

# DEEP SUBMERGENCE SCIENCE COMMITTEE

## PLANNING MEETING MINUTES

DECEMBER 10, 1995  
Moscone Center, Room 220  
San Francisco, CA

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## I. INTRODUCTION:

The Fall DESSC planning meeting was held on December 10, 1995 in Room 220 of the Moscone Center, San Francisco, CA. The meeting was called to order at 9:00 a.m. by Mike Perfit, DEep Submergence Science Committee (DESSC) Chair. He welcomed the community by indicating that the time is now to plan for operations in 1997 and beyond. The meeting agenda is included as [Appendix I](#). These minutes reflect the order in which items were addressed. A list of meeting participants is included as [Appendix II](#).

## II. 1995 SCIENCE REPORTS:

PI's who conducted science cruises using deep submergence assets over the past year were invited to present brief overviews of their science programs along with critiques of the ALVIN operations. Viewgraphs presented by the PI's are presented in *Appendices III* through *X*. These viewgraphs provide

summaries of the science objectives, maps of the dive regions and dive results. A very brief review of each program is provided below.

**Bob Embley** began with a review of his ALVIN dive series (2940-2951), AII Voyage 132 - Leg IX. A total of 12 dives were conducted; ten for NOAA and two for Meg Tivey, an NSF funded program. Bob's group carried out chemistry and biology time-series operations and focused on the CoAxial site with concentration on the FLOC and Source sites, see [Appendix III](#). One dive was made on Axial Volcano. This was a revisit after seven years. Big changes in macrofauna were observed. Bob commented that the Mesotech scanning altimeter was a very useful ancillary tool for mapping small-scale structures at vent field scale. The on-board NOAA GIS system provided a user friendly interface and was helpful in dive planning. He expressed concern over the limited number of people in ALVIN's operation group. The lack of personnel appears to be placing a strain on the existing ALVIN at-sea group.

Mike Perfit presented the ALVIN dive summaries for **Meg Tivey** and **Al Bradley**, see [Appendix IV](#). The purpose of dives were for recovery of a thermocouple/thermistor array package. Two instruments had been deployed in summer, 1994 at the Monolith and Table Vent sites, Cleft Segment of the Juan de Fuca Ridge. They were recovered on June 27 and 30, 1995. Deployment and recovery of the instrument packages went relatively smoothly, owing in large part to strategic planning with the ALVIN group during instrument development and prior to each cruise.

Mike Perfit also gave the report for **Dave Kadko's** dive program, see [Appendix V](#). The cruise was conducted at the TAG site on 2/20/95 through 3/16/95. In addition to Dave, other PI's included Schultz, Van Dover, Von Herzen, Edmond, Becker and Kleinrock. The objectives of the cruise were to: 1) Retrieve instruments monitoring the TAG mound; 2) Re-survey areas studied prior to ODP drilling; 3) Perform extensive heat flow, water sampling, sulfide sampling and sediment coring; and 4) camera tows. All of the objectives were met. The submersible operation went smoothly, although at times there were navigation problems. Eight WHOI towcam camera tows were successful until the last night when the cable parted on recovery of the vehicle and the system was lost. The system was insured and WHOI has rebuilt the towcam, and it is now available. The new system was used for a night program on the Batiza dive series in October.

The next presentation was provided by **Geoff Wheat**. A list of the cruise participants along with their cruise functions was provided, see [Appendix VI](#). Geoff investigated Baby Bare upward fluid velocity data from ALVIN cores. Calcium and sulfate vent samples were taken. The heat flow probe was broken by the manipulator. A spare probe was rigged by the ALVIN group at sea and the measurements were able to be made. The remainder of the cruise went well.

**Paul Johnson** presented results from both his ALVIN cruise and **Maurice Tivey's** dive program. Maurice's dive program took place on 13-30 July 1995. The objective of Maurice's cruise was to map the spatial variation of magnetic anomaly polarity reversal boundary with depth in oceanic crust, see [Appendix VII](#). Eleven dives were made traversing the scarp face of the Blanco Transform (Southern Juan de Fuca), one dive was lost to weather. Two additional dives were made on ODP Hole 892 Oregon Margin for Keir Becker. Magnetic field data and mesotech data was collected. There were 23 gravity stations. Rock sampling and dredging was conducted. The new WHOI towed magnetometer system was used to collect 750 km of sea surface magnetic field data. There were two deep tow magnetic tows. Six ABE launches and recoveries were successfully conducted.

Paul continued with a review of his own program. He conducted a near-bottom geophysical study of a new eruption site on the CoAxial Segment of Juan de Fuca Ridge, see [Appendix VIII](#). The cruise dates were 26 August to 10 September 1995. Thirteen dives were conducted, twelve funded by MG&G and one by Larry Clark's program. This is part of a continuing time-series measurements of the Co-Axial New

Flow eruption. The goals of the cruise were to: 1) determine the time-dependent changes in magnetization and density of the New Flow and surrounding crust, 2) characterize the geophysical signature of the "diking event" associated with the New Flow eruption and 3) determine the details of the thermal budget of crustal formation process. All experiments worked. This included work with ALVIN's magnetometer, the NAVO Bell BGM3 gravimeter in the ALVIN sphere, and ABE near-bottom magnetometer surveys. A new bare-rock heat flow blanket was deployed with very good results. ABE was a great night time vehicle and a good compliment to the ALVIN cruise. In summary, both the Tivey and Paul cruises were very successful. ALVIN worked very well along with the gravimeter. Thanks go out to Dan Fornari, Randy Herr and Dave Epp for their time and efforts in making the gravimeter accessible to WHOI and ALVIN operations.

**John Delaney** was the next presenter. John's cruise program was on the Endeavour Main Field, Juan de Fuca Ridge. They successfully implemented a new technique for in-hull surveying and refinement of transponder positions. John encouraged ALVIN users to conduct extensive survey work prior to ALVIN diving. The 3000th ALVIN dive was conducted during his cruise. He noted that the Bambi and Godzilla chimneys have grown substantially. During John's cruise, 85% of the science goals were achieved despite some rough operation conditions at sea. The ALVIN group continued to pull through.

**Rody Batiza** reported on his recent dive program to study hyaloclastites at 15 degrees North along the East Pacific Rise, see [Appendix IX](#). Nine dives were conducted on Seamount (SMT) 6. The Holloway-Stakes drill was used along with night-time WHOI towcam surveys. The science reveals that deposits are thin, there are no gradients in thickness, and no localized vents. Glass shards were produced during active sheet flow eruptions. ALVIN, the rock drill and camera all worked well.

**Rich Lutz** reported on his multi-PI (M.Lilley, K. VonDamm, C. Cary, R. Haymon and D. Fornari) cruise to 9 degrees 49-51 minutes and 13 degrees North on the East Pacific Rise. The research involved resurveying the 1991 eruption site, water sampling at high and low temperature vent sights, and monitoring the biological and geological changes in this area. Two cameras were used; a three-chip and high definition black and white camera both provided by W. Lange of WHOI. The high definition camera has a 2k x 2k pixel image. Rich showed the exceptional video footage from each of these cameras. Both videos were of extremely high quality.

**Marv Lilley**, who was on the same cruise as Rich, echoed the words of previous PI's by praising the ALVIN operation. He indicated that in his view the next priorities for upgrade of ALVIN should be power and payload. Another hour of bottom time could greatly increase science potential. **Dan Fornari** also indicated that he had success with the new time-lapse temperature sensors (HOBOS) for monitoring hydrothermal fluids funded by Lisa Rom at NSF.

All in all, PI's with operations in 1995 had high praise for the ALVIN and ATLANTIS II operation groups. Dives lost to weather and mechanical failures were few. Suggestions for ALVIN operation improvements and upgrades included increasing power for longer bottom times, navigation upgrades and addition of an improved video system such as that presented by Rich Lutz. A proposal for the first phase of the navigation upgrade has been submitted to ONR and a second phase proposal is being developed.

The final 1995 science report was provided by **Cindy Van Dover**. Cindy conducted her program on the gametogenic ecology of a hydrothermal vent community using the Navy's SEA CLIFF and ATV, see [Appendix X](#). Although a number of problems occurred during Cindy's cruise she had some successes. Additionally, the Navy offered extra dives to make up for down time. The ATV was her tool of choice for sampling. She found it very easy to use and could be brought into the smokers for temperature measurements. A SeaBeam survey was done on arrival. Use of ATV allowed for 24 hour operations to maximize bottom time. Launch and recovery could be performed in sea-state 4, even at night. Problems

experienced with SEA CLIFF included a non-functioning Schilling arm. Maneuvering SEA CLIFF is not easy and two pilots are needed. Problems on the ATV included flooding the compass, breaking the fiber optic cable and losing power to the control van. Cindy had high praise for the SEA CLIFF/ATV crew citing their professionalism, competency and courteousness.

### **III. UNOLS REPORT:**

Ken Johnson, UNOLS Chair, reported on UNOLS activities. He indicated that there is some good and bad news. The ship scheduling committee met in the fall to review 1996 ship schedules. In 1996, there are roughly 4300 days scheduled, in contrast to approximately 4900 days in 1995. Budgetary constraints continue to be a problem. A UNOLS subcommittee chaired by Peter Betzer was convened to develop a fiscal plan to prepare for anticipated budget constraints. By the end of the century we could be facing a \$15M deficit for UNOLS Fleet operations. As recommendations, the report suggests building new partnerships, accommodating the ship time of non-traditional users and working with FOFCC for future planning. UNOLS recognizes that it is easy to remove a ship from the fleet, however, the process of adding ships can be quite lengthy. Assessing the coastal science needs will continue to be a high priority.

Plans for the Arctic Research Vessel are presently on hold. UNOLS will most likely become more involved in the science planning of the USCG Ice Breaker, HEALY.

### **IV. NATIONAL FACILITY OPERATOR'S REPORT (ALVIN AND ROVS):**

**A. Operational Statistics** - Rick Chandler, WHOI, presented operational statistics for the past year, including ALVIN bottom time averages per leg, see [Appendix XI](#). In 1995, ATLANTIS II had 282 operating days and ALVIN was scheduled to complete 170 dives. This equated to 1084 hours submerged with an average dive duration of 8.1 hours and average bottom time of 4.7 hours in 1995. Thirteen science cruises were scheduled. As of the DESSC meeting, 96% of the scheduled dives had been completed since the start of the year. Rick also provided a breakdown of the operating costs for ALVIN. Salaries/Benefits/Overhead account for 72.6% of the cost. The remaining 27.4% is broken into three categories: dive expendables (12.6%), repairs and maintenance (8%) and other expenses (6.8%).

Consistent with previous years, the number of ALVIN days lost to weather and mechanical failures is low. A ten year chart of ALVIN dives lost versus completed is included in [Appendix XI](#).

The Deep Submergence Operations Group at WHOI now has a home page. The address is <http://dsogserv.who.edu>. Features include information on ALVIN including its user manual and dive log, ROVs, AUVs, WHOI's shipboard scientific services group, links to other related WHOI sites and links to other submersible/submarine sites.

#### **B. Status of Ongoing Development, Upgrade or Technical Efforts -**

**1. DSOG Tethered Vehicle Status** - Andy Bowen reported on DSOG projects that have been completed or are presently underway. His viewgraphs are included as [Appendix XII](#). Jason/Medea completed projects include control van rewiring, Medea replacement and debugging telemetry lockups. Underway projects for Jason/Medea include improved documentation, manipulator testing, revising the design of the lower payload skid and improving self-rescue capability.

ARGO II projects which were completed this year include improvement of obstacle avoidance forward looking sonar and implementation of single van operations. Projects underway include determining camera focus problems, improving thrusters for heading control, resolving noise on the LBL transducer and improving documentation.

120 kHz projects underway include replacing the depressor, refining low speed tow dynamics and improving documentation.

**2. DSOG Sonar Upgrade Proposal** - Andy continued by explaining that the DSOG Sonar Upgrade Proposal has been submitted to NSF. The goals of this effort are to: (1) eliminate many potentially catastrophic reliability problems and (2) streamline the data pipeline from collection to map making and analysis by the scientist, see [Appendix XII](#).

**3. DSOG Acoustic Navigation Upgrade** - The proposal for the navigation upgrade has been split into two phases. The Phase I proposal has been submitted to ONR. The efforts in Phase I will include purchasing the Winphrog software & PCs, installing and testing the system on ATLANTIS II, integration into portable navigation and control, testing Winphrog as an in-hull navigation processor and display, determining the preferred in-hull installation and reviewing DESSC subcommittee recommendations. In Phase II the DESSC subcommittee recommendations will actually be implemented.

**4. Jason Manipulator Development Program** - Over the past year a program to improve the manipulative capabilities of Jason has been underway. This effort was funded by ONR. The objectives are to improve reliability, test the manipulators at the maximum rated pressure, develop techniques for handling vent fluid samplers, design and test a new elevator system, redesign the gripper, improve spares and documentation and demonstrate the ability to work with temperature probes and bio-boxes.

WHOI dock side tests along with pressure tests have been performed using the improved manipulators. Andy showed a video of various manipulator demonstrations. Future plans include a demonstration of the integrated system (Jason with the manipulator) at David Taylor pressure test facility in Baltimore, MD in January.

**5. New ALVIN Equipment Used, Tried or Evaluated in 1995** - Dudley Foster reviewed a list of equipment used, tried or evaluated in 1995, see [Appendix XIII](#). ABE was tried this year with great success during an ALVIN cruise on Juan de Fuca Ridge. Equipment used, tried or evaluated with ALVIN included the Stakes-Holloway rock drill, NAVO gravimeter, pan/tilt camera mechanism, Harbor Branch's 10 mw micro-lasers, DSP&L thallium iodide light, TriTech & Imagenex sonars, new Moog motor controllers and various cameras (small 1-chip color, small ICCD, HiDef B/W, macro and Benthos/Kodak ESC).

**6. Battery Power** - Dudley reported that WHOI continues to look at ways of improving bottom time. They have done a comparison of on-bottom times for different subs, see [Appendix XIII](#). ALVIN's average bottom time over the past ten years for dives greater than 1500 meters and two hours in duration, was four hours and 47 minutes. WHOI also performed a comparison on battery characteristics and cost factors for different submersibles. The cost comparison shows that ALVIN costs \$208/kwh, NAUTILE is \$1,141/kwh, SHINKAI-6500 is \$30,440/kwh and SEA CLIFF is approximately \$3,044/kwh. The MIRs have begun using NiCad batteries. WHOI plans to wait and see how NiCad batteries perform.

WHOI analyzed long- and short-term variables which could affect ALVIN power and bottom time. The long-term variables include power characteristics of the battery type, charging equipment and power consumptive equipment. A few of the short-term variables affecting power and bottom time include the science mission objectives, piloting style, dive depth, type of terrain, lights and battery condition. WHOI is implementing improvement efforts. They will continue to: (1) monitor the battery market, (2) optimize charge cycle, (3) optimize battery maintenance, (4) implement pilot efficiency training and (5) develop electronic monitoring.

**7. Increased ALVIN Payload Possibilities** - Dudley reported that in an effort to increase ALVIN payload capability, WHOI is evaluating new motor controllers, ways to reduce battery weight, and

methods of monitoring variable ballast.

**8. Imaging Proposal Status** - Dudley Foster reported on the status of the imaging improvements, see [Appendix XIII](#). *WHOI has purchased a computer; additional shipboard recorders, monitors and editing station; new HMI lights and scaling lasers. They have completed a long baseline navigation upgrade investigation and have evaluated the EXACT system on ALVIN. Efforts that are still pending include purchasing an additional 1-chip color camera and 3-chip color camera. A pan/tilt mechanism will be purchased in early 1996.*

**9. Motor Controllers** - Dudley reported that housings for the motor controllers have been completed. WHOI is in the process of testing new endcaps and connectors.

**10. Electronic Still Camera** - Dan Fornari reported that many advances in electronic still camera technology have been made in the last couple of years. The community needs to determine their priority for this upgrade relative to other improvements. WHOI will continue to identify the best system for the National Deep Submergence facilities.

**11. Autonomous Benthic Explorer (ABE)** - Dana Yoerger reported that ABE was tested with great results this year on a hydrothermal vent area. It descends using low power and has demonstrated to be very stable and quiet. Exciting data was obtained from ABE's temperature probe. Other equipment used with ABE included a magnetometer & CTD. Although ABE at this time is somewhat power limited, it does have some payload capability.

## **V. NEW DESSC MEMBERS:**

Mike Perfit announced that J.C. Sempere (UW) & Cindy Van Dover (U Alaska) have been appointed to DESSC as new members. Karen VonDamm resigned from DESSC this fall to assume new responsibilities as RIDGE Chair. A replacement member will be nominated.

## **VI. NEW DEEP SUBMERGENCE SUPPORT VESSEL:**

**A. Decision from Agencies, Operator, and DESSC on ATLANTIS** - Jim Andrews, ONR, reported that ONR and NSF have decided to pursue the option of making ATLANTIS the new support ship for deep submergence operations. ONR, NSF and WHOI will share the cost of modifications. Halter Marine Inc (HMI), the shipyard constructing ATLANTIS, developed a great design to accommodate submersible operations. Additionally, the design will not impact the general oceanographic capability of the vessel. NAVSEA is in the process of negotiating the cost of this modification to ATLANTIS with the shipyard.

Jim showed a viewgraph comparing the capabilities of various past and potential platforms, see [Appendix XIV](#). The comparison shows that between LULU, ATLANTIS II, KNORR and ATLANTIS; ATLANTIS will offer the most science bunks, speed and lab space. Jim finished his discussion by showing the ATLANTIS/AII/ALVIN time line for 1996 through 1998. It is estimated that integration of the modifications to make ATLANTIS a submersible platform will not impact the scheduled delivery date of the vessel. ATLANTIS is scheduled to be delivered with handling capabilities in April, 1997.\*\*

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\*\* Post-DESSC Meeting Note:

The Navy and HMI successfully negotiated a cost for the ATLANTIS conversion in mid-January, and ATLANTIS was launched on February 1, 1996.

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**B. Capabilities, Berthing, Lab Space, Facilities** - Dick Pittenger continued by elaborating on the features of ATLANTIS. He showed various views of the ship's layout, see [Appendix XV](#). The ATLANTIS design includes SeaBeam 2112, P-code GPS, ASHTEC, IMET and a dual traction winch. A fiber optic cable will be part of facility. The submersible handling design calls for the cross decking and overhaul of AII's ALVIN A-frame. Other features include a submersible hanger and shops, an aft control station for A-frame and winches, a battery room, an ROV bay and a telescoping boom crane.

**C. Timing/Logistics/Shakedown/Engineering dives** - Dick reviewed the schedule of key events for ATLANTIS II, ALVIN and ATLANTIS, see [Appendix XV](#). At the completion of science operations in 1996, ATLANTIS II will come out of service. ALVIN's overhaul will take place between September 1996 and April 1997. The actual overhaul should take approximately six months, however, some added time will be needed for the DSOG to become familiar with the new ship. It was noted that any major ALVIN changes suggested for the overhaul period will need engineering, but time and funding are limited.

Modifications to make ATLANTIS a submersible support ship are expected to be complete by April 1997. The ship will arrive at WHOI on 6 May 1997. DSOG demonstrations and trials will be conducted between 20 May 1997 and 3 June 1997. ATLANTIS will be available for science in traditional operating areas (MAR, NEPR, JDF, etc.) between June and December 1997. The ship will be available for unlimited science operations by approximately February 1998. At this time, a global expedition to the more non-traditional ALVIN operating areas can begin. Given the long lead-times needed to obtain funding, the science community needs to gear up quickly for operations in 1997, both for ALVIN and ROVs.

## VII. AGENCY REPORTS:

**A. National Science Foundation (NSF)** - Don Heinrichs gave the report for NSF by first announcing that Mike Purdy had taken over as the Director of the Ocean Science Division at NSF. Don informed the DESSC community that the 1996 NSF budget was still not signed but they were trying to get funding to the fleet to permit the first six months of operations. The final budget will not be known until it is signed, but NSF is planning on a budget that would be one to two percent below that of 1995.

Don reported that an agreement had been reached between ONR, WHOI and NSF for the conversion of ATLANTIS to a submersible handling ship. Each party will share in the cost of the modification. Don was not optimistic to the chance of getting major improvements funded for ALVIN's overhaul period. He gave no illusion that there will be any funds available for additional overhaul work. NSF expects to get all approved dive programs to sea in 1996 with the ALVIN program winding down in the summer. NSF does not expect to participate in the IMAX program that is planned for 1996.

**B. Office of Naval Research (ONR)** - Jim Andrews provided the ONR report. The Defense budget has been signed so that ONR can function. The good news is there was no decrease in funding but the bad news is there was no increase. Jim said ONR is interested in deep submergence science but at this time it is not their focus. Jim explained the CNO's new direction for oceanographic research will be divided into 40% littoral, 30% deep ocean and 30% overlap. ONR is very interested in ATLANTIS being a key part of the deep submergence infrastructure. Jim also explained that the Navy has a great interest in the Autonomous Ocean Sampling Network.

Jim introduced Sujata Millick. Sujata is now on-board as the new Research Facilities Program Officer taking over for Annette DeSilva.

**C. National Oceanic and Atmospheric Administration (NOAA)** - Hank Frey sent a memo which was

read by Mike Perfit, see [Appendix XVI](#), describing the status of the NOAA/NURP program. Hank needed to stay in Washington to respond to NURP's reduced appropriation of \$12 M. In summary, his memo indicated that NURP's appropriation of \$12M was out of conference, but not voted on. This would represent a 1/3 cut from the FY94 and FY95 original appropriations. The chance of Presidential veto of the appropriation is high. The conference language requires NOAA to fund the centers at \$1,560K and distribute the excess to the three centers that suffered cuts during the FY95 recision. The FY94 and FY95 appropriations were \$18.1M and \$18M respectively. A \$3.5M recision occurred in FY95, reducing the budget to \$14.5 M.

NURP will do everything possible to preserve funds to support ALVIN but may have to do so at a reduced level.

**Award for Annette DeSilva** - Steve Ramberg presented Annette DeSilva with a citation and Merit Award (which includes a medal) from the, Office of Naval Research, signed by Admiral Mark Palaez. Steve praised Annette for her untiring efforts in support of the Research Facilities Program, filling the gap before Sujata Millick's arrival. Annette received a warm round of applause from the DESSC community present.

## **VIII. 1996 SCIENCE OPERATIONS AND LOGISTICS:**

**A. ALVIN 1996 Operations** - ALVIN has been scheduled for 53 dives in 1996 with the operations ending at Woods Hole in June, see [Appendix XVII](#). WHOI is trying to fill the down-time with possible BRIDGE MAR diving and commercial work in the late Spring/Summer. With a short operating year, the ALVIN group can use the extra time to become more familiar with ROV operations. There is a great concern, however, about keeping the ALVIN group together during the extended down-time. The ATLANTIS II crew will be laid off much earlier than was originally planned; this is also of great concern to the operator. ATLANTIS II's Master and Chief Engineer have been announced to fill the same respective positions on ATLANTIS.

**B. ROV 1996 Operations** - Three ROV cruises are planned in 1996 for a total of 117 days, see [Appendix XVII](#). Work will be at: Lucky Strike on the Mid-Atlantic Ridge, Juan de Fuca Ridge and the Southern East Pacific Rise.

## **IX. OTHER FACILITIES OPERATIONS:**

**A. Navy Deep Submergence Operations** - Commander John Green reported that the Navy has been supporting 60 days of science operations per year using their deep submergence facilities. This year, six operations were conducted during the time frame of 28 April to 28 October using TURTLE, SEA CLIFF and ATV. Areas of operations included sites off California and Juan de Fuca Ridge. A summary of these operations is as follows. [Appendix XVIII](#) provides details on each specific cruise along with the associated Principal Investigator.

- Total days on station: 40 days (four lost to weather)
- Depth: 923-10,500 ft
- TURTLE dives: 7 dives/48 hours
- SEA CLIFF dives: 20 dives/ 123 hours
- ATV dives: 33 dives/294 hrs (longest 37 hrs)
- Total hours of bottom time = 215 hrs.

John Green also reviewed the military operations performed during this same time period.

The Navy has been pursuing various science related initiatives. Select projects are being done jointly with WHOI and SIO-MPL. These include:

- lighting studies/upgrade for ATV and SCORPIO ROVs
- SeaBeam post processing system
- integrated data logging
- ATV tether and telemetry upgrades
- tracking upgrades
- video frame grabber
- MARSAT e-mail

**B. MBARI ROV Operations** - Debra Stakes provided a report on the activities at MBARI. MBARI is in the process of moving from Pacific Grove to their new facilities at Moss Landing. Construction of MBARI's new ROV support vessel, WESTERN FLYER, is nearing completion. The ship is in the water and undergoing trials. It should be at MBARI in February 1996. Limited operations are to begin in 1997 as they integrate the ship with their ROV, TIBURON. Full operations should begin in 1998. The ship is a SWATH design of 117 feet in length. It features a wet lab, moon pool for ROV launching and berthing for 15 scientists/ROV pilots/technicians.

TIBURON is their new ROV under construction. The vehicle will have a depth capability of 4000 meters, six HMI lights, dual 3-chip cameras and a series of tool sleds.

Debra showed a video demonstrating deployment of various instrument packages.

**C. ROPOS** - Steve Scott provided information on the Canadian ROV program. ROPOS is a Remotely Operated Platform for Ocean Science, see [Appendix XIX](#). A newly incorporated not-for-profit company has been formed to oversee its operation. Steve Scott is president. ROPOS system features include:

- fiber optic tethered ROV
- 5000m capability
- 2 manipulators
- variety of specialized sampling tools
- EM experiments
- 2 video cameras
- 7 simultaneous RS232 connections
- deep water system with cage - 6 pilot/engineers for 24 hour day operations
- shallow water system without cage - 3 pilots/engineers for 8 hour days

Ship requirements for ROPOS were reviewed by Steve. They are working out problems which include heave compensation and navigation. Steve provided the ROPOS system rates. The Canadians have used it for two cruises and the Germans are planning a cruise in the Aleutian trench region. The Germans will be purchasing a 5000 meter cable for this operation.

**D. German (GEOMAR) Operations** - Rich Lutz reported that GEOMAR was interested in another ROV operation in 1997 and could be open to other deep submersible activity.

**E. West Coast NURP Center Initiatives** - Cindy Van Dover reviewed the NURP's West Coast Center plans for work in the Gulf of Alaska. The plans call for three field seasons. It is scheduled to be a \$1M, five-year project.

## **X. LONG-RANGE PLANNING:**

**A. 1997 and Beyond** - Mike Perfit began the discussion by stating that the community needs to decide where we would like to take ALVIN in 1997 and beyond. From recent letters, it appears the interest in going to the western Pacific is low. The community can contact Mike Perfit with areas of interest. Also, Mike indicated that anyone with suggestions on how to get the agencies more involved with supporting deep submergence operations should contact him. DESSC will try to hold a third meeting in the spring to plan for the future deep submergence operations (funding permitting).

Don Heinrichs emphasized that budget pressures are real. The community needs to start thinking about the 15 February submittal deadline. Future expeditions need to be planned now. There is concern that NSF is supporting most requests for ALVIN and ROV time. Support from other agencies is needed.

**B. Letters of Interest** - Annette DeSilva provided a summary of ALVIN/ROV letters of interest for 1997 and beyond, see [Appendix XX](#). Forty-nine letters of interest and ship time requests were received. These include new letters, letters on file and ship time requests. Of the 49 letters/requests, 31 were for ALVIN and 18 were for ROVs (one indicated both ALVIN and ROVs for the same cruise).

The numbers of letters received for ALVIN use in 1997 was relatively low compared to past years. This was most likely due to the uncertainty of when and where ALVIN would be operating during that time frame. Interest for operations in the Southern EPR was high during 1997 and many of these requests indicated 1998 as an alternate time frame. A summary of other ALVIN dive areas of interest were: North Pacific, 75 dives; Atlantic, 37 dives; West Pacific, 60 dives (1998); Indian Ocean, 31 dives (1998); Equatorial Pacific, one dive and Southern Latitude, 25 dives.

ROV interest continues to increase. Interest areas are dispersed and include the Atlantic, Mediterranean, Juan de Fuca Ridge, Northern EPR, Southern EPR and the Indian Ocean. Highest interest was for work in the Atlantic with 61 days and JDF with 58 days.

An announcement to the community will need to go out quickly informing them of where and when ALVIN can operate.

**C. Global Deep Submergence Science Initiatives** - NSF has indicated that they are feeling budgetary restraints. Most requests for ALVIN and ROVs have been coming to NSF. Now is the time to start planning global deep submersible initiatives. Mike Perfit challenged the community to seek other ways/agencies to support submersible science operations.

**D. Programmatic Ties to other National Programs** - The need for collaboration among the various national deep submersible programs was deemed important in this scarce funding environment.

**E. Vehicle Assets and Technology** - DESSC has sent a letter to NSF which presents a 3rd party tool policy. This outlines the responsibility for development and maintenance of these tools. WHOI expressed a concern that the science need and justification of 3rd party tools should be clearly defined. The 3rd party tool policy developed by DESSC will be distributed to the community.

## **XI. OTHER BUSINESS AND ISSUES:**

**A. IMAX** - John Delaney, reported that not much progress has been made in the past 9-1/2 months on the IMAX project which involves filming ridge axes and deep-sea vents from submersibles. The cost for the program is estimated at \$6M. Industry will provide \$3M if the other \$3M can be found elsewhere. ALVIN could be featured in the filming. John reported that a pre-proposal has been submitted to NSF, however, funding does not look promising (see [Appendix XXI](#)). Discussion followed as John asked whether or not we should pursue this project and if so, how would we get funding? No definitive answers

were found. Logistics, funding and timing to integrate the program into ALVIN's 1996 operations were cited as a concern.

Those interested in discussing the IMAX issue further were invited to convene following the DESSC meeting.

*The meeting was adjourned at 5:15 p.m.*

**DESSC EXECUTIVE SESSION:** A brief gathering of the DESSC was held immediately after adjournment to discuss possible dates and locations for the next meeting.