

ALVIN REVIEW COMMITTEE

Summary Report  
of the  
June 26, 27, 1991 Meeting

Carriage House  
Woods Hole Oceanographic Institution  
Woods Hole, MA

Minutes of the Meeting

APPENDICES

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**ALVIN Review Committee  
Minutes of Meeting**

**June 26, 27, 1991**

**Carriage House  
Woods Hole Oceanographic Institution  
Woods Hole, MA**

**OPENING THE MEETING**

The meeting was called at 8:00 a.m. by Feenan Jennings, ARC Chair. Committee members, funding agency representatives from NOAA, NSF and ONR, WHOI personnel and UNOLS Office staff present for all or part of the meeting:

**ALVIN Review Committee**  
Feenan Jennings, Chair  
Casey Moore  
Doug Nelson  
Mary Scranton  
Gary Taghon  
Karen Von Damm  
Dick Pittenger, WHOI member

**Agency Representatives**  
David Duane, NOAA  
Don Heinrichs, NSF  
Keith Kaulum, ONR

**WHOI**  
Craig Dorman  
Barrie Walden  
Don Moller  
Rick Chandler

**UNOLS Office**  
Bill Barbee  
Jack Bash  
Annette DiSilva  
Mary D'Andrea

**The ALVIN Review Committee Roster is Appendix I.**

Craig Dorman, Director, WHOI, welcomed the ALVIN Review Committee and introduced Dick Pittenger, whom he had earlier named as the WHOI (operating institution ex-officio) member on the ARC. Dr. Dorman reiterated WHOI's strong commitment to continue to manage and operate ALVIN in support of the United States' oceanographic program. "We want it, we need it, we care about it." He noted that Woods Hole will also continue to promote, acquire, develop and operate other deep research submersibles and underwater vehicles as a part of the institution's strong conviction of the importance to our national oceanographic program of deep, in situ research. He noted that Woods Hole's proposal to operate AGOR-24 included the proposition to outfit the KNORR with special capabilities for supporting ALVIN and other deep manned submersibles, remotely operated vehicles, autonomous underwater vehicles and other facilities for deep underwater research.

He asked that the ARC be aggressive in their role toward promoting a strong ALVIN program in support of ocean research.

He briefly discussed new non-U.S. deep submersibles in comparison with ALVIN, some personnel changes on ALVIN/Atlantis II and the need within the ALVIN operating group for training and technical development dives. He noted that Woods Hole had formed a visiting committee, chaired by Fred Spiess, to examine, assess and advise on WHOI management and operation of ALVIN.

#### ALVIN/ATLANTIS II OPERATIONS 1991, 1992

Dick Pittenger discussed with the ARC the diversion of ALVIN/ATLANTIS II from their scientific support schedule to aid in recovery of the U.S. Navy ROV CURV III. When CURV III was "lost" during an operational deployment, circumstances were such that ALVIN/AII were the most appropriate recovery facility available. Woods Hole worked closely with Navy operational units to affect the recovery with relatively modest impact to the science schedule. Subsequent to the June 26, 27 ARC meeting, the ARC received the following message: "Woods Hole Oceanographic Institution is pleased to announce that R/V ATLANTIS II and ALVIN have successfully recovered the U.S. Navy ROV CURV III on July 1 and is resuming normal scheduled scientific operations."

The ARC offered their congratulations to Woods Hole on the efficiency of the recovery operations.

Feenan Jennings, ARC Chair, presented the meeting Agenda (Appendix II). The order of addressing items was as reported herein, adjusted from the published agenda.

Barry Walden, WHOI, summarized a Submersible Engineering and Operations Group report to the ARC on 1990-1991 operations. (The report is Appendix III.) A number of engineering topics were discussed: The Schilling manipulator, the most versatile of ALVIN's two arms continues to have reliability problems. By working with the manufacturer, many earlier problems have been solved, and a solution appears at hand for the remaining known problems. The operators are loath to give up on the Schilling arm because it is so flexible and versatile. It may or may not be possible to add a third 120v battery late in 1991 when the last of ALVIN's stainless steel motor control housings is removed. The projected balance between added weight and room for offsetting syntactic foam is too close to call. All electric hull penetrators have been replaced with a new model. Although use of these new penetrators makes routine maintenance much easier, a problem has been experienced due to condensation from within the hull. This is not a safety problem. ALVIN's video system is scheduled for replacement. A request is being developed to request of the Navy certification authority to increase ALVIN's depth rating to 15,000 feet. A request could

not go forward before the last of the motor controller pressure housings is removed, in late 1991.

**ALVIN made 154 dives during 1990.** Of these, 150 were in research projects, two were for certification and INSURV inspection and two were for inspection/survey/recovery. Eight dives were cancelled from the 1990 program, two due to mechanical problems, one to a ship departure delay and five to weather. The first twenty dives were on the Mid-Atlantic Ridge, followed by sixteen in the Gulf of Mexico. Work was in the northeast Pacific for the rest of 1990, from the Hess Deep Rift Valley north to the Juan de Fuca Ridge and, finally, work in canyons and basins off California and on Fieberling Seamount. Dives were funded by NSF, ONR and NOAA.

**ALVIN had completed 62 dives through June 1, 1991.** After an extended maintenance period while ATLANTIS II conducted non-ALVIN research, ALVIN's first dives were in February, in Santa Catalina Basin. Work continued in the Guaymas Basin and on the East Pacific Rise, southwest of Acapulco. No dives had been cancelled through June 1.

**In 1990, more than half of ALVIN's dives were for geology/geophysics, almost one-third for biology and about ten percent for chemistry/geochemistry.**

**Barrie Walden reported that the new Navy process for ALVIN certification is straightforward.** The process is rigorous and systematic but ALVIN-group capabilities and procedures have been adequate to accommodate to it. **ALVIN will need periodic overhaul in 1992.** The ALVIN Group hopes to begin the overhaul as soon after October, 1991 as feasible, to divide the down time between two operating years.

#### **ALVIN PROGRAM MANAGEMENT, SUBMERSIBLE SCIENCE MANAGEMENT**

**Dick Pittenger gave a forthright presentation on ALVIN program management and personnel issues.** He discussed recent personnel separations, and current personnel status. **He emphasized that, contrary to widespread rumors, there were no ALVIN safety issues involved in early 1991 personnel actions.** Since taking up operations in February, 1991 ALVIN has operated at the usual high level, without delay or loss of dives. Personnel changes have continued, both in the ALVIN Group and on the ATLANTIS II, as a system is implemented that should allow a better sea-shore rotation. WHOI intends to implement an evaluation process that will provide continuing assessment of ALVIN program management and of facility effectiveness.

**Dick Pittenger noted that WHOI had set up a visiting committee, chaired by Fred Spiess to look at the ALVIN program and program management.** The Committee had met both at Woods Hole and aboard

ATLANTIS II. They had not as yet delivered their report or recommendations to WHOI.

Feenan Jennings reviewed for ARC members several developments or issues in management of submersible science facilities that will affect ARC roles and activities:

1. **The Spiess Visiting Committee Report on ALVIN Management.** The ARC should examine its role in oversight and advice on technical development in light of the Spiess Committee and its findings.
2. **The NOAA/NURP-Navy/OP-23 draft agreement on a mode for managing SEA CLIFF, TURTLE and other Navy deep submergence facilities in support of academic ocean research.** ARC should respond to this draft with recommendations on how ARC and UNOLS should participate.
3. **The UNOLS report Submersible Science Study for the 1990's has been provisionally accepted by UNOLS. The Study recommends establishment of a UNOLS Submersible Science Committee, and an SSC is being formed. The ARC should develop an interface with SSC and make their recommendations to UNOLS.**

David Duane, NOAA/NURP discussed the NURP/OP-23 agreement for Deep Submergence Scientific Review Committee. At a meeting held by the FOFCC Coordinating Board, the version of the draft charter distributed to ARC members had been reviewed by Coordinating Board members and by UNOLS, ARC and submersible users from the academic community. As a consequence of that meeting, the draft charter was being revised (but was not yet available). In general, the revisions would provide for a facilities allocation review process (similar to the ARC review of ALVIN dive requests) by UNOLS. The revised charter would also explicitly recognize that agencies funding the scientific use of the Navy facilities (especially SEA CLIFF and TURTLE) would use their own process to review science proposals and make grants.

David Duane gave a review of the NOAA Undersea Research Program (NURP) as background for NOAA's interest in pursuing a NOAA-Navy agreement. NURP has been successful in providing to the academic community submersibles and other research facilities for depths less than about 2,000 meters through their regional underwater research centers (e.g., U.Connecticut/Avery Point, UNC, U.HAWAII, etc.). Meanwhile, the Navy has had SEA CLIFF and TURTLE which have the only U.S. capabilities to operate as deep as 6,000 meters (SEA CLIFF) and a rare U.S. ability to operate to 4,000 meters (TURTLE). Although the Navy operators have a mandate and interest in providing up to 50 days per year to support academic research, the interface with the academic community has not been effective. NOAA/NURP wants to facilitate the process, so that the academic community will have effective research access to depths beyond 4,000 meters.

Feenan Jennings reported that the UNOLS Council had in January, 1991, agreed to form a UNOLS Submersible Sciences Committee (SSC). The charge for the SSC would be taken from among recommendations in Submersible Science Study for the 1990's:

- monitor and promote the development and application of appropriate new technologies for submersible science;
- advise NSF, ONR, NOAA and other federal agencies on submersible technology, its evolution and applications;
- develop procedures for facilitating access to submersible systems by principal investigators of research proposals; and
- develop and exercise liaison among NURP, ARC, OP-23 and the oceanographic research community.

The ARC Chair would be an ex-officio member of the SSC. Gary Brass, UNOLS Chair, noted that the intent was that the SSC consider all available facilities for supporting underwater science, AUV's, ROV's, deep and mid-depth submersibles, etc. Their involvement with individual facilities such as ALVIN would be of an overview nature, considering such aspects as how an individual facility might contribute to a national submersible science program. The UNOLS Chair will present the concept of an SSC to UNOLS Members for their approval at the Annual Meeting in October, 1991.

Jeff Fox, who was a member of the Spiess visiting committee as well as of ARC, had provided a paper suggesting the ARC refine its role to enhance communications among the ALVIN-user community, ALVIN management/operators and funding agencies and to facilitate the development and use of new technology for ALVIN. The ARC should establish an efficient, systematic means whereby ALVIN users could be heard by ALVIN management and funding agencies. The ARC should, periodically, assess the sum of user comments and provide to ALVIN management and the funding agencies, a measured report on user sentiments and comments. The ARC should also develop means to help identify and prioritize those technology developments needed to maintain and improve the quality of ALVIN as a research facility.

Dick Pittenger noted that WHOI had not yet received their report from the Spiess committee. Although he could not comment on institution response to the Committee's findings he expected that WHOI would follow up by commissioning periodic external reviews of the ALVIN program. Woods Hole had also made tentative plans to convene annual meetings of ALVIN investigators/chief scientists as a means of opening communications between users and ALVIN management.

Don Heinrichs commented that NSF would like a broader, more refined assessment of the place of submersible science in the national ocean research program than had so far been provided by ARC, the Submersible Science Study or the user community. Questions should be addressed on the realistic scope of the effort, the best mix of facilities, use of foreign facilities, international marketing of ALVIN and other U.S. facilities and modes of management. Hopefully, the SSC, ARC and involved users will address some of these questions.

Feenan Jennings asked that ARC members consider the issues just discussed. They would be revisited later in the meeting, to agree on ARC roles and make recommendations to UNOLS and funding agencies.

#### **ALVIN ARCHIVING**

The ARC Chair had received a letter from Robert Ballard asking for clarifications on ALVIN archiving policy. Questions were raised concerning proprietary rights of P.I.'s/chief scientists, rights of employing institutions and commercialization of records, particularly film and video. The Chair's response to the inquiry (Appendix IV) drew on W.H.O.I. policy as stated in the ALVIN Users Manual and on federal funding agency policy as stated in the Federal Grants Management Handbook and in National Science Foundation Notice No. 106, dated April 17, 1989.

Since there was no further query after the ARC Chair's letter, it was presumed that initial questions had been addressed satisfactorily.

#### **REVIEW OF DIVE REQUESTS FOR 1991**

Dive requests for investigations in 1992 are listed by region in Appendix V and summarized in Appendix VI. Dive requests had been submitted in response to UNOLS announcement Opportunities for Oceanographic Research During 1992 using DSV ALVIN (Appendix VII). Fifteen requests for a total of 219 dives were received in 1991. These, together with three requests recommended in 1990 but carried forward for scheduling in 1992 resulted in 18 requests for 259 dives before the Committee. Reviews were conducted following ARC rules (Appendix VIII).

The ARC recommended sixteen of the requests for a total of 244 dives. The ARC recognized that 244 dives were far more than could be accomplished during approximately nine months of operations in 1992. They were aware, however, that not all of the pending science proposals for the dives requested would be funded. Further, some dives requested (and recommended) were distant from any other ALVIN work; not all (or perhaps any) of these distance projects would prove feasible in 1992. Finally, dives requested were about equally divided between the Atlantic



and the Pacific, and several projects in each ocean had time constraints that would be difficult to schedule. Since the ARC was willing to see any of the projects they had recommended on a 1992 schedule, they agreed to leave to WHOI schedulers whatever flexibility that might remain after science funding decisions were announced.

#### **SCHEDULE RECOMMENDATIONS FOR 1992**

The uncertainties noted above made scheduling extremely tentative. Nevertheless, a provisional schedule for 1992 was outlined that included about 75 dives in the Pacific (January-June) and about 125 in the Gulf of Mexico, Caribbean and Atlantic (June-October). The schedule outlined was efficient, and accommodated the known priorities of each of the three funding agencies. The ARC suggested that WHOI not publish an ALVIN/AII schedule for 1992 until science funding decisions were revealed.

#### **REMARKS FROM FEDERAL FUNDING AGENCIES**

Don Heinrichs reported that NSF (and OCE) had healthy increases in the President's budget for 1992. Although ALVIN-supported science does not have formal program status in OCE, interest in using the facility has remained strong, and likely would continue. (E.g., Explicit role in RIDGE plans, support from ODP, continuing support from Biological and Chemical core programs.) He expressed concern, however, at the apparent decrease in interest from ONR science program managers. (Only two dives proposed for 1992 under ONR sponsorships.) He suggested that dwindling ONR project support for ALVIN was not an exception, but was consistent with operational support throughout the UNOLS fleet. Dr. Heinrichs, for NSF, advised the ARC that the NOAA-NSF-ONR tripartite agreement concerning support of the Deep Submergence Vehicle (DSV) ALVIN expires 31 December 1992. He asked that ARC study the Agreement in the context of ALVIN performance and tri-agency support over the past several years. The Committee should provide their recommendations with factual justification on the question of renewal of the agreement and short-term scientific and programmatic needs for ALVIN in time to be considered by agencies as they negotiate continuation of ALVIN support arrangements.

Keith Kaulum noted that ONR support of UNOLS ship time was about \$7.1 million in 1991 and is projected at about \$6.7 million in 1992. (UNOLS records show all-Navy funding to UNOLS fleet operations as \$6.0 million in 1988, \$4.8 million in 1989, \$6.4 million in 1990, \$7.2 million in 1991 and \$6.2 million estimated for 1992.) He asserted that ONR had not funded more ALVIN dives than they had was that no more proposals to use ALVIN (or UNOLS ships) were received. A lively discussion followed.

Because of limited science program interest in ALVIN and because ONR management is convinced that ROV's will supersede deep manned submersibles soon, ONR will look very carefully at renewing the Tripartite Agreement.

The ARC discussed ALVIN support and agency funding. They agreed to provide a paper on ALVIN-supported science and a projection of the support necessary to maintain the program, as an aid to agencies in their consideration of the Memorandum of Agreement. The ARC should also endorse the ALVIN program directly to ONR management and urge that Navy research support to the facility be maintained or, better, increased.

David Duane reported that NOAA's NURP was then undergoing significant changes and foresaw a bright future. They expected at least level funding for 1992, and viewed their commitment to the ALVIN program as firm and certain (as it has been in the past). NURP's mid-depth submersible support continued successfully, through their regional centers. (There was pressure on NURP to establish a new regional undersea research center in New Jersey.) NOAA and Department of Commerce support to NURP and their sponsored undersea research was very strong. Goals within NURP included more support for undersea research, support for a comprehensive system of in situ facilities and provision of a submersible for depths greater than 6,000 meters.

David Duane was double-hatting in a NOAA job a level up from NURP, and was likely to be replaced as Director, NURP when that job was filled after a July 8 announcement closing. Several other NURP professional slots were in recruitment.

#### ALVIN ARCHIVES

ALVIN archives had been an issue at earlier meetings and the ARC had endorsed WHOI proposal to preserve older film records and to make files more accessible. Agencies had declined the proposal, possibly because it was not well focused and because it did not sufficiently document a level of archive use that would justify the expenditure. Since that time, WHOI had looked again at the issue and had with their resources, established a PC-based listing of all ALVIN dives. They had also implemented a system of shipboard report forms that would provide, for current dives, a first order description of activities for each dive (e.g., principal scientist on dive, kind of work, description of samples taken).

The ARC visited archives of ALVIN records, and received a status report and system demonstration from archivists. Any individual ALVIN dive from the approximately 2,400 completed through mid-June, 1991 can be called up. Search can be on the basis of scientist's name, date/time, area, etc. Recent dive records include much more information than earlier ones, but with care the entire archive can be searched. Those samples and

observations included in the archives can be recovered. The condition of old film was about as had been previously described. Color film more than 15-20 years old is deteriorating.

The ARC commended WHOI for their efforts in establishing a computer-based archive listing and search capability. Drawing from their own experience with ALVIN they made suggestions for improving the listing and search capability: For old dives on which the information in the archives is sparse, contact scientist-observers and ask that they submit their own dive logs or journals. A more complete dive record could be extracted for early ALVIN dives. The ALVIN dive log filled out by the scientist-observer (and other dive forms) should be modified to impress on investigators the importance of the forms to archives. ALVIN users on the ARC were impressed by the utility of the listings available.

The ARC recommended that WHOI develop a new proposal focused tightly on preservation (copying) old film records and other data in danger of being lost. The ARC will review the proposal, offer suggestions and endorse it to the three funding agencies.

#### RECOMMENDATIONS FOR NEW ARC MEMBERS

Terms for two ARC members, Jeff Fox and Dave Cacchione were expiring. The ARC asked Feenan Jennings, ARC Chair, to contact each of them and based on discussions then, to recommend to the UNOLS Chair that they be reappointed to the ARC for three additional years.

#### PLANNING FOR 1993 AND BEYOND

The ARC approved of the general format of the ALVIN Planning Meeting held in December, 1990. (Telemail solicitation of interest on ALVIN.PLANNING, summarized at the meeting by an ARC member; no individual presentations; technology development presentations.) The ARC also, agreed to ask for presentations projecting ALVIN use from appropriate program-management offices (e.g., NSF's RIDGE, ODP, Biological Oceanography, NOAA's VENTS).

#### FUTURE ALVIN PROGRAM REVIEWS

Several ARC members suggested that the process for the 1992 ALVIN Review be modified by selecting individual ARC members as discussion leaders for dive requests to be reviewed. The ALVIN Chair along with the UNOLS Executive Secretary were to consider the suggestion and implement it if feasible.

## SUMMARY OF ALVIN REVIEW COMMITTEE TASKS

The ARC Chair identified and ARC members accepted a series of seven tasks before the Committee during 1991-1992:

### Chairman's Summary of June 24-28, 1991 ARC Meeting in Woods Hole

During the meeting the ARC reviewed its on-going responsibilities and identified a number of tasks requiring attention during the coming year and in the future. These are summarized as follows:

1. Identify probable operating areas for out-years through solicitation of interests from academic institutions and a meeting each December between ARC and interested scientists. Solicit proposals for ALVIN use, review them and develop a tentative use schedule for subsequent years during committee meeting in June of each year.
2. When agreement has been assigned between NOAA and Navy, for scheduling use of Sea Cliff and Turtle by scientific community, ARC to review proposals and recommend to NOAA/Navy which projects should be given priority.
3. On a yearly basis, review and assess comments from ALVIN scientific users and identify meaningful themes that warrant attention by Woods Hole management.
4. Work with the newly established UNOLS Committee on undersea technology to identify and prioritize technology development needed for ALVIN, and support requests to sponsoring agencies for needed developments.
5. Organize a two-day workshop to discuss ALVIN's present technology capabilities, identify options for improving equipment and outline a long-term upgrading program. Coordinate the workshop with the new UNOLS undersea technology committee.
6. Develop a white paper on scientific and programmatic needs for ALVIN during the next three to five years for submission to the funding agencies as they consider renewal of the Memorandum of Agreement concerning support for ALVIN. The present agreement expires in December of 1992. The white paper should be completed by early 1992 and should include comments on status of ALVIN support ship.

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7. Work with WHOI ALVIN Archivists on a proposal to preserve deteriorating scientific film footage and provide strongest possible endorsement of the proposal to the funding agencies. The proposal should also include support for archivists to contact all past scientific project leaders for their dive note and logs which will be incorporated into archives computerized data base on ALVIN dives.

All business having been completed, the meeting was adjourned at 4:50 p.m. on June 27, 1991.

**UNOLS Review Committee  
for DSRV ALVIN**

Rev. 8/91

(First Meeting 2/19/75)

<u>1975</u>		Term Expires	<u>1980</u>		Term
A.F.	Richards, Chair, Lehigh	7/78	R.W.	Corell, Chair, UNH	7/76-6/82
C.L.	Drake, Dartmouth	7/76	R.N.	Anderson, L-DGO	7/79-6/82
G.D.	Grice, WHOI	7/78	J.M.	Edmond, MIT	7/78-6/81
R.R.	Hessler, Scripps	7/77	D.E.	Karig, Cornell	7/80-6/83
G.H.	Keller, NOAA/AOML	7/77	K.C.	Macdonald, UCSB	7/78-6/81
S.	Murphy, U/Wash	7/76	D.C.	Rhoads, Yale	7/78-6/81
C.	Rooth, RSMAS	7/76	G.T.	Rowe, Brookhaven	7/80-6/83
K.K.	Turekian, Yale	7/78	M.	Wimbush, URI	7/79-6/82
T.J.	van Andel, Stanford	7/77	A.E.	Maxwell, WHOI, ex-officio	
A.E.	Maxwell, WHOI, ex-officio				
<u>1976</u>		Term Expires	<u>1981</u>		Term
A.F.	Richards, Chair, Lehigh	7/78	R.W.	Corell, Chair, UNH	7/76-6/82
R.W.	Corell, UNH	7/79	R.C.	Aller, U/Chicago	7/81-6/84
M.C.	Gregg, U/Wash	7/79	R.N.	Anderson, L-DGO	7/79-6/82
G.D.	Grice, WHOI	7/78	D.E.	Karig, Cornell	7/80-6/83
D.E.	Hayes, L-DGO	7/79	G.T.	Rowe, Brookhaven	7/80-6/83
R.R.	Hessler, Scripps	7/77	F.L.	Sayles, WHOI	7/81-6/84
G.H.	Keller, OSU	7/77	M.	Wimbush, URI	7/79-6/82
K.K.	Turekian, Yale	7/78	A.A.	Yayanos, Scripps	7/81-6/84
T.J.	van Andel, Stanford	(resigned 9/76)	G.D.	Grice, WHOI, ex-officio	
A.E.	Maxwell, WHOI, ex-officio				
<u>1977</u>		Term	<u>1982</u>		Term
R.W.	Corell, Chair, UNH	7/76-6/79	R.W.	Corell, Chair, UNH	7/82-6/85
J.B.	Corliss, OSU	7/77-6/80	R.C.	Aller, U/Chicago	7/81-6/84
M.C.	Gregg, U/Wash	7/76-6/79	J.K.	Weissel, L-DGO	7/82-6/85
G.D.	Grice, WHOI	2/75-6/78	D.E.	Karig, Cornell	7/80-6/83
D.E.	Hayes, L-DGO	7/76-6/79	G.T.	Rowe, Brookhaven	7/80-6/83
A.F.	Richards, Lehigh	2/75-6/78	F.L.	Sayles, WHOI	7/81-6/84
K.K.	Turekian, Yale	2/75-6/78	M.	Wimbush, URI	7/82-6/85
R.D.	Turner, Harvard	7/77-6/80	A.A.	Yayanos, Scripps	7/81-6/84
A.E.	Maxwell, WHOI, ex-officio		G.D.	Grice, WHOI, ex-officio	
<u>1978</u>		Term	<u>1983</u>		Term
R.W.	Corell, Chair, UNH	7/76-6/79	R.W.	Corell, Chair, UNH	7/76-6/85
J.B.	Corliss, OSU	7/77-6/80	R.C.	Aller, U/Chicago	7/81-6/84
J.M.	Edmond, MIT	7/78-6/81	P.A.	Jumars, U/Wash	7/83-6/86
M.C.	Gregg, U/Wash	7/76-6/79	D.E.	Karig, Cornell	7/80-6/86
D.E.	Hayes, L-DGO	7/76-6/79	F.L.	Sayles, WHOI	7/81-6/84
K.C.	Macdonald, Scripps	7/78-6/81	J.K.	Weissel, L-DGO	7/82-6/85
D.C.	Rhoads, Yale	7/78-6/81	M.	Wimbush, URI	7/79-6/85
R.D.	Turner, Harvard	7/77-6/80	A.A.	Yayanos, Scripps	7/81-6/84
A.E.	Maxwell, WHOI, ex-officio		G.D.	Grice, WHOI, ex-officio	
<u>1979</u>		Term	<u>1984</u>		Term
R.W.	Corell, Chair, UNH	7/76-6/82	R.W.	Corell, Chair, UNH	7/76-6/85
R.N.	Anderson, L-DGO	7/79-6/82	J.K.	Cochran, SUNY/Stony Brook	7/84-6/87
J.B.	Corliss, OSU	7/77-6/80	J.W.	Deming, Johns Hopkins	7/84-6/87
J.M.	Edmond, MIT	7/78-6/81	P.A.	Jumars, U/Wash	7/83-6/86
K.C.	Macdonald, Scripps	7/78-6/81	D.E.	Karig, Cornell	7/80-6/86
D.C.	Rhoads, Yale	7/78-6/81	G.	Thompson, WHOI	7/84-6/87
R.D.	Turner, Harvard	7/77-6/80	J.K.	Weissel, L-DGO	7/82-6/85
M.	Wimbush, URI	7/79-6/82	M.	Wimbush, URI	7/79-6/85
A.E.	Maxwell, WHOI, ex-officio		G.D.	Grice, WHOI, ex-officio	

## UNOLS Review Committee for DSRV ALVIN

### 1985

	Term
R.W. Corell, Chair, UNH	7/76-6/88
J.K. Cochran, SUNY/Stony Brook	7/84-6/87
J.W. Deming, Johns Hopkins	7/84-6/87
P.A. Jumars, U/Wash.	7/83-6/86
D.E. Karig, Cornell	7/80-6/86
W. Ryan, L-DGO	7/85-6/88
G. Thompson, WHOI	7/84-6/87
G.L. Weatherly, FSU	7/85-6/88
G.D. Grice, WHOI, ex-officio	

### 1990

	Term
F.D. Jennings, Chair, TAMU	7/87-6/92
D.A. Cacchione, USGS	7/88-6/91
P.J. Fox, URI	7/88-6/91
J.C. Casey Moore, UCSC	7/87-6/93
D.C. Nelson, UC/Davis	7/87-6/92
M.I. Scranton, SUNY/Stony Brook	7/87-6/93
G. Taghon, OSU	7/89-6/92
K.L. Von Damm, ORNL	7/90-6/93
G.D. Grice, WHOI, ex-officio	

### 1986

	Term
R.W. Corell, Chair, UNH	7/76-6/88
J.K. Cochran, SUNY/Stony Brook	7/84-6/87
J.W. Deming, Johns Hopkins	7/84-6/87
J. Eckman, Skidaway	7/86-6/89
D.E. Karig, Cornell	7/80-6/89
W. Ryan, L-DGO	7/85-6/88
G. Thompson, WHOI	7/84-6/87
G.L. Weatherly, FSU	7/85-6/88
G.D. Grice, WHOI, ex-officio	

### 1991

	Term
F.D. Jennings, Chair, TAMU	7/87-6/92
D.A. Cacchione, USGS	7/88-6/91
P.J. Fox, URI	7/88-6/91
J.C. Casey Moore, UCSC	7/87-6/93
D.C. Nelson, UC/Davis	7/87-6/92
M.I. Scranton, SUNY/Stony Brook	7/87-6/93
G. Taghon, OSU	7/89-6/92
K.L. Von Damm, ORNL	7/90-6/93
R. Pittinger, WHOI, ex-officio	

### 1987

	Term
F.D. Jennings, Chair, TAMU	7/87-6/90
J.K. Cochran, SUNY/Stony Brook	7/84-6/87
J.W. Deming, Johns Hopkins	7/84-6/87
J. Eckman, Skidaway	7/86-6/89
D.E. Karig, Cornell	7/80-6/89
W. Ryan, L-DGO	7/85-6/88
G. Thompson, WHOI	7/84-6/87
G.L. Weatherly, FSU	7/85-6/88
G.D. Grice, WHOI, ex-officio	

### 1988

	Term
F.D. Jennings, Chair, TAMU	7/87-6/90
J. Eckman, Skidaway	7/86-6/89
J.C. Casey Moore, UCSC	7/87-6/90
D.C. Nelson, UC/Davis	7/87-6/90
W. Ryan, L-DGO	7/85-6/88
M.I. Scranton, SUNY/Stony Brook	7/87-6/90
G. Thompson, WHOI	7/84-6/90
G.L. Weatherly, FSU	7/85-6/88
G.D. Grice, WHOI, ex-officio	

### 1989

	Term
F.D. Jennings, Chair, TAMU	7/87-6/90
D.A. Cacchione, USGS	7/88-6/91
J. Eckman, Skidaway	7/86-6/89
P.J. Fox, URI	7/88-6/91
J.C. Casey Moore, UCSC	7/87-6/90
D.C. Nelson, UC/Davis	7/87-6/90
M.I. Scranton, SUNY/Stony Brook	7/87-6/90
G. Thompson, WHOI	7/84-6/90
G.D. Grice, WHOI, ex-officio	

**ALVIN REVIEW COMMITTEE**  
**AGENDA**  
**0800 JUNE 26, 27, 28, 1991**  
**CARRIAGE HOUSE**  
**WOODS HOLE, MA**

**Open the meeting.** Welcome and introduction by ARC Chair Feenan Jennings.

**Report on 1990 ATLANTIS II and ALVIN/ATLANTIS II Seasons, Status of 1991 Season and Preview of Factors for 1992.** Barrie Walden and WHOI operators/managers will provide a report on 1990 operations (Jan 1 - Dec 31) and on February 18 - June 3, 1991 operations. Tentative schedule for 1992-93 ALVIN overhaul and inspection, with other factors pertinent to 1992 operations.

**Status Report on ALVIN Program Management.** Aspects of WHOI management of the ALVIN program have been discussed at ARC meetings since 1987, and more urgently since, 1989. In 1989, WHOI constituted a Visiting Committee (chaired by Fred Spiess) to review and assess the program. The ARC should revisit this issue to decide if they should have some oversight role concerning program management, technical development, etc. If yes, define that role and develop recommendations to sponsoring agencies and WHOI, then begin to negotiate on ARC role/position. (See background information provided -- Tri-partite Agreement, UNOLS Charter, Jeff Fox review.)

Other aspects of **ALVIN/submersible sciences management:** Among other things, the **Submersible Sciences Study for the 1990's** recommended that UNOLS establish (in addition to ARC) a **Submersible Science Committee** to promote development and application of new technologies for submersible science, to advise NSF, ONR, and NOAA on submersible science, develop procedures for facilitating access and for liaison among NURP, ARC, OP-23 and the academic oceanography community. UNOLS is moving to establish an **SSC**. Recently NOAA/NURP and OP-23 have moved through the FOFCC to establish a **Deep Submersible Scientific Review Committee (DESSRC)**. (See the draft Charter provided.) The ARC should discuss reactions to and interfaces with these entities.

**Review Dive Requests for 1992.** NSF, ONR and NOAA representatives will provide best-available funding information for all dive requests. ARC rules and procedures for reviewing requests are provided. ARC review and discussion of all new requests for 1992. About 15 Dive Requests are before the Committee.

**Comments on ALVIN Program Funding, 1992 and beyond, by Agency Representatives.** Keith Kaulum, ONR; David Duane, NOAA; Don Heinrichs, NSF.



**Schedule Recommendations for 1992.** 1. ARC will develop 1992 schedule recommendations based on review of Dive Requests and operational/logistical information from WHOI. 2. WHOI will develop candidate schedule, for ARC review, following those recommendations. 3. ARC review and final schedule recommendations will be balanced against NSF, ONR and NOAA program/budget structure to assure that each agency's critical needs are met.

**ALVIN Equipment and Instrumentation.** Follow-up on recent issues, bottom navigation, use of Sea Beam aboard ATLANTIS II, improved samplers, etc. New developments concerning ROV's? The ARC may consider a more systematic process for overview of ALVIN-related technology development (see **ALVIN Program Management** above).

**ALVIN Archiving.** An issue has been raised concerning proprietary aspects of ALVIN collections. See Feenan Jennings-Bob Ballard correspondence.

**Recommendations for New ARC Members.** Terms for Dave Cacchione and Jeff Fox expire. Both would be eligible for re-appointment. ARC recommendations, reappointments of new members for their positions, terms July, 1991 to June, 1994.

**Planning for 1993 and Beyond.** A **Planning Meeting** in San Francisco in December (Sunday, before Fall AGU)? Format as in 1990? Possibly solicit presentations from ODP, RIDGE, NOAA's Vents on potential ALVIN use in their program projections? Other suggestions?

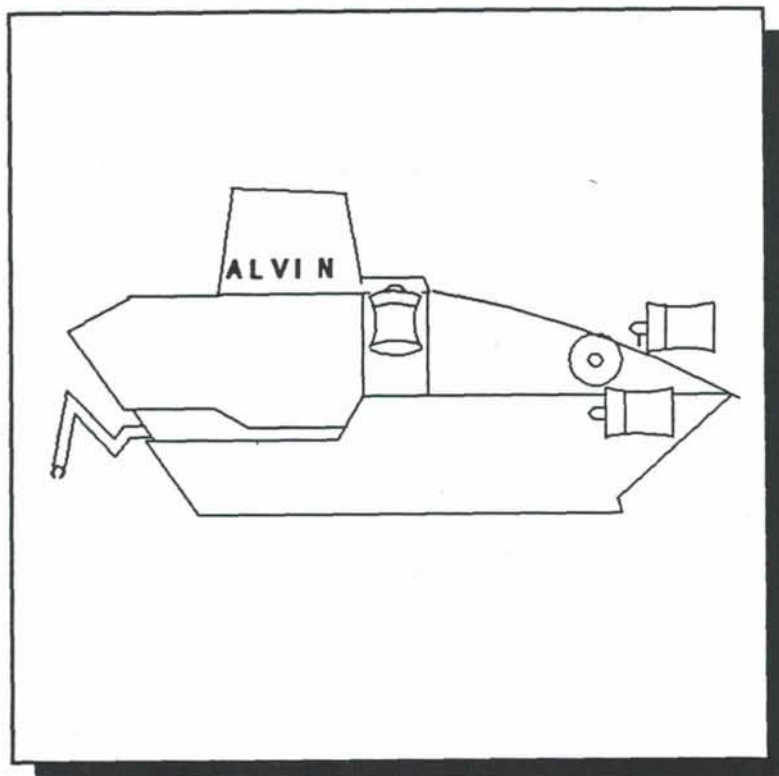
**Timing for the meeting.** It will be full, but finish by noon, Friday.

- June 26:** Reports on ALVIN/ATLANTIS II operations  
ALVIN management (may be revisited later)  
Review 1992 Dive Requests  
Preliminary Schedule Recommendations
- June 27:** Comments on ALVIN Program funding  
WHOI's Candidate 1992 Schedule  
ARC/Agency review and ARC's final schedule recommendations  
ALVIN Equipment and Instrumentation  
ALVIN Archiving  
ALVIN Management and ARC--recommendations
- June 28:** Recommendations for New ARC Members  
ALVIN PLANNING. December, 1991 Meeting

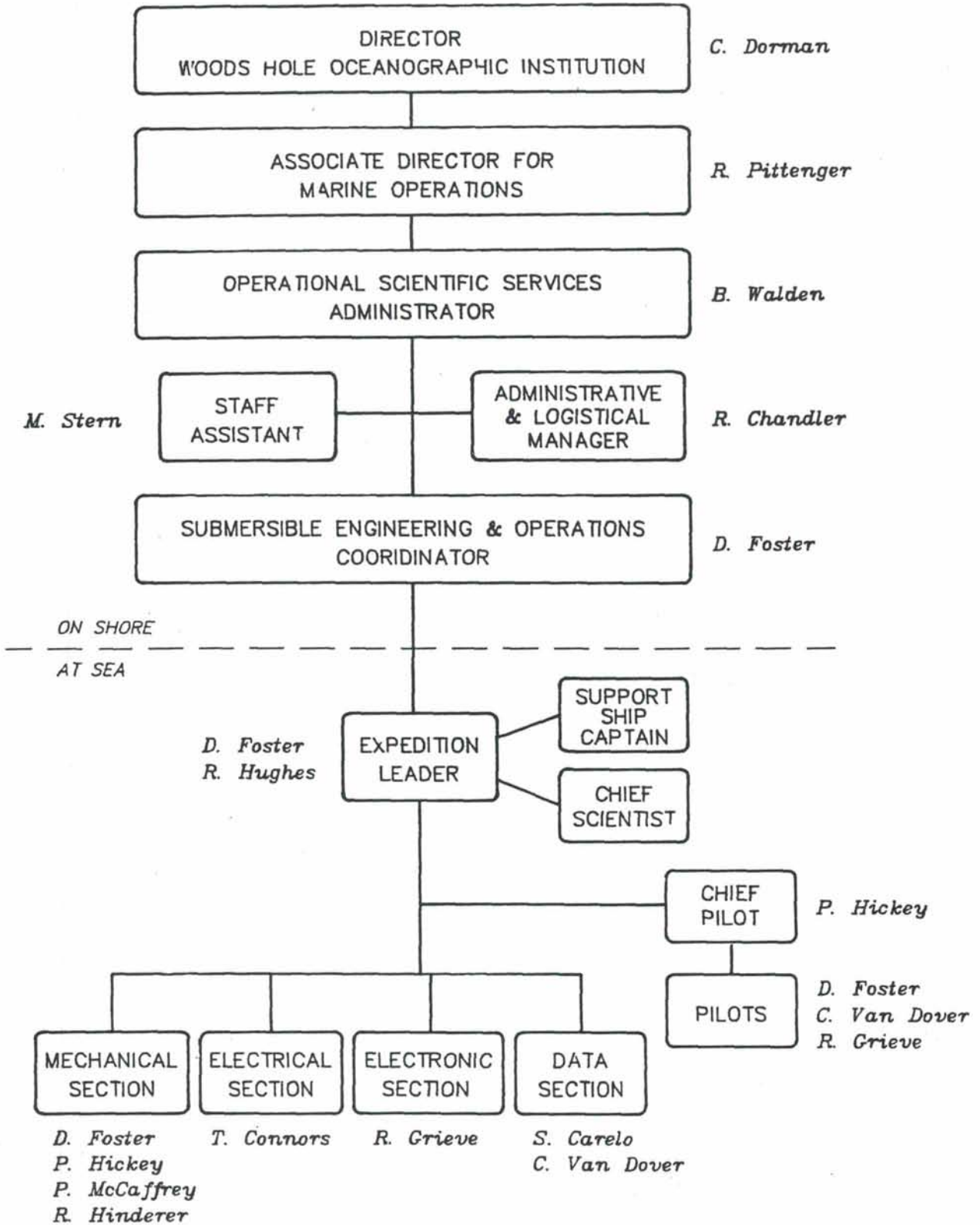
**ADJOURN AT NOON**

# ALVIN REVIEW COMMITTEE

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# SUBMERSIBLE OPERATIONS ORGANIZATIONAL CHART



## Engineering Topics

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*Third Battery* -- *ALVIN* has space for a third 120V battery pack but payload considerations have prevented installation. The long term plan has been to provide the required buoyancy by adding syntactic foam and removing the stainless steel motor controller pressure housings. Foam has been added in all reasonable locations and two of the four stainless housings have been removed but, at the same time, the weight of available batteries has increased and it remains impossible to carry a third battery tank. The last of the stainless housings will be removed at the end of this year and the space they occupy will become available for syntactic foam. This may provide the required buoyancy but present calculations indicate that it will be extremely close.

*Penetrators* -- All of *ALVIN*'s electrical penetrators have been replaced with those of a new design making periodic rebuilding unnecessary and routine maintenance considerably easier. Unfortunately, four of the new type have failed due to condensation entering from the inboard side. This implies that all of these units will need to be cycled back to the vendor for corrective action over the next two years.

*Manipulators* -- The Schilling manipulator continues to present a reliability problem resulting from the joint position feedback potentiometer being located in the main hydraulic system fluid. Any water entering the system eventually reaches these potentiometers resulting in false readings, which prevent the manipulator's control computer from determining the joint positions. Schilling appears to have solved this problem on its latest model manipulator and we will attempt to retrofit the solution to ours. All other substantial problems with the Schilling systems appear to have been corrected by the vendor.

*Video Systems* -- The present operations grant contains funds for the upgrade of *ALVIN*'s video system. Engineering and cost information is being gathered to allow replacement of all components. At present, the leading contender for the recording format is Sony's Hi8 due to its combination of high quality and small size. The camera will undoubtedly be a color CCD with telephoto lens. New lights are under consideration, particularly the 1200 watt HMI arc lamps presently in use with the MIR submersibles for IMAX filming of the *TITANIC*.

*Depth Rating* -- The Navy Certification Authority has been requested to consider increasing *ALVIN*'s depth rating to 15,000 feet. This has been a low priority item because the present motor controller housings will not allow working beyond 13,000 but, as stated above, these will be removed by year's end. At that time, it is likely that a plan can be developed to allow the increased depth certification.

## 1990 Highlights

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The first score of dives this year was spent exploring geochemical aspects of active hydrothermal vents on the Mid-Atlantic Ridge south of the Azores. After a transit to Jacksonville, *ATLANTIS II* entered the shipyard for a month of maintenance concurrent with minor *ALVIN* upkeep. One of the proposed twenty dives at the MAR was lost to weather.

In mid-March the submersible resumed diving in the Gulf of Mexico, visiting hydrocarbon seeps, brine pools and abyssal basins to catalog new biological species. Following transit through the Panama Canal, the vessels stopped briefly in Costa Rica to embark scientists before conducting geological structure measurements in the Hess Deep Rift Valley west of the Galapagos. The next port stop was Guayaquil, Ecuador, before diving continued at the Galapagos Rift, East Pacific Rise and Guaymas Basin. Three dives of 43 proposed were lost during the spring and early summer: two to mechanical problems and one to a ship fueling delay.

Steaming north in July, *ALVIN* began work on the Juan de Fuca Ridge in support of geophysical crustal studies, followed by interdisciplinary work for NOAA on the southern end of the ridge in August. The ship worked its way back south during September, with dives in Monterey Canyon en route to San Diego. Twin dive series on Fieberling Seamount west of California occupied the majority of the fall, while short cruises to the Santa Catalina Basin in early and late November allowed studies of benthic biology and *ALVIN*'s Navy inspection. A total of four dives of the 91 proposed were lost through the end of the year, all to weather.

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In February the *ALVIN* Group received the final lot of new hull electrical penetrators, which allowed us to complete the transition to a new style of penetrator designed to be field replaceable. These units were installed during a late winter maintenance period in Jacksonville.

In late fall the *ALVIN* Group placed an order for new motor controllers to upgrade the submersible's propulsion system. With the lighter, oil-immersed equipment we will be able to replace the four existing controller pressure housings, saving hundreds of pounds of critical weight aft.

The magnetometer, Trackpoint positioning system and shipboard electronics shop were also upgraded during the year.

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A new Electronics Technician (Bob Grieve) was hired in April, along with an additional Mechanical Technician (Paul McCaffrey). Roger Hughes signed on as Expedition Leader in July, and Paul Tibbetts left the group.

## DSV-2 ALVIN DIVE STATISTICS

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	<u>1990</u>
<i>Total Dives</i>	154
<i>Total Depth (meters)</i>	324,149
<i>Average Depth per Dive (meters)</i>	2,105
<i>Total Time Submerged (hours)</i>	1,135
<i>Average Time Submerged per Dive (hours)</i>	7.37
<i>Total Persons Carried</i>	462
<i>Dives for</i>	
<i>Geology/Geophysics</i>	86
<i>Biology</i>	50
<i>Chemistry/Geochemistry</i>	11
<i>Orientation</i>	3
<i>Certification/INSURV</i>	2
<i>Inspection/Survey/Recovery</i>	2

## DSV ALVIN VOYAGE STATISTICS FOR 1990

ATLANTIS II VOYAGE NO.	ON STATION	AREA OF OPERATION NUMBER OF DIVES	DISCIPLINE	CHIEF SCIENTIST(S)	DAYS AT SEA	ALVIN DIVE NUMBERS
125-I	05 Jan - 24 Jan	Mid-Atlantic Ridge 19 dives	Geology/ Chemistry	Geoffrey Thompson - WHOI Peter Rona - NOAA John Edmond - MIT Holger Jannasch - WHOI Henry Elderfield - UK	32	2177-2195
	02 Feb - 13 Mar	Shipyards/Maintenance Jacksonville				
125-II	14 Mar - 18 Mar	Transit to Tampa			5	
125-IV	26 Mar - 13 Apr	West Florida Escarpment/ Orca Basin 16 dives	Biology/ Chemistry	Richard Lutz - Rutgers James Brooks - Texas A&M	21	2196-2211
125-V	19 Apr - 28 Apr	Transit to Puntarenas			10	
125-VI	06 May - 16 May	Hess Deep Rift Valley 11 dives	Geology	Peter Lonsdale - SIO	22	2212-2222
125-VII	28 May - 17 Jun	Galapagos Rift/EPR/ Guaymas Basin 13 dives	Biology	Richard Lutz - Rutgers	22	2223-2235
125-IX	08 Jul - 15 Jul	Transit to Astoria			8	
125-X	22 Jul - 10 Aug	Juan de Fuca Ridge 21 dives	Geology	H. Paul Johnson - UW	22	2236-2256
125-XI	17 Aug - 05 Sep	Juan de Fuca Ridge 17 dives	Geology/ Chemistry	Robert Embley - NOAA	23	2257-2273
125-XII/XIII	15 Sep - 01 Oct	Oregon Margin/ Monterey Canyon 15 dives	Geology/ Biology	Casey Moore - UC Santa Cruz Richard Lutz - Rutgers	19	2274-2288
125-XIV	10 Oct - 25 Oct	Fieberling Seamount 17 dives	Biology	Lisa Levin - NCSU	21	2289-2305
125-XV	01 Nov - 08 Nov	San Nicholas Basin/ Santa Cruz Basin 7 dives	Geochemistry	William Berelson - USC	10	2306-2312
125-XVI/XVII	26 Nov - 29 Nov	San Nicholas Basin/ Catalina Escarpment 5 dives	Inspection/ Training/VIP	Barrie Walden - WHOI	4	2313-2317
125-XVIII	04 Dec - 16 Dec	Fieberling Seamount 13 dives	Biology	Lisa Levin - NCSU	18	2318-2330
Total Days at Sea:					237	Dives: 154

## 1991 Highlights

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The year began with an extended maintenance period at the Scripps Marine Facility while the *ATLANTIS II* was used for non-submersible research. During the first dive series in February, scientists revisited the site of a submerged whale carcass in Santa Catalina Basin off San Diego to assess biological community structures. After a transit to the Guaymas Basin, researchers from WHOI, Denmark and Mexico continued microbiological studies of a hydrothermal vent system utilizing a profiling bottom lander.

In April work began at the East Pacific Rise southwest of Acapulco, where scientists embarked on volcanological, geochemical and hydrothermal studies in support of the Ocean Drilling Program. A total of 43 dives were carried out for Project ADVENTURE before the ship returned to San Diego in early June.

No dives have been lost so far this year.

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Two tanks of new main batteries were installed and tested during the battery service period recently completed in San Diego. One of the two new motor controller boxes (four controllers) was also installed at that time, allowing removal of two of the four motor controller pressure housings.

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Randy Hinderer was hired as an Electrical Technician in January, and Lane Abrams accepted a position as the Engineering Group Electrical Engineer, which he will begin in July. Bob Grieve was certified as a pilot in June and Tim Connors is approaching that milestone. Tom Tengdin and Gary Rajcula departed the group early in the year.



## DSV-2 ALVIN DIVE STATISTICS

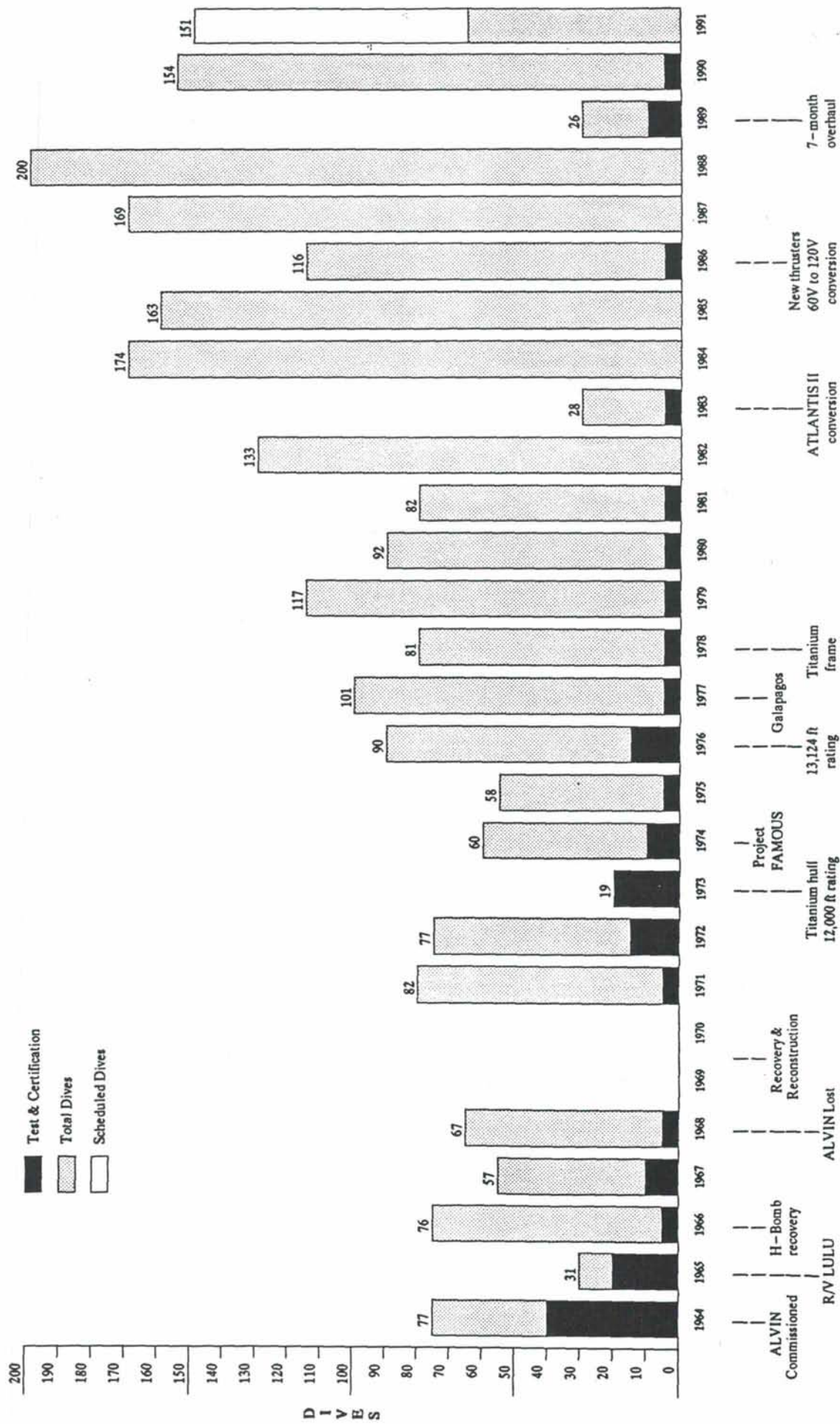
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	<u>1991 (as of 6/1)</u>
<i>Total Dives</i>	62
<i>Total Depth (meters)</i>	156,347
<i>Average Depth per Dive (meters)</i>	2,522
<i>Total Time Submerged (hours)</i>	506
<i>Average Time Submerged per Dive (hours)</i>	8.16
<i>Total Persons Carried</i>	186
<i>Dives for</i>	
<i>Geology</i>	18
<i>Biology</i>	19
<i>Geochemistry</i>	25

## DSV ALVIN VOYAGE STATISTICS FOR 1991

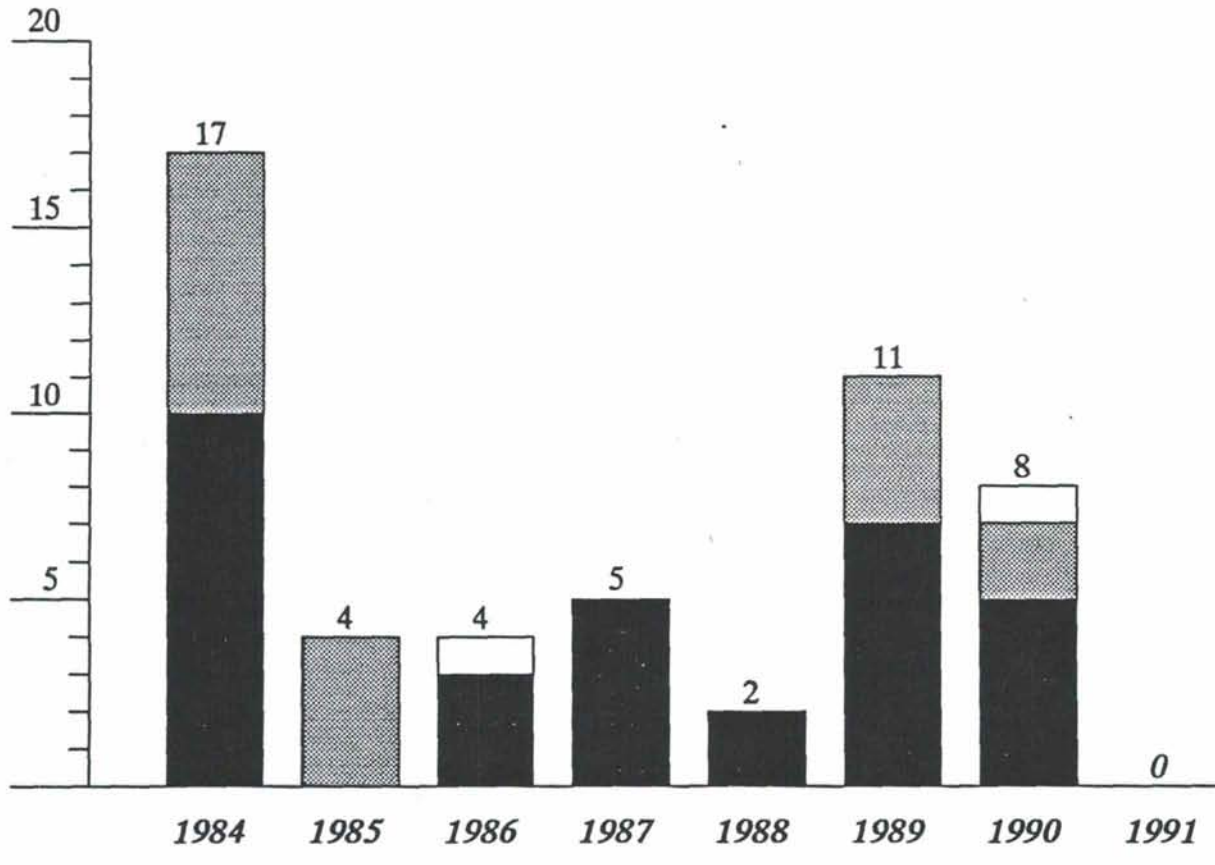
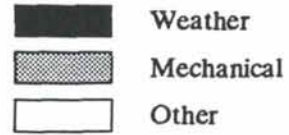
ATLANTIS II VOYAGE NO.	ON STATION	AREA OF OPERATION NUMBER OF DIVES	DISCIPLINE	CHIEF SCIENTIST(S)	DAYS AT SEA	ALVIN DIVE NUMBERS
125-XX	19 Feb - 24 Feb	Santa Catalina Basin 6 dives	Biology	Craig Smith - UHawaii	7	2331-2336
125-XXI	29 Feb - 04 Mar	Transit to Guaymas			5	
125-XXII	07 Mar - 15 Mar	Guaymas Basin 9 dives	Biology	Holger Jannasch - WHOI	10	2337-2345
125-XXIII	17 Mar - 21 Mar	Guaymas Basin East Pacific Rise 4 dives	Biology	Richard Lutz - Rutgers	10	2346-2349
125-XXIV	31 Mar - 25 Apr	East Pacific Rise 25 dives	Geochemistry	Rachel Haymon - UCSB Danial Fornari - LDGO	31	2350-2374
125-XXV	05 May - 27 May	East Pacific Rise 18 dives	Geology	Danial Fornari - LDGO	32	2375-2392
Total Days at Sea:					95	Dives: 62

# DSV-2 ALVIN DIVE HISTORY



# DSV ALVIN

## Dives Lost



Total Dives:      174      163      116      169      200      26      154      62

# Texas A&M University

College Station, Texas 77843  
(409) 845-1811

APPENDIX IV

OFFICE OF UNIVERSITY RESEARCH

May 14, 1991

Dr. Robert D. Ballard  
Deep Submergence Laboratory  
Applied Ocean Physics and Engineering Department  
Woods Hole Oceanographic Institute  
Woods Hole, MA 02543

Dear Bob:

This is in response to your memorandum of April 12, 1991 concerning policy for dealing with data collected on ALVIN. In researching your questions, I have attempted to understand both the scientific and the commercial use of the data, hence the following response deals with both of them.

- a. With regard to data collected by ALVIN video and camera systems provided by the ALVIN group, the ALVIN users manual, pages 62-64 (see attachment 1) states that material collected with ALVIN cameras or equivalents will be made available to others only with written permission of principal investigator for a one year period from date of dive, (I assume principal investigator is synonymous with your usage of chief scientist). After the year has expired, duplicates of the material will be available to any scientist who requests them and who pays the duplication fee charges by WHOI.

The Users Manual states that "commercial rights to film, video tapes, and similar materials obtained with ALVIN or by ALVIN group personnel remain with WHOI." However, such commercial rights still need to provide protection to the P.I. for the one year period before the data can be commercialized. Furthermore, NSF policy states that "unless otherwise specified in the grant, project income received or accruing to the grantee during the period of the grant shall be retained and added to the funds committed by the Foundation and used to further project objectives." After the period of the grant,

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Dr. Robert D. Ballard  
May 14, 1991  
Page 2

Woods Hole has no obligation to the Foundation with respect to copyright or patent royalties or project income." (See attached section 21 from Federal Grants Management Handbook).

- b. With regard to data collected by video and camera systems provided by the chief scientist from his own research grant, the Manual further states that all other data will be archived at the P.I.s (or funding agency's) discretion. The P.I. is responsible for meeting the data dissemination requirements of his funding agency. The NSF has a policy of open scientific and engineering communication in which "it expects investigators to share with other researchers at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections, and other supporting material created or gathered in the course of the research." (See attachment 2). Reasonable time is generally viewed as two years.

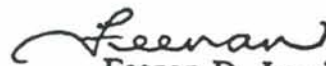
The policy on commercialization of material collected by P.I. from his own research grant is similar to that which governs data collected by WHOI. The data belong to the grantee which means the P.I.s home institution. That institution has the right to use copyright or patent royalties or project income as it wishes once the grant has expired.

- c. As far as I can tell, neither the ALVIN Manual nor NSF policy deal directly with material from personal cameras and film provided by the P.I. However, since most P.I.s would not be able to participate in ALVIN dives without the sponsorship of one of the funding agencies, it would seem ethical to follow the agency guidelines for such material.

In my opinion, the same ethical behavior should hold for commercialization as scientific use. It should follow the parent institution's policy. Here at Texas A&M, the institution owns the intellectual property and shares income from commercialization of the property 50/50 with the inventor.

I hope these comments are useful to you. If they don't answer your questions adequately, I will be pleased to put it on the agenda for discussion at the June meeting of the ALVIN Review Committee. Just let me know.

Sincerely yours,

  
Feenan D. Jennings  
Executive Director

Attachment

## ARCHIVING POLICIES

### ALVIN Film, Video Tape, and Data Disk Archiving Policy

The Woods Hole Oceanographic Institution maintains an archival system for oceanographic data including that obtained with the DSV ALVIN. The ALVIN Group's funding agencies support this system and require all meaningful ALVIN data to be included. The following policy is intended to allow the ALVIN Group to fulfill this obligation without unnecessarily compromising the Principal Investigator's right to sole use of the data for scientific purposes for a reasonable period of time.

1. All film taken from permanently mounted ALVIN cameras or their equivalents will be retained by the ALVIN Group for the Archives with one set of duplicates provided to the Principal Investigator. The film will be processed and duplicated as quickly as possible. No one will be allowed to view the film without written permission from the Principal Investigator or his designee for a period of one year from the date of the dive.
2. Video tapes and data disks produced using permanently mounted ALVIN equipment or equivalent will be duplicated on board the support ship during the cruise, with the Principal Investigator or designee receiving one copy. The originals will be archived with the same limited access as applied to the photographic film.
3. All other data and pictures will be archived at the Principal Investigator's (or funding agency's) discretion.
4. Commercial rights to film, video tapes, and similar materials obtained with ALVIN or by ALVIN Group personnel remain with the Woods Hole Oceanographic Institution.
5. Costs incurred in implementing this archiving policy will be paid by the ALVIN Group, except in cases where unusually high quantities of film, tape, or disks are required by a particular science program. In these instances, the Investigator should request additional funding from the sponsoring funding agency. Limited quantities of film, tape and data disks are carried to fulfill the scheduled dive and archive policy requirements. Small quantities of additional duplication supplies (video tapes, floppy disks) are available from the ALVIN Data Section on board ship, *but a purchase order MUST be arranged with WHOI prior to the cruise to cover the cost of these materials.*
6. The Principal Investigator is responsible for meeting the data dissemination requirements of his funding agency, as well as any requirements imposed by international agreements, i.e. conditions imposed as prerequisites to obtaining clearance for work in foreign waters.

At the end of each dive series, a form designating the Principal Investigator responsible for the dive(s) must be completed. A sample of this form is shown in Appendix F. The person so designated will have full control over all data collected on the dive and will be responsible for the proper disposition of samples collected as well.

To reiterate the policy stated above, all original film, video tapes, and data disks made during a dive will be archived at Woods Hole. Exceptions are the film from the observers' hand held cameras (35 mm and video) and any audio tapes which observers may have recorded. These are retained by the user. Video tapes and data disks (IBM PC compatible) will be duplicated at sea; the Principal Investigator will receive one copy. The format of the data disk files may be altered to eliminate irrelevant submersible engineering data and to achieve compatibility with the scientist's data reduction equipment. No film will be developed at sea, except for test strips to determine whether the cameras are functioning properly. Film will be developed and one set of duplicates made at the expense of the ALVIN Group after the cruise. No one will view the film except the photo lab personnel who develop it. The duplication will be accomplished and the copies sent to the appropriate Principal Investigator with all expediency. Principal Investigators will not automatically receive copies of pictures taken with the pilot's hand-held camera, but they may restrict the Institution's use of these pictures according to the rules outlined below.

The Principal Investigator is granted full control over all his/her data for a period of one year from the date of the dive, unless WHOI is responsible for an abnormal delay in the duplication process. In this case, restricted access will continue beyond one year by an amount of time equal to the length of the delay. Anyone, including members of the Principal Investigator's scientific party, who seeks duplicates of the data during this time must have his request approved by the Principal Investigator (in writing) and must pay the cost of duplication. Use of dive data for internal purposes by the ALVIN Group and use of the pilot's pictures for public relations purposes by WHOI must also meet the approval of the Principal Investigator. After the year has expired, duplicates of the data will be available to any scientist who requests them and who is willing to pay the duplication fee charged by WHOI.

These policies do not apply in cases involving U.S. Government classified material. Such material will be archived at Woods Hole only by direction of the sponsoring agency.

#### Requesting Duplicates from the ALVIN Archives

During the year of restricted access, Data Library personnel are responsible for acquiring a written release from the Principal Investigator before any requests for viewing or duplication can be honored. If no such release is given, the request must be denied.

All requests to view and/or duplicate film, video tapes, or data disks must be submitted in writing to the Data Library. Each request must specify cruise and leg number, dive number if known, type of material and amount of duplication needed. The Data Librarian will assist the requestor in identifying cruise, leg, and dive numbers, if necessary. Film and video tapes must be viewed within the confines of the Data Library.

Cost quotations for duplication of film and video tape will be provided by the Data



Librarian. Upon receipt of a purchase order or prepayment from the requestor, the Data Librarian will forward the job estimate form and the film or video tape to Graphic Services for fulfillment of the order. Requests for copies of the data disks will be forwarded to the ALVIN Group.

When the duplication is completed, the film, video tape, data disks and the job estimate form will be returned to the Data Library. The Data Librarian will prepare the bill and mail it and the duplicates to the requestor.

### Procedures for Curation and Disposition of Samples Collected

There are several unique and fundamental attributes of scientific deep submersible operations which dictate special concern over the management of collected samples. These include:

1. The limited duration and high cost of time actually spent on the bottom.
2. The unique nature of actual *in situ* observations and measurements, and the invaluable capability for documenting in great detail the environment from which samples are collected.
3. The limited ability of the personnel in the submersible, and in fact, those taking part in any given expedition, to fully comprehend the significance of and utilize the observations made and the samples collected. A diverse set of processes, including biological, geological, and chemical, create the environment into which the submersible dives, and thus the data and samples collected by ALVIN are potentially useful to a diverse set of scientists.

These considerations led the UNOLS ALVIN Review Committee (ARC) to establish the following regulations concerning the collection, curation, and disposition of samples.

#### 1. Sample Collection

The Chief Scientist has ultimate responsibility for the sampling program. All sample collection will be done under the direction of the scientists in the sphere. In practice, the actual sample collection is carried out by the pilot, whose skill is ultimately responsible for the quality of sampling operations, and who has responsibility to determine that the sampling operations do not compromise the safety of the submersible.

#### 2. Sample Curation

All samples returned to the surface by ALVIN, without exception, and regardless of whether collected intentionally, incidentally, or accidentally, will be curated on board the ship. This curation assures access to information about the samples to the scientific community, and ensures that important samples not relevant to the immediate goals of the expedition are not lost. Such curation will include the following:

### 15. Continuing Grants

a. Unless otherwise specified, each successive increment of a continuing grant will be funded at the level indicated in the original grant letter without a formal request from the grantee, provided the required annual progress report from the PI(s) has been received and contingent on (1) availability of funds; (2) satisfactory scientific/technical progress; and (3) any special conditions of the grant.

b. In order to obtain a committed funding increment and ensure continuity of funding, the required progress report (see Article 16) must be forwarded to the cognizant NSF Program Officer at least 3 months prior to the end of the current budget period. If the progress report is not submitted, processing of the planned funding increment will not be initiated by the Foundation.

### 16. Progress Reports

a. Content of Progress Reports. Unless otherwise specified in the grant, progress reports shall include:

(1) a summary of overall progress, including results obtained to date, and a comparison of actual accomplishments with proposed goals for the period;

(2) an indication of any current problems or favorable or unusual developments;

(3) a summary of work to be performed during the succeeding budget period; and

(4) other information pertinent to the type of project being supported or as specified in the terms and conditions of the grant.

(5) For all grants (standard or continuing) involving human subjects (see *Grant Policy Manual* Section 711) or vertebrate animals (see *Grant Policy Manual* Section 713), an updated annual certification is required by the Foundation as an appendix to the report.

b. Timing of Progress Reports. Unless otherwise specified in the grant, two copies of progress reports shall be submitted to the cognizant NSF Program Officer according to the following schedule:

For grants with an award duration of 2 years or more, the first report should be submitted no later than 90 days after the anniversary of the effective date of the grant, with succeeding reports annually thereafter, except after the final year. If a request for renewed support is submitted during the final year, the progress report should be attached to such request. Otherwise, only a final project report need be submitted.

### 17. Final Report Requirements

Unless otherwise specified in the grant, within 90 days following the expiration of the grant the grantee must:

a. send one copy of the Final Project Report (NSF Form 98A (1-87)) to the cognizant NSF Program Officer, along with any technical information items listed in Part III of the Form 98A, as appropriate;

b. furnish the NSF Division of Financial Management with final disbursement information on the Federal Cash Transactions Report, SF 272; and

c. provide any unique reports or other end products in accord with the grant, including report requirements set forth in any NSF brochure, guide, solicitation, etc., referenced in the grant as being directly related to either the award or administration of this grant.

### 18. Information Collection

Information collection activities performed under this grant are the responsibility of the grantee, and NSF support of the project does not constitute NSF approval of the survey design, questionnaire content, or information collection procedures. The grantee shall not represent to respondents that such information is being collected for or in association with the National Science Foundation or any other Government

agency without the specific written approval of such information collection plan or device by the Foundation. However, this requirement is not intended to preclude mention of NSF support of the project in response to an inquiry or acknowledgment of such support in any publication of this information.

### 19. Dissemination of Project Results

a. The grantee is expected to publish or otherwise make publicly available the results of the work conducted under the grant. Privileged or confidential information should be released only in a form that protects the rights of privacy of the individuals involved.

b. When any subject writing (as defined in Article 20) is published or distributed, the grantee will send two copies, clearly labeled with the grant number and other appropriate identifying information, to the cognizant NSF Program Officer.

### 20. Copyrightable Material

a. Subject writing means any material that:

(1) is or may be copyrightable under Title 17 of the United States Code; and

(2) is produced by the grantee or its employees in the performance of work under this grant.

Subject writings include such items as reports, books, journal articles, software, databases, sound recordings, video tapes, and video discs.

b. Copyright Ownership, Government License. Except as otherwise specified in the grant or by this paragraph, the grantee may own or permit others to own copyright in all subject writings. The grantee agrees that if it or anyone else does own copyright in a subject writing, the Federal government will have a nonexclusive, nontransferable, irrevocable, royalty-free license to exercise or have exercised for or on behalf of the United States throughout the world all the exclusive rights provided by copyright. Such license, however, will not include the right to sell copies or phonorecords of the copyrighted works to the public.

c. Grants Affected by International Agreements. If the award indicates it is subject to an identified international agreement or treaty, the Foundation can direct the grantee to convey to any foreign participant or otherwise dispose of such rights to subject writings as are required to comply with that agreement or treaty.

d. Grantee Action to Protect Government Interests. The grantee agrees to acquire, through written agreement or an employment relationship, the ability to comply with the requirements of the preceding paragraphs and, in particular, to acquire the ability to convey rights in a subject writing to a foreign participant if directed by the Foundation under the previous paragraph. The grantee further agrees that any transfer of copyright or any other rights to a subject writing, by it or anyone whom it has allowed to own such rights, will be made subject to the requirements of this article.

### 21. Project Income

a. Definition. Project income refers to that portion of gross revenues, including royalties, received by or accruing to the grantee through activities undertaken under this grant, whether received during or after the grant period. It includes, but is not limited to, proceeds from the sale, licensing, lease, rental, or other arrangement for the use, release, dissemination, or other disposal of copyrightable or noncopyrightable materials, properties, and inventions developed or produced under the grant. Income also includes any interest earned on all such revenues and proceeds.

b. Standard Treatment. Unless otherwise specified in the grant, project income received or accruing to the grantee during the period of this grant shall be retained and added to the funds committed to the project by the Foundation and used to further project objectives. The

grantee shall have no obligation to the Foundation with respect to copyright or patent royalties or project income received after the period of this grant.

c. **Records Retention.** The grantee is required to retain appropriate financial and other records relating to project income earned during the grant period and for three years beyond the end of the grant period.

## 22. Acknowledgment of Support and Disclaimer

a. An acknowledgment of NSF support and a disclaimer must appear in any publication of any material, whether copyrighted or not, based on or developed under this project, in the following terms:

"This material is based upon work supported by the National Science Foundation under Grant No. (Grantee should enter NSF grant number). The Government has certain rights in this material."

b. All subject writings (as defined in Article 20), except scientific articles or papers published in scientific, technical or professional journals, must also contain the following disclaimer:

"Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation."

## 23. Patent Rights

Unless otherwise provided in the grant letter, if this grant is for experimental, developmental, or research work, the clause found in the *NSF Grant Policy Manual* (implementing the Bayh-Dole Act, 35 U.S.C. 200 *et seq.*) applies [see *Grant Policy Manual* Section 751.3.] The grantee will include that clause in all subawards for experimental, developmental, or research activities.

## 24. Cost Sharing and Cost Sharing Records

a. The grantee must cost share under this grant in accordance with any specific requirements contained in or referenced by the grant. If the grant has no specific requirements and if the work supported by this grant is for research resulting from an unsolicited proposal, the grantee may meet the statutory cost sharing requirement by choosing either of two alternative methods: (1) by cost sharing a minimum of 1 percent on this project; or (2) by cost sharing a minimum of 1 percent on the aggregate total costs of all NSF-supported projects requiring cost sharing. [See *Grant Policy Manual* Section 640 for further guidance.]

b. The grantee must maintain records of all project costs that are claimed by the grantee as cost sharing as well as records of costs to be paid by the Government. Such records are subject to audit. If the grantee's cost participation includes in-kind contributions, the basis for determining the valuation for volunteer services and donated property must be documented.

c. If the grant does not contain or reference any specific cost sharing requirements and provides funds solely for the following purposes (not considered to be in support of "research"), statutory cost sharing is not required [see *Grant Policy Manual* Section 643.1]:

- (1) international travel;
- (2) construction, improvement or operation of facilities;
- (3) acquisition of research equipment;
- (4) ship operations;
- (5) education and training;
- (6) publication, distribution and translation of scientific data and information;
- (7) symposia, conferences and workshops; and
- (8) special studies authorized or required by Subsections 3a(5) through 3a(7) of the NSF Act, as amended.

## 25. Standards for Financial Management Systems

NSF grantees, except State or local units of government, shall have financial management systems that meet the requirements of Attachment F to OMB Circular A-110. State and local units of government shall follow the comparable standards of Subpart C, 45 CFR 602.

## 26. Audit and Records

a. Financial records, supporting documents, statistical records, and other records pertinent to this grant shall be retained by the grantee for a period of 3 years from submission of the Final Project Report specified in Article 17.

(1) Records that relate to audits, appeals, litigation, or the settlement of claims arising out of the performance of the project shall be retained until such audits, appeals, litigation, or claims have been disposed of.

(2) Records relating to projects subject to special project income provisions shall be retained until 3 years from the end of the grantee's fiscal year in which the grant requirement for reporting income expires.

b. Unless court action or audit proceedings have been initiated, the grantee may substitute microfilm copies of original records.

c. The Director of the National Science Foundation and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any pertinent books, documents, papers, and records of the grantee organization and of the performing organization, if different, to make audits, examinations, excerpts and transcripts. Further, any negotiated contract in excess of \$10,000 made by the grantee shall include a provision to the effect that the grantee, the Director of the National Science Foundation, the Comptroller General of the United States, or any of their duly authorized representatives shall have access to pertinent records for similar purposes.

d. In order to avoid duplicate recordkeeping, the Foundation may make special arrangements with the grantee to retain any records that are needed for joint use. The Foundation may request transfer to its custody of records not needed by the grantee when it determines that the records possess long-term retention value. When the records are transferred to or maintained by the Foundation, the 3-year retention requirement is not applicable to the grantee. In the rare event that this provision is exercised, the Foundation will negotiate a mutually agreeable arrangement with the grantee regarding reimbursement of costs.

## 27. Site Visits

The Foundation, through authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments and management control systems and to provide such technical assistance as may be required. If any site visit is made by the Foundation on the premises of the grantee or a contractor under a grant, the grantee shall provide and shall require its contractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representatives in the performance of their duties. All site visits and evaluations shall be performed in such a manner as will not unduly delay the work.

## 28. Suspension or Termination

a. The grant may be suspended or terminated in whole or in part, when the Foundation believes that the grantee has materially failed to comply with the terms and conditions of the grant, or when the Foundation has other reasonable cause, or for any reason by mutual agreement between the Foundation and the grantee upon the request of either party, or when the parties cannot mutually agree to a termination.

b. Normally, action by the Foundation to suspend or terminate a grant will be taken only after the grantee has been informed by the Founda-

# NATIONAL SCIENCE FOUNDATION

Office of the Director

WASHINGTON, D.C. 20550

Notice No.106

April 17, 1989

## IMPORTANT NOTICE TO PRESIDENTS OF COLLEGES AND UNIVERSITIES AND HEADS OF OTHER NATIONAL SCIENCE FOUNDATION GRANTEE ORGANIZATIONS

**SUBJECT: RESPONSIBILITIES OF INSTITUTIONS AND INVESTIGATORS IN  
THE CONDUCT OF RESEARCH**

This Important Notice implements the major findings and recommendations contained in the National Science Board report "Openness of Scientific Communication" (NSB 88-215) approved in December 1988. The purposes of this Notice are: (1) to reaffirm NSF's commitment to open, rapid dissemination of research performed under its sponsorship, and (2) to strengthen policies and procedures to assure maximum openness of scientific and technical communication.

### 1. Open Scientific and Engineering Communication

The NSF advocates and encourages open scientific communication. The NSF expects significant findings from research it supports to be submitted promptly for publication, with authorship that reflects accurately the contributions of those involved. It expects investigators to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections, and other supporting materials created or gathered in the course of the research. It also encourages awardees to share software and inventions or otherwise act to make such items or products derived from them widely useful and usable.

NSF will implement these policies in ways appropriate to the field of science and circumstances of research through the proposal review process; through award negotiations and conditions; and through appropriate support and incentives for data cleanup, documentation, dissemination, storage, and the like. Adjustments and, where essential, exceptions may be allowed to accommodate the legitimate interests of investigators and to safeguard the rights of individuals and subjects, the validity of results, and the integrity of collections.

### 2. Policies for Openness

Appropriate commercialization of the results of research will continue to receive encouragement by permitting grantee institutions to keep principal rights to intellectual property conceived under NSF sponsorship. The Foundation emphasizes, however, that retention of such rights does not reduce the responsibility of researchers and institutions to make research results and supporting materials openly accessible.

The Foundation strongly recommends that all NSF grantee institutions develop, implement, and publicize comprehensive policies for dealing with potential restrictions on openness arising from concurrent private sector support. Such policies and related procedures should preserve the prime function of academic institutions as creators and transmitters of knowledge, while safeguarding the independence of the faculty and the interests of the students.

### 3. Policies for alleged fraud and misconduct

Open scientific communication demands and encourages responsible, ethical behavior on the part of those who conduct, manage, and sponsor research. Everyone in science and engineering must guard against fraud and misconduct.

June 14, 1991

**LIST OF ALVIN DIVE REQUESTS  
FOR 1992  
BY REGION AND DISCIPLINE**

**California Basins**

3. Childress	Bio	12
13. Smith, K	Bio	<u>(5*)</u>
	1992 Total	12

\*Not until 1994?

**EPR (south), Way South**

9. Lutz	Bio	12
9. Lutz	Bio	6
12. Edmond	Chem	<u>15</u>
	1992 Total	33

**Mid Atlantic Ridge**

2. Van Dover	Bio	15
9. Lutz	Bio	6
10. Rona	G&G, Chem	20
18. Casey	G&G, Chem	<u>20</u>
	1992 Total	61

**NW ATLANTIC**

7. Flood	G&G	15
8. Mullins	G&G	15
11. Auster	Bio	<u>4</u>
	1992 Total	34

Atlantic	129
Pacific	116 + 14

**EPR (north) Galapagos, NEP Seamounts**

1. Childress	Bio	28
5. Wishner	Bio	28 + 14
15. Haymon	G&G, Chem	6
16. Lutz	Bio	<u>2</u>
	1992 Total	64 + 14

**Hawaii**

14. Garcia	G&G	<u>7</u>
	1992 Total	7

**Gulf of Mexico**

4. Roberts	G&G, Bio	16
6. Brooks	Chem, Bio	16
17. Cavanaugh	Bio	<u>2</u>
		34

**Total Dives Requested for 1992**

Total	245 + 14
Bio *	147 + 14
Chem*	77
G&G	104

\*Multi-disc requests counted  
for each discipline

## SUMMARY

## APPENDIX VI

## ALVIN SHIPTIME REQUEST

July 1991  
Woods Hole, MA

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
1. Childress, J.J.	Felbeck, H. Fisher, C.R. Nelson, D. Johnson, K. Turniciliffe, V. et al.	East Pacific Rise 12°48'-50'N, 103°56'-58'W	Hydrothermal Ecosystem Research Observatory Program. A Joint US/French program to monitor vent sites at 13°N on the EPR. Emphasis on biology w/monitoring of chemical & physical parameters which interact w/the biology.	NSF	April-May 1992	Not before April 1, 1992	28	RECOMMENDED in 1990 for 1992 schedule.
2. Van Dover, C.L.	Cavanaugh, C. DeLong, E.	TAG/MARK sites Mid-Atlantic Ridge	Study the biology of shrimp swarms at the Mid-Atlantic Ridge hydrothermal vents. Deploy & recover shrimp exclusion/sulfide-sampling devices to determine the effect shrimp grazing has on the microbial community.	NSF	June 1992	July-Aug 1992	15	RECOMMENDED
3. Childress, J.J.	Case, J.F. Carney, R.	34°50'N, 123°00'W NW Pacific off Point Conception @ 4100 m	"Studies on the Ecological Physiology of Mid-water Animals." Collection of bathypelagic & benthopelagic species for studies of their metabolic rates, activities of enzymes of intermediary metabolism, stable C and N isotope ratios, and abundance.	NSF	Jan-Feb 1992	Not between Mar 15-Jun 15 1992	12	RECOMMENDED
4. Roberts, H.H.	Carney, R. Aheron, P. Larkin, J. Sassen, R.	Gulf of Mexico 26°11'N, 94°34'W & additional sites at Challenger Knoll	Comparative studies of authigenic carbonates at known hydrocarbon seeps from Louisiana's deep continental slope and DSDP Leg 1, Hole 2 (Challenger Knoll) of the Gulf of Mexico floor.	NOAA- NIJRP	June 1992, 1993	September	16/yr	RECOMMENDED
5. Wishner, K.	Gowing, M. Hanson, A. Kester, D. Levin, L. Mullineux, L. Turley, C.	Eastern Tropical Pacific-Voicano 7 13°23'N, 102°27'W	OMZI (Oxygen Minimum Zone Interaction Study): Effects of the Oxygen Minimum Zone on pelagic & benthic communities, processes & chemistry in the Eastern Tropical Pacific.	NSF	Mar & July 1992 Need 6 mo. separation	Feb & Jun 1992	26 & 14	RECOMMENDED
6. Brooks, J.M.	Wiesenburg, D.A. Guinasso, N.L. MacDonald, I.R. Fisher, C.R.	Gulf of Mexico 26°20'-28°20'N, 86°00'-94°30'W	Salt, seeps & symbiosis in the Gulf of Mexico. Examine & study the geochemical & biological mechanisms that result in the formation of deep-water, petroleum-derived seep communities.	MMS	April 1992	Open	16	RECOMMENDED
7. Flood, R.D.	Aller, J.	NW Atlantic 30°35'N, 76°10'W 2800-3700 m depth (to 4300 m if ALVIN certified for deep dives)	"ALVIN studies of furrows on US continental rise: evaluating a potential paleo-current recorder." To determine late Pleistocene-Holocene evolution of furrows & modern activity to determine fluctuations in Western Boundary Undercurrent.	NSF	May-June 1992	Summer-Fall 1992	15	RECOMMENDED
8. Mullins, H.T.	Breen, N.	Southeast Bahamas- North of Dominican Republic (20°N, 70°W)	Carbonate Platforms along the Southeast Bahamas-Hispaniola Collision Zone: Response to Tectonic Processes.	NSF	May-June 1992	August 1992	15	RECOMMENDED

# SUMMARY

## ALVIN SHIPTIME REQUEST

Page 2  
July 1991  
Woods Hole, MA

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
9. Lutz, R.A. Vrijenhoek, R.C.	Postdoc Res. Associates Res. Specialists Graduate Students Geologist(s) Geochemist(s)	1) 17°-22°S (along EPR) 2) 62°-64°S, 58°W (King George Island Basin) 3) Snake Pit & TAG hydrothermal fields along Mid-Atlantic Ridge (MAR work can be combined w/requests of other investigators)	Gene flow, dispersal & systematic relationships of molluscs associated w/deep-sea hydrothermal vents (analyses of genetic variation will be conducted on a wide variety of molluscs collected using ALVIN at various deep-sea hydrothermal vent sites).	NSF	1992	1993	1) 12 2) 6 3) 6	Continuation of Lutz/Vrijenhoek genetic investigations. RECOMMENDED
10. Rona, P.A.	Bougault, H. Thompson, G.	Mid-Atlantic Ridge 26°N (TAG) & 15°N (Fifteen Twenty Fracture Zone)	FARA Program collaborative investigation of hydrothermal processes to include water, chemistry, heat transfer, hydrothermal precipitates, mafic and ultramafic rocks, geologic setting, and biology.	NOAA NSF IFREMER	1992 Exclusive of hurricane season (mid-Aug to mid-Oct) & first qtr of 1992 (Jan-Mar) when collaborative dives with DSV NAUTILUS are scheduled.	or 1993	20	RECOMMENDED
11. Auster, P.J. Malatesta, R.J.	-----	Continental rise south of Block Canyon (2750 m) 39°00'N, 71°00'W	Megafaunal-microhabitat relationships on the Northeast United States Continental Rise.	NOAA- NURP	July 1992	Whenever available	4	RECOMMENDED
12. Edmond, J.	TBD (last-minute submission)	East Pacific Rise at 32°-15'N	Hydrothermal fluid sampling at the super-fast spreading center of about 30°S on the EPR, Southeast Pacific.	NSF	Pre-southern Winter, 1992	Late 1992	15	TABLED
13. Smith, K.L.	Reimers, C.E.	Santa Catalina Basin 30°-14'N, 118°-37'W	Sediment community oxygen consumption and particulate organic matter flux in the deep sea: long time-series measurements.	NSF	1994	7	5	RECOMMENDED June 1990. New request required for later work.
14. Garcia, M.	Mahoney, J. Muenow, D. Kurz, M.	South of Hawaii Id. 18°-50'N, 155°-15'W	Internal & External Controls on Compositional Variation of Lavas from Loihi Seamount, Hawaii. To collect lavas from the rift zones of a sub-marine volcano to evaluate the nature & causes of compositional & vesicle variations in sub-marine lavas. (Work on the grant has been pursued during 1991 using PISCES V, but additional sampling below 2000 m requires ALVIN).	NSF	1992	-----	7	RECOMMENDED in 1990 but not scheduled in 1991. Asking for 1992.
15. Haymon, R.	MacDonald, K. Von Damm, K. Lilley, M. Edwards, J. Fornari, D. Shanks, P.	East Pacific Rise at 9°-10'N, 104°-10'-20'W	Supplement to ALVIN Diving on the EPR, 9°-10'N: Hydrothermal, Volcanological, and Geochemical Studies in Support of ODP Bare Rock Drilling. Return to site of recent eruption at 9°45'-52'N for time-series observation and resampling.	NSF	Jan 1992	-----	6	Linked to Lutz request (92-16). Timing critical. RECOMMENDED

# SUMMARY

## ALVIN SHIPTIME REQUEST

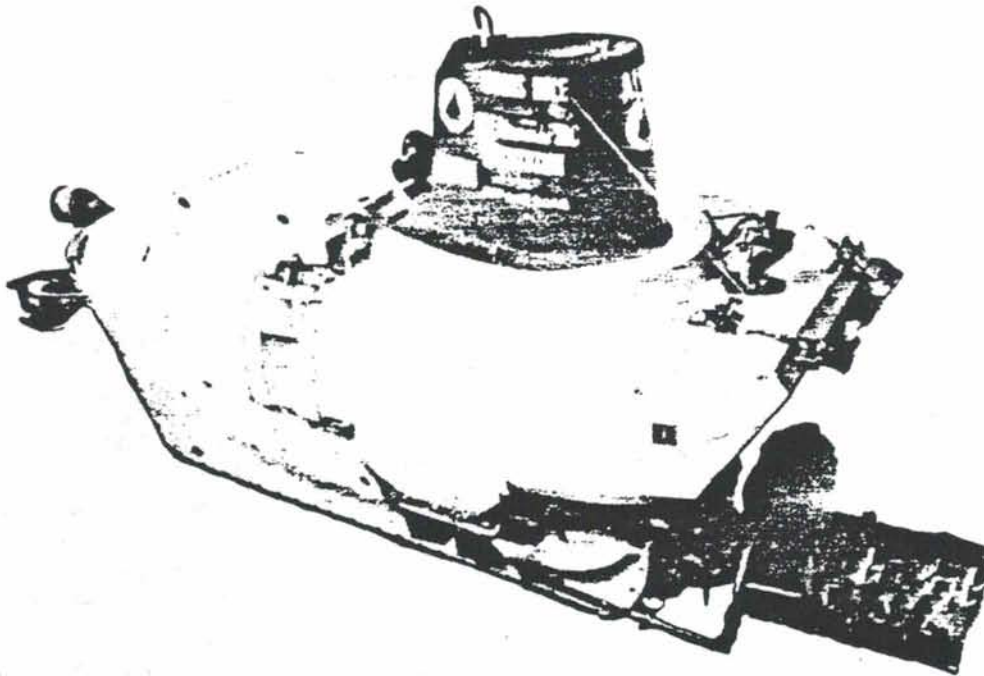
Page 3  
 July 1991  
 Woods Hole, MA

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
16. Lutz, R.A.	Haymon, R. et al.	East Pacific Rise between 9° and 10°N	Gene Flow Dispersal & Systematic Relationships of Molluscs Associated w/Deep-sea Hydrothermal Vents. Detailed genetic analyses on a variety of organisms collected between 9° and 10°N along the EPR, as well as attempting to define changes in vent biological community structure that have occurred since 4/91.	NSF	Early Jan 1992	—	2	Linked to Haymon Request (92-15). Related to Lutz Request (92-9). RECOMMENDED
17. Cavanaugh, C.	—	Florida Escarpment 26°02'N, 84°55'W	Metabolic Capabilities, Genetic Properties, and Phylogenetic Affinities of Methanotrophic Symbionts from Marine Invertebrates.	ONR	Mar 1992	Open 1992	2	RECOMMENDED
18. Casey, J.F.	Bryan, W. Meyer, P. Kurz, M. Sillanitev, S. Dmitriev, L	30°25' to 32°N, 40°30' to 42°W; MAR	Geochemical and Petrological Structure of the Mid-Atlantic Ridge, Geochemical and Tectonic Discontinuities at Ridge Segment Boundaries. A US-Soviet Cooperative Study.	NSF	July-Aug 1992	May-June 1992	20	RECOMMENDED



UNOLS ALVIN Review Committee announces  
**OPPORTUNITIES FOR OCEANOGRAPHIC RESEARCH DURING 1992**  
 USING

# DSV ALVIN



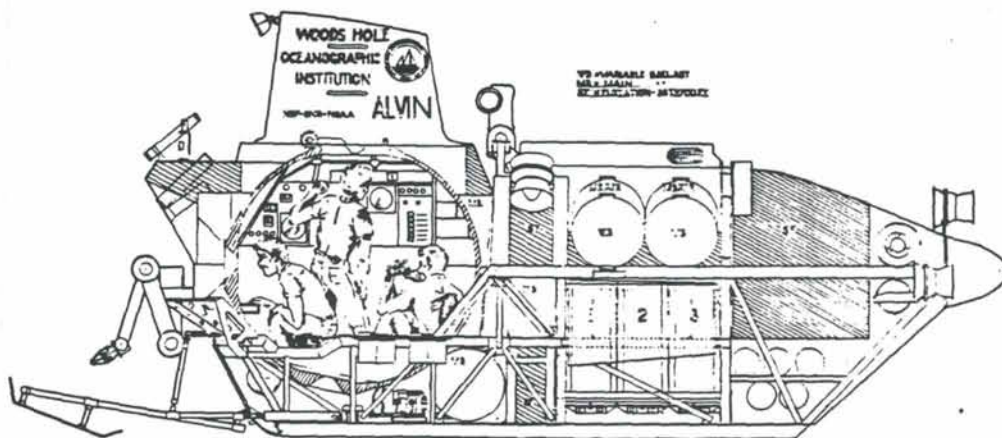
If you have an oceanographic research project that requires a manned research submersible operating to depths as great as 4000 meters, request dives on ALVIN – you will get the best facility and operational support in the world.

**1992 Operations.** ALVIN, with ATLANTIS II will be in San Diego at the beginning of 1992. The center of user interest for 1992 has been on the **Mid-Atlantic Ridge and nearby Bahamas and Gulf of Mexico areas.** Other significant interest has been shown for the **EPR from 13°N to 22°S (and for nearby Volcano 7).** Some interest continues for northeast Pacific, Mid Pacific, western Pacific and Southern Ocean Areas. ALVIN/ATLANTIS II's itinerary and operations will probably be centered on work on the Mid-Atlantic Ridge and nearby areas with, perhaps early in the year, some work in the eastern Pacific.

**ALVIN Time Requests.** The ALVIN Review Committee solicits ALVIN Time Requests for research to be done during 1992. These Time Requests should be submitted to the Chair, ALVIN Review Committee by May 15, 1991, for review by the Committee during June, 1991.

**Funding for research to be supported by ALVIN/ATLANTIS II** should be requested through traditional channels. Research proposals requiring facilities support for operations in 1992 must be submitted to the National Science Foundation to meet either the November 1, 1990 or May 1, 1991 target dates. Research proposals to the Office of Naval Research or to the National Oceanic and Atmospheric Administration must have at least preliminary approval by June, 1991.

**The Deep Submergence Vehicle ALVIN is owned by the U.S. Navy** under the purview of the Office of Naval Research. It is operated by the Woods Hole Oceanographic Institution under a Memorandum of Understanding among the National Science Foundation, the National Oceanic and Atmospheric Administration and the Office of Naval Research. ALVIN is designated a UNOLS National Oceanographic Facility.



## DSV ALVIN

### DESCRIPTION OF DSV ALVIN

Length: 7.6 meters (25 feet)    Cruising Range: 5 miles submerged  
 Beam: 2.4 meters (8 feet)    Displacement: 18 tons  
 Draft: 2.1 meters (7 feet)    Endurance: 72 hours  
 Full Speed: 2 knots    Normal Dive Duration: 6-10 hours  
 Cruising Speed: 1 knot    Depth Capacity: 4,000 meters (13,120 feet)  
 Complement: 1 pilot, 2 scientific observers

**Ownership:** The submersible ALVIN is a Navy-owned national oceanographic facility operated by the Woods Hole Oceanographic Institution and jointly supported by the National Science Foundation, the Office of Naval Research and the National Oceanic and Atmospheric Administration.

**Communications:** Sonar telephone, voice or code (submerged); marine band UHF radio (surface).

**Navigation:** Gyro compass; magnetic compass; forward-looking horizontal scanning sonar system (CTFM); echo sounder; indicators for depth and altitude; long baseline acoustic positioning system (by request).

**Electrical Power:** Three banks of lead-acid batteries configured for 120 VDC (450 Amp. hours) and 30 VDC (450 Amp. hours). A limited amount of 115 volt 60 cycle AC power is also available.

**Hydraulic Power:** The science basket is supplied with 1 GPM of 1500 PSI hydraulic oil for science applications.

**Data Logging:** Most of the information obtained from the permanently-installed instrumentation is logged on 3-1/2" computer disks. Also, selected data is superimposed on the video camera images and recorded on 1/2" VHS tape. Contact the ALVIN group for more information.

**Additional Capabilities:** The submersible is designed to be versatile with respect to payload, space and power available to meet the differing needs of scientists using the vehicle. Scientific equipment which remains on board most of the time includes two remotely controlled mechanical arms, two 35 mm. cameras and a closed circuit video system with recorder. Additionally, specialized equipment such as hot-water samplers, precision temperature sensors, a magnetometer and increased navigation capability is available but requires advance notice and may require additional funding for installation and operation. Contact the ALVIN group for further information.

To obtain further information regarding the ALVIN system capabilities or specialized equipment, contact:

Barrie B. Walden, Submersible Program Manager  
 Woods Hole Oceanographic Institution  
 Woods Hole, MA 02543  
 Telephone: (508) 548-1400 Ext: 2407

### DESCRIPTION OF RV ATLANTIS II

Built: 1963    Crew: 27  
 Beam: 44 feet (13 meters)    Length: 210 feet LOA (64 meters)  
 Gross Tonnage: 1,529 tons    Draft: 16 feet (5 meters)  
 Displacement: 2,300 L tons

**Scientific Personnel:** 9 ALVIN support team plus 1 corpsman plus 19 scientists.

**Main Engines:** Two GM 12-567E diesel engines driving through reduction gears with variable speed, hydraulic clutches. 2,000 shp.

**Bow Thruster:** 800 hp trainable. DC motor driving from main gear PTO.

**Ships Service Generators:** Two 480/120 volt AC 300-KW generators driven by CAT 353 diesel engines.

**Propellers:** Twin screw: 3 fixed blade; bronze.

**Ownership:** Built under grant from NSF. Conditional title rests with W.H.O.I.

**Speed:** Cruising: 11.0 knots  
 Full: 13.5 knots  
 Minimum: Dead Slow

**Endurance:** 45 days

**Fuel Capacity:** 90,000 gallons

**Range:** 9,000 miles

**Laboratories:** wet - 400 square feet  
 dry (4) - 3,500 square feet plus 28' by 13' ALVIN hanger

**Sewage System:** Two type III holding tanks; five to ten days endurance.

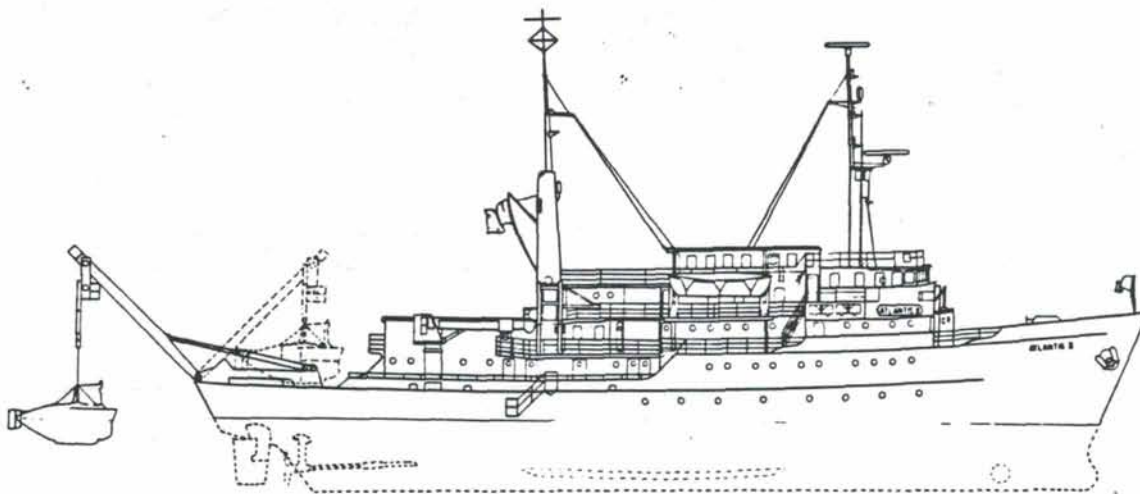
**Ship Equipment:** For full range of oceanographic observations and work. One trawl winch: 30,000 feet 1/2" cable. One CTD winch: 27,000 feet 0.303" cable; or, 30,000 feet 3/16" wire.

**One Marine Crane:** 20-ton capacity

**One Hydraulic Powered A-frame:** 18-ton capacity for launch and recovery of ALVIN.

To obtain further information regarding ATLANTIS II system capabilities or specialized equipment, contact:

Donald A. Moller, Marine Operations Coordinator  
 Woods Hole Oceanographic Institution  
 Woods Hole, MA 02543  
 Telephone: (508) 543-1400 Ext: 2277



## **RV ATLANTIS II**

### **SUBMISSION OF ALVIN TIME REQUESTS**

Requests for the use of DSV ALVIN should be initiated by sending a completed Time Request form (copy overleaf) to: Chairman, ALVIN Review Committee, c/o UNOLS Office, WB-15, University of Washington, Seattle, WA 98195. Requests may be made by scientists and engineers at any university or research institution in the United States, and should be supported by an exposition of the proposed research which specifically addresses each of the following:

1. The nature and significance of the proposed research.
2. The scientific questions being asked and the approaches that would be used toward their resolution; how ALVIN will be employed is critical to the Committee's evaluation.
3. Justifications of the need for ALVIN to do this work.
4. The research site(s) and its justification.
5. Number of dives required, justification for the number of dives and any seasonal consideration; it is especially important to include a dive plan or other description of how each dive will be used, and why each is needed. Provide sufficient detail to allow the Committee to make a quantitative evaluation.
6. Likely requirements for future ALVIN dives (not requested here) for completion of the research.
7. Proposed number of scientists and engineers in the party.
8. Curricula vitae of principal participants.
9. Potential or current support for the proposed research effort; in virtually all cases, science proposals should already have been submitted by the date of the Committee's review. If research proposals have not been submitted prior to the ARC review, the Committee may not review the Dive Request.
10. List of publications resulting from any previous ALVIN work.
11. Any special engineering required for dive operations.

#### **NOTE:**

- 1) Experience has been that ALVIN Time Requests covering items 1-7 in not more than 12 pages are most appropriate. Very long Requests bog down the review process. If science proposals are submitted, they should be appended to an appropriately concise Time Request. Items 8, 10 and 11 should also be appendices to the Request.
- 2) If operations are to be carried out in foreign waters, the required clearances should be requested as early as possible. Collaboration with foreign scientists is encouraged.
- 3) The ALVIN Review Committee will submit scheduling recommendations for consideration by the research sponsor. Final scheduling depends on approval of the pertinent research proposal by the funding agency.

#### **ALVIN Review Committee**

F. Jennings, Texas A&M University, Chair  
D. A. Cacchione, U.S. Geological Survey  
P. J. Fox, University of Rhode Island  
J. C. Moore, University of California, Santa Cruz  
D. Nelson, University of California, Davis

M. Scranton, State University of New York, Stony Brook  
G. Taghon, Oregon State University  
K. L. Von Damm, Oak Ridge National Laboratory  
G. Grice, Woods Hole Oceanographic Institution, ex-officio

**UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM  
DEEP SUBMERGENCE VEHICLE ALVIN  
TIME REQUEST**

To: **Chairman, ALVIN Review Committee**  
c/o UNOLS Office, WB-15  
University of Washington  
Seattle, Washington 98195

DATE: \_\_\_\_\_

USE OF THE ALVIN SUBMERSIBLE RESEARCH SYSTEM IS REQUESTED FOR \_\_\_\_\_ YEAR FOLLOWS:

PURPOSE: (Project, Title and brief outline of program)	
PRINCIPAL INVESTIGATOR: (Name, Title, Address, Telephone Number)	OTHER INVESTIGATORS INVOLVED:
PROPOSED CHIEF SCIENTIST:	TOTAL NUMBER OF SHIPBOARD PERSONNEL:

**PROJECT REQUIREMENTS**

# OF DIVES REQUESTED:	PREFERRED DATES:	ALTERNATE DATES:
AREA OF OPERATIONS: LATITUDE AND LONGITUDE (Attach page-size chart showing location of dives and bathymetry)		
NAME OF NEAREST PORT:	DISTANCE, IN NAUT. MILES:	
LIST SPECIAL EQUIPMENT REQUIREMENTS: (e.g., sensing, sampling and navigation requirements; attach brief description of proposed escort/surface support ship if one is required)		
COUNTRIES FOR WHICH RESEARCH CLEARANCE WILL BE REQUIRED:		

**FUNDING STATUS**

PLEASE INCLUDE THE GRANT NUMBER FOR PROJECTS ALREADY FUNDED, THE PROPOSAL NUMBER FOR PROPOSALS SUBMITTED  
NOTE: NSF research proposal requiring the use of facilities (e.g., ALVIN) must include a completed NSF-UNOLS Ship Time Request Form 831 (R-1/90).

FUNDED

NOT FUNDED

FUNDING AGENCY:			PROPOSAL SUBMITTED: _____ WILL BE SUBMITTED: _____		
GRANT NUMBER:			TO: _____		
AMOUNT OR ANNUAL RATE:			DATE: _____		
BEGIN DATE:	DURATION:	AMOUNT REQUESTED: _____	NEW PROPOSAL NUMBER:	OR	RENEWAL OF GRANT NUMBER:

**IMPORTANT: ATTACH MATERIAL ADDRESSING POINTS LISTED ON OVERLEAF**

SUBMITTED BY: \_\_\_\_\_ SIGNATURE APPROVED: \_\_\_\_\_ DEPARTMENT CHAIR or LABORATORY DIRECTOR

NAME, TITLE, ADDRESS & TELEPHONE NUMBER IF DIFFERENT FROM PRINCIPAL INVESTIGATOR:

	TELEPHONE: (     )
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April 15, 1987

Rules for Review of ALVIN Dive Requests  
ALVIN Review Committee

1. Requests for ALVIN dives, having been solicited by the ALVIN Flyer will be reviewed annually, and principally at the ARC meeting held for that purpose in about May.
2. Extraordinary requests (e.g., those for which a later submission is warranted, or those for which ARC recommendations and funding decisions do not agree) will be reviewed at ad hoc meetings either by telephone or opportunistic assembly. The Committee discourages late submissions.
3. There is potential for conflict of interest on any dive request originating at a Committee member's institution or if any investigator listed on the request is from a member's institution.
4. The Chair will raise the questions of conflict of interest at the beginning of consideration on each request for dives. Notes for the meeting will reflect these queries and actions of the member(s) involved.
5. If a Committee member is listed on a request (or is, in fact, actively involved) that member will be excused from the room for all discussion, consideration and voting on that request.
6. For requests originating at Committee member(s)' institutions, or with investigators from their institutions, those Committee members so connected will be excused from the room for all discussion, consideration and voting on that request except that at the invitation of the balance of the Committee (and with that member's concurrence) members connected only by institutional affiliation may comment on requests. However, in no case will those members vote on the request in question.
7. If there remains a question concerning conflict of interest concerning any member(s) for an individual request for dives, it will be decided by vote of the balance of the Review Committee.
8. Voting Committee members will vote to rank individual requests for dives as:
  - 1, outstanding
  - 2, excellent
  - 3, fair
  - 4, poorest ranking
  - 5, tabled--not ranked.

