UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

ALVIN PLANNING MEETING

DECEMBER 8, 1991

Japanese Pavilion, Cathedral Hill Hotel
Van Ness & Geary
San Francisco, California

CONTENTS

ALVIN PLANNING MEETING

San Francisco, CA
December 8, 1991

APPENDICES

I. Meeting Agenda
II. Attendance list
III. Sulfide Corer Schematics
IV. WHOI Presentation Overheads
V. ALVIN/AII Notification of Intent Summary
VI. Notices of Intent by Region for 1993
VII. ALVIN Proposed Dives by Region
VIII. Submersible Science Tasking

WELCOME AND INTRODUCTION

A meeting was held on December 8, 1991, in the Japanese Pavilion, Cathedral Hill Hotel, San Francisco, California to address advances in ALVIN technology and to gain information for ALVIN/ATLANTIS II operations in 1993 and beyond.

The meeting was called to order by Feenan Jennings, ALVIN Review Committee Chair. Agenda items were followed except as altered herewith. Attached as Appendix I is a copy of the agenda.

The meeting was attended by ARC members; agency representatives from NSF, ONR, and NOAA; and about thirty previous and prospective ALVIN users. Appendix II is a list of registered attendants.

Feenan Jennings opened the meeting by explaining that the morning session would focus on technology with presentations on advances in ALVIN's capabilities. The afternoon session would examine future submersible needs in 1993 and beyond. The decline in ALVIN proposals submitted for 1992 and the present state of the ALVIN/AII 1992 schedule would also be addressed.

ENGINEERING AND TECHNOLOGY

Rotary Drill - Debra Stakes of the University of South Carolina discussed her recent success in implementing a newly designed rotary drill in her September cruise to the Juan de Fuca Ridge. Debra explained that the drill was attached to ALVIN's basket and that any basket could be used simultaneously with the drill. A video was shown depicting the steps required for installation and implementation of the drill along with clips of the drill in operation. Three cores were taken; one core at the base, the second core six meters from the bottom, and the third core 15 meters from the bottom. The greatest limitation of the drill appears to be its low rotational speed of 50-60 rpm

at depth. When the corer was tested on the surface ship, a rotational speed of 150 rpm was measured. Further investigations to improve speed will be conducted.

Each core takes approximately 35 to 40 minutes to complete. A maximum core length is 18 inches with the limitation being the length of the core barrel. The energy consumed during coring is equivalent to the energy which would be consumed during driving ALVIN an equal duration of time. To obtain a core, ALVIN is driven to the desired position and applies the drill; no additional stabilizing is required. Debra displayed three cores which were taken during her dive series. They were all of excellent quality.

Leon Halloway of ODP, Texas A&M presented slides of the schematics for the drill (Appendix III). Leon worked with Debra in the development of the sampler. The approximate costs for the components of the sampler are $250 per bit and $700 per barrel. Components are made from steel and stainless steel. The drill bits are customized, but can be obtained very quickly when needed. Methods of detaching the drill from the basket in the case where the drill binds in the rock are being investigated. Other improvements being considered for the sampler include increasing the core length from 18 inches to 24 inches and having a capability of obtaining multiple cores per dive.

The entire cost of this development project was approximately $12,000. Interest for use of the sampler has been expressed in the ALVIN community. User fees per dive series are currently being considered.

Instrumented ODP Borehole Seal - Kier Becker from the University of Miami provided a report on the success in recording data from the instrumented ODP borehole seal using ALVIN. Slides and a video were presented. In a project conducted by Davis, Becker, and Carson, ODP sites were visited by ALVIN to extract data from the instrumentation in previously bored holes. The video depicted holes drilled to depths of 932 meters and 430 meters into the ocean floor. There are plans to try sampling from the seal using an ROV next year.

NAVY DEEP SUBMERGENCE ASSETS

LCDR Sam Nichols, USN Submarine Development Group One, provided a report of the Navy's deep submergence vehicles. His organization operates out of San Diego, California.

The Navy currently operates two deep submergence vehicles for salvage and research missions, TURTLE and SEA CLIFF. The depth capabilities for these vehicles are 10,000 feet and 20,000 feet respectfully. SEA CLIFF is currently decertified, but the Navy plans to resolve this situation by the beginning of the year. SEA CLIFF's capabilities include two Schilling Manipulator Arms. In 1993, SEA CLIFF is scheduled to operate off of the northwest United States coast, in Monterey Bay and off of Hawaii.

The Navy assets include the unmanned rescue vehicles MYSTIC and AVALON having depth capabilities of 5,000 feet. The Navy also operates an advanced tethered vehicle (ATV). Its assets

include a fiber optic link, manipulators, video recorders, and a depth rating of 20,000 feet. The Navy has Side Scan sonar capabilities to 10,000 feet.

The Navy leases the vessel LANEY CHOUEST to serve as the support ship for TURTLE and SEA CLIFF. It is a 240 feet long with berths for 40 scientists and a crew of 14. It has both wet and dry labs. The DOLORES CHOUEST serves as the support ship for the Navy's rescue vehicles.

Sixty days have been allocated for research (all Navy vehicles combined) to be conducted using the Navy's assets. Garry Brass, UNOLS Chair, stated that NOAA has agreed to provide funds for incidental costs associated with these days. The agreement has just been signed and there will be instructions on how to apply for this research time in the near future. It should be noted; however, that Navy assets can be diverted for Navy missions at any time.

JASON SUBMERSIBLE STATUS

Dick Pittenger, WHOI, reported on the loss of the ROV, JASON Jr, and associated instrumentation in the JASON project. The barge carrying the JASON equipment was towed the Equadorian Navy in excess of the recommended speed. High sea states were encountered, water was taken on, and the equipment was lost. No injuries or loss of life occurred. Fortunately WHOI was insured for the loss, and the money will be applied to ROV technology.

ALVIN TECHNOLOGY - STATUS AND DIRECTIONS FOR DEVELOPMENT

Dick Pittenger reported that ATLANTIS II has been recertified for another three years. An overhead was presented showing the 1991 Cruise tracks for ALVIN/AII. All cruises were in the Pacific. 1991 was very successful with only 3 percent of dives cancelled, all due to weather. An overhead comparing ALVIN's performance with other comparable submersibles was presented and it was clear that ALVIN's record was superior. All of WHOI's overheads are contained in Appendix IV.

Dick presented a list of 1991 ALVIN upgrades (Appendix IV). A video was shown of "hot springs" as recorded from JASON's camera. The clarity was notable. ALVIN's new camera is stated to be superior to that used in the JASON video. It is a single CCD camera mounted on the manipulator. In addition WHOI now owns a triple CCD camera which is available on request from WHOI. It is basket mounted, approximately four feet long and ten inches in diameter.

ALVIN/AII SCHEDULE FOR 1992

Barrie Walden, WHOI, presented the ALVIN/AII schedule for 1992. Eighty-one dives are currently scheduled, of which many still have not been funded. All NOAA and Navy cruises are pending. There is a big unscheduled gap in January and February. Due to the light schedule,

ALVIN will return to WHOI in August (vice October) to begin overhaul. This totals four months of open time in the 1992 ALVIN/AII schedule.

Barrie presented a slide of options for 1992 schedule expansions (Appendix IV). They included: (l) Technology Development Programs, (2) Navy Site Inspections, and (3) Privately Supported Science and Engineering Programs. WHOI is hopeful to add another thirty days to the schedule, but this will still represent a very light schedule.

ALVIN 1992 PLANNED UPGRADES

Barrie Walden presented a slide of planned ALVIN upgrades for 1992 (Appendix IV). These upgrades include increased depth certification to 15,000 feet and renovation of surface controllers work area to allow more space for scientists. No items have been funded to date. Items at the top of the list indicate a higher priority. Recommendations were suggested to improve CTFM and to obtain a backward looking camera.

ALVIN MISCELLANEOUS

It was pointed out that in 1991 ALVIN recovered the Navy's ROV, CURV3, without losing any dive time.

REVIEW OF ALVIN PROGRAM

Dick Pittenger provided a summary of the ALVIN program review performed by the Spiess Committee. This was an internal review and portions were not considered appropriate for distribution outside of WHOI. Overheads were presented which summarized the various areas of concern; such as, personnel, communications, and technology. Potential fixes and detailed actions were addressed in regard to each concern. WHOI is taking under advisement the report's suggestions.

AGENCY AND PROGRAM MANAGEMENT OFFICE REPORTS

NSF - Don Heinrichs provided the NSF agency report. He presented a funding chart for UNOLS operations support as provided by the various agencies; NSF, ONR, NOAA, and others. The chart supplied funding figures for actual agency funding in 1990, estimated funding in 1991, and requested funding in 1992. Support for ALVIN operations was identified separately and is provided below:

ALVIN	Actual '90	Estimated '91	Requested '92
NSF	$ 948 K	$ 1,571 K	$ 1,068 K
ONR	$ 502 K	$ 159 K	$ 92 K
NOAA	$ 406 K	$ 175 K	$ 578 K
OTHER	$ 64 K	- K	$ 137 K
TOTALS:	$ 1,920 K	$ 1,905 K	$ 1,875 k

From 1991 to 1992 there are significant decreases in funding for NSF and ONR. ALVIN days funded by NSF will decrease from approximately 100 days in 1991 to approximately 70 days in 1992. All proposals recommended by the ARC in June, 1991 were declined in the NSF review.

In related submersible issues, Don explained that the ALVIN Interagency Memorandum of Agreement (MOA) will be reviewed in the next couple of months. UNOLS and WHOI will be consulted throughout the review process. The scientific requirements of the deep submergence community will need to be addressed. The tasks outlined in the Submersible Science (S^3) report should be carefully examined. There appears also to be a need to coordinate an international deep submergence arrangement which would permit a trade in asset use between countries.

NSF has a 1992 budget. The Ocean Sciences Division received an 8.4 percent increase from 1991. This is down from the 14 percent increase requested.

ONR - Steve Ramburg from the Ocean Engineering Division of ONR provided his agency's report. ONR is concerned about the low usage of ALVIN. By the MOA, ONR is required to support 30 days of ALVIN use per year. In past years and the upcoming year, ONR will use less than 30 days per year. ONR is excited about WHOI efforts to obtain additional ALVIN time by pursing the options which were recommended by Barrie Walden (Appendix IV).

Steve suggested that the capabilities of manned and unmanned submersibilities need to be examined and compared. A balance of use needs to be established between these assets.

Discussion - John Edmund, MIT, expressed his view regarding the present and future of ALVIN. This has been a very exciting year for ALVIN research. Thoughts should be given on how to maintain this excitement. John suggested organizing expeditions to perform ALVIN-supported research in far off places.

INTEREST IN USING ALVIN, 1993 AND BEYOND:

Jeff Fox of the ALVIN Review Committee distilled the notices of interest in using ALVIN/AII which had been received from the scientific community, to suggest directions for ALVIN-supported research for 1993 and a few years beyond. Thirty-four intent notices were reviewed and are summarized in Appendix V. A table listing the ALVIN intents by geographic region is provided in Appendix VI. A map displaying the number of dives proposed for each region is provided in Appendix VII.

The intents indicate large focuses of work in the Pacific along the Juan de Fuca Ridge and in the Atlantic along the Mid-Atlantic Ridge. A total of 546 dives were proposed which includes 175 dives which are requested for 1994 and 1995. This number also includes 36 dives which were proposed last year but were not resubmitted as intents for 1993. The number of dives requested this year at the ALVIN Planning meeting represent an increase of approximately 180 dives or 50 percent from last year's meeting. Jeff pointed out that of the intents received, usually 60 to 70 percent are actually submitted as proposals. This would represent approximately 240 dive requests for 1993.

3:30 P.M. - ALVIN REVIEW COMMITTEE EXECUTIVE SESSION

NOMINATION FORM - Feenan Jennings will put together and circulate a new form for nominating members to the ARC.

SUBMERSIBLE SCIENCE SUBCOMMITTEE - At its October 16-17, 1991 meeting in Washington, D.C., UNOLS decided that rather than establish a separate submersible science subcommittee to accomplish some of the tasks recommended in the Robison S^3 Report, the Charter and the membership of the ALVIN Review Committee should be expanded to carry out the additional tasks. The UNOLS Council identified a panel of Tom Johnson, Jeff Fox and Feenan Jennings to incorporate the submersible science tasking into the ARC Charter. The panel will coordinate their efforts with the MOA subcommittee below.

INTERAGENCY MEMORANDUM OF AGREEMENT (MOA) - The MOA between NOAA, NSF and ONR for support and operation of ALVIN is up for renewal at the end of 1992. Correspondence between ONR, NSF, and WHOI, and comments during the ARC (December 1991) meeting, suggest that MOA might be modified to include submersible matters in addition to ALVIN. The ARC will be supplied with copies of the correspondence as well as instructions to UNOLS from the agencies about the new MOA.

It was agreed that new MOA might also have an impact on the revised ARC charter and should be taken into account. To assist in drafting a revised ARC charter, a panel of ARC was named, made up of Feenan Jennings, Jeff Fox, Doug Nelson, Dick Pittenger, and Jack Bash. All ARC members will be provided with pertinent documents for their input during the drafting phase. The panel revising the ARC charter (see above) will be kept appraised of the progress for their participation, comments and advice.

The ARC will be provided with the opportunity to review the draft of the interagency MOA as they are developed and will provide input to the process as requested by UNOLS and the agencies.

RESEARCH IN REMOTE AREA - In view of the fact that ALVIN will not require overhaul for three years after it comes out of WHOI in early 1993, the ARC agreed that it might be timely to accommodate the desires of the scientific community to carry out research in remote areas. Jeff Fox and Feenan Jennings will prepare an announcement to be scribed and circulated by Jack Bash about the possibility of remote area operations and the fact that ARC and UNOLS might provide assistance to interested groups during the planning stage.

TECHNOLOGY WORKSHOP - It was decided that the two-day ALVIN technology workshop should not be scheduled until after UNOLS has established the new ARC Committee with its expanded membership to address submersible science. The workshop will discuss ALVIN's present technology capabilities, identify options for improving equipment and outline a long-term upgrading program.

ARCHIVES - Feenan sent a draft of the proposal prepared by WHOI for preserving the ALVIN Archives to the ARC members requesting their comments. Two members have responded and he will summarize all comments for WHOI.

The meeting was adjourned at 5:30 p.m.

ALVIN PLANNING MEETING

Sunday, December 8, 1991, 8:30 a.m. - 5:00 p.m.
Japanese Pavilion, Cathedral Hill Hotel
San Francisco, California

AGENDA

Welcome and Introduction: Feenan Jennings, ALVIN Review Committee Chair, will welcome attendees, describe goals for the meeting and set the agenda.

Engineering and Technology: Debra Stakes of the University of South Carolina will discuss the recent success in implementing an improved sampling tool on ALVIN. The sampler was used in the for collection of sulfides in her September cruise to the Juan de Fuca Ridge. The new tool utilizes an improved drill held by ALVIN's Schilling manipulator arm.

ALVIN Technology - Status and Directions for Development: Barrie Walden, WHOI will discuss recent upgrades in ALVIN technology, requirements for further developments and anticipated development. The present capabilities of ALVIN will be provided.

Review of ALVIN Program: Dick Pittenger, WHOI, will report on the findings of the ALVIN Program Review.

LUNCH

ALVIN/AII Operations in 1991 and Schedule for 1992. A brief report.

Agency and Program Management Office Reports: Agency remarks on the ALVIN Program as desired from ONR, NSF, and NOAA. Program management office remarks projecting ALVIN use as desired from appropriate program-management offices (NSF's RIDGE, ODP, Biological Oceanography, NOAA's VENTS).

Interest in Using ALVIN, 1993 and Beyond. Jeff Fox of the ALVIN Review Committee will distill recent intents of interest in using ALVIN/AII to suggest directions for ALVIN-supported research for 1993 and a few years beyond. Candidate itineraries will be presented for 1993. Prospective investigators will be invited to comment on suggested directions during the mid 1990's for ALVIN-supported research.

ALVIN REVIEW COMMITTEE EXECUTIVE SESSION

Submersible Science Subcommittee: The UNOLS Council has tasked ARC to form a subcommittee to address submersible science (undersea technology) and develop a charge for this subcommittee.

ALVIN Archives: An update on the ALVIN Archives will be provided.

MOA Update: An update on the NOAA-NSF-ONR tripartite Memorandum of Agreement for support of ALVIN will be provided.

ANNOUNCEMENT

The

ALVIN REVIEW COMMITTEE

Will hold an Open Meeting
To Generate Planning Information on

ALVIN-ATLANTIS II
DEEP SUBMERSIBLE SCIENCE
PROPOSED FOR 1993 AND BEYOND

Sunday, December 8, 1991
8:30 a.m. - 5:00 p.m.
Japanese Pavilion
Cathedral Hill Hotel
Van Ness & Geary
San Francisco, California

Everyone with an interest in the ALVIN program and in deep submersible technology is welcome. For further information and to submit Notices of Interest to Use ALVIN, contact:

Jack Bash
UNOLS Office
P.O. Box 392
Saunderstown, RI 02874

Telephone: (401) 792-6825
FAX: (401) 792-6486

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of institutions for the coordination and support of university oceanographic facilities.

October 29, 1991

Dear ALVIN Users:

This is to announce an ALVIN Review Committee Planning Workshop to be held just preceding the AGU Fall meeting: **December 8, 1991, 8:30 a.m.-5:00 p.m., Cathedral Hill Hotel, San Francisco, California.**

The ALVIN Review Committee is hosting an open Planning Meeting to gain information on which to recommend directions for ALVIN-supported research during the 1990's - - 1993 through 1996. In preparation for the meeting, the ARC solicits Notices of Interest in using ALVIN/ATLANTIS II at any time during the 1993-1996 period. Preferably, Notices should be submitted using the OMNET electronic bulletin board ALVIN.PLANNING, established to promote communications among ALVIN users and with the ARC. To access this board, just type COMPOSE ALVIN.PLANNING, then follow the menu. The bulletin board may be useful to interested scientists in determining what scientific disciplines and geographic areas are being proposed, with a view toward collaborative programs. Notices of interest may also be submitted by mail using the form attached to this announcement. The ARC will distill and summarize the interests submitted by prospective investigators, thereby suggesting directions for the ALVIN Program. For review at the Planning Meeting submit Notices to reach the UNOLS Office by November 20, 1991.

The ALVIN Review Committee is concerned that although ALVIN/ATLANTIS II has been and remains one of the most effective research facilities in the U.S. oceanographic program, it has not been fully subscribed since 1988. Limits to funding (for both science programs and facilities) together with fewer-than-usual requests for dives have left ALVIN only partially scheduled. At the same time, impressive manned submersible facilities have been developed internationally and are purportedly available to U.S. researchers. The ARC believes that only with enhanced planning, operational execution and development can the ALVIN/AII program remain in the forefront and help preserve U.S. leadership in undersea research. In addition to scientific planning, the technological aspects of the ALVIN operations will be discussed during the meeting.

The agenda for the December 8 meeting has been enclosed. If you have an interest in ALVIN and its future, we urge you to attend.

Sincerely yours,

for

Feenan D. Jennings
Chair, ALVIN Review Committee

Attachments: Announcement, ALVIN Planning Meeting
Agenda
Notice of Interest to Use ALVIN

P.O. Box 392
Saunderstown, RI 02874

Phone: (401) 792-6825
FAX: (401)792-6486

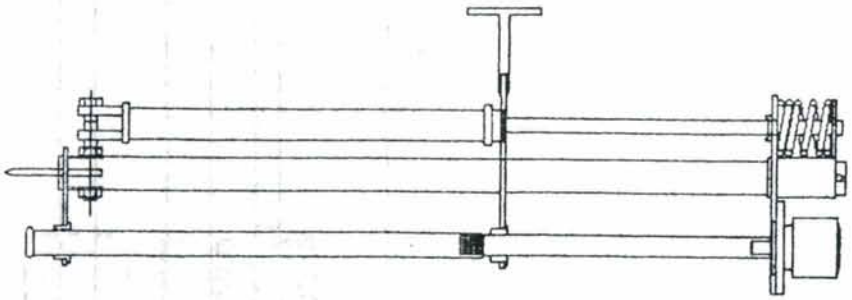
ALVIN PLANNING MEETING
ATTENDANCE LIST

Name	Organization
ALVIN Review Committee:	
Feenan Jennings	ARC Chair, Texas A & M
Dave Cacchione	ARC, USGS
Jeff Fox	ARC, URI
Casey Moore	ARC, Univ Calif S.C
Doug Nelson	ARC, UC Davis
Mary Scranton	ARC, SUNY
Gary Taghon	ARC, Rutgers
Karen Von Damm	ARC, Univ. Tenn/ORNL
Dick Pittenger	ARC ex-officio, WHOI
Federal Agency Representatives:	
Bob Embley	NOAA/PMEL
Bilal Hag	NSF
Don Heinrichs	NSF
Keith Kaulum	ONR 1121 RF
Bruce Malfait	NSF/ODP
LCDR Sam Nichols	USN, CDR Sub. Dev. Group One
Ned Ostenso	NOAA/OAR
Steve Ramberg	ONR N21
Lisa Rom	NSF

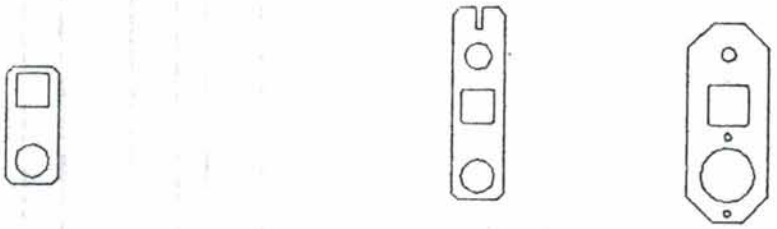
Name	Organization
Participants/Observers	
Jack Bash	UNOLS Office
Keir Becker	U. of Miami
Garry Brass	RSMAS/UNOLS Chair
Rick Chandler	WHOI
Dale Chayes	L-DGO
John Delaney	Univ of Wash
Annette DeSilva	UNOLS Office
John M. Edmond	MIT
Dan Fornari	L-DGO
Dudley Foster	WHOI
A. Mohamad Ghazi	Univ. of Nebraska
G. Leon Halloway	Univ. of Texas A & M - ODP
Chris Harrold	Montery Bay Aquarium
Kim Kastens	L-DGO

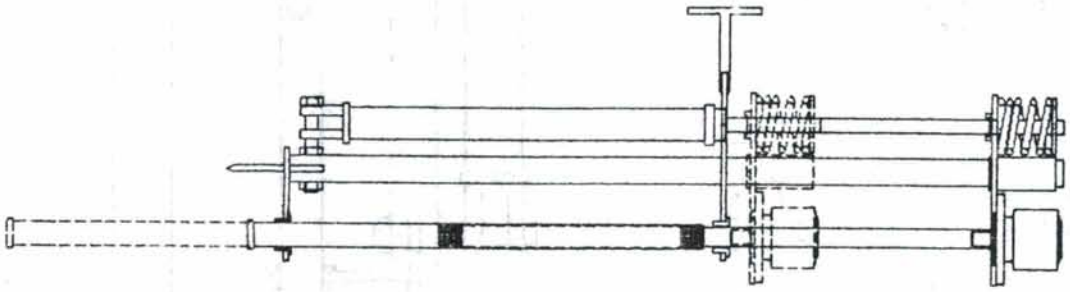
Rachel Haymon	Univ. of Cal.
Gary Klinkhammer	OSU
Randolph A Koski	USGS
Marvin Lilley	University of Washington
Rich Lutz	Rutgers Univ.
Yaeko Masuchi	COMB. Univ of MD
M. Perfit	Univ. of Florida
V. Robigou	Univ. of Wash.
Herouki Shizuya	Univ. of Southern Cal.
Debra Stakes	Univ of South Carolina
Dave Vanko	GA State U
Bob Vrijenhoek	Rutgers University
Barrie Walden	WHOI
Bob Wall	Univ. of Maine
Denis Wiesenburg	Texas A & M Univ.

SULFIDE CORER OPERATING POSITIONS



CORE DRILLING UNIT: RETRACTED POSITION

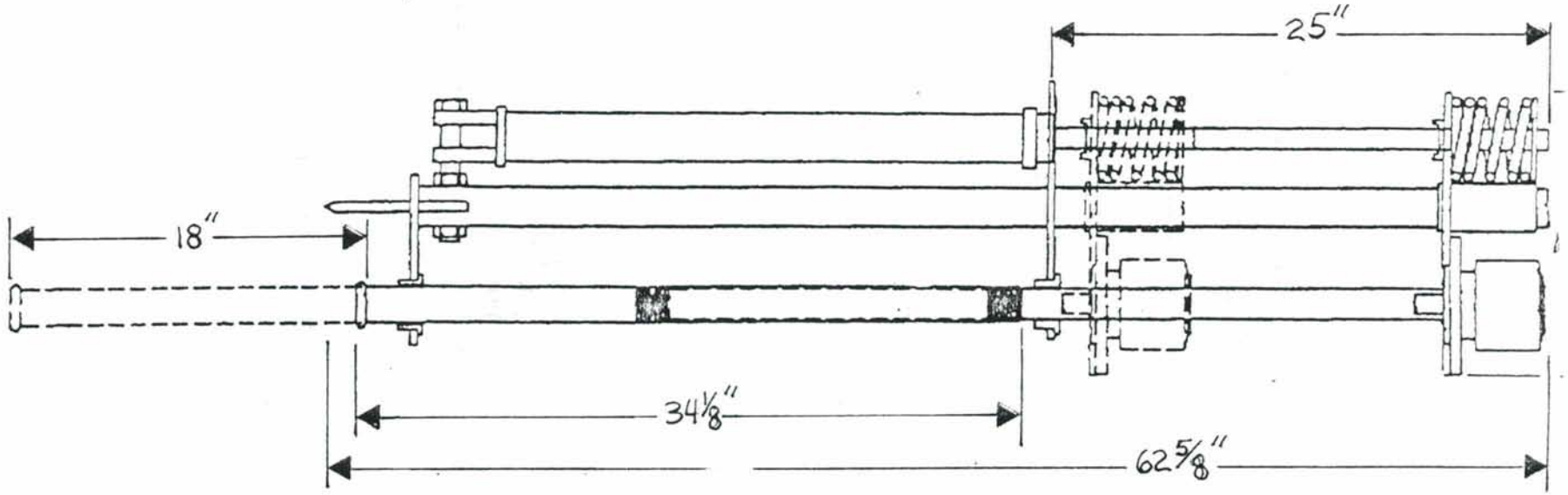




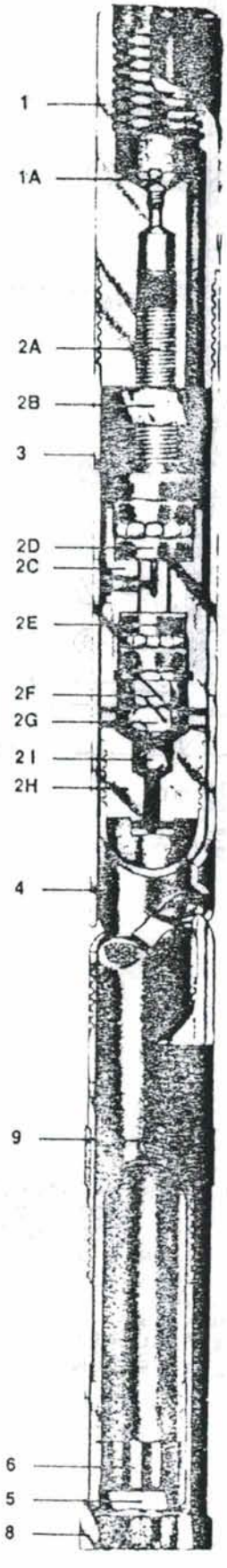
CORE DRILLING UNIT: EXTENDED POSITION (DASHED LINES)

SQUARE TUBING	17.5 LBS
SPRING	3.00 LBS
MOTOR	19.0 LBS
REAR GUIDE PLATE	7.5 LBS
MOTOR EXTENSION	12.50 LBS
MIDDLE GUIDE PLATE	5.00 LBS
CYLINDER	28.00 LBS
CORE BARREL	15.00 LBS
BUSHINGS	1.00 LBS
SPIKES	1.5 LBS
PIN	1.5 LBS
FRONT GUIDE PLATE	3.0 LBS
SYNTACTIC FOAM(DRY)	17.0 LBS
SYNTACTIC FOAM(WET)	-15.0 LBS

TOTAL WEIGHT
DRY 132.5 LBS
SUBMERGED 100.5 LBS



CORE BARREL INFORMATION



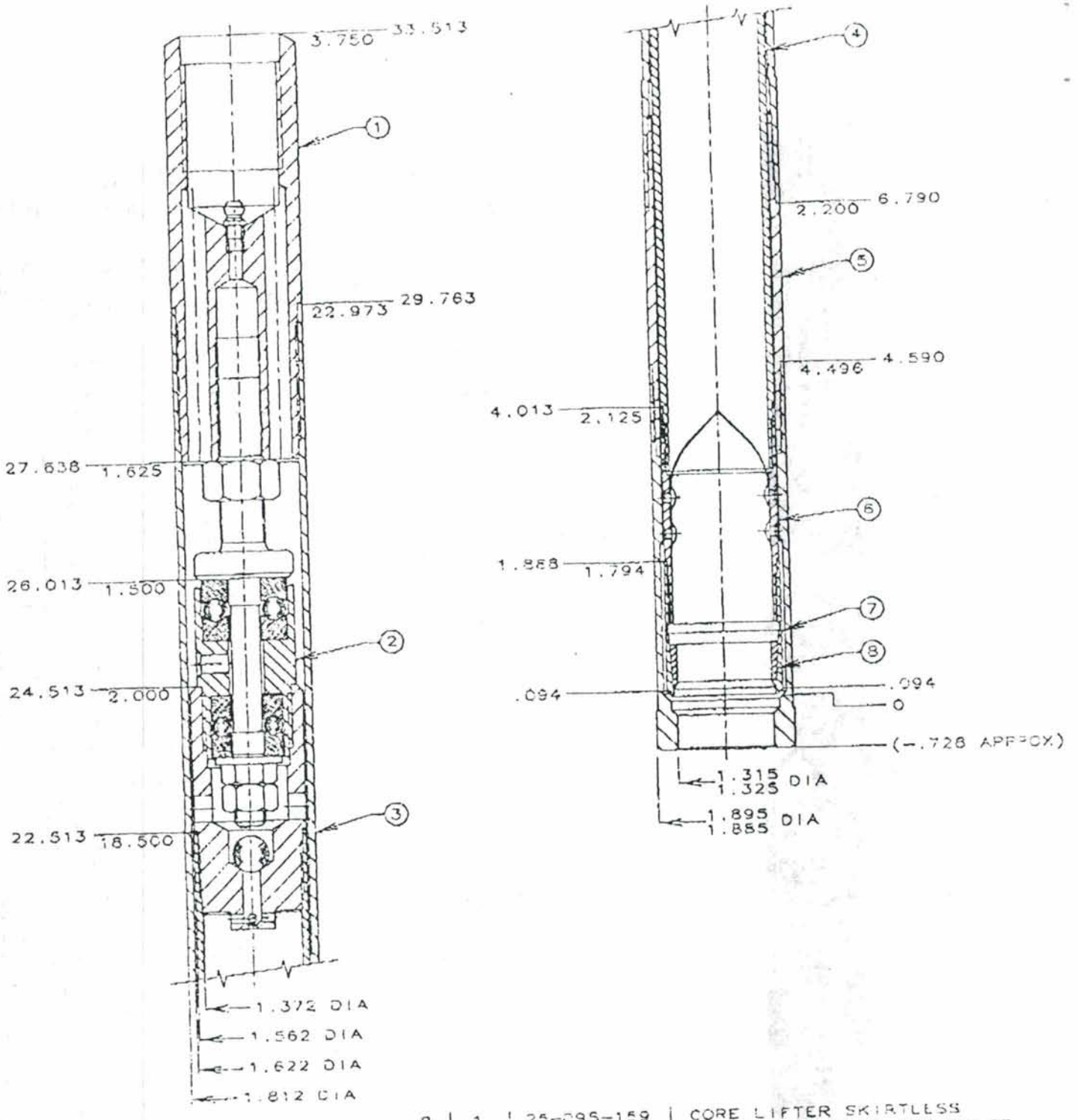
AW34 CORE BARREL

Inner Tube I.D. Chromed & O.T. Ends Laser Hard Faced

Hole Size	Core Size	Outer Tube O.D.	Outer Tube I.D.	Inner Tube O.D.	Inner Tube I.D.	Rod Connection
1.890 in	1.320 in.	1.812 in.	1.622 in.	1.562 in.	1.372 in.	AW 3 TPI
48.01 mm	33.53 mm	46.02 mm	41.20 mm	39.67 mm	34.85 mm	AWJ 5 TPI

PART DESCRIPTION	PART NUMBER	PRICE	WEIGHT
Core Barrel Assembly 5 foot			
(5 Foot 1524 mm Complete)	025-316-011	$ 513.75	23-00
1. Core Barrel Head, AW Rod	025-192-089	113.25	2-02
Core Barrel Head AWJ Rod	upon request	113.25	2-02
A. Grease Fitting	006-041-016	1.50	-01
2. Bearing Assembly	025-085-093	177.75	2-05
A. Bearing Shaft	025-089-012	61.75	-07
B. Lock Nut	006-015-192	1.50	-02
C. Bearing Retainer	025-092-016	39.50	-06
D. Bearing, Thrust Ball, Upper	025-093-014	11.75	-03
E. Bearing, Thrust Ball, Lower	025-093-022	14.75	-02
F. Hex. Nut, Flanged	006-042-139	2.25	-01
G. Hex. Nut, Regular	006-015-176	1.25	-01
H. Inner Tube Connector	025-081-092	75.50	-15
I. Stainless Steel Ball	006-043-111	1.00	-02
3. Outer Tube, 5 Foot, C.P. Ends	025-309-016	103.50	9-01
4. Inner Tube, 5 Foot, C.P. ID	025-241-019	88.50	7-07
5. Inner Tube Shoe, BW, C.P. ID	025-097-122	19.75	-02
6. Core Lifter, Skirtless	025-095-159	10.25	-02
7. Thread Protector Sub	025-105-156	47.75	1-01

OPTIONAL EQUIPMENT			
8. Core Bit See Diamond Bit Price List			
9. Reaming Shell Sub-Plain	025-197-138	77.00	-05
Reaming Shell Sub "Laser Hard Faced"	025-195-116	109.25	-06
Reamer Shell Diamond RSG 1.890	020-245-431	194.50	-12
10. Blow Out Plug	025-104-134	99.75	-12
11. Outer Tube Extension 5 Foot	025-372-012	145.50	9-01
Outer Tube Extension 10 Foot	025-372-020	200.75	17-15
12. Inner Tube Extension 5 Foot	025-371-014	118.50	7-07
Inner Tube Extension 10 Foot	025-371-022	169.50	14-10
Core Barrel Assembly 2 Foot	025-316-084	upon request	
2. Outer Tube, 2 Foot	025-309-089	upon request	
3. Inner Tube, 2 Foot	025-241-084	upon request	
Core Barrel Assembly 10 Foot			
1. 10 Foot 3048 mm	025-316-029	582.50	38-08
2. Outer Tube, 10 Foot, C.P. Ends	025-309-024	130.00	17-15
3. Inner Tube, 10 Foot, C.P. ID	025-241-027	124.75	14-10

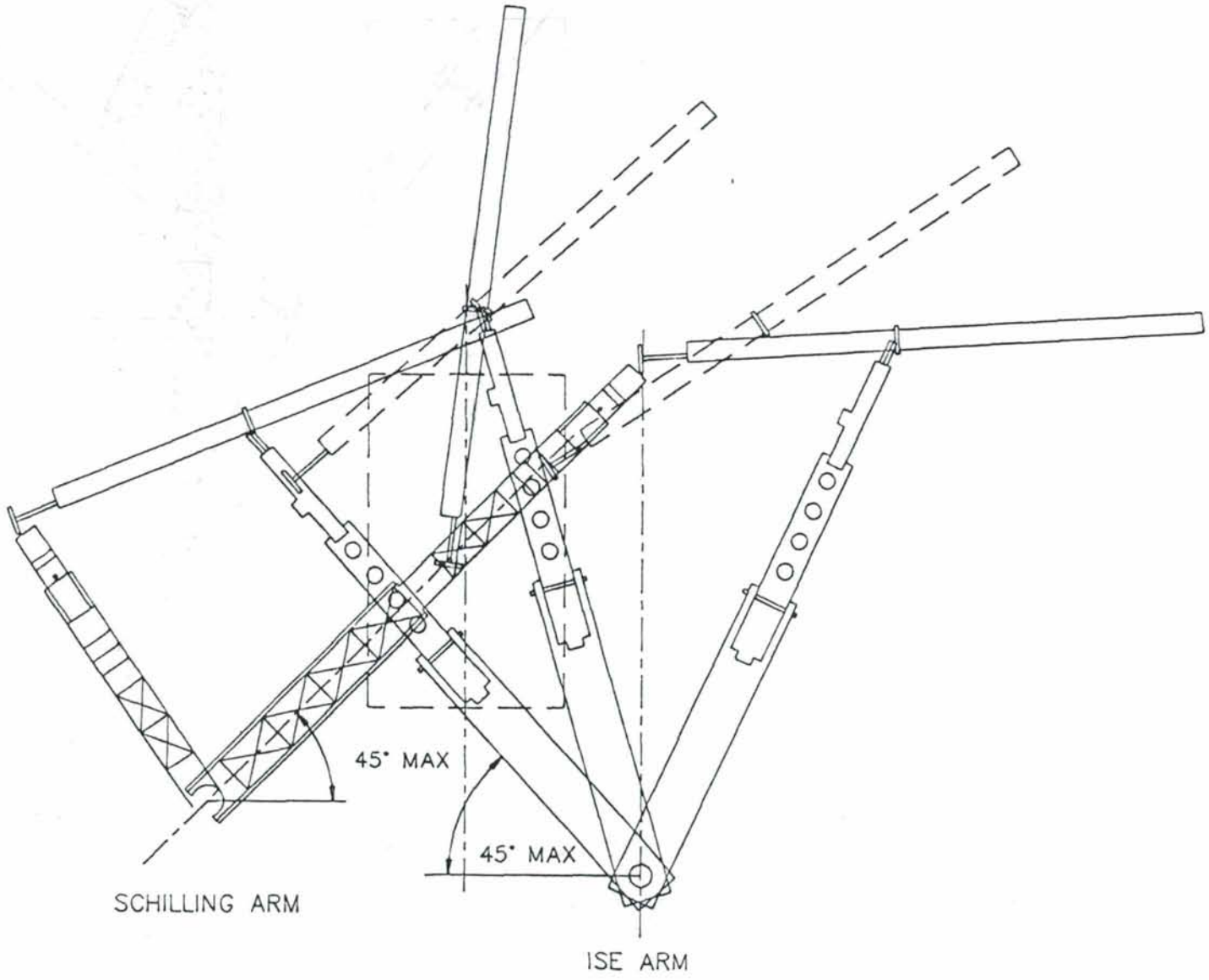


NO.	QTY	PART NO.	DESCRIPTION
8	1	25-095-159	CORE LIFTER SKIRTLESS
7	1	25-097-122	INNER TUBE SHOE STD BW CP
6	1	25-597-998	INNER TUBE SHOE SOFT FORMATION
5	1	25-197-138	REAMING SHELL SUB
4	1	25-597-980	INNER TUBE
3	1	25-597-972	OUTER TUBE
2	1	25-055-093	BEARING ASSY
1	1	25-192-059	CORE BARREL HEAD AW ROD CONN.

MANIPULATOR WORK AREA WITH SULFIDE CORER

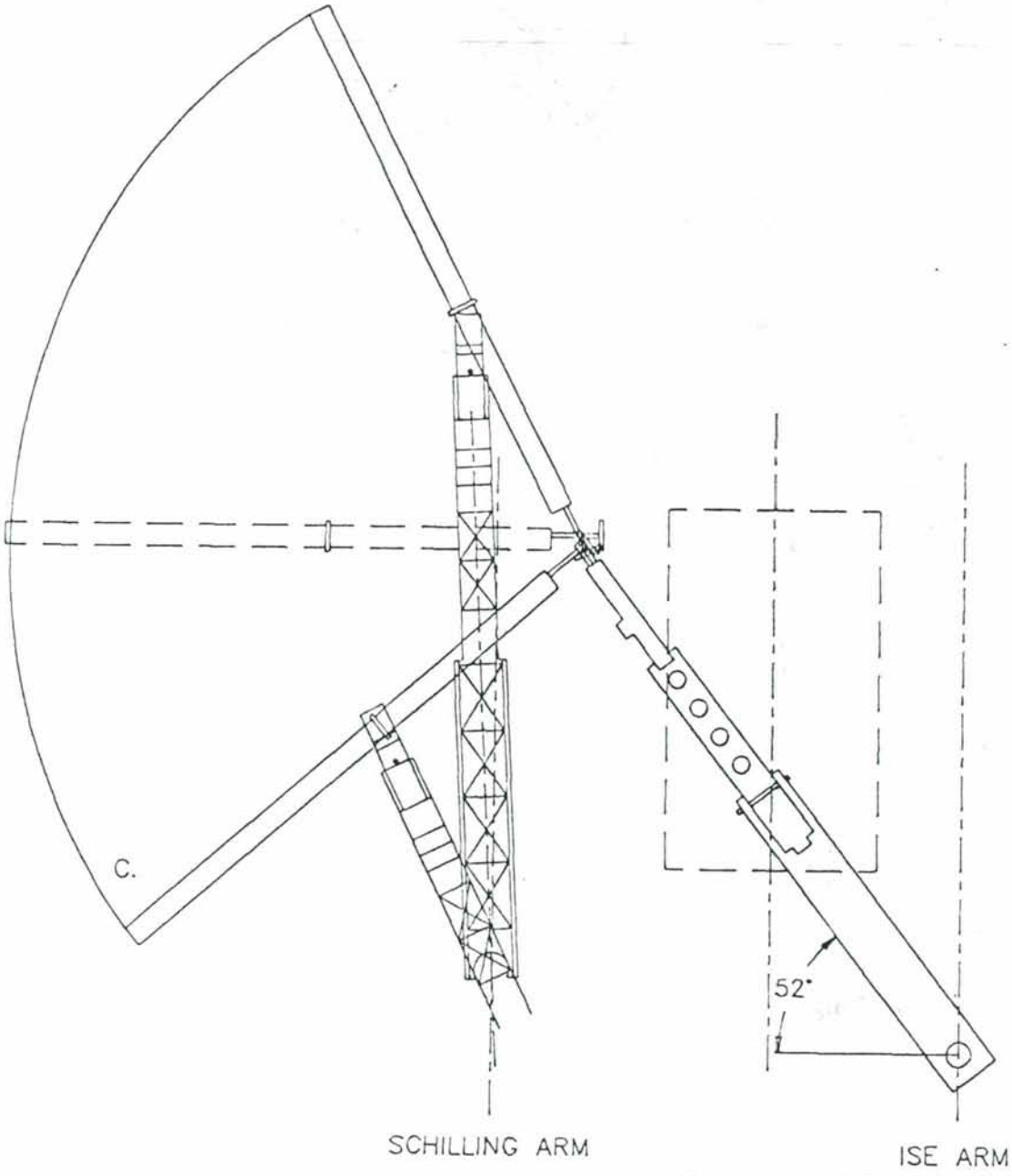
OPTION 2: MANIPULATOR WORK AREAS

(HOLD MID BARREL W/ISE ARM)



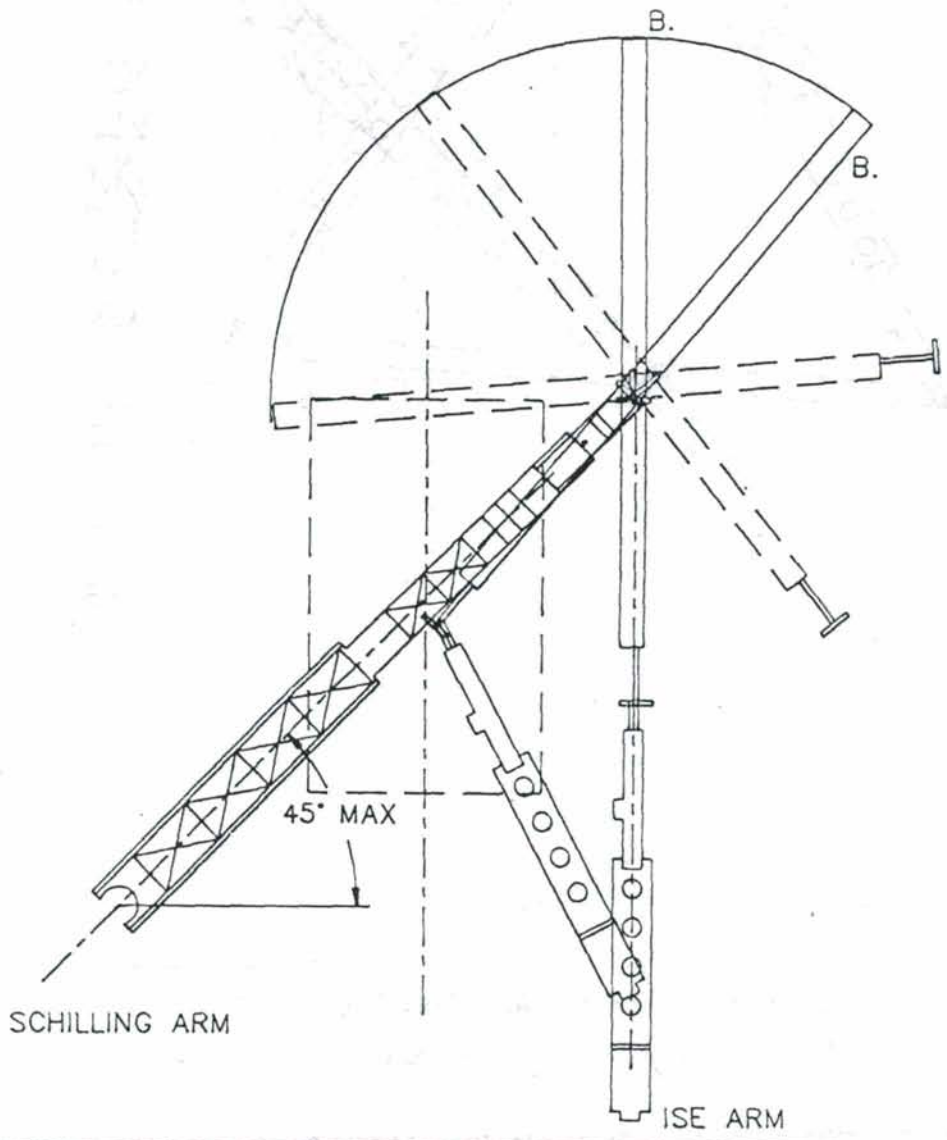
OPTION 1: MANIPULATOR WORK AREA W/ISE ARM FULLY EXTENDED ON MAX ANGLE

(HOLD MID-BARREL W/SCHILLING ARM)



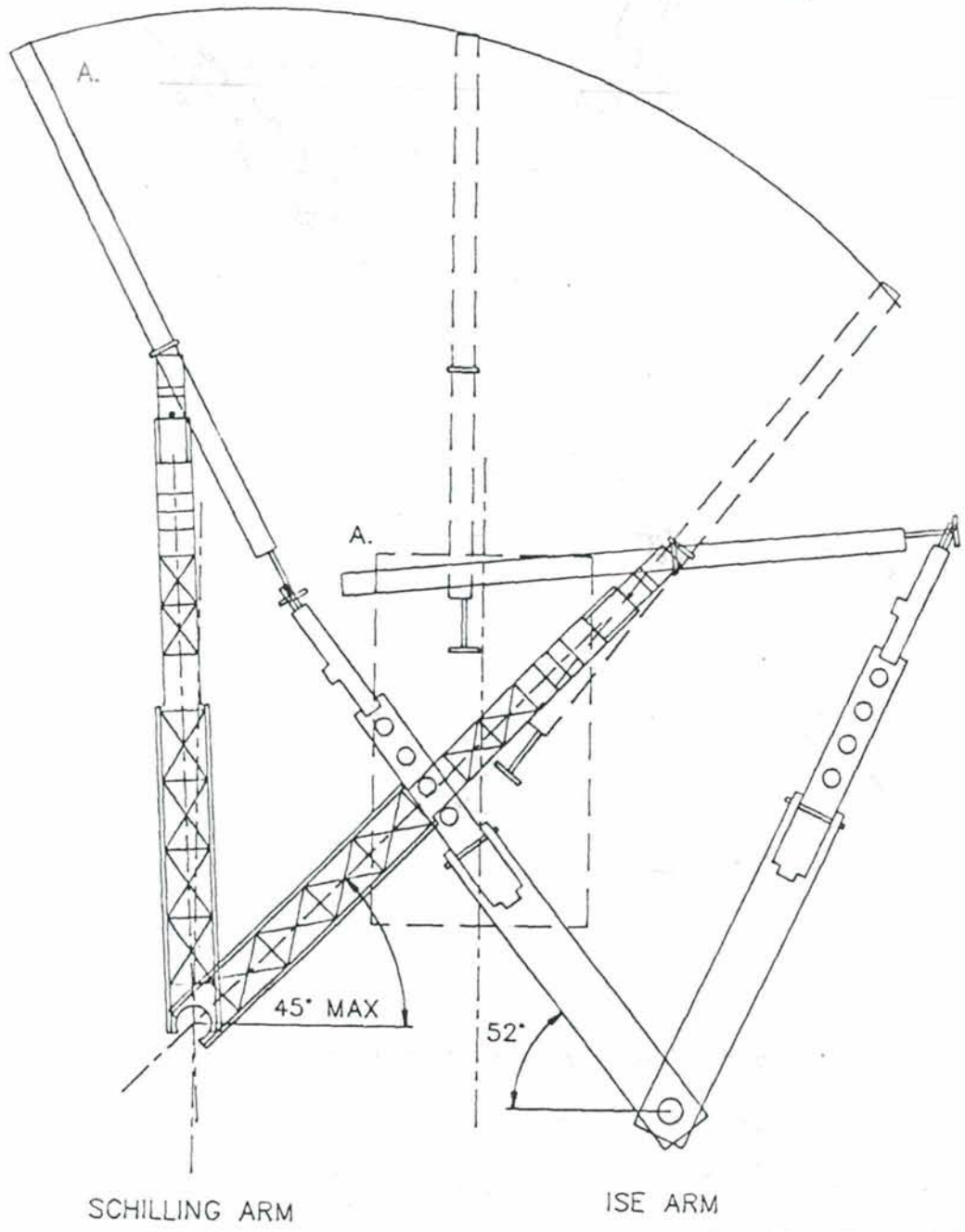
OPTION 1: MANIPULATOR WORK AREA W/SCHILLING ARM FULLY EXTENDED ON MAX. ANGLE

(HOLD MID-BARREL W/SCHILLING ARM)



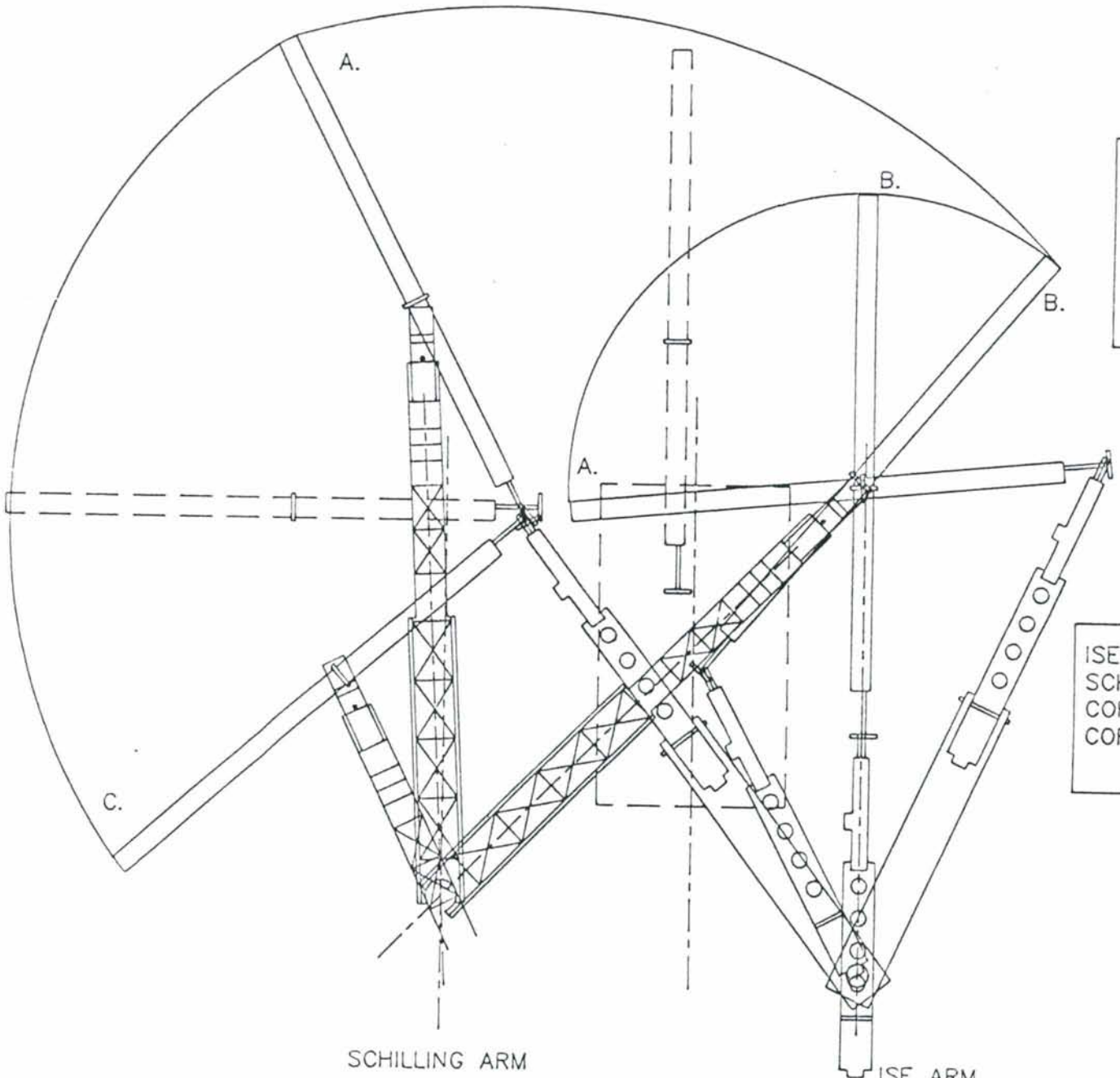
OPTION 1: MANIPULATOR WORK AREA W/ISE ARM FULLY EXTENDED

(HOLD MID-BARREL W/ SCHILLING ARM)



OPTION 1: MANIPULATOR WORK AREA OVERVIEW

(HOLD MID-BARREL W/SCHILLING ARM)



ARM POSITIONS

A: ISE ARM FULLY EXTENDED

B. SCHILLING ARM FULLY EXTENDED ON MAX. ANGLE

C. ISE ARM FULLY EXTENDED ON MAX ANGLE

ISE ARM: 69" MAX EXTENSION
SCHILLING ARM: 74" MAX EXTENSION
CORE BARREL OAL: 68"
CORE BARREL WEIGHT: 125 LBS. DRY
85 LBS. WET

HYDRAULIC HAREWARE

110A SERIES
LOW SPEED HIGH TORQUE HYDRAULIC MOTORS

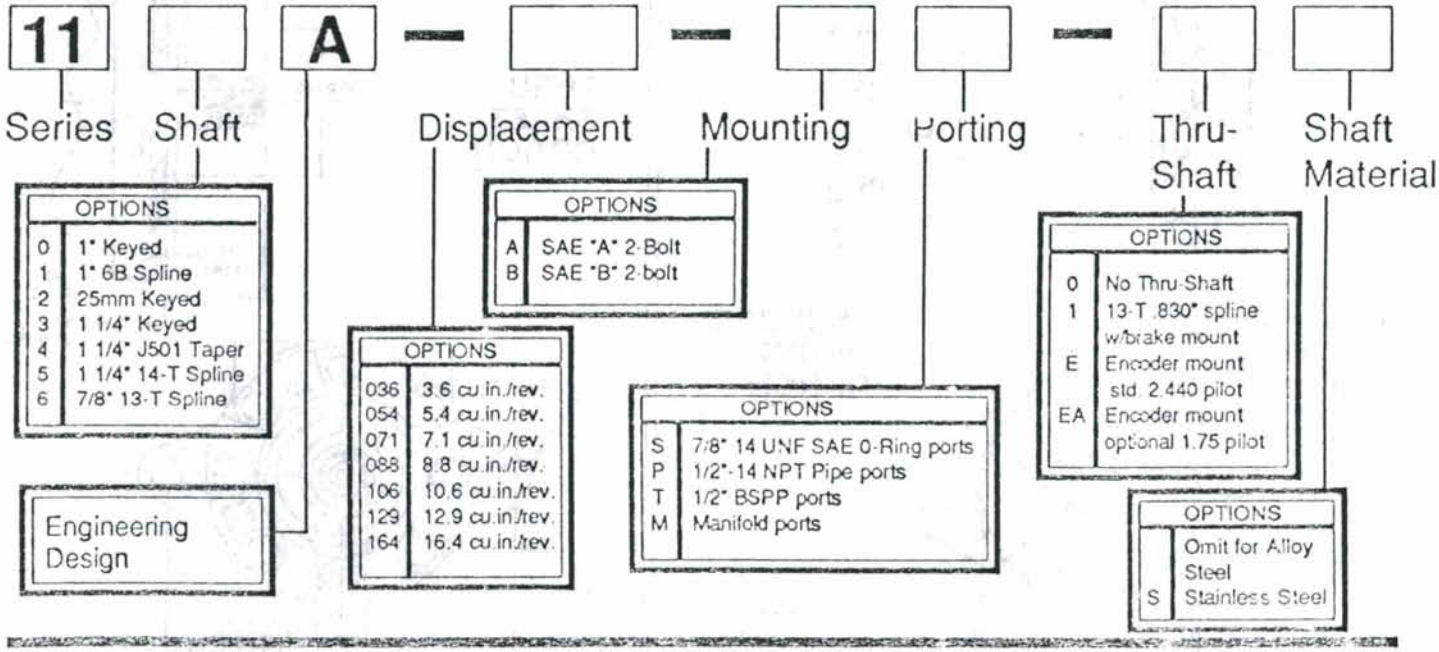
Parker Fluidpower

Specifications		036	054	071	088	106	129	164
DISPLACEMENT	cu.in./rev.	3.6	5.4	7.1	8.8	10.6	12.9	16.4
	(cu.cm./rev.)	(59)	(89)	(116)	(144)	(174)	(211)	(270)
SPEED (rpm) @ MAX. CONTINUOUS FLOW		782	785	608	499	403	339	270
PRESSURE DIFFERENTIAL (psi)								
MAX. CONTINUOUS		3000	3000	3000	3000	2750	2750	2500
MAX. INTERMITTENT		3500	3500	3500	3500	3500	3500	3250
MAX. TORQUE (lbs.in.)								
@ MAX. CONTINUOUS PRESSURE		1375	2129	2915	3593	4251	4729	5462
@ MAX. INTERMITTENT PRESSURE		1664	2543	3401	4192	5019	6108	7247

NOTES:

1. Intermittent operation is defined as less than 10% of each minute.
2. Maximum transient pressure, defined as less than 1% of each minute, is not to exceed 4000 psi.
3. (25) micron filtration with a beta ratio of 2 is recommended.
4. Maximum permitted oil inlet temperature is 180° F.
5. Maximum shaft thrust load capacity is 1000 lbs. inward or outward.
6. Thru-Shaft torque limitation is 3600 lbs.in. static, 3000 lbs.in. dynamic.
7. 1" keyed, 25mm keyed and 7/8" 13-T splined shafts are not recommended for use when torque exceeds 3000 lbs.in.. For torque over 3000 lbs.in., use of the 1" 6 B spline is recommended.
8. For optimum performance and life, motor should run in for approximately 15 minutes at no load and midflow conditions.
9. Performance data is based on Mobil DTE 26 oil at 120° F. (180 SSU) Performance will vary with fluid conditions. Lower viscosity will produce lower performance.
10. For continuous back pressure over 1000 psi consult factory.
11. When using a Thru-Shaft, consult factory if radial load on Thru-Shaft is over 400 lbs.

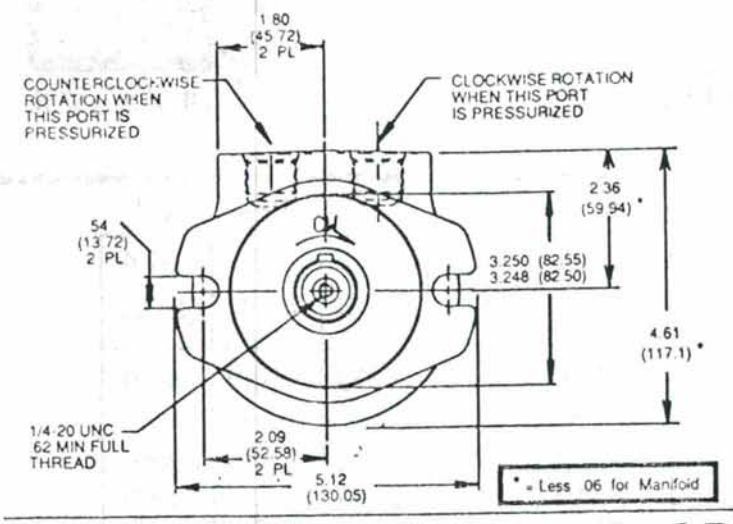
ORDERING INFORMATION



Parker Hannifin Corporation
Nichols Motor Division
Box 900, Gray, ME 04039
(207) 657-3343
FAX. (207) 657-2498

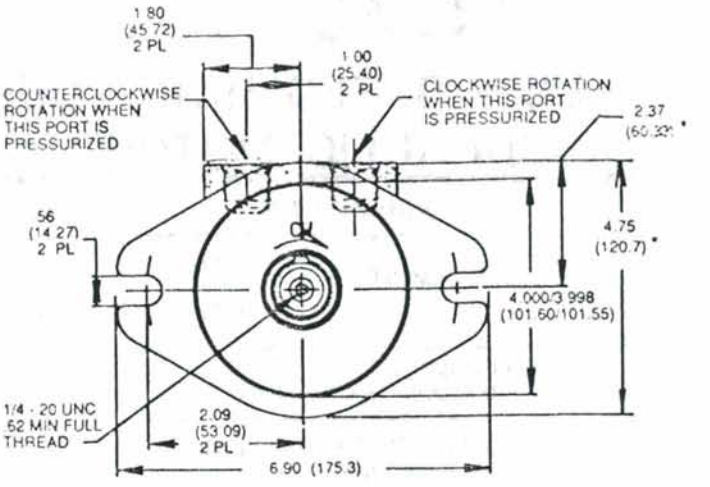
MOUNTING

SAE "A" FLANGE

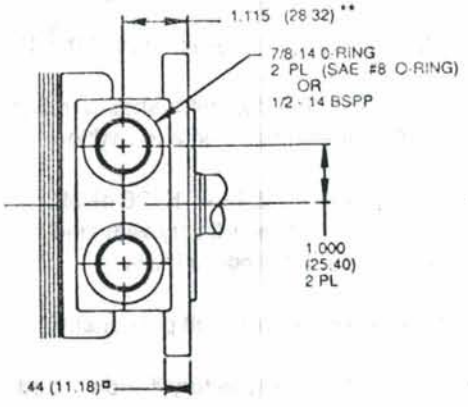


* = Less .06 for Manifold

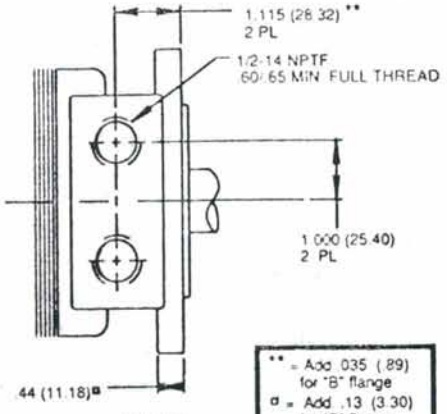
SAE "B" FLANGE



PORT OPTIONS

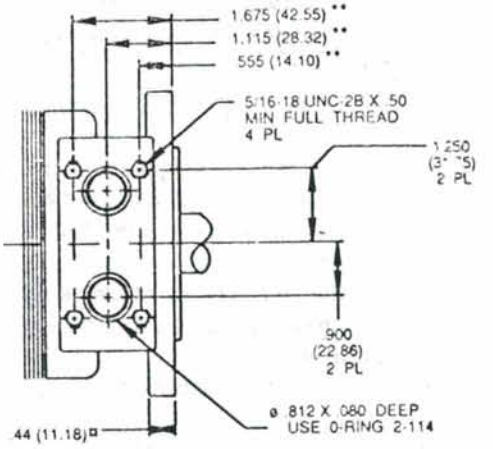


SAE O-RING & BSPP

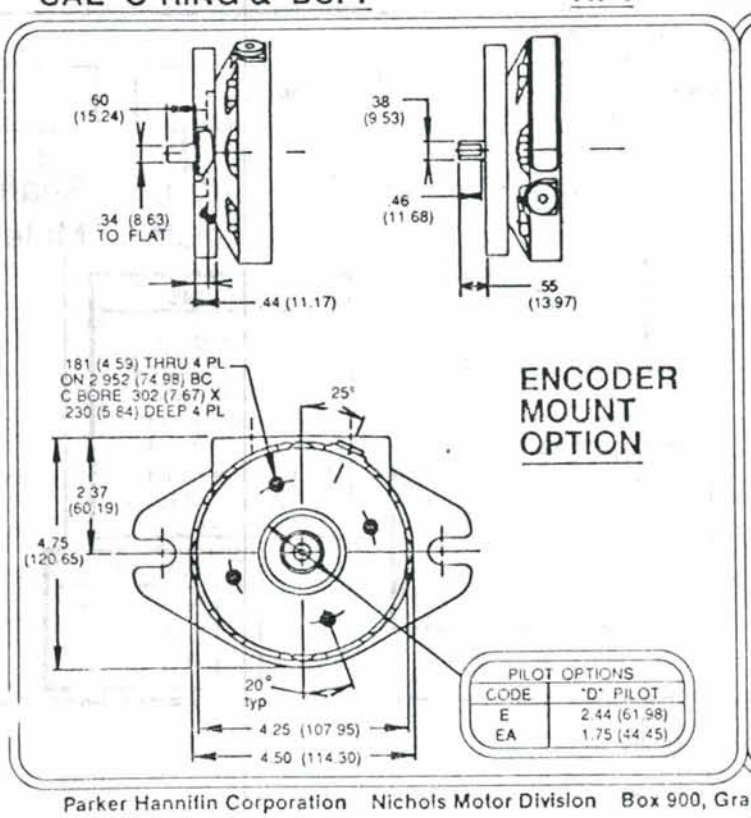


NPT

** = Add .035 (.89) for "B" flange
¤ = Add .13 (3.30) for "B" flange



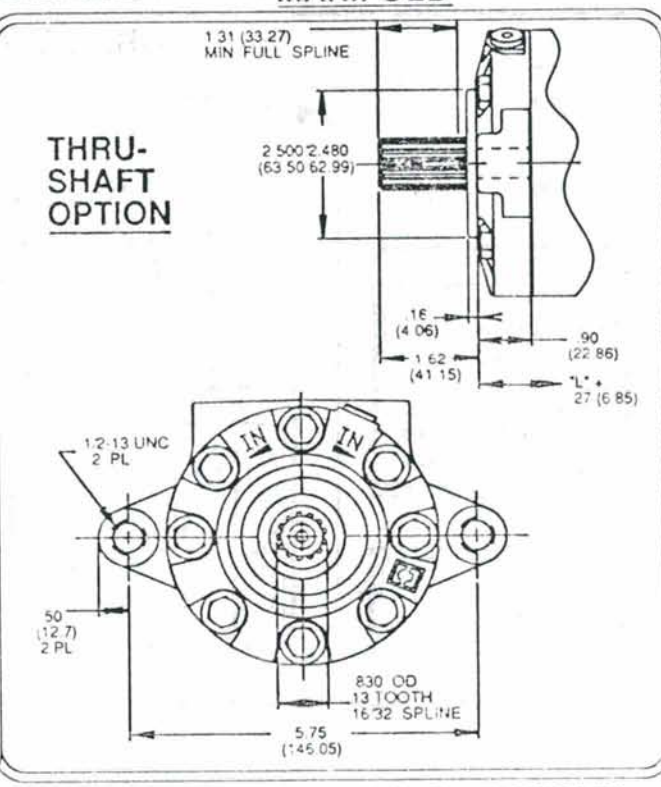
MANIFOLD



ENCODER MOUNT OPTION

PILOT OPTIONS	
CODE	"D" PILOT
E	2.44 (61.98)
EA	1.75 (44.45)

THRU-SHAFT OPTION



Parker Hannifin Corporation Nichols Motor Division Box 900, Gray, ME 04039 Telephone (207) 657-3343 Fax. (207) 657-2498

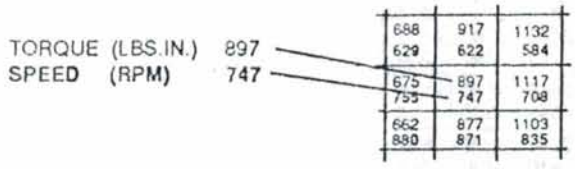
11UA SERIES PERFORMANCE DATA

CONTINUOUS / INTERMITTENT OPERATION

	With No Side Load	With Rated Side Load
☐ =	CONTINUOUS	CONTINUOUS
☐ =	CONTINUOUS	INTERMITTENT
☐ =	INTERMITTENT	

Intermittent operation is defined as less than 10% of each minute.

PERFORMANCE DATA BASED ON TESTING WITH MOBIL DTE 26 @ 120 ° F (180 SSU)



5.4 in.³ /rev.

	PRESSURE (PSI)						
	500	1000	1500	2000	2500	3000	3500
2	365 86	716 83	1051 80	1368 72	1635 58		
4	365 171	713 167	1076 164	1407 153	1700 134	1957 101	2134 60
6	361 257	722 253	1100 250	1445 244	1765 226	2055 198	2278 171
8	361 342	713 338	1057 334	1419 329	1731 309	2020 278	2237 247
10	361 428	713 424	1057 419	1392 415	1697 396	1985 366	2196 332
12	331 513	679 508	1038 503	1382 498	1697 480	2011 450	2316 408
14	318 599	653 593	1019 587	1372 581	1732 566	2129 536	2543 488
16	309 684	636 678	987 671	1335 664	1700 645	2091 618	2491 566
18	281 770	600 762	955 755	1298 747	1668 724	2052 701	2438 647
20	264 856	567 849	880 843	1220 830	1581 804	1947 785	2235 729
22	247 942	541 936	824 931	1390 913	1593 885	2026 871	2423 813

FLOW (GPM)

3.6 in.³ / rev.

	PRESSURE (PSI)						
	500	1000	1500	2000	2500	3000	3500
2	244 128	473 124	688 119	882 105	1031 82		
4	238 257	471 251	700 245	905 226	1067 193	1203 139	1293 87
6	232 385	470 381	713 [illegible]	928 362	1103 331	1255 289	1344 250
8	226 513	461 508	700 503	922 490	1117 454	1289 403	1404 359
10	221 642	453 635	688 629	917 622	1132 584	1324 526	1464 481
12	216 770	443 762	675 755	897 747	1117 708	1349 651	1564 601
14	212 898	433 889	662 880	877 871	1103 835	1375 782	1664 728
16	201 1027	415 1016	640 1006	854 996	1074 955	1306 903	1584 852

FLOW (GPM)

7.1 in.³/ rev.

	PRESSURE (PSI)						
	500	1000	1500	2000	2500	3000	3500
2	480 65	949 63	1407 62	1853 56	2260 47		
4	480 130	994 128	1492 125	1989 118	2430 105	2848 83	3243 47
6	458 195	972 192	1483 189	1966 187	2458 176	2915 154	3322 133
8	446 260	961 258	1475 255	1966 251	2458 239	2915 219	3362 193
10	424 325	927 322	1449 319	1944 316	2444 306	2915 290	3382 260
12	412 390	904 387	1407 383	1921 379	2444 371	2898 353	3391 316
14	396 455	859 451	1373 656	1876 442	2373 437	2882 419	3401 374
16	379 521	825 515	1339 510	1853 505	2345 497	2848 482	3342 429
16	362 586	791 580	1288 574	1785 568	2317 556	2814 545	3283 486
20	339 651	757 644	1237 638	1763 631	2288 618	2780 608	3243 543
22	305 716	701 709	1187 701	1740 694	2232 680	2746 673	3243 601

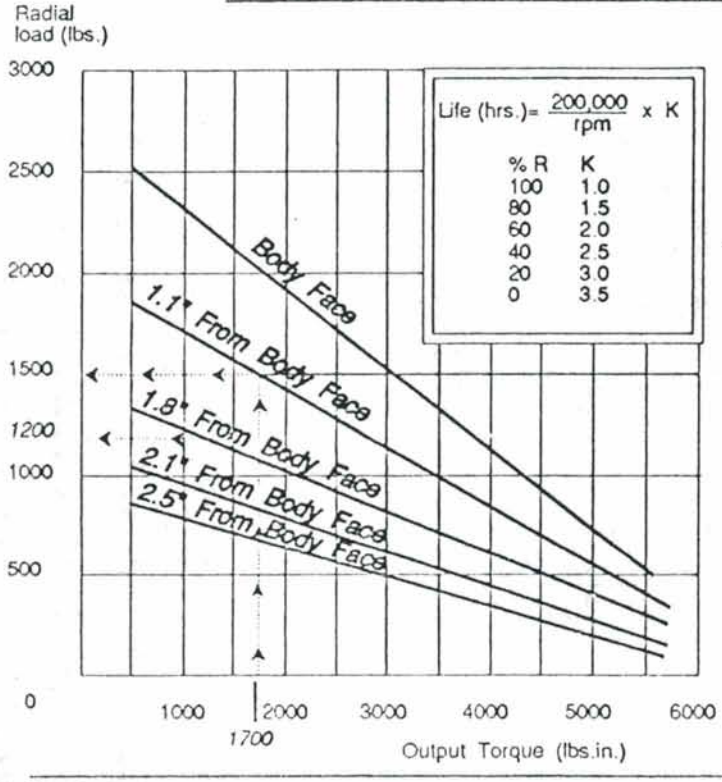
FLOW (GPM)

16.4 in.³ / rev.

PRESSURE (PSI)

FLOW (GPM)	500	1000	1500	1750	2000	2250	2500	2750	3000	3250
2	1155 28	2323 27	3406 26	3928 25	4437 24	4954 23	5462 22	5986 21	6507 20	7020 19
4	1122 56	2297 55	3414 54	3963 53	4505 51	5023 49	5530 48	6065 46	6597 44	7124 43
6	1088 85	2271 84	3422 83	3997 82	4573 80	5092 79	5599 77	6144 74	6687 72	7227 70
8	1047 113	2232 112	3394 110	3963 109	4531 108	5071 106	5605 104	6164 101	6722 98	7247 95
10	1005 141	2193 139	3367 138	3928 137	4489 135	5051 133	5612 131	6184 128	6758 125	
12	955 169	2061 167	3318 166	3888 164	4463 163	5021 161	5579 158	6141 155		
14	904 197	2086 195	3269 193	3878 192	4437 191	4998 188	5547 185	6072 181		
16	861 225	1925 223	3191 221	3763 219	4346 217	4908 215	5475 212			
18	818 254	1879 251	3113 248	3677 246	4255 243	4827 241				
20	783 282	1853 279	3015 276	3577 273	4155 270	4733 268				
22	718 310	1710 307	2721 304	3209 301	3706 297	4170 294				
25	672 352	1626 349	2596 345	3068 342	3550 338	4038 335				
30	596 423	1488 418	2388 414	2832 410	3289 406	3817 401				

MAXIMUM RADIAL LOAD CAPACITY



EXAMPLE

Load 1.1" from body face
Torque = 1700 lbs.in.
Actual radial load 1200 lbs. @ 100 rpm

From the graph:
Max. radial load = 1500 lbs.

Therefore %R = 1200 / 1500 = 80%

From Table: K = 1.5

Calculation

Life = 200,000 / 100 rpm x 1.5 = 3000 hrs.

NOTICE:

This and other information from Parker provide product or system options for consideration by users having technical expertise. Before you select or use any product or system, it is important that you analyze all aspects of your application and review the information concerning the product in the current catalog. Users, through their own analysis and testing, are solely responsible for making final selections of system and components and assuring that all performance, safety and warning requirements of the application are met.

GENERAL INSTALLATION AND OPERATING INFORMATION

1. RECOMMENDED OPERATION CONDITIONS - Refer to current product catalogs for detailed operating limitations and performance data.

2. FLUID - To insure maximum motor performance and component life, use premium quality hydraulic oils. Fluids with effective quantities of anti-wear agents or additives are highly recommended. If using synthetic based fluids consult factory for alternative seal materials.

   - Minimum oil viscosity - 50 SUS LSHT Motors
     70 SUS High Speed Motors
   - Maximum permitted oil temperature - 180° F
   - Minimum recommended oil filtration - 25 Micron, B-2

3. INSTALLATION RECOMMENDATIONS

   - To avoid contamination do not remove plastic port plugs until fittings are to be installed.
   - Motor mounting flange must make full contact with equipment mount; do not use the mounting bolts to force the motor pilot into the pilot hole or align the motor.
   - Pulleys, sprockets, wheels, or couplings should be properly aligned on the shaft to avoid excessive radial or thrust loads. To avoid damaging the thrust system do not hammer on motor or shaft to install or remove them.
   - 1" key and 7/8" spline shafts are not recommended for output torques exceeding 3000 lbs. in.

4. MOTOR CAUTION - HYDRAULIC MOTORS ARE NOT DESIGNED TO SUSPEND OR LOCK LOADS. IF APPLICATION REQUIRES A FAIL SAFE LOCKED POSITION A MECHANICAL HOLDING DEVICE (I.E., BRAKE) MUST BE USED.

5. RUN-IN - For optimum performance and life, a 15 minute run-in period at no load and mid-flow conditions is recommended. Do not subject system to full load until air has been bled from the hydraulic system and all contamination particles have been filtered out.

6. OTHER OPERATING CONDITIONS - For conditions exceeding either these recommendations or current catalog ratings consult the factory.

⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

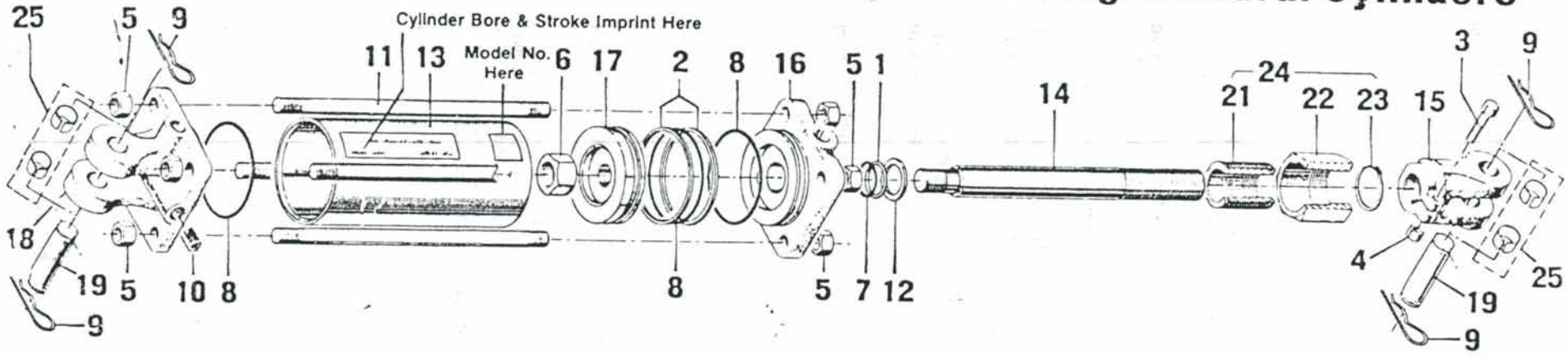
This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

"WARNING: THIS PRODUCT MAY CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM.

This warning is given in compliance with California Proposition 65, as detectable amounts of chemicals subject to Proposition 65 may be contained in this product."

Illustrated Replacement Parts List for Hydro-Line Agricultural Cylinders



Item No.	Description	Quantity
RC- 1	Back up washer (rod)	1
RC- 2	Back up washer (piston)	2
RC- 3	Clevis bolt	1
RC- 4	Nut (clevis bolt)	1
RC- 5	Nut (tie rod)	8
RC- 6	Nut (piston)	1
RC- 7	O-ring (rod seal)	1
RC- 8	O-ring (piston & tube seal)	3
RC- 9	Pin clip	4
RC-10	Pipe plug (steel)	1
RC-11	Tie rod	4
RC-12	Rod wiper	1
RC-13	Tube	1

Item No.	Description	Quantity
RC-14	Piston rod	1
RC-15	Clevis	1
RC-16	Head	1
RC-17	Piston	1
RC-18	Base	1
RC-19	Clevis pins (rod & base)	2
RC-20	Seal kit (consists of items 1, 2, 7, 8 & 12)	
RC-21	Outside stop collar	1
RC-22	Inside stop collar	1
RC-23	Retaining ring	1
RC-24	Mechanical depth stop assembly.	1
RC-25	Hardened clevis insert (optional)	2 ea. end

To order replacement parts, contact your nearest Hydro-Line Distributor and furnish the following information

- Item Number
- Description
- Quantity
- Cylinder Bore & Stroke (see label on tube) - shown above for location
- Model Number (stamped on O.D. of tube) shown for location

Warranty

Our products are warranted for 1 year from date of shipment to be free from defects in workmanship and materials. Our limit of liability under this warranty (which excludes all other warranties, either express or implied) is limited to replacing, free of charge, the particular item which our inspection discloses to have been defective at time of shipment. Inspection may be at the place of installation and use or at our plant if its return to us at our expense is requested. Notice of alleged defect and opportunity for inspection must be given us within 1 year from date of shipment.

The seller hereby certifies that the prices and terms and conditions of sale of the above listed commodities are in conformity with the applicable regulations and orders issued under the Defense Act of 1950. The products and/or services covered by this invoice have been produced in full compliance with the requirements of the Fair Labor Standards Act of 1938, as amended.

FEMA

HYDRO-LINE MANUFACTURING CO.
4950 Marlin Drive, Rockford, Illinois 61130-2045
815/654-9050 Telex 25-7446

383 25M Printed in U.S.A.

HYDRO-LINE AGRICULTURAL CYLINDER MAINTENANCE DATA

Rod, Piston and Tube Seal Replacement

Service of rod, piston, or tube seals requires the disassembly of the cylinder. Care should be taken to insure that the internal pressure in the cylinder is relieved prior to disassembly. Once the pressure is relieved, the following procedure should be followed.

1. Remove both clevis pins (cap end and rod) and lift cylinder out of implement mount.
2. Remove four (4) tie rod nuts from cap and pull cap off the cylinder assembly. This will expose tube seal at cap end.
3. Remove O-ring from groove on cap and replace with new seal.
4. Pull tube off of the piston/rod assembly. This will expose the piston seal and tube seal at head end of cylinder.
5. Remove O-rings from piston and head and replace with new seals.
6. If the rod seal must be replaced, then remove the piston nut from the rod and take the piston off the rod.
7. Withdraw piston rod thru head until rod is free of head.
8. Remove rod seal O-ring from inside groove in head and replace with new seal.
9. Slide piston rod thru head carefully, and check to insure that rod seal has not been nicked or cut (i.e. look for rubber debris on piston rod).
10. Assemble piston to rod and torque piston nut to level shown in Table I.
11. Reassemble cylinder and torque tie rods to values shown in Table I.

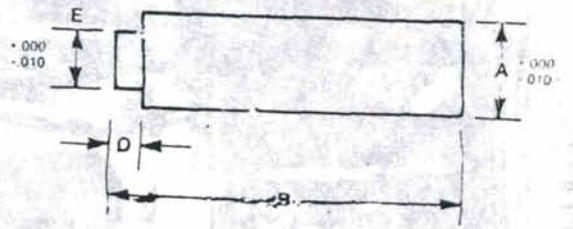
Table I
Agriculture Cylinder Specifications

Cylinder Bore	Pressure Ratings Working (psi)	Stock	Tie Rod Nut Torque (ft. lb.)	Piston Nut Torque (ft. lb.)
2	2500	4000	20-25	35-40
2-1/2	2500	4000	30-35	60-70
3	2500	4000	70-80	80-95
3-1/2	2500	4000	85-105	150-160
4	2500	4000	130-140	180-210
5	2500	4000	175-200	270-300

Rod/Cap Clevis Insert Replacement

If the cylinder has hardened inserts in either the cap or rod clevis these can be replaced as follows:

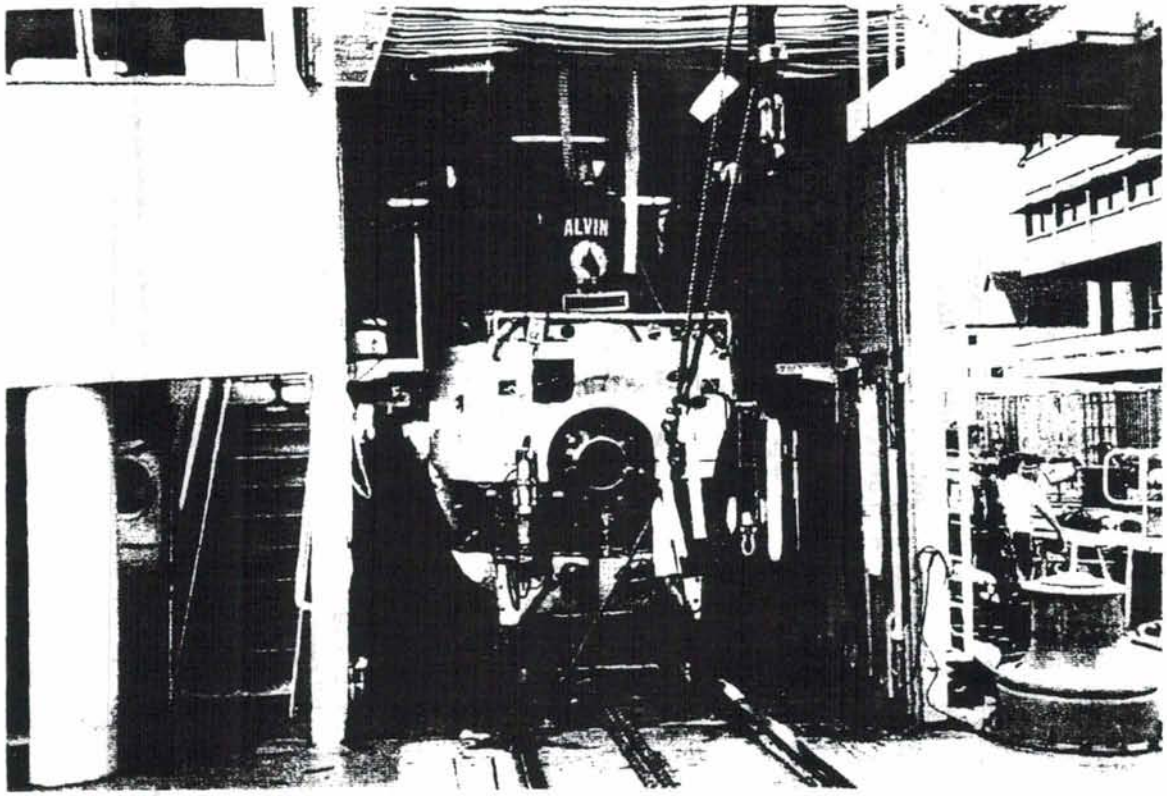
1. Mount cylinder in fixture to support ear of clevis (from below), from which the insert is to be removed.
2. Using a 1-3/16" or 1-7/16" dia. pin, press bushing out of the ear until it drops free of clevis.
3. Place the new insert on the installation pin and press insert into ear until it is centered in ear.
4. Turn cylinder over and repeat steps 2 and 3 other clevis.



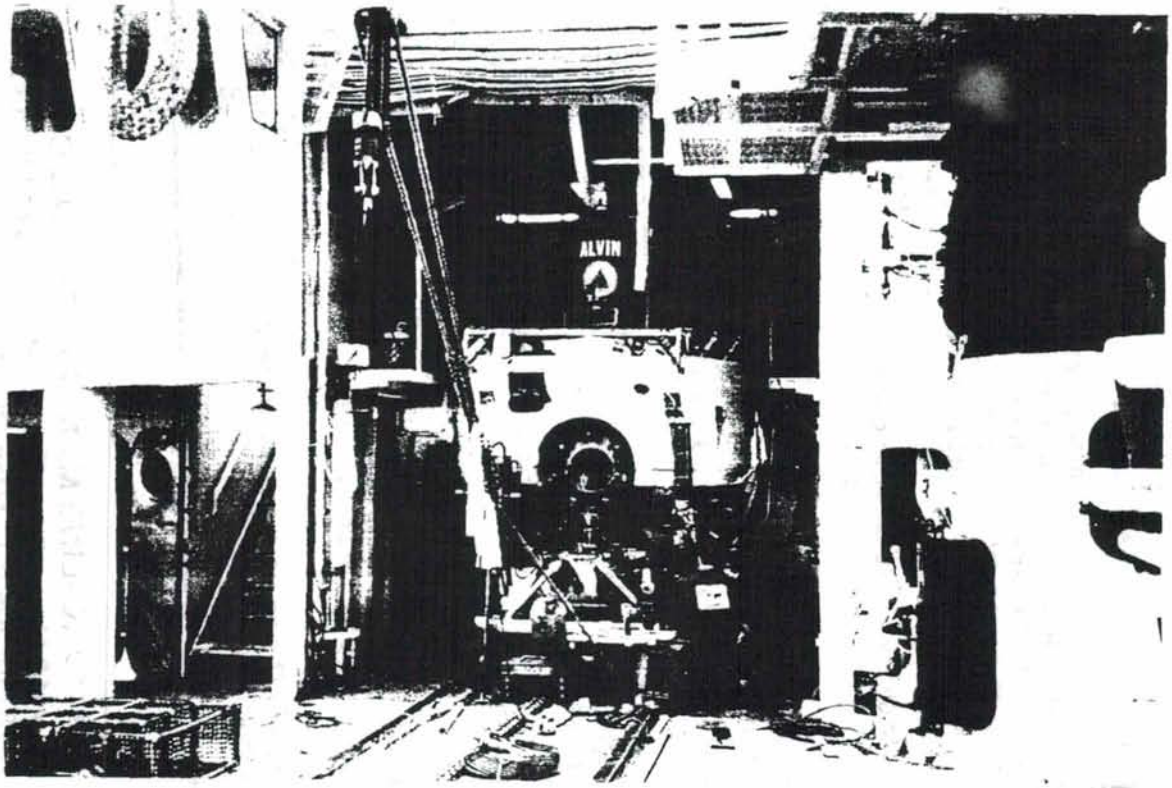
Installation/Removal Pin

A	B	D	E
1.200	2	1/4	.995
1.450	2	1/4	1.245

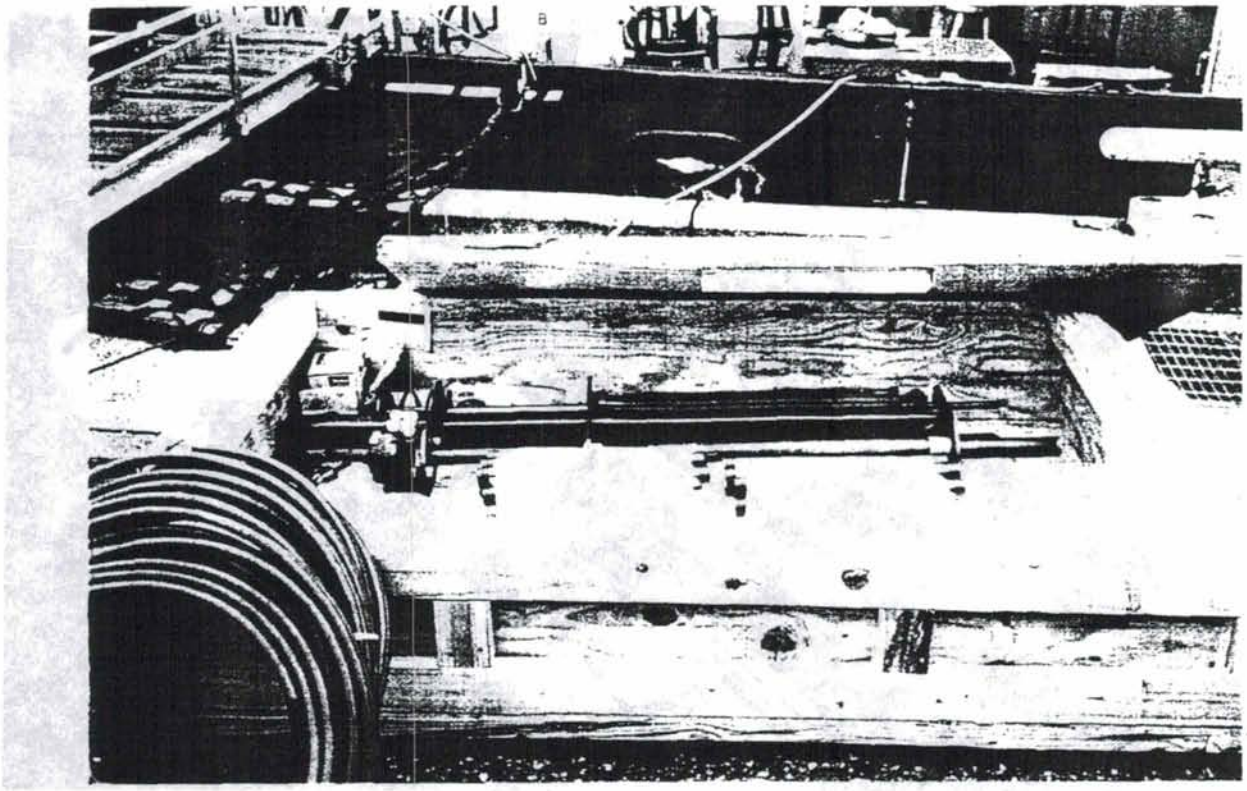
HYDRO-LINE MANUFACTURING CO.
4950 Marlin Drive, Rockford, Illinois 61130-2045
815/654-9050 Telex 25-7446



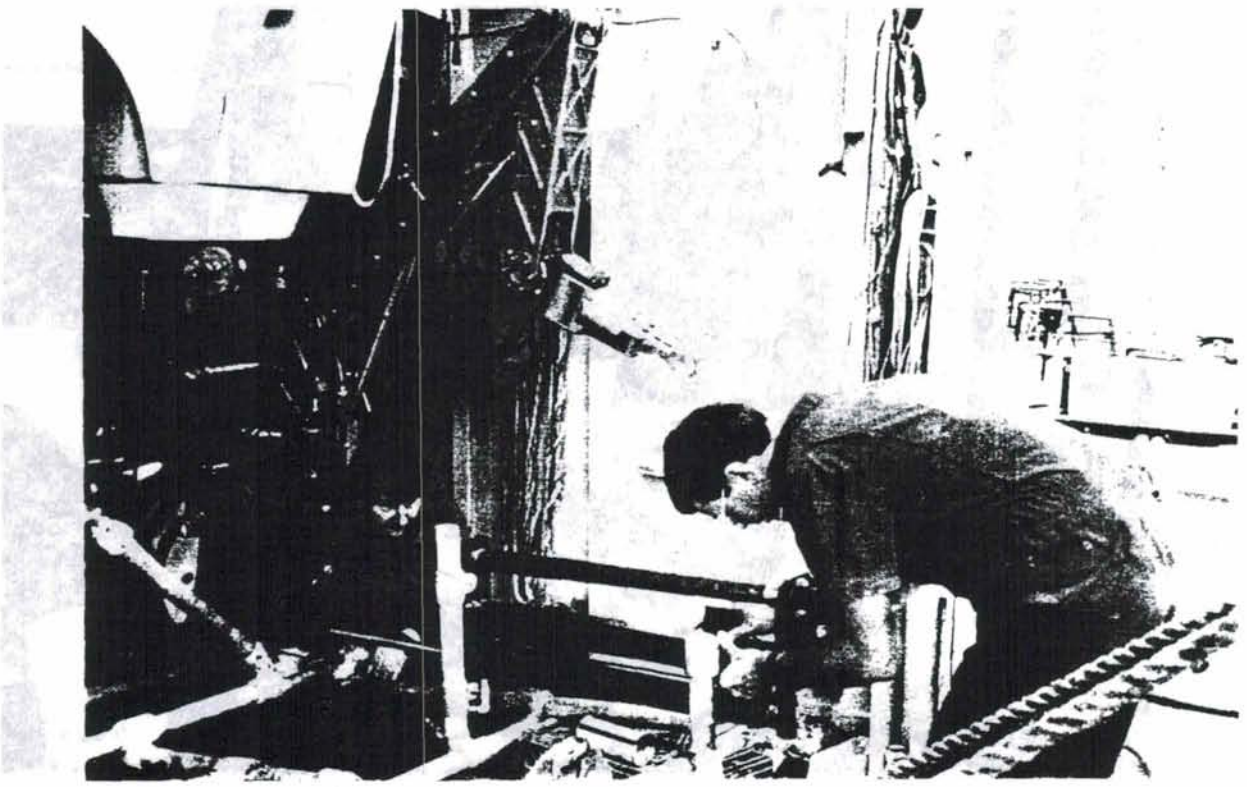
ALVIN AWAITING ATTACHMENT OF SULFIDE CORER



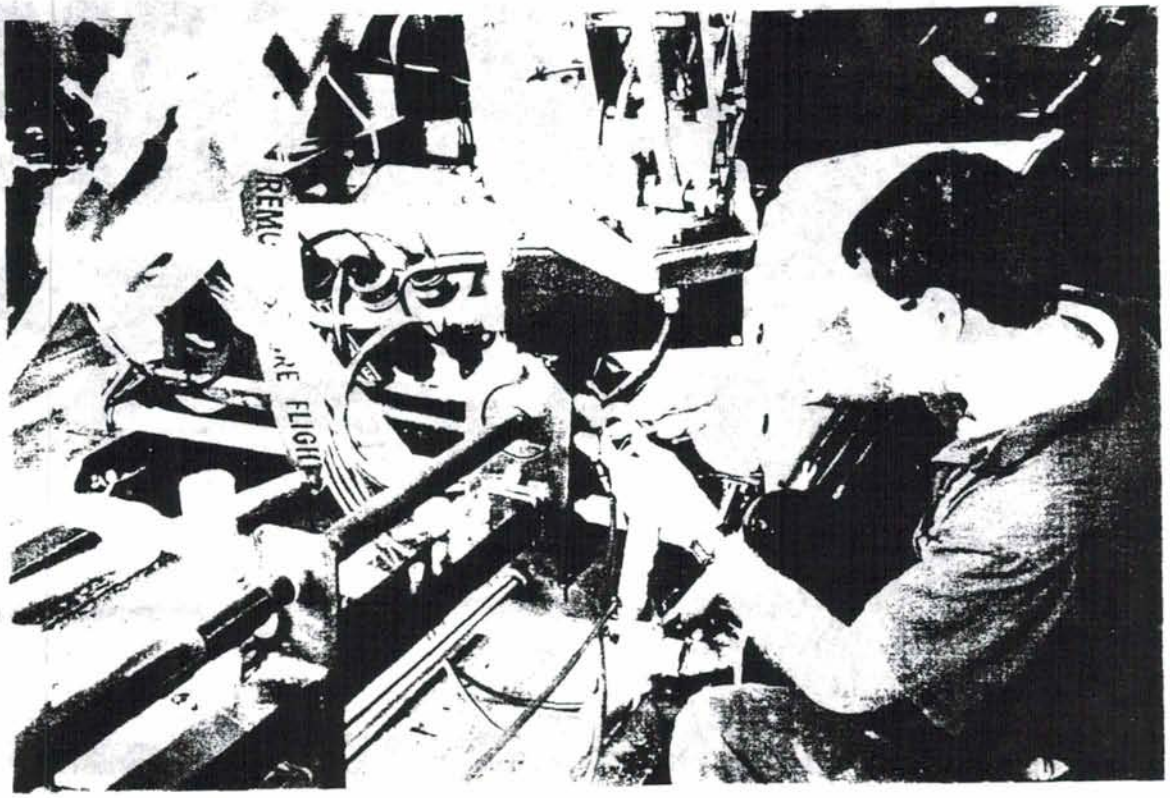
SETTING UP ALUMINUM FRAMEWORK TO MOUNT SULFIDE CORER



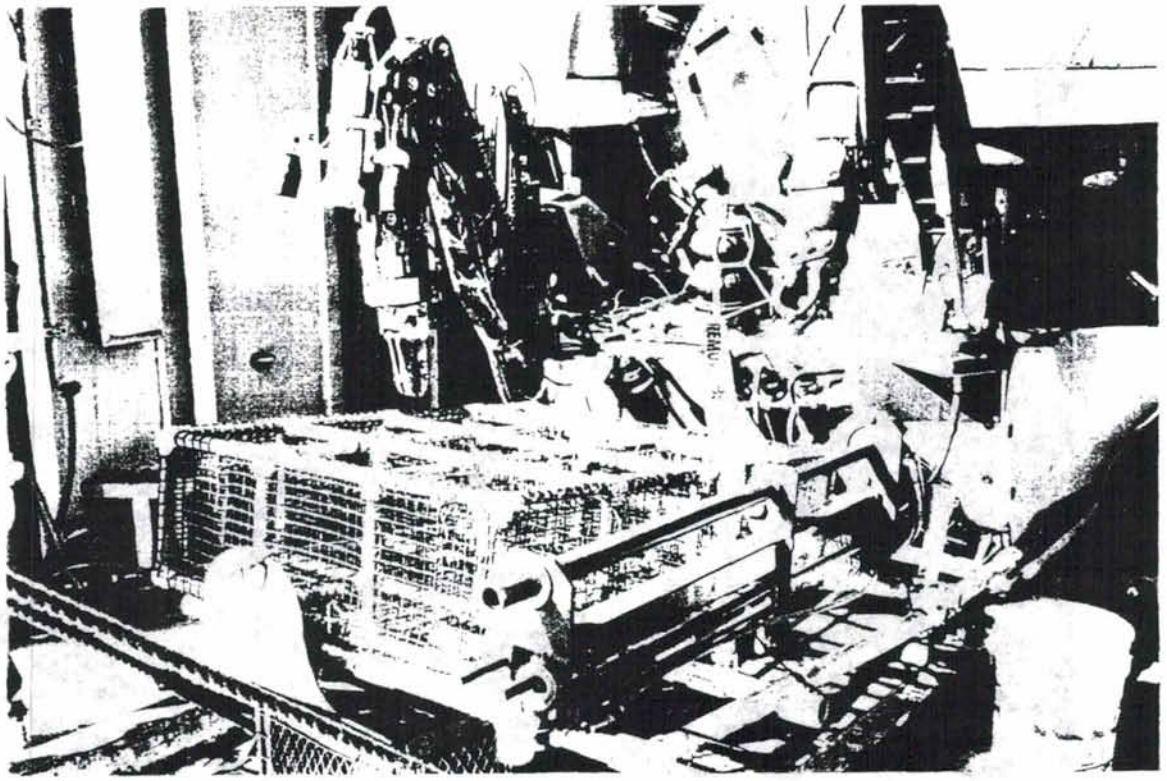
SULFIDE CORER ARRIVING IN SHIPPING CRATE ALONG WITH LINERS, SYNTACTIC FOAM,AND HYDRAULIC HARDWARE/HOSE



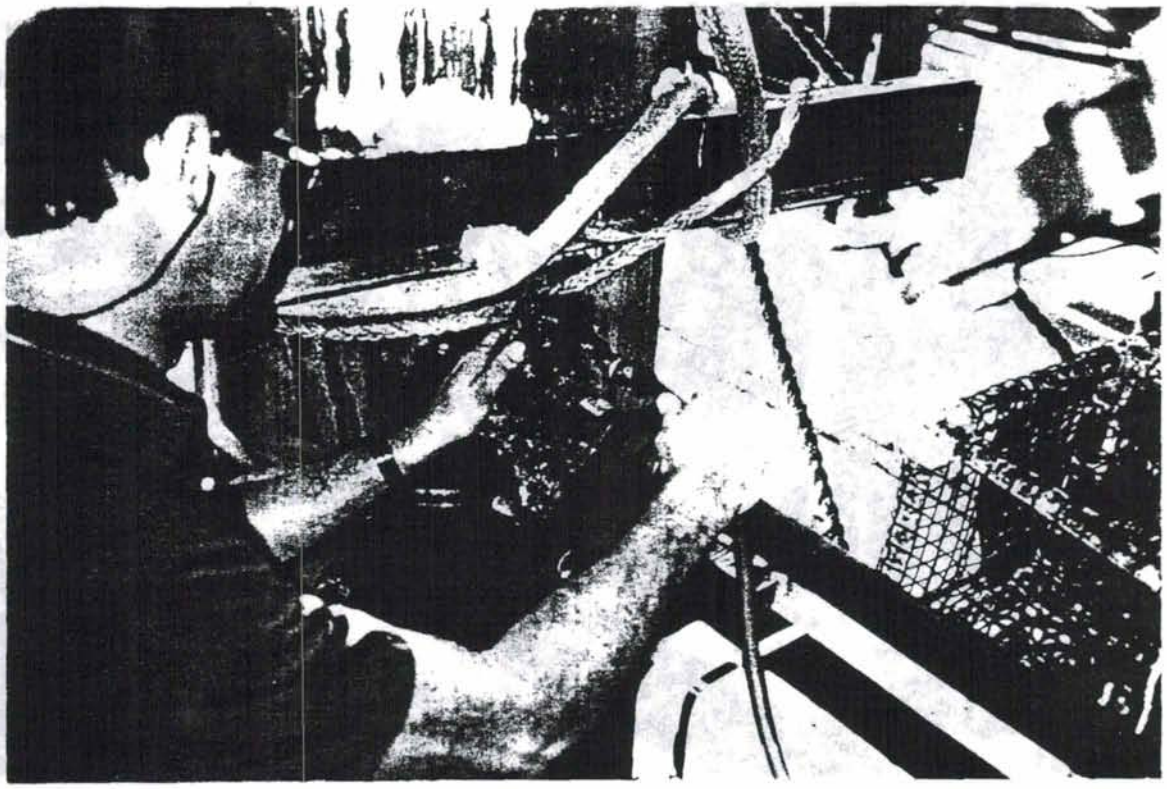
ATTACHING SULFIDE CORER TO BASKET FRAMEWORK



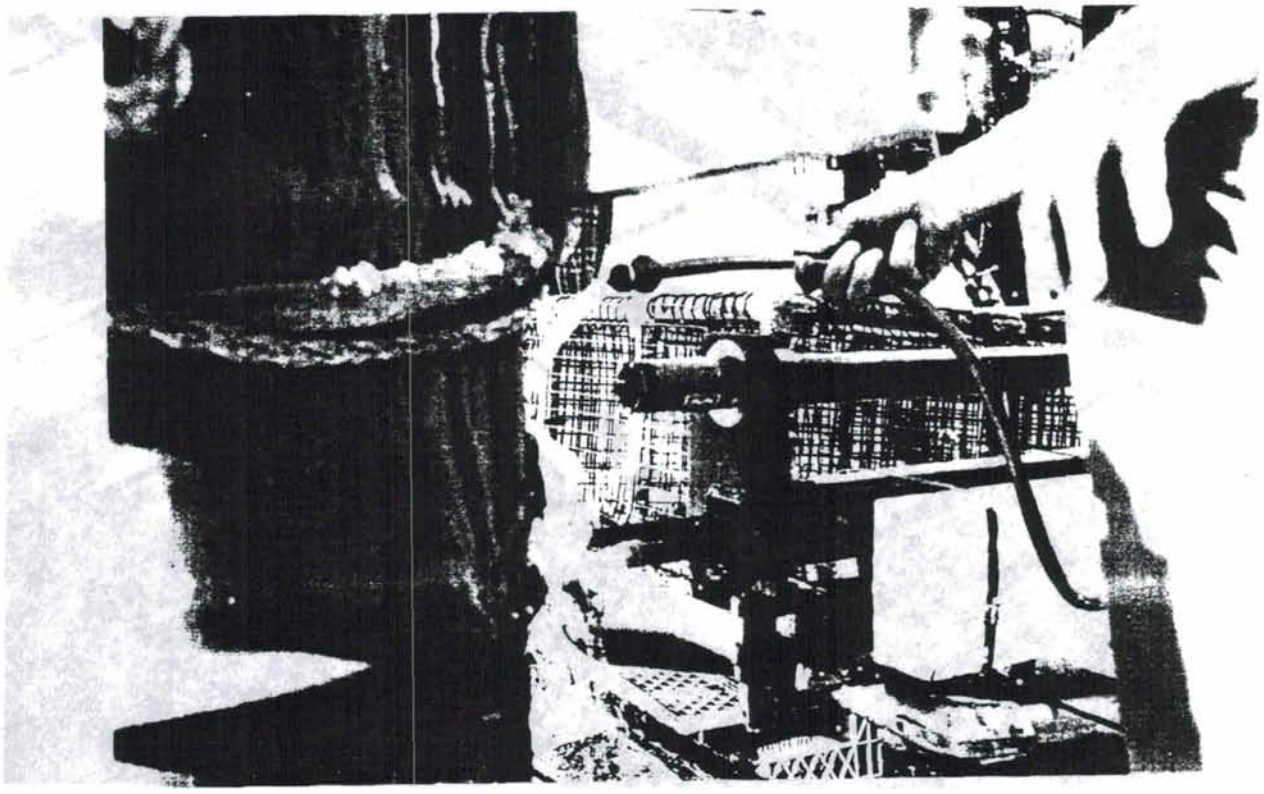
HOOKING UP HYDRAULIC LINES TO CORING MOTOR



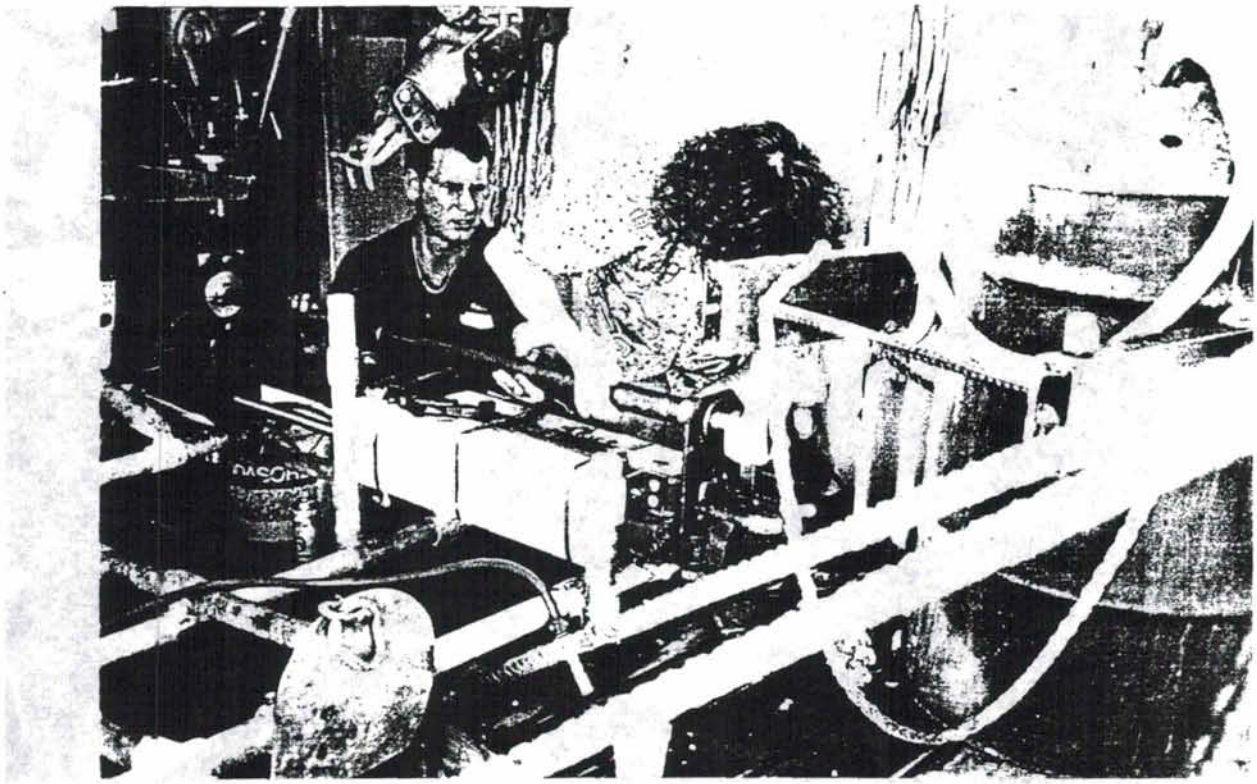
SULFIDE CORER SETUP ON FRAMEWORK AND READY FOR TEST DRILLING



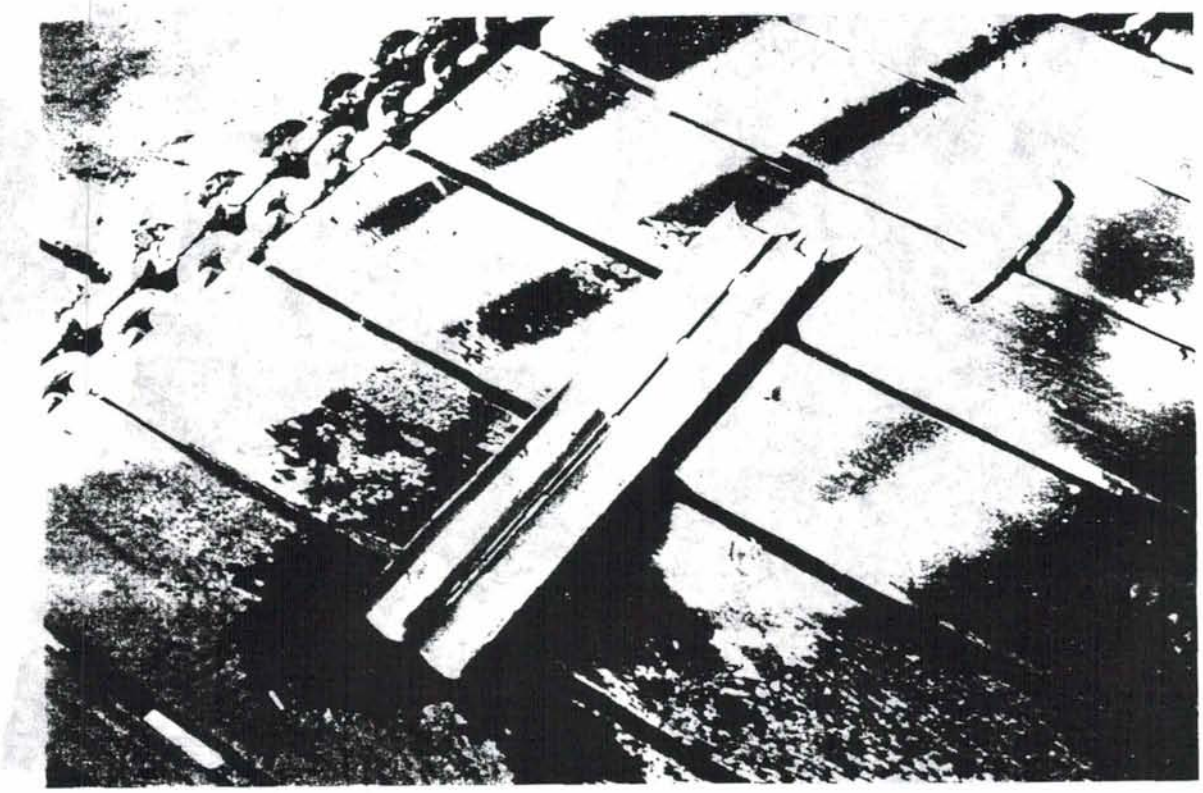
TEST DRILLING SULFIDE SAMPLE WITH SURFACE SET DIAMOND BIT



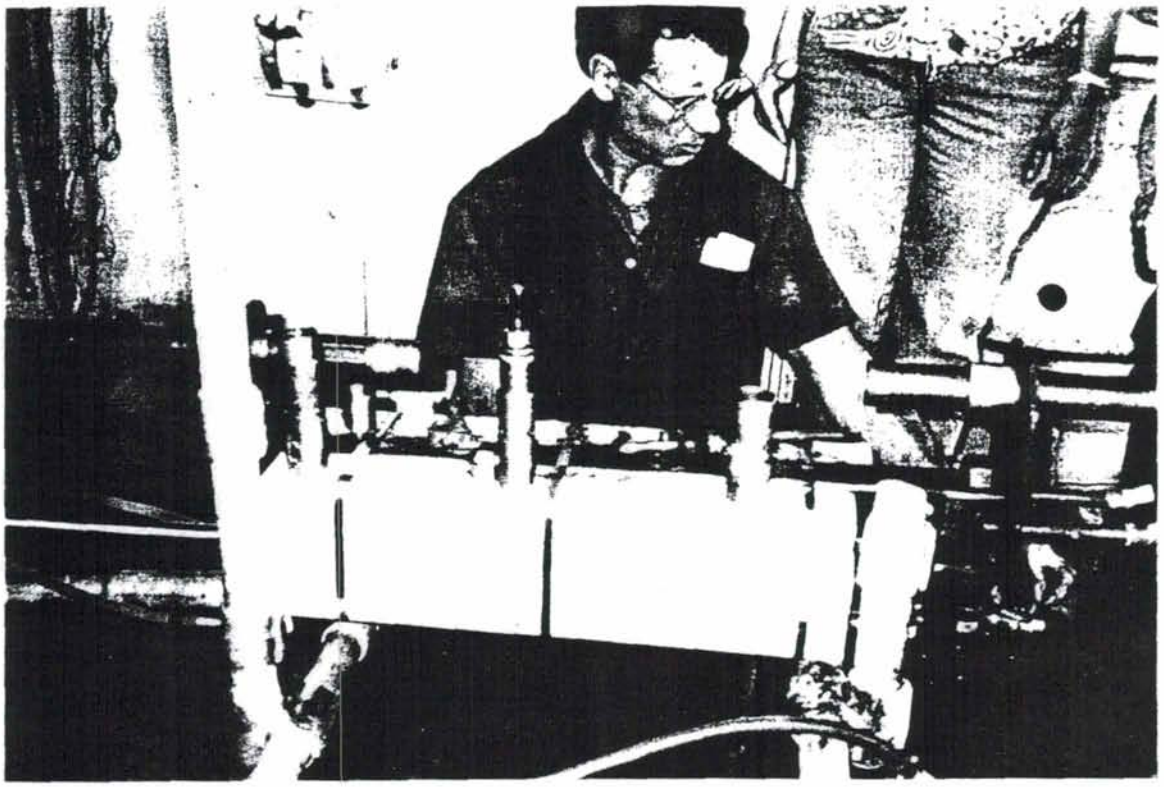
TEST DRILLING BASALT SAMPLE WITH DIAMOND IMPREGNATED BIT



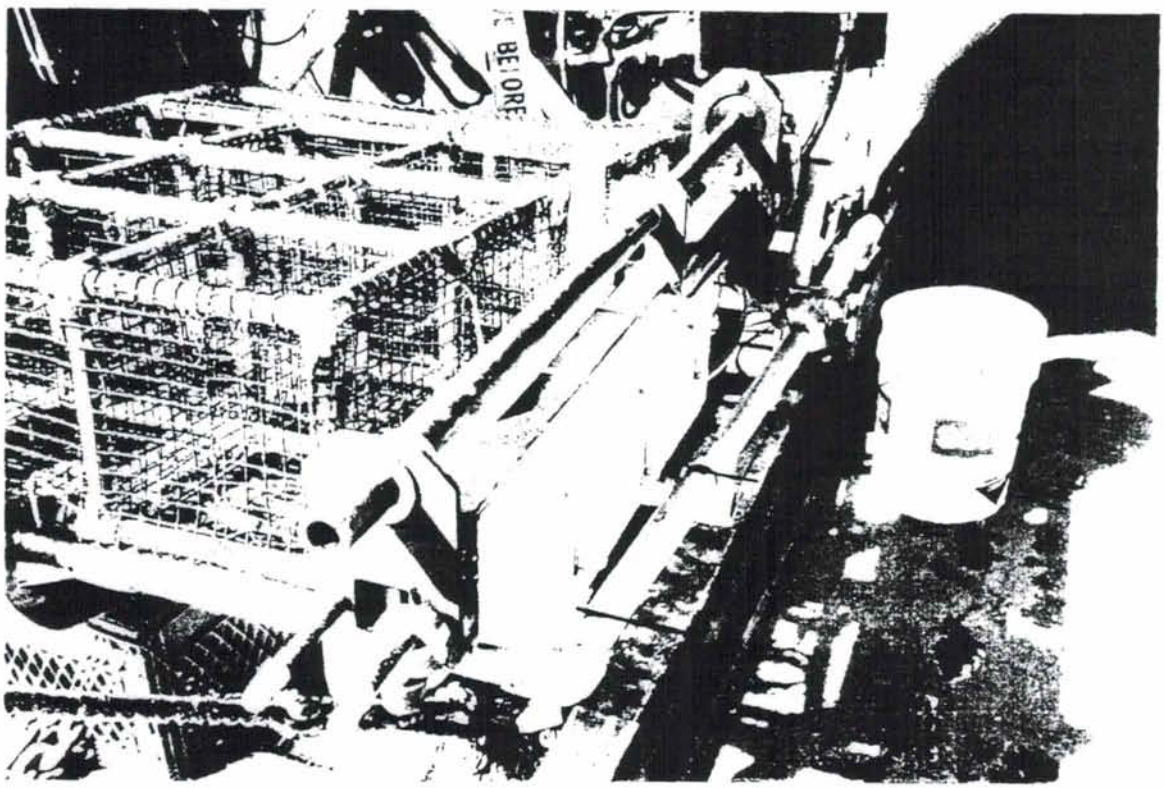
DISASSEMBLING SULFIDE CORER TO RETRIEVE TEST CORE



STAINLESS STEEL SPLIT INNER BARREL DISSEMBLED FOR CORE RETRIEVAL



REASSEMBLING CORE BARREL FOR DEPLOYMENT



SULFIDE CORER READY FOR DEPLOYMENT
NOTE: SYNTACTIC FOAM BLOCKS ATTACHED

WHOI Brief Outline

This Year '91

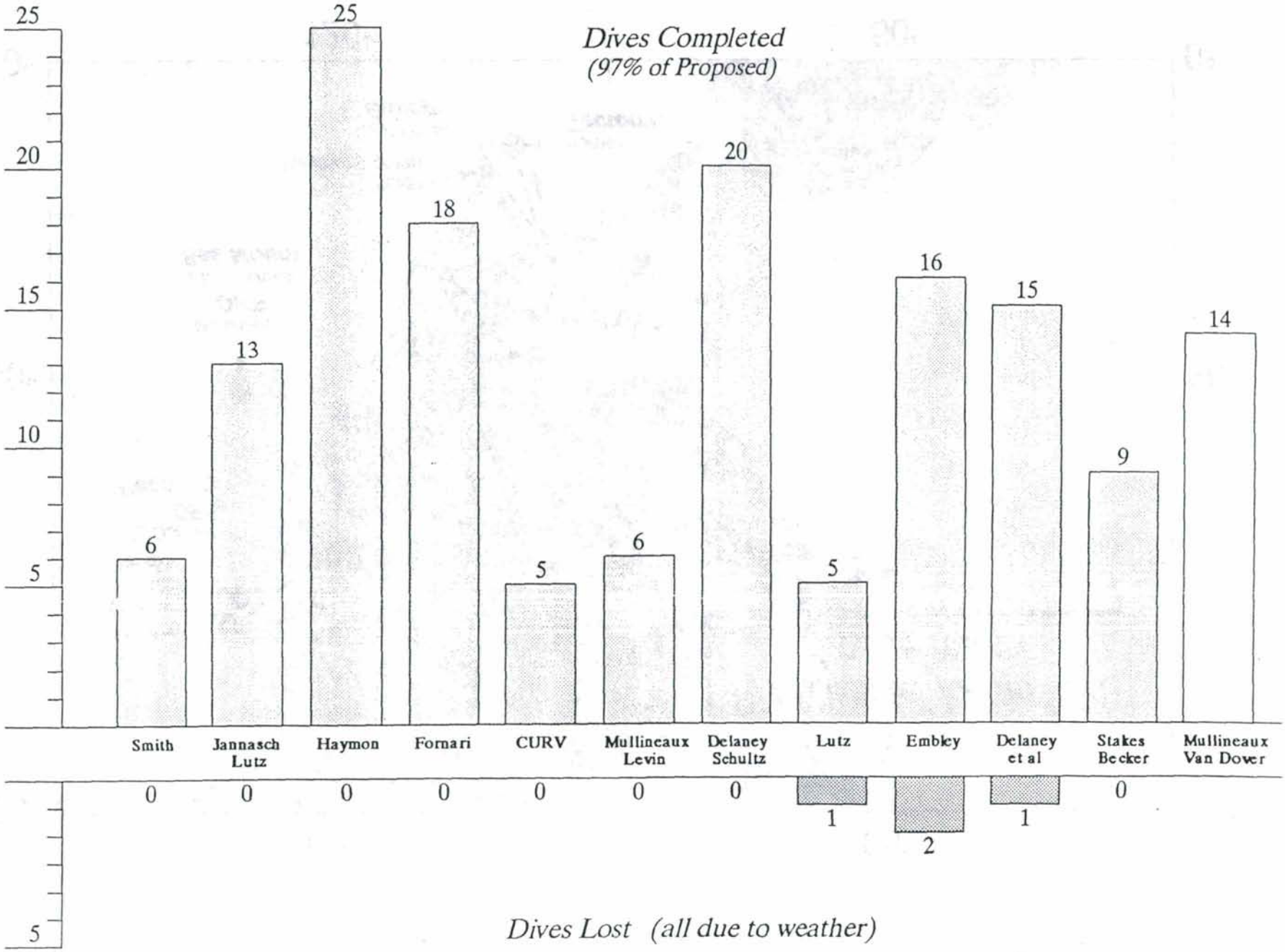
Next Year '92

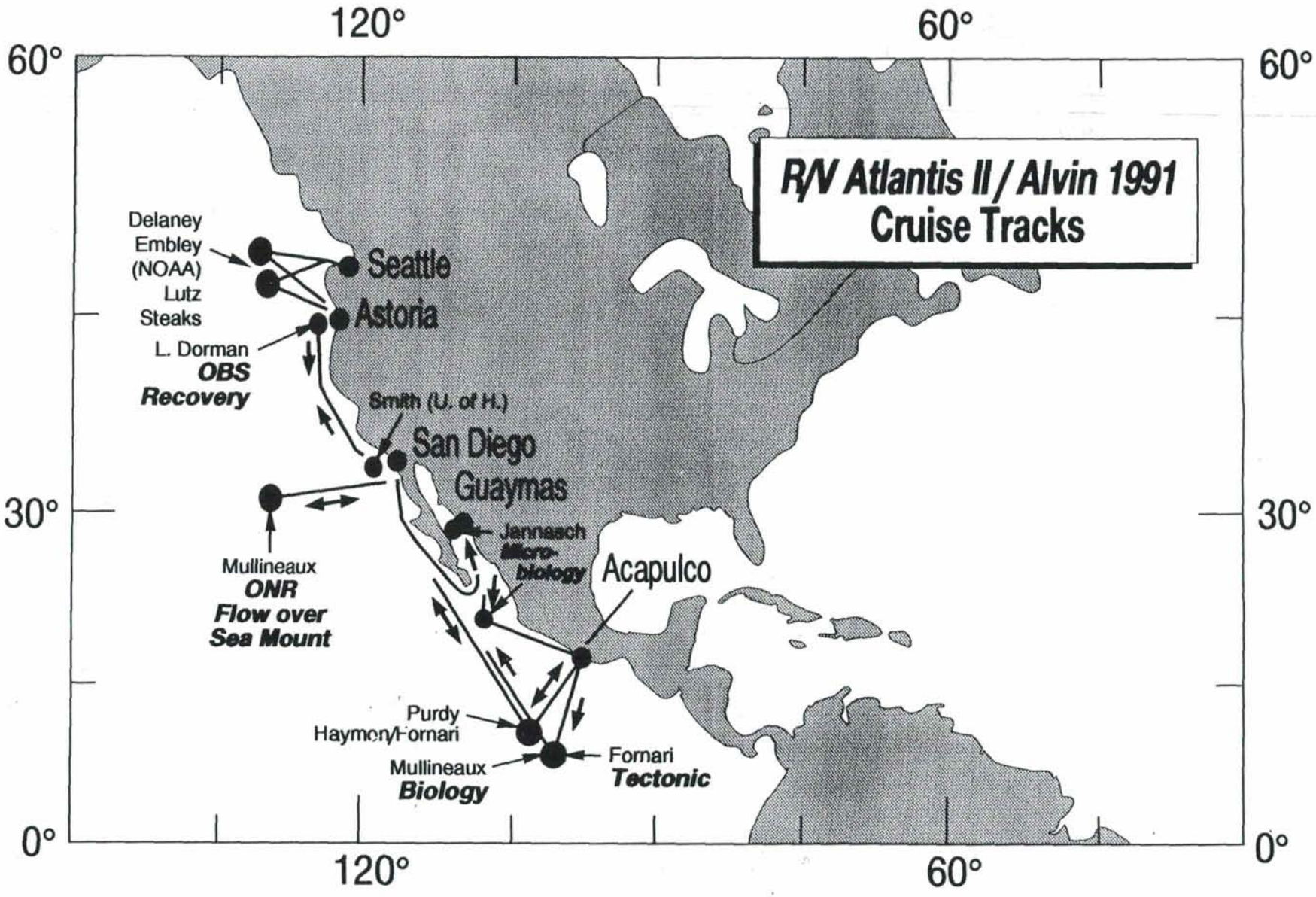
WHOI ALVIN MANAGEMENT REVIEW Committee

THIS YEAR '91

1991 ALVIN DIVES

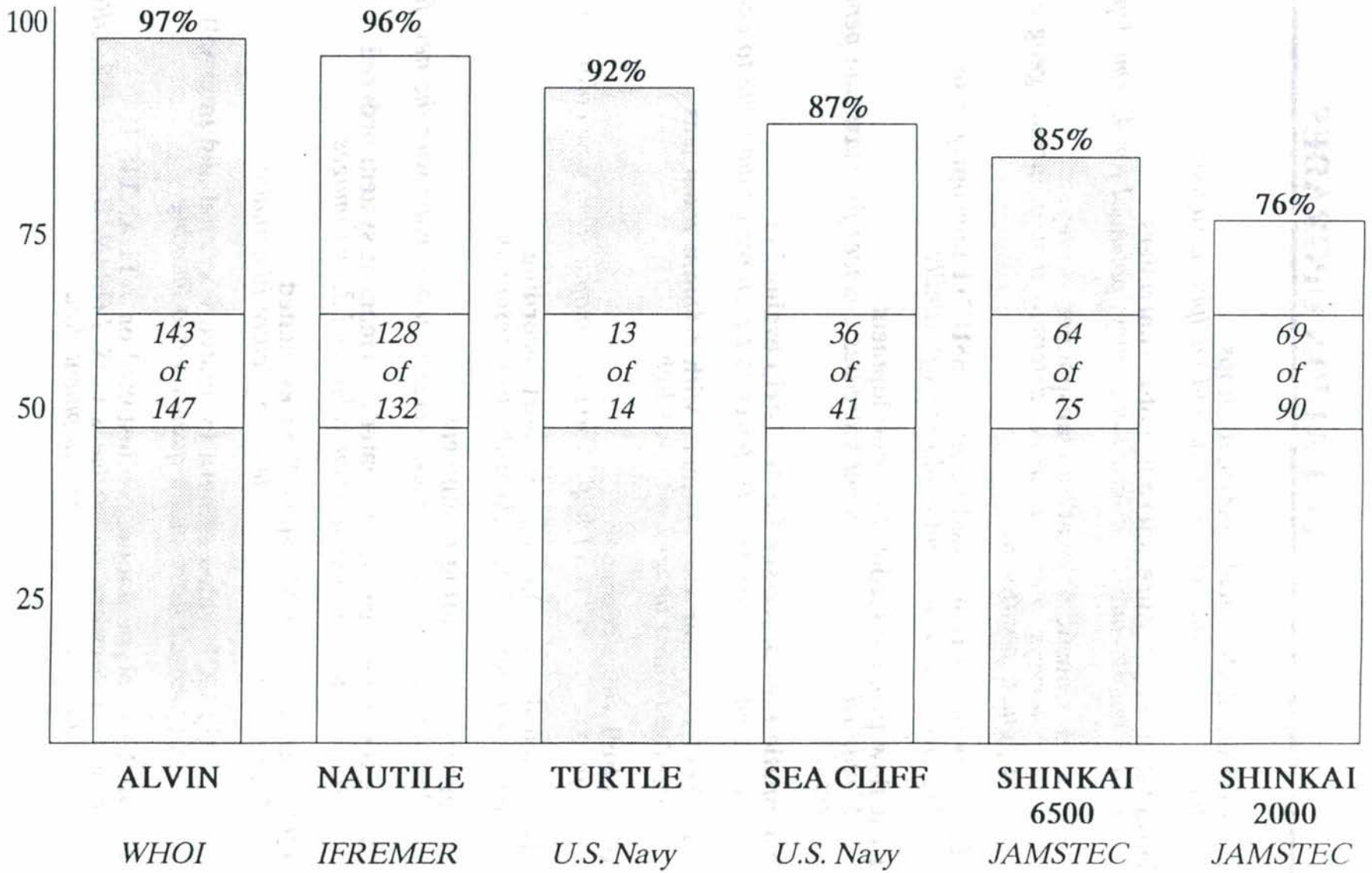
152 Planned




120°
60°
60°
60°
30°
30°
0°
120°
60°
0°
R/V Atlantis II / Alvin 1991
Cruise Tracks
Delaney
Embley
(NOAA)
Lutz
Steaks
Seattle
Astoria
L. Dorman
OBS
Recovery
Smith (U. of H.)
San Diego
Guaymas
Jannasch
Micro-
biology
Acapulco
Mullineaux
ONR
Flow over
Sea Mount
Purdy
Haymon/Fornari
Mullineaux
Biology
Fornari
Tectonic

1991 SUBMERSIBLE DIVES

Percentage of Planned Dives Completed



1991 ALVIN UPGRADES

* **Renovation of electrical/electronic shops**
  Improved working environment and equipment support

* **Installation of pressure tolerant motor controllers**
  Easier maintenance, increased buoyancy, potential for 4500m depth rating

* **GPS based acoustic navigation transponder survey**
  Faster surveys, more accurate determination of actual geographic position, single transponder positioning

* **Heat flow probe redesigned based on 68HC11 microprocessor**
  Increased accuracy and deployment flexibility

* **Heat flow probe injection tool development**
  Simplified probe deployment increases chances for maximum penetration and accurate results

* **Automatic film processor for test strip evaluation**
  Consistent exposure results, fewer lost pictures or data due to camera problems

* **Sony DXC107 color video camera with 8-48mm zoom lens**
  Improved video images with less light

* **Hi8 in-hull video recorder**
  Improved recording of high resolution output from new color video camera

* **Hi8 camcorder for through-viewport recording**
  Better images in less light with more resolution

* **Hi8 archive duplicating equipment**
  Provides support for science access to tapes made with the new format

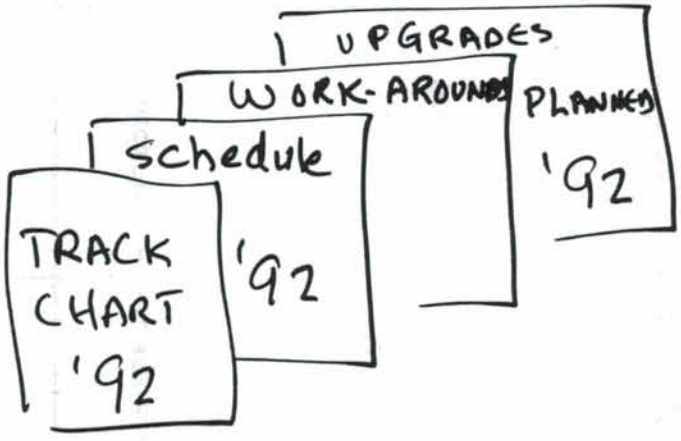
* **Lasers for image scaling evaluated; permanent system ordered**
  Allows scale determination in video and 35mm images

* **1200 watt SeaArc HMI video light evaluated**
  Possible use for better wide area picture illumination

* **Sony 3-chip CCD video camera evaluated (external and internal)**
  Could provide near studio-quality video imaging

* **KNORR prototype datalogger installed on ATLANTIS II**
  Logs, displays and redistributes GPS, LORAN, Benthos 455, ORE Trackpoint II, gyro, speed log, special science equipment data

NEXT YEAR '92


UPGRADES
WORK-AROUNDS
PLANNED
'92
schedule
'92
TRACK
CHART
'92

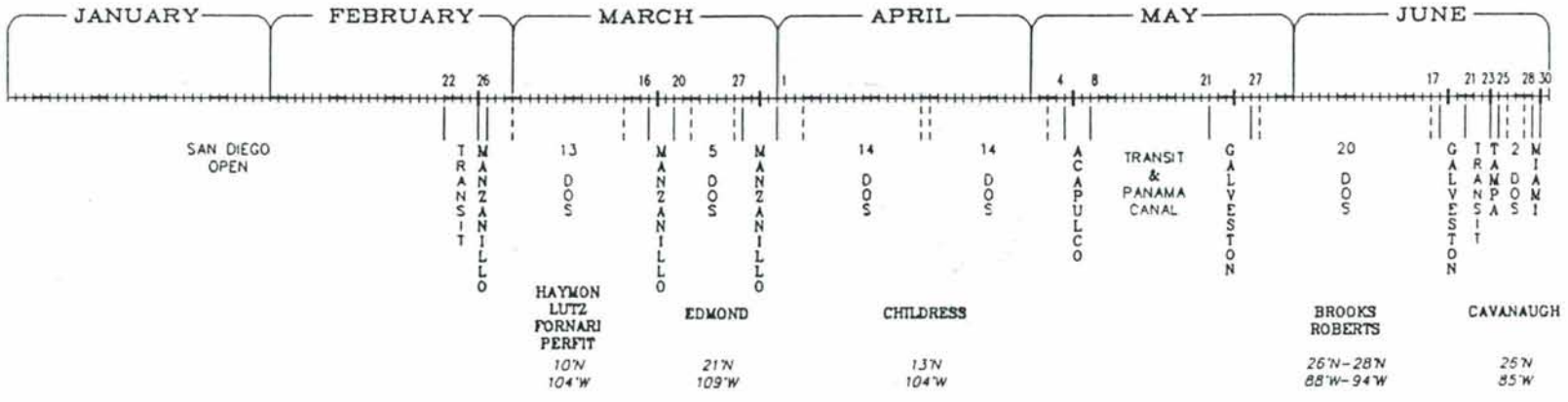
PROPOSED *

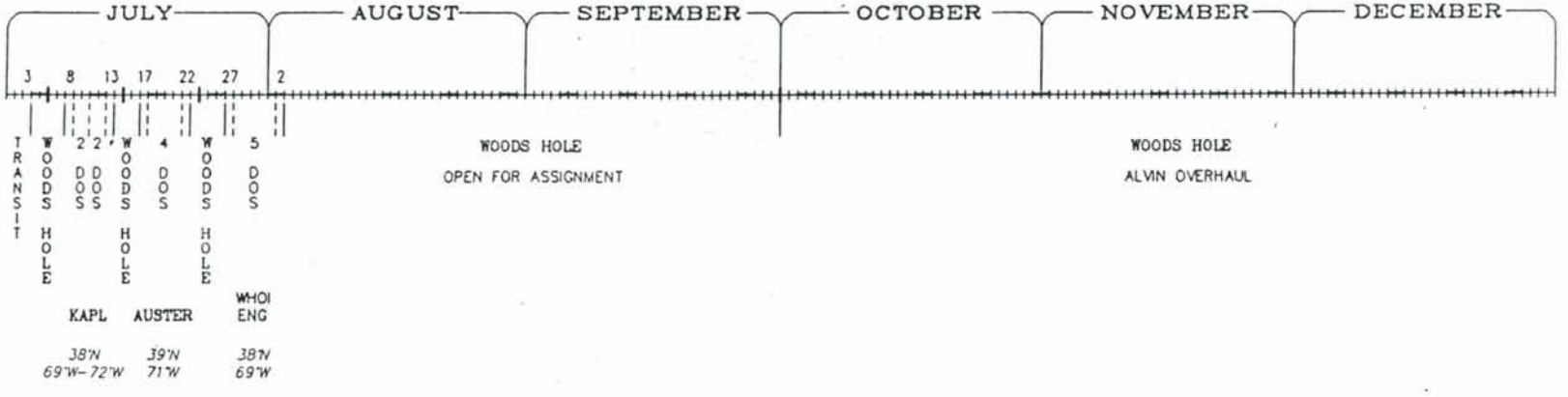
R/V ATLANTIS II & ALVIN OPERATIONS

1992

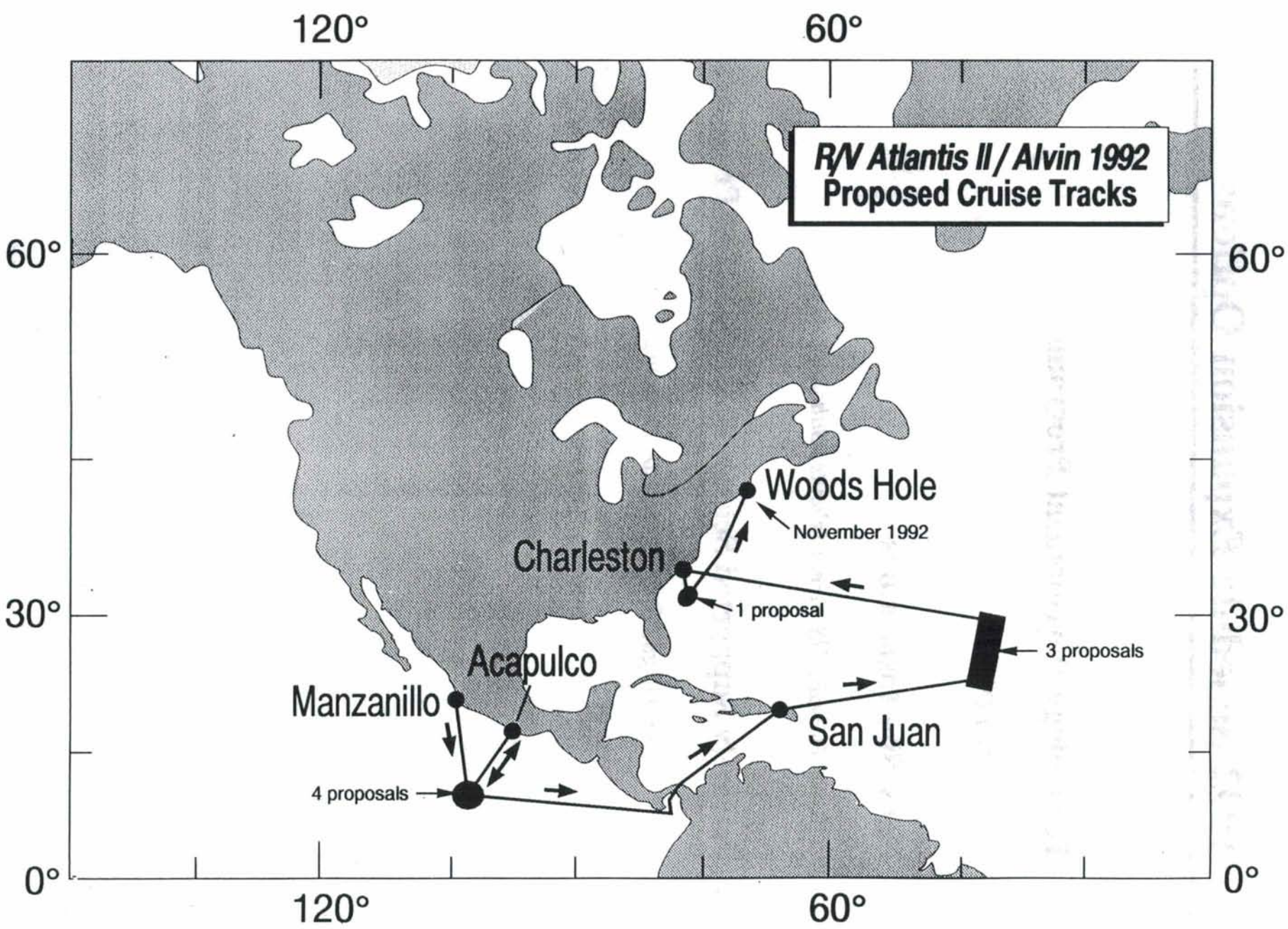
OPERATIONAL SCIENTIFIC SERVICES
WOODS HOLE OCEANOGRAPHIC INSTITUTION

4 DEC 91
~~16 OCT 91~~
~~25 SEP 91~~





* Based upon requests for ALVIN time recieved by the UNOLS ALVIN Review Committee and therefore subject to revisions resulting from supporting agency funding decisions


R/V Atlantis II / Alvin 1992
Proposed Cruise Tracks
120°
60°
60°
30°
0°
Woods Hole
November 1992
Charleston
1 proposal
3 proposals
Acapulco
Manzanillo
San Juan
4 proposals

1992 Schedule Expansion Options

- **Technology Development Programs**

  San Diego

- **Navy Site Inspections**

  Hawaii, US Virgin Islands, Bahamas

- **Privately Supported Science & Engineering Programs**

  San Diego, Gulf of Mexico, Bermuda

PLANNED ALVIN UPGRADES - 1992

* **Increased depth capability to 15,000 feet**

* **Renovation of surface controller station**
  More efficient use of space which should allow greater accommodation of science needs and an improved working environment

* **Expansion of duplicating facility for Hi8 format**
  Will allow timely high quality video viewing, editing and duplications at sea

* **Installation of laser ranging system**
  Will allow image scaling on all dives

* **New video monitors in ALVIN**
  Improved color reproduction of real time video images

* **Upgrade ALVIN datalogger to 386 system**
  Will allow both XENIX and DOS applications to run, thus reducing the need for science supplied laptops for use with user developed programs

* **Gyro upgrade**
  May improve reliability and enhance factory support

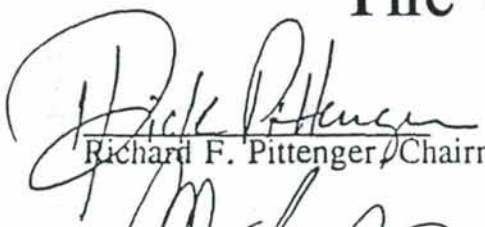
* **New titanium hydraulic manifolds**
  Improved reliability and elimination of corrosion problems

* **Redesign of ALVIN life support system**
  Reduced maintenance, improved serviceability, increased safety

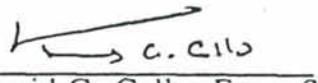
* **ALVIN video-based terrain-following navigation system**
  Will provide video mapping/mosaicking without dependence upon acoustic navigation

* **Extendable light deployment boom**
  Reduced backscatter for improved video image quality

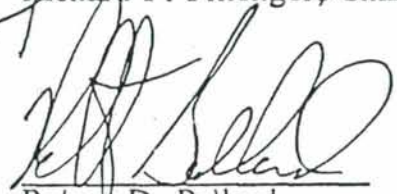
The Committee



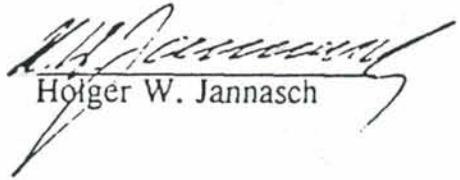
Richard F. Pittenger, Chairman



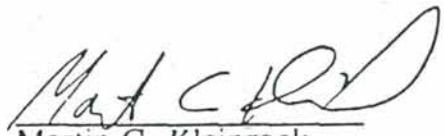
David G. Gallo, Exec. Sec.



Robert D. Ballard

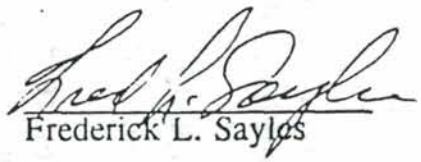


Holger W. Jannasch

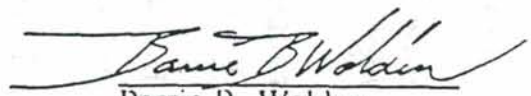


Martin C. Kleinrock

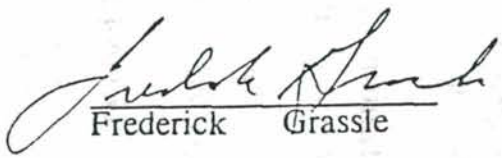
Steven J. Lentz



Frederick L. Saylos



Barrie B. Walden



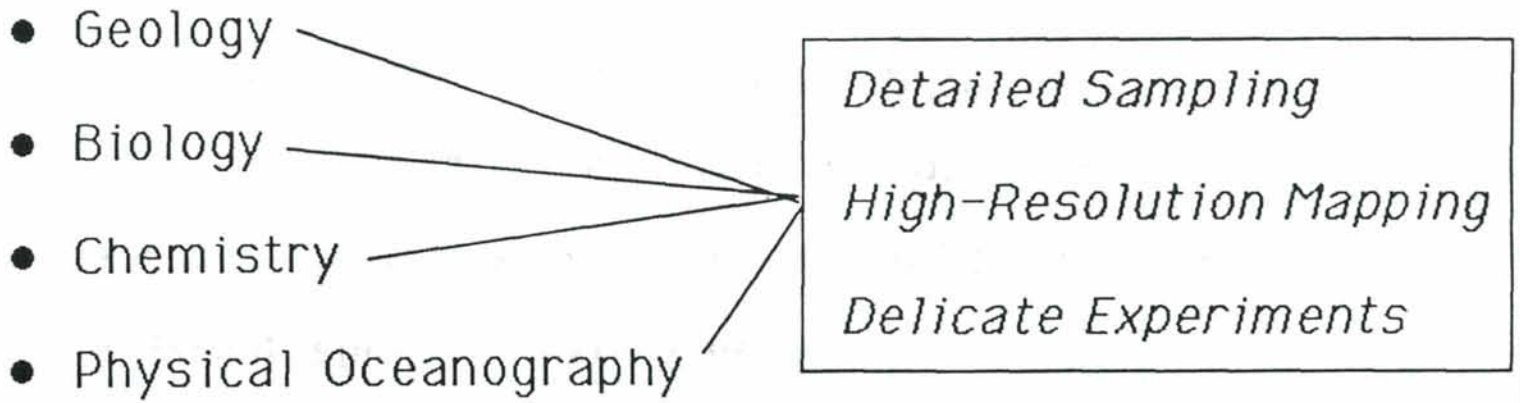
Frederick Grassle

Background

- WHOI Uniquely Experienced
- Proven Performance - Development, Proofing, Fielding
  - Technologies - Cameras, Sensors, Control
  - Vehicles - ALVIN, JASON, ABE
- Over 25 years of experience

- A National Asset -

Projected Science Needs



Technology Development and Science Vehicle Enhancement

- Tech develoment responds to external stimuli
  - Science needs
  - Advances in state-of-the-art
- Tech development at WHOI occurs in all disciplines
- Action
  - Couple tech development at WHOI with Deep Submergence Group
  - Incorporate new tecnnologies to vehicles as appropriate
    - WHOI developed
    - Externally developed

DSV Alvin

- Greatest used DSV by scientists
- Over 25 years experience
- Action
  - Continue to operate to 4000 m
  - Possible upgrade to 6000 m
  - Upgrades completed as funding available

Joint ALVIN/MEDEA-JASON Operations Group

- Functionally/Organizationally Merge Operations Group
  - OPS Crews Share Similar Talents and Scheduling Problems
- Cross-Train Crews and Pilots
- Provide "Mature" DSV and "Fly-Away" ROV Capability

MEDEA-JASON-ABE

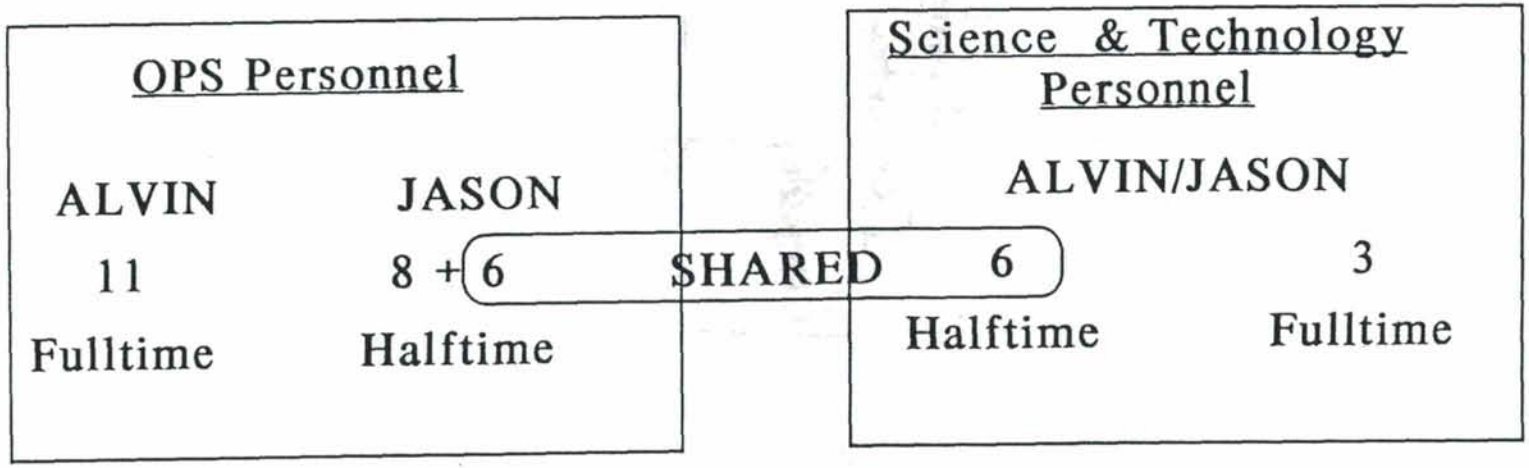
- 6000 Meter Fiber-Optic Capability
- ABE - New Family of Longterm Benthic Vehicles

ACTION

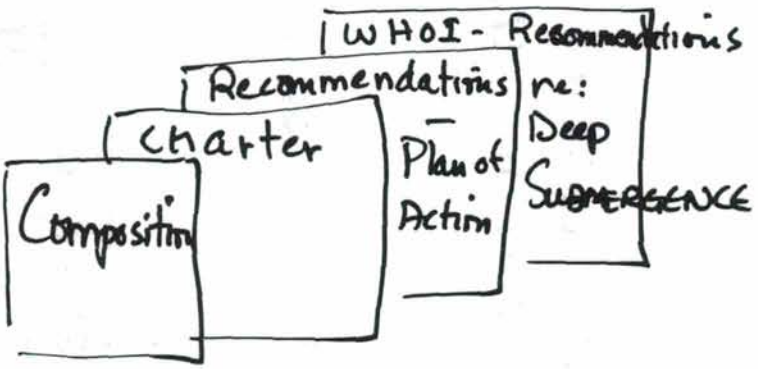
- Transitioning from Development to Routine OPS
- Series of OPS Planned Over Next 3 Years
- Generate User Constituency

Personnel

- Support ALVIN Dives Year Round
- Support JASON OPS Dives 1/2 Year



WHOI Management Review Committee (Spiess)



WHOI ALVIN MANAGEMENT REVIEW COMMITTEE

F. N. Spiess, Chair
R. W. Embley
P. J. Fox
R. R. Hessler
J. B. Mooney

To examine the administrative, technical, and operational aspects of the program and report back to the Director of the Institution, Craig Dorman.

ALVIN MANAGEMENT REVIEW COMMITTEE REPORT

PERSONNEL

Visiting Comm. Recommendation	Potential Fix	Detailed Action	Discussion
Decrease pilot turnover Possible causes: – long at–sea periods – long working hours – repetitive tasks – lack of appreciation – limited career ladder and/or advancement opportunities – boredom	▸ Reduce time at sea	Provide training and education required to open more shore–based jobs for rotational assignment	+ More versatile and skilled individuals + Larger personnel resource pool + Multiple evaluation opportunities – Must work and live in Woods Hole – Suitable alternate position location – Increase in Ops Group overall size – Additional/alternate funding required – Cost of living adjustment – Possible scheduling conflicts – Reduced pilot proficiency – Reduced systems status awareness – safety
	▸ Reduce workload	Increase number of persons qualified for ALVIN Operations team, including shore–based engineers and technicians, thus facilitating the availability of more personnel per cruise	+ More chance for daily learning + More work task variety + Increased opportunity for in–port R&R – Budgetary constraints – Berthing constraints – Fewer dives means less proficiency
	▸ Provide advancement ladder	Provide training and education necessary to qualify operational personnel for advancement within the ALVIN Group and/or a larger operations structure	+ Increases job satisfaction + Clarifies group structure/positions – Fair structure hard to implement – Rapid advancement of outstanding individuals hindered – Decreases assignment flexibility – Important subjective requirements difficult to codify

ALVIN MANAGEMENT REVIEW COMMITTEE REPORT

PERSONNEL

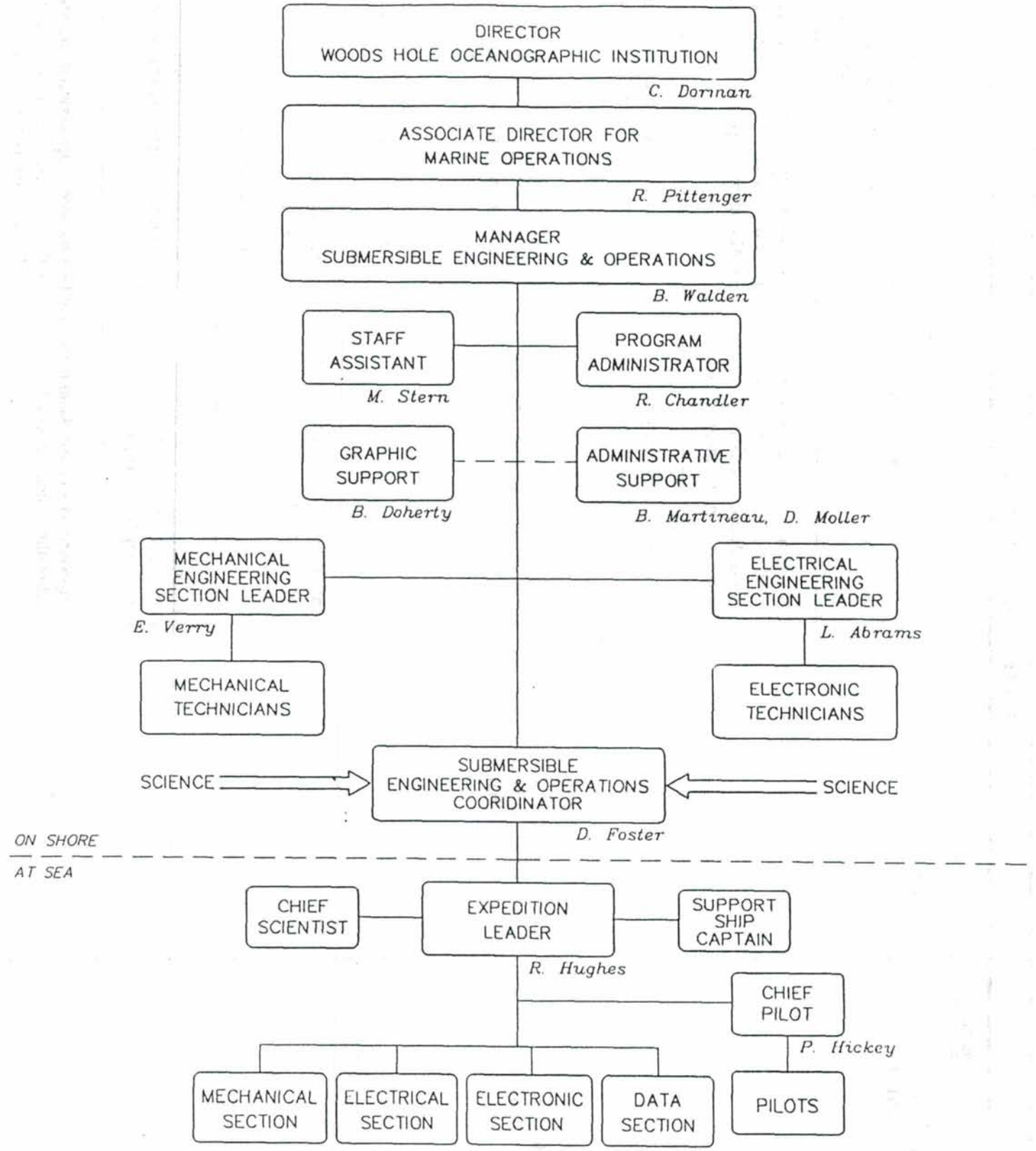
Visiting Comm. Recommendation	Potential Fix	Detailed Action	Discussion
Increase pilot training	▸ Develop training and qualification requirements to and beyond pilot certification	Provide a more formalized training structure with identifiable milestones	+ Improves consistency of training + Provides progress feedback + Develops better training methods – Subjective requirements difficult to codify
		Develop a position ladder with defined requirements	+ Insures continued training beyond pilot certification + Encourages additional proficiency
		Incorporate training and education in other areas of deep submergence operations (i.e. ROVs and AUVs)	+ Broadens knowledge base + Increases personnel pool + Provides job alternatives/variety – Reduces specialized skills – Reduces maintenance awareness
		Provide avenues for continued professional development	+ More knowledgeable employee + Qualified for more diverse jobs – Conflict with work at sea – Fosters false expectations for advancement – Ensuring course quality difficult

ALVIN MANAGEMENT REVIEW COMMITTEE REPORT

COMMUNICATIONS

Visiting Comm. Recommendation	Potential Fix	Detailed Action	Discussion
Enhance internal communications	▸ Encourage interpersonal involvement	Deeper involvement of shore–based personnel in at–sea operations	+ Increased operational awareness + Fosters better understanding of group concerns – Dilution of shore engineering effort – Added constraint on candidate pool
		Interjection of Dudley Foster with shoreside responsibility for daily operational activities and associated communications	+ Provides operational viewpoint ashore and and management viewpoint at sea – Alienation by operations personnel
		Increased upper management interest and involvement	+ Demonstrates awareness and committment – Micromanagement with insufficient detailed information
Enhance external communications	▸ Provide mechanisms for effective assimilation and dissemination of program information	Extend utilization of ARC (i.e. cruise assessment reviews)	+ Unbiased program evaluation + Identifies broad technological requirements – ARC member time committment increased – Possible management problems
		Annual ALVIN user conference	+ Provides forum for information exchange – Difficult to schedule
		Interjection of Dudley to provide users with timely operational advice	+ Provides easier access to operational expertise + Single point of contact + Helps to identify problems early in planning + Helps ensure timely information exchange
		Frequent ALVIN User Manual and ATLANTIS II Cruise Planning Manual updates	+ Accurate hard copy of information – Requires considerable engineering staff effort
		Shipboard pre–cruise planning meeting scheduling when requested	+ Guarantees Ops Group information exchange + Provides first–hand look at ALVIN – Disrupts port period activities

SUBMERSIBLE OPERATIONS ORGANIZATIONAL CHART



ALVIN MANAGEMENT REVIEW COMMITTEE REPORT

TECHNOLOGY

Visiting Comm. Recommendation	Potential Fix	Detailed Action	Discussion
Enhance technology	▸ Augment existing technology development efforts	Continue performance and reliability improvements; decrease required maintenance	+ Allows continued dependable operations
		Schedule engineering dives	+ Allows testing of new technology without impacting scientific investigations + Focusses effort on new technology + Allows continued evaluation/calibration of systems + Operational training opportunities with new equipment – Possible science scheduling conflicts
		Improve submersible science capability by involving WHOI engineering PIs and supporting their proposals	+ Promotes technology exchange among similar organizations
		Support science community development of special tools and equipment	+ Helps ensure submersible compatability + Makes available ALVIN Group expertise where appropriate

Summary

'91 A good year

'92 A scheduling, funding challenge

WHOI committed to upgrading quality of Benthic Science support.

- Management review helpful
- Upgrades to ALVIN in the works
- Long range transition to manned and unmanned tools

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
1. R. Lutz, Rutgers; R. Vrijenhoek, Rutgers		(1) 17-22° S along EPR (2) King Is Bsn (62-64°S, 58°W) (3) Mid Valley, Juan de Fuca Ridge (48°28'N, 128°38'W) (4) Oregon Subd. Zone (44°N, 125°W)	Gene flow, dispersal and systematic relationships of molluscs associated with 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 OCE 89-17311	1993		30	Additional researchers desired: postdoctoral research associates; research specialists; Technicians; graduate students; geologists/geochemists; additional biologists
2. M. Mottl, Univ of Hawaii	E. Davis, PGC; G. Wheat, UH; M. Lilley, UW; J. Franklin, CGS; R. Zirenburg, USGS	Mid. Valley, Juan de Fuca Ridge	Impact of deep sea drilling on hydrothermal processes in Middle Valley, Juan de Fuca Ridge. Compare and contrast hydrology, geochemistry, biological communities with conditions measured prior to drilling during ODP Leg 139.	NSF	June - early Sept, 1993		10	
3. M. Mottl, Univ of Hawaii	E. Davis, PGC; G. Wheat, UH; D. Chapman, Univ of Utah; M. Whiticar, Univ of Victoria; C. Forestor, Univ of Utah	East Flank of Juan de Fuca Ridge near 48°N overlying 3.5 MA old crust	On the focusing of heat and fluid flow on a mid-ocean ridge flank: Impact of bisomont outcrops. Measure geophysical properties on these outcrops to constrain models of hydrology.	NSF	June-early Sept, 1993		15	
4. C. Moore, UC; D. Orange, UC	B. Carson, Lehigh	Offshore Oregon (44°38.5' N and 44°41.5' N)	Headless Submarine Canyons, Vents, Slope Failure, and Seepage Forces: Oregon Accretionary Prism. Proposed work - (1) Test the predictions of seepage-induced spring sapping. (2) Measure pore pressure gradients at sites of active fluid venting at the inflection points of canyons. (3) Examine the distribution of pore pressure gradients within the canyons and also on the ambient slopes between canyons. (4) Examine the character of canyon walls and talus in order to assess how canyons form.	NSF	May-Sept, 1993		10	This research would be best carried out in concert with the series of dives Bobb Carson is proposing.

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
5. C. Fisher, Penn State	Biologists & Geologists involved in study of temporal variability of the RIDGE long-term observatory.	Juan de Fuca Ridge, Cleft Segment	Variability of growth-rate and form of Ridgeia sp. Investigation of the effects of variation in vent flow on the growth and condition of vestimentiferans on the Juan de Fuca Ridge. This proposal is based on the use of a newly constructed device to deploy bands on vestimentiferans for the purpose of determining growth of the tubes subsequent to being banded. This device is held in a manipulator when being used, requires a single hydraulic function, does not occupy significant basket space or mass, and 8 bands can be deployed and documented in less than 1 hour. Thus it is compatible with a variety of other operations during the same dive.	NSF - RIDGE	2 field seasons: either summer-fall 1993 & 1994	2 field sessions: either summer-fall 1994 & 1995	5 dives per year	This proposal is intended to integrate with other work at the RIDGE "Long-Term Observatory." Although only 5 dives are required, additional time on station with access to animals will be required. June-Oct weather window.
6. R.W. Collier, OSU	Klinkhammer, G., OSU; Lilley, M., UW; VonDamm, K., UT	Gorda Ridge: 160n miles from Newport, OR (approx. 42°45.3'N, 126°42.47'W)	Studies of off-axis hydrothermal venting on the northern Gorda Ridge. Normal ALNAV long-baseline navigation is requested as is Seabeam Mode 1 operations from URI. Use of the manifold sampler has been arranged with NOAA-PMEL.	NSF	June 1 - Sep 1, 1993 (due to weather constraints)		8	J. Lupton, M. Fisk, P. Schiffman, R. Zierenberg, J. McClain, R. Lowell, P. Rona and G. Taghon have expressed interest in collaborating on studies at this site.
7. R. Embley, NOAA/PMEL/ OERD; R. Koski, USGS	P. Mann, R. Dziak, W. Normark, A. Davis	Blanco Fracture Zone: 43°10' - 43°50'N, 127° -128°45'W	Submersible studies of extensional and strike-slip segments of the Eastern Blanco Fracture Zone: A window into seawater/crustal and seawater/mantle interchange along an oceanic Transform Fault Zone.	NOAA/ NURP	Aug-Sept 1993		12	
8. F. A. Frey, MIT	M. O. Garcia, Univ of Hawaii; M. Roden, Univ of Georgia; T. Trull, Univ of Paris	Oahu, Hawaii	Temporal evolution of Koolau Volcano, Hawaii: A geochemical endmember derived from the Hawaiian hotspot. In order to fully use these geochemical data to understand the origin and evaluation of the Hawaiian hotspot it is necessary to determine if these relatively young Koolau lavas are typical of the entire Koolau shield. Because more than 90 % of the volcano is submarine, sampling of older Koolar lavas requires drilling and coring through the shield or sampling the submarine scarps resulting from debris avalanches.	NSF	Summer or fall 1993		4 - 6	

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
9. F. Sansone, U of Hawaii	J. Lupton, NOAA/PMEL	Loihi Seamount, Hawaii: 18°50' N, 155°30'W	Measure dissolved gases in hydrothermal fluids emanating from a range of vent fields on Loihi Seamount (1000-4000m depth). Proposes to use gas-tight titanium samplers to collect water for measurement of CH4, TCO2, H2, and HE-3 concentrations, and DEL C-13-CH4 values. The first three of these gases will be measured on board the support ship during the cruise. A seagoing high vacuum system will be used to process samples from the gas-tight bottles, and to prepare bottles for deployment on ALVIN. The NOAA manifold sampler will be used to ensure that undiluted samples at a known temperature are collected.	NSF	September, 1993	April-May 1993	6	Dives should be coordinated with those proposed by Mike Garcia (U of H) for rock sampling.
10. D. Thistle, Florida State	J. E. Eckman, Skidaway; G. Paterson, British Museum	San Diego Trough: 32°52'N, 117°46'W	The role of predation in deep-sea community organization: A study of the effects of predators on the infauna of a site in San Diego Trough.	NSF	1994: Jan, Mar, Jun,		12 9 9	The requested spacing in time is needed.
11. R. Lutz, Rutgers	S. C. Cary, D. Desbruyeres, D. Farnari, R. Haymon, R. Hessler, H. Jannasch, K. Johnson, M. Kennish, L. Mullineaux, D. Nelson, C. Peterson, P. Tyler, K. VonDamm, R. Vrijenhoek, A. Bowen	9-10° along the East Pacific Rise, (approx. 9°50'N, 104°17'W)	Temporal changes in biological community structure at newly-formed hydrothermal vents along the East Pacific Rise. The primary objectives of the proposed interdisciplinary studies are: (1) to document temporal changes in biological community structure and associated low-temperature, vent fluid geochemistry in these newly-formed vent systems; and (2) to increase our understanding of biological and physical processes contributing to the biological succession patterns observed along this active segment of the mid-oceanic ridge axis.	NSF - RIDGE	May 1993 Feb 1994 Nov 1994 Sep 1995		25 20 20 20	The requested spacing in time is needed.
12. H. W. Jannasch, WHOI	C. O. Wirsen S. J. Mollyneax K. O. Stetter, R. Huber, D. C. Nelson	9-10° N EPR, & 23-26° N Mid-Atlantic Ridge	Work at the 9-10° N EPR sites will concern temporal changes of microbial processes, physiological and molecular analyses of the "white fluffy material", bacterial isolations. Work at the 23-26° N MAR sites will involve in-situ measurements of chemosynthesis with special emphasis on pyrite as electron donor, food source for shrimp, isolations.	NSF	1993	adjacent years	EPR:10 MAR:7	Additional researchers desired: EPR: C.M. Cavanaugh, C.L. Dover (work on symbiosis) MAR: M.K. Tivey (or associated geochemist)

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
13. C. Fisher, Penn State	R. Lutz et al.	9° N on the EPR	Allomeric growth and succession of vestiferans at a young hydrothermal vent. 9° N on the EPR has been identified as a "RIDGE Fast-response Site." The proposed experiments will take advantage of a site for which re-visitation is expected. The instrumentation described under Intent #5 also applies to this request.	NSF - RIDGE	Spring 1992 & any time after Fall 1992		4 dives Spring 1992, 4 dives 1993	2 dives/cruise on cruises of opportunity for 2 years are requested.
14. K. Wishner, URI	M. Gowing, UCSC; A. Hanson, URI; L. Levin, NC St; L. Mulleneaux, WHOI; C. Turley, Bristol & PML(UK); D. Kester, URI	Volcano 7, 13°25'N, 102°30'W, 350 km W of Acapulco	OMZI - Effects of the Oxygen Minimum Zone on Pelagic and Benthi Communities, Processes, and Chemistry in the Eastern Tropical Pacific.	NSF & ONR	1993	1994	leg 1: 28 leg 2: 14	2 legs are needed with a 3-6 month separation
15. P. A. Rona, NOAA/AOML	H. Bougault, IFREMER/COB; J.F. Casey, U Houston; H.J. Dick, WHOI; J.M. Edmond, MIT; D.C. Kadco, U Miami; G. Thompson, WHOI	Mid-Atlantic Ridge at 15°N (Fifteen Twenty Fracture Zone), 26°N (TAG), and 23°N (Snakepit)	FARA Program collaborative investigation of hydrothermal processes to include water chemistry, heat transfer, hydrothermal precipitates, mafic and ultramafic rocks, geologic setting, and biology.	NSF, NOAA, & IFREMER	1993 exclusive of peak hurricane season (mid-Aug to mid-Oct)		20	Update of prior submission.
16. D. Von Herzen, WHOI	M. Mottl, Univ of Hawaii; H.P. Johnson, U of Wash	26°N, 45°W Mid-Atlantic Ridge	Measurement of thermal & chemical vent fluxes; seafloor conductive heat flux, sulfide and basalt sampling (seafloor drill - night program from surface ship), in and around TAG hydrothermal field, mid-Atlantic Ridge.	NSF	Spring-Fall, 1993		12 - 15	Additional researchers under discussion for near-bottom active-source electromagnetic induction (S. Webb-SIO) and/or seismics (S. Holbrook, WHOI) to determine detailed internal structure beneath active venting region (night programs).

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
17. C. H. Barth, GE-KAPL	D.R. Marx, KAPL; R.B. Sheldon, GE	(1)18°N 64°W, (2) 38°25'N 72°6'W, (3) 38°18'N 69° 35'W	Recovery of deep-sea corrosion experiments. Retrieve specimens deployed by ALVIN and/or Trieste in 1977, 1979, 1980, 1982, 1983, and 1986 to support long term corrosion research program.	Dept of Energy	Summer 1993	Summer 1994, 1995	5	
18. H.T.Mullins, Syracuse	N. Breen, Stanford; J. Dolan, Cal Inst of Tech	Southeast Bahamas north of Hispaniola (approx. 20°N 70°W)	"Retreat of carbonate platforms along the Southeast Bahama-Hispaniola Collision Zone" - To determine the response of carbonate platforms to active plate tectonics collision.	NSF or ONR	Winter or Spring 1993 (avoid hurricane season)		10	Phase I of this investigation using SeaMARC II and seismic reflection techniques is already complete. Phase II will focus on bottom sampling.
19. L. Lawver, Univ. of Texas	R. VonHerzen, WHOI; M. Fisk, OSU; D. Karl, U of H; R. Lutz, Rutgers; J. Anderson, Rice	Bransfield Straight, 62°S, 59-57°W	Recently-measured heat flow in King George Basin indicate an active hydrothermal system complicated with thick sediment cover similar to the Guaymas Basin. Acomprehensive investigation of the King George Basin would benefit.	NSF/DPP	mid-Jan to mid-March 1994		50	Since freezing air temperatures are a problem, time window is limited to Jan and Feb. In December, surface ice can be a problem.
20. Ullman,W., Univ. of Del.; Kastens, K., L-DGO		Bacino Bannock, East Med., and other sites in Med.	A interdisciplinary research program to look at the geology, geochemistry, sedimentology, fluid dynamics, and microbiology in the region of the brine/seawater unterface. Detailed sampling and manipulative experiments involving sediments and the water column, with a precision that cannot be accomplished satisfactorily from surface platforms, will also be a fundamental part of the sampling program.	NSF & ONR	late summer or early fall 1993	Anytime	12	Investigators with interest in Bacino Bannock should contact the PIs. Interested in adding individuals with interests in microbiology and small scale fluid dynamics.
21. Druffel, E., WHOI	W. Ullman, K. Kastens	36°N, 23°E - shelf slope region of southern Greece.	The ages of deep-sea corals from 600 meters depth off Little Bahama Bank in the Florida Current are >200 to 1800 years old. A giant zersion of the zoanthid (or black coral) studied lives in the Mediterranean in the upper few hundred meters. Large specimens of this type would allow reconstruction of time histories of several important soncervative and transient tracers that would be reflective of physical and chemical processes in the Med. ALVIN is needed to obtain these specimens intact from known locations.	NSF	late 1993	considerable flexibility	4	Research efforts of deep-sea ecologists and geochemists interested in tracer distributions and sediments would be benificial. Camera survey of the area is required. No artificial tracers can be used on this leg.

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
22. C.L. Van Dover, WHOI	TBD	North Cleft, Juan de Fuca Ridge	Site Survey/Tropic Studies at the Volcano Observatory, North Cleft, Juan de Fuca Ridge	NSF	Summer, 1993		5	Part of multidisciplinary RIDGE program.
23. C. L. Van Dover, WHOI	TBD	Endeavor Segment, Juan de Fuca Ridge	Photo Interactive Systems at hydrothermal vents.	NSF/ONR	Summer, 1994		20	
24. C. L. Van Dover, WHOI	TBD	North Cleft, Juan de Fuca Ridge	Temporal Variability in community composition, Volcano Observatory, North Cleft, Juan de Fuca Ridge. Includes deployment of ABE, ALAN-compatible instrumentation.	NSF/RIDGE	June, Sept, June 1994-1995		5	Part of multidisciplinary RIDGE Program.
25. G.M. McMurtry, Univ. of Hawaii	P. Sedwick, D. Stuben	Island of Hawaii	Geochemical Investigation of Loihi Seamount hydrothermal vent fields. ALVIN is needed to investigate new vent fields discovered by Pisces V and MIR diving. Depth capability of ALVIN will allow study of deep vent fields at and below 2000 m limit of Pisces V.	NOAA, NSF	Summer 1993		10	
26. G. M. McMurtry, Univ. of Hawaii	P. Sedwick, P. Fryer, A. Malahoff, D. Stuben	Northern Mariana Islands	Investigation of Hydrothermal Systems on Submarine Arc Volcanos in the Northern Mariana Arc: Fukujin Seamount and the Kasuga Volcanic Chain.	NSF	Summer 1993		10	This is part of a follow-up investigation of ALVIN diving in the western Pacific in 1987. SEABEAM bathymery on Fukujin is needed.
27. C. L. Van Dover, WHOI	S. Chamberlain, C. Cavanaugh, H. Jannasch	TAG, Mid-Atlantic Ridge	Vision and ecology of the hydrothermal vent shrimp Rimicaris exoculata.	NSF	ASAP after 1992 ALVIN overhaul		20	Vision portion currently funded by NSF.
28. K. Becker, Univ of Miami	E. Davis, Pac. Geol. Ctr. B. Carson, Lehigh	(1) Middle Valley, Juan de Fuca; (2) Oregon Margin; (3) Vancover Margin	Instrumented borehole seals for the ocean drilling program: Extracting data and sampling fluids from instrumentation deployed in ODP holes at: (1) Middle Valley (deployed summer 1991), (2) Cascadia Margin (to be drilled fall 1992).	Funded NSF-ODP, (NSF OCE-9012344)	Summer, early fall 1993		5	
29. Harrold, C., Monterey Bay Aquarium	B. Robison, G. Greene, C. Baxter, J. Barry, G. Matsumoto, H. Jannasch	Monterey Submarine Canyon, 36°23'N 122°53' W	Investigations of Cold Seep Communities in the Monterey Submarine Canyon System: Investigate cold sulfide seep communities dominated by Calyptogena phaseoliforms. Investigate source of sulfides, migration of bivalves to and from the seeps, characterization of and variation in the communities, organismal interactions, nutrition of community members, genetics of Calyptogena populations.	Montery Bay Aquarium Foundation, MBARI, & USGS	Fall (Sep-Oct) 1993	Fall (Sep-Oct) 1994	10	This proposal is intended to build on work conducted on the seeps by ALVIN in 1988 and by the Soviet MIRs in 1990, and to be part of a larger seep research effort conducted by MBARI scientists in cooperation with JAMSTEC.

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
30. R.D. Flood, Stony Brook, State Univ. of NY	M. Wimbush, John van Leer, J. Aller, L. Keigwin, C. Nittrouer, G. Jones	Blake Outer Ridge, eastern U.S. margin. Primary site - 30°6'N 76°2'W. Secondary site within 150-200 miles of primary site.	(1) Determine evolution of sediment bedforms from late glacial through present-day beneath axis of Western Boundary Undercurrent at 2500 - 4500 m along the southeast U.S. From the history of bedform evolution, we can determine an independent record of temporal and spatial changes in bottom current flow at this critical site through the late glacial/-interglacial transition. Such information is required to substantiate the understanding of glacial/interglacial ocean circulation that comes from paleontological studies. (2) Study modern flow/bedform interactions. (3) Determine bedform evolution since ALVIN dives in February 1984.	NSF	Spring/ summer 1993	Fall/winter 1993	15 - 20	Scientific needs: ALVIN: - coring to ca. 1m - high freq subbottom profile Support Ship: - piston/gravity corer - SeaBEAM

ALVIN/ATLANTIS II
Notification of Intent Summary
(These Intents were submitted in 1990 and NOT resubmitted this year)

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	Dives	Remarks
31. M. B. Cita, & A. Camerlenghi, (Univ. of Milano)	K.C. Emeris, W. Hieke	Eastern Mediterranean	Mud diapurs on the Mediterranean Ridge accretionary: Work is focussed on the characterization of mud diapirism on the Med. Ridge in order to compare it with other accretionary complexes (Barbados, Nankai, Cascadia) where convergence has not led to crustal collision and no evaporitic layers exist within the subducting sediment section.	?	?		6	
32. F.W. McCoy, Univ of Hawaii	TBD	Eastern Mediterranean	Geological Structure and sampling of Eratosthenes Seamount: Investigation of potential Brine Basins on the lower Nile Cone.	NSF, BSF (Israel)	TBD		TBD	Avoid winter storms.
33. K. MacDonald, ,	S. Miller, J.C.Sempere, J. Morton, P.J. Fox,	East Pacific Rise, 8°20'S 108°W	Study of recently erupted lava field, the submarine equivalent of "flood basalts" in the accretion of fast-spreading oceanic crust and study of an incremental "event" of seafloor spreading.	?	1993	1994	10	
34. Karson, J.A., Duke	Hurst, S.D. Toomey, D.R. Klein, E.M. Auzende, J.M. Mevel, C. Gente, P.	Mid-Atlantic Ridge; 23°N 45°W - MARK area	Correlation of geological and seismic structure in the southern MARK area: Surface manifestations of active normal faulting on the Mid-Atlantic Ridge.	NSF	30 days, 5/92 - 9/30/93		20	Study is part of F.A.R.A. (French-Americearc Ament) Phase II

NOTICES OF INTENT BY REGION

For 1993

December, 1991

PACIFIC

		dives	
JUAN DE FUCA RIDGE			
1. Lutz & Vrijenhoek	Biol.	6	
2. Mottl	Interdi	10	
3. Mottl	G&G	15	
5. Fisher	Biol.	10	(5)*
22. Van Dover	Biol.	5	
23. Van Dover	Biol.	20	(20)*
24. Van Dover	Biol.	5	(5)*
28. Becker	G&G	5	
OFFSHORE OREGON			
1. Lutz & Vrijenhoek	Biol.	6	
4. Moore & Orange	G&G	10	
BLANCO FRACTURE ZONE			
7. Embley & Koski	G&G	12	
GORDA RIDGE			
6. Collier	G&G	8	
	TOTAL	112	
OAHU, HAWAII			
8. Frey	Geoch	6	
9. Sansone	Geoch	6	
25. McMurtry	Geoch	10	
	TOTAL	22	
MARIANA ISLANDS			
26. McMurtry	G&G	10	
	TOTAL	10	
MONTEREY CNYN/SAN DIEGO TR.			
29. Harrold	Biol.	10	
10. Thistle	Biol.	30	(30)*
	TOTAL	40	
EASTERN TROPICAL PACIFIC			
14. Wishner	Biol.	42	
EAST PACIFIC RISE (EPR)			
11. Lutz	Interdi	85	(65)*
12. Jannasch	Biol.	10	
13. Fisher	Biol	8	**
	TOTAL	145	
SOUTHERN EPR			
1. Lutz & Vrijenhoek	Biol.	12	
33. MacDonald	G&G	10	##
	TOTAL	22	
TOTAL PACIFIC		**351**	

ATLANTIC

MID-ATLANTIC RIDGE			
15. Rona	G&G	20	
16. VonHerzen	G&G	15	
12. Jannasch	Biol.	7	
27. Van Dover	Biol.	20	
34. Karson	G&G	20	##
	TOTAL	**82**	
WESTERN ATLANTIC			
17. Barth	Corrosi	4	
	TOTAL	**4**	
BLAKE OUTER RIDGE			
30. Flood	G&G	20	
	TOTAL	**20**	
BAHAMAS			
17. Barth	Corrosi	1	
18. Mullins	G&G	10	
	TOTAL	11	
TOTAL ATLANTIC		**117**	

SOUTHERN OCEAN

BRANSFIELD STRAITS			
19. Lawver	G&G	50	(50)*
KING GEORGE ISLAND BASIN			
1. Lutz & Vrijenhoek	Biol.	6	
TOTAL SOUTH OCEAN		**56**	

MEDITERRANEAN

20. Ullman & Kastens	Interdi	12	
21. Druffel	Biol.	4	
31. Camerlenghi & Cita	G&G,	6	##
32. McCoy	G&G	?	##
TOTAL MED.		**22**	

* The number in ( ) indicates the # of the total dives which are for 1994 and/or 1995.

** Four of these dives are proposed for 1992.

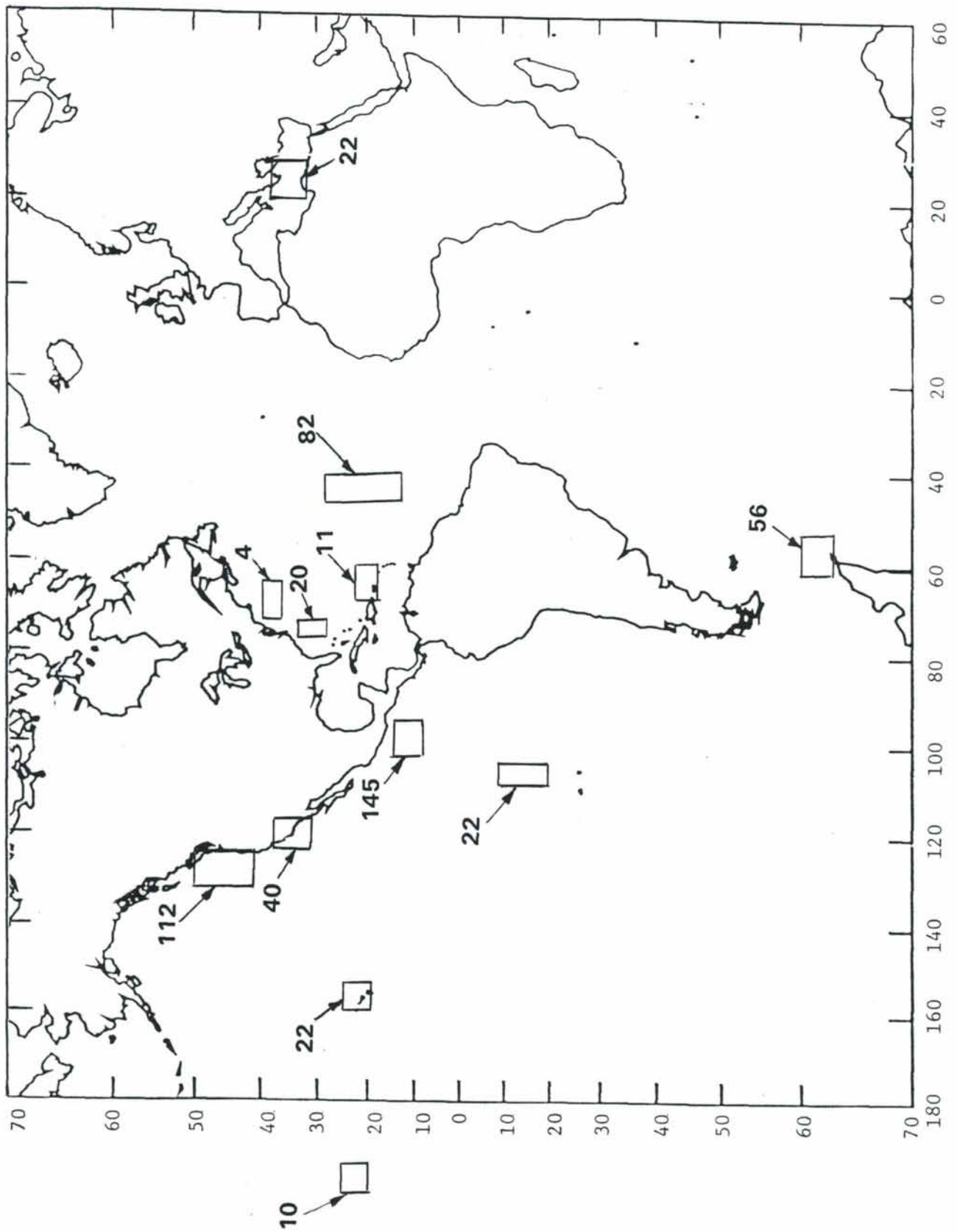
\#\# Dives were proposed last year, but not resubmitted this year.

TOTAL DIVES OF INTEREST: 546 (***)(#)

*** Includes 175 dives proposed for 1994 and/or 1995.

\# Includes 36 dives requested in 1990, but not resubmitted.

ALVIN PROPOSED DIVES BY REGION



UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of institutions for the coordination and support of university oceanographic facilities.

MEMO

To: ALVIN Review Committee

From: Jack Bash

Subj: Submersible Science Committee Charge

The following was the UNOLS charge to the planned UNOLS Submersible Science Committee.

- 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.

P.O. Box 392
Saunderstown, RI 02874

Phone: (401) 792-6825
FAX: (401)792-6486