

ALVIN REVIEW COMMITTEE

Summary Report of the  
April 23-24, 1981 Meeting

Carriage House  
Woods Hole Oceanographic Institution  
Woods Hole, Mass.

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Minutes of Meeting

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MAY 1981



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## ALVIN REVIEW COMMITTEE

Minutes of Meeting  
April 23-24, 1981  
Woods Hole Oceanographic Institution  
Carriage House, Woods Hole, Mass.

GENERAL: The meeting was called to order at 0910, April 23, 1981, by Dr. R. Corell. The following were present:

ALVIN Review Committee	Observers	
R.W. Corell, Ch.	F.R. Alexander	NSF
R.N. Anderson	R.S. Carney	NSF
D.E. Karig	R.P. Dinsmore	WHOI
K.C. Macdonald	K.W. Kaulum	ONR
D.C. Rhoads	D.G. Landry	WHOI
G.T. Rowe	W.M. Marquet	WHOI
A.E. Maxwell	M. Rawson	L-DGO
	G.G. Shor	Scripps
J.M. Edmond (abs)	T.R. Stetson	UNOLS
M. Wimbush (abs)	M.J. Umbach	NOAA

Members of earlier ALVIN Review Committees and terms of office are listed in Appendix I.

The numbered paragraphs below are keyed to the agenda items, which is included as Appendix II.

1. WELCOME AND INTRODUCTION: R. Corell gave a brief welcome to those present. He said emphasis would be placed on reviewing as many proposals as possible the first day, to enable the ALVIN group to work out a tentative, first 1982 schedule taking into account transits, suitable port stops, etc. in time for the Committee to comment on it while still in session.
2. REPORT ON LAST YEAR'S SEASON: J. Donnelly gave a report on the previous dive season illustrated by viewgraphs. These are included here with a summary of the dives conducted during 1979-1980 in Appendix III.
3. APRIL 1980 REPORT: Last year's meeting report, with appendices had been previously circulated to the Committee and all attendees. It was adopted by unanimous vote as written.

4. REVIEW OF PROPOSALS: Copies of proposals received for 1982-83 ALVIN time had been previously circulated to the Committee and a tabulation of them appears as Appendix IV. Indicated therein is a very brief note as to action recommended.

As was done last year, after a suitable discussion on each, Dr. Corell called for a vote from the Committee by means of "flash cards" thus signaling in unison ranking of the proposal under review to the recorder.

5. RECOMMENDED 1982 SCHEDULE: A preliminary, tentative, recommended schedule was developed and is included here as Appendix V. You are cautioned that some programs are not yet funded, some proposals are not even written, and that the funding agencies have not at this time offered agreement to this plan.

As the project funding becomes clearer and if slots open up other programs may be accommodated.

6. COMMENTS BY FUNDING AGENCIES:

NSF R. Carney said R. Wall, Section Head, Oceanography, was enthusiastic about Western Pacific projects. NSF spring panels are now the target date for proposals requiring ship time, so the time for the ARC Meeting should be adjusted. The Meeting could be held about the time of the NSF review, but before the spring UNOLS semi-annual meeting so that escort vessels could be considered.

ONR K. Kaulum indicated Navy concern with the submersible science study (S<sup>3</sup>) report which is still only draft. A group from ONR, SUBDEV GR I, MPL at Scripps, and others met recently to consider scientific use of SEA CLIFF and other Navy submersibles. The group concluded that some significant operational changes would be necessary to make these facilities useful to science. K. Kaulum outlined the group's resulting plan to provide a science support group and equipment funds for science utilization of Navy deep submersibles including NR-I, but indicated no funds had been identified within Navy for this purpose.

R. Corell suggested SEA CLIFF might pick up some of the science projects in the vicinity of San Diego and save LULU a long, weather-constrained transit. K. Kaulum indicated W.H.O.I. had been requested to provide design input for science capability on SEA CLIFF. ARC offered Kaulum its confidence and moral support in all these efforts.

NOAA J. Umbach, who will be reassigned in early June, said the ALVIN program ranked very high with NOAA and that the internal rankings of NOAA proposals were similar to those of ARC.

7. ALVIN REVIEW COMMITTEE TERMS: The terms of Drs. Edmond, Macdonald and Rhoads expire this June. Taking into consideration the disciplines these members represent and the content of the proposals currently being considered, the Committee suggested and ranked three candidates for each position. The secretary was requested to contact the candidates to see if they would be willing to serve. These names will be submitted to the Advisory Council for approval and subsequent ratification at the May UNOLS Semiannual Meeting.

8. SUBMERSIBLE SCIENCE STUDY: M. Rawson was present to report on what has been labeled the "S<sup>3</sup> report". Disappointingly few comments had been received on the draft by the project office at L-DGO, under the direction of W. Ryan. As a result of such reviews as they did receive, it is to be somewhat shortened and the recommendations high-lighted and the report finished by summer's end.

Major short-term recommendations include replacement of LULU with a modified UNOLS vessel or chartered mudboat and conversion of ALVIN to a single-point lift by 1983. The Committee generally endorsed using a UNOLS vessel as tender and set up an *ad hoc* group consisting of R. Anderson, R. Corell and G. Rowe to go to L-DGO April 30th to draft a concise set of near-term recommendations as endorsed by the Committee for discussion and adoption at the Semiannual Meeting.

By voice vote, the Committee rejected the draft report's recommendation to create a National Oceanographic Facility for shallow water submersible deployment and did not feel diverting ALVIN to such use was effective use of its capabilities. Admittedly "proposal pressure" was difficult to assess, but it was felt such demand as there might be could be satisfied by an outside charter.

9. ALVIN FLYER: The Committee wished to assess Community interest for dive programs in the Western Pacific Ocean with a one-page flyer soliciting proposals for work as well as projects to be accomplished in transit.

There is the possibility of this action necessitating an ARC meeting this fall.

The "standard" flyer for accessing ALVIN will be updated and issued as before, with the added text necessary to encourage P.I.'s to meet NSF target dates for proposals requiring shiptime. This may affect the timing of the spring ARC meeting.

10. OTHER:

a. A. Maxwell distributed a request to W.H.O.I. from Prof. A. Monin, Dir., P.P. Shirshov Institute of Oceanology at Moscow, to use ALVIN on the Reykjanes Ridge rift zones (SW of Iceland). It appears W.H.O.I. will not participate in this project.

b. R. Dinsmore reviewed the 1981 ALVIN schedule and indicated because of escort and other problems it appeared the P. Lonsdale request for 1982 could be accommodated in December, 1981, and K. Smith would be shifted to early 1982. Later, before adjournment we learned all parties were agreeable.

c. J. Donnelly brought up the problem of the ALVIN acquiring new, specialized equipment. Small, less costly adjustments are made routinely with operating funds, but equipment development calls for larger expenditures.

After some discussion the Committee recommended a special sub-group to meet (for about a half day) prior to the annual ARC meeting to formalize and "target" ALVIN equipment improvements.

Adjourned 1505, 24 April 1981

Thomas Stetson  
Executive Secretary  
UNOLS

TS:lm

The Committee and Executive Secretary wish to acknowledge with thanks the service of Drs. Edmond, Macdonald and Rhoads on the ALVIN Review Committee.

UNOLS Review Committee  
for DSRV ALVIN

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1975  
(First Meeting 2/19/75)

	Term Expires
A.R. Richards, Ch., Lehigh	7/78
C.L. Drake, Dartmouth	7/76
G. Grice, WHOI	7/78
R.R. Hessler, SIO	7/77
G. Keller, NOAA/AOML	7/77
S. Murphy, U/Wash	7/76
C. Rooth, RSMAS	7/76
K.K. Turekian, Yale	7/78
Tj. van Andel, Stanford	7/77
A.E. Maxwell, WHOI, <i>ex-officio</i>	

	1979 Term
R.W. Corell, Ch., UNH	7/76-6/82
R.N. Anderson, L-DGO	7/79-6/82
J.B. Corliss, OSU	7/77-6/80
J.M. Edmond, MIT	7/78-6/81
K.C. Macdonald, SIO	7/78-6/81
D.C. Rhoads, Yale	7/78-6/81
R.D. Turner, Harvard	7/77-6/80
M. Wimbush, URI	7/79-6/82
A.E. Maxwell, WHOI, <i>ex-officio</i>	

1976

A.F. Richards, Ch., Lehigh	7/78
R. Corell, UNH	7/79
M. Gregg, U/Wash	7/79
G. Grice, WHOI	7/78
D. Hayes, L-DGO	7/79
R.R. Hessler, SIO	7/77
G. Keller, OSU	7/77
K.K. Turekian, Yale	7/78
Tj. van Andel, Stanford (resigned 9/76)	
A.E. Maxwell, WHOI, <i>ex-officio</i>	

1980

R.W. Corell, Ch., UNH	7/76-6/82
R.N. Anderson, L-DGO	7/79-6/82
J.M. Edmond, MIT	7/78-6/81
D.E. Karig, Cornell	7/80-6/83
K.C. Macdonald, UCSB	7/78-6/81
D.C. Rhoads, Yale	7/78-6/81
G.T. Rowe, Brookhaven	7/80-6/83
M. Wimbush, URI	7/79-6/82
A.E. Maxwell, WHOI, <i>ex-officio</i>	

1977

	Term
R.W. Corell, Ch., UNH	7/76-6/79
J.B. Corliss, OSU	7/77-6/80
M.C. Gregg, U/Wash	7/76-6/79
G.D. Grice, WHOI	2/75-6/78
D.E. Hayes, L-DGO	7/76-6/79
A.F. Richards, Lehigh	2/75-6/78
K.K. Turekian, Yale	2/75-6/78
R.D. Turner, Harvard	7/77-6/80
A.E. Maxwell, WHOI, <i>ex-officio</i>	

1978

R.W. Corell, Ch., UNH	7/76-6/79
J.B. Corliss, OSU	7/77-6/80
J.M. Edmond, MIT	7/78-6/81
M.C. Gregg, U/Wash	7/76-6/79
D.E. Hayes, L-DGO	7/76-6/79
K.C. Macdonald, Scripps	7/78-6/81
D.C. Rhoads, Yale	7/78-6/81
R.D. Turner, Harvard	7/77-6/80
A.E. Maxwell, WHOI, <i>ex-officio</i>	

## UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

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Woods Hole Oceanographic Institution  
Woods Hole, Massachusetts 02543

### ALVIN REVIEW COMMITTEE MEETING

0830, 23-24 April 1981, W.H.O.I. Carriage House

### AGENDA

1. Welcome & Introduction
2. Report On Last Year's Season  
*A brief report will be given by J. Donnelly*
3. Acceptance of the April 1980 Meeting Report  
*Comments should have been forwarded to UNOLS Office in advance of the meeting*
4. Review of Proposals for 1982 & Beyond  
*Committee discussion & review*
5. Recommended ALVIN/LULU Scheduling for 1982  
*A tentative schedule will be developed*
6. Comments on ALVIN Program by Funding Agencies  
*An opportunity for representatives to comment*
7. Three ARC Members' Terms Expire in June  
*The Nominating Committee welcomes suggestions of names, present incumbents are eligible for reelection*
8. The Submersible Science Study  
*The Report will have been reviewed by ARC and others and will require further action*
9. The Committee Will Review Text of ALVIN Flyer  
*This will inform potential ALVIN users of its likely whereabouts*
10. Other:  
*A chance to bring up additional business or questions*



ALVIN-LULU  
1980 Operations Summary

LULU and ALVIN were at the U.S. Naval Station in Balboa Panama as 1980 opened. One cruise for Alex Malahoff in the vicinity of the Galapagos Rift Zone completed the work in the Pacific Ocean.

LULU with ALVIN aboard returned to Woods Hole for the first extensive maintenance in twenty-one months. The work on ALVIN primarily consisted of inspection repair and replacement of worn parts. However, on LULU the science and living vans were deemed unseaworthy and were replaced with built-up structure. This new complex has more usable internal space and a complete, but compact, separate head and shower for the mutual benefit of female scientists and the crew.

Certification dives in May off Bermuda were delayed for a retest of the ALVIN internal atmosphere. The commercial laboratory which analyzed our gas samples reported excessively high hydrocarbon content. The Naval Research Laboratory gave timely and thorough assistance in making a second analysis which proved satisfactory.

Two expeditions on the Mid-Atlantic Ridge, Kane Fracture Zone and Oceanographer Fracture Zone, consumed June and most of July. These two legs, 29 days followed by 24 days with 3 days between in Ponta Delgada, were an endurance test of personnel and equipment. It appears that in the future we

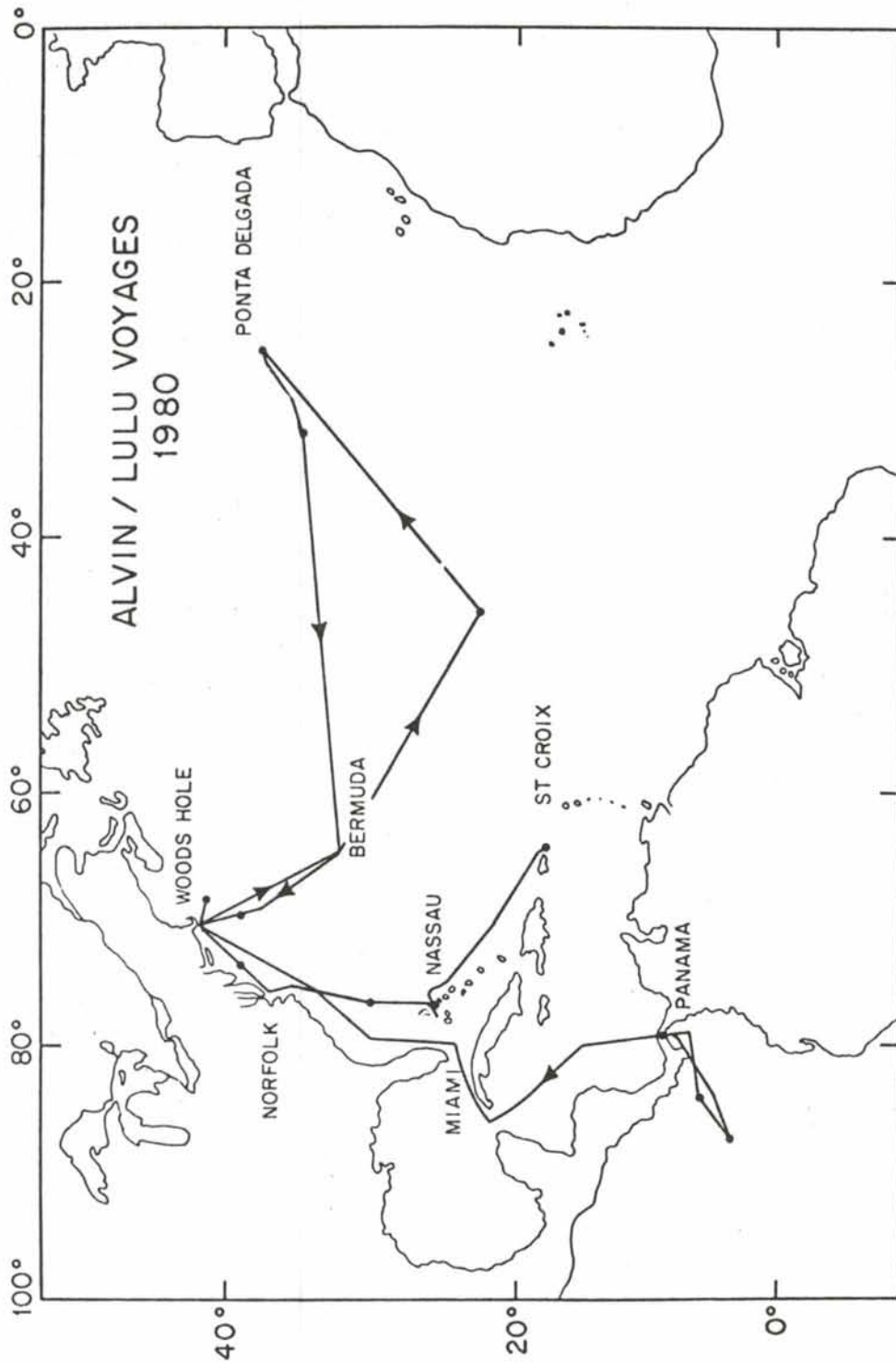
should be cautious in scheduling extremely long cruises. En route from Bermuda to Woods Hole a series of dives were conducted at Deep Ocean Station Two for Grassle, Turner and Jannasch. Two short trips out of Woods Hole preceded a maintenance period in September.

During this upkeep the major effort was final fitting and installation of the new syntactic forebody material. The expected improvement in payload has not been fully realized by this change. By replacing the old flotation with new syntactic we have reduced the gradual absorption of water which was continuously cutting into the payload reserve. Selected addition of syntactic blocks in vacant spaces will allow us to achieve the payload goal of 200 kg.

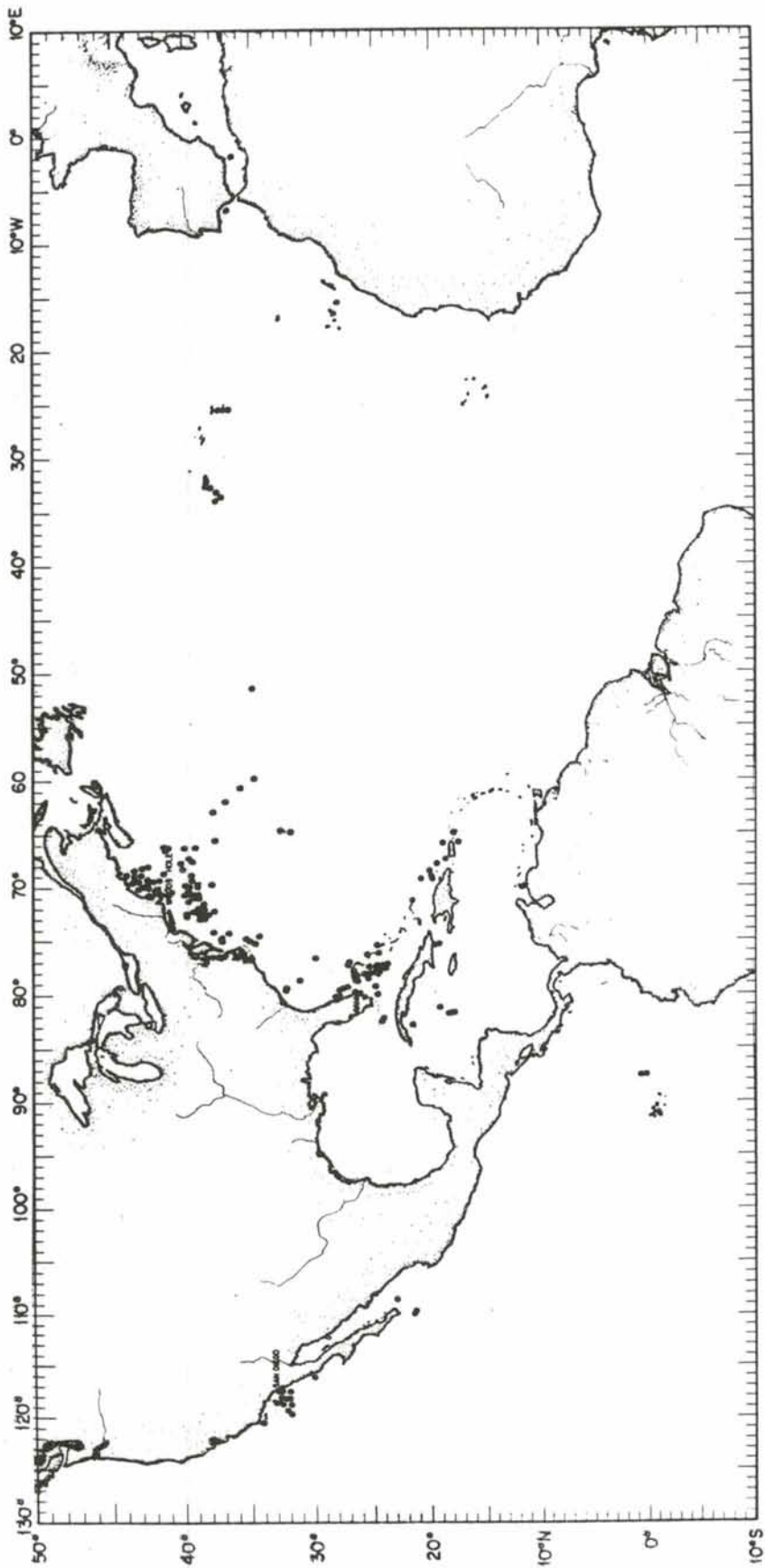
In October diving operations for Lambert of AOML and Dillon of USGS were conducted as part of the transit to the Bahamas.

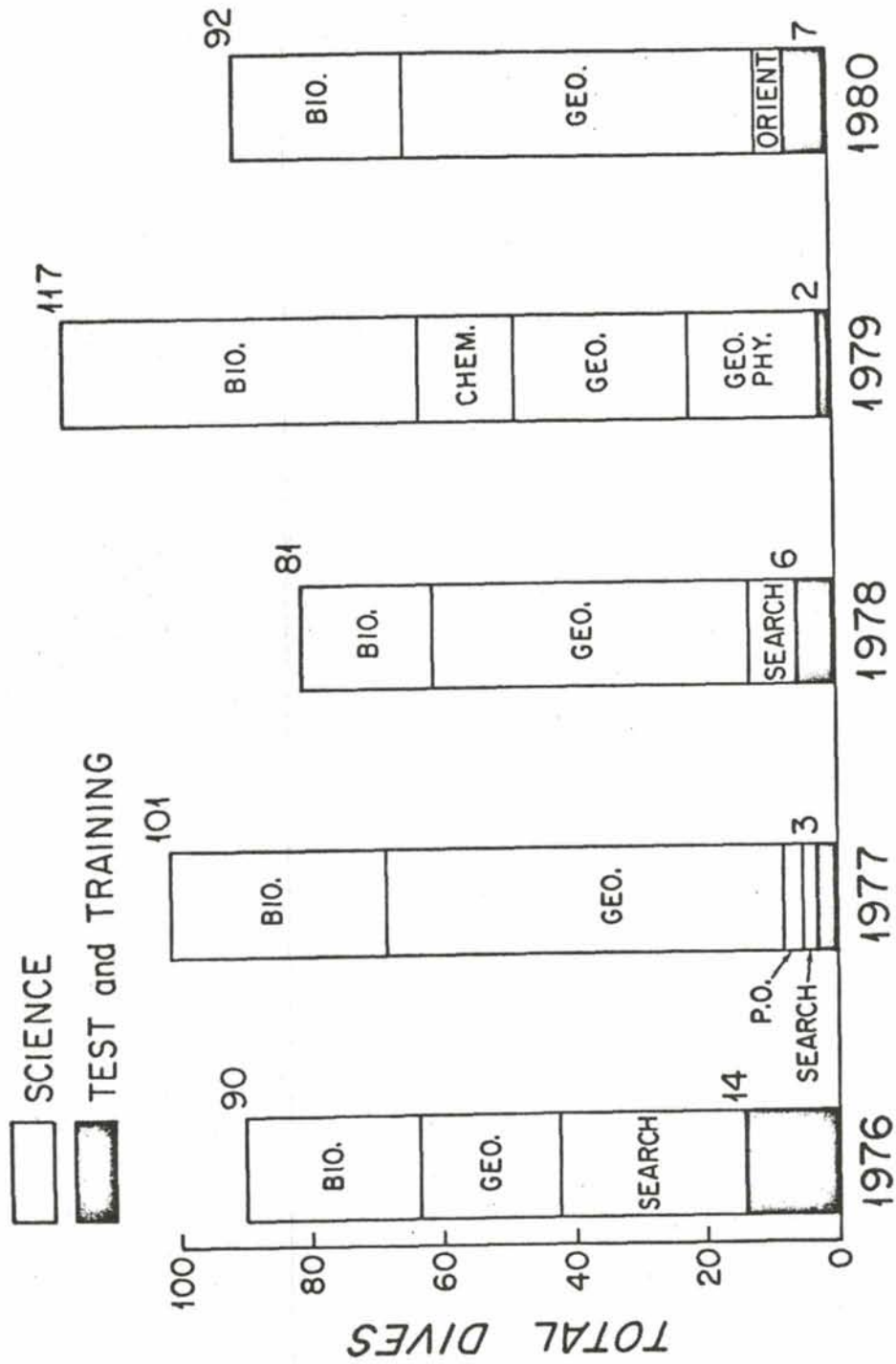
The projects undertaken in the Bahamas during November included dives for orientation, biology and filming for BBC. The last cruise out of Nassau was fraught with a series of casualties which severely impacted the scientific productivity.

The work at St. Croix for Grassle in December was interrupted by winds allowing only 9 of 12 planned dive days.



TOTAL ALVIN DIVES 1964 - 1980, 1,000







ALVIN/LULU  
OPERATIONS SUMMARY

	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>Purpose</u>			
BIOLOGY	20	54	28
CHEMISTRY		14	
GEOLOGY	48	27	53
GEOPHYSICS		20	
TEST & TRAINING	6	2	7
SEARCH	7		
ORIENTATION			<u>4</u>
TOTAL DIVES	<u>81</u>	<u>117</u>	<u>92</u>
 <u>User</u>			
NSF	88	114	58
ONR	23	35	34
NOAA	35	16	38
USGS		2	26
CALIF.		4	
NGS		5	
EPA	8		
NAVY	1		
KNOLLS ATOMIC			3
M. GILL (BBC)			2
NHK (JAPAN TV)			<u>1</u>
TOTAL USE DAYS	<u>155</u>	<u>176</u>	<u>162</u>
 <u>Activity</u>			
TRANSIT	78	56	71
ON STATION	<u>77</u>	<u>120</u>	<u>91</u>
USE DAYS	155	176	162
NON USE DAYS	<u>32</u>	<u>52</u>	<u>30</u>
DAYS AT SEA	187	228	192
OP DAYS IN PORT	<u>13</u>	<u>73</u>	<u>31</u>
OPERATING DAYS	200	301	223
NON OPERATING	<u>165</u>	<u>64</u>	<u>143</u>
TOTAL DAYS	365	365	366

COST SUMMARY

	<u>1978</u>	<u>1979</u>	<u>1980</u>
COSTS	\$1,722,700	\$1,753,800	\$1,943,750
OPERATING DAYS	200	301	223
\$/OP DAY	\$ 8,613	\$ 5,827	\$ 8,716
USE DAYS	155	176	162
\$/USE DAYS	\$ 11,114	\$ 9,965	\$ 11,998
DIVES	81	117	92
\$/DIVE	\$ 21,267	\$ 14,990	\$ 21,127



INVESTIGATOR	ASSOCIATES	AREA	PURPOSE	SPONSOR	DATE	ALTERNATE	ESCORT*	DIVES	COMMITTEE ACTION
1982									
1. BENDER, M.L. URI	von Herzen, R. Grassle, F. Honorez, J.	Galapagos spreading center	Geochem., geophys., biol. studies of mounds	NSF-2	March 82		Yes	11	#
1a CAILLIET, G.M. (OLIVER, J.S.) MLML	Mullins, H. et al	Monterey Canyon	Submar. slides benthic community	ONR-1	Spring 82	83-84	Not req'd	5	%
2. CHILDRESS, J.J. UCSB	Gluck, D. Robison, B.	S. Calif.	Near-bottom plankton metabolism	NSF-2	82	83	Not req'd	10	#
3. COOPER, R.A. NOAA, W.H.	Schlee, J. Valentine, P. Uzmann, J.	Oceanographer Canyon	Study benthos, sediments	NOAA	1-15 Aug 82	16-31 Aug 82	"	8	#
4. FLOOD, R.D. L-DGO	Biscaye, P. Takahashi, T. Lonsdale, P.	Blake Outer Ridge, 30°38'N, 76°16'W	Studies of Deepsea sed. furrows	NSF-2 ONR-2	Spring, Summer 82	Summer, Fall 82	C. HENLOPEN	7	Possible, but not scheduled
4a GANGI, A.F. BROWN, J.M. TAMU	Stacey, F. Tuck, G. Carlson, R.	Sigsbee Abyssal Plain	Test gravity hypothesis	NSF-2	Jan.-Feb. 82	March 82		4	#
5. GRASSLE, J.F. WHOI TURNER, R.D. MCZ HONJO, S. WHOI	Williams, S. Jannasch, H.	St. Croix, etc.	Sediment community ecology	ONR-3 NSF-1	Any, except Dec. 82		Not req'd	2	10-day Possible legs but not sched.
6. GRASSLE, J.F. WHOI WHITLATCH, R.B. U. CONN HONJO, S. WHOI		Panama Basin	Animal-sediment relationships BBL, marine snow	NSF-2	Open 82			10	Possible, but not scheduled
7. HECKER, B. L-DGO	Logan, D. Butman, B.	Lydonia Canyon	Slope & canyon epifaunal communities	BLM-3	Summer 82			16	#
8. HECKER, B. L-DGO		NE Providence Channel	Benthic re-colonization of DSDP Site 98	NSF-3	Spring 82	Open	Not req'd	6	#
9. HESSLER, R.R. Scripps	Smith, C. Nealson, K. Warner, J., et al	Santa Catalina Basin	Organic falls impact on benthic community	ONR-3	Spring 82	Winter 82	Not req'd	10	#
10. LONSDALE, P. Scripps	Edmond, J. Gieskes, J. Grassle, J.F. Mexicans	Guaymas Basin	Hydrothermal field studies	NSF-1	Jan. 82	-	E.B. SCRIPPS	12	#
11. MULLINS, H.T. MLML	Nybakken, J. Newton, C.	North of Little Bahama Bank	Deep water coral mounds	NSF-2	June 82	Summer 82	VIRGINIA KEY	4	%
12. NELSON, W.R. NOAA, Miss.	Grimes, C. Able, K. Cairns, S. Cohen, D.	Northern Caribbean	Deep reef fish, corals	NOAA	June, July 82	None	OREGON II	30	%
13. NEUMANN, A.C. UNC, Chapel Hill	Boardman, M. Lang, L. Lang, J.	Northern Bahamas	Carbonate reef processes	NSF-1	Fall 82	Spring 82	CZRV 2	8	#

INVESTIGATOR	ASSOCIATES	AREA	PURPOSE	SPONSOR	DATE	ALTERNATE	ESCORT*	DIVES	COMMITTEE ACTION
<u>1982</u>									
14. O'LEARY, D.W. USGS, WH	McGregor, B.	Continental slope off Cape Cod	Verify sidescan sonar images	BLM-1	July 82	Aug-Sept 82		24	Schedule if possible #
15. RONA, P.A. NOAA, Miami	Ballard, R. Bryan, W. Atwater, T., et al	Mid-Atlantic Ridge 26°N	Metallogenesis project at TAG field	NOAA-2 NSF-1	July 82	June 82	RESEARCHER	10-12	
16. SAYLES, F. WHOI	Smith, K. Murray, J. Allen, R.	DOS #2	BBL fluxes	NSF-3	July 82		Not req'd	6	#
16a SMITH, K.L. Scripps	Carlucci, A. Nealson, K. Robison, B. Childress, J.	S. Diego Trough S. Catalina Basin	Deep scattering layer	ONR-2	Spring 82	Winter 82	Not req'd	6	#
17. STUBBLEFIELD, W.L. LAMBERT, D.N. NOAA, Miami	Ryan, W. McGregor, B. Stanley, D.	Near Wilmington C., slope & rise	Geotechnical, morphological studies	NOAA	July 82	Aug 82		10	#
17a VAN ANDEL, T.J. Stanford	Lonsdale, P. Malfait, B. Ingle, J.	Carnegie R., Pan. Basin	Study Karst topography	ONR-1	Early 82			7	#
18. WILLIAMS, S.L. Knolls Atomic		38°25'N, 72°06'W DOS 2 & 4, St. Croix	Retrieve corrosion specimens	DOE-3	Open 82		Not req'd	4	#
19. WISNER, K.F. URI	Silver, M. Gowing, M. Ducklow, H.	39°10'N, 70°50'W or Atlantic upper rise, or Pacific	BBL zooplankton	NSF-1	Spring to Fall 82		Not req'd	5	#
<u>1983</u>									
20. ANDERSON, R.N. BENDER, M.L. FOX, P.J. CRAIG, H.	Lonsdale, P. Edmond, J. Hussong, D. Kari, D.	Mariana Trough	Back-Arc Spreading Center, geothermal study	NSF-1 ONR-1	June 83	Sep-Mar 83	Large AGOR	20	no action
21. GEORGE, R.Y. UNC, Wilmington	Brauer, R. Staiger, J.	Mona Canyon, adjacent P.R. Trench	Biol. of eutrophic deepsea environment	NSF-1	Summer 83	Dec. 83	C. ISELIN	6	no action

Sponsor Code:

1. Proposal will be submitted
2. Proposal submitted
3. Funded

Committee Action:

- # tentatively allocated time
- % not recommended to be scheduled

\* This column indicates escort indicated or preferred by P.I.



LULU Cr. No.	Date	Dive No.	Location	Sponsor/Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
103	1/14/80	999	0-44'N 85-50'W	Joint Agreement Geology	G. Ellis	D. Fornari R. Embley	0831	1706	8-35	2629 <sup>m</sup>	
"	1/15/80	1000	0-47'N 86-06'W	Joint Agreement Geology	R. Hollis	A. Malahoff G. Broderson	0834	1625	7-51	2500 <sup>m</sup>	
"	1/16/80	1001	0-45'N 85-50'W	Joint Agreement Geology	G. Ellis	A. Malahoff W. Ryan	0845	1707	8-22	2641 <sup>m</sup>	
"	1/17/80	1002	0-45'N 85-50'W	Joint Agreement Geology	R. Hollis	A. Malahoff R. Embley	0828	1636	8-08	2607 <sup>m</sup>	
"	2/4/80	1003	25-47'N 80-14'W	Joint Agreement Training	J. Donnelly	R. Brown R. Dinsmore	1152	1202	-10	2 <sup>m</sup>	
	5/13/80	1004	Woods Hole Dock	Tethered Trim Dive	G. Ellis R. Brown	A. Mac- whinney	1425	1542	1-17	3 <sup>m</sup>	
104	5/24/80	1005	32-23'N 64-33'W	Certifica- tion	R. Hollis R. Brown	D. Nachtman	1121	1127	-06	60 <sup>m</sup>	Aborted hy- draulic problem
"	5/25/80	1006	32-18'N 64-17'W	Certifica- tion	G. Ellis R. Brown	D. Johnson	1358	1722	3-24	3067 <sup>m</sup>	Aborted elect. problem
104	6/2/80	1007	23-40'N 45-33'W	Test	R. Hollis R. Brown	J. Paczosa	1502	1722	2-20	1978 <sup>m</sup>	
"	6/3/80	1008	23-30'N 45-00'W	Joint Agreement Geology & Certification	G. Ellis	H. Dick J. Karson	0913	1745	8-32	4014 <sup>m</sup>	
"	6/4/80	1009	23-35'N 45-01'W	Joint Agreement Geology	R. Hollis	J. Thompson H. Dick	0848	0918	-30	445 <sup>m</sup>	
"	6/4/80	1010	23-35'N 45-00'W	Joint Agreement Geology	R. Hollis	J. Thompson H. Dick	1133	1802	6-29	3670 <sup>m</sup>	
"	6/5/80	1011	23-35'N 45-00'W	Joint Agreement Geology	G. Ellis	J. Karson M. Mottl	0830	1645	8-15	3115 <sup>m</sup>	
"	6/6/80	1012	23-32'N 45-04'W	Joint Agreement Geology	R. Hollis	J. Thompson J. Delaney	0821	1622	8-01	3024 <sup>m</sup>	
"	6/7/80	1013	23-35'N 45-00'W	Joint Agreement Geology	G. Ellis R. Brown	J. Karson	1010	1806	7-56	4008 <sup>m</sup>	
"	6/8/80	1014	23-32'N 45-01'W	Joint Agreement Geology	R. Hollis	M. Mottl J. Delaney	0833	1655	8-22	2912 <sup>m</sup>	

MLU Cr. No.	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
104	6/9/80	1015	23-31'N 44-58'W	Joint Agreement Geology	G. Ellis	J. Thompson J. Karson	0823	1717	8-54	4012 <sup>m</sup>	
"	6/30/80	1016	35-07'N 34-57'W	Joint Agreement Geology	R. Hollis	K. Crane J. Karson	0817	1404	5-57	3731 <sup>m</sup>	
"	7/1/80	1017	35-07'N 35-33'W	Joint Agreement Geology	G. Ellis	W. Kidd E. Bonatti	0749	1713	9-24	3176 <sup>m</sup>	
"	7/3/80	1018	35-04'N 35-31'W	Joint Agreement Geology	R. Brown	J. Fox J. Karson	1012	1843	8-31	2627 <sup>m</sup>	
"	7/4/80	1019	35-10'N 35-31'W	Joint Agreement Geology	R. Hollis	W. Kidd R. Moody	0742	1558	8-16	3048 <sup>m</sup>	
"	7/5/80	1020	35-07'N 35-00'W	Joint Agreement Geology	G. Ellis	J. Karson E. Bonatti	0805	1727	9-22	3788 <sup>m</sup>	
"	7/6/80	1021	35-07'N 34-57'W	Joint Agreement Geology	R. Brown	K. Crane R. Goodlett	0738	1723	9-45	3524 <sup>m</sup>	
"	7/7/80	1022	35-02'N 35-07'W	Joint Agreement Geology	R. Hollis	J. Fox P. Hamlin	0721	1643	9-22	3461 <sup>m</sup>	
104	7/8/80	1023	35-07'N 34-56'W	Joint Agreement Geology	G. Ellis	K. Crane D. Elthon	0915	1822	9-07	3732 <sup>m</sup>	
"	7/9/80	1024	35-07'N 34-58'W	Joint Agreement Geology	R. Brown	W. Kidd J. Stroup	0740	1617	8-37	3636 <sup>m</sup>	
"	7/10/80	1025	35-06'N 35-03'W	Joint Agreement Geology	R. Hollis	J. Karson J. Casey	0626	1426	8-00	3834 <sup>m</sup>	
"	7/27/80	1026	38-18'N 69-36'W	Joint Agreement Biology	G. Ellis	F. Grassle R. Turner	0955	1855	9-00	3644 <sup>m</sup>	
"	7/28/80	1027	38-18'N 69-36'W	Joint Agreement Biology	R. Brown	S. Williams J. Losee	0842	1839	9-57	3644 <sup>m</sup>	
"	7/29/80	1028	38-18'N 69-36'W	Joint Agreement Biology	R. Hollis	F. Grassle C. Hannan	0833	1700	8-27	3646 <sup>m</sup>	
"	7/31/80	1029	38-18'N 69-36'W	Joint Agreement Biology	G. Ellis	R. Turner J. Losee	0844	1821	9-37	3647 <sup>m</sup>	
"	8/1/80	1030	38-18'N 69-36'W	Joint Agreement Biology	R. Brown	R. Turner T. Rubel	0836	1900	10-24	3647 <sup>m</sup>	

HULL Cr. No.	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
104	8/3/80	1031	38-18'N 69-36'W	Joint Agreement Biology	R. Hollis	F. Grassle C. Hannan	0836	1738	9-02	3647 <sup>m</sup>	
"	8/5/80	1032	38-27'N 72-05'W	KAPL* Engineering	G. Ellis	S. Williams J. Losee	0843	1823	9-40	2846 <sup>m</sup>	*Knolls Atomic Power Lab
"	8/6/80	1033	38-27'N 72-05'W	Joint Agreement Biology	R. Brown	S. Williams R. Turner	0837	1655	8-18	2826 <sup>m</sup>	
105	8/18/80	1034	40-28'N 68-09'W	Joint Agreement Biology	G. Ellis	R. Cooper P. Valentine	0842	1529	6-47	388 <sup>m</sup>	
"	8/19/80	1035	40-17'N 68-07'W	Joint Agreement Biology	R. Brown	J. Uzmann P. Valentine	0847	1626	7-39	1310 <sup>m</sup>	
"	8/20/80	1036	40-24'N 68-10'W	Joint Agreement Biology	J. Donnelly	R. Cooper R. Langton	0926	1523	5-57	622 <sup>m</sup>	
106	8/28/80	1037	40-27'N 67-40'W	U.S.G.S. Geology	G. Ellis	B. Butman B. Hecker	0955	1702	7-07	549 <sup>m</sup>	
"	8/29/80	1038	40-30'N 67-42'W	U.S.G.S. Geology	R. Brown	R. Slater P. Gibson	0853	1555	6-02	316 <sup>m</sup>	
"	8/30/80	1039	40-28'N 67-42'W	U.S.G.S. Geology	G. Ellis	B. Hecker M. Bothner	0834	1222	3-48	431 <sup>m</sup>	
106	8/30/80	1040	40-28'N 67-41'W	U.S.G.S. Geology	G. Ellis	R. Slater B. Butman	1346	1738	3-52	440 <sup>m</sup>	
"	8/31/80	1041	40-24'N 67-40'W	U.S.G.S. Geology	R. Brown	M. Bothner P. Gibson	0850	1635	7-45	633 <sup>m</sup>	
"	9/1/80	1042	40-16'N 67-38'W	U.S.G.S. Geology	G. Ellis	R. Slater B. Hecker	1011	1845	8-34	1662 <sup>m</sup>	
"	9/2/80	1043	40-19'N 67-41'W	U.S.G.S. Geology	R. Brown	P. Gibson B. Butman	0844	1609	7-25	1117 <sup>m</sup>	
"	9/3/80	1044	40-18'N 67-32'W	U.S.G.S. Geology	G. Ellis	R. Slater M. Bothner	0916	1550	6-34	1130 <sup>m</sup>	
"	9/4/80	1045	40-28'N 67-42'W	U.S.G.S. Geology	R. Brown	B. Butman B. Hecker	0828	1228	4-0	400 <sup>m</sup>	
-	9/26/80	1046	41-31.3'N 70-40.3'W	Inclining & Trim Dive	G. Ellis	None	1430	1515	0-45	20 <sup>m</sup>	W.H.O.I. Dock
107- 1	10/3/80	1047	38-19'N 73-22'W	Joint Agreement Geology	R. Hollis	D. Lambert A. Meyer	0911	1349	4-38	1463 <sup>m</sup>	
"	10/4/80	1048	38-14'N 73-06'W	Joint Agreement Geology	R. Brown	W. Stubble- field	0923	1702	7-39	2386 <sup>m</sup>	

LULU Cr. No.	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
107-1	10/5/80	1049	38-22'N 73-18'W	Joint Agreement Geology	R. Hollis	D. Lambert G. Merrill	0917	1619	7-02	1720 <sup>m</sup>	
"	10/7/80	1050	38-08'N 73-06'W	Joint Agreement Geology	R. Brown	W. Stubbel- field E. Forde	0854	1706	8-12	2409 <sup>m</sup>	
"	10/8/80	1051	38-17'N 72-40'W	Joint Agreement Geology	R. Hollis	D. Lambert G. Merrill	0847	1707	8-20	2786 <sup>m</sup>	
"	10/10/80	1052	38-15'N 73-06'W	Joint Agreement Geology	R. Brown	W. Stubbel- field E. Forde	0837	1627	7-50	2384 <sup>m</sup>	
"	10/11/80	1053	38-14'N 73-16'W	Joint Agreement Geology	R. Hollis	D. Lambert A. Meyer	0928	1356	4-28	2066 <sup>m</sup>	
107-2	10/20/80	1054	30-12'N 76-06'W	U.S.G.S. Geology	R. Brown	P. Valentine C. Paull	1150	1839	6-49	3900 <sup>m</sup>	
"	10/21/80	1055	30-12'N 76-06'W	U.S.G.S. Geology	R. Hollis	W. Dillon M. Arthur	0906	1702	7-56	3792 <sup>m</sup>	
"	10/22/80	1056	30-12'N 76-06'W	U.S.G.S. Geology	R. Brown	M. Ball E. Shinn	0852	1639	7-47	3313 <sup>m</sup>	
"	10/23/80	1057	30-12'N 76-06'W	U.S.G.S. Geology	R. Hollis	C. Paull E. Kumei	0901	1706	8-05	4000 <sup>m</sup>	
"	10/25/80	1058	29-02'N 76-43'W	U.S.G.S. Geology	R. Brown	W. Dillon P. Valentine	0906	1614	7-08	4000 <sup>m</sup>	
"	10/27/80	1059	29-02'N 76-43'W	U.S.G.S. Geology	R. Hollis	M. Ball M. Arthur	0845	1621	7-36	3728 <sup>m</sup>	
"	10/28/80	1060	29-02'N 76-43'W	U.S.G.S. Geology	R. Brown	E. Shinn C. Paull	0845	1636	7-51	3038 <sup>m</sup>	
"	10/29/80	1061	28-23'N 76-41'W	U.S.G.S. Geology	R. Hollis	P. Valentine C. Kent	0844	1648	8-04	4000 <sup>m</sup>	
"	10/30/80	1062	28-23'N 76-41'W	U.S.G.S. Geology	R. Brown	W. Dillon M. Arthur	0830	1645	8-15	3137 <sup>m</sup>	
"	10/31/80	1063	28-23'N 76-41'W	U.S.G.S. Geology	R. Hollis	E. Shinn C. Dickson	0941	1605	6-24	2282 <sup>m</sup>	
107-3	11/7/80	1064	25-07'N 77-27'W	N.S.F.	R. Hollis	R. Traxler A. Maxwell	0945	1206	2-21	1017 <sup>m</sup>	
"	11/7/80	1065	25-07'N 77-27'W	N.S.F.	R. Hollis	R. Bye D. Malow	1324	1612	2-48	1056 <sup>m</sup>	
"	11/8/80	1066	25-07'N 77-26'W	N.S.F.	G. Ellis	H. Hollenbeck A. Shinn	0921	1141	2-20	1145 <sup>m</sup>	

LULU Cr. No.	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
"	11/8/80	1067	25-07'N 77-27'W	N.S.F.	J. Donnelly	A. Ertel H. Hanson	1302	1627	3-25	1136 <sup>m</sup>	
"	11/9/80	1068	24-53'N 77-40'W	Joint Agreement Biology	R. Brown	R. Turner R. Petrecca	0923	1744	8-21	2057 <sup>m</sup>	
"	11/10/80	1069	24-53'N 77-40'W	B.B.C.	R. Hollis	F. Grassle C. Lagus	0848	1611	7-23	2064 <sup>m</sup>	
"	11/11/80	1070	24-53'N 77-40'W	Joint Agreement Biology	G. Ellis	C. Berg R. Petrecca	0856	1648	7-52	2151 <sup>m</sup>	
"	11/12/80	1071	25-00'N 77-35'W	B.B.C.	R. Hollis	C. Francis C. Lagus	0852	1154	3-02	725 <sup>m</sup>	
"	11/13/80	1072	24-53'N 77-40'W	Joint Agreement Biology	R. Brown	R. Turner C. Berg	0950	1620	6-30	2086 <sup>m</sup>	
"	11/14/80	1073	24-53'N 77-40'W	Joint Agreement Biology	G. Ellis	F. Grassle R. Petrecca	0904	1509	6-05	2093 <sup>m</sup>	
107 4	11/19/80	1074	25-23'N 77-19'W	Joint Agreement Biology	R. Hollis	B. Hecker H. Ducklow	0901	1026	1-25	1060 <sup>m</sup>	Aborted - lost underwater communications
"	11/20/80	1075	25-23'N 77-19'W	Joint Agreement Biology	R. Brown	B. Hecker H. Ducklow	0909	1747	8-38	2775 <sup>m</sup>	
"	11/21/80	1076	25-23'N 77-19'W	Joint Agreement Biology	G. Ellis	B. Hecker P. Gibson	0907	1716	8-09	2837 <sup>m</sup>	
107 6	12/4/80	1077	17-43'N 64-53'W	Test	R. Hollis	R. Brown P. Harrington	1020	1121	1-01	7 <sup>m</sup>	
"	12/5/80	1078	17-58'N 64-48'W	Joint Agreement Biology	R. Brown	R. Turner A. Critz	0953	1722	7-29	4000 <sup>m</sup>	
"	12/6/80	1079	17-58'N 64-48'W	Joint Agreement Biology	G. Ellis	C. Berg N. Copley	0848	1713	8-25	4000 <sup>m</sup>	
"	12/7/80	1080	17-58'N 64-48'W	Joint Agreement Biology	R. Hollis	R. Turner P. Medeiros	0900	1640	7-40	4000 <sup>m</sup>	
"	12/10/80	1081	17-41'N 64-57'W	Naval Training Range	R. Brown	F. Webster C. Colgan	1122	1720	5-58	909 <sup>m</sup>	
"	12/13/80	1082	17-58'N 64-48'W	Joint Agreement Biology	G. Ellis	H. Jannasch R. Turner	0838	1714	8-36	3999 <sup>m</sup>	
"	12/14/80	1083	17-58'N 64-48'W	Joint Agreement Biology	R. Brown	F. Grassle A. Critz	0838	1720	8-42	3994 <sup>m</sup>	



LULU Cr. No.	Date	Dive No.	Location	Sponsor/Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
"	1/17/81	1094	17-44'N 64-58'W	Joint Agreement Engineering	J. Donnelly	J. Akens G. Hayward	1246	1736	4-50	982 <sup>m</sup>	
"	1/18/81	1095	17-44'N 64-58'W	Joint Agreement Engineering	G. Ellis	J. Akens S. Matthews	1258	1647	3-49	988 <sup>m</sup>	
"	1/19/81	1096	17-44'N 64-58'W	Joint Agreement Engineering	R. Hollis	J. Akens G. Kozak	1257	1755	4-58	1025 <sup>m</sup>	
"	1/20/81	1097	17-44'N 64-58'W	Joint Agreement Engineering	R. Brown	J. Akens G. Hayward	0944	1620	6-36	988 <sup>m</sup>	
"	1/21/81	1098	17-45'N 60-55'W	Joint Agreement Engineering	J. Donnelly	J. Akens G. Kozak	0908	1545	6-37	932 <sup>m</sup>	
"	1/22/81	1099	17-50'N 64-43'W	Joint Agreement Training	G. Ellis	R. Weiss J. Murray	0913	1712	7-59	2502 <sup>m</sup>	Training of Scientist
107 10	1/28/81	1100	17-45'N 64-59'W	N.W.T.F. Search	R. Hollis	C. Hohing K. Durant	0838	1717	8-39	1064 <sup>m</sup>	Equipment Recovery
"	1/30/81	1101	17-53'N 64-45'W	Joint Agreement Bio/Geology	R. Brown	D. Hubbard J. Ogden	0846	1711	8-25	3942 <sup>m</sup>	
"	12/15/80	1084	17-58'N 64-48'W	Joint Agreement Biology	G. Ellis	C. Berg C. Fuller	0844	1535	6-51	3994 <sup>m</sup>	
"	12/16/80	1085	17-58'N 64-48'W	Joint Agreement Biology	R. Brown	R. Turner N. Copley	0853	1745	8-52	3991 <sup>m</sup>	
107 7	1/8/81	1086	17-43'N 64-58'W	IMI Training	G. Ellis	M. Yamauchi T. Maeda	0847	1112	2-25	969 <sup>m</sup>	
"	1/8/81	1087	17-45'N 64-58'W	IMI Training	G. Ellis	Y. Kino T. Maeda	1238	1636	3-58	2168 <sup>m</sup>	
"	1/9/81	1088	17-47'N 64-57'W	IMI Training	R. Brown	Y. Kino M. Yamauchi	0846	1449	6-03	2755 <sup>m</sup>	
107 8	1/10/81	1089	17-52'N 64-43'W	NADC Recovery	G. Ellis	T. Bourgault A. Sobel	0917	1703	7-46	3239 <sup>m</sup>	
"	1/11/81	1090	17-52'N 64-43'W	NADC Recovery	R. Brown	J. Feeley J. Harrington	0849	1751	9-02	3211 <sup>m</sup>	
"	1/12/81	1091	17-52'N 64-43'W	NADC Recovery	G. Ellis	N. Stone B. Travor	0946	1723	7-37	2549 <sup>m</sup>	
"	1/13/81	1092	17-52'N 64-43'W	NADC Recovery	R. Hollis	W. Johnston E. Asness	0847	1727	8-40	2387 <sup>m</sup>	
107 9	1/15/81	1093	17-49'N 64-40'W	Joint Agreement Engineering	R. Brown	G. Grosvner G. Kozak	1254	1614	3-20	1374 <sup>m</sup>	

LULU Cr. No.	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
"	1/31/81	1102	17-52'N 64-47'W	Joint Agreement Bio/Geology	G. Ellis	D. Hubbard T. Suchanek	0833	1711	8-38	3524 <sup>m</sup>	
"	2/1/81	1103	17-51'N 64-49'W	Joint Agreement Bio/Geology	R. Hollis	D. Hubbard I. Gill	0819	1624	8-05	3236 <sup>m</sup>	

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