UNOLS #5
9/8/76

DRAFT COPY

UNOLS ADVISORY COUNCIL

Minutes of Meeting held 1 & 2 September 1976
NSF (Room 642), 18th & G St., NW, Washington, DC

The following were present for all or part of the meetings:

Advisory Council Members	Other Participants
Dr. R. C. Dugdale, *Chairman*	Ms. M. K. Johrde
Dr. R. T. Barber	Mrs. S. D. Toye
Dr. D. Frankenberg	Mr. R. B. Elder
Dr. G. Keller	Dr. B. T. Malfait
Dr. J. Martin	Dr. W. J. Merrell
Capt. T. K. Treadwell	Dr. R. E. Wall
	Dr. N. A. Ostenso
	CDR. V. K. Nield
	Dr. A. F. Richards
	Dr. F. Webster
	Mr. T. R. Stetson
	Capt. R. P. Dinsmore

The attached draft agenda was adopted and certain items were defferred to the second day, but for chronological sake are reported here in the order they appeared on the agenda.

1. The Executive Secretary-elect, Mr. Thomas R. Stetson was introduced.

2. Review of NOFs

2.1 ALVIN - A draft of the Report of Meeting of UNOLS Review Committee for DSRV ALVIN (17-18 June '76) was introduced. Capt. Dinsmore and Dr. Adrian Richards recapped progress on another ALVIN report, dealing with its history, future role, recommendations as to scheduling, and funding, etc. A consensus from its authors has not yet been arrived at on how funding should be handled.

Dr. Ostenso read a letter from the Navy (Marcy) to NSF (Hughes) which pointed out that past Navy support was based on research being done on submersibles, but that now the Navy was being asked to support research being done from submersibles. Because of this, an "impedance mismatch" is being produced in the funding process. In any case, the Navy's promised 1/3 share is forthcoming for CY77. It was noted 1977 marks the end of the current cost-sharing arrangement among the Navy,

NSF and NOAA.

The Marcy letter indicated priorities of users should be decided by the 3 organizations, but the Review Committee doesn't share this view.

Dr. Dugdale felt workshops were an excellent way to make potential users aware of ALVIN's capabilities and limitations. He indicated he had been charged by the Advisory Council to instruct Dr. Keller to organize a workshop concerned with immediate and future use. The future of LULU might be included. This might better be held after the ALVIN report is released.

There was some discussion as to just what a base figure for ALVIN support might be - particularly as to what should it be to attract users.

2.2a A concern was expressed on the paucity of proposals to continue work on ALPHA HELIX on her next phase, working towards Honduras. To that end, the UNOLS Office has updated an invitation to submit proposals for said work. This will be mailed out as soon as copy is returned from the printer.

2.2b ALPHA HELIX - It was noted the Program Manager, Dr. Garey, will resign September 17th. The secretary and one of two techs have also departed. In view of this, the AHRC Chairman, Dr. Alexander, has suggested to Scripps that the Guidelines for Management Oversight (May '76) be adhered to and that a meeting be held at SIO, September 29th with members of the AHRC Executive Subcommittee, NSF representatives, and UNOLS Executive Secretary present.

2.3 EASTWARD - A letter from Ms. Johrde to Dr. Dugdale (dated 17 Aug. '76, w/copy to Dr. Barber) was included as back-up material for this meeting. It suggests EASTWARD has come of age and that it graduate to institutional status. After discussion, it was recommended Dr. Barber explore the ramifications to the EASTWARD operation and report at the next Advisory Council Meeting the result.

3. CAPE HENLOPEN Status - Background information provided on this item reports superficially the results by a UNOLS/NSF review team. It was noted this will be developed into a more comprehensive report when all facts and figures are in, particularly the Navy stability tests.

4. Moss Landing Marine Laboratory Status - Dr. Martin gave a resume of MLML's operations, which are mostly in Monterey Bay. An attractive feature is that they are about an hour away from deep water near the head of the canyon. MLML is the marine facility for an association - San Jose State being a principal. They currently operate OCONOSTOTA (100') & the ST-108 (45'), plus smaller craft. A vote taken with Dr. Martin absent recommended MLML be admitted as an Associate Member. This motion must now be voted on by the Membership.

ORCA (26')

4.a Sea Education Association (operating WESTWARD) has made application to become an Associate Member. No action taken at the present time. See item 8.a below.

5. AGASSIZ Status - There is a question as to whether it's wise to have an overhaul at high cost on this vessel. It was noted the legislature has voted funds for a replacement. No action taken by the Council at this time.

6. BLM's use of UNOLS Fleet - Discussion centered on difficulty with dealing with this agency. As a BLM representative was not present, no firm action was taken, except an affirmation was made that the fleet would continue to try to accommodate ship time requests.

7. Paris' Ship Design Study - This proposal, a revision of an earlier one, was reviewed once again by members of the Council. The recommendation was made that it merited no further consideration. The NSF representatives noted they were already funding four coastal R/V studies. The Chairman directed the Executive Secretary to write Mr. Paris informing him of this decision.

8.a Role of Associate Members was discussed, particularly election procedures, admission criteria, and voice in meetings. No recommendations made at this time, but this matter must be addressed by the Council and will be on the next agenda. The Secretary was instructed to work with Dr. Martin in developing R/V useage by Assoc. Members, and other non-operator users of R/V's.

8.b, 9 & 10 These items were briefly discussed but due to lack of time no recommendations were developed.

11. The date for the next Advisory Council Meeting was set for 6 & 7 December 1976; Scripps to be asked if the meeting can be held there. The next one was set for 24 & 25 February 1977 - locality not determined.

12. CY 1977 R/V Support - The following figures (millions) were provided by Ms. Johrde:

	CY76	CY77 Est.	Req.
NSF	$13.6	$15.0	$(17.0)
ONR	2.5+	ca 3.2	(3.0)
ERDA	.7	.7	
NOAA & BLM et al	2.1	1.05	
Other Fed.	.1	.96	
State/Priv.	1.2	.4+?	
Total	$ 20.2	$ 21.3	$ 23.1

Def. of $1.8

Additionally, possible lay-ups as follows were discussed.

For '76	For '77
MELVILLE	THOMPSON
THOMPSON, 1 Oct-Dec	GILLISS
CAYUSE, 1 Oct	AGASSIZ, up for sale
WASHINGTON, 1 Oct	WASHINGTON
	ALPHA HELIX

It was noticed that there appears to be surplus R/V time on the West Coast. A letter to three major West Coast Labs will be sent requesting permission to address this matter at the December meeting of the Council. Some factual background should be developed prior to that meeting.

~~Respectfully submitted,~~

T. Stetson

Thomas R. Stetson
Executive Secretary
UNOLS

TRS:jkm

Dist: Advisory Council plus: M. Johrde, N. Ostenso, V. Nield, F. Webster, W. Wooster

Background Information

(Items sent out prior to the upcoming meeting)

UNOLS ADVISORY COUNCIL MEETING

September 1-2, 1976
Washington, D.C.

DRAFT AGENDA

1000 - 1 September 1976

National Science Foundation, Room 642, Washington, D.C.

1. Introduce new UNOLS Executive Secretary
2. Review of the National Oceanographic Facilities
    1. ALVIN
    2. ALPHA HELIX
        a) request for proposals (Caribbean)
        b) future program management
    3. EASTWARD
3. University of Delaware, College for Marine Studies, R/V CAPE HENLOPEN status
4. Moss Marine Laboratory status
5. R/V AGASSIZ status
6. BLM's use of UNOLS fleet
7. J. Paris' Ship Design Study
8. Work plan for CY 1977:
    a. Role of Associate Members
    b. Role of the National Oceanographic Facilities
9. Role of UNOLS in overall ship scheduling system
10. Definition of UNOLS Vessel
11. Future Meeting dates
12. Status of CY 1977 UNOLS Vessel Support
13. Any other matter that may properly come before the Council

"Detailed Budget"

(FUEL)

R/V	Total Operations Cost 76	77	Crew Salary 76	77	Marine Operations Salaries 76	77	Maintenance 76	77	Overhaul 76	77	Other Expenses 76	77	Indirect Costs 76	77	Daily Rate 76	77	Proposed Day at Sea	
lville (245')	1,125	1,703	437	597	129	139	68	49	77	160	309 (151)	596 (367)	104	162	5434	5675	207	300
orr (245')	1, 501	1,536	676	726	36	39	50	42	20	21	540 (280)	524 (252)	180	184	4874	4988	294	309
lantis II (210')	1,956	1,884	820	793	36	43	60	45	40	42	765 (422)	735 (468)	234	226	5588	5708	350	330
shington (209')	1,237	1,310	494	548	104	115	72	37	121	110	331 (139)	376 (157)	115	124	5092	4645	243	282
ompson (209')	1,224	1,211	561	559	42	44	65	69	75	75	410 (188)	367 (162)	81	97	4994	4785	247	253
lliss (208')	1,098	1,149	368	418	42	48	106	100	100	92	375 (112)	365 (109)	111	126	4291	4911	256	234
nrad (208')	1,298	1,670	600	635	54	60	43	70	-	250	601 (169)	655 (220)	-	-	3922	5061	331	330
ma (197')	967	903	279	293	54	60	50	65	160	-	424 (139)	485 (175)	-	-	2931	2474	330	365
assiz (180')	744	804	378	377	104	95	442	30	0	80	150 (54)	146 (50)	69	76	3610	5190	206	155
eanus (177')	665	862	262	345	15	19	3	20	10	10	295 (185)	365 (221)	80	103	3446	2883	193	299
coma (177')	453	1,028	211	351	38	59	32	50	0	50	109 (51)	415 (291)	62	102	2780	3605	163	285
deavor (177')		1,015*		230*		54*		31*		60*		546* (300)		94*		3499		290
na Wave (174')	800	913	277	324	74	79	73	47	0	32	326 (173)	371 (216)	51	59	2186	2501	366	365
elin (170')	831	851	243	278	30	34	60	72	113	69	312 (96)	314 (97)	74	84	3271	3392	254	251
re (165')	856	927	321	327	32	40	97	40	-	80	374 (155)	406 (170)	32	33	3058	3432	280	270
na Keoki (156')	821	888	318	344	74	79	71	72	-0-	12	301 (144)	319 (175)	57	62	2996	2885	274	311
pha Helix (133')	903	814	332	363	77	71	55	17	122	35	235 (83)	251 (91)	84	77	2991	2282	302	357
Henlopen (120')	584	663	76	82	40	43	28	30	2	2	412 (238)	475 (273)	27	31	2245	2550	260	260
stward (118')	601	616	233	251	58	62	53	44	17	44	197 (50)	174 (53)	42	43	1971	2062	305	299
lero IV 110')	508	479	227	227	29	29	52	65	46	-0-	110 (22)	119 (32)	43	39	2331	1972	218	243
rfield (106')	338	304	90	97	42	39	22	8	48	30	107 (32)	102 (34)	29	27	1963	1633	172	186
onostota (102')	94	137	37	59	-0-	-0-	4	4	15	15	20 (16)	(30)	18*	28*	552	685	171	200
B. Scripps (95')	242	327	98	97	40	55	16	22	-0-	40	66 (24)	81 (33)	22	31	1633	2178	148	150
ona (85')	539	588	284	320	25	29	20	21	90	100	88 (30)	83 (32)	31	34	2669	3250	202	181
yuse (80')	289**	437	131	180	32	38	20	31	10	30	55 (14)	104 (42)	42	55	2353	2005	123	218
nghorn (80')	225	275	96	116	16	17	25	30	30	30	45 (24)	67 (35)	12	14	1124	1099	200	250
ue Fin (72')	154	125	43	55	-	-	3	10	60	-	28 (8)	34 (13)	13	16	1034	548	149	228
h (65')	82	88	38	39	3	3	16	16	-	-	19 (4)	20 (6)	7	9	572	541	143	163
ar (65')	104	109	51	53	4	4	10	10	8	7	24 (7)	24 (7)	8	10	564	513	185	213
ury (65')	74	86	24	26	18	23	2	3	2	22	21 (3)	24 (3)	6	8	718	755	103	114
lanus (63')	115	129	34	39	8	10	12	12	15	22	34 (7)	34 (7)	11	13	733	724	157	179

"OTHER EXPENSES"

R/V	FUEL & LUBE OIL			FOOD			INSURANCE			STORES			TRAVEL			SHORE FACILITIES			MISCELLANEOU		
	75	76	77	75	76	77	75	76	77	75	76	77	75	76	77	75	76	77	75	76	
LVILLE (245')	174	151	367	27	54	81	17	17	17	72	33	45	7	4	22	12	21	20	26	29	
ORR (245')	171	280	252	106	106	111	30	31	48	43	63	66	7	20	10	10	20	15	24	20	
LANTIS II (210')	301	422	468	86	112	104	35	46	61	34	40	42	8	100	25	10	20	14	15	25	
SHINGTON (209')	143	139	157	49	50	64	10	10	10	81	44	45	35	42	38	19	21	18	43	25	
OMPSON (209')	146	188	162	32	37	39	59	70	71	52	28	30	4	10	4	32	31	33	28	46	
LISS (208')	59	112	109	71	71	66	73	73	73	65	56	57	4	4	4	20	22	22	32	34	
RAD (208')	182	169	220	30	33	78	37	40	43	163	176	125	49	49	55	12	17	25	96	117	1
A (197')	80	139	175	57	62	75	25	30	33	103	105	110	23	30	32	34	24	25	39	34	
SSIZ (180')	33	54	50	25	34	30	11	12	12	17	25	26	1	0	0	13	16	12	10	9	
ANUS (177')	186	221	226	38	49	51	17	26	28	38	52	55	2	2	2	9	7	7	5	8	
OMA (177')	38	51	291	30	23	43	26	12	19	6	3	5	1	.8	18	15	14	21	0	0	
EAVOR (177')	69	--	300	71	--	68	18	--	21	56	--	68	34	--	19	16	--	20	56	--	5
NA WAVE (174')	94	173	216	26	35	38	15	19	20	28	39	25	15	11	19	25	27	25	25	20	2
LIN (170')	38	96	97	45	51	52	57	57	57	51	55	55	4	4	4	19	20	20	24	28	2
(165')	130	155	170	50	62	66	18	19	20	36	43	46	16	22	24	21	17	19	25	56	6
KEOKI (156')	88	144	175	30	44	43	17	15	17	15	24	20	15	7	15	23	24	24	14	41	2
PHA HELIX (133')	33	83	91	35	48	44	7	12	12	25	26	25	10	26	36	12	15	12	26	24	3
HENLOPEN (120')	--	238	273	--	37	40	--	10	15	--	10	15	--	2	2	--	12	28	--	102	10
STWARD (118')	31	50	53	29	43	29	35	40	40	15	13	12	6	16	11	8	14	12	10	22	1
ERO (110')	21	22	32	26	26	26	17	17	17	4	4	4	.8	1	1	26	25	25	14	14	14
FIELD (106')	25	32	34	8	10	11	23	24	24	15	13	7	.1	.5	.6	29	29	26	0	0	0
NNOSTOTA (102')	9	16	23	0	.7	2	0	0	0	.8	3	4	1	.7	.7	included in indirect			0	0	.4
. SCRIPPS (95')	16	24	33	12	12	12	11	12	12	7	9	12	0	0	0	4	5	4	4	4	9
NA (85')	24	30	32	11	12	15	6	6	6	6	22	10	2	5	6	10	11	12	.9	3	2
USE (80')	9	14	42	9	13	23	12	12	15	3	4	5	.1	.1	3	8	8	9	1	3	6
GHORN (80')	9	24	35	8	14	15	0	0	0	2	2	3	.5	1	2	.5	0	0	0	0	0
E FIN (72')	5	8	13	6	4	10	0	2	3	5	12	7	.5	1	1	.5	0	0	0	0	0
(65')	3	4	6	3	3	3	5	6	6	2	2	3	0	0	0	2	2	2	.6	.6	.6
R (65')	5	7	7	3	3	3	6	8	8	.9	2	3	0	0	0	3	3	3	.8	1	1
RY (65')	4	3	3	3	2	2	.4	2	2	2	2	2	.2	.1	.1	18	12	15	0	0	0
ANUS (63')	5	7	7	6	8	8	6	6	6	8	8	8	.1	.2	.2	.3	.4	.4	4	4	4

Agenda Item 2.2

R/V ALPHA HELIX

1. Walter Garey, Scripps Program Manager for ALPHA HELIX has resigned effective September 17th. To the end Walter has constantly been embroiled in administrative chaos of putting the pieces of the ALPHA HELIX Program together.

2. NSF-Scripps and ALPHA HELIX have worked over the last year to develop guidelines for developing and managing the program more effectively. A copy of the currently agreed upon guidelines is attached. The principle thrust of these is a longer range planning for the ALPHA HELIX operations where the UNOLS Office becomes more involved with the advertising for, receipt of and putting together the prospective users.

3. Current views of NSF are contained in the following extract of a letter from Mary Johrde to Dick Dugdale:

> " The Alpha Helix program has undergone major operations and philosophical changes during the past few years, a process in which the UNOLS Review Committee for the ship has been a full participant. Several events coincide to make this an opportune time for further examination of the administration and management of the Helix program. These include the expansion and restructuring of the UNOLS Executive Office, the occurrence of several vacancies and personnel changes at Scripps in positions involved with the management of the program, and, of course, the issuance of the new guidelines for the program earlier this year."

GUIDELINES FOR
MANAGEMENT OVERSIGHT
OF
R/V ALPHA HELIX PROGRAM

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- Role of the Chief Scientist(s) 10
- Flow Chart 15

May, 1976

GUIDELINES FOR UNOLS ALPHA HELIX REVIEW COMMITTEE (AHRC)

A. Organization

1. Appointments are by UNOLS. The UNOLS staff office also serves as secretariat for AHRC.

2. Membership consists of 7 scientists at large, 1 from Scripps

3. Committee acts for UNOLS in making recommendations to SIO and keeps NSF advised regarding these recommendations.

4. An executive subcommittee consisting of chairman, past-chairman and one other chosen by AHRC may act on behalf of full committee

5. Appointments are for 3-year terms. Chairman elected for 2-year term

6. Meetings - annual or as called by Executive Committee

B. Responsibility of Review Committee

1. To insure scientific quality of projects

2. To insure suitability of projects to this particular ship (ALPHA HELIX coefficient)

3. To select potential areas for cruises based on interests of applicants

4. To oversee scheduling and operation of ALPHA HELIX from a scientific standpoint

C. Mode of Operation

1. AHRC oversees the preparation of program advertisements and journal notices. UNOLS assumes responsibility for distribution.

2. On the basis of preliminary proposals regarding research projects and areas and times of operations, AHRC selects potential cruise areas 2 to 4 years in advance.

3. AHRC oversees the advertising (as above) for additional preliminary proposals for projects in the potential cruise areas.

4. AHRC evaluates preliminary proposals (or other existing proposals) with emphasis on suitability for the special capabilities of the Alpha Helix, but including considerations of scientific merit. On this basis, preliminary proposals are tentatively approved or disapproved for inclusion on projected cruises. The results of this evaluation are communicated to the proposed investigator. Advice is conveyed to applicants for whom times and places are not available, suggesting other possible areas and/or alternative ships. Upon submission of a research proposal to a funding agency for programs proposing use of the Alpha Helix, a copy is sent to the AHRC. Written recommendations concerning proposals are submitted to the funding agency for consideration in their peer review process. In general, proposals are assigned by the chairperson to one committee member as primary reviewer. This person receives and compiles comments from other committee members and is responsible for preparing an in depth review.

5. AHRC, on the basis of agency-approved proposals, groups together compatible projects to create cruises and nominates Chief Scientists; in conjunction with the PMO, AHRC arranges pre-cruise workshops and getermines the need for advance site visits.

6. Executive subcommittee may, an, at any time, approve minor changes in schedules and personnel, and approve transit use of by qualified scientists.

7. AHRC receives final cruise plans including rosters of participating personnel, as well as current status reports on on-going cruises.

8. Receives interim reports on each cruise leg within a month after its termination.

9. Reviews annual report to UNOLS which is prepared by PMO.

D. Interaction with granting agencies, especially NSF

1. AHRC transmits to agency Research Program Directors the detailed comments from its review of preliminary proposals. This occurs when preliminary versions reach proposal status and AHRC is notified that they are under review by the funding agencies.

2. Executive subcommittee of AHRC meets at least annually with agency Research Program Directors to discuss schedules and unique features of AH projects.

3. Keeps OFS informed at each step of review. Minutes of AHRC meetings are circulated to committee members, UNOLS & OFS.

4. AHRC seeks appropriate ship support from agencies other than NSF for AHRC-approved projects supported scientifically from these agencies. These include non-US agencies.

GUIDELINES FOR NATIONAL SCIENCE FOUNDATION PROGRAMS

NSF/Scientific Research Project Support Programs (SRPS)

- Receive and review proposals 18 mos. - 2 years in advance of proposed beginning date of major cruise. The funding decision will thus ensure 6 - 12 mos. of planning time for the P.I. and the PMO to arrange for equipment, shipping, travel, advance site surveys, clearances, etc. Fill-in or piggy-back projects may receive later review, but projects which hope to determine location and extent of any cruise must have lead time described here.

- Send one copy of any proposal involving use of Alpha Helix to the Chairperson, AHRC, requesting review and comments of AHRC.

- Provide 2-3 year grants to allow time for pre-cruise planning (1 year), cruise, and post-cruise activities (1-2 years). This allows for incorporation of a cruise as part of an ongoing research program.

- Travel costs for one pre-cruise workshop for each project supported and for advance site survey travel costs for key projects are allowable. (Key projects will be identified in the cruise planning phase by the AHRC.) Funds for these purposes are to be incorporated in the project grant.

- Where requested (and recommended by AHRC), consider the validity of adjunct shore stations. Funding for such shore stations, if approved, should be included with project support for the pertinent activity. This support will need to include all relevant logistic support for the station, since ship funding makes no allowance for such costs.

- Communicate clearly to P.I.'s for whom grants are being recommended precisely what is and/or is not being funded and for what reason (e.g., if travel funds are cut to disallow support for certain individuals proposed as participants, then P.I. is informed that these individuals are not approved as participants. Travel funds are not to be used for charter flights to include individuals not approved for participation in contradiction of SRPS program recommendations.)

- Follow up communications to P.I. by reviewing cruise plans and participant lists to assure correspondence with program review and support actions.

- Participate regularly in AHRC meetings, pre-cruise workshops and cruise monitoring activities. Consult with AHRC members as appropriate.

- Inform OFS promptly of all incoming proposals requesting A.H. use and of significant review and support actions related thereto.

NSF/OFS

- Provides ship support based on NSF-funded projects scheduled aboard A.H. for coming CY. Note: Shiptime for principal projects not funded by NSF must be provided by those users.

- Provides equipment support via the SIO shipboard equipment proposal, based on inputs from SRPS programs, and AHRC, within priorities established by OFS and SIO.

- Provides support for SIO technical and management functions for Alpha Helix.

- Coordinates closely with SRPS programs, UNOLS/AHRC and AHPMO in all A.H. related activities monitors SIO management of entire program; authorizes expenditures under the supporting grants for ship operations and PMO in accordance with grant agreements; provides accountability to NSF for activities supported under those grants.

GUIDELINES FOR THE SCRIPPS INSTITUTION ALPHA HELIX PROGRAM MANAGEMENT OFFICE

Background and Institutional Setting

1. Alpha Helix is a 133-ft LOA oceanographic research vessel, built under a grant from the National Science Foundation and owned and operated by the Scripps Institution of Oceanography (SIO). Alpha Helix has been designated a National Oceanographic Facility of the University National Oceanographic Laboratory System (UNOLS).

2. Requests for appropriate utilization of this research facility are evaluated by the UNOLS Review Committee for Alpha Helix. Criteria for selection of projects to be scheduled for ship use include adequacy of support for the research program, appropriateness of the ship for conduct of the work proposed, geographic compatibility of the project with other competitive programs, and overall scientific merit.

3. Operationally, Alpha Helix is part of the research fleet of SIO, maintained and operated by the Marine Facilities Division. Ship operating costs are distributed in accordance with the approved fleet allocation formula; and support for Alpha Helix operations is included in grants, contracts, and other agreements for support of the SIO fleet.

4. The Alpha Helix Program Management Office (PMO) was established by SIO in recognition of the special management support requirements of a seagoing National Facility used by laboratory researcher selected to use the ship, providing continuity and familiarity with shipboard operations; to participate in cruise planning and coordinate operational and budgetary requirements with other elements of the SIO operations staff; and to provide general staff support to UNOLS, and particularly for the AHRC, in all matters pertaining to the Alpha Helix program.

5. The PMO staff reports to an Associate Director, SIO, who has responsibility for marine operation and technical support. The staff is comprised of such management, technical and clerical support personnel as may be assigned. Support for PMO staff and administrative costs is provided largely under a grant from the Office for Oceanographic Facilities and Support (OFS) of the National Science Foundation.

6. The PMO staff receives general supervision and guidance from the Associate Director, and keeps that Office informed, on a regular basis, of its activities. The staff is expected to carry out the functions of the PMO with minimal specific supervision and to have knowledge of institutional procedures and policy sufficient to represent SIO in dealings with UNOLS and the AHRC, scientists and ship users, and funding agencies.

When policy issues or significant operational or budgetary problems arise from planned Alpha Helix programs, the PMO should call such matters to the attention of Associate Director.

Duties and Responsibilities of the Alpha Helix Program Management Office

As stated in paragraph 4 of the preceding section, the PMO has three broad areas of responsibility:

- to provide administrative and logistical support and shipboard continuity to researchers using the ship;

- to participate in cruise planning and coordinate operational and budgetary requirements with other elements of the SIO operations staff;

- to provide general staff support to UNOLS and the AHRC in all matters pertaining to the Alpha Helix program.

I. In providing support to ship users, the PMO:

- Provides information and advice to researchers preparing preliminary proposals to AHRC or project support proposals to funding agencies with respect to the capabilities and limitations of the ship; the costs of ship time, equipment, and other items; and special considerations (international clearances, seasonal navigational or weather difficulties, etc.) that may impact on scientific plans.

- Working from AHRC recommendations and with the appropriate SIO units, develops and updates tentative cruise schedules. Informs participants of schedules and of the number of scientists that can be accommodated.

- Informs cruise participants of all legal, regulatory, safety, and other requirements that must be fulfilled--international approvals and clearances; diving certificates and other medical documentation, etc. -- and establishes a timetable and checklist for obtaining from them information to fulfill such requirements.

- When a number of projects appear to inter-relate or overlap to constitute an expedition to a particular country or geographic region, works with AHRC to organize a pre-cruise workshop and/or site visit to assess scientific and logistic alternatives, inform local authorities and scientific groups of proposed investigation, and secure their cooperation or participation.

- Works with Chief Scientist(s) to establish lists of participants and their times of participation.

- Makes final decisions on logistics including allocations of available storage space to individual legs within a cruise.

- Develops equipment and supply lists; arranges for shipping, staging, maintenance and technical support for scientific equipment and supplies.

- Monitors activities during cruises, providing home base backup support as necessary.

- Follows up to ensure that all required post-cruise reports are filed and data-sharing commitments are met.

II. In coordinating operational and budgetary requirements within SIO, the PMO:

- Provides routinely a member for the Marine Operations Committee, as nominated by SIO.

- Provides the Associate Director and Marine Facilities Division (MARFAC) with budget estimates and justification for the support proposal for PMO; also provides information to MARFAC and the Associate Director as to projected Alpha Helix operations for inclusion in proposals for ship operations and technician support and acquisition of shipboard equipment, and SIO budget and fleet cost allocation computations.

- Consults with MARFAC to ensure that operational considerations are fully covered in the cruise plans, and that project needs are considered in establishing operational plans.

- In accordance with standard SIO procedures, selects unambiguous cruise name and identifiers for component legs; establishes a complete historical file for each cruise with the SIO Staff Officer/Ship Scheduler.

- Works with the Ship Scheduler to establish a timetable for all clearances; provides necessary information to Ship Scheduler to secure ship clearance for foreign operations; informs Chief Scientist(s) of all data-sharing or other commitments made as conditions of clearance.

- Provides the Ship Scheduler with all standard pre- and post cruise documents and reports as required by UNOLS, Federal agencies, foreign governments, etc.

III. In providing general support to UNOLS and the Alpha Helix Review Committee (AHRC), the PMO:

- Assists in drafting and revising program announcements, annual reports, and other documents regarding the Alpha Helix program.
- Acting on recommendations of AHRC, organizes pre-site visits.
- Provides periodic status reports to AHRC members on development of cruise shcedules and progress of current projects.
- Recommends agenda items for AHRC meetings; seeks AHRC guidance on an ad hoc basis if major changes to approved cruise plans become necessary.

THE CHIEF SCIENTISTS

Selection

The Alpha Helix Review Committee (AHRC) will name Chief Scientists and their alternates for stated periods of an upcoming expedition, as part of their overall cruise planning responsibility. For major expeditions involving pre-cruise workshops, the designation of chief scientists will usually be made at the close of the workshop. Criteria for selecting a chief scientists will include the candidate's experience and knowledge in regard to similar field research efforts, scientific reputation, and proven or potential leadership and administrative abilities. Nearly always the Chief Scientist will be a Principal Investigator on a grant involving a substantial part of the shipboard program.

Authority

Alpha Helix is a vessel of the SIO fleet; hence, both the traditions and the stated policy of the Scripps Institution will be followed in the relationship and respective responsibility of Alpha Helix's Captain and the Chief Scientist of any program.

1) The Chief Scientist has full responsibility for the scientific program, accomplishment of its objectives, and the performance of members of the scientific party. The Captain is charged with ensuring a crew and vessel performance that will accomplish the scientific program directed by the Chief Scientist.
2) During the course of an expedition the program can be modified by the Chief Scientist, within reasonable limits of the vessel's and the crew's capabilities, in order to achieve the greatest

scientific returns. The Captain and Chief Scientist will maintain close contact to ensure that all aspects of the vessel's operational support to the scientific program are best realized.

3) Any change from the prescribed ship schedule must have the concurrence of the Director's Office at SIO, the Program Manager, and the Alpha Helix Review Committee, unless undertaken in response to circumstances gravely affecting the vessel's safety or capability, or that of any of her personnel.

To summarize, the Captain acts at the direction of the Chief Scientist, except that in matters of safety of the ship and all personnel concerned, the Captain's authority is final.

Duties

The role of the chief scientist in preparing for a cruise will vary somewhat depending upon whether he is principal investigator for the entire program during his period of responsibility or whether several principal investigators are involved. In the first instance he will design the overall research plan for utilizing the ship in consultation with the principals of his party; in the second instance he will develop a composite research plan in coordination with the other P.I.s. By the time the chief scientist is appointed, the makeup of his party will have been determined by the P.I.s whose projects have received funding in whole or in part, and been appropriately scheduled by the Alpha Helix Review Committee. Determinations will have been made as to the need for shipboard accommodation of an MD-scientist, pilot(s) and other special personnel

required by the locale. In most instances he will have participated in the pre-cruise workshop at which many of the details not only of his portion but of the entire expedition will have been aired. In the field he will supervise the execution of the research program and appraise the progress being made. Significant departures from the agreed-upon research plan will be taken only with the approval of the Alpha Helix Review Committee, Program Manager, and the agency funding the investigation.

1) Once in the field, the Chief Scientist arranges an open session early in the program at which investigators will describe succinctly their proposed work, its significance and potential requirements, for benefit of the ship's crew and their colleagues in research. Arranging of shipboard seminars, planning and progress assessment sessions, and group contacts with local scientific organizations is the responsibility of the Chief Scientist.

2) The Chief Scientist represents the Alpha Helix Program in contacts with local scientific or media representatives. He is expected to meet all reasonable requests but to prevent visits at times inconvenient to scientific program or staff or to crew operations and ship movements. The Chief Scientist may, with the approval of Alpha Helix's Captain, the SIO Directors Office, and the Program Manager, arrange simple social receptions for official visitors aboard Alpha Helix.

3) In addition to routine operational traffic, the Chief Scientist prepares a weekly progress report or summary addressed to the Director, SIO, and radioed to that office.

4) Before disembarkation and dispersal of the scientific party, the Chief Scientist collects from each group leader or senior scientist an abstracted field report, complete with supporting grant data. From these he prepares and signs the UNOLS post-cruise report before leaving the ship. He later edits the individual abstracts and prepares an overview or introduction to the collection, setting forth the nature of the work, the degree to which objectives were realized, significant departures in direction, highlights of scientific findings, names and offices of local individuals contacted during the program, and acknowledgments. This overview and the abstracts are to be forwarded to the Project Manager for reproduction and transmittal to the AHRC and eventually to the sponsoring agencies.

5) The Chief Scientist shares with the Captain and the Program Manager any suggestions for improving the vessel and its scientific usefulness. Except in hardship cases, he meets the on-coming Chief Scientist to aid that person in initiating an effective program.

6) On returning to his home base, the Chief Scientist may in some instances be requested to provide more detailed evaluation of the scientific and shipboard operations, for use of the Alpha Helix Review Committee, the Program Manager, the SIO Marine Operations Committee, and the sponsoring agencies.

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

Opportunities for Oceanographic Research

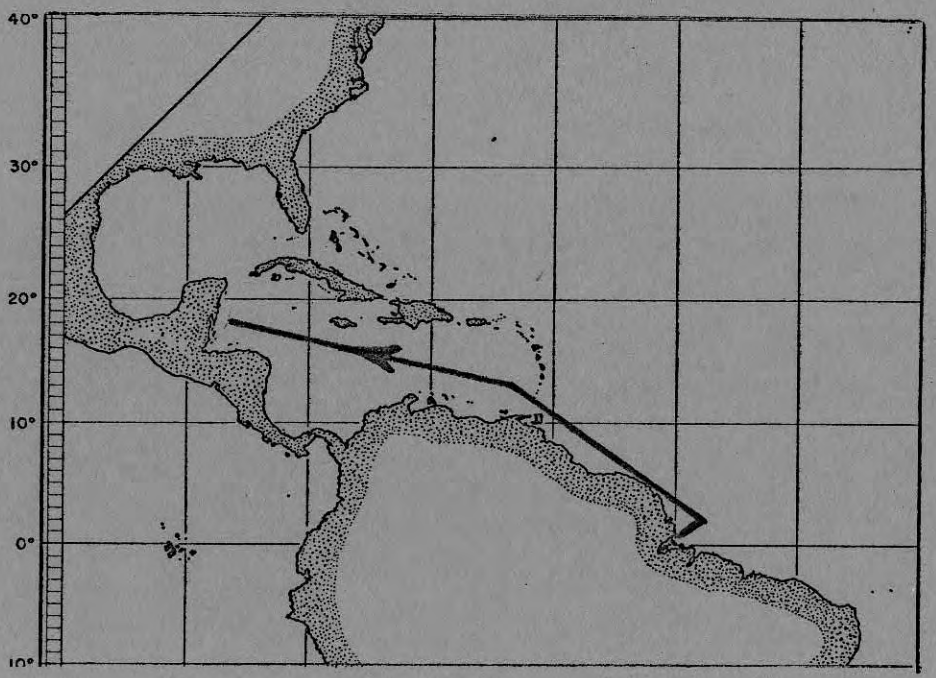
BULLETIN

THE RESEARCH VESSEL ALPHA HELIX OPERATED BY THE SCRIPPS INSTITUTION OF OCEANOGRAPHY UNDER A GRANT FROM THE NATIONAL SCIENCE FOUNDATION WILL COMPLETE ITS WORK IN THE AMAZON RIVER IN JUNE 1977. IT WILL THEN PROCEED TO THE CARIBBEAN SEA FOR BIOLOGICAL INVESTIGATIONS ON THE HONDURAS REEFS.

ADDITIONAL PROGRAMS IN THE CARIBBEAN AREA ARE BEING SOLICITED AS WELL AS NEW AREAS FOR FUTURE PLANNING. PROSPECTIVE INVESTIGATORS ARE REQUESTED TO SUBMIT EXPRESSIONS OF THEIR INTEREST TO THE R/V ALPHA HELIX REVIEW COMMITTEE.

FOR FURTHER INFORMATION SEE THE ATTACHED BROCHURE OR CONTACT:

Mr. Thomas R. Stetson
Executive Secretary, UNOLS
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
(617) 548-1400, Ext. 352



Research Vessel

ALPHA HELIX

The University—National Oceanographic Laboratory System

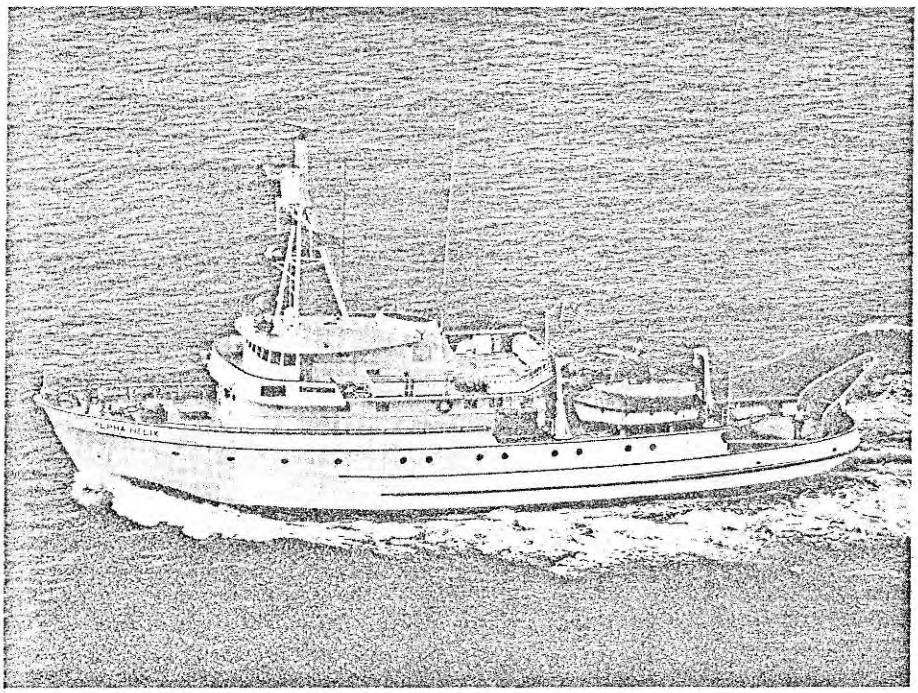
Opportunities for Oceanographic Research

R / V ALPHA HELIX

of the

Scripps Institution of Oceanography — University of California

The 133-ft Research Vessel ALPHA HELIX is a national oceanographic facility for use by investigators whose proposed projects are recommended by a Review Committee based upon scientific merit and compatibility with the facility and its mission. The ALPHA HELIX was built in 1966 under a grant from the National Science Foundation. It accommodates twelve scientists and has extraordinary laboratory spaces especially adapted to marine biology and biochemistry of an experimental nature. Oceanographic winches and instruments also give it a capability for a variety of oceanographic research functions. Use of the vessel is obtained by submitting a letter of intent and preliminary proposal to the Review Committee.



Related research support should be sought from the appropriate Federal or other science funding agency. Ship costs for National Science Foundation funded research proposals will be provided by the Foundation to the Scripps Institution of Oceanography as part of Annual Fleet Support Grants. Investigators seeking research support from agencies other than NSF should include ship costs in their budgets to those agencies. Costs are based on a daily rate which can be prorated amongst concurrent projects. It is not necessary for a potential user to propose an entire scientific party. Individuals or small groups with complementary or compatible projects may be accommodated. The ALPHA HELIX Review Committee has the responsibility for assembling cruises from the component parts.

1976 - 1977

During this period the ALPHA HELIX will be operating in the Amazon River, the Honduras Reefs and other tropical American regions. Time and space remain available for the latter half of 1977 of this period.

1978 and beyond

The Review Committee is now soliciting proposed Research Projects in order to develop future cruise areas. The planning of ship operations and the concomitant funding of research proposals requires a minimum of two years time. Prospective users are urged to communicate with the Review Committee at the earliest possible date.

For further information contact:

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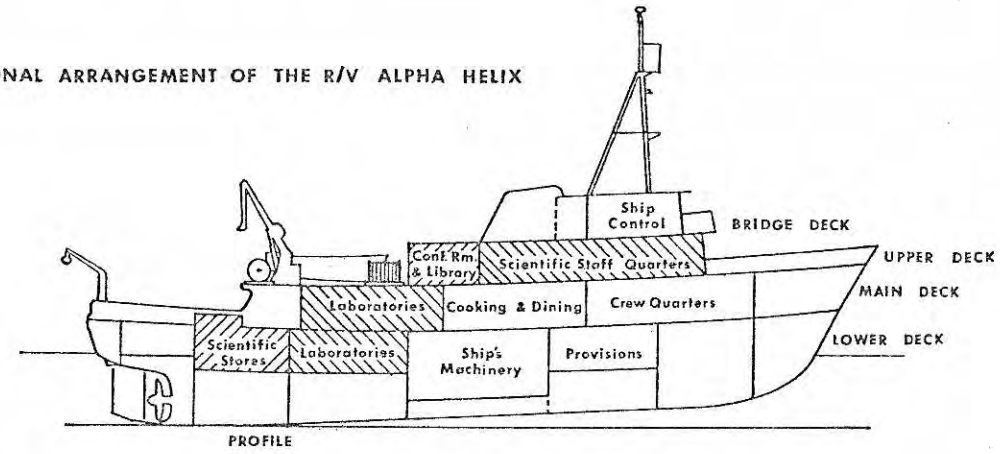
(Additional information, inside)

FUNCTIONAL ARRANGEMENT OF THE R/V ALPHA HELIX



REQUESTING USE OF THE ALPHA HELIX

Use of the *R/V ALPHA HELIX* is initiated by a UNOLS Ship Time Request (copy overleaf) to Chairman, Alpha Helix Review Committee, c/o UNOLS Office, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts 02543. This should be accompanied or followed by a related research proposal or preliminary proposal which addresses the following:

1. The nature and significance of the proposed research.
2. The scientific questions being asked and the approaches that would be used toward their resolution.
3. The justified needs for the supporting facilities of the *ALPHA HELIX* for this work.
4. The research site and its justification.
5. Ship time requirement and any seasonal considerations.
6. Proposed number of scientists.
7. Curricula vitae of principal participants.
8. Potential or realized support for the proposed research effort.

The research proposal, if not already funded, is submitted by the investigator to his sponsoring agency in the same manner as any proposal. The review by the Alpha Helix Committee is for the purpose of evaluating ship use only. In addition the Committee will submit its review for the optional consideration of the research sponsor.

It is not necessary that a single applicant request the use of the ship in its entirety. The Committee will attempt to identify complementary projects which can share concurrent use of the ship and its facilities.

Projects under NSF grants or proposed grants do not include ship operations costs in the research grant. Ship costs for NSF funded projects are separately funded as a part of annual fleet support grants. All other costs such as travel, equipment & consumables (other than available on board) should be included in the research project grant.

Research projects supported by agencies other than NSF should provide for ship operating funds for the period of their project and required transit time. Concurrent projects can share ship costs on a prorated basis. Ancillary (piggy-back) projects of a minor not-to-interfere nature may occasionally be accommodated at no cost.

The planning and development of *R/V ALPHA HELIX* projects include reviews, funding procedures, scheduling, site selections, foreign clearances, equipment acquisition, staging and testing, and detailed cruise planning - all of which involve many activities and a great deal of time. Requests for ship time which are likely to determine the selection of a cruise or expedition area of operation need to be submitted to the Alpha Helix Review Committee 2-3 years in advance of the beginning date of the cruise. Similarly, research proposals to the funding agencies for support of these principal projects should be submitted 1 1/2 - 2 years in advance. Ancillary projects added after cruises are in the planning stage may need somewhat less lead time.

POSSIBLE ACTION BY U.S. OCEANOGRAPHIC INSTITUTIONS TO FACILITATE THEIR CONDUCT OF MARINE SCIENTIFIC RESEARCH IN DISTANT WATERS

Warren S. Wooster

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On January 15, 1976, the Freedom of Ocean Science Task Group of the National Academy of Sciences, along with the University National Oceanographic Laboratories System, sponsored a Workshop on Problems of Scientific Research in the Third U.N. Law of the Sea Conference, chaired by Dr. John A. Knauss. The purpose of the workshop was to discuss among representatives of the major ship operating academic institutions the status of the marine scientific research question in the present law of the sea negotiations, the prospects for conduct of such research in the future, and alternative courses of action that might be taken to ensure continuation of oceanographic programs.

In these remarks, I shall concentrate on consideration by the workshop of possible actions that might be taken by U.S. academic institutions to facilitate the conduct of their research within the economic zones and on the continental shelves of other countries. I assume that consent of the coastal State will be required for some, if not all, of such research and that in either case the researching state will be required to meet various conditions and obligations. In their most current form, these are stated in the draft articles of the Revised Single Negotiating Text.

In Article 58, the researching state is required to furnish information on (a) objectives of the proposed research, (b) methods and means to be used, (c) location, (d) inclusive dates of research, (e) name of sponsoring institution, its director, and chief scientist, and (f) the proposed extent of coastal State participation. This information is not substantially different from that now provided by research institutions in their applications for research clearance in foreign waters. The responsibility to provide such information will if anything be greater under the new regime. As the text is further revised, I hope that agreement will be reached on the detail required in submission of such information, so that the provision of inadequate information will not be a pretext

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Presented at 10th Annual Conference, Law of the Sea Institute, University of Rhode Island, 24 June 1976.

for withholding or withdrawing consent.

In Article 59, the researching state is required to comply with a number of obligations which again, for the most part, are similar to those now required for work in foreign territorial waters. These provide for (a) participation of the coastal State in the proposed research, (b) submission of preliminary reports, final results, and conclusions, (c) sharing of data and samples, (d) assisting the coastal State in assessing data, samples, and results thereof, (e) making results internationally available, and (f) informing the coastal State of major changes in the research program.

The coastal State may require fulfillment of any outstanding obligations before commencement of any subsequent research by the defaulting party (Article 65). Thus it is necessary that a mechanism be established in the United States to facilitate and monitor the fulfillment of obligatons. The final text should provide for eventual certification by the coastal State that obligations have been or are being satisfactorily fulfilled for a given research project.

The obligation to assist the coastal State in assessing data, samples, and research results is new; how this will be implemented in practice is not yet clear. Another new obligation, stated in Article 61, requires that research results "bearing substantially upon the exploration and exploitation of the living or non-living resources of the economic zone and on the continental shelf" shall not be published or made internationally available against the express wish of the coastal State. If this unattractive provision cannot be eliminated or substantially modified, negotiations will be necessary each time that a relevant manuscript is submitted for publication or for presentation at an international meeting.

At present, the State Department handles those requests for research vessel clearance that go through official channels. Some fraction, perhaps 20%, is handled informally. It seems likely that in the future the informal negotiation of such clearances will become increasingly rare. The State Department is also involved to a limited extent in facilitating and monitoring the fulfillment of certain obligations. In the future, a much more systematic method for covering <u>all</u> obligations will be required if the continued acceptance by coastal States of U.S. research projects is to be achieved. This could be accomplished either by greatly expanding the scope of State Department responsibilities and activities in this area, by developing a suitable mechanism elsewhere in government, or by using suitable non-governmental machinery such as UNOLS.

However it is to be done, scientists must be involved in the development of realistic procedures. Operating institutions must work closely together in these matters; noncompliance by one will inevitably cause difficulties for others. While recognizing that the State Department must be involved in negotiations with other governments, I fear that a purely governmental mechanism will be excessively complex and bureaucratic and out of touch with the realities of marine scientific research.

Of the possible non-governmental organizations that might be involved, UNOLS seems particularly appropriate. Although the organization does not include all institutions involved in research at sea, all academic institutions operating research vessels in distant waters are members, and numerous other institutions have associate membership. During the several years of its existence, UNOLS has gained the confidence of the oceanographic community and has met its objectives with marked success.

UNOLS could go beyond its present role of enhancing communication among operating institutions and government agencies to play a dynamic part in coordinating relevant activities of the institutions. Possible functions for UNOLS include the following:

1. Organizing and coordinating, on behalf of the non-government operating institutions, the procedures for handling clearance requests and for ensuring that obligations are met.

2. Working with State Department in improving clearance procedures and in facilitating communications with operators.

3. Working with other U.S. agencies in developing information for advance planning of scientific cruises and in compiling progress reports and publication lists.

4. Assisting in coordination of relevant activities of government operating institutions so that uniform clearance and reporting procedures will be used.

5. Preparing advance planning notices of research operations that could be distributed to other countries.

6. Publicizing experience with implementation of procedures and with handling of clearance requests in other countries.

7. Assisting government agencies concerned with law-of-the-sea questions by compiling relevant information (for example, estimates of additional costs resulting from present and future obligations).

8. Determining the interest of U.S. scientists and institutions in working aboard foreign vessels conducting research in U.S. waters.

In addition, UNOLS could play an important role in stimulating cooperation between U.S. laboratories and those in coastal States by facilitating joint planning and use of facilities to achieve common goals. Just as UNOLS now helps to arrange use of research vessels by several U.S. institutions, it could help to bring together foreign and U.S. institutions in scientific programs on mutual interest on their or our vessels.

As the nature of the regime governing the conduct of marine scientific research evolves, U.S. oceanographic institutions are facing ever more complex and expensive conditions for operating in distant waters. Present procedures for processing of clearance requests and for ensuring that institutional commitments are kept are barely adequate; as national responsibilities increase, the need for an improved mechanism becomes urgent. If the academic institutions cannot establish such a mechanism, the government will.

In view of these considerations, the workshop recommended that UNOLS now consider accepting much greater responsibilities on behalf of its members by assuming a lead role in designing, organizing, and carrying out a more systematic, comprehensive, and coordinated program for assisting U.S. scientists and their institutions in conducting research in distant waters and in meeting national obligations toward countries in whose waters they operate. It was further recommended that UNOLS be assisted in carrying out these functions by appropriate elements of the National Research Council (for example, the Ocean Policy Committee and the Ocean Science Board), to provide policy review of future developments affecting the conduct of marine science and to assist in negotiations on research issues with scientific bodies in other countries and with international scientific organizations.

8/2/76

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Univ. of Wisconsin - Madison

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

Office for Oceanographic Facilities and Support

17 August 1976

Dr. Richard Dugdale
Chairman, UNOLS Advisory Council
Bigelow Laboratory Ocean Science
Northeastern Research Foundation, Inc.
West Boothbay Harbor, Maine 04575

Dear Dick:

In expectation of the discussion of the National Oceanographic Facilities (NOF) at the upcoming Advisory Council meeting, we have asked our colleagues in the Foundation's research support programs to join with us in a careful examination of the present and future roles of the NOF's in support of NSF-sponsored programs. We look forward to participating with you in a full and frank discussion at the September meeting. Our overall view is that Alvin and Alpha Helix, whatever specific difficulties may still exist in funding or administering the programs, continue to fulfill the function of the NOF. They offer unique, or at least, unusual and highly specialized capabilities that would otherwise be unavailable to researchers throughout the community.

We expect to make our major efforts in review of DSRV Alvin in the context of the larger cooperative evaluation called for by the support agreement. We look forward to hearing the report of the Alvin Committee and the recommendations of UNOLS, and will participate in whatever discussions, negotiations, or studies may be required over the next year to determine the future use or disposition of this facility.

The Alpha Helix program has undergone major operations and philosophical changes during the past few years, a process in which the UNOLS Review Committee for the ship has been a full participant. Several events coincide to make this an opportune time for further examination of the administration and management of the Helix program. These include the expansion and restructuring of the UNOLS Executive Office, the occurrence of several vacancies and personnel changes at Scripps in positions involved with the management of the program, and, of course, the issuance of the new guidelines for the program earlier this year.

In the case of the third NOF, Duke University's R/V Eastward, we question whether the National Facility designation is any longer valid or meaningful. Let me quickly assure you that our position with respect to Eastward is in no sense a condemnation of the program. To the contrary, it is based on our conviction that there has been a "coming of age" on the part of UNOLS, the Eastward program, and Duke University laboratory and its sister institutions in the immediate region that should signal new directions for the ship.

Briefly, we do not believe that R/V Eastward differs significantly from other UNOLS vessels in capability, usership, or management. She can serve the community as well, or better, as a regular part of the fleet than in her present somewhat equivocal NOF status. The major considerations shaping our view include the following:

-The success and general acceptance of the "UNOLS concept" has opened access to Federally-supported institutional vessels to qualified scientists throughout the larger research community: Eastward is neither more nor less "available" than any number of other UNOLS ships.

-The change in sources and amounts of Federal ship operations support funds requires that Eastward compete on the same grounds as other ships to schedule funded programs and thereby to secure operating funds. The persistence of the incorrect belief that NOF's automatically receive full support from NSF has made it unduly difficult for the Eastward management to broaden and stabilize its support base.

-The Duke University marine program and those of the University of North Carolina and other nearby institutions have increased in strength and vitality. They now regularly account for 40-60% of Eastward's schedule for the conduct of solidly-supported research projects of staff members. This level of "core use" is fully comparable to that of a number of UNOLS institutional vessels.

-The marine operations group at Duke has outgrown its origins as a single-discipline, relatively unsophisticated training support unit: Eastward is a well-run, well-equipped ship, capable of supporting the full normal range of oceanographic operations for a ship of her size.

In examining the UNOLS Charter, we find no clear indication of the procedure for disestablishment of a National Oceanographic Facility.

In the case of R/V Eastward, it seems less a matter of disestablishing an NOF than of "graduating" a member's ship to regular fleet status. We would like to explore this possibility with the Advisory Council and, of course, with Duke University. Please feel free to circulate this letter or reproduce it, if you wish, to serve as a basis for discussion at the September meetings.

Sincerely yours,

Mary K. Johrde
Head

Copy to: Eastward Program Director, (Richard T. Barber)
Executive Office, UNOLS

Agenda Items

Agenda Item 2.3

R/V EASTWARD

1. The 1976 Report of the EASTWARD Review Committee is attached. It largely reaffirms the 1975 Report, also attached.

2. The 1975 report was carefully reviewed by the Advisory Council at its August 1975 Meeting at Boothbay Harbor. Action then agreed with special consideration for technicians and equipment but disagreed with special support for travel or training programs. Recommendations regarding deadlines and advertising were generally concurred with.

3. The Advisory Council has several times indicated the desireability of meeting with the Chairman and Program Director for EASTWARD for discussions on the Committees recommendations. An item for discussion also is the consent of EASTWARD in the role of a regional vessel serving the several mid-south Atlantic institutions rather than as a full scale National Oceanographic Facility.

4. In a recent letter from Mary Johrde to Dick Dugdale some similar views by NSF were presented. These are quoted as follows:

> "In the case of the third NOF, Duke University's R/V Eastward, we question whether the National Facility designation is any longer valid or meaningful. Let me quickly assure you that our position with respect to Eastward is in no sense a condemnation of the program. To the contrary, it is based on our conviction that there has been a "coming of age" on the part of UNOLS, the Eastward program, and Duke University Laboratory and its sister institutions in the immediate region that should signal new directions for the ship.
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In examining the UNOLS Charter, we find no clear indication of the procedure for disestablishment of a National Oceanographic Facility.

In the case of R/V Eastward, it seems less a matter of disestablishing an NOF than of "graduating" a member's ship to regular fleet status. We would like to explore this possibility with the Advisory Council and, of course, with Duke University."

5. A review of the current statistics of EASTWARD use shows the following principal users by ship days:

	1975	1976	1977	total
Duke	79	161	92	332
UNC	13	35	27	75
U. of Md.	5	4	6	15
Lamont	24		26	50
VIMS	14			14
Georgia	39		14	53
Wisconsin	12		39	51
WHOI	27	15		42
Tulsa	26		15	41
Yale	10			10
Nova		26		26
Delaware		9	11	20
Louisiana		11	14	25
Brookhaven		24		24
Bigelow			19	19
Rutgers			13	13
	249	285	286	

Actual breakdowns are shown on the attached sheets.

Section 8

Table 1A
SHIP TIME COSTS PER PROJECT BY 1975

Project Identification		R/V EASTWARD $2,111	Est. Cost Ship Time Per Grant
Projects performed using NSF supported ship time			
OCE-75-21374, R. M. Goll	$ 63,000	26 days	$54,886
GA-35445, O. H. Pilkey DES72-01561A01, O. H. Pilkey GA-36803A1, W. D. Pilkey Univ. of Virginia	$ 14,825) 14,825) 20,000)	26 days	$54,886
GA-41199, N. J. Hyne, Univ. of Tulsa	$ 35,000	26 days	$54,886
GA-36235, R. R. Colwell University of Maryland BMS72-02227-A02, R. Colwell	$136,000) 121,000)	5 days	$10,555
GA-36674, A. C. Neumann Univ. of North Carolina DES75-06199, C. S. Martens Univ. of North Carolina	$ 35,000) 19,700) 	13 days	$27,443
L. P. Atkinson, PI IDOE-GX33615, H. Windom DES74-14917, W. M. Dunstan GA-35793, L. R. Pomeroy University of Georgia	$392,000) _____) _____)	9 days	$18,999
DES74-12831, R. W. Baier Hampton Roads, D. D. Adams Old Dominion Univ.	$ 35,500) 82,691)	13 days	$27,443
ID072-06422, R. T. Barber ID074-12558A01, D. Pillsbury Oregon State Univ.	$ 48,000) 176,000)	14 days	$29,554
GA-37561, J. A. Musick Virginia Inst. Mar. Sci. B-071-NC, R. T. Barber	$ 40,000) 34,277)	13 days	$27,443
GX-30416, H. T. Rossby Yale University D. R. Watts, PI	$196,000	10 days	$21,110
In Port (operating days)	_____	6 days	$12,666
Sub-totals	$1,463,818	161 days	$339,871

Section 8

Table 1A
SHIP TIME COST PER PROJECT CY 1975

Project Identification	R/V EASTWARD $2,111		Est. Cost Ship Time Per Grant
Non-NSF Projects Using NSF Supported Ship Time			
ONR-N00014-67-A-0108-0036 B. C. Heezen, Columbia Univ.	$190,022	24 days	$50,664
ERDA-AT(38-1) 639, L. R. Pomeroy, University of GA	$ 56,000	1 day	$ 2,111
Sea Grant/Univ. Wisconsin Matching Funds J. J. Magnuson, Univ. of Wisconsin	$ 3,617	12 days	$25,332
Sub-Total	$249,639	37 days	$78,107
Projects Performed Using Agency Supported Ship Time			
ERDA-AT(38-1) 639, L. R. Pomeroy, Univ. of Georgia	$131,000	16 days	$33,776
ONR-N-00014-74-C-0262-NR-083-004 N. G. Hogg, WHOI	$425,400	27 days	$56,997
ERDA-E(38-1) 889, L. P. Atkinson, Skidaway Inst.		13 days	$27,443
Sub-Total	$556,400	56 days	$118,216
Projects to be Performed in Ship Time Supported by:*			
NSF	$1,713,457	198 days	$417,978
ERDA	131,000	29 days	61,219
ONR	425,400	27 days	56,997
TOTAL	$2,269,857	254 days	$536,194

* $50,400 actually received from ONR
* $59,260 actually received from ERDA
* $459,000 support from NSF
* $32,480 used for capital equipment items rather than ship operations

Section 8

Table 1B
ESTIMATED SHIP TIME COSTS PER PROJECT CY 1976

Project Identification		R/V EASTWARD $1,971	Est. Cost Ship Time Per Grant
Projects to be performed using NSF supported ship time			
ID072-06422, R. T. Barber ID072-06422, R. Smith & D. Pillsbury, Oregon State ID072-06422, J. C. Kelley University Washington ID072-06422, R. C. Dugdale University Washington ID072-06422, M. Blackburn Scripps Inst. Oceanography ID072-06422, G. T. Rowe, WHOI	$218,571)) $833,098)) $246,436)) $328,333)) $237,033) $116,678)	123 days	$242,433
DES74-13693A01, R. Yager, M. Spillane, M. Brooks, Dennis Moore, PI, Nova Univ. Lab	$105,800	26 days	51,246
OCE-75-21374, R. M. Goll	$ 63,000	12 days	23,652
OCE-75-02635-A01, R. Colwell University of Maryland	$ 49,500	4 days	7,884
GA-36803A1, O. H. Pilkey & W. J. Cleary, UNC-Wilmington	$ 61,000	26 days	51,246
OCE-76-04330, A. C. Neumann DES75-06199, C. S. Martens Univ. North Carolina	$ 31,300) $ 19,400)	23 days	45,333
751594, R. E. Sheridan Univ. of Delaware	$ 24,688	9 days	17,739
DES75-06199, C. S. Martens Univ. North Carolina DES74-12831, R. W. Baier	$ 19,400)) $ 35,000)	12 days	23,652
_____, C. H. Moore, Univ. of Louisiana L. S. Land, Univ. Texas	$ 50,000))	11 days	21,681
DES-74-03001, R. C. Beardsley, WHOI	$ 68,200	15 days	29,565
In Port and Transit (operating days)		20 days	39,420
Sub-Total	$2,439, 237	281 days	$553,851

Section 8

Table 1B
ESTIMATED SHIP TIME COSTS PER PROJECT CY 1976

Project Identification	R/V EASTWARD $1,971	Est. Cost Ship Time Per Grant
Projects to be Performed using Agency supported ship time		
ERDA _____, F. W. Barvenik _____ Brookhaven National Labs	24 days	$ 47,304
Sub-Total	24 days	$ 47,304

SUMMARY:
Projects to be performed on ship time supported by:*

NSF	$2,439,237	281 days	$553,851
ERDA	---	24 days	47,304
TOTALS	$2,439,237	305 days	$601,155

* $550,400 support from NSF
* 50,832 actually to be received from ERDA
$601,232 total

Section 8
Table 1C
SHIP TIME COSTS PER PROJECT 1977

Project Identification		R/V EASTWARD $2,062.00	Est. Ship Time Per Grant
Projects to be Performed Using NSF Supported Ship Time			
DES-74-12831, R. W. Baier	$ 66,383	8 days	$ 16,496
OCE75-02635-A01, R. R. Colwell University Maryland	95,000	6 days	12,372
OCE75-21374, R. M. Goll	63,000	24 days	49,488
OCE75-19627, OCE75-18297, S. S. Streeter, Lamont-Doherty		15 days	30,930
OCE75-12967-A01, B. C. Heezen Lamont-Doherty Geological Observ.	52,800	21 days	43,302
Prop. No. 7523229, C. H. Moore Louisiana State University L. S. Land, University of Texas	10,900	14 days	28,868
OCE76-04330, A. C. Neumann University of North Carolina	24,601	16 days	32,992
DES75-14671, O. H. Pilkey & W. J. Cleary, Univ. North Carolina, Wilmington	62,000	40 days	82,480
DES75-15104, Ian Morris DES75-20956, T. Mague DES74-21434, R. Dugdale DES75-19025, T. Packard Bigelow Laboratory		19 days	39,178
_____, W. H. Adey and I. G. Macintyre, Smithsonian Institution & UNC-Chapel Hill	10,000	11 days	22,682
_____, N. J. Hyne, University of Tulsa	50,000	15 days	30,930
_____, J. F. Kitchell, University of Wisconsin		39 days	80,418
_____, R. E. Sheridan, University of Delaware	21,000	11 days	22,682
_____, E. Christofferson, Rutgers University	40,000	13 days	26,806

Project Identification	R/V EASTWARD $2,062.00	Est. Ship Time Per Grant
Projects to be Performed Using NSF Supported Ship Time		
_____, B. Rosendahl	20 days	$ 41,240
In Port (foreign) and Transit	13 days	26,806
Sub Total	285 days	$587,670
Projects to be Performed Using ERDA Supported Ship Time		
E(38-1)-639, L. R. Pomeroy $131,600 University of Georgia	14 days	$ 28,868
Sub Total	14 days	$ 28,868

Summary

Projects to be Performed in Ship Time Supported by:		
NSF	285 days	$587,670
ERDA	14 days	28,868
Total	299 days	$616,538

DATE: May 24, 1976

MEMORANDUM

TO: Richard C. Dugdale, Chairman, UNOLS Advisory Council
Mary K. Johrde, Head, Oceanographic Facilities & Support, NSF

FROM: EASTWARD National Advisory Committee

SUBJECT: Report of the 1976 Committee Meeting.

The R/V EASTWARD National Advisory Committee met in Beaufort, North Carolina on May 18 & 19, 1976 to accomplish its four stated objectives:

1. To evaluate the ship time requests for calendar 1977.

2. To review the Cooperative Program's proposed schedule to accommodate the highest rated ship time requests.

3. To review general aspects of the Cooperative Program and advise the Program Director concerning future plans and operational procedures.

4. To prepare a report to the UNOLS Advisory Council and the National Science Foundation.

The results of committee action on the first two objectives have been incorporated into a proposed ship operating schedule that will be submitted to the UNOLS Advisory Council.

The committee's review of the Cooperative Program identified the same problems that were described in last year's report and reaffirmed the committee's belief in the value of the EASTWARD and in the concept of operating it as a Cooperative National Program. The Committee hopes to play an increasingly active role in demonstrating the Cooperative Program concept's validity, but sincerely seeks advice of the UNOLS Advisory Council and the NSF Office for Facilities and Support as to the actions that might be most effective. We would welcome a response to the solutions recommended for the problems identified in our February 1975 report, (copy attached) and both the Cooperative Program Director and/or the Chairman of the Advisory Committee would be pleased to meet with anyone appropriate to discuss these problems and solutions. We also specifically plan to advertise the EASTWARD's availability, scheduling flexibility, and unique research capabilities by distribution of a revised version of the attached flyer and by personal contact with potential EASTWARD users. We would like UNOLS and NSF advice on the material currently being revised and hope that this subject can be included on the agenda of the suggested meetings.

Finally, the Committee discussed rotation of membership and hereby submits a list of members scheduled for rotation and of potential replacements. We request that the UNOLS Advisory Council consider these lists and appoint replacements for the rotating committee members.

Committee Member	Potential Replacement
James H. Carpenter	Lawrence Atkinson - Skidaway Peter Betzer - South Florida Kent Fanning - South Florida David Menzel - Skidaway Phillip Meyers - Michigan
H. Thomas Rossby	Robert Beardsley - WHOI Christopher Mooers - Delaware Leonard Pietrafesa - North Carolina State Wilton Sturgess - Florida State
Dirk Frankenberg	Donald Boesch - VIMS Dirk Frankenberg - North Carolina Larry Pomeroy - Georgia Charles Yentsch - Bigelow Laboratories

We look forward to receiving your response to this report and to the recommendations included here, and in the 1975 report.

Respectfully submitted,

Dirk Frankenberg

Dirk Frankenberg, Chairman
For the R/V EASTWARD
National Advisory Committee

RECOMMENDATIONS
R/V EASTWARD ADVISORY COMMITTEE
February 27, 1975

The R/V EASTWARD Advisory Committee met on February 26-27, 1975 in Beaufort, North Carolina to:

1. evaluate ship time requests for 1976
2. review the schedule designed to accommodate the recommended ship time requests and
3. review the Cooperative Program and advise the program director concerning future plans and operational procedures.

The first two of these objectives have been discharged and a proposal based on the committee's recommendations is currently being prepared for submission to the NSF Office of Oceanographic Facilities and Support. The last objective engendered considerable discussion that has been summarized in the balance of this report.

The EASTWARD Advisory Committee is unanimous in its concern that a series of independent, and apparently uncoordinated, administrative decisions has severely diminished the ability of the EASTWARD to effectively discharge its responsibilities as a National Cooperative Facility. Each of these decisions has been comprehensible in light of increasing budget constraints, but the cumulative effect has been to impair the effectiveness of the National Oceanographic Facility. The EASTWARD was originally designed and supported as a Cooperative Facility to be operated from a non-oceanographic laboratory. This conception recognized that special support would be necessary to make the program effective. The EASTWARD Advisory Committee feels that the original plan was valid, but that effectiveness depends on the EASTWARD program's ability to retain the special support inherent in the original concept.

The Committee defines the EASTWARD program's uniqueness as:

1. equality of consideration for all proposals irrespective of the institutional origin - i.e., operation from a non-oceanographic laboratory eliminates the home institution favoritism historically associated with federally supported "institutional" vessels.

2. provision of a vessel fully equipped and supplied for oceanographic research rather than a "bare hull" requiring equipment and supplies to be provided by each user.

3. provision of travel funds to and from the ship rather than requiring these funds be provided by each user.

4. ease and efficiency of obtaining a committment of the program's facilities, and

5. the possibility of using the program's facilities for graduate training.

The continued erosion of financial support for the EASTWARD program has weakened all but the first of these unique features. As a result the Cooperative National Facility is barely distinguishable from other vessels in the federally supported academic fleet. The Committee feels strongly that in the administration of facility support, the difference between a National Oceanographic Facility and an Institutional Facility must be borne clearly in mind. The Committee recognizes that unanticipated financial stringency has required that many research and facilities programs be curtailed, but the Committee feels that the original concept of a National Cooperative Facility was sufficiently sound to justify this reminder of its diminishment and to prompt the following recommendations for rekindling some fraction of the original concept.

1. The deadline for submission of proposals for R/V EASTWARD use should be postponed until at least April 15 to allow maximum opportunity for receiving proposals for use of the facility and to keep the lead time for such use as short as possible.

2. The R/V EASTWARD program should have access to justifiable travel funds to be used to defray expenses of scientifically sound research programs that might otherwise be precluded from vessel use. The National Science Foundation is urged to identify a specific procedure for responding to this need.

3. The R/V EASTWARD program should continue to receive funds for Marine Technicians, supplies and equipment at a level suitable for maintaining the program's ability to operate as a fully equipped research vessel. And,

4. The R/V EASTWARD program should be widely advertised in a fashion that makes clear: a) its general availability and b) the fact that its schedule is determined only by the research to be conducted and not in accordance with any preconceived plans of operational areas.

Additional justification and background for these recommendations follows:

1. Deferring the proposal submission deadline is designed to recapture some of the original ease and efficiency of obtaining a commitment of the program's facilities. Originally, acceptance of a proposal by the EASTWARD Advisory Committee constituted a commitment because vessel operation support was obtained prior to receipt of proposals for ship time. Thus shiptime proposals accepted by the EASTWARD Advisory Committee in February could be scheduled for July. The deferral recommended above is only a modest step towards this original flexibility, but will allow lead time for EASTWARD use to be slightly shorter, rather than slightly longer, than that required for obtaining a commitment for federally supported "institutional" vessels. The

Committee feels strongly that one appropriate criteria of a National Facility might be a demonstrably short "lead time" thereby allowing the facility to be used for high priority research needs that develop after institutional vessel schedules have been finalized. In this way the National Facility would provide needed flexibility in the UNOLS scheduling process.

2. The need for discretionary travel funds for use in hardship situations is obvious from a number of current examples. All of these relate to the fact that most EASTWARD users are not located near her home port, and many of them come from academic institutions in which it is possible to operate effective research programs without the absolute necessity of federal research support. These investigators usually have salary and research support from their home institutions. They are thus able to conduct oceanographic research if they can obtain shiptime and travel support to join the ship. It seems an unwise economy to preclude such investigators from EASTWARD use by denying them the modest support necessary to travel to and from the vessel.

3. The EASTWARD program is appreciative of past NSF support for technicians, supplies and equipment, but the need for these items persists through periods of budget stringency. The lack of heavy federal research support for oceanographic projects at Duke University Marine Laboratory eliminates one normal source for replenishing the vessel's pool of these necessities. Thus, regular support for replacement of these items is another feature of the National Oceanographic Facility concept that must be maintained if the program's effectiveness is to be preserved.

4. The EASTWARD program requires constant and changing advertisement to combat the pervasive impression that use of the vessel is controlled by policies that favor home institutional use. This impression becomes more firmly

entrenched as differences between this National Facility and the institutional vessels become less obvious. The potential user community also needs to be reminded that no preconceived or immutable schedule for seasonal operations exists, that present practices are only a response to proposal pressure and that other pressures would generate other practices.

Thus, in summary, the R/V EASTWARD Advisory Committee strongly recommends that the concept of the R/V EASTWARD as a Cooperative National Facility be reaffirmed and supported with the financial and administrative commitments necessary to assure its effectiveness.

Respectively submitted,

Donald K. Atwood
Richard T. Barber
James H. Carpenter
Reuben Lasker
H. Thomas Rossby
John W. Winchester
Dirk Frankenberg, Chairman

The University—National Oceanographic Laboratory System

Opportunities for Oceanographic Research

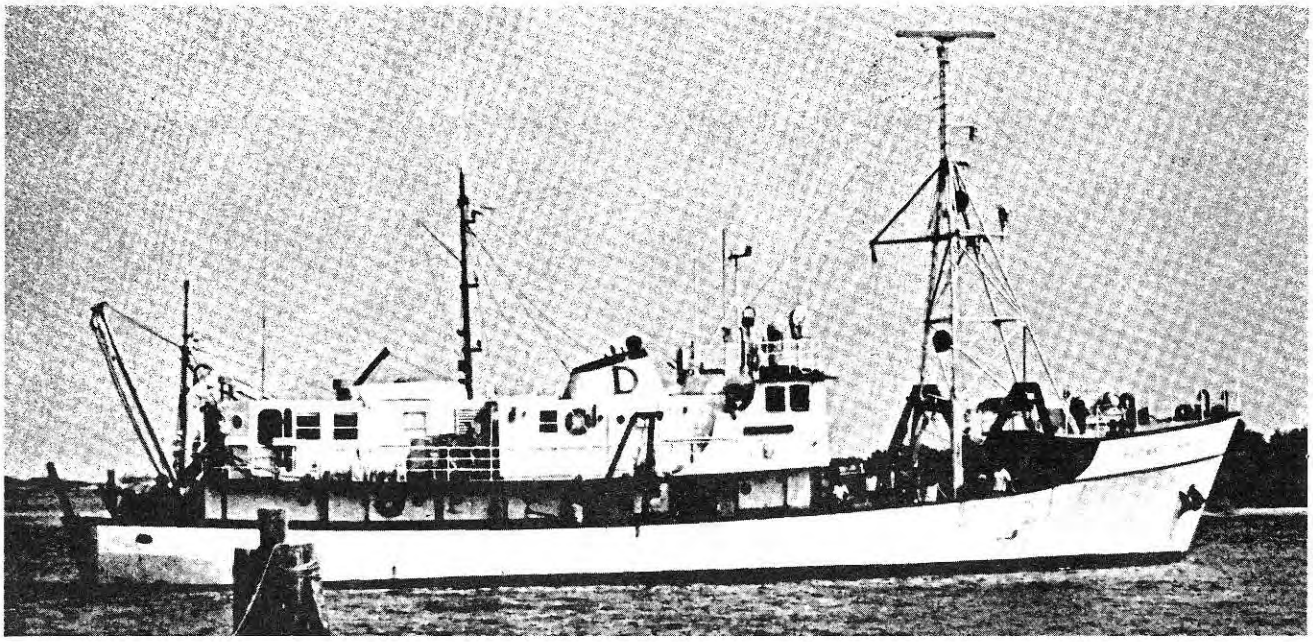
R / V EASTWARD

of

Duke University Marine Laboratory

R/V EASTWARD is owned by Duke University and operated by the Cooperative Oceanographic Program as a National Oceanographic Facility available to any researcher with a meritorious oceanographic project. The Facility currently serves 13 universities and institutions. The ship is 117.5 feet in length, carries 14 scientists and offers a versatile platform for oceanographic research in biology, geology, physics, and chemistry.

An equipment pool and analytical services are available to investigators as an integral part of the National Oceanographic Facility. The range of over-the-side sampling equipment includes dredges, trawls, plankton samplers, corers, grabs and hydrographic bottles. Shipboard systems include CSTD profiler, XBT, salinometer, UV-visible spectrophotometer, fluorometer, seismic profiler and scintillation counter. A variety of other analytical equipment is available at Duke University Marine Laboratory for use ashore. Services available include the determination of salinity, nutrients, chlorophyll, primary production and other routine oceanographic analyses.



The use of R/V EASTWARD and the services of the Facility are provided at no cost to investigators with National Science Foundation supported research projects. Investigators seeking research support from agencies other than National Science Foundation should include ship-costs in their requests to these agencies.

Investigators interested in submitting a ship time request should write for the Progress Report which includes detailed information of the Facility and instructions for preparing requests. Ship time requests are evaluated by a UNOLS advisory committee.

DEADLINE FOR SUBMITTING REQUESTS IS APRIL 1, 1976 FOR THE PERIOD BETWEEN JANUARY 1, 1977-DECEMBER 31, 1977.

For further information write to:

Dr. Richard T. Barber, Director
Cooperative Oceanographic Program
Duke University Marine Laboratory
Beaufort, North Carolina 28516

Agenda Item 2.1

ALVIN

1. The ALVIN Review Committee met on 17-18 June 1976. Draft Copy of the Report is attached.

2. The Committee noted that ALVIN Requests for 1977 although fewer in number than previous years were in general better proposals and represented more substantial programs than previously. In fact the Committee was unable to accommodate all the requests it considered suitable for accomplishment.

3. A paucity of ONR and good NOAA proposals results in less use recommended that either agency is obligated to fund. This inevitably will result in complaints by ONR & NOAA that they have been fouled by the Committee. Their possibility of withholding funds is very real. Furthermore, NSF is being asked to provide more funds that they will be willing and probably will result in scheduling cutbacks similar to last year.

4. On a request from the Advisory Council the Committee is preparing a report addressing the following questions although the format will be somewhat changed:

   (1) An assessment of the recent role of ALVIN for doing good science.

   (2) Is there a continued need for this capability? As a National Oceanographic Facility?

   (3) Has the current support arrangement been satisfactory? Why?

   (4) How can the support arrangement be improved?

   (5) What procedures can and should be instituted to assure the most effective use of ALVIN?

The Report will state that ALVIN scientific work is becoming increasingly better but should be and can be improved through a longer term approach involving groups of scientists.

Continuation as a National Facility will be recommended but there is not general agreement on support arrangements. Present alternatives range from direct science related support (as all other facilities) to total block support. A possible compromise is partial block subsidy plus incremental science related funding.

Report of Meeting

of

UNOLS REVIEW COMMITTEE

for

DSRV ALVIN

17-18 June 1976
Woods Hole, Mass.

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Appendixes

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D. Escort Policy
E. Table of Use Requests - 1977
F. Recommended Tentative Schedule for 1977

Submitted

R. P. Dinsmore
Executive Secretary, UNOLS
August 20, 1976

Approved

Adrian F. Richards
Chairman

DRAFT COPY

UNOLS REVIEW COMMITTEE
for
DSRV ALVIN
Summary of Recommendations
17-18 June 1976

1. *The non-scientific use of ALVIN is usually more significant each year than planned for. It further contributes substantial funding support. Such use should, in the future, be included in the recommended schedule but care should be exercised that it compliments but does not supplant science work. The Navy should officially recognize the role of ALVIN as a national resource important to the Navy mission.*

2. *The formula for determining daily rate costs to users not participating in the joint funding arrangement for ALVIN should be changed to make those costs more realistic and equitable.*

3. *The future of ALVIN beyond the current ONR-NSF-NOAA funding agreement (1975-1977) will be the subject of a separate report. This report will reflect the following findings and recommendations:*

    - *ALVIN is a vital tool for ocean science programs. It should be continued as a National Oceanographic Facility.*
    - *It can be better utilized for science through <u>longer range planning</u> by groups of scientists working together identifying important problem areas and their solutions.*
    - *Funding support for ALVIN should continue on a planned basis and in some way should reflect the role of ALVIN as a national resource as well as bear a direct relationship to the science it will undertake.*

4. *For Calendar Year 1977 - the Committee recommends the accomplishment of 23 projects totalling 178 use days. Specific assignments are contained in the Report.*

5. *Noting that the required support for the recommended 1977 program amounts to an estimated $1,410,000, the additional required support over the current $900,000 ONR-NSF-NOAA joint funding agreement should be apportioned as follows:*

Agency	*Additional Funds*	*Total*
ONR	*None*	*$ 300,000*
NSF	*$352,000*	*652,000*
NOAA	*None*	*300,000*
Other	*158,000*	*158,000*
Total	*$510,000*	*$1,410,000*

Report of Meeting

UNOLS REVIEW COMMITTEE

For

DSRV ALVIN

17-18 June 1976 — Woods Hole Oceanographic Institution

1. The third annual meeting of the DSRV ALVIN Review Committee convened on 17 June at the Woods Hole Oceanographic Institution. Present were:

Dr. Adrian F. Richards, Lehigh Univ., Chairman
Dr. Robert Corell, UNH, Member
Dr. George Grice, W.H.O.I., Member
Dr. George Keller, O.S.U., Member
Dr. Arthur E. Maxwell, W.H.O.I., Member
Dr. Claes Rooth, Univ. Miami, Member
Dr. Karl K. Turekian, Yale, Member

Mrs. Sandra Toye, NSF, Observer
Dr. Bruce T. Malfait, NSF, Observer
Dr. Robert E. Wall, NSF, Observer
CDR. Van K. Nield, ONR, Observer
CDR. John Harlett, ONR, Observer
Dr. Alexander Malahoff, ONR, Observer
Dr. Bernard Zahuranec, ONR, Observer
Dr. Donald C. Beaumarriage, NOAA, Observer

Dr. Richard C. Dugdale, Bigelow Lab., UNOLS A/C Chairman
Capt. Robertson P. Dinsmore, UNOLS Executive Secretary
Mr. Larry Shumaker, W.H.O.I., ALVIN Manager
Mr. William M. Marquet, W.H.O.I., ALVIN Group
Dr. Robert A. Frosch, W.H.O.I.
Dr. Earl E. Hays, W.H.O.I.

In addition, the following scientists participated in the first days discussion of ALVIN operations and use:

Dr. Robert D. Ballard, W.H.O.I.
Dr. Bruce C. Heezen, L.D.G.O.
Dr. J. Frederick Grassle, W.H.O.I.
Dr. Holger W. Jannasch, W.H.O.I.
Dr. Roland Wigley, NOAA

2. Dr. Richards, Chairman, convened the meeting. He noted that the recent Annual UNOLS Meeting had appointed the following new members to serve for three years:

Dr. Robert Corell, UNH
Dr. Michael Gregg, Univ. Washington
Dr. Dennis Hayes, L.D.G.O.

He further noted that Drs. Hessler and Van Andel were unable to attend and that the terms of Drs. Murphy, Drake and Rooth are expiring. Membership status is summarized as follows:

- To expire July, 1976
  Drake, Murphy, Rooth
- To expire July, 1977
  Hessler, Keller, Van Andel
- To expire July, 1978
  Richards, Turekian, Grice
- To expire July, 1979
  Corell, Gregg, Hayes

3. The tentative agenda was introduced and approved. This is attached as Appendix A.

4. The role of ALVIN in selected science programs was discussed by the following scientists in terms of their accomplishments in the use of ALVIN:

   . Dr. Robert D. Ballard discussed the 1976 Cayman Trough work. He stressed the combined ship-sub efforts and the unique documented sampling which the submersible provides.

   . Dr. J. Frederick Grassle described the biology work at the Deep Ocean Stations in the recruitment, growth and mortality of deep-sea benthic populations.

   . Dr. Holger W. Jannasch discussed the work on the rates of biological and organic geochemical processes in the deep ocean. He stressed the importance of planned serial biological experiments at fixed deep ocean stations & noted the uniqueness of deep submersibles for this work.

. Dr. Roland Wigley described some fisheries use but submitted that most fishery problems are on the shelf within range of shallow subs such as PICES and NEKTON. He noted, however, that the forthcoming 200 mile limit may push fisheries work into deeper water.

. Dr. Bruce C. Heezen showed much of the results of his diving in the Puerto Rican Trench. He stressed the importance of visual observations and the need to do surface sampling before diving. Dr. Heezen further compared ALVIN operations to Navy (SEA CLIFF & TURTLE). Principal advantage of ALVIN is dedication to science and more favorable launch threshold.

. Mr. Larry Shumaker, ALVIN Operations Manager discussed the role of ALVIN in non-scientific missions -- chiefly Navy. These are largely short term, occasionally emergency operations which experience has shown to indicate a continuing requirement for ALVIN as the only deep submersible in the Atlantic Area. He noted that requests for Navy operations usually occur during the year on an opportunity and have been an important element in total ALVIN support. Mrs. Toye asked if the Navy has a formal recognition of this operational role. No known stated Navy requirement is known to exist.

There followed a lengthy discussion on the non-scientific role of ALVIN with general agreement that this ought to be recognized and provided for. Dr. Turekian submitted that non-scientific use should not interfere with the primary role of ALVIN as a scientific facility.

5. Mr. Shumaker reported on the 1976 operations of ALVIN. He presented data through 1 June which represented the Southern portion of the years operation. This included 126 operating days of which 73 were use days during which 49 dives were accomplished. Projecting through

the end of the operational year — 1 September 1976 — and additional 54 operating and use days* are anticipated with an estimaged 37 dives. The 1976 operating schedule, cruise summary, dive summary, and operating statistics presented by Mr. Shumaker are attached as Appendix B.

6. Comparing actual 1976 Operations to that recommended by the Committee at its October 10, 1976 Meeting shows the following analysis:

	Research Sponsor	Use Days Recommended	Actual Use Days 1/	Actual Dives 1/
Biology Group: (JANNASCH, TURNER, GRASSLE, HAEDRICH, et. al.)	NSF & ONR	40	23	15
ROWE & COHEN	NOAA	10	10	8
ROWE	ONR	10	0	2/
COHEN & STAIGER	NOAA & NSF	10	0	2/
HEEZEN	ONR	18	18	5
EDWARDS	NOAA	10	0	2/
COOPER	NOAA	10	10	8
BALLARD	NSF	28	30	15
GINSBURG	NSF	10	0	2/
NEUMANN	NSF	8	0	2/
KELLER	NOAA	7	0	2/
CORLISS	NSF	3	3	3
ROELS - 3/	NOAA	1	1	1
NAVFAC	Navy	4/	8	7
NAVELEX	Navy	4/	12	10
NUSC	Navy	4/	2	2
DYER	E.P.A.	4/	10	6
(Certification)	-	-	-	6
(Total)		165	127	86

Notes: 1/ *Based on actual data through July 1, 1976 and projected through remainder of year.*
2/ *Eliminated from recommended schedule due to shortfall in actual funding for science operations.*
3/ *Standing recommendation from Committee recommendations of 2/19/75.*
4/ *Operations contracted for during year to support full year's schedule.*

"Use Days" are defined as days underway ready for diving plus transit time specifically assigned to a particular project. Experience has shown that the average number of dives is about two-thirds of the use-days.
"Operating Days" are days away from Woods Hole except major overhauls.

The estimated profile of 1976 use by agency sponsoring research is:

	USE DAYS		DIVES
	Recommended	Actual	
NSF	84	48	27
NAVY *	38	48	30
NOAA	43	21	17
EPA	-	10	6
total	165	127	80

(The 38 recommended Navy use days were all ONR. Actual Navy use was 26 for ONR and 22 for Naval systems activities)*

A projected profile of discipline use for 1976 shows:

	No. Dives	% Dives	Use Days	Use % Days
Tests and Certification	6	7%	-	-
Geology	23	27%	51	40%
Biology	31	36%	43	34%
Ocean Engineering	20	23%	23	18%
Mixed Environmental	6	7%	10	8%
Total	86		127	

7. Mr. Shumaker distributed copies of a draft report - DSRV ALVIN: A Review of Accomplishments - which was prepared by his office. This report gives the history of ALVIN, a narrative of scientific and Navy dives and a compilation of all publications and reports of ALVIN work. Comments of the Committee and reviewers are requested. When completed the report will be distributed separately.

8. Dr. R. A. Frosch reviewed the 1975 funding support arrangements for ALVIN and the various impacts on ALVIN scheduling and operations.

Starting with a full schedule of 164 use days recommended by the Committee at its Oct. 10, 1975 Meeting and estimated to cost $1,370,000 (including a $140,000 1974 deficit) cuts were made on Jan. 26, 1975 to an 80 use day schedule when forseeable funding was limited to $1,010,000 for support of scientific missions. The schedule reductions were made in consultation with Federal Agency Representatives and using priorities set by the Committee at its October 1975 Meeting.

As the year progressed, additional missions were added or proposed so that by mid-June the anticipated funding was $1,317,029 to provide for the current schedule of 127 use days. A summary of Dr. Frosch's discussion is contained in Appendix C.

9. A profile of 1976 ALVIN support and use data shows the following:

	SUPPORT	USE DAYS	DAILY RATE
NSF	$ 474,000		
ONR	300,000	95	$ 11,358
NOAA	305,000		
EPA	78,000	10	7,437
Navy Systems	160,000	22	
	$ 1,317,000	127	$ 10,370

The seemingly unequal rates between the NSF-ONR-NOAA "joint funding" use and the "extramural" support occurs because the latter is computed on an ONR formula using the previous 12 months costs whereas the former comes from a negotiated figure. Costs are actually based upon "operating days" which for 1976 is projected at 180. On this basis, (and excluding the $140,400 prior year deficit), the actual operational 1976 daily rate cost is $6,537. Because extra missions are opportunistic in nature, use days and operating days for those operations are very nearly the same, whereas the regularly scheduled and planned use must account for transits and maintenance which are not reflected in "use days".

It was the opinion of the Committee, however, that a more equitable scheme be devised for apportioning costs of missions outside of the joint funding arrangements.

10. Dr. Frosch next described the new ALVIN/LULU escort policy which is intended to increase the overall safety of transit and diving operations but utilize a failsafe communications - quick reaction support arrangement as an alternative to an on scene escort which has occasionally proven to be of dubious value. Under this arrangement a positive communications plan with the U.S. Coast Guard will bring support within 3 hours when operating within 200 miles of U.S. coasts. Backup on-scene radars

and underwater telephones are included as part of the new policy. A draft copy of the new escort policy was circulated and is included as Appendix D to this report.

11. The Federal Agency observers present were invited to express their views and comments.

Mrs. Toye (NSF) noted that the science schedule cutback in the 1976 schedule was done in direct consultation with the Federal observers to the program and in accordance with the Committee priorities. She stated that all interested parties were represented and any dissatisfaction with the 1976 schedule has little basis. She advised that NSF is adding an additional $74,000 support to cover an additional biological science cruise for which the Committee had expressed an urgency.

Dr. Wall (NSF) pointed out the various interfaces (i.e. Facilities, IDOE, oceanography) within the National Science Foundation and suggested that the Committee as well as ONR and NSF recognize these varying roles.

Commander Nield (ONR) expressed optimism that ALVIN is an increasingly more effective tool for science. He hoped to see more development in handling systems and integration with other systems (deep tow, ships, etc.)

Dr. Zahuranec (ONR) noted a limited interest by ONR biology in submersibles but that for those few projects where underwater work "rounds out" surface studies it is more effective and less costly to use submersibles than develop automatic systems.

Dr. Malahoff (ONR) opined that almost all Navy programs interact with the sea floor and that a submarine geology has a continuing relation with Navy missions. Elements such as sediment dynamics, bottom boundary layer, bottom structure all pose a role for the "ALVIN-Scientist team". He suggests longer range planning including meetings with ONR program managers for getting scientists involved with ALVIN interested in the ONR Mission.

Dr. Beaumarriage stressed the greater interest by NOAA in shallow water biology where less expensive submersibles than ALVIN could be utilized. He described the deep missions proposed for this year will require the one-third interest by NOAA in the joint funding arrangement.

12. The Chairman introduced the request by the UNOLS Advisory Council that the Committee develop a position regarding the support of ALVIN as a National Oceanographic Facility beyond the current ONR-NSF-NOAA funding agreement which terminates in 1977. Specifically, discussions are needed which address the following:

    (1) An assessment of the recent role of ALVIN for doing good science.

    (2) Is there a continued need for this capability? As a National Oceanographic Facility?

    (3) Has the current support arrangement been satisfactory? Why?

    (4) How can the support arrangement be improved?

    (5) What procedures can and should be instituted to assure the most effective use of ALVIN?

As an initiated step for this, a working group (Ballard, Grassle, Richards, Dinsmore) prepared a draft report which was circulated to the meeting participants. Members were requested to review this draft during the evening and to submit comments at the beginning of the second day's session.

13. A detailed discussion was undertaken on the development of future programs for ALVIN in the 1977 time frame and beyond. Dr. Ballard reported on the two workshops recently held as examples of planning efforts for the development of submersible programs. These were:

    . East Pacific Rise workshop, April 26-27, 1976 at Scripps Institution. This was for the purpose of developing a broad geological investigations of the East Pacific Rise.

    . ALVIN Planning Workshop, May 24, 1976 at Woods Hole Oceanographic Institution. This was for the purpose of bringing together biologists to discuss areas of future interest and effort utilizing ALVIN.

Reports of these workshops are being prepared and will be distributed separately. It was agreed that significant programs for ALVIN use are

best developed over a multi-year frame utilizing workshops such as these.

14. As a result of their reviews of the draft ALVIN report (Section 10 above), Committee members reported their comments and recommended revisions. Based on the comments Dr. Maxwell proposed that the Committee's Report be structured somewhat differently from the original UNOLS Advisory List although addressing the same essentials. It was agreed that the Report would comprise the following:

I. Scientific Uses of ALVIN
   a. Past Results
   b. Future Plans

II. Administrative Arrangements
   a. UNOLS ALVIN Review Committee
   b. Scientific Workshops
   c. Communications with Scientific Community

III. Funding Arrangement
   a. Present 3 year period
   b. Future recommendations

IV. Technical Improvements
   a. Submersibles
   b. Support Ship

V. Summary of Recommendations

Based on the comments received it was agreed that Drs. Maxwell and Rooth with the assistance of Dr. Ballard and the Executive Secretary would compile another draft for circulation to the Committee.

15. The meeting then turned to the business of reviewing the proposed use for ALVIN in 1977. The Executive Secretary summarized the proposals received. A summary table is given by Appendix E and shown on Figures 1 and 2. He noted that a total of 24 requests are pending representing 210 dives on or about 333 use days.

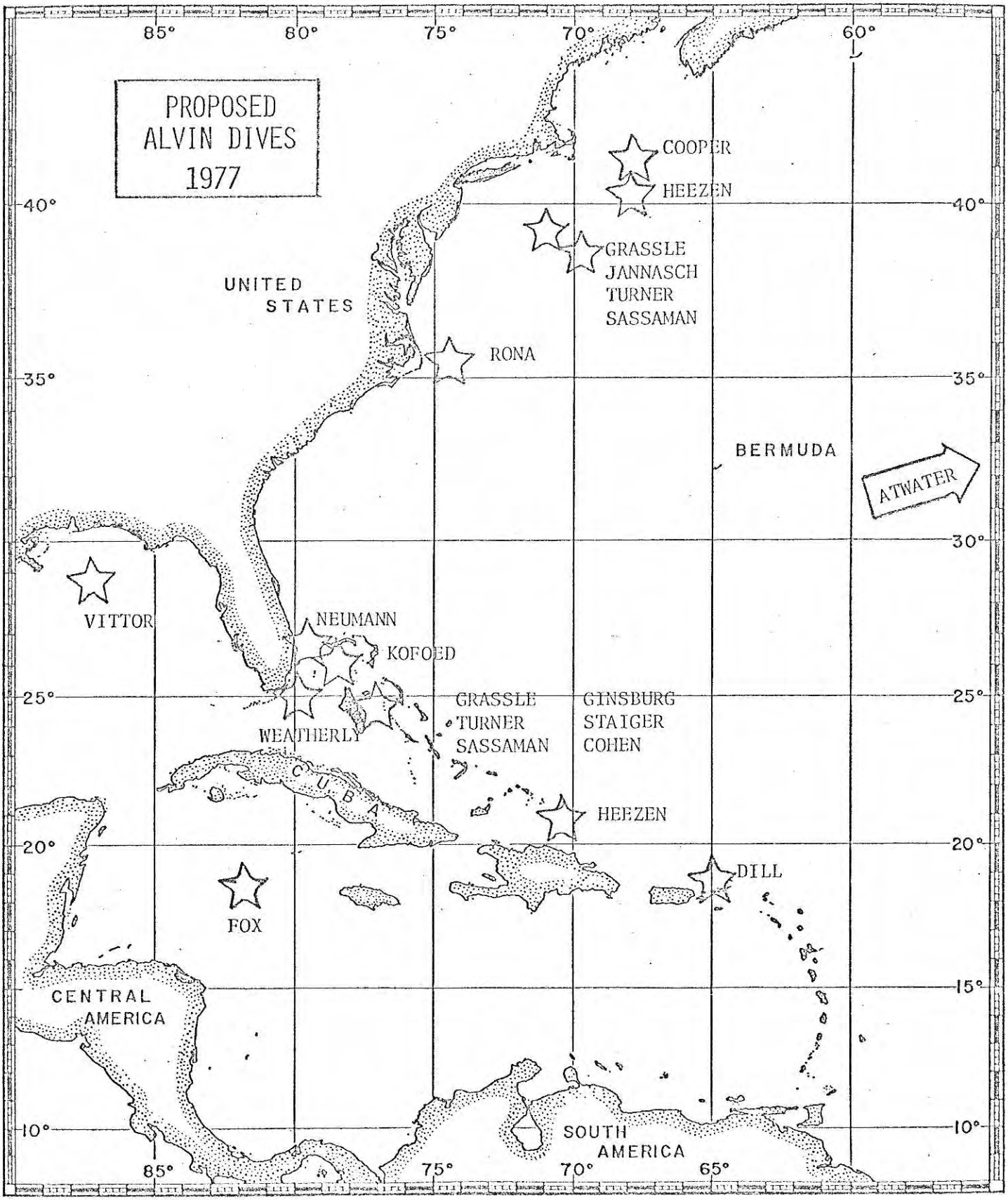

PROPOSED
ALVIN DIVES
1977
85°
80°
75°
70°
60°
40°
35°
30°
25°
20°
15°
10°
65°
COOPER
HEEZEN
GRASSLE
JANNASCH
TURNER
SASSAMAN
UNITED
STATES
RONA
BERMUDA
ATWATER
VITTOR
NEUMANN
KOFOED
GRASSLE
TURNER
SASSAMAN
GINSBURG
STAIGER
COHEN
WEATHERLY
CUBA
HEEZEN
DILL
FOX
CENTRAL
AMERICA
SOUTH
AMERICA
HONJO
CORLISS
LONSDALE

Figure 1

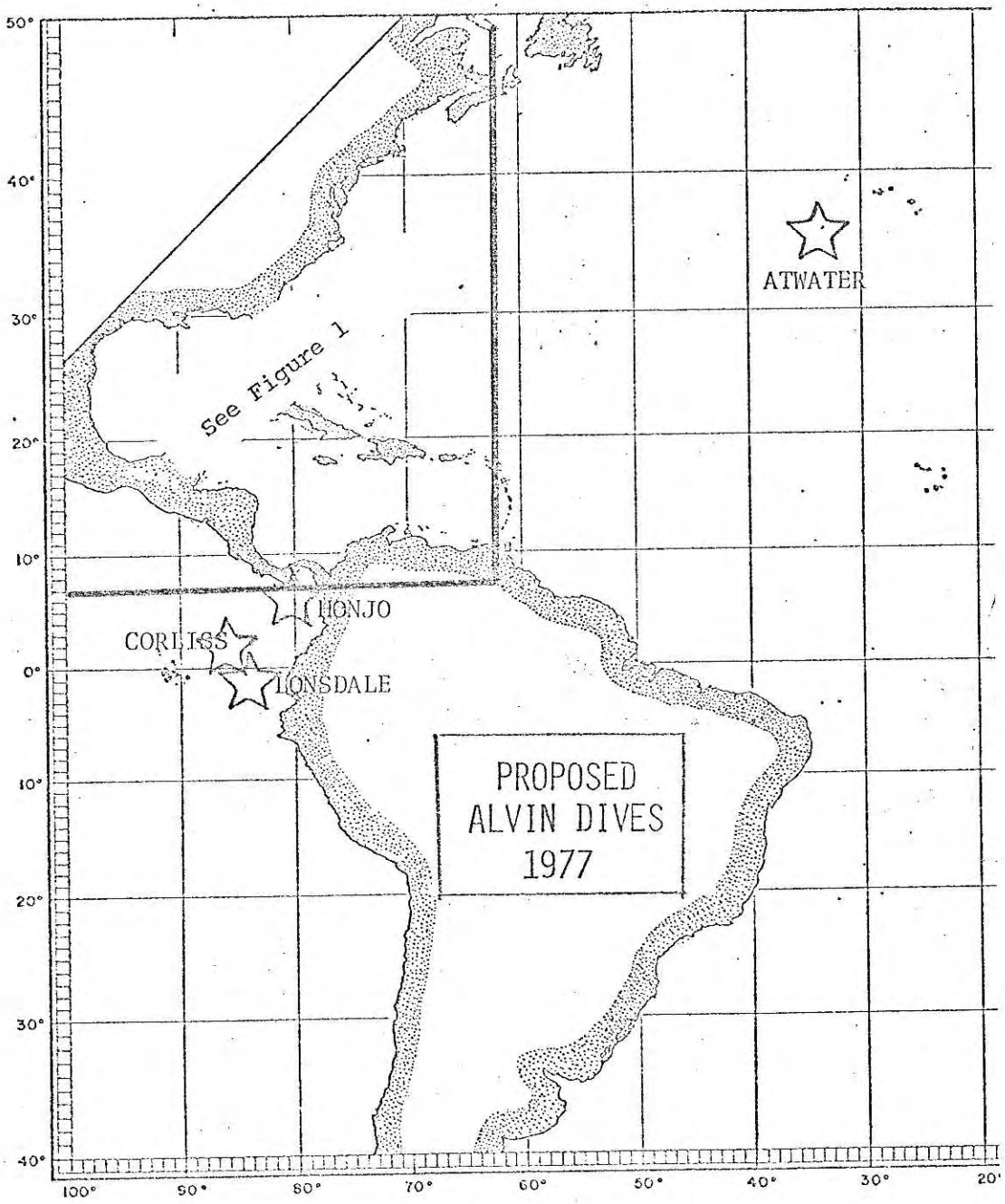

ATWATER
See Figure 1
CHONJO
CORLISS
LONSDALE
PROPOSED
ALVIN DIVES
1977

Figure 2

A profile of proposed use for 1977 is as follows: (showing comparisons with 1975 and 1976)

	1975	1976	1977
General			
Total number of proposals	25	30	24
Number of dives requested	115	160	210
Number of use days requested	171 days	246 days	333 days
Number of principal investigators	25	31	21
Number of academic labs	10	14	18
Number of Federal labs	4	4	3
Number of Other labs	1	1	0
By Area			
Northern area (north of Delaware)			
Proposals	12	14	7
Use Days	83 days	91 days	85 days
Mid-Atlantic Area (Del. to Georgia)			
Proposals	4	3	1
Use Days	17 days	27 days	10 days
Southern Area (Florida, Bahamas & Carib.)			
Proposals	12	13	15
Use Days	72 days	114 days	152 days
Other (Pacific & Mid-Atlantic)			
Proposals	—	—	4
Use Days	—	—	76 days
By Agency Funding Research (or proposed to fund)			
ONR	43	50	66
NOAA	36	49	70
NSF	77	113	187
Other	10	17	0
Unspecified	5	17	10
Total	171 days	246 days	333 days
By Discipline			
Biology	118	115	150
Geology	39	94	165
Physical	11	23	12
Engineering	13	14	6
Total	171 days	246 days	333 days
Comparison with Woods Hole			
W.H.O.I.	59	89	43
Other	112	157	270
Total	171 days	246 days	333 days

Of the 333 proposed use days, 60 have been specified by NOAA as its share of the Interagency Agreement.

16. Mr. Shumaker advised that a full operating year might comprise about 180 use days depending on extent of transits and time of starting. He noted that additional dives, normally reckoned at about 2/3 of use days could be undertaken by better use of "transit" use where batteries can be recharged during transit steaming. He further suggested that transit south and certification could be accomplished during December 1976 which would allow the user year to start promptly after New Years. Additional funding would have to be provided for the calendar if this is to be accomplished.

17. The Committee discussed whether its recommendations should address a full operating year or part of a year which would be supported by the joint funding agreement. It was agreed that a full year should be the consideration.

18. In reviewing the 24 proposals for ALVIN use the Committee continued its previous basis of

    (a) Scientific merit
    (b) Demonstrated need for submersible time
    (c) Feasibility for ALVIN operations

Submitted material was carefully examined and those not meeting (b) and (c) above were excluded. The remaining were rank ordered. At this point those requests not providing sufficient information for sound scientific judgements were accorded minimum ranking.

Of the twenty-four proposals reviewed, two did not demonstrate a justifiable need for submersible time, and one did not prove feasible by reason of location or time constraints.

Of the remaining 21 proposals, all merited scientific consideration to some extent. Two of these the Galapagos Rift and the mid-Atlantic Ridge programs were major geology and geophysics projects of which only one was considered feasible for 1977 in view of other constraints. In view of previous approval of the Galapagos Rift program at the October 1975 meeting, it was recommended that the mid-Atlantic Ridge project be resubmitted for a future year.

19. Of the proposals recommended for accomplishment, the Committee applied its review judgements subject to constraints noted, and bore in mind the interests of the funding agencies. The Committee, therefore, recommended the following awards for ALVIN use in 1977:

Recommendations for 1977

Proposal	Dives Requested	Use Days Requested	Use Days Recommended	
Biology Group (GRASSLE, TURNER, SASSAMAN)				
Tongue of the Ocean	14	20	10	
Northern Deep Stas.	20	30	20	
COHEN	8	12	5	*Note 1*
COOPER	9	13	10	
CORLISS	15	40	40	
FOX	8	12	10	
GINSBURG	8	12	10	
HEEZEN (South)	7	10	9	
HEEZEN (North)	12	18	10	
JANNASCH	8	12	10	
KOFOED	5	7	5	*Note 2*
NEUMANN	12	18	5	*Note 2*
RONA	8	12	5	
STAIGER	12	18	5	*Note 1*
WEATHERLY	9	13	4	
HONJO	3	4	*Note 3*	
LONSDALE	8	12	*Note 4*	
Unassigned North	—	—	10	
Unassigned South	—	—	10	
	166	263	178	

Note 1 - Cohen & Staiger combined into one 10 day cruise

Note 2 - Kofoed & Neumann combined into one 10 day cruise

Note 3 - Attempt to include Honjo's work in transit for Galapagos Rift Project or move to Atlantic on opportunity basis.

Note 4 - Attempt to include Lonsdale in Galapagos Rift use period. No additional time or escort appears available. Otherwise defer to future year.

20. The profile of the 1976 recommended use arrangement by user benefits is:

Use by Agency

ONR	32	use days	18%
NSF	101	" "	57%
NOAA	25	" "	14%
OTHER	20	" "	11%
	178	" "	

Mr. Shumaker estimated that the cost of an operating year based on the recommendations shown would be $1,410,000, but that such a figure should be used for preliminary purposes only. Based upon this, a preliminary profile of apportioned costs between user is:

ONR	-	$ 254,000
NSF	-	800,000
NOAA	-	198,000
OTHER	-	158,000
		$ 1,410,000

Assuming that the ONR-NSF-NOAA joint funding agreement of $300,000 for each agency, the excess costs over $900,000 should be apportioned to show a final tentative recommended support by agency as follows:

Agency	Tentative Recommended Support
ONR	$ 300,000
NSF	652,000
NOAA	300,000
OTHER	158,000
Total	$ 1,410,000

The "other" support shown is based upon 20 use days or a tentative daily use rate of $7,900. Mr. Shumaker indicated that the Navy might be interested in the Southern unassigned time and that EPA had expressed an interest in continuing its 1976 work in the Northern dump sites.

21. Using the recommended use assignments and in cooperation with the Woods Hole Deep Submergence Group a tentative 1977 Operating Schedule was developed. This schedule is given in Appendix F.

22. The Committee summarized its recommendations for the future operations of ALVIN as follows, noting that this will comprise the major elements of the report to UNOLS and the Federal Agencies:

- The ALVIN should be continued as a National Oceanographic Facility.

- Funding support should be provided in such a way as to insure full operations by ALVIN but still attract new users and support elements.

- Planning for ALVIN use should not be on a year by year basis but over several years reflecting the development of first rate programs by groups of experienced scientists.

- The planning cycle for ALVIN use should include workshops and adequate information to attract new users and scientists into the program.

23. There being no further business, the meeting was adjourned.

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

DSRV ALVIN REVIEW COMMITTEE
Third Meeting - 17-18 June 1976
Woods Hole Oceanographic Institution

TENTATIVE AGENDA

Convene 0830 - Thursday 17 June 1976
Carriage House Conference Center

1. Introduction - Dr. Adrian F. Richards, Chairman

2. Review of First Two Years of ALVIN Operations as a National Oceanographic Facility - Dr. Robert Frosch

   - Administration - budgets
   - Scheduling
   - Operations
   - Science

3. Role of ALVIN as an effective tool for science in terms of specific accomplishments and potential

   - Dr. Robert Ballard - Cayman Trough
   - Drs. Ruth Turner/Holger Jannasch - Benthic Biology
   - Dr. Richard Cooper - Fishery investigations
   - Dr. Bruce Heezen - Submarine Geological Processes
   - Mr. Larry Shumaker - Navy requirements

4. Report on 1976 Diving Season - Larry Shumaker

5. Comments and discussion by Federal Agency representatives.

6. Summary of 1977 - Requests - R. P. Dinsmore

7. Review of 1977 requests and development of recommended schedule

8. Outlook for 1978 and beyond

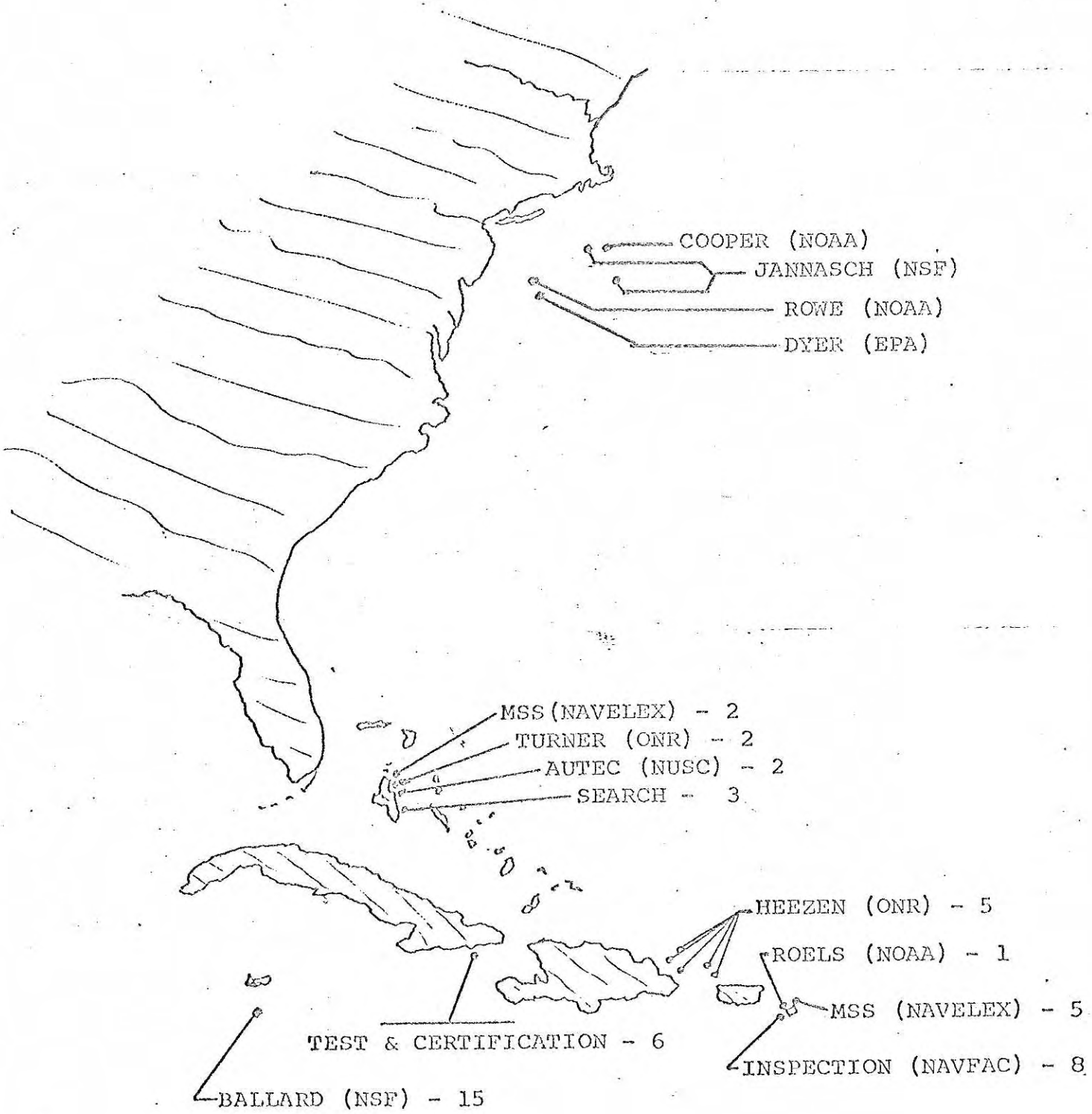
   - Development of future programs
     - Report of West Coast Meeting - Dr. Robert Ballard
     - Report of East Coast Meeting - Dr. Fred Grassle
   - Support and Funding arrangements
     - development of UNOLS recommendations on the continuation of ALVIN as National Oceanographic Facility and the support funding incident thereto.

9. Other Business

ALVIN

USER DAYS 1976 (TO 1 JUNE)	73
TRANSIT	19
WEATHER	4
IN PORT OPERATIONS....	2
DIVE DAYS	48
MAINTENANCE, STANDOWN & HOLIDAYS	46
DAYS LOST DUE TO LULU CASUALTY	9
NORTH/SOUTH TRANSIT	16
EAST/WEST TRANSIT	7
TOTAL DAYS TO 1 JUNE	151

ALVIN 1976


COOPER (NOAA)
JANNASCH (NSF)
ROWE (NOAA)
DYER (EPA)
MSS (NAVELEX) - 2
TURNER (ONR) - 2
AUTEC (NUSC) - 2
SEARCH - 3
HEEZEN (ONR) - 5
ROELS (NOAA) - 1
MSS (NAVELEX) - 5
INSPECTION (NAVFAC) - 8
TEST & CERTIFICATION - 6
BALLARD (NSF) - 15

ALVIN 1976

DIVE UTILIZATION

	1975	1976 (to 1 June)	1976 (Sched.)
TEST & CERTIFICATION	3	6	
ENGINEERING (ARPA)	4(p)		
NON-SCIENCE SEARCH	1	3(p)	
MSS PROGRAM (NAVY)		7(p)	
SURVEY & INSPECTION (NAVY)		10(p)	
SEARCH (UNIV. OF MIAMI)	1		
BIOLOGY	38	2	22
GEOLOGY	9	20	
RADWASTE INVESTIGATION	2		6(p)
INSPECTION (LAMONT-ROELS)		1(p)	
TOTALS	58	49	28

1976 Cruise
Summary

CRUISE #	SPONSOR	DATES	LOCATIONS	CHIEF SCI	OPS DIR	PURPOSE
83-1	Joint agreement	12-11-75 12-19-75	Transit to Miami	none	none	Transit
83-2	Joint agreement	1-2-76 1-7-76	Transit to GTMO	none	Shumaker	Transit
83-3	Joint agreement	1-14-76 1-16-76	Off of GTMO	none	Shumaker	Test, tng & cert.
83-4	Joint agreement	1-23-76 1-25-76	Transit to G'town	none	Shumaker	Transit
83-5	Joint agreement	1-27-76 2-5-76	Cayman Trench	Ballard	Shumaker	Geology
83-6	Joint agreement	2-10-76 2-11-76	Cayman Trench	Ballard	Shumaker	Geology
83-7	Joint agreement	2-12-76 2-17-76	Cayman Trench	Ballard	Shumaker	Geology
83-8	Joint agreement	2-17-76 2-22-76	Cayman Trench	Ballard	Shumaker	Geology
83-9	Joint agreement	2-22-76 2-25-76	Transit to GTMO	none	Broderson	Transit
83-10	Joint agreement	2-28-76 3-6-76	Transit to San Juan	none	Broderson	Transit
83-11	Joint agreement	3-16-76 3-16-76	Transit to St. Croix	none	Shumaker	Transit
83-12	NAVFAC	3-17-76 3-24-76	Ops from St. Croix	Ballew	Shumaker	Inspection
83-13	Joint Agreement	3-26-76 3-26-76	Transit to Ch'sted	Roels	Shumaker	Transit
83-14	NADC and TRACOR GE	3-27-76 3-31-76	Ops from Ch'sted	Von-Pervandt	Shumaker	Inspection & search
83-15	NAVFAC	4-1-76 4-1-76	Off of Fr'sted	Ballew	Donnelly	Inspection
83-16	Joint agreement	4-1-76 4-2-76	Transit to San Juan	none	Donnelly	Transit
83-17	Joint agreement	4-4-76 4-15-76	PR trench & transit	Heezen	Donnelly	Geology & transit
83-18	NADC and joint agg.	4-17-76 4-21-76	TOTO	Turner	Shumaker	Biology & search

1976 Cruise
Summary (cont.)

CRUISE #	SPONSOR	DATES	LOCATIONS	CHIEF SCI	OPS DIR	PURPOSE
83-19	Joint agreement	4-21-76 4-21-76	Transit to Andros	none	Shumaker	Transit
83-20	NUSC & NAVELEX	4-22-76 4-29-76	TOTO	Santos	Shumaker	Search & recovery
83-21	Joint agreement	4-29-76 5-6-76	Transit to WHOI	none	none	Transit
84	Joint agreement	6-7-76 6-16-76	WHOI bottom stations	Jannasch	Shumaker	Biology
85	Joint agreement	6-22-76 7-1-76	NY bight dump site 106	Edwards	Shumaker	Ecology Biology
86	Joint agreement	7-7-76 7-16-76	Veatch Canyon	Uzmann	Donnelly	Geology Biology
87	EPA	7-27-76 8-5-76	Radwaste dump NY bight	Dyer	Donnelly	Radwaste recovery
88	Joint agreement	8-10-76 8-20-76	WHOI bottom stations	Jannasch	Donnelly	Biology

SUMMARY OF ALVIN DIVES - 1976

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
12-10-75	604	W.H.O.I. Dock	ONR Testing	V. Wilson J. Donnelly	None	1430	1445	0-15		
1-13-76	605	GTMO Harbor	ONR Testing & Training	J. Donnelly D. Foster	R. Hollis	1208	1220	0-12	10^m	
1-14-76	606	GTMO Harbor	ONR Testing & Training	J. Donnelly L. Shumaker	R. Hollis	1535	1606	0-31	10^m	Post overhaul check & test of ARPA Arm
1-15-76	607	19-50.5N 75-12.4W	ONR Testing & Training	J. Donnelly V. Wilson	B. Walden	0825	0951	1-26	850^m	Test ARPA Arm & Data Logger
1-16-76	608	19-44.2N 75-12.7W	ONR Testing & Training	L. Shumaker J. Donnelly	None	0928	1505	5-37	3660^m	Test & Certification. VB casualty.
1-27-76	609	19-12.4N 81-18.1W	ONR Test Dive	D. Foster J. Donnelly	R. Ballard	1103	1111	0-8	120^m	Aborted due to UQC failure
1-27-76	610	19-12.4N 81-18.1W	ONR Test Dive	D. Foster J. Donnelly	R. Ballard	1121	1445	3-24	1988^m	Tests satisfactory
1-28-76	611	17-54.89N 81-41.59W	NSF Geology	D. Foster	R. Ballard J. deBoer	0959	1834	8-35	3639^m	68 lbs Rock Samples
1-31-76	612	17-57.4N 81-36.2W	NSF Geology	J. Donnelly	J. Fox J. deBoer	0855	1606	7-11	3067^m	45 lbs Rock Samples
2-1-76	613	17-57.9N 81-36.7W	NSF Geology	D. Foster	J. Fox R. Wright	0924	1753	8-29	3652^m	36 lbs Rock Samples

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
2-2-76	614	17-56.6N 81-35.5W	NSF Geology	J. Donnelly	J. deBoer W. Sullivan	0929	1726	7-57	3487m	3 lbs. Rock Samples
2-3-76	615	17-59.4N 81-35.8W	NSF Geology	D. Foster	K. Emery J. Fox	1028	1809	7-41	3075m	112 lbs. Rock Samples
2-4-76	616	17-58.0N 81-36.8W	NSF Geology	J. Donnelly	R. Ballard T. vanAndel	0902	1709	8-07	3662m	119 lbs. Rock Samples
2-10-76	617	19-08.9N 81-13.0W	NSF Geology	L. Shumaker	R. Ballard K. Emery	1006	1836	8-30	3084m	
2-11-76	618	19-05.1N 81-19.7W	NSF Geology	J. Donnelly	R. Wright J. Fox	0925	1124	1-39	1600m	Aborted due to loss of V.B. pressure indication
2-12-76	619	19-05.6N 81-19.9W	NSF Geology	D. Foster	R. Wright J. Fox	0936	1815	8-39	3657m	
2-14-76	620	18-22.6N 81-43.8W	NSF Geology	L. Shumaker	R. Ballard J. Corliss	1025	1751	7-26	3663m	44# Rock including layer 3 and 4
2-16-76	621	18-22.8N 81-45.1W	NSF Geology	J. Donnelly	K. Emery J. Fox	0916	1734	8-18	3187m	
2-18-76	622	18-22.5N 81-46.1W	NSF Geology	D. Foster	R. Ballard E. Kristoff	1112	1820	7-08	2866m	

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

U	Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
							Dive	Surf	Sub.		
	2-19-76	623	18-24.6N 81-47.2W	NSF Geology	L. Shumaker	K. Emery R. Wright	0929	1801	8-32	3658m	82# Rock
	2-20-76	624	18-21.2N 81-44.6W	NSF Geology	J. Donnelly	R. Ballard J. Fox	0926	1840	9-14	3657m	
	2-21-76	625	18-22.8N 81-48.4W	NSF Geology	D. Foster	R. Wright K. Emery	0834	1455	6-21	2228m	
	3-17-76	626	17-44.8N 64-56.6W	NAVFAC Inspection	D. Foster	R. Dill W. Gardner	1316	1842	5-26	1097m	
	3-18-76	627	17-45.5N 64-57.8W	NAVFAC	D. Foster	R. Dill A. Suther-land	1352	1532	1-40	1135m	Aborted to take George Gibson to hospital
	3-20-76	628	17-45.3N 64-57.7W	NAVFAC Inspection	D. Foster	R. Dill R. Ballew	0934	1538	6-04	1220m	Inspected one array & 1400 yards cable
	3-21-76	629	17-44.6N 64-58.7W	NAVFAC Inspection	L. Shumaker	D. Wells R. Ballew	1006	1728	7-22	1108m	Inspected two arrays & 4300 yards cable
	3-22-76	630	17-42.9N 64-57.2W	NAVFAC Inspection	D. Foster	A. Suther-land J. Williams	0942	1506	5-24	980m	Inspected two arrays & 4000' cable

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
3-23-76	631	17-41.7N 64-57.1W	NAVFAC Inspection	L. Shumaker	A. Sutherland R. Kirkpatrick	0949	1318	3-29	935m	Inspected one array and cable
3-24-76	632	17-43N 64-55.2W	NAVFAC Inspection	D. Foster	J. Brown J. Williams	0920	1730	8-10	1161m	
3-26-76	633	17-48N 64-47.5W	NOAA Inspection	L. Shumaker	L. Von Hemelrych K. Haines	1040	1732	6-52	766m	
3-27-76	634	17-49.8N 64-42.4W	NADC Search	D. Foster	L. Von Pervandt F. Hogg	1308	1919	6-11	2350m.	
3-29-76	635	17-49.8N 64-42.4W	NADC Search	L. Shumaker	L. Gagne J. Wood	1008	1825	8-17	2527m	
3-29-76	636	17-50.9N 64-40.8W	NADC Search	D. Foster	F. Hogg J. Bolan	1522	2025	5-03	2000m	
3-30-76	637	17-50.4N 64-44.7W	NADC Search	L. Shumaker	J. Kennedy W. Mellis	1124	1843	7-19	2772m	
3-31-76	638	17-52.9N 64-41.1W	TRACOR/GE Search	D. Foster	R. Mosey R. Pich	1004	1822	8-18	3610m	Insp. deep moor surface to bottom
4-1-76	639	17-45.9N 64-59W	NAVFAC Inspection	D. Foster	J. Williams D. Magnuson	0735	1104	3-29	980m	Insp. array & 3000' cable

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
4-5-76	640	18-38.2N 67-24.3W	Geology	D. Foster	B. Heezen M. Rawson	0923	1715	7-52	3662m	Hill climb 2732m 3.2 mi. horizontal
4-6-76	641	19-13.5N 67-40.9W	Geology	J. Donnelly	B. Heezen W. Nesteroff	1007	1800	7-53	3660m	
4-7-76	642	19-14N 68-38W	Geology	D. Foster	B. Heezen R. Lynde	0928	1722	7-54	3666m	
4-8-76	643	19-44.9N 68-43.1W	Geology	D. Foster	B. Heezen M. Rawson	0944	1759	10-14	3644m	
4-10-76	644	19-31.9N 69-10.2W	Geology	D. Foster	B. Heezen W. Nesteroff	0846	1646	8-00	3542m	
4-17-76	645	24-53.2N 77-40.2W	ONR Biology	L. Shumaker	R. Turner L. Cole	1106	1824	7-18	2071m	
4-18-76	646	24-53.2N 77-40.2W	ONR Training	D. Foster	R. Turner R. Hollis	0943	1818	8-35	2163m	
4-19-76	647	25-13.7N 77-45W	ONR Training	L. Shumaker	J. McCarthy	1449	1919	4-30	2830m	
4-20-76	648	25-18.2N 77-45W	NADC Salvage	D. Foster	F. Bliss J. Brown	1326	2214	8-48	2806m	Recovery
4-22-76	649	23-41.3N 77-36.6W	NUSC Inspection	L. Shumaker	J. Santos R. Ricci	0924	1558	6-34	1836m	Inspection

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
4-23-76	650	23-41.1N 77-36.8W	NUSC Inspection	D. Foster	J. Santos R. Ricci	0925	1544	6-49	517^{m}	
4-25-76	651	23-14.2N 77-33.4W	NAVELEX Search	L. Shumaker	R. Hollis J. Kirby	1127	1950	8-23	1180^{m}	
4-26-76	652	23-14.2N 77-33.4W	NAVELEX Search	D. Foster	E. Barrett C. Brown	0932	1838	9-06	1196^{m}	
4-28-76	653	23-14.2N 77-33.4W	NAVELEX Search	L. Shumaker	J. Kirby J. Snow	0849	1841	9-52	1187^{m}	
6-4-76	654	Woods Hole Harbor	ONR Test	D. Foster	W. Page R. Hollis	1445	1512	0-27	65'	
6-8-76	655	39-45.7N 70-41W	Biology	L. Shumaker	C. Wirsen R. Turner	1208	1248	0-40	600^{m}	Aborted - ground Svc bus
6-8-76	656	39-45.7N 70-41W	Biology	L. Shumaker	C. Wirsen R. Turner	1525	2032	5-07	1829^{m}	
6-10-76	657	38-18.4N 65-35.6W	Biology	D. Foster	K. Smith L. Cole	1304	2101	7-57	3651^{m}	
6-15-76	658	39-45.7 70-41	Biology	L. Shumaker	H. Jannasch J. Farrington	1003	2012	10-04	1771^{m}	
6-24-76	659	38-50N 72-31W	Biology	D. Foster	K. Smith L. Boyer	0946	1740	7-54	2196^{m}	Located all 3 B.S.

SUMMARY OF ALVIN DIVES - 1976 (CONT.)

Date	Dive No.	Location	Sponsor/ Purpose	PIC/CP	Obs.	Time			Depth M/Ft.	Remarks
						Dive	Surf	Sub.		
6-26-76	660	38-49.8N 72-31.1W	Biology	L. Shumaker	G. Rowe W. Gardner	0950	1958	10-03	2215m	
6-27-76	661	38-50N 72-31W	Biology	D. Foster	R. Harbison L. Madin	0948	1216	2-26	600m	
6-27-76	662	38-50N 72-31W	Biology	D. Foster	K. Smith L. Madin	1501	1758	2-57	620m	
6-28-76	663	38-50N 72-32W	Biology	D. Foster	R. Harbison L. Madin	0925	1220	2-55	575m	
6-28-76	664	38-50N 72-31W	Biology	D. Foster	R. Harbison L. Madin	1430	1846	4-16	1000m	
6-29-76	665	38-50N 72-31W	Biology	L. Shumaker	G. Rowe K. Smith	0938	1914	9-46	2200m	
6-30-76	666	38-50N 72-29W	Biology	D. Foster	J. McCarthy R. Haedrich	0655	1144	4-49	2300m	
7-8-76	667	39-51.4N 69-33.8W	NOAA	D. Foster	R. Cooper J. Schlee	1116	1735	6-19	693m	
7-9-76	668	39-52.3N 69-35.8W	NOAA	J. Donnelly	J. Uzmann J. Schlee	1004	1622	6-18	1435m	
7-10-76	669	39-47.1N 69-32.1W	NOAA	D. Foster	R. Cooper J. Schlee	0934	1504	5-30	1913m	
7-11-76	670	39-52N 69-35.5W	NOAA	J. Donnelly	J. Uzmann J. Schlee	0942	1556	6-14	1510m	

ALVIN 1976

TO DATE 45 INDIVIDUALS HAVE MADE ONE OR MORE DIVES AS OBSERVERS ON ALVIN, REPRESENTING THE FOLLOWING 15 INSTITUTIONS AND ORGANIZATIONS:

FAIRLEIGH DICKENS UNIVERSITY

GENERAL ELECTRIC COMPANY

HARVARD UNIVERSITY

JAMAICAN GEOLOGICAL SURVEY

LAMONT-DOHERTY GEOLOGICAL OBSERVATORY

NAVAL AIR DEVELOPMENT CENTER

NAVAL ELECTRONIC SYSTEMS COMMAND (NAVELEX)

NAVAL FACILITIES COMMAND (NAVFAC)

NAVAL UNDERSEAS CENTER (NUSC)

OREGON STATE UNIVERSITY

STATE UNIVERSITY OF N.Y. AT ALBANY

SCRIPPS INSTITUTE OF OCEANOGRAPHY

TRACOR MARINE ACOUSTIC SYSTEMS

WESLEYAN UNIVERSITY

WOODS HOLE OCEANOGRAPHIC INSTITUTION

IT IS ANTICIPATED THAT THE FOLLOWING ADDITIONAL AGENCIES WILL PARTICIPATE IN OPERATIONS THIS SUMMER:

ATLANTIC ENVIRONMENTAL GROUP OF NOAA

ENVIRONMENTAL PROTECTION AGENCY

NATIONAL MARINE FISHERIES SERVICE

16 June 1976
RAF

1976 ALVIN Funding

10 Oct. 1975: UNOLS Review Committee proposed cost apportionment

ONE	$300,000
NSF	616,500
NOAA	313,500
Total	1,230,000

26 Jan. 1976: W.H.O.I. funding forecast

Joint Agreement	$1,000,000	
NOAA Carryover	10,000	
Other Navy	53,000	(St Croix range)
Total	1,063,000	
Reduce deficit	- 140,000	(from 1975)
Available Total	923,000	

Recommendation to and agreement with ONR, NSF:
Reduce Schedule to 80 user days.

30 Jan. 1976: Proposal

NSF	$400,000	
ONR	300,000	
NOAA	310,000	(with carryover)
Other Federal	53,000	(St Croix range)
	1,063,000	
Reduce Deficit	- 133,500	(1975, more precisely known)
	929,500	
Real total costs for 80 days	- 1,099,500	
Estimated 1976 Deficit	- 170,000	

(Deficit to be reduced by savings or other dive sponsors)

APPENDIX C

1 April 1976: Internal Summary:

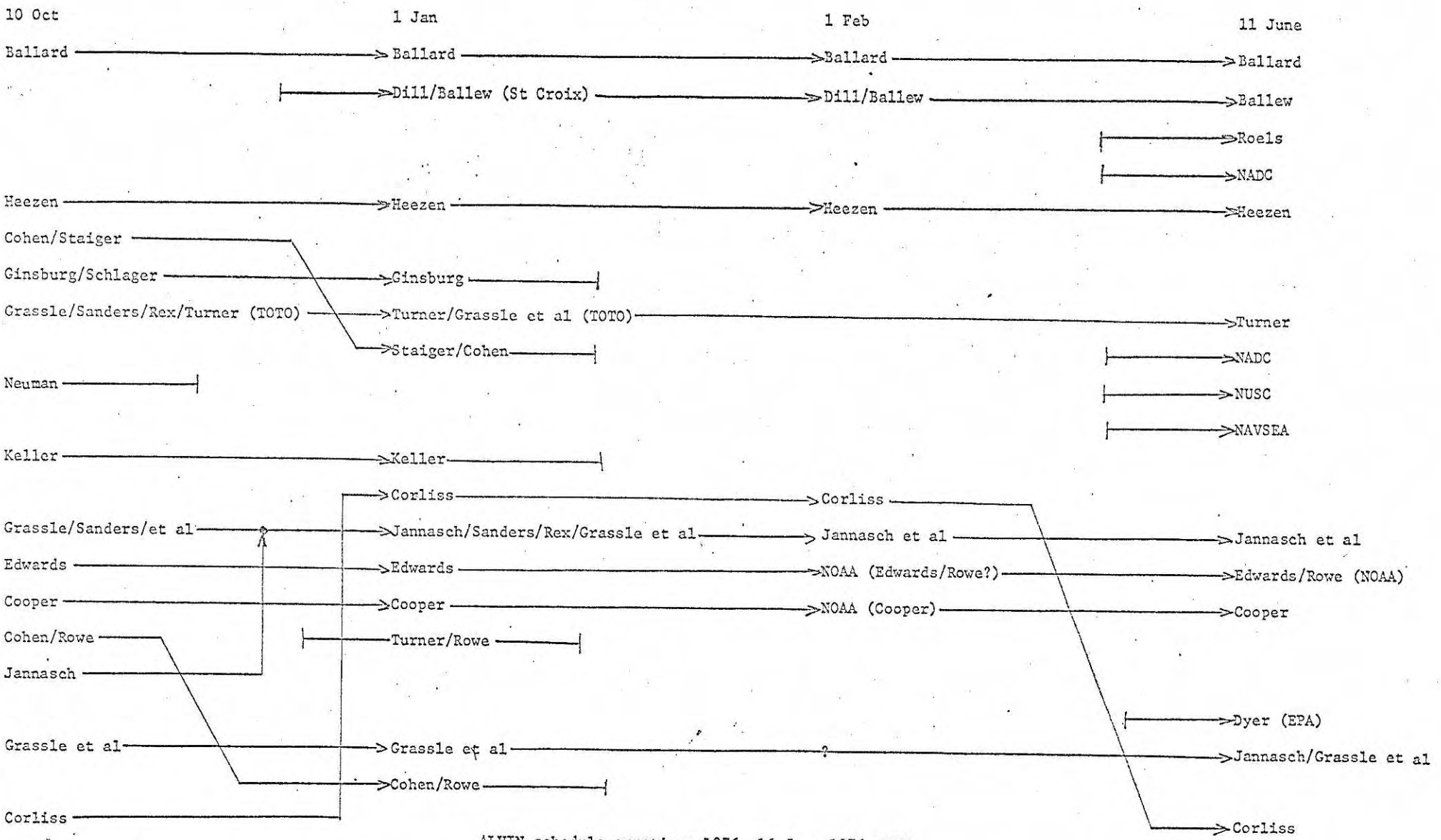
NSF	$400,000
ONR	300,000
NOAA	310,000
St Croix Range	53,000
Deficit	170,000
Total required for year	1,233,000

10 May 1976: Proposals

To NSF for EPA:	$ 62,500
NOAA	5,000

11 June 1976: Summary of status including new proposal

NSF	$400,000	
ONR	300,000	
NOAA	300,000	(10,000 carryover retrieved for use for escort)
Basic Joint Total	1,000,000	
NOAA	5,000	
EPA (via NSF)	62,500	
Misc. Navy Tasks	159,904	(accounts receivable)
	1,227,404	
New Proposal to NSF	74,000	
EPA?	15,625	
Expected total income	1,317,029	
1975 carryover deficit	- 133,500	
Available for years operation	1,173,529	



ALVIN schedule gyrations 1976, 16 June 1976, RAF

INSTITUTION MEMORANDUM #8-76

Subject: R/V LULU Escort Policy
(This expansion of Institution Memorandum #2-71 replaces that Memorandum)

Escort requirements for at-sea operations involving R/V LULU

Since LULU has limited sea-keeping and support capabilities (as a function of her speed, size, configuration and equipment) arising from her special mission characteristics, situations will arise in which special support to LULU or the LULU/ALVIN system must be provided to insure the safety of the people involved, and to limit the nature of some risks involved in this complex engineering operation. This Memorandum sets out these situations and provides policy guidance for fulfilling the aim set forth above. It should be followed in such a manner that the means chosen will always increase the probability of a successful and safe operation. Mere pro forma compliance with the requirements set forth below, which might sometimes result in a decrease in the probability of success or safety of the planned operation, would not be in conformity with the intent of the policy.

The policy concentrates on support to LULU and to ALVIN when surfaced, since the principal safety requirements for ALVIN when submerged have been built into ALVIN itself in terms of its capability to surface, and since any rescue or support measures for the submersible while submerged involve requirements that are so massive that they must always be a very special operation.

(a) General considerations affecting the need for an escort vessel include the mission, weather conditions expected in the operating area, proximity of accessible harbors, as well as the availability and proximity of pre-arranged on-call vessels or helicopters to the operating area. The decision as to whether or not an escort vessel is required rests with the Chairman of the Department of Ocean Engineering (subject to review by the Associate Director for Applied Oceanography and the Chairman of the Department of Facilities and Marine Operations) who will operate within the guidelines set forth below. Exceptions to these must be approved by the Associate Director for Applied Oceanography and the Chairman of the Department of Facilities and Marine Operations. Any vessel to be chartered by the Institution must be approved by the Marine Superintendent.

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(b) Conventional Oceanographic Cruises (Definition: At-sea operations which involve the collection of oceanographic information using conventional techniques not involving the use of submersibles or diver habitats.) The R/V LULU will require an escort vessel when operating at more than 48 hours steaming distance from an accessible harbor unless prior arrangements have been made for a stand-by vessel capable of reaching the operating area within 48 hours. (When operating at times or in areas where there is a high probability of severe weather, this time limit may, at the discretion of the Associate Director for Applied Oceanography and the Chairman of the Department of Facilities and Marine Operations, be reduced to 24 hours.)

(c) Open Ocean Transits (Definition: Transits between ports or operating areas during which LULU may or may not be carrying a secondary system such as a habitat or submersible.) The same requirements as in the preceding paragraph shall apply.

(d) Submersible Operations (Definition: Operations which involve the launching, surface controlling, and recovery of a manned submersible.) R/V LULU will require an escort vessel during all submersible operations unless:

(1) The dive site is within 30 miles steaming distance of an accessible harbor, or

(2) Prior arrangements have been made for quick reaction support (within 3 hours) to the operational site. (Quick reaction support may be ships or aircraft providing direct rescue capabilities or support to people on the surface, such as provision of rafts/boats, food, water, etc. as required by the situation on scene.)

When quick reaction support (not an on-scene escort) is to be used, the prior arrangements should include:

(1) Agreement and understanding by the Coast Guard or other agency that the capability is in fact available;

(2) A failsafe communications schedule with the reacting agency such that failure on LULU's part to send a regularly scheduled "operations normal" message, and failure to re-establish communication with LULU immediately thereafter, will result in automatic despatch of search and rescue capability (as prearranged) to the last known operations site;

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(3) Both LULU and ALVIN will be beaconed so that they will be easy for search and rescue forces to find, and that they have such equipment that the search and rescue force can talk to either when on the surface;

(4) LULU will be provided with a backup search radar capability. This is most important for cases in which we will depend upon backup land-based search and rescue, but should be provided in any case;

(5) When quick reaction support is to be used, there must be firm provisions for best available weather and sea prediction for the area of operations to be available to LULU and ALVIN.

In circumstances where an escort is provided because the entire operation is out of range of easy shore reaction:

(1) The escort should be equipped with an underwater telephone kit (over-the-side transducer) so that backup communication to ALVIN while submerged is available; (The Institution will make such a kit available.)

(2) While failsafe communications arrangements to shore probably cannot be made in all circumstances, there should be an especially strong attempt for regular, more than daily, "ops normal" messages to be sent to someone outside of the immediate operating area.

(e) Diving Habitat Operations (Definition: Operations involving the support of a bottom sitting diver habitat.) R/V LULU will require an escort unless she is equipped with a recompression chamber and qualified medical personnel and is operating within 48 hours steaming distance of an accessible harbor.

(f) Other Operations Requiring R/V LULU to Remain in Operating Area (Definition: Operations such as deep-sea drilling or similar activities in which R/V LULU is not free to leave scene of operation for extended period.) The requirements set down in paragraph (b) shall apply in this case, unless other specifications are made by the Associate Director for Applied Oceanography and the Chairman of the Department of Facilities and Marine Operations.

Paul M. Fye

ALVIN USE REQUESTS
1977

INVESTIGATOR	INST.	NO. DIVES	AREA	ASSOCIATE INVESTIGATORS	PURPOSE	SPONSOR
GRASSLE	W.H.O.I.	5 10	Tongue of the Ocean W.H.O.I. Bottom Stas.	Sanders (W.H.O.I.)	Recruitment, growth and mortality of deep-sea benthic populations	NSF
JANNASCH	W.H.O.I.	8	W.H.O.I. Bottom Stas.	Wirsen (W.H.O.I.)	Rates of biological and organic geochemical processes in the deep ocean.	NSF
SASSAMAN	W.H.O.I.	1 2	Tongue of the Ocean W.H.O.I. Bottom Stas.	Grassle (W.H.O.I.)	Population and community structure of bathypelagic amphipods in the North Atlantic Ocean	NSF
TURNER I	HARVARD	4 4	Tongue of the Ocean W.H.O.I. Bottom Stas.	Sanders (W.H.O.I.) Grassle (W.H.O.I.)	Life History and ecology of the Xylophagainae and the contribution of wood & other plant material to nutrition	ONR
TURNER II	HARVARD	4 4	Tongue of the Ocean W.H.O.I. Bottom Stas.	Shumaker	Studies of Deep Sea Fouling Communities	ONR
(Biology Group)		*14* *28*	*Tongue of the Ocean* *W.H.O.I. Bottom Stas.*			
ATWATER	M.I.T.	20	Mid-Atlantic Ridge (FAMOUS Area)	MacDonald (SIO) vanAndel (OSU) Hopson (UCSB) Hall (Dalhousie)	Volcano tectonic evolution of rifted mid-ocean ridges and distributions of reversely magnetized rocks & their tectonic implications	NSF
CORLISS	OSU	15	Galapagos Rift	Von Herzen (W.H.O.I.) Dymond (OSU) Edmond (M.I.T.)	Hydrothermal processes on the Galapagos Rift	NSF

APPENDIX E

1977

INVESTIGATOR	INST.	NO. DIVES	AREA	ASSOCIATE INVESTIGATORS	PURPOSE	SPONSOR
DILL	W.I.L.	7	Virgin Islands	Ogden (W.I.L.) Moore (LSU) Burk (U. Tex) Gladfelder (W.I.L)	Canyon Investigations off St. Croix	(Unspec.)
FOX	SUNY (Albany)	8	Cayman Trough	DeBoer (Weslayan) Bryan (W.H.O.I.) Thompson (W.H.O.I.)	Crustal Layers (Layers 3 & possibly uppermantle) exposed along the fault-scarps of the mid-Cayman Rise	NSF
GINSBURG	MIAMI	8	Tongue of the Ocean	Hooke (Minn) James (Mem. U.) Slater (Colo)	Comparative morphology of erosional and depositional platform slopes around the Tongue of the Ocean	NSF
HEEZEN I	L.D.G.O.	12	George's Bank	Rawson (L.D.G.O.) Nesteroff " Lynde " Ryan "	Processes of sediment transport & erosion in outer portions of George's Bank Canyons and contour current phenomena	ONR
HEEZEN II	L.D.G.O.	7	Puerto Rico Trench	Rawson (L.D.G.O.) Lynde " Rycin "	Geology of the flanks of Navidad, Silver and Gentry Banks on or near the north wall of the Puerto Rico Trench	ONR
HONJO	W.H.O.I.	3	Panama Basin	Takahashi (Queens) Erez (W.H.O.I.)	In-sito Δ pH and other electrictrolytic measurements in-sediment, at interface and water above the deep sea floor	NSF
LONSDALE	SCRIPPS	8	Carnegie Ridge	Mayer (SIO) Karas (SIO)	Abyssal sand dunes and a maganese nodule field study; sedimentation processes under influence of fast episodic currents	NSF

ALVIN USE REQUESTS

1977

INVESTIGATOR	INST.	NO. DIVES	AREA	ASSOCIATE INVESTIGATORS	PURPOSE	SPONSOR
NEUMANN	U.N.C.	12	Bahamas	Land (Texas) Bayer (Miami) Martens (OSU)	Lithified biohermal structures of the margins of carbonate platforms	NSF
RECKSIEK	Moss Landing	5	Monterey Bay	Frey (C,F&G)	A survey of squid spawning grounds in Monterey Bay	NOAA (Sea Grant)
STAIGER	U. Miami	12	Tongue of the Ocean	Cohen (NMFS) Rowe (WHOI)	Ecology of benthic fishes of Tongue-of-the Ocean	NSF
VITTOR	U. Alabama	12	Northern Gulf of Mexico	Crozier (Ala) Hopkins (UWF)	Fishery potential of the slipper lobster.	NOAA (Sea Grant)
WEATHERLY I	F.S.U.	4	Florida Straits	Cacchione (USGS)	Sediment Dynamics Experiment in the East Miami Terrace Trough	ONR
WEATHERLY II	F.S.U.	5	Florida Straits	Cacchione (USGS)	Secondary Flows in the Florida Current Bottom Boundary Layer	ONR
COHEN	NMFS	8	Tongue of the Ocean	Staiger (RSMAS) Pawson (Smithsonian) Rowe (WHOI)	Quantitative estimates of benthic fishes and large invertebrates in the deep sea.	NOAA
COOPER	NMFS	9	New England Slope	KELLER (OSU) Lambert (AOML) Folger (USGS)	Biology and Geology of New England continental shelf submarine canyons	NOAA
KOFOED	AOML	5	Bahamas	Keller (OSU) Lambert (AOML)	Sedimentary processes in submarine canyons	NOAA
RONA	AOML	8	Hatteras		Shelf sediment transport to the ocean basin.	NOAA

RECOMMENDED
TENTATIVE SCHEDULE

RESEARCH SUBMERSIBLE ALVIN

1977

DATES	USE DAYS	AREA	INVESTIGATOR(S)	PROGRAM	RESEARCH FUNDING AGENCY
29 Nov - 8 Dec '76		TRANSIT TO TONGUE OF THE OCEAN, BAHAMAS			
9 Dec - 22 Dec '76	0	TOTO	Sea Trials and Certification		
3 Jan - 11 Jan	9	Bahamas	Staiger Cohen	Deep Fish Populations	NOAA NSF
14 Jan - 22 Jan	9	Bahamas - Puerto Rico	Heezen	Deep Sea Erosion	ONR
24 Jan - 31 Jan	8	St. Croix	Unassigned	Unassigned	Unassigned
1 Feb - 9 Feb		TRANSIT TO PANAMA			
10 Feb - 25 Mar	40	Galapagos I.	Corliss/Von Herzen	Hydrothermal Processes	NSF
26 Mar - 3 Apr		TRANSIT TO GRAND CAYMAN ISLAND			
5 Apr - 14 Apr	10	Cayman Trough	Fox	Crustal Layers along Faults	NSF
18 Apr - 22 Apr		TRANSIT TO MIAMI			
25 Apr - 28 Apr	4	Florida Straits	Weatherly	Sediment Dynamics & Current	ONR
1 May - 10 May	10	Tongue of the Ocean	Ginsburg	Erosion & Deposition	NSF
12 May - 21 May	10	Tongue of the Ocean	Turner/Grassle Sassaman	Biology	NSF ONR
24 May - 2 June	10	Florida Straits	Kofoed Neumann	Sedimentary Processes	NOAA NSF
5 June - 9 June		TRANSIT TO CAPE HATTERAS AREA			
10 June - 14 June	5	Cape Hatteras	Rona	Cont. slope & upper cont. rise sediments	NOAA
15 June - 18 June		TRANSIT TO WOODS HOLE			
19 June - 4 July		MAINTENANCE @ WOODS HOLE			
5 July - 14 July	10	Woods Hole Deep Stations	Jannasch	Deep Sea Biology	NSF
19 July - 28 July	10	Woods Hole Deep Stations	Turner/Grassle Sassaman	Deep Sea Biology	ONR NSF
2 Aug - 11 Aug	10	Atlantis Canyon	Cooper	Megabenthic Studies	NOAA
12 Aug - 22 Aug		MAINTENANCE @ WOODS HOLE			
23 Aug - 1 Sept	10	George's Bank	Heezen	Sediments transport	ONR
6 Sept - 15 Sept	10		Unassigned	Unassigned	Unassigned
20 Sept - 29 Sept	10	Woods Hole Deep Station	Turner/Grassle Sassaman	Deep Sea Biology	ONR NSF

Agenda Item 3

University of Delaware - R/V CAPE HENLOPEN

1. The University of Delaware has built privately a new 120-ft R/V and is making a strong effort to have it designated a UNOLS Vessel for the accomplishment of all NSF programs with a wide radius (300 mi) of its home port of Lewes, Delaware.

2. The R/V CAPE HENLOPEN is an aluminum construction high speed shallow draught hull with twin engines and having both reversing clutch and variable pitch propellers. It is intended to cruise at 18½ knots and carry 12 scientists and 6 crew. Principal features are shown on the attached sheets.

3. As part of an NSF Grant for the evaluation of the vessel, a UNOLS team and NSF observers visited the ship during 16-18 August 1976. Present were T. Treadwell, J. Leiby, J. Gibbons, R. Dinsmore, T. Stetson, R. Elder and F. Alexander. Visit included a 12 hours underway making several stations.

4. The ship is an attractive, well found vessel with an attempt to provide an enormous amount of capability, flexibility and innovativeness into an otherwise small hull. Its features are high speed, heavy winches, cranes and frames and a portable deck van(s) which "mate" to the deckhouse lab as well as shore lab buildings.

5. The ship is planned to operate for 260 days/year with a crew of 6 at a budget of $663,000/year or $2,550/day. This is an unlikely aspiration, 200 days would be a more likely maximum at a cost of $550,000 giving a daily rate of $2,250.

6. Preliminary comments:

   a. The variety of equipage has so cluttered the after deck as to render it almost useless. This can be rectified.

   b. The main lab is cramped for a modern R/V of this size. Except for the van, no other space exists for scientific work, especially routine paper work.

   c. The van is an attractive feature but no special uses or demands seem to be emerging yet. Any criticism, however, should await further experience. "Self loading" capability will be limited to only the most favorable conditions.

   d. The ship is remarkably vibration free, especially in the laboratory. Moderate use can be made of microscopes at speeds up to 15 knots.

   e. Under extremely favorable wind and sea conditions, the maximum speed at full engine RPM was 17 knots. It is unlikely that the ship would have an average cruising speed in excess of 15 knots.

f. The hydroplatform is not a suitable arrangement, but can be easily rectified. Its location however is another matter. Next to the main engine air intake, normal voice communications are difficult and often impossible.

g. The trawl winch frames and fairleads are nicely arranged to provide a flexible variety of uses.

h. The variable pitch propeller system is an unproven type which is not functioning and there is a real likelihood it never will. The alternative pneumatic-dydraulic clutch limits the minimum speed to 6 knots. Extremely high accelerations make the ship difficult to handle for oceanographic operations. There is no bow thruster or any real structural or power provisions for installing one.

i. The ship has no scientific echo sounding transducers although one (inadequate) could be given over from the navigational suite. Undoubtedly, all echo sounding will have to be from towed arrays.

j. The ship will probably have an average fuel consumption of 1,500 gal/day which will limit operations to less than six days. At full speed the specifications limit endurance to two days.

k. Quarters are comfortable and adequate for a ship of this size. Mess deck is cramped and gives concern for "paper work" space. Pilot house is commodious and well planned, although has poor visibility to after working deck.

l. Main deck appeared to be exceptionally dry although no heavy seas were experienced. Crew reports after deck has never taken water.

m. Ship has 4.8-5 second roll period with severe amplitudes. During test wind was 10-13 knots with gusts to 15 knots, Sea was 1-3-ft. occasionally 4-ft heights. Ship rolled continuously on all headings 10-15^{o} with occasional rolls to 20^{o}. Maximum roll experienced was 22^{o}. Because of this, the ship obviously is extremely uncomfortable and quickly will develop a bad reputation. Anti-roll suppression systems (i.e. flopper stoppers) should be investigated for use by the ship.

n. For any sustained operations (more than 3 days) a six man crew will prove inadequate. It should carry at least seven and occasionally eight.

o. Ship has berthing problems in that new laboratory mooring basin is silting 2-ft/year and ship can now only move within 2 hours of high tide.

7. A final report of the UNOLS visiting group is in preparation for submission to NSF to become part of the record of evaluation. From the indications above, the report will not convey an especially favorable comparison with other vessels of this size and intended use both from the standpoint of cost and operational characteristics.

R/V Cape Henlopen

Physical
- Year built – 1975
- Length overall – 120'
- Length at waterline – 109'
- Breadth, MLD – 23' 2-1/2"
- Depth, MLD – 10' 7-5/8"
- Draft (loaded) – 9'3"
- Height to masthead – 48', plus antennas
- Hull material – Aluminum
- Maximum displacement – 165 tons

Power
- Engines – two 16V-149 TI GM diesels
- Shaft horsepower – 2,500 total SHP at 1,900 RPM
- Generators – two 75 KW 208/120 VAC, 3 phase, 60 Hz

Performance
- Speed range – 0 to 20 knots
- Speed, cruising – 18 to 20 knots depending on load
- Range – 900 miles at 20 knots; 2,800 miles at 12 knots

Tanks
- Fuel oil capacity – 9,000 gallons
- Fresh water capacity – 1,650 gallons

Evaporator
- Maxim HJ10A (Rated capacity: 480 gallons per day)

Quarters
- Crew – 6
- Scientists – 12

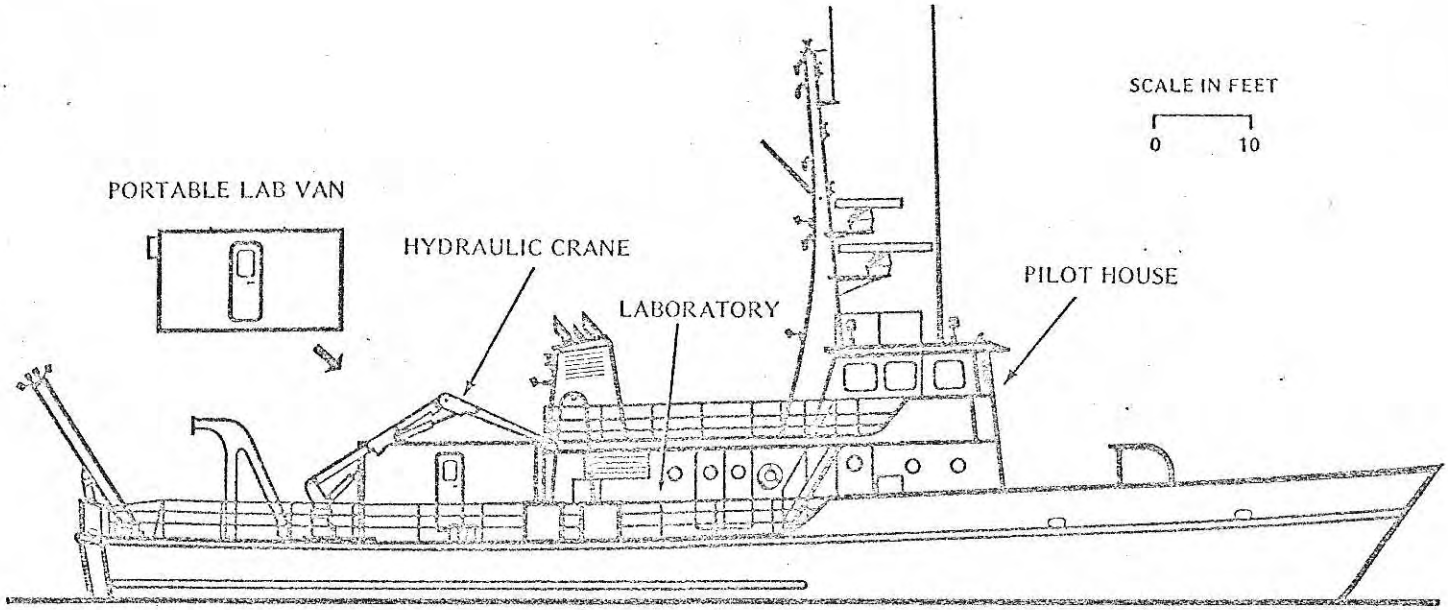
Electronics
- Radars (2) – Decca RM926, Decca RM929
- Radios (2) CAI CA-35MS/MKII SSB Transceiver; RF442 VHF Transceiver with guard receiver
- Depth sounders (3) – Konel FPG-512H (2,000) fm range); Konel F861A (130 fm range); Benmar DI-18 (60 fm range)
- Lorans (2) – Teledyne TDL-601 with remote readout; Simrad LCA-204
- Automatic Pilot – Sperry Mark 37

Winches
- Trawling – Marco 1501 double-drum with 3,000 m. of 1/2" cable per drum
- Hydrographic – Marco W1928 single-drum with either 4,000 m. of 3/16" rope or 2,000 m. of conductor cable (interchangeable)

Crane
- Husky Mariner, Marine Hydraulic Crane Model M125
- Capacities – 12,500 lbs. at 8'
  6,400 lbs. at 16'
  4,550 lbs. at 22'
- Maximum horizontal reach – 22' 8-1/2"
- Maximum vertical reach – 28'
- Degree of swing – 430°

Scientific Work Space
- Open Deck Space – 840 sq. ft. (without van)
  712 sq. ft. (with van)
- Wet Laboratory – 130 sq. ft.
  Running salt and fresh water
- Dry Laboratory – 130 sq. ft.
- Refrigeration – Foster HLR-20-20-R combination freezer/refrigerator (cubic-foot capacity – freezer, 20.1; refrigerator, 19.5; shelf area (square feet) – freezer, 15.5; refrigerator, 20.1)

Laboratory Van
- Exterior Dimensions – 8x8x16'
- Rear double doors – 4x6'
- Doors open 270° and hook to van sides
- Aluminum body
- Insulated
- Self-contained heat and cooling – 5,000 BTU
- Power transformer – 10 KVA
- Modular furniture units – 4' long
  Attached to uni-struts on 2' centers
  Includes: sink unit, desk unit, electronic instrument rack, shelves, cabinets, etc.
- Van base weight – 3,800 lbs.
- Modular furniture weight – 600 lbs.
- Available weight for your scientific equipment – 3,100 lbs.
- Weather-tight seal to ship or building doorway



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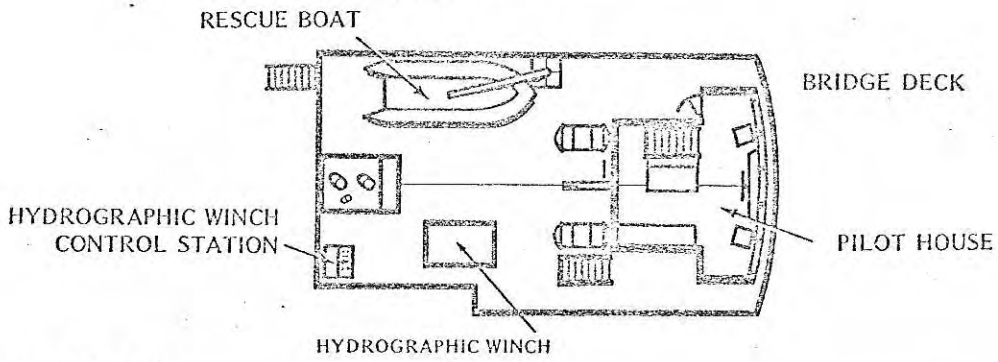

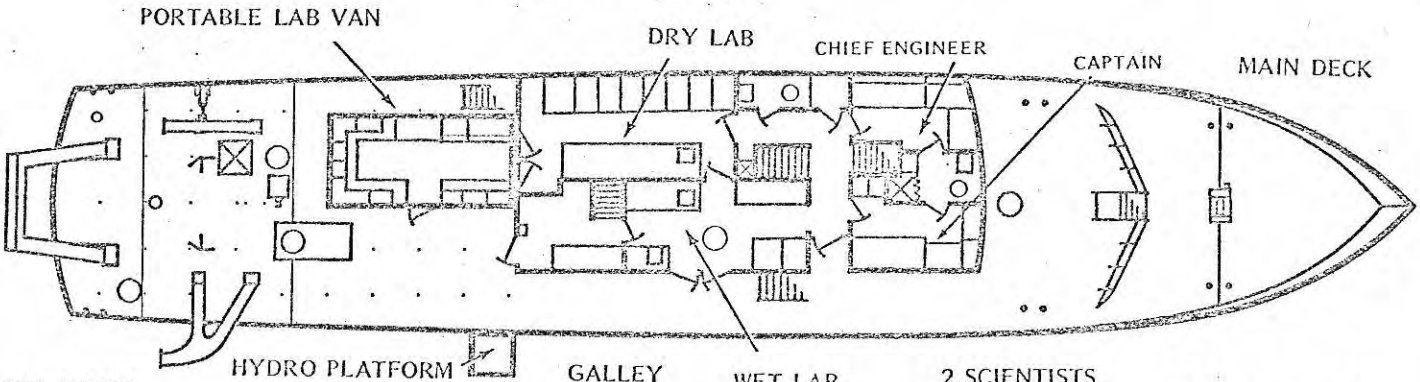

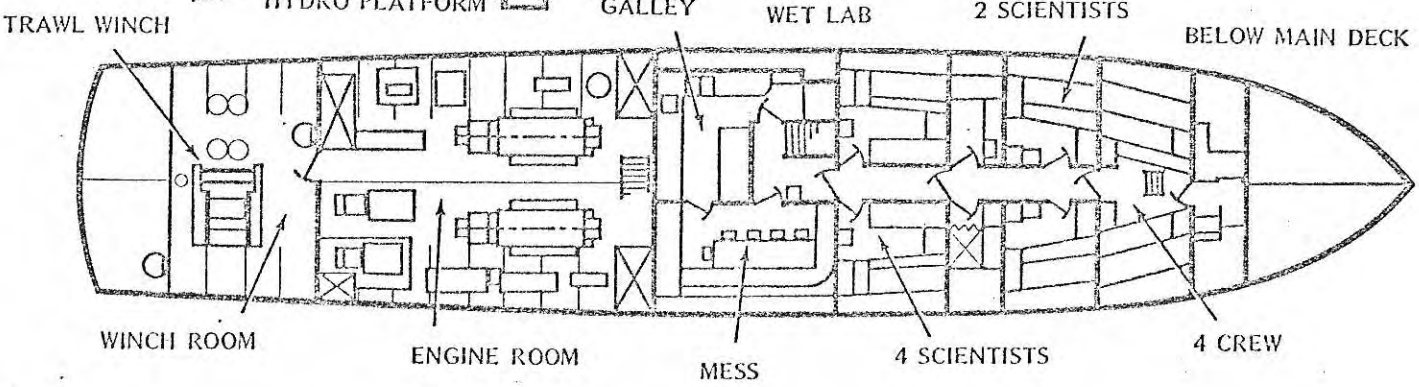

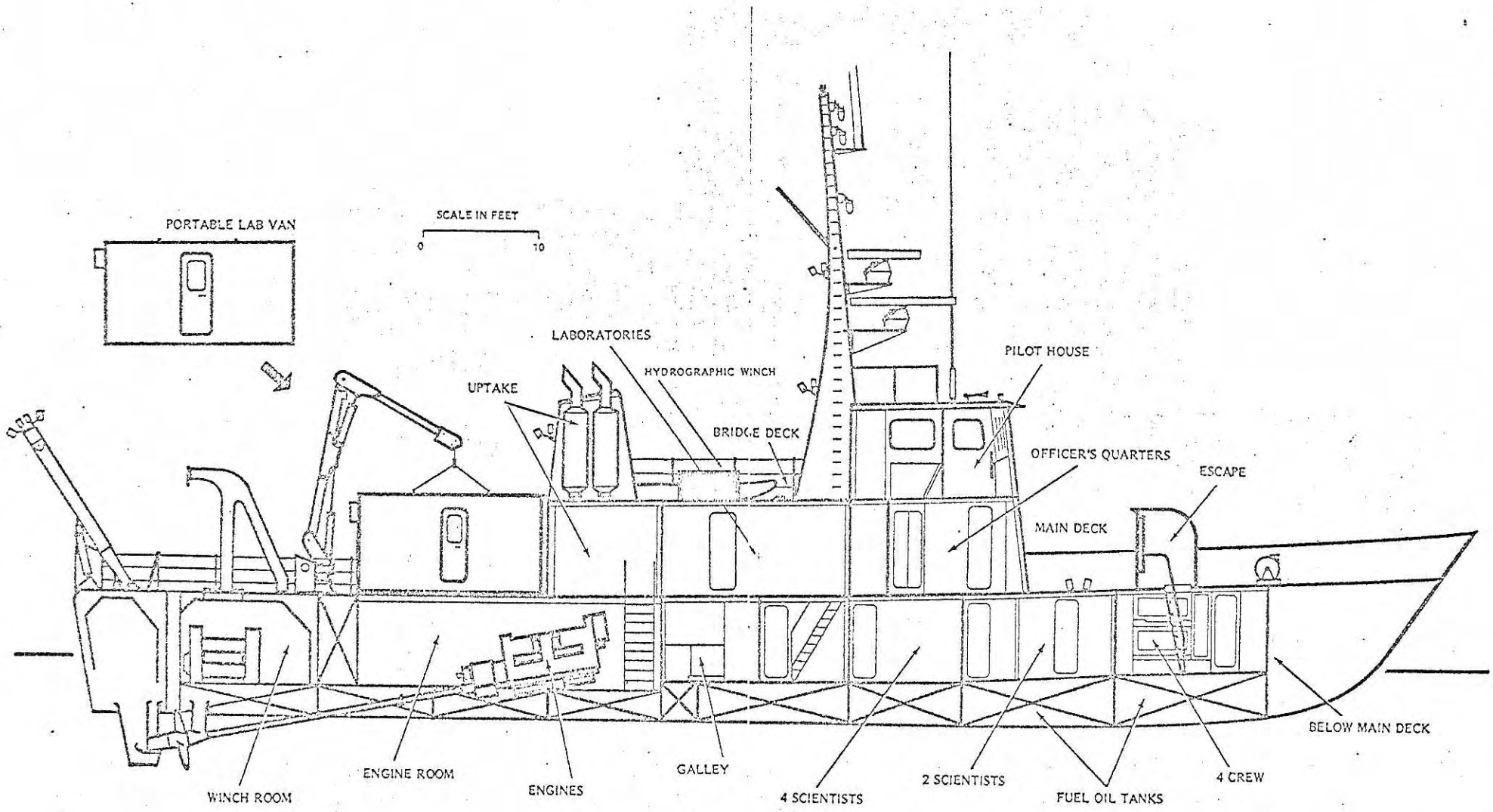
PORTABLE LAB VAN
SCALE IN FEET
0
10
LABORATORIES
HYDROGRAPHIC WINCH
PILOT HOUSE
UPTAKE
BRIDGE DECK
OFFICER'S QUARTERS
ESCAPE
MAIN DECK
BELOW MAIN DECK
WINCH ROOM
ENGINE ROOM
ENGINES
GALLEY
4 SCIENTISTS
2 SCIENTISTS
FUEL OIL TANKS
4 CREW

D R A F T

A
Proposal
Submitted To The

Office Of Oceanographic Facilities and Support
National Science Foundation
Washington, D.C. 20550

On Behalf Of
University-National Oceanographic Laboratory System

By
Bigelow Laboratory
Boothbay Harbor, Maine 04575

SMALL COASTAL RESEARCH VESSEL STUDY

REQUIREMENTS, DESIGN AND PROCUREMENT

Principal Investigator
Jay E. Paris, Jr.
Research Associate
Social Security No. 125-34-5770

A New Request To The
National Science Foundation

Proposed Starting Date: 1976-05-01
Amount Requested: $18,735
Proposed Duration: 6 Months

Endorsements

Name:	Charles Yentsch	Jim Kerschner
Title:	Director	Business Manager
Telephone:	207-633-5572	207-633-5572
Signature:	_____	_____
Date:		

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ABSTRACT

The need has been documented for coastal zone research vessels. The smallest vessels of this type between 50' and 100' in length generally operate in inshore waters on day trips or short cruises. Vessels of this size are suitable for the needs of either individual laboratories or regional groups of institutions engaged in cooperative research with UNOLS support. It is proposed that defining vessel requirements, establishing design criteria and improving procurement methods will reduce design time and costs and allow proceeding directly with vessel construction in the most economical manner at such time as funding becomes available.

Input to the study would come from a careful review of the literature, discussions with members of the oceanographic community and observations of small coastal research vessels which have proven themselves in service. Discussions with shipyard personnel would establish current construction costs, the parameters affecting costs and methods for encouraging producibility. Examination of different designs may identify certain "stock" designs adaptable to the needs of a number of different oceanographic facilities. Small coastal research vessels can have hull forms of the displacement, semi-displacement, or planing type. Differences in performance characteristic of each of these types are presented in tabular format easily understood by non-engineering personnel. Various arrangement details will be studied in terms of vessel flexibility and cost. Finally, methods will be presented to simplify the design and procurement process. These can reduce costs and simplify the evaluation of different designs responsive to a request for competitive bids on performance-oriented vessel requirements.

The goal of this study is to logically investigate the various options open to the oceanographic community in developing small coastal research vessels having the maximum flexibility consistent with simplicity and therefore minimum cost.

1. INTRODUCTION

1.1 COASTAL RESEARCH AND UNOLS

The coastal zone can be defined as that area extending from the shore out over the continental shelf. Generally, this region is within a 200-mile limit and may have fishery and energy resources of considerable value. Most of the oceanographic research in this region is best conducted using small research vessels under 150 feet in length. Many of such vessels operate locally within a given area and can often accommodate cooperative studies in addition to those of the vessel operator. By organizing the cooperative efforts of various universities and laboratories UNOLS, the University National Oceanographic Laboratory System, seeks to improve access to oceanographic facilities. In their coordination and support of oceanographic research this association of institutions has recognized a deficiency in coastal research vessels. The UNOLS' Advisory Council has recommended that a high priority be assigned to the replacement and acquisition of coastal vessels, particularly for cooperative use.

Coastal research vessels are used by scientists and students for investigations in biology, chemistry, physical oceanography, meteorology, geology, geophysics, bottom topography and ocean engineering. Because of the specialized equipment

required for each of these disciplines and the size and weight limitations of the coastal research vessel, operations will often be restricted to one or two disciplines at a time, and depth capability may be limited as well. If a vessel is to be utilized for various types of research, its effectiveness will be increased by making it possible to exchange scientific gear quickly and easily.

1.2 NEED FOR SMALL COASTAL RESEARCH VESSELS

Vessels specifically designed for oceanographic research in the United States have tended to be intermediate or large ocean-going ships. With their extensive capabilities they are expensive to build and operate and generally require simultaneous use by a large number of scientists working on different projects to make effective use of their capabilities. Smaller than the ocean-going types are the coastal research vessels of under 150' in length. Most of these which are presently in service suffer from being conversions from other types of vessels and/or are showing the symptoms of old age.

The need for new coastal research vessels has been well documented both as replacements for vessels which are reaching the end of their useful life and to meet the needs of new or expanding laboratories. The design of larger vessels of this type between 100' and 150' in length is the subject of a number of studies being conducted on behalf of UNOLS. However, much

of the coastal zone research, particularly that inshore, is conducted from smaller vessels of 50' to 100' in length. For many laboratories a vessel in this size range is their largest vessel. Improvements affecting this class of vessels could significantly increase research capabilities.

1.3 PURPOSE OF THE DESIGN STUDY

Because of the highly diverse types of vessels falling within the 50' to 100' size, it is necessary to examine how they might be best employed for coastal research. The oceanographic laboratory acquiring a new Small Coastal Research Vessel (SCRV) faces a number of decisions.

A purpose of the study is to examine the limitations of these vessels and present them in a way useful to laboratory personnel examining and defining their vessel requirements. The study will be based on a careful examination of the current literature, discussions with selected members of the oceanographic community, visits to existing SCRV's that have performed well in service and visits to small shipyards specializing in vessels of this size. By presenting data on various types of vessels and performance trade-offs and supporting this with current cost data the laboratory administration is given the basis for undertaking a design and procurement program. Furthermore, it is planned to set forth simplified procedures and techniques for

preparing the design objectives, draft specifications and small scale guidance plans for a new vessel. These simplified purchasing techniques are adaptable to soliciting responses from shipyards specializing in "stock" designs and are useful as a logical basis for conducting evaluations of competitive designs.

2. VESSEL TYPES AND SIZES

2.1 VESSEL TYPES

Whereas virtually all large research vessels have displacement type hull forms and are limited to maximum speeds of less than 1.5 times the square root of the waterline length, there is considerable variation possible for the Small Coastal Research Vessel.

First, as with the larger vessels, there is the displacement type hull with its relatively slow speed but capable of carrying large payloads and having good seakeeping ability. Many traditional fishing boats are of this type.

At the other end of the scale is the light weight planing hull form with high horsepower engines and capability for speeds of 20 to 30 knots or more. However, due to their large engines and accompanying fuel consumption both their range and payload may be restricted. However, if speed is of prime importance such a hull, particularly of the modern deep-V type noted for its seaworthiness albeit with rapid accelerations, would be worthy of consideration.

Midway between the previous two types is the semi-displacement hull form with generally relatively narrow proportions, light to moderate displacement and capable of speeds of 1.5 to 2.5 times the square root of the waterline length. This type

has much to recommend it if speed is important but range and fuel economy still warrant consideration. It is perhaps the most difficult to design, since frequently small details in hull shape can result in speed differences of a number of knots.

2.2 CONVERSIONS VERSUS CUSTOM DESIGNS

In the past, many research vessels have been conversions of vessels designed for totally different service. While some of these have proved successful, many have not, particularly those based on vessels which have reached the end of their useful life in their previous role. While a conversion can provide an adequate vessel on a limited budget, there are potential misfortunes. Funds permitting, there is much to recommend the acquisition of a new vessel.

A design prepared especially for a laboratory can be inordinately expensive, particularly if all concerned are allowed to incorporate their every desire in developing the requirements.

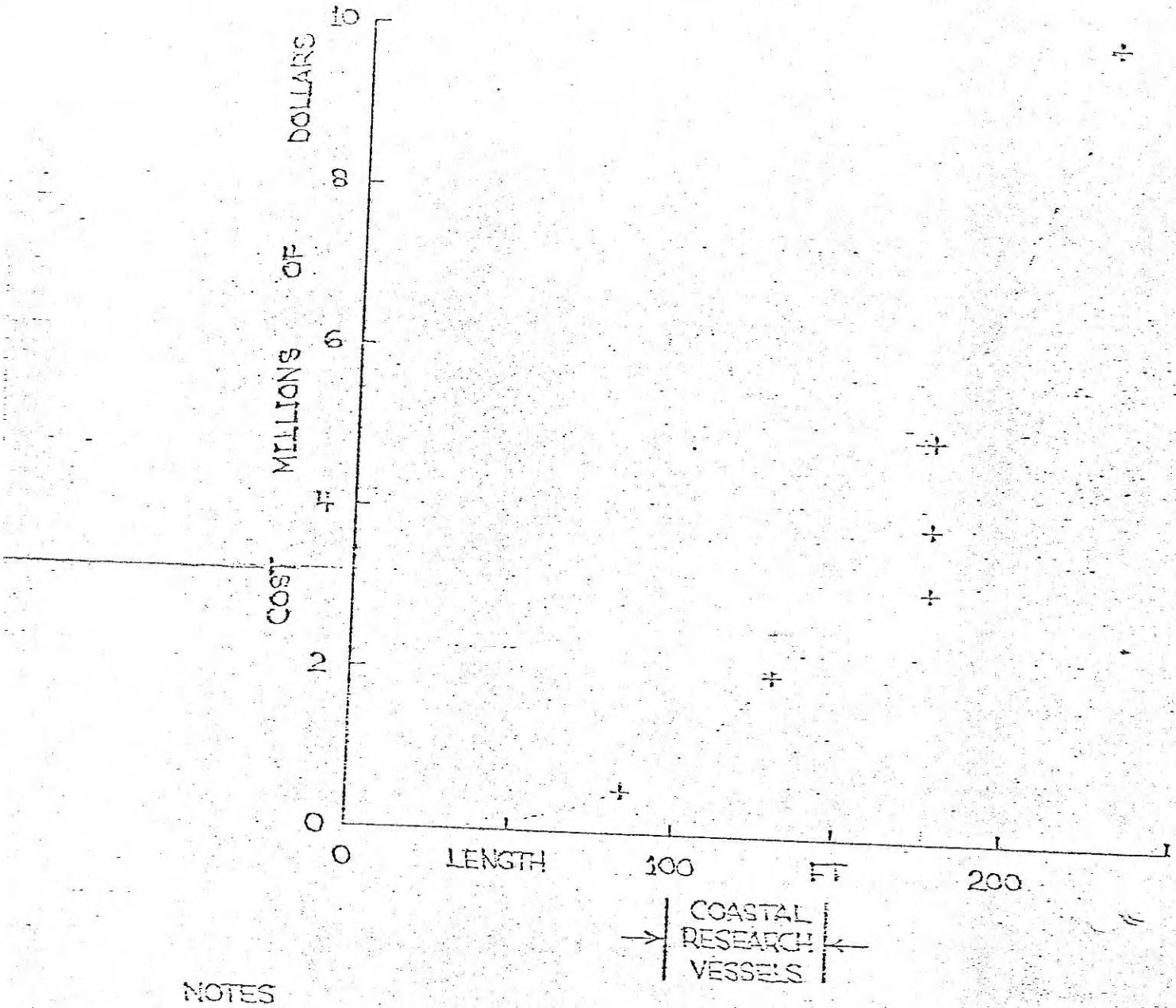
A middle approach, the careful "conversion" of an existing hull design to an SCRV, has much to recommend it. If carefully planned using the proper type of hull, the most important user requirements can be achieved while realizing the major cost advantages of a yard's standard design.

2.3 VESSEL COSTS

Economics have an increasing influence on the determination of vessel size. With the rapid increases in vessel construction

and operating costs over the last five years, there is a stro
incentive to evaluate size and cost versus effectiveness. The
values shown in Figure 1 are approximations of 1975 constructi
costs. It can be seen that for inshore missions the Small Coa
Research Vessel can perform as effectively as larger types and
it requires only one-fourth the capital investment of a researc
vessel twice the size.

FIGURE 1
RESEARCH VESSEL COSTS



NOTES

1 COST ESTIMATES IN 1975 DOLLARS EXCEPT AS NOTED

2 LENGHT IS LENGTH OVERALL

3

3. DESIGN RESEARCH

3.1 VESSEL REQUIREMENTS

Because of the highly diverse research which the Small Coastal Research Vessels perform and the rapid change in capabilities with vessel size it is difficult to set forth rigid requirements for such vessels. However, by a careful examination of previous work and comparisons with existing designs it is possible to establish relationships necessary for a design to be a suitable SCRV.

Any design is the result of numerous compromises, and many characteristics can be emphasized only to the detriment of others. A broad compilation of vessel requirements, while representative of the actual SCRV needs of the oceanographic community, may contain requirements that are incompatible. Furthermore, incompatibility of the detail level may not be apparent until after a considerable amount of design work has been undertaken. For a vessel to best meet the needs of a scientist, the vessel requirements should be freed of excessive detail and restriction and should establish priorities so that proper trade-offs can be made between conflicting requirements.

3.2 LITERATURE SEARCH

Various proposals, studies and designs will be reviewed, correlated and examined in terms of their commonalities and

differences. Previous proposals for coastal zone research facilities prepared under the auspices of UNOLS can provide the basis for establishing current UNOLS requirements. In addition various technical papers have been presented over the years on the design of oceanographic research vessels and other types of vessels suitable for this service. Material in these papers which is directly applicable to the SCRV will be considered for incorporation in the study.

After examining the available literature a set of summary notes will be prepared covering significant points and also synthesizing what might be termed a concensus of previous work applicable to the SCRV.

3.3 SCIENTIFIC INPUT

The Small Coastal Research Vessel will often be utilized by scientists practicing diverse disciplines requiring specialized equipment. It is normal to expect these scientists to strongly state their individual needs in any dialog on vessel requirements. Because such a vessel cannot carry all types of equipment at all times, their specific requirements will often appear to be in conflict. However, by carefully interviewing and evaluating the scientific input from a broad sampling of the oceanographic community it is possible to establish a set of vessel requirements compatible with the needs of a majority of the potential

users. This process is best undertaken by an individual or as small a group as possible. Since this process will require arbitrary judgements to be made, mechanisms for review by the oceanographic community will be provided with interium reports issued to interested parties for comment.

It is also expected that the UNOLS Advisory Council will contribute significantly to the scientific input. This council with representatives from throughout the United States is a broadly based group which has been concerned with improving coastal zone research facilities. Interviews will be conducted with as many council members as possible to take advantage of their experience.

3.4 VESSEL VISITS

To further utilize the experience of the oceanographic community, small vessels which have proven particularly useful for coastal zone research will be identified. From the vessels so identified, visits will be made to at least three or four of those highly recommended. The actual number of vessel visits will be influenced by ship operating schedules and travel limitations. When possible, these visits will be planned so as to coincide with a day trip of the vessel so as to observe the vessel in operation. Interviews will be conducted with scientists who have utilized the vessel and operating personnel. Where

possible, design data and operating costs will be obtained. A set of summary notes will be prepared documenting the vessel visits and significant findings.

3.5 SHIPYARD VISITS

Vessel costs can be reduced significantly if the design is well matched to the yard's production facility. Usually, a shipyard builds in basically one type of material, i.e., steel, fiberglass or aluminum, and may be further specialized by utilizing a particular construction technique in that material. If the vessel requirements can be so stated so as to be adaptable to the particular capabilities of the shipyard, the minimum cost will result.

By visiting selected yards throughout the United States, data will be collected on construction techniques and costs. It is anticipated that these visits will be conducted in three separate trips, one on the East Coast, another to Florida and the Gulf Coast, and a third to the West Coast with a possible intermediate stop in the Great Lakes area.

4. VESSEL CONCEPTS

4.1 VESSEL TYPES AND TRADE-OFFS

Data will be presented on the operating characteristics of various types of vessels including speed, range and payload. Since speed is frequently a function of length and cost one of weight, length and weight will be the primary variables used in presenting the data. It will be organized in an easy-to-understand tabular format which will allow personnel without an engineering background to understand the relationship of these variables to vessel performance. The data will be calculated using accepted preliminary design procedures and modified as necessary to reflect actual operating practice.

4.2 FLEXIBILITY, SIMPLICITY AND ECONOMY

The development of a Small Coastal Research Vessel capable of performing a multitude of missions requires a design possessing considerable flexibility. Oceanographic research vessels are more often cubic limited than weight limited. That is, there is frequently insufficient volume available for scientists and their equipment before the vessel is overloaded in terms of weight. While this is less true in small vessels, particularly the high-speed types it is often caused by the provision of dedicated spaces for particular disciplines such as a darkroom.

Since such a space is not utilized on every voyage, it may limit the carriage of more essential equipment and thereby handicap the mission.

However, if as much as possible of the scientific areas can remain undedicated with good access and provisions for stowing various types of equipment the goal of flexibility can be achieved with a relatively simple vessel.

Some research vessels are capable of carrying small modula laboratories measuring 8' by 8' by 10' in length. While this approach may not be suitable for most SCRV's it does allow trade-offs to be made between laboratory and deck area depending on the mission. A similar concept more suited to the SCRV is having an open laboratory with modular benches measuring perhaps 2' by 4' in plan view which can be installed in various arrangements depending on the mission. Benches outfitted with specialized equipment could be easily removed from the vessel and transported to a scientist's laboratory ashore.

With proper planning, a research vessel can be adaptable to diverse missions and capable of accommodating scientific equipment not as yet built or even envisioned. In some respects, an SCRV possessing flexibility and simplicity may require more thought than a more complex vessel. However, once achieved simplicity is accompanied by economy. Economy in terms of initial and

operating costs can relieve the budgetary limitations that have become the greatest constraints today on research vessel operati

4.3 STOCK DESIGNS

Considerable savings can be realized by taking advantage of "stock" designs. That is, adopting a design which a shipyard already has in production or producing a new design adapted to the yard's production facility. Again, this is only possible if the laboratory's vessel requirements are not overly restrictive. However, it should be recognized that certain hull forms are not conpatible with research requirements and operations, and utilization of a design simply because it exists is not the basis of a good SCRV.

Consideration should be given to an approach common in Great Britain whereby offshore type hulls are produced by a specialty fiberglass molding firm and completed by various small local shipyards. This has worked particularly well with designs adaptable to pilot boats, survey launches, offshore yachts and research vessels. What has been achieved is a specialty hull form possessing good seaworthiness and performance and rugged structure which would otherwise not be obtainable.

To effectively take advantage of the stock boat concept again places a premium on sound design and procurement.

5. DESIGN AND PROCUREMENT

5.1 VESSEL REQUIREMENTS

A systematic method for organizing user requirements for small coastal research vessels will be developed. This approac organizes performance-oriented requirements and particular details in an easy-to-use format which includes a set of design objectives, a draft specification, and a study plan. The flexibility inherent in this approach allows various shipyards or designer/builder teams to prepare designs based on earlier design suited to their production facilities. While engaging a naval architect to prepare a detailed design and specification package is avoided, it may be advantageous to have some professional assistance in identifying the vessel requirements. If the laboratory's requirements are to be issued to various shipyards for competitive bids, having the responses in a fixed format can considerably simplify their evaluation.

The basic technique proposed for organizing vessel requirements has been successfully utilized by the principal investigator for a 83-foot LCA Patrol/Research vessel. Material used for that vessel will be used in discussions with various laboratories and shipyards to refine the method. A vessel requirement package will be developed for a small coastal research vessel to

serve as a guideline for individual laboratories. Explanato
notes will be included as necessary to establish various rati
ale and define technical terms.

5.2 DESIGN OBJECTIVES

The design objectives consist of approximately ten basic requirements for the vessel. These might include cost, size limitations, speed, range, seakeeping, operating conditions, payload, crew and arrangements. By reducing each objective to one or two easily understood sentences, the scientists are forc to limit their requirements and priorities. If the objectives are listed in the order of their priorities, they serve to direct the designer in the inevitable compromises between conflicting requirements.

5.3 DRAFT SPECIFICATION

The draft specification addresses the same subjects as a detailed specification but is restricted to those details of importance or interest to the user (operating laboratory). Each category in the draft specification includes a blank space for appropriate designer/builder-supplied information as indicated by a letter code(s) preceding the space, e.g., Q=Quantity, B=Brand Name, S=Size or Dimension, and M=Material. If the user has a specific requirement, the appropriate blank is filled in before the draft specification is issued to the designer/builder.

5.4 GUIDANCE PLAN

Where the arrangement of certain spaces or location of specific scientific gear is of particular importance, this is best illustrated by a guidance plan. This drawing can be quite small with both profile and plan views fitting on an 8-1/2" by 11" page. It is not required to be to any scale and need only include the vessel outline and physical relationships of the various items of interest. The limited amount of detail will impose fewer limitations on the designer/builder.

6. FINAL REPORT

6.1 CONTENTS

6.1.1 Abstract

6.1.2 Introduction

6.1.3 Scientific Input

6.1.4 Vessel Requirements

6.1.5 Shipyard Design

6.1.6 "Stock" Designs

6.1.7 Vessel Costs

6.1.8 Vessel Types and Performance

6.1.9 Arrangements

6.1.10 Design Documents

6.1.10.1 Design Objectives

6.1.10.2 Draft Specification

6.1.10.3 Guidance Plan

6.1.11 Vessel Procurement

6.1.12 References

6.1.13 Appendices

6.2 FORMAT

The report will be issued in a standard 8-1/2" by 11" format with oversize drawings, graphs and tables reduced to 11" high foldouts. To insure that the report's length is not

excessive, certain appendices and supplemental material which might be of interest to a limited number of readers will be bound and issued separately from the report.

6.3 PROCEDURE

A draft report will be issued to participants in the study, the UNOLS Advisory Council and staff and selected individuals for review. Based on their comments, revisions will be made where appropriate and the final report issued.

7. BUDGET

The budget is shown as Table 1. Some of the dollar figures are estimated values. The principal investigator will endeavor to reduce those overhead items whenever possible so as to increase the funds available for the actual research.

TABLE 1
BUDGET

Salary Jay E. Paris, Jr., Principal Investigator 6 man-months	$11,500
Consulting and Clerical	500
Technical Literature and Graphics Services	250
Travel	1,500
Communications and Publications	500
Overhead (Bigelow Laboratory @ 39%)	4,485
	$18,735