

- Workshop on existing intermediate size R/Vs: R. Barber is to convene a workshop in Washington, D.C., 12-13 July, immediately following the UNOLS ship scheduling meeting. Status report? (Barber)
- Improvements to CAPE class R/Vs: T. Johnson of Duke has agreed to chair a subcommittee to consider improvements for this class R/V. Both science capability and costs are to be considered. The group will use the science mission requirements developed by Robison's subcommittee as a starting point. Status? (Nowlin)
- Future actions and support of FIC: In the next few months, FIC will need to discuss with NSF its level of support for the coming FY. Are any changes needed in what was originally proposed to NSF?

- * Stable, deep-ocean platforms: A subcommittee chaired by F. Fisher of the Marine Physical Laboratory met last summer, to look at FLIP-type hulls and other possibilities. Is further action needed by FIC?
- * Small to intermediate size, ice-capable R/V: T. Royer agreed to chair a subcommittee to develop science mission requirements for this class ship. It was understood that a meeting was planned, and hoped that a report would be available. Status? (Royer/Nowlin)
- * Research submarine: B. Robison is chairing a subcommittee to investigate the possibilities of a research submarine. A meeting was planned, and a report hoped for. Status? (Robison)
- * Multichannel seismic capabilities: M. Langseth was requested to review, with the assistance of a small group, the need for multichannel seismic capabilities and its impact on the large ship requirements which were stated by the Fleet Replacement Committee. No revised report has yet been received.
- * R/V BERNIER: Update on possible acquisition of BERNIER. (Nowlin)
- * Research accomplished on KAIMALINO and other SWATH R/Vs: At the March FIC meeting, Robison agreed to talk with prior users of SWATH R/Vs, and Dinsmore was requested to continue his evaluation of KAIMALINO. Publication of results as a FIC report was considered. Status? (Robison/Dinsmore).
- It was also believed possible to arrange further research on board KAIYO, sponsored by Navy and possibly NSF. Navy is talking to G. Grice of WHOI about possibilities. Dinsmore and Treadwell were to contact Grice and agencies to determine status and potential. (Dinsmore/Treadwell)
- * Review of the size, capability, and makeup of the UNOLS fleet: Heinrichs reported at the March FIC meeting that he had requested the UNOLS Advisory Council to examine this problem, especially in the context of level funding. Status? (West)
- * Concept design for intermediate size, general-purpose SWATH R/V: Seaco reported at the March FIC meeting on their progress on this design, and promised a final report for the July meeting incorporating comments provided. (Seaco)
- * Preliminary design for large, medium-endurance monohull R/V: Glosten Associates is proceeding with this design, under F. Spiess as Principal Investigator. Spiess, Langseth and Murray have met with Glosten to provide input on various topics.
- * AGOR 23 procurement: At last report, NavSea was evaluating proposals for this procurement, and it was felt that Navy was not permitting optimum input from the University of Washington. It is understood that the contract will be let shortly. What is the status of the procurement? (Kaulum/B. Lewis)
- * KNORR/MELVILLE refits: Kaulum reported at the last FIC meeting that in spite of budget cuts, it appeared feasible to proceed with the refits about as planned. KNORR was to commence refit in November 1988. Update? (Kaulum)

UNOLS Fleet Improvement Committee Meeting
7-8 July 1988
Room 322, South Campus Center
University of Washington
Tentative Agenda Items

Coffee at 0830

- Consider and adopt agenda.
- Reports in preparation

* Scientific requirements for the UNOLS Fleet: This document prepared by J. Murray et al. and distributed by FIC early this year, has likely been overtaken by events as major government agencies have lost considerable ground in funding. Is the situation clear enough that a revision can be planned?

* History of the U.S. research fleet: Gorsline and Treadwell are near to completing the final draft of this document. FIC should consider the draft, if available. (Gorsline/Treadwell)

* Relative benefits and costs of various modes for R/V acquisition: Gorsline's ideas on this topic were discussed at the March 1988 FIC meeting, and comments noted. A summary of these was to be included as a section of the History of the U.S. Research Fleet. Has action been completed? (Gorsline)

* USS Database: The document concerning the need for, and elements of, a ship scheduling data base (USS Database) was to receive final touch-up by Nowlin and Langseth, for coordination with UNOLS and publication. Status? (Nowlin)

* Arctic research vessel requirements: At the request of NSF, a subcommittee chaired by V. Alexander prepared a report on these requirements, and the report was accepted by NSF. Approval by the FIC is needed for publication. (Nowlin)

• Science Mission Requirement studies.

* Small, general-purpose R/V: B. Robison's subcommittee prepared a draft set of science mission requirements which were provided to the community for comment. Robison has provided a final copy; this should be considered for adoption. (Robison)

* Intermediate, general-purpose SWATH: Draft science mission requirements for this class were tentatively approved by FIC at the November 1987 meeting. Dinsmore was tasked with circulating these to the community for comment, for guidance in the concept design study being undertaken for this class. Status? (Dinsmore)

* Science Mission Requirement booklet for R/Vs: At the March 1988 FIC meeting it was agreed that a compilation and publication in loose-leaf format of science mission requirements for R/Vs would be made. A draft of all revised requirements will be available for consideration. (Nowlin/Treadwell)

Table 1. FIC budget requests/needs (\$K) for special studies and designs.

1989		1988		Original	
Present	Changed	Present	Changed	Budget	Request
Grant	Needs	Grant	needs	Request	
50	-50(1)	50	Free?(1)	50	Concept Design, Small GP Monohull
50	50	50	50	50	Concept Design, Small GP SWATH
50	50	50	50	50	Concept Design, Intermediate SWATH
50	50	50	50	50	Concept Design, Deep Ocean Stable
50	50	50	50	50	Concept Design, Small Ice Capable
50	50	50	50	50	Concept Design, Intermediate Monohull
20	20	20	20	20	Study of CAPE-class improvements
20	20	20	20	20	Study of intermediate refits
20	20	20	20	20	Study of Research Submarine
0	0	0	0	0	Small Boat (>100 ft) Study
--	--	--	--	0	SWATH Concept design may be free or balanced by lack of need for monohull design.
--	--	--	--	--	(1) Includes follow-up design studies plus tank tests plus marine architect's review.
--	--	--	--	--	(2) Study to be proposed separately, if required.
--	--	--	--	--	(3) Consulting to assess feasibility of science mission requirements.
--	--	--	--	--	(4) Dismore to begin work in late 1988. Could require added funds.

UNOLS REVIEW OF FUNDING IMPACTS

Don Heinrichs (NSF) has asked the UNOLS to review the impact of level FY89 through FY91 NSF ship support on UNOLS fleet operations considering new refits, levels of requests, AGOR-23 procurement, Navy funding, etc. Knox is chairing the study for the Advisory Council. FIC will be informed of this short-term effort.

FIC FLEET REPORT

At the end of year two of the life of the FIC, a new Fleet Improvement Report is scheduled. Murray *et al.* had prepared a report on scientific requirements which was to provide background rationale. It has been superseded to some extent by recent lack of funding growth at NSF, but will be revised during the next year when, we hope, the future funding picture stabilizes somewhat.

Meanwhile, Treadwell and Nowlin will draft a replacement plan using the FRC report as starting point. In addition, it was suggested that a survey of present research vessel capabilities would be a useful section to the Fleet Improvement Report.

breaking vessel called for in the Arctic Research vessel requirements report by Vera Alexander *et al.* Thus, the recommendation is to begin by considering a vessel smaller than 190 ft. without helicopter capability.

Royer tentatively has planned a meeting of his subcommittee on 12 August in Seattle. Nowlin will transmit FIC comments to Royer. Dinsmore will send design for a 185-ft. Finnish vessel to Royer as background.

Research submarine. Robison distributed a draft set of requirements for a research submarine. It was agreed that the subcommittee should meet to review and consider these. Robison will schedule a meeting at Harbor Branch after which Larry Schumaker and/or Frank Busby will be engaged to review the recommended science mission requirements for feasibility, previous designs to meet similar requirements, etc. A follow-up meeting of the subcommittee in La Jolla is possible. The FIC agreed that funds in the present budget could be used for consultants in this study.

Multichannel seismic capabilities. The MCS capabilities stated in the science mission requirements drafted by the FRC for high- and medium-endurance large monohull general purpose research vessels should be reviewed. Nowlin to ask for reviews by Dave Scholls (USGS), Brian Lewis (U. Wash.), and Marcus Langseth (L-DGO). Nowlin will draft alternative to present statements as suggested. If there is large disagreement, it was agreed to use the statement "Selected vessels shall carry an MCS system equivalent to present exploration industry standards."

REPORTS

History and Sources of Academic Fleet. Gorsline and Treadwell presented a new draft of their manuscript. Following one more edit and the addition of Dick West's tables of fleet statistics, the report will be published as a UNOLS/FIC report. Gorsline will provide a Macintosh disk of the manuscript or a final smooth copy to Nowlin. Nowlin will draft a preface.

USS DATABASE. Langseth and Nowlin have a final draft of this manuscript which was circulated to the FIC. Nowlin will offer it to *Eos* for timely publication. If delay time will be excessive, UNOLS News will be considered as the publication medium.

Arctic Science requirements for ice-worthy vessels. This report by Vera Alexander *et al.*, ready for distribution as a FIC report, was distributed to FIC. The FIC office will print and distribute.

BUDGETS

Needs for special studies and designs during the remainder of 1988 and in 1989 were reviewed as a first attempt to estimate FIC budget requirements. The results are summarized in Table 1. With footnotes, this table is self explanatory. The final result is that in addition to approved funding levels \$90K or more will be needed over the two years. This may be offset to some extent by saving from reduced numbers of meetings in year one. Nowlin will have a firm budget projection by the October FIC meeting.

AGOR 23 AND 24 PROCUREMENTS

A handout (Appendix 4) was provided showing general arrangements and profiles and listing capabilities of the AGOR 23 to be constructed by Halter Marine with Navy funding for operation by the University of Washington. Procurement progress was reviewed.

There is some possibility that AGOR-24 FY90 Navy ship construction funds originally earmarked for a SWATH for the academic community may be used to procure a vessel of same or similar design to AGOR-23.

M/V BERNIER

Status of Lamont-Doherty Geological Observatory's interest in procuring the BERNIER, converting her to permit general purpose research, and operating her as a UNOLS vessel for MCS and general research. The UNOLS has been asked by NSF to consider L-DGO's intention. A formal proposal from L-DGO to NSF for commitment of long-term operational support and amortization or payment of purchase/conversion costs is expected.

SCIENCE MISSION REQUIREMENTS

A summary of science mission requirements as compiled to date by the Fleet Replacement Committee and FIC was considered. This compilation will be issued to the community in loose leaf format as approved.

Small, general purpose monohull research vessel. The requirements developed by Robison's subcommittee were received. Discussion centered on the similarity in operating costs of new small vessels which would meet recommended requirements and the present intermediate size vessels. It was agreed to scale down slightly the size, endurance, and accommodation requirements for new small R/Vs. Robison will circulate revised final version to FIC. They will be available for review by CAPB-class operators.

Small, dayboat requirements. It was felt that a statement of need and guidelines for vessels of less than general purpose capability (e.g., day boats of less than 100-ft length) would be useful to the community and should be included for completeness with the set of FIC science mission requirements. Dinsmore agreed to draft such a statement including material from the late 1970s Ocean Science Board report on academic fleet by M. Mullin *et al.*, and statements in the final FRC report. Inspection requirements should be mentioned. This document would be received by a selection of present small boat operators.

Small SWATH general purpose research vessel. The science mission requirements for such a vessel originally prepared by the FRC were agreed to have been outdated by subsequent experience with SWATH design. A draft revision was made for a SWATH not larger than 100 ft. in length. Draft to be circulated to FIC and other attendees by Nowlin. On approval by the committee, Dinsmore will ask SWATH Ocean in San Diego if they would carry out a concept design for this vessel class.

Small, ice capable research vessel. The FIC reviewed Tom Royer's draft statement to his subcommittee. It was agreed that science mission requirements were needed and that the committee need not prepare a science justification. This should be distinct from the ice

was unacceptable, and seakeeping could be better. Glosten expects to carry out some redesign to improve these difficulties. To this end, they require clarification of science mission requirements regarding precision tracklines. In particular, must one consider a 35 kt wind together with a 3 kt current, is ± 0.1 kt speed control required for all conditions and if so over what time averages, and must heading deviation be maintained within 45° of trackline? The preliminary design subcommittee will meet with Glosten in early August to discuss the design. Jim Murray will arrange this meeting. Meanwhile, Murray will obtain and provide to Glosten written statements of the scenarios regarding use of deep tow, Moccness, towed Sea Mark, and Ballard's work which drive these trackline requirements.

FURTHER EVALUATION OF SWATHS

Reviewed by Dinsmore, Treadwell, and Robison were evaluation of research potential aboard KAIMALINO and KAIYO and the reasons behind renewed Navy interest in potentials for SWATH research vessels. There is already a modest body of information regarding SWATH use for ocean science. Moreover, it is understood that the Japanese will deliver a model of KAIYO to NavSea for further testing and that additional reports on that vessel will be available.

The FIC agreed that a single report reflecting the capabilities of and experience with SWATH vessels as research ships would be desirable. To that end, Dinsmore agreed to assemble research evaluations of KAIMALINO, collect and condense reports regarding the KAIYO, and summarize specifications of other pertinent SWATHS. Robison will contact prior users of SWATH research vessels for additional new information. The status of this potential FIC report will be presented by Dinsmore and Robison at the October FIC meeting.

IMPROVEMENTS AND REFITTS TO EXISTING VESSELS

KNORR and MELVILLE refits. Dinsmore reported on progress. A summary of the proposed work is presented as Appendix 3. It was reported that long-lead major components (e.g., engines and thrusters) had been selected and will be purchased with FY88 ONR funds. It is planned to begin work on KNORR in November 1988 in anticipation of receiving FY89 funding to complete that work and to refit MELVILLE. Schedules will not permit evaluation of KNORR work prior to commencing work on MELVILLE.

Workshop for refits/improvements to existing intermediate research vessels. Barber reviewed plans for this workshop scheduled for 12 and 13 July in Washington, D.C. Attendees are expected to include two naval architects responsible for designs of present intermediate/small research vessels, user representatives, and intermediate vessel operators. Barber, Treadwell, and Barbee will attend from UNOLS/FIC. The agenda will include a review of the ISELIN refit for perspective. The operator of each vessel will be encouraged to present recommendations/plans for improvements on mid-life refits. Users then will be encouraged to review and comment. The final report, which Barber will prepare, will contain a draft refit/improvement plan for each intermediate research vessel considered.

CAPB-class research vessel study. T. Johnson of Duke agreed to chair a subcommittee to consider potential improvements to two vessels in this class. The group will review the science mission requirements for small general purpose research vessels as a starting point. Johnson will arrange the first meeting. Nowlin to send him copy of latest science mission requirements.

F.I.C. 88

22 August 88

UNOLS Fleet Improvement Committee
Minutes
of
Meeting 6-7 July 1988
Seattle, WA

The UNOLS Fleet Improvement Committee met at the University of Washington in Seattle, Washington on 6 and 7 July 1988. Present were FIC members R. Barber, R. Dinsmore, D. Gorsline, J. Murray, W. Nowlin, B. Robison, and executive secretary T. Treadwell. Other participants were R. West (NSF), W. Barbee and G. Keller (UNOLS), S. Drummond and M. Rice (representing SEACO), and Dwain Laible and Bruce Hutchison (The Glosten Associates).

AGENDA

A tentative agenda distributed prior to the meeting (Appendix I) was adopted with changes in order as reflected in these minutes. Copies of documents in support of agenda items were distributed.

CONCEPT DESIGN FOR INTERMEDIATE, GENERAL PURPOSE SWATH RESEARCH VESSEL

Scott Drummond (from SEACO) and Mark Rice (consultant for SEACO) presented results of their concept design for an intermediate, general purpose SWATH research vessel. A final report of the study was submitted. (Copies of their transparencies are given as Appendix 2.) Based on this work, the potential for such a vessel seems great compared to that for very small (<80 ft) or large (>200 ft) SWATHS for oceanographic research. Nowlin will reprint the report and distribute as a FIC report.

The FIC agreed that SEACO should be encouraged to take another turn in the design spiral to resolve several specific questions raised by the concept design:
(1) According to SEACO's calculations there would be too much acceleration aft in certain headings. Can the seakeeping be improved by reducing the waterplane area with minimum degradation to other characteristics?
(2) What are the advantages and disadvantages of the proposed azimuthing thrusters versus conventional aft propellers, and how would the change affect seakeeping? Other considerations (e.g., handling of tall objects through centerwell from first deck) may also be considered by SEACO.

It was agreed that Dinsmore will send a letter soliciting rapid responses to the SEACO concept design to a selected subset of the community. Dinsmore's draft letter was approved with modifications by the FIC. Comments received will be incorporated in a request for additional design studies by SEACO. These likely will be followed up by tank tests. Cost estimates will be obtained from SEACO by Dinsmore.

PRELIMINARY DESIGN FOR LARGE, MEDIUM ENDURANCE MONOHULL RESEARCH VESSEL

Representatives Dwain Laible and Bruce Hutchison from The Glosten Associates gave a status report on their preliminary design study. Model basin tests had recently been completed showing that hull resistance was higher than expected, the present bow design