UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE (RVTEC)

MEETING MINUTES

October 19, 1998

Scripps Institution of Oceanography
La Jolla, CA

Research Vessel Technical Enhancement Committee (RVTEC)
Scripps Institution of Oceanography
La Jolla, CA
October 19, 1998

1998 Annual Meeting Minutes
Compiled by Tony Amos and John Freitag from notes taken by Tony Amos

Appendices

I. Meeting Agenda
II. Meeting Participant List
III. Shipboard E-mail
IV. HEALY Science System Testing
V. Extending the Internet to the Oceanographic Fleet

The meeting was held in conjunction with the International Marine Technical Committee (INMARTECH) meeting and was limited to one-day rather than the usual two to three-day RVTEC meeting format.

Monday, October 19, 1998

Meeting Called to Order - The 1998 annual meeting was called to order October 19th at 9:00 am in Hubbs Hall at Scripps Institution of Oceanography in La Jolla, California. The introduction was made by Woody Sutherland (SIO), who outlined the meeting "housekeeping", admonishing participants to obey the parking rules, as the Parking Police are "ruthless". He provided a campus road map to help us find our way. John Freitag, University of Rhode Island (URI) thanked Woody and Annette DeSilva, University National Oceanographic Laboratory System (UNOLS) for their efforts in organizing the meeting and handed the podium over to Bob Knox (SIO), the recently elected chair of UNOLS, who gave the official Welcome to RVTEC members. John Freitag then outlined the INMARTECH meeting to follow RVTEC and asked for feedback from RVTEC members, reminding us of the great opportunity it was to have the international meeting held at SIO. The meeting agenda (***Appendix I*** was followed in the order as recorded in these minutes.

Participant Introductions - Participants introduced themselves. (See ***Appendix II*** for a list of participants).

Acceptance of Minutes - A reading of the Minutes of the 1997 RVTEC meeting was waived by consent as all members had a copy in their meeting documents. A Motion to accept the minutes was made by Marc Willis (Oregon State) and Seconded by Rich Findlay. The motion was passed and the minutes accepted into the record.

UNOLS Reports: A summary of UNOLS activities was given by John Freitag, who immediately got a blank screen courtesy of modern computer technology, which was quickly rectified. John discussed the Fall **UNOLS Council** meeting, and RVTEC liaisons with other UNOLS Committees.

Ship Scheduling Committee - R/V KNORR (WHOI) is planned for a lay-up in 1999. A total of 5355 ship days are scheduled in 1998. R/V EWING, Lamont-Doherty Earth Observatory (LDEO) and R/V ENDEAVOR, University of Rhode Island (URI) had originally been slated for lay-ups in 1998. However, ENDEAVOR was able to schedule a major NOAA fisheries program which resulted in 158 days. EWING contracted private work and ended up with a schedule of 245 days.

The Fleet Improvement Committee (FIC) met to discuss their long-term agenda; in addition they discussed the impact of new regulations on intermediate vessels. The estimated cost to build a new intermediate vessel is $18 million. Approximately $800,000 of this cost would be to bring the vessel to the new standards. The question of whether it is an impossible goal to bring the existing ships to compliance with the new standards is asked? The status of various other research vessels under construction or in design was presented. The National Oceanic and Atmospheric Administration (NOAA) has indicated a need for six new fisheries research vessels at $46 - $55 million each (these are 65m [213ft] vessels). The FIC is working on Science Mission Requirements (SMRs) for an ALPHA HELIX (University of Alaska) replacement and an east coast coastal vessel. In the coming years, FIC will look at the future of R/Vs KNORR (WHOI) and MELVILLE (SIO), and the OCEANUS class of vessels. A progress report on the new AGOR 26 SWATH design ship for the University of Hawaii was given.

The Arctic Icebreaker Coordinating Committee (AICC) reported that Icebreaker HEALY would begin outfitting in January in New Orleans. The actual delivery date would likely slide four to six months. Presently, the Vessel was scheduled to begin its Arctic Science in January 2001. It is anticipated that HEALY will be funded in a manner similar to the UNOLS vessels. A more detailed report on HEALY is slated for later in this meeting. Decisions have not been made yet on Ship of Opportunity proposals. The next meeting was scheduled for spring 1999 in New Orleans.

Annette gave a summary of the Research Vessel Operators' Committee (RVOC). The next RVOC meeting is scheduled for 4 - 6 November 1998 in Hawaii. On the agenda are the National Science Foundation (NSF) ship inspection system, the use of American Bureau of Shipping (ABS) Marine Services, ISM Codes, Safety Committee, an update on Research Vessel Safety standards, BLUEFIN replacement and CALANUS replacements. Florida Institute of Oceanography (FIO) is to replace SUNCOASTER with a 120ft vessel. SUNCOASTER is 40 years old (1962) and was originally a supply ship. University of Connecticut is constructing a 76ft vessel. WHOI commented that they were going ahead with model tests of their SWATH design, but need funding to proceed into the construction phase. The RVOC safety video was shown. There followed a Round Table discussion soliciting views on UNOLS and technical support. Some participants did not know about the UNOLS equipment WEB page. Annette asked for ideas from RVTEC for the page. Tom Wilson, State University of New York (SUNY) maintains links to R/V Web sites. He has no data on the number of "hits" on the sites but said that the new server has been up for nine months and that the volume is "tremendous". Questions were asked on how many scientists hit these sites. The address is www.gso.uri.edu\unols\rvtec\rvtec.html

The DEep Submergence Science Committee (DESSC) - SEACLIFF has arrived at Otis Air Force Base and has been officially handed over to WHOI from the Navy. SEACLIFF has a titanium sphere. Barrie Walden, (WHOI) comments that WHOI has been funded to study how to utilize SEACLIFF. The problem goes beyond SEACLIFF to ALVIN. Now that TURTLE is decommissioned, ALVIN offers the only manned deep submergence option for the US. It is not yet known what to do with SEACLIFF. Dan Schwartz, University of Washington, cited the National Academy of Sciences (NAS) study. If either TWA or Swissair (two recent commercial airliner crashes where the wreckage was on the sea bottom) had gone deeper, they would have needed ALVIN to locate them.

In conclusion of the UNOLS report, it was noted that there are widely perceived problems with ship scheduling. New scheduling procedures will be tried in 1999 for 2000 schedules. They call for the ship scheduling committee to meet as a group in mid-July after most funding decisions are known and schedules can be made more firm.

Agency Reports:

National Science Foundation (NSF): Sandy Shor explained the hierarchy of the Division of Ocean Sciences. The NSF Budget was signed by President Clinton only one day before this meeting. There was an increase of almost 9%, a very good development. It may not trickle down to Ocean Sciences at the same rate but will certainly help. Things are "looking up".

New Proposal Guidelines have been sent out to Principal Investigators (PI's) for their feedback. The main changes in Technical Services, are the elimination of project-specific support and user fees, and a new optional section for Specialized Instrument Support. Spare parts can be included in Oceanographic Instrumentation. Sandy will discuss these changes in detail this afternoon. Fiscal 99 is expected to fund more proposals. The National Fleet Review Committee will review UNOLS fleet operations and management. Two meetings have been held and a third will be in December. Sandy reported on Dick West's retirement two weeks ago and said how he would be missed. Sandy will take over the UNOLS Office proposal and Shipboard Scientific Support equipment (winches).

The NSF has decided to directly administer the **Ship inspections** contract which is presently administered out the UNOLS Office. Inspections under the present contract to Jamestown Marine have been going on for one year with three more to go.

The **Instrumentation** proposals have came in. There is now a formal sub-program called "miscellaneous". **Shipboard technician** proposals are still coming in. Questions were asked regarding the Guidelines. The **Major Instrumentation** program has a 1 January 1999 deadline.

Office of Naval Research (ONR): Today is Tim Pfeiffer's third day on the job at ONR; hence he is still learning the ropes. The Department of Defense (DOD) program for major instrumentation is soliciting proposals for instrumentation with a price tag of $50,000 minimum, but not more than $500,000. Agency cost-sharing will be required. The program is called

Defense University Instrumentation Program (DURIP). Rich Findlay (Miami) asked how do you submit joint proposals. Information is on the web at:
www.onr.navy.mil/sci_tech/special/onrpgafm.htm

National Oceanographic and Atmospheric Administration (NOAA): No formal report was provided.

Naval Oceanographic Office (NAVOCEANO): The Naval Oceanographic Office Report will be given later in the meeting.

United States Coast Guard (USCG): Jon Berkson gave the USCG report. The present news on HEALY is that a 30 June 1999 delivery from Avondale shipyard is scheduled. The USCG appreciates John Freitag's help with the proposed Sea Trials. They are concerned that without coordinated planning with the research community, not enough work will be found for HEALY. Sandy Shor reported that the NSF Office of Polar Programs (OPP) requested a substantial increase in funding ($22M). They reported to Congress on how they plan to spend the funds. They requested increase of $22M but got half (still substantial). Sandy reported on the 30m Coring system at WHOI. Woody Sutherland asked a question regarding 30m coring on the necessity for hull strengthening. A discussion followed on the increase from 12m to 30m coring. Experiments could require deploying one from the stern, and the other from the starboard. Sandy said that the issues have been resolved. John Freitag ended the discussion by retorting that this was a "Side Issue". (laughter).

As there was some time before the break, some other issues were brought to the table:

Dale Chayes (LDEO) reported on a workshop two weeks ago on the access of US Navy nuclear Submarines to collect data in the Arctic Ocean. A memorandum of Agreement (MOA) was established in 1994 to provide science opportunities on nuclear submarines each year for five years. The final cruise under the MOA is planned for spring of 1999. He was pleased to hear that RADM Ellis (the new Oceanographer of the Navy) is supportive of using the submarines for science. We won't have access to the 37m class subs as they are rapidly disappearing. There were five working committees in this workshop. The original proposition was "non-interfering science programs" using no people (i.e. "blind data" acquisition programs). To sail science packages in this mode would present a challenge. Denmark and Norway have approached Navy inviting them into their waters.

Shipboard E-Mail - John Freitag opened a discussion on shipboard email (see ***Appendix III***). All (of us) have wrestled with the problem of shipboard email. John says that now, 90% of the email is personal. Dale questioned John on the source of this statistic. It was John's estimate. It was commented that it is important to make email transmissions as efficient as possible. Often there are one or two users who deserve a whopping bill, while there are many who don't deserve a bill at all. Sandy commented that it was a good idea, but much better not to do it at all. Built in to Sandy's proposals is a certain amount for communications. There are problems with the Chief Scientist paying personally and collecting later. There followed a discussion on the pros and cons

of personal versus institutional paying the bill. The COMSAT bill for R/V THOMPSON "went out of sight" until dollar restrictions were put in place. This prompted a lively discussion. There was disagreement over personal versus official mail, especially from WHOI. A similar disagreement arose over paying for email versus getting it for free. WHOI is now maintaining web sites via e-mail. Also it was reported that cell phones do not work nine out of ten times. Woody will demonstrate their system on MELVILLE for INMARTECH. E-mail costs vary from $2,000 to $40,000 month.

Break (10:45am)

The meeting resumed at 11:00am.

USCG HEALY Science Systems Testing Discussion - John Freitag informed the meeting about the latest developments, see ***Appendix IV***. Avondale is still holding the 28 February 1999 delivery date but it is unlikely that this cannot be met. The "unofficial" revised date is 1 July 1999 based on the percent completion of the required testing procedures. This will heavily impact the testing sequence because there are seasonal weather considerations in the Arctic, which come into play. The first testing sequence will be the Warm Water test cruise which is mainly for Sea Beam calibration and will be conducted off the East coast, probably out of San Juan, PR. After transit to the ice, level ice testing will begin. This will include testing of a propulsion ice performance and limited science testing. This would be followed by the science ice trials. This leg would have a chief scientist and a group of technical experts. There followed several questions and comments. WHOI asked about funding for the testing cruises to NSF. There were questions on the makeup of crew and the training of crew and crew rotation. Rich spent a week on the USCGC POLAR SEA. The operation worked "fairly well". A new crew rotated in and had to be trained on the operation of the Autosal laboratory salinometer and the CTD. It was questioned whether the science party would be running winches? The USCG answered in the negative: as this is a dedicated (science) ship and the crew will not be pulled from science ops to do other things. There was a question on how to obtain a 30m cores with 9/16" cable " [I] will not be on deck when the core is pulled out of mud".

The meeting was adjourned at 12:00 noon for **Lunch**

The meeting resumed shortly after 1:00 pm.

Naval Oceanographic Office (NavO) Ship Programs - SIO has been the coordinating data processing for UNOLS institutions for most of the NavO work. Woody Sutherland reported on the 1998 NavO Program and the 1999 schedule (434 ship days at $5,761,000). All in all it is considered to be highly successful and Woody gave details of the operations in which SIO was a participant. A discussion ensued on coring techniques including the virtues of coring from the fantail and the use of chain use as a cradle for the core bomb.

Bob Knox (UNOLS Chair) reminded the group that we should not think that NavO work is going on forever. Some operations are one-time only and some are repeat (i.e. CTD work). But it is

not an "ad infinitum funding source like NSF". The Physical Oceanography program is pretty much finished after 1999. But NavO is interested in continued coastal work. The Navy vessels can do "military surveys" in other country's territorial waters without requesting clearance, whereas UNOLS vessels come under the definition of Research Vessels and must receive clearance from any country in which they conduct operations within the 200-mile EEZ. As a result, UNOLS vessels have not participated in NavO operations in foreign EEZs.

The **UNOLS Ship Inspection Program** status was given by Greg Beers, Jamestown Marine Services. He gave a background on the Inspection Program and his background. Bob Dinsmore (WHOI) has been retained as an advisor. Since the inspections began in September 1997, JMS has inspected 17 vessels. Some points and suggestions were offered;

- Test vessels' crane, winch and weight handling equipment to 125% of SWL (Safe Working Load) every two years.
- Devise weight tests that research vessel operators can do themselves
- Winch wire logs should record wire out and maximum tension.
- GFCI (Ground Fault Circuit Interrupter) receptacles are recommended for all R/Vs
- International Safety Manual (ISM) should be consulted.
- Radioisotope safety issues were discussed. Sandy brought up the point that NSF has funded the University of Miami to conduct swab surveys on all UNOLS vessels upon request after Radioisotope use on board. This is at no cost to the requesting vessel operator.

Questions and comments: Sandy pointed out that [all should] benefit from this program. It is appropriate for program operators to consult with the company on problems with their vessels slated for inspection. Inspections are a good way to justify equipment/instrumentation replacements and improvements.

SeaNet Update – Dale Chayes provided a report on SeaNet, "Extending the Internet to the Oceanographic Fleet," see ***Appendix V***. He listed the SeaNet partners and described the award process. Eight proposals were received from operators and five ships were selected for SeaNet installations. Installation is in the early stages. Dale reviewed the operating modes and tentative billing model for Inmarsat HSD. Lastly, future plans were discussed.

Shipboard Technical Support Proposal Revisions were reported on by Sandy Shor (NSF). Only one change on Instrumentation proposals has been made in the proposed new guidelines: now spare parts are not prohibited. There was a question on spare kits when purchasing new equipment. These would be allowed, but should generally be included in the original funding request. Technical Services Proposal changes include Specialized Instrument Support v/s Basic Services. Specialized instruments may need extra personnel at-sea, but this will be provided by the Technical Services award and not via individual research grants. There was a discussion on the new ship time request form. Technical groups need the information provided by Part B of the form. Part B is to be completed by the PI after receipt of funding. Part B is still in development and is in draft form only at the moment. Sandy noted that the proposal revisions are due mainly to prevent, say Physical Oceanography departments from getting a new CTD for their general use rather than for UNOLS shared equipment use.

2:30 pm. **Break**

The meeting reconvened at 2:45pm for

Salary Survey Discussion - Annette reported that she only received information from three institutions with 13 surveys completed. This was a low response. She asked for a show of hands for those who wished to continue the survey and seven or eight responded. Annette will send out reminders to all via email to respond to the survey request.

Subcommittee reports:

Long Range Instrumentation Planning - Rich Findlay discussed the complex varieties of Digital Video Disks (DVD's), as in the future, Compact Disk Read Only Memory's (CD-ROMs) will be replaced in all PCs. There are:

- DVD-R (Digital Video Disk Recordable)
- DVD-RAM (Digital Video Disk Random Access Memory)
- DVD-ROM (Digital Video Disk Read Only Memory)

DVD ROM will read CD-ROMS but not Compact Disk Recordables (CD-Rs). One must look for a "multiread" designation.

Rich also told the meeting about the "Ultimate Ship of Opportunity": a super cruise liner that would incorporate various sensors for recording oceanographic/meteorological parameters along the liner's cruise tracks. Royal Caribbean Cruiselines is inviting U. Miami to provide help in outfitting the ship for science. There were many volunteers to help Rich with this project and a question was asked regarding the possibility of having a future RVTEC meeting aboard. The ship is scheduled for an Atlantic delivery cruise in 2000.

Tom Wilson reported on Database Subcommittees and On-line Resources Subcommittee - The SUNY Marine Sciences Research Center (MSRC) Ocean Instrument Lab web site is coming soon (Check http://kilroy.msrc.sunysb.edu/welcome.html). He gave a report on the "Seven steps to crash-proof [PC] system and an automatic rebooting program. There were comments that Windows NT is a better platform for reliability. There was some concern about the advisability of rebooting four times a day. Sandy Shor said that there are appropriate sources of funds if needed.

In answer to a question regarding bubble free water for instrumentation, Tom Wilson (SUNY) described his debubbler, a device to go in-line with pure sea water lines to provide a bubble-free flow through water supply for fluorometers, transmissometers, etc. He has two on the shelf at the moment. Price tag $550+. A 20 l/min flow is typical.

Next up was the Data Interchange Subcommittee report presented by Steve Poulos, University of Hawaii. The main topic was the network Common Data Format (NetCDF). Steve commented

that it's about time it was implemented. NetCDF is a standard method for storage and retrieval of data in the form of arrays. Dale suggested that it is time for a proposal in which two or three people could collaborate for a few weeks to implement this as a method of exchange for UNOLS data. This cannot be done as a volunteer effort. Rich Findlay moved to form a committee to write a proposal to get funded to do the job. The motion was seconded by Carroll Baker, Skidaway Institute of Oceanography. The motion carried. Steve Poulos (UH), Dale Chayes (LDEO), Tony Amos (UT), and Kalin Huang (WHOI) agreed to be on this Committee. A meeting needs to be set.

The Wire and Cable Subcommittee reported next. John Alberts (WHOI) is to take over as coordinator of the cable pool. A new chair of the Wire and Cable Subcommittee is needed as Don Moller (WHOI) retired at the end of the year. Don has served in that capacity for many years. A discussion followed on replacing the standard CTD cable with a single conductor cable. The Committee felt that it needed a bigger cast of players than this forum [RVTEC]. Rich Findley was appointed as chair of the Wire and Cable Committee for the next year. Mike Webb will continue to serve on the committee. It was suggested to ask Tom Althouse to be on the committee. John Freitag will also be on the committee.

Nominations Committee Report: Election of Chair - The committee reported that for the position of RVTEC Chair, there were two candidates: Woody Sutherland, (SIO), and John Freitag, (URI). No other candidates were nominated from the floor. It was decided by voice vote that it should be a paper vote and that UNOLS (Annette) should oversee the mechanics of the election. Only one vote per institution would be allowed. John Freitag was elected as Chair, the two-year term to begin at the adjournment of the meeting.

Rich Findlay moved to reappoint Tom Wilson as chairperson of the On-Line Resources Subcommittee, Dale Chayes seconded the motion which was carried by voice vote.

New Business

The only new business item was the selection of next year's meeting site. The Chair noted that we have traditionally alternated coasts for our meeting venues and that we had altered that pattern this year in view of the unique constraints set by INMARTECH. There was a short discussion during which Alaska and Hawaii came under discussion. Tony Amos (UT) volunteered to have the meeting at his institution in Port Aransas, Texas. This was received well by the attendees and accepted with a voice vote.

Thanks to the hosting institution and Woody Sutherland and his crew for the hard work and preparation for the meeting were offered by the Chair. Thanks were also given to Annette and Mary from the UNOLS office for their work in making arrangements.

Rich Findlay moved to adjourn, Dale Chayes seconded. The motion was passed by voice vote and the meeting adjourned at 5:00 pm.

Appendix I

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE
OCTOBER 19, 1998
Scripps Institution of Oceanography
4500 Hubbs Hall
La Jolla, CA

Monday, October 19:

8:30 am **Informal Networking**

9:00 am **Meeting Called to Order**
- Welcome by Woody Sutherland (SIO)
- Introductory Remarks by John Freitag, Chair

9:15 am **Participant Introductions**

9:30 am **Accept Minutes** - Accept the 1997 RVTEC Annual Meeting Minutes

9:35 am **UNOLS Reports**
- Summary of UNOLS Activities
- RVTEC liaisons with UNOLS Subcommittees:
  - FIC
  - AICC (HEALY Science Systems Testing to be discussed later)
  - RVOC

10:00 am **Agency Reports**:
- NSF
- ONR
- NOAA
- NAVO
- USCG

10:45 am Break

11:00 am **USCGC HEALY Science Systems Testing Discussion** - John Freitag will report on the status of developing science system test programs for USCGC HEALY.

12:00 pm Lunch

1:00 pm **Naval Oceanographic Office (NAVO) Ship Programs** - Woody Sutherland (SIO) will lead a discussion to review 1998 NAVO cruise programs. Recommendations for next year's operations will be discussed.

1:20 pm **UNOLS Ship Inspection Program** - Status and Feedback

1:40 pm **SeaNet Update** - Discussion on the status of installing SeaNet Systems on UNOLS vessels (a full technical report will be provided during the INMARTECH '98 Symposium on Thursday, 22 October.)

2:00 pm **Shipboard Technical support proposal revision in procedures** - Sandy Shor NSF/OCFS Program Manager will provide an update on new procedures for writing the Tech Support proposals and requests for ancillary services.

2:30 pm Break

2:45 pm **Salary Survey Discussion:** An update on where we stand at this point and a discussion of possible mid-course corrections to the survey still in progress.

3:00 pm **Subcommittee Reports**

- Online Resources Subcommittee; Tom Wilson
- Data Interchange Subcommittee; Steve Poulos
- Wire and Cable Specifications Review Subcommittee
- Long Range Instrumentation Planning Subcommittee; Rich Findley

4:00 pm **Show and Tell / New Instrumentation Presentations**

- The Ultimate Ship of Opportunity - Rich Findley
- Shipboard E-mail - A Nightmare in the Making? - John Freitag

4:30 pm **General Business**

- Report form the Nominations committee and election of Chair
- Updating of Action Plans

4:50 pm **New Business**

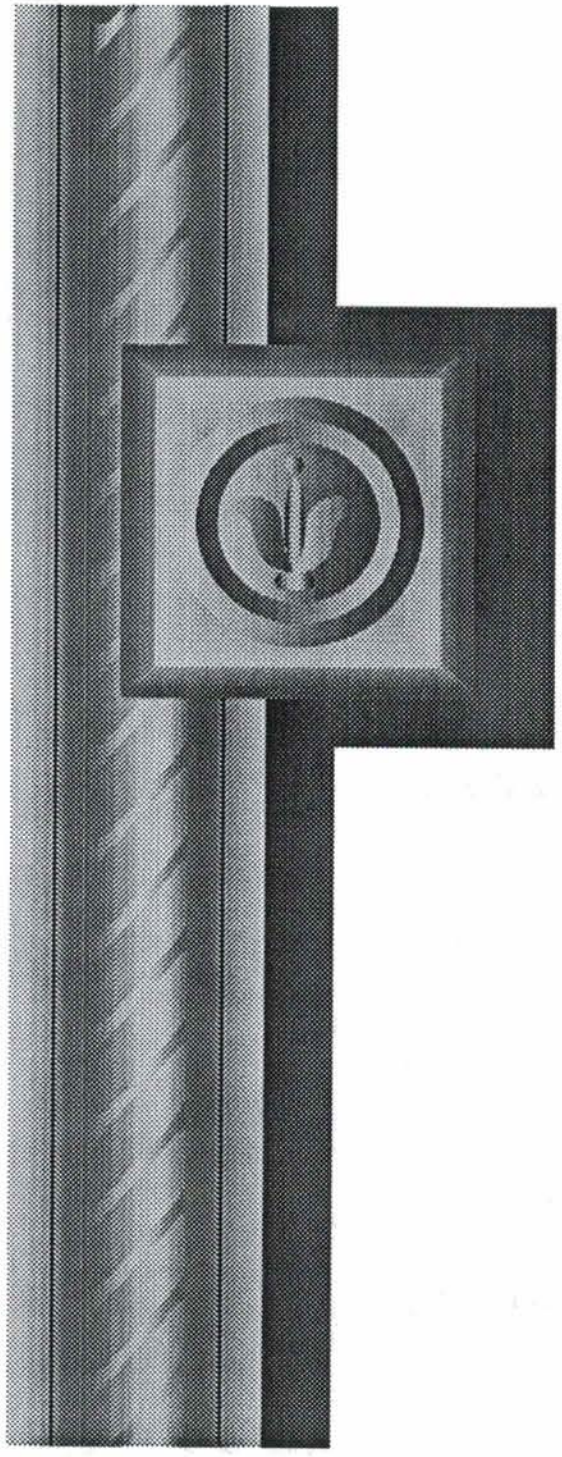
Adjournment

Appendix II

Preregistered Attendees
RVTEC - 1998

Name	Organization
David, Blake	British Antarctic Survey
Arrants, Dwight	D/UNCOC
Walker, Robert	FL Institute of Oceanography
Beers, Greg	Jamestown Marine Services
Dartez, Steve	LA State University
Chayes, Dale	LDEO
Muller, Rich	Moss Landing Marine Labs
Glydewell, Jimmie	NAVO
Somers, David	NAVO
Shields, Dennis	NOAA
Shor, Alexander	NSF
Fayler, Linda	Oregon State University
Willis, Marc	Oregon State University
Knox, Robert	SIO
Smith, Stu	SIO
Williams, Robert	SIO
Baker, Carroll	Skidaway Inst. Of Oceanography
McKissack, Travis	Skidaway Inst. Of Oceanography
Amos, Anthony	TAMU
Hartz, Steve	Univ. of Alaska
Deering, Timothy	Univ. of Delaware
Pfeiffer, Timothy	Univ. of Delaware
Poulos, Steve	Univ. of Hawaii
Findley, Richard	Univ. of Miami
Martin, William	Univ. of Washington
Schwartz, Daniel	Univ. of Washington
White, George	Univ. of Washington
D'Andrea, Mary	UNOLS
DeSilva, Annette	UNOLS
Freitag, John	URI
Orvosh, Thomas	URI
Szelag, Jan	URI
Albrough, John	USCG
Hutchison, David	USCG
McFadden, Eldridge	USCG
Vaughn, David	USCG
Akens, John	WHOI
Maffei, Andrew	WHOI
Martineau, Barbara J.	WHOI
Walden, Barrie	WHOI

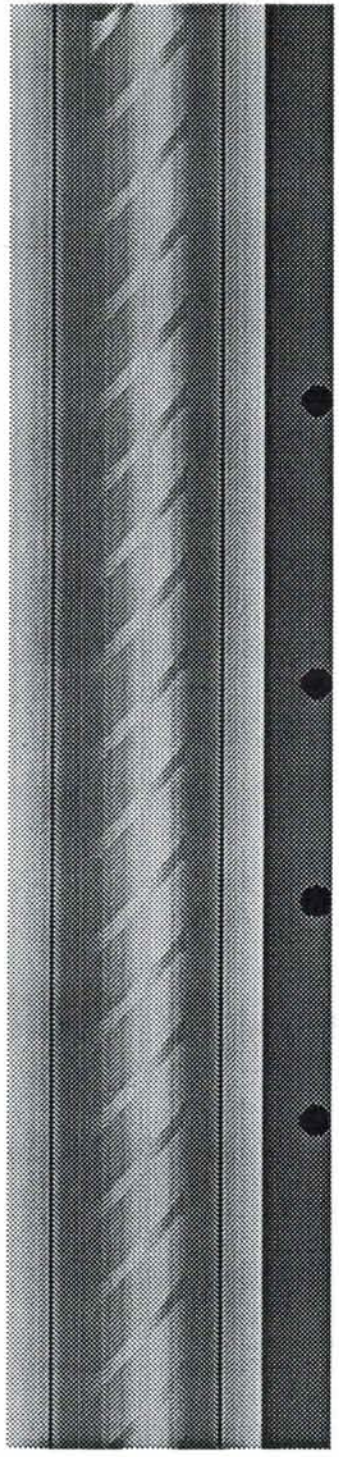
Appendix III



Shipboard E-mail

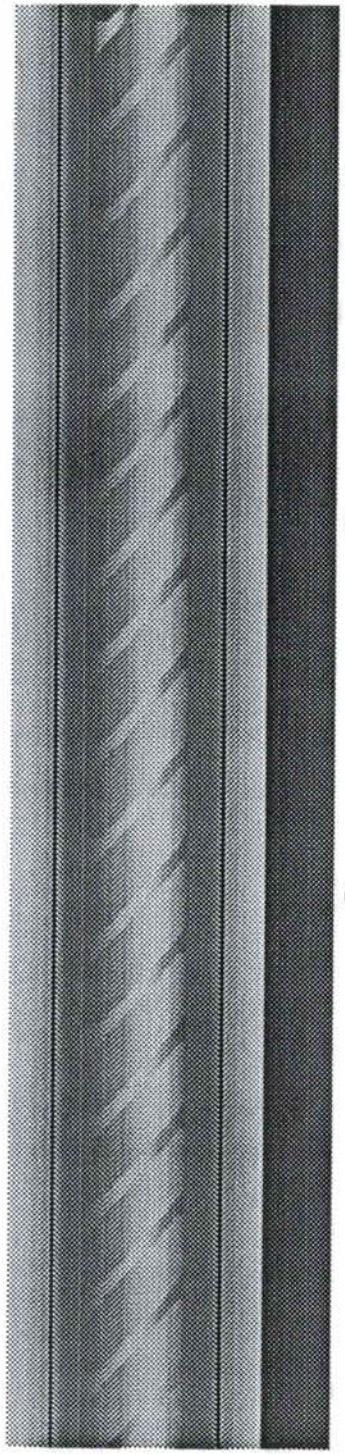
A nightmare in the making?

John S Freitag
UNOLS/RVTEC



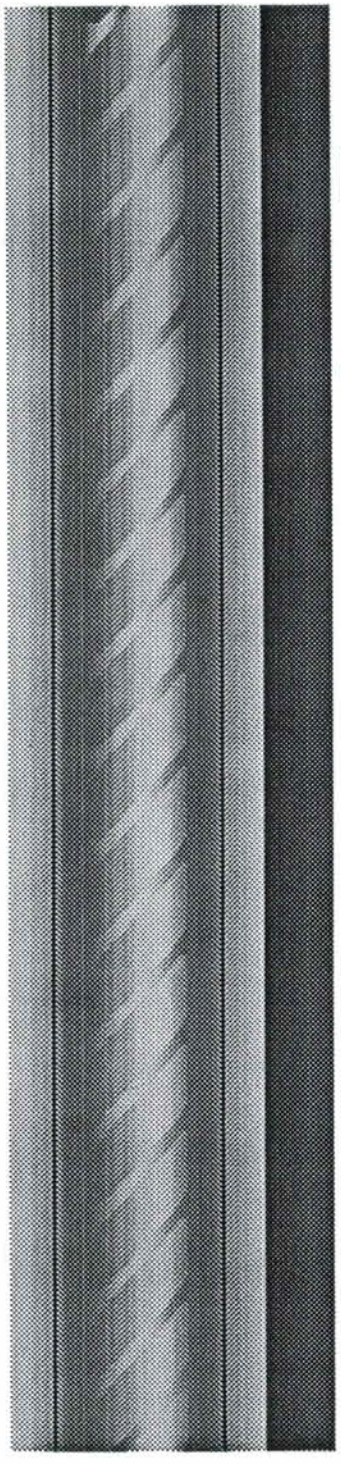
Status Summary

- The widespread use of e-mail for personal communication has changed the overall philosophy of shipboard communication.
- Personal e-mail should not be charged to project accounts or hidden in the rate structure.
- Scientific participants and crew must be aware of costs up front
- Charges should be collected prior to departure from ship



Goals

- Use a simple charging scheme based on words or bytes
- Provide access to a running total of one's personal account
  - Both in bytes and charges incurred
  - Totals of incoming and outgoing message traffic
- Accepting payment by credit card, checks and cash makes it simple to obtain payment prior to departure



Potential Problem Areas

- Downloading mail intended for previous cruises
  - The use of mailboxes on the shore side which open and close with the duration of each cruise will minimize these problems. Stale addresses will be bounced by the shore side server.
  - Separate address scheme for crew and technicians will keep addresses constant for resident personnel
- Science personnel receiving unsolicited e-mail
  - All personnel need to be instructed to limit dissemination of their shipboard e-mail address
  - Remind users that they are responsible for charges both in and out

Problem areas, Continued

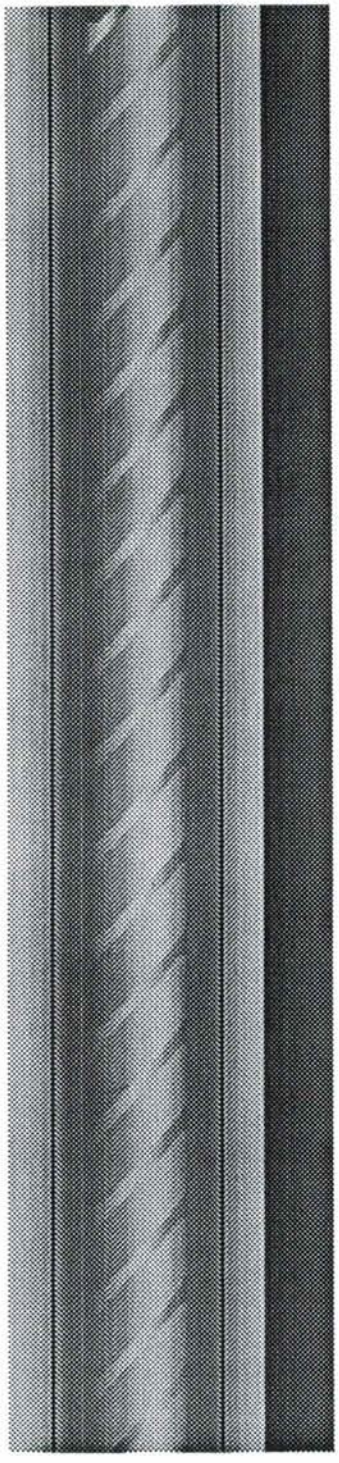
- Scientists having a combination of personal and official e-mail
  - Allow split payment of accounts: ie: part of the bill on the scientist's institutional VISA card and part in cash or check.
  - The allocation of the bill is up to the scientist in all cases as he must answer to his own program manager or institution
- Deadbeats, people who skip on their bills
  - There is no excuse for having it happen more than one time, next time ask for their VISA up front before the account is opened, just like the Radisson.
  - In extreme cases the institution can be notified.

Mechanics of setting up

- Need to set up VISA, MC and AmEx accounts and have a machine and charge tickets on board.
- Institution should set up a clearing account
  - Charge receipts go into this account
  - Satellite carrier bills are paid from this account
  - The long term cash flow in this account is used to compute the charge rate
- An e - mail accounting package is necessary to tally each account

Mechanics, Continued

- Use of a long term average makes the relative cost of transmission transparent
  - Most ships have a combination of Cell phone, M-sat, INMARSAT Std-A or B which charge different rates, land lines are sometimes used
  - Unfavorable conditions may require multiple tries to transmit a single message
  - It is important that the user cost be adjusted only infrequently, once or twice a year at most
  - Attempting to sort out which messages went on which medium is a nightmare to be avoided at all costs



Summary

- Individual private e-mail accounts
- Payment prior to departure from ship
- Constant charge rate, just like the phone company
- Costs available to users up front
- Transmission method transparent to users
- Minimal accounting hassles for operator
- Users receive a bill similar to a phone bill

Appendix IV

Science Trial Goals

- Evaluate Scientific capabilities of vessel under operating conditions
- Define and document design and equipment shortcomings and suggest corrective measures
- Provide prospective Scientists with a clear understanding of vessel capabilities

Trial Phases

- Warm Water Testing Phase
- Transit to Ice
- Level Ice tests
- Science Ice Trials
  - divided into 4 one week legs
  - the major scientific involvement will occur in this phase

Warm Water Testing

- Will focus on Sea Beam calibration and testing
- Navigational interfaces will be tested during this period
- Early evaluation will allow mid coarse corrections prior to leaving for Arctic

Transit to Ice

- Science testing is ancillary in this phase
  - Run Sea Beam underway
  - ADCP testing (not to interfere basis)
  - Navigation and Met system testing
- Helio Dynamic Interface tests
- Initial propulsion/propeller cavitation tests
- Crew training and familiarization

Level Ice Testing

- Propulsion Ice performance testing is primary objective in this phase
  - Icebreaking performance
  - Water wash system tests
  - Bollard pull tests
  - Vibration, stress and ice milling tests
- Science testing is limited in this phase

Science Ice trial Period

- Cruise will operate as a scientific operation with a Chief Scientist
- Divided into 4 legs of approximately 1 week each. Each with a particular focus
- Participating Technicians from several UNOLS institutions
- Program will emphasize performance in ice and interaction of various systems

Science Trials Scenario

- Each leg of the Science Trial period will be conducted according to a written plan
  - Each leg will be headed by a Chief Scientist
  - A group to Technicians expert in the areas to be tested will be on board for each leg
  - The leg will be run as a science mission, however there will be no guarantee that scientifically valid data will be produced

Science Trials Scenario ctd.

- Leg 1 Scenario
  - Sea Beam testing
  - Bathy 2000 Subbottom profiler testing
  - ADCP testing
  - XBT system testing
  - DSF-6000 Survey Fathometer testing

Science Trials Scenario ctd.

- Leg 2 Scenario
  - Coring systems testing, includes piston cores from 2 alternate deck locations, box core and multicore systems
  - Deck handling systems, an evaluation of deck layout for various types of deck operations
  - core/sample handling systems, cold rooms, freezers operational testing

Science Trials Scenario ctd.

- Leg 3 Scenario
  - CTD systems testing, this will include a multi station CTD survey in a variety of water depths and ice conditions Carousel water sampling system testing
  - Laboratory Salinometer and lab testing
  - Flow through instrumentation, Fluorometer, Salinograph, uncontaminated seawater temperature stability measurements

Science Trials Scenario ctd.

- Leg 4 Scenario
  - Set and retrieve mooring
  - Met system project
  - Project involving the use of above deck incubators to test location, water supply, contamination issues

Science Trials Scenario ctd.

- Tests conducted during all scenarios
  - Ergonomic and environmental aspects of labs
  - Shipboard communications systems
  - Noise and habitability working considerations
  - Integration of Navigation and data systems
  - Versatility of scientific computer system
  - Project interaction in lab and deck spaces

Final Product

- An extensive written report to NavSea and the Coast Guard detailing scientific short-comings and proposing solutions.
- A graphic report of system capabilities and performance aimed at prospective scientific users. This will include final data outputs as would be given the departing scientific party in an actual mission

Technical Support

- It is anticipated that the Coast Guard will use a combination of Civilian and USCG Technicians to provide long term support
- USCG has been receptive to incorporating some aspects of the UNOLS model into the support program
- There will be 4 MST's assigned to HEALY, several have already been on UNOLS ships

Science on HEALY

- HEALY is scheduled to go into service supporting funded science 1 January 2001
- HEALY will operate as a full time research vessel, not in the SOO mode of the Polar class breakers
- It is anticipated that HEALY science will follow the same peer review funding process as other UNOLS vessels

HEALY Schedule

- Original delivery date of 28 February 1999 has slipped 4 months to June 1999
- Final delivery date will determine which trial scenario will take place
  - Ship may conduct early trials in Eastern Arctic and transit the Panama Canal, finishing the science trials the following year in Alaskan waters

Schedule, ctd.

- Ship may go to the Eastern Arctic and transit the NW Passage, winter in Seattle and finish trials the following spring in Alaskan waters
- Ship may go directly to Seattle via the Panama Canal and conduct the entire trial in Alaskan waters the following year.

- The scenario chosen will depend on delivery date, ice conditions and other factors.

Accommodations:

The **HEALY** has permanent accommodations for 125 persons. All berthing spaces are located above the main deck.

Accommodations are provided for:

Officer	12	
Scientist	35	(47 Surge capacity)
CPO	10	
Enlisted	53	
Surge	12	
Visitor	2	
Total	125	

Living spaces dedicated to the Science Community include:

- Chief Scientist Stateroom and Conference Room
- Scientist Staterooms (2 person, 3 during surge capacity)
- Science Leisure Area consisting of Lounge, Library, and Conference Room

Common living spaces include:

- Central Messroom with cafeteria style service
- Laundry
- Gym
- Ship's Store
- Medical Treatment facility

Living spaces dedicated to the Ship's Crew include:

- C.O. Cabin and Stateroom
- Officer Staterooms (2 person)
- CPO Staterooms (2 person)
- Enlisted Berthing (4&6 person)
- Leisure Areas consisting of Officer Lounge, CPO Lounge, and Crew Lounge

Appendix V

Extending the Internet to the Oceanographic Fleet

UNOLS RVTEC Meeting - Oct. 19, 1998

SeaNet Partners

- JOI - Administration of project funds, liason to agencies and academic research fleet operators (Ellen Kappel)
- WHOI - SeaNet Communications Node (SCN) development to support network functionality (Anrew Maffei, Steve Lerner, Cindy Sellers)
- LDEO - Installation and operations management of the shipboard hardware/software package (Dale Chayes and Richard Perry)
- Naval Postgraduate School - Liason with Navy fleet, forward planning, testbed maintenance (Rex Buddenberg)
- Omnet, Inc. - Network Operations Center, accounting and billing, value-added services and investigate commercialization.

SeaNet Award Process

- Letter sent to all UNOLS vessel operators in March 1998 asking for proposals on how SeaNet systems would be used.
- Eight proposals received in response
- Review committee established and provided written reviews.
- Conference call to make recommendations to NSF/ONR managers and SeaNet group (excluding WHOI and LDEO representatives).
- Decided on Atlantis, Ewing, Melville, Pelican, and Seward Johnson

Installation Status

- ATLANTIS - Beta system installed, gathering statistics, production system installation pending.
- EWING - site survey begun, SATCOM ordered, tentative installation in Nov/Dec.
- SEWARD-JOHNSON - SATCOM ordered and delivered to HBOI, NERA installation pending (to be done by HBOI), site survey pending, install date not yet scheduled.
- MELVILLE - site survey complete, SATCOM ordered, antenna install in Dec., need wire run details for antenna.
- PELICAN - site survey pending, SATCOM not yet ordered, install date not yet scheduled.

SeaNet Communications Node (SCN)

- Hardware - Linux-based PC, Cisco router, Ethernet switch, NERA Saturn-Bm control unit
- Software - SCN v2.1.7 (currently). Written in Perl. Uses WWW interface.
- Functions - link operations and management, SeaNet value-added services, detailed accounting.

SeaNet Operating Modes

- DataPipes - for efficient/automated bulk transfer of files between network-available directories on the ship or on the shore
- WebMirror - for efficient mirroring of websites on the ship or on shore
- Interactive IP - full IP connectivity ($$$$$)
- (come to INMARTECH talk to learn more)

Initial wireless systems to be supported

- NERA Saturn-B Inmarsat-B system
- AMSC/MSAT 4800 baud
- Cellular Telephone

Tentative Billing Model for Inmarsat HSD

- SeaNet Institutions set up purchase orders with Omnet for use of the SeaNet services on board the ship.
- COMSAT (or other INMARSAT provider) provides detailed electronic bills to Omnet for all calls made via SeaNet units.
- Omnet will bill for all INMARSAT use that goes through SeaNet. Any other use will still be billed to the institution registered to the NERA unit.
- Omnet will be able to provide authorized users web-access to up-to-date SeaNet usage information, including cost-to-date.
- Omnet will be able to itemize billing by project, individual, account, etc. But of course, Omnet will need to know beforehand what the billing breakdown should be.

Future Plans

- Look for lower cost communications options to integrate into system - possibly shared-use satellite systems.
- Investigate ONR/NSF jointly funding SeaNet continuation
- Add more ships
- Offer tools to better integrate shipboard data systems to shore-based operations