UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

# Research Vessel Technical Enhancement Committee (RVTEC)

# MEETING MINUTES

**October 18-20, 2000**

**Lamont-Doherty Earth Observatory**
**of Columbia University**
**Palisades, New York**

**Research Vessel Technical Enhancement Committee (RVTEC)**
**The Lamont-Doherty Earth Observatory**
**of Columbia University**
**Palisades, NY**
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# 2000 Annual Meeting Minutes

**Compiled by Tony Amos from notes taken by Tony Amos, Dale Chayes, and Annette DeSilva**

*Appendices*



## Wednesday, October 18, 2000

**Meeting Called to Order -** The 2000 annual meeting of the Research Vessel Technical Enhancement Committee (RVTEC) was called to order on October 18th at 9:09 AM in the Monell Auditorium of the Lamont-Doherty Earth Observatory (LDEO) of Columbia University. The agenda (***Appendix I***) for the meeting was followed in the order as reported by these minutes. RVTEC Chair John Freitag (URI) had participants in the auditorium introduce themselves (see ***Appendix II***, list of participants).

LDEO Interim Director John Mutter gave a welcome address. He invited RVTEC participants to take a look around LDEO. This is the best time of the year, he said (and indeed, after the first day, the weather was splendid).

At 0913 John Freitag outlined the differences between this year's meeting and previous meetings: first the meeting is being held in an auditorium with speakers at a podium on stage, compared with the usual round (or square) table format. He felt that this would work out well but wanted feedback. Also different from previous years is the "breakout sessions" planned for the second day of the meeting. Groups would go to appropriate locations at LDEO where sessions on wire terminations, salinometers, SeaNet, NetCDF,

and other demonstrations would take place. Everyone at the meeting would have the opportunity to attend all breakout sessions.

Dale Chayes then went over some housekeeping notes on lunch and dinner. Dale noted that interest in Bruce Huber's (LDEO) salinometer session was high (22 signed up). Interest in other sessions was high, except for NetCDF.

**The Minutes of the 1999 RVTEC meeting** were then introduced for acceptance. No hard copy had been provided this year; the minutes are posted on the UNOLS/RVTEC web site and can be downloaded as a PDF file. A motion to accept the minutes was seconded and carried. Vice Chair, Tony Amos, who's duty includes preparation of each year's minutes asked if there was any parliamentary reason why the minutes should not be posted on the web long before the next meeting, perhaps posted on a URL site that is not available to the public, and solicit comments from the RVTEC membership. This might speed up the process of publishing the minutes as procrastination occasionally rears its head when the preparer knows that the next meeting is a year away. John Freitag thought there would not be any procedural objection to this and Amos will try to have minutes done in a reasonably short time.

**The Agency Reports** were given.

**National Science Foundation (NSF)** - Alexander (Sandy) Shor (**NSF**) outlined the FY 2001 OCFS Priorities. The NSF viewgraphs are provided as ***Appendix III***. Fiscal Year 2001 started two weeks ago and the actual program budgets are not yet resolved. NSF received the largest increase in its history, 13.6% above FY2000. It is not yet clear what the budget will be for UNOLS ship operations, technical support and instrumentation. Identified in the budget was enhancement of operations and technical services for the UNOLS fleet. The NSF budget request for FY2001 was very ambitious with a 17.3% increase overall from FY2000, an increase of 22.2% for Ocean Sciences, and 27.3 % for Facilities. NSF hopes to double its budget in five years.

Sandy continued by reporting agency personnel changes: Margaret Leinen has joined as Assistant Director of Geosciences. Michael Purdy resigned as Division Director to become LDEO Director (effective December 1, 2000). Michael Reeve replaced Don Heinrichs as head of the Facilities Section. The Research Section Head search is now nearly complete. A new section has been created: MG&G + ODP. This is expected to have little effect on ship operations. Linda Goad, of the University of Michigan, is coming into the Ship Operations group to work with Dolly Dieter.

On the 2001 Ship Schedules, there is an overall increase in demand over 2000. Scheduling operations is especially difficult for large and intermediate ships in the Pacific, but on the positive side, an increase in ship use despite flat budgets, has occurred. Sandy reported some "Coming Attractions." There will be a Robotic Drill Workshop on November 3 - 4, 2000. Recent tests of the RDI 75 kHz phased array ADCP have taken place and are now becoming available. The 1999 Seismic Reflection Workshop report is now available.

Other things going on include the development of a Federal Interagency Policy for long-term management of the National Academic Research Fleet with its blueprint of fleet replacement in the next 20 or more years. The plan is being drafted by the Federal Oceanographic Facilities Committee and is expected by mid-2001. Sandy emphasized that the Quality of Service & Training issues need to be highlighted as identified in the Academic Fleet Review (AFR). Important elements of this include adequate technician training and defining levels of service that users can expect.

**Office of Naval Research (ONR) –** Tim Pfeiffer reported that Navy support for fleet operation is approximately $17.5M. *FLIP* has a busy schedule of over 100 days. There has been a $1.7 - $1.8 M investment in instrumentation, mainly through the Defense University Research Instrumentation Program (DURIP). This year, requests for multibeam systems crowded out smaller requests. The award results are expected in February or March 2001. International Safety Measures (ISM) will be mandatory for ships over 500 tons, starting in July 2002. The issue of ISM compliance will be a focus of next week's meeting of Research Vessel Operators Committee (RVOC). There are unanswered questions on how far ISM will go into scientific operations on a ship. Winch and crane operations are obvious candidates. In ship news, The AGOR 26 SWATH vessel is in construction. Delivery will be delayed by four months. Lastly, in personnel news, Pat Dennis has left ONR for a position as Chief of Staff at the Consortium of Oceanographic Research and Education (CORE).

Sandy Shor reported that funding for NSF's Major Research Instrumentation program has been increased by 50%. This should have an effect on acquisition of big (expensive) equipment.

**National Oceanic and Atmospheric Administration (NOAA)** – No NOAA report was provided.

**Naval Oceanographic Office (NAVO)** - The **NAVO** report was given by Jerry Gathof. His viewgraphs are provided as ***Appendix IV***. NAVO plans to bring real-time data from their fleet of eight research vessels to shore. Jerry reported on the use of UNOLS ships for NAVO work. Since the start of the NAVO/UNOLS partnership, there have been a total of 1250 UNOLS ship days using 15 ships. Jerry listed the accomplishments and beneficiaries of these operations. CY2000 NAVO activities include 205 ship days for work in the Gulf of Mexico, Narragansett Bay, South Florida, Onslow Bay, and off California. Plans for CY2001 include 310 ship days with operations off Florida, California, Hawaii, Onslow Bay and the Gulf of Mexico.

**United States Coast Guard (USCG) -** The Coast Guard report was given by John Berkson, who expressed appreciation to UNOLS for allowing Coast Guard technicians to cross-train on UNOLS vessels. He also thanked UNOLS for inviting the Coast Guard to participate in RVTEC meetings. This is important because of rollover (the limited tours of duty that many Coast Guard personnel do on their vessels). USCGC *POLAR STAR* completed the Arctic West cruise and underwent repairs to its center shaft. *POLAR SEA* has also undergone considerable repairs. USCGC *HEALY* completed the warm water and ice trials this summer with considerable assistance from UNOLS and RVTEC. The vessel

is now undergoing warranty repairs in Seattle. A *HEALY* ice trials video was shown at the Marine Technology Society Oceans 2000 Conference. The video is available for viewing at this meeting.

The meeting took a **break at 1030** and **reconvened at 1057.**

**UNOLS Report** - The report on **UNOLS activities** was given by Bob Knox, UNOLS Chair. His viewgraphs are included as ***Appendix V***. Bob pointed that many of the important issues facing UNOLS (ISM, HEALY support, Quality of Service, fleet renewal, etc) are on the agenda to be addressed during the RVTEC meeting. Therefore, his report will focus on ship scheduling issues. UNOLS experienced several years of underutilization, especially of the large ships. This resulted in ship lay-ups and pressure toward retirements. ONR/Navy concerns about the underutilization lead to additional new NAVY work in the form of NAVO and LWAD cruises. Now as we plan operations for 2001 we are facing over-bookings of the ships. Some of the large programs could not be accommodated. This was due to multiple constraints including ROV logistics, weather windows, and operations in remote areas. In 2002 the new Hawaii SWATH vessel, AGOR 26 comes on line and may help to alleviate the demand on the large ships. Within UNOLS the scheduling process is complex and depends on the ability to all parties to communications problems, evaluate tradeoffs to PI's and seek feedback. Criteria should be established for prioritizing field programs. This effort must include all parties, agencies, users and operators. UNOLS will continue to monitor fleet utilization to determine if the situation in 2001 becomes a trend. Bob asked that everyone recognize the schedulers, PIs and agency representatives in their efforts to establish the best ship schedules feasible.

Mike Prince continued the UNOLS report with Committee News and information on how UNOLS is evaluating approaches for improving Quality of Service. His viewgraphs are included as ***Appendix VI***. The UNOLS Office is now located at Moss Landing Marine Laboratories. The University of Rhode Island (URI) was the UNOLS office for the past nine years. The Office grant is for three years and they hope to be able to renew that once or twice. The new contract started on May 1, 2000. Annette DeSilva is still Assistant Executive Secretary of UNOLS and will continue to assist with RVTEC, FIC and DESSC activities. The UNOLS has registered its domain name and its website is located on a commercial server <http://www.unols.org>. UNOLS will use the Internet to improve communications. Mike reported that the other staff members of the Office include Kate Sawyers, Administrative Assistant, and students Sara Anderson and Laura Dippold. The students are serving as our webmasters. The RVTEC web site is still (and will continue to be) maintained by Tom Wilson.

**Research Vessel Operators' Committee (RVOC)** – Activities of the RVOC include establishment of laboratory van specifications. They are also trying to establish standards for safe maximum working loads on wires. This is a joint project with RVTEC. The next RVOC meeting will be held next week at Oregon State University. ISM will be a big topic. Other issues that will be addressed include crew retention, training and quality.

**Arctic Icebreaking Coordinating Committee (AICC) -** HEALY is currently out of the water in Seattle for warranty repair work. The yard period will be followed by another

short sea trial period. The sea trials will be conducted on certain pieces of equipment that were identified in the summer ice trials. Some members from RVTEC contributed their time and expertise in assisting with the sea trials. There will be continued training for Coast Guard Marine Science Technicians (MSTs). In addition to HEALY, AICC is also helping to coordinate the Science of Opportunity programs for the other Polar Class vessels.

**Fleet Improvement Committee (FIC) –** The FIC has been focusing on fleet renewal efforts. They have been trying to spread the word throughout the community about the immediate need for fleet planning. They have submitted an article to EOS alerting the community about the need for fleet renewal**.**

**Quality of Service (QOS) -** Mike Prince reported on what has stimulated the recent initiative by the UNOLS Council to investigate QOS. His viewgraphs are included as ***Appendix VI***. In 1998/99, a comprehensive external review of US Academic Research Fleet was carried out as part of the NSF Ship Operations Program re-authorization, the "Academic Fleet Review (AFR)." The report is posted on NSF's website at <http://www.geo.nsf.gov/oce/pubs/fleetrev.html>. The findings included:

- US scientists got excellent access to the sea via UNOLS
- Their satisfaction with the system was very high.

There were problems, however

- Complexity of cruise scheduling.
- Lack of consistency between institutions with shared-use equipment/services.
- A concern that equipment is becoming more sophisticated and expensive and that its acquisition, use, and maintenance is not handled in a uniform manner.
- Concern among users that they have little recourse for action should equipment or services not be up to par.

The AFR recommendation states that improvement is needed in scheduling, support of non-operator researchers, quality of support/maintenance of installed, and pool equipment. This need for a continuous improvement and formal quality control "needs to be infused into the entire UNOLS and operator system." The observations are summarized in the final recommendations of the 1999 AFR. Four years from now the Ocean Science's Facilities Section must show what action has been taken - hence the Quality of Service initiative. Also, this is what UNOLS does, and why it exists: to provide the highest possible facilities for marine research and education. New technology introduction is needed, but they are not talking about a new program but rather to improve the existing one. The present system of quality control and improvement within UNOLS is based on:

- UNOLS committees and the Council. Mike went on to describe the mandates of each of the above (see Appendix VI), noting that it will be RVTEC where the large part of the QOS will be addressed.

- Post cruise assessment forms are available on old-style paper, or online at <http://www.gso.uri.edu/unols/pcarform.htm>. Presently, the submission rate is 60%. Very few reports contain significant constructive criticism. Also, the assessment form for captains and technicians are (generally) only filled in by captains. Input is needed from all!
- The ship inspection program has lapsed but is not dead. A contract for re-implementing the program is needed, as is input from technicians and operators on how to structure the program.
- Ship operations committees at some (but not all) operating institutions are a good vehicle for user input and the recommended vehicle for planning improvements and replacements.
- Scientist-administrators/advisers at operating institutions are vital for communication with users.
- Feedback by users to ship operators and technician groups (us).

Mike reviewed the suggestions from the report that were directly applicable to RVTEC under "What do we need to do more?"

- Set a uniform plan for shared use equipment and technical support.
- Set standards for base level equipment.
- Increase reliability, quality of data and performance for shared use equipment including fleet wide quality, a modern quality control system, education, and evaluation of performance with budget support for implementing these features.
- Increase shared use of specialized systems that have wide application - there would then be less need for PIs to request purchasing such equipment in their proposals and eliminate duplications as well as ensuring uniform reliability and data quality for all users.
- Take advantage of slack time to do equipment overhaul, upgrade, repair and replacement.
- A UNOLS wide action to improve feedback. Current forms have been created by RVOC. Users will then feel that their concerns are being addressed.

Finally, Mike asked, "What's next?"

- To identify a formal quality improvement or quality control program fleet-wide.
- ISM is a safety and pollution control program that will be mandatory for some and probably the norm for all.
- ISO 9002 is a quality assurance program, better suited for individual operators rather than UNOLS as a whole.
- There are other programs, such as Six Sigma, a GE program, or the Malcolm Baldrige National Quality Award. Criteria of this Department of Commerce award, oriented towards business and education, could be used as a guide rather than actually competing for the award.

NSF's Innovation and Organizational Change Program manager told the Council that the complexity of UNOLS makes it a challenge to develop a formal program because of the

many institutions and agencies involved. However, Program researchers may be available to advise us.

Mike finished by appealing for our (the technicians of RVTEC) help in improving quality of service at our own institutions, and participating in surveys, committees, etc. UNOLS as an organization must ensure that Quality of Service to Marine Science is the "prevailing culture."

A question was asked about mandatory nature of the post cruise assessment form. NSF is not going to make it mandatory. Mike is going to look at what they get out of reports now and review the process. Dale asked a question on ISM safety regulations. Mike told of scientists in the UK being required to take a standard safety course or they don't go on cruise. Sandy Shor said that NSF is taking these issues seriously and will contribute funding for improvement programs.

**Break for lunch at 1211: Meeting reconvened at 1327**

**USCGC HEALY Science Systems Testing -** John Freitag reported on the AICC HEALY science testing. Testing of the new USCG Icebreaker *HEALY* was conducted in the model of a science cruise with a chief scientist to emulate an actual cruise and to involve as many people as would be on such a cruise. The Warm Water Trials in February 2000 tested Swath mapping, ADCP, and a "first approximation" of the coring system. There were many problems, particularly with the multibeam system. The multibeam problems will be addressed in post-shakedown availability. Science ice trials were held over the summer and operations included coring, towing, CTD, ADCP, and swath mapping, as well as underway data acquisition and flow-through sea water systems. Reports are now available on CD-ROM and additional copies can be made. A lot of good comments/feedback were made available to USCG. On the basis of these results, many warranty questions arose, some structural. In closing, John commented that he thinks HEALY will be well equipped to start science operations next year.

**SeaNet Update -** Dale put off demonstration of high-speed data transfer because it was to be set up outside on picnic table in rain. He next gave the report on **Extending the Internet to the Oceanographic Fleet (SeaNet)**. His viewgraphs are provided as ***Appendix VII***. The SeaNet Partners are WHOI (Andy Maffei, Steve Lerner, Scott McCue, and Cindy Sellers), LDEO (Dale Chayes and Richard Perry), and Geo-Prose (Ellen Kappel). SeaNet is now on six vessels. It is funded at reduced levels for at least one year. Near real-time ship position status data are available at <http://www.seanet.int/>. Ships have transferred about one gigabyte of data so far. Examples of use are email, shoreside website maintenance, video, satellite imagery, large file transfer, and ship/shore collaboration by scientists and data analysis. Some recent changes: SeaNet Operations Center is now at WHOI, with LDEO as a backup. They have shifted billing responsibilities from OMNET back to the operators. However, estimated billing with estimated breakdowns of science use is available both on the ship and via <http://www.seanet.int>. It is desirable to have 24-hour support service, but funding support is not available. Operation hours are now 0900-1700 EST. Operators will have to

pick up more of the install/maintenance, travel and SATCOM equipment costs. Dale said that three more vessels would be equipped for Sea-Net and wondered if anyone at the meeting was interested. New generation hardware will be used for future installations (smaller, PC Notebook-based). The next software release will support e-mail. An education effort is underway so scientists understand SeaNet's capabilities and use it even more. At the present time, there are no venders that will supply necessary billing and security features.

Question: Will there be a higher charge for faster data transfer rates?

Answer: You Bet!

Question: When will the software be available?

Answer: Don't know at this time.

Sandy Shor commented that three new ship SeaNet systems are not the limit. They are prepared to add more systems to the fleet if there is interest.

**Report on International Ship Management (ISM) Code Issues and Discussion –**Bill Martin (UW) and Paul Ljunggren (LDEO) provided a report on **ISM.** Bill gave the report. He learned at the INMARTECH 2000 meeting that Southampton, UK did not require their technicians to be ISM certified but did require their taking their own Standards of Training, Certification and Watch keeping (STCW) Class. They did not take fire fighting but did do a 2 ½ -day event that included in-water exercises with wet suits and first aid classes. The University of Washington will require their technicians to comply with their standard manual. The ISM compliance organization will do a preliminary review of the draft ICM procedures six months prior to the scheduled compliance date. They will come back to certify the procedures.

There was a great deal of discussion amongst the RVTEC meeting participants.

Question: Do operators using (for example) Jason, Prod Drills, or ROPOS need to be certified?

Answer: ISM is requiring that any new piece of equipment have an ISM procedure (document) in place addressing safety issues involved with the operation. The result may be a one-cruise document. There has to be a written procedure for deploying any equipment over the side!

Question: Who has the responsibility for formulating procedures?

Answer: The bottom line is that ISM is "A huge burden." Potential scientists are sent out cruise planning forms six months ahead of time. These are all the things we do anyway but don't write down. ISM will require that plans be recorded.

There followed discussion about different methods of, say launching a CTD. There ensued a lively discussion. Bill will be happy to go over this with anyone. A hypothetical question was asked about the possible 95 steps needed to do a CTD cast.

Question: Would an inspector then expect all other CTD operations to use the same steps? What about provisions for doing things differently on the fly?

Answer: Bill replied that you could do this. They don't want to prevent you from doing things. Their focus is on safety. You just will have to revise your

procedures. There needs to be duplicate documents on the ship and on the shore. An inspector may bring out the shore-based version. Who signs off on the procedure, the ship's master or shore-side management?

Tim Pfeiffer asked if there has been any collaboration with other operators. It seems as if the science procedures need to be standardized to some extent, especially since the scientists will go from ship to ship. It was indicated that there would likely be a template developed for various common systems. The goal will also be to keep the procedures as simple as possible.

Mike Prince pointed out that RVOC has had ABS representatives at their meeting to discuss ISM requirements.

Question: Have any vendors been involved in the process?

Answer: Bill indicated that they have not been involved with individual vendors. They look at the equipment. Bill said he would be happy to share the status with the rest of RVTEC. They plan to have it up on the web. This will allow the science community to view it.

Question: Sandy asked, "Is the science community aware of this issue?"

Answer: He mused that the answer is basically "No."

**ADCP Update on Phased Array ADCP Systems -** John Freitag then recapped history of phased array ADCP. This is in response to criticisms of old the broadband ADCPs. There are two phased array systems made by RDI.

- 38kHz, 900mm, 980 elements. This originally used time delay beam formers, then converted to phase shift beam former.
- 75kHz, (fits in the same well as narrow band 150kHz system).

There have been two studies on phased array ADCPs, one by Eric Firing (U.Hawaii) using a Japanese ship. He was enthusiastic about the results. Frank Barr of WHOI using a 75kHz unit supplied by RDI did another study. He tested it on *ATLANTIS* in the summer. He was also enthusiastic. Another test will be done by URI on *ENDEAVOR* (Jules Hummon is leading the effort) next year. John showed profile examples and declared that it looks like phased array is "the thing of the future."

**The meeting took a break at 1510 and reconvened at 1540**

**Report from MATE** - There was no report from the Marine Advanced Technology Education (MATE) center, but Mike commented that they're happy with their intern program with UNOLS and wish to continue it. WHOI may hire some of their graduates. Sandy said that they have start-up funding for one more year.

**Base levels of Technician/Instrumentation UNOLS support** - Sandy Shor acted as moderator.

Dolly Dieter suggested that RVTEC define some technical service standards. The ship inspection program can use these standards.

Question: Does RVTEC have standards of service?

Answer: No.

Question: Is RVTEC interested in starting to define some levels of service?

Answer: Considerable discussion followed.

Marc Willis has found a change in expectations of what they are to provide in terms of technical support. For GLOBEC North Pacific program on *WECOMA*, they had a lot of equipment requirements (MOCNESS, towed SONAR, CTD, SeaSoar, underway, etc.). But, he only was to provide one technician. This was an "intolerable situation." for one technician to provide 24 hours of assistance, seven days a week. He typically sent four on a cruise, and at no time was there less than two. It is the same situation on *BLUE HERON*: one technician providing 24 hours of service. Obviously this cannot work so others must do some of this work. A question was raised on what is the liability when the technician is responsible for being available at all times. Who gets the blame [if something goes wrong]? Bob Knox brought up the safety issue with this scenario. It was commented that in the past the scientific party ran the equipment and the technicians maintained it. Someone made a comment about "The good old days." Mike Prince said that there is a whole lot of connectivity between science and the technicians. Chris Riffe commented that there is also a problem of equipment getting damaged when you need to train other people to use their equipment.

Sandy Shor shared his opinion that the technician should supervise, but not operate the equipment. There may be equipment a scientist has not seen before. There is the expectation that a technician should be present for, say dangerous operations at night. Tony Amos commented that "in the old days" it was often the scientist that developed and built the equipment he used at sea, but now such gear has become more commonplace, reliable and is made commercially. Also, at times there are graduate students doing nothing on the ship, letting the technician do their sampling for them. Changing expectations have enabled scientists to "not need to even go to sea." Robert Walker (FIO) commented that they do not have a shipboard technician. It becomes the responsibility of the students and professors to provide the technical support. Rob indicated that there is no funding to support the shipboard technician. He trains the people who will go out to sea. This isn't to say that things don't get broken often. He made the comment, "Why let such situations exist?" Bob Knox said that we are in an era now where we must agree upon what will succeed at sea prior to the cruise. The scientists need to know what will be supplied when they prepare their ship-time requests. Rich Findley said that it was getting to the point where scientists want almost instant analysis of data - e.g. ADCP. They want the data processed. A comment was made that scientists also want to leave equipment on at all times yet they cannot possibly analyze the data for lack of funding.

Barrie Walden commented that there is the fact of the ever-increasing complexity of equipment while there is no increase in technician support. An opposing point of view was expressed that in fact, instruments like the CTD are now easier to use. One potential way to improve the situation is to have more shared use technicians. Sandy gave an example of

R/V *EWING* using a CTD for first time (*EWING* is largely a dedicated seismic vessel). This took the efforts of Oregon State University (OSU) and the University of Miami, etc. to do this.

Woody explained that the new policy is not working. In the past the PIs would propose exactly what they needed. Now they don't tell the operator up front. The users often know that SIO has "free" equipment, so they want to use everything. They don't tell the operators this in advance. SIO is expected to provide the services. John Diebold (LDEO) commented that it would help if the technical support groups could see the science proposals in advance to know what the PI intended to do. This gets back to the question of what is expected. Woody wants to know when "no" is the appropriate answer. Tom Wilson sees two different things under discussion - 1) making sure equipment is available, and 2) wanting technicians to run the equipment as well. Scientists are out there to get as much as they can out of system. Rich Findley has a check-off form asking what equipment the PI's want to use. They are required to submit the form by a specified date. They also need to indicate the number of people they are bringing. The operator will question the number of people if it looks too small to accommodate all of the equipment requested.

Sandy thinks PIs are hesitant to ask NSF for technician support. He does not fund technicians to be operators or watchstanders. However, it is important to provide as much support as possible to the science program. He would love to see some standards provided by the RVTEC group. Mike suggested that they include the science community. Sandy would like a small group of the technicians to take the first stab at this. It was pointed out that the funding for science programs is strapped also, limited in supporting additional technicians or an adequate number of scientists to complete program. John indicated that the committee should be made up of small, intermediate and large ship program representatives.

Dinner for Day 1 is to be on board the Royal Caribbean Cruise Line's new ship Ocean Explorer. Rich Findlay (U. of Miami) has a program to instrument this vessel as a ship of opportunity. Before adjourning for the day, Rich gave a brief outline of the cruise ship operations before we get there. All superlatives. The purpose is to get an excellent long-term data base once per week just North of the Bahamas from Miami to Barbados.

Question: Who does the scientists submit proposals to?

Answer: There will be formal Request for Proposals issued from U. Miami, RSMAS.

**Adjourn Day 1**

***Thursday, October 19, 2000***

**Call Day-Two to order and announcements** - Rumor had it that Tony Amos was lost on the Palisades Parkway, but in fact he was simply late. We deferred his presentation on INMARTECH until after lunch. Dale made announcements about the day's logistics, session locations and lunch.

**Break out sessions**:

**Workshop session on 0.322 electrical wire termination techniques (Dave Nelson and Tom Wilson provided the demonstration).** Annette DeSilva took pictures. Tom Wilson took prints. Dan Mertez took digital pictures.

The demonstration showed methods of terminating the standard 0.322" diameter double-armored conducting cable used primarily for CTD deployments. The session provided many useful tips with an opportunity for questions and answers. Equipment and products used were demonstrated as well as procedures. In addition to the termination procedure, Dave also explained a method for repairing a cable with a broken wire in the middle of the cable.

**Workshop on Salinometer techniques – A hands-on interactive session with Bruce Huber (LDEO)**

Bruce demonstrated techniques used to run a Guideline laboratory salinometer, the main instrument used by UNOLS vessels to determine salinity to a high degree of accuracy. RVTEC attendees wishing to do so were able to run samples on the instrument Bruce had set up. Various techniques were discussed (temperature regulation, leaving pump on "to do or not to do," settings, sample collection techniques, storage of samples before running on salinometer, bottle types and closures, handling and storing standard sea water). One of the most useful aspects of this session was the input of attendees, telling of their methods for running salinities. It is obvious that this subject has garnered the attention of many of us in RVTEC and a considerable effort has been made to make routine salinity determinations among the most accurate of measurements regularly done at sea. If there was one message to come out of the session it was "Temperature, temperature, temperature." The regulation of the room and sample temperature to within narrow limits is essential when dealing with salinometers.

**SeaNet Tutorial Session –** Steven Lerner, Andrew Maffei and Scott McCue provided The SeaNet Tutorial Session. A training session guide was provided by the group and is contained in Appendix VII and also on the web at <http://www.seanet.int/Documents/seanet_training2.pdf>. The session covered concepts/terminology, architecture, theory of operation, operator interface, starting interactive Internet sessions performing Batch file transfers, configuration, and tips.

The meeting reassembled after **lunch at 1320**

**Call for Nominations** - John Freitag made a call for RVTEC Chair nominations,

**Report from INMARTECH 2000 by Tony Amos (UTMSI) and other attendees** - Tony reported on the meeting that was held at the Nederlands Instituut voor Onderzoek der Zee (Netherlands Institute for Undersea Research, or NIOZ) in Texel, Holland on September 19 - 22, 2000. The meeting was well run and organized. There were several RVTEC attendees here today who also attended: Marc Willis (OSU), Bill Martin (U. Washington),

Woody Sutherland (SIO), Barrie Walden (WHOI), and Glen Hendrickson (USCG). The meeting was well organized with a general session followed by parallel sessions and ending with a general session. Each session had a chairman and a raconteur. The raconteur provided a five-minute summary after the session as a wrap up. Tony thought this was a good idea. Woody provided a report to the meeting on the INMARTECH 98. Tony showed a video of Texel including the bus ride to the meeting, the facility, main meeting room, their primary research ship, the *PELAGIA*, and equipment displays. At the end of the meeting, participants went on a day-long trip on their smaller research vessel for a short cruise that included doing a trawl, and a visit to an island called "No Man's Land." Tony thought that NIOZ did an excellent job with the meeting and tour. The ferry that connects Texel with the rest of Holland had an ADCP on board continuously collecting and displaying current, temperature, and salinity data for both research use and public information. Tony noted that NIOZ makes extensive use of laboratory and other general use vans. He also said that meeting organizers had a difficult time finding speakers, something to be noted for future INMARTECH meetings. The 2002 INMARTECH will be held in Japan.

**2001 RVTEC/RVOC Joint Meeting** - John Freitag made the suggestion of having a joint RVOC/RVTEC meeting in 2001. He asked RVTEC to consider this suggestion and provide any feedback.

**Afternoon Break out sessions:**

- **Workshop session on 0.322 electrical wire termination techniques (Repeat)**
- **SeaNet Tutorial Session (Repeat)**

**Break -** There was a BREAK following the Breakout sessions and the meeting reconvened in general session at 3:30 PM in auditorium.

**HEALY Video -** John Freitag showed a video of the *HEALY* ice trials and underwater images of the ship while underway. This was followed by a group discussion of the breakout sessions. John wanted to know how people like the breakout session format. Comments included:

- The Sessions were given too much time.
- Sizes of the sessions need to be determined in advance to allow for enough meeting room space.
- It was suggested to video the sessions.
- The opportunity to ask questions was essential.
- The opportunity for people to share their own experiences and problems was important.

**High Speed Data Communication** - Larry Inglebert (of Stratos) provided a discussion on Stratos Mobile Networks and INMARSAT. His viewgraphs are included as ***Appendix VIII*****.** Larry introduced the Stratos company, a Canadian Company that has Inmarsat A (Many users in our group - it is very popular), INMARSAT B (gave applications of A&B), and Stratos Inmarsat C. He talked about the INMARSAT M4 Global Area Network system. He described the Inmarsat F1/F3 Marine HSD Roadmap system. F1 is geared

toward replacing Marine B terminals. It is currently in beta testing and has the GPS built into the antenna. F3 is marketed toward super yachts and is also currently in beta testing. It is scheduled to be available by the second quarter of 2001. The system uses M4 specifications and is approximately 2.5-feet by 2.5-feet in size and uses Afloat Telecommunications Service (ATS), Stratos Inmarsat lease coverage, and Stratos CN-17 and best lease services. It is a fairly compact system running at 4.8 kbps (voice) and has applications such as video conferencing. There followed a series of Questions and Answers.

Question: What is the cost of lease service?
Answer: An initial cost of $3500. The service, Stratos Connect (StratosNET), provides lower calling cost to all mobile satellite phones ($2.80 versus $10 for Mini–M; $3.65 versus $10 for Inmarsat B.
Question: What platforms does it support?
Answer: Windows 95, 98, 2000.
Question: What happened to M1, M2, and M3?
Answer: Don't know.
Question: Is there an M4 packet data service?
Answer: Not available yet.
Question: Does it cover the entire globe?
Answer: It uses the standard INMARSAT service.
Question: What is the data rate?
Answer: M services 9.6 Kbytes/sec.
Question: What is Stratos BEST service?
Answer: Best is a bandwidth managed service.
Question: What are the differences between Inmarsat B and M4?
Answer: B would be a little more expensive and supports high-speed data and works "globally" within the latitude (+/- 73 degrees). The M4 marine service does not currently support high-speed data and when it does, will only do so in areas with spot beam coverage.

**ONRUST Replacement** - Tom Wilson reported on StonyBrook's new vessel. Their present vessel, the ONRUST is now "pushing its capabilities." The new vessel will be a product of the Fishing Capacity Reduction Initiative, and, in fact, is the last of the buyout boats. It will be renamed SeaWolf. It is 80-ft x11-ft and 120 tons. It has an adapted fish hold for storage, can berth 11 people plus captain and mate. It should be easy to run wire and will work the New York Bight and the Hudson River. The projected annual operating time is estimated at 120 days/year. It will be ready for operation by mid January 2001. The vessel specifications are included in ***Appendix IX*** and posted on the web at <http://Alpha1.msrc.sunysb.edu/~vessels/Seawolf/seawolf.htm>.

**Day-Two of the meeting adjourned at 1630.**

***Friday, October 20, 2000***

**Informal Discussion**

**Show and Tell Session**

**OSU Data display system – Toby Martin, OSU**

Toby reported on the real-time html based data displays now being used on OSU ships. Information about the system is included in ***Appendix X***. The system allows you to look at your data, remotely monitor your instruments, share graphs via the web, or provide full-time access for the world. Web based data displays provide remote access, multi-site access, familiar user interfaces, and a simple programmer interface. The system includes data acquisition, data archiving, and data selection. A variety of parameters can be accessed. Toby showed an example of sea temperature over a 72-hour period. The system allows you to look at the data (not just the plots), with different measurements displayed in different windows.

Question: What feedback does he get from researchers?

Answer: "Why is the background always blue?" (Joke), but seriously, it has become the standard reference on board. Wind speed has been used as a diagnostic tool.

Question: Does the ship use data?

Answer: At this time the bridge doesn't have interest. It does use the display that is broadcast throughout ship. Toby said it's all on web, anyone is free to grab it whenever they want. Only recently have they started shipping the data back to shore. The web address is <http://joxer.oce.orst.edu/~das/hmsc/doc>. He was asked to e-mail the address to everyone.

Question: How do you do it?

Answer: Every time an e-mail session goes so does the data. The data is grabbed using essentially an ftp. Toby commented that now that he has seen SeaNet, he has different ideas.

Question: Is there a problem with scientists not wanting their data to go ashore for anybody to use?

Comment: Specialized high-density data are not appropriate, but standard meteorological data is more like public domain, as is very low-resolution data. OSU just established the shore link, so they have not had to deal with this potential problem. This will need to be discussed with the chief science prior to each cruise.

Question: What is the size of the data and how do you transmit it (do you use Inmarsat B?)

Answer: 90% of the data transmitted is over cell phone. The size is stripped down to about 40K.

A request was made for next year's RVTEC meeting to have a session on radio modems.

**Winch Instrumentation Recording – Bill Fanning (URI) -** Bill Fanning reported on a winch instrumentation recording system that they have developed at URI. He said that they (URI) decided to record all of the winch operations because of interest in wire tension. Data are logged and passed around ship (R/V *ENDEAVOR*). He showed a record of one

day's worth of data, about five casts. Three graphs show wire out, wire velocity, and tension. The Captain is very interested in this data and gets very upset if someone accidentally turns it off.

Question: What about winch operator?

Answer: He sees the standard Metrox LED display.

Question: What is it exactly that you are recording?

Answer: One record is a time stamp plus the three parameters (wire out, wire velocity, and tension).

Question: There is an apparent drift between casts, what is this?

Answer: The system only records data when the winch moves. The discrepancy is an artifact of plotting.

Question: Do you have trouble with calibration of tension and line out?

Answer: You don't even know if it needs calibrating until you look at the data. Recording raw data is only a start. Comment. It is difficult to get a good measurement of wire tension.

**Data Network Modules -** Rich Findlay was due to give talk on Data Network Modules, but unfortunately duty called him to take a trip on his 137,000-ton luxury research vessel.

***End Show and Tell Session***

**Base Levels of Technician/Instrumentation Support on UNOLS Ships** - John Freitag and Sandy Shor had a discussion over breakfast. They had an idea to set up a "One Time Committee" to address base levels of technician/instrumentation support on UNOLS ships. It will be the Level of Service Standards (LOSS). The committee will primarily correspond by e-mail. Recommended committee members include Jean Captain (LLO/UMD - small ships), Marc Willis (OSU - medium size ships), Barrie Walden (WHOI, large ships), and Woody Sutherland (SIO, large ships).

Question: Are you going to circulate Committee comments and suggestions on e-mail and on the RVTEC web site?

Answer: Yes.

## RVTEC Subcommittee Reports:

**Online Resources Subcommittee - Tom Wilson's reported on On-Line Resources.** Officially, the UNOLS web site is <http://www.unols.org> located on a commercial hosting service (Verio) at $25/month. It is a common and permanent portal, has high reliability, simple browser based management tools, and low cost. Some functions are to remain on URI and Moss Landing Marine Laboratories' servers. There are space limitations on the Verio host and legacy applications are already running fine where they are. The RVTEC site is to remain on the SUNY server. The portal is <www.unols.org/rvtec> it has no space limitations, multiple authors, and a toolbox. Tom reported that he is still hosting the site on Pentium/10 base T/Win95.

The software Tom was waxing eloquently about last year, SmartDEsk really went completely out of business. The web server he is now using is Apache <www.apache.org>. Tom is still using HoTMetal.pro for page development <www.softquad.com>. Now Linkbot is getting expensive. His Action Plans are Under Construction (always), and he is developing tutorials. The RVTEC site features on the front-page information on all RVTEC projects and subcommittees. Tom asked the entire committee to send any URLs that they would like to see referenced on the site. He is making a threaded, browseable archive of RVTEC mailings. Dale made the comment that he thought things were being too spread out and dispersed. Annette pointed out that we wanted to keep everything on line for at least six months. There were bookmarks in place. We will start consolidating as things become more settled down. Annette provided the names of Sara Anderson and Laura Dippold as the webmasters. We have a feedback form on-line and everyone is encouraged to provide comments. Tom commented that he thinks the site looks very nice.

**Data Interchange Subcommittee (NetCDF) - Steve Poulos/Bill Martin**
Steve Poulos could not attend the meeting but he sent a written report by e-mail. John Freitag read Steve's e-mail (it is included as ***Appendix XI***). Steve encouraged everyone to send him data sets for conversion to NetCDF. Tony Amos reported that he sent Steve data sets from his underway system. Tony commented that Steve did a nice job with his input from his underway system with many variables.

**Winch and Wire Subcommittee** - There was no report from the Subcommittee since the chair, Rich Findlay, is out to sea.

Jack Bash (URI) is in the process of editing the update to the Winch and Wire Handbook. The results of the 1999 Winch and Wire Symposium as well as the original authors of the document provided input for the update. Annette says that he hopes to have it out by end of the year. Marc Willis reported from INMARTECH that our European colleagues are moving ahead rapidly with new technology in this area.

**Training and Education Subcommittee** – The report was given by Bill Martin (UW). He is developing a web site for Training. By end of the month it should be up and running. Information about the site is contained in ***Appendix XII***. The URL for the website is <http://kilroy.msrc.sunysb.edu/rvtec/training/Welcome.htm>. The site is being developed to provide the marine technicians a central location to find training courses. He wants input as to what lengths we should go with the training effort. Should the show and tell presentations be posted on this site? Bill is willing to maintain the site and post whatever this group wants. Sandy Shor (NSF) commented that there is a fair bit of information immediately available on courses. Bill will contact vendors to see if they plan to conduct training sessions.

Question: Would it be appropriate to post the vendor courses these on site?

Answer: Yes.

Question: Is it possible to publish courses on a web site for those who may be at sea or unable to make it to a course?

Answer: Some of the expertise for the field resides within the institutions and needs to be shared throughout the community. Sandy indicated that there is agency interest for this and can provide support to make this happen. Sandy also indicated that sailing on other ships is a way of cross training that should be encouraged.

Bill Martin indicated that the site would be up by the end of the month. He encouraged everyone to provide input. It was suggested that a list be made from inquiries for training needs. Bill would be willing to locate information on training on various marine related subjects and post them on the web. Bill needs input from us!

**Break**

**Nominations and Election of RVTEC Chair** - John Freitag reminded the meeting that only official UNOLS Institution representatives had a vote in the election, and only one vote per institution is permitted. The nominations for Chair are: Bill Martin (UW), Tony Amos (UTMSI), and Dale Chayes (LDEO). Dale Chayes was elected the new RVTEC Chair. (Applause)

**2001 RVTEC Meeting Plans -** There followed a discussion on the 2001 RVTEC meeting site. It has been recommended that RVOC and RVTEC have a joint or concurrent meeting. It was commented that their meeting style is different from RVTEC's. How would one conduct a concurrent session? Sandy commented that this would be economical for the funding agencies. RVOC attendees are usually Marine Superintendents. RVOC is in favor of a joint meeting. The cost saving is not much, but the dialog is a plus. Annette suggested that a one-day of overlap of the two groups would be beneficial. Some items of interest to both groups include ISM, winch and wire, and quality of service. RVOC will meet in Newport, RI in 2001. Annette suggested that RVTEC meet in Rhode Island at the Graduate School of Oceanography, URI. The two groups could easily get together for a joint day. Arrangements could also be made for a joint social on one of the evenings.

Question: How do RVOC make their meeting site decisions?

Answer: They schedule their meeting locations two years in advance and alternate the site each year from East to West Coast.

Dale then asked the meeting for a show of hands for a joint RVOC/RVTEC meeting in 2001. There were 14 for a joint meeting and four opposed. John Diebold (LDEO) suggested a one-day overlap. Tom Wilson (SUNY) made a suggestion to have plenary session and one social event for informal networking (a big part of RVTEC). Bob Knox (SIO) suggested that the Chairs of RVTEC and RVOC get together via email to work out the details.

***At this point Dale asked the meeting to thank John Freitag for his four years of service as Chair to RVTEC (applause). John said he thoroughly appreciated the opportunity to serve as Chair.***

**OTHER Business**:

Toby Martin (OSU) asked who was interested in cellular phone communications. A show of hands indicated much interest in data exchange via cell-phone. Tom Wilson suggested Novatelwireless.com - Wireless IP cell phone connection.

Tony Amos will be giving a lecture at the Lamont Hall in the afternoon (about his beach surveys in Texas.

**Data Logging - Dennis Shields presented a report on NOAA's Shipboard Scientific Computer System (SCS)** His presentation is included in ***Appendix XIII.*** The system is designed for collecting and storing underway data. The latest version can be run on Windows NT (and also Windows 2000). It uses a Digi Acceleport PCI serial card and is now going to use USB ports. Presently it is installed on several NOAA ships. They are forming partnerships with a number of other national and international organizations. These partnerships have resulted in additional installations of the system. SCS is installed on two UNOLS vessels, *ENDEAVOR* and *WEATHERBIRD II*. Additional information about SCS can be obtained from Dennis Shields and David Benigni.

The meeting Action Items are summarized in ***Appendix XIV***.

***The 2000 RVTEC Meeting adjourned at 1200 hours.***

# Appendix I

# RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE
## OCTOBER 18,19,20 2000
## Lamont-Doherty Earth Observatory
## of Columbia University
## Palisades, New York

**Directions to the LDEO Campus are posted at:**
**http://www.ldeo.columbia.edu/facilities/campus_map/**

***Wednesday, October 18, 2000:***
***Monell Auditorium***

**8:30 am Informal Discussion Period**

**9:00 am Meeting Called to Order**

- Welcome by L-DEO
- Introductory Remarks by John Freitag, Chair
- Intro to Breakout Sessions – Dale Chayes

**9:15 am Participant Introductions**

**9:30 am Accept Minutes - Accept the 1999 RVTEC Annual Meeting Minutes**

**9:35 am Agency Reports:**

- NSF
- ONR
- NOAA
- NAVO
- USCG

**10:00 am Break**

**10:20 am UNOLS Reports**

- Summary of UNOLS Activities
- Report on Quality of service issues, Mike Prince, UNOLS Executive Secretary
- RVTEC liaisons with UNOLS Subcommittees:
  - FIC
  - AICC
  - RVOC

**11:20 am USCGC HEALY Science Systems Testing -** John Freitag will report on the outcome of the Science Systems Testing program on the USCGC HEALY and plans for the future.

**11:30 am ADCP Update on Phased Array ADCP systems –** John Freitag will provide an update on

the status of testing the Phased Array Technology.

**11:45 am SeaNet Update -** Discussion on the installation and use of SeaNet Systems on UNOLS vessels, future plans for the SeaNet system and the present state of the art on satellite connectivity. (Dale Chayes/Andy Maffei)

**12:00 pm Lunch**

**1:00 pm Report on ISM issues and discussion -** Bill Martin (UW) and Paul Ljunggren (LDEO)

**1:30 pm Report from MATE** on activities during the past year and future directions.

**1:45 pm Discussion of Base levels of Technician/Instrumentation support provided on UNOLS ships -** Moderated by Sandy Shor, NSF

**2:45 pm Break**

**3:00 pm High speed data communication**

Conducted at L-DEO Lab facility (Dale Chayes)

***5:00 pm*** **Adjourn Day 1 Business**

**Evening: Dinner/Activity (to be announced)**

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***Thursday, October 19 ,2000***

**8:30 am Informal Discussion**

**9:00 am Call to order and announcements**

**9:15 am Report from INMARTECH 2000** by Tony Amos and other attendees.

**9:30 am Break out sessions:**

- Workshop session on 0.322 electrical wire termination techniques
- Salinometer techniques – Hands on interactive session with Bruce Huber (LDEO)
- SeaNet Tutorial Session

**12:00 Noon Lunch**

**1:30 pm Break out sessions:**

- Workshop session on 0.322 electrical wire termination techniques (Repeat)
- SeaNet Tutorial Session (Repeat)

**4:00 pm Group discussion of Break out sessions, specific points**

**5:00 pm Adjourn Day 2 Business**

***RVTEC Dinner -October 19, 2000***
**The River Club, Nyack, NY**
**Please RSVP John Diebold at marscico@ldeo.columbia.edu**

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***Friday, October 20, 2000***

**8:00 am Informal Discussion**

**8:30 am Data Logging**

- NOAA/SCS user group session and presentations – Dennis Shields, NOAA
  - Demo of latest NOAA SCS software
  - Discussion of use of SCS on UNOLS and USCG ships

**9:30 am Show and Tell session**

- OSU Data display system – Toby Martin, OSU
- Winch instrumentation recording – Bill Fanning, URI
- Data Network modules – Rich Findley

**10:00 am Break**

**10:20am Subcommittee Reports**

- Online Resources Subcommittee; Tom Wilson
- Data Interchange Subcommittee; Steve Poulos/Bill Martin
- Wire and Cable Specifications Review Subcommittee; Rich Findley
- Training and education committee; Bill Martin

**11:40am New Business**

- Nominations and Election of Chair
- Selection of 2001 meeting site

***Adjournment***

# Appendix II

# RVTEC Meeting - October 18-20, 2000

**Please check off your name if it appears below and make any corrections if necessary. If your name does not appear on the list, please add it at the bottom of the list.**

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Yagiela | Andrew | U of MI | 1700 Geddes #L-14 | Ann Arbor | MI | 48104 | 734/2228371 | | ayagiela@umich.edu |
| | Zettler | Erik | S.E.A. | P.O. Box 6 | Woods Hole | MA | 02543 | 508/5403954 X29 | | czettler@sea.edu |

# Appendix III

**Report to UNOLS RVTEC Meeting, October 18-20, 2000**
**NSF (Division of Ocean Sciences)**

Alexander Shor, Director
Oceanographic Instrumentation and Technical Services Program

## 2001 NSF Budget:

Actual program budgets for FY2001 are not resolved yet, and that process normally isn't complete until early next year. However, as of 10/13/00, it appears that the overall NSF budget has been approved, and it includes a significant increase (13.6% above FY'00 overall for NSF). The NSF budget request for FY'01was a very ambitious one, asking for 17.3% more than FY'00 overall, and it included even higher percentage increases for Ocean Sciences (22.2%) and the section of Ocean Sciences Division, Oceanographic Centers and Facilities (27.3%), that supports ship and other facilities operations. Thus while we can't say at this point *precisely* what the FY2001 budget will be for support of ship operations, technical services and ocean instrumentation, we can say that we are **much more optimistic** about the outlook than we were last year at this time. Based on our plans and recent budget actions by Congress, we expect to extend our efforts to improve the capabilities and quality of support available to NSF-funded researchers using the UNOLS fleet.

## Personnel Changes at NSF:

2000 has been a year of transition in Division of Ocean Sciences, including changes at all levels in the Division and in leadership of the Geosciences Directorate above us, where Assistant Director Margaret Leinen replaced Robert Corell as AD/GEO in January. Dr. Leinen has, in addition to her responsibilities for Geosciences, a special cross-directorate mandate (new) for coordination of all environmental sciences programs, which includes the new Biocomplexity initiative that has several major cruises on UNOLS ships over the next three years (and more coming, we expect). Our Division Director, G. Michael Purdy, submitted his resignation effective November 30, 2000, to accept the position of Director at Lamont-Doherty Earth Observatory. We anticipate that an Acting Director will be appointed very shortly, and that a search will take place over the coming months, hopefully culminating in selection of a new Division Director by mid 2001. Our Section Head of many years, Donald Heinrichs, retired at the end of 1999, and was replaced by Michael Reeve, formerly Head of the Ocean Sciences Research Section here; the search for Mike's replacement in the Research Section is nearing completion. Larry Clark has been serving in the Acting Section Head capacity until that effort is complete. Also, sometime later this year the research section will be divided into two parts, with a search expected to begin shortly for a Head for the new section, which will include the Marine Geology & Geophysics and Ocean Drilling programs. Within our Facilities group, we have had an unfilled Program Director position since the late 1998 retirement of Richard West, and a search that has been underway for more than a year has finally concluded successfully with selection of Dr. Linda Goad of University of Michigan. We understand Linda will join us in mid-January, and she will work closely with Dolly Dieter on Ship Operations, Shipboard Equipment, and other UNOLS-related responsibilities. We anticipate some further changes in structure and assignments over the coming months as we realign into three sections, but there is unlikely to be much direct impact on those activities that relate to support of the UNOLS fleet operations.

## CY2000 and CY2001 UNOLS Ship Schedules

Perhaps more than many years, some uncertainties remain in schedules for CY2001, and these have had particularly big impact on the large and intermediate ship schedules in the Pacific. Though clearly a problem for those directly impacted, one more optimistic view of the scheduling difficulties this year is that is shows increased demand, and continuing growth in use of UNOLS ships by NSF and Navy groups, especially. From NSF's viewpoint, this could be considered surprising, inasmuch as the programs being scheduled for '01 were supported from FY2000 funds, and that was a year of almost no overall growth for our Division. It implies, therefore, that we supported more seagoing programs than in previous years as a percentage of our awards, and with a significant increase in support expected for FY'01, there is reason to be optimistic about continued growth in use of UNOLS time by NSF again in '02 (though no assurance, of course). So overall, we're pleased with the direction things are going, and we're making efforts to look ahead to be sure the necessary facilities support and improvements are in place to support the research. If there's a downside, it's that the pressures on the scheduling process are stressing the scientists and ship operators pretty heavily this year, and that may continue.

**Various Instrumentation Issues**

Robotic Drilling Workshop – Taking place at Texas A&M University November 3-4, 2000, hoping to define scientific and technical requirements for drilling systems, and especially those that can be handled from UNOLS vessels. Bill Martin of UW will represent RVTEC; I will be there as well. Convenor is Will Sager of TAMU; Steering Committee also includes Henry Dick (WHOI), Paul Johnson (UW) and Patty Fryer (Hawaii).

Acoustic Doppler Current Profiler test results – recent tests by Frank Bahr of the new phased array ADCP (75 kHz, RDI) compare these data with 150 kHz narrow band RDI data collected on the same cruise. Data are available on web site at http://matisse.whoi.edu/adcp/oceanus_os/adcpcomp.html and Frank has indicated if anyone would like a CD-ROM of the data, he can provide them on request. You can reach him by email at fbahr@whoi.edu. In a similar vein, Eric Firing has recently sailed with a 38 kHz RDI PA-ADCP on the Japanese vessel Kaiyo, and will have more info on that later; he was generally pleased with its operation, and has recommended that this system be added to the inventory of instruments on the AGOR-26 presently being built for U of Hawaii. For more info from Eric, you can reach him directly at efiring@soest.hawaii.edu. And finally, there is being planned a further test of the new 75 kHz on R/V Endeavor – for status and details, contact John Freitag at jfreitag@gso.uri.edu.

U.S. Marine Seismic Reflection Acquisition Needs for the Next Decade– Report from the workshop held last fall at Scripps are available by contacting co-convenors Tom Shipley (tom@utig.ig.utexas.edu) at University of Texas or Greg Moore at University of Hawaii (gmoore@soest.hawaii.edu). It is also available online at the Geo-Prose web site, http://www.geo-prose.com/seis/seis.html.

**Federal Fleet Plan:**

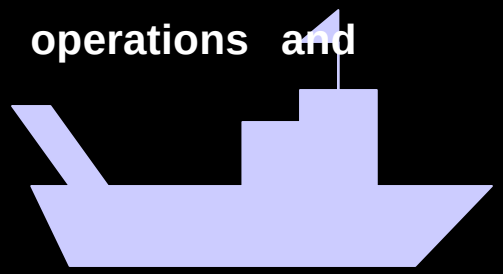
In coordination with ONR and NOAA, NSF is involved in developing a plan for future federal fleet requirements, specifically ship replacement priorities, technology upgrades and future scientific needs. This effort, which was called for last year in the Academic Fleet Review presented to the National Science Board, is intended to serve as a guide in replacing the aging vessels in UNOLS, and to assist in preparing a coordinated voice for the federal agencies involved in ocean sciences research in the area of budget development for building new research ships.

**Technical Services Program: Quality of Service and Training**

The Oceanographic Technical Services Program will continue to emphasize personnel training and quality of service in 2001, continuing efforts begun last year based on recommendations of the Academic Fleet Review. As part of this effort, we are beginning a dialogue at this RVTEC meeting regarding standards of service in the UNOLS fleet, and what role RVTEC might have in helping define them. In particular, we seek to get RVTEC to comment on appropriate levels of staffing for support of basic services, as well as minimum and/or optimum shared-use instrumentation capabilities that should be available on UNOLS research vessels (of various classes).

# FY 2001 OCFS Priorities Identified in Budget Request

- **Continued support for the academic research fleet to ensure that required ship time and capabilities are provided to satisfy merit reviewed research project requirements for NSF-sponsored studies;**
- **Enhancement of technical and shared-use instrumentation support for research projects to reduce financial and management burdens on research project awards to sea-going scientists;**
- **Continued maintenance and ship-improvement programs to provide a modern and efficiently operated academic research fleet for effective support for a diverse set of research projects from all fields of oceanographic and environmental sciences; and**
- **Increased support for quality improvement activities in operations and technical services programs.**



# FY 2001 Budget to Congress

**NSF Requested Overall 17.3% Increase**

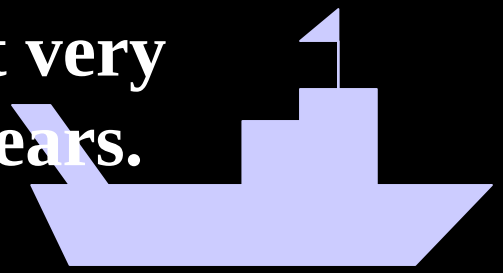
**Ocean Sciences Request +22.2%**

**Facilities Request +27.3%**

**NSF Plan is to double budget in 5 years.**

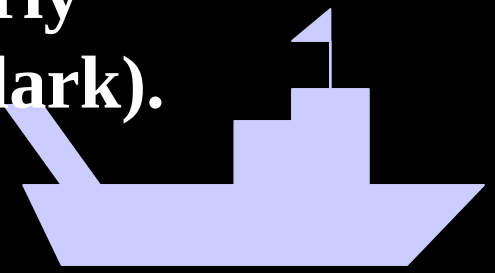
**10/13: Congress approved overall NSF +13.6%, largest increase ever.**

**Details of Ocean Sciences budget to be resolved in coming weeks, but very positive compared to recent years.**



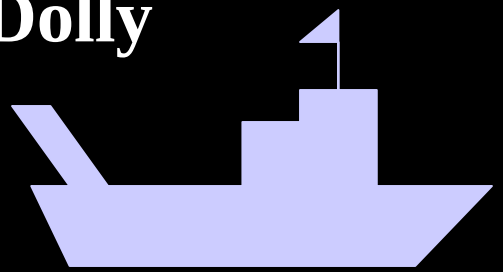
# Recent NSF Personnel Changes

- Dr. Margaret Leinen joined NSF 01/00 as Assistant Director, Geosciences.
- Dr. G. Michael Purdy resigned as Division Director, Ocean Sciences, effective 12/00 (becomes Director, LDEO). Acting DD TBD.
- Former Research Section Head Michael Reeve replaced Donald Heinrichs as Head, Facilities Section, 01/00.
- Research Section Head search nearly complete (Acting SH Larry Clark).



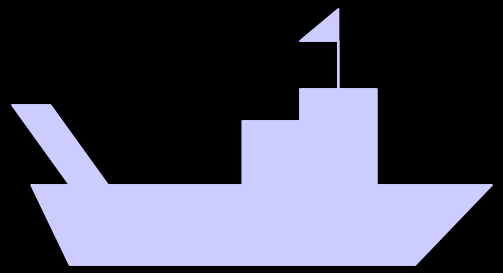
# Recent NSF Personnel Changes, Cont'd.

- New Section (MG&G + ODP) being formed, Search for Head to begin shortly. Some personnel and program redistribution, but little effect expected on ship-related activities.
- Linda Goad, University of Michigan, coming aboard as Program Manager 01/01 to work with Dolly Dieter in Ship Operations.



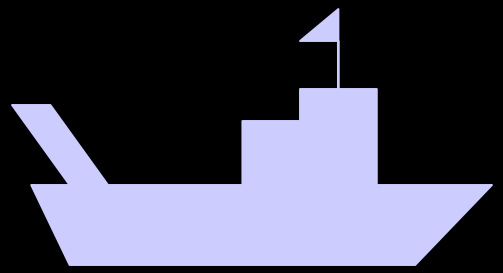
# 2001 UNOLS Ship Schedules

- Ship Scheduling process difficult due to conflicting schedules, overall increase in demand over 2000.
- Especially difficult for large and intermediate ships in Pacific.
- Positive side is continued increase in NSF ship use, up from 2000, despite essentially flat budgets in NSF research programs.



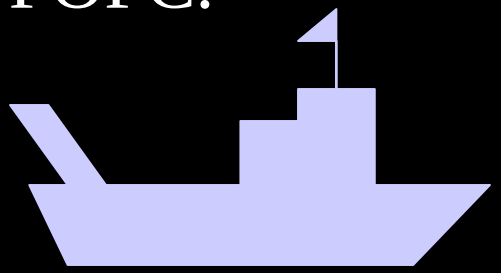
# Various Instrumentation Issues

- Robotic Drill Workshop.
  - To address needs for small drills
  - November 3-4, 2000, Texas A&M.
- Acoustic Doppler Current Profilers
  - Recent tests of Phased Array RDI systems now becoming available.
- 1999 Seismic Reflection Workship.
  - Report now available.



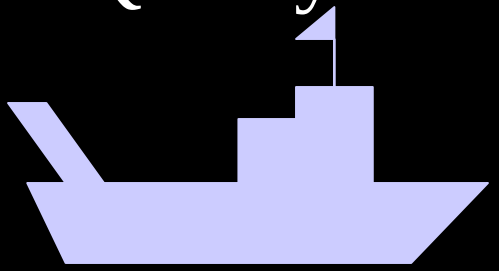
# Federal Fleet Plan

- A Federal Interagency Policy for the long-term management of the National Academic Research Fleet, called for in Academic Fleet Review 1999.
- A blueprint of the fleet for the next 20 years based on past utilization and science requirements and future science trends and technology visions.
- To be used as a compass for Federal Government Agencies, Academia and Congress for guiding the fleet into the 21st century.
- To be approved by NOPP NORLC via FOFC.
- Plan expected by mid-2001.



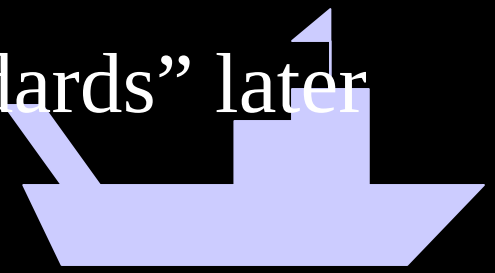
# Fleet Plan Goals

- Distribute fleet resources geographically to best support science needs and optimize access to perform ocean research.
- Provide state of the art surface ships for performing ocean science research at sea.
- Maintain an efficient fleet capable of meeting future science demands.
- Improve Ship Utilization Rates and Quality Control.



# Quality of Service, Training

- Oceanographic Technical Service Program will continue to emphasize Quality of Service and Training issues in evaluation of operations and proposals, as identified by Academic Fleet Review in 1999. Important elements of this include
  - adequate attention to technician training, and
  - definition of levels of service that customers should expect.
- Plan discussion on “Service Standards” later in the meeting.



# Appendix IV

# UNOLS/NAVOCEANO

RVTEC Meeting October 2000


**Naval Oceanographic Office**

# What We Have Achieved

- **Total UNOLS Ship Days - 1250**
- **Ships Used - 15**
- **Accomplishments:**
  - **CORE/GRABS -1400/600**
  - **CTD - 6500**
  - **XBT - 4000**
  - **BATHYMETRIC SURVEYS, SIDE-SCAN IMAGERY, ADCP, SUBBOTTOM PROFILES**
  - **TEN UNOLS INSTITUTIONS EMPLOYED**
- **Beneficiaries**
  - **NAVOCEANO**
  - **NUWC-Newport**
  - **SeaBased Weapons and Advanced Tactics School**
  - **COMINWARCOM**
  - **SCORE RANGE**
  - **Northern Gulf of Mexico Littoral Initiative**

# CY2000 Activity

- **205 Ship Days**
- **Northern Gulf of Mexico Littoral Initiative -** LUMCON
- **Narragansett Bay Ranges -** URI
- **South Florida Test Range -** UMiami
- **Onslow Bay -** Duke
- **SCORE Range -** Scripps
- **COMINWARCOM Western Gulf of Mexico -** UTEX
- **Central California Physical Oceanography -** NPGS/SIO

# CY2001 Plans

- 310 Ship Days
- South Florida Test Range - Swath Bathymetry
- Mayport - Side Scan, Swath Bathymetry, Acoustics
- SCORE Range - Propagation Loss
- Fleet Battle Experiments
  - Camp Pendleton - Side Scan, Swath Bathymetry
  - Panama City - Side Scan
- Onslow Bay - Swath Bathymetry, Side Scan
- Northern Gulf of Mexico Littoral Initiative - Phys Oceano
- Hawaii - Bathymetric Surveys
- Central California - Physical Oceanography

# Appendix V

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

- Agency plans and budget forecasts (agencies)
- USCGC Healy (J.Freitag)
- ISM and implications (Paul Ljunggren)
- Quality of service (Mike Prince)
- Basic tech support (Sandy Shor *et al*.)
- Future fleet renewal (FIC)
- *Scheduling*

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

- Prior years of underutilization of big ships (5 Navy, 1 NSF)
- Layups, pressure toward retirements
- ONR/Navy concerns, actions
- New “customers” (NAVO, LWAD)
- Multiple sponsors, multiple constraints
- Current-year “overbooking” and constraints - LWAD times, ROVs

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

- Delayed resolution (July *vs.* Oct. (?))
- One-year or trend?  (AGOR 26)
- Similar crunch could happen with existing fleet or with fewer ships
- MSR clearance aspects

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

- Communicate problem(s) and tradeoffs to PIs, seek feedback
- Criteria for prioritizing, deferring - needs consensus (not just UNOLS)
- Recognize efforts of schedulers, agencies toward best, if imperfect, result

# Appendix VI

# UNOLS evaluates approaches for improving Quality of Service

The UNOLS Council has recently embarked on an initiative to investigate ways to improve the quality of service provided to marine science by the U. S. Academic Research Fleet. Now it is time to bring the rest of the community into the process.

# What has stimulated this Quality of Service initiative?

# A comprehensive external review of the U.S. Academic Research Fleet was conducted in 1998-99.

- *Fleet Review Committee appointed by NSF's Assistant Director for Geosciences.*
- *Requested by the National Science Board as a pre-requisite to re-authorizing the Ship Operations Program at NSF.*

**Their 1999 Report provided the community with a careful assessment of the current and future research vessel requirements and the overall management structure for the fleet. This report is referred to as the Academic Fleet Review (AFR)**

# The committee found:

- *U.S. marine scientists were provided excellent access to the sea through the centralized scheduling and coordination of UNOLS.*
- *User satisfaction with the current system was very high.*

They also found some areas of concern.

These included:

- ***the complexity of cruise scheduling.***
- ***some lack of consistency between institutions with regard to conventional shared-use equipment and services.***
- ***concern about the acquisition, use, and maintenance of increasingly sophisticated and expensive equipment which is not available or maintained in a uniform manner throughout the fleet.***

# Also…

- *There was some concern that some scientific users, particularly those from non-operator institutions, felt they had little recourse for action if a ship, its equipment, or technical staff failed to meet the scientific requirements of their specific project*

# The Academic Fleet Review states in the section containing recommendations:

- "*Several recurrent issues such as improvement in the scheduling process (especially abrupt changes), equal support of non-operator researchers, quality of shore support, and maintenance/support of installed and pool equipment need to be worked on and improved. “*

*“ The orientation towards a continuous improvement program and a formal quality control program (looking toward the best industry training and practices) needs to be infused into the entire UNOLS and operator system.”*

These observations of the Fleet Review Committee were summarized within two of the eight final recommendations in the 1999 Academic Fleet Review.

*4. The funding agencies and UNOLS need to support fleet improvements by enhancing quality control, expanding training of personnel in technical and safety procedures, and developing even higher standards for shared use facilities*

*7. There is a need for a strong, continuing program of new technology introduction; steady improvement of existing facilities and technologies; greater, continuing attention to quality control and safety; and a more systematic, standard approach to maintenance, renovation, upgrading, and replacement.*

*In four years, the Ocean Science's Facilities Section will have to show what action has been taken to implement the recommendations in this report!*

*This is one reason why we have a "Quality of Service" initiative.*

**The other reason is because UNOLS is a quality improvement program.**

*It's what we do and why we exist; to provide the highest quality facilities possible for marine science research and education.*

**So… We are not talking about starting a totally new "Program"**

*We are talking about finding ways to improve what we are already doing!*

UNOLS was created in 1972 to ensure that scientists had access to safe, effective, sea-going platforms for ocean research, regardless of whether or not their home institution operated a vessel in the academic fleet.

What is the present system for quality control and improvement within UNOLS?

- *UNOLS Committees and Council*
- *Post Cruise Assessments*
- *Inspection Program*
- *Ship Operations Committees*
- *Involvement of Scientists at operating institutions as administrators or advisors.*
- *Direct feedback by ship users to Ship Operators and Technician groups.*

# UNOLS Committees

- *Council*
  - provides oversight, new direction and assessment of overall program.
- *Ship Scheduling Committee*
  - Ensures access to the fleet by all and coordinates schedules for optimum utilization of the fleet.

- *Fleet Improvement Committee (FIC)*
  - Plans for the future of the fleet
  - examines way to improve the capabilities of the current fleet
- *Deep Submergence Science Committee (DESSC) and Arctic Icebreaker Coordinating Committee (AICC)*
  - Act like Ship Operations committees for the National Facility at WHOI and for the Coast Guard's Icebreakers

# Research Vessel Operators Committee (RVOC)

- *RVOC predates UNOLS and has always been a forum for sharing ideas, technologies and policies that help to bring about better and more uniform service to science.*
- *Many programs and group efforts have been undertaken through RVOC and quality of service will be no different.*

# Research Vessel Technical Enhancement Committee (RVTEC)

- *Modeled after RVOC, this committee promotes the sharing of knowledge of new technologies, procedures, policies and training that directly serves the needs of scientists using our fleet.*
- *This committee is where a large part of the quality of service issues will be addressed.*

# A partial list of what you are already doing:

- Standard data formats and media.
- Improved shared use equipment specifications, calibration and operation.
- Personnel qualifications and training for marine technical staff.
- Improved communications to and from ships and between scientists and operators.

# Post Cruise Assessments

- *Two forms are available for Chief Scientists*
- *Online form at:* *http://www.gso.uri.edu/unols/pcarform.htm*
- Older paper form still in use.
- Submission rate is around 60%
- Very few reports contain significant constructive criticism.
- Form for Captains and Technicians only used by Captains. Need input by all!

# Inspection Program

- *Auditing system that should help to ensure uniform quality of operations, equipment and safety.*
- *Independent assessment of condition that should verify the effectiveness of other efforts.*
- *Contract for re-implementing the program is needed.*
- *Input from Technicians and operators on how the program is structured would be helpful.*

# Ship Operations Committees

- *Committees established at operating institutions to oversee and advise on operation of Research Vessel.*
- *May contain users from other institutions.*
- *Not all institutions have them.*
- *Recommended vehicle for planning improvements and replacements.*
- *Good vehicle for user input on operations.*

# Institutional Involvement & Direct Use Input

- *This is the cornerstone of making sure we provide the facilities and services required by the scientific users of the fleet.*
- *Support for quality research vessel operations and technical services needs a high profile at operator institutions.*
- *There is no substitute for personal communication with the scientific users of our vessels.*

# What more do we need to do?

- *Some suggestions from the report directly applicable to RVTEC*
- *Uniform shared use equipment & Technician support:*
  - Standards for base level of equipment.
    - on your agenda for today.
  - equal standards for technical support.
  - common charges (for any that are paid directly)

- *Increased reliability, quality of data and performance for shared use equipment:*
  - fleet wide quality based system to ensure proper logistical and technical support at each operating institution.
  - adopt a modern quality control system.
  - increased education and training of personnel.
  - rigorous evaluations of operator performance.
  - budget support for the quality program and training.

- *Increased shared use of specialized systems that have wide application.*
  - Users want expensive and complex systems to be provided by operators.
  - Eliminate duplication of equipment purchases by individual PI's.
  - Continue to expand the concept that some of these systems are shared between several operators. Supported by one operator?
  - Ensure availability, reliability and quality of data from these systems for all users.

- *Take advantage of slack periods in schedules for:*
  - Equipment overhaul, upgrade and replacement.
  - This requires advance planning and budgeting.
  - Technical training and education.
  - Rotation to other institutions or support for specific projects that improve the fleet or your own vessel operations.
  - Identify and implement improved technologies and equipment.

# Improved feedback system

- *This is a UNOLS wide action. Current forms created by RVOC.*
- *Need to improve the type of information and feedback that we use to evaluate our performance and make improvements.*
- *Need to increase participation in the process by users and providers of services.*
- *Improve the feedback to users so that they feel that their concerns are being addressed.*

# What's Next?

- *Identify a formal quality improvement or control program for the fleet as a whole.*
- *ISM or ISO 9002?*
  - ISM is a safety and pollution control program that is mandatory for some and will probably be the norm for all. It is not a quality program.
  - ISO 9002 is a quality assurance program but may be better suited for individual operators than it would be for the UNOLS organization.

# What other programs are there?

- *Six Sigma*
  - Elimination of defects to a level that is near perfection. GE program that AFR committee Chair Roland Schmitt was involved with.
- *Demming Award*
  - Japanese business award program for quality organizations.

- *Malcolm Baldridge National Quality Award*
  - U.S. Equivalent to Demming Award.
  - Oriented to business and educational organizations.
  - Established by Congress and administered by the Department of Congress.
  - Criteria can be used as a guide for a continuous quality improvement program without competing for the award.

# NSF's Innovation and Organizational Change Program

- *UNOLS Council heard from program manger Mariann (Sam) Jelinek.*
- *UNOLS is a complex organization and it would be a challenge to develop a formal program that cut across the many institutions and agencies.*
- *Researchers in that program may be available to help us.*

# We need your help

- *Technicians are an integral part of the service provided to science.*
- *Your input on improving the quality of service at your own institution and across the fleet is invaluable in developing a program that makes a real difference.*
- *Participate in surveys, committees and programs that will continue our efforts to improve service.*

# Closing Thoughts

- *Quality of Service means satisfying the customer which in our case is "Marine Science"*
  - Scientists, PI's, Chief Scientists, Science Technicians, and students.
  - Funding Agencies and Program Managers.
  - Taxpayers and the public.

# Quality of Service means a quality organization.

- *Meeting or exceeding the expectations of the customers.*
- *Meeting the expectations and needs of employees, staff, crew and EVEN technicians.*
- *A source of satisfaction and pride for everyone involved.*

# UNOLS is made up of many individual organizations

- *This may mean that we have several levels of quality management and improvement programs.*
- *These should be integrated and complimentary as much as possible.*
- *UNOLS as an organization should ensure that the overall goal of "Quality Service to Marine Science" is the prevailing culture.*

# Appendix VII

SeaNet

# Extending the Internet to the Oceanographic Fleet

RVTEC Meeting - Oct. 18, 2000

# SeaNet Partners

- WHOI - Andrew Maffei, Steve Lerner
  - Scott McCue, Cindy Sellers
- LDEO - Dale Chayes
  - Richard Perry
- Geo-Prose - Ellen Kappel

# Current Status

- SeaNet installed on six vessels (Knorr added under separate funding)
- Operations and support continue for at least one more year
- Near real-time ship status is available via http://www.seanet.int/. Shows ship position and SATCOM statistics from transfers.
- Now close to one gigabyte of (compressed) files transferred.

1999 SeaNet BHSD Usage Summary per Ship

| SCN | Entries | Int | Batch | Elapsed | Bytes |
|---|---|---|---|---|---|
| ATL-SCN | 223 | 7 | 216 | 08:38:16 | 81.4MB |
| EWI-SCN | 202 | 43 | 159 | 17:25:03 | 125.4MB |
| MEL-SCN | 20 | 4 | 16 | 00:34:40 | 6.0MB |
| PEL-SCN | 202 | 34 | 168 | 07:54:44 | 61.6MB |
| SEW-SCN | 326 | 9 | 317 | 07:13:48 | 22.2MB |
| Total: | 973 Transmissions, 97 Interactive, 876 Batch, 296.6MB | | | | |

2000 YTD as of 05/30/2000 SeaNet BHSD Usage Summary per Ship

| SCN | Entries | Int | Batch | Elapsed | Bytes |
|---|---|---|---|---|---|
| ATL-SCN | 396 | 24 | 372 | 21:22:48 | 227.7MB |
| EWI-SCN | 108 | 31 | 77 | 05:39:00 | 30.5MB |
| MEL-SCN | 129 | 2 | 127 | 15:13:21 | 140.3MB |
| PEL-SCN | 167 | 77 | 90 | 07:46:10 | 48.6MB |
| SEW-SCN | 823 | 1 | 822 | 22:56:20 | 50.0MB |
| KNR-SCN | 53 | 9 | 44 | 00:58:14 | 3.9MB |
| Total: | 1676 Transmissions, 144 Interactive, 1532 Batch, 501.0MB | | | | |

Note: Bytes listed in the above tables are the actual compressed data bytes transferred over the Inmarsat BHSD communication link. The number of bytes of user-level data transferred (uncompressed) would be considerably higher.

# Example Uses of SeaNet

- Email Transport
- Shoreside Website Maintenence
- Video Transfers
- Regular satellite image service by operators
- Large file transfer
- Ship/Shore scientist collaboration and data analysis

# Recent Changes

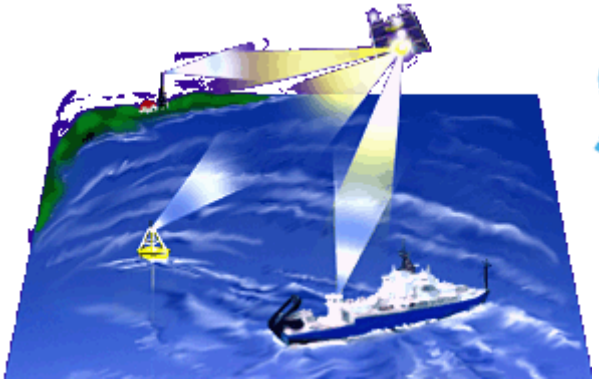
- SeaNet Operations Center is now at WHOI. LDEO is being setup as backup.
- INMARSAT billing has reverted back to operators but estimated billing with estimated splits of science use are available both on the ship and via http://www.seanet.int/ (email seanet-ops@whoi.edu for assistance)
- Operators will have to pickup more of the install and maintenance costs:  travel and SATCOM equipment.
- Operations Hours are officially 9-5 EDT though we keep our eyes on things nights and weekends when possible

# Plans for Next 12 months

- Add 3 more vessels -- interested?
- Major effort to educate scientists about SeaNet capabilities so that they use it even more
- SeaNet Newsletter will be distributed to better inform operators, technical folks, scientists on tips and other info.
- A next generation (smaller - PC Notebook) version of hardware will be used for future installations.
- Integrated Email (based on WHOI cmail) available in next release for those who want it. Existing operator-preferred email will still be supported.

# Next 12 months (cont.)

- Look at new SATCOM options for ships including M4/F1/F3….
- Look at best future option for providing Internet capabilities for UNOLS vessels -- SeaNet or can we find a commercial service?



# SeaNet

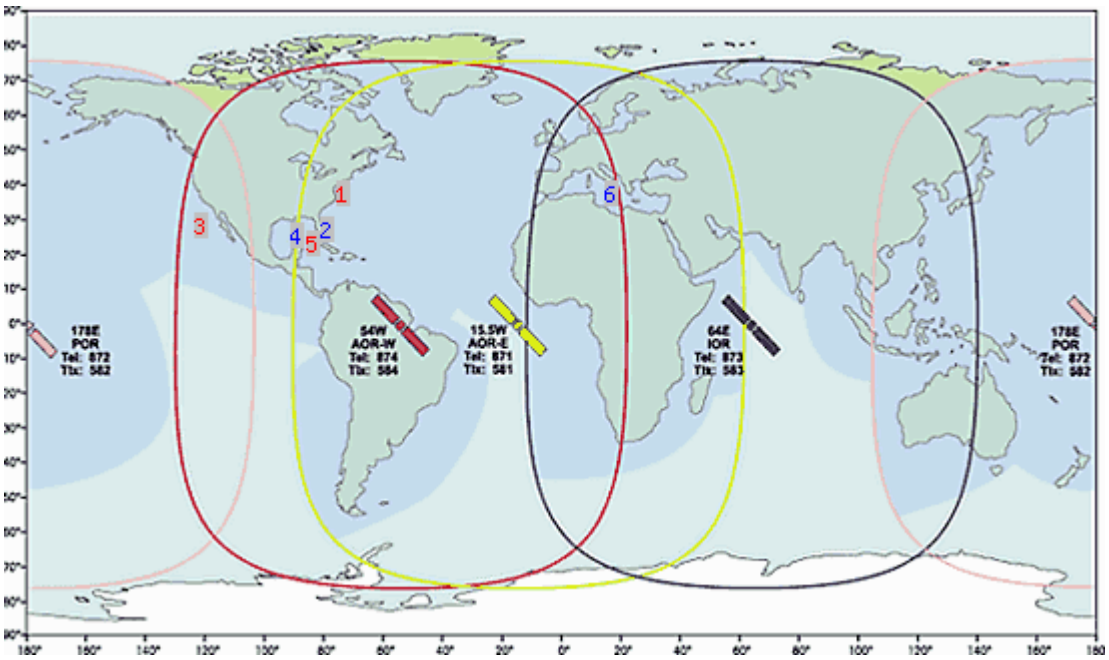
SeaNet Training
April 25, 2001

Steven Lerner, Andrew Maffei,
Scott McCue, Laura Geopfert

## I. SeaNet Introduction

- SeaNet: Extending the Internet to the Oceans
- Installed on 6-UNOLS Vessels (Atlantis, Ewing, Melville, Pelican, Seward Johnson, Knorr)
- NSF Award to Continue Operations and Add 3 Additional Vessels in 2001
- Support wireless communications including INMARSAT BHSD (64-kbs)
- Support High Speed Batch File Transfer to/from anywhere on the Internet
- Support Live Interactive Internet Sessions at Sea
- Applications include remote scientific collaboration, outreach, regular satellite image/data transmissions, live Internet access, website mirroring, email, video conferencing, etc.
- Provide Technical and Administrative Support
- Provide World-Wide Coverage
- Additional Benefits: Coordination with UNOLS, Negotiated satellite rates

For more information, visit http://www.seanet.int




Key: 1-ATL 2-EWI 3-MEL 4-PEL 5-SEW 6-KNR
Note: Locations in red indicate home-ports and are used when position information is N/A.
(This image is available at http://www.seanet.int)

## II. SeaNet Concepts/Terminology

**SeaNet –** A communication system for extending the Internet to the Oceans

**SCN** - SeaNet Communication Node
Computer system along with the necessary hardware and software to communicate with shore via wireless communications. Typical ship SCNs interface to Nera INMARSAT BHSD (64kbs) satellite systems.

**NIC** - Network Information Center
Computer system along with the necessary hardware and software to communicate both with the SCNs and the Internet. Technical and administrative shore-side support provided (Mon-Fri 9-5). Additional support is available upon special request.

**Interactive Internet Sessions**
Allows interactive internet sessions on-board ship. Supports web-browsing, ftp, telnet, chat, video conferencing, etc.

**BatchXFR**
An efficient method of transferring files to and from ship. Files are bundled, compressed, and transferred simultaneously bi-directionally.

**DataPipes**
A method to easily transfer files or directories from a computer on-ship to a computer on the Internet and vice-versa.

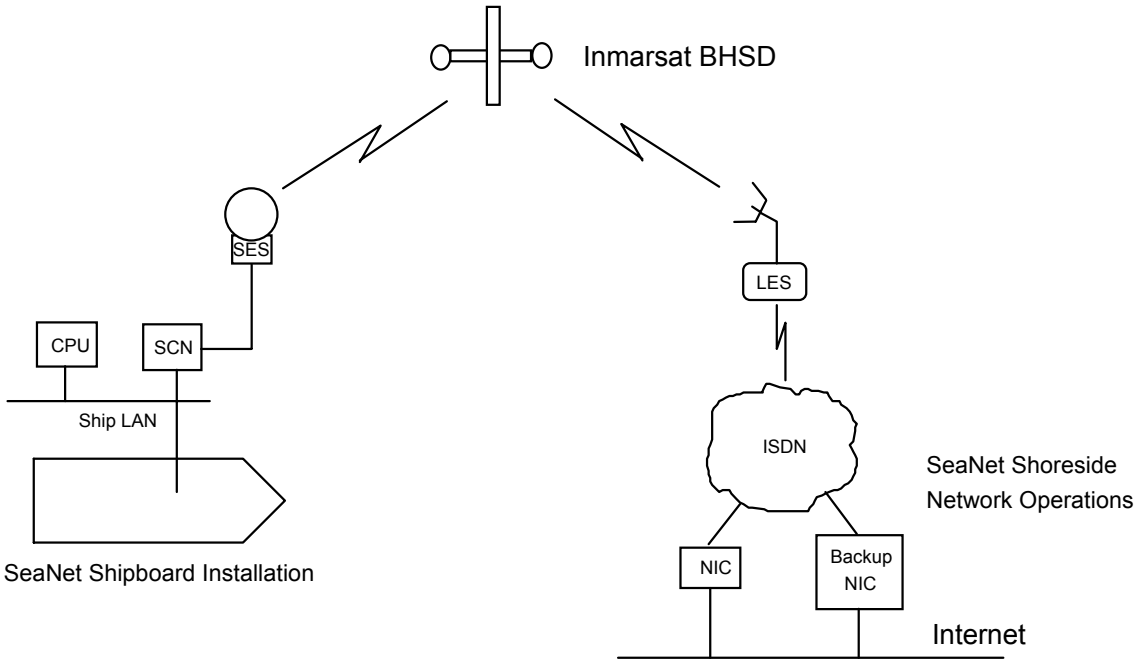
**Cmail** – An email system developed at WHOI for shipboard systems.

**Inbox/Outbox**
Analogy of transferring files between an SCN and a NIC. Files in the SCN Outbox are transferred to the NIC's Inbox and files in the NIC's Outbox are transferred to the SCN's Inbox. These transfers occur simultaneously during a BatchXFR. Files will only be deleted if they have been successfully transferred.

**Clink -** A SeaNet communication link. A typical Clink on a ship is BHSD.

**CdevInfo -** A method to request information from a specific Clink device. For a BHSD Clink, this is used to gather information such as SNR.

## III. SeaNet Architecture




## Shipboard SCN

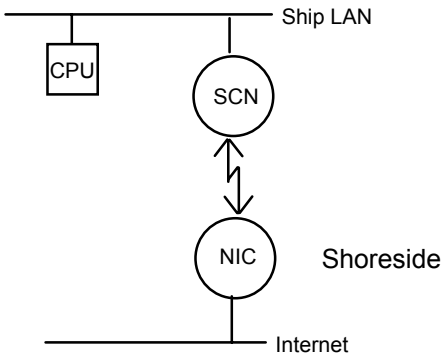
Computer Monitor
Rackmount Enclosure
Storage Tray
Slide-out Keyboard
Ethernet Switch
Cisco Router
Nera Below Deck Equip
Linux PC-based CPU
Backup UPS
Nera BHSD Antenna

Nera BHSD Antenna

IV. Theory of Operation

## A. Interactive Internet Session

Most flexible but least cost efficient. Used for web-browsing, ftp, telnet, video-conferencing, web-mirroring, etc. Can be a cost-effective solution in obtaining necessary data in a timely fashion and also provides standard internet capabilities for specific applications.

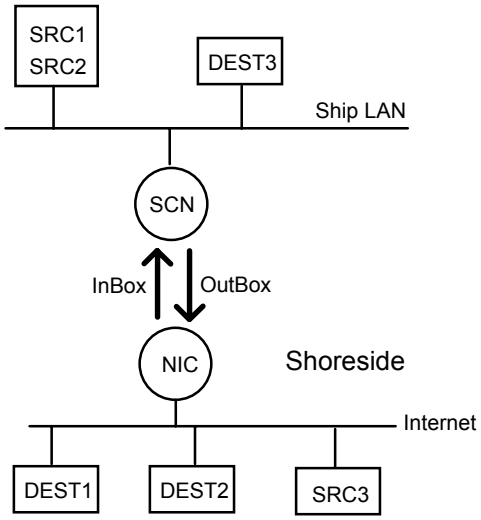



**Notes:**

1. Normally the SCN is the only computer live on the Internet
2. Other shipboard computers can be configured to use the SCN as the default router, but this should be done carefully. Please contact SeaNet Support for assistance.

## B. BatchXFR/DataPipes

Most cost effective and typically used. Simultaneously transfers packed compressed files bi-directionally. Used for email, file transfer, directory transfer, web-mirroring, etc. DataPipes allow one to easily transfer files or directories from a computer on-ship to a computer on the Internet and vice-versa.




DataPipe Details:

1. Each DataPipe is defined in 1-direction (ie; SRC1->DEST1) and the source and destinations must have ftp servers running on them.
2. Use multiple DataPipes for bi-directional file transfer
3. DataPipe Names must be unique. They should also be descriptive and end with either 2Ship or 2Shore (eg; Cmail2Shore)
4. Order of Operations
   - Collect Out-Bound Data
   - BatchXFR
   - Distribute In-Bound Data

Note 1: Files are distributed to shore destinations after the satellite link is shutdown to avoid any Internet latency.

Note 2: What you send is what you receive (files, directory trees, compressed files). For standard DataPipes, SeaNet will package and compress data to efficiently transfer it over the satellite link. Files sent to the final destination will be unpackaged and uncompressed first and transferred in the original form that as it was picked-up from the source.

## B. BatchXFR/DataPipes (Continued)

Note 3: Files are deleted from the source directory once they have been collected. Files in the ship's OutBox will only be deleted if they have been successfully transferred to the NIC's InBox (on-shore) and vice-versa.

Note 4: Special DataPipes maybe setup for '2Ship' DataPipes for applications that need to eliminate any pickup latency (e.g.; email). The data from these incoming DataPipes are ftp'd directly from shore which guarantees that the ship receives the most up to date files. Note however that SeaNet does not do anything with these files other than transfer them, and it is up to the user to compress and package them efficiently to reduce costs (i.e.; transferring many small files can be expensive).

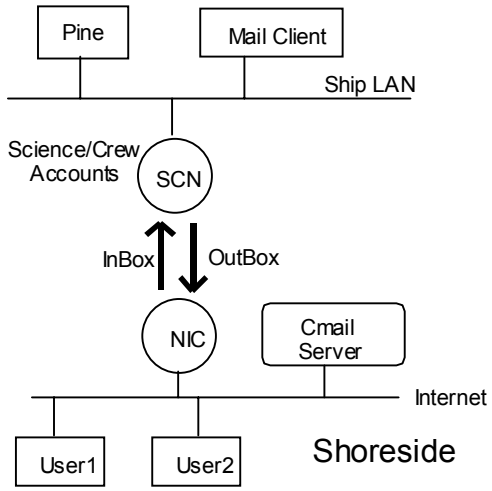
Example DataPipes:

| | |
|---|---|
| Cmail2Ship | - Used on Atlantis/Knorr/Seward Johnson for email to ship |
| Cmail2Shore | - Used on Atlantis/Knorr/Seward Johnson for email to shore |
| DiveDiscover2Ship | - Dan Fornari's Internet at-sea program - Atlantis/Melville/Knorr |
| DiveDiscover2Shore | - Dan Fornari's Internet at-sea program - Atlantis/Melville/Knorr |
| LUM2Ship | - Used on Pelican for regular satellite image transfer |
| SSSG2Shore | - Ship technical service group ftp drop |
| SeaAcct | - SeaNet internal DataPipe for accounting |
| SeaStats | - SeaNet internal DataPipe for statistics |

Other examples include: LUTZ2Shore, News2Ship, etc.

## C. Cmail

Cmail is a SeaNet supported internal email system. Ken Feldman and Jim Akens from WHOI developed this email system designed especially for ships. The SeaNet operator creates Cmail accounts for science and crew users. The Cmail transfer is done via a standard batchXFR transfer. For new cruises (or legs), science accounts are automatically deleted and crew accounts remain. Features include transfer size limits and aliases (username@ship.seanet.int).



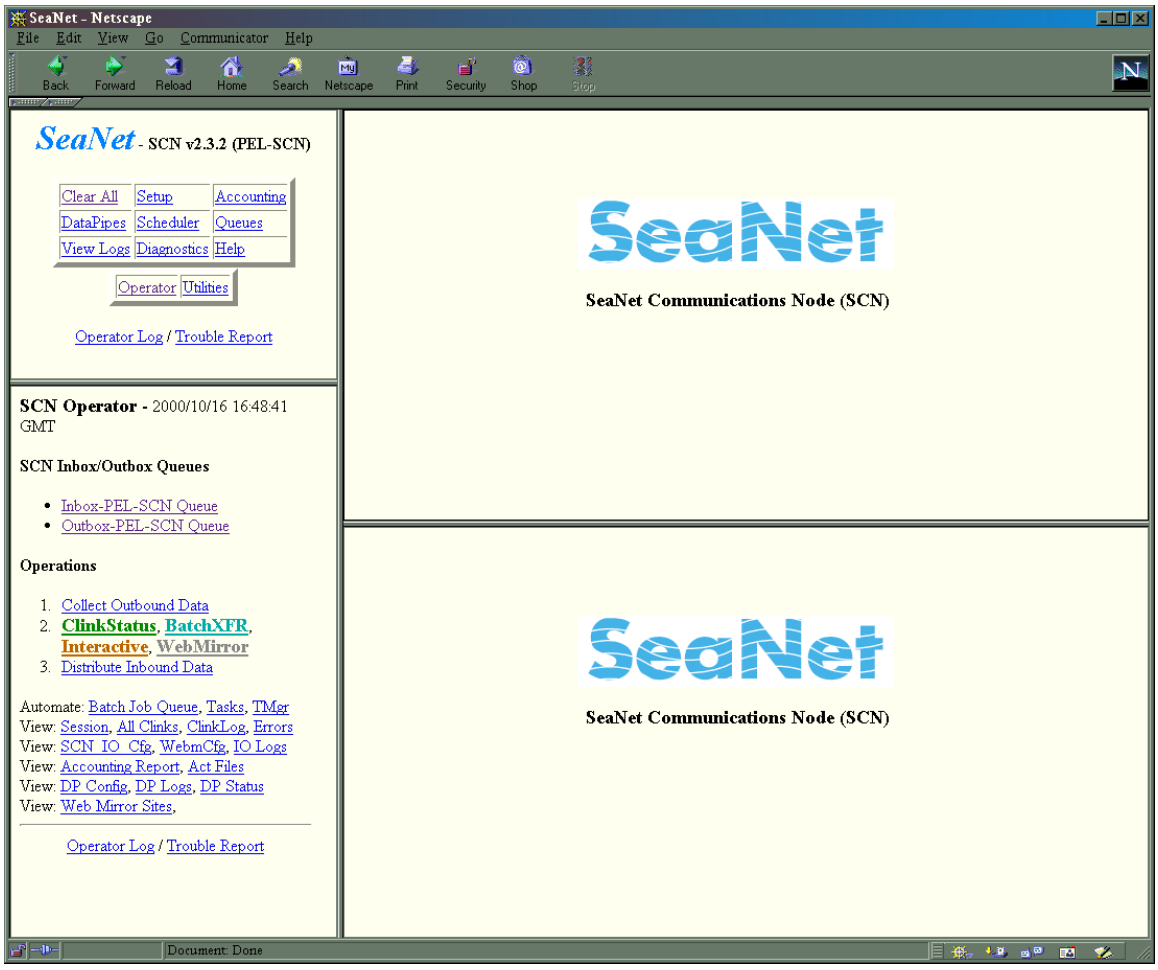

Cmail Details:

1. The SCN Operator creates Science and Crew User Accounts used for email.
2. A filter database is created with nominal limit of 10k. Aliases are created for all users (first initial followed by last name: e.g.; jsmith@ship.seanet.int). Aliases for Crew and Science user groups are also created.
3. New Cruise deletes all Science Accounts and resets filter. Crew User Accounts are maintained but can be enabled, disabled, or deleted on a need by need basis.

Note: Filter database can be modified to change limits for user accounts and to modify aliases.

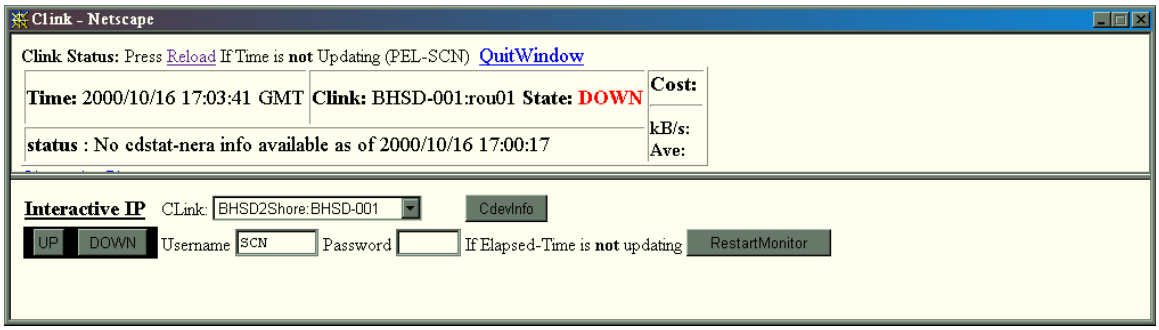
## V. Operator Interface - Overview

A web-browser such as Netscape is the operator interface to the SeaNet system. The main menubar is shown in the upper-left frame. Any menubar item pressed will display a list of menu options in the bottom-left menu frame. The two frames on the right complement one another. Typically, the bottom-right frame is for text output, logs, and diagnostic information and the top-right frame is for displaying queues and supplemental information. To de-clutter the display and start over, press 'Clear All'. By default, the operator's menu will be displayed in the bottom-left menu frame.



## VI. Bringing Up an Interactive Internet Session

1. Click on 'Interactive IP' from operator's menu to popup Interactive IP Window.

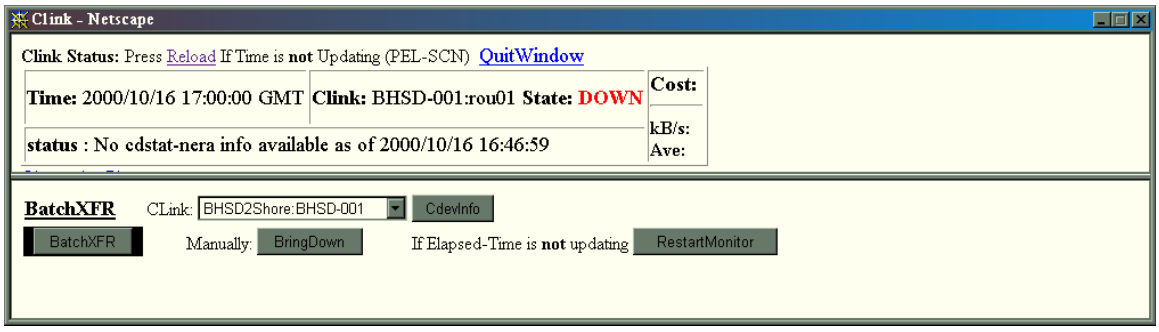



2. Verify Clink and click 'CdevInfo' to look at SNR and check for bad headings.
3. Enter Username and Password
4. Click on 'UP' [Monitor Clink state and estimated costs]
5. When finished, click 'DOWN' and verify state is DOWN and red lights are off on the datacomm switch.

Note: When link is coming up, status and debugging information will be displayed in the lower-right frame. This information is stored in a Session log file and can be reviewed should problems occur.

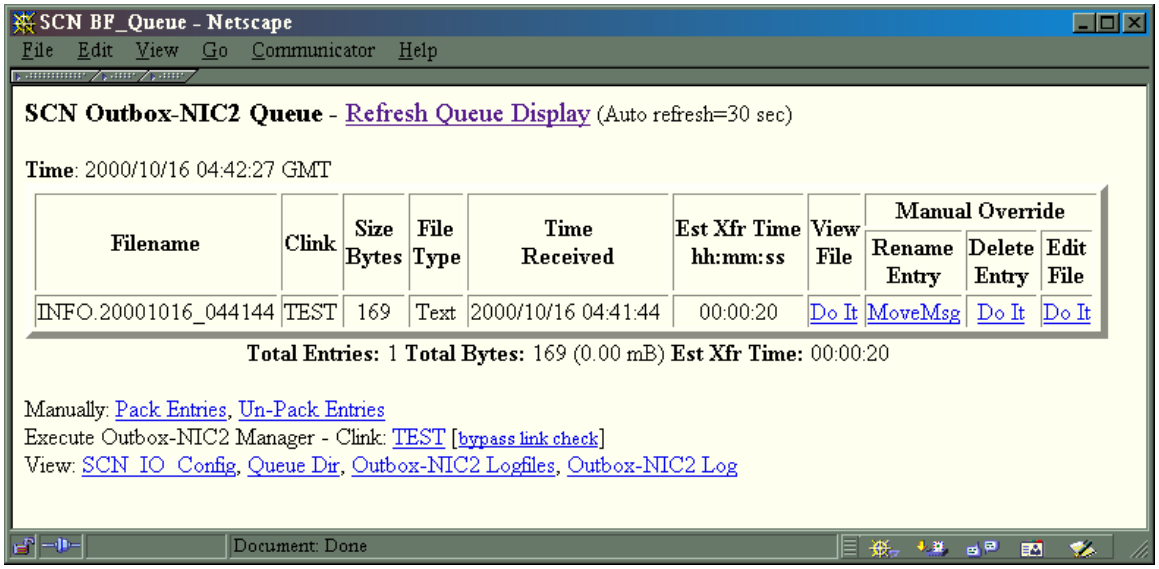
## VII. Performing Batch File Transfer (BatchXFR)

1. Collect OutBound Data
2. Click on 'BatchXFR' from operator's menu to popup BatchXFR Window.




3. Verify Clink and click 'CdevInfo' to look at SNR and check for bad headings.
4. BatchXFR - monitor link state, xfr bytes/sec rate
5. When finished, state should be DOWN and red lights off on the datacomm switch. To manually bring down link, click on 'Manually BringDown'.
6. Distribute InBound Data

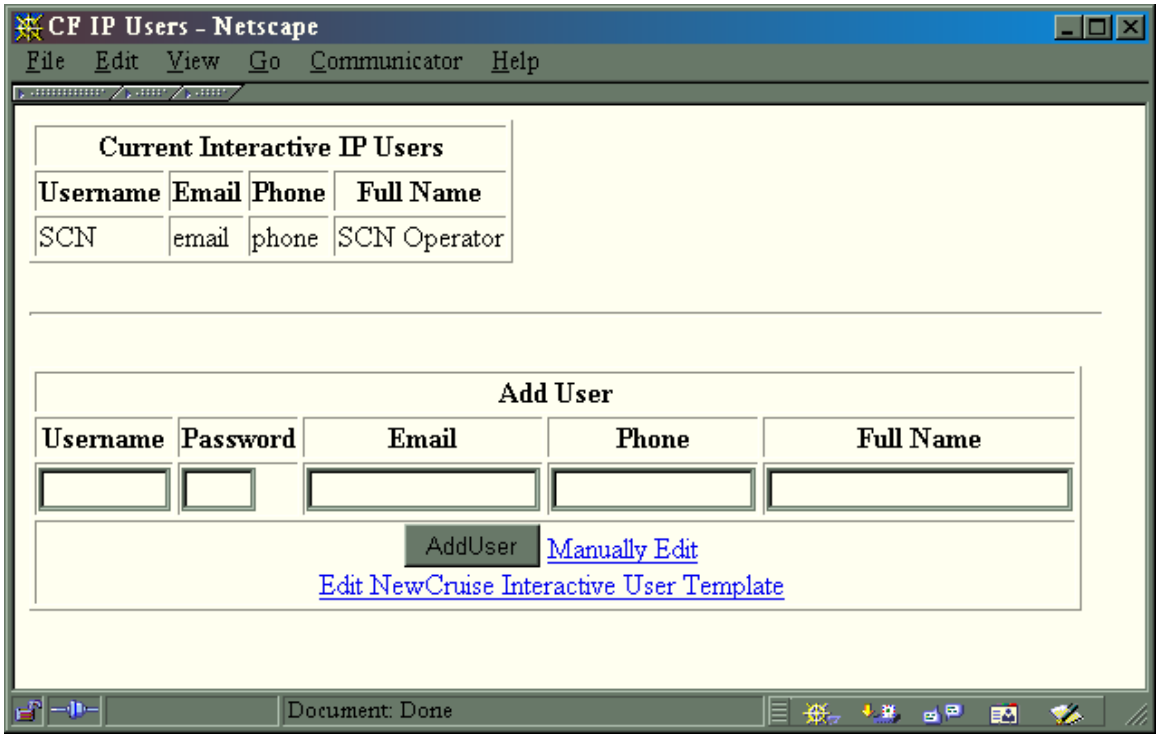
Note: At anytime you can see what is in your Inbox or Outbox queues by clicking on either Inbox or Outbox queue within the operator's menu. Example Outbox is shown below.



VIII. Configuring Interactive Users – Note: The SeaNet Billing Form must be filled out by the PI first

1. Click on 'Setup' from main menubar
2. Click on 'Configure Interactive IP Users'
3. Fill out the on-line form (shown below) and press 'Add User'

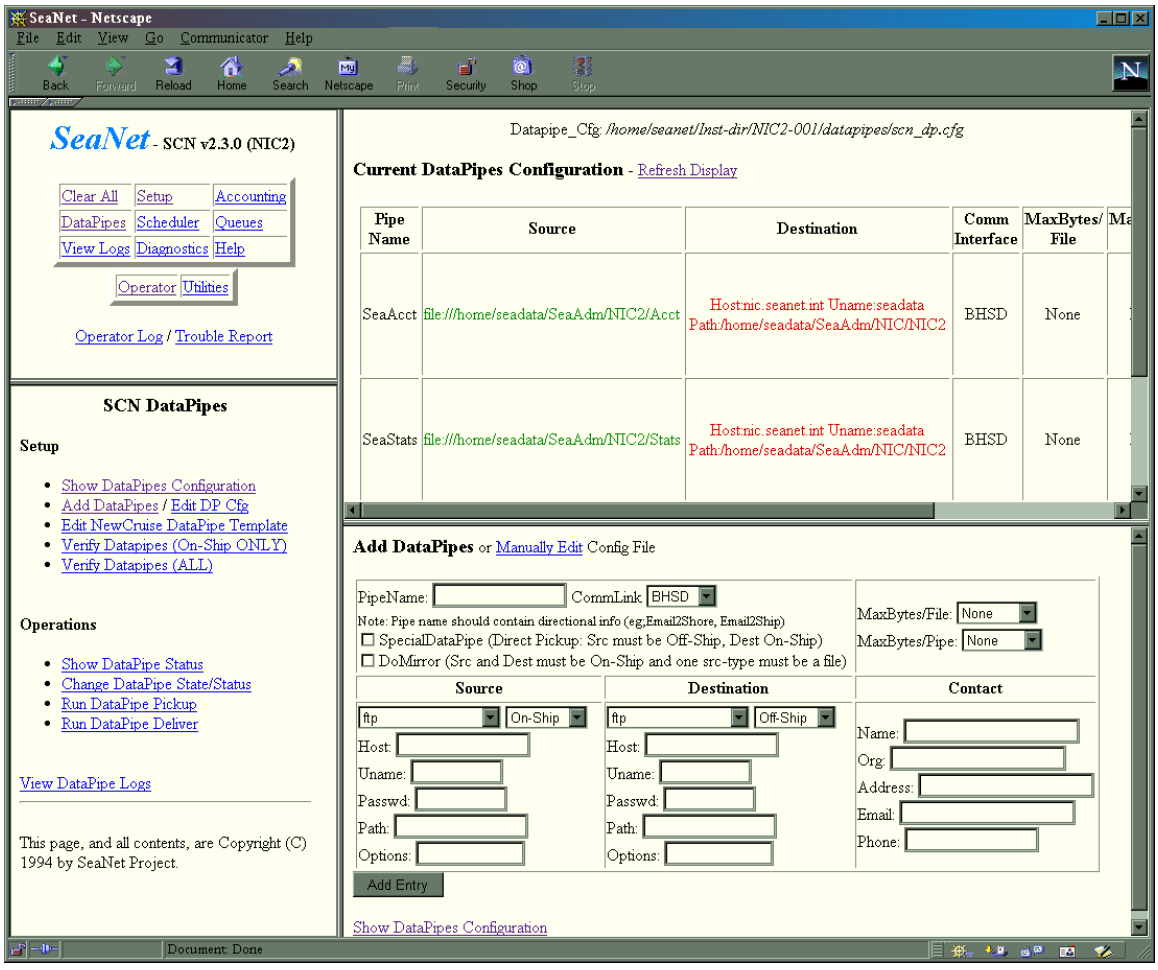
Note: To delete interactive user accounts for a new cruise, refer to Miscellaneous Operations: New Cruise Setup.



## IX. Configuring DataPipes – SeaNet Billing Form must be filled out by PI first

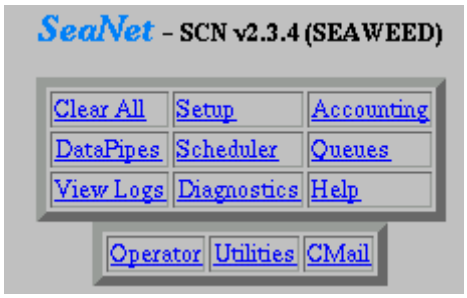
1. Click on 'DataPipes' from main menubar
2. Click on 'Add DataPipes'
3. Fill out the on-line form and press 'Add Entry'. Note that DataPipe names must be unique and should end with 2Ship or 2Shore.
4. Review configuration with 'Show DataPipes Configuration'
5. 'Verify DataPipes (On-Ship Only)' - checks for usernames, passwords, directory read/write access.

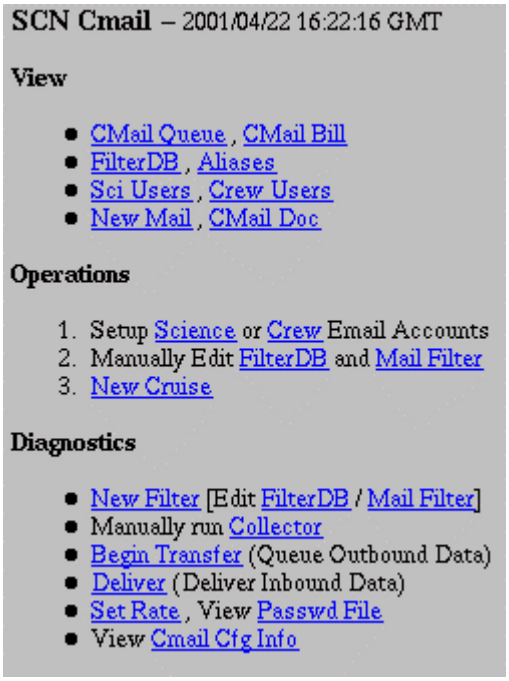
Note: To delete DataPipes for a new cruise, refer to Miscellaneous Operations: New Cruise Setup.



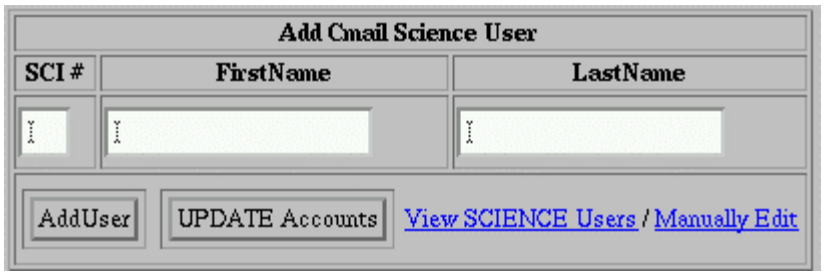
X. Configuring CMail – SeaNet Billing Form must be filled out by the PI first

1. Click on 'CMail' from main menubar




2. Click on Setup 'Science' or 'Crew' Email Accounts





3. Fill out the on-line form and press 'Add User'. When done, press 'UPDATE Accounts' and then run 'New Filter'. The form will prompt you for what needs to be done.

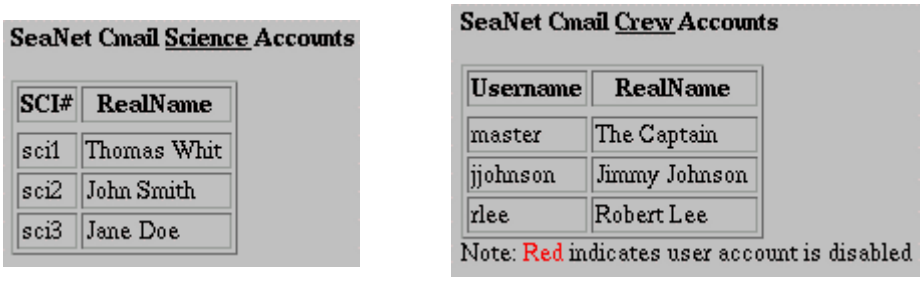
Note 1: To view Science Users, press 'View SCIENCE Users'. If any Science Accounts have been manually edited, press 'UPDATE Accounts', and then run 'New Filter'.

X. Configuring CMail (continued)

Note 2: To view Crew users, press 'View CREW Users'. Crew users may be enabled, disabled, or deleted at any time by pressing the appropriate button and then running 'New Filter'. To reset Science Users for a new cruise, refer to Miscellaneous Operations: New Cruise Setup.

Note 3: Anytime the filter database is manually edited, be sure to run 'Mail Filter' to send a copy back to the shore cmail-server.

- Sample Science and Crew Listing



**SeaNet Cmail Science Accounts**

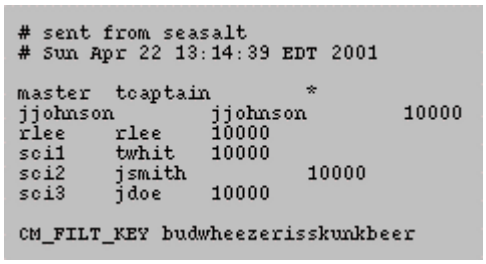
| SCI# | RealName |
|---|---|
| sci1 | Thomas Whit |
| sci2 | John Smith |
| sci3 | Jane Doe |

**SeaNet Cmail Crew Accounts**

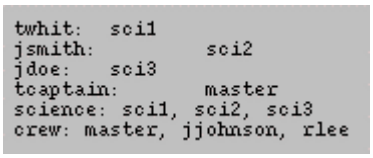
| Username | RealName |
|---|---|
| master | The Captain |
| jjohnson | Jimmy Johnson |
| rlee | Robert Lee |

Note: Red indicates user account is disabled

- Sample FilterDB and Aliases

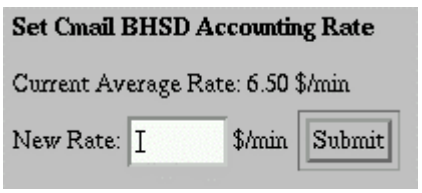


```
# sent from seasalt
# Sun Apr 22 13:14:39 EDT 2001

master  tcaptain        *
jjohnson        jjohnson        10000
rlee    rlee    10000
sci1    twhit   10000
sci2    jsmith          10000
sci3    jdoe    10000

CM_FILT_KEY budwheezerisskunkbeer
```



```
twhit:  sci1
jsmith:         sci2
jdoe:   sci3
tcaptain:       master
science: sci1, sci2, sci3
crew: master, jjohnson, rlee
```

- Setting CMail BHSD Rates



**Set Cmail BHSD Accounting Rate**

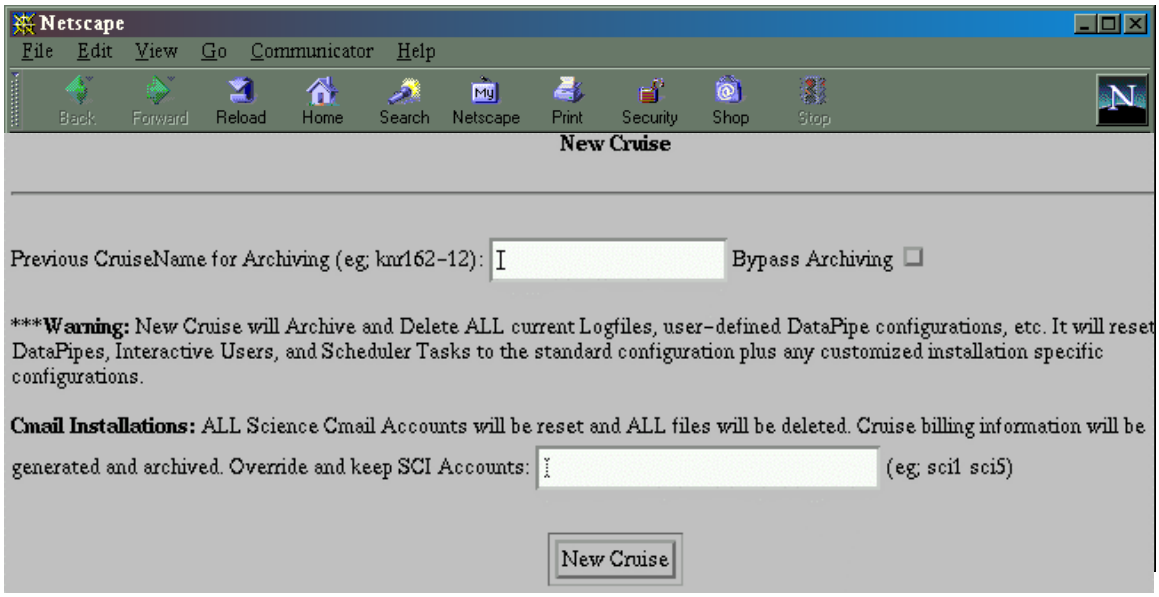
Current Average Rate: 6.50 $/min

New Rate: [ ] $/min [Submit]

## XI. Miscellaneous Operations

### A. **New Cruise Setup** - Resets DataPipes, Interactive Users, and Cmail Users for a new cruise

1. Click on 'Utilities' option in the main menubar (or NewCruise from Cmail menu)
2. Click on 'New Cruise' from the Utilities menu
3. Either supply archive name (eg; ATLl5v3) or click BypassArchiving
4. Press 'New Cruise' on the form

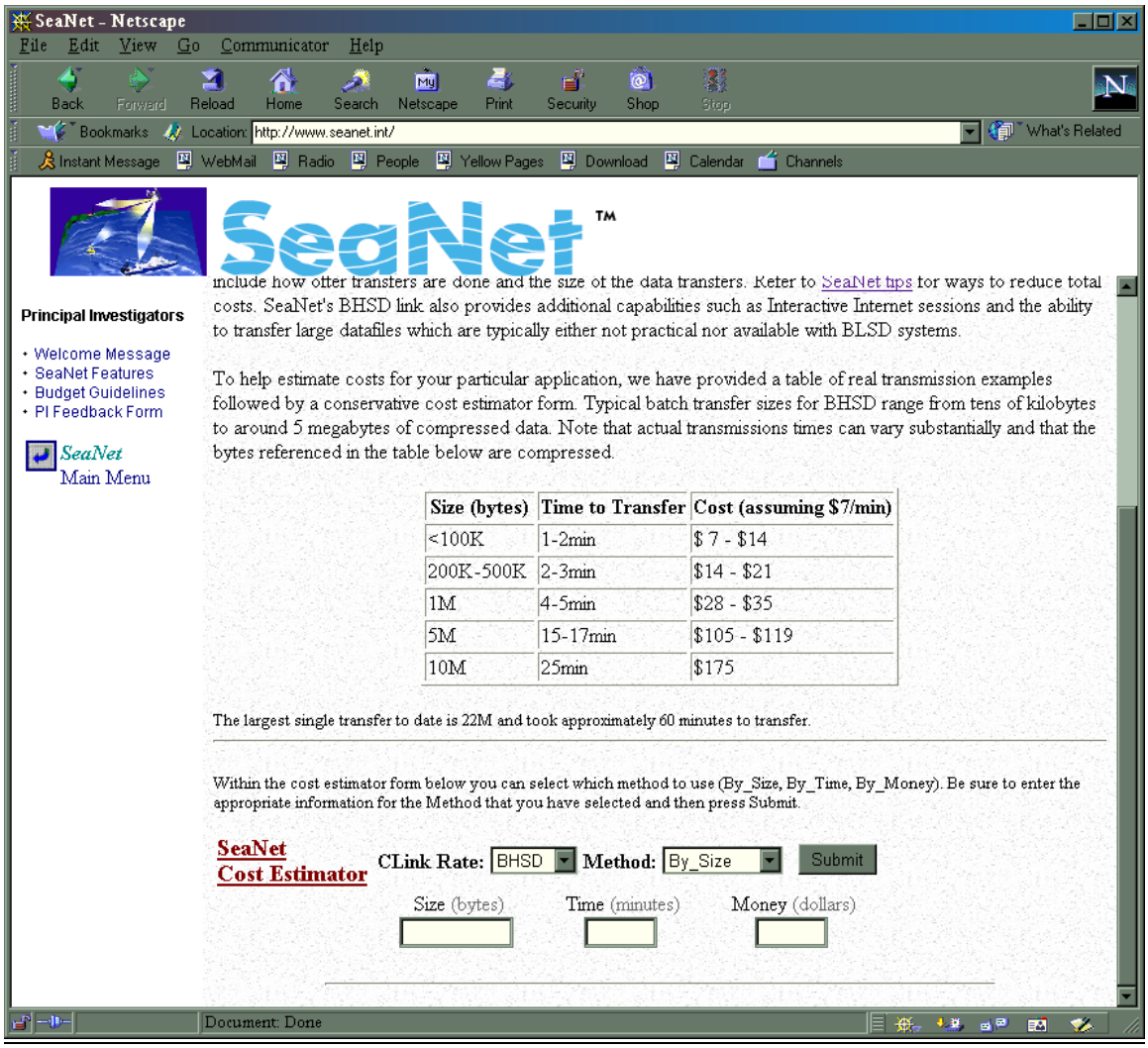



Note: If you wish to have specific DataPipes configured to continue from cruise to cruise, please contact SeaNet Support for assistance.

B. **Cost Estimator** - A tool for estimating costs for transferring data

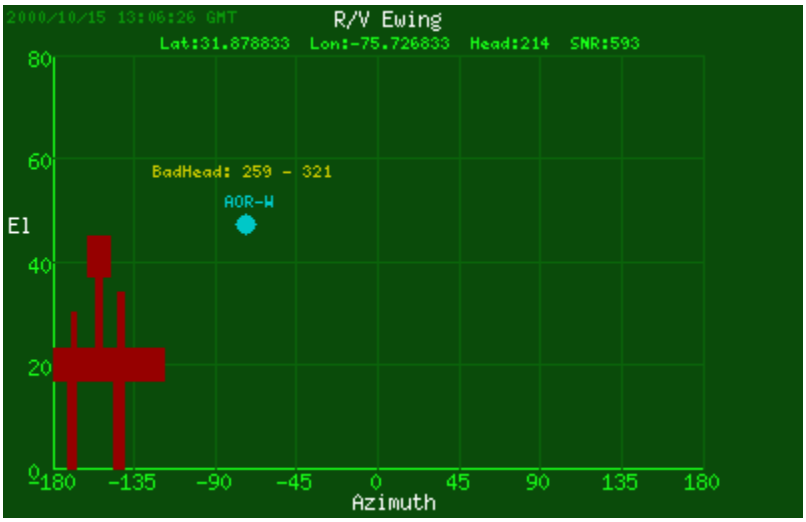
1. Click on 'Accounting' option in the main menubar
2. Click on 'Est Cost/Usage Form' from the Accounting menu
3. Fill out the on-line form by selecting Clink Rate, and depending on Method selected, fill out corresponding entry below and press Submit.

Note: This form is very conservative and is based on an estimated average throughput. For data > 500K, actual costs will be lower than estimates as higher throughput is normally achieved when transferring large amounts of data. The table shown below is from the PI page on the SeaNet website and is based on actual transfers.



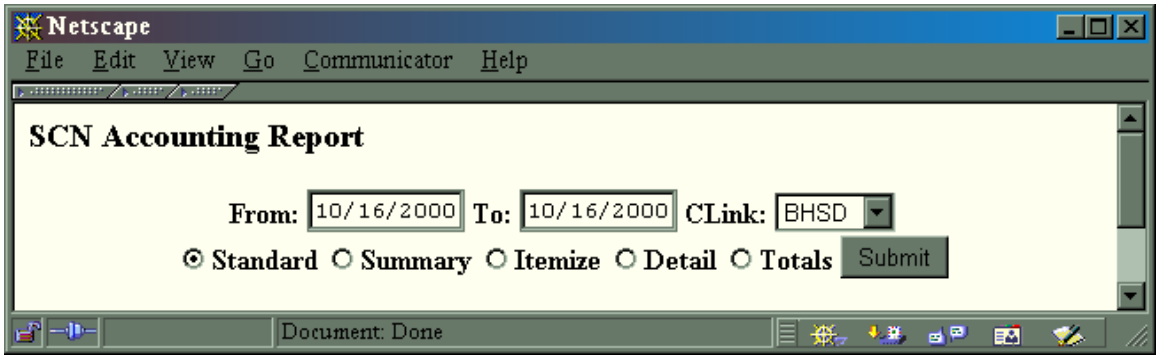
C. **Obstruction Plots** - An aid for determining heading obstructions

1. From either the BatchXFR or Interactive Window, select Clink and click on 'CDevInfo'. This will update the information used for the obstruction plot.
2. Then click on 'Obstruction Plot' to see the plot in the bottom-right window.




D. **Accounting Reports** - provide a summary of **estimated** costs

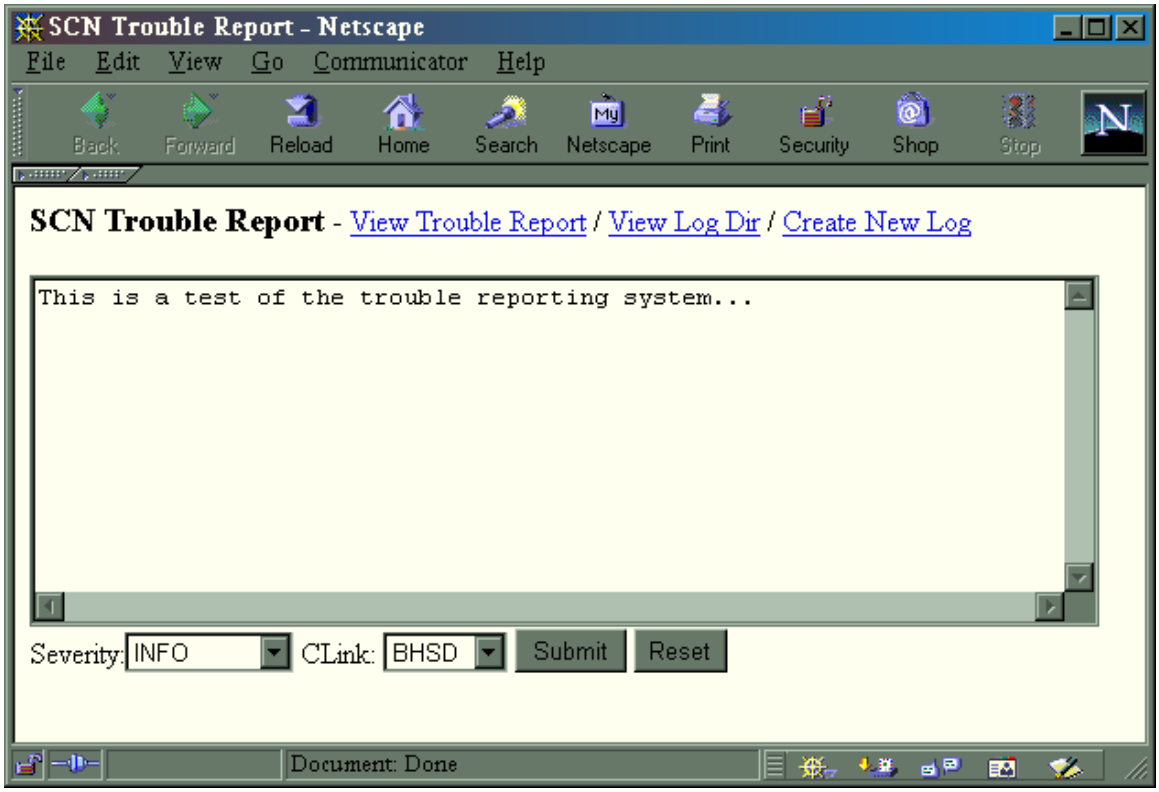
1. Click on 'Account Report' from the Operator's menu.
2. Select date range, Clink, type of report, and press 'Submit'.
3. Report will be displayed in upper-right window.




Note: This service is also available to shore-based personnel via password access at http://www.seanet.int. The costs are estimates only, actual costs are billed by the providers (eg; Comsat, Station12).

E. **Trouble Report** - On-line method to contact SeaNet support

1. Click on 'Trouble Report' from either the main menubar or the operator's menu.
2. Fill out the on-line form, select Severity, Clink and press 'Submit'.
3. The request will be placed in the OutBox and sent during a normal BatchXFR. Reply messages from the SeaNet technical support will be delivered to the InBox and may be viewed via the Inbox Queue.



## XII. High Speed InmarsatB (BHSD) Tips

1. BHSD cost effectiveness as compared to BLSD is approximately 2:1. BHSD costs roughly 3-times more per minute than BLSD, but it can transfer data up to 6-times faster (64kbs).

2. Cost per minute based on carriers and peak/off-peak rates play a significant role in total costs. SeaNet allows users to choose their carriers. Rates for peak and off-peak for each carrier are listed in the accounting tables.

3. It is more efficient and cost effective to transfer files bi-directionally as this occurs simultaneously with the SeaNet system.

4. It is more cost effective to transfer many bytes at once rather than individual transmissions.

5. It is more efficient and cost effective to transfer larger files than smaller ones (in particular >70K for BHSD). Rates for files greater than 1Meg average around 6Kbytes/sec as compared to 2-4Kbytes/sec for smaller files.

6. File sizes between 2500-100K for BHSD cost approximately the same. So if you're going to send 20K, you can send another 80K for next to nothing.

7. With link overhead, minimum billing time is around 1minute. Base transfer is approximately 70sec (2500-100K bytes). Bytes less than 2500 may have had transmission problems - low snr, heading, etc. as transmission times are significantly higher.

8. Transmission rates can vary substantially. Causes can be due to location, sea-state, obstructions, hardware problems, time of day, etc.

9. When using Special DataPipes, it is considerably more efficient to pre-package and pre-compress all files.
   Note: This is done automatically for standard SeaNet DataPipes.

10. We plan to do testing with new linux kernel with updated tcp/ip sliding window in Fall of 2000 to hopefully improve small transmission efficiency. For real small transmissions, it is more cost effective to use BLSD.

11. Interative Internet/Web browsing capability is available and can be a cost-effective solution in obtaining necessary data in a timely fashion.

12. SeaNet also provides access to standard Internet capabilities, including ftp, telnet, chat sessions, video conferencing, etc. via Interactive Internet Sessions.

## XIII. Contact Information

For more information on SeaNet, please visit http://www.seanet.int or contact:

| General Information | Technical Support |
|---|---|
| Andrew Maffei<br>Woods Hole Oceanographic Institution<br>Woods Hole, MA 02543<br>amaffei@whoi.edu<br>Phone: (508) 289-2764<br>Fax: (508) 457-2174 | Scott McCue - Seanet Service<br>Woods Hole Oceanographic Institution<br>Woods Hole, MA 02543<br>Seanet-Service@seanet.int<br>Phone: (508) 289-3700<br>Fax: (508) 457-2193 Attn: SeaNet Support |

# *SeaNet* Billing Information Form

Cmail, DataPipes, Interactive Internet

**Please Return Form to Billing Institution**

Name: _____ Vessel: _____ Voyage: _____ Leg: ___
(Please Print)

Email Addr: _____ Phone: _____

Organization: _____ Billing Address: _____
_____
_____

Payment Method: Visa Mastercard PurchaseOrder Invoice (circle one)

Name on Card: _____ or Purchase Order#: _____

CardNumber: _____ Exp Date: _____

I understand that I am responsible for the communications costs associated with the following Cmail User(s), DataPipes, and/or Interactive Internet Users via the SeaNet system and agree to pay for these expenses.

Check all that apply:

- ☐ Cmail User(s): _____
- ☐ DataPipes: _____
- ☐ Interactive Internet Username: _____ Pin: _____

Signature: _____ Date: _____/_____/_____

SeaNet Tech: _____ Date: _____/_____/_____

# *SeaNet* DataPipes Information Form

**Please Attach Form to SeaNet Billing Information Form**

**DataPipe Name**: _____ (Should end with either 2ship or 2shore. Eg; Cmail2Ship)

☐ Special DataPipe: (For special datapipe, Source must be off-ship, and Destination must be on-ship)

**Source**: On-Ship or Off-Ship (Circle one)

Hostname: _____ (IP Address)

Username: _____ Passwd: _____

Pathname: _____ (fully specified pathname)

**Destination**: On-Ship or Off-Ship (Circle one)

Hostname: _____ (IP Address)

Username: _____ Passwd: _____

Pathname: _____ (fully specified pathname)

**DataPipe Name**: _____ (Should end with either 2ship or 2shore. Eg; Cmail2Ship)

☐ Special DataPipe: (For special datapipe, Source must be off-ship, and Destination must be on-ship)

**Source**: On-Ship or Off-Ship (Circle one)

Hostname: _____ (IP Address)

Username: _____ Passwd: _____

Pathname: _____ (fully specified pathname)

**Destination**: On-Ship or Off-Ship (Circle one)

Hostname: _____ (IP Address)

Username: _____ Passwd: _____

Pathname: _____ (fully specified pathname)

On-Ship Contact: Name: _____ Email: _____

On-Shore Contact:

Name: _____ Org: _____ Email: _____

Address: _____ Phone: _____

# Appendix VIII

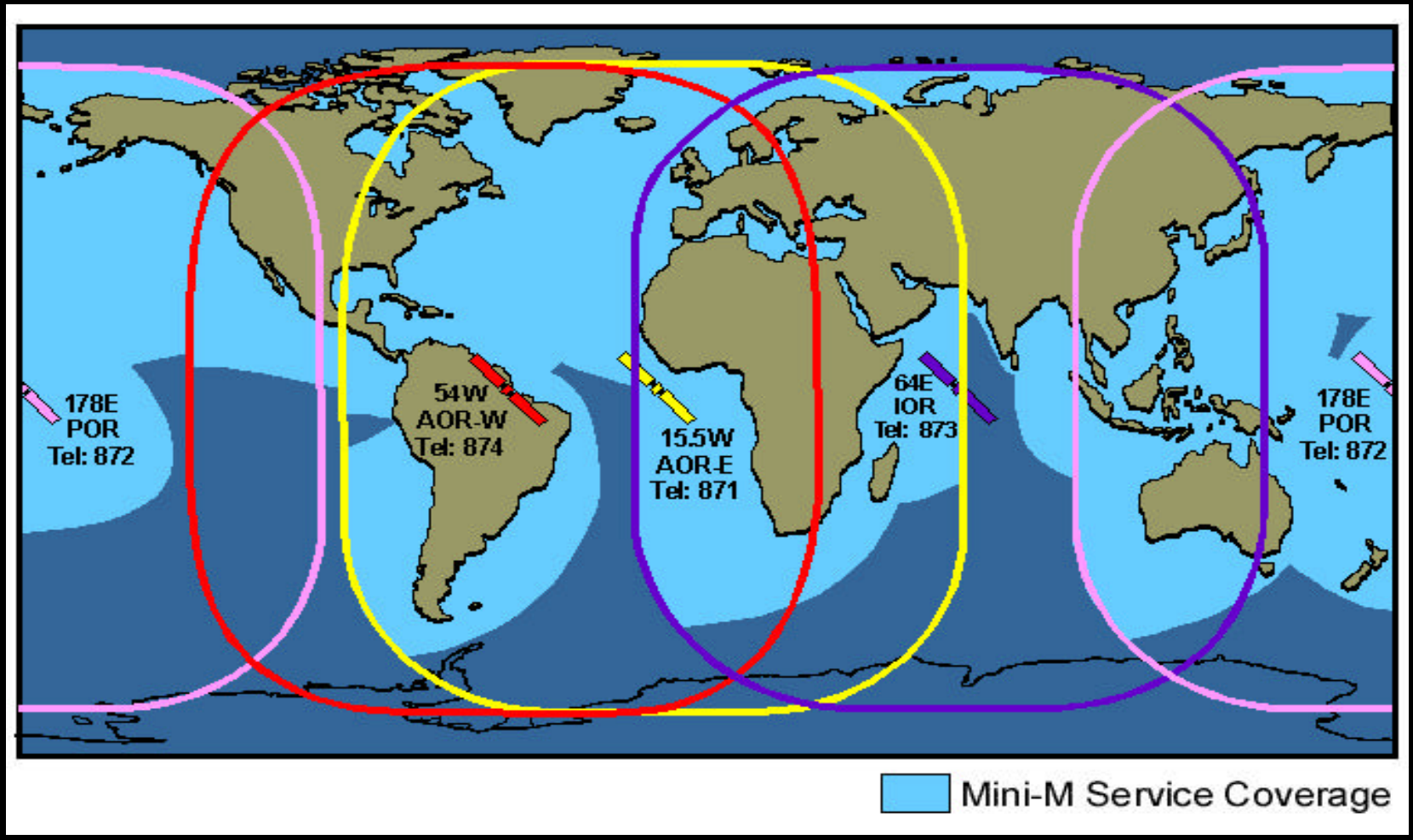
# Inmarsat - M

- 6.4 Voice
- 2.4 Fax
- 2.4 Data
- 4.8 Secure Voice*

*** The STRATOS SIWF Protocol Offers the *ONLY* 4.8 Kbps STUIII *and* STU IIB Secure Calling Service for Inmarsat-M Customers.**

STRATOS
MOBILE NETWORKS

# Inmarsat - Mini-M Coverage




STRATOS
MOBILE NETWORKS

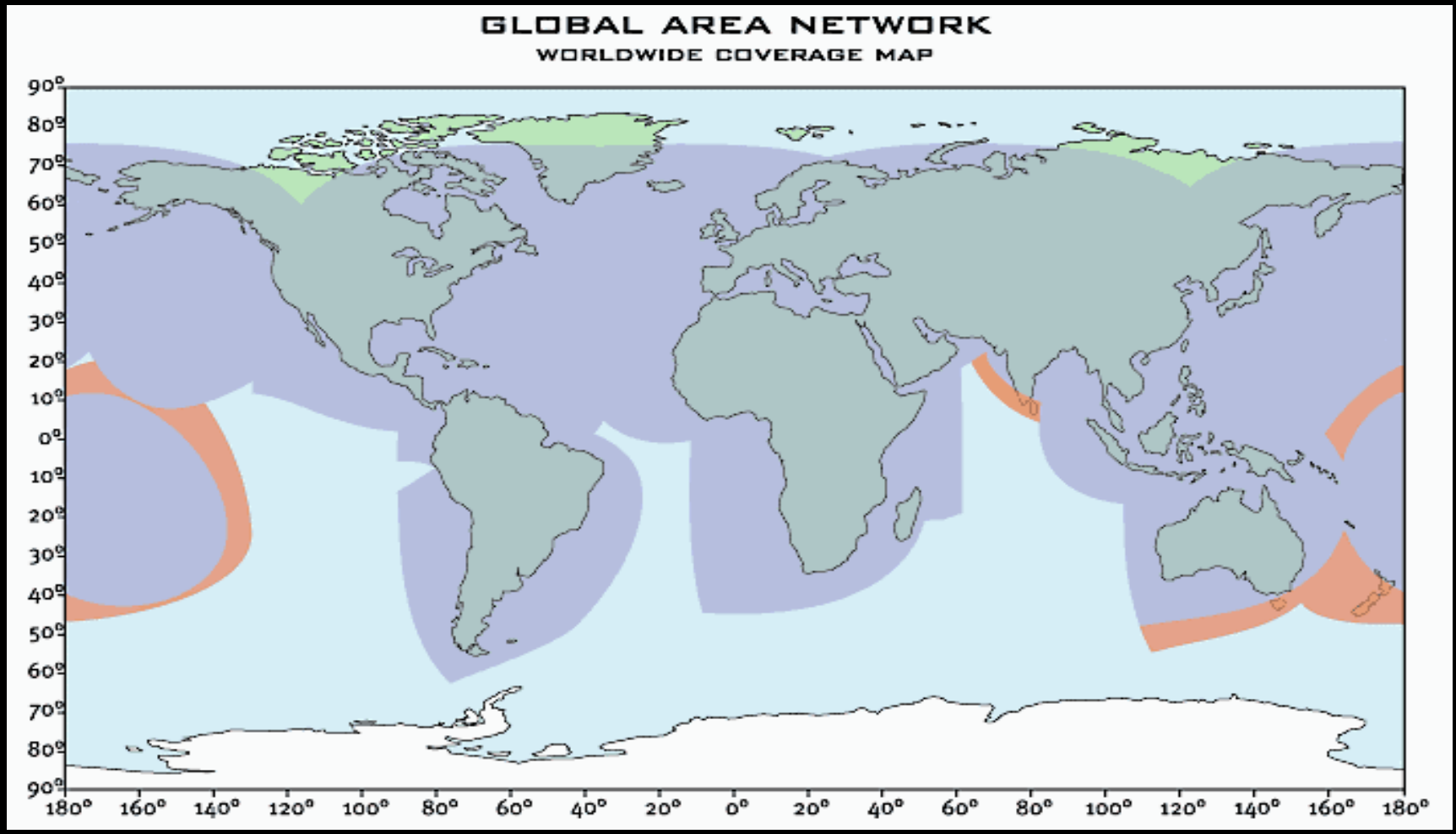
# Inmarsat - Mini-M

- 4.8 Kbps Voice
- 2.4 Kbps Data
- 2.4 Kbps Fax
- 2.4 Secure Voice*

*** The STRATOS SIWF Protocol Offers the *ONLY* 2.4 Kbps STUIII *and* STU IIB Secure Calling Service for Inmarsat-Mini-M Customers.**

STRATOS
MOBILE NETWORKS

# Inmarsat - M4 (GAN) Coverage




STRATOS
MOBILE NETWORKS

# Inmarsat - M4

- 4.8 Kbps Voice
- 2.4 Kbps Data
- 2.4 Kbps Fax
- 2.4 Secure Voice*
- 64 Kbps Voice
- 64 Kbps Audio
- 56/64 Kbps ISDN
  High Speed Data
- Wireless Network Handset Calling
  With DECT Phone Option
- Packet Data Service

*The STRATOS SIWF Protocol Offers the *ONLY* 2.4 Kbps STUIII *and* STU IIB Calling Service for Inmarsat Mini-m Customers.

STRATOS
MOBILE NETWORKS

# Inmarsat - M4

Remote
Secure Data
File
Transmission

GD 1910

Laptop

STRATOS
MOBILE NETWORKS

Desktop

GD 1910

# *Inmarsat F1/F3 Marine HSD Roadmap*

F-1 Geared toward replacing Marine B Terminals

- Currently in Beta testing
- Scheduled to be available by 3Q 2001
- GMDSS Compliant
- Uses M4 Specs
- Approx. 3’ by 3’ in size
- GPS in built-in to antenna
- Will use Global Beam Coverage
- Will be IPDS ready

# *Inmarsat F1/F3 Marine HSD Roadmap (Cont'd)*

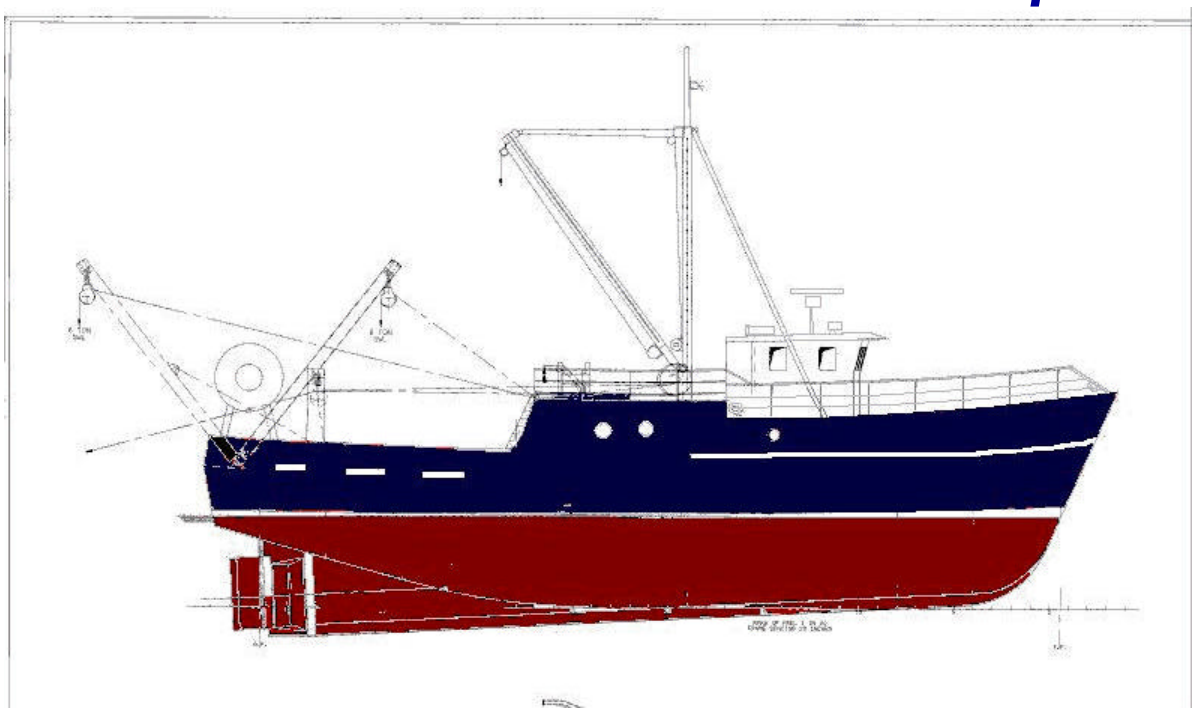
F-3 Marketed toward Super Yachts

- Currently in Beta testing
- Scheduled to be available by 2Q 2001
- Uses M4 Specs
- Approx. 2.5' by 2.5' in size
- Will use Spot Beam Coverage
- Will be IPDS ready

# Appendix IX

marine sciences research center
at the State University of New York, Stony Brook

# Research Vessel *Seawolf*



After 25 years of service the ***R/V Onrust*** is retired, and has begun a new career in the Gulf of Mexico for Tulane University. The Marine Sciences Research Center is now undertaking the renovation and conversion of the 80' fishing vessel *Bagatell*, which became available as part of the NOAA's Fishing Capacity Reduction Initiative (FCRI). Commonly known as "the buyout", the FCRI was put in place to reduce the size of the fishing fleet to aid in the recovery of the Northeast Groundfish stocks. The *Bagatell* was one of New Bedford's highliners and is a true sea boat, having proven herself through several winters on Georges' Bank. Renamed the ***Seawolf,*** the vessel is now undergoing a complete renovation to into a state of the art multipurpose research vessel for MSRC.

.

- Seawolf Specifications
- Seawolf Pictures-prior to conversion
- **Seawolf Progress Update:**

  - June 8, 2001
  - April 20, 2001
  - March 6, 2001
  - February 16, 2001
  - January 12, 2001
  - December 14, 2000

- November 21, 2000
- October 30, 2000
- October 19,2000
- September 25, 2000
- September 11,2000
- August 28, 2000
- August 10, 2000
- July 30,2000
- July 15,2000

## Links at the Marine Sciences Research Center

Oceanographic Technicians and Sampling Equipment; design, construction, and rental, available aboard the ***Seawolf*** or for charter:

- Electronics and Instrumentation
- Technical and Field Support

- Marine Sciences Research Center Home Page

## Other Oceanographic Links

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***For More Information contact:***
**Steve Cluett, Captain**
***R/V SEAWOLF***
**MSRC**
**SUNY at Stony Brook**
**Stony Brook NY 11794-5000**
**tel: 631.632.8723**
**fax: 631.632.9441**
**cell: 516.639.4187**
**email: scluett@notes.cc.sunysb.edu**

# Appendix X

# Real-Time HTML-Based Data Displays

**Introduction**

"I just want to SEE my data!"
"What's it doing?"
"How do these compare?"

Whether you just want to:
peek at your data;
remotely monitor your instruments;
share graphs via the web;
or provide full-time access for the world,
a web-based data display might be just the ticket.

Web-based data displays provide:
remote access
multi-site access
familiar user-interface
simple progammer-interface

All this can easily be done with simple HTML code and CGI scripts.

**Topics**

| | |
|---|---|
| Data Acquisition | Here it comes! |
| Data Archiving | "The time has come ... to talk of many things:" of files -- and formats -- and delimitors |
| Data Selection | HTML forms and CGIs |
| Graphing | perl & Gnuplot - also available on MS |
| Presentation | GIF |
| Updates | HTML refresh & expires |
| Housekeeping | tmpwatch |

**NOT Topics**

Spinning earth
Flames
Java
Frames

---

[NEXT] [introduction] [acquisition] [archiving] [selection] [graphing] [presentation] [updates] [housekeeping] [HMSC] [SUDS]

---

Last modifed: 14 April 2000 by Toby Martin toby@oce.orst.edu

# Appendix XI

# Report on Data Standards

1. Have converted some UH data to netCDF just to get the feel just to evaluate what is easiest.

2. Have converted a data set from Tony Amos to move toward more of a production model and nail down easiest/quickest steps to convert.

If someone has netCDF utilities on their machines that can read a netCDF file - I can send small samples. Let me know by email.

3. Have put word out for more data sets to evaluate - but response minimal. Funny, since I do all the work - all you have to send is a few hours of ASCII data with description or header of what it is and I put it thru a process and presto - have a netCDF file.

4. Effort needs to be made so that each institute has the necessary s/w (to work with their Operating System) to compile & run netCDF utilities. I Am only dealing with Unix type system so far. Once they have installed it (libraries, utilities) they can handle or check the sample netCDF files I would send to them (from the sample of data they send me). Once they can check they can then begin the conversion themselves.

5. I could say a bit more about time libraries, etc. but that is to much typing, etc.

6. All institutes should have no excuse as to being able to convert to netCDF this year. If I receive a cry of help from Institutes who need more hand holding - that can be worked out as well later with Sandy.

I know that many will be 'disappointed' that I will not be bringing this topic up in all its glory since it is so near and dear to our hearts. Maybe another time. And if that is the case hopefully with the idea that this open item can be closed.

Steve Poulos

Univ of Hawaii - SOEST

# Appendix XII

# *Welcome*

### *to the RVTEC Training Web Site*

This site has been developed to provide the Marine Technicians within the UNOLS community a central location to find training courses promoting the development of skills related to our field. Private industry with products and/or information related to the marine technician work environment are invited to enter instructional classes they may be conducting. A cooperative effort between our two sectors will surely benefit everyone.

Not only will this site list formal classes but also conferences, symposiums, workshops and other educational opportunities as they become available. The word "course" used on this site includes all these agendas.

Courses are listed by:

Topic

Region of the country

Organization conducting the class

Calendar with course dates.

Your input will determine the success of this site. Please use the Course Entry Form to list an event that you feel might interest our community.

***As technology advances so must our skills and knowledge.***

As we all know, our skills cover a broad array of topics and interests. I am sure I have left out a field or two so please provide feedback so the site can be useful and informative.

# Appendix XIII

**Sorry for the inconvenience, but an electronic version of this Appendix is unavailable. A hardcopy of the Appendix can be obtained by contacting the UNOLS Office <office@unols.org>.**

# Appendix XIV

# Appendix XIV

**RVTEC Action Items:**

1) New committee on Level of Service Standards (LOSS):
   The committee will primarily correspond by e-mail.
   Members:
   Jean Captain (LLO/UMD - small ships)
   Marc Willis (OSU - medium size ships)
   Barrie Walden (WHOI, large ships)
   Woody Sutherland (SIO, large ships)
2) Next year's breakout sessions
   What do we want to cover?
   a) Radio modems and wireless networking