Research Vessel Technical Enhancement Committee (RVTEC)
October 23-25, 2001
University of Rhode Island
Graduate School of Oceanography
Narragansett, RI

2001 Annual Meeting Minutes

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

A copy of these minutes can be downloaded as a pdf document: <rvtmi110.pdf>

RVTEC Meeting Appendices

Tuesday, October 23, 2001
RVTEC and RVOC Joint Session

Meeting Called to Order - The 2001 annual meeting (This year, a Joint RVTEC and RVOC Joint Session) was called to order October 23rd at 8:58 am in the Corless Auditorium at the Narragansett Bay campus of the University of Rhode Island.

John Freitag, Manager of Marine Technicians, URI made the opening remarks. His welcome to University of Rhode Island (URI) gave a brief history of RVTEC.

URI Marine Superintendent, Bill Hahn, told the meeting he was pleased to have us here and it has been 20 years since last meeting was held at URI.

Prof. John Merrill, Acting Dean, URI, Graduate School of Oceanography and Professor of Oceanography followed with welcoming remarks. He gave a brief overview of the facilities and how important they were to the scientists. He also stated that these meetings were exciting and that the enhancement of facilities is very important to the scientific community.

RVOC/RVTEC Chair Remarks

Steve Rabalais (LUMCON), Chair of RVOC acted as the Chair for this joint session. He has been around since before UNOLS even and before RVTEC. He gave rundown on meeting schedule.

Dale Chayes (LDEO). Chairman of RVTEC gave his introduction noting that this was the first time a joint RVOC/RVTEC session had been held and suggested that owners of cell phones that ring during a session should be required to buy a round for each offense.

The Meeting agenda is included as ***Appendix I*** and the meeting participant list is attached as ***Appendix II***.

UNOLS Reports

Summary of UNOLS Activities - Bob Knox, Chair of UNOLS, outlined the issues facing UNOLS and by extension, RVOC and RVTEC. These include piracy and security, in light of the attack on the Ewing in the Gulf of Aden and the events of September 11th in New York City and Washington, D.C. Future considerations regarding operating areas and vessel safety will be topics of discussion in the upcoming meeting and the Council meeting rescheduled for 15 Nov. Bob also discussed the Federal Oceanographic Facilities Committee (FOFC) Long-range Fleet Renewal plan and the UNOLS community response. Additionally, he discussed the International Shipboard Management (ISM) July 2002 implementation requirement and indicated that the impact on science is expected to be minimal. Quality of service and a definition of technician services also need to be addressed and are areas of high importance for UNOLS. There are benefits in some inter-institution commonality. It helps to reduce the uncertainties of what might be involved in moving between ships. Bob's viewgraphs are included as ***Appendix III***.

Security and Fleet Renewal: Questions now loom such as:

- Are there places we should not send our ships?
- While the emphasis is on ships, there are other issues for Fleet Renewal such as new winch and wire specifications.

ISM: The ISM Code (International Management Code for the Safe Operation of Ships and for Pollution Prevention - more simply International Shipboard Management Code) will be mandatory for UNOLS large vessels (>500 gross tons) on 1 July 2002. This will eventually have an impact on science on these vessels. The magnitude of the affect on small ships is not yet known.

QSI: Then there is QSI (Quality of Service Initiative). We are wrestling with question of how you get unbiased opinion from our community.

Post-cruise Assessment: A new post-cruise assessment form has been devised.

We need a Definition of Technical Services. A better definition of the boundaries between technical and science groups is needed. We are far away from the era when equipment could be fixed with a hammer and a socket wrench.

There will be a Council meeting on November 15 in DC, partially to discuss the "Ewing event."

UNOLS Committee Reports:

0927 Dale Chayes on RVTEC meeting - At last year's RVTEC it was decided to get the minutes approved before the next meeting. The RVTEC 2000 minutes were approved via email. Some of the activities that the RVTEC have been involved in over the past year have included input to the post cruise assessment form revisions. They have also been collaborating to prepare USCG Icebreaker HEALY ready to support science. They have begun discussions regarding establishment of winch and wire mission requirements. These activities will continue into the next year.

He announced that Tony Amos (UTMSI) has done his two terms and RVTEC is looking for someone to run for Vice Chair.

0930 Steve Rabalais on RVOC meeting - Steve Rabalais reported on the very successful 2000 meeting hosted by Fred Jones at Oregon State University at their Newport campus where a demonstration on life-saving techniques was presented by BMCS (Ret.). Other topics discussed included:

- The community must expect insurance rates to rise significantly
- New ships
- Voluntary ISM compliance for small ships

0936 FIC Report by Joe Coburn: The focus for the Fleet Improvement Committee has been work on scientific mission requirements for new vessels, in particular an Alaska

Region research vessel and the new Ocean and Regional Class vessels. They have crafted a response to the initial FOFC draft. Finally they are trying to work on AGOR 26. They will discuss a method for post-cruise evaluation for KILO MOANA, AGOR 26. Debrief interviews, similar to those used for HEALY cruises may be considered. The FIC meeting scheduled for 9/12 in DC was cancelled. They are trying to communicate via e-mail but Joe thinks they should have face-to-face meeting.

0941 AICC Report - Dan Schwartz RVOC liaison to AICC reported that USCGC HEALY just returned from its first season up in the ice. The continuing partnership of USCG and academia has been very good. There is work still to be done. A liaison between the AICC and the Antarctic RV Oversight Committee has been established.

On the Polar Class Icebreakers, one is in dry-dock now and one is going in soon to make them better suited for science. Improvements based on HEALY are to be implemented on the Polar Class icebreakers. The AICC-USCG Cruise Assessment Reports will help to correct any problems/deficiencies that were overlooked. The AICC meeting was on 10 September and it broke up on the 11th. Since the 11th, icebreaker schedules have been classified.

Dale Chayes also reported on first HEALY science cruise.

0945 Annette DeSilva report on DESSC

The Deep Submergence Science Committee met twice this year. The DESCEND (1999 meeting) brochure was printed and distributed. The minutes are on the UNOLS web site. The next meeting will be in December 2001 at AGU. One recommendation of workshop was to have follow-up "technology workshop". Dan Schwartz led an evening session at the Oceanology Americas meeting. DESSC outreach will sponsor a Special Session at AGU/ASLO 2002 to better engage the biology community. Submergence needs include improvements for biologists and also shallow water use. Other outreach activities will be the Archaeology meeting in April at MIT.

0950: Ship Scheduling Committee: Joe Ustach and Dan Schwartz (vice chair) provided a report. This year, ship days scheduled for 2002 will be 300-400 days less than in 2001. The September 12th Ship Scheduling Meeting was first canceled but then held as many members were already in Washington. A perennial problem is scheduling of work at Juan de Fuca due to the short weather window and high demand. Also there is the problem of several ships in one area on multi-ship ops (e.g. GLOBEC). There was a question from Steve Rabalais regarding the rumor that there may be problems with NAVO funding for next year. LWAD (Littoral Warfare Advanced Development) program has pretty much been canceled. 100 days ship time has been deferred to 2003.

0954 Mike Reeve (NSF). Most agencies are currently operating under a Continuing Resolution. It is now extended to 31 October. It may be several days or weeks before the NSF budget is approved. The request was a 1% decrease but in actuality funding was flat to a 1% increase. They don't know the outcome yet, but hope for >5% increase. At the

moment they cannot even think of what the budget might be, for example, for mid-life refits.
Don Heinrichs did well as interim head of OCE. He is retired again as of last Friday. He will do some work for Polar Programs in New Zealand. James Yoder is now on board as the head of the Division of Ocean Sciences. There are now three Sections within OCE:

- Marine Geosciences Section (Bruce Malfait, Head). Includes MG&G (Marine Geology and Geophysics) and ODP (Ocean Drilling Program).
- Ocean Section (Larry Clark, Head).
- Integrated Programs Section (Mike Reeve, Head).

Mike discussed the Federal Oceanographic Facilities Committee (FOFC) Fleet plan, which incorporated many of UNOLS suggestions. The FOFC web site will be out in a few days with lots of color and glossy pictures. Admiral Cohen (ONR) and Dr. Rita Colwell (NSF) met recently to work on a plan for acquisition of research ships. There has been $1M for design studies (through tank tests) for an Alaska Region ship.

1005 Tim Pfeiffer (ONR). Tim expressed pleasure in addressing this joint meeting. There are uncertainties with the ONR budget as there are at NSF and they are making conservative decisions. Ship-day request declines are in part due to science and budgetary decisions. The DURIP (Defense University Research Instrumentation Program) has been successful over the past few years with large proposals for shipboard equipment. Submissions have been about three times more than the money available. The Iridium program satellite time is open to non-DOD users who are sponsored by DOD. It is free for those with DOD programs (DOD has pre-paid the air-time for 20,000 users). For the land-line there is a charge. Work is continuing on an antenna suitable for use on buoys such as those currently using ARGOS.

On Ship Inspections, Tim reported that THOMPSON would be coming up shortly and MELVILLE coming up next year.

1010 Beth White (NOAA) - Beth reported that while many NOAA people are in attendance, some are at a retirement event. Admiral Lautenbacher is the (unconfirmed) nominee for NOAA Head Administrator. There are 15 Research Vessels (soon, sixteen) currently in the NOAA Fleet. The new fisheries vessels (FRVs) are coming soon. NOAA has been successful in bringing a couple of vessels back on line. ***Adventurous*** (T-AGOS) has been taken out of the Reserve Fleet on the James River to be brought on line. She will be the interim replacement for ***Townsend Cromwell***. ***YTT Agate Pass*** (Navy Yard Torpedo Test craft) will be the replacement for ***Ferrel*** in the Gulf of Mexico. It was built in 1991 but has never been in service. The timeline for both will be late2002. ***Fairweather*** is coming back on line in early 2003 for hydrographic use. A question from Steve Rabalais: Are you going to put the old vessels up for sale? Answer is that they probably will be sold. ***Baldridge*** may be used in the Antarctic. Beth's viewgraphs are included as ***Appendix IV***.

1030-1045 Break

1047 Gordon Wilkes (NAVO) Reported that 1,785 days of ship's time had been used by NAVO programs over the past five years. Eighteen out of 23 potential UNOLS ships from 14 institutions were used. This is the equivalent of 6.6 Navy ship-years. Eight thousand CTD stations and 3000+ XBT drops have been made. The work was spread out well and everybody's satisfied. This program has benefits for many Navy labs, groups and projects. Next year is up in the air but current plan calls for 298 ship days. ***Revelle*** was tentatively scheduled for 40 days but is now adjusted to 16, which allows NAVO to buy some additional days. The NAVO presentation is included as ***Appendix V***.

1054 Jon Berkson (USCG). George Dupree retired in June. Cmdr. Joe Bodenstedt took over then but is now on travel. The USCG has been largely shifted to homeland defense and port security. Schedules have been taken off the web site. Pacific Area science coordinators can be contacted directly for schedules. He reported that the (***Healy***) cruise to the Gakkle Ridge was successful. Currently: Bellingham AUV tests and radar scattering from ice calibrations are underway. The ship will be in emergency dry-dock upon return and some ADCP issues will be addressed at that time. At the end of April it will be underway again for the SBI (Shelf/Basin Interaction) program. Of the other icebreakers, ***Polar Sea*** has four members here. She may go to the Wedell Sea to look for ***Endurance*** in addition to Deep Freeze 2003. ***Polar Star*** is preparing for Deep Freeze 2002. No one of her crew is here. She will return in April.

1058 Liz Tirpak. (Department of State - DoS) - Tom Cook retired from DoS and a nice retirement party was held. A GS14 position is still open to fill his position. Liz is applying for a similar position but will keep the ships afloat. Two job descriptions now cover foreign clearances as well as administrative support. There is a new office director at "oceans affairs", and they will be better able to fulfill the science community's needs, perhaps without external money. Roberta Barnes is also available (202-647-0240). DoS processed 111 Clearances in 2001. Countries are now getting picky about having 6-months notice. It is essential to let them know how to plan and to interact with their coastal scientists. She likes it when people submit their clearance applications electronically. NSF has a scientific advisor to the State Department. See web site http://www.state.gov. There is a pointer at the UNOLS web site. DoS is reconsidering its role in advising ships about entering territories. The question is "When does science stop?" What in UNCLOS (United Nations Convention on the Law of the Sea) Article 246 Para 3 defines "normal" circumstances for Coastal States to grant consent for conducting marine research? DoS will provide a list of contacts and information on piracy and armed robbery issues. There is a UN effort on this topic that will turn into a resolution to be presented for vote this fall. IMO is considering piracy issues. After the ***Ewing*** incident, Paul Ljunggren contacted the regional security officer in the embassy in Djibouti. State needs to clarify their internal procedures. Liz's viewgraphs are included as ***Appendix VI***.

1109 Mike Prince (UNOLS) spoke on the QSI (Quality of Service Initiative). His viewgraphs are included as ***Appendix VII***. There is a Committee to review PCAs (Post Cruise Assessments) consisting of Gardner, Shipley, Rabalais, Cowles, Chayes, Prince, and Laura Dippold (UNOLS office). Tom Shipley (UT) pointed out that not everybody realizes technicians can submit reports. Captains report less than the

science. Great majority of PCAs say everything went fine. 80-90% success. Main areas of concern are

- Pre-cruise planning
- Ship's equip
- Science

Question posed: who gets the information (from the PCAs)? Answer: UNOLS and the person submitting form. Sandy (Shor) says reports have "ground to a halt". Dolly (Dieter) said some institutions are very good about submitting them but there are several that she has never received reports from. There are very different reports from captains & scientists. There followed several questions and a discussion

- Have you compared Captains' and Scientists' reports for same cruise?
- For "Days Lost", put in "other" as an option with a space to explain.
- Why Officers and not Crew?
- Dale make HTML version of the form.
- Were Captain's form shown to program managers.
- Much discussion on who gets to see what, including NSF. Since PCAs have gone electronic, almost none of them have made it to the NSF program managers. Dolly said that by design, agencies aren't supposed to get them directly. Scientists don't understand (at least some times) that agencies don't get the reports. Dolly says what Sandy (equipment) desperately needs to know how things work out and Mike's mandate is QSI. Comment by Dale: We need to know what the objective of the form is.
- Should limit this form to chief scientist rather than every PI on board.
- Comment from URI. Planning by the institutions is often worse than that by outside users.
- Barrie (WHOI) noted that Captain and technicians reports are generally defensive. Comment: our (technicians') role is not to evaluate scientists. Feedback is needed.
- Sandy said that you don't have to accept every cruise if the PI doesn't follow the rules. Lively discussion ensued
- Should we have a (different) technician/technologist form?
- What is appropriate distribution of these collected forms? Wider distribution may limit the "harsh reality" comments.
- Funding agencies uses quality feedback info help make funding decisions.
- How to organize the comments of cruises that have many co-chiefs?
- Pre-cruise planning should improve communications and avoid some of the points of contention?
- The goals have to be clearly defined in order to do better PCAs.
- This isn't about judging scientists; the goal here is to improve our "service" organizations.
- Sandy: you can turn ill-planned cruises away from your ship(s). You don't have to schedule every one.
- Dale: it seems that the operators/technicians are not getting enough information in the cruise planning process. The scientists aren't always

forthcoming with this info. Therefore, we (the marine offices, working with their technicians) have to be more pro-active in figuring it out.

Mike asks the meeting to send in comments on what you feel strongly about.

1220 -1315 Lunch Break

1317 Reconvene.

Dale Chayes, Chair for afternoon session, reported that the Winch and Wire Handbook which is now finished. He acknowledged Jack Bash (URI) for his excellent work on this project. There followed several speakers on the W&W subject.

1320 Peter Wiebe (WHOI) on Future Science Needs - Dr. Wiebe introduced himself as a zooplankton biologist just returned from two cruises in Antarctica aboard ***R/V Nathaniel B. Palmer***. Dr. Wiebe's viewgraphs are included as ***Appendix VIII***. Historically zooplankton researchers started out with Longhurst- Hardy Plankton Nets, then Bongos and then MOCNESS (Multiple Opening and Closing Net Environmental Survey System) and later towed body acoustics. BIOMAPER uses a winch-towed body system built with DURIP money by Dynacon for $380,000. It was tested out in 30-ft seas. They built a stiff arm to put docking system on stern A frame on the ***Palmer***. The system has many environmental sensors: CTD, optics, acoustics. After deployment it is brought into a heated van. System uses computers to do real-time data processing. Wire tension very stable even in 30-ft seas. He says that despite the increased use of AUV (Automated Underwater Vehicles) we will still need towing systems. He thinks the Committee and handbook should be Winches Wire and Handling Systems, not just Winches and Wire. The need for large and heavy systems will remain. He cited increased bandwidth (more data will be processed in the towed body). There is also a need for self-propelled vehicles deployed ahead of ship. For the future, we need more conductors, fiber optics, higher speeds, motion compensation (8m of slack wire might be OK on ***Endeavor,*** but not on ***Palmer***. He said that wire jumping out of sheave is dangerous. There is an increased need for docking mechanisms (why have we not paid more attention to these?). He expressed a need for look-ahead sensors and improved display of relevant parameters on ship.

Questions: What was the gas used for compensation? A: Nitrogen.
Q: Why was the tension greater at lower wind speeds? A: The unit was at 100 m. during storm.
Q. What cable were you using? A: 0.68", 3-conductors cable with fibers (46,000lb breaking strain). A heavier cable has less inherent towing angle so you must pay out more wire with thinner wire. He told a story about an ice chunk damaging towed body. He puts lights and car batteries on MOCNESS to "blind" krill. Bob Knox comment how rapidly ship design and scientific needs were becoming blurred.

1400 Jon Alberts (WHOI) on Safe Working Load and establishing Wire Science Mission Requirements - Jon started out comparing used systems in the early days with those used now. His viewgraphs are included as ***Appendix IX***. In the early 1980's 11 cables were found just on CTD winches (Dinsmore statement). He gave history of the Winch and Wire Symposium in 1999. In early 2001 the Safe Working Load Group was formed, by mid- 2001, the Wire Science Mission Requirements and Specifications Group met. The objectives are towards establishing Safe Working Loads and working to develop mission requirements. 0.322 CTD cable is in use now throughout the fleet. A 0.68 coaxial cable group developed a standard back in the early 1980s. Vendors are likely to include The Rochester Corp and the Wire Rope Corporation of America. They bought a 10km piece of 0.680 fiber optic cable on a winch that Tom Althouse is custodian and are working to buy of a couple of 0.322 Fiber Optic cables. He asked for input via the UNOLS web sites. Please go there! He admonished. Tell us what you need. He passed a handout around. He wants scientist input as well.

1415 Tom Althouse (SIO) on Safe Working Load - Tom said that there is no specification for Safe Working Load (SWL) or safety factor we should use when using these cables over the side. The problem is the weight of cable: at 5,000m you are already at SWL (for 9/16 cable at 5,000m SWL is reached). We need to establish a consistent set of guidelines that we agree on as a group, and that the regulatory bodies will acquiesce to. ABS (American Bureau of Shipping) and USCG have agreed to take what we propose and then respond. This group needs to meet. Southampton Oceanography Centre has a theoretical study. There is a definite need to monitor and record wire tension. There was 50,00 lb of tension when Dan Fornari's camera was lost. For cargo handling gear, wire SF (Safety Factor) = 5. For occupied submersible handling equipment the ABS SF is 4.7.
Q. What about tapered cable? Or synthetic cable?
Tom's viewgraphs are included as ***Appendix X***.

1430 James Stasney (Dynacon, Inc) on Over-the-side-Handling Gear (http://www.dynacon.com/default/UNOLS.html**).** Ultimately, James said, either the wire breaks or winch breaks. A key is to reduce bending load and snap load. He suggested that a traction winch for CTDs with bend ratios of 80:1 is ideal. A docking system with latching plate for CTD is needed. The A-frame sheave 56" in diameter for 0.960" cable. A telescoping 'A' frame is needed for deploying packages from stern in ice. Low fleet angles on even large diameter sheaves should be used to reduce stress on cable. He noted that a three-sheave cable tensioner can be a cable destroyer. Systems should have no fixed sheaves, because even one or two degrees will scrape the galvanizing off the strands. For cranes, he noted that most cranes are designed for land, not ship-mounted operation. His advice: don't assume an A-frame is an A-frame and a sheave is a sheave. External breaks or crutch for static situations. Booms must withstand side loading. Skid mounts on gear can spread the load on deck and avoid deck reinforcement. When buying, try to think what do I want to do rather than what do I want to buy. Compare electric vs. hydraulic winches. If you do the same thing all the time then hydraulic is the answer. Biodegradable marine hydraulic oil is available from Royal Purple hydraulic oil (www.royalpurple.com). Lubricating wire is good if it's allowed. They (Dynacon) have lubing systems. But consider these advantages of electric winches:

- Quiet
- Non-polluting
- Big
- And they have a flat torque curve

While hydraulic winches have

- Better peak torque
- Easier to package
- And exhibit more performance

1500 - 1515 Break

1518 Capt. Morgan Terrell (U.W.) on International Safety Management (ISM) Code and the Research Fleet. Captain Morgan presented to the meeting the steps U.W. has taken to implement ISM. He offered advice (e.g. for Class I Ships he advised starting early as it takes 18-24 months to instigate), suggested planning, how to start, outlined the 13 elements of the ISM Code, gave examples, informed us of where to find information, and recommendations (see ***Appendix XII*** for details). His presentation was informative and illustrated with some amusing images. He said there were Opportunities for Improvement (he didn't like the word "Deficiencies"). The current status is that the deadline for compliance is 1 July 2002. Class I ships of The Big Four (SIO WHOI, UW, and LDEO) are on track to get certified by April. He suggested the use of the Power Point presentation to teach your crews and showed examples of how UW has formulated their plan for ISM.

Q (Sandy Shor): Do you see this as excluding "the untrained" from your ship?
A. The technicians are already trained in the procedures and they in turn will train people on the ship.

1600 Paul Stone (Southampton Oceanography Centre, UK) reported on an overseas operator's guide. See ***Appendix XIII***. The ISM code arose from a series of maritime disasters. It stems from SOLAS (Safety Of Life At Sea), which was spurred by the 1912 Titanic disaster. There is a strong relationship between ISO 9002 and ISM; however, there are some points that don't overlap! He said that Research Vessels are inherently different than other ships for which ISM was designed. We think our operations are safe. But it took them four years to get started. He compared the ISO 90002 to the ISM code. They had a "culture shock" about how they were going to comply. They had a problem with the audit. They got colleagues to do test audit to see how things work. Then they had problems with ISM Certification. Southampton graduated about 2 years ago but still have a long way to go. He said that if you have an accident it means that something went wrong and you must put it right. He wondered if any US groups had been certified by ISM. (WHOI & SIO have prepared their initial paperwork). He felt that ship Masters in UK consider themselves above the masses but ISM says they must be involved with investigating the system.

1640 Doug Friske (NOAA) on NOAA, IMO and STCW (***Appendix XIV***) - NOAA had decided to make the seven ships that go into foreign ports ISM compliant. They want to

become self-auditing; they obtained Training Database software (Cyngus Solutions: Gyrus Training software). Their people were more at ease with training at home rather than traveling to get trained. They also have Powerway document management software for "compliance" with ISO documents with version control of many formats of documents. Includes routing and signature support and web publishing in PDF format. It's a large and complicated set of documents. It would be nice to have search capabilities. It can handle pictures but not video (yet). NOAA would like to have about 200 scientists trained by coming to their facility. (Approximately 1200 scientists use NOAA ships per year). The response of scientists and their managers to STCW (Standards of Training, Certification and Watchkeeping for Seafarers) training is very mixed.

The Joint RVOC/RVTEC Meeting adjourned at 17:14

Wednesday 24 October 2001
URI/ Graduate School of Oceanography
Coastal Institute Building

Following yesterday's Joint RVOC/RVTEC meeting, the 2001 RVTEC Meeting **Convened at 0900** with introductions of the participants.

Chair Dale Chayes (LDEO) made several meeting announcements, including some Meeting Agenda changes. Also:

- T here will be the Election of RVTEC Vice-Chair. Marc Willis will assemble candidates.
- M eeting minutes: there were no objections to the method used for RVTEC 2000
- I NMARTECH (International Marine Technicians Workshop) 2002 will be held in Japan at JAMSTEC (Japan Marine Science & Technology Center). Barrie Walden (WHOI) will be the RVTEC representative. In 2004 INMARTECH will be in Southampton (UK) or BAS (British Antarctic Survey) and in 2006, in USA. But where? Suggestions were SIO, as Woody (Sutherland) did such a good job in 1998. Others suggested the East Coast as it was on the West Coast last time.
- A Data Acquisition System survey is coming
- S how & Tell presentations from Bill Fanning, Tom Wilson, and Tim Pfeifer on Iridium

0910 Barrie Walden (WHOI) on Basic Levels of Support - The group presently consists of Barrie, Marc Willis, Barrie Walden and Jean Captain. It is not easy to do this by e-mail (communicate with group members). These are some of the issues that the group dealt with:

- There are so many things to consider that it is difficult to tackle.
- They could establish a standardized "protocol" to define the dialog in planning that is relatively uniform from ship to ship.
- The idea of coming up with standard equipment is good in theory but very difficult as soon as you try to do it. So they next thought, "OK, not specific, but just say to the level of "we have a CTD", not what sensors are on them. Then they realized that now more complicated equipment exists that technicians or even scientists don't know how to run.
- Then the idea of having Centers of Excellence emerged, with a group of technical specialists, but this not simple either because who supports the specialists? and what if the instrument goes out of use?
- The positive side is the idea of having a pre-and post-cruise evaluation. This might do some good. They did not suggest that the committee is going to write such a thing, but rather, get input from you folks. Then the idea of doing a web page emerged.

Barrie suggests that tomorrow we kick around ideas and then provide the ad hoc committee with ideas and issues with some hope of success. Dale commented that we go further and talk about how to do this now. Sandy Shor wanted to exclude the big complex systems from basic levels of support (they are not basic) and wants to understand the minimum requirement for different ships.

0919 Andy Maffei (WHOI) on SeaNet (update) (*Appendix XV*) - The SeaNet system provides Internet connection to ships. WHOI, LDEO and Geo-Prose (Geosciences Professional Services) are partners. Presently it is installed on six vessels and there is one portable system. Thanks to Sandy Shor, it is on MELVILLE. Installation needs some time to arrange. NSF support continues. SeaNet email is up and running and they are testing a video. Andy reported that one gigabyte of information had been handled by SeaNet on UNOLS vessels this year. More information on Cmail (SeaNet e-mail) can be had from Seanet-support@seanet.int (SeaNet's web site is www.seanet.int). CMail is being used without Andy knowing it - an encouraging development. One of the more fun things to do is video conferencing. LUMCON spurred us on in developing interest in video conferencing. There were several questions:

- Q what about its use for troubleshooting? A. Dale is looking into remote troubleshooting.
- Q What do you do about cost? A. Accounting was major source of discussion. Yes, they set up accounts with a user name password. There were complications with data coming in at same time so they set up data pipes to split costs between incoming and outgoing,
- Comment: WHOI rates have had discussion with satellite companies.
- SeaNet has created a web site so that operators can look at their accounts.

Other developments:

- Dale: There are two ways to double speed: one is using both satellites at same time. Load balancing software exists to do this, but the method needs tuning; the other is to upgrade an INMARSAT Bm Ship Earth Station (SES). INMARSAT is going to set up 128kb system and has been doing extensive testing.
- COMSAT is no longer a US Government corporation and will be privatized.
- Two years ago we were stirred up about the advent of INMARSAT F systems now there will be a test of system F1. Dale was asked to use ***Ewing*** to participate in a test arranged (and paid for) by INMARSAT. Not sure yet what the hardware will be. Japan Radio Corporation (JRC) may be working on the system. Nera is known to be developing a system. Thrane and Thrane is likely to have the first type approved system.
- SeaNet group has been talking with INMARSAT service providers about a link that is always up or always on 9600kbyte transfer but to only charge while data is transferred (packet information).
- Also talked to INMARSAT Service Providers to use always connected service bandwidth for ships on multi-ship program.
- Also watching and talking with Rich Findlay re Iridium systems

1015 Discussion on Breakout Sessions to follow
The following sessions are planned:

- **Toby Martin leading Wireless Data Communications/Networking** – Watkins Room 12.
- **Rich Findley leading Data Acquisition/LabView** – CIB Large Conference Room
- **Tom Wilson leading Debubbling Systems** – Technical Services Building Laboratory (see ***Appendix XVII***).
- **Onboard Ultra-pure Water Systems** - Technical Services Building Conference Room

Because there were no takers for the Ultra-pure Water Systems, a brief discussion ensued:

- Rich Findlay (HBOI) remarked that water to be purified was taken from all different places (e.g. ship-made, or from some island). The trouble is the quantity of junk in it, so they pre-filter and distill it. Another problem is the lack of space for distilling equipment. They end up with better than 1Megohm going in to their milliQ system What about getting better life out of cartridges? Discussion ensued.
- Steve Hartz (U of Alaska) doesn't use a still any more because of cooling water needs. What do you do with waste product from RO?
- Tony Amos (UTMSI) Commented re Base Level of Support. Who supplies the filters? Ship or project?
- Barrie Walden (WHOI) noted that the head tank supplies enough pressure when put above the MilliQ system.

1030 Break

Note: The Vice-Chair's Sony Vaio failed after someone pulled the plug or it was dropped in moving tables and it literally died. After absurd efforts to find batteries (he didn't bring spares -why?) By the time he got the computer back up it was 1126 the DAS Breakout session was almost over. In general, minute keeping during breakout sessions is not easy or practical. In some meetings, breakout sessions are repeated so that participants can attend all sessions. At this year's RVTEC each session was held only once and concurrently.

1200 - 1315 Lunch

1314 Reconvene Breakout Session on DAQ

David Begnini (NOAA/OMAO) reported on the SCS (Scientific Computer System) Data Acquisition System that is on most of the NOAA fleet + some other vessels outside NOAA (see Appendix XVI). He outlined some features of SCS:

- Data from sensors is run via serial cables directly to the computer
- The system is a Client/Server type where anyone using a PC can go off server to get on to Windows & acquire the data for display, plotting, track line plots, and event logging

- Most data files are ASCII, comma delimited, that can be viewed and edited using and editor (one capable of handling large files).
- The system does some quality monitoring but does not flag bad data
- It runs on 2 servers but does not do automatic changeover.
- There is a problem with $ sign interpretation
- It is often difficult to get operators to keep up with system calibrations.

Question: How do you handle analog inputs? Answer: We use analog to digital converters, but no significant discussion about details.

David used simulators for demonstration of how the system works. True simulators are where information goes in one RS232 and out another. The whole system is menu driven with a series of simple menus, password protected. SCS also utilizes sounds so that if data gets bad data the computer speakers say "Data Bad" but people changed sound to Budweiser Frogs or turned volume down! The Server logs "Parent" data in Raw Data file. The Client can then acquire "Child" data such as COG, SOG (Course and Speed Over the Ground) for example. The user can show 4 data windows, display can be in the form of bars and dials display or real time graphics display. Send SCS allows a user's PC to acquire any suite of data via a com port (i.e. someone in another part of the ship).

The Event Logger allows logging of data either based on a manual event (clicking a button, for example, or an automatic event (say starting when a specified latitude is crossed and ending when another latitude is reached). The configuration file is password protected and backed up frequently.

They decided to stay clear of "big-time data" like ADCPs, CTDs, multibeams and seismic systems e.g., and also to stay clear of ship's data (engine room data e.g.).
NOAA doesn't generally give the software except with an MOU (Memo of Understanding).

Session adjourned

1500 Meeting Reconvened:

Barrie Walden (WHOI) presented the history of DAQ on ***Alvin***. Alvin had a DOS-based system that worked so well that they resisted the change until Dennis Shields, NOAA, came up with SCS. They first used Nutcracker to convert code but could not afford the software so finally went to HPV, a competitor of LabView. They bought both. It's now called Agilent Vee because HP spun off their instrumentation division to Agilent. Both programs can run Active X boxes, and also run MATLAB for high-level mathematics and analysis.

Barrie developed the system pretty much as a combination of what we heard this morning. (i.e. LabView/SCS). The system uses configuration files (one file for all sensors). It puts out an Excel file for singular data and also outputs UDP datagrams to the network. Barrie could not show his PowerPoint slides (could not connect to the VC's docking station) so he had to describe the system verbally. It is used on ***Alvin*** and ***Atlantis***. It works well on

simple ship applications. There are a few problems with running it on ***Alvin***. He noted that HP Vee code is a text file.

Rich Findley (HBOI) on re-doing their VIDS (Virtual Integrated Data System). Their history: first came SAIL (Serial ASCII Interface Loop), then CIDS (Central Integrated Data Systems), and now VIDS. Everything is carried on the Ethernet. There are Multi OS written in National Instruments LabView via Data Sockets and multiple computers. The philosophy is to write VI's (National Instrument's Virtual Instruments) using Multiple Computers as you cannot write one program for every sensor. There is a Global Configuration utility - configuration file. Data is displayed on computers all over the ship. The displays change ranges easily but reverts back to previous scales.
Q: Let's say I wanted to change scale permanently. Can I do it? A: Yes.

16:28 Reconvene General Meeting to discuss Sessions

Toby Martin (OSU) discussed the (Wireless) breakout session: the big thing is how to communicate from ship when at another institute's dock and from ship-to-ship during multi-ship operations. Rich Findley commented on difference between store-bought and homegrown systems. Dale Chayes spoke on recent AICC meeting talking to the Captain of ***Healy***. He remembered a smart sensor with calibration data and scale factors built into them. He thought there was an initiative by IEEE (Institute of Electrical and Electronic Engineers) to standardize. John Freitag "dredged up Bill Gates" - plug in a new piece of equipment and a window pops up saying detected a new sensor - do you want to install it? Tom Wilson, quoting John F. said he spent much of his career buying $50,000 bits of gear no more complicated than a color TV.

Some final discussions:

- When should we have an RVOC/RVTEC Joint Meeting again? John Freitag thought that formalizing say every 4, 3, or 2 years would be the way to go. Most thought that the Joint Meeting was successful.
- Who might host next year's RVTEC meeting? Some suggestions: on (Rich's) Cruise ship? On the West Coast?
- Directions were given to get to the restaurant. (They turned out to be lacking in important metadata.)

Meeting adjourned at 1700.

Thursday 25 October 2001
URI / GSO Coastal Institute Building

Convened at 0830 with a brief Joint Session RVOC/RVTEC

0830 Mat Hawkins on Laboratory Van Standardization (see *Appendix XVIII*) - The UNOLS Standardized Van design is flexible and interchangeable. We now have a letter from US Coast Guard (USCG) that laboratory vans are not accommodations and don't need Coast Guard inspection. In not being accommodations, USCG did not want to set PSI and fire ratings. So where do we go from here? Should we adopt minimum standards even though they are not required to be inspected? It's not all that difficult. He doesn't think that is a difficult concept to accept. Matt fielded questions on power supply and grounding. Fred Jones designed the electrical grounding system. He also explained how an accommodation van is defined. The general message: it's not that bad

0845 Marieke Rietveld (NIOZ) on INMARTECH 2002 (see *Appendix XIX*) - Marieke from the Nederlands Instituut voor Onderzoek der Zee (Netherlands Institute for Sea Research) was invited to address RVOC/RVTEC on the upcoming International Marine Technicians Workshop (INMARTECH 2002), which will be held from 7 - 11 October 2002 at the Headquarters of JAMSTEC (Japan Marine Science and Technology Center) in Yukosuka. She outlined the suggested Main Themes of the meeting, and invited RVTEC marine techs to participate.

- Data acquisition
- Hardware & Operations
- Data Management
- CTD
- ADCP
- Meteorological
- Chemical analysis of sea water
- Biological sampling etc.

She thought there might be too much for getting an audience and too many sub-themes. The Workshop Committee is comprised of members from Japan, Europe, and the USA. There will be an announcement in November 2001. The workshop will not be informal, but will be held in "Japanese Style."

The RVTEC and RVOC divided into their respective committees for the remainder of the meeting.

0900 John Freitag (URI) gave an update on the RDI Ocean Surveyor ADCP (Acoustic Doppler Current Profiler), see ***Appendix XX***. They had funding from Sandy Shor to compare a 150KHz narrow band and a 75kHz broad band. The original idea was to replace the 150KHz with a 75KHz. The transducer face size is about the same. There was a cruise on ***Endeavor*** with an RDI representative and Jules Hummon working with Eric Firing. A report is on the University of Hawaii web site. The data was taken in February on a transit

to URI. The units can profile simultaneously and they did a comparison between Narrow Band (NB) and Broad Band (BB) with alternating pings. Cell sizes are not the same in different modes. Lower frequency increases the standard deviation. The BB mode falls apart before the NB mode but the Ocean Surveyor can profile to 800m vs. 400m with the NB 150. The new system received Eric Firing's approval with some reservations

- He wants to see some details of the acoustic sidelobes.
- Beam patterns need more evaluation
- The velocity alias ambiguity is a bit reduced compared to the old narrow band

Questions:
Q. What are the cell (bin) sizes? A. NB cell size = 16 and 8m; BB cell size 8 and 4m.
Q. Why use 150KHz BB and 75KHz NB? A. Because of plate size
Q. How does the original BB ADCP compare? A. With the same transducer size you can double the range. It was a way to test compared to the BB. Another advantage is that it is no longer limited by powers of two bins - gives tradeoff.

0913 Barrie Walden led the discussion on Basic Level of Support - We should concentrate on more basic things first and leave the more complex equipment (Centers of Excellence) for later.
Q. How does someone get support going on another ship that they would get on his or her own? A. We shouldn't expect everyone to have everything. Sandy was hoping to get an idea on what the basic equipment and support that everyone expects. He said that requests for services that a ship does not provide should be addressed to the science program manager.

Q. What would you consider normal operation say on a CTD? A. Every year a document from each institution saying what they have as services should be updated. A document - Service Operated Data Base should be available so that people can see what's available on what ships. Sandy Shor said that Probably 95% of people get what they want in the scheduling process. More than 50% of the problems are due to add-ons and last-minute requests.

Rhetorical Q. Do we tell add-on projects they are level B people? Comment: (Woody Sutherland) Don't forget the add-on could be writing a proposal to use your ship next year.

Barrie suggested that we discuss how we might improve the reporting process. One idea might be to invite chief scientists to the RVTEC meeting. Perhaps discussion among the chief scientist, captain and lead technical support person at the end of the cruise is what leads to the "report"? Tony Amos remarked that SIPs (Ship Information Plans) are required to be submitted up to two years ahead of time on Antarctic ships and reporting before cruise is over is done, including recommendations and problems. Sandy comment: There are some aspects of that already. Dale Chayes said that there is not a clear statement from any ship about what compromises the Basic Level of Service. Sandy retorted that UNOLS ships Cruise manuals show the basics well defined.

0943 Saundra Butcher (Marine Advanced Technology Education [MATE] Center) (*Appendix XXI*) - MATE started in 1998 with surveys at INMARTEC. MATE gets some support from NSF to fund students to become interns on our ships as Marine Technicians. They teach them

- Electronics
- Seamanship
- Hydraulics, etc. etc.

Other things they do are to get educators to stimulate their students. They also promote diversity but obviously it is not working (of the 38 people at this meeting, only 6 are women). Students are mentored at Colleges or Universities. They need to understand that they will work long hours and maybe get seasick. MATE takes care of paying students while NSF pays the airfare. MATE pays supplementary insurance. We (RVTEC) have to decide what we want the student to do. They do try filling jobs with their students. Send openings to MATE. Results so far:

- Placed 33 students on 16 vessels
- Placed 9 students in jobs.

Saundra says MATE is trying to work with scientists too and retorted.

Q. Would you support a MATE intern on a non-UNOLS vessel? A. (From Sandy Shor). Yes, Sort of. Employment opportunity in UNOLS is very small but gives the broadest possible experience to students.

Q. Is there training for deck officers? No MATE is slanted towards marine technicians.

1004 Subcommittee Reports.

Tom Wilson (SUNY) on On-Line Resources (*Appendix XXII*). Tom told RVTEC that SUNY StonyBrook is now officially StonyBrook University. The web site remains on the SUNY server. He has been posting technical traffic from the RVTEC List Server.

Steve Poulos (U of Hawaii) Data Interchange subcommittee. There has not been much activity this year. The only format that makes sense is NetCDF. There is no point in going over it again. He will put the existing info on the RVTEC web site. He did ask for data a couple of years ago, but only got input from Tony Amos (Vice-Chair note: Steve did an excellent job of converting my data). There was a motion to make a final report and dissolve this subcommittee, which led to discussion: Woody Sutherland suggested that the next step is to quality control metadata. Sandy Shor said it would be a mistake to absolve RVTEC from efforts to standardize data exchange. Motion to dissolve the Data Exchange Subcommittee was seconded and carried.

Rich Findley (U Miami) Wire and cable specifications review. He said we couldn't go far until safe working loads issue is resolved. There is a report in the new revision of the Winch and Wire Handbook. The committee is primarily concerned with the core (# conductors etc.). Its plastics. I mean Fiber Optics, folks. For the future there should be large diameter multi-conductor fiber for 3 phase and small CTD type single-conductor

fiber. Ultimately copper should be "outlawed". Woody Sutherland said that a big step towards documenting safe loads is monitoring wire out and tension, etc. How do we do it? Should it be continuously recorded? It's not simple but it has to be done. He proposed to have this charge added to Rich Findlay's subcommittee. Best bet would be analog to chart recorder? Sandy Shor says get some word out there on the net and get this going.

Bill Martin (UW) Training and Education - The web site is up and running but he needs better input from the group about classes. Bill asked that you could e-mail him to tell him what classes your technicians are going to. Also please let him know where to get the cable termination video (Wood's Hole). The subcommittee is open to suggestions. Woody Sutherland: there are two classes coming up next summer: OSI salinity measurement training at Scripps and a free Crosby course on rigging at UW on 4-5 December 2002. Note, Crosby will come to you. Sandy pays for training. Rich has manual and documentation of how to launch and rig CTDs and wire termination and oxygen determinations. Someone suggested that an SCS (Scientific Computer System) FAQ would be good. It was also noted that procedures in ISM documentation should be called Instructions and be part of our training and education effort.

After a break

1100 Reconvene, New Business

Election of Vice Chair. Candidates. Tom Wilson (Stonybrook U), Steve Poulos (UHawaii). Steve Poulos is elected as Vice-Chair.

Next meeting site discussion
Joint RVOC/RVTEC Meetings:
How often will we joint host with RVOC? Dale Chayes said that meeting every year has drawbacks. Some hosts may not have facilities for a joint meeting. Also RVOC said that while the joint meeting was productive they would need longer to meet when that happens. Rich Findley said that at one time there was a liaison between RVOC and RVTEC.
A suggestion to get minutes out earlier was aired.

Tom Wilson said that two years from now would be a good time for joint meeting, primarily because ISM will be in place. Woody Sutherland said that they are better at planning than us. It was agreed that the next joint meeting be in the fall of 2003. Annette DeSilva suggested it possibly be held on the East Coast.

RVTEC Meeting - Rich Findley proposes the Cruise Ship again but nobody responds. If it did come about it would be on East Coast, while it is the West's turn next year. Venues put forward:

- Hawaii
- Oregon (Hatfield Marine Center, Newport), probably
- Seward (Alaska)

Travel problems and venue issues with Oregon and Seward were discussed. The University of Hawaii was proposed and a discussion ensued. Steve Poulos was instructed to go back to Hawaii and put the suggestion to his Dean.

INMARTECH - Next Dale Chayes wondered if we want to address the INMARTECH issue of too many subjects for discussion. It was proposed that we start by nominating a person or persons? Barrie Walden, as our representative to INMARTECH is willing to start it and go from there. Barrie will report to Dale.

Discussion on utility of **Breakout Sessions** - Steward Lamerdin said that fleet-wide issues are not really addressed by the breakout sessions and he would like to see more. He will contemplate what the issues are and contact Dale in a couple of weeks. There followed a discussion of what other subjects for future breakout sessions.

Sandy Shor suggested Standards. Bill Martin would like to see Level of Services. Tom said that this year they took up too much time. It would possibly have been better to have one session where everyone would have attended. Two years ago at LDEO it was necessary to have more time. Moss Landing is getting a towed vehicle and would like to consider a working group? Tim Deering has already done that with a list server.

1147 Show and Tell:

Tom Wilson (Stonybrook U) Weather-proof labels. Tom reported that Avery 5513 sticky labels are (were) available at Staples. Not on Avery's web site. Use color Laser printer and they stick to drifters. There are many options with laminators: for pouches and commercial labelers. Use laser printer because inkjets fade. Also, Staples Funtime Laminator is now reduced to $25. Brother P-Touch series printer/labelers. They work at depth but may fade in the sun. Some have computer interface. There is "industrial" material on the web site.

Tom also reported on their two new boats. The ***Donald W. Pritchard*** is 28ft. and can carry a shallow water multibeam (EM3000.) The ***SeaWolf*** is 80ft, built in 1982, but converted in 2001. She has berths for 12 people. Can do trawling if A-frame removed and ramp installed.

1158 Bill Fanning (URI) demonstrating "The Virtual CTD" (*Appendix **XXIII***). The site is <http://131.128.105.32:1852>. A better title is Real-Time Data web server. It now has Winch and SCS (Underway) data sent to browsers. They are considering ADCP and wondered if there was anything else that could go. A small application reads a shared data file and responds at a pre-defined port with html formatted data using html refresh. Rich Findley said that a lot of data acquired fast might slow down the server.
Q, is there a worry about security on your server? A. Not on ship. But Dale says you should be concerned with security in designing things like this, as more ships will be more connected in the future.

1211 Iridium, Tim Pfeiffer (ONR) Ship Operations and Technical support. - The National Ocean Partnership Program (NOPP) Ocean. US program is exploring Iridium application. The Iridium based system works like ARGOS but is bi-directional and available continuously rather than when the satellite passes over. He doesn't know what the rate will be but it could range the gamut. Will be putting notice out on RVTEC list server. There are about 100 existing prototypes. Ocean.US would put existing prototypes on UNOLS vessels for testing. Rates are completely unknown. He said think about responding to this for free hardware. It is widely thought that DOD has bailed out Iridium. For DOD users, the cost will be 500 minutes/month for $40/month. A "Crypto" module is required ($4,000 on top of hardware). For non-DOD users they have offered to provide 500 minutes free @ $120-$150 /month (2400bps uncompressed). Non-DOD users don't need clearance. Tim is willing to be convinced that we can make a significant difference in the e-mail problem. If it doesn't take care of the majority of the routine email it would not be worth the effort. Tim can't handle uncertain costs, there has to be a hard limit. Sandy Shor wondered what's the significance to 500 minutes? Beyond that, expense goes up significantly.
Q. (Sandy) what are you asking? A. Wants single document for all the RVTEC community. Rich Findley moves that we pursue this, John Freitag seconds
Clarification: This must make a major impact on the email problem (A back-of-the-envelope calculation: This amounts to 15 minutes of high speed INMARSAT B.

Following Tim's presentation, a motion to adjourn the 2001 RVTEC meeting was made and seconded.

1230 Meeting Adjourned

Dale called for the meeting to thank Tony Amos for the past 4 years. Applause follows.

An Afternoon Session of Technical Presentations by manufactures ensued.

1312 Dan Gibson (Knudsen) made a Technical Presentation of the 320BR Deep water system, see ***Appendix XXIV Part a and Part b***. Q What about Problems with NT PCs? SCSI interface problems. They will address these in User's Manual

TSS
Grant Jennings Gen. Manager TSS in Houston, TX
Can train any techs on any of their gear
Voyage data recorder

RDI
Talked about their ADCP Broad Band Processor and tried to clear up the confusing terminology. The Narrow Band ADCP was the original, and then came the Broad Band Work Horse and now the Ocean Surveyor. The Phased Array is a different transducer technology. Generally, the lower the frequency, the deeper the data. OS 75 has now solved

the filter skew error problem. Described the WINADCP software, bottom tracking to 1000m with 75KHz. In 2001 RDI officially obsoleted the Narrow Band.
Q (J. Freitag) in Jules report mentioned differences between transducers - side lobes. There was a discussion about chirp technology - too complicated and costly. Their new software will be available 1 Nov 2001 and will be downloadable on website.