RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE November 18-20, 2003 United States Coast Guard Integrated Support Center - Bear Room Pier 36 - 1519 Alaskan Way South, Seattle, WA

A complete copy of the meeting minutes are available in PDF format at <<u>200311rvtmi.pdf</u>>

Meeting Presentations:

Day 1: Presentations and Materials

I. Meeting Agenda II. Meeting Participant List III. NSF Report (Sandy Shor) IV. ONR Report (John Freitag) V. USCG Report (David Forcucci) VI. RVOC and Safety Committee Report (Bill Martin) VII. UNOLS Report (Annette DeSilva) VIII. Defined Levels of Technician/Instrumentation Support IX. RVTEC Swiki X. EWING Seismic Tailbuoy (John Diebold) XI. SeaWaves <<u>http://www.seawave.com</u>> (Marc Witsaman) - Contact Lawrence Zevon (LZevon@seawave.com) for info on this report XII. SeaNet (Andy Maffei) <u>http://www.seanet.int/index.html</u>

Day 2: Presentations and Materials

XIII. INMARTECH 2004
XIV. Functional Requirements for the Next Generation Wire
XV. ADCP: Automated Shipboard Processing and Monitoring (Jules Hummon)
XVI. Post Cruise Assessment Reports (Annette DeSilva)
XVII. EWING Replacement Report (Dale Chayes)
XVIII. Alaska Region Research Vessel (Steve Hartz)
XIX. KILO MOANA Report (Steve Poulos)
XX. CAPE HENLOPEN Replacement Vessel Status
XXI. UK Ocean Research Services (Geraint West)
XXII. Arctic CTD (Dick Perry)
XXIII. Science Data Network (USCG)

Day 3: Presentations and Materials

XXIV. <u>Multibeam Options</u> (Dale Chayes) XXV. <u>High-Resolution Marine Meteorology workshop</u> (Linda Fayler) XXVI. <u>Ocean Surveyor ADCP Overview</u> (Jules Hummon) XXVII. <u>Globally Corrected GPS</u> (Val Schmidt) XXVIII. Ridge 2000 Metadata forms (Dale Chayes) XXIX. <u>Applanix POS/MV</u> XXXX. Caching Web Server (Joe DiGiovanni) XXXI. <u>Report from MATE</u> XXXII. <u>RVTEC Meeting Locations</u>

Day 1, November 18, 2003

Meeting Called to Order - Dale Chayes, RVTEC Chair, called the 2003 RVTEC meeting to order. Dale

requested all cell phones be turned off (or set to silent or vibrate.) A few copies of the 2002 RVTEC Draft Meeting minutes were placed on tables in the back of the room and Dale asked everyone to review them.

Introductory Remarks - Dave Forcucci, USCG Liaison went over meeting logistics and carpooling information for travel to Seabird Technology and to the UCSGC HEALY tour.

Welcome - Captain Daniel Oliver, CO USCGC HEALY made the welcoming remarks. Captain Oliver is the current Commanding Officer of the HEALY. He was the Executive Officer on HEALY for Science Trials. At this time, none of the icebreakers are in port. POLAR SEA and POLAR STAR are headed to McMurdo Station and HEALY is in Todd Shipyard. Capt. Oliver then gave a brief overview of current science support on the USCG icebreakers and praised UNOLS/AICC for their role in the design of HEALY and in the science trials.

Dale Chayes then went over the details of the meeting this week. The agenda is attached as *Appendix I*. He asked that everyone review the draft wire specifications in preparation for later discussion. Introductions were made around the room. The attendance list is included as *Appendix II*.

Acceptance of Minutes - Approval of minutes from the 2002 meeting was delayed pending review during next couple of days. Approval will be made later at the meeting.

Agency and UNOLS Reports:

National Oceanic and Atmospheric Administration (NOAA) - Mike Webb:

Mike went over a few of the many changes that are taking place in the NOAA Fleet. They have been able to transfer some of the Navy's ships into their fleet. NOAA received an YTT (torpedo trials craft) to take place of the FARREL on the east and gulf coasts. FAIRWEATHER is being refurbished to become a hydrographic survey vessel. NOAA has also converted some of the ex TAGS ships. INDOMINTABLE is being converted to replace McArthur (McARTHUR will possibly be going to the Marshall Islands.) LITTLEHALES will replace the WHITING. (WHITING will go to Mexico.) CROMWELL will be going to American Samoa. The new Fisheries Survey Vessel, OSCAR DYSON, was launched and may begin operating in late 2004/early 2005. A Second FSV is being built.

OCEANOGRAPHER is now in Kirkland, WA serving as a windbreak. BALDRIDGE is sailing as a cruise ship in Antarctica.

The NOAA research ships will be upgrading from Narrow Band ADCPs to Ocean Surveyor ADCPs. He noted that SURVEYOR was listed on Ebay.

RVOC & Safety Committee - Bill Martin, UW (RVTEC liaison for RVOC and the Safety Committee) Bill's slides are included as *Appendix VI*. The UNOLS RVOC Safety Committee met October 6th and 7th in conjunction with the RVOC meeting held October 8-10 in Duluth, MN. The Safety Committee plans to review and update the RV Safety Standards. The revised version will address the difference between inspected and uninspected vessels. Bill said that in his role as the RVTEC rep, he will be reviewing radioisotope and hazardous material guidelines and will be requesting input from the community. They would also like comments on what the science party's personal gear should consist of, e.g., shoes, hats, work vests. They would also like to include "level of support" and "winch and wire" into safety information as well as including standards on wire rope. The new safety manual will include also ISM & SOLAS information.

Bill also commented that the current safety videos are very outdated and need to be updated. The new version will most likely include digital videos of simulated scenarios.

In a short overview of the RVOC meeting, Bill said that during the closed Round Table discussion at RVOC, the subject of voluntary ISM compliance was addressed. He noted that the presentation by SeaWave was interesting.

Bill also said that there was discussion on ship security in foreign ports (or in any port.) He said that there would need to be improved documentation on scientific gear that is to be brought aboard ship. Proper identification of the science party will be required and shipments will have to be cleared more carefully. He also commented that foreign personnel arriving at US ports has been a problem.

Office of Naval Research (ONR) - John Freitag (John's slides are included as *Appendix IV*.) John announced that Dr. Stephen Lubard is the new Technical Director at ONR. Dr. Lubard is in the process of reorganization. Results of his efforts are expected to be released after Thanksgiving 2004.

Funding days in 2003 equal 793. There are 834 requested for 2004. 740 were funded but that number is expected to go up a bit due to some large projects (and a few normal-sized ones.) ONR supported various Ship upgrades in 2003

- Z-drive overhauls and gear upgrades
- Z-drive spares to allow timely recovery
- KNORR and MELVILLE propulsion electronics SCR upgrade
- Dynamic Positioning System upgrades on THOMPSON and KNORR
- New radar set KNORR
- Simrad EM-300 on THOMPSON

Instrumentation funded Included:

- RoadNet band satellite communication for the Pacific ships
- A laser wave measurement project
- Communications upgrade for POINT SUR to support Navy projects
- ATV activation project

John said that ONR has participated in two INSURV ship inspections. They intend to include 2-3 RVTEC persons on THOMPSON's inspection in December with the goal of increasing cross-fertilization in a non-adversarial way. He also said the Navy's Ocean Class Common Hull study includes a continuation to address preferred hull design for Ocean Class ships. There was a question as to who will fund the Regional Class acquisition. Answer: "NSF." It was noted that in the current FOFC report, there is no line item for Ocean Class Vessels.

John showed a slide with the R/V MIRAI Scoreboard displays that were available during the ISOM meeting.

NSF and ONR have had 4-5 requests for new handling systems. At present, there are approximately 53 winches between ONR and NSF ships. There is money now to purchase new systems and both NSF and ONR have funded a study to evaluate what is available before any new ones are purchased. Dolly has requested that Matt Hawkins, U. Delaware chair a committee to evaluate the available systems. The committee will also include Marc Willis, Andy Bowen, Jim Holik, and Tom Althouse (for a total of 5 persons.) They are to visit winch manufacturers (including foreign companies.) The companies are Dynacon, Markey, Caley, and one more British company. John said that this study would address to safety issues.

A question was asked, "Is ONR ship-time money going away?" John said that this rumor is false. No other follow-up questions were posed.

United States Coast Guard (USCG) - Dave Forcucci

Dave gave a PowerPoint presentation on the history of the US Coast Guard support for Antarctic and science, leading up to the current situation of the repair/upgrade/and/or replacement of the POLAR SEA and POLAR STAR (see *Appendix V*).

Dave also gave a brief rundown of the numerous problems that the POLARs incurred breaking into McMurdo

Station and during re-supply in 2003. He then went over the HEALY 2003 summer schedule.

He closed by going over the USCG's concerns for the future of the POLARs.

Fleet Improvement Committee (FIC) - Mark Willis, OSU

Mark reported that the Regional Class SMRs as currently drafted would be the baseline for the Regional Class design. There were very limited comments received from RVTEC for the Regional Class SMRs and they would not like to have that happen again.

Mark said that NSF is very interested in the competitive aspects of the integrated team approach (builder, architect, and operator) for the Regional Class ship acquisition process. The integrated approach is an alternative to the NAVSEA one design approach. This was suggested by JJMA and supported by NSF. In this approach, there are multiple paid teams under contract to each develop a ship design based on performance specifications. Each team is to generate a design and then NSF down-selects the one with the most, "bang for the buck." FIC has recently sent a letter to NSF stating their concerns about the integrated team approach. In particular, they are concerned with the process in which the community can participate and provide feedback. The Regional Class vessels will all be of the same design.

KILO MOANA: In addition to Post Cruise Assessments, FIC has been in the process of debriefing chief scientists who have used the vessel. A moon pool was installed on the vessel but it will be closed up. The swell effects between the hull were much greater than anticipated. Gear launch and recovery through the moon pool did not work in a seaway. In calm it was fine.

Lastly, Marc commented that NSF would no longer seek a waiver for ship-ops proposals to exclude them from the normal NSF review process.

National Science Foundation (NSF) Report - Sandy Shor

Sandy could not attend the RVTEC meeting and so gave his report via teleconference. (See *Appendix III*) The FY 2004 budget has yet to be approved by Congress. NSF is operating under a continuing resolution. It is anticipated that funding will be flat in 2003, plus or minus one or two percent. The biggest issue is that there is 20 to 30% more ship days planned in 2004 than in 2003. There are 3,700 NSF-funded ship days planned for 2004. With the lack of additional funds in the division there will be a significant amount of rearranging required.

The deadlines for Instrumentation (10/15) and Technical Services (11/15) proposals have both passed, but Sandy has given some flexibility. They have received eight instrumentation proposals to date and expect five more. The technical services proposals for this year are (mostly) in the form of an annual report. All you need to do is fill in the personnel and attach a PDF of the entire proposal. All other questions are answered by phone.

Marine mammals – This has absorbed an inordinate amount of time and has been cause for much scheduling difficulty. Two cruises have been partially or completely canceled, including one yesterday. A question was asked, "Is NSF actively looking to add personnel to assist with this?" Answer: "No." Follow-up question: "What can we do to help?" Answer: "Encourage progress."

Phil McGillivary posed another question, "The USCG has concerns for the white hull fleet. Are there synergies?" Answer: "At the current time, we are only concerned about seismic sources (air guns, GI guns, water guns). No other systems have yet arisen but could in the future. Michael Rawson at Lamont has been handling marine mammal permitting issues and using LGL Environmental to help. There is a long involved process."

Follow up question by Steve Poulos, "How will funding be handled?" Answer: "By discussion."

Coffee break

Quality of Service – Dale reported that the group held a meeting last week. They are continuing discussion about how to provide the necessary depth and breadth of technical support to provide first class support for science and high quality data.

DESSC and Other UNOLS Reports - Annette DeSilva UNOLS provided reports from a number of UNOLS committees. Her slides are included as *Appendix VII*. The report included information on the top ten issues facing UNOLS. Fleet Renewal activities are a major focus. If renewal is not implemented on schedule, by 2008 there will be a shortage of ships to support science.

Deep Submergence Science Committee Activities - Major activities and improvements to the National Deep Submergence Facility (NDSF) over the past year and planned for the future include:

• Upgrades to Jason 2 and DSL-120 - 1st science programs successful (Fryer used Jason 2 at 6500 m)

• A Human Occupied Vehicle (HOV) Design Study is underway for a replacement of ALVIN. The new vehicle would be more capable, have better ergonomics, improved visibility, and a 6500-meter capability.

• DESSC Outreach - The DeSSC is trying to do a better job at reaching other disciplines, non-MG&G

For the first time there will be no DESSC meeting at the fall AGU. Instead the DESSC Annual Meeting will be held at the 2004 AGU Ocean Sciences Meeting in Portland, OR on January 25, 2004. It will be a traditional meeting plus a training session on the NDSF.

The OSB's Committee on Future Needs in Deep Submergence Science released their report last week and it is available on Web. It recommends new submersibles; both manned and unmanned that are more capable than those in the current fleet. The new HOV should have depth capability to 6,500 meters.

Ship Scheduling Committee – Annette continued with a report on UNOLS ship scheduling. This was a "challenging" year, with high demand in peak periods and numerous requests for specialized facilities. Many of the logistics were worked out ahead of time, thanks in part to Mike Prince in the UNOLS Office. There have been many improvements to scheduling due to improvements in web tools and data.

The Large and Regional Class ships have full schedules in 2004. The Intermediates are below optimum levels and the Local ships are busy. There is approximately 289 ship days that will be deferred from 2004 to 2005 due to ship availability (214 days), external reasons (permits, civil unrest, etc), instrumentation availability, and PI request.

Science Committee for Oceanographic Aircraft Research (SCOAR) Committee – Annette reviewed the recent activities of SCOAR. Last month the committee's second official meeting took place in Arlington, VA. They have made some recommendations to CIRPAS and have been seeking to improve communications with the scientific community. They have also begun interactions with UCAR (University Corporation for Atmospheric Research). SCOAR also coordinates with NOAA agency representatives. RVTEC recommended that there be a liaison from the RVTEC Committee for SCOAR.

Working Group on Ocean Observatory Facility Needs – Annette reported that a UNOLS committee was formed, chaired by Alan Chave, to identify ocean observatory facility needs.

• The committee has completed their draft of the report and has made it available for community feedback. Ships would be needed for installation, operations, and maintenance. A rapid response capability is needed. Routine access to ROVs for observatories will be required. Some preliminary recommendations include that UNOLS should develop SMRs for a Global Class vessel that could support observatory needs. They identified improvements that could be made to existing Global

Class vessels to make them better suited for observatory operations. The Chave report is available on the UNOLS web site at <<u>http://www.unols.org/committees/fic/observatory/work_group.asp</u>>.

MATE update - Jill Zande (Jill could not attend the RVTEC meeting so her report written report was read. It is included as *Appendix XXXI*.) Jill reports that they had 23 interns in the MATE program this year on research vessels, in laboratories, and with industry. Some of the interns participate as part of the science party and some via the marine technician groups. Thirteen interns were placed on UNOLS vessels.

The second annual ROV competition was held at MIT in June. Thirty different teams participated.

Technical Services Committee - Barrie Walden, WHOI

Barrie went over background information on the committee and their activities. The committee members are Barrie Walden, WHOI; Woody Sutherland, SIO; Stewart Lamerdin, MLML; Marc Willis, OSU (he is rotating off) and Bill Fanning, URI.

The have worked to develop a technical services outline that would be used as a template for providing information about services. The outline would provide a standard means for providing information to the community. It does not standardize the services provided. (*Appendix VIII*.) Barrie said that the committee would like to receive a consensus from RVTEC that they are going in the right direction with the current outline. They would like to receive all comments by the end of the year so that they can include any new suggestions into a revised version.

There was discussion on where the outline and ship information would reside. A centralized database would be the most supportable. There was also discussion on how to keep the information current. The system would be designed for easy maintenance.

Ship Inspections - Sandy Shor, NSF (Sandy continued via teleconference) Sandy will discuss NSF's plans regarding ship inspections with John Freitag at ONR (see *Appendix III*).

At this time NSF is preparing for the next round of ship inspections. They will probably begin after the first of the year. Sandy reported that the inspection group at Jamestown Marine Services has a new science system inspector. He said that Dolly Dieter, Linda Goad, and Holly Smith all plan to be involved in the process.

Break for Lunch

Wireless Networking and Data Transfer – Toby Martin, OSU; Linda Fayler, URI; Jim Wilson, USCG, John Diebold, LDEO

Toby reported on two e-mail data transfer systems: Globalstar vs. Iridium. Toby reports that Globalstar is less costly than Iridium software (\$40 per month for 400 minutes.) He received reports that Globalstar service has been sporadic at times but that his experience is that Iridium was not as reliable as Globalstar. On his recent cruise they used Iridium and could only receive small files and the up time on Windows was short.

Linda Fayler reported on 900 KHz modems:

• Has used them sporadically for a couple of experiments. Thought about it for wind sensor up the mast, but chose cable in the end. Price about \$250 for a pair perhaps would go a mile or more. Some experience out to seven miles.

• Rich Findley uses remote serial port servers.

- Link between HEALY and POLARSTERN for AMORE 2001
- Used an Orinoco gateway (loaned by NSF). Out to 5 miles.
- Used a pair of 180 degree sector antennas (fore and aft.)
- Ted K (Freewave remote serial links out toward 20 miles)

John Diebold (LDEO) - EWING tail buoy (see *Appendix X*)

- 470 Megahertz Pacific Crest radio to telemeter tail buoy position
- Streamer recover devices (SRDs)
- Levelers (birds)

Ships Wireless Access Protocol – (Appendix IX)

- Goal of providing access for ships at the pier
- Got Seward access to work but could not do
- Got about 4 miles ship to ship last year
- Seattle Wireless
- Forttle (<u>http://frottle.sourceforge.net/</u>) package may help with some of the routing and access

Toby asked, "Sandy what is fundable...?", could handle either one big effort or a few small ones. A plan is needed first.

Sandy replied that a generic communication capability with buoys is a 'good idea.'

How to design it so that " it just works"? Probably some level of central administration is needed.

- Option A:
 - Least common denominator approach
 - Common definition of hardware, configuration and procedures
- Option B (more reliable)
 - More centralized common set of equipment
 - Organized MAC addresses
 - Simple (appropriate) encryption and passwords ("The front door is unlocked but
 - closed.")
 - Community documented and changes are synchronized
 - Perhaps as a shared equipment pool
 - If the "high end" hardware is necessary, then you have to justify it (as usual) in any proposal.

John Freitag indicated that DOD is largely in favor of COTs. He is personally skeptical about the difference in prices of approximately an order of magnitude. How do we deal with the flux in the market?

User stories were described:

- Ship arrives in port and is able to (easily) get an insecure route to the Internet.
- Multiple ships working in proximity can swap files
- Ship is able to "discover" a buoy and figure out if it's policy allows sharing
- A ship with an "out bound" link (such as SeaNet or RoadNet) and whose policy allows sharing can act as a router for other ships or buoys.

Break

SeaWave - Mark Witsaman (see Appendix XI)

Mark gave background information on the company. They are a restart of PinOak Digital Company and began their company with high fidelity radio communications. He said they sometimes think of themselves as software developers but they also build hardware. They are also as ISP, reselling INMARSAT and Iridium as well as an ASP.

They provide services on four different channels: HF, Cellular (GSM), LEO (Iridium), and GEO (INMARSAT.) The INMARSAT Fleet 55 product works on voice for global but data only on spot beams. Fleet 77 and B provide both on global beams.

The SeaWave hardware is a small, Linux-based least cost router with billing called "Integrator 3.0." The proprietary throughput technology software (TTS) provides many advantages including the following:

- Parses out email messages and transfers it as binary
- Can delete html-encoded email
- Can separate attachments and deliver partial
- User-based accounting handles costs.
- On-board self sign-up. Ship operator never sees the bill
- Operator can have a group of accounts that are direct billed w/ accounting

They Sell value added services such as tracking and weather. Other features include:

- Full duplex communications
- Call disconnect data recover
- Powerful file compression Different file types separately
- The run all the files in parallel (separate threads)
- Junk mail filters
- Conditional filters
- Built-in GMS and Iridium
- ALE (old HF term)
 - Ionosphere sounding
 - Power control

• They do not re-bill GSM usage. If you get to GSM turf, you will get a separate phone bill from your carrier.

- Can encrypt attachments (blowfish)
- Can set "immediate" or "normal" priority

SeaNet - Andy Maffei reported that they are transitioning to a mode that will support the existing users. At this time there is no funding available for further development or new SeaNet installations. A link to the SeaNet site is provided as *Appendix XII*.

End of the day one.

Tuesday Evening 6 - 9 PM - Sea-Bird Electronics Tour - RVTEC members were invited to tour the Sea-Bird Electronics factory. New products and software were on display. The calibration facility was open for tours.

Day 2 – Wednesday, November 19, 2003

The meeting was reconvened. Geraint West and Simon Watts, meeting representatives from the UK's

Southampton Oceanography Centre were introduced. Logistical information was repeated from day one.

Continuation of Reports

SWIKI - Val Schmidt (LDEO) gave a demonstration of the online SWIKI.

Post Cruise Assessments (PCA) - Annette DeSilva, UNOLS

Annette reported on the new subcommittee formed to evaluate the PCA form and its effectiveness in addressing issues of quality improvement. Her slides are included as *Appendix XVI*. During their review, it became apparent that response from the marine technical support group is low. Dale Chayes commented that NSF had been pressuring for a new form to document the improved quality assessments. This has been on all fronts especially in regard to technical services. General discussion followed:

• Barrie Walden commented about his technical persons completing the forms. At this time, they do not submit the form.

• Rich Findley commented that for statistical purposes, the form is worthless.

• Steve Hartz commented that the Chief Scientist sometimes provides comments that are not valid and he provided an example.

• Dale C. added that we need to figure out how to improve quality of service with ref to NSF, substantive comment are needed from the RVTEC group.

• Richard Perry suggested that problems should be addressed perhaps on board as they are happening.

• John Diebold – ref to ISO9000 type of quality format as suggestion for process improvement.

• Rich Findley – document procedure to improve an action, (like ISO9000), need process loop to fix a procedure.

• John Freitag suggested that the PCA form be coded to indicate which sections should be completed by which groups. He feels that some sections aren't appropriate for completion by the technical groups.

• Bob Wilson indicated that the PCA should be tied to the pre-cruise planning conference. Science parties comment on issues that are not part of their planned program.

• Bill Fanning reported that they have gained important feedback from the science party's reports. URI encourages the science party to document problems.

• Lynn Butler added that the input from the Science Party could help justify the need for new equipment.

• Dale Chayes inquired about sequentially completing the form and asked if the form should be changed in any way to avoid the 'vanilla' response.

• Bill Martin asked if they could have access to forms that are handwritten and sent in opposed to electronic versions? Annette (DeSilva) said she would find out if this can be done.

• Marc Willis pointed out that when the Chief Scientist submits a form identify problems or issues; the technical support group is responsible for responding. However, when the technical support group provides a critical report about the science party, the PCA goes no further. There is no response or accountability on behalf of the science party.

• Dale wrapped up the discussion, indicating that the issue isn't over.

Discussion of Inspection Programs

John Freitag reported that the THOMPSON INSURV would take place the second week in December. John will send three RVTEC members to the inspection to address science areas. The plan is to complete the inspection in a constructive, non-adversarial way where knowledge is shared. Safety and maintenance concerns will also be addressed. They would like to get away from the "parochialism" that has plagued them in the past.

INSURV has been in existence since the end of the Civil war. Every ship owned by USN, is under a Congressional mandate to undergo the inspection. The INSURV Board uses teams of 15 to 50 personnel that

range from food inspectors to winch specialists and they take their directives very seriously. The UNOLS Global class ships are at the small end of the different classes of ships. The first day of the inspection is held dockside; the next day's inspection is held at sea and is followed up by an on-scene report. The results of the inspection are reported at the next meeting. The board is in constant communication with Dolly Dieter. Dolly is in charge of the inspection program at NSF.

Comment from Phil McGillivary: "The historical folks didn't historically address the science gear so the "combat systems officer" had to check if the sound was okay."

Bill Martin commented that their ship (THMPSON) is scheduled to have their inspection done first. Bill said he would like to go on the next Navy ship inspection as an observer to see if his ship was evaluated fairly. He is concerned that he might be biased but would like to go as an "unconcerned" individual. John said he would be happy to have Bill's opinion.

Phil McGillivary asked if there is a communications expert on INSURV. Answer: "Yes."

NOAA fleet inspections - Mike Webb, NOAA

Mike said that during his second year at NOAA, he was sent to Kodiak with a stack of forms to be completed. This process left much to be desired. In the 1980's the inspection process was revised and they were then able to address more "real" issues. In the 1990's the process included a permanent team consisting of three personnel: An officer, engineer, and an electrician. Now, more time is spent on safety and maintenance. They are also able to focus on issues that arise from the first yearly inspection. They appear to be adding extensions or interpretations of the CFR and ABS rules. About 20-22 ships are inspected each year.

Their two biggest concerns are:

• The Captain's fitness report is tied to the inspection rating.

• The inspection schedule is known 6-8 months ahead of time so there is plenty of time to make needed changes. As a result, the report is most likely always "excellent". The inspections should be unannounced.

Rich Findley commented that they underwent an unannounced inspection that happened to coincide with everything being off the ship for calibrations. The result was disastrous.

STCW and ISM Compliance

Compliancy expenses have been mostly funded through NSF Ship Ops. A small fraction of UNOLS Operators has complied. Rich Findley warned that voluntary is a slippery area. Mark Willis warned of the "documenting" requirements. If you seek voluntary ISM compliance, you cannot revert back to be uninspected.

Geraint West (SOC) reported that the RRS Ships, DISCOVERY and CHARLES DARWIN, are classified as cargo vessels. This means that everyone onboard (e.g., scientists, technicians, etc.) have to sign on the ship's articles with all the baggage. Pre-cruise meetings are scheduled and take a full day. All hazardous activities must be identified; some governed by UK health and safety laws. Risk assessments are sometimes required from the science parties and they must be submitted one month prior to the cruise departure date. Every cruise participant has their own training folder containing certificates, etc. The PI also needs a letter from the director of their home institution certifying that they are competent to assume the role. Work hour rules are a huge impact on a cruise. They have had to curtail work. In barter arrangements with NSF and other national agreements, the NERC-council funded programs must sail on ISM certified ships. The UK has a review group to evaluate post cruise assessments. The group includes ship operators, scientists and independent chair. Recently, a chief scientist was on the dock to explain their actions.

Regional Class Acquisition and Science Mission Requirements (SMR) Efforts - Marc Willis, OSU Mark reports that the Regional Class SMR effort is moving forward. NSF plans to acquire three ships using

departmental program funds (about 10% of their ocean science budget would be set aside each year) and they seem to be moving fast. Three ships are planned at a cost of approximately \$25M/each. They would like to begin construction in 2006. The Request for Proposals (RFP) for the "design/build teams" could be out in six months. Marc encouraged RVTEC to look at the FIC website for documents on this effort.

FIC is also looking at the "lessons learned" feedback from previous construction and new ship operations. They will be appended to the SMRs for future use, particularly.

An SMR has been drafted for a Global Seismic Vessel. The document is available on the UNOLS website for community comment.

EWING Replacement Vessel - John Diebold (LDEO)

John presented a PowerPoint (*Appendix XVII*) with pictures and drawings of the proposed replacement vessel. The slides provide a history of what lead up to the proposal to replace EWING with a modern seismic vessel. The proposal is being submitted now to NSF. The cost of the ship, plus conversion and outfitting is estimated at \$22M.

Break

Alaska Region Research Vessel (ARRV) - Steve Hartz, University of Alaska

Steve provided a PowerPoint presentation (see *Appendix XVIII*) and showed a Stealth movie. Steve reported that the ARRV is to be an ice-capable vessel and not an icebreaker. It will also be able to cruise in the open ocean during rough weather. The ship is likely to be an Ocean Class vessel at 206 ft. It will have 45-day endurance, 60-day hotel only. There are plans for 26 science berths. The original plans for Azipod propulsion have been changed to Z-Drives to reduce radiated noise. It has been difficult to incorporate a motion compensated crane in the Baltic room. This is being reviewed and reworked. The acoustic performance of the "centerboard" used on the MILLER FREEMAN has been considered favorably and will be incorporated.

KILO MOANA Update - Steve Poulos, UH

Steve's report also included photos taken of and in the ship (see *Appendix XIX*). A list of items discussed by Steve include:

• The original subbottom profiler array was sitting on silicon pads and operating through the hull (same pictures as last year.)

- Discovered a bug in the Knudsen display software.
- Installed a sea-chest in February (same time as aborted moon pool).

• Current arrangement has no option for head pressure, just have 3-4" on top of the transducers. Still sitting on top of the hull.

- Currently operate at lowest Knudsen transceivers.
- At the location of the transducers, the hull plate is flat.
- Deck is about 13' feet above the water line
- Moon pool is not going anywhere. Still doing CTD operations the old way.
- Still have DP problems. Simrad will bring on their system late this month.

• Have been running without an ADCP. Overhaul the Sontek ADCP. Will add an RDI Ocean Surveyor 38 kHz.

- Completed 12-13 dredges, most successful.
- Have done a few piston cores using a rail system down the "middle"

• Have switched 0.680 off the traction winch to allow dredging. Will put fiber 0.681 on again to support other operations.

- Will be testing their acoustic navigation system.
- Been operating a year and a half, still working issues.

CAPE HENLOPEN Replacement Vessel (CHRV) Status (Appendix IX)

Four proposals for construction of the CHRV have been received. The original estimate for construction was \$10-12M. The proposals received were slightly higher but still competitive. Right now University of Delaware is in the shipyard selection process and has been instructed by UDel leadership to move forward in the negotiation and selection process. A link to the current status of the CHRV can be found on the FIC web page at: <<u>http://www.ocean.udel.edu/ships&facilities/rvchreplacement/currentstatus/index</u>>.

USCG Icebreakers - Phil McGillivary, USCG Liaison

There are many updates on AICC web site regarding overhaul of the POLAR class vessels (STAR and SEA):

- Replace engines to achieve 60K HP with diesels only, remove turbines
- Perhaps more space below deck and aft

Dale added that AICC is looking for input on science system upgrades to POLARs

Level of Technical Services - Barrie Walden, WHOI

Barrie began the discussion by asking if there is actual need to proceed with this process? Rich Findley replied that, "We've been talking about this for years; it would be a shame to stop the discussion and we should actually do it!"

Steve Poulos asked how the process will be implemented and where the data will reside. Barrie replied that we would get there as soon as we get past the first step. If there are no further objections, we will move forward. Between now and the first of the year, we need feedback on the items in the outline. The committee will then update the outline and then add sample content for their four vessels.

Bill Martin stated that he has no problem with the outline. He went on to say that the committee should address some issues that are common with all vessels in the fleet. He said that he came up short with some on-board CTD spares. Question: Can we define what the acceptable levels of spares? How about uniform work hours? For instance, the Jason and ROPOS folks shut down after 12 hours. Some groups work longer.

Dale responded that, among other things, work hours are governed by a huge collection of external forces that are beyond our control. Bill Martin replied that the UW's HR Department have indicated that there is no university or State of Washington work rules or laws that limit what hours UW personnel can work. Bill says that he can instruct his employees to work 23-24 hours per day.

Discussion followed:

• Joe DiGiovanni: this looks like an excellent tool but I don't see "service level agreements", and I don't know if that is appropriate in this context. In other situations, they have proven very helpful in trying to prioritize implementations.

• Bill Martin: do you intend to evaluate each ship's content and then ask operators to improve? Reply - No, this is just a forum to establish a coherent way to discuss the differences.

• John Diebold: a bit of concern about being held to some bit of text. Barrie: some will choose to be more or less explicit.

• Assuming that we have the content, how do we "house it", update it, make it available, keep it current....?

• There was discussion of who would be the users and how they would use it. • Barrie: if I'm lucky, assembling the scattered pieces of paper to assemble this outline will be a big step along the way.

INMARTECH 2004 – Geraint West, Southampton Oceanographic Centre (SOC) (see *Appendix XIII*) Geraint announced that British Antarctic Survey (BAS) and SOC will co-host INMARTECH 2004 in Cambridge, UK. It is to be held mid-September 2004. There is to be no single theme of the Workshop but there will be a hand full of sessions including a mooring and communication session. The Call for Papers will be announced soon. There will probably be some kind of visit to SOC after the event. **INMARTECH 2006** – There was discussion on INMARTECH 2006, which is slated to be hosted by the US. WHOI has been suggested as the host. Discussion included the following:

- Physical plant probably has to be done by the host institution.
- The community can contribute by leading programs, sessions.
- Barrie will concentrate on deep submergence.
- Bill Martin would like to put less emphasis on science and more on technical issues.
- Glen Hendrickson: Last time around, there was little time to discuss the topics. More time for discussion would be good.

The 2008 INMARTECH meeting is slated for Brest, France.

Jim Wilson - The CG is looking for comments on their SDN requirements effort.

Break for Lunch

Continuation of reports

UK Ocean Research Services - Geraint West, head of UK Ocean Research Services gave some background information on SOC (see *Appendix XXI*). He assumed the position in 2001. SOC was formed to unify a range of UK marine science entities, which was finalized in 1995. Their new model for funding started in 2001 with 600 fully funded science days/year. Geraint reviewed the Structure and organization of SOC. They support research cruises their own ships plus many other ships in the UK and foreign countries. The Darwin replacement is funded. The ship will be about 95m and will be the mother ship for their new ISIS ROV (Jason 2 clone.) They will cut steel next year.

RRS Discovery winch and wire – Geraint continued with a report on the winch and wire (See PowerPoint). Discussion items included:

- Embarked on a new winch upgrade on the Discovery
- Contracted to Caley
- Caley chose not to use Lebus shells. That is being changed.
- The ship is out of the yard, but little is working. The problem is between the drives and the control software. Level winding, "rendering". Problem since August.
- They developed a split requirement for CTD:
 - Shallow: less than 4,500m
 - Deep
- Deep wire is synthetic (Spectra from Cortland) with fiber optic
- Goal to make wire change

• Dale: how have you dealt with the mismatch between the synthetic cable and the strength of the mechanical structure (A-frames...)? The concept is that the winch control system would allow the system to spill cable at an adjustable tension below the safe working load. Have not raised this issue with the inspectors and regulators yet.

Next Generation Wire – (Jon Alberts and Rich Findley) (See Appendix XIV)

Jon Alberts reported that since last year they have been debating how to develop new specifications for a next generation wire. The last time they did this was in the 1980s. Draft functional requirements for a new wire have been developed and are available for review on the UNOLS website at http://www.unols.org/wire/Cable Functional req.html. Input from RVTEC is needed.

<<u>http://www.unols.org/wire/Cable_Functional_req.html</u>>. Input from RVIEC is needed.

Marc Willis asked, "How big will the new wire be and will we require new winches?" Answer: "No, it will

likely be a bit bigger but will get 9,000m on existing winches with changes to shells and sheaves." Marc replied that there has been a tradeoff to having smaller armor on the outside and this has not worked out well. There have been no torque balance tests.

Steve Hartz commented that the Laser Optical Plankton Counter requires two copper conductors to achieve necessary data rates. They would be happy with optical telemetry.

At some point, we will have to move to bigger wire to accommodate large packages.

Mike Webb commented on recent problems with Rochester Cables. Even through they are built to the same UNOLS specification, seems like they are not doing the necessary QC. Rochester seems to be much more expensive than others for some kinds of tests.

Improved ADCP Quality (Jules Hummon)

Jules report is included as Appendix XV - "ADCP: Automated Shipboard Processing and Monitoring."

- Automated on-board QC processing
- Results sent to shore
- Results and plots available on board as well.
- System:
 - Linux box
 - Extra serial ports
 - Python and Matlab
 - Messages returned by email, 1,500-byte payload.

Potential for pooled support, Dale Chayes

- We (UNOLS) pools wire, what else makes sense? What other equipment makes sense?
- Some suggestions included: ADCPs, CTDs, Salinometers, Multibeam
- For ADCPs, perhaps have a deck unit in a "sealed" box somewhere.
- There was discussion of policy and protocol about how to insure that what you draw from the pool actually works.
- Should we have a better method of keeping track of who has what stuff.

Discussion of list sever and spam - There was some discussion relating to the UNOLS list server and spam. The list is open for those who wish to post to the RVTEC e-mail distribution list. Recently, there had been some "spam" forwarded to the list but the person is aware of the situation and it is hoped that it will not happen again.

Arctic Rosette - Richard Perry, LDEO

A report on Arctic CTDs is included as Appendix XXII.

USCG Icebreaker Support Contractor - Pete Wilson, ESU; Andrew Mungin, ATG

Pete introduced Andrew of Allied Technology Group (ATG). ATG is a contractor for the USCG and they provide a broad range of technical support for the icebreakers. Most of their background is in electronics and communications. They are interested in collaborations to assist in science support on the icebreakers. They do not have many science support technicians, but they expect to out-source that.

Information on the USCG Science Data Network is provided in Appendix XXIII.

Break for tour of USCGC HEALY

Day 3 – Thursday, November 20, 2003

The meeting was reconvened. A few remarks were made:

- We need a Liaison to SCOAR
- Dale Chayes is currently Liaison to AICC
- Next meeting location is needed.
- Meeting logistics
- Talk from Applanix

Healy Multibeam Upgrade Options, Dale Chayes See PowerPoint. Discussion points included:

- Why do the hydrophones fails?
- Long-term multibeam issues current system does not work well in water depths less than
- ~250m.
- Options:
 - Upgrade the existing sonar (SB2112)

o Incremental o In one shot

- Replace the existing sonar
- Issues for either:
- o Changes to the under hull
- o Strength of windows
- o Integration with ship's systems
- o Re-training
- o Operational support

If they decide to go with a replacement, they should think seriously about other models.

High Resolution Marine Meteorology Workshop Report - Linda Fayler, URI (See Appendix XXV)

- Goal of improved surface flux measurements
- High resolution = (automatically AND once per hour or faster)
- Improved data quality
- Linda will assemble our comments and we will send an official response
- McGillivary: CG has interest and concerns, likes the modeling of flow modeling around ships

ADCP Data Quality Evaluation Report - Jules Hummon, UH (see Appendix XXVI)

- See the appendix Ocean Surveyor ADCP Overview.
- Got lots of data from Ocean Surveyor data from the fleet with support from NSF (Shor)
- Significant comparison
- Thanks to Sandy for funding, Eric for oversight and the folks who contributed data
- Jules: ".... That's not structure, it's an ERROR!"
- The take-home message is "fix your heading"

Globally Corrected-GPS: Val Schmidt/ Robby Laird (see Appendix XXVII)

- Two services currently exist, C&C & Furuno
- Updates delivered by satellites

• Corrects for ephemeris and clock errors plus ionosphere and troposphere corrections and delays.

Break

Isotope Procedures – Phil McGillivary, USCG

• Training to know what to expect of those certified

Mandatory Metadata: Dale Chayes

- Brief intro with regard to collecting, inventory, and documenting data services at Ridge2K
- And MARGINS programs
- Discussions of forms http://data.ridge2000.org/
- Glenn: How does compare to JOSS? Dale Its different.
- Rich Windows? Dale -platform independent

Applanix" - Brief overview of GPS Aided Inertial Nav System: Pete Stewart

- GAMS= GPS Azimuth Measurement System
- See presentation in Appendix XXXIX.

SDN Systems Recommendations - Joe DiGiovanni "Allied Tech Group"

- Artic East-West Summer Cruise on HEALY
- Operating Sys: RedHat Linux or Mac OS X preferred Why? Stability, Security, Productivity
- How? Phased: Clients, servers (once applications are ported/tested)
- Proxy & Servers Browser 'Opera' (cross-platform)
- Email: SMTP/POP3/IMAP4/LDAP servers
- Support configuring routing independent of address space
- Automatically determine best available route (Inmarsat, Iridium, etc)
- Web-based feature rich client

RVTEC Business - Dale Chayes

Dale requested that speakers provide Annette DeSilva with digital versions of their presentations for inclusion in the minutes.

There was a Motion to nominate Steven Hartz as liaison to SCOAR. Response: Passed - tentatively 2- year term, will revisit in a couple of years.

AICC Liaison – Dale Chayes offered the position to other members. There were no volunteers from the group. Dale agreed to continue as liaison for now.

Past RVTEC meeting locations were reviewed (*Appendix XXXII*). Rob Walker of Florida Institute of Oceanography FIO volunteered to host the 2004 RVTEC meeting.

Steve Poulos was formally re-elected as RVTEC Vice Chair.

Mark Willis is stepping down from the of 'Levels of Service' committee and will be replaced by Bill Fanning (URI).

Dale provided an opportunity for comments in various areas, Mark Willis will continue to monitor and broadcast FIC issues when RVTEC comments are needed for rest of community.

A Motion was made by Rich Findley to accept 2002 RVTEC meeting minutes. Mark Willis made a second motion. The Motion was then passed.

Post Cruise Assessment Form - Ideas of how do deal with the Post cruise assessment form were discussed. Probably just continue hammering away at how we want to impart quality of improvement ideas. Dale will pass comments along to the PCA committee. Pondering a constructive criticism procedure or process that we could experiment with. Rich Findley suggested that an official statement be made that the current Post Cruise assessment should be revisited. Bob Wilson commented that pre planning is more important or as important and the PCA and should be emphasized.

• ACTION Item: Rich Findley will address the Post Cruise Assessment issue and report.

Meeting Adjourned – End of RVTEC 2003 Seattle Meeting

POS/MV Training - Bill Martin of the University of Washington organized a training session in cooperation with Applanix to follow the RVTEC meeting on Thursday afternoon and Friday. The session will cover operation and maintenance of the precision Applanix Attitude and Heading Reference (AHR).