

UNOLS Research Vessel Technical Enhancement Committee (RVTEC)
2007 Annual Meeting
Moss Landing Marine Laboratories
Moss Landing, CA
November 6-8, 2007

Meeting Minutes

Action Items:

1. **Appoint new nomination committee** – In 2008 the Chair will be up for election
2. **Untreated wood packaging** – Include information in your pre-cruise planning documents. (RVTEC)
3. **Regional Class** – Post the SOR comments and recommendations as general guidelines for future ship design efforts (Office)
4. **RF Frequency Spectrum Management Committee Status Report:**
Complete the RF Survey:
<http://www.shipops.oregonstate.edu/martech/rvtec/2007/RF_Survey-10-2007.xls>
and send it to Richard Perry and the UNOLS Office (RVTEC)
 - Compile initial survey results and send to NSF (T. Gergely, A. Clegg, and E. Dieter) by mid-November (Subcommittee)
 - Send results to CORF and Tom Gergely/Andrew Clegg (NSF)
 - Continue to collect RF Frequency Spectrum use data (Subcommittee)
5. **Marine Technician and Crew Retention Issues:**
 - Conduct Salary Survey - Set a deadline for submission and send a message to Tech managers and Marine Superintendents (Office)
 - Complete salary survey and send to the UNOLS Office (RVTEC)
 - Set up a wiki for dialog (Dale Chayes)
 - Compile survey results and formulate recommendations (Subcommittee)
6. **Transportation Worker Identification Credential (TWIC):**
Encourage all Marine Technicians to get TWIC cards. (RVTEC) - Send recommendation to Council for all Chief scientists get TWIC cards.
7. **MATE: Create a brochure** for marine technician careers within the UNOLS Fleet. (RVTEC)
8. **SAMOS Implementation** – If your ship has an opportunity in 2008 for a SAMOS installation, contact Shaun. (RVTEC)
9. **Export Controls** – If you have information on any “Deemed Exports” send it to Tom Wilson. He will compile it and get the list out to the group. (Wilson)
10. **HiSeasNet** – Respond to letter to M. McNutt regarding antenna shadowing issue. Steve Foley/Jon Berger will draft a letter and send it to Bill Martin. Bill will forward the letter to RVTEC for consideration. If endorsed, response will be forwarded to M. McNutt.
11. **HiSeasNet Training** – Contact RVTEC about training opportunity. (Dave Fisichella)

- 12 New UNOLS Wire Safe Working Load (SWL) Standards:** Post the Research Vessel Safety Standards (RVSS) appendix drafted by Matt Hawkins that deals with SWL on the RVSS project website. (Office)
- Review the SWL Appendix - and any other chapter of the RVSS – (RVTEC)
- 13. User groups** – Any groups/subcommittees that would like to meet in 2008 in conjunction with RVTEC (Day-3, mornings, day before, etc), should contact Bill and Office.
- 14. Technical Services Information (TSI) Outline:**
- Technical managers should try out the on-line TSI form and work to complete it in 2008.
 - Annette will send instructions to each manager.
- 15. HiSeasNet Licensing** – Obtain proof of licensing documentation from Steve Foley (RVTEC)
- 16. ADCP:**
- Upgrade the firmware on your Ocean Surveyor system. (RVTEC)
 - Refer scientists in need of ADCP information to Jules. (RVTEC)
- 17. 2008 INMARTECH Symposium (France):**
- Contact the 2008 Organizers and determine a point of contact. (DeSilva)
 - RVTEC managers should include travel funds in their budget to attend. (Tech Managers)

Appendices:

Day 1 - November 6, 2007	
I	Meeting Agenda
II	Participant List
III	NSF Report
IV	USCG Report
V	SCOAR, DESSC, and MLSOC Report
VI	RVOC Highlights
VII	Untreated Wood Regulations
VIII	Data Management Best Practices
IX	Alaska Region Research Vessel Update
X.a.	R/V Marcus Langseth Conversion Update (2.5 MB)
X.b.	Ocean Class Acquisition Status
XI	Post Cruise Assessment Report
XII	Radio Frequency Spectrum - Committee Report
XIII	UNOLS Chair Report (1 MB)
XIV	RVTEC Chair Presentation on UNOLS (2.2 MB)
XV	Marine Technician and Crew Retention and Hiring Issues
XVI	ACT Program (2.9 MB)

XVII	MBARI AUVs (6.8 MB)
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Day 2 - November 7, 2007	
XIX	Past RVTEC Meeting Locations
XX	Transportation Worker Credential (TWIC) Update
XXI	MATE Program Update
XXII	Technical Services Information Report
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XXIV	Vessel Metadata Survey Report
XXV	Voluntary Observing Ship (VOS) Program (3.2 MB)
XXVI	Export Controls
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XXVIII	SIO- HiSeasNet Configuration
XXIX	WHOI - HiSeasNet Configuration
XXX	USCG - HiSeasNet Configuration
XXXI	UW - HiSeasNet Configuration
XXXII	UH - HiSeasNet Configuration (1.7 MB)
XXXIII	MLML - HiSeasNet Configuration (2.0 MB)
XXXIV	NOAA VSAT (1.1 MB)
XXXV	Wire and Cable Subcommittee Report
XXXVI	UNOLS Wire SWL Standards Update
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Day 3 - November 8, 2007	
XXXVIII	Knudsen Engineering New Echosounder (9.7 MB)
XXXIX	SWAP at U. Delaware
XL	SWAP Update
XLI	ADCP and UHDAS
XLII	GeoMapApp at Sea
XLIII	Reach out and (re)Boot Someone, Inexpensive Serial to Ethernet Converter, A/D over Ethernet for \$15 per Channel
XLIV	Tips and Tricks for Using PMI Finger Grips on EM Cable (7.5 MB)
XLV	Wire Lubrication (4.1 MB)

Meeting Report:

Tuesday November 6th - Moss Landing Marine Laboratories Main Seminar Room

Meeting Called to Order – RVTEC met on November 6-8, 2007 at Moss Landing Marine Laboratories (MLML). Bill Martin, RVTEC Chair, presided over the meeting. The meeting followed the agenda (*Appendix I*) as recorded in this report. Stewart Lamerdin provided a welcome to MLML. RVTEC participants introduced themselves. The attendance sheet is included as *Appendix II*.

Accept 2006 RVTEC Minutes <[200610rvtmi.pdf](#)> - The minutes are available for review during the meeting. This item will be revisited later in the meeting.

RVTEC Vice-Chair Election – Motion made and passed to not appoint Marc Willis to the nominating committee (Dale/Findley). Bring nominations for Vice Chair to Marc.

Agency Reports:

National Science Foundation (NSF) – Jim Holik provided the NSF report (*Appendix III*). The topics discussed include:

OCE Integrative Program Section Staffing:

- The Section Head position will re-advertised soon. Dolly Dieter is still the Acting Section Head
- Jim Holik was hired as a visiting scientist to replace Sandy Shor in the Ocean Technical Services and Ocean Instrumentation Program.

Jim Holik – Background:

- Sailed on *Conrad* in 1983
- PhD from TAMU in geophysics (work at Lamont)
- Worked with the oil company.
- Went to sea on *Nathanial Palmer*. In 1998 became manager of Tech services and marine management at ASA and then Raytheon.

FY 2008 Budget:

- The NSF Appropriation for FY 2008 has not been passed. NSF is currently operating under a Continuing Resolution which runs through November 16, 2007.
- Modest increases have been included in the House and Senate bills but the budget is not signed into law yet.

OCE Facilities - Budget planning for FY 08:

- FY08 is a very challenging year with Ship Operations projecting major shortfalls.
- The technicians and instrumentation programs will be impacted as well.
- Like FY07 Ship Operations had substantial prepay but even with this, increased costs and weak schedules are making FY 08 challenging.
- Technicians and instrumentation programs funding are expected to be similarly stressed.

- NSF continues to give high priority to training and communication and to support technician transfers between operators to educate each other and learn new ways to improve quality of service.

Major Research Equipment and Facilities Construction (MREFC):

- Scientific Ocean Drilling Vessel (SODV) MREFC funding started in FY 06
- The *JOIDES Resolution* is scheduled to resume drilling activities in Spring 2008
- Alaska Region Research Vessel (ARRV) MREFC funding began in FY 07
- Ocean Observatory Initiative (OOI) MREFC funding began in FY 07

OCE Midsize Infrastructure Initiatives:

- R/V *Marcus Langseth* Seismic Vessel (LDEO) currently undergoing sea trials and inspections. Its ship inspection is scheduled for 7&8 Nov. Science testing/calibration to run mid Nov 2007 to mid Jan 2008.
- The Human Occupied Vehicle (HOV) to replace *Alvin* is being designed by WHOI
- The Regional Class Research Vessels (RCRV) design efforts continue

Navy – Bob Houtman provided the report for Navy.

- Navy also on a continuing resolution (CR). The current CR runs to mid-November.
- He does not anticipate a decrease in ONR Research Facilities budget (~\$10M). There will be additional funds for Fleet operations (\$1-2M) from other Navy activities.
- They are assuming that there will not be any Navy plus-up funds in 2008. (there had been plus-up funds in previous years that totaled ~\$5M annually.
- The estimated costs for Navy operations on UNOLS vessels in 2008 project a deficit between \$2m and \$2.5M.
- They are trying to find additional funds within Navy to support UNOLS Fleet operations.
- Planning for the Ocean Class acquisition continues – will be addressed in the "ship updates" section later in the meeting

NOAA – Larry Loewen provided the report for NOAA.

- NOAA is also under a Continuing Resolution and are planning to lay up additional ships.
- NOAA is working on their fleet renewal efforts that would add ships to their Fleet and extend the life of others.
- As a result of last year's fire at the piers in Seattle, NOAA is leasing piers from the city of Seattle.
- Conversion of the Ocean Exploration vessel, *Okeanos Explorer*, is underway in a Bellingham, WA shipyard. The vessel should be in service in late 2008.
- NOAA's fishery vessel, *Oscar Dyson*, was equipped with an EM70 fisheries sonar.

USCG – Jon Berkson provided the USCG report (*Appendix IV*).

- Their budget is too complicated to talk about.
- Status of the USCG Polar Icebreaker Fleet:

The Coast Guard polar icebreaker fleet consists of three polar icebreakers. Two Polar-class icebreakers, the *Polar Sea* and *Polar Star*, which were both commissioned in the 1970's, have provided the annual heavy icebreaking services needed to break open a channel into McMurdo Station. In addition, in past years, they have supported science missions in both Polar Regions. *Healy*, which was commissioned in 2000, is primarily assigned to support science in the Arctic.

Healy's operating time since commissioning has been dedicated to supporting Arctic research, except once – in early 2003 – when it was sent to assist *Polar Sea* with the McMurdo break-in. In summer 2007 *Healy* completed three phases of science missions in the Western Arctic and then returned to homeport to conduct dockside maintenance in preparation for Arctic West Summer 2008.

Polar Sea completed Operation Deep Freeze 2007 in conjunction with the Swedish Icebreaker ODEN. She then completed dry-dock work and a training cycle in preparation for Deep Freeze 2008. NSF plans to use *Oden* as the primary icebreaker and *Polar Sea* in standby. If *Polar Sea* does not deploy for Deep Freeze 2008 the Coast Guard intends to deploy her to the Arctic in 2008 primarily for training to maintain crew proficiency but also to conduct Coast Guard missions.

Polar Star remains in caretaker status. The Coast Guard is currently working on awarding a contract to conduct a study on the maintenance requirements and crew options for long-term lay-up.

UNOLS Reports:

Fleet Improvement Committee (FIC) – Marc Willis gave the FIC report.

- Marc is leaving the Marine Office at OSU and will work full time on the AARV project starting in 2008.
- Darryl Swenson is taking over as the OSU at tech manager
- The major activity of FIC is the Fleet Improvement Plan. The Plan provides the UNOLS perspective of where the fleet should be going. The FIC hopes to update it more often. The last one was done in 1995.

Arctic Icebreaker Coordinating Committee (AICC) – Steve Hartz reported.

- He was just appointed to the AICC.
- Steve reviewed the AICC meetings that took place over the last year including the retreat in Feb 2007.
- The AICC is work on prioritizing proposed science upgrades for *Healy*.
- On Nov 16 and 17, 2007 the AICC will conduct debrief interviews with the PIs from the 2007 *Healy* science cruises (Sambrotto, Grebmier, Mayer)
- The next AICC meeting is planned for Nov 27-28 in Seattle.

Scientific Committee for Aircraft Oceanographic Research (SCOAR) – Annette DeSilva reported. Slides are included as *Appendix V*.

- SCOAR's last meeting was in Nov 2006 (teleconference)

- They are soliciting nominations for SCOAR Chair
- Focus – CIRPAS

Deep Submergence Science Committee - DESSC – Annette DeSilva reviewed the list of DESSC’s action items in 2007 (*Appendix V*):

- NDSF User Debrief Process – DESSC has formalized the reporting system for Chief-Sci interviews for *Jason/Alvin/Abe-Sentry*
- NDSF/DESSC conducted a community Survey on new control van design for Jason
- Plans are underway for a workshop on the needs of submersibles and robotic vehicles in early 2008
- A DESSC Subcommittee has worked to establish Safety Standards for Human Occupied Vehicles (HOVs). All Chapters have been drafted and are in review

Marcus Langseth Science Oversight Committee (MLSOC) – Annette DeSilva provided the MLSOC report. (*Appendix V*)

- W. Steven Holbrook, U Wyoming is the MLSOC Chair)
- Their first official meeting was in Galveston, TX, Mar 2007, at the ship
- The key issues covered during the meeting include:
 - Staffing
 - Shipboard processing needs
 - Lowering the threshold for user expertise.
 - Shakedown cruise.
 - Marine Mammal Observation (MMO).
 - Ombudsman role.
 - Long range planning.
- Fall AGU Meeting plans:
 - MLSOC Lunch Meeting – Monday, mid-day, Dec 10th
 - Town Hall Meeting, Monday evening, Dec 10

UNOLS Booth at AGU – Annette encouraged everyone to visit the UNOLS booth at AGU - #403.

Research Vessel Operators’ Committee (RVOC) and Safety Committee – Bill Martin provided the RVOC report (*Appendix VI*) He began by discussing wire testing. He encouraged operators to send a length of cable to Rick Trask (WHOI) and he will conduct a pull test to determine the break tension of the wire. The length should be terminated with the type of termination used for your wire. This test performed free of charge except for the cost of shipping your wire to Rick. Bill has asked Rick about getting a copy of the test standards so that institutions could have their wires tested locally to avoid shipping expenses and being without their termination. The test standards were not yet available.

Safe Working Loads (SWL) Standards and TWIC will be discussed later in the meeting.

RVOC Safety Committee – Research Vessel Safety Standards (RVSS) Revision update status:

- The RVSS are nearly complete. The manual has undergone a complete re-organization to better distinguish between what is required by regulations and what is required by the Safety Manual. The items required by regulations have been thoroughly reviewed by Jon Alberts.
- Chapter Ten – Explosives has been removed and the pertinent content will be part of Chapter Nine
- A new chapter, Chapter 18 – Personal Safety has been added. Sexual harassment, Drug and Alcohol Policy, ADA Guidelines and General Science Party Safety will be included in this chapter
- The final draft will be circulated for *comment*.
- The revision is expected to be completed early 2008 and hopefully presented to the UNOLS Council at their spring meeting.

Untreated Wood Regulations – Bill Martin (*Appendix VII*)

- Bill encouraged RVTEC to add information to pre-cruise packet information and on web sites about wood packaging requirement. This must be discussed in pre-cruise planning. A stamp is needed on foods to insure that the environment has been insulated by treating this wood.

Data Management Best Practices - Bob Arko, co-chair of UNOLS Data Ad Hoc Committee provided a status report of their efforts. His slides are contained in *Appendix VIII*.

- The Ad Hoc Committee was chartered by UNOLS Council, March 2007.
- Charge: “*Report to the Council on current community-wide best practices*”
- *In data and metadata capture when collecting data at sea.*”
- Initial term: 1 year.
- Committee membership list is in the slides. Co-chairs are Steve Miller (SIO) and Bob Arko (LDEO).
- Committee operations will be by e-mail, Web portal *data.unols.org*, telecons, and meetings of opportunity.
- Committee calendar was reviewed. They will meet at the Fall AGU meeting on 12/12/07.
- Initial activities have included:
 1. They refined their ad-hoc committee charter to, “*Report on best practices for data and metadata capture at sea and make recommendations for improvement*”.
 2. Their audience is the UNOLS community: Platform operators, Data producers, (both acquisition and processing), Data managers, End users (scientists, students, etc)
 3. They have conducted a survey of priorities.
- The survey result identified:
 - Top issues:
 - Shipboard metadata creation
 - Shipboard data quality control
 - Shore side quality control
 - Mid-level issues:

- Dissemination to repositories
 - Shipboard archiving and reproduction
 - Shipboard data access
 - Shore side data access
- Other issues:
 - Data transport to shore
 - Foreign clearance requirements
 - Dissemination to scientists
- Bob reviewed some of the related efforts that are on-going within our community (see slides).
- Next steps for the ad-hoc committee include:
 1. Identify minimum standard set of metadata and data products.
 - Expedition details (platform, science party, ports/dates,)
 - Data inventory (samples, files, observations)
 - processed products (navigation, MGD77/JGOFS files,)
 - (Etc)
 2. Identify optimal path for flow of products from ship to shore.
- Committee materials and outcomes will be continuously posted at: <http://data.unols.org>. Feedback will be solicited at meetings of opportunity e.g. RVTEC. Drop a line to any committee member or to the UNOLS Office.

Discussion Followed:

- Dale – how do foreign clearances become a data issue? Bob Arko – The data is always streaming. We have to be more aware of the data that is being collected. Some countries may object.
- Dale – This could become a National problem. Definition of EEZ is not always clear. Rules about what you can and can not collect are driven by international law and individual countries' laws and interpretation. Bob Arko – he feels that the data should be available immediate.
- Stewart – Are you recommending a central repository? Bob – They will start out by providing the information that should be included in a proper data inventory/cruise report.
- Shawn – As member of data committee, they are still in the informative stage and haven't figured out the final product. They are discussing the types of policies that UNOLS should adopt. Managing the data sets.
- Dale – Is it the purpose for the Council to adopt the policy and enforce it. Prince – this is complex. There are some policies that are governed by federal policy. It is not the intent to contradict federal policies. The Council will provide recommendations and advice to all operators. They can also make recommendations to agencies regarding agency policy.
- Jules Hummon – EEZ-crossings should be identified.
- Dave Fisichella – He would like UNOLS to help define what is allowed in the EEZs.
- Sandy Shor – Remember this is not a US law – it is up to the coastal countries. We must comply with the State Department clearance policies. Cruise data collection must be specified in the clearance.

- Marc Willis – The scientists and agencies would like the data to just flow off the ships. The technicians are the operator. It seems as if the marine techs are relieving the scientists of the responsibility to do data processing and providing good data. This is fundamentally wrong for the Techs to be made responsible for providing the data. It is mission creep. Sandy – The most efficient way for this to happen is for it to come from the operator.
- Jim Holik – He had similar issues arise in his experiences in Polar operations. He feels that there is some data that could be provided by the operator. Science specific data should come from the scientist.
- Richard Perry – Will there be minimal data quality standards? Bob Arko – They haven't gotten there yet, but will probably happen soon.
- Bob Arko – He understands the importance of not imposing unfunded mandates.
- Toby – Quality, analysis, etc. Most institutions stream the data and provide it to the scientists. It is not difficult to make another stream, but it has to be clear that the techs can't be responsible for the processing.
- Rich Findley– we would have to add techs to our operations if processing becomes a responsibility.
- Toby – It must be recognized that it is raw data that we are providing.
- Bob Arko – They have an opportunity with *Langseth* and can see what can be done. Then perhaps move it further to the other large ships.
- Stewart – The committee must remember that there are also smaller ship operations. The data guidelines seem to be more applicable to large ships. As the committee is drafting the recommendations, the diversity of the ships must be remembered. This has the potential to be very expensive to implement – some ships don't have time stamps, etc.
- Mike Prince – Dave Forcucci, Shawn Smith, and Bill Fanning are also on the committee. If there are concerns, let them know.
- Shawn – They were attempting to find underway data in the National Archives – impossible. Not sure if the data is just not getting in there. The Techs are out there collecting data – it should be recognized and acceptable.
- Shawn – NODC has just brought on two more people – hopefully some of the underway data issues will be resolved.
- Stewart – Isn't it NSF policy for scientists submit data? Sandy – it is the policy, but the data is not getting into the repositories.

Break

SHIP UPDATES:

Alaska Region Research Vessel (ARRV) – Steve Hartz reported on the ARRV. His slides are included in *Appendix IX*.

- UAF entered a Cooperative Agreement with NSF. The project has four phases:
 - Phase 1 – Project Execution Plan & Design Refresh
 - Phase 2 – Bid Package Prep & Shipyard Selection
 - Phase 3 – Construction

Phase 4 – Pre-Operation Testing/Trials

- Steve reviewed details of each phase. Each phase requires oversight review and approval before proceeding to the next phase.
 - Phase 1 Tasks - 9 Months \$2.5 Million
 - Phase 2 - 3 months \$.8 million
 - Phase 3 - 24 months \$113 million
 - Phase 4 - 12 months \$7 million

Key project personnel are listed in the slides. Marc Willis will participate as the Shipyard Marine Technician.

There is an ARRV Oversight Committee (AOC) that includes a Naval Architect, Polar Marine Scientists, Marine Superintendents, Marine Technical Specialists, Alaska Native/Coastal Community, and NOAA Fisheries.

The total project cost is \$123M. If all progresses as planned the ship should be ready for service in 2011. The big risk item is the ability to contract a shipyard.

Regional Class Steering Committee – Stewart Lamerdin reported on the Regional Class Acquisition effort.

- Stewart introduced the Navy PEO-Ships reps – Dan Rolland, Dave Barksdale, and Caitlyn Jarecki.
- He gave the history of project:
 - Two competing design/build teams were selected Dakota Creek & Nichols Brothers
 - A stop work order was issued in December 2006 by NSF. Ship specs were revised to include a construction budget cap.
 - Yesterday (11/5) one of the ship yards went out of business: Nichols Brothers. However, a Seattle headline reads, "big boat builder may re-open soon"
 - It is not clear how this will affect the process. The other design/build group is still moving forward.
 - The next design review meeting is planned for December 2007.

Discussion followed:

- Dale – what ever happened to the comments that the UNOLS group recommended to NSF/PEO-Ships regarding science outfitting. Dan Rolland – everything was inserted.
- Dale – The UNOLS comments were general and should be applicable to future vessels.
- Marc Willis – He incorporated them into the ARRV design. Annette – they were also considered in the recent FIC update of the Ocean Class SMRs.
- Mike – Should these be in all SMRs? Stewart – These are more like a set of guidelines.

Action Item – Post the SOR comments and recommendations as general guidelines for future ship design efforts (Office)

Any concerns or questions regarding the Regional Class acquisition can be directed to Stewart.

R/V *Marcus G. Langseth* Conversion Update – Annette provided the report for Al Walsh who is with the ship as it undergoes the NSF inspection. Slides are included as *Appendix Xa*.

A brief project history was provided:

- 2002 *Ewing* Midlife Refit Workshop – Community recommendations called for a modern seismic vessel
- 2003 Replacement Ship Proposal was submitted.
- 2004 a commercial seismic ship was purchased and brought to the US
- 2005 ship yard specifications and preliminary work
- 2006 The ship is still undergoing ship yard modifications
- 2007 Integration of science outfitting. The ship is moved to Galveston, TX.

They have had delays of many kinds; some designed, some mistakes, some even now seem to have been inevitable. Recently they have had considerable progress:

- USCG certification in Oct 07
- ABS certification in Oct 07
- Multibeam Acceptance in Oct 07
- DP Acceptance in Sept 07

The USCG process of reflagging was very difficult and ABS certification very time consuming. The multibeam was accepted just recently after long process. The multibeam system (EM120 1° x 1°) pod was designed, built, and installed in 2006. A test area, Alaminos Canyon, was identified near Galveston for its acceptance test. Slides provide an example of results from Alaminos Canyon. The test included science processing to check calibration and system performance. The test also provided an opportunity to perform auxiliary systems tests. They had an interruption in surface sound speed velocity input that could be seen in the multibeam processing. They did XBTs and CTDs as well.

During the Dynamic Positioning acceptance tests, the system performed well and modeling was accurate. The ship was able to perform station keeping in all positions in the mild conditions encountered (Wind = 15 knots).

The ship conversion items that still need to be addressed include:

- NSF ship inspection Nov 7 and 8
- UNOLS vessel designation. UNOLS is poised to make the designation as soon as notification is received on the successful completion of reflagging and inspections.
- Title Transfer to NSF immediately thereafter.

Shakedown and Calibration cruises will begin on Nov 16th and run through January 8th. The shakedown includes time to learn handling of 3D MCS gear which is big and spread far from the ship. The *Langseth's* science equipment value exceeds that of the ship.

Operating funds are critical, but even more critical and difficult is finding and keeping TECHNICIANS.

Ocean Class Acquisition – Bob Houtman (ONR) reported on the Navy’s Ocean Class acquisition effort.

- The Navy still has funds in their plans to acquire two Ocean Class ships and hopefully the funds will stay in the budget through POM 10 (next cycle).
- Within the Navy structure, there is an opportunity to take money out of the budget. POM10 is very important.
- \$185M is budget for the two ships.
- Plans call for the Navy to start construction of the first ship in FY11 and the second in FY12. In the meantime, they are using RTD&E funds to support PEO-Ship’s efforts in the acquisition preparation work for the review cycles.
- There are three different organizations within Navy involved with the project (ONR, Oceanographer, PEO-Ships)
- In FY08 focus is to finalize the Ocean Class ships requirements documents. PEO-Ships will develop notional designs.
- The process will likely be similar to the Regional Class process. They will seek UNOLS input. It is important for the details to get documented.
- Bob presented the notional schedule. (*Appendix X.b.*)
- Earlier in the year FIC reviewed the Ocean Class SMRs at ONR's request and updated them.
- Mary-Lynn Dickson asked - Where does the operator selection fit in? Bob – purposely left out of the schedule slide. They are leaning towards putting out the solicitation for both operators at the same time. They would like the two ships to look as much alike as possible.
- Dan Rolland presented the Ocean Class performance parameters (*Appendix X.b*)
- The performance parameters are based on the SMRs – in all cases they at least met or exceeded the SMRs for now. Now they will start creating notional designs and tradeoff studies to see if the objectives can be met. The budget is fixed.
- The ship will be a monohull vessel
- The size: About 2500 tons, 230-ft LOA – estimated, but will determine if this can be afforded.
- The goal is to meet the SMRs and initially they feel that this will be positive.
- Trade-off studies to consider are:
 - Multibeam sonar – 1x1 system goal. They will look at configurations – hull mounted or gondola.
 - DP systems – what is reasonable to expect?
 - Handling system
 - ICES
 - Science complement: 20-25
- These results will go into the specifications document, which are the detailed requirements that designs will be based on.
- Dale – Is \$185 total cost? Bob – Yes – management, outfitting, etc. This is why the trade-offs are so important.

- Dan – They will design a ship that can accept the systems that we want.
- Dale – It is important that the shipyard does not select the equipment.

Post Cruise Assessment (PCA) Subcommittee Report – Mary-Lynn Dickson reported that not much more to report since last year’s meeting. The PCA Subcommittee final report is posted <[Final Report, UNOLS PCA Subcommittee, 2004-2006](#)> and was presented to the Council in March. Mary-Lynn’s slides are included as *Appendix XI*.

A new subcommittee has been formed and includes Bob Collier (Chair), Mary Jane Perry, Matt Hawkins, and Mary-Lynn.

Discussion:

- Sandy – Why were the marine technician reports omitted from the final report. Mary-Lynn and Mike Prince – The return has been spotty. (Later in the meeting Mike provided additional details – reports have typically only been submitted regularly by UHawaii and OSU. A few other institutions submit reports on occasion (UW, Skidaway, Delaware, URI)). Sandy – The low response probably should have been addressed in the report.
- Meghan Donahoe – The SIO marine technicians fill out a report, but not that PCA. She thinks it would be good for the marine techs to complete the form.
- Prince – Institutions have their own internal policies associated with post cruise assessment. Distribution of the UNOLS PCA is controlled by each institution. Within NSF all reports go to Linda Goad, at ONR reports goes to Bob Houtman, and at NOAA reports go to Beth White. In turn they distribute internally.
- Dave Fisichella – At WHOI, the techs send in a separate detailed report following a cruise.
- Question - Why is it important for techs to submit the PCA? Sandy – The agencies need to see the reports. The technician PCA report provides a different perspective than the science party report.
- Dale – the PCAs expose issues so that they can be discussed and addressed.
- Comment - Some of the meeting participants expressed that having the exact same PCA form for Techs, science, and captains is good because it provides a method for comparison.
- Bob Houtman – he finds the PCA reports useful.
- Willis – What is the purpose of the PCA? It should be to ferret out problems with the ships and operations.
- Sandy – he finds the PCAs very useful. He looks at the comments – not the statistics.
- Willis – Expressed frustration that nothing happens when a Tech submits a PCA report with problems about a science party.
- Stewart echoed Marc’s comments. If nothing is ever going to change regarding retribution, it doesn’t seem worth while to fill out the report.
- Prince – How can we follow up to determine that the PCAs are being used in an effective way?
- Tom Wilson provided a few closing remarks on how to increase PCA response from Marine Techs:
 - Managers should stand up for their Tech groups

- Encourage and direct the marine techs to submit the PCAs.
- Encourage constructive input.
- Make suggestions on how the cruise could be better.

RF Frequency Spectrum Management Committee Status Report – Richard Perry gave the status report. His slides are in *Appendix XII*.

The RF Spectrum Committee members are Steve Hartz, Toby Martin, and Richard Perry (Chair). Their directives are:

- Continue their efforts.
- Provide RF Survey results to Otis Brown at The University of Miami (CORF)
- Look for ways to elicit response from a wider portion of the Oceanographic Community
- A requirement was passed on through UNOLS is to provide a community wide survey of RF use to the Us Dept. of Commerce in November of this year,

Survey Results – So far, 26 types of service were documented. There were ten original survey respondents with two additional survey being received after last year’s meeting. Richard would like to be able to include additional data. He encouraged meeting participants to complete the paper form.

The Survey Report was sent to Otis Brown in August 2007. It turns out that Otis is no longer on CORF.

Ways to expand and increase the response to the survey have been considered. Suggestions included:

- Simplify the Survey
- Remove the questions concerning Number of days / year of use and transmit power.
- Create a separate questionnaire for non shipboard users - buoys etc.
- Provide a hard copy of the survey for key personnel from each of the institutions represented at RVTEC.
- Involve the science user directly.

Richard reported on some future efforts to collect data:

- Contact the Buoy Workshop Committee and ask that the RF Survey be distributed as a handout to attendees at their next meeting in March 2008.
- Request information on RF use earlier in the ‘science process.

We need to insist on disclosure of the types RF use required for science programs and whether or not there exists a requirement for equipment or operator licensees. Potential methods for accomplishing this:

- As part of the proposal process.
- As part of the UNOLS ship scheduling process.
- As part of the pre-cruise questionnaire or planning meeting.

Discussion:

- The subcommittee was asked to continue for another year.
- Mike Prince – reports should go to CORF and Tom Gergley (NSF)
- Dale – We need to contact people directly. You can search Fastlane to find out people who use the RF. Then call them.
- Mike Prince – UNOLS started the process of surveying RF spectrum use with RVTEC – how it gets expanded is yet to be decided.

Lunch Break

UNOLS Report - Marcia McNutt (UNOLS Chair) provided the report. Her slides are in *Appendix XIII*. She is relieved to know that the Consortium for Ocean Leadership will be addressing Oceanographic Facilities. Ocean Leadership is the new organization of the merged CORE and JOI. It looks like we are heading for a train wreck. Ships are getting old at the same time new initiatives that will need ships are moving forward (ocean observatories). We need new ships. Marcia discussed UNOLS goals, activities and issues:

UNOLS Goals for 2008:

- Enlarge the group of supporters for the UNOLS fleet both in terms of capitalization and operations. We are in danger of becoming a fleet that is dependent on the rise and fall of NSF. We need to expand out to other supporters.
- Extend our planning horizon to ensure that we are building a UNOLS fleet that really meets what the infrastructure needs will be for ocean sciences in the coming decades.
- Continuously work to lower barriers to effective use of UNOLS ships caused by disabilities, gender, or other special situations.

Operating the UNOLS Fleet: 2008 Ship Scheduling and Challenges - In 2008, operations face a deficit of ~\$10M. Agency reps, UNOLS, and schedulers are working on solutions. The deficit is due to:

- Overall higher costs (fuel, SOLAS, Homeland Security, etc.)
- Fewer agencies supporting fleet operations at historical levels
- Although ship demand remains high, budget constraints and higher costs result in fewer funded ship days. 2008 Ship Schedules are weak.

UNOLS Fleet Renewal: By 2020 will have fewer ships than that we have now.

Equal Access at Sea:

- We are making progress in ADA access.
- ADA is addressed in the Research Vessel Safety Standard Update
- ADA Guidelines for Research Vessels have been drafted and are in review.
- Evidence suggests that we still need to increase awareness on what actions constitute sexual harassment and the negative consequences of such behavior on UNOLS vessels.
- UNOLS is exploring training resources.

Other important activities, accomplishments, and issues are listed in the slides.

Discussion:

- Bruce Applegate – What is being done on Crew and marine tech retention and hiring. Marcia – The Council will be looking to RVTEC and RVOC for suggestions. The topic generated much discussion at the Council meeting. The Council is poised to respond to RVOC/RVTEC's recommendations.
- Annette – What will Ocean Leadership consider in terms of future facilities – just Academic Fleet – or more broad? Marcia – It will be based on community needs and priorities, so it would be broader than just the academic fleet – icebreakers, satellites.

Open Discussion: - UNOLS Council – What is it and how do they help us? Bill Martin shared his thoughts on his experiences with the UNOLS Council. His message that discusses the Council and RVTEC's respective roles is included as *Appendix XIV*.

Discussion followed:

- Rich Findley – he supports Bill and his role in championing RVTEC issues.
- Dale – The community (Council) isn't going to respond to a concern from the RVTEC with a solution that they don't like. You have to go to them with an executable plan that is feasible.
- Bill – RVTEC needs to be more responsive to all issues. When a question goes out about equipment, electronics, there is a huge outpouring. RVTEC has to also express interest in all issues, including policy.
- Sandy – RVTEC should not go to agencies and by pass the Council. The Council is the group that is advisory to the Agencies.
- Mike Prince – The model used for addressing the issue of technician retention and hiring is the one to use.
- Tom Wilson – is RVTEC helping? Yes – the networking is working and is of great value. Are we reaching the agencies? – they are well represented at the meeting – so hopefully they are listening. As for the Council, present them with something that they will say yes to.
- Bill – We should continue to present the Council with our issues, but we should better communicate our needs.
- Mike Prince – He feels that this group has done a great job.

Marine Technician and Crew Retention Issues – Stewart Lamerdin presented the slides that Matt provided to the Council (*Appendix XV*).

- On July 12th there a UNOLS Council phone meeting that included a report by Matt on this issue.
- A letter from Matt, Bill, Stewart, and Pete was sent to the Council and is posted as Appendix VII of the July Council minutes.
- We understand that the solution can't be to just recommend more money.
- The salary survey is part of the effort to address the issue.
- We understand...
 - It is a highly complex issue

- There's only so much funding available – must work within current budget constraints.
- We don't want individuals solely motivated by pay BUT don't want to settle for the “dregs” from other industries either.
- It is a multi-dimensional problem requiring a multi-dimensional solution.
- Industry is better equipped to respond to market forces...but, we still have to compete and provide quality service.
- Quality Service = Finding and maintaining “Top Notch” personnel.

What are we doing about it?

- Gathering information and hard data.
- Developing tangible and realistic solutions.

Collect data will help to:

- Illustrate the severity of problem
- Provide justification for changes in short-term spending priorities and policies.
- Provide justification for long-term funding increases

A comprehensive salary survey will be conducted and will include all classes, crew and techs, and current industry figures. The survey will be coordinated through UNOLS Office.

Possible solutions include:

- Investing in people vs. investing in equipment.
- Develop a more formalized sharing/management of relief personnel.
- Promote the UNOLS fleet.
- Reduce other operating costs through regulatory relief.

Discussion followed:

- Rich Findley – We should also be getting input on tech manager salaries.
- We need hard data on the difference between industry and us.
- Sandy – The problem with crew is that regulatory license requirements are expensive and have severely reduced the hiring pool. It is a critical issue with the crew.
- Stewart – part of the motivation of this effort is to determine what is working best.
- Richard Perry – should we be grouped with RVOC – why? Mike – The larger group brings more clout.
- Jim Holik – “you grow Techs.” There are other things besides just money, encourage training.
- Stewart – We are looking for creative solutions.
- Lani Clough – What percentage of the group is not having a problem? 0%.
- Mary-Lynn Dickson – What industries are you going to? Stewart – there are a few that they are approaching including MBARI.
- Mike – What other industries should be looked at? Oil industry.
- Rich Findley – There is a difference between crew and marine techs? The crew has job specifics. The marine techs do everything. The tech can go ashore and get a job

anywhere. We are competing with a whole different group than just the crew. Marine techs can go anywhere – sea or shore.

- Meghan Donohoe – Techs are often overworked, poorly managed, training is inadequate, and they are treated poorly by science parties. The RVTEC group is not going to the science fairs – they need to go out and advertise.
- Stewart encouraged everyone to provide this sort of information.
- Rich Findley – Can we set up the wiki's for this dialog. Dale volunteered to set one up.
- Bill – He asked if there should be a membership change for this subcommittee– They will revisit this later in the meeting.

Break

ACT Program – Alliance for Coastal Technologies - Jason Smith provided the report. His slides are included as ***Appendix XVI***. See his slides for details.

ACT is a NOAA funded project. The program was initiated in 2000. ACT Services provide an information clearinghouse. They hold workshops. ACT priorities are to:

- transition emerging technologies to operational use rapidly and effectively
- Maintain a dialogue among technology users, developers, and providers.
- Identify technology needs and novel technologies
- Document technology performance

The ACT headquarters is located at UMCES/CBL. There are eight partner institutions with expertise in coastal technology that are distributed around the country. Their technical evaluations include performance verification and performance demonstration. The purpose is to document performance under third party tests. They do not provide certifications, recommendations, or direct comparisons. They can't do this since they are NOAA.

Their program is voluntary and they don't exclude anyone. ACT will put out a request for technologies. The program is free, except the vendor must provide the unit and shipping cost if possible. Moored test beds are typically used for testing to keep costs down (ship time is too expensive). Jason reviewed the Technology Evaluation Themes from 2004 to 2008.

Some of the outcomes of the ACT technology workshops include:

- altered the way data is collected
- altered technology designs
- generated funding opportunities
- Helped focus other ACI activities.

For additional information about ACT, visit www.act-us.info.

MBARI AUV – An overview of MBARI's mapping vehicle – Doug Conlin provided a presentation on MBARI's AUVs. His slides are included as ***Appendix XVII***. MBARI

operates two Dorado Class vehicles, a CTD Vehicle, and a Mapping Vehicle. One additional “mothballed” vehicle is available. It was previously used as the AUV docking test vehicle.

The Dorado Class AUV specifications are:

- 21 inch diameter
- Length varies from 12 to 21 feet.
- Modular design
- Free flooded fairing
- Electronics are in discrete pressure housings
- Main vehicle computer (MVC) is housed in a 17” glass sphere
- Ducted tailcone for propulsion and steering
- Lithium ion or polymer rechargeable batteries
- Communication is via Freewave Ethernet link at surface (57kbps).
- Iridium telemetry capabilities (Short Burst Data)
- Ashtech DG16 GPS Receiver
- RD Instruments 300kHz Workhorse Navigator DVL
- Sonardyne USBL Transceiver for vehicle tracking.
- Strobe, RDF, Argos PTT, Homer beacon.
- Emergency dropweight (10 or 20 pounds).
- Benthos LF Acoustic Modem on Mapping Vehicle for subsea communication and position updates. (Model ATM-891, 8-15kHz)
- Speed capabilities are from 2-4 knots.
- Turning radius of < 10 meters.
- Max dive rate is 30 meters/min.
- CTD vehicle depth limited to 300m because of optical instrumentation. Core components able to operate to 4000m.
- Mapping vehicle depth rated to 6000m.
- Able to operate on a variety of ships using various launch and recovery methods.

Doug described the following system components (see slides for details):

- Main Vehicle Computer (MVC)
- Tailcone Assembly
- MAUV Battery and Reson
- Vehicle Tethers
- Design Tools

The AUVs have been operated off of the following vessels using various launch and recovery mechanisms: *Zephyr*, *Western Flyer*, Spare Rhib (22-ft), *Point Sur*, *Shana Rae* (52ft. Fishing vessel), *Sproul*, *Thompson*, *Atlantis*, and *Healy*.

The D. Allen B Mapping AUV and its systems were described. The system is surface-aided during descent. The ship can perform other functions after touchdown. It has an 18 hour endurance/36 km² coverage.

The CTD AUV is MBARI's "workhorse" AUV. It performed ~3000km of UNATTENDED surveys in 2006. It has an endurance of up to 22 hours (on 6kWhr) with a turn around time of ~6 hours.

Doug Reviewed the lessons learned and on-going AUV work. He provided a list of mapping missions to date that have been carried out.

MBARI ROV – Dale Graves reported on the MBARI ROV. His slides are included as *Appendix XVIII*. The new ROV (*Tiburon II*) comes online next year. The vehicle's current and future tasks include:

- Ocean experimentation and sampling - Instrument deployment and Sample collection (mid-water and benthic habitats)
- Ocean observatory support - Cable installation and Sensor deployment & recovery
- Platform for research & design
- High resolution imaging
- HDTV video, digital stills
- Ocean exploration
- Education & outreach

Project status was reviewed. The scheduled sea trials date is September 2008.

The new ROV will prove a significant increase in payload, thrust and power. It is easier to maintain and easier to interface with new instrumentation. The new ROV will have a better capability to adapt to future requirements (bandwidth, power and payload). The general specifications include:

- 4,000 meter depth rating
- 600 lbs (in water) science payload
- Add on Tool skids
- Dedicated support ship (Western Flyer)
- Vehicle weight < 5,040 kg (11,100 lbs)
- 75 shp hydraulic system

Dale reviewed the custom requirements and science tools (see slides). To support the new ROV, the crane on Western Flyer required an upgrade. New vehicle, plus crane, and umbilical is about \$4M.

Ship and Facility Tours – Point Sur and MBARI AUV Lab/Test Tank

Wednesday November 7th - Casa Munras Hotel in the Casa Munras Conference Room

Call Day 2 to Order and Announcements:

2008 Meeting Location – Florida (FSU, HBOI, Miami) was suggested. (Past Meeting Locations are in *Appendix XIX*)

Bill encouraged institution reps to submit the RF Survey form.

Transportation Worker Identification Credential (TWIC) Update – Bill Martin provided the TWIC update. His slides are included as *Appendix XX*. Congress, through the Maritime Transportation Security Act, or MTSA, directed the federal government to issue a biometric transportation security credential to any individual with unescorted access to secure areas of facilities and vessels and all mariners holding Coast Guard issued credentials or qualification documents.

TWIC is a common identification credential for all personnel requiring unescorted access to secure areas of MTSA-regulated facilities and vessels, and all mariners holding Coast Guard-issued credentials. TSA will issue workers a tamper-resistant “Smart Card” containing the worker’s biometric (fingerprint template) to allow for a positive link between the card itself and the individual.

An estimated 750,000 individuals will be required to obtain a TWIC. This includes Coast Guard-credentialed merchant mariners, port facility employees, longshoremen, truck drivers, and others requiring unescorted access to secure areas of maritime facilities and vessels. If Marine Technicians want to go to and from the ship at a secure facility, unescorted, they will need to have a TWIC card. If Science Personnel want to get to the ship in a secure facility, they must have a TWIC card or be escorted.

Univ. of Washington has filed or intends to file for a facility exemption. If they get the exemption then people, including UW faculty, students, delivery drivers, cruise participants, etc can have access to the UW dock and not be escorted.

Bill suggests that all Marine Technicians get a TWIC card in order to come and go on our ships whenever we want. Unless the Scientists have a TWIC cards, they would need to be escorted to and from the ship at secure facilities.

Bill asked RVTEC is he should make a suggestion to the UNOLS Council regarding science personnel requirements for TWIC cards?

Discussion:

- There was a lot of concern expressed that marine techs might have to escort science party members (who don’t have TWIC cards).
- Bill suggested that all Chief scientists get TWIC cards.
- Sandy – the Techs are not in charge of the ship and shouldn’t be held responsible for escorting the science party. This discussion should be across the board (operator, Council, etc)
- Bill – this should be included in pre-cruise planning documents and discussions.

- Matt Hawkins – There was a discussion at the RVOC meeting on this topic. They are trying to get a fleetwide exemption. This is only a US port requirement. The only issue is the science party access.
- Stewart asked how this would apply to a shipyard. Tiffani - The shipyard would have their own plan and would probably provide escorts.
- The cost for a TWIC card is \$195 for 5 years.

Action Item:

- Encourage all Marine Technicians to get TWIC cards. (RVTEC)
- Send recommendation to Council that all Chief scientists get TWIC cards. Bill will discuss the issue with the RVOC Chair.

Report from MATE – Lani Clough provided an overview of the MATE Internship Program. Her slides are included as *Appendix XXI*. Since 1999, 194 community college and university students have been placed in research vessels, labs and industry settings (107 supported UNOLS vessels). Lani reviewed the process used to place interns with UNOLS (see slide). The program successes are highlighted in the slides.

Informal feedback from mentors on experiences with interns was collected to determine ways to improve the program. The following concerns have arisen:

- Few MATE interns apply for positions on UNOLS vessels after their internships
- Some student interns are more interested in working in science or with ROVs than working as marine technicians
- Many student interns do not understand the nature of marine technician work before they participate in the internship
- Students need a better understanding of equipment before they sail on the vessels.

Some possible solutions to these concerns include:

- Recruit more heavily at MATE partner colleges with strong marine technical programs
- Focus recruitment on students near graduation and recent graduates
- Enhance student screening by revising the internship application to include career goals and quiz on common equipment and marine technician job duties
- Revise internship recruitment materials and the web site to reflect technology and the emphasis on technician positions
- Advise MATE partner faculty in best practices for supporting their students.

MATE will work to improve the quality of information potential interns receive from MATE by providing more detailed information about marine technician careers on MATE's web site. For example:

- MATE's Marine technician knowledge and skills guidelines (KSG)
- Examples of past internship tasks and host expectations including video interviews with students and mentors
- Provide information on the equipment and vessels for students to study prior to boarding vessels.

A primary challenge for the MATE Center is securing vessel space far enough in advance so the “best” students aren’t lost. Some ways on how UNOLS could help include:

- Mentors phone interview top 2 student applicants
- Mentors provide more detailed information concerning the internship tasks and related technology applications
- Commit to hosting interns earlier in the year so MATE can advertise each internship individually. The best time to find out about internship vessel space is January to March. Two month lead time is desired.
- Encourage marine technicians to use the internship experience to promote marine technician careers
- Create a brochure for marine technician careers within the UNOLS fleet
- Assist MATE partner colleges in updating their curriculum so it is better aligned with UNOLS workforce needs/skill sets
- Mentors should return evaluation sheets.

Dave Forcucci asked if MATE tracks interns after graduation. Lani replied “yes.” MATE hopes to have funding to support 12 interns for 4 weeks each in 2008.

Defined Levels of Technical Services –Annette DeSilva provided an update on the project to publish Technical Services Information (TSI). Slides are included in *Appendix XXII*. The TSI website is on-line at http://unolsweb.cms.udel.edu/STRS/Public/diu_login.aspx. The TSI outline was created and endorsed by RVTEC a couple years ago. The outline provides a standard format for describing technical services. In 2007 the on-line TSI system was developed by Aaron Payne with design assistance from Laura Dippold. It is now ready for the technical groups to start enter their data.

Annette reviewed the process for getting started. It begins with becoming a member of the UNOLS Ship time Request System (STRS). The system is password protected. Once you are a member, the UNOLS Office can provide authorization for access to the TSI web pages. Once you have authorization, you can enter data and submit it as “public” when ready.

There are separate web pages that the general public will have access to and no login is required. The web site is intended to allow quick access to ship/service information in a standard format. The web page will allow the viewer to see multiple ships side by side. The TSI Outline for Sections: I, IV, V, VI, VII, VIII is ready for data entry. Beta testing began in mid Sept with data from URI, WHOI, MLML, OSU, and HBOI. We would like to continue to introduce the system and move forward with development of equipment/instrumentation inventories – Sections II, III.

Technical managers will be contacted with instructions for entering data.

Progress of the SAMOS Initiative – Shawn Smith provided the report. His slides are included as *Appendix XXIII*. It has been a good year for SAMOS. The current focus is on improving access to high-quality meteorological and near-surface oceanographic

observations collected in-situ on research vessels. The science goals include creating estimates of the heat, moisture, momentum, and radiation fluxes at the air-sea interface, improving our understanding of the biases and uncertainties in global air-sea fluxes, benchmarking new satellite and model products, and providing high quality observations to support modeling activities, process studies, and global climate programs. Shawn described typical SAMOS observations that include navigation, meteorology (true wind vector, air temperature, moisture, pressure), and oceanography (sea temperature, salinity, conductivity, florescence).

Currently there are 12 research vessels providing data when at sea. In FY2007 there were approximately 2 million one-minute records. Shawn showed maps with the SAMOS coverage.

Shawn described the flow of SAMOS observations. Data is transmitted from the ship to shore as a once daily email attachment via 24/7 broadband satellite communication.

Detailed metadata is collected for all vessels. The current practice is to collect metadata using Word forms sent via email. This has been a limited success and they are seeking better automation through either ASCII text documents sent via email at the start of each cruise or a Web interface that would allow operators to directly input metadata into the SAMOS ship database. The web approach may offer ease of implementation.

Next Shawn reviewed SAMOS data processing. Processing is automated and combines metadata with daily data received from the vessel. Preliminary quality evaluation is conducted. Vessel operators are notified when problems are discovered. Data distribution is via the SAMOS website at <http://samos.coaps.fsu.edu/>. Graphical tools will allow users to search for available data and quality information. There is an agreement in place with NODC (U.S.) and NCAR for long term archival of all observations. The first annual SAMOS report is to be released in January 2008.

Benefits for vessel operators who participate in SAMOS include routine data quality evaluation by experienced marine meteorologists, at sea notification of data problems, and near real-time distribution of science observations.

SAMOS welcomes additional vessel operators. Only two WHOI ships participate now. They anticipate adding eight NOAA ships in 2008. Instructions on what the operators need to provide is included on the slides and on the SAMOS page.

The 4th SAMOS Workshop (Joint with Global Ocean Surface Underway Data project) is planned for summer 2008 and will be hosted by the U.S. Coast Guard in Seattle, WA. All from RVTEC are welcome.

Automated Transfer of Instrument & Vessel Metadata - Survey Report – Shawn Smith reported on the results of the survey. His slides are included as *Appendix XXIV*.

The purpose of the survey was to understand current metadata practices in use by UNOLS operators. There were eight questions and ten responses were received. Full details are included in the slides.

The survey revealed that there are a wide variety of methods employed for storing metadata. Hard copies of sensor calibrations seem common.

Most metadata is updated by ship technical staff. Documentation is never a high priority or desired task. A key issue is how to ensure metadata are updated on sensor swap or other change (e.g., personnel swap).

A combination of shipboard and shore-side metadata storage existed for all who responded. The data is transferred by a variety of means; manual (hand carry), DVD transfers, and electronic. It is mostly done at home port. Automated transfers require some formal electronic storage of information on shore. Not all institutions use databases or have dedicated digital resources on shore.

Metadata is disseminated to users typically by DVD/CD or on-line. Some restrict access to information. Some institutions also maintain metadata on hard disk onshore, but these are not linked to web or ftp. Many have expressed interest in universal on-line access.

Several survey responses commented that developing a community-wide GUI for the web would be helpful. It was suggested that GUI ties into a Central Metadata Repository with access by ship, cruise, dates, and ocean region.

In summary, the current technology will allow automated metadata transfers. There is a need for a system-wide approach and a central repository would be useful. Recommendations for moving forward:

- Form a task group to develop prototype web/email collection system and repository
- Build upon UNOLS efforts to automate cruise metadata collection
- Ensure system will be accessible to large and small operators
- This must be a funded task.
- Must be a UNOLS priority.

Break

World Meteorological Organizations Voluntary Observing Ship (VOS) program – Robert Luke reported on VOS. His slides are included in *Appendix XXV*.

The World Meteorological Organization (WMO) recruits ships to voluntarily observe and report marine meteorological and oceanographic conditions to ensure the safety of life at sea and reduce commercial loss. Some of the VOS statistics include:

- ~200,000 observations per year
- ~900 ships actively participating

- ~200-250 ships report each day
- ~400-450 ships report weekly
- \$180,000 annual operating budget

The WMO VOS program recruits, supports and provides training for crewmembers of ships that participate in VOS program as part of the U.S. commitment to SOLAS. They also check and calibrate barometers, provide equipment to selected vessels on a case by case basis, and perform quality control of observations. Robert showed world maps of the VOS program observation coverage.

The VOS Climate (VOSCLim) is an ongoing project that provides a high-quality subset of marine meteorological data with extensive associated metadata. The data is available in both real-time and delayed mode to support global climate studies. This data are invaluable for climate change studies and research.

Export Controls – Tom Wilson reported on Export Controls. His slides are included as *Appendix XXVI*. An export is “Any oral, written, electronic or visual disclosure, shipment, transfer, or transmission; of commodities, technology, information, technical data, assistance, or software codes; to anyone outside the USA including a US citizen; to a non USA individual or entity; or to a foreign embassy or affiliate.” Tom provided a definition of deemed exports. Export Controls are U.S. laws and regulations that govern the distribution of strategically important technology, services, and information. Regulatory and enforcement agencies include the Department of Commerce, Department of State, and Department of Treasury. The problem is that regulations are not harmonized. Compliance with one set does not ensure compliance with all. Penalties for noncompliance can be very expensive and include prison time.

The marine technical support groups are often the ones who are shipping the gear, demonstrating the equipment, or teaching the science party how to use it. Furthermore, this is often done with people who are not employees/students of our own institution, and potentially with visitors or foreign observers.

Tom’s recommendations include:

1. Be Proactive.
2. Discuss our needs and typical cruise situations.
3. Generate hypotheticals; get some regulatory feedback and decisions.
4. Establish as many exemptions as possible.

There are some exemptions to export controls: Public domain exemption, fundamental research exemption, Education exemption, and Employment exemption. Details and examples of the exemptions are included in the slides.

Phil McGillivray commented that on the USCG ships they have had to lock up areas to prevent access to foreign participants. NOAA added that they have had to lock off areas as well. Richard Perry commented that there are software products that get into the gray area. There is software that can only be purchased in the US.

Tom Wilson volunteered to collect any information that the RVTEC provides on deemed export. He will compile it and get the list out to the group.

HiSeasNet Update – Steve Foley provided the HiSeasNet update. His slides are included as *Appendix XXVII*.

HiSeasNet services include providing satellite bandwidth for ship-to-shore and shore-to-ship connectivity, hub station connection to Internet, and ship and shore equipment maintenance two times a year.

The Principal Investigator for HiSeasNet is Dr. Jon Berger, UCSD/SIO and the engineer is Steve Foley, UCSD/SIO. Help/backup is provided by Geoff Davis and Brian Battistuz, both UCSD/SIO. There is a satellite network design and equipment maintenance contract with CommSystems.

In 2007 HiSeasNet was added to four more UNOLS ships: R/V *Point Sur*, R/V *Walton Smith*, R/V *Oceanus*, and R/V *Langseth*. This brings the HiSeasNet Fleet to include the following:

- C-Band (2.4m dish, Global coverage): *Atlantis*, *Kilo Moana*, *Knorr*, *Melville*, *Revelle*, *Seward Johnson*, *Thompson*, *Langseth*
- Ku-Band (North America coastal coverage): *Endeavor* (1.2m), *New Horizon* (1.2m), *Oceanus* (1.5m), *Pelican* (1m), *Point Sur* (1m), *Walton Smith* (1m)

The HiSeasNet Web site is (<http://www.hiseasnet.net>).

The HiSeasNet antenna size comparisons between the C-Band, Ku-Band and small KuBand are shown in the slides. Maps showing the coverage in the Pacific, Atlantic/Eastern Pacific, and Indian Ocean were displayed. Equipment downtime statistics since RVTEC 2006 are included in the slides.

HiSeasNet equipment support and maintenance is contracted to CommSystems. The HiSeasNet staff authorizes what resources are used and when. Maintenance is done roughly every 6 months. They try to perform maintenance during combined visits or do them in San Diego to cut down on costs. International emergency visits are made as needed to resolve problems. Operators are welcome to pay CommSystems for anything not supported by our maintenance contract (training, upgrades, 3rd party teleport network changes, etc.).

Most HiSeasNet problems are user or ship related. These can be a result of power outages, antenna repoints, gyro failure, unfamiliarity with gear, etc. RF gear failures are a major cause of ship outages. A solution is to have the RF spares and antenna spares on board.

SeaTel has released a DacRemotePanel. It runs under Windows across a serial or IP connection to an antenna controller. It provides extra diagnostic plots, debug data dumps, and visibility into the pedestal control unit.

Steve discussed the problem of satellite shadowing. Shadowing is caused when a mast, stack, stairway, etc. is between the antenna and the satellite. The ensuing outage from being on a “bad heading” for extended tracks is frustrating for science and crew. Options for resolving this include moving the antenna higher than anything else, buy a second antenna for each ship, move the antenna between two positions, or remove obstructions. Some of these options are expensive to implement.

Future work includes bringing a few more ships online and possibly expanding Ku-band carriers to cover more of POR. They will work on a training program if there is interest. More documentation, troubleshooting guides, etc. will be developed and they will continue routine maintenance/upgrades of all equipment.

Discussion followed:

- Bill Martin asked if the shadowing problem went away on *Revelle* after the antennae was raised. Steve – The connection was a bit better.
- Sandy suggested that a portable KuBand system could be used as backup on cruises that require HiSeasNet.
- Rich Findley asked about licensing? Steve replied that they would like to get a fleet-wide Earth Station license. However, it is a year-long wait. If successful, the whole fleet would be covered and a paper copy of the license could be sent to each ship.
- Tim McGovern asked if there is any chance of expanding bandwidth. Steve replied that it would require funding.
- Bill Martin said that he would respond to Marcia McNutt about the antenna shadowing issue.

Various ship configurations utilizing C-Band and Ku-Band HiSeasNet Systems:

SIO Configuration – Steve Foley presented the SIO HiSeasNet configuration. His slides are available in *Appendix XXVIII*. The services provided include mail for all, DNS for all, Web for some, VoIP, Instant Messaging, bulk transfer onto ship (via FTP proxy and reconnecting downloader), bulk transfer off of ship (URLFetch), bulk Ship-To-Shore (URLFetch) [if ship goes offline, then back online, shore picks up stalled transfer], and bulk Shore-To-Ship.

WHOI HiSeasNet Configuration – Dave Fisichella reported that the Ku-band HiSeasNet was installed on *Oceanus* and connected to HiSeasNet on March 27, 2007. The hardware costs were shared by NSF (75%) and ONR (25%). Regional satellite signals provide continuous high-speed data transfer in coverage areas. They used the SES Blue Sky. The concern with this approach was that you don’t get to experiment with it while at home. You have to wait until you are in the service area before you can try it out (*Oceanus* was in the Mediterranean). The cost wasn’t much different than HiSeasNet at home. Cave’s slides are included as *Appendix XXIX*.

Science Network on Ice Breaker *Healy* - James Wilson, U. S. Coast Guard, provided the report on the *Healy* Satellite Connectivity at Sea. His slides are included as **Appendix XXX**. Their science network provides access to a Window server and has Windows and Mac workstations. Personal laptops can also connect to the network. Internet access is provided by INMARSAT 24/ 7 in low latitudes and IRIDIUM e-mail 24/7 in low and high latitudes but no internet. The INMARSAT B system includes two antennas and offers 64K for the science network and 64K for the Coast Guard network. It covers all of Alaska. The IRIDIUM system is 9600 baud (4 channels or phones) and has four antennas, one for each channel.

The INMARSAT is a Navy leased line and uses military satellites. The IRIDIUM SIMS was purchased by the Coast Guard and there is no air time cost.

R/V *Thompson* HiSeasNet Installation & Access Control – Bill Martin reported on UW's system. His slides are included as **Appendix XXXI**. The slides include images of the system components. John Delaney cruise on *Thompson* included a real-time feed. John paid for the extra satellite time.

University of Hawaii's HiSeasNet Configuration - Tim McGovern slides are included as **Appendix XXXII**. The *Kilo Moana* uses the Pacific Ocean Region C-Band satellite, providing access to internet anywhere in the Pacific. Installation was completed in March of 2005. The antenna and radome are mounted on the aft-control station, which is situated on the aft section of the 02 deck. From here, the only obstruction to sending or receiving data comes from the main mast, located ~40 feet forward of the radome. There have been some instances of interference from the antenna but over all that has been fairly rare.

Tim did some speed comparisons using a web-based Bandwidth Meter Test available through CNet, and found that while speeds are significantly reduced as compared to shore-side internet, overall it is sufficient for general internet work with a moderate number of users.

For each cruise, three IP addresses are provided to the chief scientist. Wireless routers allow a much larger pool of scientists and crew to access the internet, and only then have they noticed a slow-down. Typically that would involve numbers as high as 12-15 people on the internet at any one time. There are two public computers in the library with off-ship internet access, available to crew and science. Additionally, the captain, chief mate and engineer, and the bridge computer all have internet access. Skype and instant messaging on the public computers is not allowed, but they haven't restricted access on the other computers – mostly because it is impossible to enforce.

HiSeasNet Install Onboard R/V *Point Sur* - Ben Jokinen thanked HiSeasNet for the help installing and providing coverage in the Pacific Northwest. Ben's slides are included as **Appendix XXXIII**. The challenges so far include mast masking, Pacific NW Beam 2

coverage, hardware firmware bugs, bandwidth versus the number of users, and crew versus science use.

Bill Martin recommended that there be a HiSeasNet user session before or after next year's meeting.

Lunch Break

NOAA VSAT Implementation - Gene Nelson reported on NOAA's VSAT. His slides are included as ***Appendix XXXIV***. This is an update of the 2006 presentation by Doug Perry at the RVTEC meeting. One of the goals of the VSAT project are to provide a secure 24/7 WAN connection between deployed ship networks & NOAA's Trusted Campus Network.

There is a T1 WAN connection from the Earth-station/Gateway to NOAA Network Operations Center in Silver Spring, MD. Each ship operates within the NOAA Trusted Campus Network via iDirect network and is protected by the NOAA Firewall. The bandwidth is 512 kbps up/ 1024 kbps down shared for 10 Ku-band vessels with dedicated 128 kbps up/down for C-band.

In FY04 the NOAA fleet wide Inmarsat cost was \$330K. The VSAT Acquisition/Implementation was \$80K to \$250K per vessel in FY07. The bandwidth cost per vessel per month is less than \$3K for Ku-band and \$4K for C-band. The annual maintenance per vessel is about \$2K + travel. The benefits offered by VSAT are that the ships at sea are always connected and in turn there is safer and more effective operations and improved morale. The slides include a table showing the cost estimate by year from FY05 to FY08 for bandwidth and equipment.

The NOAA Fleet VSAT configuration was described. Coastal ships in the Ku-band footprint utilize 1.0, 1.2 and 1.5 meter dishes. Global & Deep ocean ships utilize 2.4 meter Cu-band dishes. *Okeanos Explorer* will utilize a 3.7 meter dish for live television broadcast. Gene reviewed the Ku-Band and C-Band system selections and implementation strategy (details are in slides). The *Oscar Elton Sette* installation was described.

Gene provided some operational notes regarding the system. Two of the three Orbit systems failed out of the box or soon after installation. Six field service trips were required to the *Miller Freeman & Oscar Dyson* in five months. Spares availability is an issue. The SeaTel 9797 is rock solid. Bandwidth usage is adequate for ship use, but NOAA programs are interested in increased data rates.

Gene reported that NOAA asks all users to sign an internet policy that they agree to no VoIP, no Skype, and no downloads.

Wire and Cable Subcommittee Report – Rich Findley provided the subcommittee report. His slides are included as ***Appendix XXXV***. Rich reviewed basic wire

characteristics. Tables comparing the various characteristics of different wires are included in the slides. Next Rich reviewed the history since 1999 of the various wire and cable symposiums, requirement development efforts, workshops, and the recent safe working load (SWL) standards. A summary of excerpts from the 1999 wire and cable symposium are included in Rich's slides along with the symposium recommendations. Rich also reviewed the recommendations from a 2004 report on Draft Functional Requirements for a Potential New Generation Standard UNOLS Small Diameter Electro-Mechanical (EM) or Electro-Optical-Mechanical (EOM) Cable.

Rich said that we need to figure out how we can get this moving along. There are more and more heavier packages going over the side. People are using the cables to their legal limit. The wires are being stretched.

Mike Prince commented that Rich's tables show characteristics for new cables. The numbers would be lower with older, used cables. A solution perhaps should be centered on proper monitoring of the wire.

A first step in engineering a new wire is establishing the SWL.

New UNOLS Wire SWL Standards Update – Matt Hawkins reported on the New Wire SWL Standards. His slides are included as *Appendix XXXVI*. The SWL standard is modeled after the UK standard. It allows more operational flexibility and allows a lower Factor of Safety (FS). The operator chooses the desired FS to use based on existing monitoring equipment and the handling system design monitoring system, operational science characteristics, and the capabilities of ship and personnel. The lower the FS you choose the more you need, and the more you have to do. $FS < 2.5$ need stringent requirements (10 Hz monitoring).

A new Appendix A has been added to the Research Vessel Safety Standards (RVSS). Appendix A is the only document in the RVSS that requires minimum sheave diameters and grooving details, monitoring systems, winch operator training and safety procedures, and routine cable testing. The SWL standards are in final community review.

Matt reviewed the SWL Table, using *Sharp* as an example.

Break

Guest Speaker – Mr. Phil Gibson, President, Tension Member Technology Laboratories provided a talk on wires and cables. His slides include cable specs, tables, and images are included as *Appendix XXXVII*. Phil provided information on the .322 cable. He discussed torque balancing: elongation vs. tension, the effect of compressibility, elongation vs. pressure and the effects of hydrostatic pressure on elongation.

Synthetic cables were discussed. With synthetics, the outside doesn't want to bend, but the inside – the core will go into compression. This could happen by putting a cable on a

sheave that is too small. There are pitfalls with the synthetic wires that you have to be aware of.

Phil is beginning a cable test program for Rick Trask. He showed pictures of the test equipment. They will look at the residual breaking strength. The tests run for 1,000,000,000 cycles and can take 11 days.

Phil said that sheaves all count, but the wrap angles don't matter as long as they are more than half a lay length. The sheaves need to match the wire diameter. The sheaves should not be too close together. Outer wires see the least amount of curvature. Rollers are a cable eater.

Phil was asked to comment on EM cable lubrication. Phil – A non-lubricated cable will corkscrew.

Sandy Shor asked what is the best way to improve on the cables we are using now. Phil responded by indicating that three conductors in the wire may be excessive. The wire has redundancy built in, but it may not be needed. Rich added that it is best to stay at same diameter, but perhaps go down to one conductor.

Rich asked how much does it cost to design a new cable. Phil – If you stay with same diameter, and go to one conductor, vendors can be creative.

Phil cautioned about using a low FS. It is complex because the cables degrade with strength.

Break

Reflections and Looking Forward - Sandy Shor and Jim Holik – Sandy provided some reflections on his experiences at NSF in the Technical Support Program:

- The budget is bad and ship schedules for 2008 still have not been posted.
- The Technical Support Program funds the basic services rates and the other half of the budget is for special services.
- We are at critical level in terms of technical staff level.
- Specialized services are going to squeeze the budget because of the new ship, *Langseth*, coming on line.
- Mitigation on Marine Mammals permitting is coming at a cost, \$.5 to \$1M
- Long coring support is ~ \$1M
- Multibeam and HiSeasNet are about \$1M and are part of the basic rate.

Jim Holik remarked that technical services are important to him and he is excited to oversee the program at NSF.

Adjourn Day Two

Thursday November 8th - Casa Munras Hotel in the Casa Munras Conference Room

Vice-Chair Nominations – Stewart Lamerdon was nominated for re-election as RVTEC Vice-Chair. There were no other nominations. The members voted to reelect Stewart as Vice-Chair.

Determine Host Institution for 2008 RVTEC – Shawn Smith and Rich Findley offered to host the 2008 meeting. Details will be worked out.

Show & Tell Presentations:

NSF Group Purchase – There was a presentation on the Knudsen Engineering new echosounder. His slides are included in *Appendix XXXVIII*.

The Knudsen Chirp 320BR is the workhorse for the UNOLS Fleet. There are 30 units spread over 16 UNOLS organizations. The first units were introduced to the Fleet in 1996. We are now experiencing part obsolescence.

Nolan discussed the next generation product strategy. There are two products, the sounder series for general purpose shallow water applications and the chirp series for deep water, sub bottom applications. He suggests introducing both series with 16 bit processor. Images of the various units as well as a system comparison table of the 320BR Series versus the Chirp 3260 Series is included in the slides. The Chirp 3260 new 5509 module replaces both MPM and SPM modules used in 320BR; there is one less module to deal with. The Chirp 3260 pick-up modules offer lower noise, lower losses, and added protection circuitry. Other benefits offered by the Chirp 3260 system components are included in the slides. Photos of the Chirp 3260 physical configuration front panel and internal layout are displayed. Details of the Chirp 3260 software are described. Examples of the data taken from a Chirp 3260 @ 3.5 kHz are included in the slides. The Chirp 3260 new features and options include an optional KEL USB printer (available in future) and an optional simulator box.

The UNOLS group purchase is for an order for eight systems (16 bit processor). Delivery is expected in January 2008. There is a trade in option for spares. There is a complimentary upgrade to 32 bit. This is a dedicated effort to control fleet configuration to same the commonality.

Discussion:

- Rich Findley asked about impedance. Donna – The issue of impedance matching is important and still under investigations.
- Rich Findley – Is there any way to indicate that raw data has been entered? Donna – It really depends what the user wants.
- Bruce Applegate – Does the system come with a PC? Donna – They can make recommendations regarding PC peripherals, but it is probably better for the user to get it.
- Bill Martin – Is the system Vista compatible? Donna – Other than thermal printers, it should be compatible.
- David Fisichella – When did development of the unit begin? David P – this past year.

- Bruce Applegate – At SIO they had a lot of problems finding a depth. Is any one else having this problem? Michael Delatte – Yes; they lose the bottom. Many people have this problem.
- Applegate – they also loose terrain.
- Bill Martin – there was one depth that they consistently lost. Knudsen came out and fixed it.
- Stewart – Could there be a “print screen.” The thermal printer is stinky and wasteful. It could be a snapshot.
- Rich Findley – Any requests to Knudsen should be sent to the RVTEC mail list.
- Stewart – Question to Rich Findley – What is the status of the group purchase? Findley – There are 8 units; one for *Walton Smith*, one for *Seward Johnson*, one as a spare, the spare will be available as needed. The other four units are for URI, MLML, Duke, and Bermuda.
- Rich Findley – You can trade in your old unit for spares. The trade in time is about a year. If you want to get in on another group purchase, you would have to put it in your own proposal.

SWAP Report: University of Delaware - Toby Martin reported how the University of Delaware is using SWAP. The U.Del SWAP slides are included as *Appendix XXXIX*. Delaware is using SWAP for support in their Delaware Bay Observatory Systems (DBOS) program. Their SWAP network base site is their marine operations building. Instrument access is provided over the network. The buoy uses a Windows remote desktop. CODAR uses Timbaktu. The Cape Henlopen Pilot Tower is Relay Site #1. It is about 80 feet high and permission to install on the site was easy. The Cape Henlopen CODAR site provides in-situ surface water currents and waves data and real time access. Site #1 at Cape Henlopen uses SWAP. Site #2 at Cape May uses a phone modem, and will be upgraded to SWAP. The Luther Buoy “A” is 5 miles from the Marine Operations Building and Buoy “B” is 7 miles from Pilot Tower. A future Relay site #2 is the Brown Shoal Navigation Marker. Permission to install on this site was more difficult.

The DBOS instrumentation systems include: CODAR, Instrument Buoys, Wave Riders, Microbial Observation, ADCP, Video Observation, and Relay Sites.

The slides provide credits to the SWAP design team. Funding sources for DBOS and SWAP are identified.

SWAP Report – Toby Martin (OSU) next gave a report on the Status of SWAP: Ship-to-Ship/Shore Wireless Access Protocol. His presentation is available as *Appendix XL*. SWAP was developed by Toby Martin (OSU), Val Schmidt (L-DEO), Geoff Davis (SIO), and El McFadden (USCG). Additional major 2007 contributors are listed in the slides. In 2007, although there was not much expansion on ships; on land a number of sites were added (Martha's Vineyard, WHOI Shuttle Van, Lower Columbia River, Delaware, and Yaquina Head).

Plans are underway for SWAP 2 development. There are a few reasons for changing to SWAP 2:

- Development on the Pebble distribution has been discontinued.
- SWAP 1 still has multiple node routing issues.
- Needed to change the addressing scheme.

A comparison table of SWAP 1 versus SWAP 2 is in the slides. The SWAP user goals include:

- service stability: routing, relaying, auto detection, no tech required
- easy install
- easy configuration: web interface, name2ip
- after install & config, no messing about - it just works
- Internet access to a ship or buoy
- easy port forwarding (network sensors, VoIP, telecommute, ...)
- provide for shore-side relay chains
- access via standard wifi
- security: WEP, WAP, etc.

Toby reviewed the SWAP technical needs and the SWAP 2007 timeline. SWAP funding for the development and installation of SWAP is provided by the National Science Foundation.

Marc Willis remarked that the SWAP activity started within RVTEC from the ground up. All are welcome. Contact Toby for information and feel free to join.

Shipboard ADCP Systems: Status Reports - Julia Hummon provided the report. Her slides are included as *Appendix XLI*. The University of Hawaii ADCP data acquisition and processing software "UHDAS" has been installed on two Antarctic research vessels, three NOAA ships, 8 UNOLS ships, and one other vessel. A system status report status and subsampled data are emailed from these ships daily, allowing the health of the systems to be monitored. Status reports and figures from the subsampled data are updated on the web.

In general, the ADCPs using UHDAS are doing well. The anomalies are noted in Jules' slides. She recommended that the Ocean Surveyors be upgraded to new firmware 23.16 (from 23.11). UHDAS is moving to a different Linux distribution; Ubuntu, from Mandriva. Five of the UHDAS installations are running under Ubuntu (7.04). They are working towards a more streamlined installation process. Jules has software that allows you to try out Linux; she encouraged the group to check it out.

The UHDAS documentation has been improved for better access to data. There are more troubleshooting pages and better organization. They are weaning from Matlab (Python and Matplotlib).

Jules emphasized the need for communication and encouraged RVTEC member to email with any questions or problems. Interactions with techs on ships are critical. She said to feel free to put the scientists in touch with her.

GeoMapApp at Sea - Bob Arko reported. His slides are included in *Appendix XLII*. GEOMAPAPP is a Java™ desktop application to explore and visualize geoscience data. It was created by Bill Haxby at LDEO. It includes global multi-resolution topography compilation. The application is maintained by the NSF Marine Geoscience Data System (MGDS) developer team at LDEO. The motivation for GEOMAPAPP was because science users want a graphical interface that supports map view and profile view, a high degree of interactivity with data, and a free and easily available application that works on any computer.

Bob reviewed the GEOMAPAPP features for map, grid, and special functions (see slides). He provided an example from Juan de Fuca. The GEOMAPAPP architecture diagram is provided in the slide.

For an at-sea deployment of GEOMAPAPP in Mode #1, the laptop is sent to the ship with a Web server and data pre-installed. The pro is that it works on any ship with zero impact. The con is that it is only available to one user at a time. In Mode #2 a portable data disk is sent to a ship, installed in ship Web server. The pros are that it is available to any/all onboard users. The con is that it requires network configuration. Details of the Mode #2 configuration are in the slides. Successful deployments 2007 were on *Palmer*, *Knur*, *Healy*, and *Oceanus*. Planned deployments 2008 include the *Resolution*, *Atlantis*, and *Langseth*.

Break

Show & Tell Presentations (continued)

Reach out and (re)boot someone – Tom Wilson gave a report on three topics: Reach out and (re)boot someone, inexpensive serial to Ethernet converter, and A/D over Ethernet for \$15/channel. His slides are included in *Appendix XLIII*. Since 2001, the Ocean Instrument Laboratory has operated the SoundScience autonomous data system aboard the *P.T. Barnum*, a 300-foot passenger ferry crossing Long Island Sound. The *Barnum* system consists of fifteen instruments measuring about 30 parameters, a central data acquisition computer, two display computers, and a wireless Internet link to shore. Even when following best practices for power/UPS surge protection, and software - many service calls required no more than a power cycle of the affected subsystem. The hardware and software installed are listed in the slides. The data acquisition computer pings iBoot and wireless Internet router watchdog. Failure of a switch or computer results in switch and computer power cycle. Failure of a router results in router power cycle. All three switch systems can be monitored / commanded from shore. Addition of remote power controls have resulted in a decrease in the number of on-site service calls to the ship, quicker problem resolution, and happier scientists and engineers.

Next Tom discussed inexpensive Ethernet to serial by use of SENA serial servers, marketed in USA by Axxeon Technologies. There are various software options. SENA provides a free COM port redirector that creates virtual COM ports on your Windows machine. There is also a Linux TTYRedirector that functions similarly to the Windows COM port redirector.

Lastly, Tom discussed A/D to Ethernet for \$15/channel using B&B Electronics 232SDA12. It offers 11 channels of 12-bit A/D, 3 digital inputs and 3 digital outputs, and simple ASCII commands over RS232.

Tips & Tricks for using PMI Finger Grips on EM Cable – Marc Willis provided the report. His slides are included as *Appendix XLIV*. The UNOLS .322” wire is Left Hand Lay (LHL). The grip works by friction between grip wires and armor wires. Grip wires are laid in the same direction as the outer armor. Using the wrong (opposite) lay grip will result in failure at a much lower tension - the grip will slip instead. Thimble prevents deformation of the grip eye and extends the life of the termination. Be sure that all grip wires are in contact with the wire with no crossovers or fishhooks. Gaps are normal, and are the result of sizing the grips for a range of diameters. At this point, the grip termination (with or without thimble) has about 90% of the strength of the cable.

The primary failure mode in this state is ‘unzipping’ from the eye end. We have observed that under high tension, the wire will flip out of the grip turn-by turn, starting at the eye. To increase termination strength, a 1/2” Crosby cable clamp can be used to secure the eye end of the grip. To prepare for this, wrap several layers of electrical tape at the base of the eye. This provides a base for the cable clamp to grab.

The Crosby clamp is placed over the tape, and tightened enough to stay in place, and prevent unzipping. It can be pretty tight, since the cable core is well protected by the armor and the grip wires. The tape keeps the clamp in place. If tape is not used, the clamp has a tendency to slip.

Once the clamp is tightened, the whole thing is wrapped in electrical tape to keep the nuts from coming off. Without this, they tend to work loose as the wire vibrates in use. It’s a good idea to add some tape at the upper end of the grip to keep the wires from working loose, and to prevent hand injuries. Bright tape is a good two-block indicator for winch operators.

Discussion:

- Where are the conductors? Marc- The conductors are in the armor and deep within the system.
- Do you tape before gripping? Marc – no.
- Do you get deformation under grip? Marc – no.
- Marc – if you buy the Finger Grips in large quantity, they are reasonable. The set-up fee is about \$125. Then each one is \$25.

Wire Lubrication and Corrosion Prevention – Chris Griner gave a presentation on wire lubrication and corrosion prevention. His slides are included as *Appendix XLV*. Extend the working life of wire rope and EM cables using the Corelube 2100 Lubricator with StranCore Corrosion Inhibitor. It penetrates and resists water wash off, is non toxic, and consists of 70% water & biodegradable glycols. The lubricator allows easy, clean and efficient field application for EM / CTD, hydro, and fiber optic wires. The lubricator is compact. It can be mounted around cable in moments and operate at any speed. Air nozzles dry the wire prior to lube. The system is portable. WHOI tested four wire specimens hanging in salt water since July 6, 2007 with different lubrication techniques. The new specimen lubed with StanCore lubricant and CoreLube lubricator showed no fouling and little corrosion.

Discussion:

- How much did it cost? Chris – It cost about \$3,000.

Accept the minutes – The 2007 RVTEC Meeting minutes were approved with incorporation of comments.

Crew and Marine Technician Retention Committee – It was agreed to keep the membership as is for now.

INMARTECH 2008– Annette will contact INFREMER for meeting details.

UNOLS Office Host - Mike Prince commented that there will be a call for UNOLS Office host institutions in early 2008.

Adjourn – A motion was made and passed to adjourn the 2007 RVTEC Meeting (O’Gorman/Willis).