

**Research Vessel Technical Enhancement Committee Meeting
November 18-20, 2009 (Wednesday-Friday)
(Focus Groups met on Tuesday, November, 17th)
University of Washington
Center for Urban Horticulture, UW Botanic Gardens
Northwest Horticultural Society (NHS) Hall
3501 NE 41st Street
Seattle, Washington**

Meeting Minutes

Executive Summary: The 2009 RVTEC Meeting was hosted by the University of Washington on 18-20 November. Rich Findley, RVTEC Chair, presided over the meeting. The meeting agenda was full. A few of the major discussion topics included the:

- Satellite Communications
- Data Collection Systems including a session on the Rolling Deck to Repository (R2R) Initiative
- Network Security
- Winch and Wires
- The Marine Technician Retention and Recruitment Initiative

A new feature of the RVTEC meeting that was introduced in 2009 was the “Year in Review.” Each marine technician group was asked to provide a brief presentation recapping the highlights of their annual operations including the most challenging issue or biggest technical hurdle.

The agenda also included reports from agency representatives, committee reps, and subcommittee liaisons. Tours of the University of Washington ship and facilities were provided. Group purchases were discussed. An informative Show and Tell session was provided at the end of the meeting.

Elections were held for a new RVTEC Vice Chair. Daryl Swenson from Oregon State University was elected.

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Meeting Summary:

Tuesday November 17th -- Pre-meeting Working Groups meetings were held on Tuesday, November 17, 2009. The working groups included:

- HiSeasNet Focus Group (Accelerators)
- SWATH Multibeam Focus Group

Wednesday November 18th – Center for Urban Horticulture, NHS Hall

Meeting Called to Order - Rich Findley, RVTEC Chair, called the 2009 RVTEC meeting to order at 8:30 am. Rich mentioned that he has been a part of RVTEC since it's very first meeting. William Wilcock of the University of Washington (UW) welcomed RVTEC to UW. He stated that the marine technicians are often taken for granted, yet it is the service and expertise of the techs that make our fleet effective. William said that it has been a tough year with the loss of UW technicians Bill Martin and then Mike Relander. He thanked RVTEC for coming to UW.

RVTEC meeting participants introductions were made. The meeting agenda is included as **Appendix I** and the participant list is included as **Appendix II**.

Accept 2008 RVTEC Minutes – Dave O’Gorman made a motion to accept the 2009 minutes. Jim Postal provided a second. The motion passed.

RVTEC Vice-Chair Election – Individuals interested in the RVTEC vice-chair position were encouraged to contact Marc Willis (Nominating Committee).

Agency Reports:

National Science Foundation (NSF) – Jim Holik provided the report for NSF. His slides are included as **Appendix III**. The NSF Appropriation for FY 2010 has not been passed and NSF is operating under a Continuing Resolution. In the President’s request for 2010, there are rumors of anywhere from a 6% to a 9% increase for NSF. It is unclear what amount will actually be appropriated. There are pressures from the federal budget deficit that will likely make for a very austere 2011; however, if you have something you need, propose it. NSF was able to accomplish a lot with the stimulus funding (ARRA) (\$3.3 Billion for NSF). The ARRA funds supported the Alaska Region Research Vessel (ARRV) with the first ARRA award of \$148M.

The ARRA funds provided 20M for ship operations. This allowed for funding over 500 additional NSF ship days (>50% global) and \$17M for SSSE/OI. Funds would be provided for the winch pool, multibeam upgrades and new installations, and seismic equipment.

New initiatives this year include R2R and Marine Tech Retention program.

Office of Naval Research (ONR) – Tim Schnoor provided the report for the Office of Naval Research. His slides are included as **Appendix IV**. The Navy’s fleet usage and budget has been flat for many years. Tim anticipates that the number of days the Navy can support will go down because costs are going up.

Some of the Navy ship activities this year have included ship propulsion issues, AGOR inspections, and the Ocean Class Acquisition Program.

United States Coast Guard (USCG) – Dave Forcucci provided the USCG report. A few years ago the budget authority for *Healy* operation was transferred to NSF. The Antarctica McMurdoe ice break-out was outsourced to the Swedish research vessel *Oden* this year.

Polar Sea supported two Arctic research cruises last year. The ice beaker *Polar Star* is in port in a semi mothball status. Major renovations are needed.

This year marks Healy's first decade of operations. Currently the ship is in Todd Shipyard for a maintenance period. The shafts are being pulled and they are replacing the SeaBeam multibeam system with a Kongsberg 322.

In the future, budget authority for the Healy operations might come back to Coast Guard.

National Oceanic and Atmospheric Administration (NOAA) – Mike Webb provided the NOAA report. NOAA received a lot of ARRA funds and built a new fisheries ship, FSV 7. This vessel will replace the *Jordan* and it is ready for deployment. Last year NOAA took delivery of *Pisces*. *Shimada* has yet not met ICES so NOAA has not yet accepted the vessel. ARRA funds were also spent on vessel maintenance.

NOAA's west coast vessels are moving from Seattle to Newport, Oregon.

RVTEC Subcommittee Reports:

Post Cruise Assessment Report (PCAR) Committee – Annette DeSilva provided a brief update on the PCAR committee. The members of the committee include Bob Collier (Chair), Wilf Gardner, Joe Malbrough, and Mary-Lynn Dickson. In the upcoming year, the Committee will review PCARs for the Global ships. They will also look at introducing a new on-line form. Mary-Lynn has decided to step down from the committee and a new RVTEC rep will be needed.

Safety Committee – Rich Findley provided the Safety Committee report. The focus of attention is on Appendix A (Wires and Cables) of the Research Vessel Safety Standards (RVSS). Everyone will need a strong understanding of Appendix A in order to comply. It will introduce major changes and equipment will need updating.

If RVTEC members have any safety issues, they should raise them with Rich. He will bring them to the Committee.

RVTEC Education Subcommittee – Aubrey Steele provided the Education committee report. Her slides are included as Appendix V and cover "How-To Manuals" and "Training and Certificates." How-To Manuals should be step-by-step and easy for anyone to replicate. There should be standardization of procedures and consistency. Compilations of Shipboard Technicians' notes on procedures and manufacturers' web pages are also useful for "how to manuals." It is useful to include photos, equipment specs, drawings, and pin-outs for reference.

Aubri provided 2009 training highlights from the HighSeasNet (HSN) workshop. It was an NSF funded workshop with attendance from 7 institutions and 11 participants. Karl Kapusta (CommSystems) and Steve Foley (UCSD) led the instruction. A Ku-band antenna

was leased for the 4-day workshop for hands-on learning. Key Points from the HSN Workshop included:

- Satellite theory background
- SeaTel antenna system background, operations & troubleshooting
- Comtech modem operations & troubleshooting
- Amplifiers
- Codan RF operations & troubleshooting
- HiSeasNet data flow & troubleshooting
- HiSeasNet structure, policies, procedures

Some future technician training topics that have been suggested include:

- ADCPs, Teledyne RD Instruments
- CTD/TSGs/mod sensors, Sea-Bird Electronics
- Fiber Optic training, Fiber Instrument Sales (Nationwide) or Corning
- Salinometers, Guildline Instruments or (OSI – Standard seawater provider)
- HiSeasNet again
- Basic Safety Training
- Depthsounders, Knudsen Systems
- Applanix, POSMV Inertial Positioning system
- LabView, National Instruments
- Computer Certifications (A+, CompTIA, etc)
- Electronics 101
- Rigging
- Crane Ops and/or basic Hydraulic Systems
- Multibeam Systems
- SCS [NOAA's DAC System]
- ISO/Quality Assurance/Quality Improvement
- Team Building – Jung/Myers-Briggs Type Indicator [MBTI]

RVTEC nominations for PCAR Subcommittee - Dave Fiscella has expressed an interest in being the RVTEC rep to the PCAR Committee.

Jamestown Marine Service (JMS) Ship Inspection Program – Ted Colburn (JMS) provided the report. His slides are included as **Appendix VI**. Ted provided the names of the Ship Inspection Team. Inspections offer good opportunities to learn how things are done on each of the UNOLS ships.

Ted focused on the Inspection Perspectives as the RVSS Appendix A becomes implemented. The operator selects the Factor of Safety (FS) based on operational needs or system configuration. If what is needed exceeds what can be achieved by the configuration of components there is an opportunity to comment on the ship condition form. Operators will be completing a “Rope and Cable Safe Working Load” table.

Ted's slides gave examples of working with two Factors of Safety; FS = 5.0 and FS = 2.5 (see slides). He highlighted the increase in requirements when working with a Factor of Safety of 2.5. You must have the ability to keep the load < SWL. The load must be the

actual load read from the monitoring system (not calculated). There must be audible and visual tension alarms with data logging . Cable/Wire break testing is required every two years. The wire logs must include the winch and system manufacturer when sending the wire back to WHOI. The data log must include the number and/or duration of deployments between testing, the measured maximum tension for each cast, the measured maximum payout for each cast, and alarms. There will be a learning curve.

Questions/Discussion:

- How did the inspection on the *Polar Sea* workout? Ted – Their winches were in pretty good shape. They had done a lot of work on the sheaves.
- Dave Fisichella – If an operator wants to do a break-test, they can send the wire to WHOI with the termination. This is useful because it gives you the strength of the termination.
- Rich Findley – Is the wire break-test done with a fixed end? Dave – yes.

Break

Communications:

Summary of Satellite Meeting – Rich Findley provided the report. His slides contain the summary and are included as **Appendix VII**.

Fleet Broadband – Dave Fisichella and Laura Stolp provided a Fleet Broadband (FBB) report. Their slides are included as **Appendix VIII** . Dave reported that FBB was evaluated as a backup for HSN. The operator has to monitor the FBB system actively. The good news is that a new satellite rate has been negotiated.

Laura reported that so far the FBB system has worked well in switching between HSN and FBB automatically. If you have to do work over the FBB it is very slow. One of the slides showed the FBB transmission speeds from *Knorr* and *Atlantis* speeds. They never saw the advertised speed.

Discussion:

- Dave Forcucci – Did you see the bandwidth use of crew compared to science. Laura – The crew was very cautious in their use. They got what they wanted and turned it off. The science basically did the same.
- Jim Holik – FBB was purchased as a backup system for HSN and it is still considered a pilot program. He wouldn't mind seeing a proposal for a better way to manage FBB. There is a lot of uneasiness about using FBB. He would be interested in seeing one protocol developed for using FBB.
- Is there some way of seeing the use level of FBB as is being used or say every few months so that you can tell if you are approaching your annual allotment. Laura – Not right now. Jim – It would be a good feature.
- The FBB rate is \$1.52/MB. If the system use is left unmonitored, the bill could run up to \$6100/day.

- Jim Holik – There should be a mechanism such that if a scientist needs to use streaming he/she should be able to, even if it is over the allotment level. A mid-year user allotment status would be a very nice feature. A fleet policy is needed.

HiSeasNet recap of Focus Group – Steve Foley could not attend the RVTEC meeting, so Jon Meyer gave the report for Steve. The summary of the HSN focus group meeting is provided in the slides that are included as **Appendix IX**.

In 2009, HSN was installed on Atlantic Explorer. There have been bandwidth changes for different operations areas. A HSN training class was offered at Scripps Institution of Oceanography (SIO) in August 2009. If there is interest in another workshop, contact Steve.

Network accelerators are being rolled out fleet-wide. Two ships were test in 2009 and proved positive. Installations will be ongoing as gear is deployed to ships. Ku-band ships seem to prefer a bigger footprint to more bandwidth. There have been a lot of tech-to-tech discussions of policies that do and do not work on various ships. Management of user expectations of HiSeasNet services and capabilities is needed.

General discussion of FBB and HSN:

- Jim Holik – They are spending about the same level of funding on the two systems.
- Jules Hummon– For her use, the FBB has been great.
- Jon Meyer - One of the things that were of concern is that the carrier charges you every 12 hours even if you don't use the system. So you get charged for the Megabyte whether or not you use it. Fortunately it is cheaper.
- For technical issues on FBB, whom do you contact? It is difficult to get a hold of someone. Dave Fisichella – Contact Al Suchy.
- Dale Chayes– The list server for RVTEC is very useful. If you discuss your problem in private, no one knows the problem and no one will learn from it. He recommended that WHOI/Al Suchy create a listserve for FBB.
- Tim McGovern – He was surprised that the same amount of money is being spent on FBB as is on HSN. Would it be better to spend the FBB funds on HSN.
- Jon Meyers – What about buying more bandwidth for HSN. Jim Holik – So you want two antennas? Jon – yes.
- Bill Fanning – The KuBand *footprint* is too small. Endeavor is often out of the footprint.
- Dave – FBB or any other system is an independent back up to HSN.
- Dale – Even most of the large ships can't install second antenna. The negotiated rate for FBB is a huge step forward.

Iridium OpenPort – Dave Hassilev provided the report. His slides are included as **Appendix X**. Dave discussed the OpenPort features and deficits. HTML interface occasionally fails.

OpenPort was used aboard the CGC *Polar Sea* on the cruise from September 25 to November 1, 2009 in the Beaufort and Chukchi Seas (operating areas were 72 – 74 N0).

OpenPort had seven antennas plus GPS. The deficits included that when you have an error, you might not know it and you might still be transmitting. If you don't have your antennae properly placed, you won't see a satellite. For 300 minutes of voice, the price was about \$1200-1500/month. Protocols must be efficient.

In terms of usage, FTP was very good. The Web is very expensive. VPN is supported, but has not been tested. When a satellite leaves your range, the system should find another satellite, but this can be a lengthy process and you might lose your application.

Email use with OpenPort requires a shore side gateway. There must be strict quota management on both ends and this is expensive.

File transfers with OpenPort had highly variable success rates and speeds. There were many stalled transfer sessions.

Dave said that from his experience, OpenPort was a good solution for high latitudes. The system offers a quickly deployable network solution for smaller platforms or camps. It will (generally) get the job done.

Discussion:

- Marshall Swartz – He was on a Russian ship this summer and the ship had the OpenPort system. They had very fast dropouts and sometimes they lost the system within seconds. Dave H – They hadn't seen sub-minute sessions, but there were often interruptions. There is set-up time for each session; this would take time and eat up minutes of the satellite pass.
- Dave Forcucci – would multiple antennas help? Dave H – No. Placement and a 360-degree view is key. Satellites rarely go overhead at high latitude (the Arctic).
- Dave Forcucci – Did you play with the antennae location? Dave H – A little bit
- Dale Chayes – He has had two OpenPort systems in the field at 82N. He saw the same behaviors. They probably had better antennae locations. The OpenPort hardware implementation is very biased toward power management in the sense of minimizing satellite (transponder) usage. It often feels that it has powered off. It feels like it is an end-user product. It is the only viable option at high latitude. The antennas are relatively small and light compared to the conventional dynamic antennas that we are used to seeing.
- Dave H – On the *Healy*, they had a good antenna location, but still saw similar issues.
- David O'Gorman – Inmarsat separation from the Iridium antennae is required (he found this out by looking in the manual). On *Wecoma*, they made special fixture for it.

SWAP – Toby Martin reviewed the topics that would be covered in the Friday SWAP Focus Group. His slides were included **Appendix XI**. SWAP2 is working well. On Friday they will try new protocols to see how easy it is to have a SWAP system.

Discussion:

- Andy Maffei – SWAP is very valuable.

- Marc Willis – SWAP presents a very different model. There was a group of people who were interested in this type of communication. They gave themselves a mandate and implemented it (without a proposal). It worked well.

Lunch Break

Data Collection Systems and Initiatives:

UHDAS and ADCP update – Julia Hummon provided the presentation. Her slides are included as ***Appendix XII***.

Jules said that the most common interaction she has with the marine tech groups is telling them to reset their Ashtech systems. There is now UHDAS on 11 UNOLS ships, two Antarctic Polar vessels (*Palmer* and *Gould*) and the *KOK*. Since last year there were seven upgrades. There was a new installation on the *New Horizon*. There was a science request to add a triggering option and this was added. *Endeavor* offered Jules her first experience with FBB. They gave her a port and it was great. They get the award for the most GPS feeds.

There was also a new Installation on the *Atlantic Explorer*. This was also the result of a science request. This was a challenging installation because of electrical interference, poor range (instrument placement in well), and acoustically noisy.

Minor problems that Jules has had to deal with include high maintenance scientists, bugs, and attitude (Ashtech, PHINS failures, and POSMV). Major problems were experienced when a deck unit failed on *Wecoma* and it took two weeks to figure out a solution. The *Knorr* had a strange (electric) failure that is still under investigation.

Improvements since the last RVTEC include processing plots and calibration written in Python as part of their migration away from Matlab.

There is a new request for ADCP metadata. Some of the data that is of interest includes:

- Instrument complement
- Location and drawings of installations
- Ancillary instruments
- Photos
- Other info (cable run, window, plumbing, etc.)

Jules's goal is to assemble this data over the next year.

Jules's continuing request to the tech groups is to keep her in the loop regarding new ADCPs, changes in serial feeds, and new attitude devices. Finally, feel free to refer your needy scientists to Jules. Anyone out there can use UHDAS open source processing – you don't have to have a UHDAS.

Discussion:

- Tim McGovern – Has Ashtech done anything to improve their system. Jules – Not that she knows of.
- Jon Meyer – Can you change the green light to yellow light? Jules – She will make this request of Erik Firing (who writes the code).
- Jon Meyer – Would you program UHDAS so that it can reset the Ashtech? Jules – Can't do it.
- Jules – They use Linux. For ADCP use, they need to send a break to the ADCP and must also collect binary data.
- Jon Meyers – Do you have a plan to update the documentation? Jules – Go to the site and download a Tar ball. Everyone should have this.

OSU Data Collection - Daryl Swenson introduced the OSU group. Their slides are included as *Appendix XIII*. Dave O’Gorman gave an overview of what OSU collects. He reviewed the data selection and data formatting. They decided to use XML. It no way limits the various end users.

Toby Martin continued the presentation. He discussed data transport, security (malicious, inadvertent), and protocol (TCP vs. UDP). They went with TCP because of reliability and flexibility. Data recording and distribution were described (see slides). Moving large amounts of data (~8 gigabytes per day) to shore is going to be a challenge and they are looking for guidance from R2R.

In summary, the OSU system provides network sensor interface, increased sample frequency, and ease of use for users and technicians.

Discussion:

- Bill Fanning – What will be the price be? Dave O’Gorman – It is \$250 /per board, but they are waiting for more info.
- Dale Chayes – Do you have multiple inputs from within the firewall? How do you handle time-outs and failures in the system? Dave – They don’t collect data on their nodes. The interruption would not be collected.
- Alex Dorsk - How do you configure the boards? Dave – Their plan is to have a web interface for the boards so that the tech can just log it in.
- Jon Meyer – Are they putting data to two separate servers. Dave – Yes.
- Jon Meyer – What if a server has a problem, how do you reconcile the data? Toby – This is always a problem.
- Anthony Johnson – Are you replacing serial ports? Daryl – People will always want the serial ports.
- How will they give the data to users? Daryl – In the future portable hard drives will be needed. They will also send them to R2R, but they don’t know how this will happen.
- Dave Forcucci – How many ships in the UNOLS fleet will need this? Daryl – OSU had a problem with their legacy DAS system, and needed to solve it. This is why they came up with their system.

LDEO Data System - Dale Chayes described the Lamont Data System (LDS). His slides are included as *Appendix XIV*. LDS based instances from 1987 to 2009 consisted of DAQCS (for

the SCICEX cruises) and RVDAS (on the *Palmer* and *Gould*) among others. The design drivers were to be as simple as possible and be operational 24/7, 365 days a year. The system had to reliably capture and log what comes out of the devices (no missing data), provide accurate time stamping, and be based on standard protocols.

Implementation included:

- Unix-based OS
- C & Perl
- Single process per “device”
- Real-time access to data w/o risk to the acquisition process
- Distributed (network) logging devices
- Command-line interface

Dale reviewed the LDS history dating back to 1987, new/recent system features, and future plans. Some of the future plans include:

- Integration of EM122 for direct (network) capture of data from SIS.
- Precision timed camera image capture
- GUI (control) wrapper
- Enhanced automatic event logging

They developed the LDS system and by design there is no realistic way that a downstream user can disrupt your acquisition system but they can do whatever they want to their copy of the data. The system is simple and reliable. LDEO uses UDP internally and externally.

Discussion:

- Toby Martin – So is this an endorsement of UDP? Dale – Yes. It is good enough. Val Schmidt did a fair amount of testing trying to break UDP. The amount of load you have to impose is huge. They thought about going to multicast, but have not yet. They may revisit it.

ISS-2000 Integrated Survey System – ISS-2000 is a software package for surveying that integrates inputs from the sonar systems, dynamic positioning system, and data acquisition systems, all with a graphic user interface (GUI). – John Keirnan (SAIC) provided a description of the system. His slides are included as **Appendix XV**. The ISS 2000 is a system similar to what is on the Navy TAGS ships.

ISS-2000 Integrated Survey System (ISS) overview is included in the slides and describe the functional components and the strengths and benefits of using an ISS.

The ISS-2000 real-time data acquisition system includes a workstation with timing module. The internal timing card receives an analog 1 PPS signal and serial time message to synchronize to the GPS receiver. The serial message options are NMEA ZDA, UTC, and Time Mark 1B.

For system setup, the antenna and transducer lever offsets are entered and applied. Vessel parameters for settlement and squat, and towfish block offsets are set. Program selection,

error limits, timeout values and data logging intervals are entered. The operator can control many of the equipment settings from ISS-2000 software through Parameter Control interfaces. The system does not increase the number of operators required and provides a single control interface for different equipment. Sensor parameters are monitored to user-defined parameters. Messages are generated by sensor errors, survey operations, performance information and operator entered text messages.

ISS-2000 is designed to automatically alarm the operator when the system is exceeding the operator set parameters. The system allows the operator to monitor the integrated system in real-time. Data types include informational and event messages, and caution, warning, and severe alarms. The Navigation Display allows the operator to view the data in real-time while monitoring the survey progress and navigation information, including survey lines and swath coverage. The system provides steering commands to the DP and/or autopilot systems. Multibeam data can be viewed in real-time to verify data quality. SVP casts can be applied and verified in real-time. Towfish and ROV positioning is enhanced using proven algorithms. Coring and bottom investigations are used to ground truth sidescan mosaics.

ISS provides the strongest support for MG&G operations. Data from multibeam swath mapping sonar system recorded to OEM and open format GSF. Generic Sensor Format (GSF) is a standard file format for bathymetry data and widely used in the maritime community. Many multibeam sonars provide one or more outputs of acoustic backscatter.

Biological, Physical and Chemical Oceanography systems and sensors are not tightly integrated and are run independent of main ship systems. Ship and/or tow body position and time synchronization can be transmitted to workstations collecting and recording data. Survey planning includes waypoint surveys. Data archive can be managed using ISS at the end of survey.

Discussion:

- Dale Chayes – What is the pricing? John – There are various options that are available. The Baseline system is \$25k to \$30K. Dale – What is in the baseline system? John – Add-ons are multibeam (\$5K), another attitude, POSMV, etc.
- Dale Chayes – What is the annual maintenance cost? John – there is a 15% annual maintenance cost.

Break

Rolling Deck to Repository (R2R) Initiative – Bob Arko provided an R2R overview. His slides are included as **Appendix XVI**. This September the R2R project was funded. The design principles of the project are to

- Work directly with the operators – if the vessel is over 50 feet, and if funded by NSF, it will be a candidate.
- R2R is taking a web centric approach.
- There will be routine submission to the national data centers.

The current status is:

- 12 vessels are actively submitting data

- 1000+ cruises have been inventoried
- 3.8 million data files archived.

Much of the cruise metadata exists and R2R will try to get this from sources that already collect the data – UNOLS Office, port offices, etc. They are interested in

- Cruise summary
- Science party
- Instrumentation

The R2R next steps include:

- Identify R2R contacts
- Real Time MET/TSG
- Event log development + deployment

Discussion:

- Jon Meyer – What about other data? Bob – They will accept anything.
- Jon Meyer – What about processed data? Bob – they really only want to accept data from the operators. If the processed data is from the operator they will accept it. They are figuring out how to identify raw from processed.
- William – When will the R2R have a standardized data format? Bob – There is no standard format for accepting data. So far, they haven't seen anything that they cannot deal with.
- Bob Arko – R2R will not release data unless it is cleared by the PI. It will be sent after 2 years, unless notified.
- Toby – What about real-time data. Bob – R2R wants the post cruise data, no decision on the other data.
- Doug – Will the operator have the option to not send the data? As an example, cruises for commercial work. Bob – They have not seen an instance yet. Marshall Schwartz – The Saudi Arabia work on *Oceanus* is an example. Bob – As a minimum they would want the cruise metadata.
- Jim Holik – What about historical data? Bob – For a few ships they are looking at back data to 2000.
- Jon Meyer – It would be great to have Multibeam data under every cruise track. Bob Arko – This won't happen in year one, but would be a very cool idea for year 2.

R2R Technical Breakout - Real-time MET and TSG Data Exchange – This breakout session was led by Shawn Smith and included an open discussion between UNOLS operators and the SAMOS data center to design an underway meteorology and thermosalinograph data exchange to support real-time data quality evaluation. The discussion focused on transmission formats, parameters to exchange, timeliness of ship-to-shore transmissions, and feedback to operators. Shawn's slides are included as ***Appendix XVIIc***.

Discussion;

- Marc Willis – He is confused about the timing of submitting the data. Shawn – They want their data before the R2R data.
- Marc – Location should be a separate field.

- Are you getting data that you can't use? Shawn – They haven't been getting the 1 HZ data from the Fleet.
- Anthony Johnson – They have 7 sources of navigation – do you want them all? Shawn – yes. It would be good to find out what is the best navigation system on-board.
- Shawn –They can develop a best practices document.
- Jon Meyer – What about putting a SAMOS server on the ships. Then you can collect all of the feeds that you want. Shawn – Then we get into hardware issues; however, this is something that he hadn't thought about. It is an interesting idea.
- Marc - UHDAS is a great model. There is a log-in box on the ship that Jules can log into and she monitors activities.
- Shawn – What do people think about this? Daryl - he likes the idea.
- Tim McGovern – You will get a lot more buy-in from operators by using Jules' UHDAS model.
- Shawn – It is a great idea, but it is out of the SAMOS expertise – they don't build hardware. Marc – it is not complicated.
- Robbie Laird - We don't have all of these sensors. Can Shawn, provide a list of the high priority sensors? Shawn – Yes, they have high priority items – radiometer, PARs. Robbie Laird – publishing the list would be helpful.
- Anthony – He would like a best practices manual. Shawn – This is important. There is an old manual; he can try to make it more procedural.

R2R Technical Breakout - Event Logger System – This breakout was led by Alex Dorsk and Cyndy Chandler. An event logging application is being developed as part of the R2R program. An early prototype version was introduced, followed by hands-on use of the application for those with laptops and discussion of design features, functionality and next steps for deployment on UNOLS vessels. Their presentations are included as **Appendix XVIIa** and **XVIIc**.

Adjourn Day 1

Thursday, November 19th – Center for Urban Horticulture, NHS Hall

Call to Order & Announcements – Rich Findley called Day 2 of the RVTEC meeting to order at 8:30 am.

Network Security – Dave Dittrich (UW) provided a presentation on Network Security. His slides are included as **Appendix XVIII**.

Dave started off by saying that the Internet is very unsafe. He reviewed the principal threat categories, or things that people have to worry about including data theft and espionage, fraud, disruption of operations, and extortion. Threats happen every day.

Espionage/Data theft can occur as a result of targeted spam with Trojan horse, executable attachments, media files/documents with embedded content, key loggers or “root kits” installed, data exfiltrated by POST or reverse tunnel through firewall, and surplused

equipment. You must wipe your drives before sending computer/drives to surplus or recycle.

Fraud is big problem. It is unauthorized access to steal data. Phishing is social engineering via email. There are various attack mechanisms:

- Social engineering and exploiting trust – these are when you are contacted personally for information.
- Bypassing technical defenses
- Eluding capture through concealment
- Avoiding detection for long periods of time

Propagation mechanisms include:

- Exploitation of remotely accessible vulnerabilities in Windows.
- Email to targets obtained from WAB except those containing specific substrings. Messaging AIM and MSN buddy list members with randomly formed sentence.\ and URL
- Trojan horse SETUP.EXE from free download site. Very sneaky
- Trojan Horse *dropper* associated with celebrity video clips. “Suddam Hussein is alive – click here to open”

Toby Martin – What about the Sony root kit? Dave – The root kit had a problem with it. You can’t get rid of it because it is hidden.

Stolen passwords are a problem. Don’t share accounts and passwords among systems. You quickly get wide scale propagation.

Dave encouraged everyone to rethink defensive posture.

- Information Assurance (IA) is defined to be, “measures that protect and defend information and information systems by ensuring their *availability, integrity, authentication, confidentiality, and non-repudiation.*”
- “These measures include providing for restoration of information systems by incorporating *protection, detection, and reaction* capabilities.”

You might be able to tell if your system has been compromised if your data change when you haven’t touched it.

Preventive measures include:

- Apply layered & complementary defenses
- Do all: Protect, Detect, and React
- Not all solutions are technical
- Support those tackling the hard problems with policy and resources

Isolation of untrusted devices:

- Trusted devices on secured AP
- Un-trusted devices on open AP (outside firewall: can only talk to the internet) – you can take these down quickly

- Alt: Use PPTP, IPsec or other VPN to tunnel *in* to trusted network
- Constantly scan hosts (nmap) and analyze traffic (ntop, Snort, etc.)

Discussion:

- Stewart Lamerdin – What is cloud computing? Dave – Everything seems to have clouds. Cloud computing is an interesting combination of things. In old days everything was centralized on main frames. Then things were outsourced to separate user laptops. Now there is a move to virtualize – this is basically centralizing. With cloud computing, you can't really tell where the data is located. If you say you want to delete the data, how do you know it was actually deleted? If you are in the middle of ocean and your laptop is compromised from Astoria – where did the crime occur? Cloud/virtual computing has many benefits.
- Alex Dorsk – What are some favorite tools? Dave – There are tools listed on his website.
- Robbie Laird – In Massachusetts there are requirements/laws for data protection/breaches. Dave – In Italy, if it is shown that your computer was involved in a breach and you didn't take the necessary precautions, you can be prosecuted.
- Robbie Laird – What about people coming aboard the ship with computers that have personal data. Dave – Have each person be aware of the security measures and take responsibility for them.
- Jim Postel – Yesterday we talked about giving people access to shipboard data – how can we maintain security? Dave – Make everyone aware of the policies.
- Jim Postel – How much time do you devote to this when you are trying to get underway? Dave – It is a tough balance.
- Marshall Schwartz – There was a ham radio operator who provided information. The information was compromised and the operator was considered an ISP. Can ships be considered an ISP? Dave – It depends. His read – potentially anyone with an Internet can potentially be an ISP and law enforcement can use the info to search with warrants. You might want to at least figure out what can be done to accommodate law enforcement. Keep logs.
- Robb Hagg – He has heard rumor that some institutions scan computers. Robbie Laird – WHOI used to do this. Robb – This is a problem if the user comes aboard with an old operating system.
- Jules – let the users know well in advance that their systems must be up-to-date and scanned.

R2R Plenary: Recap of Wednesday afternoon breakout discussions – Bob Arko introduced the R2R group. Summaries of the Breakout sessions were provided.

Event Logger System Breakout summary - Cyndy Chandler summarized the session. Her summary slides are included in **Appendix XIX** and discussion followed:

Discussion:

- Jon Meyer – There is rumor that MySQL is going away. R2R might want to migrate away this. Cyndy – Yes, R2R can migrate away from it.

Shawn Smith provided an overview of his session. They discussed real-time data transfer from ship to shore. R2R came into the session with an idea to use a common format to

transfer data bundled and transmitted to shore over HiSeasNet. The discussion went in a totally different direction. Basically SAMOS wanted to get all of the 1Hz data to shore and get it processed and sent out to centers. Instead, it was suggested that the Met data get processed on the ships and compressed, then put in box for transfer to shore. The model of UHDAS was suggested. The ships would be equipped with a hardware/software package. So it is back to the drawing board.

R2R Cruise Data Directory Structure - Bob Arko provided the presentation. His slides are included as *Appendix XX*. R2R is developing a "fleet-standard" directory structure as guidance for configuring acquisition systems and producing end-of-cruise distributions.

The goal is to develop a fleet-standard cruise directory structure to:

- Differentiate routine underway, national facility, and science party data sets
- Differentiate data files from documentation
- Identify the instrument system that produces each data set

The constraints are:

- Cruise ID is unique (within R2R system)
- Standard vocabulary of instrument type, make, and model
- Preserve "all" of the "original" data
- Preserve version of data that the science party took home

There are issues (compression, checksums, File system type) that are usually irrelevant.

Bob said that in a year from now to have a strawmen to present.

Discussion:

- Jim Holik – Is there something that R2R prefers. Bob Arko – A strawman will be out soon. The first year has been very useful.
- Marc Willis – congratulated Arko for his outreach and encourages Shawn and Bob to engage the front line technicians.
- Jim Holik – He would like the techs to tell PIs about the letter endorsing R2R.
- Dave Forcucci – The letter should extend beyond UNOLS Fleet and include icebreakers.
- Jim – The letter should be posted and presented at the pre-cruise planning meeting.
- Jim Holik – Does anything in R2R contradict the OCE data policy? Bob – Vicki and Cyndy looked at this and felt that R2R did not conflict.
- Dave – Would you accept small coastal vessel data? Bob Arko – The policy is vessels over 50 feet and thus is NSF supported.
- Jim Holik – there are two goals. One for all UNOLS ships to participate, and two a standard, preferred definitions.
- Jon Meyer – These are good goals, but it will take time and iterations.

Break

Winch and Wire Discussion:

Research Vessel Safety Standards (RVSS) Compliance – Rich Findley referred to the material that he presented last year. Nothing has changed and eventually compliance with RVSS Appendix A will be required.

Winch Monitoring Equipment Relevant to RVSS Appendix A – Tom Rezanka, Measurement Technology NW provided a report on “Winch Monitoring for Increased Safety and Compliance with Appendix A”. His slides are included as **Appendix XXI**.

Tom’s slides covered:

- UNOLS Appendix A – operations at a Safety Factor of 2.0 or less
- Winch Monitoring Overview
- Tension Measurement
- Tension Sensors
- Wrap Angle
- Corrections for Wrap Angle Errors
- Application
- Speed/Payout Sensors
- Displays - Current
- The new display will be a direct replacement for existing LCI-90.
- Complementary Devices:
- Software – WincDAC – this is underdevelopment and input is welcome.

For Appendix compliance, the following applies:

- For Factor of Safety ≤ 2.5 , systems need to be upgraded
- LCI-90R units will be phased out
- Gumball bracket mount enclosures can be reused
- Any WinchDAC software needs to be upgraded
- Serial data can still be transmitted via existing networks to meet the standard

Discussion:

- Dave Fisticella – How compatible are your monitors with other systems? Tom – They can collect to most sensors without problem.
- Daryl Swenson – You said that you could take multiple inputs. Tom – A benefit of using the remote displays is that it can be used as a backup. You can set up a display with a rope or winch name. This can be done in the factory.
- Ted – Can you show the peak load during a cast? Tom – yes.
- Mike Prince – How linear is the accuracy. Does the percent accuracy change a lot. Tom – The sensor should be linear for the full range.
- Jim Postel – What is being calibrated every 6 months? Rich – If you don’t already have a high powered dynamometer you need one. Tom – You should be calibrating the monitor.
- Marshall Schwartz – With Jason you always use an inline tensiometer. When you are calibrating a sensor you should also calibrate the zero factor.
- Jim Holik – Proposals are due December 1st.

New Power Optic Cable (.681”) Design - Rich Findley said that in everyone’s meeting packet there was a design of a new fiber optic cable. Annette can send additional information.

UNOLS Wire Workshop - Rich Findley reported that this topic has been on our agenda for a long time. It is not an easy solution. The only way to have a dramatic solution is to have one conductor. Annette there is funding for this. Rich we can put together a steering committee to organize a workshop.

- Marshall Schwartz – He sees the need for more than one conductor.

MATE Report – Tami Lunsford provided the MATE report. Her slides are included as **Appendix XXII**.

Tami is the MATE Program Coordinator. She is located on the east coast and can be reached at tlunsford@marinetech.org or (302) 731-3035. Tami provided an internship program overview. The program started with a NSF UNOLS grant in 1999 to fill need for marine technicians. Since 1999, 225 community college and university students have been placed in research vessels, labs and industry settings (135 were placed on UNOLS vessels). Tami presented data on 74% of interns as of 2008:

- 40% are continuing education in a related field
- 43% are working in marine science and technology fields
- 63% are in academic science or technology based careers
- 37% are in industry

Tami reviewed the UNOLS intern selection process. Preference is given to technical community college students and marine technology undergraduate students. 82% of interns this year were from community colleges. Interns’ interests, knowledge, and skills are carefully matched to mentor requirements. The mentor receives the 3-5 resumes that best match their needs and the mentor makes the final decision on which student(s) they host.

In 2009, 11 interns were placed on UNOLS and USCG vessels (*Sharp, Blue Heron, Wecoma, Thompson, Walton Smith, Seward Johnson, Oceanus and Atlantis, and USCG Healy*). The group included 5 women and 6 men; ages 18-33. 100% of the 2009 mentors said the intern was beneficial to the organization, made their job easier, and they would hire another MATE intern in the future. 100% were impressed or very impressed with their intern’s knowledge and skills (up from 91% last year and 80% the year before). The weakest areas appear to be scientific and technical knowledge and computer skills (half of the responses on these were adequate instead of excellent or above expectations). 80% said would hire the intern immediately in an entry-level position

The technicians/mentors have been great mentors and role models for the students.

Based on the input from UNOLS in the past, improvements have been made to the MATE Technical Internship Program (see slides).

Tami asked that the marine tech groups commit to providing internship opportunities as early as possible this year so MATE can recruit and place the best students.

Discussion:

- Anthony – Are you interested in putting interns on transits? Tami – Yes. They had been hesitant, but with the right mentor, this could work.
- Richard Perry - Are you getting engineering students? Tami – The focus is on community college students in their first two years; however, if this is what you are interested in this, they can try to help.
- Marc Willis – Do you want just summer opportunities, or can interns participate year round? Tami – They prefer summer so the students don't miss class, but sometimes other times will work.

Lunch

Marine Technician Retention and Recruitment Initiative – Jim Holik provided a report on the initiative. His slides are included as ***Appendix XXIII***.

A workshop was held in Austin, TX in February 2009. The key topics discussed included:

- Aging Workforce
- Increasingly complex work environment
- Finding well suited personnel that have potential and desire to work at sea
- Adding flexibility to our SOP regarding providing high quality tech support at sea
- Increasing technical support footprint at sea

With feedback from NSF and the community, UNOLS proposed and was funded to add one full time staff member to the UNOLS Office to conduct and manage a two-year pilot program.

Investment into Marine Technical Services has lagged behind all other aspects of ship operations. That will continue to be the case until a well researched and defined program of improvement across the fleet can be proposed.

The plan is not to change the way we do business but to “augment” existing support structures. The pilot program will evaluate all institution’s Technical Operations in order to better understand shipboard and shore side duties and operation. The pilot program will work to create a better system for exchange/sharing of full-time technicians. It will establish a database of contract technicians not currently working within the fleet that could sail of cruises as needed (tech Pool) and a mechanism to hire them. Ship schedules will be evaluated for potential problems with staffing and recognize opportunities to increase the level of technical support when possible. The program will develop and implement a training program for technicians with a focus on increasing versatility and skill level.

Jim reviewed more of the plan:

- Create standard job titles and job descriptions throughout the Fleet (?)
- Work with UNOLS office and Institutions to get an accurate representation on-line for the Fleet's shared-use equipment.
- Work with the NSF Program Manager to revise the Technical Support Proposal Guidelines.
- Visit the UNOLS Institutions to discuss the implementation of the Technician Pool concept with the Operators and establish working relationships with the Technical Managers of the fleet.
- Establish mechanism for better documentation throughout the fleet
- Develop a template for a Cruise Support Plan, which in essence will be a contract between the Institution and the PI as to what the at-sea support will be in terms of equipment and instrumentation provided, technical support and schedule.
- Increase the visibility and information about jobs on Academic Research Vessels and explore establishment of an internship program.
- Provide the fleet a resource that was heretofore unavailable

Requirements for the pilot program manager position are:

- Extensive background in the oceanographic research field with combined experience as an at-sea technician, marine operations/Technical Support manager, and possess a strong science background.
- Good understanding of technical issues.
- Understanding of personnel and human resource policies and procedures.
- A strong background in Project Management
- Understanding of research vessel schedules and cruise planning.
- Ability to maintain accurate and up-to-date records and information using databases and information systems.

The candidate for the position is Alice Doyle.

The timeline for the project was reviewed:

Jan – March 2010

- Begin to understand structure of Academic Fleet Technical Support Programs.
- Participate in evaluation of Tech Support Proposals.
- Prepare documentation regarding how various Institutions do business. Begin contact with Tech Managers.
- Begin assembly of database for Tech Pool.
- Receive training at LDEO for R2R

March – June, 2010:

- Begin visits to Institutions to discuss and/or provide the following:
- Schedules and technical support needs
- R2R training and implementation
- Establishment of the fleet wide shared-use inventory
- Current and proposed training programs for techs
- Documentation needs. Do we need a Tech Writer for the fleet? Is there any value of having a writer create a how-to documents

June 2010

- Meeting in DC with NSF, RVTEC Chair, and UNOLS Exec Secretary to evaluate the pilot program to date and define second 6 months action plan

Jim introduced Alice.

Alice explained that the program is to augment and improve your programs. The ideas came from the workshop. It is a very ambitious 6-month plan. She encouraged feedback. The improvements cannot happen overnight. She sees the job as a challenge.

Discussion:

- Dave Fisichella – On the chart, the tech numbers don't look like they are going up by 30%. He had suggested that it seems reasonable and there is justification to go to the science program managers and say that the techs are doing more of the science support. They should get a higher proportion of the budget.
- Richard Perry – there was a lot of grumbling last year, it seems like this pilot program will address these issues.
- Jim Holik – Increased money and accessibility to ships is an issue.
- Stewart Lamerdin – One of the objectives of the workshop was to address recruitment and retention. Jim Holik – If you provide a better work environment with training, it could help.
- Stewart Lamerdin – We heard that there were issues about hanging onto the good people. The pilot program is addressing some issues with the tech managers, but not keeping people in the program. Jim Holik – He feels that there are people who would not like to work with the institutions, but instead want more flexibility. He thinks it is a way to look at the future. If pay is the issue, he needs to know this.
- Marc Willis – The slides presented an ambitious program. In 25 words or less, what is the problem that this pilot program will solve? Jim Holik – The problem is dissatisfaction, retention, morale is low, no career path. Marc Willis – So how is this the solution of the problem? Jim Holik – This is the best solution that they came up with as a group. Marc Willis – Trying to mix Alice's job with R2R is a big mistake. Injecting another person into R2R is a bad idea. Trying to standardize the tech manager position descriptions would not happen – too many institutional issues. Putting another person in the cruise planning project is a problem.
- Aubri- Do you have any idea how many people will be in the tech pool? Jim – No idea. It could be 5 or it could be many more.
- Dale Chayes – The tech pool infers that there will be a tech list with contact info. It is a crock. Jim Holik – That is not what is meant. These will be good people. Dale – A list is not what is needed. You need to be able to contact people who can come to work the next day.
- Dale Chayes – Training is not the solution to many of our issues and underlying problems. There is a difference between training and education. Training is for routine jobs. We need educated people. We are rapidly dumbing down the workforce and providing more support from shore. Jim Holik – He can't disagree, but what is the problem.

- Dave Fisichella – A pool of techs that they can go to for relief work is needed. If he can sit down with someone who has already vetted the list – he sees the benefit. It would also be nice to be able to offer time off to his techs.
- Scott Hiller – Don't we already have a tech pool. Jim – Yes, but he would like to have a more formal program.
- Mike Prince – The problem was stated in the workshop. Mike's understanding is that there is an ad hoc arrangement for sharing techs. From the workshop, it was the plan to have a better, more formal, vetted pool.
- Marshall Schwartz – He has had a lot of experience working with WHOI SSG and other groups. Often his networking is exhausted, this will help.
- Marshall – What happens when your institution is found to be deficient in pay, benefits, etc. Jim – The program will look at this. It is not meant to single out people.
- Tim McGovern– He has a person who is leaving UH, but who he would like to keep the person in the system. The tech pool will help.
- Alex Dorsk – It is good for people to get on other ships to learn and share expertise.
- Dale Chayes – Why don't we make job openings better known? The Pilot Program manager position was never advertised on the RVTEC list so few in our community were aware of the opportunity to apply.
- Jim Holik - He would like to increase the tech footprint at sea.
- Scott Hiller - How will we deal with Unions? He is a union employee.
- Jim Holik asked for patience, cooperation, and open mindedness. It is a sensitive issue.
- Alice – Ask questions and provide input.
- Dale Chayes – A list of ideas and a timeline is a good start.

Year in Review – Each marine technician group was asked to provide a brief presentation that covers the following three topics.

- Annual Operations Recap
- Highlight(s) of the year
- Most challenging issue or biggest technical hurdle

Annette introduced the topic and said that this is a new addition to the meeting. We hope to learn more about the annual operations and to also hear from some of the junior technicians.

The presentations from each of the UNOLS vessels and the USCG icebreakers are included in **Appendix XXIV**.

University of Washington Ship and Facilities Tours – Meeting participants were welcome to tour the UW facilities including R/V Thompson.

Friday, November 20th – Center for Urban Horticulture, NHS Hall

Call Day 3 of the RVTEC meeting to order

UNOLS Reports:

Scientific Committee for Oceanographic and Atmospheric Research (SCOAR) Report – Dan Schwartz provided the SCOAR report. His slides are included as **Appendix XXV**. Dan showed a video clip of a launch and recovery of an UAV from a research vessel.

Discussion:

- Marshall – How many have been deployed? Dan – Don't know. SCOAR is having a town hall meeting at Ocean Sciences. We will have some of the vehicles at Ocean Sciences.

Fleet Improvement Committee (FIC) – Marc Willis provided the FIC report and said that the Fleet Improvement Plan has been completed. Marc's slides are included in **Appendix XXVI**.

Arctic Icebreaker Coordinating Committee (AICC) – Steve Hartz provided an update on the AICC activities. The Committee will meet in Seattle in December. They continue debriefs of the *Healy* users.

RVOC and Safety Committee – Rich Findley reported that the RVSS Appendix A has been approved. By October 2010, UNOLS should be in compliance with Appendix A.

UNOLS Report - Annette DeSilva provided the UNOLS report. Her slides are included as **Appendix XXVII**. She reported on the publications from 2009 and the goals for the upcoming year. In 2010, the UNOLS Charter will come under review. The RVTEC By Laws are contained in Annex V of the Charter <http://www.unols.org/info/u charter.html#annexV>. Annette encouraged everyone to look at the Annex V and if there is anything that you would like to change, let us know.

Ship Updates

Alaska Region Research Vessel (ARRV) – Steve Hartz and Marc Willis provided an update on the ARRV. Their slides are contained in **Appendix XXVIII**. Marc recommended two books as excellent references (see slides). The ship name should be chosen soon. The ARRV will have an Ice Class of Polar Class 5, first year ice.

Ocean Class Research Vessel (OCRV) Status – Mike Prince provided a report on the OCRV status. His slides are included as **Appendix XXIX**.

The Phase I/II solicitation was released 24 April 09 and proposals were received on 24 June. Phase I is the Preliminary Contract Design. Contract awards are expected in December 2009. The first design reviews are expected in March 2010. The ship deliveries: are expected as:

- 1st ship – FY 2014, Q2
- 2nd ship – FY 2014, Q4

The status report and slides include the:

- History of the OCRV Specification Development
- Specifications and Solicitations

- Ship Acquisition:
- Operator Selection:

Mike Prince has been hired as the ONR Research Facilities Assistant (IPA). He will represent ONR and the UNOLS community during the Ocean Class AGOR design and construction process. He will coordinate with Operator representatives during design reviews and construction.

Additionally, the Navy will work with UNOLS on the establishment of an advisory committee to serve as a resource for ONR, NAVSEA, the selected operators and the UNOLS Community. The formation of the advisory committee will take place after the NAVSEA design awards and selection of operator institutions (2nd Qtr).

The OCRV key parameters were reviewed:

- Length Overall - Around 200 to 220 ft
- Displacement - 1,800 to 2,500
- Draft - no greater than 17 ft
- Speed - 11 knots in calm seas at 80% MCR
- Propulsion - Integrated Diesel Electric (1/2 rpm to max) - might be z drives
- Range - 10,000 NM
- Endurance - 40 days
- Science Berths (minimum required) = 10 two-person S.R. - this includes technicians and One "accessible" S.R.
- Crew Berthing (minimum required) = 8 single berths and 6 double berth S.R.
- Labs ~ 1,900 sq ft
- Main Deck ~ Minimum 2,100 sq ft, (1,600 aft of house, Stb side 80 ft x 10 ft, space for two vans)

Costs, budget and time will affect scope of initial outfitting. Most science equipment will be government furnished and specified and purchased later in the project, just in time for delivery or post delivery. Operators will have input to NAVSEA on this process. Winches, Cranes and Over-the-side equipment are planned as part of the shipyard contract.

INMARTECH 2010 - INMARTECH 2010 will be in NIWA, Wellington, New Zealand in January 2011. Jim Holik encouraged attendance and participation.

Determine Host Institution for 2010 RVTEC Meeting - This can be done by email after the meeting.

RVTEC Vice-Chair Nominations - The nominees were introduced and a paper vote was taken.

Multibeam Focus Group Summary - Dale Chayes provided an update on the Multibeam Focus Group discussion that was held on Monday. His slides are contained as **Appendix XXX**. It was a productive discussion. The possible actions are to:

- Identify an advisory group

- Prepare a proposal
- Improved communications with vendor - It was clear that better communications with Kongsberg are needed.
- Negotiate a fixed price/year maintenance agreement that covers all ships.
- Evaluate “depot” spares arrangement - Can we do something to provide on-board spares
- Establish and maintain a patch test site/clearing house
- Develop and maintain accurate configuration documentation information per ship
- Document best practices (installation, operation, maintenance)
- Facilitate raising the knowledge level of our at-sea technical personnel

Discussion:

- Jim Holik – He thought that we run the multibeam all of the time. We have to improve on this.
- Dale – His understanding was that Sandy’s intent was for the operators to propose to run underway stuff everyday and put it in the budget. If that is what we are budgeting we need to do it. If we aren’t budgeting for it we should.
- Jim – He would like to see the underway systems running all of the time. The data is too valuable. If you need additional support, let him know.
- Dale is looking for ideas
- Tim McGovern – He expressed concern over the level of support that is required. There is pressure to take this on, yet there is also the need to keep day rates down. It is a disconnect.
- Dale – there is also a problem of the raw versus processed data. There were cruise plans that deleted the need for Multibeam when they found out that “processed on board” cost more.
- Tim – He is concerned with having his techs have to troubleshoot boards when they have to do every thing else.
- Dale – It is a problem. If you have a mooring cruise you might not have the electronics tech aboard.
- Dale – He is worried about 24 ops and just 2 techs aboard. It can’t be done safely and effectively with only one which has been the past practice for many ships.
- Steve Hartz – It isn’t just multibeam. ADCP, etc. Sometimes Multibeam must be shut down so that other things will work.
- Jim – Dale is going to be responsible for writing a proposal for negotiation of Kongsberg, spares, and best practices. Dale will try to do that – yes. He will come up with the advisory group.

Break

Show & Tell Presentations

Wikis in Action - Alex Dorsk provided a show and tell on Wikis. His slides are included as ***Appendix XXXI***.

Wikis are very flexible. The SSSG Wiki is used on the ship. The can post cruise archives. As you find a better way to do things it is easy to edit. It can be used as a publishing tool to post guides. It is searchable.

SIO Portable Seismic System – Brandi Murphy provided a show and tell on the SIO portable seismic system. Her slides are contained in **Appendix XXXII**.

The system is highly portable and has been used on:

- CICESE *Francisco de Ulloa*
- NERC RRS *James Cook*
- OSU R/V *Wecoma*
- URI_GSO R/V *Endeavor*
- SIO RV *Roger Revelle*
- SIO RV *Melville*

The new system uses food grade silicone oil, which makes it safer to transport, and leaks less damaging. Details of the system include:

- 48 Channel Geometrics GeoEel silicone filled
- 3 GI Gun Inventory (use two, one spare)
- 5 Digicourse 5010, 5011 Birds (Loan LDEO)
- 1 272 Bird Modem (Loan LDEO)
- Real Time Systems Sureshot Gun Controller

The dry end equipment includes controlling PCs: two Windows XP, two linux and one Free-Dos. There are deck units for timing, plotting, streamer control, and depth control. All PCs are networked and there are no tapes.

SIO Support for Shipboard Use of Radioisotopes - Gary Lain provided the Show and Tell. His slides are included as **Appendix XXXIII** and cover the topics:

- What is Radioactivity?
- Contamination
- SWAB Surveys
- Radioisotopes used on SIO Ships
- Wipe Surveys

Discussion:

- Stewart Lamerdin – Should nothing be disposed of over the side? Gary – Nothing that is over background.
- Dave Fisichella – Most of what we are concerned with is the scientific integrity. They have nothing at WHOI to do a swipe test other than sending it to Miami. How do you deal with post-cruise contamination found to exist while waiting for SWAB test results? Gary – The waiting period can be a couple of weeks. Not sure how to deal with it.
- Robbie Laird – Are incubations levels too low? Gary – Yes.
- Do technicians get the radioactive handling training? Gary – The techs are the eyes and ears. Jim Dorrance – The techs are trained in the same way as the science party. The

techs are responsible for enforcement of the handling requirements. Meagan – Gary has trained the techs in doing decontamination.

WHOI-developed Ethernet telemetry system for UNOLS CTD cables - Marshall Swartz provided the Show and Tell. His slides are included as *Appendix XXXIV* and covered the following topics:

- Symmetric Digital Subscriber Line (DSL) Technology
- Evaluations on WHOI 7.4 km Test Sea Cable
- The first application considered
 - Up link and control LADCP in real time
 - Video feed from WHOI DSPL cameras
- SDSL Prototype concept - external battery powered
- SDSL Prototype Minimum Requirements
- SDSL Data – link prototype
- Test Results on Atlantis Cruise
- They found that the RDI equipment was inadequate.
- Future plans
- Implementation Issues
- Sea Cable Qualifications

Discussion:

- Dave Forcucci – What is the cost? Marshall - \$12K or less for the entire package.
- Richard – How small can you get the system? Marshall – The minimum Inside Diameter (ID) is going to be about 5”.

Vice-Chair Election Results – Daryl Swenson was elected.

Closing Remarks: Rich Findley thanked UW for host. It has been a great venue.

We will decide on the location of the next RVTEC meeting location after the meeting. The previous meeting locations are listed in *Appendix XXXV*.

Adjourn RVTEC 2009 Meeting – A motion was made and passed to adjourn the meeting (Willis/Steele).