

**Research Vessel Technical Enhancement Committee (RVTEC) Meeting**  
**Astor Crown Plaza Hotel, New Orleans, LA**  
**Hosted by the Louisiana Universities Marine Consortium (LUMCON)**  
**November 14-17, 2011 (Monday-Thursday)**  
**~ Training Workshops are offered on Friday, November 18th ~**  
**Sunday: November 13, 2011**

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## **RVTEC - Training Sessions, November 18, 2011**

Short Course on Automated Underway Meteorological Observations  
Fiber Optic Termination Demo

**RVTEC 2011 Poster Presentations:** The list of posters is available at:  
<[RVTEC Posters2011.html](#)>

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## **Meeting Minutes**

**Executive Summary:** Louisiana University Marine Consortium (LUMCON) hosted the 2011 RVTEC Meeting on 14-17 November. David Fisichella, RVTEC Chair, presided over the meeting. This meeting format was changed from previous years with positive feedback from participants. A few of the major discussion topics included:

- Data Collection Systems
- Multibeam Systems
- Satellite Communications and optimizing bandwidth

The 2011 meeting introduced technical exchange sessions. The session topics included:

- Network Infrastructure, topology, routing, shipboard WiFi
- Science Data Acquisition Systems
- Underway Seawater Systems – Sensors, System Set-up, etc

The last day of the meeting was devoted to two training sessions. One provided a short course on Automated Underway Meteorological Observation. The other session was on Fiber Optic Termination Demo.

**Meeting Called to Order** – David Fisichella, RVTEC Chair, called the 2011 RVTEC Annual Meeting to order and provided introductory remarks. The meeting agenda is included as **Appendix I:** (<http://www.unols.org/meetings/2011/201111rvt/201111rvtag.html>). David stressed to the meeting participants that feedback is needed on the meeting

format.

**Welcome by LUMCON** – Joe Malbrough welcomed RVTEC members to New Orleans. He provided meeting logistic information.

**Dr. Nancy Rabalais**, Executive Director and Professor of LUMCON, provided a talk about her research in the Gulf of Mexico. The slides from her talk “Documenting Hypoxia (Low Oxygen, ‘Dead Zones’) in the Northern Gulf of Mexico” are included in **Appendix III**.

Discussion:

- Jim Holik - Will there be any BP work on the R/V *Pelican*? Nancy Rabalais -Yes it's the ship of choice.
- David Fisichella - How long did the high O2 conditions last after a hurricane? Nancy – The conditions returned back to hypoxia conditions in three to four days.

**Accept Minutes of the 2010 RVTEC Meeting** – A motion was made to accept the minutes from 2010 RVTEC meeting <http://www.unols.org/meetings/2010/201011rvt/201011rvtmi.html> (Swensen/Hagg). The motion passed.

**RVTEC Participant Introduction** - Meeting participants introduced themselves. The participant list is included as **Appendix II**.

**Icebreaker Session** – Representatives from marine technical support groups for UNOLS vessels and other research vessels provided presentations on a major challenge that they faced in 2011 and how they addressed the issue. The slides for these presentations are included as **Appendix IV**.

- *Walton Smith* - Rich Findley provided the report and his slides are in Appendix IV, Part A.
  - The main challenge was financial in nature. The ship budget was negotiated on the basis of 220 days, but the actual days carried out were 160.
  - They are looking for something better to use for tag line hooking. Suggestion and examples from the group are welcome

UW Ships: Jim Postal provided the report and his slides are in Appendix IV, Part A.

- *Clifford A. Barnes* –They had a short schedule.
  - Most of the work for the Barnes is NSF funded, but there are also a few additional days from NOAA.
  - Shipyard work was carried out this year and included improved the bridge electronics.
  - Scientific outfit is fine for the work they predominately do
  - Scientists are interested in getting data ‘real time’ from ship to shore. They are investigating different types of network connections from sea.

- *Thomas G. Thompson*
  - The Propulsion system was overhauled in 2011.
  - The computer room was remodeled.
  - New weather instrumentation was installed.
  - Extra time in the shipyard was needed to complete all the work.
  - The biggest science problems during the year included:
    - Issue with multibeam - The transducers were damaged from touching bottom while entering Newport, OR. They have been replaced and are operational again. Money from ARRA was used to fix the new transducer array.
    - The *Thompson* operation saw a lot of new people in 2011. They started the year with four new technicians. One has already been lost to graduate school
    - All the technicians on the vessel were at the shipyard for 3 months.
    - Ship funding for this year was good, but one NOAA crew was lost due to the budgeting process.
    - Their funding sources were diverse.
    - There were tech exchanges with the Coast Guard, *Langseth* and *Hatteras*.
    - They hosted a MATE intern during the summer.
  
- *Atlantic Explorer* - Robert Koprowski provided the report and his slides are in Appendix IV, Part A.
  - Robert is a New marine science tech and started in May 2011
  - The primary cruises for 2011 included BATS work. It is a 23-year data set with 46 validation cruises.
  - Most difficult challenge was the diagnostic issues with the CTD.
  - Main problems for the year included:
    - Issue with Desh 5 Markey cable winding that has plagued them for the past 8 months.
    - Spooling of .322 cable
      - Switched between new and old cable in the attempt to get a proper spooling.
      - There is a mismatch between Libus shell and wire diameter. The diameter mismatch led to cross-overs, etc.
      - Libus Company would not guarantee the number of wraps they were putting on the spool.
      - They replaced a worn shuttle valve but it did not fix issue.

#### WHOI Ships:

- *Atlantis* - Dave Sims provided the report.
  - There were no *Alvin* cruises because the vehicle is out of service for its upgrade, but they still have work for the ship.
  - They have been supporting *Jason* operations.
  - Hopefully *Alvin* will be back in service next year.

- The biggest problem was a bow thruster issue in the shipyard.
  - Another large issue was getting science users hooked up to printers aboard the ship. The issues were with Windows 7 hooking up to printers. The problem was solved by sharing the printer on one computer. Windows 7 will suck them off the shared box.
  - Dave expressed a “Thank you” to Steve Foley on his HiSeasNet support for the year.
- *Knorr* – Robbie Laird provided the report and his slides are in Appendix IV, Part A. Robbie discussed a problem that was related to insufficient communications with the science party.
    - The problem occurred on a cruise using a free floating surface profiler with a low surface expression. It is used for wave data collecting.
    - 5-8 deployments were planned.
    - A small boat launch was requested for recoveries.
    - After deployment the profiler sank for a long time.
    - Deployment is easy, but recovery is difficult in trying to keep track of instrument.
    - The antenna was getting submerged and there were issues in tracking.
    - Small boat operations were not an option due to weather, so they attempted to use the crane from the side of the ship.
    - There was difficulty with recovery using the crane and they missed on the first attempt.
    - The instrument did not show up on the next attempt for pick up.
    - They attempt different ways to find it. Hydrophones were used on both sides moving forward to survey.
    - They turned off the ADCP and discovered that this was the noise that was thought to be the package.
    - The moral of the story is that communication between the science party and ship operations is key to successful cruises.
    - A decision process for how to go about the best steps to make a critical resolution is needed.
- *Oceanus*- David Fisichella provided the report and discussed the challenges they experienced with shipping the towed video plankton counter from work off of Namibia to Antarctica. The time between cruises was very tight and shipping costs were very high.
- *Cape Hatteras* – Beth Govoni provided the report and her slides are in Appendix IV, Part B.
    - Beth introduced herself as the XO for R/V *Cape Hatteras*.
    - A big challenge in 2011 was the transition from Joe Ustach to her (Beth) as the XO. There was a major learning curve in coming up to speed.
    - Another challenge is having only one marine technician for the year and that individual was expected to go on every cruise and maintain all equipment.
    - Trying to keep operations going with the lack of people was a challenge.
    - Failure of the ADCP was another issue. One beam was not functional and they

didn't realize there was a problem for almost a year. They finally learned from a returning scientist that there was a problem with the data.

- To remedy the problem, they found a loaner ADCP and operated it with an over-the-side pole. Everything worked fine for the rest of the year.

## **Break**

### **Resume Icebreaker Session:**

- *Endeavor* – Lynne Butler provided the report and her slide is in Appendix IV, Part B.
  - Personnel shortage issues were a large challenge. One of their senior technicians retired, Dave Nelson.
  - Another challenge was with Appendix A & B:
    - Using wires in accordance with the factor of safety
    - There were issues with having to use a factor of 5 for the stern deployments.
  - They had to do some wire swapping for 9/16" to .680
  - Feedback on wire lubing is requested. They used the Strancore. It made a large mess with the 9/16" wire, but not as bad with the .680 wire.
  - Communication issues, both internal and external of the institution, were experienced. This is an area that they always hope to improve upon.
  - *Endeavor's* hull was repainted in a new color (blue) during 2011. They hope this will make rust less obvious.
- *Hugh R. Sharp* – Wynn Tucker provided the report and her slide is in Appendix IV, Part B.
  - University of Delaware hosted two MATE interns in 2011.
  - The ship had about 200 sea days.
  - The first time using fiber cable was a big challenge
  - They had one cruise with multiple problems:
    - ADCP failed
    - Scan fish flooding
    - Docking head for the CTD rosette failed
    - They were able to get everything working with shore-side support providing replacement parts. About 12 hours were lost.
  - David Fisichella: How is the Caley system working?
  - Wynn: Overall it has been doing well. They changed the docking head to stainless steel. They have a hard time getting Caley to send information and documentation.
- *Kilo Moana* – Daniel Fitzgerald provided the report.
  - *Kilo Moana* has a CTD Caley over-the-side handling system and is having a lot of failure issues.
  - A UNOLS "pool" technician was provided in 2011.
  - They have had good success with the vessel's transducer stem. This was built as an extra transducer well and was useful in the navigation of ROV *Jason*.

- Jim Holik: Please explain the implosion with the Benthos float. Dan – The science party supplied system was attached to the CTD. A camera was inside the Benthos sphere. The implosion destroyed a lot of gear on the CTD and the only thing survived was the lowered ADCP and benthos pinger.
  - Discussion ensued on pressure housings and batteries with some implosion stories from the group.
- *Langseth* – David Ng provided the report and his slide is in Appendix IV, Part B.
    - David is the Computer Engineer for the vessel and has been with the ship for three years.
    - The biggest challenge is personnel, or lack there of. A lot of on-the-job training is needed and there is no time for training before cruises.
    - *Langseth* received help from the USGS and OSU (Toby Martin) for CTD operations.
    - Using the help of the UNOLS tech pool and outside contractors, they were able to successfully finish the cruise season and get data to scientists.
    - Handling terabytes of data is also a challenge.
    - Jim Holik commented that in 2010 Lamont had a very challenging year of operations. They did a great job of turning things around in 2011 with almost complete success with their operations. He praised Lamont for their efforts.

SIO Ships: Brett Hembrough provided the report on the SIO vessel operations and his slides are in Appendix IV, Part B.

- *Robert Gordon Sproul* – Sproul had 62 sea days in 2011 operating off of California. The biggest challenge was complex instrument testing using custom built deck gear on a small research platform.
- *New Horizon* – The vessel supported a lot of CalCOFI work in 2011.
  - They were able to use the new dive van for blue water diving this year. Very cool!
  - Rod and reel squid sampling was interesting cruise in 2011.
  - A challenging operation was 24-hour non-stop multicoring in 2000m basins with unknown bottom compositions and rough seas.
- *Melville* – *The vessel had 289 days at sea in 2011. A big challenge was supporting over 900 over-the-side operations in 38 days in the Southern Caribbean/Amazon River Plume.*
- *Roger Revelle* –
  - One of the biggest challenges was with the load out for the 5-month DYNAMO cruise. There were communication issues and difficulty making everyone aware of shipping regulations (what can be shipped and how it can be shipped). Eight different groups were involved with the cruise.
  - Jim Holik: This SIO tech group did very well in 2011. Meghan Donohue was mentioned often.

- *Pelican* - Joe Malbrough provided the report and his slide is in Appendix IV, Part C.
  - They experienced difficulty assessing the starboard A-frame SWL of 6,000 lbs.
  - Hosted two MATE interns and it was a very successful experience.
  - The ship had less sea days than it historically supported, but still over 200 days.
  
- *Point Sur* – Annette DeSilva provided the report for MLML and their slide is included in Appendix IV, Part C.
  - They had a short year with on 84 days at sea.
  - There most challenging cruise was with an atmospheric experiment using a smoke-making system that required high volumes of oil. There were many challenges associated with the permitting process. As part of this experiment, there was a twin otter aircraft sampling at the same time.
  - MLML's Triaxus functioned well, but still presented some challenges.
  - They also carried out some very interesting tuna sampling cruises, but it was a challenge staying on top of the fish schools.
  
- *Wecoma* – Daryl Swensen provided the report.
  - The Wecoma supported the UNOLS Chief Scientist Training cruise. Daryl participated in the cruise.
  - They hired one of the MATE interns.
  - Operations included OBS deployments.
  - Heave compensation for winches would be useful.
  - OSU has a new Marine Superintendent.
  
- *NOAA vessels*- Phil White provided the report and his slide is in Appendix IV, Part C.
  - One of the biggest challenges for NOAA in 2011 is their budget.
  - Another major challenge has been their move to a new facility in Newport, Oregon from Seattle, WA. It is a very nice facility.
  - NOAA has a variety of of technicians:
    - Survey technician
    - Network technician,
    - Electrical Technician
    - Hydrographic tech - works with the Multibeam and chart survey work
    - Biological survey technician
  - The new NOAA admiral has asked that a 'Beginners Training Session' for technicians be organized.
    - They are looking for speakers.
    - Contact Phil to volunteer: [Phil.white@NOAA.gov](mailto:Phil.white@NOAA.gov)
    - The dates of the training are January 17-20 2012
  - Phil spoke about a challenging issue that arose during the year when working aboard a Humbolt vessel with poor data quality and with the improper installation of a temperature sensor that was located behind the keel coolers. As a result, the temperature data was contaminated.
  - Mike Prince asked why NOAA was funding work on a Humbolt vessel instead of using a UNOLS ship. Phil – The Humbolt vessel was affordable and in the location that they were interested in.



USCG vessels – *Polar Star*, *Healy* - Jon Berkson provided the report for the Coast Guard.

- *Polar Star* is undergoing budget and political issues. The vessel is in a Seattle shipyard undergoing revitalization.
- One of *Healy's* cruises included has a request to test an unmanned aircraft in the Arctic. There was a joint-ship operation with the Canadians.

### **Break for Lunch**

#### Antarctic Vessels:

- *N.B. Palmer* – Ross Hein provided the report and his slide is in Appendix IV, Part C.
  - The operational year began in August and ends in May 2012.
  - Some of the activities and challenges experienced included:
    - A new dredge basket was acquired.
    - An LCI90i was installed.
    - They used a new .680 cable hybrid fiber/COAX.
    - They supported a mega core system with a McCartney system
    - They experimented with .322 wire.
- *L.B. Gould* – Andy Nunn provided the report and his slide is in Appendix IV, Part C. Some of the challenges included:
  - Changing out the winch drum with 9/16" wire to the .680 cable.
  - There were some issues with the hydraulic controls for their .322 winch. Desh 04
  - They were able to re-service this winch in about 7 days. The winch when through a full factory refurbishment with Markey. Everything went well and the system is working now.
- Sea Education Association (SEA) – Mary Engels provided the report and her slide is in Appendix IV, Part C.
  - SEA supports two 115-foot brigantines:
    - *Robert Seamans* - Worked in the Pacific during 2011.
    - *Corwith Cramer* - Worked in the Atlantic for 2011.
  - Challenges and activities included:
    - Having enough shipyard time to fix all the issues.
    - They upgraded the Chirp System, Knudsen 3260, very good results.
    - They have good personnel support in 2011 with three techs per vessel. The third tech is to learn the position with on the job training.
    - Seamans problems included wastage on the cable pass-through. The cable connector was larger than the pass-through and what to do?!
    - Cramer problems included a Desh 4 winch issue with damaged bearings. The shaft spacing was tighter than what was taken out.

### **Agency Reports**

**National Science Foundation (NSF)** – Jim Holik provided the report and his slides are included as **Appendix V**. David Fisichella provided an introduction of Jim. In the spirit of New Orleans, David presented a voodoo doll of Jim to use for leverage on funding.

Jim showed a map of all the UNOLS institutions and tech facilities.

Jim presented the FY2012 budget. The 2012 budget has not yet passed. In 2011, NSF was on a continuing resolution for the whole year. NSF has requested a 10% increase for next year, but it is unlikely. Requests for vessel funding went down 12% due to lighter schedules and the retirement of *Oceanus*. Details of the FY2012 budget request and pie charts with budget allocations are included in the slides.

The biggest challenges to the tech support program in 2011 were:

- Retention of technicians
- Allocation of resources in with variable schedules and declining ship days
- Bringing new technicians into the fleet?

Jim made a presentation to the NSF science program officers. There was some resentment regarding the funding level in the tech support budget. Jim works to show them how much the tech support groups do with so little funding support. Jim presented a slide that compares the technicians by support model. UNOLS vessels carry fewer techs that vessels of other agencies and organizations. Jim stressed to the scientific program managers to ask for additional technician support.

Comments:

- Mike Prince commented on the need for more technicians, especially on cruises with new PIs.
- Annette DeSilva added that the recent UNOLS survey on ship usage indicated that there is not enough technician support for young PI field work.

**Polar Research Vessel (PRV) Project and R/V *Point Sur*** – Tim McGovern (NSF) provided the report. The PRV project proposes a 11,000-ton vessel. The acquisition process will go through NSF's Major Research Equipment (MRE) process (same as the RCRV). Once the project is approved, design efforts will begin. Projected delivery is in 2021.

Tim reported that NSF has been in discussions to bring the *Point Sur* down to the Antarctic Peninsula. Scientists have been expressing the need for a Regional Vessel in this area for a long time. The vessel will allow science groups much greater access to areas that need a smaller vessel and equipment. Tim has been working with Jim Holik and others to arrange this. Moss Landing Marine Lab is currently working on plans for fueling, provisioning, outfitting, etc. This is an experiment and NSF will assess if this should be an ongoing effort. Stewart Lamerdin will talk more about this later in the meeting.

Comments:

- Dale Chayes: Can you comment on what is happening now before the PRV comes on line, in terms of the acquisition effort?
- Tim: The Science Mission Requirements (SMR) refresh was done on the mission requirements. They are looking to tighten up the concept design. Feedback from community will be needed on the design. The estimates for cost will need to be tightened up. \$600 million was the extrapolated price. If the vessel cost can start at a lower price there will be more support.
- Dale: Will the *Palmer* be used as a bridge until the PRV comes into service?
- Tim: The *Palmer* contract ends in March 2012. Solicitation for a replacement vessel is in the works. They expect to have a vessel on line in March for the next 10 years.

**Office of Naval Research (ONR)** – Tim Schnoor provided the report for ONR.

- The Ocean Class Research Vessel acquisition process is moving forward with Mike Prince engaged in the project.
- ONR saw a decline in ship time again. They are not sure if this is a short term issue or not.
- FBB and bandwidth usage issues will be discussed later in the meeting.
- Tim had a chance to go out on a UNOLS cruise on the *Sharp* with Wynn Tucker. It was a very nice experience.

United States Coast Guard (USCG) – Jon Berkson provided the report for the USCG.

Some of the *Healy* operations this year included:

- NASA Icecapex cruise
- Mapping cruise with Canada
- Winter biology ocean study

Work in 2012 will include North Slope mooring deployments and recoveries. A Bering/Chuchi study and a mapping cruise.

The *Polar Sea* crew has been transferred to *Polar Star*.

*Polar Star* was in caretaker status since 2006. The decision has been made to reactivate the ship and bring it back to service in 2013. The cost is estimated at \$63 million to extend the service life for 10 years.

**UNOLS Technical Support Manager Report** – Alice Doyle provided the report on the “Marine Technician Retention and Recruitment Pilot Program” and her slides are included as **Appendix VI**. Alice provided the report via conference phone.

In 2011 there were 17 technician exchanges scheduled. The technicians that did exchanges were excited to see new vessels. Institutions appreciated the help. It would be good to increase exchanges in the future and she is working with various operators to do this.

Due to budgets constraints, it has been hard to fully institute the tech pool. Currently there is a one-person pool, Robb Hagg.

A NOAA training opportunity is planned for the week of January 17, 2012. This year's RVTEC meeting offers training opportunities.

WHOI submitted a proposal for a pilot program for an on-line pre-cruise planning system. It will be discussed later in the meeting.

Alice has been working to develop an on-line shared use equipment database. It will be part of the UNOLS STRS system. She has collected equipment data from the technical services proposals. Each technical support group will be required to update their respective data before submitting their technical services proposal.

Jim Holik remarked that there is a lack of knowledge of what equipment is in the fleet. He is working on re-writing the proposal guidelines. The guidelines will be changed to require an edit database as opposed to submitting an equipment list.

Woody Sutherland - Can we use a database instead of spreadsheet? Alice: The inventory will be in database, the same kind as ship time requests. The inventory will be linked with the ship inspections forms and also downloadable for other uses. Any other features would be helpful or needed should be sent to Alice. The inventory is expected to be available in the first part of 2012.

The 2011 Long Term Internship program has had very positive results. There are 31 applicants for the 2012 program.

### **Data Collection Systems and Initiatives:**

**Rolling Deck to Repository (R2R) Initiative Update** - Bob Arko provided the report and his slides are included as *Appendix VII*.

- Bob began by reviewing the program goals and the ships that are submitting data to R2R. There are currently 26 ships in the program and *Palmer* and *Gould* will be added next year
- A table showing the cruise catalog for 2010 and 2011 was displayed. The number of datasets submitted into the archives has increased substantially.
- Bob stated that there is not enough metadata. More information than just the type make and model is needed.
- Bob reviewed the long term archiving goals.
- R2R has a standard for quality-controlled navigation products (see slide)
- Screen shots of a Cruise Catalog example is in the slides.
- There is a reciprocal linking to expand the relative links to the cruise.
- The Event Logger is currently on 7 vessels.
- SAMOS real time data is moving forward and they have recruited vessels for their effort.
- Bob reviewed the R2R quality assessment efforts. Vickie Ferrini working on Quality Assessment.
- The R2R outstanding issues include the need to provide subbottom data to archives in SEG Y format.

**R2R Quality Assurance Objectives** – Vicki Ferrini continued the R2R presentation on R2R QA. Her slides are included as **Appendix VIII**. The slides include details about the QA objectives, development status, dashboard concept, summary plots, test details, and next steps.

Discussion:

- Jim Holik: (R2R) has done a great job and R2R has grown. He would like to hear from the techs - What is the area that you are most frustrated with? Data format? What will make it easier?
- Bob Arko: Pushing the data down stream to the archives. This is going to happen, but it will just take work.
- Vicki: R2R needs more metadata.
- Bill Fanning: it's a good thing!
- Jon Meyer: Who is responsible for the data? It seems like mission creep for the techs.
- Jim Holik: It is the PI responsibility.
- David Fisichella: The policy on data hasn't changed, it is just the method on how the techs turn over the data that has changed.
- Woody Sutherland: Our job is to make instruments run. It's the scientist's job to make sure the data is quality controlled.
- Jim Holik: The efforts of the techs and R2R is for the greater good
- Rapid group discussion on who is responsible for the data:
  - Dale Chayes: The "old" NSF requirement states that PIs who collect the data should be responsible for the data. In practice it has changed from the science PIs to the techs.
  - David Fisichella: We need to discuss this topic more during the meeting.

**UHDAS and ADCP update** – Julia Hummon provided the report. Her slides are included as **Appendix IX**. The slides include details on UHDAS goals, installations, improvements, problems, and plans for 2012.

There is more work to do with a lot of requests for more vessels and other countries. There is a need for more support for more data processors.

Jules asked the group to keep her in the loop and to always run "End Cruise." As always, send your needy scientists to Jules.

**Break**

**BGM-3 Gravimeters in the UNOLS Fleet** – Dan Fornari provided the report via phone conference. His slides are included as **Appendix X**.

Information about the pool gravimeters and Potential Fields Pool Equipment (PFPE) is located on the MISO website (Google "PFPE WHOI"). WHOI maintains six gravimeters on UNOLS vessels and two pool units. Dan's slides include information on PFPE

resources, pool gravimeters, PFPE status and goals, technical support, 2012 planned efforts, and best practices.

Discussion:

- Dale Chayes: Think hard about shipping the pooled items to and from LDEO and WHOI. There could be potential shipping issues.
- Dan: Depending on how things proceed, they have no objections to the units staying at the institutions.
- Richard Perry: Is there a plan for potential replacement of some of the old units?
- Dan: When this started, a new unit (if they can be acquired) was \$400K. It has been more economical to refurbish unity. This is a good reason to look into spares in the fleet.
- Jim Holik: There are no plans/thinking of replacing units. They should try to keep them going as long as possible. Not sure if there is a demand for this in the science community.
- Ted Kozynski requested help with gravity time data. Dan: There is an internal document available and it can be distributed. He will look into getting this document on the web. Randy Herr is the contact for this data.
- David Fisichella: Should the document be on the best practices UNOLS site?
- Alice Doyle: There is something there but she will investigate more.
- Dan: We will look into the NAVO information and making sure it's available.

**JMS Inspection Report** – Ted Colburn (JMS) provided the report. His slides are included as **Appendix XI**.

Ted reviewed the purpose of the inspections, which included ensuring that the vessels can meet the capability standards expected by the science community. Another purpose of the inspections is to share experiences from one vessel to another.

Ted reviewed the pre-inspection information needs. Shipyard reports are very helpful. The on-line Ship Condition Form is required and has a new format. The new format should make it simpler and better for both the operators and inspectors. It is now a working document that is designed for ship operators to make comments in the document.

Ted discussed Appendix A issues and the status of Appendix B. Ted has an Appendix A cheat sheet (see **Appendix XII**). Appendix B is currently in draft form. An Appendix B Workshop is planned for February 2012 in San Diego. He encourages people to attend.

Ted provided some observations and best practice examples from the ship inspections:

- Hydraulic hoses
  - o Tags, change out log etc.
  - o Provide serial numbers and record of pressure tests
- Labs
  - o Showers - Test on a regular bases. See the example of brown water from

- o not testing on a regular bases.
  - o UPS issues and fire examples
- Chemical use and storage
  - o There is a good example from *Sharp*, plan for separation of acid and bases.
  - o Large bold labels are needed.
- Scientific Equipment Operating Procedures Manual
  - o Meaghan Donohue and Woody Southerland have some good examples.
- ADA
  - o We can do more. Access to berthing and labs. Improved lighting and alarms.
- Gas Detector
  - o See the slide for an example of what and when it should be used.
- *Cape Hatteras*
  - o Nice replacement of winch windows
  - o See example of utilizing small sail boat winches for tag lines.
- *Healy*
  - o Map Server
  - o Safety bars on crane
- *Walton Smith*
  - o Over the side pole, nice example
  - o Non-penetrating flow meters

**UNOLS Vessel Position Map** – Bob Arko and Dale Chayes reported on the vessel tracker page that they have been working on with Laura Stolp. Their slides are included as **Appendix XIII**. Their goal is to collect data from VOS or SAMOS emails and enter it into a relational data base.

Discussion:

- Jon Meyer: Is there a security issue?
- Bob Arko: It is not an issue if other public sites already have this data. If you don't want your ship on tracker, don't send the data.
- Rich Findley: You can broadcast your AIS from other sites. It can be filtered down to send what you want.
- Bob: This can be an outreach tool.

**Improved Termination Design for Sea Spy Magnetometer** – Woody Sutherland provided the report and his slides are included as Appendix XIV. Woody explained how this originated. A poorly designed termination lead to a generally unreliable system. A saltwater short caused damage to their Towfish increasing repair costs. They have been unable to hold the manufacturer accountable for warranty repairs.

- Cable costs are high: 12 -15 K
- \$ 1,800 field kit cost
- 3K cost for re-term
- 18 month to get cable
- \$13K institution funds more than is expected

- Helping to recover costs by getting the system sold to other users
- With the improved termination design, SIO was able to tow from Barbados to Cape Town.

**Polar Research Vessel (PRV) – Science Mission Requirements (SMRs) Refresh Project** – Dale Chayes reported on the status of the project to refresh the PRV SMRs. His slides are included as **Appendix XV**. Dale reviewed the project goals, schedule, and committee members. A survey to collect community feedback on this effort is available on the UNOLS website.

**MATE Update and Long Term Internship Program** – Tami Lunsford provided the MATE report. Her slides are included as Appendix XVI.

Tami handed out remotes to a technician from each vessel so that they could take a quick survey. She asked the questions and they could click in their response.

Tami provided an overview of the internship program and requested everyone to send intern requests in ASAP. In 2011 there were two long-term interns who worked on *Wecoma*, *Cape Hatteras*, and *Knorr*. There were 12 interns placed on UNOLS and USCG vessels and five placed on other research vessels. All mentors indicated that they would hire their intern.

Discussion:

- David Fisichella: One of the issues with hosting an intern is berthing. Perhaps they could treat training berthing as the *Alvin* program does. On every 4<sup>th</sup> dive there is a seat available for training. He would like to see a push for more training berths on UNOLS vessels. Support from program managers is needed to make it happen. There would be a need to show the benefit on this to ensure buy in.
- Mike Prince: This is one of themes identified from the technician retention workshop.
- Mary Engels: What about establishing a dedicated observer's berth?
- David: Providing berths would need to be done by the scientific compliment not the technicians.
- A motion was made and passed to send a request to the UNOLS Council asking that berths for technician training be included on science cruises (Postal/Fanning). The motion passed.

5:15 pm **Adjourn Day 1**

**Tuesday, November 15th - Toulouse Room**

8:30 am **Coffee and Informal Discussion**

9:00 am **Call to Order & Announcements** - David Fisichella called Day 2 of the meeting to order.



## Multibeam System Discussion:

**Optimizing Multibeam data quality across the fleet** – An update on a strategy to establish technical resources and new communication mechanisms to develop and share common information, tools, and expertise for operating and monitoring MB sonars across the fleet was provided by Vicki Ferrini. Her slides are included as Appendix XVII. The slides include information on the project goals and outcomes. There is a Multibeam Advisory Committee (MAC) and Vicki reviewed their role. There are MAC teams for Shipboard Acceptance, Acoustic Noise Analysis, and Quality Assurance. There is a MAC website. In the spring 2012, an inaugural meeting of the stakeholders is planned.

Vicki requested that RVTEC members provide community input to MAC.

**Update on the State of Multibeam Systems** – Dale Chayes provided an update on the state of Multibeam systems. His slides are included as **Appendix XVIII**. He reviewed the project goals displayed a slide listing the number of US research vessels with multibeam systems. It has ramped up significantly since 1980.

- Jim Holik pointed out that Dale's list does this include the small systems in the fleet. Dale: Potentially not all of them.

Dale stated the need for dedicated hydrophones for ship noise detection. Dale reported on known/emerging issues (see slide). There is a lot that can be done to fix data, but it is expensive and time consuming. By far the best approach is to do it right up front. Proper system installation is key.

### Discussion:

- Jon Meyer: Mentioned the 860 System and that it is working well for SIO.
- Jules Hummon: She would like to have the heading reference for the vessel in the table. Dale: It's there, but it is a LONG table.
- Jules: Good this is relevant to ADCP
- Steve Hartz: What is the status of the maintenance program? Dale: It is in the development stage and will be a part of the proposal; however, he is not sure how much NSF will be able to afford. It will include site visits
- Dale: We need to pay a lot of attention at the dock acceptance testing before getting to the sea tests.
- Dale: The systems need to be under a software update maintenance program.
- Jim Holik: A recalls that each institution had degradation issues. Is this being addressed?
- Webb Pinner: Has anyone reached out the NOAA Hydro fleet? Dale: Not formally.
- Webb Pinner: *Okeanos Explorer* is on their 3<sup>rd</sup> revision of EM302. It has been a challenge. NOAA might be able to give the program a head start due to previously going through this process.
- David Fisichella: Question for Vicki. Is there funding beyond travel for people in the committee? Vicki: There is only funding for the actual time on the ships.
- Jim Holik: There is no salary support for people other than Vicki's committee.

- Vicki: They are still fleshing out the committee make-up.
- Tim Schnoor: Is this a service or a mandate? Vicki: Service.
- Jim Holik: From the workshop it was determined that there is a real need to address these issue. This is the first announcement of this opportunity.
- Jim Holik: All the data across the fleet will be looked at.
- Vicki: There will be a best practice component.
- Tim: Is the ultimate goal some kind of IMO type standard? Dale: Probably not that rigorous.
- Woody Sutherland: When you are talking about quality of data there are lots of operational issues. If a scientist wants to do something that is out of the norm there will be data quality ramifications.
- David Fisichella: Not every institution has a multibeam expert. This effort will pool some of expertise and provide a resource for the fleet
- Justin Smith: At UW, a lot of money is being spent, but we are not getting what we want out of it. Performance is an issue, but there are also Kongsberg issues with spares and support. Is there going to be a collective effort for addressing the venders? Jim Holik: No - this has not been addressed.
- Sandy Shor (via phone): Do we need to purchase an independent maintenance service agreement from Kongsberg? Dale: They are working on a group proposal for the fleet and this will be a part of the proposal.
- Sandy Shor: Will the group proposal it include the *Kilo Moana* system? Dale: It will include the 122 system, but not the 710.
- Dale: Your maintenance contract will need to be addressed after your warranty is up. This includes the 310 on *Thompson* and the *Sharp* unit.
- Sandy: Are the software and hardware agreements different?
- Dale: The hardware and software are separate agreements.
- Sandy: Is the software agreement going to be an institution responsibility, or is it now a fleet-wide issue?
- Jim Holik: You will need to have an agreement at the institution level for now until we get a Fleet-wide proposal.
- Sandy Shor: He asked for guidance on how U.Hawaii should submit a proposal for the Multibeam agreement. He is concerned about the short term system that is being installed on the *Kilo Moana*.
- Jim Holik: He offered to follow-up with Sandy off-line.
- Sandy Shor: He has questions but no answers so far.
- David Fisichella: When WHOI purchased their Kongsberg system earlier in the year, they had planned to arrange a training session and invite others. However, they could not schedule it, but would still like to schedule a session on *Atlantis*. Please get back to David if there is an interest in getting a UNOLS-wide support/NSF proposal for this kind of training.
- Annette DeSilva: Are there any issue with the portable multibeam system and will it expand in that direction?
- Jim Holik: He is not sure there are any out there.
- Vicki Ferrini: There are some units and the owners of the portable systems are welcome to come to the MAC meetings and be involved. There are other small systems on AUVs, etc.

- Dale: There aren't many systems under NSF facilities.
- David Fisichella: Echoed the frustration of communicating with Kongsberg on issues. Can MAC be the point of contact for this?
- Tim McGovern: The community could benefit by better communications amongst themselves and with Kongsberg.
- Sandy Shor: When is will the MAC meet?
- Vicki Ferrini: Not until after AGU, but please contact Vicki if you have issues in a shorter time frame.

## Poster Session (Bourbon Room)

**Pre-Cruise Planning Initiative** – Adam Shepherd provided a report on the new pilot program to develop a web-based application for pre-cruise planning. His slides are included as **Appendix XIX**.

Adam introducing himself and said that he has been at WHOI for over ten years. They are developing a Drupal-based pre-cruise planning tool. As a first step, his group will listen to ship operators to identify their needs and document them. They are conducting interviews with ship operators. After gathering information, two operators will be selected for implementation of the initiative.

The pre-cruise planning tool will be an open source application for the community. Adam's group will provide a report of everything found in the process of this effort. The Pilot program is a 1-year effort and obstacles include: time, complexity, and IT support.

Adam can be contacted at [adam@whoi.edu](mailto:adam@whoi.edu).

### Discussion:

- Marshal Swartz: Will this be user or WHOI maintained? Adam: It will be operator managed, not by WHOI.
- Brett Hembrough: Will there be database management? Adam: It will be documented and reported if this is a function that is useful.
- Jim Holik: He thought that there would be six institutions involved in the pilot program. Adam: Yes, there will be 6 institutions initially during the fact finding tasks, but there will only be two chosen from the six for implementation
- Bill Fanning: Do you envision this hosted at UNOLS? Adam: Ultimately hosted at UNOLS sounds like a good goal but the beginning development will be hosted at WHOI.
- Mike Prince: With the UNOLS scheduling system, R2R, etc., how will these things be integrated with the pre-cruise planning tools to reduce duplicate systems? Adam: The pre-cruise planning initiative was funded under the R2R umbrella. This will try to bring the whole picture into the system. They do not want to duplicate efforts.
- David Fisichella: Can others look at the WHOI system to see what/how it works? Adam: Yes. Contact me and we can facilitate this.

## Appendix A – Implementation: Comments, questions, and general discussion –

Dave Fisichella moderated the discussion.

- Bill Fanning: Stewart Lamerdin sent an email asking if anyone had a DESH 5. They have a level wind that requires a Safety Factor of 5. The roller needs to be 12.5” and they have a 12” roller. Stewart wondered if there could be a group purchase to improve this issue. There appears to be five units in the Fleet.
- Rich Findley: If you are trying to improve the roller issue, it can be removed. Perhaps there could be a change in Appendix A. This was a recognized problem.
- David Fisichella: Feedback is needed on how many winches are in this situation and what the cost is for a fix.
- Dale Chayes – There seems to be a flaw in the safety standards. To spend 10s of thousands of dollars to replace winches and level winds is a waste.
- Rich Findley: the lawyers dictate the system. Keep people off the deck during winch operations. If no one gets hurt, there is not a problem.
- Mike Prince – The main reason for implementing Appendix A is to make it safer for what we want to do and to also extend the lifetime of the system. There is nothing he could find in the standards about rollers. Perhaps the existing rollers can be grandfathered. Find a reasonable approach and send it to the RVOC Chair and Safety Committee.
- Rich Findley – He urged RVTEC to carefully read Appendix B and let the Safety Committee know of any concerns.
- Justin Smith: What is driving the new standards? Mike Prince- There was not a common standard that defined the different safe working loads. Things varied from ship to ship. Finding a solution that meets everyone’s needs is a challenge. If there is a flaw in the safety standard, you have the responsibility of correcting it.
- David Fisichella: We don’t know the cost of the standards until implementation begins them. There should be a cost benefit analysis on the standards. The UNOLS risk manager stated that we have to comply with the standards that we set.
- Action Item: David Fisichella will send a message to each ship operator to determine how many winches are out of compliance with the new standards. With this information, a cost estimate can be developed for meeting compliance. This estimate will be sent to the Safety Committee and to Matt Hawkins.
- Marshall Swartz: Discussion on winch operator training and institutional differences.

12:00 pm **Lunch Break**

The morning discussion on Appendix A was continued. David Fisichella said that he would request that RVTEC participation be increased on the RVOC Safety Committee. Mike Prince suggested that the name be changed to the “Research Vessel Safety Committee.”

**LCI-90i Discussion and User Feedback** – Joe Malbrough lead the discussion. His slides are included as **Appendix XX**. There was a UNOLS Fleet wide group purchase of MTNW LCI-901. The system meets the new RVSS requirements. There is 80% completion of installations in the group purchase. Question to group on who is collecting the data?

## Discussion:

- Rich Findley – Measurement Technology cannot read the chip from the winch read-out.
- Joe Malbrough – The read-out should go to a computer. Rich Findley – That would require software and it had issues.
- Daryl Swensen - They had similar problems at OSU and had to put it on its own isolated network.
- Rich Findley - This issue should go back to LCI. We should keep track of these issues and send them to the vendor.
- Bill Fanning - They weren't happy with the network problems, so URI is using their own software instead of LCI's.
- Justin Smith - Have you confirmed that the 20 HZ is working. Bill Fanning – Yes, it is working.
- Daryl Swensen - Besides OSU, who else is using a network. BIOS, UW is trying to set it up, and Miami.
- Justin Smith - Are you saving all of the data? Daryl – OSU is saving all the data and putting it on R2R. They have to also save the cast numbers, etc. Measurement Technology is supposed to come develop software that will do this for you, but for now he is saving it.
- Dale Chayes - It is good to save the data. There are other uses for it.
- Audible alarms - Joe Malbrough asked if everyone had these. Most said yes, but not all.
- Joe added that if there are any problems, call Tom Rezinsky.
- Marshall Schwartz - There will be a project that uses the 96 package CTD rosette. They sent an in-line tensionometer for the cruise. The cruise party was not happy about it. They did an initial test and saw numerous occasions of zero tension.
- Robbie Laird - It would be good to build this into the top of the CTD. He was surprised as to how strong the wire is. The problem remains an issue.
- Bill Fanning – The standards require the operator to have a graph. The LCI-90i provides a graph that meets Appendix A. The speed and payout numbers are tiny. How can this be reconciled? Is this a problem? Rich Findley - You can as the manufacturer to change the display. The graph must be available to the winch operator.
- Richard Perry - He is worried that everyone is coming up with his or her own interpretation of the Appendix A. Mike Prince - It is the individual who is responsible for the ship that must know how to interpret Appendix A.
- Lynne Butler - Their winch operators have actually appreciated having the graphs.
- David Fisichella again reminded everyone to provide feedback and use the list server. Be reasonable, be flexible, but let us know if the standards cannot be met. If they need to be changed, so be it.
- Mike Gagne - Isn't the whole point to know that you are operating safely.

## Poster Session

### Technical Exchange Sessions:

#### **Technical Exchange 1 – Network Infrastructure, topology, routing, shipboard**

**WiFi, IT** – This technical exchange was a nuts and bolts discussion about the design of the network. The moderator was Jon Meyer. His slides are included as **Appendix XXIa**. Discussion topics included:

The session included discussion on shipboard networking topics such as:

- Bandwidth -- everybody wants more than is available; what can we do?

- Internet Connectivity -- links are very dynamic; they aren't always all online. Fancy routing tricks can help.
- Controls -- methods for making the most of what we have.
- Local Area Network, WiFi, special networks

Bandwidth and controls were also discussed.

John Haverlack (UAF/SFOS IT) continued the discussion with a *Sikuliaq* IT overview. His slides are available as **Appendix XXIb**. John's network diagram is available at:

<https://web.sfos.uaf.edu/trac/sikuliaq/export/44/SQ%20IT/Mockup/Sikuliaq%20Network%20Overview.graffle/QuickLook/Preview.pdf>

**Technical Exchange 2 - Science Data Acquisition Systems** – This technical exchange session provide an opportunity to share ideas on what a DAS should look like and general concepts. The moderator was Daryl Swensen.

Daryl began with a question to the group on what systems are currently used and for what? (Below are the rough notes from the Technical Exchange.)

- OSU
  - o 1 Hz Scan saved
  - o UDP
  - o Home Brew Serial to IP system
  - o Community effort and available
- *Walton Smith*
  - o LabView Windows based
  - o One program running for each instrument
  - o Community effort and available
- Andrew Ziegwied from McCartney - Triaxus driven DAS
- Paul Johnson
  - o MAC
  - o Multibeam centric
- Andy Maffei - Interested in event loggers hooks
- R2R - Interested in what is being used by institutions
- Schmidt Ocean Institute – They are in the market for a new system.
- *Thompson* - Using a home brew system (code no longer supported)
- Shawn Smith (Samos) - Getting data into SAMOS
- NOAA
  - o Serial data SCS (log native sensors)
  - o Binary file log in native file format
  - o Video - Broadcast - instant replay (not logging every thing)
  - o Data management (file naming, Meta data, SCS with data base backend) NMEA header to the check some. META data generated on the shore, rsync to shore 1.5 mega bit
  - o Event logging (IM server to shore log locally when coms are down) SMTP based not UDP

- Rob Hagg
  - o Colliapy
  - o UHDAS model
- Bob Arko
  - o Interested in a common data directory structure
- WHOI
  - o Calliapy
  - o May replace
  - o META data
  - o Creep
- Ratheon
  - o Home Brew (Linux)
  - o Event logging still done by hand
- Dale Chayes
  - o UNIX based system passes UDP data gram
  - o The core system on *Healy* and *Langseth*
  - o Scales well
- LUMCON – SCS

#### Group Discussion:

- Dale: Lamont UDP data gram logger Perl, C. Techs need to know how to manipulate on the fly (it is not a static environment).
- Rich Findley: Using LabView. A one-week course for techs can assist getting them up to speed.
- SCS
  - o Proprietary - Yet flexible,
  - o Sensor configuration file,
  - o Monolithic - Stop acquisition to make modifications
  - o SCS 5 underdevelopment
  - o Training available for SCS
  - o UNOLS may need a SCS Liaison with NOAA for SCS
  - o Not all UNOLS vessels are using the same version
  - o Data Base for sensor configuration not data acquisition (20Hz data caused problems for database).
  - o Bob Arko on SCS: Nice directory structure Helps R2R initiative
  - o UNOLS operations have limited voice and support
  - o SCS under staffed and suffers from personnel loss
- UHDAS
  - o C with a python wrapper
- Shawn Smith: SAMOS Project
- *Okeanos Explorer* – Webb Pinner
  - o Moxa 5110 serial to IP multicast
  - o Multicast Spans subnets (routers set up for multicast)
  - o MOXA Serial to IP devices supports UDP/Multicast

- Andrew Girard:
  - o Port to VM and sandbox
  - o Suggested a SWAP fest concept, a gathering to build Virtual Machines for Sandbox of data acquisition
- *Okeanos Explorer* – Webb Pinner
  - o Push data to a DMZ server with read only data properties for science. Science has access to data and no worries of corrupting data products being collected. *Thompson*, OSU, WHOI all doing this
- Shawn Smith
  - o R2R working on method of getting meta data off ships
  - o UNOLS Meta data task force may be needed
  - o UNOLS operators input needed
  - o SAMOS developed scheme for Meta Data
  - o Directory and file structure is the 1st order of meta data
  - o R2R should drive meta data (what data archives need)
  - o Mechanism to get the meta data to shore?
  - o Meta data following the data
  - o OSU SUDS (approach) Meta data is embedded into every scan and file
  - o Shawn will establish a listserve for meta data and invite all on RVTEC list

Group consensus: Next year's RVTEC meeting should host a VM underway data acquisition system or bring your system in to set up and show. VM would allow systems to be distributed. Standard demonstrations could include: adding sensor, updating meta data etc.

**Summary of Tuesday's Technical Exchange Sessions** – Each Session Moderator provided a brief summary of key issues and highlights from their session.

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

### **Wednesday, November 16th**

**Call to Order & Announcements** - David Fisichella called Day 3 of the meeting to order. He announced that with changes in *Pelican's* cruise schedule, a trip to New Orleans was not feasible and would not be available for tours.

#### **Technical Exchange Sessions:**

**Technical Exchange 1 – R2R Eventlogger – Demo of Version 2** – Andy Maffei and Laura Stolp moderated the session of the R2R Eventlogger.

**Technical Exchange 2 - Underway Seawater Systems – Sensors, System Set-up, etc** – Steve Hartz moderated the session. Notes from this session were recorded by Daryl Swensen and are provided below. Topics included:

- The sea chest location was discussed.
- Pumps - Centrifugal



- Plumbing:
  - PVC
  - Teflon lines
  - Titanium
- De-contamination systems - Discussion of different systems and the foreign fleet systems.
- Sensor location and time lag was discussed
- Flow trough housings
- Sensors:
  - What should be standard?
  - Data nodes
- David Fisichella brought up the topic of decontamination or lack there of. They took a section of pipe out and it was full of dead grit. They had to back flush the pipe.
- Robbie Laird: A HUGE amount of velocity is needed for the pipe size.
- Rich Findley: The cruise ship uses potable water for a one-hour back flush of the system. That works well and it is automated. No fouling has been detected. They have found that flushing *Walton Smith* once a week is not enough.
- Shawn Smith: What is the cost of the automated system on the cruise ship?
- Rich Findley: They budgeted \$80K for the system and the next installation is looking at 60K. They have \$4-5K in stainless boxes that have equipment housed in the box. They wanted to get the manufacturer to make a hardened sensor, valves, and flow meters etc.
- Dale Chayes: How much of that is labor?
- Rich Findley: The piping is stainless steel with swage locks.
- Robbie Laird: It would be difficult to retro fit the existing systems due to not being part of the original design.
- Steve Hartz: There is flushing and decontamination. Are you looking at decontamination issues?
- Robbie Laird: It's not killing the biology it's getting the gunk out.
- Dale Chayes: It takes a lot of flow.
- Tim Schnoor: With the new vessels we should get this right.
- Steve Hartz: We need to get the type of pipe down correctly.
  - UAF is using stainless steel (SS)
- PVC does not meet ABS
- Stewart Lamerdin: *Point Sur* had a SS pipe system and it rotted out in a couple of months.
- Stewart: What is the mechanism for 'Clean,' what are the British doing?
- Robbie Laird: It's hard to match what the science types want for each application.
- Annette DeSilva: FIC was asked to come up an uncontaminated seawater piping recommendation for the Ocean Class vessels.
- Tim Schnoor: Attention to this is essential.
- Richard Perry: Are people using the same system for multiple uses?
- *Gould* and *Palmer* have three diff systems. It is a challenge getting everything balanced when everything is changing for each cruise.
- Richard Perry: Do they have de-icing systems?
- For *Palmer*, there are different systems and they change where they are pulled for

different uses/dimes.

- Dale Chayes: They (the *Healy*) have a standard strategy for pulling from one source. Every time there is a change in pull volume there is a change in the flow through data. When you are sampling from different sources you are sampling different water. This needs to be included in the META data. This needs to be done in the design phase and is not a retro item.
- Richard Perry: In regard to SS corrosion, seasonal differences impact corrosion.
- Dale Chayes: Allowed materials? GRP is allowed in most circumstances.
- Richard Perry – For decontamination, Sea Keepers makes a system - Ozone system.
- Steve Hartz: They installed an Ozone system, but did not have the system up long enough to determine the outcome.
- There was a group discussion about different ways to clean the system.
- Robbie Laird: Not sure there is data on what is clean for the science requirements.
- Dale Chayes: He advised to never use the “uncontaminated” (UC) terminology, instead use the term “science” seawater. There is NO WAY to have it uncontaminated in a way that meets the implied expectations of every scientist and need.
- Stewart: For trace metal science, what is clean? In the ship design, it’s impossible to make a ship based UC system.
- David Fisichella: A more realistic approach is to document on what type of seawater piping system the vessel has and let the science party decide if it’s good enough. Managing expectation!
- Dale Chayes: Depending on what kind of science they are doing, will influence the interpretation of the science user.
- Dale Chayes: There should be a separate pump for flow through sensors.
- Shaun Smith: For new vessels take the experience from this group as to what would work best for the new design.
- Steve Hartz: Science is not always right in what makes the best new system.
- Robbie Laird: Pumps? What are the expectations from the science groups on an acceptable kind of pump?
- Steve Hartz: They went with a pulp paper pump.
- Richard Perry: The *Gould* has a high volume centrifugal pump.
- Steve Hartz: Discussion on inductor pump. Pulling through system instead of pushing. Not very high volume but enough flow for the underway sensors
- Richard Perry: Is anyone doing thermal change and putting into data?
- David Fisichella: They are using the SBE 48 magnetic temperature sensor.
- Steve Hartz: Using an inferred temp sensor for skin temp.
- Rich Findley: They ran into an issue on the cruise ship with magnetic sensors. There were acceptance issues.
- Steve Hartz: Kongsberg makes a good box for sound velocity probe.
- Rich Findley: A 2’X2’ space is needed.
- Steve Hartz: Ultrasonic flow meters?
- Rich Findley: Flight time flow meters. Get any size for about \$1,200
- Steve Hartz: Does the material matter?
- Rich Findley: They have a setting for different kinds of pipe material

- Steve Hartz: What are people using for TSG?
- Group: Most are using SBE 45
- Dale: They are low water flow and this changes the residency time and hence latency of water through the system..
- There was group discussion about flurometers, PCO2, etc.

## Poster Session

**Lightsquared Corp.** – Richard Perry provided a report on Lightsquared, Corp. / GPS interference issue.

## Discussion Period and Group information:

- David Fisichella: Pointed out the link to the data policy that Jim Holik posted.
- David Fisichella: He would like to recruit another RVTEC rep to join the RVOC Safety Committee and be engaged in the RVSS and Appendix A and B.
- David Fisichella read a draft letter to the group that will be presented to the UNOLS Council on “technician in training” berthing space
- Dale Chayes: There is a difference in the impact of one more tech in training berth means a cruise is in relation to large and small vessels
- David Sims: Every 5<sup>th</sup> dive for *Alvin* there is a place for pilot training.
- Bill Fanning: Training is needed during the more demanding trips not just transit cruises.
- Dale Chayes: We are already doing this on transit cruises; this is directed more to real science environment.
- Annette DeSilva: UNOLS has an agreement with USCG for space on UNOLS vessels for their technicians. Does this fall into David’s letter?
- David: This is in addition to the USCG agreement.
- Jim Postal: There is a need for crew space training too.
- David Fisichella: Yes, but that won’t be addressed in this letter.
- Stewart Lamerdin: Discussed point on how the process would work - deciding when/where/how.
- Phil White: What about the workload? Training will add additional work to the senior techs.
- David Fisichella: The benefits would outweigh the extra work.
- Jim Holik: If the science community gets the idea that this will improve how their work will get done on RV’s they may be supportive.
- Robbie Laird: Who sets this up or at what level does the extra tech request get done?
- Anthony Meyer – As an intern, this program will be helpful.
- Jim Holik: The science program managers don’t really know much about the tech support groups. There was need for a technician on a biology cruise and a tech was sent. It was a very successful operation.
- Andrew Nunn: Another example was associated with a jumbo piston core cruise and the need of more technicians. The additional tech support was very helpful.
- Jon Meyer: How will this be organized?
- David Fisichella: The process should be started early and berth space be identified

well in advance of the cruise. The ship schedules should be evaluated.

- Joules Hummon: Identifying the type of cruise would be helpful.
- David Fisichella: A letter of support from RVTEC to the Council is needed.
- Rich Findley made the motion for approve letter. Jim Postal seconded the motion. The motion passed.

12:00 pm **Lunch Break**

**Communications Panel Discussion** – A panel discussion with HiSeasNet and Fleet Broadband operators was held. Topics for discussion included, but were not limited to, those below. Panel Members include: Jon Berger, Steve Foley, Mike Gagne, and Al Suchy

- HiSeasNet highlights from 2011
- Fleet Broadband use and update
- USAP Vessel Use of Fleet Broadband – Scott Walker
- Optimizing Bandwidth (General Introduction)
- General Discussion

Guru Chana (INMARSAT) gave a presentation on FleetBroadband (FBB) – Managed Services Practical Solutions. His slides are included as **Appendix XXIII**.

- Guru gave an example of the bandwidth usage of when say a crew member views the CNN site. The usage is 1.5 meg/day; however, each time a crew member looks up CNN its another 1.5 meg. If the site had been cached, multiple transmissions could have been avoided.
- There are not enough resources for seagoing applications to operate like a terrestrial resource.
- Another way to limit transmissions is at a router or firewalls.
- Richard Perry: How are those restrictions visible to the end user?
- Guru: This would be set at the corporate policy level.
- Richard: If I type in “facebook,” what does it say?
- Guru: The system would tell you what is available and if it’s not it will tell you.
  - The only way to get the most of a managed resource is to properly manage it.
  - A flat rate is most desirable.
  - You want a managed service to get the most of the limited resource you have.
- Scott Walker: Do we have that kind of access for FBB? Guru: You do not, but they have it at WHOI.
- Guru showed the Global coverage map. The purple bits are the users in those areas.
- With a managed service, you get a faster feeling service.
- John Haverlock: What protocol are you using for the video? Guru - It’s up to the user. We cover everything. They are just providing an IP pipe.
- Scott Walker: What is the policy for streaming? Al Suchy: It’s been a case-by-case situation. Some PIs know they will need this for outreach in advance and get a PO set up in advance. Some are short notice items and those are harder, but achievable. They were able to support all requests in 2011. He asked operators to be on top of these requests and get the necessary funding into the proposals.

- Guru explained some of the next steps:
  - Multi-Voice
  - Dynamic Telemetry Service (DTS). DAS
  - GMDSS non-Solas/Solas This will be coming to be compliant
  - GlobalXpress
    - Inmarsats next consolation
    - 3 new sat in KA band space. Developed by Boeing
    - Aiming for end of 2014

Jon Berger discussed HiSeasNet (HSN) and highlights from the past year. His slides are included as **Appendix XXIV**. He also discussed what is planned for the future.

Discussion:

- Dale Chayes: Are those deliverable IP protocol or theoretical?
- John Berger: Basic theoretical. It was planned to be a basic one to one.
- Andrew Nunn: We are coming close to sending what they are bringing to the ship.

The USAP Vessel Use of Fleet Broadband was presented. The slides are included in **Appendix XXV**. Scott Walker from Raytheon said that Antarctic ships normally work in areas that are not within FBB range. There is GUI set up that is managing the individual quota. It gave people a good experience. It makes you use the internet for a purpose not an open pipeline. The future will follow the Enterprise standard.

- Robby Laird: Do people sell their time?
- Scott Walker: No it's self policing.
- Stuart Lamerdin: Do you see an issue with smart phone use?
- Scott Walker: Their system only allows one device per user.
- Mike Gagne: Formulate a batch file to open and close sessions each day. This gives the ability to see what user is taking bandwidth and alert them.
- There was a question about the satellite calculator?

A report on Fleet Broadband use and an update was presented. The slides are included as **Appendix XXVI**.

- Scott: Has anyone hit a hard stop?
- Al Suchy – Yes, we have hit a number of them. Like a tanker once the usage gets going WOW it really gets going. In April of 2011 a bunch of ships came on line and around August they surpassed the available bandwidth. In November, they changed the MB to 100K and instituted hard stops.
- Bill Fanning: It would be good to know what we are using. How can we know if we are going over?
- David Fisichella: This will be talked about later in the meeting.
- Tim Schnoor: Please talk to OPP technician people about their broadband use and management.

**Satellite Communications, Optimizing Bandwidth (Toulouse Room)** – Review and discussion. Steve Foley, Mike Gagne and Al Suchy lead the discussion.

- Jim Holik - WE ARE NOT GOING TO BUY MORE BANDWIDTH.

- Woody Sutherland: He would like to have a statement from the funding agencies and UNOLS providing a policy on the use of bandwidth.
- Jim Holik: There will be a group formed this meeting that will form a policy.
- Woody Sutherland: Internet access is a very important tool for recruitment and access for crew and technicians.
- Dale Chayes: This is an essential item now for technical support of the complex systems we are running.
- Jim Holik: Do we need this for moral more than we need it for science?
- Dale Chayes: No
- Robbie Laird: He thinks it is used 90% for moral items.
- Jon Meyer: There is culture shifts on how much we are tied to the net for everything that we do.
- Richard Perry: Much of life is now connected to the net and it is needed.
- David Fisichella: The actual amount of bandwidth needed for sci. missions is usually small.
- Dale Chayes: A huge chunk of bandwidth is used for the operating institution's business.
- David Fisichella: It is hard to distinguish what is or is not important with the usage. How do we optimize the bandwidth we have?
- Robbie Laird: We need to distinguish the differences between the systems, HSN and FBB.
- Jim: Look at *Langseth*, they use lots of HSN, but not much of FBB
- Woody: If we are not going to purchase any more bandwidth but will start filtering access etc. this will also cost money.
- Jim Holik: The rules need to be the same.
- Woody: There needs to be a fleet wide policy.
- Jim: Yes.
- David: There needs to be resources for a policy to be implemented too.
- Dale Chayes: Look at the long-term track record. Getting a big picture policy in place would be constructive base on our history. The challenging part for the shipboard technician is that he/she is going to be the police person for the system.
- USCG: With a policy in place there is something for the technician to fall back on.
- Scott Walker: Hard stops are a large wakeup call!
- Jim: What do we allow and what we do we not allow?
- David Fisichella: If NSF forms a committee and the policy it's well defined, it would be good but who is going to police this and how?
- Jon: This will need management.
- Rich Findley: Shared bandwidth is causing us to have to fight with each other.
- Mary Engels: Is it possible to split up the usage between science and public?
- Jon: It's possible but there is still a limited pipe.
- Robbie: One ship can police itself; but it's much harder when we have shared usage.
- David Sims: Our wireless only allows access to the ship network.
- Jon Berger: Does NSF pay for all bandwidth?
- Jim: No. It's split between the different agencies. OPP, NAVY OOI etc.
- Robbie: 90% of traffic is still a HUGE gray area.
- Jon Meyer/Robbie: Discussion on blocked site issues

- David Fisichella: Blocking sites should be looked at from a fleet perspective.
- The RVTEC participant largely agreed.
- Robbie Laird: There is still an issue of the different systems. FBB and HSN.
- David Fisichella: Having a centralized box or tool is beneficial and there are different options for doing this. The fleet needs to be under the same policy. There needs to be a group that gets together and establishes a policy before we spend money on the problem.
- David: People that are interested in working in that group, please see him before the end of the meeting.
- Tim Schnoor: He does not have a problem being the bad guy. What will come out of this is policy and technology. There needs to be a statement that explains the policy. Technology will back it up.

### **Thursday, November 17th – Toulouse Room**

9:00 am **Call to Order and Announcements** – David Fisichella called the 4<sup>th</sup> day of the RVTEC meeting to order.

**Short review of the Under Way Seawater Systems Technical Session** - Steve Hartz provided the review.

- The take away for the session was the nomenclature - what these systems are called. Uncontaminated might not be the best word to use.
- Science seawater systems etc. might be a better name to call these systems.
- There is a fight to keep standard flow rate.
- Piping PVC is not ABS approved. Above waterline it is a smoke issue.
- Volume of seachest should be included as meta data.
- Bio-fouling and decontamination are issues.

### **UNOLS Van Pool – Inventory and Plans –**

Wynn Tucker reported on the East Coast UNOLS Van Pool. Her slides are included as **Appendix XXVII**. Commercial shipping is very difficult on the vans. She emphasized that help is needed by RVTEC in maintaining the condition of the vans. They are still having vans returned with issues like wire passes not installed.

West Coast Van Pool - Daryl Swenson provided the report. His slides are included as **Appendix XXVIII**. They are still having problems with the vans coming back in bad condition. They had a van coming back with stuff welded on to it.

Discussion:

- Woody Sutherland- Is there a policy on the vans?
- Jim Holik - There is a flaw in the process.
- David Fisichella - At WHOI, if the PI wants a van and WHOI doesn't have it, the tech group requests the van.
- Bill Fanning suggested a cleaning deposit.
- Daryl - If a van comes back hot, the PI is responsible for cleaning it.
- Richard Perry - Install a placard on the van that says "don't install things, return it clean"
- Daryl - The vanpool operators can come up with a policy and install it in the van.

- Mike Webb - They have similar problem within NOAA. They developed a checklist and the responsible party has to initial it. This makes them more aware of the policy.
- Woody – The policy has to be fleet wide.
- Wynn - They need to determine who the responsible person is.
- Daryl - The responsible person should be a scientist.
- Woody - the tech could be a middle man.
- Mike Webb - Make the policy as simple as possible.
- Joe Malbrough - The policy is posted on the east coast van pool site.
- David Fisichella - How many people have their own vans? Large show of hands. David - He has been in touch with Tim Deering regarding the flooring (dis-similar metals) and Tim has been very helpful. Daryl encouraged all to get in touch with Tim with van problems.
- James Postel - There is the same situation on west coast. JMS encouraged them to contact the west coast pool with problems.
- Rich Findley - What about scintillation counters? Wynn - It comes with the van.
- Woody - They have problems in California with shipping the scintillation counters. They take it out of the van and ship it separately; otherwise they would have to ship the entire van as hazardous material - very expensive. So they ship is separately, but then have to reinstall and recalibrate.

Woody - There were 2 LSC venders - Packard and Beckman. The Packard system works well in the university lab, but not on a ship. The Beckman has alignment rails that work better on ships. Two years ago, Beckman discontinued their LSCs. There are some independent vendors who are willing to service the old LSCs. Now there is a new vendor providing LSC (Hideck?). WHOI and SIO have purchased them and are trying them out. Limited experience, but the results have been good. They will report more in future. The Hideck does not have the radioactive element.

## **RVTEC Subcommittee Reports**

**Post Cruise Assessment Committee** – Daryl Swensen provided the report. His slides are included as **Appendix XXIX**. Jim Holik commented that the agency reps read all of the PCARs. He encouraged the techs to submit the report.

**RVTEC Education Subcommittee** – Rich Findley provided the report. His slides are included as **Appendix XXX**. He summarized the appendix A workshops. U Del has just requested another workshop that they will pay for. Rich said that one problem is low attendance by the scientists at the workshops. Appendix B is coming soon.

**8th INMARTECH**: NIOZ, Tentatively September 26-28 2012 – Daryl Swensen provided the report. His slides are included as **Appendix XXXI**. Planning has just begun and they are interested in changing the format from previous meetings. Ideas of things that you would like to see at the INMARTECH meeting should be suggested to Daryl. Start planning now for attending the international meeting.

- Jim Holik - If you go, plan to be a presenter.

## **Break**

**2012 RVTEC Meeting Host Institution** – The list of meetings from past years is



**included as Appendix of XXXII. The meeting requires a lot of space and lab area.** Next year's meeting will be at LDEO.

- Dale Chayes - If there were enough interest, he would provide space where they could set up data acquisition systems for the week. The auditorium would be used for the general group discussions. RVTEC was the first group to use the LDEO auditorium.
- David Fisichella - plan on bringing interesting things. These can be set up and left for the week.
- David - we haven't set the dates, but could consider bumping up to INMARTECH.

## **UNOLS Reports**

FIC – Annette DeSilva provided the report. Her slides are included as **Appendix XXXIII.**

- Marc Willis is the RVTEC representative for FIC, but could not attend the meeting.
- NSF requested changing the six classes of UNOLS vessels to a four-class system.
- FIC is review the service life memos and end dates of the vessels.
- FIC has been asked to provide feedback on the suggestion to transfer the WHOI long core to the *Langseth*.
- Chief Scientist Crew training opportunity. Linda Goad funded this program and it has been very successful. Clare Reimers is the PI.
- FIC's major activity will be devoted to evaluating Fleet Size and Fleet planning. How to reduce the size of the fleet? Where is the major future research going to be done?

**RVOC and Safety Committee** – Joe Malbrough provide the report. His slides are included as **Appendix XXXIV.**

- Appendix B needs input and feedback.
- There is a Compliance date of 15 July 2015
- MCD was discussed.
- Woody Sutherland: Are these MCD documents common in other industries?
- Joe: Yes.
- Woody: Are they available?
- Joe - Have not looked into this yet.
- For next years RVTEC would be a good to have some examples of everyone JSA's to see what is looking the best

**AICC and SCOAR** – Steve Hartz provided the report.

- Polar Star will be operational by 2014
- During The AICC meeting, they recognized Dale Chayes as an OUTSTANDING contributor to AICC and arctic research.
- AICC has postponed their fall meeting and it will be held in Jan. of 2012.
- SCOAR
  - SCOAR has been focusing on automated aircraft.
  - CIRPAS has one predator
  - The NAVY is funding a UAS program off a UNOLS Vessels
  - French vessel and *Healy* are having joint operation.

- UAF also involved in lots of AUV Quad copter, Puma aircraft
- Richard Perry: Permitting delay for Healy?
- Steve: Explaining the difficulties of permitting and using AUV's and the coop agreement with FAA.

**UNOLS Report** – David Fisichella provided the UNOLS Report. His slides are included as **Appendix XXXV**.

- There is a small group working to foster UNOLS and NOAA cooperation.
- Bruce Corliss has recommended a UNOLS Speaker Series. It is targeting under privileged university. RVTEC feed back is needed.
- Another initiative is Greening of the fleet. A workshop is planned for January 2013.

### **Ship Design/Construction Updates:**

**R/V Sikuliaq** –Steve Hartz provided the report. His slides with images of the ship construction are included as **Appendix XXXVI**.

- Marc Willis is the technical director for the build
- Things are moving faster and faster since the build has started

**Ocean Class Research Vessel Status** – Tim Schnoor provided the report. His slides are included as **Appendix XXXVII**.

- Mike Prince is leading the effort.
- A year from now Mike will be showing images similar to the ones that Steve Hartz presented.
- They have less money for design changes than Sikuliaq.
- There is one large crane aft. One portable crane forward. One fixed crane forward.
- They are not sure what they will be getting for engines.
- The ship timeline is in the slides.

**Regional Class Update** – Jim Holik provided the report. The Regional Class Research Vessel is going through internal NSF review.

**Meeting Format Discussion** – David Fisichella lead a general discussion on this year's meeting format. Alice Doyle will send a survey after the meeting.

**Closing Remarks** – David Fisichella thanked everyone for making this a successful meeting.

Dale Chayes made a motion to adjourn the meeting. Robbie Laird provided a second to the motion. The motion passed.

### **Adjourn RVTEC Meeting**

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**Training Session** - CTD Troubleshooting and Calibration. Slides are included as Appendix XXXVIII.

## **RVTEC Manager Roundtable Discussion**

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**Friday, November 18th - Toulouse Room**

**Two Training Sessions were held concurrently:**

- **Short Course on Automated Underway Meteorological Observation –**  
Facilitators: Chris Fairall (NOAA), Dan Wolfe (NOAA), and Shawn Smith (FSU).
- **Fiber Optic Termination Demo –** Andrew Girard (WHOI).