

Meeting Minutes

Tuesday November 1, 2016

Meeting Called to Order

RVTEC Chair, Scott Ferguson, called the 2016 RVTEC meeting to order at 8:30 am on November 1st. The meeting was hosted by the Scripps Institution of Oceanography (SIO). The meeting followed the agenda except as noted within these minutes.

Introductory Remarks

Dr. Bruce Appelgate of Scripps Institution of Oceanography, welcomed RVTEC to SIO. He provided an overview of SIO. He expressed his appreciation for the efforts and skills of the RVTEC community.

Science Talk

Dr. Guy Masters, Deputy Director of Research at SIO. He provided a broad overview of the diverse research at SIO. He expressed that research at Scripps covers a broad spectrum of ocean sciences from the atmosphere to the oceans.

Dr. Masters described the platforms at SIO available for ocean observations. He gave a historical perspective of early research and compared that to the current research and tools available for oceanographic measurements. He also compared the measurements from autonomous Argo floats to measurements of research vessels. He stressed that vessels still provide the best access to the sea for research.

He concluded by discussing the importance of polar research and atmospheric research. Both are important to measuring global sea level rise. SIO researchers are also using data from LIDAR measurements to predict effects from sea level rise or the event of a tsunami.

Introductions

All participants introduced themselves.

Icebreaker Session

University of Miami – Walton Smith – Annette DeSilva

U. Miami technicians were unable to attend due to shipyard obligations. The 5 Yr. R/V Seward Johnson project has come to an end. Equipment from that project will be made available to the community through Jim Holik.

University of Washington - Clifford A. Barnes – Michael Foy

Michael summarized the year operations. He described a challenging trip where the data acquisition system did not come up as expected and CTD operations were impacted by electronics problems. The cruise was also plagued by engine failures.

University of Washington - Thomas G. Thompson – Loren Tuttle

Loren introduced himself as the new tech manager at UW. He described the current challenges of the mid-life refit on Thomas G. Thompson. Prior to dry dock the ship stripped bare for the refit.

Bermuda Institute of Ocean Sciences– Atlantic Explorer - Mason Schettig

Mason introduced himself. He described a CTD operational challenge. The LCI-90 malfunctioned, he was able to troubleshoot the issue and described Niskin closure challenges on their rosette package.

Woods Hole Oceanographic Institution - Atlantis - Cris Seaton

Cris described challenges with Hiseasnet upgrades and Chief Scientist training cruises.

Woods Hole Oceanographic Institution - Neil Armstrong - Joseph McCabe

Joseph introduced himself and discussed the operational challenges with a new ship and entering shipyard.

University of Minnesota – Blue Heron - Jason Agnich

Jason described sailing with URI adding a mass spectrometer to a Triaxis vehicle. The cruise in March on the *R/V Endeavor* was challenging with equipment surprises and cable failures.

University of Rhode Island – Endeavor – Lynne Butler

Lynn described a high tension event while piston coring with the trawl winch using 9/16” wire rope. Safety procedures were followed but the tension exceeded the rating of the block that was installed. The block was retired after the high tension event and ship systems required inspection.

University of Delaware – Hugh R. Sharp - KG Fairbarn

KG introduced himself and discussed the challenges of being a new technician. He also described the challenges of creating documentation for ship systems to allow new technicians on the vessel be oriented to the ship.

University of Hawaii – Kilo Moana – Jeff Koch

Jeff described the challenges of moving the UH Marine Center to a new location. He described the advantages the new facility provides. The Kilo Moana also has gone through engine upgrades

Scripps Institution of Oceanography – Roger Revelle - Drew Cole

Drew discussed several challenges. Shipyard, 36 - place rosette loss and recovery. The Hiseasnet radome was also replaced.

Scripps Institution of Oceanography – Sally Ride - Melissa Miller

Melissa described the challenges of outfitting a new vessel. She also described the Hiseasnet installation and outreach being conducted.

Scripps Institution of Oceanography – Robert Gordon Sproul - Drew Cole

Drew discussed the challenges of FBB keeping up with user expectations. He also discussed the deploying FLIP moorings on the vessel.

Scripps Institution of Oceanography – FLIP - Drew Cole

Drew discussed the challenges of installing new science systems on this unique platform. He also discussed the user expectations of FBB bandwidth.

LUMCON – Pelican – Marshall Kormanec

Marshall described the challenges of LIDAR optical research conducted this year on Pelican.

Skidaway Institute of Oceanography – Savannah – Zachary Tait

Zachary introduced himself and described the challenge of the recent hurricane damage. He also described collaborating with the crew Hugh R. Sharp.

Oregon State University – Oceanus – Brandon D’Andrea

Brandon gave an overview of operations this year. He described a challenge of LCI-90 repairs

Lamont-Doherty Earth Observatory – Marcus G. Langseth – Jeff Rupert

Jeff described the recent seismic streamer upgrades. He outlined the cost savings of equipment that was acquired and the challenges of assembling a 12.6km streamer. They also plan to deploy a 15km Streamer.

University of Alaska, Fairbanks – Sikuliaq – Steve Hartz

Steve introduced himself and described a challenging weather situation that damaged the chocks on the vessel. The ship is currently working in the Arctic. He described the challenges of integrations of science user’s system into the ship. The science systems were not up to date and there was difficulty in getting them integrated.

Tech Pool – Tina Thomas

Tina discussed vessel assignments this year. She sailed on the Atlantic Explorer and Neil Armstrong this year.

NOAA Vessels – Don Jones

Don discussed the Kongsberg sonar systems on the Reuben Lasker. The MS 70 system began to ping, stopped, then smoked. The system had a catastrophic power supply failure. A new, custom, power on sequence was needed.

USAP Vessels - Nathaniel B. Palmer - Laurence M Gould - Valerie Warner

Valerie gave an overview of cruise highlights. She discussed a dinosaur’s shoulder blade that was sampled, mooring cruises, and growing pains with a new

RHIB added to the vessel. USAP is building a new display system and has installed a Fx system.

Schmidt Ocean Institute - Falkor - Stian Alesandrini

Stian discussed several challenges this year including a generator failure that caused a cruise to be cancelled. A Vietnamese cruise was cancelled due to permitting issues. SOI is building a new ROV SuBastian that will enter service in the next several months. This requires a new ROV team.

Stony Brook University – Seawolf – Tom Wilson

Tom discussed challenges installed and testing a data collection system on a ferry in Tanzania. The system had to be shipped as checked luggage. There were border and travel challenges in getting to the vessel. The pelican cases used as luggage served as the electronic enclosures.

Sea Education Association (SEA) Vessels – Sarah Fuller

Sarah introduced the SEA vessels. She described a challenge of finding the correct spooler to work with their vessel. Custom arbors had to be made for a Reel-o-Matic to off spool the cable. A custom solution had to be rigged to spool the cable back on the vessel.

Ocean Exploration Trust – Nautilus – Justin Lowe

Justin described a challenge with a PPS error on a MBES. The resolution was spring fingers on an adjacent board was shorting the system.

STARC – Healy - Brett Hembrough USCG – Healy –Ensign Taylor Peace

Taylor Peace discussed the final season cruise HLY1603 which included dredging and multibeam operations. She also discussed HLY1602 mooring operations and HLY1601 challenges with ice and mechanical failures. Brett Hembrough introduced himself as the new STARC coordinator. He discussed the challenges of working in the Arctic and the STARC program.

Agency Reports

NSF - Jim Holik

Jim Holik reported that the federal government is currently in a continuing resolution. He reported on changes in IODP including a new overview panel for Joides Resolution. These changes have resulted in a cost savings. Jim announced SATNAG Satellite Network Advisory Group. Comprised of Jon Meyer, Ken Feldman, John Haverlack and Laura Stolp.

ONR - Mike Prince

Mike reported on the ONR fleet. First the Neil Armstrong and Sally Ride have been delivered, tested and inspected. Next is the project to extend the life of the ONR Global class vessels beginning with Thompson, Revelle, then Atlantis. The Kilo Moana has been going through propulsion and control system upgrades. Other projects included DURIP funded instrumentation on Neil Armstrong and Sally Ride, this includes, HiPaP,

EK80, shallow water MBES. As part of the refit on Global class vessels MBES, OTS, and instrumentation upgrades are being planned. Two issues to consider as these vessels become more complex is how to provide the needed technical support and bandwidth needs.

NOAA - Don Jones

Don reported on NOAA activities. NOAA is currently assessing aging vessels in their fleet. They are closely monitoring the refit of ONR Global vessels. ABS has been contracted to conduct end of life assessments. The Thomas Jefferson just conducted a significant refit. Unmanned ASV systems are being implemented to augment survey activities. Cybersecurity has been an active area of policy development. Sensor upgrades, SCADA strategies and Shipboard Network upgrades. Data management in the form of NIST traceable calibrations, SAMOS participation. SCS version 5 is in development targeted for release mid 2017.

USCG - Dave Forcucci

Dave gave an overview of USCG icebreaker operations. The life of the Polar Star has been extended, the Polar Sea is not in service. The Healy has not had NSF funded cruises this year or next year. STARC has had significant turnover. USCG is in the process of designing a new icebreaker. A new committee is being formed to address research operations in the Arctic. An outcome of that committee had been a Standards of Care.

MISO - Jim Holik

Jim started with discussing the desire for more bandwidth and provide a more common experience with managing bandwidth. Reporting for Dan Fornari on MISO multicoring and towcam operations in 2016. He discussed cruises on Thompson, Atlantis, and Sikuliaq. On the R/V Savannah on conducting wire was available, a mini towcam was assembled instead. Towcam was used on R/V Armstrong to image an upside down trawl resistant OBS. NSF will continue to support MISO camera system in 2017. A list of equipment in the inventory was provided and an overview of 2017 work.

Side Discussion

A brief discussion absolute gravity stations UH, UW, SIO, and USCG facilities are in need of replacement gravity tie stations. UH received excellent support getting a replacement. Woody Sutherland is working to have West Coast stations updated.

Introduction of Friday Training Sessions

Kevin Walsh provided an overview of the in depth Hiseasnet training sessions. Topics include Satellite 101, Sea Tel operator training, Teledyne Paradise modem configuration, Sally Ride demo, Technical Q&A.

Dale Chayes gave an overview of the hands-on transducer impedance. He provided a list of homework for attendees.

Lunch

Lunch was held at the Scripps Seaside Forum.

Introduction of Afternoon Sessions

1:30 PM - 3:00 PM

Electronic Design - Tom Wilson, SUNY

Peplink and Cyberoam Configuration - Jon Meyer, SIO

Data Acquisition Systems - Dave Fisichella, WHOI

3:20 PM - 4:50 PM

Lithium Battery Shipping Storage and Handling - Gary Lain, SIO

Troubleshooting Serial Communications - Toby Martin, UH

Data Acquisition Show and Tell

End Day One

6:00 PM - 8:00 PM - SIO hosted reception at Birch Aquarium

Wednesday November 2, 2016

Discussion

Scott called the meeting to order.

The meeting was broken into groups for breakout sessions and tours of Nimitz Marine Facility per the meeting Agenda.

Thursday November 3, 2016

Discussion

Scott called the meeting to order and began with a summary of Tuesday sessions.

Tom Wilson Tuesday session

20 people attended. He discussed that electronic design is a lot like troubleshooting. Starting from the big picture to the small details.

Presentations

Jon Meyer Peplink

Discussion of the options of how to connect to the internet. Overview of the tools to manage traffic.

Dave Fisichella Data Acquisition

The session was well attended. There a discussion of not only data acquisition but data display.

There was discussion on whether there should be more uniformity or specification on data acquisition systems. Scott agreed that a list of data acquisition standards. There should also be a discussion of quality assessment and quality assurance. The volume of data was not discussed but is increasing

Toby Martin

The group started with a bundle of wires and progressed to serial comms troubleshooting.

Lithium battery Session

His presentation is a good reference and will be posted.

Nandita Sankar

Nandita gave an overview of MATE. There have been over 300 placements. The program is currently funded until 2017 and typically hosts 12-17 interns per year. The program

hosts one long term six month intern. Elizabeth Ricci was the long term intern this year. The six month intern placement is completely dependent on the skill set of the intern. About 50 applications are received every year. The summer intern number 12-15 per year. They try to balance the placement with shore and sea work. The host makes the decision on interviewing and accepting candidates. Alice Doyle and Nandita screen the applicants. Mate is a matching program for interns. The program is NSF funding and takes care of the costs. The goal is for interns to gain experience for possible employment. Interns learn about the diversity of oceanography. Interns this reported a positive experience and reported their mentor served as a professional role model. The MATE program thanks hosts institutions. The mentors were satisfied with the process and the interns.

Elizabeth Ricci

She summarized her 6 month experience. She was first assigned to UH and the BIOS. She is very grateful for the technical training and mentor ship. Slide show is here

Kevin Walsh Hiseasnet

Kevin introduced himself and discussed an exciting year. Jon Meyer has moved over to STS.

- He is going to talk about network scaling.
- He will introduce a new Ku service.
- Slack has been upgraded to a commercial version.
- InMon Traffic Sentinel implementation.
- Life Cycle Replacements and Future Directions

Hiseasnet leased space segment on Intelsat global beams, the Atlantic, Pacific, and Indian Ocean. Getting ready for a Transatlantic ocean Ku beam. This will give the Atlantic vessels more coverage. There is a tool for a Hiseasnet customer service information online. The Hiseasnet team is available on Slack as a troubleshooting tool. Langseth is a top talker on Hiseasnet.

Goals for 2017

- Matrix support with STS
- Lifecycle replacements. Radomes, LMR600, Bigger Amps
- Better integration with FBB and GX
- Standardize reference architecture
- Engineer for increased bandwidth
- Manage bandwidth as an end to end service
- Routine system checks during mobilization
- Continue to baseline systems and operations

Al Suchy FBB and GX

Al introduced the program has been extended.

- User count has increased from 75 to 100
- Biggest customers are UNOLS and OOI
- Unused bandwidth will carry forward

The fleet Express units

- Revelle
- Palmer
- Sikuliaq

- Armstrong
Coming Soon
- Oceanus
- Atlantic Explorer

Important Aspects of Installation

Antenna Location

Need to be commissioned by Inmarsat

Network Service Device (NSD) integration into ship network

Piers Chapman - Marine Technician Pool

Marine technicians have a large amount of expertise. This knowledge needs to be passed down to future techs. The technician pool provides a way to introduce new technicians to the fleet. By putting people into the pool this allows for informal technology transfer.

How does it work?

- Program started in 2016
- Works closely with Alice Doyle to hire and place technicians.
- Technicians considered independent contractors.
- Technicians responsible for own medical coverage
- Eligible for training workshops > 100 days per year
- Work is not guaranteed

There are currently eight technicians in the pool.

- Flexibility to hire people quickly
- Good communication is vital
- Centralized schedules and point of contact make things much easier
- Need knowledge of skills and technical needs
- Interest has grown as people become familiar with the system

Alice Doyle - Tech Exchange and tech pool

48 cruises on 14 different vessels

19 tech exchanges

29 Tech Pool

There continues to be positive feedback from the tech exchange program and the tech pool program.

Discussion

Dale: What is the career path?

Jim: The goal is to fill immediate needs

Justin: BIOS would like to train technicians that can gain experience elsewhere

Ethan: It could be difficult to retain new talent with this model

James: NSF Health insurance option could be geocare

Scott: The community should be onboard with providing opportunity

Alice: Tech exchanges provide different perspectives

Scott: Managers could help with technicians moving to shore positions but is a difficult transition.

Dale: How do we maintain high caliber talent at sea

There is disagreement over whether techs are crew or not

A lively exchange was held

Ted Colburn

Ted introduces himself as science inspector for JMS with NSF ship inspection program. The goal is to maintain UNOLS standards. Recent and upcoming inspections are listed in the presentation. Appendix A is coming along well in terms of compliance. An Appendix A assist sheet is available to complete before inspections. There were several changes in the recent rewrite. Primarily there should be an extenuating circumstances plan. There should be a plan for possible tension member emergency scenarios. Additional guidelines are lubricating of wires and fresh water wash down. Most older system are limited to FS of 5.0. Wire train diagram description is helpful to illustrate the systems. Are the monitoring systems staying within the tolerance limits? Be careful how blocks are labeled clear labels are important. Appendix B many MCD are done but there is a long way to go. Some areas will need technical expertise. Appendix B assist sheets are available for the system and components. The challenge with B is to figure out how to test systems.

Common Findings

- Are controls labeled?
- Independent safety devices are important
- Make sure there is a lithium battery plan
- Safety briefing is important, cruise planning manual
- Realistic drills are important
- Technicians should conduct training for technicians
- Clear muster plans
- Sink labeling

Observations from around the fleet were referenced and can be found in his presentation

UNOLS Committee Reports

UNOLS Report - Annette

Overview of UNOLS activities

Policy activities

No retired ships, two new vessels, midlife being planned for

Issues

- Pregnancy at sea
- Spaces for Nursing mothers
- Sexual harassment prevention

There is currently a group gathering information on these issues. There is also a document being created for guidelines and recommendations.

Policy regarding UAS on UNOLS ships. More to come in SOAR report

Chief Scientist training workshops, there were seven programs in 2016. Goal is to have better trained Chief scientists to submit proposals for ship time. A lessons learned document would be helpful. Workshops and meetings have also been very active this year.

FIC

The committee is documenting what is going well and what needs improvement with the current new ships and apply this to future ships. Science mission requirements are in the process of being updated for global class vessels.

RVOC Safety committee - Bill Fanning

The safety committee coordinates the distribution of safety guidelines

Topics

- Who is on the committee
- Exemptions
- Lithium battery safety
- LCI 90 issues
- UAS safety

AICC - Steve Hartz

Two meeting a year. The committee developed to coordinate activities.

Topics

US is fast-tracking a heavy icebreaker.

There is significant activity in the international community in developing

Removal of science gear from the Polar Star is a possibility

Work to mitigate consequences on Native communities

SCOAR

One meeting this year. Discussion of the funding environment. The meeting was in June. The FAA has issued new regulations on UAS. In 2015 Sikuliaq had several UAS systems onboard. There have been instances unsanctioned flight off vessels. A subcommittee has been created for shipboard activates. Some guidelines have been created for operators and users.

Discussion

Lee - There are instances of users bringing tethered vehicles with exemptions that were not correct according to the university

Steve - UAF is trying to guide this process through university departments

Dave F - Operators should be able to determine what is safe

Annette - That is the guidance from UNOLS

Scott - There should be session on this topic next year

RCRV

- May an RFI was released
- RFP has been released
- Final design review
- Operator selection. OSU will operate the first one.

How many will be built is currently unknown.

INMARTECH

Discussion of INMARTECH

Telepresence and expended bandwidth lessons learned

Kevin Topics

- Definition of bandwidth
- Hiseasnet current baseline is Mbit
- Hiseasnet is capable of 30 Mbit

Seven expansions in 2016. There were a number of lessons learned.

Systems of systems approach

End to end path test

Application ports and protocols defined in advance

End points defined in advance

Bi-directional application

Ken Topics

Check presentation

John Haverlack

Bandwidth upgrade on Sikuliaq

Synthetic rope Gravity Coring - Jim Holik

Check presentation

R2R Update - Bob Arko

Check Presentation

Tagging underwater Video - Vicki Ferrini

See Presentation

East Coast Winch Pool Update - Josh Eaton

See Presentation

West Coast Winch Pool - Aaron Davis

See Presentation

UHDAS ADCP Update - Jules Hummon

Concluding the UHDAS presentation the afternoon breakout sessions began.

The meeting was adjourned at the conclusion of the afternoon breakout sessions