

Draft

**Research Vessel Technical Enhancement Committee (RVTEC) Meeting
University of Miami, Rosenstiel School of Marine and Atmospheric Science (RSMAS)
Miami, Florida
3-5 November 2015
Meeting Minutes**

Appendix List

I	Participant List
II	RSMAS Welcome Remarks
III	Science Talk: OceanScope
IV	RVTEC Icebreaker Session
V	Multidisciplinary Instrumentation in Support of Oceanography (MISO)
VI	Potential Fields Pool Equipment (PFPE)
VII	National Science Foundation (NSF) Report
VIII	Office of Naval Research (ONR) Report
IX	National Oceanic and Atmospheric Administration (NOAA) Report
X	MATE update
XI	HiSeasNet (HSN) Update
XII	Fleet Broadband/ Global Express updates
XIII	INMARSAT Report
XIV	OSU Marine Sediment Sampling (MARSSAM) Group (formerly NORCOR)
XV	East Coast Winch Pool
XVI	West Coast Winch Pool
XVII	Operation SWAB
XVIII	Sikuliaq Automated Windows Print Driver Installer
XIX	UNOLS Report
XX	Fleet Improvement Committee Report
XXI	RVOC and Safety Committee Report
XXII	Arctic Icebreaker Coordinating Committee Report
XXIII	R/V <i>Sally Ride</i> Update
XXIV	ADCP/UHDAS Report
XXV	Multibeam Advisory Committee (MAC) Update
XXVI	JMS Inspection Report - XXVIa – Appendix A Assist Sheet - XXVIb – Appendix B Assist Sheet
XXVII	Rolling Deck to Repository (R2R) Update
XXVIII	AIS Applications
XXIX	Safety Programs for Technicians and Scientists
XXX	Breakout Session Material: - XXXa – Breakout: Sikuliaq Cyberroam Deployment and Network Usage Data Collection - XXXb – Breakout: Troubleshooting Session - HiSeasNet - XXXc – Breakout: Troubleshooting Session – Serial Communications - XXXd – Breakout: Cyberroam & Peplink – Bandwidth Management Tools for Ships of all Sizes - XXXe – Breakout: Workshop on NSF OCE Instrumentation Proposals

Meeting Minutes:

Tuesday, 3 November 2015 - Courtyard Marriott Coconut Grove, Ballroom A&B

Meeting Called to Order – RVTEC Chair, Scott Ferguson, called the 2015 RVTEC meeting to order at 8:30 am on November 3rd. The meeting was hosted by the University of Miami, Rosenstiel School of Marine and Atmospheric Science (RSMAS). The meeting followed the [agenda](#) except as noted within these minutes.

Welcome Remarks – Dr. Peter Ortner from the University of Miami, RSMAS, welcomed RVTEC to Miami. He provided an overview of the RSMAS campus including the student population, academic programs, and facility descriptions. His overview is provided as [Appendix II](#).

Science Talk – Dr. Peter Ortner, continued with a science talk on OceanScope: the Satellites of the Sea. His slides are included as [Appendix III](#). Peter explained that OceanScope is unique in that it works to directly measure ocean currents, to create synergies by integrating circulation measurements with chemical and biological measurements and to freely distribute these data to the international research and operational ocean communities.

Peter described the “OceanScope” vessel capabilities along with a description of the AMOS installation and technologies. Their current fleet of vessels includes cruise ships. They have experienced issues with bubble sweepdown. For full details about the program, see Appendix III.

In conclusion, Peter stated that OceanScope can provide unique information that complements the research fleet and GOOS.

Accept Minutes – A motion was made to accept the minutes of November 2014 RVTEC Meeting (Fischella/Findley). The motion passed.

RVTEC Participant Introduction – Meeting participants introduced themselves. The participant list is included as [Appendix I](#).

Icebreaker Session – A representative from each of the ship operations presented one slide that described a technical/operational crisis from the past year and how it was resolved it. All of the slides have been compiled into one pdf document and are available as [Appendix IV](#).

- Walton Smith – Aubri Steele made the presentation for Denis Ilias who is at sea. Images of various at-sea operations from this year were displayed.
- University of Washington: Darcy Balcarce & Jennifer Nomura made the presentations on *Thomas G. Thompson* and *Clifford A. Barnes*. On the *Thompson*, the first challenge was supporting the OOI cruise that was sandwiched between *Jason* cruises. That left little time for staging. Another challenge was getting a winch for the TAO buoys cruise. On *Clifford A. Barnes* there were challenges with Wi-Fi cellular data use in Puget Sound. Another problem was experienced with the CTD conducting cable.
- BIOS – *Atlantic Explorer* - Nick Matthews and Jeremiah Brower made the presentation. There was an intensive cruise that included operations with AUVs, ROVs, etc. This resulted in a lot of

Internet demand. The bandwidth is limited. Nick has been prioritizing use and creating use policies for bandwidth. Jeremiah explained that there were serial communication problems with the Sperry gyro. This was related to wiring issues aboard *Atlantic Explorer*.

- Woods Hole Oceanographic Institution - *Atlantis* - David Fisichella reported that his greatest challenge was been bringing the new vessel (*Armstrong*) on line. The ship is now on its maiden voyage heading to San Francisco from Anacortes, WA. One major challenge was that Dakota Creek Shipyard could not do the Phase III ship outfitting. A new shipyard will complete the work. There will be science verification cruises planned to test out and evaluate the systems. Science operations will begin in 2016.
- University of Minnesota - *Blue Heron* - Jason Agnich gave the report (no slide). His biggest challenge was with the Triaxis. It is still not working.
- University of Rhode Island - *Endeavor* - Bill Fanning reported that the technician pool worked out well for staffing cruises. This year *Endeavor* was equipped with a 1.5-meter dish to support telepresence operations. The URI Provost funded the system. Live video was streamed for one month over the summer. It was cost effective. There is now a cruise utilizing Telepresence to link the chief scientist into the cruise. The chief scientist is pregnant and cannot participate in the at-sea operations.
- University of Delaware - *Hugh R. Sharp* - Max Rekowski provided the report. The biggest challenge they have had is with the RDI. They talk to Jules Hummon when in trouble. Another problem was with the Multibeam system. It would not sync correctly.
- University of Hawaii - *Kilo Moana* - Trevor Young reported that they experienced a rain event that filled the J-Box on the winch. They replaced what they could, but lost the strain gauges. The resisters were replaced and it works.
- Scripps Institution of Oceanography:
 - *Robert Gordon Sproul* - Tony Galecki reported on the experiment conducted on *Sproul* using biodiesel fuel.
 - *Roger Revelle* - Tony Galecki reported that the ship had a lot of international work and shipping requirements were intense.
- LUMCON - *Pelican* - Ross Turlington provided the report. Marah has joined the operation and has been with the ship for two weeks. Ross came aboard this year. He will transition to the wheelhouse.
- Oregon State University - *Oceanus* - Johna Winters provided the report. The ship supported OOI work this year. The OOI moorings are very large and this creates a variety of challenges. The ship must return to port for each deployment because the deck is too small to carry multiple moorings. They made it work.
- L-DEO - *Marcus G. Langseth* - Alan Thompson reported that this year they broke much less equipment. Everything went well and they are processing the data.
- University of Alaska Fairbanks - *Sikuliaq* - Steve Hartz and John Havalack provided the report. The ship is not an icebreaker, but they it is ice capable. Bringing a new ship on line has a lot of complications. They took delivery in June 2014 and six months later they were doing science operations. It has been a challenging pace.
- NOAA Vessels - Don Jones reported that this year NOAA sent R/V *Ron Brown* and *Okeanos Explorer* to the Pacific. They faced a few challenges. Thirteen of 16 ships are delayed due to the continuing resolution; however, they still realized an 83% utilization rate. On the *Ron Brown*, the IRIDIUM pilot system was installed to support an Arctic mission.
- STARC/*Healy* - Croy Carlin reported on the "Gremlins of the North." When they went above 86-degrees North, there were Multibeam software issues. The good news is that they made it to the Pole.
- USCG - *Healy* - Bill Cullen reported that at the very high latitudes, they fell off the Internet. A lot of advance warning was given to the science party.

- USAP Vessels: *Nathaniel B. Palmer* and *Laurence M. Gould* - Julie Jackson reported that the major activities of the year included 1) cleaning out their warehouse, 2) implementing a policy for Drone use, and 3) upgrading their Multibeam system.
- Schmidt Ocean Institute (SOI) – *Falkor* - Stian Alesandrini reported that the *Falkor* supported its first seismic cruise. A seamount was discovered and named after the *Falkor*. SOI's 4500m ROV development is well underway. One of the challenges they have been dealing with is the issues associated with operating an older ship. The ship is 35 years old and had a major rebuild in 2012. They have had some ADCP failures that they will try to troubleshoot while in dry-dock. SOI has been low on marine techs and are relying on the tech pool. They hope to hire a new full time position next year.
- Sea Education Association (SEA) Vessels – Jason Clermont reported on the challenge of working in a shipyard in Spain. It was very trying and time consuming.
- Stony Brook University – *Seawolf* - Alex Sneddon reported on the saga of their buoy. The buoy broke away during the winter ice. A Facebook page was started to help track the buoy.

RVTEC Chair Elect Call for Nominations – Scott Ferguson requested that any nominations for the Chair-Elect position should be sent to him.

Appendix B – Rich Findley remarked that about four years ago, he and Aubri offered an Appendix A training program. If anyone is interested in Appendix B training send Rich an email or send it out to the RVTEC list serve. Rich will monitor interest for additional training and potential venues.

Multidisciplinary Instrumentation in Support of Oceanography (MISO) Group Update – Dan Fornari (WHOI) began the presentation by thanking the marine technicians for their service to the Fleet. Dan's slides are included as [Appendix V](#).

The Multidisciplinary Instrumentation in Support of Oceanography (MISO) Facility at WHOI provides a well-maintained pool of commonly used and essential digital imaging equipment and associated sensors for large-scale experiments and multidisciplinary field programs. MISO systems have been used on over 50 cruises over the past 13 yrs.

MISO is supported through a '5-year Facility Grant' through the NSF-OCE- OI and MGG Programs. Funding for field-use of the system is supported by grants and contracts from individual science programs through NSF, NOAA, ONR, and foreign research organizations. Dan reviewed the list of institutions with scientists who have used MISO TowCam and related instrumentation. Between 2010-2015 the MISO Facility has funded ~60 WHOI employees. There have been 22 TowCam and related cruises in the last 5 years.

MISO instruments currently available include:

- The WHOI TowCam Systems (4- towed digital deep sea cameras & sampling systems)
- 4 - 16 MP OIS color digital still cameras with water corrected lens
- 8 - deep-sea strobes (300 to 600 watt/sec)
- 2 - deep-sea strobes (150 watt/sec)
- Time-Lapse Deep-Sea Digital Still Camera
- 22 - Deep-Sea Batteries 24VDC (42 amp/hr)
- Deep-Sea ON/OFF Switches capable of controlling power to 24VDC and 120VDC instruments
- Bottom-Moored Acoustic Transponders
- High- & Low- Temperature self-recording loggers for use at hydrothermal vents
- HD video cameras, GoPro cameras, NiMH battery packs

In 2015, they started the program of multicoring with a real-time camera installed and supported of three programs:

- Leila Hamdan – George Mason U. – April 2015 R/V *Pelican* – Gulf of Mexico
- Giuliana Panieri – U.Tromsø, Norway – May 2015 R/V *H. Hanssen* - Svalbard, 80°N
- Allen Reed – NRL – August 2015 R/V *Sharp* – offshore Long Island, NY

In 2016 they will work with UNOLS operators to distribute some of the MISO platforms and discuss options for training shipboard technical personnel in operation of MISO equipment for multicoring. Input from all UNOLS operators on upcoming multicoring programs is requested so that the MISO team can help support them with MISO imaging/sensing equipment. Dan is looking to RVTEC to find out what type of multicoring support is needed.

Discussion:

- Dave Fisichella – In addition to having the imaging tools on the multicore for science, it is also good for operations to show the PIs what the environment is where they are coring.
- Bill Fanning – Are there issues with hockling. Dan – The times you get into trouble is if there is bad weather and the system lands hard. It is designed to land gently. They have been able to avoid hockling by placing the system softly on the bottom.
- Max Rekowski – There was an issue with the MISO operations on the *Sharp*. They had hard landings. Dan – Yes, they were aware of the issues and they worked with the chief scientist.

Dan recognized the individuals who were involved in the development of the MISO systems including Marshall Schwartz, SIO for creating the housings, Steve Libortory (retired WHOI) who helped maintain systems, Terry Hammer, and Rod Catanack who designed the original frame. The engineers have been key to making this happen.

Potential Fields Pool Equipment (PFPE) update – Dan Fornari (WHOI) continued with an update on PFPE. His slides are included as [Appendix VI](#).

PFPE supports the US research fleet in obtaining gravity and magnetic data. They provide equipment and technical support. They support UNOLS vessels as well as gravimetry work throughout NSF.

Prior to 2007, only four gravimeters were permanently installed on US research vessels. An agreement with the Naval Oceanographic Office (NavO) provided access to their gravimeters. NavO terminated their gravimeter program in 2007 forcing US scientists to find a new solution.

In 2007, Fugro offered to sell used BGM-3 gravimeters and spare parts to the UNOLS community. WHOI, SIO, and UAF successfully submitted a proposal to acquire them. This equipment was refurbished and delivered to UNOLS. The acquired equipment included: 7 working gravimeters, 4 gyros, 8 horizontal accelerometers, over 20 power supplies, and over 20 boards.

In June 2009, the PFPE was formed at WHOI. A 2010 award provided PFPE with a 5 year operating budget to support gravimetry on UNOLS vessels. In 2014, PFPE expanded to include USAP and receive support from Polar Programs.

PFPE provides the community with:

- A supply of spares for maintaining the at-sea BGM-3s
- Repair or refurbish of sensors as necessary
- Technical support including on-shore support for the at-sea gravimeters and helping establish best practices.
- Pool equipment

PFPE does not post-process or archive marine gravity data.

Dan reviewed the PFPE technical support, pool gravimeters, and additional resources. He reviewed the 2015 PFPE activities. They have updated instructions on most common repairs and problems. They are striving to make this a document *not* controlled by ITAR and aiming for early 2016 release. Training videos are available on common procedures.

Dan reviewed the activities planned for 2016 (see Appendix VI).

Discussion:

- Jim Holik wants feedback from RVTEC on how this is working.
- Scott Ferguson – It is working very well and the support has been great. James was very helpful.

Introduction of Afternoon sessions – Scott Ferguson said that a big part of being the RVTEC Chair is putting the meeting agenda together. Justin Smith suggested a trouble shooting session. The techs rallied to make this happen.

Afternoon session leaders provided brief descriptions of their respective sessions. The Troubleshooting Session is described in the meeting agenda.

Lunch and Bus to RSMAS Campus – The afternoon sessions were held on the RSMAS campus and followed the schedule below.

	SLAB Seminar Room (capacity 48)	Map & Chart Room (capacity 50)	Dean's Conference Room (capacity 20)
1:30pm – 3:00pm	Basic Troubleshooting: 1:30pm: Troubleshooting 101 – Dale Chayes, UNH 2:20pm: Ship's Power 120 VAC 3-Phase – John Freitag	Underway Data: Best Practices and New Tools – R2R Program Team	Ocean Instrumentation Proposal Writing Seminar – Dan Fornari, WHOI
3:00pm – 3:20pm	Break		
3:20pm – 4:50pm	Basic Troubleshooting: 3:20 pm: Serial Communications – Tom Wilson, Stony Brook	Appendix B Q&A – Aaron Davis, WHOI	Ship/Shore Comms Subcommittee Meeting

5:00pm RVTEC Reception hosted by U. Miami/RSMAS Dean Roni Avissar

Wednesday, 4 November 2015

Courtyard Marriott Coconut Grove, Ballroom A&B

Day-2 Called to Order – Scott Ferguson called day-2 of the RVTEC meeting to order.

Agency Reports:

National Science Foundation (NSF) – Jim Holik (NSF) provided the report. He began with showing an organizational chart of NSF leadership and sections (see [Appendix VII](#)).

NSF is not in a continuing resolution and they have a budget. OCE is expected to have a flat budget; however, if fuel prices stay low more funds will be available for operations.

NSF is addressing the recommendations of the National Academy's *Sea Change* report. The report studied the costs of NSF's large facilities. *Langseth's* operations were specifically cited and as a result NSF recently held a *Langseth* workshop to address future operation plans. NSF also held a coring workshop to discuss strategies for coring. With the retirement of R/V *Knorr*, the long coring facility is no longer available.

Office of Naval Research (ONR) – Tim Schnoor (ONR) provided the report. His slides are included as [Appendix VIII](#).

The Navy operates six UNOLS research vessels. On average the Navy 's annual usage is approximately 1500 days. The also owns one Floating Instrument Platform (*FLIP*). *FLIP* was built in 1962 by Scripps and supports acoustics and air-sea interaction experiments. The Navy also owns one Deep Submergence Vessel, *Alvin*. The vehicle was built by WHOI in 1964.

The activities that keep Tim busy at ONR include:

- Funding ship operations proposals
- Dealing with ship repairs
- Ship inspections: Every 30 months – Navy INSURV
- Ship improvements – DURIP
- Mid-Life Overhauls

Some of the planned projects for the Global Ship mid life refits and Service Life Extension Program (SLEP) include:

- Propulsion and Electrical Replacement
- Bow Thruster Overhaul
- Firefighting systems upgrade
- HVAC/potable water/refrig upgrades
- Ship hardware and systems overhaul
- Scientific support systems

R/V *Thompson's* midlife is funded and will begin in 2016. The Mission Capability Improvements include:

- DESH-5winchoverhaul
- EM302 component replacement
- New CTD Package
- New Ocean Surface Radiometer
- New USBL Transceiver/ Instrument Well
- Computer Network Upgrades

Tim reported on the status of the new Ocean Class ships, R/V's *Neil Armstrong* and *Sally Ride*. The details are included in Appendix VIII.

NOAA – Douglas Perry provided the NOAA Report. His slides are included as [Appendix IX](#).

Doug's briefing reported on

- NOAA's ship and aircraft
- Unmanned Systems

- Data Management

The ships are aging and there is no new funding for construction. The P3 Aircraft is being re-winged.

Doug discussed the UxS vision. The vision is captured in interviews with NOAA Leadership (see Appendix IX). An UxS Steering Committee has been formed to address unmanned technologies (UxS) utilization to enhance mission effectiveness and improve operational efficiency. Some of the initiatives that they will explore include:

- Unmanned Surface Vehicles for hydro survey operations
- Small Unmanned Aircraft Systems for living marine resource survey
- Forecasts and warnings augmented by Unmanned Systems

United States Coast Guard (USCG) – David Forcucci provided the report on the status of the icebreaker fleet. The icebreaker *Polar Sea* has been deactivated and its future is unclear. The *Polar Star* will do the Antarctic break-in. The *Healy* is dedicated to science operations. This year the ship will go into a dry dock period. Every three years the ship goes into dry dock.

President Obama wants to speed up the construction of a new icebreaker.

The new STARC manager is Dan Schuller from SIO.

An USCG outreach program was offered this year. School kids decorated small boats. The boats were then set adrift and the kids tracked them with buoys. There is a web map. They tracked them with buoys that will last a year.

Summary of Tuesday afternoon sessions – Session leaders provided brief recaps of their respective sessions.

Troubleshooting Session – Toby Martin gave a summary of the three topics that were covered. There was interest to repeat the session tomorrow.

R2R:

- Shawn Smith gave an overview of MET.
- Dru Clark gave an overview of a new system that lets them view the device list.
- There was a suggestion of forming a task team.
- They will look into developing a common file that maps which devices are available for a particular cruise. This will allow easy management by operators. This is just a concept at this point.

Appendix B – Aaron Davis said that the Research Vessel Safety Standard Appendix A has been published. Appendix A addresses wires. It was drafted so that the strengths that need to be in place for safe handling systems are known. It takes a lot of effort to comply. The responsibilities for the handling systems are spelled out in the new Appendix B.

Ship to Shore Communications – Jim reported that the discussions mostly focused on Global Express. There will be a pilot program on *Armstrong*. There has also been an increase in throughput by four times in HiSeasNet.

Proposal Writing – Dan Fornari led a discussion on how to strengthen proposals. Think about the users and PIs that will use the systems and get their feedback. Cite all references in the proposal.

MATE update – Nandita Sarkar of the MATE Program provided the report. Her slides are included as [Appendix X](#).

Nandita provided an Internship Program overview. The program started with a NSF UNOLS grant in 1999 to fill the need for marine technicians. The program is currently funded until 2017. Since 1999, 300+ community college and university students have been placed in research vessels, labs and industry settings (~200 were placed on UNOLS vessels).

In summer 2015 there were ten internships. Five of the interns were from community colleges. Interns' interests, knowledge, and skills were matched to mentor requirements. A mentor receives the 3-5 resumes that best match their needs. The mentor makes the final decision on which student(s) they host.

Nandita reviewed the selection process for the 6-month interns. Alice Doyle, Nandita and Tami (MATE) review applicants for marine technical qualifications and determine the top 10-12 finalists. An ad-hoc committee of RVTEC members reviewed the finalists and ranked them. The top 5 candidates from this review are sent to the host(s) to interview, call references, and select.

The 2015 long-term intern was Sonia Brugger with Oregon State University. Nine other interns were placed on UNOLS vessels: *R/V Sharp (2)*, *Thompson (1)*, *Langseth (4)*, and *Pelican (2)*.

MATE has formed a new partnership with Schmidt Ocean Institute.

Nandita asks the Tech groups to:

1. Please commit to providing internship opportunities as soon as possible and consider longer multi-cruise internships.
2. Use the internship to promote marine technical careers– you are great mentors and role models.

Tech Pool – Jim Holik (NSF) reported that a solicitation was advertised to host the Tech Pool. There were good proposals and it was very difficult to come to a decision. Texas A&M won with a very simple model. It was the easiest to start-up. Employees of the pool will be an independent contractor responsible for their own benefits. TAMU will have an umbrella policy for workman's comp. There are three levels of employment – entry, medium, and senior. The salary is a little higher than average. Alice will coordinate the pool and TAMU will coordinate it. Jim hopes this will work, but no one is required to use the tech pool.

Discussion:

- Toby Martin – Will the tech exchanges continue (techs not working on a ship because of a layup)? Jim Holik – The tech exchanges will continue and take precedence over the pool.
- Ted Coburn – It would be good to have the tech pool techs come to RVTEC. Jim – Funds for this are in the contract.
- John Ahern – Is there any discussion about group benefits? Jim – there isn't, but this could be considered.
- Bruce Felix – Has there been any discussion about USAP and NSF coordinating? Alice – There is a UNOLS Multibeam tech that will be on the *Palmer*. We are starting this up again.
- Question – The people who work in the pool will not work for UNOLS? Jim – That is correct. They would be independent contractors.
- Question - How will it be decided on who goes where and when? Jim - Alice will assist.
- Woody Sutherland – Who is the direct supervisor of the pool techs? Jim – The manager on the ship.
- If you are interested in being in the pool contact Alice.

Break

Ship/Shore Comms:

HiSeasNet (HSN) Update status and directions - Kevin Walsh provided the report and he is happy to be a part of the community. His slides are included as [Appendix XI](#).

Kevin reviewed the 2015 transitions and highlights. The transitions included the HiSeasNet team and the network infrastructure. The new Q-Flex modems were fully fielded on ships and shore. Bandwidth increased four times at twice the price.

Steve Foley, the heart and soul of HiSeasNet, has moved on to be a farmer. He supported HiSeasNet for 13+ years. Kevin Walsh has taken over the position and requested patience during the transition.

HiSeasNet 2.0 enables new capabilities for scientific users. It is all IP architecture with no more serial interfaces. It enables better remote support, monitoring and measurement. There is rapid response 7 days a week. HiSeasNet is delivering mainstream maritime SatCom services tailored to the oceanographic research community.

Discussion:

- Bill Fanning – Can you put together emergency contact information. Kevin – they will do that.

Fleet Broadband/ Global Express updates – The slides are included as [Appendix XII](#).

The program was established 1 January 2010 and has been extended through Oct 2016. The user count has increased from 75 to 100 and the rate has been steady at \$0.70/MB. The total pool size is established at just over 200 GB/Month.

The unused FBB balance will carry-forward month to month within the annual period. If the user pool exceeds allowance, use rate continues at \$0.70/MB. The plan has allowances for Global Express transition.

The Global Express pilot program ships in 2015 include *Revelle*, *Sikuliaq*, and *Armstrong*.

The Service Plan will include a flat monthly rate for both Ka and L (FBB) bands. There will be no cost for usage during trial.

If an emergency comes up, don't hesitate to call the emergency number.

A presentation on Inmarsat and Global Xpress is included as [Appendix XIII](#).

OSU Marine Sediment Sampling (MARSSAM) Group (formerly NORCOR) – Mitch Lyle (OSU) provided the report. His slides are included as [Appendix XIV](#).

The MARSSAM people include:

- Mitch Lyle: director
- Chris Moser: Coring tech
- Paul Walczak: Coring logistics and Tech
- Additional techs as needed from other groups

Mitch explained why coring is still needed. The majority of cores taken before 1972 were poorly sited and poorly navigated. Modern GPS navigation, digital sub bottom profiling, multibeam mapping, and station keeping means that we can now hit 1 km targets. Coming into the 21st century all the tools to survey and core effectively were developed. Good cores don't last forever and sampling is usually destructive. Cores dry out and lose integrity over time. The majority of cores have been in repositories for >40 years.

MARSSAM specialties include:

- Piston coring/'big Bertha' gravity coring: sampling 5-20 m sediment sections
- Gravity coring from large and small platforms: sampling 2-3 m sediments
- Multicoring: sampling the top 0.5 m
- Ability to stage multiple coring operations at the same time.

UNOLS coring plans in 2016 include:

- Coring test *Sikuliaq*; February
- Coring test *Armstrong*; June
- Coring test *Ride*; August
- Jamaica coring: Holocene hurricane history; September, *Atlantis*

UNOLS Challenges: next 5 years

- Turnover in Technician pool: retirements and replacements
- Turnover in UNOLS fleet: new ships coming on line
- Turnover among scientists: Loss of experienced chief scientists
- Fewer field operations: budgets are low, costs going up

Details of these challengers are provided in the slides.

Winch Pool Updates – Aaron Davis, SIO and Brian Guest, WHOI:

East Coast Winch Pool (ECWP) – Brian Guest reported. His slides are included as [Appendix XV](#).

The ECWP was established in 2009 as a single point of contact for over boarding systems. They provide portable winch systems in support of oceanographic research. They also provide expertise in tension member spooling for both portable and shipboard winches.

The ECWP team includes Jamie Haley (maintenance), Josh Eaton (engineering), and Brian Guest (management).

The ECWP winch assets include:

- 2 ea. MacArtney MASH2K (one with MRU)
- 2 ea MacArtney MASH4K
- 2 ea Dynacon 10030 Light duty winches
- 1 ea Hawboldt Medium duty
- 1 ea Dynacon Medium duty (GEOTRACES)
- 1 ea Rapp Hydema Heavy duty (Jason)
- 1 ea TSE mooring spooler
- 1 ea Sea-Mac 1300 lb SWT

The non-winch assets are listed in the slides.

2015 was a busy year with 22 deployments so far totaling 519 days of ECWP equipment usage.

In 2012 the ECWP established a web site to allow users to request equipment for their work, provide information about our equipment, and to improve asset management.

West Coast Winch Pool (WCWP) - Aaron Davis provided the report and his slides are included as [Appendix XVI](#).

The WCWP is a shared-use facility working to procure the most frequently used winches and other handling gear. Their staff handles maintenance, repairs, and upgrades.

Science parties conducting NSF-funded research generally incur no costs (freight included). Others pay a “day rate” and the cost of freight. Routine maintenance is paid for with day rates. All other expenses funded via an NSF grant.

Aaron reviewed the pool assets.

The West Coast Winch Pool will take old equipment from institutions that aren’t using the equipment and will refurbish it.

Intro of afternoon sessions – session leaders provided brief introductions. The sessions are listed below.

	SLAB 2 nd Floor Conference Room	Map & Chart Room (capacity 50)	CIMAS Conference Room (cap 22)	Dean’s Conference Room (DCR)(capacity 20)
1:00pm – 2:15pm	Cyberroam & Peplink - Bandwidth Management Tools for ships of all sizes – Tony Galecki, SIO <i>Sikuliaq</i> Cyberroam Deployment and Network Usage Data Collection - John Haverlack, UAF	Techniques for Evaluating Wire Condition At Sea - Rick Trask Discussion of recent .681 cable failure in use with the Jason ROV - Andy Bowen	MOCNESS Renewal	Basic Troubleshooting: 1:00pm: HiSeasNet – Steve Foley (DCR) 1:20pm: Diagramming – Lee Ellett, SIO (DCR) 1:40pm: Networking: Pick-up Sticks – Toby Martin, UH (DCR) 1:55pm: Troubleshooting Gallery, round 1
2:15 – 2:30pm	Break			
2:30 – 3:30pm	Winch Pool Q&A – Josh Eaton, WHOI & Aaron Davis, SIO	Multibeam Advisory Committee (MAC) – Vicki Ferrini (LDEO) & Paul Johnson (UNH)	MOCNESS Renewal (cont.)	Basic Troubleshooting: 1:55pm: Troubleshooting Gallery, rounds 2, 3, 4

Bus to RSMAS Campus for Lunch

RSMAS Tours – tours were provided of the following facilities:

- SUSTAIN Building/Hurricane Simulator

- Atlantic Oceanographic and Meteorological Laboratory (AOML) – The tour will include the Hurricane Research Division and GOOS (ARGOS, Drifter Array, XBT lines etc.)*
 - Southeast Fisheries Science Center (SEFSC)*
-

Thursday, 5 November 2015

Meeting Called to Order – Scott Ferguson called Day-3 to order.

Operation SWAB – Jim Happell (RSMAS) provided the report and his slides are included as [Appendix XVII](#).

Operation SWAB was developed to help protect background 14C and 3H measurements from contamination. The University of Miami's Tritium Laboratory runs it. It was also set up to protect the NOSAMS facility from contamination.

Even small amounts of 14C and 3H from the labeling experiments inadvertently spilled on a ship have the potential to adversely affect background measurement of these isotopes.

Samples are collected from a 1 m² area using a water/count-off (radiological soap) mixture. Samples are collected and analyzed by a lab that has no stake in whether or not contamination is present. Reports of the results are delivered to the ship operators and scientists involved.

A SWAB test should be performed on the ship and Rad Van after every cruise where 14C or 3H is used.

There is no direct cost to the operating institution for a SWAB test. Contact PI Jim Happell at: (jhappell@rsmas.miami.edu, 305-421-4111) to schedule a SWAB test.

Sikuliaq Automated Windows Print Driver Installer - Scott Lonergan, UAF/Sikuliaq, provided the report. His slides are included as [Appendix XVIII](#).

Scott explained that an installer is needed that Windows users can run to install all printers in all our locations without having to call support. NSIS is a professional open source system to create Windows installers. It is designed to be as small and flexible as possible. NSIS is script-based and allows you to create the logic to handle complex installation tasks.

You can download NSIS from their website as well as any add-ons or Plug-ins. The NSIS website also contains a page of code examples, which can be helpful in developing new installers: <http://nsis.sourceforge.net/Download>

Scott continued by providing information on a Windows Printer Installer. The slides provide step-by-step instructions.

Question: Is there a similar utility for the MAC system? Scott – No, but if any one comes up with something, let him know.

Summary of Wednesday afternoon sessions:

Troubleshooting Session – They had fun playing with the toys and telling stories. Information on HiSeasNet troubleshooting is included at:

https://www.unols.org/sites/default/files/201511rvtap30b_breakout.pdf

Cyberroam Session – Tony Galecki gave a summary. Information about the Cyberroam session is included in slides at:

https://www.unols.org/sites/default/files/201511rvtap30a_breakout.pdf

Techniques for Evaluating Wire Condition At Sea - Ted Coburn reported that if you have to do a test in the field on how much cable to cut, Rick Trask can provide advice.

Discussion of recent .681 cable failure in use with the Jason ROV Session - Andy Bowen provided an update on cable failure on Revelle. It might have been due to cyclic loading.

MOCNESS – Scott Ferguson reported that they have had real issues with vendor support. Scott and Alice will develop a MOCNESS mailing list that everyone is welcome to join.

UNOLS Reports:

UNOLS office – Annette DeSilva (UNOLS) provided the report. Her slides are included as [Appendix XIX](#). The UNOLS Chair, Chris Measures, could not attend the RVTEC meeting because he is currently at the North Pole. The UNOLS report included information about vessel retirements since late 2014, which included R/Vs *Knorr*, *Melville*, *Point Sur*, and *New Horizon*. In design and construction news, R/V *Sikuliaq* entered service in fall 2014. Two new Ocean Class ships, R/V *Neil Armstrong* (WHOI) and R/V *Sally Ride* (SIO) will enter UNOLS service in 2016. The Regional Class Research Vessels acquisition process is in progress and if funds for construction become available, the first ship could enter service in 2021.

UNOLS has formed a subcommittee to address “Medical Questions, Medical History Forms, and Pregnancy at Sea Issues.” UNOLS strives to provide clear policy information on all these issues with an aim toward promoting a safe and friendly work environment on all ships in the fleet. Presently UNOLS has taken the approach that these various policies are best determined at the institutional level; however, UNOLS can make suggestions to improve and better communicate this process.

The Research Vessel Safety Standards (RVSS) have been updated and reissued. See the slides for details.

UNOLS has continued the Chief Scientist Training Cruises programs. These have been very successful and we are very appreciative of the efforts of the marine technicians in support of these programs

The list of upcoming UNOLS meetings and workshops is contained in the slides.

Fleet Improvement Committee (FIC) – Woody Sutherland (SIO) provided the report. He is the RVTEC liaison to the FIC. His slides are included as [Appendix XX](#).

The FIC met on March 30, 2015. The committee was tasked to consider future capability options for R/V *Langseth*. Many in the community want to see *Langseth* managed and upgraded to preserve its central MG&G missions (including purchasing the Sercel streamer), but they do not want to see the seismic capabilities of *Langseth* compromised or the resources expended to make *Langseth* more suitable for general purpose oceanographic operations.

The FIC have been working on an update to the UNOLS Fleet Improvement Plan. The Plan will be released before the end of 2015. Woody reviewed some of the Plan’s recommendations. He also discussed the FIC’s response to the National Academy’s *Sea Change* report. See the slides for details.

Discussion:

Jim Holik commented that the new streamer for *Langseth* has been purchased and the ship will not be reconfigured for general purpose.

RVOC and Safety Committee – Bill Fanning (URI), the RVTEC member of the Safety Committee, provided the report. His slides are included as [Appendix XXI](#).

Bill reviewed the membership of the Safety Committee.

In April 2013 the Safety Committee was tasked with updating the RVSS. In November 2014, NSF requested that JMS review the RVSS update. In July 2015, Version 10 of the RVSS was released with Appendix B.

The committee is working on procedures for requesting and evaluating requests for waivers to Appendices A and B. One waiver has been requested and granted to URI. Waivers need approval from the Safety Committee

Arctic Icebreaker Coordinating Committee (AICC) - Steven Hartz (University of Alaska, Fairbanks), RVTEC liaison to the AICC, provided the report. His slides are included as [Appendix XXII](#). Steve reviewed the Healy operations, which included a shakedown cruise, than a transit north followed by a USCG RDC trip. The *Healy* then transited from Seward to Dutch to support the Geotraces cruise to the North Pole. The AICC does a good job of debriefing all of the *Healy* science users.

Scientific Committee for Oceanographic Aircraft Research (SCOAR) – David Fisichella (WHOI), a SCOAR member, provided the report. Luc Lenain is the new SCOAR Chair. The Committee has drafted Chapter 19 of the RVSS to address unmanned aircraft system operations on ships. The Chapter will be updated. Please contact David or Steve Hartz if any changes are needed.

The SCOAR will look very carefully at UAS operations from ships. The FAA regulations are evolving. They recognize that operations offshore (beyond 12 miles) are allowed, but line-of-sight with the system and a safety operation plan is required. If someone shows up with an aircraft, the master can allow it only if they have a safety and operation plan.

Ship Design/Construction updates:

R/V Neil Armstrong & R/V Sally Ride - Tim Schnoor (ONR) provided the report and showed the same slide from his ONR report ([Appendix VIII](#)). Tim explained that ten years ago the FIC was developing new fleet plans that called for Ocean Class ships. In response, the community came up with requirements for the Ocean Class Research Vessels (OCRVs). The Navy identified funding to the build the OCRVs. The Navy had a competition for operators and as it turned out the large ship operators (WHOI and SIO) won. These institutions were required to give up ships to get the new ships. The ships that were retired were Global ships (*Knorr* and *Melville*).

David Fisichella continued the report with information on *Armstrong*. The shipyard that built the vessels, Dakota Creek, had initially been tasked with Phase III (outfitting). With delays, Decota Creek cannot carryout Phase III. Currently the *Armstrong* is transiting from Washington to the east coast. There is no science equipment aboard. However the handling systems are on-board and the crew is able to try them out. They need to find a shipyard on the east coast to complete science outfitting. This is not an optimal situation. Presently WHOI is developing their science verification

cruise (SVC) plan for the ship. There will be six or seven SVC legs in 2016. SVC will start in early spring.

Woody Sutherland continued the report with additional information about the OCRV and *Sally Ride*. His slides are included as [Appendix XXIII](#)

Woody's slides include a matrix of the various Science Mission Requirements, the design goals, and the actual ship capability or characteristic. In most cases the ship capabilities exceed the design.

The OCRV general characteristics and design sketches are provided in the slides.

Everyone is working hard to meet the delivery schedule.

David Fisichella added that the biggest challenge is finding space for all of the antennas. The preliminary sound studies indicate that the hull is very quiet.

ADCP/UHDAS report – Julia Hummon (UH) provided the report. Her slides are included as [Appendix XXIV](#).

Jules review the UHDAS concept that includes acquisition, monitoring and remote troubleshooting, and processing.

Jules reviewed the UHDAS systems supported in 2015 that included 16 UNOLS ships, 3 polar ships, 5.5 NOAA ships, and two other ships. The activities supported in 2015 were summarized. There was an ADCP processing workshop at Scripps (>15 scientists). New ADCPs were added to *Atlantis* and *N.B Palmer*. There were a lot of problems with ADCPs this year. Details about the problems and activities are included in the slides.

UHDAS will be added to *Sally Ride* and *Neil Armstrong* in 2016 along with *Hugh Sharp*. They are also preparing to install UHDAS on five NOAA ships *Okeanos Explorer*, *Gordon Gunter*, *Pisces*, *Henry Bigelow*, and *Ferdinand Hassler* with five more in 2017.

Jules emphasized the continuing request to her in the loop and always run “End Cruise” before archiving. ALWAYS use the complete cruise name. Send your needy scientists to Jules

An important UHDAS link:

http://currents.soest.hawaii.edu/uhdas_fromships/RB1503L2_atsea_report/

Break

Multibeam Advisory Committee (MAC) Update – Paul Johnson (UNH), Vicki Ferrini (L-DEO) and Kevin Jarrem (UNH) provided the report. Their slides are included as [Appendix XXV](#).

UNOLS ships are used for many different types of oceanographic work. Multibeam systems are just one of many complex sensors on each ship. The ships can be used for opportunistic collection of bathymetric data on non-mapping cruises. An NSF workshop in 2010 identified a strong need to coordinate operational efforts across the fleet. In response, a MAC proposal was funded in 2011 and 2015.

The MAC works to ensure all hull-mounted multibeam systems are installed, calibrated, and configured properly and consistently. Acoustic noise tests are done by MANTECH to assess and potentially improve sensor efficiency and data quality. MAC works to ensure multibeam sonar

systems are operated in a consistent manner that maximizes data accuracy, precision, and scientific utility.

The Appendix XXV includes a matrix that lists the Multibeam system for each ship with the related MAC support.

MAC works to helping the multibeam community. Technical reports and resources are available at <mac.unols.org>. There is a help desk, mac-help@unols.org.

MAC activities were described for work on R/V *Kilo Moana* and RVIB *Nathaniel B. Palmer* (see slides).

Discussion:

- David Fisichella - Are there plans for real time monitoring? Vicki – This something that they have been thinking about. There is nothing in place right now, but they will look into this. They will also put together best practices.
- Jim Holik – Is there an issue with realizing that data is bad after the fact. Vicki – This really hasn't been much of an issue.
- David Fisichella – If a cruise isn't a dedicated mapping cruise, you might not know there is a problem with the multibeam. Vicki - R2R might be able to help in this regard. There will also be a BIST test that will help. There will be documentation on the website.
- Jim Holik – He is not adverse to a multibeam model that is similar to UHDAS, he is just wondering if there is need for the detail monitoring.
- Woody Sutherland – When they get bad data, they know they have bad data.
- Joyce – Even though the modular Multibeam system that they were using was mounted backward, the BIST test passed.

JMS Inspection Report – Ted Colburn (Jamestown Marine) provided the JMS inspection report. His slides are included as [Appendix XXVI](#).

The major purposes of the NSF Ship Inspection Program are:

1. To assure that the capabilities of the research vessel and technical support meet accepted scientific community standards and expectations;
2. To assure the seaworthiness and safety of research vessels supported by NSF meet or exceed the standards set forth by the UNOLS Research Vessel Safety Standards (RVSS), and applicable requirements of the International Maritime Organization, American Bureau of Shipping (ABS), the Code of Federal Regulations (CFR), and the U.S. Coast Guard;
3. To ensure NSF-owned ships as capital assets, are being adequately maintained;
4. To ensure NSF-funded science is scheduled on properly outfitted and maintained vessels.

JMS recently completed inspections on 13 UNOLS vessels, the R/V *Falkor*, RVIB *Palmer*, and ARSV *Gould*. Upcoming inspections are planned on 11 ships.

RVSS Appendix A compliance appears to be coming along well. Almost all vessels are in compliance at a safety factor of 5.0 based on the Version 9 of the RVSS. However, a factor of safety of 5.0 does not meet mission requirements for many vessels, particularly if the calculation method in the Appendix is used. Some of the vessels are limited to a factor of safety of 5.0 by sheave diameters and grooving. They are also limited by roller diameters. The logging requirements for each tension member are more comprehensive than historically being maintained.

There is an Appendix A assist summary for each wire or cable. The assist summary has been posted with these minutes and is available at:

https://www.unols.org/sites/default/files/Append%20A%20Assist%20Sheet%2011_3_15.pdf

Ted reviewed the changes in the latest version of Appendix A (see slides).

Ted cited best practices in the Fleet for Appendix A. Some include:

- R/V *Atlantic Explorer*: Logs both the payout per cast and payout at maximum load
- R/V *Oceanus* - Fairlead Roller Diameter - Large rollers are installed on R/V *Oceanus*
- R/V *Savannah* - Sheave Wrap Angle - Instrument blocks that measure the wrap angle in order to measure the tension in the cable.

Ted provided an updated on RVSS Appendix B compliance. Vessels are making some progress toward compliance with Appendix B, but we have yet to see a complete package for an overboarding handling system (OHS). Most vessels will have several "Overboard Handling System Operator's Manuals" supported by "Component Booklets" for the components used for the OHS operation. An OHS Operator's Manual is needed for each overboarding system (exception for portable systems). Assist sheets are available for the system level and component level. The assist sheets have been included with these minutes at:

https://www.unols.org/sites/default/files/Append%20B%20Assist%20Sheet%2011_1_15.pdf

RVSS Appendix B contains the following aspects of overboard handling systems (latest version):

- Responsibilities
- Structural Design Criteria
- Maximum Capability Document Requirements
- Testing and Test Documentation
- Operations and Safety
- Training
- Labeling
- Preventative maintenance

Almost all documentation accomplished for the previous version of Appendix B will be useful in the new version. The exception is emergency OHS procedures are not specifically retained in the new version, but extenuating circumstances has now been added in Appendix A.

The new version of Appendix B is easier to understand what is required. Appendix A and B work together better.

Ted reviewed some common findings observed in the inspections that are relevant to operations, systems, and procedures. These include:

- Appendix B Test Plans.
- Human Factors
- Lithium batteries
- Environmentally Acceptable Lubricants [EAL]
- Science Safety
- ADA
- Hydraulic Hoses
- Wet Lab Gas Detector
- Realistic Drills
- Muster List
- Battle Lanterns

System design, proper human engineering, labeling, and detailed training will substantially reduce the risk of human error. The Coast Guard strongly reminds all maritime operators of the importance:

- Designing and maintaining emergency systems to be logical and easily operated in high stress situations,
- Maintaining a high level of crew familiarity with emergency systems, and
- Exercising safeguards during testing to mitigate the risk of human error or system malfunction

Ted wrapped up with information on Marine Safety Alerts pertaining to gear, overloaded lifting, and surge “protective” devices. There is a Marine Safety Information Bulletin issued regarding recreational and medicinal marijuana use policies for maritime transportation workers. The Department of Transportation’s Drug and Alcohol Testing Regulation – 49 CFR Part 40 – does not authorize the use of Schedule I drugs, including marijuana, for any reason.

Full details of Ted’s report are included in his slides.

Ted thanked Josh Eaton and Aaron Davis for their efforts in rewriting Appendix B. It is a lot more understandable.

R2R Update – Bob Arko (L-DEO) provided the R2R report. His slides are included as [Appendix XXVII](#). The slides provide information about updates to the cruise catalog, data types and volumes, development work, community projects, and looking ahead.

AIS Applications – Kurt Schwehr (UNH) joined the meeting via teleconference. His slides are included as [Appendix XXVIII](#). Kurt discussed AIS applications on R/Vs. To learn more about some of the activities that Kurt is involved with, visit www.globalfishingwatch.org.

David Forcucci commented that on *Healy* they received a distress call. They used AIS tracking to find the vessel and assess the situation and as a result wasn’t necessary to divert for a rescue.

Safety Programs for Technicians and Scientists – Lee Ellet (SIO) provided the report. Details are included in his slides available as: [Appendix XXIX](#)

INMARTECH 2016 Announcement (<http://www.irso.info/inmartech/>) – Scott Ferguson (UH) reported that INMARTECH 2016 will be held in the Netherlands. Details about the meeting can be found on their website (<http://www.irso.info/inmartech/>).

Intro of afternoon sessions – Leaders of the afternoon sessions provided brief introductions.

Lunch

Breakout Sessions - The following afternoon breakout sessions were held. The tech managers met for their round table discussion.

	Ballroom A&B	Ballroom C	Coconut Grove Room
1:00pm – 2:30pm	Basic Troubleshooting*: 1:00pm: Troubleshooting 101 – Dale Chayes 2:00pm: Serial Communications – Tom Wilson, Stony Brook	HiSeasNet (HSN) Education – Review of 2015 System Upgrades	Manager’s Meeting
2:30pm – 2:50pm	Break		
2:50pm – 4:30pm	Basic Troubleshooting*: 2:50pm: Serial Communications – Tom Wilson, Stony Brook 3:50pm: Open Forum – the Good, the Bad, and the Ugly	HiSeasNet II – Review of 2015 System Upgrades	

The 2015 RVTEC meeting adjourned at 4:45pm.