

**DEep Submergence Science Committee
Woods Hole Oceanographic Institution
Carriage House – Quissett Campus
Woods Hole, MA
June 13-14, 2012**

Meeting Minutes

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Action Items:

Global Vessel Mid-Life Refits – NSF and ONR have provided a set of recommendations regarding fleet operations and plans for 2013 and beyond. Included in these recommendations is a plan to conduct mid-life refits on the Navy owned Global Class vessels. The refits would extend the life of these ships. The UNOLS Non-Operator subcommittee is welcoming feedback on the agency recommendations. Global vessels are the primary support platforms for NDSF vehicles. DESSC can provide feedback on the recommendation.

DESSC/OOSC - Identify a DESSC Liaison to OOSC (Pete Girguis)

Vehicle Upgrades - Post the *Jason* and *Sentry* Vehicle Upgrade slides and send the link to Matt, Carl and Andy. (A. DeSilva) In turn, WHOI will inform science users about the upgrades.

Sentry Review – DESSC members are asked to review WHOI’s *Sentry* Year-1 report (and associated documents) along with the user debrief summaries for *Sentry*. Comments are requested by June 29th. Pete Girguis and Annette DeSilva will consolidate the responses.

NDSF Data Management Spreadsheet – DESSC is asked to review the data management spreadsheet drafted by Vicki Ferrini and Andy Maffei. Feedback is requested by June 27th.

DESSC Early Career Program – Plan an Early Career Workshop that will take place on the Saturday before the DESSC Meeting. Planning should include consideration of the:

- Application and Selection process
- Workshop Agenda
- Evening Session
- Mentors
- Filming select segments of the workshop
- Engage 2011 Early career workshop participants for assistance in planning

DESSC Meeting Filming and/or Webinar – Explore logistics, requirements, and pricing for filming and broadcasting via webinar future DESSC meetings. (A. DeSilva with assistance from Vicki Ferrini).

Alvin Science Verification Cruise – Cruise Planning and Announcement:

- Draft Announcement for Science Verification Cruise Opportunity (op areas might include Blake Ridge, Cayman, or Florida Escarpment). Request information identifying team members, science plan, and travel costs.
- Form a selection/review panel
- Identify a cruise director – suggestions: Cindy Van Dover, John Wiltshire
- Submit an EAGER Proposal (Peter Girguis)

NDSF User Debrief Process:

- The debrief process should be more bi-directional. DESSC “Friends” are asked to send their debrief PowerPoint slides to NDSF earlier so that NDSF can review the comments and flesh out any miscommunication.
- Revise the structure of the debrief interviews – Chris German is tasked to revise the debrief interview structure using the PowerPoint slides as a template.

Expand the DESSC Community Email List:

- Eric Benway is asked to add Annette DeSilva to the email distribution of the science party lists.
- DESSC debrief “Friends” are asked to send science party lists to Annette for cruises that are not on WHOI vessels.

DESSC Outreach Tools – Conversation with DESSC committee about how to facilitate outreach activities.

OOSC White Paper - Pete Girguis will request that the OOSC prepare a white paper regarding the role of deep submergence vehicles in OOI.

DESSC Webpage – The UNOLS Office is redesigning the UNOLS/DESSC web pages. Content and design suggestions are requested. Vicki Ferrini offered to provide advice to the UNOLS Office.

Wednesday, June 13, 2012 – Carriage House

Introductory Remarks, Meeting Logistics, and Introductions - Peter Girguis, DESSC Chair, opened the meeting. The agenda is included as *Appendix I*. Participants introduced themselves. The participant list includes as *Appendix II*.

Agency and UNOLS Reports:

National Science Foundation (NSF) – Brian Midson provided the NSF report. In personnel news:

- Tim Killeen’s replacement will be announced in 16 days.
- An announcement for the Head of the Division for Earth Sciences is forthcoming.
- The incoming Section Head for Ocean Sciences is Debbie Bronk.

NSF Budget Update:

- The 2012 Ocean Sciences budget was for level funding. The latest Ocean Sciences newsletter describes the budget situation. Within Ocean Sciences, the budget for facilities was reduced by 5%. It is anticipated the future facility budget cuts will be needed.
- The President’s budget for 2013 calls for a 5% increase
- OMB has cautioned to prepare for a 5% budget decrease in 2014.

Discussion:

- Pete Girguis – During the UNOLS Council Meeting, Bob Houtman reiterated that the community should comment on NSF priorities. To what degree is the Division of Ocean Sciences interested in maintaining existing facilities? Brian – There are a few major items in the facilities budget. Some are expected to offer new ways of conducting research. NSF will work to support its facilities. NSF welcomes comments and priorities.
- Rob Munier – Has NSF looked at more efficiencies in operations for OOI and Ships? Brian – NSF hasn’t developed new mechanisms. They have commissioned Academy studies.
- Andy Bowen – What is the funding level for facilities? Brian Midson – About \$150M of that OOI is budgeted to be \$65M to \$55M.
- Dan Fornari – It is devastating that OOI support will come out of NSF’s core science funds. The new programs should look at their potential impact to future budgets. New programs are good, but the core programs need to be preserved. The new incoming NSF

directors should consider these things. Brian – The core program managers are very concerned with this. There is a concerted effort to explain how important it is to maintain the core. Your program managers are your advocate for core programs.

National Oceanic and Atmospheric Administration (NOAA) – Catalina Martinez provided the NOAA report. Her slides are included as *Appendix III*.

Catalina reviewed the 2012 *Okeanos Explorer* Field Season. By the end of next year the vessel will have completed significant mapping.

In July 2012, an exploration and testing cruise is planned using *Sentry* from *Okeanos Explorer*. Cindy Van Dover and Carl Kaiser are the PIs. This is the first telepresence cruise that will use the AUV *Sentry*.

Catalina discussed NOAA's *Okeanos Explorer* Mapping Internship Program. There were over 120 applicants in 2012 for 16 open positions.

Other topics that were reported on included:

- *Okeanos Explorer*'s 2013 plans
- PMEL NeMO Project 2012
- INSPIRE: Chile Margin 2012
- 10 Year NOAA OER Program Review
 - They should be receiving input in July.
 - The documentation is on-line

Full details are provided in Catalina's slides.

The FY13 President's Budget for NOAA is \$19.7M for OER. It eliminates funding for NURP.

Discussion:

- John Wiltshire – In Hawaii, Senator Inuai worked with Senator Cochran in Mississippi to get Hawaii and Mississippi's NURP funds back into the budget. The remainder of NURP is not budgeted. HURL *Pisces* vehicles have been very active. They will do work for the Navy to look at munitions with a month of diving. Hawaii is also bringing a 6000m ROV on-line built by DOER. They have had a very close relationship with the Chinese submersible group. They are doing a 7000m dive now in Marianna's trench. The *Pisces* and Chinese sub are very similar.
- Dan Fornari – How will the ROV be operated? John Wiltshire – The ROV will be run with HURL personnel, but it is owned by UHawaii.
- John Wiltshire – The ROV will be operated from *KOK* and *Kilo Moana*.
- Andy Bowen – Are there any ITAR issues working with the Chinese? John Wiltshire – The Chinese cannot take anything. Annette DeSilva – Dennis Nixon has been tasked to look at this issue on a Fleet-wide basis.
- Brian Midson – How will the ROV be supported? John Wiltshire – U. Hawaii will use the vehicle and will establish a day-rate for other use.
- Catalina Martinez – NOAA's *Aquarius* system is being considered for use by private groups.

Office of Naval Research (ONR) - Tim Schnoor provided the ONR report via teleconference. The Navy doesn't have plans to use the submersibles, but they have an interest in supporting the vehicles and support ships. Frank Herr was in China to attend acoustics meetings. He visited an institution that is interested in putting sonars on the Chinese subs.

UNOLS Report – Bruce Corliss, UNOLS Chair, provided the UNOLS report. His slides are included as *Appendix IV*.

As in previous years, UNOLS has established a subcommittee of non-ship operator representatives to review agency recommendation regarding fleet operations for the next calendar year. This year is challenging because the recommendation include retiring Cape Hatteras in 2013 and Pt Sur in 2014. Additionally, ONR continues to plan for retirement of R/V *Knorr* and R/V *Melville* in conjunction with requirements for crew training prior to deliveries of Ocean Class AGORs 27 and 28. Nominally this will result in *Knorr* coming off line by April 2014, and *Melville* off line by December 2014. Depending on scheduling requirements and demands in 2014, retirements may take place sooner.

ONR has initiated scoping studies for mid-life refit of the Global AGOR 23 Class of vessels, to include R/V *Thompson*, R/V *Revelle* and R/V *Atlantis*. Depending on availability of funds, these refits could start as early as mid-2014 with *Thompson*, and could extend the Expected Service Life of the vessels to 40 years. ONR has requested UNOLS input on this effort.

Bruce reported on some of UNOLS' outreach activities. UNOLS is in the second year of its Early Career Scientist Chief Scientist Training Program. This year the training program will take place on New Horizon in November.

UNOLS is kicking off a UNOLS Speaker Series to highlight UNOLS ships and oceanographic research. Non-UNOLS colleges and universities will be targeted, particularly institutions with under-represented minorities in marine sciences. To minimize cost, a regional approach is being taken. The regional coordinators and other details are included in Bruce's slides.

Bruce reviewed the UNOLS Ocean Observing Science Committee membership and charge. Pete Girguis and Larry Atkinson can work together to identify a DESSC/OOSC liaison.

Discussion:

- Dan Fornari – The phrase “under utilization” was used in regard to the agency recommendations on Fleet operations. He feels it the phrase should be “under funded.” It becomes a self-fulfilling prophecy. Is anyone thinking about the current and future scientists who need to go to sea? The ships are underfunded. Are we properly promoting the ships?
- Bruce Corliss – The Council agrees with the points that Dan made. Dan – Is there something that the community can do? Etc. Is there a way to mobilize the community?
- Bruce Corliss – The community can voice concern over the core science budget issue.
- Chris German – NDSF uses the five Global vessels; two of these ships are projected to go out of service in the 2014 time-frame. We need to think about the future. The new Ocean Class Research Vessels (OCRVs) will have 24 berths as opposed to 36 bunks.

- Annette DeSilva – The OCRV design drawings and presentation are on the UNOLS website.
- The DESSC was encouraged to provide a recommendation to the Non-op group regarding the need for Global Mid-life refits.
- Dan Fornari – Will NOAA’s Ron Brown get a mid-life refit? Bruce Corliss – Yes and we will try to coordinate down times, etc. with NOAA.
- Bruce – thanked DESSC for all of their efforts.

National Deep Submergence Facility (NDSF) Operator’s Report:

Introductory Remarks and Announcements - Rob Munier provided the WHOI report. His slides are included as *Appendix V*. Rob reviewed personnel changes and the 2012 NDSF operations for the first part of the year. See the slides for details.

Discussion:

- Private R/Vs – There are a few opportunities for use of private R/Vs. This might be an area for filling in gaps for the NDSF vehicles. Examples of private vessels include the R/V *Falker* and R/V *Aleutia*.
- Bruce Corliss cautioned that use of private R/Vs could have an impact on UNOLS operations. Rob – They understand this from a WHOI perspective. The private work is often for higher risk items.
- Brian Midson – NSF is drafting a policy on use of third party vessels. Costs, safety, and data management will be addressed by the policy.

NDSF Vehicle Operations Summary - Rick Chandler provided the report. His slides are included as *Appendix VI*.

- *Jason* completed 3 cruises in the first half of 2012 and collected 314 hours of data. Support ships included *Atlantis* and *Merian*.
- *Sentry* had a major upgrade and completed two cruises in 2012 with 343 km of survey. Support ships included *Thompson* and *Melville*.
- The slides include details about the operation highlights.

Deep Submergence Scheduling: 2012 and Beyond - Eric Benway reviewed the *Jason* and *Sentry* 2012 schedules and the outlook for 2013 and beyond. His slides are included as *Appendix VII*.

- The *Jason* 2012 schedule includes 172 days
- The *Sentry* 2012 schedule includes 86 days
- *Atlantis* will have a shipyard period at the beginning of 2013. There are 133 funded *Alvin* days in 2013.
- *Jason* – There are 175 funded days (cruise days, not dives) in 2013.
- *Sentry* has 104 funded days in 2013.
- In 2014 and 2015 there aren’t a lot of requests in the system.

Discussion:

- Pete Girguis - Did you capture the withdrawn STRS? Eric Benway – No, but he will capture them in the future. Pete – Many of these will be resubmitted.

- George Luther – Is it possible to add ship days if they are funded? Brian Midson – If the message comes from the program manager it is a much stronger case.

Break

NDSF Vehicle Debrief Interviews:

Feedback from *Jason* cruises - Wiebke Ziebis provided the report. Her slides are included as ***Appendix VIII*** and include a lot of detail. Nine cruises are included in the report.

Some of the feedback received included:

- Pre-cruise planning went well.
- Jason and Atlantis web sites need updating.
- There were some ship's agent problems.
- Jason experienced repeated ground faults on both manipulators
- Launch and Recovery System (LARS) has some initial issues.
- Ship related issues: They lost dynamic positioning on 6 separate occasions.
- Image quality – some felt that the pilot camera was better than the PI camera.

Feedback from *Sentry* cruises - Vicki Ferrini provided the report. Her slides are included as ***Appendix IX*** and include a lot of detail. Three *Sentry* cruises are included in the report and all are post refit.

Some of the feedback received included:

- The *Sentry* team was very pro-active.
- Lack of pre-cruise testing was an issue.
- There were multiple operational problems with *Sentry* and USBL navigation

Recommendations included that engineering dives are critical. There should be a training schedule for the operational team.

Operator's Response to NDSF Debriefs - Andy Bowen provided the WHOI response to the NDSF Debriefs for *Jason* and *Sentry*. Details of the response are included in ***Appendix X***.

Discussion followed:

- Marsh Youngbluth – What is the status of lighting, imaging and the monitor? Matt Heintz – He will discuss the lighting and imaging in his report. As for the monitors, he is not really sure what this is.
- Marsh Youngbluth – That is the status of the control box? Andy Bowen – There is no plan to change the box. Matt Heinz – Last year they revamped the box. The box has a lot of functions. Chris German – It is a lot better, but it still is tricky.

Upgrades to National Deep Submergence Facility

Jason* upgrades, incl. LARS** - Matt Heintz provided the report and his slides are included as ***Appendix XI.

The *Jason* upgrades include:

- Additional LED lights
- Another Mini Zeus, making 3 total
- Additional pan & tilt, making 3 total
- New strobes, 2 circuits simultaneous down and fwd imaging cameras on one dive
- New CTD with O2, additional sensor ports
- New LARS crane and docking head (DH) fully integrated
 - Greater *Jason* air weight
 - 25% increase in *Jason* payload (syntactic foam added)
 - Greater flexibility of staffing
 - DH arrests swing & sway and rotates
 - Less tether handling - They have been going with a team of nine and may reduce further if needed.
- Active Heave Comp (AHC) Winch – Matt provided the specifications for the new system. The winch is scheduled for delivery in January 2013.
- A video of an ROV cage with and without Active Heave system was presented.

Matt showed an image with new options for lighting and imaging configuration.

Discussion:

- Pete Girguis – A 1000 lb payload was mentioned. Matt – They picked this payload for a depth of 6000m. At RSN, the payload can be higher due to the shallower water depth.
- Pete Girguis - The LED lighting worked very well. Matt – These come in arrays of 3. They are lighter. There is a weight and power savings and they are less expensive. The swing-arm feature was very handy.
- Pete Girguis – In terms of getting *Medea* closer to bottom, can they do this? Matt – With AHC, they can use shorter tethers so this will help.
- Pete Girguis – The *Jason* Expedition Leaders have been doing a good job announcing that if there are few changes to the basket configuration, a 4-hour turnaround time may be possible.
- George Luther – These upgrades are not posted yet. Matt – The slides will be posted on the UNOLS site and he can send them to the chief scientists.
- Brian Midson – what is *Jason*'s capability to handle the OOI secondary cable? Matt – With AHC, the RSN will want to connect small cables from the array to sensors. NDSF considered the OOI needs when acquiring the AHC system. They can put the MBARI winch on *Medea*. There is also a possibility of launching *Jason* from Atlantis and then using the AHC and the old *Jason* crane to launch another system. At Aloha, they removed the *Jason* sled and put on the cable handling system.

Sentry upgrades, includes CHIRP & Sidescan - Carl Kaiser provided the report. His slides are included as *Appendix XII*.

- In Personnel news:
 - Expedition Leader – There are three expedition leaders and there will be a four by August 2012 (Dana Yoerger, Carl Kaiser, James Kinsey, and Michael Jakuba (needs 1 cruise to be up to speed).
 - Mechanical Engineers – There are two and will have three by July 2012.

- Electrical Engineers - Now one, with two planned by the end of 2013
 - Data Managers – Dana Yoerger, James Kinsey, and Carl Kaiser are all able to do most pieces. A contractor will join the group by fall 2012.
 - Documentation – large investments are required and critical for interchangeability.
- The Sidescan is up and running. It is nearly automated. For a 20 hour dive, they are now able to process the data in 1 hour.
 - Deep Water operational problems were experienced with the actuators and navigation. They are working on a long term replacement for the actuators. Testing of the navigation system is on-going.
 - Other upgrade areas that Carl reviewed included (see slides for details):
 - Strobe & Camera
 - Cradle
 - Diet
 - Thrusters & Fairings
 - Timing & Powering

Navigation - James Kinsey provided the report. His slides include great detail and are included as *Appendix XIII*.

James reviewed the goals and progress:

- Merge existing nav post-processing software into a single standardized software package for use on all vehicles. PROGRESS: Completed – now working with a common software base.
- Improved LBL and USBL post-processing tools. PROGRESS: USBL tools developed; need to complete LBL tools.
- Automated fusing of post-processed navigation data and standard science sensor data. PROGRESS: Completed for most *Sentry* standard data products. Used on the 2011 Tominaga/Tivey cruise.
- Ensure the source of the post-processed nav data is kept with the re-navigated data. PROGRESS: Completed on *Sentry* data products; tested on *Jason*
- Improved documentation. PROGRESS: In progress.
- Automate the process as much as possible. PROGRESS: *Sentry* pipeline is largely automated. Prototyped on *Jason* data in Jan 2012.
- A parallel effort is the porting of the navigation code used on *Sentry* and *Nereus* to *Jason* and the *Alvin* upgrade. PROGRESS: Significant work by Howland and Suman. Engineering testing on *Jason* in Jan 2012.

The list of upcoming navigation work items is included in the slides.

Lunch Break

***Jason* HDTV camera study** - Chris German presented for Jon Howland. The slides are included as *Appendix XIV*.

The new *Jason* HDTV has received good reviews in general, but there were two specific “short-coming” issues raised in recent debriefs :

- camera is light hungry in the far-field
- camera does not zoom in as far as biologists would like

Both issues were raised in comparison to the new mini-Zeus HD camera now installed for the pilots’ use. An evaluation was conducted during the Jan 2012 engineering dive time *after* 2nd tranche of new LED lights had been added to *Jason*.

Conclusions

- The Science Camera was clearly superior over the Pilot Camera in terms of imaging quality & aesthetics when in the “sweet spot” range (important for science communication, post-cruise outreach efforts)
- The Pilot Camera could see more detail in the periphery of the field view, on a like-for-like basis with the same lighting when zoomed all the way out - used extensively for this in subsequent reconnaissance work
- The Pilot Camera was also more useful when zoomed all the way in to study the fine detail of (vent) organisms – used to help select between two species of (retracted) tube-worm during subsequent sampling operations

The implications for the next *Alvin* Science Camera are:

- InSite have demonstrated added capabilities (maximum zoom, lower light demand) in their Mini-Zeus camera that would be valuable for scientists
- NDSF is now in discussions with this company to procure a new Science Camera 2 for *Alvin* that will build on the same optical capabilities as the Mini-Zeus, with a 12 MPixel still imaging capability as well as HD video
- For *Alvin* this camera will be equipped with a Perspex hemispherical dome to ensure it is suitable for use on an HOV.
- There will be future consideration as to whether it will also be desirable to procure a similar camera (but with a glass dome) for *Jason* (*e.g.* to retire the DSC)

Discussion:

- Marsh Youngbluth – there is rumor that a 20 MPixel will be available soon. Should we wait until these are available? Chris – he thinks that InSite is offering them the latest.
- Dan Fornari – Is the 12 MPixel on the chip. Pete Girguis – He thinks that it is local on the chip.
- Marsh – Is the lighting configured properly. The images look like they are center focused. Matt Heintz – The LEDs are arrays of 3. Previously it has been one light. Now with the LEDs, there is much greater spread. It is much better balanced now with 18 lights.
- Marsh – Has anyone been interested in using red light? Matt Heintz – Many years ago they used red lights.
- Marsh – What can you put on swing arms. Matt – Now that the LED lights are so much smaller, it might be able to be used with other gear. This can be reexamined.
- Pete Girguis – With the mini Zeus’ and LEDs, you had a real idea of what you are looking at. In terms of a camera that allows you to do your work, the Mini Zeus’ were fabulous. There is a lot of light on the vehicle now.

- Marsh – When looking at natural behavior, can you dim the light? Matt – With smart placement of the arrays, you can turn certain arrays away. Dimming LEDs is tricky.

NDSF Data Management Review – A report on NDSF data management issues and the priorities for the path forward was provided by Andy Maffei and Vicki Ferrini. Their slides are included as **Appendix XV**.

Andy began the report. As part of the NSF data management policy, there is move towards data reuse.

Vicki reviewed the slides. The motivation for the project is:

- Community feedback re: data quality, delivery and storage
- Online documentation describing data products available from the NDSF
- Compliance with 2011 NSF Data Policy and increasing demands on PIs w.r.t. data documentation and submission
- Efficiencies gained by documenting metadata describing data acquisition which are critical to data preservation and re-use
- General goal of achieving cross-NDSF consistency w.r.t. data management and data products wherever possible, within funding constraints.
- Help identifying future data directions for NDSF data efforts based on the needs of its user community

The approach for the data review is:

- (1) Document and compare NDSF Data Products & Documentation for each vehicle (including metadata, documentation, data quality, & at-sea data planning, processing & delivery)
- (2) Identify potential synergies_with related ongoing community data efforts (e.g. R2R, MAC, SESAR, MGDS, etc) especially w.r.t. best practices for QA/QC, data documentation, etc.
- (3) Consider the long-term fate of data (e.g. archive, rescue, access, etc).
- (4) Prepare a report – summarize findings and recommendations

Phase I will focus on the at-sea processing pipeline and QC. Vicki displayed the draft NDSF Data Deliverable Spreadsheet. She requested DESSC feedback.

In summary of the Data Products Review, the next steps are to:

- Finalize Data Products Spreadsheet and Summary
- Review from perspective of:
 - At-sea science user’s operational needs
 - Scientist’s data reporting requirements**
 - NDSF Operational Team members
- Look for Synergies
- Long-term fate of data
- Potential Budget Implications

Vicki presented the project proposed timeline. The goal is to produce a Final Report in advance of the fall DESSC meeting.

Discussion:

- Pete Girguis thanked Andy and Vicki for all their hard work.
- Dan Fornari – Dave Fisichella should be kept abreast of this project.
- Andy Bowen – The data systems on *Alvin* will be very different than in the past and will be more similar to the other vehicles.
- James Kinsey – This will be very helpful. One interface for all vehicles is useful. There are synergisms.
- Andy Bowen – What about the human element? The systems are quite different in the way they gather data. It might be sensible to address this. The expertise differs between *Sentry* and *Alvin*.
- Vicki – A line can be added to the spreadsheet.
- Andy Maffei – In looking at the spreadsheet, the columns are the data products.
- Pete Girguis – In processing data/Reson data, the science party is ultimately responsible for the processing. There are two options; either bring more people on the cruise or have the processing staff on-shore.
- Carl Kaison – In the Ocean Exploration (OE) program, they will be using the model of sending the Multibeam to shore and Dana will process it and send it back to the ship. Catalina Martinez – This is the way that OE operates.
- James Kinsey – On the Van Damm cruise site, they produced a map quickly, but they would not use it for publications.
- Vicki – For her mapping cruise, she would want to know quickly if there are gaps in her data and she also needs to know which areas she should return to.
- Carl – Back to Pete’s question – you would need a link that is higher than FBB/HighSeasNet
- Dan Fornari – what is being done now, is so much more refined from what was being done 5 to 10 years ago. We should be able to produce maps that will allow you to identify areas quickly that you should return to.
- Andy – NDSF has to pay a lot of attention to NSF’s data policy. We need to determine if the data collected should be available to the general community. If we are looking at the broader community, then we need to look at other outside solicitations.
- Dan Fornari – we need to be conscience of both – you should be able to get the metadata for the broader community. Vicki – Most of the pieces of data that she wants; she knows how to find. As part of this project – they need to inform the community of how to get the metadata and the data availability.
- Chris German – R2R alleviates the data responsibilities from the PIs by asking the operators to provide the data.
- Vicki – We can’t make all of the data the highest quality all of the time. A biologist does not have the need for high quality Multibeam data as compared to a geologist.
- Marsh – There has been no mention of the past. There is a lot of information that is locked up. Is NDSF data available? Dan Fornari – It is available and some is relatively good. They have had some funding for the archives. It is really tough to get money for this sort of project.
- Marsh – If someone wants to look for a specific species, can they? Dan – To varying degrees. Vicki – It is not a relationship database.

- Catalina Martinez – If they don't archive/type stamp in real-time, it is so difficult to go back in time to get this done.
- John Wiltshire – At HURL they employ a person to put the data into the database.
- Dan – The framegrab has been extremely useful
- Vicki – The frame-grabbers on the cruises are the least educated on the cruise. With some training, this could be very useful.
- Brian Midson – he is glad that this was couched in terms of the NSF data policy, but a reminder that we need to consider the broader use. There isn't a "new" NDSF data policy. In 2004, Ocean Sciences established an ocean sciences data policy and it was revised in 2011. The requirement for proposals to include a data management plan was added. Getting the data to the National data repositories is important.
- Vicki – What we are working towards is to hopefully provide the community a means and directions for them to meet their data management plans.
- Andy Maffei – He would like some feedback from DESSC on whether he and Vicki are following the right path.

Break

Alvin Upgrade Project – Kurt Uetz provided the Alvin Upgrade project update. His slides are included as *Appendix XVI*.

Kurt reviewed the project. In personnel changes, Don Peters is the project Chief Engineer and managing the engineering effort.

There has been a recent descoping effort. The project is suspending ABS classification of the vehicle. This reduces risk in the project related to double classification. The vehicle will continue the Navy certification process. The personnel sphere and LARS will also continue the ABS classification process.

As part of the NAVSEA Certification, there are weekly program and technical meetings to review certification progress and expedite resolution of issues. On June 8th, there was a Hydrostatic Test Readiness Review. NSF reviewed and authorized pressure testing of the sphere. The sphere is being transported to Annapolis, Maryland and the personnel Sphere Hydrostatic Test is planned to start on June 20th with delivery to WHOI on July 6th.

Kurt showed images of the sphere with the strain gauges. He showed images of the hydrostatic test facility. There will be two unofficial dives. There will be 2 10-hour tests to 6,500 and then 6,800. For ABS there will be a final test to 8125m. It will be held for a minute or two.

A new capability is the expanded manipulator reach of the vehicle. Another new capability is imaging. He showed the Vehicle layout, the high-bay and the vehicle mock-up sphere. The benches have been modified to be lounge chairs.

Status of Major Components:

- Penetrators: The fiber optic units have been delivered and are in testing. The electrical units have been fabricated and are preparing for testing.

- Foam: All foam has been purchased, tested, and accepted. The shaping is in process with several pieces delivered.
- Frame: the front section has been removed and fabrication of the new section is started.
- The Launch and Recovery System (LARS) design will have an increased lift capability to 50,000 pounds. The A-Frame upgrade was completed March 2011
- Completion of the LARS integration and the ABS classify and NAVSEA certify are all this weekend.
- WHOI is committed to be ready for sea trials in Dec 2012.

Challenges ahead include:

- Frame Modifications: Proceeding with fabrication in parallel with NAVSEA reviews.
- Vehicle NAVSEA Certification: Completing assembly and testing concurrent with certifying the vehicle for manned operations
- R/V *Atlantis* LARS - Classify through ABS and certify with NAVSEA in time to support November dock trials
- Budget - Any schedule delay will jeopardize completion within budget

Discussion

- Pete – the lighting is an area where the technology may have advanced since purchase. Kurt Deep Sea Power and Light can deliver lights in a month that will meet specs and have improved reliability.
- Pete – Should you go to sea trials with existing lights and hold off on purchase for 6 months to get the latest product. Pat Hickey – They can do this, but it might not be worthwhile. There will be 30 lights.
- Kurt – There are 30 lights total, but they will get 4 lights originally to test them out. Then they will get the remaining 26.
- Susan – the gap between sea trials and the science verification cruise will be useful to put new things on the vehicle.
- Girguis – what will happen to the mock-up? Hickey – In development of other systems to meet the 6500m, the frame and sphere mock-ups will come in handy.
- Marsh – Why did it go from bench to lounge chair? Pat – It is more ergonomic. Kurt – you will have better access to the viewports and less potential damage to the viewports.