

# ARVOC Meeting Report

## Antarctic Research Vessel Oversight Committee

10-11 March 2008  
Arlington, Virginia

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## Recommendations

(Excerpted from following Report)

Recommendations ARVOC March 10, 11, 2008

In discussions about the PRV (Polar Research Vessel), it was noted that perhaps dialogue between UNOLS, the deep submergence /community at WHOI, NOAA, and MBARI, and ARVOC could lead to positive support from a broader community and give added strength to the need for the PRV. It was noted that ARVOC can articulate the pros/cons of having a close association between submergence groups and ways to develop, grow, and work together. ARVOC and UNOLS should jointly consider the issues relating to a closer association between OPP and UNOLS vis a vis polar ship research.

**RECOMMENDATION: Rob Dunbar will speak with the UNOLS office, Mike Prince, MOSS Landing, and others in an effort to get a small group together to begin dialogue. Rob will report back to ARVOC on his efforts. We need to articulate pros/cons of having a closer association.**

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Bob Farrell, Dan Herlihy advised ARVOC of the Marine staffing changes over the last year. Also, Bob noted that the vessels now fall within Palmer Area Directorate. This change from Science Support to Palmer Area Directorate should be transparent to the grantees. ARVOC members are very interested in knowing of staffing shortages as this may impact their cruises and create a need to bring on participants with special skills. In particular, ARVOC members expressed considerable concern over the recent high rates of turnover and suggested that additional turnover could very well have a significant and negative impact on the vessels requiring science support.

**RECOMMENDATION: ARVOC asks that RPSC (Bob Farrell, Dan Herlihy) continue to have “staffing” as an agenda item for ARVOC meetings and, if there are major changes to staffing, to inform ARVOC when these happen. ARVOC also asks that RPSC give some consideration to steps that might be taken to ensure retention of experienced marine group staff.**

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Met Data retention was discussed (refer: Recommendation 2, June 2006 meeting). Rob Dunbar explained that there is already a method of moving the data from the vessels to the appropriate facility or the appropriate scientist. There is a funded grant for archiving the met data (Suzanne O’Hara, Lamont Doherty Earth Observatory). Scott Borg noted that grantees should indicate in their proposals how their data collection should be handled- if it’s available or not available for release to the public. During the SIP process, this can also be restated.

**RECOMMENDATION: NSF (Scott Borg) will review and amend the award letter to include how data retention is handled, justified. For information purposes, Rob Dunbar will provide Scott Borg with a copy of the policy letter he wrote to Tom Wagner. Ways to get this information out to the grantees will be identified.**

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Sample Shipments, how they are processed and shipped, training, etc. were discussed. Members indicated that sample shipments are handled satisfactorily south of 60°. The shipping problems over the past year were above 60°S.

**RECOMMENDATION: RPSC (Ken Navarro) will review the procedures for shipping, will discuss with Pt. Hueneme staff the problems encountered, will work toward developing better procedures, and will provide ARVOC with a sample shipment report at the next regularly scheduled meeting.**

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The ARVOC charter (page 23) was rewritten in 2006 to bring it more in line with the other Users' Committee Charters. Very minor additions were recommended by ARVOC to include/identify "vessels" in the charter. As there are three new members on the ARVOC committee who have not been able to review the amended charter prior to the meeting and, as Rob Dunbar suggested a further change that would include the "ODEN or other vessels" in the charter, this 2006 recommendation will be deferred until the next ARVOC meeting. The draft charter will be sent to the three new members for their review/input.

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Committee discussed Man Overboard Response System options and, at this time, no suggested acquisition was recommended. It was stressed by committee, however, that safety and safety training should be addressed proactively. The Principal Investigators should make sure their participants/students are aware and knowledgeable of the safety hazards and safety procedures aboard ship.

**RECOMMENDATION: Chief Scientists and individual group leaders should inform/instruct their participants on matters of ship and lab safety on board. This is in addition to the safety training that ships' crew provides. Dr. Erb will be asked to add a comment to the Chief Scientist letter concerning safety instruction for participants.**

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In the past, ARVOC members were kept informed of proposed capital equipment and major purchases. These purchases or "wish list items" were made possible because funds were sometimes available due to, for example, fuel costs that resulted in excess funds at year end. With current high cost of fuel and tighter budget, Marine Ops does not have discretionary funds available for these types of purchases. Nevertheless, priority capital equipment expenditures are still being made, and are funded through other means.

**RECOMMENDATION: ARVOC asks that they be kept informed of capital equipment, major purchases for the vessels, regardless of the funding source. Their experience and input could be used to help make informed decisions. RPSC will provide ARVOC with a capital equipment report at the next meeting.**

Discussion continued on the PRV. Rob Dunbar discussed the history, the town meetings, and all the work involved with creating this viable proposal.

**RECOMMENDATION: While funding isn't available at this time and the PRV project appears to have temporarily stalled, ARVOC (Rob Dunbar) will contact the Chair of the OPP Advisory Committee to ask if the PRV can be an agenda topic at their May meeting. Rob will check on the availability of additional copies of the "PRV Notebook" that can then be provided to ARVOC members. He will start by asking RPSC to check their stock of extra copies of this notebook, either in DVD or hardcopy format. Efforts will be made to keep the PRV active and to gain more support from the science community and the funding agencies.**

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Following the IT summary discussion, ARVOC members strongly supported the installation of wi-fi aboard the vessels.

**RECOMMENDATION: ARVOC members recommend that wi-fi be installed aboard the vessels. RPSC (Bob Farrell) pointed out that the security of the wireless bridge has been an issue in the past. Any installation would require sign-off/approval from NSF IT. Bob will follow up on this recommendation and keep ARVOC informed. ARVOC will also follow up with the NSF as the NSF representative present knew of no impediment to following the examples of nearly all other U.S. research vessels that already have shipboard wi-fi.**

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Recent ADCP failures aboard the NBP were discussed. Dan Herlihy will investigate why the process was handled the way it was and advise members of his findings. (Dan's immediate diagnostic response after returning to Denver and Bruce Huber's email correspondence follows.)

**RECOMMENDATION: RPSC will ensure the ADCP equipment is working. If there are problems with the equipment, spare parts will be available and spare parts will be replaced when used/depleted. RPSC (Bob Farrell) will instruct POCs to alert the Principal Investigators when/if an important piece of their equipment malfunctions or fails.**

**Mar 13, 2008 Subject:** Further OS-38 ADCP Details

**To:** [Committee Members](#) - **From:** [Dan Herlihy](#)

As promised, my first action item upon returning to the office yesterday was to get a full accounting behind the latest failure of the OS-38 ADCP system aboard the NBP. As I mentioned to at least a couple of the members on Tuesday, both of Marine's ET Supervisors, Andy Nunn and Bruce Felix are absolutely top notch and as good as any electronics professionals that I have worked with in my 30-year marine career, and I have rarely had reason to question how they run their department. After a long talk with Andy yesterday, the following is a more detailed history of the latest failure and status of where things currently stand.

The primary PIs for the system (Dr. Eric Firing, Dr. Teri Chereskin, and Dr. Jules Hummon) have all been involved with our troubleshooting and response to this latest failure. In fact, Dr. Chereskin was on board the NBP when the problem was first detected, and we flew Dr. Hummon and her backup OS-38 computer system to New Zealand to install and troubleshoot the system on site in early January. According to Andy, we probably could have made a general PI-wide announcement of the issue, but since the Primaries were

already closely involved and since we were unsure of the extent of the problem at the time, that seemed somewhat premature.

Initially it was believed that the problem was a failure in the computer system hardware, possibly related to the fire, and we spent a great deal of IT and ET time and with the PI's involvement doing drive swaps, software debugging, and system rebuilds. We finally replaced the entire computer system with a spare from the University of Hawaii installed by Dr. Hummon in New Zealand. Unfortunately, this did not fix the problem and by the time RDI engineers decided the system deck unit was the likely issue, the ship had already sailed from New Zealand. The deck unit was shipped back from McMurdo on 30 January COMAIR, and a P.O. for the repair work is in place. Pt. Huaneme should have shipped the deck unit to RDI overnight express as early as Tuesday. Andy will be in contact with the RDI engineers as soon as they start work on the unit. We hope that RDI can fix the deck unit and we can ship it back to Lyttleton in time for the NBP08-04 transit (departs 21 March), but realistically our best hope is that the unit can be repaired in time for NBP08-05 (departs PA 18 April).

A timeline is included below for your reference. Unfortunately, by the time we determined that the problem was not computer related, and all of our troubleshooting efforts up until that point had focused on that, the NBP was already en route to McMurdo and shipping from or service visits to McMurdo are problematic.

Until the computer issue was resolved we could not effectively troubleshoot the deck unit issue. At this point our ETs and the PIs have spent so much time working on the unit on-site, a traveling RDI tech would not be able to do any more than they could. If RDI had ever suggested an on site visit could have helped we would have set it up.

Andy and Bruce's main concern is that that the failure is not in the deck unit - although a heat related failure from the fire does seem most likely, and RDI engineers seem fairly confident of this from our test results.

However, we have been down this path with RDI before, and they convinced us first that the deck unit, then the cable, then the beam former board in the transducer top hat was the issue in 2005, until finally conceding that the transducer itself had failed. The symptoms are different this time - it's a gain issue rather than a missing beam - so hopefully it is a deck unit problem alone.

I hope the above provides enough additional background to convince everyone that we are taking this issue very seriously, as we do any major equipment problem, and are doing everything we can to rectify the situation and to return the OS-38 to fully functional status as soon as possible.

Please let me know if anyone has any further questions or concerns, and I will keep you all updated we continue with this repair process.

Thanks.  
- Dan

To: Dan                      From: Bruce Huber 3/14/08

Thank you for the prompt and very thorough review of the steps taken to remedy the failed OS-38. It's clear that Andy Nunn, Bruce Felix and others devoted considerable effort to solving this problem, and I understand the decisions made during the diagnostic process.

We look forward to hearing that the problem has been resolved. Given the current budget climate, I suppose it's out of the question to purchase spare deck unit boards, but one can always ask.... Having worked with both Andy and Bruce, I share your high regard for their skill and professionalism.

Regards,  
Bruce Huber

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Following discussion of the ARSV, it was suggested by ARVOC Chair that the NSF do a study of the pros and cons of owning versus chartering an Antarctic research vessel. Tim Hollenbaugh, Andrea Lloyd, Marad may be available to consult regarding this idea.

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**RECOMMENDATION: RPSC will send the password and instructions for accessing the outbriefs to all members. All committee members will be added to the weekly sit-report distribution list.** (done- members should be receiving the weeklies effective with the reports dated after March 21, 2008.)

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ARVOC does want to be kept informed of large equipment items that are possible acquisitions. ARVOC would like the option of providing prioritization to the list of purchases.

ARVOC would like to see RPSC retain experienced/knowledgeable vessel staff.

ARVOC would like more information on how the merger of vessel operations into Palmer Station Directorate develops. It was suggested that RPSC (Bob Farrell) might draft a “self exam” of how/why the merger is for the better.

ARVOC continues to be available as a resource for RPSC and the NSF.

ARVOC will solicit and elect a new member to replace out-going member, Chris Measures. Rob Dunbar, out going Chair, will serve as Ex-Officio Chair and will work closely with the new Chair. New Chairperson will be elected by committee members.

ARVOC tentatively set October 14, 15, 2008, Denver, Co, for the next meeting. This date is subject to change.

# Report

## **Attendees:**

Rob Dunbar, ARVOC Chair, Stanford University  
Bruce Huber, ARVOC member, LDEO  
Bruce Sidell, ARVOC member University of Maine  
Janet Sprintall, ARVOC member, Scripps Institute of Oceanography  
Maria Vernet, ARVOC member, University of California, San Diego  
Meng Zhou, ARVOC member, University of Boston  
Alexandra Isern, Oceans Project Manager, NSF  
Roberta Marinelli, Organisms and Ecosystems Program Director, NSF  
Peter Milne, Oceans and Atmospheric Sciences Program Manager, NSF  
Scott Borg, Division Director/OPP, NSF  
Eric Chiang, Division Director/OPP, NSF  
Dan Herlihy, RPSC, Marine Operations Manager  
Bob Farrell, RPSC, Palmer Area Director  
Dawn Scarboro, RPSC, Admin. Coord., Sr.

7:45AM 10 March 2008 **Welcome/Introductions/New Members**

ARVOC: Rob Dunbar welcomed all and, following round table introductions, reported that Drs. Sprintall, Zhou, and Vernet are the newly elected ARVOC members. There is one vacancy left to fill and he and committee members will solicit, nominate, and elect the new member via email before the next meeting. Rob will serve as ex-officio for one year and the committee members will name a new chairperson from within the ARVOC membership.

Today and tomorrow's meetings will discuss the many changes regarding the interface between RPSC, NSF, and ARVOC. Things to consider are mandates, direction, etc. ARVOC is a knowledgeable group of dedicated volunteers and RPSC and NSF should use the ARVOC members to improve/make suggestions for the way science is conducted aboard the vessels and at the stations where the vessels dock.

## **NSF Report**

Alex Isern reported that she and others at NSF continue to work on the ARSV (Antarctic Research Supply Vessel) and PRV (Polar Research Vessel). The ARSV re-competition process is proving to be a great deal of work. Committee members were provided general information on the ARSV and there was discussion.

The budget picture was grim this last year. Any gains were zeroed out because of ombudsman decisions. Higher fuel costs, commodities, and people costs all contributed to exhausting the budgeted funds. Decisions to put off certain projects had to be made. For instance, the Palmer Station pier has been delayed another year. One goal the NSF wants to consider is having more detailed discussions with UNOLS. Perhaps they could be doing some of the work in Antarctica- working some of the cruises. Scientists and



Principal Investigators may want to include the option of a UNOLS vessel in their future proposals.

Alex reported on the Alaska Region Research Vessel (ARRV) meeting she attended last week. The meeting was a review of their 2004 plans. The meeting went well with this scientific steering group. This is a Division of Ocean Sciences (OCE) effort but ARVOC members may find the ARV interesting to follow.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=500063](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500063)

It was noted that ARVOC may want to continue or establish contact with other organizations that are researching in the Antarctic and the Arctic. Rob will represent ARVOC at the June Arctic Icebreaking Coordinating Committee (AICC) meeting. Even though the UNOLS vessels are “bare bones” and staffing and equipment may be issues, they may have something to offer during some of the down time for our vessels. Alex is unsure how a “chartered vessel” would blend with an “owned” vessel.

Roberta noted that ARVOC might want to consider being a part of the deep submergence group. This might offer more flexibility, cross-research and perhaps fuller research schedules. Suggestion was made that perhaps the submergence group Chair be invited to an ARVOC meeting.

In discussions about the PRV (Polar Research Vessel), it was noted that perhaps dialogue between UNOLS, the deep submergence community at WHOI, NOAA, and MBARI, and ARVOC could lead to positive support from a broader community and give added strength to the need for the PRV. It was noted that ARVOC can articulate the pros/cons of having a close association between submergence groups and ways to develop, grow, and work together. ARVOC and UNOLS should jointly consider the issues relating to a closer association between OPP and UNOLS vis a vis polar ship research.

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## RPSC Report

### Reorganization of Marine Division RPSC Marine 2007-2008 Management/Supervisor Changes

Position	Departed	Month	Arrived	Month
Marine Manager	Jim Holik	Mar 07	Dan Herlihy	Jul 07
Marine Superintendent	Alice Doyle	Jan 08	TBD	TBD
Marine Tech. Supervisor	Jenny White	May 07	Jesse Doren	Sep 07

Marine Tech. Supervisor	Jesse Doren	Oct 07	Ross Hein	Feb 08
Asst. MST Supervisor	Mark Pomeroy	Apr 07	Addie Coyac	Sep 07
Science Cruise Coordinator/ Planning Support Manager	Jesse Doren	Sep 07	Adam Jenkins	Dec 07
Science Cruise Coordinator/ Planning Support Manager	Steffi Suhr- Sliester	Mar 08	TBD	TBD

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### Recommendations/status from 2006 meeting

Dan reviewed the Recommendations from 2006 ARVOC meeting.

#### Status of 2006 ARVOC Meeting Recommendations

Recommendation	Status	Comments
<b>1. RPSC Marine Manager/staff should submit (via email) brief reports of meeting topics and/or agenda items to each member two to three weeks prior to the meeting date. These informational reports will make for a smoother, more productive meeting and will, also, allow for input/questions/suggestions from members not in attendance</b>	One page summaries, agenda, charter, members and terms are emailed to all members by March 3, 2008, prior to the 2008 meeting.	
<b>2. ARVOC Chair (Rob Dunbar) will write a brief letter to the OPP Advisory Committee describing ARVOC’s views and discussions about data archiving and availability policies. ARVOC recognizes that these issues are important for all parts of OPP and wishes to engage the other user committees in a broader discussion. RPSC (Jim Holik) will revise the RPSC policy as directed by ARVOC members and today’s discussion. A</b>	One-pager written for Tom Wagner wherein the status quo was changed from PIs having to select what data sets to make available prior to the end of the data moratorium to a default where they have to select which data sets to be withheld during the moratorium period.	See ** page 10

<p><b>detailed presentation will be an agenda item for the next meeting. Dunbar and Holik will organize this presentation jointly.</b></p>	<p>This is the policy in effect now for all underway data.</p>	
<p><b>3. RPSC (Bob Kluckhohn) will gather information on sample shipments moving from Chile to home institutions and these stats will be reported back to ARVOC and will, hopefully, show the effectiveness of the newly implemented sample shipment procedures.</b></p>	<p>Peninsula Science Support shipped a total of 98 temperature sensitive samples during the 2007/08 season, which includes research vessels, Palmer Station and field camps. All samples arrived at the final destination in excellent condition.</p> <p style="text-align: center;"><u>Revisions and changes to shipping procedures this season include:</u></p> <ul style="list-style-type: none"> <li>• 24 hour emergency contact numbers while shipments are in transit.</li> <li>• Training and certification courses for all personnel involved with packing samples. <ul style="list-style-type: none"> <li>• Samples tracking advisories that are sent out for each shipment.</li> </ul> </li> <li>• Scheduling shipment departure dates to the U.S. on Sunday thru Wednesday in order to avoid arrivals over weekends.</li> <li>• Daily observations of samples and replenishment (when necessary) of dry ice over weekend and during holidays whenever samples are in custody at Santiago.</li> <li>• Peninsula Logistics and Marine Operations are working as a team in order to ensure successful delivery of ALL samples.</li> </ul>	<p>* See page 10</p>
<p><b>4. A sub-committee group (Steve Ackley, Janet Sprintall, Bruce Felix, &amp; Jim Dolan) will work to resolve questions and make recommendation to ARVOC on MET data reporting from the vessels.</b></p>	<p>Both vessels are now reporting data to VOS/Clim and SAMOS. The LMG has recently received an award for the volume of data that it is reporting.</p>	
<p><b>5. Committee consensus is that the ARVOC Charter should read: “The ARVOC Committee as a whole will elect the successor for an outgoing member.” And on page 2 of 4 of the proposed Charter that refers to what ARVOC does, the Committee suggests that the first sentence end with “Research aboard USAP vessels, or other U.S. vessels.”</b></p>	<p>Done. ARVOC members provided a copy of the revised Charter prior to March 10 meeting.</p>	<p>*** page 11 Note: Charter will be amended to include “ODEN and other vessels”. Rob Dunbar will amend Charter and review/ approval will be agenda item at next meeting.</p>
<p><b>6. ARVOC recommends an FRRF and a PRR for exclusive use on the vessels be purchased.</b></p> <p>(FRRF- The USAP currently owns one. This system is used by the Palmer Station LTER from October-March each year. Each year requests are received for an additional instrument during the austral summer. \$40,000)</p>	<p>New Satlantic FIRE system purchased as a replacement for the Chelsea FRRF, based primarily on positive feedback from Maria Vernet who used a FIRE on LTER LMG08-01.</p> <p>The NSF has not yet funded a replacement PRR.</p>	<p>ARVOC members noted at the March 10 meeting that there is still a need for a PRR.</p>
<p>RPSC has been seeing increased requests for ROVs over the past couple of years. The USAP HYBALL ROV is old and outdated. Would it be more beneficial</p>	<p>A Seabotix LBV150 was purchased for SIMBA, but failed to operate. It was returned for repair and brought</p>	<p>ARVOC members did not have a specific request/</p>

<p>to have a larger, more capable ROV (\$100,000) or would something small be suitable (\$15,000)?</p> <p><b>7. ARVOC recommends that RPSC request a smaller ROV for use on the vessels rather than the one available on the equipment list.</b></p>	<p>on LMG08-02. It was tested from a zodiac at Palmer Station and worked reasonably well. There was an issue with current and lack of control due to being caught in diver's bubbles.</p>	<p>recommendation at the March 10 meeting.</p>
<p><b>8. ARVOC recommends the purchase of the "man-overboard" alarm system but sees this purchase as being a RPSC Environmental Health and Safety (EH&amp;S) item due to it being so closely related to safety. Jim Holik will contact EH&amp;S regarding possible acquisition.</b></p>	<p>The Electronic Tech Supervisor did extensive research on MOS, contacted several vendors, etc. The ET Supervisor's research was done to support any actions EH&amp;S might do regarding acquisition/ implementation of MOS. Denise Riad of EH&amp;S, who is no longer with RPSC, was provided with all of the information but, to-date, no further action has been taken. EH&amp;S was contacted again this week on this subject and they indicated that all PPE money has been taken out of EH&amp;S and placed in the Centralized Material Planning budget and departments are now responsible for these types of items.</p>	<p>**** Page 11</p> <p>ARVOC did not have a specific request/ recommendation at the March 10 meeting. This may be a topic at a later meeting.</p>

\*\*Met Data retention was discussed (refer above: Recommendation 2, June 2006 meeting). Rob Dunbar explained that there is already a method of moving the data from the vessels to the appropriate facility or the appropriate scientist. There is a funded grant for archiving the met data (Suzanne O'Hara, Lamont Doherty Earth Observatory). Scott Borg noted that grantees should indicate in their proposals how their data collection should be handled- if it's available or not available for release to the public. During the SIP process, this can also be restated.

**RECOMMENDATION: NSF (Scott Borg) will review and amend the award letter to include how data retention is handled, justified. For information purposes, Rob Dunbar will provide Scott with a copy of the policy letter he wrote to Tom Wagner. Ways to get this information out to the grantees will be identified.**

\*Sample Shipments (refer above: Recommendation 3 June 2006 meeting), how they are processed and shipped, training, etc. was discussed. Members indicated that sample shipments are handled satisfactorily south of 60°. The shipping problems over the past year were above 60°S.

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Maria Vernet, Bruce Sidell, Bruce Huber noted that shipping issues they encountered included points of contact not being informed of delivery arrangements/times, repackaging/chilling or keep frozen mistakes. Committee members added that they are available to discuss with Ken Navarro, RPSC, shipping issues and to offer suggestions for improvement.

\*\*\*(refer above: Recommendation 5 June 2006 meeting) The ARVOC charter was rewritten in 2006 to bring it more in line with the other Users' Committee Charters. Very minor additions were recommended by ARVOC to include/identify "vessels" in the charter. As there are three new members on the ARVOC committee who have not been able to review the amended charter prior to the meeting and, as Rob Dunbar suggested a further change that would include the "ODEN or other vessels" in the charter, this 2006 recommendation will be deferred until the next ARVOC meeting. The draft charter will be sent to the three new members for their review/input.

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### Procurement Plans RPSC/Vessel addition/equipment

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## Recent USAP Shipboard Equipment Purchases or Upgrades

Item	Description	Cost
Biosonics transducer upgrade	In process currently at the manufacturer; addition of a secondary 38 kHz transducer to be towed Biofish DT-X system.	\$29K
Datasonics side scan sonar upgrade	Full conversion of old Datasonics Side Scan Sonar to modern version of Teledyne Benthos SIS-1625, complete with modernized electronics, software, dual frequency side scan transducers and sub bottom transducers. Upgrade is complete and system is en route back to Punta Arenas.	\$85K
LMG winch display system upgrade	Installation of a modern system to replace old system ported over from the Polar Duke.	\$28K
Addition of new ORE Offshore Acoustic Deck Unit on the LMG & the addition of eight communication channels to the existing Benthos Acoustic Deck Unit on each ship.	Both ships now have permanently installed matching deck units for communication with all InterOcean, ORE, Benthos, and Edgetech releases, and can conduct bidirectional communications and data downloads from CPIES moorings.	\$24K
New Satlantic FIRE fluorometer system	Replaces non-functional Chelsea FRRF system.	\$35K
LMG dry dock – added new VHF radio cable runs and antennas.	Provides full base station power VHF communications to every lab, the back deck shop and the MPC office.	\$3K
New Seabotix mini-ROV	Provides basic ROV capabilities.	\$30K
New SBE-45 thermosalinograph and SBE-38 digital remote temperature probes to the uncontaminated seawater system on each ship.		\$10K
Installed new Fleet-77 Inmarsat satellite systems on each ship.	Provides reduced e-mail transmission costs and increased reliability.	
New Geometrics single-channel solid streamer	Replaced lost oil-filled single-channel streamer with a new design solid streamer made from “spherethane”, a world first in marine technology.	\$25K
New motor-generator van aboard the ODEN	Designed and implemented to supply American-style 240 and 208volt 60Hz electrical power aboard the European-style 380volt 50Hz power only Swedish Icebreaker.	\$100K

## PRV Discussion

Rob Dunbar recalled the two workshops held a number of years ago, the efforts of Marad, Dick Voelter, naval architects, and others in planning a new vessel, the three town hall meetings and the final presentation report to the NSF. Following all these planning efforts, the NSF instructed that plans for a PRV be put on hold. A polar research

committee was formed to discuss the PRV plans to date, and a website created to capture future needs. All of this information was provided to the NSF, but no feedback was received. ARVOC members asked for the NSF's current state of thought for the PRV- can this be put back on line?

After lunch, discussion continued on the PRV. Eric Chiang and Scott Borg joined the meeting and it was noted that, while the vision represented by the PRV is fantastic, stark budget constraints don't allow for the PRV at this time. ARVOC should feel that they have an avenue to the Advisory Committee for Polar Research and concerns can be voiced to the Advisory Committee. Polar research might be another avenue to get your voice heard-or through AGU.

**RECOMMENDATION: While funding isn't available at this time and the PRV project appears to have temporarily stalled, ARVOC (Rob Dunbar) will contact the Chair of the OPP Advisory Committee to ask if the PRV can be an agenda topic at their May meeting. Rob will check on the availability of additional copies of the "PRV Notebook" that can then be provided to ARVOC members. He will start by asking RPSC to check their stock of extra copies of this notebook, either in DVD or hardcopy format. Efforts will be made to keep the PRV active and to gain more support from the science community and the funding agencies.**

### RPSC Summary Reports-general discussion/questions

Following the IT summary (see page 16) discussion, ARVOC members strongly supported the installation of wi-fi aboard the vessels.

**RECOMMENDATION: ARVOC members recommend that wi-fi be installed aboard the vessels. RPSC (Bob Farrell) pointed out that the security of the wireless bridge has been an issue in the past. Any installation would require sign-off/approval from NSF IT. Bob will follow up on this recommendation and keep ARVOC informed. ARVOC will also follow up with NSF as NSF representative present knew of no impediment to following the examples of nearly all other U.S. research vessels that already have shipboard wi-fi.**

Recent ADCP failures aboard the NBP were discussed. Dan Herlihy will investigate why the diagnostic process was handled the way it was and advise members of his findings. (see Dan's immediate response after returning to Denver and Bruce Huber's email correspondence page 3)

**RECOMMENDATION: RPSC will ensure the ADCP equipment is working. If there are problems with the equipment, spare parts will be available and spare parts will be replaced when used/depleted. RPSC (Bob Farrell) will instruct POCs to alert the Principal Investigators when/if an important piece of their equipment malfunctions or fails.**

## ARSV Re-bid Process

Discussion regarding the Antarctic Research Supply Vessel re-bid process. Alex noted that an extension to the R/VIN Nathaniel B. Palmer's contract is the most appropriate step at this time. This will allow time to determine where and how to proceed in the ARSV process.

Bruce Sidell reviewed his ARSV report of February 19, 2008 (page 20). General discussion regarding the re-bid process is not recorded.

Other Summary reports-

Sonar window- Paul Olsgaard page 17

ODEN report- Karl Newyear page 19

Tues 3/11/08

8:00AM

### Continuation of any unfinished topics- other business

Rob re-emphasized that ARVOC is a multi-disciplined advisory committee to RPSC and, as such, RPSC should know that the members are always ready to help with issues or concerns.

Vessel outbriefs are another task the ARVOC Chair responds to. On some outbrief topics, the Chair may ask another member to speak with the principal investigator. ARVOC wants to be kept informed of such issues as any shipping difficulties, staffing changes, staff shortages, and/or open positions.

Janet Sprintall mentioned that she would like to be kept informed on how the merger of vessel operations with Palmer Station Operations progresses, what changes might occur, etc. Also, it was noted that ARVOC members might be of help in getting the merger information out to the science community. Bob Farrell might draft a brief document to explain how NBP/LMG operations and support are benefited by being in Palmer Station Operations.

Next meeting: Tentative meeting date is October 14, 15, 2008 in Denver.

Move to adjourn. 10:00

## Attachments

Agenda -below

IT summary- Dave Leger

Sonar window- Summary report, Paul Olsgaard

ODEN – Summary report, Karl Newyear

ARSV Report- Bruce Sidell

Terms and Limitations

Charter

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ARVOC

March 10-11, 2008

14 of 26



**ANTARCTIC RESEARCH VESSEL OVERSIGHT COMMITTEE (ARVOC)**  
**Room 1060, NSF, 4201 Wilson Blvd., Arlington, VA**  
**March 10-11, 2008**

(Note: An informal meeting of Committee Members will be scheduled the evening of March 9<sup>th</sup>. The exact time and location is to be determined. NSF and RPSC attendees are welcome.)

## Agenda

7:30AM	<b>Monday</b> Welcome/Introductions/New Members	Rob Dunbar
8:00 AM	NSF Report	Alex Isern
8:30 AM	RPSC Report Reorganization of Marine Division	Bob Farrell/Dan Herlihy
9:30 AM	Recommendations/status from 2006 meeting	Dan Herlihy
9:45 AM	Procurement Plans RPSC/Vessel addition/equip.	Bob Farrell/Dan Herlihy
10:00 AM	<i>Break</i>	
10:15 AM	PRV Discussion	Rob Dunbar
12:00 PM	<i>Lunch- on your own</i>	
1:15 PM	Recap of morning session	Rob Dunbar
1:30 PM	ARSV Re-bid Process	Alex Isern/Bruce Sidell
3:00 PM	<i>Break</i>	
3:15 PM	RPSC Summary Reports General Discussion/questions re: Summary Reports	Dan Herlihy
	<u>Close meeting for the day 1 4:30 or 5:00</u>	
7:30 AM	<b>Tuesday</b> Brief recap of Monday session	Rob Dunbar
7:45 AM	ODEN report/discussion	Dan Herlihy/Alex Isern
8:15 AM	Continuation of any unfinished topics (ARSV Re-Bid/PRV/other)	
9:00 AM	Other Business Next meeting date/location Approval of June 14, 2006 Minutes	
10:00 AM	Adjournment	

(FYI- *Polar Icebreaker in a Changing World: An Assessment of U.S. Needs Report* at:  
[http://www.nap.edu/catalog.php?record\\_id=11753](http://www.nap.edu/catalog.php?record_id=11753) free download)

## IT

(Dave Leger, IT Manager- 2/8/08)

The Nathaniel B. Palmer suffered a fire in the Biology Lab. Heavy soot and smoke filled the labs and corridor. It was not until 2 hours after the fire occurred that IT staff members were allowed back in to shut down our equipment. At that point many computers had already failed, either locking up or showing error indicators. As the NBP diverted to Palmer Station to refill the breathing apparatus air tanks used in fighting the fire, IT staff worked to train the science party on how to disassemble computers and clean all the individual components. Everything had to be taken down to basic components, cleaned, and reassembled.

Meanwhile IT staff in Denver boxed up 3 rack mount computer systems from the Denver test lab. We use these systems to model the vessel environment and test software. While a bit old (one is a model no longer manufactured), we could ship these quickly to Chile. Once these 3 systems arrived at Punta Arenas, and the ship returned from Palmer Station, we worked day and night to build replacements for key systems. Functions which had been running on separate machines were squeezed in to run together. The oldest machine was set up as a data acquisition system. The one with larger disk drives replaced the failed drive away for storage space. The 3<sup>rd</sup> was set up to provide all other services, supporting logging in, email, printing, etc. The spare network switch, which was not set up, was cleaned and activated. One of the two switches which died was resurrected after cleaning. With these switches and systems the NBP returned to sea to complete the science cruise which had been interrupted.

While science proceeded on the NBP, Denver IT staff worked with a list of everything that was compromised. A recovery team was instituted across divisions, and plans were quickly in place to restore full functionality before the next cruise. All in all we ordered around \$350,000 in IT equipment. On October 31<sup>st</sup> the NBP arrived in Punta Arenas. IT staff began removing damaged systems and moving the new systems aboard. The biggest job was installing the new network equipment, configuring it, and installing the new servers and setting them all up. Everything from log-in handling and accounts to printer services to disk space and email services had to be set back up on these new machines. Every computer had to be hardened again to meet the program's security guidelines. The new network switches had to be configured for the ship, and to meet security standards. Bottom line: after an almost complete IT retrofit in the face of many challenges the NBP left port on schedule for its next science cruise.

We are in the process of implementing a new version of the data acquisition system (DAS) on both ships. The serial port adaptors currently used are no longer manufactured or supported. Work on the new DAS implementation has been delayed by the fire recovery efforts but will continue.

As the vessels are federal computer systems on a federal network, they are subject to federal security guidelines. The major part of our efforts outside of direct cruise support will, over the next year, continue to be hardening vessel networks and systems to meet federal standard configuration and vulnerability standards.

(Paul Olsgaard- Proj. Mgr/Marine 2/8/08)

## Sonar Windows

New sonar windows were installed on both research vessels. The installations utilize a new design for mounting (reciprocating bevels vs. thru-hole) and new window material (optical polycarbonate). This was a world “first” in marine technology.

The old windows were leaking and attenuated the sonar signals, which previously required expensive emergency dry-docking periods and limited both data volume and quality. The new windows are watertight and have yielded 20% improvement (increase) in acoustic transmission depth range.



## Single-Channel Seismic Streamer

Marine worked with Geometrics to procure a new solid single-channel streamer, which was also a new design. The streamer is a Programmable Aperture Single-Channel Solid Seismic Streamer with a 12-channel Deck Interface. Channels 1 to 6 hydrophones are spaced at 1.0 meter intervals closest to the lead-in. Channels 7 to 12 hydrophones are spaced at 0.5 meter intervals with channel 12 closest to the tail. The streamer was made using a new patent-pending material process called Spherethane, which maintains consistent density for flotation while most importantly improving the bonding properties.



## **PRV**

There has been no activity on PRV since the last ARVOC meeting. RPS has submitted a New Project Proposal yearly with the exception of FY2007. RPS had an opportunity to socialize PRV with Erick Chiang of the NSF, and the guidance received was \_\_\_\_\_ (Paul's email had the following message).

Dan,

My input (PM) for the ARVOC meeting is attached. You'll need to get the latest PRV input (Erick Chiang guidance) from Bob Farrell or Jeanne, and I have put a section for that at the end of my paper. The best thing to facilitate a PRV discussion would be to just have an internet connection available, pull up our PRV web site, and then talk time, \$, a possible project charter, etc.

If you wish I can write a PRV section for you once I know what Erick Chiang's guidance was.

Regards, Paul Olsgaard

## ODEN

By Karl Newyear (2 8 08) ARVOC One-Pager

### Accomplishments

During the 2007-08 season RPSC Marine was able to support a very ambitious science program, with very little advance planning time available, on an unfamiliar platform. The US science program involved 7 US PIs and included parallel Trace-Metal Clean and standard CTD casts, XBT/XCTD deployments, a pumped TMC water system, incubation experiments including radioisotopes, underway and lowered Video Plankton Recording systems, vertical plankton net casts, underway air and seawater sampling, nutrient analysis, and oxygen titrations. USAP-provided infrastructure to support these activities included a motor-generator van, radioisotope van, refrigerated lab van, TMC winch, rosette frame, and CTD instrumentation, nutrient autoanalyzer, deck incubators, lab chemical storage lockers, and other “standard” laboratory equipment. Additionally, three RPSC technicians sailed on the cruise to help support the program.

Significant difficulties were encountered throughout the planning and implementation of this project. The short lead time stressed the USAP procurement system including shipping items from the US to Punta Arenas as well as on-site configuration and testing of new equipment. There were some last-minute personnel issues that required near-heroic measures to obtain PQ status. Navigating both the US and Swedish radioisotope permit procedures was challenging. During the port call we were hampered by port authority restrictions on cargo movement in high wind conditions, and throughout the port call and cruise staffing levels were barely adequate. Despite meetings and teleconferences prior to the cruise, we encountered differences in the expectations between the US and Swedish sides of the program.

### Current Challenges

Although the *ODEN* cruise has been completed there is still follow-up work to do. Neither McMurdo nor the ship itself has adequate crane capability to offload lab containers. This will need to be done upon the ship’s return to Sweden at the end of March. The radioisotope van must be verified clean through swab testing by the University of Miami Tritium Lab. The Trace Metal CTD system must be shipped back to Moss Landing Marine Laboratory where it requires some maintenance and repair.

A workshop was held in Stockholm, Sweden 11-12 February attended by personnel from NSF, the Swedish Polar Research Secretariat, and both US and Swedish scientists to help formulate a realistic scientific and logistical framework for the next four years of *ODEN* participation in the USAP. Proposal submissions are due on 2 May 08 and NSF expects to make funding decisions by early July for the *ODEN*’s 2008-09 cruise to McMurdo Sound. Until the science program is known it’s difficult to identify what specific challenges may be on the table. However, we will once again be faced with a short planning and implementation timeframe when compared to “standard” USAP science cruises, though we have a better understanding of the capabilities and limitations of the *ODEN*.

## ARSV Rebid Process 2/19/08

(Bruce Sidell)

Dear Colleagues,

Once again, I am sending a very quick update on the ARSV Rebid Process to both members of the Scientific Advisory Subcommittee and to membership of our parent Committee, ARVOC.

You may recall from my last communication that a Pre-proposal Conference was scheduled for mid-February, which would enable potential bidders who required more specific information or clarification of the RFP to have one-on-one discussions with representatives of RPSC, NSF and the scientific community. The conference was held in Arlington, VA last week. I (Sidell) attended on behalf of our Scientific Advisory Subcommittee and as a representative of the scientific community. Four different organizations from the maritime industry elected to participate in the conference. (Please note that this does not necessarily equate to the number of bidders that ultimately will submit proposals, simply those who felt that participation would be valuable.) Under the terms of a Proprietary Information Agreement to which I must abide, the detailed information that I can share with you is restricted (*e.g.* I cannot reveal the identities of organizations attending the meeting). However, there are several pertinent pieces of information that I can provide:

- Because of market forces affecting the shipping and ship-building industry at present (notably enormous demand from oil exploration companies), there exists tremendous pressure on shipyards and suppliers of major equipment systems for ships. There was a consensus among all the industrial participants that lead-time for delivery of major ship systems (*e.g.* propulsion systems, cranes, *etc.*) is in the range of 24-30 months from the date of order. Likewise, demand for slots in shipyards for hull construction is very intense. These factors combine to suggest that delivery of a new-build by any company would probably require a minimum of *ca.* 36 months from time of the award of contract.
- Clearly this type of lead-time requires that alternatives be explored to ensure continuity of both logistical and science support of USAP activities in the Peninsula between the term of our current charter extension for the *Laurence M. Gould* (July 2010) and delivery date of a new vessel, in the event that a new-build was decided upon. All parties are cognizant of this and, without going into detail, several possible mechanisms for dealing with this issue were discussed, both with conference attendees and among RPSC and NSF participants.
- Intensity of pressure on maritime organizations described above also may compromise their ability to assemble proposals in time for the deadline of submission articulated in the RFP (25 April). Consequently, we discussed the possible necessity of extending this deadline by an additional 3 months. The

thinking here is that, if this would maximize the number of credible bids, it may be worthwhile. RPSC representatives are currently canvassing potential bidders to assess whether this extension will be necessary.

- The relative advantages/disadvantages of different propulsion systems (*i.e.* direct-drive diesel with controlled propeller pitch, diesel-electric with azimuthal drive, diesel-electric with azimuthal drive) were discussed with each of the attendees. There was substantial disagreement among the parties about the merits of these systems with respect to fuel usage, functionality in heavy ice conditions and, noise issues). Jim St. John (*STC Corporation*), who is providing marine architectural and engineering expertise to the Committee, will be looking into resolving these questions for us.
- Although removed from the budget for this year, construction of a new pier at Palmer Station is nonetheless a very high priority. Alex Isern (NSF attendee) indicated that redesign of the pier is underway and that there is a commitment for this project to go forward. She speculated that the new pier would be completed by the time that a new ship went into service, in the event of a new-build. This would eliminate the necessity of the 19 ft draught limitation because of the rock near the current Palmer Station pier.

I would like to emphasize to you all that I remain heartened that the process is moving forward with all deliberate speed. I can also tell you that some of the discussions with conference attendees were very positive, indeed exciting. I know that some of you will be concerned at the possibility of a further delay of a few months but, within the context of the delays we already have encountered, this may be a small price to pay in order to ensure the best competitive outcome. I have been asking members of the Scientific Advisory Subcommittee to keep their calendars open for early May for review of technical performance sections of proposals. In the event that the deadline is extended, I will let you know immediately so you can free that part of your calendar and start to protect a different target date-range.

Please don't hesitate to contact me if you have any additional questions. However, please also try to be understanding if I am unable to answer some of these directly because of the Proprietary Information Agreement. I'll give you all the information that I can within those bounds.

Bruce Sidell

## ARVOC Members & Term Limitations (2/14/08)

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Term: January 01, 2004-December 31, 2007 (will serve as Ex-Officio 10/01/07-09/30/08)

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Term: October 1, 2005-September 30, 2008

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Term: October 1, 2007-September 30, 2010

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Term: January 1, 2004-September 30, 2007

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Term: October 1, 2005-September 30, 2008

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Term: October 1, 2005-September 30, 2008

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Term: October 1, 2007-September 30, 2010

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Term: October 1, 2007-September 30, 2010



# Charter for USAP User Committees

The USAP Users' Committees provides advice and recommendations to Raytheon Polar Services Company (RPSC) on the support of science projects using USAP resources and facilities. The committees ensure representation of principal investigators to the management and operation of USAP research stations, vessels, and field camps. RPSC's goal is to provide effective and efficient support to science projects. The committees advise RPSC on policies that guide their operation on stations, vessels, and at field camps and how they may be improved, and on USAP resources and how they can better meet grantees' needs. RPSC and NSF/OPP will respond to the committees' recommendations as outlined in the bylaws.

## Bylaws Governing USAP User Committees

### Scope:

The User Committees are advisory committees to the USAP prime contractor. As the prime contractor, RPSC is responsible for making recommendations in turn to NSF/OPP. RPSC is responsible for tracking recommendations, results of those recommendations, and implementing solutions approved by NSF.

This charter and bylaws apply to all USAP stations and the field camps they support as well as the research vessels. In this document, "station" refers to continental stations, field camps, and research vessels.

The committees have an advisory status but cannot task RPSC or NSF/OPP with action items to be carried out. Where a provision in these bylaws is specific to a committee, the provision is so marked. The committees are station-specific and named as follows:

- ARVOC. Antarctic Research Vessel Oversight Committee
- MAUC. McMurdo Area Users' Committee
- PAUC. Palmer Area Users' Committee
- SPUC. South Pole Users' Committee

The users' committees are representative of the larger grantee community and topics will be of concern to the community. Likewise, deliberations and recommendations will be beneficial to the entire USAP community or segments of the community.

**Topic criteria:** Topics must be determined collaboratively between the committees, RPSC, and NSF/OPP. This provision is intended to prevent committees from spending time and effort on:

- Topics that are already being addressed by the Office Advisory Committee (OAC) or within the purview of the OAC.
- Topics that are of a magnitude that must be addressed by NSF/OPP at a higher level, i.e. strategic planning, icebreakers, bandwidth improvement, station master plans.

### Structure & organization:

**Topic identification:** The committees work with RPSC and NSF/OPP to identify topics of interest to the larger grantee community and within the scope of the committees' purview. Sources for topics include but are not limited to:

- Suggestions from PIs, co-PIs, team leads, and other USAP community members.
- Committee members.
- RPSC requests for committee opinion.

- NSF/OPP requests for committee opinion.
- Project outbriefs where issues have been identified that affect the community and not the single project and where PIs have given permission to make the topic public.

At least 60 days before the annual meeting, topics will be identified. Identified topics will be discussed with RPSC and NSF/OPP as the agenda is developed. During the meeting the topics and recommendations will be discussed. The goal of each meeting is to arrive at specific recommendations.

**Membership:** Committee members will be representative of each of the USAP programs as appropriate for each station. Member terms will be for three years, with one-third of the membership rotating off the committee each year. Members shall serve only one term, however non-consecutive terms are acceptable. Terms shall begin on the first day of the fiscal year (1 October) and end on the last day of the fiscal year (30 September). Committee members must be USAP grantees but not necessarily a principal investigator and not necessarily having a current award.

The ARVOC members, as a whole, will elect the successor for an outgoing member. Nominations will take place in Executive Session, and will be presented to RPSC for concurrence. In some circumstances, past members will be asked to remain on the committee in an advisory role. Ad hoc members can be identified as needed when expertise is required to address specific topics.

Committee chairs will serve for three years in addition to time already served as a member, and one additional year at his or her discretion as an ex-officio member. The chair will be restricted to current committee members to ensure continuity and familiarity with the committees' role and functions.

Election of the new chairs will be conducted by the outgoing chair at his/her last meeting as chair. Nominations will be solicited from the active membership. The outgoing chair will determine the willingness of nominees to stand for election and will conduct a ballot of the membership.

The characteristics of and criteria for each committee's membership is slightly different:

ARVOC members are representative of the community of ocean research scientists with particular emphasis on those with current or previous NSF/OPP support for research aboard USAP vessels or other U.S. vessels. ARVOC membership is limited to no more than nine (9) regular members, plus the ex-officio chair.

MAUC members are representative of each of the USAP programs, Aeronomy & Astrophysics, Biology & Medicine, Geology & Geophysics, Glaciology, and Oceans and Climate Systems. There is no established limit on the number of members.

PAUC members are representative of the community of Antarctic Peninsula research scientists with representation from the major activities, perspectives, and disciplines. There is no established limit on the number of members.

SPUC members are representative of the science activities at South Pole Station including large and small science projects and projects in each sector. SPUC membership is limited to seven (7) regular members, plus the ex officio chair.

**Meetings:** The committees will meet at least once a year in locations suggested by the committee and approved by RPSC. Ad hoc meetings can be scheduled at the discretion of the committee. For the continental research stations, ad hoc meetings are held on-station. Annual and ad hoc meetings are open for attendance by any members of the USAP grantee community. Ad hoc members and guests may be invited to meetings for their specialized expertise. At the end of annual meetings, the committees will set approximate dates for the next year's meeting.

Executive Committee and Executive Sessions: The "Executive Committee" comprises only the regular members of each committee without RPSC or NSF/OPP representation. At the chairs' discretion, executive committees may meet in "executive sessions" when necessary.

**Working Groups:** Each committee, RPSC, and NSF/OPP may collaboratively identify special topics that require more detailed investigation and deliberation to arrive at recommendations. In such cases, working groups composed of grantees with some expertise in and experience with the question will be formed. Working groups can be convened at the annual meetings, at ad hoc meetings on stations, or at any other time.

**Action Items:** During any meeting, committee members and RPSC staff may volunteer to provide information or otherwise take some action that will benefit the committee process. Committees cannot task RPSC with action items and RPSC may not task committee members with action items. Completion of action items will be tracked within the committee management and within the RPSC department or division volunteering for the action item.

\*\*\*\*

**Results, Reporting and Response:**

Three weeks after each meeting, RPSC will send a draft meeting report to committee members. Committee members will have 2 weeks to comment on the report draft. One week later (six weeks after the meeting) RPSC will publish the revised draft report to usap.gov. The published draft will include RPSC resolutions or RPSC’s suggestions for NSF/OPP resolutions to the committees’ recommendations. Within three weeks of receipt of the report, NSF/OPP will advise RPSC and the committee as to when they will provide formal responses to each of the recommendations. NSF’s response may be approval or denial of the recommendation. Or, for more complex topics, NSF’s response may be a due date when the issue will be fully addressed. Final reports will include NSF/OPP responses and will be published to usap.gov, overwriting the draft report. Reports will be updated as needed to publish additional resolutions to committee recommendations.

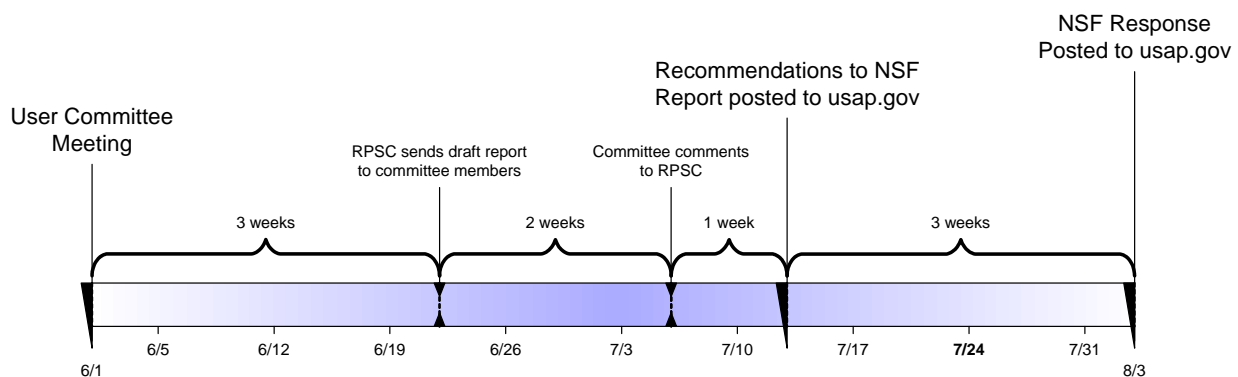
The diagram below is an example of a timeline for a meeting held on 1-June.

Meeting reports will contain the following information in this order:

1. Topics and recommendations of the committees
2. List of attendees and their contact information

Ancillary information related to meetings may optionally be provided separately on the usap.gov website:

- Action items taken on by RPSC or the committees
- Abbreviated contents of RPSC and NSF/OPP briefings (e.g. bullet list)
- Full presentations
- Meeting agenda



**Response Follow-up and Closeout:**

An RPSC point of contact (POC) is assigned to each user committee. POCs are members of the Planning Support Manager’s group within the Science Support Division. With the committee chair, each POC is responsible for the management and administration of committee activities. The POCs will work with the

committee members to produce meeting reports and submit them to NSF. The POCs will track due dates, follow-up with NSF/OPP for resolutions, and report back to the committees.

The POC will assist the committee chair in drafting and refining meeting agendas and in identifying topics in collaboration with NSF. The POC will ensure that meeting reports are published to usap.gov within the timeline as outlined in these bylaws.