Polar Research Vessels and UNOLS

Polar Research Vessel Committee Update

AICC Meeting

March 22-23, 2012

Polar Research Vessel Committee

Rob Dunbar/Stanford- Chair
Hugh Ducklow/MBL
Vernon Asper/USM
Carin Ashjian/WHOI
Larry Lawver/UTexas
Dale Chayes/LDEO
Doug Russell/UW
Dan Oliver/UAK
Maria Vernet/UCSD
Eugene Domack/Hamilton
Bruce Huber/LDEO
Craig Smith/UH
Annette DeSilva & Jon Alberts/UNOLS

PRV Committee Goals

The key charges to this committee were:

- Update the science questions and review/modify the vessel science mission requirements defined in an ARVOC study conducted between 2002 and 2006
- Articulate and evaluate emerging new science drivers
- Utilize the UNOLS model for developing science mission requirements based on current and broad science community input
- Submit a report to NSF in two stages with an interim report due in August 2011 and a final

Workshop- Meetings- Report

- PRV Workshop- NSF Feb 28 & March 1, 2011- 70 participants- Flesh out Science Questions and Drivers
- PRV Committee met in Palo Alto on May 5 & 6 to continue to identify
- science questions and writing the interim report.
- Interim Report Submitted to NSF/OPP on 31 August 2011, followed by request for community feedback
- UNOLS and PRV are developing science capability tables- Summer/Fall 2011
- PRV met again at NSF on December 1 & 2, 2011.
- Final report submitted to NSF in February, 2012.

Interim Report- Approach Taken

- Review the Science Questions developed in the 2002-2006 study to determine if still valid.
- Determine new science drivers and grand challenges and attempt to predict out 30 years
- Careful not to get bogged down on science mission requirements, but to identify science capabilities which come out of science questions.

Grand Challenges

- # 1- The Ice Sheet to Marine Transitions zone- understanding the processes and thresholds at the boundaries between the ice sheet and ocean.
- #2- What is the role of the polar oceans in the global carbon cycle?

Additional Science drivers

- What is the geologic nature and extent of the polar continental shelves and what natural resources do they contain?
- How do polar organisms respond to environmental change?
- What will be the effects of sea level rise?
- How will unique polar marine ecosystems respond to climate change?

Table 1. Conceptual specifications based on the workshop and committee deliberations through December, 2011.

Characteristics Specification

- Icebreaking Capability Continuous transit through 4.5 feet sea ice at 3 knots
- Accommodations Crew and marine technicians plus 45 scientists
- Length Overall ~115m (380 ft)
- Beam ~23m (75 ft)
- Draft ~9m (30 ft)
- Displacement ~ 11,000 LT (11,200 MT)
- Propulsion Horsepower ~16.8 MW (22,400 HP)
- Special features Box keel, 4m x 4m interior moon pool, lab vancapable (4 or 5), helicopter support, 24/7 internet, small boat operations, designed for flexible use of both starboard and port rails for instrument deployment

- http://www.unols.org/committees/fic/smr/PRV/PRV_SMR_FinalReport_Feb2012.pdf