Polar Research Vessel and UNOLS

Research Vessel Operator’s Committee Update

April 24-26, 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 report due in February 2012
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.

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.

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