

## Icebreakers

The OAC recommended that OPP “*Develop a comprehensive systems approach to Antarctic icebreaking* in order to alleviate the single point of failure inherent in the current mode, and to reduce operating, maintenance, and fuel costs.” This systems approach is recommended not just for review of icebreakers, but for all considerations that were included in the resupply report and any others that NSF may consider. With specific regard to icebreakers, the Committee indicated that, “In the near term this should include commercial sources, backed up by the US Coast Guard icebreakers. Ultimately a new McMurdo-capable icebreaker may be required to meet future logistical needs of the USAP. *Commercial business models (possibly involving the private sector) should be examined considering procurement and/or operation of that icebreaker.*”

## Short Term

The Russian vessel KRASIN has again been chartered for the McMurdo break-in and escort for the 2005/6 operating season. OPP was quite impressed with the performance of this vessel during the 2004/5 season. The vessel operated on a 24x7 basis and had no noticeable problems with breaking the ice and escorting the re-supply vessels (albeit the POLAR STAR did the initial break-in before the arrival of KRASIN). The major difference in the design of the two ships is that the KRASIN has 1.5 times the displacement of a POLAR (19,920 LT vs. 13,200 LT) but it has half the horsepower (37,000 HP vs. 75,000 HP turbine/18,000 HP diesel). Both ships appeared to be effective in the ice with the KRASIN requiring significantly less fuel.

OPP sponsored a Naval Architect study of the performance of the KRASIN in the expected ice conditions for the coming season. This study determined that the break-in through last year’s channel should take less than 10 days. Because of this study and because of the unavailability of one POLAR class vessel and the fragile condition of the other, the KRASIN will be the primary icebreaking vessel and OPP has tasked the STAR to remain in Seattle on ready alert. The STAR would only be deployed if it is clear that KRASIN needs assistance. OPP has arranged for Naval Architects to be aboard the KRASIN as it proceeds through the ice to make continuous observations of the ship’s performance. This will serve two purposes: 1) It will give OPP early warning if the performance is less than predicted such that STAR should be deployed, and 2) It will give clear engineering assessment of what a more conventional, commercially designed ship can do in what is expected to be a difficult ice year, adding to the knowledge base for specifications for a commercial vessel to do the break-in/escort if that becomes the future option.

The POLAR SEA is scheduled to undergo maintenance this year that would enable her to be used for Antarctic icebreaking in FY07 and FY08.

## **Long Term**

The Committee recommended to NSF that it clearly define the characteristics of its icebreaking requirements; these characteristics are beginning to emerge:

- A vessel capable of performing the break-in and escort without requiring fuel from McMurdo;
- A commercially manned vessel; and,
- A vessel under a long-term charter, for only the period of the break-in.

Although not requirements, other considerations would include determining whether it would be desirable for such a vessel to be available to escort the HEALY in the Arctic when not engaged in the Antarctic or to engage in other commercial activities when not under charter to NSF.

OPP expects to issue a Request for Expressions of Interest from industry regarding icebreaking in the coming year.

## **International Collaboration**

In parallel with OPP's efforts to define a commercial charter, we will also explore the potential of an international collaboration. Other nations with smaller Antarctic Programs, particularly those known for their icebreaker construction infrastructure such as Sweden, Norway or Canada, may have significant interest in teaming with the U.S. by providing icebreaking support to the USAP in exchange for access to USAP infrastructure for support of their science program. NSF will pursue this option through its contacts in the Council of Managers of National Antarctic Programs (COMNAP).