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BACKGROUND

In the current operational paradigm, resupply of two of the U.S. Antarctic Program's three year-round research stations mandated by U.S. policy has depended in recent years on two polar class icebreakers working together to open a shipping channel through the ice to McMurdo Station. The channel makes possible the resupply of both McMurdo and South Pole stations, as well as remote field stations around the continent. Resupply of the new U.S. South Pole Station then takes place via supplies brought to McMurdo Station.

The U.S. Coast Guard has succeeded in opening the channel for many decades now but only with increasing difficulty in recent years. Its two Polar Class vessels are within a very few years of their estimated 30-year lifetime and are becoming increasingly difficult and costly to keep in service. Two years ago NSF had to divert the *Healy* from the Arctic to provide assistance to the only USCG Polar Class vessel operational at that time. This year NSF was able to charter a heavy icebreaker from the Russian Company FESCO to assist the USCG's *Polar Star* as the *Polar Sea* was not in operable conditions. However, the *Polar Star* developed a serious oil leak in January and a 10-day delay ensued while divers made emergency repairs. The *Polar Sea* will not be back in service until at least 2007, and then only if adequate funds can be found for her repair. It is hoped that the *Polar Star* can be made seaworthy in time for the 2005-2006 season and that a foreign icebreaker can be again chartered to assist her. OPP provided an additional \$9.2 million to the U.S. Coast Guard in FY 2005 to assist in this effort.

The Coast Guard has estimated that it would cost approximately \$600 million to refit its two polar class vessels to the extent that they could provide reliable continued service. With the White House having assigned responsibility to NSF for funding polar icebreaking operations and maintenance in total, it is important to note that this would be by far the largest single expenditure for equipment in NSF's history, and also that there is already a multi-year list of pending projects waiting in queue in the Agency's MREFC program.

Given the above state of affairs a thorough analysis of resupply options is essential both to assure continuity of operations of the U.S. Antarctic Program, and also to assure that the most cost effective and reliable option is implemented.

The Office of Polar Programs initiated a preliminary study of several options last fall. Examples of options identified then for study included:

- Unloading fuel and supplies on the ice shelf rather than at McMurdo Station and transporting them overland to the Station, in order to greatly reduce the icebreaking challenge;
- Continuously milling the channel through the austral winter months using relatively light and much less costly icebreakers;
- Airlifting all supplies to McMurdo;
- Moving the resupply base from McMurdo to a new station;
- Direct resupply of South Pole Station by air from New Zealand or elsewhere;
- Establishing a multi-year store of fuel and non-perishable supplies during years of light sea ice combined with some of the above.
- Partnering with another country, sharing access to USAP infrastructure in exchange for icebreaking support.
- Several of these options have been analyzed in considerable detail by OPP staff; others have not, and there may well be additional promising options that should be considered.

Information for Polar Programs Postdoctoral Research Fellows



The U.S. Coast Guard icebreaker *Polar Star* and Russian icebreaker *Krasin* work together to open the turning basin in McMurdo Sound for the fuel and supply ships in January 2005. (NSF/USAP photo by Opher Ganel, University of Maryland.)

CHARGE TO THE SUBCOMMITTEE

The Subcommittee is asked to serve as a steering committee for the analysis of options for the resupply of McMurdo and South Pole Stations. As such it will –

- identify any initial universe of options worth considering;
- monitor progress of the OPP working group analyzing the options;
- assist the working group in focusing on the most promising options in a timely fashion; and
- prepare a short summary of the pros and cons of any options the Subcommittee deems worthy of serious consideration by NSF.

The analysis should take the following critical factors into consideration: safety, environmental protection, reliability, cost, and timeliness.

An OPP staff member selected by the OPP Director and the Subcommittee Chair will serve as the OPP Point of Contact for the Steering Committee and will have full authority to task OPP staff and contractors for the purposes of this study.

The Steering Committee is asked to provide its report to the OPP Advisory Committee by June 30, 2005, for discussion and adoption.

A tractor hooked up to fuel sleds waits to begin the South Pole Traverse. (NSF/USAP photo by Kristan Hutchison, Raytheon Polar Services Corporation.)



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