ACQUISITION AND OPERATION OF POLAR ICEBREAKERS: FULFILLING THE NATION'S NEEDS

Statement of
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Chair
Committee on Polar Icebreaker Cost Assessment
Division on Earth and Life Studies
and
Transportation Research Board of the
The National Academies of Sciences, Engineering, and Medicine

before the

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Chairman Hunter, Ranking Member Garamendi, and distinguished members of the subcommittee, thank you for the opportunity to discuss the recently released report '*Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs*,' which I would also like to enter into the record.

My name is Dick West. I am a retired U.S. Navy Rear Admiral, and I chaired the study committee that authored the report for The National Academies. Our report was requested by this subcommittee, and focuses on strategies to minimize capital acquisition and operating costs for polar icebreakers capable of meeting the Coast Guard's mission requirements, including breaking out McMurdo station.

For more than 30 years, studies have shown the need for polar icebreakers to fulfill the Coast Guard's statutory missions and to meet other national goals. These studies have indicated ever-widening gaps in the nation's ability to meet its statutory obligations, protect its interests, and maintain leadership in the high latitude regions of the Earth.

We recommend building four heavy polar icebreakers—owned and operated by the Coast Guard— and propose an acquisition strategy that could address these anticipated gaps. We examined leasing options and found them to be more expensive for the federal government over the life of the assets. The first three heavy icebreakers would meet the Coast Guard's need to provide a continuous presence in the Arctic, while the fourth heavy icebreaker could perform the annual McMurdo breakout, with one of the first three icebreakers assigned to the Arctic providing emergency backup, if needed.

The recommended acquisition strategy employs block buy contracting with a fixed price incentive fee for the four ships and a design for a single class of heavy polar icebreakers. By using a single design, we estimate that the fourth heavy icebreaker would cost less than a first medium icebreaker. With our recommended strategy, icebreaker design and construction costs can be clearly defined. A fixed price incentive fee construction contract is the most reliable mechanism for controlling costs for this program. Block buy authority for this program will need to contain specific authorizing language for economic order quantity purchases for materials, advanced design, and construction activities.

Such a contracting program with economic order quantity purchases enables series construction, motivates competitive shipyard bidding, enables shipyard infrastructure investment, and reduces material acquisition costs—allowing for volume purchase and for the timely acquisition of material with long lead times. It would enable continuous production, give the program the maximum benefit from the learning curve, and thus reduce labor hours and costs on subsequent vessels.

Technology transfer from icebreaker designers and builders with recent experience is critical for reducing design and construction costs. In addition, the design should maximize the use of commercial off-the-shelf (COTS) equipment, apply the Polar Code and commercial standards, and reduce military specifications (MIL-SPEC) to the minimum amount necessary. Reduction of MIL-SPEC requirements could significantly lower the acquisition cost of each ship with no loss of mission capability. Importantly, the program schedule must allow for completion of design

and planning before the start of construction. Our recommended acquisition, design, and construction strategies will control possible cost overruns and provide significant savings in overall life-cycle costs for the polar icebreaking program.

We recommend that the single design for the heavy icebreakers is made "science ready" and include sufficient space and margins to accommodate the needs for future scientific installation. The additional design cost is minimal, especially compared to a subsequent retrofit. Recognizing that the *Healy* is halfway through its expected service life, the fourth proposed vessel could be made "science capable," or fully outfitted for science.

The *Polar Star* is well beyond her expected service life. We propose an enhanced maintenance program with the intent of keeping the vessel operational through the delivery of at least the first new icebreaker. Although extending the life of the *Polar Star* will be challenging, the committee recommends against compressing the design and construction schedule of the new icebreakers, as such an approach may lead to cost overruns.

Mr. Chairman, this concludes my statement. Thank you again for the opportunity to testify, and I will be pleased to respond to any questions the subcommittee may have.