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Office of the Inspector General

MEMORANDUM

DATE: June 10, 2013

TO: Kelly Falkner
     Division Director
     Division of Polar Programs

FROM: Ken Chason /s/
     Assistant IG for Legal, Legislative & External Affairs

SUBJECT: NSF's Response to Report of the U.S. Antarctic Program Blue Ribbon Panel

Background

A two-phase review of the Antarctic program was called for in the FY 2010 budget. The first report, "Future Science Opportunities in Antarctica and the Southern Ocean," developed by a panel formed by the National Research Council, examined the major science questions that will drive Antarctic research over the next 10 to 20 years. This report identified key scientific questions within two broad themes—global change and fundamental discoveries.

The second report, from the Blue Ribbon Panel chaired by Norman R. Augustine, examined a number of logistical issues, including transportation, communications, and energy efficiency. The report stated that U.S. activities in Antarctica are well-managed but suffer from an aging infrastructure, lack of a capital budget, and the effects of operating in an extremely unforgiving environment. The panel concluded that "sooner or later the atrophying logistics infrastructure will need to be upgraded or replaced. Failure to do so will simply increase logistics costs until they altogether squeeze out funding for science."

The report identified nine single point failure areas, including icebreakers required for resupply and broadband communications. Single point failures are circumstances in which the failure of one element would render the entire system incapable of performing its function.

Blue Ribbon Panel Report Recommendations

To address these pressing challenges, the report made recommendations pertaining to ten topic areas, which were presented in order of priority as follows: Antarctic bases, polar ocean fleet, logistics and transportation, McMurdo and Palmer facilities, USAP capital budget, science support costs, communications, energy efficiency, international cooperation, and Antarctic policy.

To support these overarching recommendations, the Panel provided 84 implementing actions within three separate but related categories: 1) those essential for safety and health; 2) those which are readily implementable; and 3) those with significant investment/large payoff. The ten most important actions are prioritized within each category.

Examples of actions in the first category include replacement of the pier at Palmer, installation of a fire suppression system in the woodshop at Palmer, increased emphasis on workplace safety and health, and a more comprehensive system of safety inspections to ensure that corrective actions are completed. Examples of actions in the readily implementable category include a review to reduce contractor personnel by approximately 20 percent and the provision of two inflatable boats at Palmer to enhance research safety and cost effectiveness. Examples of significant/large payoff actions include constructing a runway at the South Pole to permit C-17 operations, consolidating warehouse space at McMurdo, and determining the feasibility of converting waste wood, cardboard, and paper at McMurdo into clean electric power and heat.

NSF's Response to Blue Ribbon Panel Report Recommendations

Upon receipt of the report in July 2012, the NSF Director charged a group of senior NSF advisors to develop a "point-by-point and a summary response" to the report's recommendations. In March 2013, NSF released a "summary response" to the Blue Ribbon Panel Report organized according to the ten overarching recommendations listed above. Referring to NSF's response, the Director stated "we now have in place the means for disciplined, multi-year tracking and planning for additional improvements."

NSF agreed with the majority of the Panel's recommendations, and the NSF Director noted that "substantial progress has already been made on many fronts in implementing these recommendations." For example, regarding the recommendation about icebreakers, NSF's summary response stated that the Foundation is participating in an interagency effort to "assess government-wide requirements for icebreaking." In another example, concerning the recommendation to update the master plan for McMurdo and Palmer, NSF said that it "is currently in the process of updating the master plans."

In addition to the summary report responding to the ten overarching recommendations, NSF also developed a working matrix describing the status of the 84 implementing actions. According to a description in the summary report, the matrix is meant to "serve as a living document [which will] be updated regularly as a means for NSF management to track progress." This document categorizes progress on these actions in five ways: 1) in place (NSF agreed with the recommendations and considers them as already implemented); 2) in process (NSF agreed with the recommendations and required actions are in various stages of implementation); 3) review (NSF must complete further study to determine feasibility and cost-effectiveness); 4) no action (recommendations either require action on the part of other government agencies or NSF has no current plans to implement the recommendation); and 5) USAP long-range investment plan (encompassed within the USAP long range investment plan, which is constructed to provide a high-level view of budget outlays and cash investments).

We reviewed the matrix document to assess the progress NSF has made toward implementing the Panel's various recommendations and associated action items. We then met with officials in

the Office of Polar Programs who noted several challenges in responding to these recommendations. For instance, they explained that it was sometimes difficult for them to track implementing actions back to the overarching topics or to the individual recommendations in each category, such as health and safety. This difficulty occurred because of the way the report was structured—that is, there were ten overarching recommendations which reflected issue areas such as logistics and transportation, communications, and energy efficiency. There was also a list of implementing actions characterized as being "essential" for health and safety. Additionally, there was a list of actions characterized as "readily implementable" and another list of significant/large payoff issues. The 84 implementing actions tied back to different issue areas and recommendations, and it was challenging to track specific actions to implement various recommendations that in some instances were listed in more than one category. For example, the overarching transportation recommendation calls for replacing some LC-130 flights with additional traverse trips. This recommendation is reflected in an implementing action in the significant investment category.

We also discussed NSF's response to recommendations in the "readily implementable" category as this appeared to provide a reasonable roadmap for priority action. However, some of these recommendations were repeated in other categories and some required funding that NSF does not have and is unlikely to obtain.

OIG Observations on NSF's Response to Blue Ribbon Panel Recommendations

We recognize the challenges involved in implementing the Panel recommendations given their breadth, as demonstrated by the need for implementation to entail 84 specific actions. Further, we understand that some of the recommendations depend on actions over which NSF has limited control. For example, some, such as upgrading aging facilities at the McMurdo and Palmer Stations, will require additional funding. Others, such as leveraging resources with international partners, will require collaboration.

While mindful of these challenges, we nevertheless underscore the need for NSF to work toward implementation in a well-organized and structured manner in order to help ensure success. By capturing the status of all 84 action items in one place, and categorizing the status of each, NSF's matrix document will greatly assist the Foundation toward this end. We did, however, find that the utility of this document could be enhanced through additional specificity regarding implementing details.

Greater specificity about implementing details would enhance NSF's tracking document

Thirty of the 84 responses in the document reflect that NSF has already implemented the recommendation, and 24 reflect that it is in the process of doing so. As this represents more than half of the total implementing actions, we would expect to see more specific information about what NSF has done or plans to do in the matrix document. We found that such detail, however, is often missing and this may undermine NSF's ability to sufficiently track overall progress or to demonstrate progress to stakeholders.

The following examples illustrate the lack of detail about what steps have been completed:

- Action No. 4.2-3 -- Ensure that the support population for field camps is streamlined and appropriately matched to the needs for the science activities. NSF noted that it "reviews field camp staffing requirements with the contractor each year," but provided no description of the outcome of the most recent review, nor any citation or link to supporting material. Also, NSF stated that "[a]dditional opportunities to improve service delivery may be possible pending the results of several initiatives also recommended by the Blue Ribbon Panel that NSF is pursuing." While one broad example is given, there is no description of the other initiatives that are underway, nor is there a citation or link to materials that contain this information.

- Action No. 4.4-4 -- Consider more widespread use of airdrops for resupply operations. NSF stated that this recommendation reinforced current practices to "evaluate and use the most effective support options." NSF characterized this action as being in place. The response cites one instance in which an airdrop was used for cost-effective support on a project, but there is no indication of how often NSF intends to use this option in the future or whether it has a plan for increasing airdrops.

- Action No. 4.7-4 -- Identify science projects that can benefit from real-time experimental data delivery to the United States and other off-sites and establish new Service Level Agreements that reduce the demand for scientists to be on site. NSF responded that it "has implemented data management protocols (such as filtering and compression) for major, data-intensive projects . . . resulting in fewer people deploying to support these projects than had originally been requested." Aside from the parenthetical example, there is no further description of these protocols, nor any citation or link to source documents.

- Action No. 4.8-18 – Provide greater clarity and consistency in guidance concerning gear approved for use in the field and when flying. NSF stated that it is has programs in place to address this recommendation, but did not describe or cite/link to any supporting documentation. The response also explained that NSF will "provide more explicit guidance to USAP participants." However, it is unclear how the "more explicit" guidance will differ from what is in place and why such guidance is needed.

Milestones and target completion dates would benefit NSF's tracking document

In addition to a lack of detail about *what* NSF is doing, what it has done, and what it intends to do to address the recommendations, we also found a lack of detail about *when* NSF planned to act. For example, aside from referring to actions that have already taken place, some of NSF's responses describe its intent to study, explore, review options, and assemble teams. However, the responses do not state when such activities would be completed, which activities were priorities, and how NSF would monitor and assess progress.

To illustrate, in response to a recommendation to increase the available communication bandwidth to the Antarctic stations and field camps, NSF noted that, while this recommendation has already been implemented, it is "actively pursuing all available options for improving high-bandwidth communications." However, there was no reference to an associated timeframe for accomplishing this goal. NSF's response also stated that in preparation for the Panel review, the Foundation funded an "analysis of alternatives" for Antarctic communications and that there

"appear" to be cost-effective solutions that make use of satellites retired from other uses. There were no concrete steps or timetables for adopting these solutions mentioned.

In another example, in response to a recommendation to develop a strategy for defining components of the continental-scale, long-term observing system, NSF said it "would pursue possibilities" for such a network. There was no timeframe described; thus, there is no way to determine when or how NSF will decide that the pursuit of possibilities is complete. Similarly, the Panel recommended that NSF develop a plan to maximize solar generation of heat and electricity at all sites. NSF agreed and explained that "[a]dditional study to determine the optimal use of these resources will be needed," though a description of timeframes associated with the planned study was not provided.

Key elements of an effective process to accomplish goals include developing a plan, creating a realistic schedule to implement that plan, and monitoring and reporting on the status of actions. To the extent NSF has developed or identified concrete plans or actions to implement the Panel's recommendations, these plans should be (but were not) described in its implementing action document.

Conclusion

We recognize the challenges NSF faces in implementing the Panel recommendations. Given the large number of associated action items, there is an inherent risk that NSF could lose track of progress unless implementation is approached systemically. The matrix document is a positive step in the right direction. It would be a more powerful tool, however, if it consistently provided sufficient information on actions taken or concrete plans (including timelines) to address the recommendations. Its utility would be further enhanced if it reflected a contact person for each action item and the date of any updates (to make it easier to assess progress over time).

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