



## **Oversight Plan for NSF's U.S. Antarctic Program Office of Inspector General October 2013**

### **I. Background and Overview**

Since 1956, American scientists have been conducting scientific studies from and about Antarctica at U.S.-run bases on the continent and from ships in the Southern Ocean. These scientific investigators and supporting personnel make up the U.S. Antarctic Program (USAP), which implements the nation's goals of exerting an active and influential science presence in support of the Antarctic Treaty including fostering cooperative research with other nations and protecting the Antarctic environment in accord with the U.S. Antarctic Conservation Act. Research supported through the USAP encompasses numerous disciplinary and interdisciplinary subjects that are best conducted or can only be conducted from Antarctica.

The USAP mission is accomplished largely through the support of peer-reviewed research conducted by scientists from universities, other research institutions, and other agencies often in collaboration with scientists from other nations. Operations and logistics are supported through contracts with commercial and government entities. The National Science Foundation (NSF) meets its obligation to provide single point management of the USAP on behalf of all of the U.S. government through its Division of Polar Programs. NSF operates, through a prime contractor, three permanent year round scientific stations in Antarctica: McMurdo Station, where 90 percent of USAP participants are based or pass through on their way to research sites; Amundsen-Scott South Pole Station; and Palmer Station, on an island off the Antarctic Peninsula.

The extreme Antarctic environment and the short period during which access to the continent is possible in the austral summer make the provision of logistical support a challenge for the USAP. Such support includes, among other things, an annual resupply effort involving icebreaking a channel in the sea ice to allow a fuel tanker and cargo vessel access to the McMurdo pier, communications systems including satellite services, environment, safety and health programs, vehicle and equipment maintenance, science project support, and both rotary and fixed wing aircraft lift with attendant support systems. NSF spends about \$255 million annually for USAP facilities and logistics and about \$70 million for NSF-funded research. Other agencies such as NASA, NOAA, and USGS additionally fund science projects in Antarctica as part of the USAP.

In July 2012, an independent Blue Ribbon Panel issued its report, "More and Better Science in Antarctica through Increased Logistical Effectiveness." The report concluded that, while U.S. activities in Antarctica are well-managed, they suffer from an aging infrastructure, lack of capital budget, and the overall effects of operation in an extremely unforgiving environment. 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. According to the Panel, failure to address the USAP's logistical challenges will increase logistics costs until they altogether squeeze out funding for science.

Given the enormity of NSF's investment in Antarctica and the potential risk to that investment if challenges identified by the Blue Ribbon Panel are not addressed, OIG has developed a long range oversight plan for the USAP. The projects outlined in this plan break down into two overarching themes: 1) ensuring efficiency in the logistical operation; and 2) ensuring financial accountability. Much of our initial emphasis will be to monitor and assess NSF's actions in response to the Blue Ribbon Panel report. Our work plan includes both short and long term projects which can be performed by our auditors, inspectors, and investigators, or by combinations of staff.

Outlined below is a description of our planned projects.

## **II. Logistical**

*Following is a summary of proposed projects focused on efficiency in the logistical operation.*

### **1. Impact to Science from Potential Logistical Limitations in Antarctica**

Getting materiel to Antarctica is a challenge. We are concerned about the lack of reliable icebreaker ships to ensure the continued success of ongoing research in the Antarctic. The most important research facilities, McMurdo and South Pole stations, rely on resupply from such icebreakers.

#### **Objectives:**

- a. Determine whether NSF is adequately planning to ensure that adequate icebreaker support will continue.
- b. Determine whether NSF is adequately assessing the impact to scientific research should the Antarctic continent become logistically inaccessible due to the lack of icebreaker support.

### **2. Health and Safety**

An earlier OIG audit assessed the USAP's Occupational Health and Safety and Medical Programs. This audit found that, in general, the programs protected the overall health and safety of the USAP's employees, contractors, and researchers. However, the audit noted opportunities to improve in the areas of long-range capital planning and budgeting for facilities and infrastructure; training and assessment of work centers to reduce the number of injuries; and oversight of the medical programs on the USAP's research vessels.

All personnel going to Antarctica must first undergo a physical exam and medical tests, and be found physically qualified. The Blue Ribbon Panel Report recommended that NSF reevaluate the required medical tests to determine if all tests were necessary. The Panel also noted that the current physical screening process is the same for all travelers, regardless of what they will be doing in Antarctica. A September 2013 OIG audit of the USAP medical screening process found that NSF may have missed opportunities to reduce the cost of the medical screening process because it has not implemented certain recommendations from its medical review panel.

## **Objectives:**

- a. Assess whether the policies, procedures, and performance of the current contractor's health and safety and medical programs ensure the overall health and safety of USAP participants, and comply with NSF guidelines.
- b. Assess the effectiveness of NSF's oversight and support of its logistics and operations contract for health and safety and medical programs. This audit will include Palmer Station, which was not included in the previous audit. The recent Blue Ribbon Panel report on the USAP program noted several health and safety issues at that station.

*NOTE: These two objectives could be consolidated into one job or handled separately.*

### **3. Assessment of Processes and Controls over Management of Inventory at Subcontractor Locations in, California, Chile, and New Zealand**

NSF has three sites—Port Hueneme, California; Punta Arenas, Chile; and Christchurch, New Zealand—where inventory is stored and maintained prior to shipment to Antarctica. The Port Hueneme facility alone handles approximately 40 million pounds of cargo each year. Sound management of the acquisition, storage, and shipment of inventory is critical to controlling cost, operational efficiency, and mission readiness. Accurate data is needed for management to make informed decisions regarding budgeting, financial management, and logistical and operational management.

Inventory stored at these sites is at particular risk due to the large volume of material, long logistical lead time, and remoteness from the USAP program headquarters. These factors combine to create an environment in which substantial inventory shrinkage could occur undetected by NSF's current program management.

To further illustrate the need for effective processes and controls, we note that in 2003, two employees of the subcontractor that runs the warehouse operation in Punta Arenas, Chile, were charged with embezzlement of funds, some of which affected USAP funds. The embezzlement occurred because of the lack of internal controls, lack of management oversight, lack of enforcement of corporate policies, and collusion.

**Objective:** Assess the internal controls over the management of inventory maintained in warehouses and inventory in transit to/from warehouses, including physical security controls, controls over the movement of inventory, and controls built into the inventory tracking systems. This job will also include, if applicable, a review of the extent to which USAP inventory is segregated from other inventory collocated in the same warehouse(s). It is anticipated that this review will include physical inventory verification as well as an assessment of policies and procedures.

#### **4. USAP Flight Support**

Christchurch, New Zealand, is the gateway for the USAP operations at McMurdo and the South Pole, and the field camps near McMurdo. One of the most important USAP functions in Christchurch is flight support. This function is exceptionally complex because of the numerous organizations involved, including DoD's Air Mobility Command, the 109<sup>th</sup> Airlift wing of New York's Air National Guard, Air New Zealand, Lockheed Martin, and the Defense Contract Management Agency. At issue are about 70 C-17 and 400 LC-130 flights a year. Risks involved in flight support include inefficiencies that would result if there is inadequate tracking of the use and asset value of aircraft supplies owned by OPP; misallocation of aircraft maintenance costs, or double payments for aircraft services. This audit would follow-up on a prior OIG audit: *Review of Flight Support for the U.S. Antarctic Program* (9/28/01).

##### **Objectives:**

- a. Determine whether the procedures for tracking and reporting the use and asset value of aircraft supplies owned by PLR are effective.
- b. Determine whether cost-allocation procedures are accurately allocating contractor-performed aircraft maintenance costs between PLR and the 109<sup>th</sup> Airlift Wing of the New York Air National Guard in accordance with agreed upon procedures.
- c. Determine whether PLR is paying for services for Air Force flights at a cost that is already covered by the flight hour costs PLR pays.

#### **5. Deferred Maintenance**

According to the Blue Ribbon Panel report, "under current practice, when NSF and its contractors must choose between repairing a roof or conducting science, science usually prevails. Only when the science is seriously disrupted because the roof begins to collapse will it be replaced; until then, it is likely only to be repaired." The report provides both small and large examples of deferred maintenance, including a warehouse where areas are avoided because forklifts fall through the floor, and gaps under doors where wind blows snow into the buildings. Although the practice of putting science before maintenance and repairs is well-intentioned, it is not a sustainable practice and can ultimately jeopardize the health and safety of USAP personnel.

##### **Objectives:**

- a. Identify and assess the most urgent areas of maintenance needed at USAP's stations and determine how NSF or the contractor identifies and determines which maintenance receives priority or action.
- b. Evaluate NSF's long-term plans and budgets for repairing or replacing its facilities, equipment, vehicles, and other accountable property.

## **6. Antarctic Law Enforcement**

Because of its remoteness, an effective law enforcement program in the Antarctic is critical to ensuring the safety of U.S. citizens, and to protecting federal property. An earlier audit assessed whether NSF's law enforcement program was effective and whether NSF complied with the rules and regulations governing the appointment of Special Deputies for the Antarctic. It found that generally, the program ensured that citizens and property were protected from immediate harm, evidence was properly secured, and incidents were investigated appropriately and in as timely a fashion as possible and presented to the proper prosecutorial authority. In response to our recommendation, NSF coordinated with the U.S. Marshals Service to train and equip its Special Deputies with non-deadly weapons, a baton and/or pepper spray, to assist the Special Deputy in performing his duties.

While there is a Special Deputy year-round at McMurdo station, there is none at Palmer or South Pole.

**Objective:** Assess whether NSF's law enforcement program in the Antarctic continues to be effective and to protect the safety of U.S. citizens and federal property, including Palmer and South Pole stations.

## **7. Possible Disruptions to Life Support and Science Activities from Information Technology Deficiencies**

The remote and harsh Antarctic landscape leaves little margin of error for many basic support activities. Weaknesses in the USAP information system have been cited as a reportable condition in NSF's FISMA audit since 2004 as they could potentially disrupt essential life support and/or science activities. FISMA audits have also found that NSF needs to improve its disaster recovery planning, and ensure that it is prepared if there is a disruption in IT services.

**Objective:** Review NSF's plan to address FISMA findings.

## **8. Plans to Address Single-Point Failure Risks**

The Blue Ribbon Panel report identified nine single-point failure risks—circumstances in which the failure of one element of a system would render the entire system incapable of performing its function. Examples of these risks include icebreaking capacity, broadband communications, and fire suppression systems requiring electric power.

**Objective:** Assess NSF's plans for prioritizing and addressing single-point failure risks.

## **9. Response to "readily implementable" improvements**

The Blue Ribbon Panel included a list of actions to enhance efficiency, such as establishing a group to seek cost reduction opportunities and adding to existing partnerships with other nations, which the Panel stated could be "undertaken without substantial financial expenditures or inconvenience while offering disproportionately great benefits." The Panel's list of "readily implementable"

improvements seems to present a useful roadmap for NSF as it seeks to prioritize recommendations and act on them.

**Objective:** Evaluate NSF's response to readily implementable improvements.

**10. Assessment of NSF's Response to Blue Ribbon Panel Report**

In March 2013, NSF released a "summary response" to the Blue Ribbon Panel Report's ten overarching recommendations. NSF also developed a working matrix describing the status of 84 "implementing actions" which it stated will be updated regularly as a means for NSF management to track progress. In June 2013, the OIG gave NSF a memo making observations and suggestions to enhance its tracking matrix.

**Objective:** Continue to monitor NSF's progress toward implementing the Panel's recommendations.

**11. Standards of Professional Conduct for Contractor Employees in the USAP Program**

Information has been brought to light about the conduct of contractor employees that raises questions about whether the contractor stipulates standards of conduct for its employees. Examples of matters covered by such standards include anti-discrimination and harassment policies, personal use of government equipment, conflicts of interest, and personal relationships in the workplace.

**Objective:** Assess the adequacy of the contractor's standards of professional conduct for its employees and identify any deficiencies.

### **III. Financial**

*Following is a summary of proposed financial audits related to the USAP contract.*

**1. Cost Assurance for the Antarctic Support Contract**

The Antarctic Support Contract ASC is NSF's largest contract. With the start of a new contract, new contractor accounting and financial systems, and new terms and financial incentives, there is a great need to assure that costs charged to the contract meet federal requirements. It is important that costs charged from award inception are reasonable, allowable, and allocable to the USAP logistics, support, and maintenance requirements. A number of issues that relate to how and what types of direct and indirect costs charged to the contract can surface at the time of initial contractor billing and in the first few periods of a new contract. Audits that relate to costs charged to the contract are conducted by the Defense Contract Audit Agency (DCAA). In the past we have routinely partnered with the cognizant DCAA audit branch to have accounting and business systems and costs claimed under the contract reviewed. Such audits have surfaced financial management control weaknesses, noncompliance with Cost Accounting Standards, and questionable direct and indirect costs charged to the contract.

**Objectives:**

- a. Determine whether Lockheed Martin is charging costs to the ASC contract that are reasonable, allowable, and allocable.
- b. Determine if LM is adhering to CAS and Disclosure Statement requirements and that it has accounting and business systems in place that are effectively accounting for and reporting contract costs.

**2. Incurred Cost Audits of Lockheed Martin Subcontractors for USAP**

Incurred cost audits in year one or two of subcontractors on the Lockheed Martin USAP contract -- like incurred cost audits of Lockheed Martin (the prime contractor) itself -- would provide NSF with information as to how NSF funds are being expended and whether the contract should be renewed or re-competed after year four. NSF has recommended incurred cost audits of certain cost-plus-award-fee subcontracts.

Such audits would also be useful to ensure that subcontractors (with time and materials contracts with fixed unit prices) appropriately measure and record the unit that pricing is based upon:

**Objectives:**

- a. Determine whether the costs incurred by subcontractors under cost-plus-award-fee arrangements are allowable, allocable to the contract, and reasonable; and whether fees paid and approved are justified.
- b. Determine whether subcontractors with Time and Materials contracts with fixed unit pricing have the ability to appropriately measure and record the unit upon which pricing is based.