



National Science Foundation • Office of Inspector General
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MEMORANDUM

DATE: September 30, 2013

TO: Dr. Roger Wakimoto
Assistant Director, Directorate for Geosciences

FROM: Dr. Brett M. Baker 
Assistant Inspector General for Audit

SUBJECT: *Audit of the United States Antarctic Program's Medical Screening Process, Report No. 13-2-009*

Attached please find the final report of our audit of the United States Antarctic Program's (USAP) Medical Screening Process. The report contains two findings on the need for NSF to consider opportunities that exist for cost savings on USAP medical screenings and the need to improve oversight of Antarctic support contract medical processing payments. We have included NSF's response as an appendix to the final report.

To comply with Office of Management and Budget Circular A-50 requirements for audit follow-up, please provide within 60 calendar days a written corrective action plan to address the report recommendation. This corrective action plan should detail specific actions and milestone dates.

We appreciate the courtesies and assistance provided by Division of Polar Programs' staff during the audit. If you have any questions, please contact Marie Maguire, Director of Performance Audits, at (703) 292-5009.

Attachment

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Audit of the United States Antarctic Program's Medical Screening Process

**National Science Foundation
Office of Inspector General**

**September 30, 2013
OIG Report No. 13-2-009**



Results in Brief

Before going to the Antarctic through the United States Antarctic Program (USAP), potential travelers must pass a number of medical and dental examinations based on factors such as gender and age. With minor exceptions, this physical qualification testing is “one size fits all,” meaning that all candidates, regardless of their deployment duration, job responsibilities, season of travel, or duty station, must undergo the same medical tests.

We 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. For example, for at least five years, the panel has recommended that NSF base required medical tests on factors, such as how long an individual will be in Antarctica and the assigned duty station and job responsibilities, rather than require all applicants to undergo the same tests. Revising the number of medical tests performed to reflect these criteria could lower costs, which are approximately \$860 per person. Furthermore, nearly 20 percent of applicants withdraw each year before completing the medical screening process, constituting significant time and effort for staff as well as incurring medical examination costs. To reduce these costs, NSF should examine the reasons why applicants withdraw from the process and address these causes.

The Antarctic Support Contractor (ASC) and its subcontractors prepare, process, and pay as many as 1,600 individual reimbursement requests each year for costs related to medical screening. We found that guidance about what medical expenses will be reimbursed by the contractor is unclear. As a result, applicants may be submitting claims for expenses that are not eligible for reimbursement. We also found that the contractor does not have a robust system to ensure the accuracy of invoices for medical costs. NSF should consider increasing its investment in the oversight of invoiced costs until it is better assured of the contractor’s internal controls.

We recommend that NSF establish a process to address and track medical panel recommendations in a timely manner and identify and address the reasons why applicants withdraw during the medical screening process. We also recommend that NSF require the contractor to document its internal controls over ASC invoicing for the medical screening process. NSF agreed with the recommendations.

Background

The United States Antarctic Program

Antarctica is the coldest, driest, windiest, most remote continent on earth. The weather changes frequently and abruptly. Since 1956, American scientists have been studying the Antarctic and conducting research to better understand Antarctica and its effects on global processes.

The National Science Foundation (NSF) manages all U.S. scientific research and related logistics in Antarctica and aboard ships in the Southern Ocean through the United States Antarctic Program (USAP). The USAP costs NSF approximately \$350 million a year, which includes grants supporting 130 to 160 scientific research projects a year as well as the necessary associated infrastructure and logistics for three year-round research stations in Antarctica

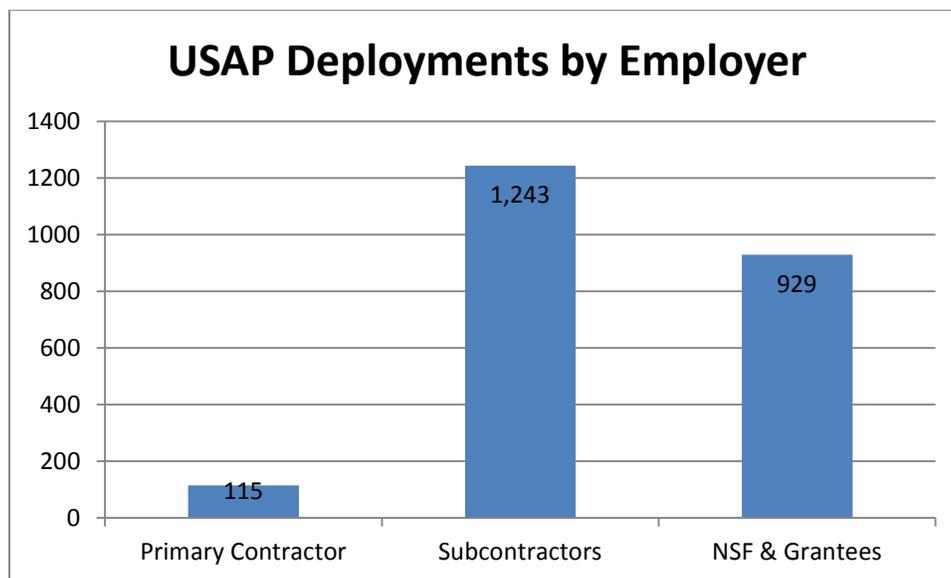
(McMurdo, Amundsen-Scott South Pole and Palmer) and two science vessels in the Southern Ocean (Laurence M. Gould and Nathaniel B. Palmer).

NSF's largest contract is for logistical support for the USAP. At the time of our audit, Lockheed Martin (LM) was in the first full year of a 13 year contract¹ to provide Antarctic support worth \$1.9 billion.

Physical Qualification Screening

Before going to the Antarctic, potential travelers must pass a number of medical and dental examinations based on factors such as gender and age. With minor exceptions, this physical qualification testing is "one size fits all," meaning that all candidates, regardless of their deployment duration, job responsibilities, season of travel, or duty station, must undergo the same medical tests. Candidates who anticipate spending the austral winter² in Antarctica are subject to a psychological evaluation.

For the 2012 – 2013 Antarctic travel season, NSF was responsible for determining that at least 2,287 people were physically qualified for travel to Antarctica for the USAP. Of these, 41 percent were NSF staff and grant funded scientists, while 59 percent were contractors providing logistical support.



Cost of Medical Processing

Candidates are responsible for scheduling their own examinations but NSF bears the cost of physical qualification testing. Although contractors have the same physical qualification requirements to travel to Antarctica as NSF staff and scientists, NSF pays for the testing differently for each.

¹ The first 4.5 years of the contract are guaranteed. NSF has the option to extend the contract to 13 years total.

² Roughly February through October

NSF staff

NSF staff can use the in-house health clinic to get blood taken, a medical exam performed, and an electrocardiogram test done for no out-of-pocket cost. The health unit provides vouchers to NSF staff for some required tests that are beyond its capability. The health unit absorbs these costs within its own annual budget so those costs are not charged to the USAP.

NSF grantees

Grantees budget for and directly charge their NSF grant for the cost of medical testwork. NSF estimated that the typical cost budgeted for this testing, net of insurance, was from \$500 - \$1,500 per traveler. Because NSF does not obtain the actual expenses incurred by grantees for medical testing separately from other grant expenses, we used NSF-provided estimates of the number of science projects conducted in the Antarctic and the size of the grant teams to calculate an annual cost of grantee medical testwork charged through grants of \$500,000.

Contractor staff

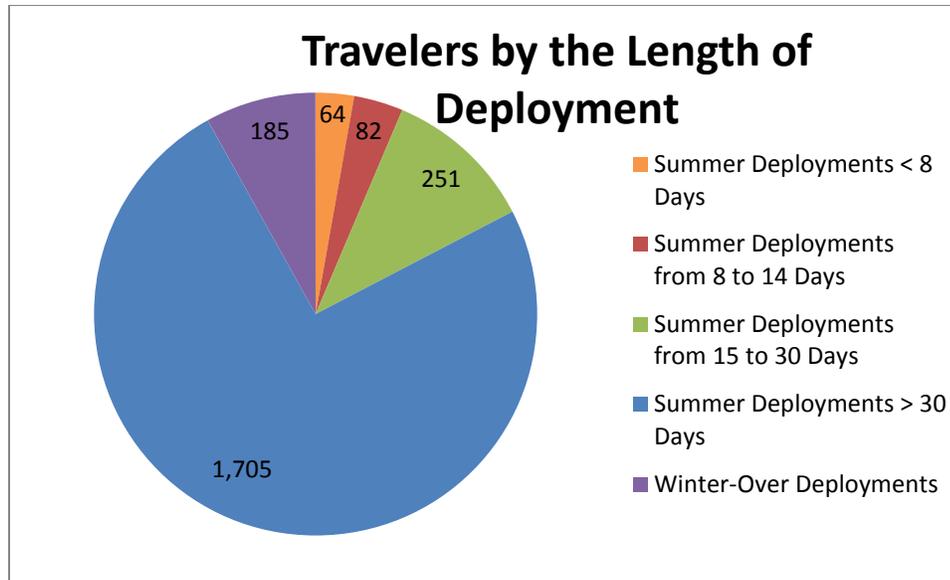
Contractor staff can go to their personal medical provider and receive reimbursement for medical testwork through LM. LM also established contracts with medical providers that provide for fixed pricing and direct billing to LM, which allows contractor personnel to avoid paying out of pocket. At the time of our audit, 5 of the 6 contracted medical providers (doctors, dentists and psychologist) were in the Denver area. The one nationwide contracted provider performs laboratory testing services. LM told us that they receive many reimbursement claims for people without health insurance because subcontractors have applicants undergo medical testing before offering them a job.

For its first year as the Antarctic Support contractor (April 2012- March 2013), LM reported \$1.1 million in medical processing costs. In addition to the cost of testing, medical processing costs also include the labor involved in reviewing the testing results and determining each applicant's suitability for Antarctica. Medical providers send completed test results to the University of Texas Medical Branch (UTMB), LM's subcontractor for USAP medical services. Using NSF's medical screening guidelines, medical officials at UTMB decide, after reviewing the results of all medical testing, whether or not a candidate is physically qualified to deploy to Antarctica.

Travel expenses related to physical qualification testing are also billable to the Antarctic support contract, but LM charges these costs as travel instead of medical processing and we did not attempt to quantify those costs.

Length of Deployment

While a physical qualification determination is considered valid for 12 months, only 185 of the 2,287 travelers during the 2012-2013 year (8 percent) planned to stay through the duration of the austral winter. Also, 397 people (17 percent), were in Antarctica for 30 days or less, but were held to the same medical testing as those who were staying through the austral winter, with the exception of the psychological evaluation. The majority of travelers (75 percent) stayed for summer deployments lasting over 30 days.



Results of Audit

We 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. In particular, NSF has not implemented a recommendation to base required medical tests on factors such as how long an individual will be in Antarctica, duty station, and job responsibilities. Revising the number of medical tests performed to reflect these criteria could lower costs.

We also found that NSF has limited oversight of individual medical processing costs charged. NSF relies on LM to have a well-controlled system of subcontractor invoice review. However, LM's internal controls over invoice accuracy need improvement.

Finding 1 – Opportunities Exist for Cost Savings on USAP Medical Screenings

Establish a process to address medical panel recommendations

NSF uses a medical review panel, comprised of medical doctors from other federal agencies, to provide expert advice and guidance on the USAP medical care system. The panel reviews the contractor's annual *Healthcare in Antarctica* report and holds a 3-day annual meeting where NSF and contractors present an overview of medical issues and care from the preceding year. Following the annual meeting, the panel, based on its professional judgment and experience, makes written recommendations to NSF for refining the USAP medical care system.

We found that NSF may have missed opportunities to reduce the cost of the medical screening process because it has not implemented certain panel recommendations. During the period we reviewed, from 2009-2012, the panel made between 18 and 32 recommendations each year. NSF does not respond to the prior year's recommendations until the next year's meeting. Although it makes progress and addresses some panel recommendations, NSF does not have a transparent process to address the recommendations. The panel chairman told us that the panel is "frustrated" because NSF has not acted on its recommendations. Other panel members acknowledged that a sense of frustration exists.

We identified two outstanding recommendations -- revising the medical screening process and revising the dental screening guidelines -- that could result in cost savings. For at least five years, the panel has recommended that NSF revise the medical screening criteria to consider factors such as length of deployment, job responsibilities, and destination. The current medical screening process costs approximately \$860 per person.

Adjusting the screening criteria to reflect the amount of time the traveler will spend in Antarctica and other factors, such as job responsibilities and duty station, could decrease the number of required tests for many USAP travelers, which could in turn reduce the cost to medically qualify a person to travel to Antarctica. In 2011, a medical panel member proposed revised medical screening guidelines for NSF. Under these guidelines, required medical tests would vary depending on whether individuals were overwinter personnel, remote field camp/critical personnel, whole-season visitors, or short-term visitors. NSF has not determined what, if any, revisions it will make to its medical screening guidelines.

In 2012, at NSF's request, the panel recommended that dental screening be included in the review of USAP screening guidelines. In addition to an annual set of dental bitewing x-rays, the dental guidelines require travelers to have a panoramic mouth x-ray every five years. The primary purpose of the panoramic x-ray, which costs \$100 per person, is to identify human remains in the event of a catastrophe. NSF has considered possible alternatives, but has not made a decision.

The dental guidelines also require consideration of unopposed third molars. Because these molars can become impacted or infected, this condition has resulted in a "not physically qualified" determination for a number of applicants. NSF reported that all these determinations were waived. The waiver process is costly and time consuming, but NSF has not made a decision on accepting the panel's recommendation to revise the guidelines on unopposed third molars.

When we asked NSF why it had not addressed the panel's recommendations, particularly in light of the potential costs savings, officials told us that the agency is not required to respond to the recommendations as the panel serves in an "advisory" role. NSF also informed us that it had not taken more action because the official in charge of implementing the recommendations unexpectedly had extended military leave. Finally, NSF stated due to the change in contractors managing the USAP medical program, it delayed the review of medical guidelines.

NSF does not have a transparent process to evaluate and implement panel recommendations, which includes clear roles and responsibilities and milestones. Because of this, NSF may have

missed cost savings it could have realized by implementing risk-based guidelines that would reduce the types and number of required tests.

Identify and address reasons candidates withdraw from the medical screening process

For the past three travel seasons, 19 percent of candidates, on average, withdrew each year before completing the medical screening process. While we were unable to determine how far along candidates were in the screening process or how much NSF had spent on medical tests before these candidates withdrew, the process costs approximately \$860 per applicant. In addition, the former contractor reported that processing those who do not complete the process constituted significant time and effort for staff. To reduce costs, NSF should examine the reasons why applicants withdraw from the process and address these causes.

The chart that follows contains information on the number of candidates annually undergoing the medical review process, including those who were determined to be physically qualified for travel, those determined to be not physically qualified, and those that withdrew from consideration.

Annual Results of the Medical Review Process					
Category	2009-2010	2010-2011	2011-2012	Average 2009-2012	Percent of Average
Candidates Determined to be Physically Qualified	2,608	2,766	2,633	2,669	75%
Candidates Determined to be Not Physically Qualified	265	227	204	232	6%
Candidates Dropped Prior to Completion	680	656	669	668	19%
Total:	3,553	3,649	3,506	3,569	

Recommendation 1: We recommend that NSF establish a process to address and track medical panel recommendations in a timely manner and identify and address the reasons why nearly 20 percent of applicants withdraw before completing the medical screening process.

Finding 2 – Improvements Needed in the Oversight of Antarctic Support Contract Medical Processing Payments

Individual reimbursement requests for medical testing costs should be better controlled

LM and its subcontractors prepare, process, and pay as many as 1,600 individual reimbursement requests a year for costs related to contractor staff physically qualifying to travel to the Antarctic. Based on our review of a sample of invoices, these claims are generally for amounts of \$3,000 or less. Reimbursement claims are paper-based, so there are no automated checks against the accuracy of the claim. LM staff manually review each of these claims for payment.

We found that the guidance about what medical expenses will be reimbursed by the contractor is not clear. For example, the guidance states that applicants will be approved for out-of-pocket expenses but does not provide a detailed listing of such expenses. As a result, applicants may be submitting claims for expenses that are not eligible for reimbursement.

We did not attempt to verify the validity of all of the medical and laboratory tests submitted for reimbursement in the sample of payments that we obtained, which covered hundreds of employee medical payments and reimbursements, but of the \$253,213 charges we reviewed, we found six for teeth cleaning and one for an electric toothbrush that clearly should not have been reimbursed.

Once medical expenses are incurred and submitted, the contractor told us that a cost analyst performs a high level cursory review of each invoice it receives, and then a manager does a more detailed review to ensure each charge is allowable. However, we did not see evidence of such review in the support for the 11 payments that we examined. LM's lack of clear policy and procedures as well as the volume of reimbursement claims increases the risk of paying for medical costs that are not allowable.

The Contracting Officer's Representative told us that NSF cannot tell if it is being accurately invoiced by LM for medical processing costs and is instead reliant on the contractor to charge them accurately. According to the Contracting Officer's Representative, he reviews the electronic copy of the invoice to see if it looks reasonable. He relies on one contractor employee to examine the LM invoices, including medical processing costs, more closely. We found that LM does not have policies and procedures for reviewing Antarctic Support Contract invoices. While we recognize that medical processing only constitutes approximately \$1 million out of the first full year's contract value of \$173 million, finding a less than robust internal control system over relatively small costs of medical processing raises the possibility that a similar level of control could exist over larger contractor costs. NSF should consider increasing its investment in the oversight of invoiced costs until it is better assured of LM's internal controls over invoicing accuracy.

Internal control needs to be clearly documented, the documentation should appear in management directives, administrative policies, or operating manuals, and all documentation and records should be properly managed and maintained³. Because of the relatively small dollar value of individual reimbursement claims, priority should also be given to reducing the volume of reimbursement claims submitted, such as by having more candidates use contracted medical providers.

Recommendation 2: We recommend that NSF require LM to document its internal controls over Antarctic Support Contract invoicing for the medical screening process in the form of directives or policies.

³ GAO's *Standards for Internal Control in the Federal Government*

Other Matters

Contracted Medical Providers

We were unable to determine the extent to which contracted medical providers were being used or the cost savings resulting from using them. LM receives numerous invoices and receipts from its subcontractors supporting hundreds of smaller charges from several providers. Determining the number of tests that were provided by contracted versus non contracted medical providers would require manually reviewing each bill to identify each medical test procured for each of the thousands of candidates. If information on the rate of use and the cost of contracted medical providers was available, it would better enable LM and NSF to evaluate the cost savings of using contracted medical providers.

However, we did find that the price difference between non-contracted and contracted laboratory rates was significant, with some non-contracted tests costing from 5 to 10 times more than the same tests under a contracted rate.

Because LM personnel in Denver, where the contracted medical providers are available, constitute only 115 of 1,358 personnel deploying to Antarctica this past year, NSF could consider contracting with additional medical providers, which may result in cost savings. Since LM does not track the specific costs of each candidate's medical testing, or how many tests are done by a contracted medical provider, we were not able to quantify the potential cost savings of using contracted providers.

Psychiatric evaluations

Everyone who spends the austral winter in Antarctica is required to have a psychiatric evaluation. Currently, there is only one, sole source provider for psychiatric evaluations and that provider is located in the Denver area. We found that last year NSF paid for 347 psychiatric evaluations at a cost of \$260 per person, (not including travel costs). To reduce costs, NSF could direct LM to explore a lower cost for psychiatric evaluations by opening this contract to competition.

Summary of Agency Response and OIG Comments

In its response, NSF concurred with the OIG's recommendations. In responding to recommendation 1, NSF agreed to formalize its process for addressing and tracking medical panel recommendations. NSF also stated that it would direct Lockheed Martin to collect information on the reasons why applicants withdraw before completing the medical screening process in order to have a basis for determining whether additional action is necessary.

In response to recommendation 2, NSF will direct Lockheed Martin to document its internal controls over subcontractor management regarding receipt and flow-through of subcontractor's invoices costs for medical screening.

NSF provided comments in its response that conflict with the evidence that we gathered and reported on during the course of the audit. For finding 1, we specifically did not render judgment on whether any required test was essential because we did not have the medical

expertise needed. We report that the group NSF utilizes for medical expertise, the medical review panel, has recommended for 5 years that the medical screening criteria be revised. In addition, we did report the difference in the physical qualification process based on operating season and duration of stay is that candidates who anticipate spending the austral winter in Antarctica are subject to a psychological evaluation. As reported in the background section, we found that 64 travelers were deployed to Antarctica during the austral summer for less than 8 days. Under the current medical screening guidelines, those travelers were required to undergo the same medical tests as travelers staying the entire summer.

NSF's response noted that a single medical evacuation flight can cost as much as \$625,000. During the audit, when asked about the cost of medical evacuations, an USAP senior official explained that during the summer there is not usually additional cost for medical evacuation flights because NSF has the ability to change the flight schedule and utilize regularly scheduled flights. During the winter, the risk of NSF incurring cost for a medical evacuation flight is low because nearly everyone in Antarctica then is a contractor and the contractor is required to have medical evacuation insurance.

As discussed in finding 1 of the report, NSF's existing "process" to address and track medical panel recommendations is to provide a response to the panel for each recommendation at the next year's meeting. Although NSF makes progress and addresses some panel recommendations, this has not proven to be an effective method to address recommendations as medical panel recommendations have shown to repeat from year to year. When we briefed an USAP senior official on the need for a process to address medical panel recommendations, this official agreed that NSF's process to address panel recommendations needs to be improved.

Finally, for finding 1, NSF responded that it advised us that it discontinued the requirement to repeat the panoramic x-rays every five years. NSF did not inform or provide us evidence that it made this change to its requirements despite having received a draft of this report in advance of the exit conference. Similarly, in its response, NSF stated that it made the decision that the presence of unopposed third molars absent attendant complications is no longer a disqualifying condition. NSF neither mentioned that it had changed its guidelines on unopposed third molar at the exit conference nor provided revised guidelines evidencing a change had been made.

In response to NSF's claim that we incorrectly characterized the Contracting Officer's Representative's statements regarding the invoice review process, we reviewed the three report statements attributed to the Contracting Officer's Representative and confirmed that they accurately reflected the conversation that we had with this individual.

We consider management's planned actions to be responsive to our recommendations. We look forward to receiving the Corrective Action Plan and working with NSF officials to confirm its implementation. We have included NSF's response to this report in its entirety as Appendix A.

OIG Contact and Staff Acknowledgements

Marie Maguire – Director of Performance Audits
(703) 292-5009 or mmaguire@nsf.gov

In addition to Ms. Maguire, Kelly Stefanko and Jeff Stitz made key contributions to this report.

Appendix A: Agency Response

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230



GEOSCIENCES DIRECTORATE

MEMORANDUM

DATE: September 17, 2013

TO: Dr. Brett M. Baker
Assistant Inspector General for Audit
Office of Inspector General

FROM: Dr. Roger Wakimoto *Roger Wakimoto*
Assistant Director
Directorate for Geosciences

SUBJECT: Official Draft Report, *Audit of the United States Antarctic Program's Medical Screening Process*

Thank you for providing NSF the opportunity to provide a formal response to the Official Draft Report of the *Audit of the United States Antarctic Program's Medical Screening Process*. Our response is attached to this Memorandum.

Recognizing that the Inspector General's report is preliminary, NSF requests the opportunity to revise its response in the event that the report is revised.

Attachment

cc: Cliff Gabriel
Kelly Falkner
Susanne LaFratta
Michael Montopoli
Brian Stone

National Science Foundation Response

Audit of the USAP Medical Screening Process

TM#13-P-2-002

The Office of Inspector General (OIG) conducted a performance audit of the U.S. Antarctic Program's (USAP) process for physically qualifying personnel who travel to Antarctica. In addition to responding to the two recommendations, NSF provides additional information relevant to some of the statements included in the report in order to provide the reader with an accurate context.

Finding 1.

- The report indicates that NSF may have missed opportunities to reduce the cost of the medical screening process because certain recommendations made by the medical review panel have not been implemented, "in particular, ... a recommendation to base required medical tests on factors such as how long an individual will be in Antarctica, duty station, and job responsibilities." The report also states that revising the number of medical tests performed to reflect these criteria could lower costs. The report does not indicate which of the required tests the Inspector General deems unessential or on what medical evidence the conclusion is based.

In fact, there are already differences in the physical qualification process depending on factors such as length of stay and purpose of trip as well as age, duty station and operating season.

Further, despite the Inspector General's apparent impression, NSF manages its medical program using a variety of inputs and the Medical Review Panel is but one aspect. For example, NSF continually reviews and updates, with its Medical Review Panel, its contracted service providers and other subject matter experts as appropriate, the medical guidelines that are used in making physical qualification decisions; there are several instances of recent changes that NSF has made to the guidelines as a result of this practice. For example, although the report still discusses a requirement to repeat the panoramic x-rays every five years, NSF had advised the Inspector General that it discontinued this requirement.

Decisions such as these are rarely made solely on the basis of cost, however, since NSF must also balance the very real risk that it will have to medically evacuate personnel from its stations or ships. As the Inspector General indicates, the medical screening process costs approximately \$860 per person. A single medical evacuation flight can cost as much as \$625,000. Diverting the research vessel for even one day costs \$45,000. Changes to the guidelines therefore require clear and convincing medical evidence that a given test is not

useful for determining an individual's general health or the care he or she would need while deployed.

- In its discussion of "not physically qualified" determinations for participants with unopposed third molars, the Inspector General states, "The waiver process is costly and time consuming ...", but does not present any supporting cost data.

NSF considers the waiver process an important aspect of its physical qualification process. The waiver process provides an opportunity to consider other factors that would be relevant to an individual's deployment on a case-by-case basis – ironically, something the Inspector General seems to advocate elsewhere in its report. Data resulting from consideration of waivers and outcomes is also used to update the physical qualification process, as happened recently when NSF made the decision that the presence of unopposed third molars absent attendant complications are no longer a disqualifying condition.

Recommendation 1, Part 1. We recommend that NSF establish a process to address and track medical panel recommendations in a timely manner.

NSF Response. NSF has a process to address and track medical panel recommendations and so while it is not necessary to establish a process, the process will be formalized by incorporating a description in the Medical Panel Charter that is currently under revision.

Recommendation 1, Part 2. We recommend that NSF identify and address the reasons why nearly 20 percent of applicants withdraw before completing the medical screening process.

NSF Response. The report seems to assume that "nearly 20 percent" is more than it should be, and that by reducing the percentage of applicants who withdraw before completing the medical screening process NSF will lower its costs. While it is not possible to know whether the percentage or the costs can be reduced, NSF will direct Lockheed Martin to collect information on the reasons that applicants withdraw before completing the medical screening process in order to have a basis for determining whether additional action is necessary.

Finding 2.

- The Inspector General incorrectly characterizes the Contracting Officer's Representative statements regarding the invoice review process.

The Inspector General was advised that NSF has no privity of contract with Lockheed Martin subcontractors, and that it is Lockheed Martin's responsibility to ensure that it has sufficient internal controls for validating and paying invoices for subcontractor charges. In addition, the Contracting Officer's

Representative follows the approved NSF procedure for reviewing invoices to certify that costs are reasonably consistent with supplies and services received. The NSF OIG has authorized the Defense Contracts Audit Agency (DCAA) to audit Lockheed Martin's costs incurred to determine whether they are allowable, allocable and reasonable.

Recommendation 2. We recommend that NSF require LM to document its internal controls over Antarctic Support Contract invoicing for the medical screening process in the form of directives or policies.

NSF Response. The LM billing system has been found adequate and due to subcontract privity constraints, the root issue is with LM's review of subcontractor invoices prior to submission of costs to NSF. Therefore, we will direct that LM document its internal controls over their subcontractor management regarding receipt and flow-through of subcontractor's invoice costs for medical screening.

Appendix B: Objectives, Scope and Methodology

We performed this audit to determine the adequacy of NSF's oversight of the medical screening process required of individuals seeking to travel to Antarctica under sponsorship of the United States Antarctic Program (USAP) and whether opportunities exist for cost savings. Our scope included the \$1.1 million in costs incurred between April 1, 2012 and March 31, 2013 to determine if contractor candidates were physically qualified for travel to the Antarctic. We did not include in our scope the cost of required medical, dental, psychiatric, and laboratory tests for grantees, estimated at \$500,000, or NSF employees which does not get billed through the Antarctic support contractor.

To determine the adequacy of NSF's oversight of the medical screening process, we reviewed the USAP medical guidelines and annual USAP medical reports from 2009 to 2012; attended the annual medical review panel meeting in May 2013, and reviewed the annual medical review panel meeting notes and recommendations from 2009-2012. We also interviewed NSF Division of Polar Programs and LM Antarctic Support Contract staff members. We assessed the information obtained against GAO's *Standards for Internal Control in the Federal Government*.

To identify opportunities for cost savings, we reviewed a judgmental sample of 11 payments representing 23 percent of the approximate \$1.1 million billed to NSF for the medical screening program. These payments included charges covering hundreds of participants' medical charges and reimbursements. From this sample, we identified variations in medical costs due to the use of personally chosen versus contracted medical providers. We did not project the results of this sample to the population of \$1.1 million in payments. We also determined the number of people that travelled to Antarctica for various lengths of deployments. We interviewed NSF and contractor staff to understand the invoice, reimbursement, and oversight of the payment process for the medical screening program. We assessed this information against our implicit criteria that lower costing alternatives (that also maintained effectiveness) were advantageous in reducing USAP's medical screening costs.

We reviewed applicable provisions of pertinent laws and guidance, including 45 CFR, PART 675 – Medical Clearance Process for Deployment to Antarctica and the USAP Medical Screening Guidelines. Absent medical expertise, we did not attempt to test NSF's compliance with these regulations and guidelines.

Through interviewing NSF and contractor staff and reviewing documentation, we also obtained an understanding of the management controls over the USAP medical screening program. We identified ways that costs associated with this program could be reduced. We identified improvements needed in the oversight of Antarctic Support Contract medical payments but did not identify any instances of fraud, illegal acts, violations, or abuse.

During the course of this audit, we relied on information and data received from NSF and USAP contractors in electronic format that had been entered into a spreadsheet or that resulted from computer processing. We tested the reliability of the computer-processed data through a variety of means including manually reperforming calculations, reviewing data using automated data analysis software, and matching numbers against original source documents. Based on our

assessment, we concluded the computer-processed data was sufficiently reliable to use in meeting the audit's objectives.

We conducted this performance audit between March 2013 and August 2013 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our finding and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We held an exit conference with NSF management on August 21, 2013.