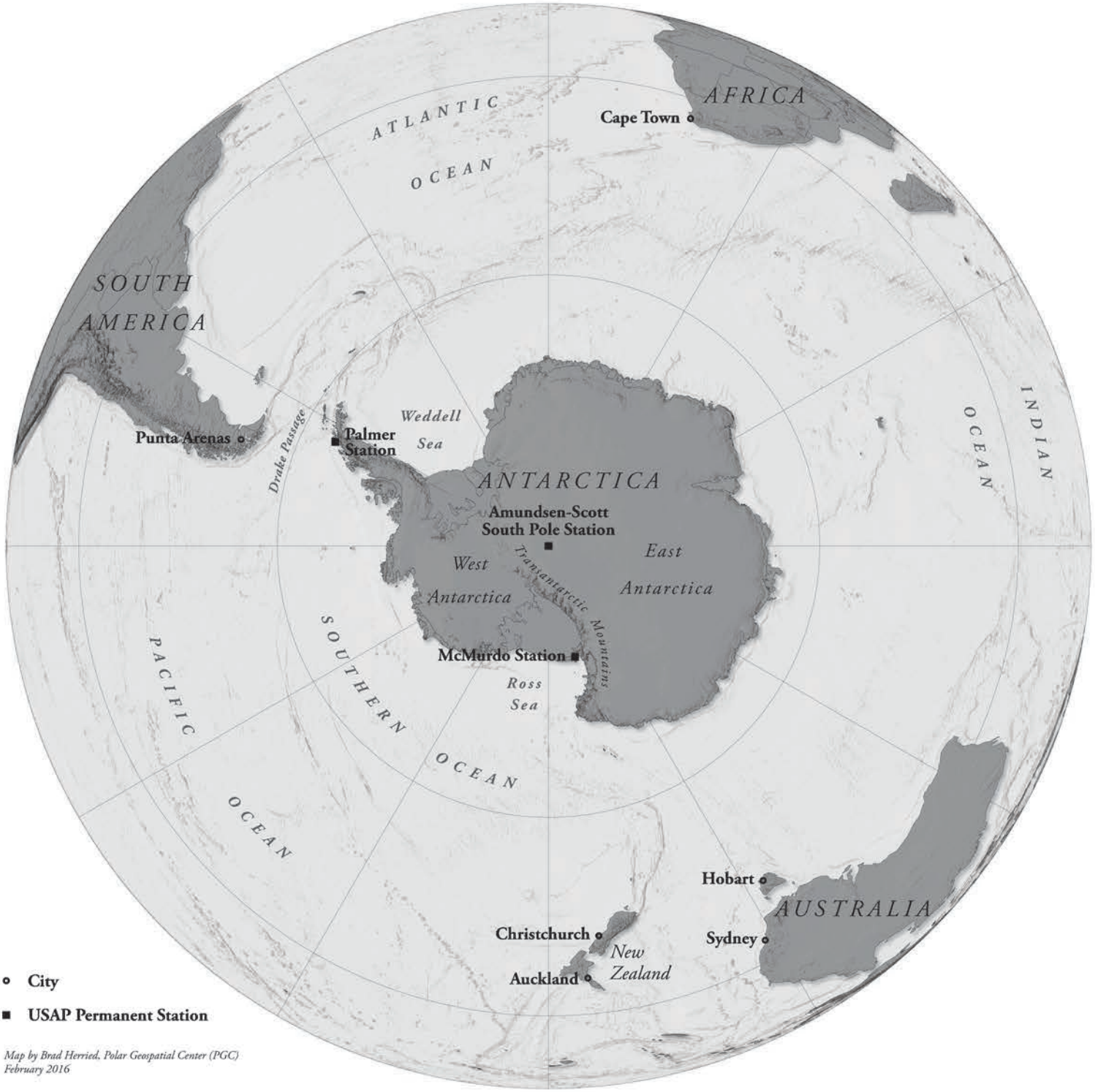
United States Antarctic Program

Participant Guide

2016-2018 Edition

NSF

National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230



Map by Brad Herried, Polar Geospatial Center (PGC)
February 2016

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

The United States Antarctic Program

Welcome to the U.S. Antarctic Program.

The *U.S. Antarctic Program Participant Guide* was revised and updated for 2016-18. I think you will find it useful to read the entire publication well in advance of your deployment date. The *Guide* provides practical information about the Program, which NSF manages; about preparing for deployment; about transporting people and cargo; and about living and working in Antarctica. The *Guide* also may be used as a reference since it contains answers to the many questions that may arise during deployment. It is available online at www.usap.gov at any time.

Ensuring the safety and health of all of its participants is a priority for the U.S. Antarctic Program. Harsh Antarctic conditions present numerous challenges to safety. Some are obvious, some not so obvious. Even routine tasks can be potentially hazardous. Medical care on "The Ice" is limited. Reducing the risk of injury and illness depends on a combination of systematic risk assessment, hazard elimination or control, appropriate use of personal protective equipment, and safe work practices. Please pay close attention during training on how to live and work safely in Antarctica. Report unsafe conditions promptly.

Your safety and the safety of those around you will depend on your conduct on the Ice. Intoxication of any kind in the harsh Antarctic environment can be particularly dangerous and will not be tolerated.

Note as well that you are responsible for full compliance with measures to protect the Antarctic environment. Failure to meet these obligations may result in penalties under U.S. law.

On behalf of the U.S. Antarctic Program leadership team, I wish you a productive and safe deployment.

Kelly K. Falkner, Director
Division of Polar Programs
National Science Foundation

Some Antarctic Basics...

Antarctica...

This continent is the highest, driest, coldest, windiest, and emptiest place on earth. An ice sheet covers more than 99% of Antarctica. At its thickest point the ice sheet is 4,776 m (nearly 3 mi.) deep. This ice is approximately 90% of all the world's ice (by volume) and is 70% of all the world's fresh water. There are many penguins and abundant sea life along the coast – but there is little life on the continent, and there are no indigenous people.

Temperatures...

The mean annual temperature at South Pole Station is minus 49°C (-56°F). Temperatures at McMurdo Station may reach as high as 8°C (46°F) in summer, while at South Pole Station, the record high summer temperature -l2.3°C. (9.9°F.) was recorded in December 2011. Palmer Station's summer temperatures will reach above 4°C (40°F).

Daylight and Darkness...

Simply put, much of the area above 66.5 degrees south enjoys one long day and one long night each year – with weeks of sunrise and sunset in between. There are spectacular displays of aurora australis (southern lights) during the winter darkness.

Ownership...

No nation owns Antarctica. The Antarctic Treaty, which has been recognized by 50 countries, reserves the area south of 60 degrees South as a zone for the peaceful conduct of research. Treaty nations coordinate and cooperate to maximize research results and minimize logistics requirements.

Size and Distance...

The continent is roughly 14 million sq. km. (5.4 million sq. mi.). The United States is smaller at 9.36 million sq. km. (3.6 million sq. mi.). The area of sea ice around Antarctica varies from 4 million sq. km. (1 million sq. mi.) in summer to 20 million sq. km. (7.7 million sq. mi.) in winter. The distance from Washington, D.C., to McMurdo Station is approximately 14,830 km. (9,920 mi.).

Science...

Antarctica provides excellent conditions for scientific research on such topics as global climate change, ozone depletion, UV radiation, earth sciences, glaciology, astronomy, oceanic and atmospheric circulation, marine ecosystems, meteorite studies and biology, among others.

History...

The existence of Antarctica was only a hypothesis until it was first sighted in 1820-21. No one set foot on the continent until 1895. The South Pole was first reached in 1911, and a year-round research station was established in 1956. Antarctica's history is packed full of extraordinary stories of heroism and survival.

Welcome...

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

Congratulations. As a U.S. Antarctic Program participant you are among a select few thousand people in the world who deploy each year to stations and field camps or aboard ships and aircraft to conduct or facilitate the research supported by the National Science Foundation in Antarctica and in the Southern Ocean.

The privilege of participating in the program also comes with individual responsibility for environmental stewardship. Actions required of you as an individual help to ensure the Program's and the nation's compliance with the Antarctic Treaty and with U.S. public law and program procedures. Noncompliance can result in removal from Antarctica and in substantial civil or criminal penalties. This guide is designed to alert you to those responsibilities and to help you meet to them as you work toward achieving your professional objectives.

In Antarctica, you represent not only yourself, but your institution, or your employer, and your nation. It is therefore imperative that you also adhere to the Program's Code of Conduct.

Your safety and health and environmental stewardship are among the program's highest priorities. Continuous vigilance and appropriate action in these areas are essential to maintain a safe, healthy and productive work environment in Antarctica.

Eric Saltzman, Head
Section for Antarctic Sciences
Division of Polar Programs

Scott Borg, Head
Section for Antarctic
Infrastructure and Logistics
Division of Polar Programs

(This *U.S. Antarctic Program Participant Guide* is revised every two years.)

This **Participant Guide** is the initial source of information for U.S. Antarctic Program participants. It covers McMurdo, Palmer and South Pole stations, field camps and the research vessels. The information will help you prepare for your Antarctic experience and point you toward other sources. Be sure to work closely with your **point of contact (POC)** for more detailed information and the particular requirements related to your objectives. The U.S. Antarctic Program website (**www.usap.gov**) will contain more current deployment information than this book. If you are reading this online, you can click on websites listed in this book and be taken to that site.

All U.S. Antarctic Program participants – including grantees, Antarctic Support Contract (ASC) employees, visitors and military – should use this handbook for general reference only. Authoritative guidance is provided in grant instruments, employment contracts or other legally binding documents.

This map represents the routing of most USAP participants. Your exact route may differ.

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CHAPTER 1:

United States' Role in Antarctica

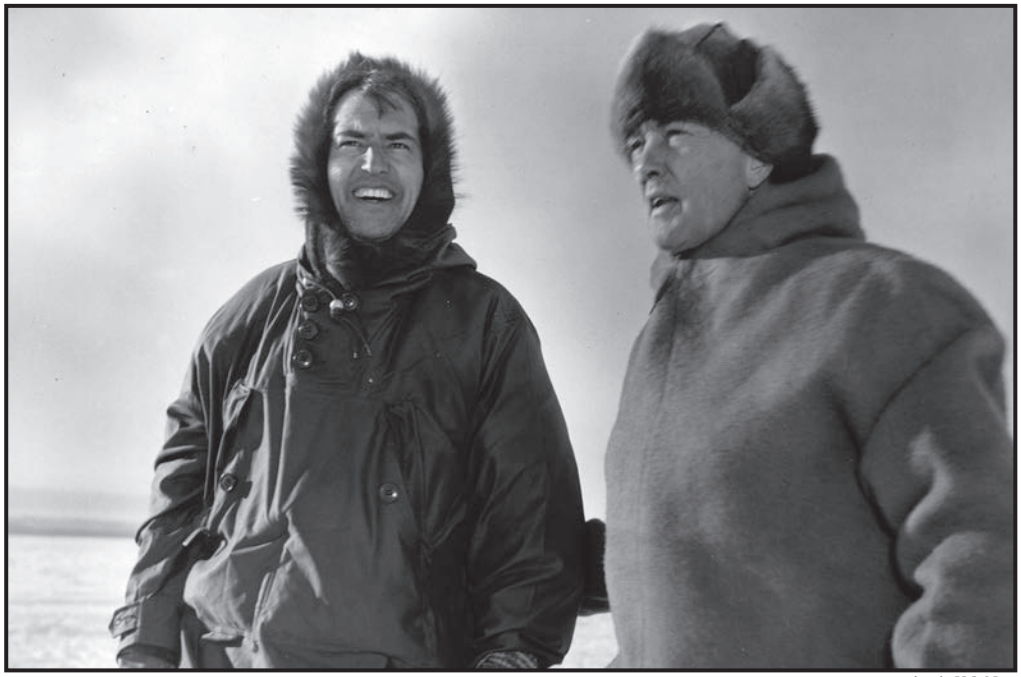


photo by U.S. Navy

Dr. Paul Siple and Admiral Richard E. Byrd were pioneers of U.S. exploration in Antarctica. Siple first went to Antarctica as a 19-year old Eagle Scout with Byrd's 1928-30 expedition.

The U.S. role in Antarctica today derives from American expeditions to the region and diplomatic initiatives that have taken place almost since the birth of the United States. This history led to a continuous U.S. presence in the region since the 1950s and to a consistent U.S. policy toward Antarctica that has been reaffirmed repeatedly over the decades, most recently by high-level reviews in 1994, 1996 and 1997. Current federal policy suggests continuation into the foreseeable future of a strong U.S. government capability to support Antarctic scientific research.

HISTORY

U.S. Expeditions, 1775-1948

The first Americans to work in the Antarctic were sealers and whalers who discovered many sub-Antarctic islands. They were first to explore parts of the great peninsula jutting out of the Antarctic mainland toward South America. Among them was the youthful Nathaniel Palmer, who may have been the first person to see Antarctica. Sailing the 47-ft. sloop *Hero*, Palmer almost certainly viewed the Antarctic Peninsula from a distance of about 5 km. on November 16-17, 1820. (Historians have not settled the question of who discovered Antarctica.) James Eights, a geologist from Albany, New York, became the first U.S. scientist to work in Antarctica. In 1830, aboard the *Annawan*, Eights made investigations in the South Shetland Islands and westward along the Antarctic Peninsula. Eights Coast, 90 to 100 degrees West longitude, is named for him.

Expeditions sponsored by several nations approached the Antarctic continent early in the 19th century. Among the leaders was Charles Wilkes, a U.S. Navy lieutenant who commanded an expedition in 1839-40 that was the first to prove the existence of the continent. His expedition mapped 2,400 km. of Antarctic coastline in the Indian and Australian quadrants.

For the next 80 years, U.S. interest in Antarctica, outside of periodic whaling voyages, lay dormant.

In 1928-1930 and 1933-1935, Admiral Richard E. Byrd led two privately sponsored expeditions, one that included the first flight over the South Pole in 1929, sparking U.S. interest. Another American, Lincoln Ellsworth, conducted a series of privately financed expeditions in the 1930s. Ellsworth's most memorable contribution was his transcontinental flight from Dundee Island off the Antarctic Peninsula to the Bay of Whales on the Ross Sea. The U.S. Antarctic Service Expedition (1939-1940), under the leadership of the Navy, maintained bases at Marguerite Bay and Bay of Whales.

Airplane flights and traverses continued the geographic and scientific reconnaissance that Byrd had started. The United States' Operation Highjump in 1946-1947 was the largest single expedition ever to explore Antarctica, involving 13 ships, numerous airplanes and more than 4,700 men. Aerial photography was used extensively to record unexplored areas. The next year, the Navy's Operation Windmill used helicopters to complete some of the work begun during Highjump. Also that year, Finn Ronne led a privately sponsored U.S. Antarctic expedition, which reoccupied the Marguerite Bay base for a year and pushed exploration of the Antarctic Peninsula southward.

photo by U.S. Navy

U.S. Navy pilot LCDR Gus Shinn cranks up the Que Sera Sera before taking off for the South Pole from McMurdo Station on 31 October 1956. This C-47 (DC-3) aircraft was the first to land at the South Pole.

International Geophysical Year

The 1957-1958 International Geophysical Year (IGY) emphasized polar exploration and included research by 12 nations at 67 stations in Antarctica. For the first time, year-round stations were maintained in the continental interior, and the distribution of stations was sufficient to permit synoptic studies. It was the greatest coordinated scientific assault on Antarctica ever mounted.

The IGY is an Antarctic milestone. It produced the first understanding of the broad relationships of the continent's ice topography, the discovery of many new major geographical features, and a revelation of the significance of the atmosphere above the continent. The United States established seven IGY wintering stations: four on the coast (Little America, Hallett, Wilkes and Ellsworth), two inland (Byrd and South Pole) and a logistics base (McMurdo Sound). The U.S. made 6,000 km. (3,728 miles) of traverses, operated 10 to 12 ships each season, and flew 23 Navy and eight Air Force airplanes. The U.S. National Committee for the IGY of the National Academy of Sciences administered U.S. participation. The National Science Foundation (NSF), a federal agency established in 1950 to support basic research and education in the sciences and engineering, administered funding for the U.S. science projects, and the Navy and the Air Force supported these efforts logistically.

Antarctic Treaty

No nation owns Antarctica. A passport is not required to enter, though you will need one en route to Antarctica.

The Antarctic Treaty entered into force in 1961, and its original 12 signatory nations include those that were active in Antarctica during the IGY. The treaty is a remarkable achievement whose primary success has been to reserve the area south of 60 degrees South latitude as a zone of peace: it prohibits measures of a military nature, including fortifications, and it prohibits nuclear explosions and the disposal of radioactive waste. It gives treaty parties the right to inspect all areas of Antarctica, including stations, installations, equipment, ships and airplanes of other member states, to ensure continuing adherence to the treaty.

photo by Deven Stross

The Ceremonial Pole at the South Pole is surrounded by the original signatory nations of the Antarctic Treaty.

The treaty encourages scientific investigation in Antarctica and promotes international cooperation. It also provides for annual exchange of plans, personnel, scientific observations and results. The United States, a leader in both the establishment of the treaty and in its continued operation, cooperates extensively with the other treaty nations in scientific research and operational support. See The Antarctic Treaty in Appendix A to read the original text.

Treaty nations hold annual consultative meetings. Measures to extend and improve the effectiveness of the treaty are adopted at these meetings. The Agreed Measures for the Conservation of Antarctic Fauna and Flora, recommended at the third consultative meeting in 1964, resulted in passage in the United States of the Antarctic Conservation Act of 1978. A Convention on the Conservation of Antarctic Seals entered into force in 1978, and a Convention on the Conservation of Antarctic Marine Living Resources entered into force in 1982. Special consultative meetings during the 1980s led to a 1991 Protocol on Environmental Protection and a ban on mining. The comprehensive environmental protocol entered into force in 1998. To learn more, visit **www.nsf.gov/geo/plr/antarct/aca/aca.jsp**.

More than 50 nations are now members of the Antarctic Treaty. In addition to diplomatic interchange carried out under the Antarctic Treaty by the Department of State and its counterparts in other nations, leaders of the various national Antarctic program offices (NSF's Division of Polar Programs and its counterparts abroad) directly coordinate and exchange views and plans by means of the Council of Managers of National Antarctic Programs (COMNAP).

The Antarctic Treaty consultative parties established a secretariat in Buenos Aires, Argentina, for support of Antarctic Treaty activities. Besides assisting with preparation for annual meetings, the Secretariat also is responsible for information related to the Treaty System and the Protocol. Its website, **www.ats.aq**, includes a database describing science and operations for each nation in Antarctica and information about the operation of the treaty.

UNITED STATES ANTARCTIC PROGRAM

The results of research performed during the IGY were so interesting scientifically that the United States and the other IGY nations decided to continue their Antarctic work. The NSF was given responsibility for the U.S. research effort, and in 1959 established the U.S. Antarctic Research Program (USARP). Mapping, biology and ocean sciences were added to the already active disciplines of geology and geophysics, glaciology, meteorology and upper atmosphere physics. The Department of Defense was tasked to support the scientific effort, and established a unit, Operation Deep Freeze, to perform this work.

After 1971, the NSF was assigned overall responsibility for U.S. activities in Antarctica. The term U.S. Antarctic Program (USAP) came into broader use to designate both the U.S. Antarctic Research Program and operational activities, including Operation Deep Freeze, that support the research program and other features of the U.S. presence in Antarctica.

Research is pursued in geospace sciences and astrophysics, glaciology, integrated system science, ocean and atmospheric sciences, earth sciences, and organisms and ecosystems, so that an understanding of Antarctica's natural features and processes can be developed. The high latitude location of Antarctica is also useful for studying near-earth and extraterrestrial processes. Results of U.S. research since the IGY have greatly improved our understanding of Antarctica, its role in global change, and its ecological and environmental processes, and have placed the United States in a position of scientific and diplomatic leadership in Antarctica.

Programs to integrate research and education have become a part of the U.S. Antarctic Program, as they have in other programs the NSF supports. There is also an Artists and Writers Program facilitating works of art to increase public understanding of Antarctic research and the continent.

U.S. Antarctic Policy

U.S. policy for Antarctica has been consistent over the years. It is based on four principles:

1. Nonrecognition of territorial claims.
2. Retention of the right to participate in any future uses of the region.
3. Use of Antarctica for peaceful purposes only.
4. Free access for scientific investigation and other peaceful pursuits.

The nonrecognition of territorial claims dates to 1924, when Secretary of State Charles Evans Hughes wrote that discovery of lands unknown to civilization "does not support a valid claim of sovereignty unless the discovery is followed by an actual settlement of the discovered country." In 1934, the assistant secretary of state added: "I reserve all rights which the United States or its citizens may have with respect to this matter." President Franklin D. Roosevelt reaffirmed the United States' stance in 1939: "The United States has never recognized any claims of sovereignty over territory in the Antarctic regions asserted by any foreign state." And in 1947, Dean Acheson, the under secretary of state, wrote that the United States "has not recognized any claims of any other nations in the area and has reserved all rights which it may have in the area."

As early as 1948, drawing on its leadership in Antarctic and world affairs, the United States had proposed an international trusteeship. The seven original claimant nations and the United States (and other nations, if they wished) would have agreed "not to seek a division of the territory in the area, but to join with the others." The eight nations would make joint explorations and would have free access over the area.

For a decade the idea gained little traction. Then the IGY renewed ties, and in May 1958, President Dwight D. Eisenhower invited the 11 other Antarctic IGY nations to come to Washington to draft an Antarctic Treaty. He wrote: "The United States is dedicated to the principle that the vast uninhabited wastes of Antarctica shall be used only for peaceful purposes …. We propose that Antarctica shall be open to all nations to conduct scientific and other peaceful activities there." Referring to the IGY, the president wrote: "Our proposal is directed at ensuring that this same kind of cooperation for the benefit of all mankind shall be perpetuated."

Secretary of State John Foster Dulles referred to the extensive activities of U.S. expeditions to the Antarctic and set forth the basic position and proposal of the United States in these words:

> *In view of the activities of the United States and its nationals referred to above, my Government reserves all of the rights of the United States with respect to the Antarctic region, including the right to assert a territorial claim or claims.*
>
> *It is the opinion of my Government, however, that the interests of mankind would best be served, in consonance with the high ideals of the Charter of the United Nations, if the countries which have a direct interest in Antarctica were to join together in the conclusion of a treaty which would have the following peaceful purposes:*
>
> *A. Freedom of scientific investigation throughout Antarctica by citizens, organizations, and governments of all countries, ...*
>
> *B. International agreement to ensure that Antarctica be used for peaceful purposes only.*
>
> *C. Any other peaceful purposes not inconsistent with the Charter of the United Nations.*
>
> *It is believed that such a treaty can be concluded without requiring any participating nation to renounce whatever basic historic rights it may have in Antarctica, or whatever claims of sovereignty it may have asserted. It could be specifically provided that such basic rights and such claims would remain unaffected while the treaty is in force, and that no new rights would be acquired and no new claims made by any country during the duration of the treaty.*

The nations met, the Antarctic Treaty was written, and all the proposed provisions were in it. The treaty entered into force in 1961. The Antarctic Treaty became the keystone of U.S. Antarctic policy. See **Appendix A**.

In October 1970, President Richard M. Nixon stated U.S. policy for Antarctica to be:

> *To maintain the Antarctic Treaty and ensure that this continent will continue to be used only for peaceful purposes and shall not become an area or object of international discord.*
>
> *To foster cooperative scientific research for the solution of worldwide and regional problems, including environmental monitoring and prediction and assessment of resources.*
>
> *To protect the Antarctic environment and develop appropriate measures to ensure the equitable and wise use of living and nonliving resources.*

The president added:

> *Science has provided a successful basis for international accord, and the Antarctic is the only continent where science serves as the principal expression of national policy and interest.*

In 1970 and again in 1976, National Security Decision Memoranda 71 and 318 reaffirmed the "importance of maintaining an active and influential U.S. presence in the Antarctic" that is "responsive to United States scientific, economic, and political objectives."

In February 1982, President Ronald Reagan reaffirmed the prior policy and noted that the presence in Antarctica shall include "the conduct of scientific activities in major disciplines" and "year-round occupation of the South Pole and two coastal stations." See Appendix B.

In 1990, the Antarctic Protection Act (Public Law 101-594) banned mineral resource activities by U.S. citizens.

A 1993 decision by a U.S. appeals court established that the National Environmental Policy Act (Public Law 91-190) applies to U.S. government activities in Antarctica. This decision requires the formal evaluation of any activities that may have environmental impacts.

The 1994 Presidential Decision Directive NSC-26, U.S. Policy in the Arctic and Antarctic Regions, states four U.S. policy objectives in Antarctica: protecting the environment; protecting opportunities for scientific research; maintaining Antarctica as an area of international cooperation for peaceful purposes; and conserving living resources in the oceans surrounding Antarctica.

In 1996, the president's National Science & Technology Council concluded that U.S. national and scientific interests are well served by continued involvement in scientific activity in the Antarctic. The policies laid out in the 1982 Presidential Memorandum 6646 continue to be appropriate. The council's 83-page report, United States Antarctic Program, is on the NSF's website at **www.nsf.gov/pubs/1996/nstc96rp/start.htm**.

In 1997, an external panel assembled by the NSF in response to a recommendation of the 1996 report concluded, "We believe the U.S. Antarctic Program is well managed, involves high-quality science, and is important to the region as well as to the United States." The panel's report led to a congressional commitment of support for the present array of three U.S. Antarctic Program year-round stations and for major modernization of the U.S. research station at the geographic South Pole. The 94-page report, The "United States in Antarctica," can be found on the NSF website at **www.nsf.gov/pubs/1997/antpanel/start.htm.**

In 2011, the Office of Science and Technology Policy and the National Science Foundation initiated a major review of the U.S. Antarctic Program to examine U.S. logistical capabilities likely to be needed in Antarctica and the Southern Ocean during the next two decades and to seek ways to enhance logistical efficiency to support world-class science. The results of this review and the panel's recommendation are published in the report "More and Better Science in Antarctica through Increased Logistical Effectiveness." Links to the report are at **www.nsf.gov/geo/plr/usap_special_review/usap_brp/rpt/index.jsp**.

ANTARCTIC PROGRAM STRUCTURE

Cooperation of multiple entities is coordinated by the NSF in support of the U.S. Antarctic Program.

National Science Foundation

The NSF has overall funding and management responsibility for U.S. activities in Antarctica. This responsibility involves several functions:

- Annual preparation of plans and budget for consideration by the executive branch, and for review and appropriation by Congress.
- Developing scientific goals for Antarctica, obtaining advice as needed from the scientific community, and communicating these goals to the scientific community.
- Receipt of proposals for research and education projects from U.S. universities, other research institutions, and federal agencies; evaluation of these proposals for relevance to program goals, scientific merit, and logistics feasibility; and granting of funds (as available) to these institutions for performance of the projects in Antarctica and completion of analysis upon return.
- Detailed planning of logistics, and transmitting logistics requirements and necessary funds to elements of the Department of Defense and to the United States Coast Guard.
- Facilities management, design, planning, engineering, construction and maintenance.
- Development and management of a contract with a commercial firm, currently Antarctic Support Contract (ASC), for operation of Antarctic stations and research ships and related services including construction.
- Development and implementation of a comprehensive safety, environmental, and health program for U.S. activities in Antarctica.
- Arrangement of cooperative scientific and logistics programs with other Antarctic Treaty nations.
- Designation of a senior U.S. representative in Antarctica and on-site management of the field programs in Antarctica.
- Serving as a clearinghouse and source of information regarding Antarctic records, files, documents, and maps maintained within agencies and nongovernmental organizations.

The staff in the NSF's Division of Polar Programs has day-to-day responsibility for these functions. The address is: National Science Foundation, 4201 Wilson Boulevard, Suite 755, Arlington, VA 22230. Useful telephone numbers are:

Division Director	703-292-8030
Antarctic Sciences	703-292-8033
Polar Environment, Safety and Health	703-292-8031
Antarctic Infrastructure and Logistics	703-292-8032
Information	703-292-8014
Permits	703-292-8030
Facsimile machine	703-292-9080
Website	www.nsf.gov

Support Contractors

Leidos is the prime contractor supporting the U.S. Antarctic Program, managing a team that includes companies performing specific support functions. Together the support contract is known as the Antarctic Support Contract (ASC).

Antarctic Support Contract (ASC)

Leidos	ASC program management, science planning
Best Recycling	Waste
Damco	U.S. and international cargo, Punta Arenas operations
Gana-A' Yoo (GSC)	Lodging, food/beverage, recreation, retail, post office

GHG Corporation	IT and communications
PAE	Infrastructure, operations, transportation and logistics
PAE New Zealand	Christchurch operations
Univ. of Texas Medical Branch	Medical qualification and telemedicine

The scope of work that ASC is responsible for includes:

- Supporting science and operating research facilities.
- Procuring, arranging for transport, warehousing and issuing equipment and supplies.
- Designing, procuring and constructing facilities.
- Operating and maintaining stations, research vessels, and numerous field camps.
- Arranging medical clearance and travel of participants.
- Managing transportation of passengers and cargo.
- Arranging annual resupply and fuel of McMurdo Station by Military Sealift Command contract ships.
- Providing marine terminal operations.
- Complying with safety, health, and environmental requirements.

The point of contact for ASC may be reached at 800-688-8606, fax 303-790-9130. The address is: 7400 S. Tucson Way, Centennial, CO 80112-3938.

Other organizations are also contracted by NSF, ASC and the Department of Defense to perform specific tasks. Two of these include PHI for helicopter support, and Kenn Borek Air for fixed-wing aircraft support.

Department of Defense

The Department of Defense (DoD) provides military logistics, reimbursed by the NSF, as part of the U.S. Antarctic Program as directed by Presidential Decision Memorandum 6646, and in accordance with the NSF-DoD Memorandum of Agreement. This support includes:

- Shipborne cargo between the U.S. West Coast and McMurdo Station (Military Sealift Command).
- Shipborne fuel delivery to McMurdo Station (Military Sealift Command).
- Airlift (C-17) between Christchurch, New Zealand, and McMurdo (Air Mobility Command).
- LC-130 Hercules (ski-equipped) airlift in Antarctica and between Antarctica and New Zealand (109th Air Wing, Air National Guard).
- The annual resupply cargo ship is loaded and unloaded by the Navy Cargo Handling and Port Group.
- Weather forecasting, air traffic control, ground NAVAID electronics maintenance, RF spectrum management, and DoD messaging (SPAWAR Office of Polar Programs).
- Information Security/Information Assurance management and government oversight support (SPAWAR Office of Polar Programs).
- Electronic systems engineering including design, procurement and installation (SPAWAR Office of Polar Programs).

The Commander, Joint Task Force Support Forces Antarctica (CJTF SFA), is responsible for DoD forces deployed in support of Operation Deep Freeze. This person is normally stationed at Hickam AFB, Hawaii.

The Deputy Commander JTF-SFA (DCJTF) executes the DoD mission and manages DoD assets on behalf of CJTF-SFA and is present in either New Zealand, Antarctica or Hawaii. The commander of the 13th Air Expeditionary Group (13 AEG/CC) commands all DoD aviation operations and is normally present at McMurdo. At different times, the DCJTF will act as the 13 AEG/CC.

Department of Homeland Security

The Department of Homeland Security (United States Coast Guard) has provided icebreaker services, reimbursed by the NSF. These services have included:

- Channel breaking the fast ice of McMurdo Sound in advance of the annual fuel and resupply ships.
- Escorting supply ships into and out of McMurdo Station.
- Refueling Marble Point.
- Providing other assistance, including science project support, as required.

Department of the Interior

The Department of the Interior's Aviation Management Division (DOI/AMD) provides procurement assistance, contract administration, and inspection for commercial aircraft services contracted to the U.S. Antarctic Program. The U.S. Geological Survey (USGS) holds geodetic data that supports mapping in Antarctica and administers Antarctic place-name decisions. A variety of topographic maps and aerial photography is available from the USGS's EROS Data Center at http://eros.usgs.gov.

Department of State

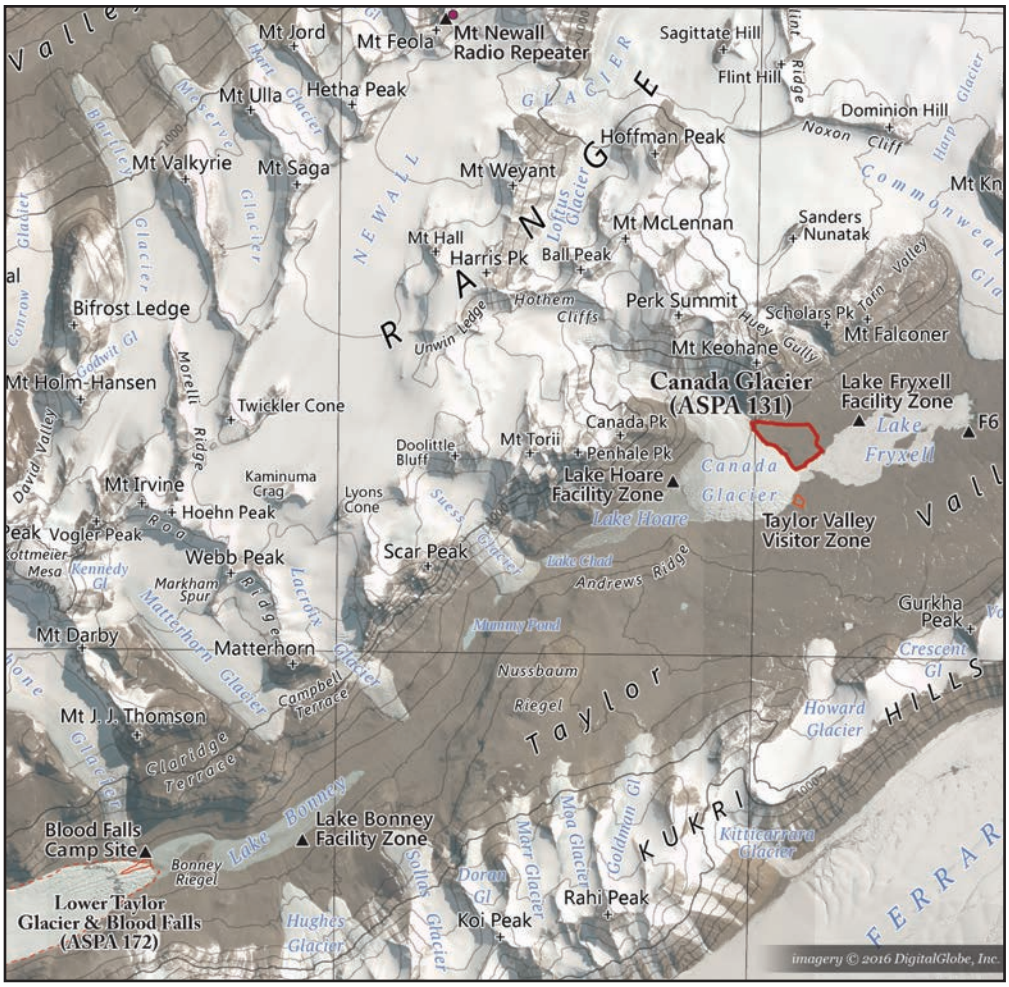
The Department of State is responsible for the formulation of foreign policy and the provision of foreign policy direction relating to the development and implementation of an integrated U.S. program for Antarctica; for the conduct of foreign relations regarding Antarctica; and for legal matters relating to the interpretation and implementation of the Antarctic Treaty. The Department of State leads the U.S. delegation to the annual Antarctic Treaty Consultative meeting, where the international community discusses a range of issues pertaining to Antarctica. The Department also is responsible for informing other treaty parties of non-governmental expeditions to Antarctica organized in or proceeding from the United States and determines, in consultation with the Environmental Protection Agency and the National Science Foundation, whether expedition organizers are subject to U.S. environmental regulations.

International Cooperation

Within the context of the Antarctic Treaty, international cooperation in support of science projects is common. In addition, the national Antarctic programs of many nations cooperate with each other on logistical issues when there are benefits to all parties. Some past and current examples are exchanges of personnel among projects and stations, cooperative planning and execution of large-scale science projects, and the exchange or shared use of logistics assets such as ships and airplanes. The United States has pursued cooperative projects with most Antarctic Treaty consultative nations.

The NSF encourages U.S. scientists to propose collaborative research with foreign colleagues using U.S. facilities and/or facilities of other national Antarctic programs.

The **Scientific Committee on Antarctic Research (SCAR)** also helps to facilitate discussions about international scientific activity in Antarctica. SCAR is a part of the International Council of Scientific Unions. It is a nongovernmental body established to further the coordination of scientific activity in Antarctica, with a view to framing scientific programs of circumpolar scope and significance. SCAR organizes symposia, prepares annual reports to ensure the regular exchange of information about scientific programs, develops long-range scientific goals, and responds to special requests for scientific advice from the Antarctic Treaty organization. Most treaty consultative nations are represented on SCAR. Experts in various disciplines from several countries are organized into groups that consider needs for scientific plans and areas of conservation. The SCAR website is **www.scar.org**.



map by www.pgc.umn.edu

Polar Geospatial Center (PGC) provides mapping, high-resolution commercial satellite imagery, and geospatial support to the U.S. Antarctic Program. This is a map of the McMurdo Dry Valleys.

The Polar Research Board, National Academy of Sciences, represents the United States on SCAR and provides liaison between the United States and foreign scientific communities. Their website is **www.dels.nas.edu/prb.**

SCIENCE PROPOSALS AND GRANTS

The mission of the Division of Polar Programs is to promote and support excellence in scientific research and education in and about the polar regions in accord with national policies and NSF's mission. In its administration of the U.S. Antarctic Program, the Division of Polar Programs receives proposals from scientists or groups of scientists who wish to conduct research projects in Antarctica. Each proposal is reviewed by the appropriate staff scientist and at least three other scientists selected for their expertise in one or more areas of the proposal. These "peer reviewers" are the source of the greatest volume and the most detailed scientific advice to the program. Although generally focusing on the details of a particular proposal, their reviews also shed light on broader questions of scientific merit and priority by virtue of comments relating the proposal to its general field of science.

Any scientist is considered eligible to be selected as a reviewer and most agree to do so when asked. Their opinions are given candidly and without compensation, and are held in confidence,

except that verbatim copies are given to the proposer without revealing the name of the reviewer. These contributions are indispensable in setting priorities among projects and in maintaining high standards for the projects selected. For some disciplines, the NSF selects panels of experts from the research community to further evaluate proposals to assist in decision making.

The NSF also obtains advice regarding the performance of Antarctic research in other ways. An Advisory Committee for Geosciences provides "advice, recommendations, and oversight concerning support for research and research-related activities in the geosciences." It meets twice each year to discuss trends and challenges within the Directorate for Geosciences and recommend approaches to improving NSF research supported by this Directorate.

A Committee of Visitors, operating on a three-year cycle, assesses the quality and integrity of program operations and program-level technical and managerial issues pertaining to proposal decisions and comments on how the outputs and outcomes of awards have contributed to NSF's mission and strategic goals.

The NSF website, **www.nsf.gov**, provides more information about the U.S. Antarctic Program and NSF goals, plans, budgets and activities. "About the NSF," for example, has the president's budget request to Congress for NSF, a discussion of how the agency is responding to the Government Performance and Results Act, the American Recovery and Reinvestment Act of 2009, performance and financial highlights for the last fiscal year, and the NSF Strategic Plan. "Awards" on the NSF website contains a searchable database of grants, including abstracts and award amounts. This site provides significant opportunities for Antarctic investigators. The "**Polar Programs**" section describes research facilities in polar regions and Antarctic and arctic research areas supported by the NSF.

The American Geological Institute Website contains the world's most complete Antarctic bibliography with abstracts at **www.coldregions.org**.

The U.S. Antarctic Data Coordination Center, **www.usap-data.org**, collects descriptions of data sets compiled by U.S. Antarctic Program participants for entry into the international Antarctic Master Directory.

The Polar Geospatial Information Center, **www.pgc.umn.edu**, is developing highly detailed Antarctic geospatial digital maps, available for scientists and the public to use.

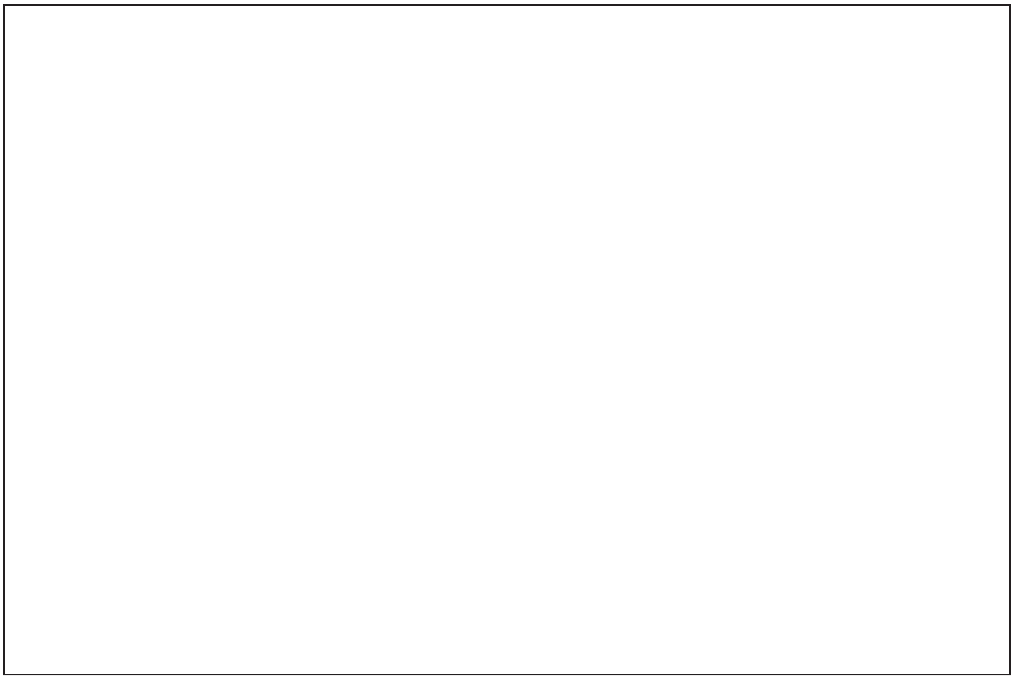
The U.S. Geological Survey has a searchable database of Antarctic place names, maps and photographs at **http://usarc.usgs.gov**. Scientists and others working in Antarctica who have reason to name previously unnamed natural features are encouraged to use the material on the "Geographic Names" portion of this website to recommend that the Advisory Committee on Antarctic Names, U.S. Board on Geographic Names, officially name such features. The U.S. Geological Survey, NASA, and the British Antarctic Survey have coordinated, with funding from the NSF, to provide the Landsat Image Mosaic of Antarctica (LIMA) at **http://lima.usgs.gov**. ■

USAP Statistics

- Approximately 3,000 participants work at U.S. Antarctic stations and field camps.
- Approximately 90% of the participants travel through New Zealand.
- Participants originate from all over the U.S., with Colorado having the highest representation.
- Approximately 75% work during the austral summer and 25% during the winter.
- Approximately 33% are female and 10% are minorities.
- More than 700 scientists conduct research on more than 200 different science projects in Antarctica.

APTER 2:

efore You Leave Home



Adélie penguins at Cape Royds, Ross Island.

photo by Mike Lucibella

You will travel through at least one foreign country en route to Antarctica, and once there you will be living in a region that does not provide many modern conveniences. Planning ahead is essential and will contribute greatly to your effectiveness and comfort. You will require a passport and you will have to pass physical and dental examinations. Please read the following information carefully. Your supervisor, science team leader or ASC point of contact will answer any additional questions you may have.

PROGRAM REQUIREMENTS

Medical and Dental Examinations

You must pass rigorous medical and dental examinations before going to the Antarctic.

Antarctica is an extreme, remote environment, and medical facilities are limited. U.S. Antarctic Program facilities are equipped and staffed to provide routine ambulatory care that would be expected in a U.S. clinic, and have the capability to stabilize and manage a range of emergency medical and dental conditions before transporting patients off the continent. However, medical evacuations take a lot of time and effort and place others at risk, even when the weather allows travel. Remote field camps and research vessels pose additional difficulties. Therefore, the physical qualification (PQ) process administered by ASC seeks to screen out people with conditions that cannot effectively be managed on the Ice or aboard ship.

This PQ process applies to all grantees, ASC employees, contractors, military personnel or guests of the NSF. Members of another nation's Antarctic program may be cleared through their country, but must provide ASC with their country's/program's clearance documentation, and carry a copy of their medical records with them if they are to be stationed near and supported by U.S. medical facilities. A resident of a nation that does not have an Antarctic field program will be required to pass the U.S. Antarctic Program screening program. The U.S. Antarctic Program also maintains reciprocity with the U.S. Arctic Program.

Deployment clearance begins when ASC is notified that you are a candidate to deploy to Antarctica, either through the Support Information Package (SIP) for grantees, hiring paperwork for contract employees, or other documents. The medical department is located at the University of Texas Medical Branch (**UTMB**) in Galveston, Texas. Upon authorization, UTMB sends each candidate an **e-mail with information on how to access medical forms and instructions online**.

Please note that the physical qualification process frequently changes as new information on risks or treatment options arise. You should only obtain the tests required in your packet. **The U.S. Antarctic Program will not pay for ANY testing performed outside of those requested in your packet.**

Please read all of the instructions. The information in the packet will answer most questions about how to schedule needed exams and return the completed information back to UTMB. If you have further questions, or special circumstances, please contact your POC. Contact information for UTMB is included in your deployment packet.

ASC Employees: If participants have their own insurance, they should submit expenses to their insurance first. ASC will reimburse the participant for approved out-of-pocket expenses. Receipts must be submitted to the particular teammate (e.g., PAE, GSC) hiring them.

Grantees may pay for their physical and dental examinations from their NSF grant. Work with your principal investigator (PI) for procedures. NSF funding cannot be used for medical or dental treatment that may be required to meet physical qualifications requirements established for the U.S. Antarctic Program.

NOTE: Treatments to resolve dental conditions or other items required to meet U.S. Antarctic Program screening criteria are **not reimbursable**. Please check with your health coverage or UTMB before scheduling exams or additional work that is not listed on your original checklist.

You will mail the completed documentation to UTMB. If your providers have questions concerning the deployment exam, required labs and/or tests, direct them to the Dear Doctor and Dear Dentist letters in the packet for detailed instructions.

Candidates are responsible for scheduling their examinations early to ensure that complete information is provided to ASC **no less than eight weeks** prior to their planned departure for Antarctica. You should start the process as early as possible in case additional testing is required for your clearance. Ensure that all contacts at UTMB and ASC know how to contact you at all times (phone and/or e-mail) should additional information be required.

In addition to medical paperwork there will be additional documents which must be submitted to ASC. Passing the physical examinations mean you are PQ'd. You will not be ticketed to travel to Antarctica until **all required documents have been returned to ASC**. Ticket information is normally sent two weeks before your departure date. The best rule is to submit your information as early as possible to allow time for problems or re-testing. Always keep copies of paperwork submitted for your own files.

While a PQ is valid for 12 months, the physician reviewer may require additional information to maintain PQ status. For example, someone who originally PQs for a summer season may be offered a winter position once deployed, which will require additional testing.

All medical information, laboratory results, X-rays, dental exams, releases, and personal information forms are the property of the U.S. Antarctic Program, and will not be returned to candidates. Make copies of all the paperwork for your own files.

Waivers. Candidates who do not meet U.S. Antarctic Program criteria and are determined "Not Physically Qualified" (NPQ'd) may request a waiver for NSF review of their condition. UTMB will send out information on how to apply for a waiver with your NPQ document. Be aware that additional testing or treatment needed for a waiver will not be reimbursable. Also note that the waiver process can take up to eight weeks for completion.

Immunizations

All participants must have had a tetanus vaccination current within the last 10 years and an annual seasonal influenza vaccine (available in late September) prior to deployment. Proof of vaccination status for measles/mumps/rubella (MMR) and pertussis is also required. Other vaccinations may also be required. A pneumovax for participants who are age 64 or older, or who have special medical conditions, is highly recommended.

If you are planning travel after your deployment, in tropical South America for example, you may need other immunizations. Consult your physician or the Center for Disease Control (CDC) at 800-232-4636 or at **www.cdc.gov/travel/default.aspx** for current recommendations on the areas where you plan to travel.

If vaccinations or medications (e.g., malaria chemoprophylaxis) are required prior to your travel, you must purchase them before leaving home and take them to the clinic upon arrival on station. The vaccination will be administered to you at the end of the season.

No immunizations are required for return to the United States. Under international health regulations, other countries may require international certificates of vaccination against yellow fever.

More information on health considerations is covered in Chapter 6.

Privacy Act Compliance

All medical information gathered from you by the NSF or its contractor is maintained in accordance with the Privacy Act of 1974 (Public Law 93-579).

NSF's authority to collect medical, dental, and psychological information is derived from its authority to prescribe rules governing its operations as set forth in section 1870(a) of title 42 of the U.S. Code. If you do not provide the information requested, you may be disqualified from the U.S. Antarctic Program.

Deployment Paperwork

First Steps

1. **PQ email** - print online forms, make and attend medical appointments, mail Medical paperwork to UTMB.
2. **Deployment email** - print and complete forms, sign papers, mail Deployment paperwork to ASC Travel.

Grantees and ASC: Once you have been identified as a USAP participant (or alternate participant), you will receive an **email containing a link to the Deployment Packet**. It will be sent a few weeks after you have received the PQ email. Please review this paperwork carefully. It includes information you need to know before you get to Antarctica and the forms (e.g. airport of departure, passport information and clothing sizes) you'll need to **fill out and return to ASC Travel** before your airline ticket can be issued.

Travel Arrangements

ASC Travel begins work on your ticketing and itinerary early in the qualifying process. You may be consulted in advance to establish your deployment date, but y**our itinerary and tickets will not be released to you until you have turned in all paperwork**.

You will travel through New Zealand, Chile, or other countries en route to Antarctica, using airline tickets provided by the U.S. Antarctic Program.

The International Air Transportation Fair Competitive Practices Act of 1974 (better known as the Fly America Act) requires the use of U.S. carriers (coach class) whenever available when ASC is the ticket buyer. ASC Travel reserves, purchases, and issues your tickets for direct air travel from your home airport to New Zealand or Chile. This information is taken directly from the travel paperwork submitted by you. Any deviation from the direct route must be authorized in advance by the NSF program manager or ASC management. To get the best fare, airline tickets are purchased at least three weeks in advance.

When the ticket information is sent to you, make sure the date and time of travel are what you expected. Make sure the name printed on your tickets corresponds to the one in your passport (i.e., no nicknames). If your tickets have discrepancies, contact ASC Travel.

Every effort is made to obtain flight dates as requested, but this is not always possible. Remember that during the southbound trans-Pacific flight you cross the International Date Line, losing a day. For example, if you leave the United States on a Tuesday, you will arrive in New Zealand on Thursday.

Your **Airport of Departure (AOD)** is the location you designate as your residence on either the SIP or your deployment paperwork, and is the city to which you will be returned. You will not be able to change your AOD once your tickets have been issued. The only exception would be proof of a change of residence that occurred during your deployment and approved prior to re-deployment by ASC management.

Expenses

Grantees: Your PI or team leader can give you information on what expenses are covered by your grant and any special training or meetings that may be required.

ASC Employees: Contact your company's HR/Finance department with any questions regarding expense reimbursement prior to deployment. Take any previously unreimbursed expense receipts with you to Antarctica, as you will be able to complete expense reimbursement there. Your particular employer will advise if anything additional is required.

PASSPORTS, VISAS AND PERMITS

Passports

You must have a valid passport before leaving the United States. Obtaining a passport is your responsibility, and typically takes at least six weeks. To apply for a passport, you must present two photos and a certified copy of your birth certificate to a Department of State Passport Office. Information can be found at **http://travel.state.gov**.

If you are a federal employee, your agency must obtain an Official passport by contacting the Department of State. **Bearers of official passports require visas in some countries that may not require visas of regular passport bearers**.

If you already have a passport, make sure that it is not scheduled to **expire** during your overseas stay. **Your passport must be valid at least six months beyond your intended stay. This is an airline requirement.**

It is a good idea to keep a photocopy of your passport (including pages containing visas) in a separate place in the event that your passport is lost. Assistance with the replacement of passports lost in New Zealand/Antarctica can be done via the Christchurch Travel Office. **Never** risk mailing your passport from Antarctica.

Visas

If you are a **U.S. citizen, you do not need a visa** for New Zealand, Chile, or while transiting through Australian airports.

If you do not hold a U.S. passport you might require a visa to transit through countries entered en route to Antarctica. Any necessary visas should be obtained at least eight weeks before deployment by contacting the embassy of the countries to be visited. Failure to do so could delay or even prevent your deployment.

The requirements of the four countries through which most U.S. Antarctic Program travelers pass are explained below. Any **necessary visas should be obtained before leaving the United States** by contacting the embassies of the countries to be visited. Failure to do so may complicate or delay your travel. **The U.S. Antarctic Program does not pay for nor provide assistance in obtaining visas. ASC Travel will not purchase your ticket until visas are obtained.** If your New Zealand

or Chilean visa application requires an itinerary and letter of participation in the USAP, please contact ASC Travel, and the required documentation will be provided.

New Zealand. A visitor's permit is required for all holders of U.S. passports and will be issued at the airport upon arrival in New Zealand. The total time spent in both New Zealand and Antarctica is recorded by New Zealand Immigration as time spent in New Zealand.

ASC will provide all ASC-ticketed participants with an official letter requesting a 12-month visitor's permit. When entering New Zealand, you must provide this letter with your passport to the Immigration agent. Failure to do so will provide you with a three-month permit. *Do not use the express passport kiosks in the airport as the machines will not provide you with a visitor's permit for an adequate length of time for most deployments to Antarctica.* Double-check that you have been given a 12-month visitor's permit before exiting Immigration.

If you plan on traveling in New Zealand after your deployment, you must not let your visa expire. Electronic visa extensions are available for up to three months from **INZCHCHExpress@mbie.govt.nz** and can be requested before you leave Antarctica. Visas can also be extended at any N.Z. Immigration office, for a fee.

Chile. If you will be traveling on a tourist (private citizen) U.S. passport, you do not need a visa to enter Chile. Bearers of Official passports **do** need a visa, available from the Chilean Embassy, 1732 Massachusetts Ave., N.W., Washington, D.C. 20036 (202-785-1746). Send a letter stating the purpose of your visit; enclose your passport and a return envelope. For more information, go to **www.chile-usa.org**.

Argentina. If you will be traveling on a tourist (private citizen) U.S. passport, you do not need a visa to enter Argentina. Bearers of Official passports **do** need a visa, available from the Argentine Embassy, 1600 New Hampshire Avenue, N.W., Washington, D.C. 20009 (202-238-6460). Send a letter stating the purpose of your visit; enclose your passport and a return envelope. For more information, visit **www.embassyofargentina.us.**

Australia. USAP participants with a U.S. passport, who have been ticketed by ASC, who are routed through Australia en route to New Zealand, do not need a visa if you are remaining inside the international terminal of the airport.

U.S. passport holders planning leisure travel through Australia **do** need to obtain a visa in advance. Usually this can be accomplished online, but you may be required to submit an application and send your passport to the Embassy of Australia, 1601 Massachusetts Avenue, N.W., Washington, D.C. 20036 (202-797-3000). For more information, visit **www.usa.embassy.gov.au**.

Sea travel requires a Marine Crew Visa (MCV Class 988). If you are embarking/disembarking a ship in Hobart, the MCV must be obtained before you arrive in Australia. The application can take 5-30 days. ASC Travel can assist in this process.

Visas for non-U.S. citizens. Foreign nationals residing in the United States are responsible for obtaining the appropriate visas from their country before leaving for Antarctica. Contact the embassy of the country through which you will pass to learn requirements. Allow up to eight weeks for the visa to be processes. Remember, no tickets will be purchased before visas are obtained.

If you are not a citizen of the United States, you will need a two-entry visa (one for initial entry and one for return from Antarctica) for New Zealand or for South American countries through which you will pass. **It is your responsibility to check with an official of your country well before the planned departure; the U.S. Antarctic Program will not act on your behalf**.

Resident aliens in the United States should determine any other regulations that govern absence from the United States by checking with the U.S. Immigration & Naturalization Service. Lack of compliance with regulations can cause loss of accrued residence time benefits that are applicable toward citizenship and/or re-entry. It can take several months, and even require a visit to the consulate, for non-U.S. citizens to get these visas.

U.S. visas for foreign nationals. If you are a foreign national not residing in the United States, and will be traveling to the United States after you have been to Antarctica, please review the Department of State Visa Services Internet Information at **http://travel.state.gov** for exchange visitor visa and student visa information and requirements.

Permits and Approvals

NSF grantees may need to obtain permits for working with birds or mammals, for transporting samples, for entering protected areas, for introducing non-native species, etc. These permits may be issued by the National Science Foundation (Antarctic Conservation Act permits) or by other U.S. or foreign government agencies. These permits cannot be obtained from Antarctica. Your SIP contains the actual applications and describes what is required and where to file the applications. **See Chapter 4 for details on the permitting process.**

Diving qualifications. Some science projects in Antarctica require scuba or surface-supplied diving. There are a number of unique risks associated with polar diving, including extreme cold, limited entry/exit points, ice in many forms, potentially dangerous marine life, low light and visibility, contaminated water, and others. Because of these risks, Antarctic diving demands special training, experience and an on-site orientation for divers; proper equipment; and a thorough and realistic dive plan. All diving under NSF auspices in Antarctica requires prior approval from the NSF. To obtain approval, a dive plan must be submitted that is consistent with the ***NSF/Polar Programs Standards for the Conduct of Scientific Diving***, available online by clicking on the title here, or from your POC. The PI's home institution diving safety officer or equivalent must provide comments on and approval of any request to dive in Antarctica. Final authorization will be made by the Division of Polar Program's diving safety officer or other NSF-designated diving safety officer. Prior to approval, additional training may be required or it may be necessary to change the original dive plan. Dive plan forms and individual diver information sheets are available in the Dive section of **POLAR ICE**, the online application for science and technical support. .

A variety of diving equipment, including scuba tanks and backpacks, weight belts and weights, regulators, dive computers, and compressors, among other items, is available at McMurdo and Palmer stations and aboard USAP research vessels. PIs must specifically request the use of any NSF/PLR equipment in their SIP during the preseason planning stage. Recreational diving is not permitted.

Grantees: The *Antarctic Scientific Diving Manual* (NSF 99-22) contains information on certification, dive sites, environment, operations, emergencies, reference tables, etc. Guidelines for research diving can be found in the *NSF/Polar Programs Standards for the Conduct of Scientific Diving.*

Firearms. The use of firearms is prohibited without advance permission from the Division of Polar Programs. Request permission by letter, stating:

- Purpose of the firearm
- Make and caliber of the firearm
- Type and amount of ammunition

Upon completion of your fieldwork, you must report the disposition of firearms and excess ammunition to the Division of Polar Programs. This information will be reported to the other Antarctic Treaty nations, as required by the Antarctic Treaty.

New Zealand agriculture. Like most nations today, New Zealand has restrictions on what may and may not enter the country. Goods are restricted if they are known to carry pests or diseases that could endanger native plants and animals. Travelers are required to declare all restricted goods when they enter New Zealand. Some examples of restricted goods are dairy products; fish, fruit and vegetables (fresh/dried/frozen/cooked); genetically modified organisms (GMOs); herbs and spices; noodles and rice; nuts; bamboo, cane and basket ware; cut/dried flowers and leaves; seeds; wooden artifacts; camping equipment; feathers, bones, horns and tusks; furs and skins; soil and water; unpro-

cessed wool and animal hair. All restricted items will be examined on arrival, and if found to comply with current requirements, will be permitted to enter. People who knowingly bring restricted items into New Zealand and do not declare them will be prosecuted and will be subject to severe penalties.

Some goods prohibited from entry into New Zealand include honey; eggs and egg products; meat and meat products; unpopped popcorn; plants (live/dried); straw; shells and coral; ivory; turtle and tortoise shells. For more information, visit **www.biosecurity.govt.nz**.

CUSTOMS

Your baggage will be inspected by Customs officers and may be screened by dogs that are specially trained to detect controlled substances and agricultural products including fruits, plants and food. In addition, thorough searches of luggage and individual clothing items, as well as body searches, are routinely conducted by the Customs authorities at the time of entry. Importation and possession of controlled drugs without prescriptions, marijuana, weapons (especially firearms and switchblade knives), pornography, and certain animal/agricultural products are strictly prohibited when entering New Zealand and Chile. Violators will be instantly fined $400NZ or more. Transportation of the above-mentioned items aboard U.S. military ships and airplanes is also prohibited by federal law.

Travelers are able to carry **personal effects** in their normal luggage. Personal effects are articles a traveler may reasonably require for personal use during the journey such as clothing, footwear, watches, brushes and toiletries. Personal effects can also include jewelry (but not unmounted semi-precious or precious stones). Personal effects also are duty-free items purchased either prior to your departure or upon your arrival; are for your own private use or intended as gifts; are not imported for commercial purposes or for use in your business and/or profession; and are not imported for other persons at their request.

There are limits on quantities of tobacco and alcohol that can be brought into many countries. Please refer to these websites for current customs regulations:

New Zealand: www.customs.govt.nz
Chile: www.aduana.cl
Australia: www.customs.gov.au
Argentina: http://argentina.visahq.com/customs

In addition to the personal effects concession, each passenger is entitled to the Visitor Concessionary Entry of other items that a visitor normally carries. This includes items such as a laptop computer, cameras and a Smart Phone. These goods must be for personal use, and the goods will be taken with the passenger when he/she leaves the country.

If you plan on carrying any single item worth more than US$1,000 excluding personal items such as laptops and cameras, please indicate that on the Trip Details form in your deployment paperwork you will receive from ASC.

ASC Employees: ASC will not provide personal property insurance.

Grantees and Technical Events: Grantees and Technical Event personnel should have insurance for project equipment as determined by the PI. The cost of insurance should be included in the budget request.

Customs and Your Equipment

If you will be taking or shipping technical equipment to Antarctica through another country, prepare in advance to avoid two possible costs, paying import duty or posting bond to a foreign country (even though your equipment is only passing through) and paying duty when you bring the equipment back into the United States.

Technical equipment includes any valuable items of foreign make (other than the personal effects concession mentioned above), such as scientific equipment or numerous computers or

professional cameras, which you plan to take with you to Antarctica. If these items are not registered with U.S. Customs or you do not have proof of previous payments for such items, you may have to pay import duties on them upon your return to the United States. You cannot be reimbursed for such costs. Customs regulations also require that prescription drugs be hand-carried and not placed in checked baggage. Carry a copy of each prescription provided by your personal physician. See Chapter 3 for further information on prescription medications.

Scientific or technological equipment (including personal computers, spare parts or other equipment carried for ASC) that you carry as part of your personal luggage is likely to be charged a customs duty and/or tax, or impounded if such a duty or tax is not paid. If you do not have a receipt or the item was a gift, Customs will determine the value. NSF contractor representatives will not cover charges for customs duties or taxes. All scientific or technological equipment should be shipped from the United States and Antarctica as cargo (all cargo is designated NSF and hence is exempt from duty and taxes).

Customs registration must be made in person, and you must possess the articles and serial numbers to be registered. Registration can be made at any international airport in the United States that originates overseas flights (e.g., Los Angeles or Miami). Also, Coastal Customs Registration Centers are located in the World Trade Center, Los Angeles.

It is suggested that you prepare a list of items (with serial numbers and/or appropriate documentation) prior to your arrival at the registration center. This information can then be easily transcribed to the customs registration forms available only at the centers.

There are several methods of protecting against payment of unwarranted duty:

Registry with U.S. Customs. To ease re-entry and before leaving the United States, you can register equipment such as cameras with U.S. Customs by completing U.S. Customs Form 4457. Contact Customs at any U.S. international airport.

Letter from your institution. When carrying science equipment as accompanied baggage, list it on your institution's stationery and include a statement that the material will be used for research at a U.S. government Antarctic station. Keep the list with the material to ease clearance through Customs in Argentina and Chile. This letter is not enough when going through New Zealand.

Temporary importation of your equipment into New Zealand. There is a customs law for nonmilitary U.S. Antarctic Program participants entering New Zealand. Grantees, contractors and other visitors carrying high-tech and scientific equipment (not including laptop computers) as part of their luggage must carry a New Zealand Customs form stating (1) that the goods will not be left, sold or disposed of in New Zealand without the written permission of New Zealand Customs, (2) that the goods listed will be finally exported from New Zealand within 12 months of their first landing, and (3) a list of the equipment and its value. Appropriate forms must be obtained from ASC Travel in Denver before you depart for New Zealand and must be returned to ASC Travel upon return to your home institution.

NOTE: Technical event participants fall into a special category. Contact ASC Travel.

Carnet de Passage. Visitors from the media and other organizations are not issued NSF letters for their professional equipment. To avoid paying the customs duty, anyone carrying professional equipment including cameras and other recording devices must have a carnet. NSF representatives will not help you get a carnet and will not pay customs duty for you.

If you have a carnet, you do not also need to register items with U.S. Customs. Obtain the Carnet de Passage for Temporary Admission before you leave for Antarctica. In the United States, the U.S. Treasury has appointed the U.S. Council for International Business to issue carnets: **www.uscib.org/ata-carnet-export-service-ud-718**

PERSONAL MATTERS

Before you leave for Antarctica, take care of your personal affairs. Designate someone you trust as your **stateside representative.** It can be difficult to handle financial or other personal affairs from Antarctica. Because mail delivery to Antarctica is not always reliable or timely, you **should NOT forward your mail** or change your address to Antarctica. You will be able to communicate with your stateside representative by telephone and e-mail.

Personal Finances

Take enough money with you to meet all eventualities. Most foreign banks will not cash personal checks or cashier checks drawn on your home bank. NSF representatives in New Zealand will not advance funds nor will they accept a personal check.

NOTE: Make sure that your ATM and credit cards do not expire while you are away from home.

International credit cards (e.g., MasterCard, Visa) are generally accepted in New Zealand and South American countries.

You should plan to have a minimum of $500 available for your trip to Antarctica. This amount will vary with personal spending habits, length of stay and travel delays. Ensure you plan for the purchase of personal items (soap, toothpaste, souvenirs, etc.) in Antarctica. There is an ATM at McMurdo Station, but none at the other Antarctic stations or onboard the research vessels.

Banking in New Zealand. Banks in New Zealand will exchange U.S. cash and travelers checks into New Zealand currency. You can also withdraw funds from banks using your Visa and Mastercard credit cards, if you have previously established a Personal Identification Number (PIN) with your bank. ATMs marked with 'Plus' or 'Cirrus' accept credit cards (with a PIN) as well as ATM and debit cards, and are located in both the Auckland and Christchurch airports.

Banking in Chile. In Santiago, money exchange is available only in the international terminal (not the domestic terminal). There are ATMs located throughout the airport terminal, but be aware that on occasion there will not be time to exchange money upon your arrival and before your departure. However, U.S. currency can be used for taxes and fees (see Chapter 5 for more information). Banks in Punta Arenas, Chile, are closed half of Saturday and all of Sunday, so plan accordingly. There are ample ATMs throughout Punta Arenas. ATMs marked with 'Plus' or 'Cirrus' accept credit cards (with a PIN) as well as ATM and debit cards.

Palmer is 100% cashless. Bring a credit or debit card. They do not accept cash or checks.

Joint bank accounts and debt payments. If you will need to draw funds from a bank account while you are in Antarctica, you may wish to have the account established jointly with another person to permit the other person to withdraw the funds as required. The joint tenant of the account can legally withdraw any and all funds whenever he/she wants.

Arrange for the regular payment of insurance premiums and any other term debts that you may have while in Antarctica.

Mail service from Antarctica during the winter is limited and it is **not** available at all from South Pole during the austral winter. It is erratic during the summer season. You are advised not to rely on the mail service to pay bills from Antarctica (see Postal Services in Chapter 6). South Pole's winter is February to November.

Absentee ballot. If you wish to vote in any local, state or federal elections by absentee ballot, you must arrange to receive an absentee ballot from your voting authorities. Keep in mind the uncertainties of mail in and out of Antarctica. Voting regulations are updated frequently and the most current information for U.S. citizens interested in voting from an overseas location can be found at **https://www.fvap.gov.** Be sure to check absentee voting requirements of your home precinct before you leave for Antarctica.

Income Tax

It is each participant's responsibility to ensure their U.S. taxes are filed each year. For federal income tax returns, due April 15, you may request an extension for filing from the district director of the Internal Revenue Service. However, interest is charged on the unpaid balance of your tax beginning April 15.

You can file your income taxes online or give someone a limited or special power of attorney to act as your agent in filing your income tax returns (federal, state and local). IRS district directors have forms for this purpose, or you may have a lawyer draw up the document. Remember that if your agent fails to file the return, you are still the one who has to pay the delinquent tax penalty.

The IRS does not consider Antarctica extraterritorial, so U.S. tax law applies. For further information, you can contact the IRS. District directors are in each state at the same address where you normally file tax returns. For more information, go to **www.irs.gov**.

ASC Employees: Federal and state income taxes are withheld from all ASC employee paychecks.

Power of Attorney

You may wish to establish a general or a special power of attorney before leaving home. A general power of attorney permits your agent to act for you in ordinary business and commercial transactions: to endorse and write checks, to sign documents and bills of sale on your behalf, and so forth. A special power of attorney restricts the agent's authority to functions specifically described. For example, you might empower your agent only to sell a particular piece of property for not less than a stated price.

Some institutions, such as savings banks, may not accept a power of attorney document. They may require you to make special arrangements with them before others may withdraw your funds. Individuals may be reluctant to communicate with your agent under a general power of attorney if the authority for a particular transaction is not specifically set forth, or if your agent's authority is otherwise in doubt. Consult a lawyer before drafting a power of attorney. A power of attorney automatically expires at the time of your death and defers to information contained in your will.

Wills

A will ensures distribution of your estate as you desire and not arbitrarily, as state laws require if there is no will. You are urged to consider having one prepared before you deploy to Antarctica.

Notary Services

No universally recognized notary services are available in Antarctica. Therefore, you cannot count on being able to execute or revoke legal documents requiring notarization. Settle outstanding legal matters before you leave for Antarctica.

Insurance

Notification of Injuries and Evacuations. If you are injured while working in Antarctica or if you are taken to New Zealand or South America for a medical consultation or evacuation, the U.S. Antarctic Program management will not notify your family of the injury if you are physically capable of contacting your family members on your own. In the event you are physically unable to notify your family members, U.S. Antarctic Program management will contact your emergency contact (not necessarily at your request).

Personal property and cargo insurance. A loss of personal property in Antarctica through fire, theft, or any other means should be protected by individual personal property insurance. It is your responsibility to obtain this coverage. The U.S. government normally does not assume liability for damage to or loss of personal property unless there is clear evidence of negligence

by government personnel acting in the scope of their employment. Although every effort is made to care for cargo (personal or scientific), the U.S. Antarctic Program is not responsible for any damage that may occur.

Grantees: Make sure you have adequate insurance for your stay in Antarctica. An NSF grant for work in Antarctica does not provide insurance coverage. Check with your employer or a financial consultant to find out what insurance you have and to decide what you should have. Consider the following areas:

Health insurance. Although medical personnel are available at each U.S. Antarctic station, the medical clinics are for urgent care and emergent needs only. They are not to be considered your primary care physician. You will be **responsible for costs** of hospitalization, medical care, laboratory fees, and any other charges incurred outside of Antarctica. Before leaving the United States, examine your health coverage and buy insurance if you need it. **Grantees are asked to read Appendix D on page 85 regarding medical insurance.**

Worker's Compensation. If you will be working for a PI as a volunteer, remember that worker's compensation coverage may not be provided.

Life insurance. Grantees and their team members are urged to have adequate life insurance. Federal employees' Civil Service policies remain in effect during Antarctic duty. Examine your insurance coverage before departure to ensure you are adequately covered. The NSF does not provide life insurance for its grantees in Antarctica. In making arrangements for insurance, keep in mind that Antarctic flights are generally considered non-scheduled military airplane operations. Check with your institution to see whether its group policies for employees provide coverage or exceptions for travel and work in remote regions.

photo by Michiel Gitzels

Antenna riggers install a remote weather station in the Joubin Islands, Antarctic Peninsula.

Travel insurance. Some insurance companies offer air travel insurance for scheduled commercial and Air Mobility Command flights. This insurance is available at most commercial airports and Air Mobility Command terminals. It generally does not cover you during flights to Antarctica or during flights in Antarctica.

Grantees should have insurance for project equipment as determined by the PI. The costs of insurance should be included in the budget request.

ASC Employees: Employees may be eligible to enroll annually in various insurance options offered by their employer (e.g., PAE, GSC).

If you are required to leave Antarctica for medical treatment, as approved by the ASC Medical organization, you are responsible for your medical bills unless the injury or illness is deemed work-related.

Worker's Compensation. Any ASC employee who is injured while in Antarctica may be covered by worker's compensation. Within one day of the incident (regardless of the severity), a Medical Report Form must be completed by the medical staff and turned in to the designated person at the station or vessel. If you feel you will need treatment after redeployment from Antarctica, you should contact Human Resources prior to leaving Antarctica or prior to debarking a vessel in order to establish a claim. If the injury can't be treated on station or on the vessel (as determined by ASC Medical), you may be transported off the continent/vessel to be evaluated by another doctor in Christchurch, New Zealand, or Punta Arenas, Chile. Keep in mind that worker's compensation covers only injuries. Note that medical issues that are pre-existing or are not work-related in nature (e.g., appendicitis, kidney stones) are not covered by worker's compensation. Your insurance policy through your employer or insurance through an outside carrier may cover different conditions.

NOTE: It is highly recommended that each employee carry some kind of medical insurance that will provide coverage while traveling out of the country after deployment. If you have enrolled in your employer's medical insurance, COBRA will be available upon completion of your contract. If medical insurance was not elected, COBRA will not be available.

Cash, Meals and Lodging in Antarctica

The U.S. Antarctic Program stations and vessels use U.S. currency.

An ATM is available at McMurdo Station, but not at South Pole or Palmer stations. The ATM s a Wells Fargo bank ATM, so customers of other banks may incur a charge from their bank and/or Wells Fargo.

South Pole grantees must bring sufficient cash to last the duration of their time at Pole. ASC participants working at Pole may elect to receive a portion of each paycheck in cash (e.g. $100).

Palmer Station is 100% cashless.

Credit cards may be used at McMurdo and Palmer stations for purchases. Credit cards cannot be used at South Pole Station.

No checks may be cashed at any USAP station.

Meals and lodging. Meals and lodging are provided to participants at all U.S. Antarctic Program stations, aboard the research vessels *Laurence M. Gould* and *Nathaniel B. Palmer*, and in all field camps. If you are traveling with foreign expeditions, be prepared to pay meal charges aboard their ships.

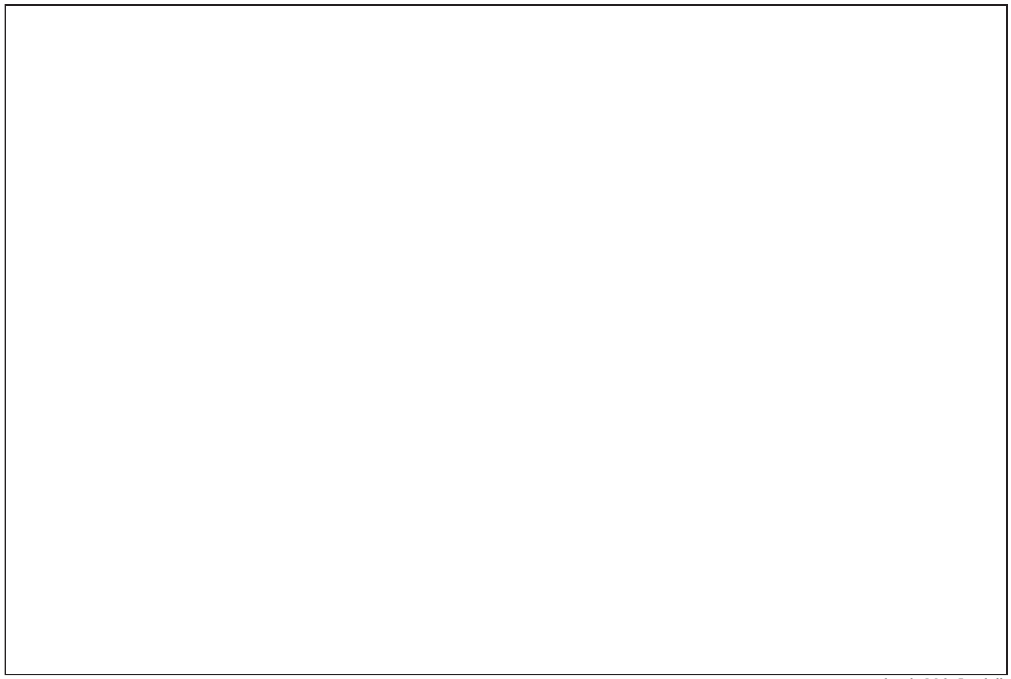
Paychecks

Paychecks are **not** sent to Antarctica. All employees are required to have a U.S. bank account for the electronic direct deposit of payroll funds. ASC employees should refer to the paperwork received from their employer for detailed information about travel funds, marine compensation, etc.

In Antarctica, the work week is 54 hours, nine hours per day, Monday through Saturday. Aboard the research vessels, the work week is 84 hours, 12 hours per day, Monday through Sunday. **At times, everyone may be expected to work more hours, assist others in the performance of their duties, and/or assume community-related job responsibilities such as washing dishes or cleaning the bathrooms.** Due to the challenges of working in Antarctica, no guarantee can be made regarding the duties, location or duration of work. **The objective is to support science, maintain the station, and ensure the well-being of all station personnel.** ■

CHAPTER 3:

How and What to Pack



U.S. Antarctic Program participants carry their bags to the station upon arriving to the South Pole.

photo by Mike Lucibella

There will be several stops on your journey to Antarctica. Various transportation providers (U.S., foreign, vessel, military) have differing baggage allowances and restrictions. Please adhere to the limitations set forth by each carrier. In New Zealand or Chile, you will pick up ECW clothing. You may require personal items for the various climates, work and activities. Planning and prioritizing are very important. Read this chapter carefully.

BAGGAGE ALLOWANCES

Commercial Carriers

You will travel from your airport of departure (AOD) to Christchurch, New Zealand, or Punta Arenas, Chile, on commercial carriers. It is important to review the airline's baggage limitations and fees prior to departure. Baggage allowances on flights from Christchurch to McMurdo differ from the commercial allowance.

At the time this book went to press, the baggage allowances were **two bags, 23 kg/50 lbs each**, plus your carry-on for all participants.

Each airline carrier has differing rules for both carry-on and checked baggage, so it is in your best interest to review the airline's website to ensure there are no surprises at check-in. Updates regarding travel are posted on the airline carrier's website and should be consulted before departure.

Flights from Christchurch to McMurdo Station

All personnel have the same luggage weight allowances flying from New Zealand to McMurdo Station. **A maximum of 39 kg/85 lbs for your luggage**, plus 7 kg/15 lbs for carry-on, is allowed for this leg of your journey.

NOTE: Realize that the weight of the ECW gear issued to you in Christchurch will be counted as part of your baggage. The ECW clothing weighs about 10 kg/22 lb. You are required to wear certain items on the flight. The rest of the issued clothing (about 3 kg/7 lb) will be considered part of your checked baggage.

Grantee and Technical Event Excess Baggage

Grantees and Technical Event personnel must fill out form **TL-FRM-0094** for excess baggage. **The program does not reimburse costs.**

Personal Baggage Insurance

Baggage insurance is provided if ASC purchases your airline tickets. If a claim needs to be processed, it is your responsibility to contact the airlines and complete the required paperwork. Do notify ASC Travel and keep them posted on the situation. Loss protection is limited and supplemental **personal property insurance is recommended**.

Loss protection is only provided during commercial flight segments. Should a loss occur during transit to/from the airport, while in a hotel, during your stay in Antarctica, etc., it is the participant's responsibility to retain personal property insurance coverage.

Research Vessels and Palmer Station

There are no weight restrictions for personal baggage on the research vessels, although space is at a premium onboard.

Mailing Personal Packages

If you need to take more than the allowed weight of baggage to McMurdo or South Pole stations, you can mail boxes to yourself at the **Army and Air Force Post Office (APO)** address in Antarctica. The APO addresses are listed in Chapter 6. You should be aware, however, that NSF priorities dictate that all science cargo and flat mail (envelopes) take priority over any personal packages. It is recommended that packages be mailed from the U.S. no later than October 15. Do not place medications in package mail.

Once you are in Antarctica, you can have mail sent to you. However, the APO in Christchurch will not accept packages for shipment unless they are received via the Postal Service. **This means you cannot order items via the Internet from Antarctica for courier delivery (e.g., FedEx) to you in Antarctica. The Christchurch APO nor USAP offices will accept such deliveries.**

The APO cannot be used to support any type of commercial activity. It is illegal for you to ship items to Antarctica for resale.

Near the end of the season, many program participants realize that they've accumulated more than they will be allowed to have with them on their flight north. This excess must be sent in the mail. It is important to pay attention to announcements about mailing deadlines and procedures for mailing personal packages from Antarctica. The timelines and options differ according to the station and the time of year.

APO Privileges

There is an APO located at the USAP facilities in Christchurch. Participants will have APO privileges for ten days upon their arrival in Christchurch. This benefit provides a tremendous cost savings if you need to mail boxes to the United States from New Zealand. Any mail received by the APO after the valid 10-day period will be returned to sender. The post office will have a list of eligible participants

APO service is **not available for Palmer Station** participants. See Chapter 6 for instructions on mailing boxes and flat mail to Palmer Station and the research vessels.

PERSONAL PRESCRIPTION MEDICATIONS

It is the responsibility of all participants to obtain a supply of their regular prescription medications to cover the time that they will be deployed. **The station medical clinic doctor is not your primary care physician and cannot refill your prescription medication.** Participants will not be allowed to winter-over unless they have enough of their regular medications to last through the winter season.

Participants working at McMurdo Station, South Pole Station or area field camps. Participants are responsible for complying with all U.S. and international laws when exporting and importing personal medications. Please seek guidance from the U.S. Food and Drug Administration, **www.fda.gov/drugs/default.htm,** and the U.S. Drug Enforcement Administration, **www.justice.gov/dea/index.shtml**, to determine whether your specific medication is controlled and may require special export or import authorizations.

New Zealand custom laws only allow for three months of prescription medications (e.g. thyroid medication) and one month of controlled prescription medications (e.g. codeine) to be hand-carried through New Zealand.

New Zealand law requires the following for transport of controlled drugs into the country:

- You must declare the controlled drugs on your passenger arrival card.
- You cannot have more than one month's supply of the controlled drug with you. If you have more, you will need a license from the Ministry of Health to import
- You must prove to Customs that the drug
  - o is required for treating your medical condition
  - o has been lawfully supplied to you in the country of origin - a letter from your doctor or a valid label on the container with your name and the quantity and strength of the drugs would be sufficient

All medications must be in properly labeled pharmacy containers. It is important that you hand-carry the initial three months of medication (one month for controlled medications) in order to provide enough time for the mail to reach you in Antarctica. When you get your prescription medications filled, ask the pharmacist to put three months of medication (or one month of controlled medications) in one labeled container and the remainder in a separately labeled container.

If you will be deployed for a longer period of time, your medications should be mailed through the APO by your doctor or pharmacy in small priority mail envelopes to ensure their timely arrival. Medicines should never be packed inside a larger box containing other items as the box may not make it to Antarctica; whereas a small envelope, considered flat mail, likely will. Medicines destined for summer participants should be mailed after Labor Day, or they will be returned.

Remember that you will have to clear Customs in New Zealand to re-enter the country on redeployment, and the same restrictions on the quantity of medications will apply.

In an emergency, contact **chc-couriernotifications@usap.gov** with details of your situation.

Participants working at Palmer Station. Chilean customs laws do not restrict the amount of personal medications hand-carried through Chile, and participants that are deploying through Chile can hand-carry the amount of medication that they need for the deployment.

Carry a copy of each prescription provided by your personal physician.

WHAT TO PACK

Below is a brief narrative and list of some items you may want to consider for your personal list of what to pack. The items listed are meant as a guide only, and should be adjusted to individual needs and preferences. Wintering personnel, for example, should increase the quantities, while official visitors and others who are scheduled for only a few days in Antarctica will require less. **Your point of contact (POC) can give you specific advice about what you might need depending on your length of stay and the Antarctic facility at which you will reside.**

You should bring your own supply of over-the-counter medications. There may be some special or brand name products, such as vitamins, your favorite cold remedy, aspirin, and/or toiletries that you may require during your deployment. The station store at each facility carries a limited supply of toiletries, gift items, batteries, snacks, and soda, and is meant to supplement items you should bring with you. Your supervisor or team leader can give you a good idea of what items are stocked in the store at the station where you will be working.

Toiletries. Antarctica is very dry, and it is recommended that you use hand lotion and lip balm. The station store carries a limited selection of these items along with other toiletries, so it is recommended participants bring their own lotions and soaps. There is no store aboard the research ships.

Pain relievers such as aspirin and cold capsules (non-prescription) are usually available for purchase at station stores. Quantities and brand names are unpredictable, however, and it is suggested that you bring your preferred pain relievers to Antarctica. Also, if you re-pack them to conserve space, retain their original labels.

Vitamin D3. Recent research strongly suggests that maintaining an adequate level of vitamin D in the blood can reduce the frequency and severity of respiratory infections. See page 58 for more information.

Indoor clothing choices are up to you. You bring your own regular indoor clothing, including underwear, socks, shirts, pants and shoes. No dry cleaning services are available. The use of polyester double knit fabric is not recommended, as it is not sufficiently warm. Base the quantity of clothing you bring on recommendations from your point of contact, the length of stay in Antarctica and the type of work you will be doing.

Outdoor clothing (hiking boots, cold-weather gear, etc.). If you are experienced in cold weather conditions, you may add your own cold weather gear for field use. Be sure these items are clean and free of soil or plant material before packing them (check the Velcro®). A lightweight windbreak jacket is useful in McMurdo during the austral summer. **You must bring your own**

Packing Suggestions

CLOTHING ITEMS:

- Boots and shoes; work, hiking, insulated as needed for your work
- Glasses; eye and sun, extra pair, prescription
- Gym clothes/shoes
- Jacket; warm windbreaker
- Neck gaiter
- Pajamas/robe
- Pants/jeans
- Shirts; light wool or fleece, long-sleeve (machine washable)
- Slippers for indoor wear
- Sock liners; polypropylene or Merino wool to wick moisture away from foot
- Socks; heavy to wear outdoor with boots; Merino wool or nylon
- Sunglasses
- Swimsuit (for sauna)
- Towel and washcloth
- Long underwear; thermal top/bottom; both base and mid-weight layers; polypropylene or Merino wool or silk
- Underwear; regular
- Flip flops for shower

MISCELLANEOUS:

- Alarm clock
- Batteries, rechargeable/charger
- Camera/camera batteries
- Coffee mug
- Day pack
- Hair dryer
- Hobby, craft items (small)
- Laundry bag
- Lip balm
- Lock, combination or key
- Memory sticks or external hard drive
- MP3 player/extra earbuds
- Musical instrument/spare parts
- Prescription medications
- Skis; skate/cross country
- Plastic food containers with lids to hold left-over food in your dorm room mini-refrigerator
- Toiletry articles; toothpaste, dental floss, comb, razor, shave cream, deodorant, soap and skin lotion for dry skin, tampons, a carrying case
- Vitamins
- Water bottles

Station Store

Each station store normally carries the following items, with slight variations due to the remoteness and supply and demand. Snacks, drinks, souvenirs and other items are also sold.

- Baby Oil
- Body Soap
- Combs
- Dental Floss
- Deodorants
- Eye Care Solution, Multi Purpose
- Eyeglass Repair Kits
- Facial Tissue
- Feminine Hygiene Pads
- Hair Brushes
- Hair Conditioners
- Lip Balms
- Lotions
- Mouth Wash
- Nail Clippers
- Sewing Kits
- Shampoo
- Shaving Cream
- Sunscreen SPF 30
- Tampons
- Toothbrushes
- Toothpaste
- Tweezers

long underwear and heavy socks to wear with outdoor boots. It is highly recommended to bring three pairs of heavy socks and sock liners, and at least two sets of lightweight and mid-weight long underwear. Polypropylene/Merino wool or silk are excellent at wicking away moisture and holding heat next to your body. Contact your POC to get a recommendation of how much to bring based on your job and location.

Sheets. The U.S. Antarctic Program supplies linens, pillows and blankets for the beds.

Laundry. Washing machines and dryers are conveniently located and are free to use. Laundry detergent is also provided free in the laundry room in each dorm and is also sold in the station store. The research vessels also provide laundry detergent and facilities.

Layering. The temperature both inside buildings and outside can vary dramatically. The best way to manage these changes is by layering your clothing. This will allow you to shed or add layers quickly and easily. Several thin layers are more effective than one bulky layer.

Electric power. As in the United States, the U.S. stations use 110-volt power supply systems. No converters or adaptors are needed.

Power in Argentina, Chile and New Zealand uses 230-volt, 50 hertz, power supply systems. In order to use U.S.-purchased appliances, such as hair dryers and razors, you will need to bring your own power converter and plug adapter (laptops and iPods have a built-in converter, but you will still need a plug adaptor for the wall socket).

The research vessels have both 220- and 110-volt power.

Feminine hygiene supplies are available at the station store. Brand selection is limited, but necessary supplies are normally available. Women may wish to bring items and brands they prefer.

Towels and washcloths. The U.S. Antarctic Program does **not** provide towels and wash-cloths in Antarctica, although it does provide towels on the R/V *Laurence M. Gould* and R/V *Nathaniel B. Palmer*.

Sunscreen. Carry and use a sunscreen with an SPF number of 15 or greater. Ensure that it provides both UVA and UVB coverage, and that the product expiration date does not occur during your stay. In summer, the sun is up 24 hours a day, and its reflection off snow and ice multiplies the potential for sunburn.

Sunglasses. Sunglasses or goggles are critical. Your ECW clothing issue will include ski-type UV protective goggles. Participants should bring two pairs of 100% UV protective sunglasses in case one pair is lost or damaged. Consider wrap-around temple frames, side shields, nose guards or other features to protect from harsh sunlight and reflections off the snow. If you wear prescription glasses, you should also bring prescription sunglasses with the above recommended features. Eye protection is your responsibility.

Water bottle. Bring at least one water bottle that can be carried with you throughout the day. Antarctica is a desert, and staying well hydrated is critical. Water bottles may be available in the station store, but are in limited supply.

Prescription eyeglasses and contact lenses. If you wear glasses, carry a record of your prescription to Antarctica. You should take a spare pair with you. The cost of eyewear replacement is your responsibility, and the means to obtain replacements is limited. It is also suggested that you carry contact lenses on your person to avoid possible damage from freezing.

Contact lenses have been found to work fine in Antarctica. Lens cleaning supplies are available at the station store at McMurdo in limited quantities and brands. Regular saline and sensitive saline solutions for soft contact lenses are available. Heat-type solution is not available. You may wish to bring enough personally desired items to last your entire stay.

Recreation gear (e.g., skis, musical instruments). While musical instruments and recreational equipment is available to be checked out at the three stations, variety and availability is different at each facility. You may wish to send your own recreational gear depending on your length of stay. Your POC can give you specific information. Be sure all recreational gear is clean prior to packing.

Smartphone, iPod. An all-in-one device is useful as it can serve as an alarm clock, provide music, be a camera, etc. **You will NOT have cell phone service in Antarctica**, but you can use the device to listen to music and take pictures. WiFi is only available in limited areas to the scientific community and is not available to the general population, so do not plan to rely on a device that needs wifi. Don't forget the cable to plug into the wall and an extra set of ear buds.

Attire en route. While dress may be informal en route to and in both New Zealand and South America, you are requested to remember that you are representing the United States and the NSF and that your appearance (and conduct) will be noted. Avoid inappropriate conduct during travel.

New Zealand and Chile. Weather conditions change rapidly. Cold temperatures and rain can be expected even during the spring and summer months. Lightweight rain gear, as well as a warm sweater or jacket, are recommended.

Antarctic clothing. You will be issued ECW clothing as you pass through Christchurch or Punta Arenas. Special arrangements will be made if you are taking other routes to Antarctica. This clothing will include outer garments necessary for warmth and dryness, pile jackets and pants, gloves, thermal boots, and other items. Depending on your work, you may also be issued special safety gear (e.g., hard hats, goggles) upon arrival at your work site.

Proper clothing fit and functionality are important to achieve maximum protection. You should check each individual item to ensure that it fits correctly, that the zippers work, and quantities are correct. If you expect to gain weight while in Antarctica, which is common, select clothing that fits loosely. You will stay warmer if you wear several thin layers than if you wear one thick layer.

The clothing issued to you is U.S. government property. You are required to return it in New Zealand or South America during redeployment, even if you think it may be of no further use. You are responsible for maintenance of issued clothing in your possession. Some issued clothing, especially parkas, is subject to theft, and you should take care to prevent loss. Abnormal damages or unreported loss of clothing will result in your being billed for repair or replacement costs. Report immediately the theft of any U.S. government property to the NSF representative or the station manager. It is illegal for you to mail government property from Antarctica. It is illegal for individuals to buy or sell government property, including clothing.

Strict regulations regarding required ECW attire on flights and cruises to and from Antarctica will be explained during clothing issue in Christchurch or Punta Arenas.

NOTE: Understand that while the U.S. Antarctic Program will provide you with what you need for outdoor clothing, participants must bring their own long underwear, heavy socks, etc., to wear. If you will be wintering, you will want to pack additional items. Ask your POC for more information.

WHAT NOT TO PACK

Personal comfort in Antarctica is important. So is environmental protection. When choosing items to make your stay more comfortable, buy and take items with you that are as environmentally friendly as possible. Try to use biodegradable soaps and shampoos, which will have less impact on the local environment. You need not do without little luxuries in Antarctica as long as you take the time to select items with the least environmental impact and package them frugally.

Plants, seeds and animals. The Antarctic Treaty, which all participants must adhere to, prohibits the importation of any seeds (including chia seeds), plants (except food plants under controlled conditions for use in the greenhouse), or animals (including insects) to Antarctica. Be sure to clean your clothing prior to packing it so you can prevent inadvertently importing organic material. For example, be sure there are no seeds on Velcro®, mud on boots or grass inside cuffs. When leaving the continent, it is prohibited to remove any materials such as wood, bone, eggshells, feathers, and plant or animal parts, unless specifically authorized by permit issued from the NSF. In addition, you may not collect any of these items while working on the continent without a permit.

Don't pack a pest when you pack bags for Antarctica! Make sure all the gear and clothing you bring to Antarctica are clean to prevent non-native species from hitching a ride to the Ice. This includes biologically viable organisms in food and personal care products/supplements – do not pack "SCOBY" (symbiotic culture of bacteria and yeast) used to make kombucha, probiotics, spirulina, yogurt cultures or similar biologically active products.

Microbeads, tiny plastic particles in bath and beauty products, are now a banned substance in Antarctica. Do not pack any personal care products containing microbeads; they cannot be contained by wastewater treatment and will be discharged to the ocean environment, resulting in plastic pollution. Microbeads can absorb toxins and be ingested by marine organisms.

Similarly, the **antibacterial/antimicrobial agent triclosan** is currently under review. The USAP no longer purchases soaps and personal care products with triclosan, and we recommend participants not bring them to Antarctica. Triclosan is not removed during wastewater treatment and accumulates in the tissues of marine organisms, resulting in concerns about toxicity.

Please read the *Don't Pack a Pest* online brochure at: **www.usap.gov/usapgov/travelAndDeployment/documents/PackaPest_brochure_Final.pdf**

Hazardous and toxic substances are prohibited.

Polystyrene packing materials such as peanuts, chips and beads are prohibited, as they can easily blow away, posing a threat to wildlife. Cushion your packed items with clothing.

Try to avoid using **aerosols** such as hair spray, pressurized containers of deodorant and shaving cream. These items become hazardous waste because of their ingredients or because they are pressurized.

Disposable batteries such as mercury, alkaline and lithium cells are discouraged. Consider buying rechargeables and a charger.

Unmanned aerial vehicles, drones or remotely piloted aircraft in Antarctica by U.S. Antarctic Program personnel is prohibited without specific authorization from the National Science Foundation.

Magazines, catalogs, newspapers and junk mail are also discouraged. Do not have your mail forwarded to your Antarctic address, as it increases the amount of waste that must be removed from the continent.

Eliminate as many **plastic and throwaway containers** as possible. This will help reduce the volume of solid waste disposal in Antarctica. Repackage products into containers you are more apt to take home with you, or use Ziplock® bags that can be used repeatedly during your stay. Be sure to keep prescription labels with your repackaged items.

Use the backpacker's rule – if you pack it in, you pack it out.

Commercial or other business activities. You may not market or sell clothing or finished articles printed, manufactured, or assembled outside Antarctica. You may not import materials to finish and market such items locally. Federal law forbids the use of an APO address for the shipment of articles or materials used in private resale operations. The U.S. Antarctic Program also prohibits use of government transportation for shipment of goods and materials for unauthorized personal business activities.

Hazardous materials. Explosive gases, flammables, oxidizers, poisons, radioactive material, corrosives and other hazardous materials may not be shipped as baggage, mail or hand-carry. See Chapter 4: Science Cargo.

Electric blankets and heaters are not allowed for safety and power reasons. Any device that could be used to **heat cooking oil** is not allowed as splattered oil poses a fire danger. And no open flames such as **candles** are allowed.

BAGGAGE ORGANIZATION

Your personal belongings and ECW clothing will be transported from Christchurch to McMurdo as checked baggage on a cargo pallet. You will be allowed a carry-on bag, which must not exceed 61x38x23 centimeters (24x15x9 inches). All luggage will be screened as you check in at the Antarctic Passenger Terminal.

Laptops are accepted as hand-carry, but it must fit into the hand-carry dimensions along with the rest of your hand-carry. You may not bring sharp objects aboard planes: if you are bringing a pocket knife, scissors, or other sharp objects, stow them in your checked baggage. As on commercial airlines, liquids, aerosols and gels are restricted to 3 oz. containers in carry-on luggage. To see current standards, visit **www.tsa.gov**. Your baggage will be screened using various detection sensors, including a drug detection dog. The contents of your baggage may also be subject to additional visual inspection.

If you are traveling to Antarctica on a research vessel, the amount of baggage you will have access to can be very limited. You should pack the items you'll need for the five-day ocean journey in a small piece of luggage. Any baggage you store in the cargo area will be inaccessible during the journey.

Mark all your bags, including those you carry aboard, clearly with tags. Also place identification inside each bag. Include your assigned Antarctic station, the initials "USAP," "ASC" or event number, and return address.

Any **Do Not Freeze (DNF)** equipment should not be included in your checked or hand-carry baggage. Use the U.S. Antarctic Program cargo system to protect it from freezing (see Chapter 4: Cargo).

Other personal equipment. Personal baggage may also include delicate scientific instruments that must be hand-carried. You are responsible for handling personal baggage throughout the trip to and from Antarctica, unless it is checked as air cargo. If delicate instruments are to be moved as air cargo, clearly mark any handling requirements on the container. Handling personal baggage includes customs clearances in New Zealand, Chile, and the United States when returning from Antarctica. Pack baggage securely in easily handled containers.

STORAGE AVAILABILITY

In New Zealand

There is a limited amount of storage space available at the U.S. Antarctic Program Clothing Distribution Center (CDC) in Christchurch to leave items not needed in Antarctica. Some examples of items you might leave behind are summer clothing, business suits, street shoes, backpacking equipment, books that you have finished reading, and souvenirs acquired on the trip south to New Zealand.

This service is not provided solely for your personal benefit. It reduces the amount of materials airlifted to and from Antarctica, freeing capacity for timely movement of needed U.S. Antarctic Program materials, possibly including yours.

There will not be much time to spend sorting through your baggage before checking in for your flight to McMurdo Station. Plan ahead and organize your baggage and any items for storage in advance.

U.S. Antarctic Program participants who wish to use their personal dive equipment, bicycles, or camping gear while in New Zealand, may mail the items to themselves in care of the CDC. These items should not be mailed more than 60 days prior to your arrival in Christchurch. Items received after your departure to Antarctica will be held in the CDC warehouse secured baggage storage room until you redeploy from Antarctica. The address is as follows:

[Participant's Name], [Specify the Antarctic Station]
c/o Private Bag 4747
Christchurch Airport
Christchurch 8140
New Zealand
HOLD IN CHRISTCHURCH

Upon redeployment from Antarctica to Christchurch, it is also possible to store items within the CDC. This is to allow participants the opportunity to take personal vacations prior to final redeployment, but this storage is limited to 60 days.

The New Zealand Ministry of Primary Industries (MPI) is now assessing a fee (average $7NZ) to clean/fumigate items (e.g., dirty hiking boots, tent poles) left in Christchurch while you are in Antarctica. These items will remain in MPI custody at the U.S. Post Office in Christchurch until arrangement has been made to pay the fee.

In Chile

Limited short-term secure storage space is available at the Punta Arenas warehouse for participants to store items they do not want to take to Antarctica, such as clothing to be used after leaving Antarctica and science equipment used in multi-year projects. Contact the Peninsula Logistics manager or supervisor if you have questions regarding the storage of any personal items in Punta Arenas. Coordinate with Damco officials upon arrival in Punta Arenas to have items stored. ■

CHAPTER 4:

Conservation, Permits and Science Cargo

photo by Peter Rejcek

Blood Falls is a unique feature where iron-rich brine from the subsurface is released at the terminus of the Taylor Glacier. Any work within the protected area of Blood Falls requires an ACA permit.

Environmental conservation and waste management law applies in Antarctica. This chapter describes environmental impact assessment, the Antarctic Conservation Act, and explains how to get a permit for certain activities.

The chapter also discusses the shipment of science cargo, and it explains the permitting rules that apply to cargo, including specimens shipped from Antarctica.

ENVIRONMENTAL IMPACT ASSESSMENT

U.S. Federal Regulations require that proposed activities shall be subject to environmental impact assessment of those activities on the Antarctic environment, or on dependent or associated ecosystems.

Annex I of the Environmental Protocol to the Antarctic Treaty establishes the process for Environmental Impact Assessment (EIA). A Record of Environmental Review (ROER) will be completed by the environmental department for all USAP activities. If the ROER determines that the activity will have a less than minor or transitory impact, the activity may proceed without further review. If the ROER determines that impacts are no more than minor or transitory, additional review will be required according to Annex I. Depending on the expected level of impact, an Initial Environmental Evaluation (IEE) or Comprehensive Environmental Evaluation (CEE) will be prepared. Polar Programs will work with those who are planning to conduct the activity to ensure that all environmental review has been completed and appropriate mitigating measures are in place before the activity proceeds.

ANTARCTIC CONSERVATION ACT

The Antarctic Conservation Act 16 U.S.C. § 2401, *et seq*. implements various requirements as delineated in the Antarctic Treaty and protocol on Environmental Protection to the Antarctic Treaty.

The Antarctic Conservation Act (ACA) applies to any person subject to the jurisdiction of the United States.

Violations of this law may result in civil fines, criminal fines and imprisonment for up to one year. Other penalties could include removal from Antarctica, rescission of a grant, or sanctions by your employer. It assigns the NSF and other agencies regulatory, permit and enforcement authority.

The Antarctic Conservation Act requires your involvement from the time you begin planning your trip until after you leave Antarctica. Your activities, on or off the job, must comply with the Antarctic Conservation Act. Much of your conservation planning will involve common sense – minimizing pollution, avoiding interference with animals – but the Act is complex, and you cannot rely solely on common sense.

The ACA and permit application instructions and form can be accessed online at: **www.nsf.gov/geo/plr/antarct/aca/aca.jsp**

Highlights of the Antarctic Conservation Act

Taking means to kill, injure, capture, handle or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected.

Harmful interference means:

- flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds and seals.
- using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds and seals.
- using explosives or
- in a manner that disturbs concentrations of birds and seals.
- willfully disturbing breeding or molting birds or concentrations of birds and seals by persons on foot.
- significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, walking on them, or by other means.
- any activity that results in the significant adverse modification of habitats of any species or population of native mammal, bird, plant, or invertebrate.

Specially Protected and Managed Areas. A number of precisely defined places in Antarctica are designated under the Antarctic Treaty as Antarctic Specially Protected Areas (ASPAs), which protect outstanding environmental, scientific, historic, or wilderness values. You must have a compelling need to enter one of these areas, and you must have a permit to do so. You must carry your permit with you while working in an ASPA. Some of these special areas are near stations, such as Arrival Heights next to McMurdo or Litchfield Island near Palmer. Other ASPAs include the historic huts in areas near McMurdo.

Antarctic Specially Managed Areas (ASMAs), have been established to assist in the planning and coordination of activities, to avoid possible conflict and to minimize environmental impacts and to improve cooperation between national programs. Entry into an ASMA does not require a permit, however all activities conducted within the ASMA must be in accordance with the ASMA management plan and any associated codes of conduct.

The areas and their management plans are described on the website maintained by the Antarctic Treaty Secretariat for the Committee on Environmental Protection at **www.ats.aq/e/ep_protected.htm**.

Introducing species. You need a permit to introduce non-native species to the Antarctic (south of 60 degrees South latitude). A clear need to introduce the items must be demonstrated. Laboratory animals and plants, as well as viruses, bacteria, yeasts and fungi may be permitted for introduction for scientific research purposes.

The ACA also allows the importation of food plants under special circumstances. Many Antarctic stations have hydroponic vegetable gardens, including South Pole Station.

If you have questions regarding the introduction of non-native species, contact the ACA Permit Office at **acapermits@nsf.gov**.

Import into and export from the United States. In the United States it is unlawful, unless authorized by permit, to have or sell, or to import or export, Antarctic plants, mammals or birds. An application for a permit must demonstrate that the import or export would further the purposes for which the species was taken or collected, demonstrate that the import or export is consistent with the purposes of the ACA, and state which U.S. port will be used.

Mailing items to or from the United States constitutes import or export.

Antarctic Conservation Act Waste Management

Banned substances. The ACA waste management regulations ban these substances, and others, from Antarctica:

- pesticides (except those required for science or hygiene; a permit is needed)
- polychlorinated biphenyls (PCBs)
- nonsterile soil
- polystyrene beads and plastic chips, and loose polystyrene packing material

Designated pollutants. The ACA identifies some substances as designated pollutants that must be used, stored, and disposed of in a way that prevents their release to or adverse impact on the environment. Designated pollutants include any substance listed by name or characteristic (flammable, corrosive, reactive, toxic) in the Clean Air Act, the Clean Water Act, and Resource Conservation and Recovery Act, and other U.S. regulations. Waste containing designated pollutants is Antarctic hazardous waste, and it has to be used, stored and disposed of in controlled ways. Many research and industrial supplies and common substances like lighter fluid and fingernail polish remover are designated pollutants. The support contractor holds the USAP Master Waste Permit which manages these substances. If you have any questions about the substances you intend to bring to Antarctica, please contact **Environmental@usap.gov**.

You need to pay attention when you pack for travel to Antarctica, at your work site and living area. When packing, ask yourself: How might I reduce the number/amount of such substances; are there benign substances that might be substituted for designated pollutants; and how should these substances be handled?

Historic sites. More than 90 historic monuments or sites have been designated during Antarctic Treaty meetings. Steps have been taken to restore and preserve monuments, including tombs, buildings and objects of historic interest. These sites must be protected from damage. If you go near historic sites, please take care not to damage or disturb them. If you come across a potentially historic artefact, you should not touch it, but should report the find and its location to an NSF representative or to support contractor management staff.

Five Antarctic Treaty historic sites are in the vicinity of McMurdo Station: Observation Hill, Scott's Hut, Vince's Cross, Richard E. Byrd Memorial, and a plaque commemorating the location of the former nuclear power plant. The U.S. Antarctic Program also commemorates historic events with plaques: Our Lady of the Snows Shrine, which was established in memory of Richard Thomas Williams, a Navy Seabee who drowned when his tractor broke through the sea ice in January 1956, and the Raymond Smith Monument, which commemorates BM1 Raymond

Environmental Guidelines

Aspects of environmental protection are covered in many parts of this guidebook. It is your responsibility to know them. Here are a few more common sense examples of how you can do your part.

Don't litter. Use the appropriate receptacles and comply with the waste management program at your station and work site. Winds can turn litter into dangerous flying materials.

Secure construction sites. Pick up debris and dispose of properly. Protect outdoor materials from scattering by the wind.

Handle waste properly. If you handle waste, know the rules. If you do not know them, ask a supervisor, a lab manager, an ASC waste management employee, or an NSF representative.

Leave only footprints. Bring everything back to McMurdo, Palmer, South Pole or the ship from field camps. This includes human waste.

Handle lab chemicals properly. Pack, store and identify them correctly. Arrange for proper disposal according to instructions.

Don't spill fuel. Take the time and precautions necessary to avoid spills. Use secondary containment and absorbent spill pads when transferring fuel. Waste fuels and lubricants have to be labeled and stored for return to the United States. All spills must be reported.

Help clean up. Volunteers assemble from time to time to police an area. This is an opportunity to work with your colleagues to keep camp and station areas clean.

Avoid disturbing wildlife. In particular, do not walk on vegetation, touch or handle birds or seals, startle or chase any bird from its nest or wander indiscriminately through penguin or other bird colonies. If the wildlife are reacting to you, then you are too close.

Do not introduce plants or animals to Antarctica, or collect eggs, feathers or fossils. Clean your gear and clothing before arriving in Antarctica.

Do not enter any of the ASPAs without a permit and adhere to the area management plan when working in these areas and in ASMAs.

Avoid interference with scientific work and do not enter unoccupied buildings or refuges except in an emergency.

Take care of Antarctic historic monuments.

Thomas Smith, USN, who died in 1982 during an unloading accident at McMurdo onboard USNS *Southern Cross*.

Two Antarctic Treaty historic sites are located near South Pole Station: Amundsen's tent, erected in 1911, and Flag Mast, established in 1965. The locations of these monuments is unknown.

Capes Royds, Evans and Adare contain historic huts or their remains. Respect the basic rule prohibiting the removal or disturbance of any materials from these sites, for either souvenir or scientific purposes.

The historic huts at Hut Point, Cape Royds and Cape Evans have been designated as ASPAs by the Antarctic Treaty and require a permit to enter. There are opportunities for group visits to these huts from time to time. Information about visits can be obtained from the contractor staff in the Chalet at McMurdo Station.

Enforcement officers. ACA enforcement officers are federal officials responsible for ensuring compliance with the ACA and for issued permits. Enforcement officers help U.S. Antarctic Program participants understand their obligations to protected native plants and animals, and to prevent the release of pollutants. ACA environment officers are authorized to exercise the full array of law enforcement powers when performing their duties.

PERMITS AND REPORTING

Antarctic Conservation Act. NSF will not allow work in Antarctica to commence until an ACA permit has either been approved or found not to be required. You may not do things that require a permit unless you have a permit. A permit cannot be retroactive.

You are the person who initially decides whether or not an ACA permit will be needed for proposed activities in Antarctica. If there is any doubt, contact the ACA Permit Officer at ACApermits@nsf.gov, or:

Permit Officer
Division of Polar Programs, Room 755
National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230
Fax: 703-292-9081

Normally, 45 to 60 days are required for NSF to review and decide on an ACA permit. During that time, a summary of the application is published in the Federal Register so that the public can comment. The Foundation evaluates public comments and performs an internal review. It then approves the application, approves it with modifications, or rejects it.

Postseason report. At the end of the season, by April 1, a report of activities conducted under your ACA permit must be submitted to the permit officer at the Division of Polar Programs.

Protected resources. If your project involves any native mammal that is a marine mammal as defined by the Marine Mammal Protection Act of 1972 (16 U.S.C. 1362(5)), any species that is an endangered or threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), or any bird that is protected under the Migratory Act (16 U.S.C. 703 et seq.), you may need to obtain permits from other federal agencies. NSF cannot issue an ACA permit until the Permit Office receives copies of valid permits issued under these regulations. The following websites provide information on the acts listed above:

- www.nmfs.noaa.gov/pr/permits
- www.fws.gov/migratorybirds

Meteorites. A U.S. regulation governing Antarctic meteorites ensures that meteorites in Antarctica will be collected for scientific research purposes only. U.S. expedition organizers who plan to collect meteorites in Antarctica will ensure that any specimens collected must be properly collected, handled, documented and curated to preserve their scientific value. For more information on meteorite regulation, please visit **www.nsf.gov/geo/plr/antarct/meteorite_regs.jsp**.

OTHER IMPORT-EXPORT REGULATIONS

Federal laws and regulations control the taking and importing into the U.S. of certain biological specimens, alive or dead. Other countries have rules for crossing their borders with some materials.

Responsibility for knowing these regulations, complying with restrictions, and obtaining clearances rests with the grantee. Keep your ASC science support POC informed by sending copies of relevant correspondence, actions and permits granted.

The NSF representative in Antarctica cannot provide the needed clearances from the field. It is your responsibility to obtain the necessary permits.

Import of animal-origin materials. The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), regulates the import of all animal-origin materials and soils that could be a disease risk to U.S. livestock. Animal-origin materials include animal products, animal by-products, and biological materials that contain or have been in contact with materials of animal origin (including cell cultures). You may not bring such materials into the country without a permit.

To verify your project's requirement contact **AskNIES.Products@aphis.usda.gov**, or:

USDA, APHIS, VS, NCIE
Products Program
4700 River Road, Unit 40 Telephone: 301-734-3277
Riverdale, MD 20737-1231 Fax: 301-734-8226

Foreign permit restrictions. All countries have some restrictions against the importation of harmful plants or animals or of soil samples that might contain harmful seeds, insects, fungi, or bacteria. New Zealand has particularly stringent regulations (see below), and Argentina and Chile have similar rules. Chile does not currently restrict transshipment of specimens or technical equipment. For general information about materials sent by mail or shipped as retrograde cargo to the United States, the contact list below provides a first contact for information. It is important to obtain necessary foreign permits before you leave the United States. Otherwise, there may be difficulty in clearing customs, particularly when hand-carrying biological samples.

- For information about New Zealand Ministry of Primary Industries (MPI) regulations, visit their website: **www.biosecurity.govt.nz**
- For information about Chilean restrictions, contact the consulate in your region: **www.chile-usa.org/consular.htm**
- For information about Argentinean restrictions, go to the following website, click on the English link and then the Consulates in the U.S. link: **www.embassyofargentina.us**
- Please forward copies of correspondence to your ASC science support POC.

New Zealand health and agricultural requirements. New Zealand has strict regulations regarding importation or transshipment of biological and laboratory samples. A permit from the Ministry for Primary Industries (MPI) New Zealand must be obtained for entry of biological and laboratory samples. This applies to samples coming from the United States or Antarctica.

Please enter information regarding the movement of samples into POLAR ICE, the online database used to create the Science Information Packet (SIP). This outlines the science group's requirements for the season. During this process an application for an MPI permit will be created. Applications are gathered by the senior administrative coordinator at PAE (NZ) for processing. You must apply for a permit at least eight weeks before you leave the U.S. for Antarctica.

Controlled Drugs, New Organisms, Genetically Modified Organisms

If your research requires movement from the United States to Antarctica of controlled drugs, new organisms or genetically modified organisms, permits from U.S. and N.Z. government agencies must be obtained and the process will take longer.

Controlled Drugs. Controlled drugs for research purposes require advance planning and documentation. ASC personnel will arrange for procurement and shipment of these items to Antarctica. Please notify your ASC Science Planner if you anticipate use of controlled drugs during your field season. Protocols set forth by the U.S. Drug Enforcement Administration (DEA) are applicable while in Antarctica.

NOTE: Personal prescription drugs are covered in Chapter 3.

New Organisms or Genetically Modified Organisms. To transship new organisms and genetically modified organisms (GMOs), approval must be obtained from the Environmental Protection Authority (EPA). This is part of the MPI process. For GMOs you must provide your approved ACA permit along with an application available through POLAR ICE. For new organisms, you must provide your approved ACA permit. You should expect the EPA/MPI process to take at least 6-8 weeks to complete.

PAE NZ holds an approval from the New Zealand EPA to transship new organisms and GMOs through New Zealand en route to or from Antarctica.

Provided the science group's organisms meet the definition of the 'Risk Groups' contained within the EPA Decision Document they are able to transship them. A copy of the Decision Document and applicable MPI permit can be requested from the Crary Lab supervisor, **Mcm-CraryLabSupv@usap.gov**.

If an organism does not meet the definitions in the Decision Document, a new application must be made to EPA. The process to complete this is available on **www.epa.govt.nz**. The application could take 12 or more weeks to be completed.

Importing Samples into New Zealand

If samples are being imported into New Zealand with New Zealand being the ultimate destination of the samples, that destination institution or agency must provide a copy of their *MPI Permit to Import* to accompany the samples. A copy must be sent to the grantee importing the samples, to the Crary Lab supervisor, **Mcm-CraryLabSupv@usap.gov**, as well as to the **Chc-MPIpermits@usap.gov** email group.

Transhipping Samples through New Zealand

United States to Antarctica. If you are *shipping* samples from the United States through New Zealand on to Antarctica, a copy of your permit will be sent directly to you along with a letter from the Contract Manager of New Zealand Operations. If you plan to hand-carry your samples you must advise the Christchurch Hand carry email group of your intentions and all special handling requirements: **chc-handcarry@usap.gov**. You will be advised in the letter from the Contract Manager New Zealand Operations that you need to carry your permit and your letter with you, and when you arrive in New Zealand, you must declare your samples and present the permit and letter to the Ministry for Primary Industries inspector at the border. If you also have GMOs or new organisms, you must present the additional paperwork provided to you by PAE (NZ).

If you are shipping your samples directly from the United States to Antarctica, you must attach the permit, and any other applicable paperwork, to the boxes being shipped.

Antarctica to the United States. If you are shipping samples from Antarctica to the United States, your permit will be sent to the Crary Lab in McMurdo. It will be held there until you are ready to leave the Ice. Additionally, all sample shipments need to be accompanied by a letter, on the proper **university's letterhead**, which answers the following three questions:

1. What is the source of the product?
2. If animal, what is the type and origin?
3. Does the product contain any animal by-products?

More information can be found in the **Packing and Shipping Instructions – TL-MAN-0002** on the USAP website. A copy can be sent to you by request. If you plan to hand-carry your samples, you must present a copy of your permit and declare your samples to the MPI Biosecurity officials when you enter New Zealand. If you are shipping, your permit will be available in the Crary Lab at McMurdo Station. When you are ready to ship your samples, contact the Crary Lab and Science Cargo supervisor with details of your shipment. If you are working in the Antarctic Peninsula area, get transport details from the NSF representative there, the ASC resident manager at Palmer, or the marine projects coordinator on your research vessel.

You will be required to identify the container as to content, relevant permits, special handling requirements (such as dry ice) and addressees. State whether the container will be hand-carried or shipped independently.

NOTE: If you plan to hand-carry samples and did not identify this in your SIP, you must let your ASC POC and ASC Travel (travel@usap.gov) know immediately what the samples are and the name of the person who will be hand-carrying the samples. This will allow ASC Travel to ticket the individual appropriately through New Zealand. Australian law does not allow hand-carried samples.

Radioactive Materials

Shipment and use of radioactive materials in Antarctica requires strict adherence to U.S. Antarctic policies and procedures to avoid contaminating the Antarctic environment, and to ensure safety. Approval by the NSF Division of Polar Programs to use radioisotopes in the Antarctic must be obtained before any radioactive material is shipped south. A hard-copy of the NSF/PLR approval should accompany all radioactive material shipments to and from Antarctica. PIs are responsible

for the procurement, packaging, transport and retrograde of NSF-approved radioactive materials required for their particular research project.

PIs must direct their requirements through the radiation safety officer of their institution to ensure compliance with state, national and international regulations pertaining to the packaging and shipment of radioactive materials. Consult with the Hazardous Material (HAZMAT) specialist in Christchurch by e-mail (hazmat@iac.org.nz) or fax (+64-3-358-1479), for shipments to and through New Zealand. When shipping radioactive materials, or having them consigned from a vendor, please ensure that any material packaged within category "Yellow-II" does not exceed a transport index of 1.0, or that any "Yellow-III" packages do not exceed 3.0.

It is against the law to hand-carry radioactive materials into New Zealand.

Radioactive isotopes **cannot** be shipped to New Zealand without the appropriate Certificate of Authorization to Import Radioactive Materials. The HAZMAT specialist in Christchurch must receive importation documentation five business days before radioisotopes are shipped through/to New Zealand. Accordingly, if you are planning to order and ship radioisotopes directly from U.S. vendors to New Zealand, then you MUST adhere to the following instructions:

All orders must be marked by the vendor for:

National Science Foundation
c/o PAE (NZ) Limited
Gate 1, Orchard Road North
Christchurch International Airport
Christchurch, New Zealand

The project's event number and PI's name must also be included in the shipping instructions so that the HAZMAT specialist in Christchurch will know to whom to consign the shipment in Antarctica.

After the order is placed with the vendor, you MUST then send the HAZMAT specialist in New Zealand either an e-mail (hazmat@usap.gov) or a fax (+64-3-358-1479) with the applicable following information:

Unsealed (Not shipped as an integral part of equipment)

1. Radionuclide
2. Activity per item
3. Number of items
4. Description of radioactive material
5. Country of origin
6. Expected departure date from country of origin (include country name, e.g., United States)/Arrival in Auckland, New Zealand

-OR-

Sealed (Shipped as an integral part of an instrument)

1. Radionuclide
2. Activity per item
3. Number of items
4. Year of manufacture (if known)
5. Source serial number (if known)
6. Instrument type (if part of an instrument or other equipment)
7. Model #
8. Serial #
9. Country of origin
10. Expected departure date from country of origin (include country name)/ Arrival in Auckland, New Zealand

Additionally, you are required to follow up with confirmation of the Airway Bill and flight numbers and special handling instructions (e.g., DNF) as soon as the shipment is confirmed.

Upon receipt in Christchurch, the HAZMAT specialist will ensure that the shipment is consigned to the PI at a station in Antarctica or aboard a USAP research vessel at Port Lyttelton.

Please do not hesitate to contact the HAZMAT specialist with any questions on this procedure:

Cargo/Hazardous Coordinator, PAE (NZ) Limited
Tel: +64-3-358-1417 Fax: +64-3-358-1479
Mobile: 027-4357731 E-mail: hazmat@usap.gov

SCIENCE CARGO

Many dollars have gone into the support of each science project and the facilities required for the projects. Data and their subsequent interpretation are the greatest single return on this investment. Data and specimens should be transported with the same care and forethought that went into planning the research.

The challenges presented in transporting cargo and passengers to and from Antarctica are diverse. Antarctic operations are divided roughly into two geographic areas, the Continental and the Peninsula areas, differentiated by the stations and the means of supplying those stations.

Instructions on Packaging and Shipping, provided by ASC, explains exactly how to package and ship your science cargo to and from Antarctica. This publication is kept current with recent methods of safe and damage-free shipping, examples of how to time your shipments, and the current name, address and phone number of the Port Hueneme representatives. This information can be found at **www.usap.gov/usapgov/logistics/index.cfm?m=4.**

Sea and Air

Due to the unusual restrictions presented in getting cargo to Antarctica, requirements are analyzed and cargo loads are planned months in advance. Planning begins with information gathered from the SIP and ASC management.

Responsibility for cargo and passenger movement within the Continental Area rests with the ASC director of Transportation and Logistics and the ASC manager of Antarctic Terminal Operations (ATO). During the summer season at McMurdo, ASC's Terminal Operations department manages all cargo transported to McMurdo Station and onward.

US Antarctic Program/Science Cargo is the facility that focuses on the cargo related to **science** efforts, technical events, and hazardous cargo. At McMurdo Station, cargo is documented, packaged, and labeled for transport and then turned over to the Movement Control Center (MCC) staff for actual transport. All hazardous cargo to be transported is processed through the U.S. Antarctic Program Science Cargo office. Should you require assistance in determining the location of cargo you have shipped, these people can tell where in the U.S. Antarctic Program cargo system your particular items are located. It will assist them if you can provide a copy of the U.S. Antarctic Program shipping document, or, for commercial shipments, a copy of the bill of lading or airway bill.

Methods of cargo transport used each year in support of science are explained below.

Palmer Station via research vessels. Cargo must reach the NSF contractor representative in Port Hueneme, California, at least 90 days before it is to be loaded aboard the research vessel in Punta Arenas, Chile, for forwarding to Antarctica.

McMurdo Station via charter resupply vessel. A U.S. flag charter ship sails from Port Hueneme to McMurdo Station, arriving in mid-January. Cargo for this ship must be received in Port Hueneme by December 1. This ship is the preferred transport for delivering materials to McMurdo and the inland stations. Plan to get as much of your cargo as possible on it.

McMurdo Station via U.S. Antarctic Program airlift. U.S. Antarctic Program airlift refers to the scheduled movement of cargo and passengers from Christchurch to McMurdo via any aircraft capable and certified to operate in Antarctica. The airlift period is generally from the beginning of WINFLY to the end of the operating season. Airlift may be used with NSF approval to support funded science projects, prevent work stoppages, facilitate emergency repairs, and transport mail and fresh food. Most cargo is moved from Port Hueneme to Christchurch to await airlift to McMurdo. Commercial surface vessel shipment to Christchurch is the preferred transport mode for airlift cargo. Additional NSF approval is required to ship cargo from Port Hueneme to Christchurch via commercial air, and approval is based on the importance of accomplishing program objectives. In general, airlift cargo needs to arrive in Port Hueneme by 30 August. A link to the Packing and Shipping Instructions can be found at **www.usap.gov/usapgov/logistics/index.cfm?m=4**.

Commercial air cargo. If circumstances prohibit shipment by sea, ASC may be authorized by the NSF to ship your cargo by commercial air. Commercial air shipments need to provide sufficient benefit to warrant the added cost of this transport mode. This is the most expensive way to ship, and will be used only for essential material that cannot go by sea. Air cargo will not be authorized as a substitute for inadequate advance planning of material movements. ASC submits Air and Commercial Air Shipment requests to the NSF to gain authorization to use this mode of transportation.

South Pole Station cargo. Cargo to/from South Pole Station is transported almost entirely by LC-130 aircraft from McMurdo Station. These aircraft operate only from late October through mid-February. The station is isolated the rest of the year. ASC Science Cargo personnel in McMurdo and at South Pole determine cargo plans and schedules.

Hazardous cargo. Explosives, gases, flammables, oxidizers, poisons, radioactives, corrosives, and other hazardous materials are forbidden in personal baggage, mail or hand-carry and must be shipped as cargo. Hazardous cargo must be packaged, labeled, marked, and documented in accordance with the applicable federal, international, military, and U.S. Antarctic Program regulations. Contact the ASC Hazardous Cargo supervisor for more information.

Emphasis on sea cargo. The U.S. Antarctic Program is committed to maximize practical use of sea cargo – and to minimize use of air cargo, which is vastly more expensive. Shipping by sea is the preferred method for transporting grantee cargo and other materials to Antarctica. It is far cheaper than air cargo, and it is secure. Once your cargo is packed and labeled properly and on the ship, the next off-load stop is McMurdo Station. The ship also can be used to return gear and specimens to the United States.

Maximum use of sea transportation is possible only through planning by all concerned. Make every effort to allow sufficient time for shipment by sea. Plan to position cargo in Antarctica the season before field work.

Transportation schedules are available at **www.usap.gov** under the **Grantees Support Calendars and Schedules** link to facilitate cargo movement planning. Cut-off dates for shipping to the research vessels *Nathaniel B. Palmer* and *Laurence M. Gould* provide the dates when the cargo must be at Port Hueneme to meet the quoted delivery date at the ship. The R/V *Laurence M. Gould* is the primary vessel used to transport passengers and cargo between Punta Arenas and Palmer Station. The Continental Area Acquisition Schedule, located on the same website referenced above, provides the timeline for cargo movement to McMurdo and South Pole stations.

Retrograde (Return) Science Cargo

Near the end of your stay in Antarctica, you will arrange to have your science cargo shipped to the United States with the U.S. Antarctic Program cargo representative at McMurdo Station or cargo personnel at Palmer or South Pole stations. This person will issue you the appropriate documents and accept the cargo for shipment. You are responsible for insuring, packing and crating the equipment, and for labeling the containers.

Use of ship, rather than air, cargo back to the United States, especially from McMurdo, is encouraged when the science will not be compromised by the slower delivery. Air cargo will be authorized when necessary.

Retrograde cargo is shipped to a U.S. entry point and onward to its ultimate destination. The grantee pays shipping costs from the U.S. entry point to the ultimate destination. Note that it is the shipper's responsibility to insure cargo against loss.

You are entirely responsible for any items you mail or hand-carry. All retrograde cargo will go by ship unless air shipment is fully justified and authorized by the NSF representative or designate at Palmer Station, or the NSF representative at McMurdo Station.

Refer to Chapter 6 for information on transporting personal cargo and boxes.

TRAVEL WITHIN ANTARCTICA

Timeframes and transportation for work in remote locations is planned well in advance during the summer planning season. Working together, grantees, the NSF, implementers, and transport schedulers agree upon a field plan that is published in the Research Support Plan (RSP) six weeks before the participant deploys. All plans are subject to change given weather conditions and other unforeseen circumstances that may arise.

Any unauthorized travel on aircraft or ocean-going vessels may result in an employee's immediate termination and removal from Antarctica.

Grantees and ASC employees traveling to remote locations should read the **USAP Field Manual** available in PDF under the Travel and Deployment link at **www.usap.gov.**

Air Transport

Transportation to remote field camps is provided by fixed-wing aircraft, helicopters and ground transportation.

Fixed-wing aircraft include LC-130 ski-equipped airplanes, Baslers and smaller Twin Otter aircraft. LC-130s are operated by the 109th Airlift Wing of the New York Air National Guard. These airplanes provide heavy-lift capability to all inland stations, as well as Search and Rescue (SAR) for the entire continent. Science project team members must work with the science cargo staff to stage their cargo 72 hours before scheduled transport. Passengers must stage their personal luggage (except for one carry-on) the night before the scheduled flight. This is called "bag drag."

Deep field camps are managed by the ASC continental field manager.

South Pole. Grantees and employees traveling to the South Pole will coordinate their trip with the South Pole population specialist and the station supervisor at South Pole. Because of limited berthing, all participants going to this station must be approved by the NSF well in advance of the trip.

Twin Otters are twin-engine, high-wing aircraft, and **Baslers** are larger twin-engine low-wing aircraft, used for small field teams with moderate cargo loads deploying to more remote locations, generally without groomed landing areas. Science project team members must work with the science cargo staff to stage their cargo 72 hours before scheduled transport. The day of the flight, science team members and ASC camp staff will transport their personal bags to the airfield via the shuttle service where they will then will assist the flight crews in loading the plane.

NOTE: Please provide accurate weights for all personal bags to the fixed-wing office.

Helicopters are used principally for logistical support in the Ross Island region and in the Dry Valleys. Anyone expecting to fly on a helicopter must attend safety and environmental training. Cargo capacity and range varies depending on the helicopter. Science team members work with the helicopter staff to arrange the cargo logistics.

photo by Peter Rejcek

A Twin Otter at a deep field camp.

For all airframes, hazardous cargo must be packaged and certified by U.S. Antarctic Program cargo personnel in accordance with applicable regulations. Detailed packing and planning guidelines, including field and mechanical equipment weights, are presented in the U.S. Antarctic Program Field Manual.

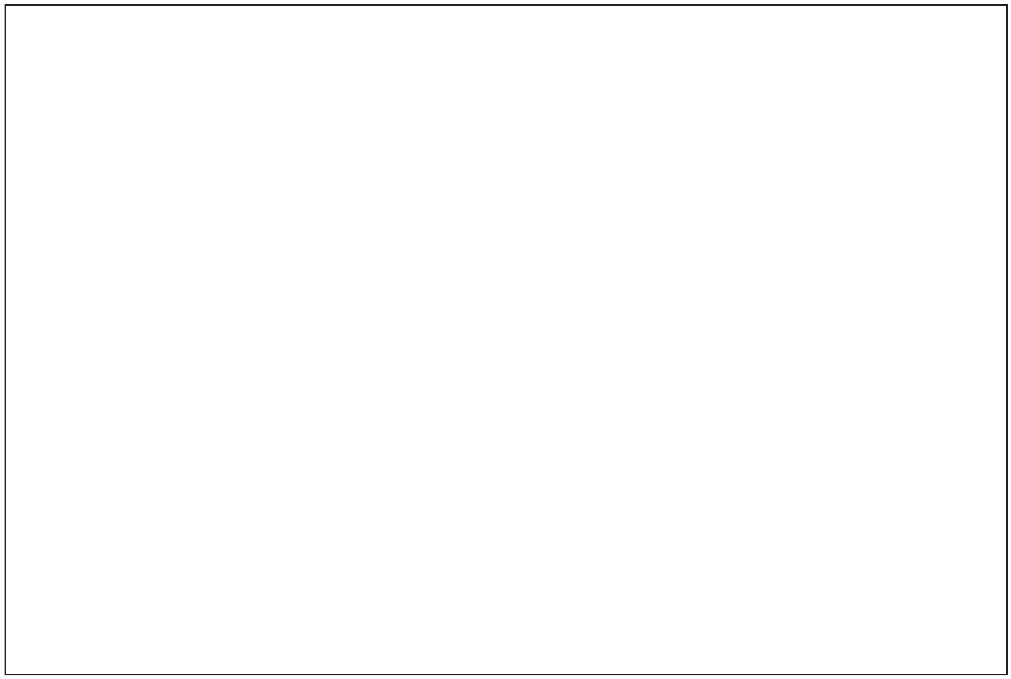
Safety. As with all operations in Antarctica, safety comes first. Mechanical problems and bad weather can delay missions.

- You must be manifested on any aircraft. Any unauthorized travel on aircraft may result in your removal from Antarctica.
- Be on time. Departures will not be delayed for persons arriving late.
- A brown bag flight lunch can be obtained by the passenger from the McMurdo cafeteria "grab and go" cooler prior to transport to the airfield.
- Do not consume alcoholic beverages before a flight. You will not be allowed to board the aircraft if you appear to be under the influence of alcohol.
- Consumption of alcoholic beverages is not permitted onboard.
- You must wear certain items of the ECW clothing. The specific requirements will be posted in advance of your flight.
- Hazardous materials must be packed and certified by U.S. Antarctic Program cargo personnel. You may not carry unauthorized hazardous material in your baggage or on your person.

Anyone flying on a USAP aircraft (other than South Pole flights) must attend the Field Safety Training. More details on this are provided in Chapter 6. ■

CHAPTER 5:

Travel Guidelines



A C-17 jet, flown by the U.S. Air Force, lands near McMurdo Station.

photo by Jack Green

This chapter gives travel advice for the foreign countries through which you might travel, explains how to obtain your extreme cold weather (ECW) clothing issue, how to transport your baggage, your arrival in Antarctica, and your return from the continent.

TRAVEL ADVICE

Customs and Mail Warning

Like any traveler, participants must obey foreign laws. These laws can differ from those of the United States, and penalties for violations can be more severe. Persons found in violation of these laws are subject to prosecution in the local courts. Association with the U.S. Antarctic Program affords neither preferential treatment nor immunity from prosecution.

Governments are determined to prevent the passage of illegal materials, especially illegal drugs, through their countries. You could be imprisoned for life for bringing or mailing illegal drugs into a foreign country.

Methods of finding illegal materials include the use of trained dogs, handled by the New Zealand Customs Service and the Chilean Servicio Agricola y Ganadero. At NSF's request, all mail destined for the continental side of the program is screened/inspected by New Zealand Customs Service. On occasion, U.S. citizens have been detained by Customs on their return. Some of them have been found guilty of carrying illegal materials and have been fined.

U.S. law also prohibits the mailing of controlled substances, which includes illegal drugs. The policy (6 April 1982 Federal Register, pages 14864-14866) recognizes the responsibility of the United States to ensure that personnel authorized to use the military postal facilities do not abuse the customs, tax, and other laws of the host country. This applies to articles/mail that are staying within New Zealand. New Zealand Customs Service does not assess a tax or duty for items going to Antarctica.

In addition to being guilty of criminal activity and causing inconvenience and expense to themselves, people who try to bring illegal materials through foreign countries embarrass their own countries. In particular, the New Zealand mail interdictions have delayed mail for all program participants.

- Obey the law.
- Do not try to take illegal substances through foreign countries.
- Do not mail illegal substances.
- Tell your friends not to mail illegal substances to you.

There are also heavy penalties for concealing dutiable goods from Customs or for making false declarations. It is against the law to take dutiable items (e.g., cameras, electronics, binoculars) and to sell or give them away without paying duty.

Stay in Contact

While awaiting transportation from New Zealand or Chile, keep the local program representatives informed of where you are and how they can contact you. Transport schedules are often revised on short notice.

Be Patient

Whether you travel to Antarctica via a research vessel or by air, you should be prepared to handle delays and changes in schedules. Every effort is made to ensure the safety of program participants, and that often means departures are delayed or flights are turned around. This may be due to mechanical considerations, ice conditions, and especially weather.

Currency Exchange

Learn the currency exchange rate before departing for a foreign country. Bank representatives will change foreign money for U.S. money at U.S. international airports. You can also change money at most banks in foreign countries. Remember that banks and stores may be closed on weekends and holidays. ATM cards can be conveniently used in both New Zealand and Chile.

Generally, a better exchange rate will be found in the country whose currency you are purchasing than in the United States. Also, in Chile, rates can vary significantly between banks and currency exchange houses.

Chilean and New Zealand banks will not cash personal checks drawn on U.S. checking accounts. Carry enough cash, an ATM card or credit cards such as Visa/Mastercard. A credit card with a chip is required in many foreign stores.

Electrical Compatibility

The electrical voltage at all Antarctic stations is the same as in the U.S., so no adapters or converters will be needed once you arrive to your destination. However, you will need adapters for the countries through which you will be traveling.

The electrical voltage in New Zealand is 230v 50hz. For Chile, it is 220v 50hz. Most laptop computers will have an AC converter that will be compliant. The user will require a suitable adapter plug to connect to the wall outlet, which can be purchased from hardware and travel stores. Some small appliances, such as razors and hair dryers, can be purchased with dual voltage capabilities, but would still require an adapter plug to fit into the wall sockets.

You can find information on the type of electricity used and the electrical plugs needed for countries around the world at various websites. An example is: **http://countrycode.org.**

Pre-Deployment Personal Vacations

Participants vacationing in New Zealand before going to Antarctica must contact the Christchurch Travel Office at least three days before their scheduled date to fly to Antarctica. Flight schedules to

Antarctica often change, and it is advantageous to both you and the Christchurch Travel Office if regular contact is made during the period of leave.

NOTE: Contract employees are not allowed to take pre-deployment personal vacations en route to Antarctica.

Post-Deployment Personal Vacations

You may elect to travel to other countries prior to returning to the United States. Any costs associated with the additional travel will be your responsibility. You will need to return to the Christchurch Travel office or Punta Arenas Damco office to collect your itineraries and any stored baggage. If you wish to spend time in New Zealand or South America, you will need to be in compliance with the immigration policies. When you stay in a country as a tourist, the U.S. Antarctic Program is no longer your sponsor, and you are responsible for observing Immigration and Customs regulations.

The program requires its travelers to cover the extra expenses of taking post-deployment vacations, and the fare difference could be significant. Participants are responsible for making their own leisure travel arrangements. In addition, once a traveler begins personal leisure travel, normal airline baggage policies apply.

You will be provided a 12-month New Zealand visitor visa letter before your deployment. Present this letter to New Zealand Immigration when you first arrive in New Zealand. One year covers the period most participants deploy, with extra time for personal stay. However, if you deploy for a longer period of time and your visa expires while you are deployed, one extension of three months is available. This process is completed by providing the necessary information to the New Zealand Immigration office at **INZCHCHExpress@mbie.govt.nz.** They will require the following information:

- Name, as indicated on your passport
- Passport number and expiration date
- Date of birth
- Your redeployment date (approximate will suffice)

Please note that this information is regarded by the U.S. Antarctic Program as Personal Identifiable Information (PII) and should not be transmitted via U.S. Antarctic Program e-mail.

TRAVEL THROUGH NEW ZEALAND

The majority of U.S. Antarctic Program participants will travel through New Zealand en route to Antarctica. All participants will be provided instructions via e-mail from the Christchurch Travel office regarding hotel, ECW issue times, taxis, shuttles, etc.

If you have a problem with mishandled luggage, please do as you normally would stateside: file a claim with the airline upon arrival at Christchurch. Retain a copy of your luggage claim form and advise the Christchurch Travel office personnel so they know you are experiencing a problem.

Accommodations. Hotel/motel reservations in Christchurch are booked in advance by ASC for all participants for the length of their stay in Christchurch. This method enables the Christchurch office to find you should there be a change in date or time for your departure to Antarctica.

If you plan to stay with friends in Christchurch, please advise ASC Travel of the contact telephone number in Christchurch where messages can be left for you. Flight schedules change often, and it is critical that the office knows how to contact you with updates. For those organizations not ticketed by ASC, please provide the information to the Christchurch Travel office.

Do not change your reservations without prior approval by the Christchurch Travel office. If you do not honor your hotel reservation, expect to be billed by the hotel for the first night of the booking.

Always keep your passport and valuables on you. Hotel/motel bills, telephone charges, etc., should be settled the night before your departure from Christchurch.

Grantees are responsible for paying for their accommodations.

ASC employees' accommodations are paid by ASC.

Medical care. If you need medical care in New Zealand, please contact the PAE (NZ) medical coordinator, who will assist you with arranging medical/dental appointments. There will be a charge for your visit to the doctor/dentist. See Chapter 2: Health Insurance.

Public transportation. An extensive network of bus routes serves Christchurch, Lyttelton, the airport and U.S. Antarctic Program offices. Taxi and shuttle details are provided in your arrival documents.

Car rental and insurance. If you rent a car, be sure you know New Zealand traffic regulations and have sufficient insurance. A booklet on traffic laws called the Road Code is available at auto rental agencies. Traffic regulations are strictly enforced. Driving is on the left side of the road and requires strict attention. A driving permit is not required if you can provide a valid U.S. driver's license.

Extreme Cold Weather Clothing Issue

Extreme Cold Weather (ECW) clothing and accessories will be provided to you at no charge at the Christchurch Clothing Distribution Center (CDC). These items are to be returned to the CDC immediately upon your return from Antarctica. Clothing issued is the property of the NSF. Participants are responsible for all issued clothing.

The issued ECW clothing is functional, sturdy and cost effective. It includes special items of outer clothing required for the Antarctic climate, such as parkas and boots. The majority of clothing is in men's sizes but will fit both men and women. However, to ensure an acceptable fit, be sure to provide accurate measurements on the ECW form submitted with your travel/deployment forms.

It is important that you **try on all** of the ECW clothing (including boots) at your fitting session. Any sizing errors will be corrected at that time. The type and amount of clothing you receive depends on where you work and what your job title entails. Most, but not all, of the ECW clothing is mandatory. If you are new to the program, it is best to take all the clothing issued to you. There will be no additional clothing issued once you are in Antarctica.

The clothing issued to you is **U.S. government property.** You are responsible for it and required to return it in New Zealand. Some issued clothing, especially parkas, are subject to theft, and special attention should be taken to prevent loss. Abnormal damages or unreported loss of clothing will result in your being billed for repair or replacement costs. Any theft or loss should be reported immediately to the NSF representative or the station manager. It is illegal for you to mail government property from Antarctica. It is illegal for individuals to buy or sell government property including clothing.

To McMurdo Station

The flight from Christchurch to McMurdo is called your **Ice flight,** and the date you fly is called your **Ice date**. Report for your flight at the time given to you by the Christchurch Travel office.

You will be asked to pack one bag with personal items/clothing and other essentials required for a one- or two-night delay. In the event your flight turns around (boomerangs) or is otherwise delayed after you have checked in, this is the only bag that will be returned to you.

As part of the check-in process, you will be given time to change into your ECW gear, pack your carry-on and boomerang bags, and store any other baggage that you will not need in Antarctica in the CDC secured storage room.

Notify the ASC representative or the agent of any accompanied cargo or baggage that exceeds your authorized weight. Remember that authorization for excess baggage must be obtained in

photo by Elaine Hood

A participant tries on ECW during clothing issue in Christchurch, New Zealand.

advance from ASC. This also applies to your northbound return. See Chapter 3: How and What to Pack.

Your passport should be ready for inspection.

You will be issued an Antarctic Departure Card, which you are required to complete before moving through to the Antarctic Passenger Terminal (APT). Your passport and departure card will be checked during check-in at the APT.

After dressing for your flight and completing your Antarctic Departure Card, you will walk to the APT for official check-in and weigh-in. This is commonly known as "bag drag."

After being checked through the APT, you will no longer have access to your baggage except the carry-on piece. You may not leave the area unless authorized by officials. Transportation to the aircraft is provided. Personnel who, in the judgment of the crew, are intoxicated will not be permitted to board aircraft, either en route to or from Antarctica, or when traveling within the Antarctic continent.

You will fly between New Zealand and Antarctica on an aircraft taking between five and eight hours.

These cargo and troop planes are not designed for passenger convenience. Food and water are provided during the flights at no cost to the traveler. Toilets are provided on all planes, but the facilities can be awkward.

The weather in Antarctica is likely to be clear, cold and very bright. After the plane has landed, gather your possessions, zip up your parka, and put on sunglasses and gloves. You will be transported by vehicle to McMurdo Station.

On arrival at McMurdo Station, you will be given an in-brief and instructions about collecting baggage and about your lodging. Generally, your checked baggage will be ready for you at the Movement Control Center (MCC) in McMurdo two hours after you arrive.

Return to New Zealand

Grantees: At least 10 days prior to your planned departure from Antarctica, advise the NSF passenger coordinator in the Chalet or the science coordinator at South Pole of your intended departure date from Antarctica and of any stopover en route to your airport of departure. The staff will, in turn, coordinate your requirements with the PAE (NZ) Limited Travel representative in Christchurch. You should also ensure that your retrograde cargo is ready for transport. See Retrograde Cargo in Chapter 4.

ASC Employees: Weeks before redeployment begins, employees are given check-out instructions. Prior to completion of your contract, your supervisor will schedule you on one of the return flights from McMurdo to Christchurch.

Excess Baggage. Remember that prior approval for excess baggage is required for anything over the standard limits (see Chapter 3) and that prior approvals are required for both south and northbound travel. If you check in for a northbound flight in McMurdo without the necessary excess baggage approvals, you will be required to mail that excess at your own expense through the U.S. Post Office at McMurdo Station.

Be sure to carry your **passport on you** and not in your checked bag.

Upon your return to Christchurch from McMurdo, you must return to the CDC to return your ECW issue and retrieve personal belongings stored in the storage room. You will be given information about your accommodations and travel before departing for your hotel by taxi or shuttle bus.

NOTE: Remember that your APO privilege to mail boxes at U.S. rates expires in 10 days. See Chapter 3: APO Privileges.

TRAVEL THROUGH CHILE

In Chile, the U.S. Antarctic Program has contracted with Damco to provide support and manage local offices.

Chile, Argentina and the United States cooperate frequently in Antarctica. Both Argentina and Chile are Antarctic Treaty nations, and both have year-round stations along the Antarctic Peninsula. While Spanish is the predominant language, English is spoken by many of their citizens, including agents employed by ASC to assist you in your passage. A simple Spanish phrase book may prove helpful, however.

Health. If you require health care on your travel through Chile, contact the local Damco office for assistance in making appointments. Be prepared to pay for services at your appointment. See Chapter 2 on health insurance.

The two cities that you will pass through in Chile are **Santiago**, the capital, where your plane from the United States will land, and **Punta Arenas**, from where you will depart for Antarctica. Occasionally there may be a brief stopover in Puerto Montt en route to Punta Arenas. In the austral summer, Santiago is hot, and the weather in Punta Arenas can vary from cold to warm. Chile's food and lodging costs are about the same as or less than in the United States.

On arrival at the Santiago airport you will be met by an agent, who will assist you through customs and help you to make the onward domestic flight to Punta Arenas. The agent will direct you from the international terminal to the domestic terminal and ensure that you get on your flight to Punta Arenas. It is your responsibility to be alert for domestic gate changes, which may or may not be announced in English.

The flight from Santiago to Punta Arenas takes approximately 3 1/2 hours. Damco manages the U.S. Antarctic Program warehouses at the Prat Pier, Punta Arenas. A Damco representative will greet and assist you at the airport, transport you to your hotel, notify you of your ECW clothing issue time, your ship embarkation times, and help you with local authorities. You will be provided with a "QR code card" that will provide access through the Prat Pier security gate, enabling you to come and go easily between the city and the pier area.

You may be asked to board the vessel immediately upon arrival in Punta Arenas. However, the majority of people traveling to the station are scheduled to spend one night in a hotel and board the ship the following day. Generally, if you are not asked to board the ship immediately, you should not request to do so since it means the ship is not yet ready to take passengers. Be on schedule, as time to complete your outfitting is limited and ship schedules are often tight.

Costs for hotel rooms for ASC personnel is direct-billed, but incidentals and meals will be paid by you. Grantees must pay for their hotel rooms. The agents and ships representatives can provide local information regarding restaurants, money exchange, etc.

Damco Chile SA (Santiago)
Cerro El Plomo, Floor 7, Office 707
Santiago de Chile
Contact: asc.scl@damco.com, +56 (2) 828-9900
Emergency: David Peña, David.Pena@damco.com, +56 (9) 8156-8164

Damco Chile SA (Punta Arenas)
Warehouse #4, Prat Pier
O'Higgins #1385
Punta Arenas, Chile
Contact: asc.puq@damco.com, +1 720 568-2870
Emergency: Gonzalo Aviles, gonzalo.aviles@damco.com, +56 (9) 7548-3942

NOTE: Nothing may be charged to the Damco agent that has not been approved in writing by the Division of Polar Programs.

ECW Clothing

ECW clothing and accessories will be provided to you at no charge from the Punta Arenas warehouse. These must be returned to the warehouse immediately upon your arrival in Punta Arenas on your return from Antarctica. You are responsible for the safekeeping and accountability of all items issued and may be charged for loss or damage as a result of gross negligence or willful misconduct.

The ECW clothing issued is functional, sturdy, and cost effective. It includes special items of outer clothing required for the Antarctic climate, such as parkas and boots. To ensure an acceptable fit, be sure to provide accurate measurements on the ECW form submitted with your travel/deployment forms.

It is important that you try on **all** the ECW clothing (including boots) at your fitting session. Any sizing errors will be corrected at that time. The type and amount of clothing you receive depends on where you work and what your job entails. If you are new to the program, it is best to take all the clothing issued to you. There will be no additional clothing issued.

Participants deploying to the vessels and Palmer Station should note that there is a considerable amount of rain and other precipitation experienced on the peninsula. Any personal clothing choices should take this into account. Please see **www.usap.gov/usapgov/TravelAndDeployment/contenthandler.cfm?id=1860** for information regarding Peninsula ECW options.

Baggage

Due to crowded conditions on the research vessels, you should pack required clothing and personal items you'll need on the journey into a single piece of luggage. The remainder of your luggage will be stowed in the ship's hold and returned to you on arrival at the work site.

Only science equipment that is used in multi-year projects may be stored in the warehouse if approved in advance by the NSF.

photo by Elaine Hood

A cabin onboard the research vessel Laurence M. Gould.

To Palmer Station

Travel to Palmer Station and other peninsula research sites is primarily via the R/V *Laurence M. Gould*. The ship transit takes 4-5 days depending on routing. Once embarked, the ASC representative and ship's personnel will outline ship procedures, safety policies and room assignments.

Ship transits are usually crowded, so please comply with regulations and show courtesy in the common areas, hallways and dining areas. Remember that ships operate 24/7 and as such, crew members and staff are either working or sleeping at all times. Meals are provided free. If you are prone to motion sickness, consult with your personal physician prior to deployment. Over-the-counter-type pills (e.g., Meclizine) are often sufficient to relieve sea sickness.

On arrival at Palmer Station, please clean your cabin and ensure you take all your baggage and personal items with you when you disembark.

Return to Chile

Grantees: At least three weeks before you plan to return from the Antarctic Peninsula area to South America, give your northbound travel plan to the ASC administrative coordinator at Palmer Station or the marine projects coordinator on your ship. Identify any requirement for excess baggage or special handling of material. Airline and hotel bookings will be confirmed for you with

the appropriate agent. You should also ensure that any retrograde cargo is ready for transport: see "Retrograde (return) Cargo" in Chapter 4.

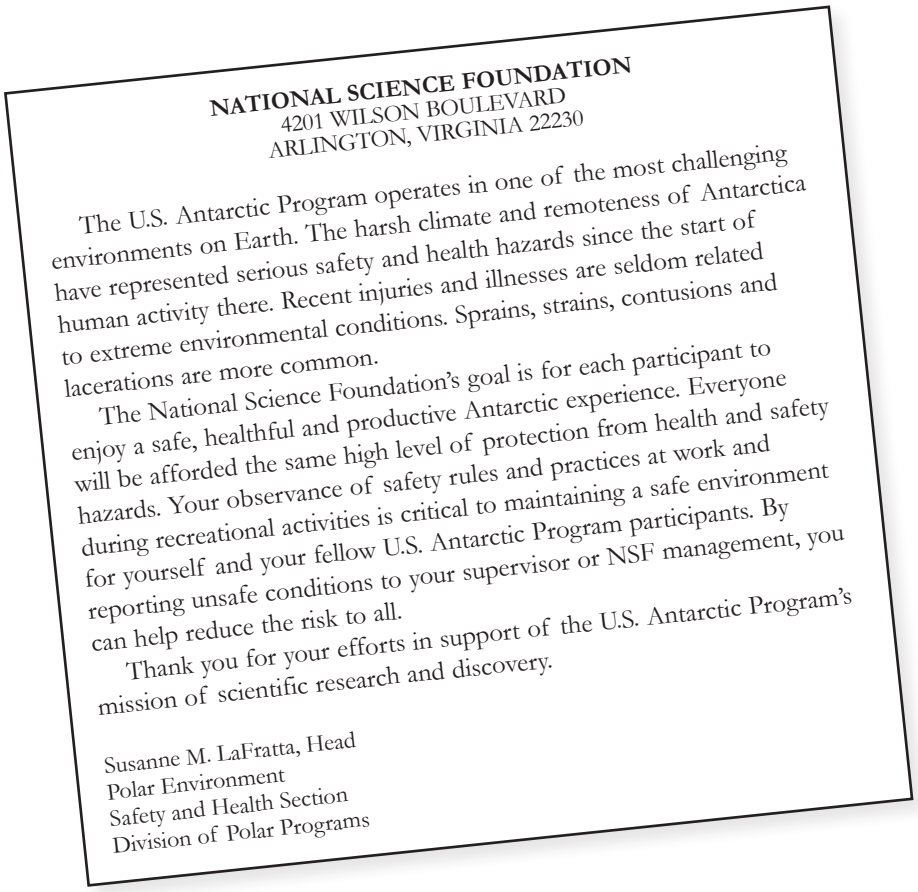
ASC Employees: Prior to completion of your contract, your departure will be scheduled; you will have indicated any travel plans.

On arrival in South America, you will be met by a Damco representative who will give you your return itinerary and collect your ECW clothing issue.

Individuals who plan personal travel following their return to Chile are responsible for their own transportation to the Punta Arenas airport, and will not receive a 'meet and assist' service in Santiago. Once leisure/personal travel commences, normal airline baggage policies apply. ■

CHAPTER 6:

Living and Working at U.S. Antarctic Program Facilities



NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

The U.S. Antarctic Program operates in one of the most challenging environments on Earth. The harsh climate and remoteness of Antarctica have represented serious safety and health hazards since the start of human activity there. Recent injuries and illnesses are seldom related to extreme environmental conditions. Sprains, strains, contusions and lacerations are more common.

The National Science Foundation's goal is for each participant to enjoy a safe, healthful and productive Antarctic experience. Everyone will be afforded the same high level of protection from health and safety hazards. Your observance of safety rules and practices at work and during recreational activities is critical to maintaining a safe environment for yourself and your fellow U.S. Antarctic Program participants. By reporting unsafe conditions to your supervisor or NSF management, you can help reduce the risk to all.

Thank you for your efforts in support of the U.S. Antarctic Program's mission of scientific research and discovery.

Susanne M. LaFratta, Head
Polar Environment
Safety and Health Section
Division of Polar Programs

The United States operates three year-round stations in Antarctica, two research vessels and numerous seasonal field camps in the summer. This chapter discusses safety, health and training considerations and then gives an overview of each facility, describing the key administrators, guidelines on waste management, and provides information about communications and mail service.

SAFETY

U.S. Antarctic Program goals are to protect your safety and health through proactive management.

Required training. Since much of your work in Antarctica will not be unique to that region, you are expected to use work practices that are consistent with U.S. occupational safety and health standards. For situations that present unusual or unique hazards associated with Antarctica's extreme environment, you will be provided specific instruction (e.g., how to act on sea ice or around airplanes).

Injuries are preventable. Injuries are caused by the unsafe actions of people and the existence of unsafe conditions. Most injuries are not chance occurrences, but represent a failure of safety systems. Following proper safety procedures and maintaining safe conditions will reduce injuries.

Everyone is responsible for preventing injuries. Safety and health performance are equally important to productivity, quality and cost. The safest way is always the best way. Everyone is accountable for the safety performance practices of participants and for the maintenance of safe, healthy work conditions under his/her responsibility.

All operating exposures can be safeguarded. Sources of hazards shall be controlled through careful planning, appropriate work procedures, training, inspections, and the proper use of protective equipment and clothing.

Safety is a condition of participation. Each USAP participant must accept responsibility for his/her personal safety and health, as well as that of fellow participants. Everyone is to conduct himself/herself in a safe manner, and follow policies, rules, procedures and work practices. Supervisors shall ensure compliance with these safety requirements by the people they supervise.

Risk Management. Safe operations in unique environments often require more than simply complying with established rules. Everyone must routinely evaluate and continually reevaluate the risks associated with each task or operation. Participants must refuse to proceed until unacceptable risks are controlled or eliminated. Risk is frequently defined as the combination of the probability an adverse event will occur and the severity of the consequences if it does occur. For example, it is likely (high probability) that a person would suffer serious or fatal hypothermia (severe consequences) if caught far afield in extreme conditions without proper clothing or equipment. Therefore, taking a snowmobile to a distant site without ECW clothing and other appropriate equipment would be a high-risk undertaking. This doesn't mean that distant sites cannot be visited; it just means the risks must be reduced to an acceptable level. The risks in this example might be controlled by taking proper gear and rescheduling the trip if especially harsh weather is forecast. Keep in mind that for emergencies in the Antarctic environment, it may take hours or days before help arrives. Also, one must not only consider the risk to one's self, but also the risks potentially imposed on rescuers and other response personnel. High-risk operations and activities are not acceptable unless a deliberate assessment of both risks and benefits has been conducted and approved by appropriate authorities.

People are the keys to safe operations. Safety awareness and a mindset that controls risks are not instinctive; they must be developed through training, motivation and cooperation. With the commitment and diligence of every participant, operations can be free of unacceptable risks.

All participants in the line of authority are responsible and accountable for:

- Evaluating the risks associated with every activity and refraining from performing high-risk operations.
- Preventing others from performing high-risk operations.
- Controlling high risks associated with essential tasks so that they can be performed with little risk of injury, illness or loss of property.
- Providing, using and enforcing the use of necessary personal protective equipment.
- Properly maintaining tools and equipment.
- Assigning participants only to tasks they are physically and mentally capable of performing.
- Taking immediate steps to correct any violation of safety rules observed or reported to them.
- Ensuring that subordinates understand the work to be carried out, the risks and hazards that might be encountered, and the proper procedures for doing work safely.
- Ensuring that subordinates understand that compliance with safety procedures and requirements is an essential part of their duties, and that willful violations are subject to disciplinary action.

Incident reporting. Any participant involved in or witnessing an accident or incident must report it to his/her supervisor or manager as soon as possible (no matter how minor). Accident or incidents may include injuries, spills, near misses, or unsafe conditions. Incident investigations must be completed within 72 hours of occurrence. Access to the ASC Incident Reporting form can be found through the ES&H webpage on the USAP intranet sites.

Safety

The five most common injuries are...

- Sprains/Strains
- Contusions (bruises)
- Lacerations (cuts)
- Fractures
- Eye damage

If you do have an injury…

- Get immediate medical attention.
- Never hesitate or delay going to Medical for treatment.
- Report it promptly.
- You could be penalized for not reporting an injury or a near-miss incident.
- Reporting and analyzing accidents is the best way we can prevent future incidents.
- Accidents or injuries caused by failure to follow safe work practices, procedures, or training could result in disciplinary action.

If you have people working for you…

- You are responsible for fostering a safe work place.
- You must ensure your employees are properly trained, work safely, maintain safe conditions, and are aware.
- In the event of an injury or incident, you must complete an injury or incident investigation report, and take corrective action.
- The report must be filed the day of the injury.

Fire Safety

Fire is a serious threat to life in Antarctica. Shelter is critical to our survival, and because of the dry and windy conditions, fires start easily and spread rapidly in Antarctica.

Most fires are caused by carelessness, poor housekeeping, or faulty electrical or mechanical operations. If precautions are taken to eliminate dangers in these areas, the threat of a disastrous fire can be greatly reduced.

All participants need to understand and obey fire prevention rules, become familiar with their surroundings, respond rapidly to any alarms, know and follow evacuation and muster plans, know how to locate and operate extinguishers, and understand how and where to report a fire.

FIELD SAFETY TRAINING

The U.S. Antarctic Program continually strives to improve safety. Part of this effort consists of field safety training, which includes a variety of specialized courses with the following objectives:

- To provide basic training in cold weather survival skills. Topics covered include risk assessment, cold weather camping, use of ECW, hypothermia and frostbite, working on sea ice, altitude awareness, glacier travel, and other areas.
- To enable field teams to use the actual equipment they will be using in the field. An opportunity for the project teams to set up and demonstrate the proper use of tents, stoves, radios, etc., pays obvious dividends.

- To provide an opportunity for field team members to work together as a unit, perhaps for the first time, before going into the field. This is an excellent opportunity for the field team leader, as well as the individuals on the team, to learn the strengths and weaknesses of the team members.

Generally, anyone leaving the established road system in and around McMurdo Station must complete training appropriate to his or her expected exposure, previous training and experience. Some courses are tailored to the needs of each group. For example: instructions for parties spending their time in the Dry Valleys, groups working on sea ice, and groups traveling long distances by snowmobile.

The courses are not intended to develop advanced field skills (mountaineering, or traversing crevasse fields, for example) in the inexperienced person. Rather, they familiarize proficient people with specific situations they might encounter in the Antarctic. Leaders of remote field projects should select team members with wilderness survival skills and at least one safety guide to oversee any activities that occur on technical terrain.

Due to the nature of the instruction, there is some risk of injury. The instructors have full responsibility for conducting the program safely. Please follow their directions. People who enter the training area to observe are also the responsibility of the course instructors; failure to respond to directions given by course instructors will result in being asked to leave.

Antarctic Field Safety (AFS) Courses

The following courses are provided at McMurdo Station.

Antarctic Field Safety (AFS) – 4 hour class; required annually for all personnel who will be traveling off the established trail system and/or riding in a helicopter.

Sea Ice Safety – 1 day; required for all personnel who will be working or traveling independently on the sea ice. A Sea Ice refresher course (45 min) is required for personnel who have taken the full course in recent previous seasons.

Altitude Safety – 2 hours; required for all McMurdo-based personnel who will be working at or above 8,000 feet without close support.

Glacier Travel Safety – 1.5 days; required for all personnel whose work requires travel in steep and/or crevassed terrain above firn line and/or on active glaciers.

GPS Training – 3 hours; required for all grantees working on the sea ice and highly recommended for all ASC participants who work on the sea ice.

Outdoor Safety Lecture (OSL) – 1 hour; required for all personnel who want to participate in any recreational activity in the immediate area surrounding McMurdo Station. There are hiking/skiing trails outside of McMurdo along flagged trails and it is important that proper procedures are followed.

Shakedown Courses

Deep Field – 2 days

Dry Valleys – 2 days

These customized courses are required for personnel going to field camps that are not already established and do not have 24-hour heated buildings with food/water provided and/or easily accessible. The Deep Field Shakedown is oriented to camps based on snow and the Dry Valleys Shakedown is for camps based on rock or ice. The AFS course must be completed prior to taking the Shakedown class.

HEALTH

The Field Manual for the U.S. Antarctic Program provides information on field party preparation, safety training, transport safety, radio usage, weather, shelters, sea ice, glacier travel, rescue, etc. You can find the manual online **www.usap.gov/TravelAndDeployment/contentHandler.cfm?id=540.**

photo by Elaine Hood

Sea Ice Safety training teaches participants how to determine the thickness of the sea ice and whether or not it is safe for travel.

Antarctica's extreme environment and relative isolation challenge human health and wellness. A medical clinic and physician are available at all three research stations. Health is a 24-hour-a-day consideration; it involves occupational and nonoccupational issues, both physical and mental. Emergencies risk not only the victim, but also others, such as medical personnel and flight crews who provide treatment and evacuation. This expenditure of money, labor, and equipment resources diminishes the ability to perform the program's principal mission of scientific research.

To help minimize risk, the program requires the advance medical screening described in Chapter 2. Certain medical conditions can present unexpected risks under Antarctic conditions, where each participant must be capable of physical activity wearing bulky cold-weather gear while being exposed to low temperatures and high altitudes, possibly under survival conditions.

Participants are reminded to bring your own supply of over-the-counter medications including aspirin, ibuprofen, cold medications and cough drops. The station medical clinic has only enough for emergency response and the station store has limited quantities.

Common colds. Although the "crud" waylays many travelers, it isn't true that exposure to cold temperature causes upper respiratory infections or colds. They are caused by a host of viruses spread by droplets. Covering your mouth when you cough/sneeze, not sharing cups and eating utensils, and washing your hands after coughing or sneezing will reduce exposure.

Colds usually last from seven to ten days with or without treatment. The best care is rest, adequate nutrition, and increased fluid intake.

Antarctica is a polar desert and very dry. In such a dry environment, large amounts of fluid are lost via your skin and lungs, and the mucous membranes lining your nose and mouth become dry and no longer protect you against viruses. Increase your fluid intake according to your location and your level of physical activity. Caffeine and alcohol will increase fluid loss, so avoid consuming large amounts of beverages/foods containing alcohol and caffeine, particularly if you are dehydrated. Chocolate and many soft drinks contain caffeine.

Research strongly suggests that maintaining an adequate level of vitamin D in the blood may reduce the frequency and severity of respiratory infections, such as colds and flu. Respiratory infections in Antarctica are often exacerbated by the dryness and can be quite severe. Eating well and getting plenty of sleep and fluids will go a long way toward keeping you healthy during your deployment. Sufficient daily doses of vitamin D3 may also be beneficial. Consult with your health care provider regarding your blood level of vitamin D and the proper daily dose. Vitamin D3 is not available at Antarctic stores, so if you do need it, you will have to bring an adequate supply with you.

photo by Elaine Hood

Dressing appropriately for outdoor work in Antarctica is critical.

Sunburn. Snow or ice reflects 85% of ultraviolet radiation. Overestimate the protection necessary and carry a sunscreen with an SPF number of 15 or greater that includes both UVA and UVB protection. Reapply frequently according to package directions.

Altitude sickness. Some of the field camps and Amundsen-Scott South Pole Station are at physiological elevations above 3,000 m (10,000 ft). The flight from McMurdo doesn't allow time to acclimate en route. If you are assigned to these areas, you should check with your doctor to see if living at high altitudes will affect any preexisting medical problem. A medicine called acetazolamide will be available at the McMurdo clinic. Treatment should begin up to 24 hours before leaving for the high altitude. This medicine is contraindicated for those allergic to sulfa medications. The signs of altitude sickness can include shortness of breath that is not relieved promptly by resting, headache, dizziness and difficulty sleeping. You will feel better if you avoid strenuous activities the first two days, increase fluid intake, stop or limit smoking, and avoid alcohol and caffeine. Altitude sickness can occur as late as five days after reaching altitude, and occasionally, could progress to a serious or life threatening condition. Anyone developing symptoms should see the local medical provider.

Snow blindness. Caused by exposure of the eyes to excessive light, at levels typical in Antarctica, this condition can be serious, painful and disabling. You prevent snow blindness by wearing 100% UV protective sunglasses. Snow goggles are issued to those who need them. Everyone in Antarctica must have sunglasses that protect the eyes from ultraviolet radiation. Some "dark" glasses do not block UV. They do more harm than good because the iris widens to admit more light. Sunglasses are especially important on windy days to protect against volcanic ash particles in the eyes. For more information, refer to Chapter 3: What and How to Pack.

Female considerations. Many women living in Antarctica experience a variety of changes in their menstrual cycles. It is thought that this occurrence may be due to the changing daylight cycles and to the close proximity of other women.

Smoking. In addition to the well-known health hazards, smoking greatly increases your chance of dehydration. Smoking is prohibited in all indoor areas at all three stations. The indoor ban includes e-cigarettes. There are designated outdoor smoking shelters. Put cigarette butts in appropriate containers – not on the ground.

RECREATION AND PERSONAL CONDUCT

A wide range of recreational opportunities are available while working for the U.S. Antarctic Program. McMurdo has the largest range of organized activities due to its size and facilities, while Pole and Palmer stations have more spontaneously organized events. Station-specific information is provided later in this chapter. Off-station activities such as hiking may be pursued in accordance with safety rules issued at the stations. Residents are encouraged to use the recreational facilities and activities. However, due to the conditions of the Antarctic continent, certain restrictions are required to ensure safety.

The work equipment you are issued is for authorized activities. You are authorized to use the U.S. government equipment issued to you only to accomplish your approved work.

The guidelines and operational procedures that govern your conduct while in Antarctica vary considerably at different locations and with changing conditions, particularly weather. Familiarize yourself with local knowledge at your station or camp, and follow local rules. It is impossible to write rules to cover all circumstances, and you are expected to regulate your own activities to avoid injury to yourself and hazards to others who might have to attempt rescue. Antarctica – every part of it – can suddenly and unexpectedly become a very dangerous place.

The use of any unmanned aerial vehicle or remotely piloted aircraft in Antarctica by U.S. Antarctic Program personnel is prohibited without specific authorization from the National Science Foundation.

Attendance of an **Outdoor Safety Lecture (OSL)** is required by McMurdo residents before they are allowed to recreate off-station. This one-hour class covers rules and guidelines for safe travel and explains the check-out process.

Safety briefings are provided at Pole and Palmer. Additional training is required at Palmer for boating.

Alcohol and Drugs

A limited amount of alcohol is available for purchase at the three Antarctic stations. Alcohol is not available on the research vessels.

The ability of a person to deal effectively with a mishap is reduced if he or she is intoxicated or under the influence of either drugs or alcohol. The NSF will not tolerate abuse of alcohol or drugs, including controlled, prescribed and over-the-counter.

With reasonable cause, testing for alcohol may be conducted while an employee is in active working status. Disciplinary action, up to and including termination, may occur if a person is determined to have any amount of alcohol in their system while on the job.

photo by Robyn Waserman

Hiking the Castle Rock loop, a 10-mile marked trail near McMurdo Station, is a popular recreational activity.

Existing grants are subject to revocation in the event of substance abuse.

Persons under the influence of alcohol or other controlled substances will not be allowed to board program aircraft or ships.

U.S. Criminal Jurisdiction

Public Law 98-473, the Comprehensive Crime Control Act of 1984 (Part H, chapter XII; 18 USC 7), extends Special Maritime and Territorial Jurisdiction to cover offenses committed by or against U.S. nationals in areas not under the jurisdiction of other states. Since, in accordance with provisions of the Antarctic Treaty, the United States does not recognize territorial claims in Antarctica, this law establishes that persons **can be prosecuted** in a federal court for violation of U.S. criminal law in Antarctica.

WASTE MANAGEMENT AND ENERGY CONSERVATION

The Antarctic environment requires us to pay close attention to aspects of life easily overlooked at home. Services we typically take for granted – abundant electrical power, plentiful potable water, ample food, convenient transportation, and timely and easy waste disposal – are scarce and expensive in Antarctica. Conservation and efficient management are imperative if the United States is to continue to support broad-based science programs in Antarctica. For that reason, and because of our commitment to preserving Antarctica for future research and discovery, the U.S. Antarctic Program requires that participants carefully think about what they bring, use, or throw away in Antarctica. Regulations governing waste management under the ACA specifically require that we change the way we think about trash.

Waste management is far more stringent in Antarctica than in the United States. Every work center is required to schedule a briefing regarding the waste management program, and all personnel are required to sort their own trash. Marked receptacles are located in work centers and lodging areas for separating solid waste (e.g., cardboard, recyclables, metal) and hazardous wastes (e.g., batteries, aerosol cans, fuel and oil).

Given that neither climate nor the remoteness of the southern polar region are naturally conducive to human life and work, everything needed to support scientific research in Antarctica must be shipped or flown in. The U.S. Antarctic Program waste management practices follow the same principle in reverse: All the program's refuse – except wastewater – is removed from the continent for proper disposal. What comes in must eventually go out.

The intent is to diminish the environmental impact of a sizeable human presence on a continent where cold, dry conditions tend to preserve things rather than degrade them. In addition, we must be efficient and cost effective in the allocation of resources necessary to handle waste generated in Antarctica in order to further the U.S. Antarctic Program's primary mission to support research. Like most waste reduction efforts in communities at home, the U.S. Antarctic Program operates according to the tenets of reduce, reuse and recycle.

Energy conservation. Energy moves, powers, melts, heats and lights the U.S. Antarctic Program, and it is a very significant operational cost. Participants are encouraged to do as much as possible to conserve energy while working in Antarctica. The more we can do to conserve energy, the more the NSF can do to support science.

Summer residents at the South Pole are restricted to two, two-minute showers and one load of laundry per week. Although there are no such restrictions for personnel at McMurdo and Palmer stations, everyone is expected to make efforts to conserve energy.

COMMUNICATIONS

Communications within Antarctica, and between Antarctica and other parts of the world, are a vital and integral part of research and support in Antarctica. The primary use of communications is

www.usap.gov 1-800-688-8606

to support official requirements of the USAP, including both science and operations. However, there are opportunities for personal use of communications on a "not to interfere" basis.

While in Antarctica, you can either use your own personal laptop or one of the Microsoft Windows computers provided for public use in the small computer centers available 24 hours a day at all three stations.

Mobile devices (Smart phones, iPads, etc.) are not allowed to access the USAP network by default. Remember, since there is no cell phone service at U.S. stations, your smart phone will not work as a "cell phone."

On the research vessels mobile devices are encouraged to be used when accessing the Internet, but will not be allowed to be connected to the ship's USAP network.

Internet is available at all three stations via the USAP network, the only network available. You are provided an account to access the USAP network upon arrival on station. You must complete USAP Information Security Awareness Training before receiving access to the network. Instructions for completing this training will be included in your deployment paperwork.

USAP Information Security Awareness Training includes the **USAP Enterprise Rules of Behavior (EntROB)**. When using the network, you are required to adhere to the USAP EntROB, which is based on federal laws, regulations and agency directives. As such, there are consequences for non-compliance, which can include appropriate administrative sanctions including dismissal, civil liability or criminal prosecution.

The Enterprise Rules of Behavior:

- applies to all resources that comprise the USAP information infrastructure and all users of USAP information resources.
- defines appropriate and acceptable use of USAP information resources.
- defines prohibited use of USAP information resources.

All USAP participants have a role in the protection of the USAP network and information, and are subject to USAP policies related to information security. The USAP Information Management Resource Directives are located on **www.usap.gov/technology/contentHandler.cfm?id=1563**. .

Computer Usage

Prohibited

- Distributing or copying of copyrighted material (DVDs, MP3s). Downloading of copyrighted material that was not legally purchased.
- Downloading pornographic, sexist, racist, or other offensive material.
- Internet video/voice communications that have not been pre-approved for business or educational outreach purposes.
- Network gaming.
- Personal servers (e-mail, FTP, web, etc.). Use of Secure File Transfer Protocol (SFTP) may be approved for use in situations where a bona fide business need exists.
- Personal wireless access points, routers, switches, or any other unauthorized network devices.
- Physically accessing, modifying, or altering configuration settings or in any way changing or disrupting any information system or network infrastructure.

Acceptable

- Mission-specific activity.
- Reasonable e-mail and Internet browsing.
- Reasonable Instant Messaging.
- Reasonable personal business (online banking, shopping, etc.).

South Pole Internet availability. If you are traveling to South Pole Station, note that the Internet is only available for a limited number of hours per day, when satellites are visible to the station. A routinely updated satellite coverage schedule is located online: **www.usap.gov/usapgov/technology/contentHandler.cfm?id=1935**.

E-mail. ASC personnel are provided with a U.S. Antarctic Program e-mail address upon arrival on station. You may also continue to use your private e-mail account (e.g., Yahoo), but must understand that you are using program bandwidth/resources and still must adhere to all EntROB. E-mails cannot exceed 10 MB. If you need to transfer a file that exceeds 10 MB for business or science purposes, contact the local station Help Desk.

Grantees are **not** assigned a U.S. Antarctic Program e-mail address unless one is either requested in your SIP or upon request once you arrive on station. If you do not request a U.S. Antarctic Program e-mail account, all local mail is sent to the e-mail address specified in your SIP. At McMurdo Station, grantees have access to IT equipment provided in the Crary Lab. Available equipment includes Macs, PCs, a scanner, a color printer and an E-size plotter.

Computer screening. All computers (including science experiments, mission operation systems, workstations, PCs, servers, laptops, portable notebooks, and mobile devices) are screened prior to connecting to the USAP network. All systems must pass a screening process that validates the system meets computer requirements before receiving access to the network. Additionally, all systems must continuously maintain compliance with the computer requirements. A system that falls out of compliance, such as falling behind in anti-virus definitions, patches or vulnerability remediation, may be disconnected without notice if the NSF determines there is an unacceptable level of risk or threat to the USAP environment.

For information on USAP computer requirements, refer to **www.usap.gov/usapgov/technology/index.cfm?m-4.**

Telephones. U.S. Antarctic stations and ships access commercial and government satellites for transmission of data and voice. This service is available for business and private use, although official communications have priority. The satellite systems are very reliable, but service outages do occur. A calling card is needed to place personal calls from all three stations in Antarctica. South Pole residents can place personal phone calls during satellite connectivity. Calling cards are not sold in the station stores, so a rechargeable one is recommended. Your personal cell phone will not work as a telephone due to lack of satellite coverage by your cell phone provider. All calls from U.S. Antarctic stations originate in Denver, Colorado. In other words, a phone call from McMurdo Station to New York City will have a long distance charge of a phone call from Denver to NYC.

Time zones. Different countries have different time periods for observing Daylight Savings Time, so time differences between your home in the United States and at the station where you are living will vary throughout the year.

South Pole and McMurdo stations operate on the same time as New Zealand, which is 16-18 hours ahead of the U.S. If it is Tuesday afternoon in the U.S., it will be Wednesday morning at those stations. Palmer Station operates on the same time zone as Chile. Several websites provide easy time zone guidelines. One example is **www.timeanddate.com.**

Field-party communications. Each station and ship uses hand-held and/or vehicle-mounted VHF radios for local communications. The observance of radio etiquette is necessary to ensure efficient and available radio communications. Keep messages short and professional. For more information on proper radio etiquette, contact the communications group for your station.

Before leaving for a lengthy field deployment or even for a day, you must inform the communications center of your intentions. Frequencies and call signs are assigned, and check-in procedures are

arranged. To avoid unnecessary search and rescue missions, every effort must be made to adhere to the established daily check-in. Immediately on returning from the field, inform the communications center that the party has returned safely.

Postal services. U.S. domestic postal rates and regulations apply to all Army and Air Force Post Office (APO) mail to New Zealand and McMurdo and South Pole stations. There is no APO service to Palmer Station and the research vessels. More specific postal information is **detailed later in this chapter**. While postage stamps can be purchased at all three stations, participants should bring a supply of stamps with them. Registered mail service is not available for the stations.

All NSF- and ASC-sponsored participants are granted use of the APO in Christchurch for 10 days on arrival in New Zealand from the United States and again for 10 days on return to Christchurch from McMurdo Station. The Christchurch APO only accepts credit/debit cards and personal checks.

You cannot order items via the Internet from Antarctica for courier delivery (e.g., FedEx) to the APO. The APO will not accept such deliveries. Alternatively, you can send mail and parcels through the New Zealand postal system at the international postage rate.

Mail is received in Christchurch seven days a week. Letter mail, also known as flat mail, is transported from Christchurch to Antarctica on all available southbound flights. Letter mail service varies, generally taking five to 14 days, but sometimes longer depending on the time of year. Letter mail always takes priority over package mail, both to and from Antarctica. Packages have the lowest priority of all cargo being transported to Antarctica, resulting in a delivery time of up to six weeks. Please do not send perishable foods.

Packages destined for summer participants at McMurdo or South Pole **should be mailed after Labor Day and before October 15.** Mail that misses summer participants is either forwarded (if a directory card has been given to the McMurdo post office), or returned to the sender.

There is no mail service to South Pole and limited mail to McMurdo during the winter.

The most cost-effective way to mail a parcel weighing more than 10 lbs. to Antarctica is parcel post. If you have a parcel that contains only videos, books or CDs, it can be sent special fourth class media rate, which is the lowest cost. Do not use single-use packing material and instead use clothing or something similarly useful and non-polluting to cushion the objects being mailed.

Do not rely on mail service for critical business, as the timing for delivery is always subject to weather, transportation options, cargo space, forwarding and your movement between locations.

Medicines should be mailed to you by your doctor or pharmacy in envelopes, not boxes, to ensure arrival as "flat mail."

Marketing of clothing or other finished articles, printed or manufactured outside of Antarctica, requiring shipment or transportation to Antarctica, is prohibited. **Usage of an APO address to mail articles for resale is not permitted.** This prohibition is based on federal law.

The Postal Service prosecutes people who mail items improperly. The Postal Service states, "full responsibility rests with the mailer for any violation of law under Title 18, United States Code 1716, which may result from placing these items in the mail."

Remember, all mail going to McMurdo, South Pole and surrounding field camps is subject to customs, agricultural and drug inspections as it passes through Christchurch.

For a complete listing of prohibited/restricted items, ask your local post office to show you a copy of Publication 52, Acceptance of Hazardous, Restricted, or Perishable Matter, or go to **www.usps.com** and conduct a search for Publication 52.

Mail to/from New Zealand. If you are corresponding with New Zealand residents, have them use this address to avoid the unnecessary time and expense of having the letter go to the United States:

[Participant's Name]
McMurdo Station
Private Bag 4747
Christchurch, New Zealand 8140

This address is a courtesy and must not be used for ordering large quantities of personal goods. All mail must comply with USPS regulation (e.g., no alcohol). The Christchurch postmaster reserves the right to refuse goods deemed excessive.

NOTE: Goods must go through the New Zealand post system. Items delivered by any other agency (e.g., FedEx) will be refused. If you are in any doubt, seek advice from the postmaster in McMurdo or Christchurch before posting mail.

Philatelic mail. Philatelists (stamp collectors) are interested in receiving mail from Antarctica, and the NSF has a procedure to support philately at a level not to interfere with the science mission.

While in Antarctica, you may receive unsolicited philatelic mail from collectors. The Foundation discourages this unauthorized philatelic activity, and you will be entirely within your rights in declining to respond to such unsolicited requests. Please discard the material in the appropriate recycling container.

If you receive large amounts of unsolicited philatelic mail, bring it to the attention of the station manager or the NSF representative.

Philatelists may obtain a maximum of two covers (self-addressed stamped envelopes) a year by writing to the postal clerks (addresses below) at the three year-round U.S. Antarctic stations.

- No more than two covers per person per station per year.
- Covers will be processed for personal (that is, noncommercial) use of individuals only.
- U.S. correspondents use domestic first-class postage for the APO addresses (below) and international first-class or air mail postage for the Palmer Station address.
- Non-U.S. correspondents use international first-class or airmail postage.

Philatelic Mail Clerk	Philatelic Mail Clerk	Deposito Franco Antartico
PSC 769	PSC 768	PO Box 60-D
APO AP 96599-9998	APO AP 96598-0001	Punta Arenas, Chile

Covers are not processed if these guidelines are not followed. Philatelic mail is processed and returned to senders as soon as possible, but the processing is in addition to regular duties of station personnel. Some processing is done during the austral winter, when antarctic stations are isolated, resulting in year-long (or longer) delays in mailing covers back to the collectors. ■

CHAPTER 7:

Stations and Ships

photo by Elaine Hood

McMurdo Station, the largest research station on the Antarctic continent, is the southernmost point on earth you can sail a ship. This photo view is to the south, with the flat white Ross Ice Shelf beyond Observation Hill.

The U.S. Antarctic Program has three permanent, year-round research stations and two research vessels. Additional temporary field stations are constructed and operated during the austral summer. As detailed previously in this book, participants are required to put safety and environmental protection first. Extra individual responsibility for personal behavior while living and working in Antarctica is also expected.

MCMURDO STATION

McMurdo (77°51'South, 166°40'East) is the main U.S. station in Antarctica. It is a coastal station on the barren low ash and lava volcanic hills at the southern tip of Ross Island, about 3,864 km (2,415 mi) south of Christchurch and 1,360 km (850 mi) north of the South Pole. The original station was constructed in 1955-1956. With many additions and modernizations over the years, today's station is the primary logistics facility for airborne and overland resupply of inland stations and for field science projects. The station is also the waste management center for much of the U.S. Antarctic Program. The Albert P. Crary Science and Engineering Center serves as the primary laboratory and research facility.

The mean annual temperature is minus 18°C (0°F). Temperatures may reach 8°C (46°F) in summer and –50°C (–58°F) in winter. The average wind speed is 12 knots, but winds have exceeded 100 knots.

Approximately 90% of U.S. Antarctic Program participants reside in or pass through McMurdo Station. The austral winter population ranges from 150 to 200, with the summer population varying between 800 - 1,000. The station has routine weekly flights from/to New Zealand

during the busy austral summer, known as Mainbody (October - February), with less frequent flights during the winter months between March and September.

McMurdo has two airfields. Phoenix Airfield, under construction at the time this publication was printed, is located about 18 km (11 mi) from McMurdo on the McMurdo Ice Shelf. Phoenix is expected to replace Pegasus White Ice Runway during the 2017-18 austral summer and will accommodate wheeled aircraft. Williams Field Ski-way, located about 15 km (9 mi) from McMurdo is for ski-equipped aircraft only.

McMurdo also has a heliport located on gravel at the edge of town.

McMurdo Sound is an historic area. On his voyage of 1839-1840, James Clark Ross brought his ships *Erebus* and *Terror* into the sound before sailing eastward along the front of the great ice shelf that now bears his name. In 1902, Robert F. Scott wintered the *Discovery* in Winter Quarters Bay, adjacent to the station. A hut he built in 1902 still stands. Scott in 1901-1903 and 1910-1913 and Ernest Shackleton in 1907-1909 and 1914-1916 deployed their sledging parties from the area. Other huts used by these expeditions, at Cape Royds and Cape Evans, still stand and are open on a limited basis for tours.

An active volcano, the 3,794-meter (12,447 ft) Mt. Erebus, is a landmark. On the west side of McMurdo Sound, the Royal Society Range, and an extinct volcano, Mt. Discovery, are spectacular vistas.

The **Movement Control Center** (MCC) provides a terminal operations function for all continental cargo and passenger movements. MCC coordinates passenger manifesting and transportation to and from the McMurdo area airfields in addition to providing support with cargo pallet building and airplane load planning. MCC personnel are also responsible for the loading and unloading of all fixed-wing airplanes (Twin Otter excluded), as well as operating the McMurdo-area shuttle vans.

Lodging at McMurdo Station is similar to college dormitories, with a community bathroom down the hall. Linens, blankets and pillows are provided, but towels, slippers or shower shoes, and toiletry containers are not. Participants are assigned at least one roommate. Roommate requests, including spouses or significant others, may not be honored for temporary McMurdo residents. Temporary residents are defined as ASC employees staying fewer than 30 days and grantees staying fewer than 15 days. Those transiting through McMurdo to the South Pole or field camps will be assigned to transient lodging. Due to round-the-clock operations, roommates may arrive at any time of the day or night.

Diesel-driven generators provide **electrical power** at 120 volts, 60 hertz, the same as in the United States. Reliability is good, but rare surges or outages could affect electronic equipment. Fresh water at McMurdo is made from seawater using reverse osmosis. Compared to taking it from a stream or a well, as we usually can do in the U.S., this is an expensive way to get fresh water, so everyone is encouraged to practice conservation.

Telephone calls can be made 24 hours a day from dorm rooms that have phones. Phone calls from Antarctica actually originate in Denver, Colorado. In other words, if you are placing a call to New York City, the charges will reflect a Denver to NYC long distance call. If you plan to make personal long distance phone calls, you will need to obtain a personal PIN either via a calling card or from an online company, for which you arrange payment. Business calls are made using a PIN, assigned by your supervisor or, for grantees, the Crary Lab supervisor. **Incoming calls are restricted to U.S. Antarctic Program business or emergency calls.**

Communication radios and pagers may be checked out through the communications department on station for business use.

Fax machine. Fax machines are available for limited use with permission of your supervisor. Grantees can use the Crary Lab fax machine whenever needed.

E-mail and Internet. The satellite infrastructure used to provide off-continent communications in Antarctica is limited. While mission activities can be supported with prior coordination, participants should have no expectations regarding service for non-mission activities. For example, using video chat applications such as Skype or Facetime or social media applications such as Facebook are restricted since they can impact the bandwidth available for science and operational traffic. Many high-bandwidth/inappropriate sites are blocked or de-prioritized to ensure mission traffic is able to move back and forth.

McMurdo Station has 24/7 access to the Internet over a very small (17Mb) link which is shared by the entire McMurdo community. Mission traffic takes priority over this link. The internet can be accessed 24/7 from McMurdo, however most sites respond very slowly compared to what you may e used to in the U.S.

General information about the USAP computer technology requirements can be found here: **www.usap.gov/usapgov/technology/index.cfm?m=4**. Changes to guidance occurs frequently, so please check the link regularly for new directions.

Mail. The post office at McMurdo offers all regular services (letter and package mail, stamps, etc.) and operates routine hours. It does not send COD mail. The post office only accepts credit/debit cards. There is limited mail service during the winter. Talk to your POC about the winter flight schedule.

Mail for WINFLY (mid-August) delivery should be sent after the first week in July or it will be returned. WINFLY transportation and space for parcel mail is limited. If there is not space available for your package, it will be held in Christchurch until space allows during Mainbody (October).

Packages destined for summer participants should be mailed **after Labor Day and before October 15**.

Your address in McMurdo will be:

[Your Name]
PSC 769 Box 700
APO AP 96599-9998

McMurdo Station has an **American Forces Radio and Television Service** (AFRTS) affiliated radio station and television station. They are supported and managed under the directive of the Defense Media Activity. The cable television programming consists of entertainment channels provided by the American Forces Network (AFN) and the Navy Motion Picture Service (NMPS). The programming includes a variety of news, sports, movies and general entertainment. Additional channels provide informational programming and include the emergency alert service, real-time weather and flight information, dining menu and other general community information.

The radio station broadcasts National Public Radio (NPR), AFN feeds consisting of popular music, news, talk radio, and local programming scheduled by volunteer deejays from the community. Participants may wish to bring a small radio for use in their dorm room or work center.

There are **recreational facilities,** including a library, clubs, climbing wall, gymnasium, weight room, aerobics room and band room. Volunteers organize art shows, chili cook-offs, running races, yoga classes, dances, league play, lessons, lectures, etc. DVDs, CDs, musical instruments, cross-country skis and other items are available for rental.

Laundry facilities and detergent are provided at no charge for personal use in the dormitories. Participants are responsible for washing linens and clothing.

Chaplain services are provided by a military chaplain. In addition to conducting regular worship services and religious programs, the chaplain accommodates all religious practices and is available for counseling, both religious and secular. The chapel program provides opportunities for volunteers to use their gifts in ministry and service.

Food service at McMurdo Station is cafeteria style. There is no charge for meals. Take as much as you want, but, to minimize cost and waste, eat all of what you take.

There are a variety of food options offered everyday. People with severe dietary restrictions or significant food allergies need to be prepared for limited choices. Gluten free, vegetarian and began menu items are often available, but not guaranteed.

After dining, if the room is crowded, please leave to make room for others. Arrange with the food service management for takeout meals for those ill or on duty. In addition to the regular three meals, a midnight meal is served in summer first to night workers and then the general population.

The **station store** stocks very limited supplies of toiletries and souvenirs.

Medical. The McMurdo Clinic provides health care on a walk-in and appointment basis during posted hours, six days a week. Hours are posted at the entry and on the McMurdo intranet. For emergencies, staff can be reached 24 hours by calling the fire dispatch emergency number (911). The facility is equipped to handle a wide range of minor illnesses and injuries, and to stabilize critical patients for evacuation. Services include X-ray, laboratory, pharmacy and nursing. A dentist is not available during the season although one may be deployed near the end of the summer to help with winter-over physical qualification. During the winter season, the physician has limited capability to treat and manage dental and rehabilitation needs. The clinic has a limited pharmacy and does not provide over-the-counter medications. You should bring adequate common over-the-counter medications to treat your needs.

All injuries should be evaluated at the clinic. The physician will work with the safety manager to determine whether a workman's compensation claim is filed. Injuries are tracked to identify potential health risks to our population.

Vehicles at McMurdo are for official use only, not for personal or recreational use. They are assigned to grantees or work centers. If your assignment requires driving a vehicle, you will receive training in proper use and preventive maintenance.

Waste. It is the responsibility of all persons to keep the station presentable by properly sorting and disposing of packing materials and other waste, which is recycled to the extent practical. By entering a U.S. Antarctic station, you automatically consent to abide by local procedures prescribed for waste management. See Waste Management in this chapter 6 for some of the rules. Other details will be provided to you.

Albert P. Crary Science and Engineering Center (CSEC). The Crary Lab was built in the late 1980s and dedicated in November 1991. Its dedicated name is in honor of the geophysicist and glaciologist Albert Paddock Crary (1911-1987), the first person to reach both the North and South Poles. Crary was designed as a state-of-the-art laboratory facility, supporting scientists spanning a great number of fields within biology, geology, physics, chemistry and system sciences.

Crary Lab is one of the main buildings at McMurdo Station, with more than 46,500 ft.^{2} (4,320 m.^{2}) of working space. The lab provides a variety of general use consumables, glassware, equipment, instrumentation, chemicals, cryogens, cold storage units, laboratory materials and general laboratory Personal Protective Equipment (PPE). Specialized gear and specialized PPE are brought to McMurdo by deploying science teams.

The Crary Lab was built in three phases with a total of five sections. Each section was designed to facilitate a particular purpose. Phase I, South Side, provides the greatest variety with a library, shared-use computers, conference rooms, administrative and staff offices, shared equipment rooms, a cargo receiving area and equipment/material storage areas. Phase I, North Side, contains laboratories for biology and chemistry work, microscope rooms with light, petrographic and fluorescent scopes, office spaces, environmental and walk-in freezer rooms, and a staging area equipped with a carpentry work bench. Phase II, South, and North Side, contains laboratory space for physics, geology, glaciology, and engineering work, Rock sectioning rooms, staging areas, cold rooms for ice core work, office spaces and the IT office. Phase III contains aquarium tanks, a flow

through seawater system and a few wet laboratories designed to support work on live animals, as well as test sea-bound equipment before it is deployed.

The laboratory is managed by ASC with direction from the NSF. Crary is staffed with support personnel including facilities engineers, IT support, materials and supply specialists, lab supervisors, a cryogen/chemical specialist, a research associate, and an instrument technician. The staff provides direct assistance for the hundreds of scientists who that move through the station each year. More specifically the staff allocates and redistributes resources and ensures operations comply with safety, environment and health requirements. All scientists are expected to arrive to McMurdo trained in their respective disciplines or be accompanied by a team member who provides guidance.

Scientific posters and displays are found throughout the lab, and the McMurdo community is encouraged to visit the facility to learn more about U.S. Antarctic Program research. Tours are provided on Sundays by the laboratory staff, and science lectures are presented by visiting researchers twice a week and occasionally for night shift workers. Special events and tours are often held throughout the season to further encourage community and scientific interaction.

AMUNDSEN-SCOTT SOUTH POLE STATION

This station, at the geographic South Pole, is on the polar plateau at an elevation of 2,835 m. (9,300 ft). It is situated on a 2,700 m. (9,000 ft.) –thick plateau of ice. It is 850 nautical miles south of McMurdo. The station is drifting with the ice sheet at about 10 m (33 ft.) a year.

The original station was built in 1956-1957, and is now buried beneath the snow. The second station, located under a geodesic dome, was completed in 1975. The Dome was dismantled in 2009-10 and removed from the continent. The current station was dedicated on January 12, 2008. The winter population is around 45 and the summer population averages 150.

Most U.S. Antarctic Program personnel will reach the South Pole from McMurdo Station via LC-130 airplanes. Cargo and fuel are transported by over-snow traverse, in addition to airplanes, from McMurdo Station. The short austral summer season, when most activity occurs, is from late October through mid-February. The station is isolated for the majority of the year, from mid-February through late October.

The mean annual **temperature** is –49°C. (–56°F.). Average monthly temperatures range between –28°C. (–18°F.) in the summer and –60°C. (–76°F.) in winter. The record high of –l2.3°C. (9.9°F.) was recorded in December 2011, and the record low of –82.8°C. (–117°F.) was recorded in June 1982. Precipitation is about 20 cm. of snow (8 cm. water equivalent) per year, with very low humidity. Drifting is the primary factor in accumulation of snow around the buildings. Average wind speed is 10.8 knots.

Research includes astronomy and astrophysics, aeronomy, auroral, and geospace science studies, meteorology, geomagnetism, seismology, earth-tide measurements, and glaciology.

Telephone calls can be made from the South Pole during satellite coverage. Remember to bring a calling card for personal calls. Charges for these calls originate in Denver, Colorado. In other words, if you are placing a call to New York City, the charges will reflect a Denver to NYC call. Science, business and emergency related calls can be made with an Iridium phone during times of no satellite coverage. Incoming emergency calls must be routed through ASC or the NSF.

There is no fax machine service available at South Pole. Scanned images of documents are transmitted via e-mail to eFax, a company that faxes the document to the recipient. For incoming service, faxes are sent to eFax, which then e-mails it to the Pole, where it is printed.

Internet. The satellite infrastructure used to provide off-continent communications in

photo by Paul Sullivan

The Elevated Station at South Pole contains dorm rooms, offices, cafeteria, gymnasium, a store and post office.

Antarctica is limited. While mission activities can be supported with prior coordination, participants should have no expectations regarding service for non-mission activities. For example, using video chat applications such as Skype or Facetime or social media applications such as Facebook are restricted since they can impact the bandwidth available for science and operational traffic. Many high-bandwidth/inappropriate sites are blocked or de-prioritized to ensure mission traffic is able to move back and forth.

South Pole Station has very limited access to the Internet during short windows of satellite time. For an up-to-date look at the satellite schedule, please visit **www.usap.gov/usapgov/technology/contentHandler.cfm?id=1935**.

General information about the USAP computer technology requirements can be found here: **www.usap.gov/usapgov/technology/index.cfm?m=4**. Changes to guidance occurs frequently, so please check the link regularly for new directions.

E-mail on the USAP network is available only during satellite coverage. Business, science, or emergency e-mails may be sent or received outside of satellite hour utilizing restricted group-based e-mail accounts.

Mail. South Pole has postal services where stamps can be purchased and mail posted. However, it does not offer any registered services or sell money orders. Mail is placed aboard resupply airplanes and routed through McMurdo Station.

Packages destined for summer participants should be mailed after Labor Day and before October 15. Your address at South Pole (both summer and winter) will be:

[Your Name]
PSC 768 Box 400
APO AP 96598-0001

Meals. Food service at the South Pole is cafeteria style with three meals served daily. There is no charge for meals. Take as much as you want, but eat all of what you take. Remember, every piece of food thrown in the garbage has to be flown out of Pole.

There are a variety of food options offered everyday, and though some food accommodations may be made, people with severe dietary restrictions or significant food allergies need to be prepared for limited choices. People with dietary restrictions should contact the food service management regarding dietary concerns, preferably before deployment.

Arrange with the food service management for takeout meals for those ill or on duty. Volunteers provide assistance with dish washing and on special occasions.

Housekeeping chores are shared by all personnel on a rotating basis. All residents participate in cleaning residential bathrooms and most work centers have weekly station chores as well.

The **station store** stocks very limited supplies of toiletries and alcoholic beverages. A small variety and quantity of Antarctic and South Pole souvenirs are available for purchase. Only cash and travelers checks are accepted at the store.

Money. There is **no ATM nor credit card usage** available at the South Pole due to the limited satellite availability. ASC employees may be able to have funds taken out of their paychecks and obtain this money in cash while on station. There are **no check cashing services** available

at South Pole. **Non-ASC participants (grantees) must bring all of their cash with them to South Pole.**

Lodging. Lodging facilities at the South Pole are very limited. There are 154 rooms in the Elevated Station.

Water conservation at South Pole Station is critical. Participants are limited to **two, two-minute showers** each week.

Laundry facilities and detergent are provided free of charge, but due to water conservation, participants are only allowed one load of laundry each week.

Recreational facilities. There is a large gymnasium, weight/cardio room, sauna, small arts & crafts room stocked with basic supplies, quiet reading room, small greenhouse with public lounge, two movie lounges, pool room and a music room stocked with basic instruments.

Medical. A physician is accessible on station at all times.

Altitude sickness. Amundsen-Scott South Pole Station is at a physiological elevation above 3,000 m (10,000 ft). The flight from McMurdo doesn't allow time to acclimate en route. You should check with your doctor to see if living at the high altitude will affect any preexisting medical problem. Altitude medicine will be available at McMurdo Clinic. Treatment should begin 24 hours before leaving for the high altitude. This medicine is contraindicated for those allergic to sulfa medications. The signs of altitude sickness are shortness of breath that is not relieved promptly by resting, headache, dizziness, and difficulty sleeping. They can be minimized by avoiding strenuous activities the first two days, increasing fluid intake, stopping or limiting smoking, and avoiding alcohol and caffeine. Altitude sickness can occur as late as five days after reaching altitude, and occasionally, can progress to a serious medical condition requiring evacuation to a lower altitude. Anyone developing symptoms should see the local medical provider.

PALMER STATION

Although the United States has had long historical ties to the Antarctic Peninsula, it did little work there until 1965 when a small biology facility, Palmer Station, was established. It is named after Nathaniel B. Palmer, the American sealer who pioneered exploration of the Peninsula area in 1820. In 1970, the new and current station was completed on Anvers Island, at 64°46' South, 64°03'West. The station, built on solid rock, consists of two major buildings and three small ones, plus two large fuel tanks and a dock.

Ship access is usually year-round. Tour ships and sailing yachts visit frequently during the summer months. There is no airfield for fixed-winged aircraft.

Wildlife at Palmer Station is abundant, which makes it superbly located for biological studies of birds, seals, and other components of the marine ecosystem. It has a pier and facilities for the research vessels that support logistics and research in the marine sciences. It has a large and extensively equipped laboratory and seawater aquarium. Meteorology, upper atmosphere physics, glaciology, seismology and geology are also pursued at and around Palmer Station. The immediate vicinity is a dedicated Long Term Ecological Research (LTER) site. As with elsewhere in Antarctica, all interactions with wildlife are strictly governed by the Antarctic Conservation Act.

Station population is about 44 in the summer and 20 or more in winter. Unlike South Pole and McMurdo Stations, Palmer usually receives transportation year-round and does not generally have a distinctive period of winter isolation.

Palmer Station is a community where all residents share responsibility for the station. Everybody participates in station clean up, radio watch and hosting visitors. Residents are encouraged to share their time and talents to improve the station and the community experience.

photo by Julian Race

Palmer Station, the smallest of the three U.S. Antarctic Program research stations is supplied by the research vessel Laurence M. Gould.

Palmer's climate is milder than that of the other U.S. Antarctic stations, as it is farther north and it is influenced by a polar-maritime air mass. Temperatures in the summer season range from just below freezing to above 4°C (40°F). Winter temperatures range between freezing down below minus 10°C (14°F) in the winter. Palmer Station is often windy and wet with both snow and rain. The water equivalent in snow and rain averages 81cm (32in) per year.

Science. The science resources at Palmer Station are managed by ASC with direction from the NSF. It is the responsibility of the ASC Palmer Science Implementation Manager to ensure that operations comply with safety, environment and health requirements. All users are provided with a chemical hygiene plan. The NSF urges users and visitors to keep the laboratory spaces clean and safe.

Tourism. During the summer season, a limited number of tour ships and yachts will visit the station. Members of the community participate in preparing for these visits, giving tours of the station or working in the store.

Boating. Training is required before participants are allowed in the small boats. Depending on your position, you may be required to complete Boating I, Boating II, or The Islands Course, which covers the location of survival caches, signaling, radio operations, survival skills, cold water immersion, etc.

Vehicles consist mainly of Zodiac boats, snowmobiles and all-terrain vehicles.

Lodging at Palmer Station is similar to college dormitories with community bathrooms down the hall. Linens, blankets and pillows and towels are provided. Participants are assigned a roommate. Washing machines, dryers and detergent are provided. Everyone participates in cleaning the station, as there is no janitorial staff.

Water conservation is encouraged but usage is not restricted.

Meals. Food service at Palmer Station is cafeteria style. There are a variety of food options offered every day but Sunday, when there are ample leftovers available. People with severe dietary restrictions or significant food allergies need to be prepared for limited choices. Gluten free, vegetarian, and vegan menu items are often available, but not guaranteed.

Medical. A physician with emergency dental training, is accessible on station at all times.

Recreation opportunities include an exercise room with weights and cardio equipment. There is also a self-service bar with billiard and ping pong tables. There is a variety of arts and craft supplies and woodworking materials available. The station also has a sauna and an outdoor hot tub.

There is no live TV or radio, but videos and DVDs are available for viewing on a large screen projector in the lounge.

Boating is available to those who have received training. It is a popular recreational activity for viewing local wildlife and is available as weather permits. For outdoor recreation, there is limited selection of cross-country skis and snowshoes and camping equipment for short term use.

A small **station store** stocks toiletries, over the counter medicines, souvenirs and beverages.

Telephone calls can be made from Palmer Station and each room has a phone with a Denver, Colorado phone number. You should purchase a rechargeable PIN for personal calls. Charges for these calls originate in Denver, Colorado. In other words, if you place a call to New York City, the charges will reflect a Denver to NYC call.

Fax machine and scanners are available.

Internet. Palmer has a 3 Mbps satellite link which provides Internet, data transfer, and telephone service. The connection is shared by 44 people at Palmer and by up to 97 when the research vessel *Laurence M. Gould* is at the pier. For comparison, cable and DSL Internet connections range from 20 to 250+ Mbps for a single household in the US, and 4G LTE phones average 12 Mbps continuous download speeds.

Due to the very limited Internet bandwidth at Palmer Station, please bring all necessary software, files, and entertainment (movies, TV series, music) with you rather than trying to download once you are at Palmer. Large downloads and streaming media do not work well and impact everyone else on station.

General information about the USAP computer technology requirements can be found here: **www.usap.gov/usapgov/technology/index.cfm?m=4**. Changes to guidance occurs frequently, so please check the link regularly for new directions.

Mail. There is no APO service available to Palmer Station and the station has no post office. Mail reaches Palmer Station on each southbound vessel, about once a month. Friends and family should send letters and limited small packages (smaller than a shoe box) to the ASC office about two weeks in advance of the ship's scheduled departure from Punta Arenas. Packages should include a packing list and will be opened and inspected prior to sending on to the station.

Mail should be sent to:
[Your Name]
[Palmer Station or Vessel Name]
c/o ASC
7400 S. Tucson Way
Centennial, CO 80112-3938

RESEARCH VESSELS

The **R/V *Nathaniel B. Palmer*** *(NBP)* began science operations in late 1992 when it sailed from Punta Arenas in support of the Russian-United States Ice Camp Weddell. Since then, the 94-meter (308 ft) *NBP* has sailed more than 110 science cruises, and it is now into its second long-term charter in support of U.S. Antarctic Program marine science research.

The *NBP*'s main engines provide a total horsepower of 12,700. This rating, along with hull strength and other criteria, combine to qualify it for classification by the American Bureau of Shipping (ABS) as an ABS Maltese Cross A1, Maltese Cross AMS, Ice Class A2, icebreaker (able to break three ft of ice at a continuous forward speed of 3 knots). A modern, multi-disciplinary research vessel, the *NBP* has six laboratories totaling 353.5 m^2 (3,800 ft^2). It can accommodate 39 scientists and ASC crew.

The *NBP* has worked in many areas of the Southern Ocean, including the Ross and Weddell seas, the Bransfield Strait, and has completed two circumnavigations of Antarctica in support of research projects.

The **R/V *Laurence M. Gould (LMG)*** began its service in Antarctica on January 16, 1998. A new contract with the NSF ensures that the vessel will continue Antarctic research and resupply missions until the year 2020. Since 1998, the *LMG* has sailed in support of more than

photo by Julian Race

The research vessel Nathaniel B. Palmer.

80 science cruises. This ABS Maltese Cross A1, Maltese Cross AMS, Ice Class A1, 70.2-meter ship, has an available horsepower of 4,576 in open water operations and 3,900 horsepower during operations in ice. The A1 rating classifies the *LMG* as being capable of breaking one foot of first-year ice while maintaining continuous forward progress. It has berthing space to accommodate a total of 28 scientists and ASC personnel. There are an additional nine bunks for passengers transiting to Palmer Station.

The *LMG* works primarily in the Antarctic Peninsula region, transporting support and science personnel and cargo to and from Palmer Station and supporting research throughout the peninsula area. Voyages are also made farther afield, including the Weddell Sea.

Both vessels are equipped with an enclosed Baltic Room, a diverse sonar suite, a specially designed aquarium room, moon pool, and an uncontaminated seawater system delivering water to several labs. The *NBP* seawater supply is also available on the 02 Level's Helo Deck.

Both the *NBP* and *LMG* are owned and operated by Louisiana-based Edison Chouest Offshore (ECO) and were built by North American Ship Building, a subsidiary of ECO located in Larose, Louisiana.

Living conditions on the research vessels include two-person cabins; private toilets and showers are available in each cabin. Each ship has laundry facilities, exercise rooms, and TV lounges with DVDs. Cafeteria-style meals are provided. Be aware that travel on the U.S. Antarctic Program research vessels often involves passing through some of the roughest seas in the world. If you are prone to motion sickness or have never sailed before, consult with your personal physician for the appropriate medication before you leave home.

E-mail is available on both ships and is sent and received every 30 minutes. The message size and the use of the attachments in e-mail from the vessels are limited to 10 MB per message. There is limited Internet access available while at sea. Please consult your POC for the current vessel e-mail and Internet access policy.

Telephone service via the Iridium satellite phone system is available for personal use at no cost via a morale phone. Calls on this phone should be limited to 10 minutes.

Mail to participants on the research vessels can be routed through Damco in Punta Arenas. Please consult the mail information described under Palmer Station to find appropriate mailing addresses. For cruises originating in New Zealand or elsewhere, please consult your POC for mailing instructions.

For more information, go to **www.usap.gov/vesselScienceAndOperations**.

FACILITY ADMINISTRATION

The NSF, a federal agency, plans, funds, manages and coordinates the U.S. Antarctic Program in accordance with U.S. government policy.

The Department of Defense (U.S. Air Force, Air National Guard, Army, Military Sealift Command, and Air Mobility Command) and the Department of Homeland Security (Coast

Guard) provide logistics, as requested by the NSF, on a reimbursable basis. The NSF contracts with ASC for station operating support services, science support services, operation of the research vessels, for facilities planning and construction, and logistics services.

Senior U.S. representative in Antarctica. The director of the NSF has designated the Division of Polar Programs director as the senior U.S. representative in Antarctica, or SUREPA. During the austral summer operating season, the director sometimes designates ranking officials of the U.S. Antarctic Program to serve as senior U.S. representative in Antarctica. The official designated is normally located at McMurdo Station during the summer operating season. The senior U.S. representative ensures that U.S. policy and directives for the U.S. Antarctic Program are implemented, represents the United States as it interacts with foreign nations in Antarctica, ensures that U.S.-sponsored Antarctic activities are carried out consistent with the Antarctic Treaty, and takes appropriate action in personnel matters not subject to military or other authority. At McMurdo, the SUREPA's office is located in the NSF Chalet.

NSF representative. The NSF representative, a rotating position, is on the continent throughout the austral summer and is the Foundation's principal representative for implementing the planned field operations. He/she coordinates and establishes on-site priorities for field support of U.S. Antarctic Program activities, coordinates the supervision and direction of the NSF contractor's efforts at McMurdo and the inland sites, and serves as an NSF spokesperson. The NSF representative has an office located in the Chalet at McMurdo Station.

NSF science representative. The NSF science representative is the Foundation's principal representative for Antarctic science activities, interacts with investigators and the NSF representative to set science-support priorities, gives on-site direction to the ASC laboratory services manager on science matters, and serves as the NSF science spokesperson. The position is occupied by different NSF science program managers over the course of the summer. At McMurdo Station, the NSF science representative has an office in the Albert P. Crary Science and Engineering Center.

NSF McMurdo Station Manager. The NSF McMurdo Station manager is a year-round position at McMurdo whose function is to oversee operation of station facilities and serve as Deputy Marshal. The manager interacts with all organizations represented at McMurdo. In winter, the NSF manager is the ranking U.S. government official at McMurdo and is responsible for managing emergency situations.

Commander Joint Task Force Support Forces Antarctica (CJTF SFA). The commander of Department of Defense support forces in the U.S. Antarctic Program. The CJTF SFA is located at Hickam Air Force Base, Hawaii.

13th Air Expeditionary Group Commander (13 AEG/CC). The 13th AEG commander is the designated commander of all military forces deployed to the Joint Operations Area as part of Joint Task Force Support Forces Antarctica.

NSF representative, Antarctic Peninsula. The NSF representative, Antarctic Peninsula, is resident at Palmer Station or aboard research vessels during a part of the austral summer. This person coordinates U.S. activities in the Peninsula area.

NSF representative, South Pole is resident at South Pole Station during a part of the austral summer. This person coordinates U.S. activities at South Pole Station.

ASC area manager. ASC has an area manager at McMurdo, South Pole and Palmer stations during the austral summer. This person, in conjunction with the senior ASC representative, oversees all contractor support activities. An ASC winter site manager serves in this role during the winter months at each station. An Area Manager may be supplemented with a site manager during the austral summer depending on station and scheduled workload.

Station science leader. The NSF designates a science leader for U.S. Antarctic Program stations. The station science leader is directly responsible to the Division of Polar Programs when no NSF representative is on the continent. Researchers at each station, or working out of the station, are responsible to the station science leader, who coordinates science projects and arranges for the logistics needed to support them. Researchers request support from the station science leader during the winter, who consults with the NSF station manager (at McMurdo) or the station manager (at South Pole or Palmer stations) to arrange the support. The station science leader clears official messages concerning research projects before dispatch.

ASC winter site manager. This position is responsible for all station support activities including local support for science projects. At McMurdo Station, the NSF station manager is designated as the senior official on station. At South Pole and Palmer, the winter site manager and support personnel maintain the station and support the research projects.

Marine project coordinators (MPC) are provided by ASC on both research vessels who coordinate and direct shipboard activities in conjunction with the ship's master. The MPC and the ship's master make all decisions regarding the safe conduct of the ship. ■

APPENDIX A:

The Antarctic Treaty

Twelve nations signed the Antarctic Treaty on December 1, 1959 in Washington, D.C. The signatory nations were: Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of Soviet Socialists Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. The Antarctic Treaty entered into force on June 23, 1961; the 12 signatories became the original 12 consultative nations.

Seventeen additional nations (Brazil, Bulgaria, China, Czech Republic, Ecuador, Finland, Germany, India, Italy, Netherlands, Peru, Poland, Republic of Korea, Spain, Sweden, Ukraine and Uruguay) have achieved consultative status by acceding to the treaty, and by conducting substantial scientific research in Antarctica. Russia carries forward the signatory privileges and responsibilities established by the former Soviet Union.

Another 24 nations have acceded to the Antarctic Treaty: Austria, Belarus, Canada, Colombia, Cuba, Democratic Peoples Republic of Korea, Denmark, Estonia, Greece, Guatemala, Hungary, Iceland, Kazakhstan, Malaysia, Monaco, Mongolia, Pakistan, Papua New Guinea, Portugal, Romania, Slovak Republic, Switzerland, Turkey, and Venezuela. These nations agree to abide by the treaty and may attend consultative meetings as observers.

The 50 Antarctic Treaty nations represent about two-thirds of the world's human population.

Consultative meetings have been held approximately every other year since the treaty entered into force, but since 1993 they typically have been held annually. Each meeting has generated recommendations regarding operation of the treaty that, when ratified by the participating governments, become binding on the parties to the treaty.

Additional meetings within the Antarctic Treaty system have produced agreements on conservation of seals, conservation of marine living resources, and comprehensive environmental protection (The Protocol on Environmental Protection to the Antarctic Treaty). More can be learned about the Antarctic Treaty at: **www.ats.aq/index_e.htm**

[Preamble]

The Governments of Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, The Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

Recognizing that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;

Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;

Convinced that the establishment of a firm foundation for the continuation and development of such cooperation on the basis of freedom of scientific investigation in Antarctica as applied during the International Geophysical Year accords with the interests of science and the progress of all mankind;

Convinced also that a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations;

Have agreed as follows:

Article I
[Antarctica for peaceful purposes only]

1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.
2. The present treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purposes.

Article II
[freedom of scientific investigation to continue]

Freedom of scientific investigation in Antarctica and cooperation toward that end, as

applied during the International Geophysical Year, shall continue, subject to the provisions of the present Treaty.

Article III
[plans and results to be exchanged]

1. In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:
   (a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;
   (b) scientific personnel shall be exchanged in Antarctica between expeditions and stations;
   (c) scientific observations and results from Antarctica shall be exchanged and made freely available.
2. In implementing this Article, every encouragement shall be given to the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica.

Article IV
[territorial claims]

1. Nothing contained in the present Treaty shall be interpreted as:
   (a) a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;
   (b) a renunciation or diminution by any Contracting Party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;
2. No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty shall be asserted while the present Treaty is in force.

Article V
[nuclear explosions prohibited]

1. Any nuclear explosions in Antarctica and the disposal there of radioactive waste materials shall be prohibited.
2. In the event of the conclusion of international agreements concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material, to which all of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX are parties, the rules established under such agreements shall apply in Antarctica.

Article VI
[area covered by Treaty]

The provisions of the present Treaty shall apply to the area south of 60° South latitude, including all ice shelves, but nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area.

Article VII
[free access for observation and inspection]

1. In order to promote the objectives and ensure the observation of the provisions of the present Treaty, each Contracting Party whose representatives are entitled to participate in the meetings referred to in Article IX of the Treaty shall have the right to designate observers to carry out any inspection provided for by the present Article. Observers shall be nationals of the Contracting Parties which designate them. The names of the observers shall be communicated to every other Contracting Party having the right to designate observers, and like notice shall be given of the termination of their appointment.
2. Each observer designated in accordance with the provisions of paragraph 1 of this Article shall have complete freedom of access at any time to any or all areas of Antarctica.
3. All areas of Antarctica, including all stations, installations and equipment within those areas, and all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica, shall be open at all times to inspection by any observers designated in accordance with paragraph 1 of this Article.
4. Aerial observation may be carried out at any time over any or all areas of Antarctica by any of the Contracting Parties having the right to designate observers.
5. Each Contracting Party shall, at the time when the present Treaty enters into force for it, inform the other Contracting Parties, and thereafter shall give them notice in advance, of
   (a) all expeditions to and within Antarctica, on the part of its ships of nationals, and all expeditions to Antarctica organized in or proceeding from its territory;
   (b) all stations in Antarctica occupied by its nationals; and
   (c) any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in paragraph 2 of Article I of the present Treaty.

Article VIII
[personnel under jurisdiction of their own states]

1. In order to facilitate the exercise of their functions under the present Treaty, and without prejudice to the respective positions of the Contracting Parties relating

to jurisdiction over all other persons in Antarctica, observers designated under paragraph 1 of Article VII and scientific personnel exchanged under subparagraph 1(b) of Article III of the Treaty, and members of the staffs accompanying any such persons, shall be subject only to the jurisdiction of the Contracting Party of which they are nationals in respect to all acts or omissions occurring while they are in Antarctica for the purpose of exercising their functions.

2. Without prejudice to the provisions of paragraph 1 of this Article, and pending the adoption of measures in pursuance of subparagraph 1(e) of Article IX, the Contracting Parties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.

Article IX
[Treaty states to meet periodically]

1. Representatives of the Contracting Parties named in the preamble to the present Treaty shall meet at the city of Canberra within two months after date of entry into force of the Treaty, and thereafter at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their Governments, measures in furtherance of the principles and objectives of the Treaty including measures regarding:
   (a) use of Antarctica for peaceful purposes only;
   (b) facilitation of scientific research in Antarctica;
   (c) facilitation of international scientific cooperation in Antarctica;
   (d) facilitation of the exercise of the rights of inspection provided for in article VII of the Treaty;
   (e) questions relating to the exercise of jurisdiction in Antarctica;
   (f) preservation and conservation of living resources in Antarctica.
2. Each Contracting Party which has become a party to the present Treaty by accession under Article XIII shall be entitled to appoint representatives to participate in the meetings referred to in paragraph 1 of the present Article, during such time as the Contracting Party demonstrates its interest in Antarctica by conducting substantial scientific research activity there, such as the establishment of a scientific station or the dispatch of a scientific expedition.
3. Reports from the observers referred to in Article VII of the present Treaty shall be transmitted to the representatives of the Contracting Parties participating in the meetings referred to in paragraph 1 of the present Article.
4. The measures referred to in paragraph 1 of this Article shall become effective when approved by all the Contracting Parties whose representatives were entitled to participate in the meetings held to consider those measures.
5. Any or all of the rights established in the present Treaty may be exercised as from the date of entry into force of the Treaty whether or not any measures facilitating the exercise of such rights have been proposed, considered or approved as provided in this Article.

Article X
[discourages activities contrary to Treaty]

Each of the Contracting Parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the present Treaty.

Article XI
[settlement of disputes]

1. If any dispute arises between two or more of the Contracting Parties concerning the interpretation or application of the present Treaty, those Contracting Parties shall consult among themselves with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of their own choice.
2. Any dispute of this character not so resolved shall, with the consent, in each case, of all parties to the dispute, be referred to the International Court of Justice for settlement; but failure to reach agreement on reference to the International Court shall not absolve parties to the dispute from the responsibility of continuing to seek to resolve it by any of the various peaceful means referred to in paragraph 1 of this Article.

Article XII
[review of Treaty possible after 30 years]

1. (a) The present Treaty may be modified or amended at any time by unanimous agreement of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX. Any such modification or amendment shall enter into force when the depositary Government has received notice from all such Contracting Parties that they have ratified it.
   (b) Such modification or amendment shall there-after enter into force as to any other Contracting Party when notice of ratification by it has been received by the depositary Government. Any such Contracting Party from which no notice of ratification is received within a period of two years from the date of entry into force of the modification or amendment in accordance with the provision of subparagraph 1(a) of this Article

shall be deemed to have withdrawn from the present Treaty on the date of the expiration of such period.

2. (a) If after the expiration of thirty years from the date of entry into force of the present Treaty, any of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX so requests by a communication addressed to the depositary Government, a Conference of all the Contracting Parties shall be held as soon as practicable to review the operation of the Treaty.
   (b) Any modification or amendment to the present Treaty which is approved at such a Conference by a majority of the Contracting Parties there represented, including a majority of those whose representatives are entitled to participate in the meetings provided for under Article IX, shall be communicated by the depositary Government to all the Contracting Parties immediately after the termination of the Conference and shall enter into force in accordance with the provisions of paragraph 1 of the present Article.
   (c) If any such modification or amendment has not entered into force in accordance with the provisions of subparagraph 1(a) of this Article within a period of two years after the date of its communication to all the Contracting Parties, any Contracting Party may at any time after the expiration of that period give notice to the depositary Government of its withdrawal from the present treaty; and such withdrawl shall take effect two years after the receipt of the notice by the depositary Government.

Article XIII
[ratification and accession]

1. The present Treaty shall be subject to ratification by the signatory States. It shall be open for accession by any State which is a Member of the United Nations, or by any other State which may be invited to accede to the Treaty with the consent of all the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX of the Treaty.
2. Ratification of or accession to the present Treaty shall be effected by each State in accordance with its constitutional processes.
3. Instruments of ratification and instruments of accession shall be deposited with the Government of the United States of America, hereby designated as the depositary Government.
4. The depositary Government shall inform all signatory and acceding States of the date of each deposit of an instrument of ratification or accession, and the date of entry into force of the Treaty and of any modification or amendment thereto.
5. Upon the deposit of instruments of ratification by all the signatory States, the present Treaty shall enter into force for those States and for States which have deposited instruments of accession. Thereafter the Treaty shall enter into force for any acceding State upon the deposit of its instrument of accession.
6. The present Treaty shall be registered by the depositary Government pursuant to Article 102 of the Charter of the United Nations.

Article XIV
[United States is repository]

The present Treaty, done in the English, French, Russian, and Spanish languages, each version being equally authentic, shall be deposited in the archives of the Government of the United States of America, which shall transit duly certified copies thereof to the Governments of the signatory and acceding States.

In witness whereof, the undersigned Plenipo-tentiaries, duly authorized, have signed the present Treaty.

For Argentina:
Adolfo Seilingo
F. Bello

For Australia:
Howard Beale

For Belguim:
Obert de Thieusies

For Chile:
Marcial Mora M.
L. Gajardo V.
Julio Escudero

For the French Republic:
Pierre Charpentier

For Japan:
Koichiro Asakai
T. Shimoda

For New Zealand:
G.D.L. White

For Norway:
Paul Koht

For the Union of South Africa:
Wentzel C. du Plessis

For the Union of Soviet Socialist Republics:
V. Kuznetsov

For the United Kingdom of Great Britain and Northern Ireland:
Harold Caccia

For the United States America:
Herman Phleger
Paul C. Daniels

APPENDIX B:

Presidential Memorandum Regarding Antarctica, February 5, 1982

Memorandum 6646

The White House
Washington

For:

Secretary of State

Secretary of the Treasury

Secretary of Defense

Secretary of the Interior

Secretary of Commerce

Secretary of Transportation

Secretary of Energy

Director, Office of Management and Budget

Director of Central Intelligence

Chairman, Joint Chiefs of Staff

Director, Arms Control and Disarmament Agency

Director, Office of Science and Technology Policy

Administrator, Environmental Protection Agency

Director, National Science Foundation

Subject: United States Antarctic Policy and Programs

I have reviewed the Antarctic Policy Group's study of United States interests in Antarctica and related policy and program considerations, as forwarded by the Department of State on November 13, 1981, and have decided that:

- The United States Antarctic Program shall be maintained at a level providing an active and influential presence in Antarctica designed to support the range of U.S. antarctic interests.
- This presence shall include the conduct of scientific activities in major disciplines; year-round occupation of the South Pole and two coastal stations; and availability of related necessary logistics support.
- Every effort shall be made to manage the program in a manner that maximizes cost effectiveness and return on investment.

I have also decided that the National Science Foundation shall continue to:

- budget for and manage the entire United States national program in Antarctica, including logistic support activities so that the program may be managed as a single package;
- fund university research and federal agency programs related to Antarctica;
- draw upon logistic support capabilities of government agencies on a cost reimbursable basis; and
- use commercial support and management facilities where these are determined to be cost effective and will not, in the view of the Group, be detrimental to the national interest.

Other agencies, may, however, fund and undertake directed short-term programs of scientific activity related to Antarctica upon the recommendation of the Antarctic Policy Group and subject to the budgetary review process. Such activities shall be coordinated within the framework of the National Science Foundation logistics support.

The expenditures and commitment of resources necessary to maintain an active and influential presence in Antarctica, including the scientific activities and stations in the Antarctic, shall be reviewed and determined as part of the normal budget process. To ensure that the United States Antarctic Program is not funded at the expense of other National Science Foundation programs, the OMB will provide specific budgetary guidance for the antarctic program.

To ensure that the United States has the necessary flexibility and operational reach in the area, the Departments of Defense and Transportation shall continue to provide, on a reimbursable basis, the logistic support requested by the National Science Foundation and to develop, in collaboration with the Foundation, logistic arrangements and cost structure required for effective and responsive program support at minimum cost.

With respect to the upcoming negotiations on a regime covering antarctic mineral resources, the Antarctic Policy Group shall prepare a detailed U.S. position and instructions. These should be forwarded for my consideration by May 15, 1982.

Ronald Reagan

APPENDIX C:

The Metric System

The Metric Conversion Act of 1975 (15 USC §§205a-k) and E.O. 12770 (3 CFR, 1991 comp.) encourage federal agencies to use the metric system in procurement, grants and other business-related activities. The general conditions of each NSF grant contain a provision encouraging principal investigators to submit progress reports, final reports, other reports and publications produced under grants that employ the metric system of measurements.

Approximate Conversion from **CUSTOMARY TO METRIC**

When you know	*You can find*	*If you multiply by*
Length		
inches	millimeters	25
feet	centimeters	30
feet	meters	0.3
yards	meters	0.9
miles	kilometers	1.6
Area		
square inches	square centimeters	6.5
square feet	square meters	0.09
square yards	square meters	0.8
square miles	square kilometers	2.6
acres	hectares	0.4
Volume		
cubic inches	cubic centimeters	16
cubic feet	cubic meters	0.03
cubic yards	cubic meters	0.8
Mass		
ounces (avoirdupois)	grams	28
pounds	kilograms	0.45
short tons	metric tons (megagrams)	0.9
Liquid Volume		
ounces	milliliters	30
pints	liters	0.47
quarts	liters	0.95
gallons	liters	3.8
Temperature		
degrees Fahrenheit	degrees Celsius	5/9 (after subtracting 32)

Approximate Conversion from **METRIC TO CUSTOMARY**

When you know	*You can find*	*If you multiply by*
Length		
millimeters	inches	0.04
centimeters	inches	0.4
meters	feet	3.3
meters	yards	1.1
kilometers	miles	0.6
Area		
square centimeters	square inches	0.16
square meters	square yards	1.2
square kilometers	square miles	0.4
hectares	acres	2.5
Volume		
cubic centimeters	cubic inches	0.06
cubic meters	cubic feet	35
cubic meters	cubic yards	1.3
Mass		
grams	ounces (avoirdupois)	0.035
kilograms	pounds	2.2
metric tons (megagrams)	short tons	1.1
Liquid Volume		
milliliters	ounces	0.034
liters	pints	2.1
liters	quarts	1.06
liters	gallons	0.26
Temperature		
degrees Celsius	degrees Fahrenheit	9/5 (then add 32)

APPENDIX D:

Grantee Medical Insurance

NATIONAL SCIENCE FOUNDATION
4201 Wilson Boulevard
ARLINGTON, VIRGINIA 22230

DIVISION OF POLAR PROGRAMS

Dear Grantee,

The National Science Foundation's Division of Polar Programs (PLR) would like to take this opportunity to remind you of the importance of being prepared for all aspects of your fieldwork. You will have received a lot of information from Polar Programs and from its support contractor, Antarctic Support Contract, with respect to working in Antarctica, including a link to the *United States Antarctic Program Participant Guide,* which provides you with practical knowledge about working in Antarctica.

You are responsible for yourself and for all members of your team, including graduate students and postdoctoral fellows. All research staff (paid or volunteer) should be affiliated in some manner with your organization(s), so any worker compensation issues arising from injuries sustained while deployed can be addressed by your organization. NSF does not provide insurance for grantee personnel, and the cost of insurance is not an allowable expense on NSF grants. As such, persons traveling to Antarctica are expected to have insurance appropriate to their normal life situations so that any needed health care, compensation for property loss, worker's compensation, or survivor benefit will be provided for in the event of a health care emergency. Emergency medical care for U.S. Antarctic Program participants in Antarctica is provided in clinics at the year-round stations, and persons who need hospital care will be transported to health care facilities in New Zealand or South America, at which point they or their sponsors will be responsible for medical costs, including medical evacuation expenses from the gateway city to your final destination. An often overlooked aspect of fieldwork is time you and members of your team will spend in the gateway cities of Christchurch, New Zealand and Punta Arenas, Chile. Check your health and life insurance policies to be sure that flights aboard scheduled military aircraft are covered and also that health care received in foreign countries is covered.

Wishing you a safe and productive deployment.

Kelly K. Falkner
Director
Division of Polar Programs

Eric Saltzman
Section Head
Antarctic Sciences Division

Scott Borg
Section Head
Antarctic Infrastructure and Logistics Division

Glossary

62nd Airlift Wing Provides C-17 aircraft support to the U.S. Antarctic Program; headquartered at Joint Base Lewis-McChord.
109th Airlift Wing Division of the New York Air National Guard that supports the U.S. Antarctic Program.
139th Expeditionary Airlift Squadron (EAS) Designation of the 109th Airlift Wing when deployed.
304th Expeditionary Airlift Squadron (EAS) Designation of the 62nd Airlift Wing when deployed.
500th Air Expeditionary Group (500 EAG) Commands all LC-130 and C-17 activities and personnel in New Zealand and Antarctica.
ACA Antarctic Conservation Act.
ACL Allowable Cabin Load. Payload of aircraft. Calculations based upon take-off, landing restrictions, range, weather, fuel requirements, etc.
AFRTS American Forces Radio and Television Service.
AIL Antarctic Infrastructure and Logistics. NSF Division of Polar Programs functional work group.
AIMS Antarctic Infrastructure Modernization for Science.
AMC Air Mobility Command, U.S. Air Force.
ANG Air National Guard, U.S. Air Force Reserve Component.
ANT NSF Divison of Polar Programs functional work group managing research grants.
AOD Airport of Departure.
APHIS Animal and Plant Health Inspection Service, U.S. Department of Agriculture.
APO Army and Air Force Post Office.
APT Antarctic Passenger Terminal at the International Antarctic Center in Christchurch, New Zealand.
ASC Antarctic Support Contract. The primary logistical support contractor to the USAP, managed by Leidos.
ASMA Antarctic Specially Managed Area.
ASPA Antarctic Specially Protected Area.
ATO Antarctic Terminal Operations. Division of ASC that manages the movement of passengers and cargo.
Bag Drag Similar to check-in with commercial airlines. Passengers are weighed and checked for ECW gear, carry-on bags are approved, and bags are palletized for transport.
BEST Recycling ASC teammate that provides waste and recycling services to the USAP.
BFC Berg Field Center. The McMurdo building contains tents, sleeping bags and other field camp equipment.
Bio Palmer Station building containing the biology laboratory.
BizOps Business Operations. ASC functional work group overseeing finance and budget.
Boomerang A flight that departs and returns to its origin, due to weather or maintenance considerations.
Bumped Refers to cargo or passengers that is/are removed from a flight due to weight restrictions or other considerations.
C-17 A U.S. Air Force aircraft used for transporting cargo and personnel between New Zealand and McMurdo.
CDC Clothing Distribution Center located in Christchurch, N.Z.
Chalet Building that houses NSF and ASC headquarters staff at McMurdo Station, Antarctica.
CHC or CHCH Acronym for Christchurch. Pronounced “cheech.”
Clean Air Sector Area upwind from the South Pole Station that is not contaminated by exhaust fumes from station activity.
COMAIR Commercial airline transport.
COMNAP Council of Managers of National Antarctic Programs.
COMSUR Commercial surface vessel transport.
Communications ASC functional work group overseeing publications, media relations, technical editing, education outreach, photo archiving and USAP-related news stories.
Condition One Weather condition when visibility is less than 100 ft., wind is greater than 55 knots, or wind chill is greater than -100ºF.
Condition Three Weather condition better than Condition Two.
Condition Two Weather condition when wind speed is between 48-55 knots, or visibility is less than 1/4 mile, but greater than 100 ft., or wind chill is greater than -75ºF, but less than -100ºF.
Continental Area The part of the U.S. Antarctic Program that includes McMurdo Station, South Pole and field camps (not the Peninsula area).
CONUS Continental United States.
CSEC Crary Science and Engineering

Center. Laboratory at McMurdo Station. Also known as Building One, or Crary Lab.
Damco ASC teammate providing cargo logistics and Punta Arenas operations.
Dark Sector Area near the South Pole Station that is not contaminated by light pollution.
Deployment Initial passenger transport from airport of departure to destination.
DNF Do Not Freeze.
DoD Department of Defense.
DV Distinguished Visitor.
ECO Edison Chouest Offshore LLC. The company that owns and operates the two USAP research vessels.
ECW Extreme Cold Weather. Used in reference to the special clothing/ equipment issued to U.S. Antarctic Program participants.
Event Number A number identifying a science group that has received funding from NSF to perform research in Antarctica.
FAR Federal Acquisition Regulations.
FMC Facilities, Maintenance, Construction, ASC functional area.
Gana-A' Yoo (GSC) ASC teammate providing lodging, recreation, food service, retail and postal service for the USAP.
Genetically Modified Organism (GMO) Any organism in which any of the genes or genetic material has been modified by in vitro techniques.
GHG Corporation ASC teammate providing most of the on-Ice IT and communications support.
Grantee A scientist who has received a grant from the NSF.
GWR Palmer Station building containing the garage, warehouse and recreation.
Herbie Term used to describe a storm with fierce, blowing wind and/or snow.
HR Human Resources.
IAC International Antarctic Center, Christchurch, New Zealand.
Ice Slang term for Antarctica. Usage: “I’m going to the Ice.”
IGY International Geophysical Year, 1957-1958.
Implementers The people who work most closely with science projects in Antarctica.
IT&C Information Technology and Communications. ASC functional work group overseeing telecommunications and computers.
JSOC Joint Space Operations Center; a building in McMurdo.
KBA Kenn Borek Air, Ltd. The company that provides small fixed-wing aircraft, pilots and support.
Kiwi Nickname that refers to New Zealanders.
Land-line Describes a regular telephone line compared to broadcast radio conversation.
LC-130 A ski-equipped, four-engine Lockheed Hercules turboprop airplane.
Leidos The prime contractor supporting the USAP, managing the group of companies known as Antarctic Support Contract (ASC).
LMG Research support vessel called the *Laurence M. Gould.*
LTER Long Term Ecological Research.
MPI Ministry of Primary Industries, New Zealand.
Mainbody The period of time between October and February when the majority of USAP activity occurs.
MCC Movement Control Center, McMurdo Station, Antarctica.
MEC Mechanical Equipment Center, McMurdo Station, Antarctica.
Medevac Medical evacuation of a patient.
Milvan Vernacular for cargo containers used for shipping and storing supplies.
MOGAS Motor automotive gasoline.
MPC Marine project coordinator.
MPSM McMurdo, Palmer, South Pole Modernization.
MSC Military Sealift Command.
NBP Research support vessel called the *Nathaniel B. Palmer.*
NGO Non-governmental organization.
NPQ Not physically qualified.
NSF National Science Foundation, the agency of the U.S. government that manages the U.S. Antarctic Program.
NYANG New York Air National Guard.
NZAP New Zealand Antarctic Programme.
NZDF New Zealand Defence Force.
OAE Old Antarctic Explorer. A reference to an experienced Antarctic program participant.
Operations ASC functional work group overseeing vehicle fleet maintenance and operation, fuels, fire department, station services, and recycling.
PA Abbreviation for Punta Arenas, Chile; a staging area for Peninsula operations.
PAE ASC teammate providing infrastructure, operations, transportation and logistical support for the USAP.
PAE New Zealand ASC teammate providing Christchurch operations.
Pax Vernacular for passenger/s.
Pegasus A runway on permanent ice near McMurdo Station that accommodates wheeled airplanes.
PESH Polar Environment, Safety and Health. A group within the NSF Division of Polar

Programs responsible for environmental, safety and health issues.

Peninsula Area The part of the U.S. Antarctic Program that includes Palmer Station, R/V *Laurence M. Gould,* and other operations in the Antarctic Peninsula area.

PHI The company providing helicopters, pilots and helicopter support.

Phoenix A runway on compressed snow near McMurdo Station that accommodates wheeled airplanes.

PI Principal Investigator: Team leader or scientist in charge of a funded research project.

Planning and Controls ASC functional work group overseeing cost and labor scheduling.

PMO Program Management Office, ASC functional group that oversees the prime contract.

Professional Services Professional Services, an ASC functional work group that provides engineering oversight.

POC Point of contact.

POLAR ICE Participant On-Line Antarctic Resource Information Coordination Environment. A web-based data collection and dissemination system designed to capture and administer all relevant support requirements for scientific research in Antarctica.

PQ'd or **PQ** Physically Qualified.

PSR Point of Safe Return.

PtH Abbreviation for Port Hueneme, CA, the port through which most USAP cargo passes.

Radioisotopes A radioactive isotope used by scientists.

Redeployment Passenger transport from destination to origin.

Retrograde To return cargo from the field to McMurdo Station, or from McMurdo to destinations north. Usually in the reverse order of its initial deployment.

RNZAF Royal New Zealand Air Force.

ROS Required on site date, usually expressed as a Julian calendar date.

RSP Research Support Plan. The planned support to be provided for a science project.

SAAM Special Assignment Airlift Mission, a mission supported by U.S. Antarctic Program AMC at the request of the NSF.

SAR Search and Rescue.

SCAR Scientific Committee on Antarctic Research, of the International Council of Scientific Unions, a nongovernmental organization.

Science Planners ASC personnel in Arlington, VA, who work with science groups to plan their research season.

S&TPS Science and Technical Project Services. ASC functional work group that works with scientists to ensure their research requirements are met.

SFA Support Forces Antarctica. The tactical operational name given to U.S. military activities in Antarctica.

SIP Support Information Package, a listing of the resources requested by the grantees to complete their research.

SOPP SPAWAR Office of Polar Programs. Agency that provides weather forecasting and air traffic control services for the USAP.

SPoT South Pole Traverse.

SSC Science Support Center, a building in McMurdo containing the MEC and field safety instructors.

SUREPA Senior U.S. Representative, Antarctica, appointed by the director of NSF to oversee U.S. government activities in Antarctica.

T&L Transportation and Logistics, an ASC functional work group overseeing cargo and passenger transport, and inventory management.

USAF United States Air Force.

U.S. Antarctic Program (USAP) United States Antarctic Program, the U.S. government's program, administered by the National Science Foundation, for research and related activities regarding Antarctica.

USAP Airlift Refers to the scheduled movement of cargo and passengers from Christchurch to McMurdo

USCG United States Coast Guard.

USGS United States Geological Survey.

University of Texas Medical Branch (UTMB) ASC teammate providing medical qualifications and telemedicine services.

V-event A visitor, approved by the NSF, for visiting U.S. Antarctic Program locations.

Vessel A ship. Often refers to the annual resupply ship or to research vessels.

VHF Very high frequency: VHF radios are used locally around stations and ships.

VMF Acronym for the Vehicle Maintenance Facility, also known as the heavy shop.

Winfly Vernacular for "winter fly-in." Usually occurring in late August.

Williams Field Skiway A snow skiway airport located near McMurdo Station.

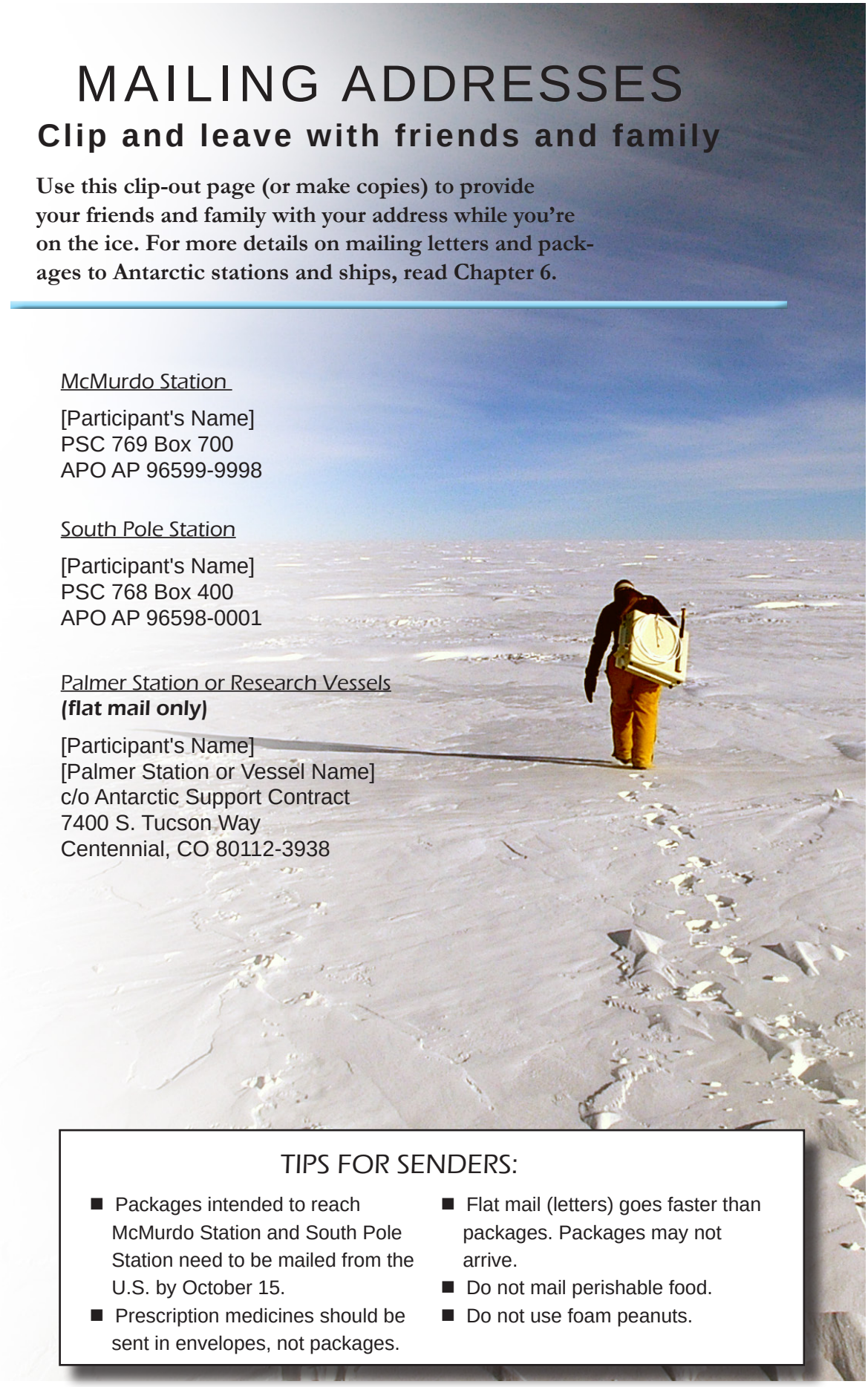
Winter Verb to winter: to spend the austral winter season at a U.S. Antarctic Program station.

Index

MAILING ADDRESSES

Clip and leave with friends and family

Use this clip-out page (or make copies) to provide your friends and family with your address while you're on the ice. For more details on mailing letters and packages to Antarctic stations and ships, read Chapter 6.



McMurdo Station

[Participant's Name]
PSC 769 Box 700
APO AP 96599-9998

South Pole Station

[Participant's Name]
PSC 768 Box 400
APO AP 96598-0001

Palmer Station or Research Vessels
(flat mail only)

[Participant's Name]
[Palmer Station or Vessel Name]
c/o Antarctic Support Contract
7400 S. Tucson Way
Centennial, CO 80112-3938

TIPS FOR SENDERS:

- Packages intended to reach McMurdo Station and South Pole Station need to be mailed from the U.S. by October 15.
- Prescription medicines should be sent in envelopes, not packages.
- Flat mail (letters) goes faster than packages. Packages may not arrive.
- Do not mail perishable food.
- Do not use foam peanuts.

HANDY CONTACT INFORMATION

Following is a list of frequently used phone numbers.

National Science Foundation
Division of Polar Programs
703-292-8030
www.nsf.gov

Antarctic Support Contract
1-800-688-8606
www.usap.gov

ASC Travel
1-800-688-8606, ext. 33202
deploy@usap.gov
redeploy@usap.gov

UTMB
1-855-300-9704
medical@usap.gov

Christchurch Travel Office
From the US – 1-800-390-1449
In New Zealand – 0-800-358-8139
chctravel@usap.gov

Emergency
To get an urgent message to someone in Antarctica, call ASC headquarters in Denver (303-790-8606). Explain the emergency and you will be put in contact with the appropriate person.

Learn the Lingo!

USAP ASC OAEs will deploy from the **CDC** in **Chch** (cheech) on a **C-17**, arriving on the **Ice** around **1400**, dressed in **ECW** and then ride **Ivan** to **Mactown** ...

(don't worry, you'll catch on!)