CHAPTER 1:

US Role in Antarctica

photo by Glenn Grant

The flags of the 12 original signatory nations of the Antarctic Treaty are displayed at Amundsen-Scott South Pole Station.

Today's US role in Antarctica derives from American expeditions to the region and diplomatic initiatives that have taken place almost since the birth of the United States. This history has led to a continuous US presence in the region since the 1950s and to a consistent US 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 US government capability to support antarctic scientific research.

HISTORY

US Expeditions, 1775-1948

The first Americans to work in the Antarctic were sealers and whalers who discovered many subantarctic islands and 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-foot sloop *Hero*, Palmer almost certainly viewed the Antarctic Peninsula from a distance of about 5 kilometers on 16-17 November 1820. (Historians have not settled the question of who discovered Antarctica.) James Eights, a geologist from Albany, New York, became the first US 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 US Navy lieutenant who commanded an expedition in 1839 and 1840 that was the first to prove the existence of the continent. His expedition mapped 2,400 kilometers of antarctic coastline in the Indian and Australian quadrants.

For the next 70 years US interest in Antarctica, outside of periodic whaling voyages, lay dormant. In 1928-1930 and 1933-1935, Richard E. Byrd led two privately sponsored expeditions, one of which included the first flight over the South Pole, and US interest rose dramatically. 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 US 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 US Antarctic expedition, which reoccupied the Marguerite Bay base for a year and pushed exploration of the Antarctic Peninsula southward.

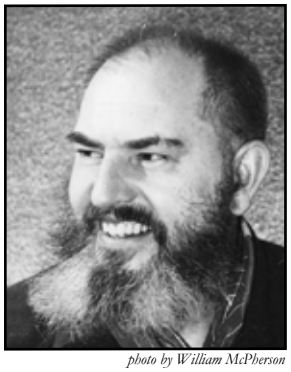


photo by William McPherson

Dr. Paul Siple was one of 18 men (and one dog) who spent the first winter at the South Pole in 1957 as part of the International Geophysical Year. Siple was the lead scientist during the IGY.

International Geophysical Year

The 1957-1958 International Geophysical Year (IGY) emphasized antarctic 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 US 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). It made 6,000 kilometers of traverses, operated 10 to 12 ships each season, and flew 23 Navy and 8 Air Force airplanes. The US National Committee for the IGY of the National Academy of Sciences administered US 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 US 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. Perhaps because of this lack of ownership and freedom of entry, nations interested in Antarctica have developed a framework, the Antarctic Treaty, for cooperation and management of antarctic concerns.

The Antarctic Treaty entered into force in 1961, and its original 12 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, to ensure continuing adherence to the treaty.

The treaty encourages scientific investigation in Antarctica and, to promote international cooperation, provides for annual exchange of plans, personnel, and 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.

Treaty nations hold consultative meetings routinely. Measures supplementing the Treaty have been enacted at such 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 US 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 for comprehensive environmental protection and a ban on mining. The environmental protocol entered into force in 1998.

Many 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 Office of Polar Programs and its counterparts abroad) directly coordinate and exchange views and plans by means of a Council on Managers of National Antarctic Programs (COMNAP) and the Standing Committee on Antarctic Logistics and Operations (SCALOP).

UNITED STATES ANTARCTIC PROGRAM

The results of research performed during the IGY were so interesting scientifically that the US and the other IGY nations decided to continue their antarctic work. The NSF was given responsibility for the US research effort, and in 1959 established the US 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 US activities in Antarctica. The term US Antarctic Program (USAP) came into broader use to designate both the US Antarctic Research Program and operational activities, including Operation Deep Freeze, that support the research program and other features of the US presence in Antarctica.

Research is pursued in aeronomy 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 and the high latitude location of Antarctica can be utilized for study of near-earth and extraterrestrial processes. Results of US antarctic research performed since the IGY have had a great role in developing understanding of Antarctica, its role in global change, and its ecological and environmental processes, and have placed the US in a position of scientific and diplomatic leadership in Antarctica.

Programs to integrate research and education have become a part of the US 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.

US Antarctic Policy

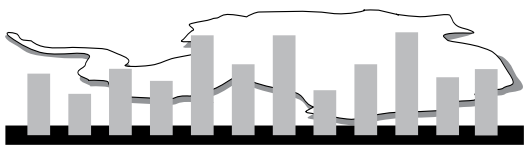
Our nation's policy for Antarctica has been consistent over the years. It is based on four principles:

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

2007 – 2008 USAP Statistics

- Approximately 3,000 participants worked at US Antarctic stations.
- Approximately 90% of the participants traveled through New Zealand.
- Participants originated from 48 states, with Colorado, Alaska and California being the most represented.
- Approximately 80% went during the austral summer season and 20% wintered.
- Approximately 34% were female and 6% were minorities.
- More than 800 scientists did research on more than 125 different science projects in Antarctica.



have with respect to this matter." President Franklin D. Roosevelt reaffirmed the US 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 US had proposed an international trusteeship. The seven original claimant nations and the US (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 did not catch. 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 US expeditions to the Antarctic and set forth the basic position and proposal of the US 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 US antarctic policy. See Appendix A.

In October 1970, President Richard M. Nixon stated US 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 non-living 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 United States 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 US citizens.

A 1993 decision by a US appeals court established that the National Environmental Policy Act (Public Law 91-190) applies to US 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, US Policy in the Arctic and Antarctic Regions, states four US 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 of living resources in the oceans surrounding Antarctica.

In 1996, the president's National Science & Technology Council concluded that US 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 Internet web site 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 US 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 USAP year-round stations and for major modernization of the US research station at the geographic South Pole. The 94-page report, The United States in Antarctica, can be found on the NSF web site at www.nsf.gov/pubs/1997/antpanel/start.htm#pdf.

ANTARCTIC PROGRAM STRUCTURE

Cooperation of multiple entities is coordinated by the National Science Foundation in support of the US Antarctic Program.

National Science Foundation

The National Science Foundation (NSF) has overall funding and management responsibility for US activities in Antarctica. This responsibility involves several functions:

- Annual preparation of plans and budget for consideration within 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 US 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 US Coast Guard.
- Facilities management, design, planning, engineering, construction and maintenance.
- Development and management of a contract with a commercial firm, currently Raytheon Polar Services (RPSC), for operation of antarctic stations and research ships and related services including construction.
- Development and implementation of a comprehensive safety, environment, and health program for US activities in Antarctica.
- Arrangement of cooperative scientific and logistics programs with other Antarctic Treaty nations.
- Designation of a senior US 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 non-governmental organizations.

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

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

Support Contractors

The NSF prime antarctic support contractor, currently RPSC, provides support functions related to the program. The scope of work that RPSC is responsible for includes:

- Supporting science and operating research labs
- 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 parties
- Managing transportation of passengers and cargo
- Arranging annual resupply and fuel of McMurdo by Military Sealift Command contract ships
- Providing marine terminal operations
- Complying with safety, health, and environmental requirements

The point-of-contact for RPSC may be reached at 303-790-8606, fax 303-790-9130. The address is: 7400 S. Tucson Way, Centennial, CO 80112-3938; Web site: www.usap.gov.

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

photo by Elaine Hood

A US Antarctic Program helicopter owned and operated by Petroleum Helicopters International, Inc., carries science cargo to a field camp.

Department of Defense

The Department of Defense provides military logistics, reimbursed by the NSF, as part of the US Antarctic Program, including:

- Shipborne cargo between the US 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
- SPAWAR Office of Polar Programs: weather forecasting, air traffic control, ground electronics maintenance, and engineering

The Commander, Joint Task Force Support Forces Antarctica (CJTF SFA), is responsible for Antarctic military logistics, provided under a memorandum of agreement between the NSF and the Department of Defense. This person is designated by the commander in chief. US Pacific Command has operational command and/or tactical command of Department of Defense transportation assets and personnel when they support polar programs.

The Commander of the 13th Air Expeditionary Group (13 AEG/CC), headquartered at Hickam Air Force Base, Hawaii, controls flight operations, supporting LC-130s and C-17s for Operation Deep Freeze.

Department of Homeland Security

The Department of Homeland Security (US Coast Guard) has provided icebreaker services, reimbursed by the Foundation. 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

photo by Peter Somers

A United States Air Force C-17 hauls passengers and cargo, such as this large tractor, from Christchurch, New Zealand, to McMurdo Station, Antarctica.

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 US Antarctic Program. The department's Geological Survey provides mapping control in Antarctica, compiles and publishes geologic and topographic maps, and administers Antarctic place-name decisions.

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 US 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 chairs the Antarctic Working Group, which is a sub-group of the Interagency Working Group on Global Environmental Affairs. The Antarctic Working Group formulates policy guidance for US activities under the Antarctic Treaty. Its members represent the Department of State (chair), the NSF, the Department of Defense, and other agencies as appropriate.

International Cooperation

Within the context of the Antarctic Treaty, extensive international cooperation takes place in Antarctica to accomplish both science projects and logistics more effectively. 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. Recently, the NSF has collaborated with Russia and Sweden to provide icebreaking services to McMurdo Station. The US has pursued cooperative projects with most Antarctic Treaty consultative nations.

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

Two examples of this international cooperation are the Council of Managers of National Antarctic Programs (COMNAP), and the Standing Committee of Antarctic Logistics and Operations (SCALOP). The COMNAP web site (www.comnap.aq) links to many of these international programs and organizations.

The **Scientific Committee on Antarctic Research (SCAR)** also helps to coordinate 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 plans, and responds to special requests from the Antarctic Treaty consultative meetings. 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 web site is www.scar.org.

The Polar Research Board, National Academy of Sciences, represents the US on SCAR and provides liaison between the US and foreign scientific communities. Their web site is www.nas.edu.

SCIENCE PROPOSALS AND GRANTS

The mission of NSF/OPP 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 US Antarctic Program, the OPP 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, of course, 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; 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 Polar Programs provides "advice, recommendations, and oversight concerning support for research and research-related activities in the polar regions." It meets each year to review specific programs and recommend procedural or other improvements.

A Committee of Visitors, operating on a continuing 3-year cycle, augments the advisory committee to assess program-level technical and managerial matters pertaining to proposal decisions.

The NSF web site (www.nsf.gov) provides more information about the US 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, and the NSF Strategic Plan.

"Awards Data" on the NSF Web site contains a searchable database of grants, including abstracts and award amounts.

"Crosscutting Programs" describes Foundation programs to support focused research in selected multi-disciplinary areas and to integrate research and education. These award areas provide significant opportunities for antarctic investigators.

The "Polar Research" section describes research facilities in polar regions and antarctic and arctic research areas supported by the NSF.

The American Geological Institute web site contains the world's most complete antarctic bibliography with abstracts: www.coldregions.org.

The US Antarctic Data Coordination Center (www.usap-data.org) collects descriptions of data sets compiled by US Antarctic Program participants for entry into the international Antarctic Master Directory.

The US Geological Survey has a searchable database of antarctic place names, maps and photographs at http://usarc.usgs.gov or 1-800-USA-MAPS. 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 Web site to recommend that the Advisory Committee on Antarctic Names, US Board on Geographic Names, officially name such features. The US 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. ■