

CHAPTER 4:**Conservation, Permits,
and Science Cargo**

*A scientist drills a
rock core sample from
the Dufek Massif in the
Pensacola Mountains.*



photo by Mike Cheadle

Environmental conservation and waste management law applies in Antarctica. This chapter describes the public law and explains how to get a permit for activities allowed under permit.

The law applies to everyone working in the US Antarctic Program and to every US citizen associated with other national programs. It applies to all expeditions to Antarctica that originate from the United States. The import-export part of the law even applies to tourists as well as US citizens not in Antarctica.

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

ANTARCTIC CONSERVATION ACT

The Antarctic Conservation Act (P.L. 95-541), as amended by the Antarctic Science, Tourism, and Conservation Act of 1996 (P.L. 104-227), formalizes US adherence to Antarctic Treaty conservation rules, including the 1964 Agreed Measures for the Conservation of Antarctic Fauna and Flora and the 1991 Protocol on Environmental Protection.

The law provides penalties of up to \$11,000 and 1 year imprisonment for each violation. 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 the job or off, 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 on unassisted common sense.



Antarctic Conservation Act of 1978 (NSF 01-151). This book contains the law, its regulations, maps of special areas, the Protocol on Environmental Protection and a permit application form. Read more about the Antarctic Conservation Act on the **NSF web site** at www.nsf.gov and conduct a search for “ACA.”

Highlights of the Antarctic Conservation Act

Environmental Impact Assessment. Proposed activities shall be subject to environmental assessment of impacts of those activities on the antarctic environment, or on dependent or associated ecosystems.

If an activity has less than a minor or transitory impact, the activity may proceed. Otherwise, an environmental assessment must be completed, according to Annex 1 of the Protocol on Environmental Protection to the Antarctic Treaty. Parties planning the activity are responsible to ensure that the assessment procedures set out in Annex 1 are applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area. An Initial Environmental Evaluation, or a Comprehensive Environmental Evaluation, of the activity may be required and must be signed by the National Science Foundation before the activity can begin.

Taking or harmful interference are prohibited except under a permit that specifies the authorized activity, including when, where, and by whom it is to be conducted. Permits are issued only to provide specimens for scientific study or for museums or other educational institutions. NSF evaluates requests for permits and issues them when approved. You must carry a copy of your ACA permit when working with fauna or flora in the field.

“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:

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

Special areas. A number of precisely defined places in Antarctica are designated under the Antarctic Treaty, and in the US law, as Antarctic Specially Protected Areas (ASPAs), formerly referred to as SPAs and SSSIs. 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. The areas and their management plans, with which you must comply if you are permitted to enter, are described in the publication *Antarctic Conservation Act of 1978* (NSF 01-151), free from NSF and on the Web site listed above.

An additional category, Antarctic Specially Managed Areas (ASMAs), may be created for areas where activities pose risks of mutual interference or cumulative environmental impacts, and for sites of recognized historic value that do not require strictly controlled access. Entry into an ASMA will not require a permit.

Do Not Disturb Wildlife.

If they are reacting to you, then you are too close.

Introducing species. You need a permit to introduce nonindigenous species to the Antarctic (that is, south of 60 degrees South latitude). A clear need to introduce the items must be demonstrated. Only the following may be considered for a permit allowing their introduction:

- a) domestic food plants
- b) laboratory animals and plants including viruses, bacteria, yeasts and fungi

The ACA allows food plants, but introduced soil must be sterile. Many antarctic stations have hydroponic vegetable gardens.

Living nonindigenous species of birds may not be introduced into Antarctica. Section 670.18 of the Antarctic Conservation Act lists antarctic native birds.

If you are uncertain if the species you need to take to Antarctica would be an introduced species, contact the environmental officer at the NSF/OPP (Polly Penhale, ppenhale@nsf.gov; 703.292.8031).

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. Winds can turn litter into dangerous flying materials.

Secure construction sites. Pick up debris and dispose of properly. Protect materials outdoors 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, a RPSC 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. Waste fuels and lubricants have to be labeled and stored for return to the US. Any spill should be reported to the McMurdo fire house or the station manager at South Pole and Palmer stations.

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.

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

Do not enter any of the Antarctic Specially Protected Areas without a permit and adhere to the area management plan when working in these areas and in Antarctic Specially Managed Areas.

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

Take care of antarctic historic monuments.

Import into and export from the US In the United States it is unlawful, unless authorized by regulation or 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 Antarctic Conservation Act, and state which US port will be used.

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

Banned substances. The Antarctic Conservation Act waste management regulations ban these substances from Antarctica:

- ▶ pesticides (except those required for science or hygiene: a permit is needed)
- ▶ polychlorinated biphenyls (PCBs)
- ▶ nonsterile soil
- ▶ polystyrene beads and plastic chips

Designated pollutants. The Act 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.

This category is large and requires attention both when you pack for travel to Antarctica and at your work site and living area. When packing, think about how to minimize the types and amounts of substances you need, to substitute benign substances for designated pollutants wherever possible, and to handle the designated pollutants that you must take.

Designated pollutants include any substance listed by name or characteristic (flammable, corrosive, reactive, toxic) in the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and other US 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

NSF will not allow work in Antarctica until a permit has been either approved or found not to be required. Copies of ACA permits must be on file at NSF.

substances like lighter fluid and fingernail polish remover—at US antarctic stations are designated pollutants. All of them must have a permit to enter Antarctica. The support contractor annually completes the actions needed to request a permit; the task requires the cooperation of all program participants. This chore and others are part of the work involved in preparing for Antarctica.

Historic sites. More than 70 historic monuments or sites have been identified during Antarctic Treaty consultative meetings. Steps are taken to restore and preserve monuments, including tombs, buildings and objects of historic interest. The concerned governments protect these sites from damage. If you go near historic sites, please take care not to damage or disturb them.

McMurdo has four Antarctic Treaty historic sites: Observation Hill, Scott's Hut, Vince's Cross and the Richard E. Byrd Memorial. Two other monuments are accorded historic status by the US Antarctic Program: 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 Thomas Smith, USN, who died in 1982 during an unloading accident at McMurdo onboard *USNS Southern Cross*.

South Pole has two Antarctic Treaty historic sites: Amundsen's tent, erected in 1911, and Flag Mast, established in 1956. The location of both 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.

Enforcement officers. Antarctic Conservation Act enforcement officers are federal officials responsible for ensuring compliance with the Antarctic Conservation Act and for permits issued to US citizens or foreign nationals in the US. Enforcement officers help US Antarctic Program participants understand their obligations to protect native plants and animals and to prevent the release of pollutants. They are authorized to review permits to ensure terms and conditions are fulfilled; serve warrants; search and seize property without warrant; take affidavit; detain for inspection and inspect packages, crates, or other containers; and make an arrest with or without a warrant. The local enforcement officer can be reached via the NSF station representative.

GETTING ACA PERMITS AND REPORTING

NSF will not allow work in Antarctica until a permit has been either 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 NSF/OPP (Nadene Kennedy, nkennedy@nsf.gov).

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

Normally, at least 65 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.

Meteorites. A US regulation governing antarctic meteorites ensures that meteorites in Antarctica will be collected for scientific research purposes only. US 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/od/opp/antarct/meteorite_regs.jsp.

Postseason report. At the end of the season, write a one-page report of activities conducted under your ACA permit and submit it to the permit officer, OPP.

NOTE: 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 native bird that is protected under the Migratory Act (16 U.S.C. 701 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 web site provides information on the acts listed above: www.nmfs.noaa.gov/prot_res/overview/permits.html.

OTHER IMPORT-EXPORT REGULATIONS US & FOREIGN

Federal laws and regulations control the taking and importing into the US 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 RPSC Science Support POC informed by sending copies of relevant correspondence, of action taken 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 US Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), regulates the import of all animal-origin materials that could be a disease risk to US 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. Permits may be requested on VS Form 16-3, "Import or Transport Controlled Material or Organisms or Vectors." If you want to import cell cultures, you also need VS Form 16-7, "Additional Information for Cell Cultures and their Products." Forms and fee information can be found at www.aphis.usda.gov/us/ncie or from the address below. A copy of the forms you submit should be sent to your RPSC Science Support POC.

USDA, APHIS, VS, NCIE
 Products Program
 4700 River Road, Unit 40 Telephone: 301-734-3277
 Riverdale, MD 20737-1231 Fax: 301-734-8226
 Hyattsville, Maryland 20782

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 US, contact the embassies of the respective countries for information and permit applications before you leave the US. Otherwise, there may be difficulty in clearing customs, particularly when hand carrying biological samples.

For information about New Zealand Ministry of Agriculture and Forestry regulations, visit their web site at:

www.maf.govt.nz/mafnet

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 web site, click on the English link and then the Consulates in the US link:
www.embassyofargentina.us

To keep the NSF informed of your action, please forward information copies of correspondence to your RPSC 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 of Agriculture and Forestry (MAF) Biosecurity New Zealand must be obtained for entry of biological and laboratory samples. This applies to samples coming from the US or Antarctica.

Please enter information regarding samples into POLAR ICE, the online grantee application. This process will create an application for a MAF permit. Applications are sent to the senior administrative coordinator at Raytheon Polar Services NZ for processing. You must apply for a permit at least eight weeks before you leave the US for Antarctica.

Permit information submitted through POLAR ICE is sent electronically to RPSNZ. However, permit applications can also be forwarded directly to the senior administrative coordinator via e-mail: CHC-MAFpermits@usap.gov. Alternatively, they can be faxed to NZ at 011.64.3.358.9060.

Controlled Drugs, New Organisms, Genetically Modified Organisms

If part of your research requires transshipment from the US to Antarctica of controlled drugs, new organisms or genetically modified organisms, permits from additional NZ government agencies must be obtained and the process will take longer.

Controlled Drugs. Approval must be obtained from New Zealand Food Safety Authority and Medsafe to transship controlled substances. Due to the additional requirements of these agencies, you should plan on your permit process taking at least 10-12 weeks to complete.

New Organisms or Genetically Modified Organisms. To transship new organisms and genetically modified organisms (GMO) approval must be obtained from the Environment Risk Management Authority. 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 need to add the 65-day waiting period for the ACA permit to the time to process your MAF permit.

Importing Samples into New Zealand

If you are planning to import your samples into New Zealand for testing at a New Zealand institution, you must obtain a MAF permit from your collaborative institution. This permit must accompany your samples either as hand-carry or cargo.

Transshipping Samples Through New Zealand

US to Antarctica. If you are shipping samples from the US through NZ on to Antarctica, a copy of your permit will be sent directly to you along with a letter from the Manager NZ Operations. If you are hand-carrying your samples from the US, you must carry your permit and your letter with you. When you arrive in NZ you must declare your samples and present the permit and letter. If you also have controlled drugs, GMO or new organisms you must present the additional paperwork provided to you by RPSNZ.

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

Antarctica to US. If you are shipping samples from Antarctica to the US, your permit will be sent to the Crary Lab in McMurdo. It will be held there until you are ready to leave the Ice. 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 MAF Biosecurity officials when you enter NZ.

If you are shipping, your permit will be available in the Crary Lab at McMurdo Station. When



photo by Stacy Kim

A science team deploys a new instrument under the sea ice at its field camp on the Ross sea ice.

you are ready to ship your samples, contact the Crary Lab and Science Cargo staff with details of your shipment.

If you are working in the Antarctic Peninsula area, get transport details from the NSF representative there, the RPSC 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.

Radioactive Materials

Shipment and use of radioactive materials in Antarctica requires strict adherence to the US Antarctic policies and procedures to avoid contaminating the Antarctic environment, and to ensure safety. Approval by the NSF/OPP to use radioisotopes in the Antarctic must be obtained before any radioactive material is shipped south. A hardcopy of the NSF/OPP approval should accompany all radioactive material shipments to and from Antarctica. Principal investigators are responsible for the procurement, packaging, transport and retrograde of NSF approved radioactive materials required for their particular research project.

Principal investigators 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, Christchurch, New Zealand, 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, Christchurch, New Zealand, 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 US 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 Raytheon Polar Services (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, New Zealand, 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@iac.org.nz) 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, i.e., 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 (i.e., Keep Frozen) 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
Raytheon Polar Services (NZ) Limited
Tel: +64-3-358-1417 Fax: +64-3-358-1479
Mobile: 027-4357731 E-mail: mike.skevington@iac.org.nz

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 RPSC, 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.

You can find this information online at www.usap.gov.

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 RPSC management.

Responsibility for cargo and passenger movement within the Continental Area rests with the RPSC director of Logistics and the RPSC manager of Antarctic Terminal Operations (ATO). During the summer season at McMurdo, RPSC'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, special S- or T-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 via helicopter is also processed through the US Antarctic Program Science Cargo office. Should you require assistance in determining the whereabouts of cargo you have shipped, these people can tell where in the US Antarctic Program cargo system your particular cargo is located. It will assist them if you





photo by Chris Demarest

The cargo ship American Tern at McMurdo Station's ice pier. From food and construction materials to paper and computer equipment, almost everything needed to keep operations going is delivered on this one ship once per year.

- ✓ It typically costs 20 to 30 times more to fly items than to ship them via vessel.
- ✓ Frequently, air transport costs exceed the cost of the actual item being transported.
- ✓ Lack of planning results in excessive transport costs.

can provide a copy of the US 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:

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 US flag charter ship sails from Port Hueneme to McMurdo Station, arriving in early February. Cargo for this ship must be received in Port Hueneme, California, by 1 December. 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 USAP airlift. USAP 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 USAP airlift period is generally from the beginning of Winter Fly-In (WINFLY) to the end of the operating season. USAP 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, California, to Christchurch to await airlift to McMurdo. Commercial surface vessel shipment to Christchurch is the preferred transport mode for USAP airlift cargo. Additional NSF approval is required to ship cargo from Port Hueneme to Christchurch via commercial air, and approval is based on importance to accomplishing USAP objectives. In general, USAP airlift cargo needs to arrive in Port Hueneme by 30 August. The Packing and Shipping Instructions located under the Logistics link at www.usap.gov provide a more detailed schedule for the movement of cargo.

Commercial air cargo. If circumstances prohibit shipment by sea, RPSC may be authorized by the NSF to ship your cargo by commercial air. Commercial air shipments need to provide sufficient benefit to the USAP 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. RPSC submits USAP 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 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. RPSC 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 US Antarctic Program regulations. Contact the RPSC regulatory specialist for more information.

Emphasis on sea cargo. The US Antarctic Program is committed to maximum practical use of sea cargo—and to minimum use of air cargo, which is vastly more expensive. Shipping by sea is the preferred method for transporting grantee 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 US.

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 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, California, 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, Chile, and Palmer Station. The Continental Area Acquisition Schedule, located on the same web site referenced above, provides the time line 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 US with the US 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 US, 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 US entry point and onward to its ultimate destination. The grantee pays shipping costs from the US 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

Time frames and transportation for work in remote locations is planned well in advance during the summer planning season. Working together, grantees, the NSF, planners, 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 RPSC employees deploying 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.



photo by Sean Lantini

Curious emperor penguins investigate a Twin Otter plane parked at a remote Antarctic field camp.

Fixed-wing aircraft are LC-130 ski-equipped airplanes 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.”

Twin Otters are twin-engine, high-wing aircraft used for small field teams with moderate cargo loads deploying to more remote locations without groomed landing areas. Science team members and RPSC camp staff are responsible for transporting the cargo to the airfield and loading it onto the plane.

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 training. Cargo capacity and range varies depending on the helicopter. Science team members work with the helicopter staff to arrange the cargo logistics.

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

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

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.
- ▶ Bag lunches are provided, but it is always a good idea to have a good meal before long flights.
- ▶ 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 USAP cargo. You may not carry unauthorized hazardous material in your baggage or on your person.

Anyone requiring overnight stays away from a station must complete Field Safety Training. More details on this are provided in Chapter 6. ■