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POLAR CONTINENTAL SHELF PROGRAM ARCTIC OPERATIONS MANUAL

Updated August 2016



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Cover photograph: Field equipment awaits pickup by a Twin Otter aircraft on the Devon Ice Cap on Devon Island, Nunavut.

Section header image: A field camp at Lorillard River, Nunavut

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Part 1. Polar Continental Shelf Program

1.1 FOREWORD

The mission of Natural Resources Canada's (NRCan) Polar Continental Shelf Program (PCSP) is to provide safe, efficient and cost-effective logistics in support of science and federal government priorities. The PCSP provides logistics planning, coordination and advice for Canadian government, university, northern, independent and international researchers conducting field work, particularly in Canada's North. The PCSP delivers logistics support each year to scientific field projects in disciplines ranging from anthropology to zoology, in addition to federal operations and training projects. The latter include those conducted by the Department of National Defence's (DND) Canadian Armed Forces Arctic Training Centre (CAFATC).

The PCSP can provide the following types of logistics assistance:

- ▶ Chartered air transportation to and from remote field camps throughout the Canadian North.
- ▶ Field equipment for loan (including communications equipment and cold-weather clothing).
- ▶ Fuel for aircraft, field equipment and camps.
- ▶ Advice and coordination for shipping and receiving (including sealift and dangerous goods).
- ▶ Meals, accommodations and working space (including a multi-purpose laboratory) at the PCSP facility in Resolute, Nunavut.
- ▶ Scientific licensing and permitting advice.
- ▶ A communications network that links the PCSP with research teams in field camps throughout the Canadian Arctic.

Twin Otter aircraft at the PCSP Arctic logistics hub in Resolute, Nunavut





A helicopter is used for geological field research on Baffin Island, Nunavut.

The PCSP's clients and partners rely on the PCSP for expert advice that enables them to conduct field studies safely and successfully. More information about the PCSP is available on the PCSP's website at www.pcsp.nrcan.gc.ca.

This manual is based on the PCSP's many years of experience. It provides guidelines and information on what the PCSP expects of you and what you can expect from the PCSP. This manual also highlights important components of PCSP Arctic operations to make it easier for you to plan and conduct Arctic field studies and for the PCSP to help you to do this work.

Ultimately, you and each member of your team have the responsibility to be properly trained and prepared for working in the Arctic and accept responsibility for your personal health, safety and preparedness. Careful planning is essential to the success of your Arctic field project.

1.2 LOGISTICS REQUEST PROCESS

The PCSP supports researchers from Canadian federal, territorial, and provincial governments, universities, and northern organizations conducting field work in the natural or social sciences. Logistics are also available to international research organizations and private research institutions, subject to feasibility and overall demand for PCSP assistance. The PCSP also supports Arctic training activities, including those of the CAFATC, and federal government operational field work to service scientific equipment and perform inspections.

By coordinating multiple projects and seeking opportunities to share resources between projects, the PCSP creates synergies and increases the feasibility of individual projects. The deadline for submitting a request for Arctic logistics coordination assistance is in **late October** each year for field work during the following calendar year. This deadline allows sufficient time for the PCSP to develop a season plan that optimizes efficiencies and safety and reduces costs as much as possible, which is necessary for work in Canada's North.

Before you complete an Arctic logistics request form, you should plan your field work and have a thorough understanding of your logistics requirements. You will have to provide details about your needs for chartered aircraft, fuel, field equipment and accommodations at the PCSP Arctic logistics hub in Resolute. You will also be asked for information about your field camp location(s), field party, planned use and load details for each aircraft request. The PCSP also requests a project description, a health and safety plan, and information to conduct an environmental assessment pre-screening, which help the PCSP assess its ability to provide logistics support. It is important that you review this manual, including the PCSP's terms and conditions in the "Appendix," before you apply.

Although the PCSP may be able to provide advice, share best practices and help provide contacts, the PCSP **does not supply** (i.e. arrange, procure or provide) the following field program components, which may also be considered logistics:

- ▶ Commercial flights, accommodations or equipment rentals.
- ▶ Food and personnel for field camps.
- ▶ Training field party members and personnel.
- ▶ Wildlife monitoring services.
- ▶ Community liaison.
- ▶ Required licences and permits or environmental assessments.
- ▶ Scientific fieldwork planning.
- ▶ Firearms.
- ▶ Site cleanup and environmental remediation including removing fuel drums.
- ▶ Project endorsement.

PCSP planning and coordination is intended to reduce costs for projects while maintaining a focus on field safety. The PCSP provides advice, coordination and planning free of



A sling load is attached to a helicopter on Banks Island, Northwest Territories.



Researchers load field gear into inflatable boats on the Pelly River as part of geological studies in Yukon. Inflatable boats are part of PCSP's field equipment inventory.

charge to eligible projects but recovers the direct expenditures made on behalf of a project (e.g. one hour of flying billed to the PCSP will, in turn, be recovered from the client). For Canadian projects, the PCSP can, at times, defray a portion of the eligible logistics costs for eligible projects. This type of support is referred to as direct, in-kind support. Canadian researchers are invited to indicate in their application if they want to request direct, in-kind support for their field logistics.

Note that federal government researchers can request field equipment at any time of the year for use in areas of Canada outside the Arctic. The PCSP provides only field equipment and shipping and receiving for projects in field locations outside the Arctic. The PCSP's Ottawa logistics hub, which is the PCSP headquarters and principle depot for PCSP field equipment, is open year-round. Submit your request at least eight weeks in advance to ensure availability of equipment and allow adequate time for shipping.

1.2.1 Review process

After the late October deadline for submitting Arctic logistics request forms, the PCSP assesses the feasibility of the submitted projects and

seeks priorities for its logistics support from relevant organizations. For more information on the prioritization process for your organization, contact the PCSP.

The PCSP Project Review Committee reviews all Canadian university projects. For more information on the methodology of the Project Review Committee, see the Project Review Committee Scoring Guide on the PCSP website.

Once a project is fully accepted, planned and coordinated, a formal project agreement is sent to the client. This document confirms all planned logistics, provides estimated costs and reminds researchers of the terms and conditions for PCSP support. Note that NRCan may require a credit check to be performed. This documentation will be sent with your project agreement and must be completed prior to any logistics being provided.

1.2.2 Conditions of support

Specific terms and conditions apply to the specific types of logistics support provided to your project. See the "Appendix" for the Terms and conditions of Polar Continental Shelf Program support. You are agreeing to all terms and conditions when you sign your project agreement.

A field crew installs a global positioning system (GPS) receiver during field work on Richards Island, Northwest Territories.





Part 2. PCSP Arctic logistics

2.1 ARCTIC LOGISTICS HUB

The PCSP maintains a facility about 7 kilometres (km) northwest of the Hamlet of Resolute on Cornwallis Island, which borders Barrow Strait and the Northwest Passage. The PCSP facility is close enough to the Resolute airport that aircraft can taxi directly from the runway to the facility.

Resolute is one of the coldest inhabited places in the world, with a daily average temperature of -15.7°C . It has a polar desert climate with long, cold winters and short, cool summers. Most of Resolute's precipitation falls as snow, typically from September to May. The harbour at Resolute is open to receive shipments via sealift only in August and September.

Resolute is in the Central Time (CT) zone (UTC-6) and uses daylight saving time. In Inuktitut, Resolute is known as Qausuittuq, or the "place with no dawn." Although Resolute has 24-hour darkness during much of the winter, it enjoys 24-hour sunshine from late-April until mid-August each year.

The PCSP Arctic logistics hub in Resolute has a footprint of about 7,500 square metres (m^2) of buildings on almost 26,000 m^2 of leased land (see Figure 1). The facility comprises the following:

- ▶ An operations building that houses the PCSP Operations Centre and adjacent Arctic Training Centre (ATC) Operations Centre.
- ▶ The Martin Bergmann Complex, which includes all sleeping quarters, lounge areas, a fitness room, office spaces and the kitchen and dining facilities.
- ▶ The Dr. Roy M. "Fritz" Koerner Laboratory.

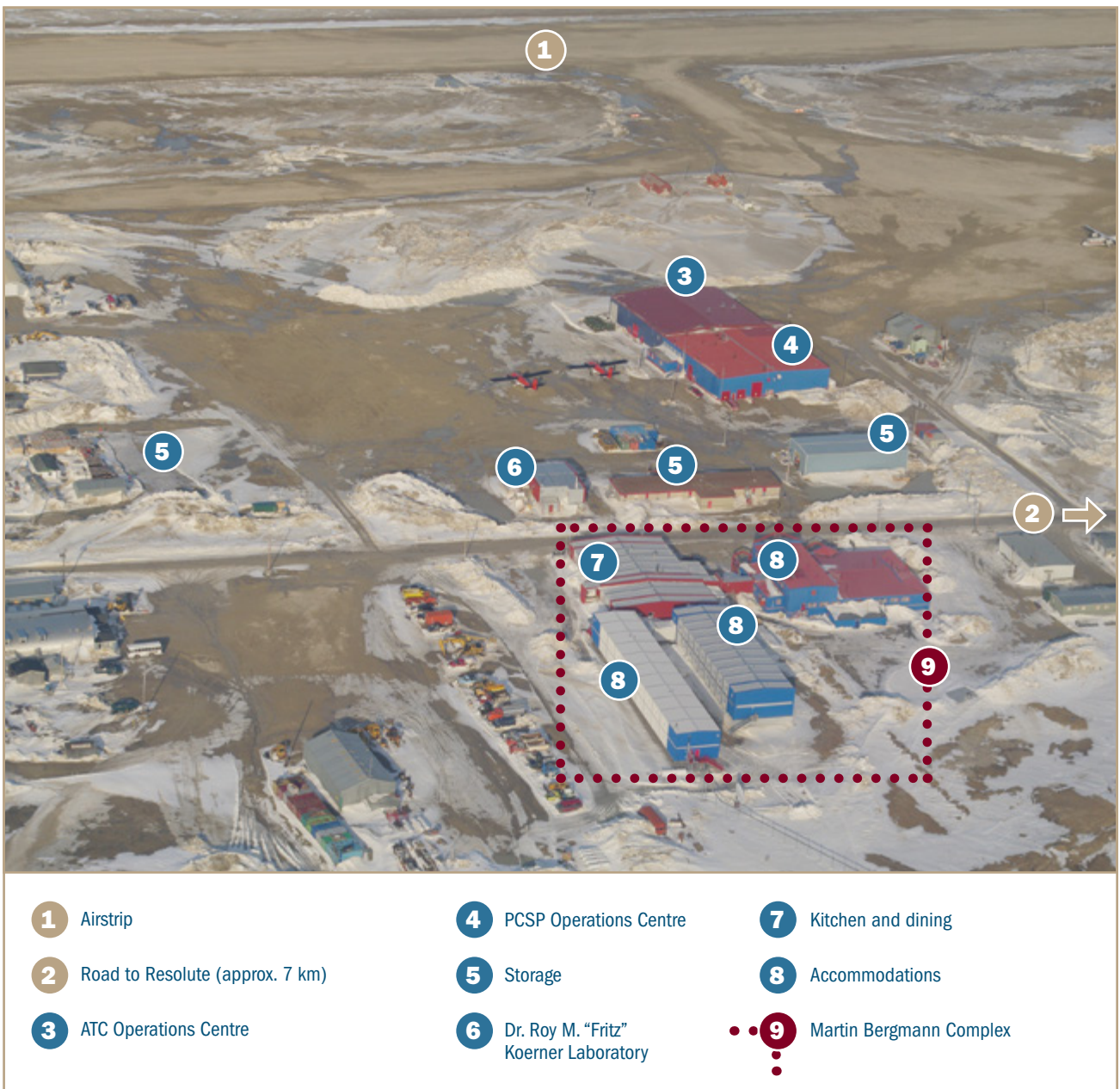


An accommodations building at the PCSP Arctic logistics hub

The PCSP facility can accommodate up to 237 clients, staff and pilots. The facility is typically open from February to September, but this period can fluctuate depending on user requirements each year. The PCSP can also

facilitate access to accommodations in Eureka and Alert, Nunavut, in facilities owned by the federal government. Requests to stay at the PCSP facility in Resolute must be made during the annual Arctic logistics request process.

Figure 1. PCSP facility in Resolute, Nunavut



2.1.1.1 Martin Bergmann Complex

The Martin Bergmann Complex has three wings for sleeping accommodations that can meet a variety of client needs:

- ▶ Shared bedrooms (two people to a room) that have two single beds, a closet, a desk, a chair and access to common washrooms and showers.
- ▶ Single bedrooms that have one double bed, a closet, a desk, a chair and an ensuite bathroom.
- ▶ Two wheelchair-accessible single bedrooms that each have a double bed and an ensuite, accessible bathroom.
- ▶ Shared bedrooms (four people to a room) that have two sets of bunk beds, lockers and an ensuite bathroom.

PCSP staff will assign a room to you upon arrival, according to operational and accessibility requirements. Every bed has a mattress with a cover and a pillow with a cover. You must bring



The main entrance to the Martin Bergmann Complex

your own sleeping bag; sheets and blankets are not provided. You will also need to bring a towel, washcloth and personal toiletries. Washers, dryers and laundry soap are available at the facility.



A shared bedroom at the facility



A lounge in the Martin Bergmann Complex

The Martin Bergmann Complex has lounges with satellite television, a library, a fully equipped fitness room, offices and meeting rooms, and a boardroom that may be reserved by contacting a PCSP Logistics Operations Officer on site.

The fitness room is not supervised; you use it at your own risk. Ensure that you know how to use the fitness equipment correctly and exercise at levels appropriate for your health.

Internet access is available at the facility. In the Martin Bergmann Complex, the Internet is available via wall outlets or wireless connection, depending on the area. Wired access is also available in the laboratory. **Internet bandwidth is limited**, and restrictions apply to the use of the Internet for live streaming, downloading large data files or using programs such as Skype™ or YouTube.

Two telephones in privacy booths are available for visitors to make personal calls, either by calling collect or using a calling card that you bring with you. The Co-op store in Resolute sometimes has calling cards for purchase.



The fitness centre at the facility

2.1.2 Operations Centre

The PCSP Operations Centre has garages for use by the PCSP mechanic, a large storage hangar and some working space for client use.

Space may be available for storing field equipment between field seasons on a first-come, first-served basis. Storage space consists of caged enclosures on the upper level of the working building, and space is assigned by the PCSP stores person. A charge for storage space use may apply. **Chemicals and hazardous materials (including fuels) are not permitted in the storage spaces.** The storage enclosures may be shared with other people, but they will be locked when not in use. The key for your storage space must be left with the PCSP.

If you bring boxes of food for your field camp and plan to leave them at the PCSP facility in Resolute for future camp resupply, organize and number them so that you can call on the radio for specific boxes for each supply run.



A Twin Otter aircraft is loaded in Resolute, Nunavut.

The ATC Operations Centre was added in 2013, effectively doubling the size of the PCSP Operations Centre; however, the ATC Operations Centre is uniquely designed to meet DND needs and is not generally available for use by PCSP clients from other organizations.



PCSP Operations Centre



The dining hall
in the Martin
Bergmann
Complex



2.1.1.3 Food services

The PCSP serves three meals per day to clients staying at the Arctic logistics hub in Resolute. The facility has a dining room that can seat 100 people at a time. There are set meal times and our kitchen staff are able to accommodate allergies or dietary restrictions, if given sufficient notice. Inform the PCSP Logistics Operations Officers of any allergies or dietary restrictions before you arrive.

Box lunches are not routinely provided. Subject to operational requirements, the kitchen staff may prepare box lunches for clients with approval from the PCSP Logistics Operations Officers. For larger groups, at least 48-hours' notice is required.

Food supplies for field camps will not be issued from the PCSP kitchen, except in an emergency.

2.1.1.4 Dr. Roy M. "Fritz" Koerner Laboratory

The modern laboratory at the PCSP Resolute facility includes three laboratory areas, a walk-in freezer, a walk-in cooler, a -80°C freezer, fume hoods, a compressed air supply, a water purification system and sinks. The laboratory also has binocular microscopes, a centrifuge, balances and limited glassware. For more information about the laboratory, contact the PCSP for a copy of the *Procedures and Safety Guide for the Dr. Roy M. "Fritz" Koerner Laboratory*.

You must request use of laboratory areas when you initially request PCSP support through the Arctic logistics request form. Access to the laboratory is restricted to users authorized by the PCSP. Before using the laboratory, you must review the *Procedures and Safety Guide for the Dr. Roy M. "Fritz" Koerner Laboratory* and take an orientation tour. A project's Principal Investigator must provide the PCSP with copies of all Material Safety Data Sheets before bringing any chemicals into the laboratory.

Chemicals cannot be stored in the laboratory between field seasons. The Principal Investigator for each project is responsible for removing all chemicals and chemical waste from the laboratory before leaving the facility and for arranging proper transportation and disposal of hazardous goods. Use of radioisotopes and perchloric acid are prohibited.

2.1.5 PCSP vehicles

Four-wheel- and two-wheel-drive trucks and vans are stationed at the PCSP Arctic logistics hub. They are used by PCSP staff to meet clients at the airport, move material around the facility, and load and unload aircraft. A PCSP vehicle may be made available for client use, with permission from the PCSP, and a minimum or daily rate may be charged to your project for vehicle use. A photocopy of a valid driver's licence is required by the PCSP before you may drive a PCSP vehicle. You are responsible for loss and damage (normal wear and tear excluded) to PCSP vehicles while they are in your possession.



Dr. Roy M. "Fritz" Koerner Laboratory

2.1.6 Client responsibilities and code of conduct

■ Firearms

Firearms and ammunition must be transported and handled in accordance with the *Firearms Act*. When you are at the PCSP facility in Resolute, you must surrender all firearms and ammunition to the PCSP's Regional Firearms Custodian Officer for safe storage. You will be required to present your Possession and Acquisition Licence (PAL) when you surrender your firearm and before retrieving it. Ensure you have your PAL with you in the field at all times. **Firearms are NOT permitted in the Martin Bergmann Complex under any circumstances.**

■ Smoking

In accordance with the *Non-smokers' Health Act* and the Treasury Board of Canada Secretariat policy on smoking in the workplace, smoking is prohibited in NRCan workplaces, including the PCSP facility in Resolute. "Smoking" includes, but is not limited to, using tobacco products, electronic cigarettes, electronic nicotine delivery systems or products that produce vapours.

Smoking is prohibited in any outdoor area in the vicinity of a perimeter building opening (i.e. air intake, window or other opening) where it is likely that smoke will have an impact on indoor air quality. Where indoor air quality is deemed to be impacted, smoking will be prohibited within 9 m of the building opening or from the property line, whichever is least.

Smoking is prohibited in any area adjacent to refueling operations for aircraft, other areas of heavy equipment operation and maintenance or adjacent to storage areas for flammable substances, such as fuel tanks and fuel drums.

■ Alcohol

In Nunavut, the regulations for purchasing, consuming and importing alcohol vary by community and fall under one of the following four systems: prohibited, committee, restricted or

unrestricted. Resolute is designated as restricted, and therefore, you must obtain a permit to bring alcohol into the community, including into the PCSP facility. Contact the Nunavut Liquor Commission for detailed information about applying for a permit, restriction regulations and local Alcohol Education Committees. Be aware that permit approval can take several weeks.

The PCSP facility in Resolute is an NRCan workplace and, as per the *Canada Labour Code*, Part II, the abuse of any alcohol, illicit drugs or prescription or over-the-counter medications will not be tolerated at the facility.

■ Footwear

Following health and safety requirements, shoes must be worn in the NRCan workplace, which includes the PCSP facility in Resolute. Boots and outdoor shoes may not be worn in the Martin Bergmann Complex. Wear indoor shoes or slippers at all times in this building. If needed, mud covers are available.

■ Attire

While dress at the PCSP facility in Resolute is casual, a dress code is in effect in the common areas of this federal government workplace. As a courtesy to all, wear appropriate attire (i.e. do not wear pajamas or undergarments) in the common areas of the Martin Bergmann Complex.

2.1.7 Medical services in Resolute

There is a health centre (also called the nursing station) in Resolute. However, the closest doctor is in Iqaluit, which is at least a four-hour flight away. You are responsible for bringing an adequate supply of all medication you will require during your stay in Resolute and during your field work, including enough to cover any unexpected travel delays. Prescription and over-the-counter medication cannot be purchased in Resolute, and, with the exception of medical emergencies, medications cannot be provided by the Resolute Health Centre to out-of-territory visitors.



Helicopters are tethered at a field camp at Johnson Point on Banks Island, Northwest Territories.

2.2 CHARTERED AIRCRAFT

The PCSP can charter, schedule and coordinate aircraft for your field requirements. See the “Appendix” for specific terms and conditions that apply to aircraft operations. This chapter provides additional information for planning purposes.

Note that the PCSP will not put anyone alone into the field. Also, every field party must include at least one person in the field at all times who has significant experience working in the Arctic. Significant experience is defined as a depth and breadth of experience normally acquired by having performed a broad range of related activities in the field for a period of at least three years.

2.2.1 Weather observations and forecasts

The PCSP Logistics Operations Officers at the PCSP Arctic logistics hub have access to satellite weather imagery nearly in real time. PCSP staff and pilots use this information to plan daily aircraft operations.

If you are expecting an aircraft at your camp or if an aircraft will be flying in the vicinity of your camp, you may be asked for weather information during the PCSP’s daily scheduled radio calls (see Section 2.6.3 Radio schedules and watch). This basic weather information will include variables such as cloud ceiling height, visibility distance,

type of precipitation falling (if applicable), and wind speed and direction. It is important that you be as accurate and knowledgeable as possible when providing weather information. During the radio call, PCSP Logistics Operations Officers can provide a general overview for your area to help you with planning your daily activities, if requested.



Researchers wait out a storm at a field camp on Devon Ice Cap, Nunavut.



A Twin Otter aircraft on sea ice

2.2.2 Types of aircraft

The PCSP uses various types of chartered aircraft, including fixed-wing (airplane) and rotary-wing (helicopter) machines. Table 1 lists aircraft that can be chartered by the PCSP for Arctic field work and is provided for your information and planning. Other aircraft may be available upon request. Contact the PCSP's Logistics Operations Officers to discuss all aircraft requirements.

Table 1. Chartered aircraft available through the PCSP

Aircraft type	Cruise speed (km/hr)	Fuel consumption (L/hr)	Maximum load for distance* (kg)	Maximum load with minimum fuel* (kg)	Maximum number of passengers
Twin Otter DHC-6-300	241	400	544	1,588	12
BT-67 Skis	322	800	1,361	2,948	18
BT-67	354	800	2,268	3,856	18
Bell 206B	161	114	428	1,080	4
Bell 206LR	177	127	540	1,250	6
Astar BA	201	174	577	1,725	5
Bell 206L-3	177	130	579	1,250	6
Bell 206L-4	177	174	700	1,525	6
Astar B2	209	200	800	2,250	5
Bell 407	241	200	824	2,550	6
Astar B3	217	190	824	2,750	5

*Note: All loads listed in the table include passengers whose average weight is assumed to be 82 kilograms (kg). The data reflect the performance of aircraft under ideal conditions.

Researchers carry a sample pail to a helicopter at Parker River, Banks Island.



2.2.3 Aircraft safety requirements

Check with your employer about aviation safety training, insurance requirements or waivers that may be required before you fly on aircraft arranged by the PCSP.

Air charter companies are required to brief passengers before they use any aircraft. Such briefings are a contractual obligation for the aircraft company. Notify the PCSP immediately if you do not receive the required briefing.

The pilot of the aircraft has full authority on matters of safety at all times. You must follow the pilot's directions on where to sit in the aircraft, and you must advise the pilot of any dangerous materials being carried on the flight.

The field party is responsible for obtaining the latest maps, charts and aerial photographs of the area(s) where the aircraft will operate for the project. In addition, field party members must carry a sleeping bag and emergency rations in the aircraft, in case of emergency.

2.2.4 Fuel caching

The PCSP does not take responsibility for project-specific fuel caches; this is the responsibility of the project's Principal Investigator. It is also the responsibility of the Principal Investigator to ensure that a contingency plan is in place to minimize the risk of a fuel leak or spill and to address any fuel leaks or spills that may occur.

It is the Principal Investigator's responsibility to identify the location of any required fuel caches to PCSP Logistics Operations Officers. Your pilot will try to leave required fuel where requested, but may deem the location unfeasible and choose another nearby location. The pilot will notify the PCSP Logistics Operations Officers of the new location, and they will, in turn, notify you.

If you need an unplanned fuel cache to be established in the field, fuel call out charges will apply (i.e. you will be charged for the aircraft hours required to move the fuel).



Pilots prepare to land an aircraft on Ellesmere Island, Nunavut.

All field parties are legally required to clean up fuel caches and campsites immediately when leaving the field site. The policy is “one bag (drum) in, one bag (drum) out.” Removing drums from the field is part of your project planning and must be factored into the determination of the aircraft hours required for your project.

All spills of petroleum products or other hazardous materials over a certain quantity must be reported immediately to a PCSP Logistics Operations Officer and to the 24-hour spill report line for the territory in which you are working. See Section 2.5.1 Reporting fuel or hazardous materials spills for further details about reporting spills.



Refueling a helicopter at Johnson Point on Banks Island, Northwest Territories

2.3 FIELD EQUIPMENT

The PCSP can provide field equipment through its warehouses in Ottawa, Resolute and Cambridge Bay, Nunavut. The field equipment includes a wide range of items such as all-terrain vehicles, snowmobiles, outdoor clothing, camping gear and communications equipment. Before you use PCSP equipment, you must agree to specific terms and conditions, which are listed in the "Appendix."

Field equipment is prepared for shipment at the PCSP Ottawa logistics hub



Field equipment is lent without charge to PCSP clients, with the exception of expendable items (e.g. batteries, matches, garbage bags). A charge will apply for expendable items. Note that shipping costs are fully recoverable from the client. All equipment must be returned to the PCSP at the end of the field season. Clients are responsible for replacement costs of field equipment that is not returned or is lost or damaged because of misuse, abuse or neglect.

All PCSP field equipment is available to researchers; however, not all equipment is suitable for Arctic operations and some will not fit into the aircraft. You will be advised if the equipment you select is not appropriate. The PCSP's supply is limited, and the PCSP may need to substitute certain items or reduce quantities.

The PCSP does not provide training in the operation of PCSP field equipment. It is your responsibility to obtain the appropriate licence(s) and/or training required to operate and maintain the field equipment (e.g. all-terrain vehicle certification, snowmobile safety training, boating safety course). The PCSP may ask for proof of training and/or certification.

A field crew uses "fat bikes" and a trailer for transporting equipment in a coastal tundra environment.





All-terrain vehicles (left) and field equipment (right) at the PCSP Ottawa logistics hub

2.4 SHIPPING AND FREIGHT

2.4.1 General

The PCSP can help you to contact organizations responsible for receiving your equipment in locations other than Resolute. Your shipment details and the label on the cargo must include the following information:

- ▶ c/o the PCSP Resolute facility address or prearranged community-based destination
- ▶ your project number and the name of your project's Principal Investigator
- ▶ your (or a designated person's) contact information

You must pre-pay all shipments. The PCSP will not pay shipping charges or accept cash-on-delivery (COD) shipments. As well, shipments from the field must not be billed to the PCSP.

2.4.2 Shipping to and from Resolute

Every effort must be made to keep the weight of an individual unit or package below 90 kilograms (kg). All freight arriving at the PCSP facility in Resolute will be stored indoors, if possible. Shipments should be sent in sufficient time before your arrival for any missing items to be tracked and located.

The PCSP can receive your food shipments during the field season and will get them to your camp on the next available flight. Make sure all shipments are labelled appropriately and organized well in advance of your arrival.

Your equipment, instruments, samples and other field gear should be returned to your home organization at the end of every field season. You must box, secure and weigh your shipment before you leave Resolute. Both air freight and sealift to Halifax, Nova Scotia, or Valleyfield, Quebec, are options for shipping. The PCSP can help you make shipping arrangements for your gear and samples.

2.5 FUEL FOR FIELD CAMPS

Camp fuels are available from the PCSP facility in Resolute only. All fuel containers must be returned to the PCSP facility in Resolute. Clients are responsible for ensuring appropriate fuel containment at their field sites and using secondary containment, if applicable. All field camps must be equipped with a spill kit, and all field party members should know how to use it. The PCSP can provide fuel spill kits to field camps or provide advice on purchasing them.

Leftover fuel must not be disposed by dumping or burning. You are responsible for the safe disposal of any unused fuel. The removal and proper disposal of all fuel and fuel containers from your field site should be part of your field plan.

The camp fuels available to clients from the PCSP facility in Resolute include:

- ▶ **Diesel:** It is used in heating stoves and some generators and is available from the PCSP in bulk or in 205-litre (L) drums. A full drum weighs 190 kg.
- ▶ **Gasoline:** It is used in trucks, snowmobiles, some generators and all-terrain vehicles and is available from the PCSP in varying amounts up to 205-L drums. A full drum weighs 182 kg.

PCSP can supply fuels for various uses, including camp stoves, heaters and other field equipment.

- ▶ **Propane:** It is available from the PCSP in 11-kg and 45-kg tanks. The larger tank weighs 81 kg when full.
- ▶ **Naphtha (white gas):** It is sometimes used in camp stoves or catalytic heaters and is available in 1-L, 22-L or 45-L containers. One litre of naphtha weighs about 1 kg.

2.5.1 Reporting fuel or hazardous materials spills

All spills of petroleum products or other hazardous materials over a certain quantity must be reported immediately to a PCSP Logistics Operations Officer and to the 24-hour spill report line for the territory in which you are working.

Report spills that occur in Nunavut or the Northwest Territories to:

Nunavut and Northwest Territories 24-hour spill report line

Tel.: 867-920-8130

Report spills that occur in Yukon to:

Yukon 24-hour spill report line

Tel.: 867-667-7244

More information about reporting fuel or hazardous material spills in each territory can be found at the following websites:

Yukon

www.env.gov.yk.ca/environment-you/spills.php

Northwest Territories

www.enr.gov.nt.ca/programs/hazardous-materials-spills/reporting-spills

Nunavut

www.gov.nu.ca/environment/documents/spill-response



2.6 FIELD COMMUNICATIONS AND MAIL

2.6.1 Field party communications

Communications are essential to safe operations in the Arctic. Clients may request satellite telephones from the PCSP to ensure they can be reached by the PCSP or contact the PCSP for safety advice and in case of emergency while in the field. Each field camp must contact the PCSP at least once every 24 hours or the PCSP will initiate a search at the client's expense.

The PCSP uses PCX-250 high-frequency (HF) radios. These portable radios are small and effective and are used with an inverted V or a dipole antenna, which is easily erected in the field. If you are working out of Resolute, a radio will be issued to you from the facility before you go to the field. The antenna should be set up perpendicular to the direction of communication and raised as high off the ground as possible. Any portion of the antenna may serve as a receiving aerial, but you need the full length for transmitting. Your field party is obligated to treat the radio gear with great care.

The call sign for Resolute is XMH-26. Field camps usually use call signs that indicate their geographic locations.



A satellite telephone is used in the field.

Ensure that your field party has a plan in place for communicating with any groups who are separated from the main camp on day trips. Whether using satellite telephones, high-frequency radios or other communications equipment, your field party must ensure that enough devices are available for the main camp and each group of researchers that is working away from camp on day trips. Have a means of communication other than radio, in case issues arise with using the radio system. Field team members must be familiar with the daily communications routine with the main camp and with the PCSP.

An HF radio antenna at a field camp on Axel Heiberg Island, Nunavut



2.6.2 Radio frequencies and licences

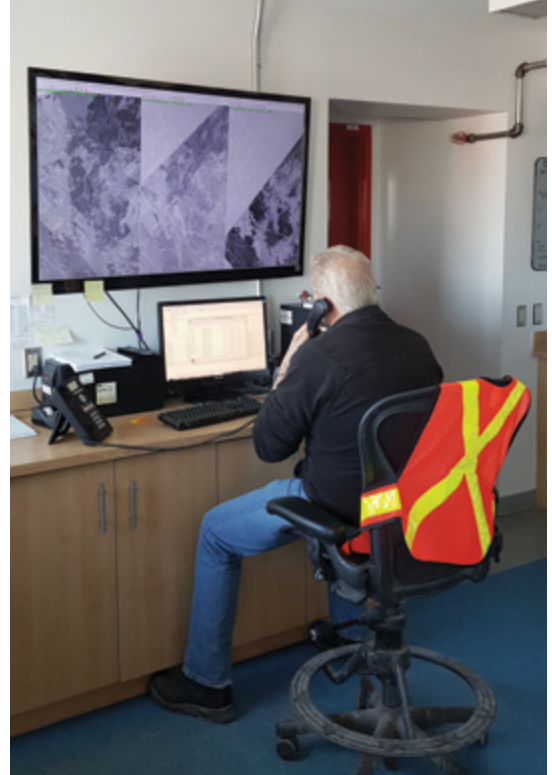
PCSP radios operate in the HF range. With HF radio, your communications may be heard clearly hundreds of kilometres away. The primary frequencies for communications between the PCSP and field parties are 4472.5 kilohertz (kHz) and 4441.0 kHz. The antennae that are supplied with PCSP radios will operate on either frequency.

If you want to use a frequency that has been assigned to a private company or an individual or if you want to install a PCSP frequency in your own radio, you must obtain prior written approval from the holder of the frequency. Parties using their own radio must obtain a licence and an assigned frequency to operate a radio in Canada, at their own expense. The PCSP may request proof of licensing. Contact Industry Canada for an Application for Licence to Install and Operate a Radio Station in Canada and a Mobile Radio Station Licence Application.

If your project is supported by the PCSP and a PCSP radio has been issued to you, a separate licence is not required. The PCSP holds the licence, and you will be covered by it.



An HF radio kit available from the PCSP



Field parties contact PCSP Logistics Operations Officers twice-daily during scheduled calls using HF radio and satellite telephones.

2.6.3 Radio schedules and watch

During twice-daily scheduled radio calls, also known as the radio “sked,” the PCSP will contact field camps in the order that they went into the field. Calls are made daily at 07:30 and 19:00 CT (UTC-6). If radio communications are not possible at your location and you are using a satellite telephone instead of a radio, call the PCSP facility in Resolute at the scheduled radio call times. You must make every effort to adhere to the programmed schedule. If you cannot make contact with the PCSP or any other field party, check your radio batteries and antenna and keep trying, or call in by satellite telephone. If you miss a radio “sked” for reasons beyond your control, call the PCSP facility in Resolute at your earliest opportunity.

PCSP Logistics Operations Officers monitor the radios from 07:00 to about 20:00 CT (UTC-6) each day. Note that Resolute is in the Central Time (CT) zone and observes daylight saving time. When aircraft are flying outside of these hours, either a PCSP Logistics Operations Officer maintains flight watch or the pilot communicates with Arctic Radio.

2.6.4 Mail service from Resolute on chartered aircraft

While you are in the field, staff at the PCSP facility in Resolute will pick up mail at the Resolute post office and forward it to you on the next PCSP flight to your camp. Postage-paid mail sent from your camp can be taken to the post office for mailing. The Principal Investigator for each project must send a list of names of all members of their field party to the PCSP before going to the field, which helps get mail and messages to their proper locations. Mail going to field camps should be addressed as follows:

Addressee's name
c/o the name of your project's Principal Investigator and your project number
c/o Polar Continental Shelf Program
Resolute NU XOA OVO

Before proceeding to the field, ensure that you have enough envelopes and stamps. The PCSP will not supply envelopes or postage for your mail.

2.7 FIELD EMERGENCIES AND RESCUE

2.7.1 Medical emergencies

The field party leader must document all injuries that occur at camp or in the field and report them to the PCSP. Discussion with the PCSP will determine if a medical evacuation is required. When a medical evacuation (also known as a "medevac") from camp is required, this early discussion with the PCSP allows for rapid transportation of the injured party.

Note that most employers will require that documentation of any incidents be provided immediately for occupational health and safety reporting and compensation claim process requirements. You should have a list of field participants and their emergency contact information with you and with your employer. You will also be required to provide a copy of this list to the PCSP Logistics Operations Officers.



A field camp on the Cumberland Peninsula of Baffin Island, Nunavut

2.7.2 Aircraft incidents

The safety of our clients and our air charter partners is of the utmost importance. The PCSP requires that any incident be reported immediately, including concerns regarding the pilot, the aircraft, procedures and missed pick-ups. The PCSP documents and follows up on all aircraft incidents. Receiving timely information is essential to this aspect of PCSP's safety framework.

Note that as soon as an aircraft is known to be in distress or two hours after it fails to land on schedule, the PCSP will initiate a search and rescue (SAR). During a SAR mission, continuous radio watch will be maintained and all field parties must stay off their radios, unless there is a new emergency, until the SAR mission is completed.

A field camp at Hare Fjord on
Ellesmere Island, Nunavut





Part 3. Advice on Arctic field work

This section will help you with planning for your field project through sharing some of the knowledge that the PCSP has acquired through its extensive experience operating in the Arctic and supporting scientific field parties. Note that this *Polar Continental Shelf Program Arctic Operations Manual* is not a substitute for proper training.

Working in the Arctic presents many potential hazards, including wildlife, extreme weather conditions, difficult terrain and isolation. Plan ahead and ensure all field party members are trained appropriately for potential hazards, such as first aid; safe and proper operation of all field and communications equipment; predator awareness; handling chemicals; and using personal protective equipment, as applicable. You may want to consider conducting task hazard analyses of your planned field activities.

3.1 HEALTH AND SAFETY

Safety considerations are paramount when working in the Arctic. Ultimately, you are responsible for your own safety. The PCSP does not provide specific training related to field work. It is your responsibility to have a proper health and safety plan in place and to ensure all participants have the appropriate training required. Every field party member should be familiar with and have a copy of the field safety, communication and emergency procedures for your field project.

Note that PCSP will not put anyone alone into the field. Field work should be conducted in teams. Every field party must have at least one person in the field at all times who has significant experience working in the Arctic. Significant experience is defined as a depth and breadth of experience normally acquired by having performed a broad range of related activities in the field for a period of at least three years.



An auger is used to drill a hole through sea ice.



A rock saw is used to sample bedrock west of Wager Bay, Nunavut.

3.1.1 Insurance

You should be aware of and plan according to your organization's insurance and health and safety requirements and policies. Each field party member should ensure that he or she has adequate insurance coverage for personal travel, including coverage for flying in chartered aircraft, emergency medical evacuation, repatriation and disability. Field party members should check with their insurance providers and/or employer to determine if they have appropriate coverage.

For their part, all commercial aircraft operators will have a Certificate of Insurance detailing their coverage. You may wish to ask a PCSP Logistics Operations Officer about a particular aircraft operator's Certificate of Insurance.



3.1.2 First aid

All members of your field party should hold valid first aid training and cardiopulmonary resuscitation certificates. Wilderness first aid training is also strongly recommended for field party members, given the remote nature of much northern field work and lack of readily accessible health care services. It is also encouraged to have at least one person in camp certified as a Wilderness First Responder.

Each field party should carry a well-stocked field medical kit, and any small party doing field work separately from the rest of their field party should also be equipped with a first aid kit.

Field party members should bring an adequate supply of any required medication for the duration of field work, including enough to cover any unexpected travel delays. If you are allergic to bee stings, carry appropriate allergy medication because bees live as far north as Alert, Nunavut.



Standard (above) and portable (below) first aid kits are available through the PCSP.



3.1.3 Firearms

If you are bringing firearms to a field camp, you must hold a valid PAL. Consult the Royal Canadian Mounted Police's (RCMP) Canadian Firearms Program for information about licensing in Canada. You should familiarize yourself with the current regulations and legislation on firearms, which is available on the RCMP website.

If you are planning to work in a national park and bring a firearm with you, contact Parks Canada for requirements and/or permits for carrying a firearm in a national park.

Ensure that all ammunition is removed from firearms before they are transported to and from the field. Refer to the *Transportation of Dangerous Goods Act, 1992* and associated regulations for more information on requirements for shipping firearms and ammunition. Consult Section 2.1.6 Client responsibilities and code of conduct for requirements if you are bringing firearms to the PCSP facility in Resolute.

3.2 LICENSING AND PERMITTING

All projects submitted to the PCSP for logistical support undergo a federal environmental assessment pre-screening related to the *Canadian Environmental Assessment Act, 2012*. For this pre-screening, applicants are asked two questions about their field work on their logistics request. When necessary, the PCSP will contact the applicant with further pre-screening questions. This pre-screening does not replace any environmental screening or assessment that may be required by territorial or other environmental assessment organizations for your proposed field work. Environment and Climate Change Canada has online resources that provide information about relevant legislation and the activities that require an environment assessment.

Most field research requires other licences, permits and environmental screenings. The documentation required will vary by licence/permit/screening, depending on the type of work you are conducting and location(s) of your studies. It is essential that clients investigate, well in advance, the licensing and permitting requirements that may govern their research in the Arctic. Obtaining all required licences, permits and project screenings by federal and territorial government organizations or other agencies for field work is the sole responsibility of the client (not the PCSP). Any costs associated with obtaining licences, permits and project screenings are also responsibility of the client.

Note that the licensing process can be lengthy, and you should apply at least three months before you plan to go into the field.

All scientists working in the Arctic need a territorial scientific research licence. It is the responsibility of each Primary Investigator to obtain this licence before undertaking field research. The following agencies issue territorial scientific research licences. They can advise you about required documentation and help you obtain a licence. They are also a resource for general licensing and permitting information for Arctic field studies.

Nunavut

Nunavut Research Institute
www.nri.nu.ca

Northwest Territories

Aurora Research Institute
www.nwtresearch.com

Yukon

Heritage Resources Unit
Department of Tourism and Culture
Government of Yukon
www.tc.gov.yk.ca/scientists_explorers



Iqaluit, Nunavut

3.3 COMMUNITY ENGAGEMENT AND CONSULTATION

Field science can affect local people, communities and environments. Even when research does not directly involve local people, it may still have an impact on the land, water or wildlife of the region, which can influence residents directly and indirectly. The word “community” is not restricted to a settlement alone; the land that supplies resources for a settlement and the people who live on the land are part of the community.



Resolute, Nunavut

The unexpected arrival of researchers in a community may be disruptive. Well in advance of the planned field work, the Principal Investigator for each project should contact relevant groups to discuss the planned field research. This may include the hamlet council and the local hunters and trappers organization of the community closest to his or her study site. Give the community information about the type of research and field studies you plan to undertake and work with the community to build mutually respectful relationships.

Community engagement should be part of all aspects of your research from the conception, design and execution of your field studies to data analysis and publication of results. Consider how your research team can effectively disseminate the results of its research to northern communities and participate in outreach initiatives.

All researchers working in the Arctic must adhere to ethical principles while conducting their research. The Association of Canadian Universities for Northern Studies published *Ethical Principles for the Conduct of Research in the North* as a reference guide. It is available on its website. The principles promote co-operation and mutual respect among researchers and the people of the North. All field party members should read this

booklet, even if your research team is not working out of a settlement or is not doing research in a social sciences field. Your project must meet all ethical, environmental and legal requirements and regulations for conducting your field work, or you may not be allowed to undertake your field studies. Note that cultural products, artefacts and animal skeletons or parts must not be touched or moved without special permits or licences.

3.4 PROVISIONS

Each field party must be self-sufficient. Unless you are based in a community for field work, you will need to purchase most or all of the food for your camp and ship it to your staging community well in advance of leaving for the field. Stores in northern communities carry a limited selection of food products and hardware. You may want to supplement the camp food that you shipped with provisions from these stores.

Note that the kitchen at the PCSP facility in Resolute cannot provide food supplies for field camps (see Section 2.1.3 Food services).

Note that hunting and fishing in Nunavut, the Northwest Territories and Yukon are not permitted without proper licensing.

3.5 CLOTHING

Be sure to have field clothing that is appropriate to the time of year, location(s) of field studies and types of planned field activities. In general, multiple layers of clothing are warmer and more effective for adapting to changing weather conditions than a single, thick layer. Clothing should be selected to allow free movement, keep you warm, allow perspiration to disperse and be comfortable, regardless of the weather. Clothing and footwear size should be large enough to accommodate an extra layer of insulating clothing, and outerwear should provide protection from wind and water.

Staying dry is important for staying warm. If your clothing becomes wet, change into dry clothing. Weather conditions in the Arctic can change dramatically; plan ahead.

Specialized outerwear (e.g. parkas, boots, snow pants, insect protection jackets) may be borrowed from PCSP's field equipment inventory. Identify these items in your Arctic logistics request form.

3.6 FIELD CAMPS

3.6.1 Emergency evacuation procedures

All field party members should understand emergency and evacuation procedures and protocols for field sites. In an emergency evacuation of your camp, follow this order of priority for evacuation:

1. personnel
2. scientific data
3. equipment (set priorities based on value, weight and bulk)



Field clothing is part of the PCSP's field equipment inventory.



A longhouse tent at a field camp at Johnson Point on Banks Island, Northwest Territories

3.6.2 Campsite selection and maintenance

Selecting a campsite requires careful planning. You must combine safety considerations, environmental suitability, access to study sites and proper access for aircraft. Here are some suggestions:

- ▶ For the best radio reception, set up camp on flat land or a hilltop.
- ▶ Always look for a nearby source of water when selecting a campsite.
- ▶ To limit wind exposure, camp on the leeward side of a ridge, if possible.

- ▶ Never camp in a ravine or creek bottom because a sudden shower or warm weather may cause the release of a substantial amount of water into your campsite. Camping in a ravine also may cause poor radio and satellite telephone reception.
- ▶ On glaciers, check that the camp area is free of crevasses, and never camp near the snout of a glacier, where katabatic winds can damage camp gear.
- ▶ On sea ice, make camp in a stable area, on multi-year ice or on land fast ice. Separate fuel, tents, food, generators and communications equipment to avoid losing all camp gear at once because of ice fracture.

Organize material in your camp so you can locate it after a snowstorm by piling items in one location and covering them with a tarp. Poles or pieces of wood can mark the four corners of your cache.

Every effort should be made to minimize the human impact of scientific investigations and campsites on the environment:

- ▶ When leaving a campsite, try to return it to its natural state. For example, you can scatter rocks that were used to hold down tents, flatten snow mounds and remove all garbage, packing it in a suitable manner for transport out of the field.



A field camp at Lorillard River, Nunavut



Logan tents at a field camp on Baffin Island, Nunavut

- ▶ In winter and spring, some snow contamination around camp may occur, but keep pollution to a minimum.
- ▶ In an ice camp, where the ice is your source of drinking water, the snow and ice must be kept clean from surface pollutants to avoid contaminating your drinking water supply.
- ▶ In a camp on a glacier or sea ice, soot from stoves may produce meltwater ponds and accelerate melting in the summer.
- ▶ Clean up and contain any fuel spill waste appropriately, using a spill kit, for transport out of the field.

3.6.3 Garbage and human waste

Keep your camp clean and organized to avoid attracting bears and other wildlife and to be considerate of the environment.

The disposal of litter and garbage is a major challenge. Take all solid garbage out of the field with you for proper disposal. The increased sensitivity toward the problem of litter is backed by laws and regulations that govern disposal and levy penalties. Litter around camp is more than an eyesore; it gets blown by the wind



A field camp near the Hornaday River, Northwest Territories

and light objects could fly into the blades of a helicopter. When a blade is chipped or dented, the helicopter is grounded until new blades are shipped to the site.

Pay strict attention to sanitary habits and the use of camp sanitary facilities. It is important that each field member maintain a high standard of personal hygiene. Sanitation in and around a camp is paramount to good health.

Establish a latrine on the far side of a hill or ridge near camp and set up a signal system that tells everyone when the area is occupied.

Note that if you are working in a national park, certain rules may apply about human waste disposal. Contact Parks Canada for more information about the park in which you are planning to work.

3.7 WILDLIFE

During field work, you may encounter wildlife ranging from small birds and lemmings to Arctic wolves, muskox, polar bears and grizzly bears. All field party members must observe all game laws and avoid disturbing wildlife. Keep your camp clean, ensure waste is properly handled and contained, always be aware of your surroundings, and know how to handle wildlife encounters.

In most cases, unwelcome or hostile animals can be scared away by loud noises made by bear bangers, generators or vehicles. You may report the presence of a bothersome bear to a local Conservation Officer (in Nunavut and Yukon) or Renewable Resource Officer (in the Northwest Territories).

If you are working in a region known to have bears, hiring a bear monitor from a local community, at your expense, is recommended. You are advised to carry a firearm in areas of high bear concentration. It is common for field parties to be equipped with firearms whether in camp or during day trips. Every person who carries or uses firearms must have appropriate certification and carry their PAL with them in the field. For advice or specific information regarding bears or other wildlife in your study area, contact a Conservation Officer (in Nunavut and Yukon) or Renewable Resource Officer (in the Northwest Territories) in the community closest to your field site.

If a field party member kills an animal in self-defence, you must contact the appropriate officer (listed above) and turn in the animal's carcass.

Polar bears



3.7.1 Hunting and fishing

In Nunavut, everyone (except for Nunavut Land Claim Agreement beneficiaries) requires a hunting licence to hunt and a sport fishing licence to fish. Contact the Department of Environment (Government of Nunavut) for more information about territorial hunting and fishing regulations and how to obtain licences.

In the Northwest Territories, with some exceptions, all residents and non-residents require a hunting licence to hunt. Most residents and non-residents require a sport fishing licence to fish in the territory. Contact the Department of Environment and Natural Resources (Government of Northwest Territories) for more information about territorial hunting and fishing regulations and how to obtain licences.

In Yukon, a person must have a hunting licence to hunt and an angling licence to fish. Contact Environment Yukon (Government of Yukon) for more information about territorial hunting and fishing regulations and how to obtain licences.

Fishing in national parks requires licensing from Parks Canada.

A migratory game bird hunting licence, available from the federal government, is required for hunting migratory birds in Yukon, the Northwest Territories and Nunavut. Contact Environment and Climate Change Canada for more information.

Provincial hunting and fishing regulations vary by province. Contact the appropriate provincial authorities for more information.

3.8 INTERNATIONAL PARTICIPANTS

International clients must have appropriate personal identification documents and a visa, if applicable, to enter Canada and may require special clearance to move personnel and/or material into and out of Canada. Contact the nearest Canadian embassy or consulate for the most up-to-date advice and information.

Consult the Canada Border Services Agency for information regarding importing firearms to Canada. Scientists from outside Canada who want to bring firearms into the country must complete a Non-Resident Firearm Declaration. For more information about requirements for non-residents, contact the RCMP well in advance of arrival in Canada.

International visitors to the PCSP facility in Resolute or other Government of Canada facilities are required to be screened for security purposes. This screening may result in requests for additional personal information.



Part 4. PCSP contact information

For more information about the PCSP and its logistics coordination and planning assistance for field studies, contact:

Polar Continental Shelf Program
Natural Resources Canada
2464 Sheffield Road
Ottawa ON K1B 4E5

Ottawa logistics hub:
Tel.: 613-988-8145

Arctic logistics hub (Resolute):
Tel.: 867-252-3872

Email: nrcan.pcsp-ppcp.nrcan@canada.ca

Geologists examine an outcrop of sedimentary rocks near Darnley Bay, Northwest Territories.



Appendix. Terms and conditions of Polar Continental Shelf Program support*

(*These Terms and conditions of Polar Continental Shelf Program support are valid as of August 2016. See the PCSP website for the most recent version of the terms and conditions.)

General

1. Each project supported by the PCSP is under the PCSP's jurisdiction in all matters pertaining to PCSP-chartered aircraft operations and safety, the use of PCSP facilities, the use of PCSP-issued field equipment and any other logistics support provided by the PCSP. The PCSP solely reserves the right to withdraw its support to a project if safety is compromised or if the PCSP's logistics support is abused.
2. The PCSP solely reserves the right to curtail, modify or cancel any of its logistics support or access to facilities because of circumstances beyond its control, including, but not limited to, acts of God, inclement weather, local circumstances, emergencies, transportation problems, governmental action or conflicting demands of the various agencies receiving its support.
3. The client is responsible for all recoverable expenditures associated with their project. The PCSP cannot transfer your project's expenses to a third party. The value of PCSP assistance with defraying eligible recoverable expenditures is NOT transferable between categories of support (i.e. accommodations, aircraft, field equipment, fuel, freight or miscellaneous expenses) or between projects. Any savings from unused PCSP assistance reverts to the PCSP.
4. The client is responsible for ensuring that the PCSP receives all requested documentation (e.g. signed agreements, waivers, itineraries, emergency contacts, copies of licences,

permits and certificates). If this obligation is not met, the PCSP solely reserves the right to modify or cancel the support provided to the project.

5. Non-federal clients must sign a waiver that states that the federal government is not responsible for any actions, proceedings, claims, demands, losses, costs, damages and expenses that are in any way related to occupancy of contracted aircraft.
6. The PCSP requests that all publicity materials, presentations, public relations initiatives, media coverage and communications pertaining to, or following from, activities carried out through the PCSP recognize the role and logistics support of the PCSP.

Permits and licences

7. The client is responsible for determining which permits and licences are required for his or her field research and for obtaining them from territorial and federal governments or other agencies.

Health and safety

8. The client is responsible for ensuring the health, safety and preparedness of his or her field party.
9. Every Arctic field party must have at least one person in camp at all times who has **significant**¹ experience working in the Arctic.

¹ Significant is defined as a depth and breadth of experience normally acquired with having performed a broad range of related activities in the field for a period of at least three years.

10. The client shall ensure that all field equipment is used and operated in accordance with manufacturers' operating procedures and only for the purpose for which it was intended. The client is accountable for exercising due diligence in complying with the health and safety requirements for the use of all field equipment issued. Also, the client shall ensure that the equipment is operated only by people who are qualified and trained to do so.
11. PCSP-issued satellite telephones are to be used only to contact the PCSP and for emergency calls.

Firearms

12. Any person in possession of a firearm must have their PAL with them at all times.
13. Upon arrival at the PCSP facility in Resolute, you must surrender all firearms to the PCSP's Regional Firearms Custodian Officer for safe storage. A PAL must be presented when you surrender and retrieve a firearm.
18. Any changes to planned aircraft use could result in additional costs for the project. If the project is cancelled or aircraft requirements are modified after aircraft commitments have been made, the client may be invoiced for daily minimums plus **cancellation fees** (if applicable).

Chartered aircraft

14. The client is not permitted to make aircraft arrangements (e.g. charter, schedule changes) and charge the expenses to the PCSP. The client must contact the PCSP to request any changes to the type of aircraft, flying schedule or number of flying hours required for PCSP chartered aircraft.
15. Aircraft-related prices may increase during the field season. If they do, the PCSP will notify the client and adjust the estimated costs.
16. Hourly aircraft rates calculated by the PCSP are comprehensive and include, as applicable, positioning of the aircraft to and from aircraft bases (normally in Inuvik in the Northwest Territories and in Resolute, Cambridge Bay, Eureka, and Iqaluit in Nunavut), fuel, landing fees, NAV Canada fees and pilot accommodation.
17. Many aircraft companies charge a fixed fee called a "daily minimum," which is based on the cost of a daily minimum number of hours of flight. The PCSP makes every effort to maximize the use of aircraft among projects. However, if applied, the client is responsible for expenditures related to daily minimums for the period the aircraft was associated with their project.
19. If a flight is turned back because of inclement weather, the time will be charged to the project. The client will be invoiced for the cost of additional hours flown in excess of the planned hours for the project.
20. Unless otherwise identified, the client is responsible for expenditures related to **fuel caching** for the project.
21. The client must receive approval from the PCSP before using fuel from commercial sources or existing fuel caches. Client-supplied fuel must meet or exceed aircraft companies' specifications. The client must also indicate on the daily flight report that client-supplied or commercial fuel was used.
22. The client is responsible for notifying pilots of any cargo that has a value exceeding \$50,000.

Insurance

23. All field team members of PCSP-supported projects should ensure they have adequate insurance coverage for personal travel (including coverage for flying in chartered aircraft), medical emergency evacuation, repatriation and disability.

Shipping

24. The PCSP can arrange shipping of PCSP-issued field equipment from a PCSP warehouse to a staging location, but we will recover **shipping charges** from the client. For return shipments, the client is responsible for directly organizing and paying for shipment according to his or her organization's financial practices. The PCSP cannot accept cash on delivery (COD) shipments, nor can shipments be invoiced to the PCSP.

Dangerous goods

25. In compliance with the *Transportation of Dangerous Goods Act, 1992* and associated regulations, dangerous goods such as firearms and corrosive materials, transported by commercial carriers, require the completion of specific shipping forms. The client is responsible to obtain the required documentation through their employer or through consultation with PCSP staff in Ottawa or Resolute. It is illegal to pack hazardous goods in baggage or to carry them on board an aircraft. The client must ensure that proper procedures are followed, the information is correct and all shipping documents are signed. See the *Transportation of Dangerous Goods Act, 1992* and associated regulations for more information.

Field equipment

26. Title to the field equipment² provided by the PCSP shall, at all times, remain vested in the Natural Resources Canada's Earth Sciences sector and nothing contained in the project agreement shall be deemed to confer upon the client any greater right to or property in the field equipment than that of a user.
27. The client shall not lend or rent the field equipment or transfer any right, title or interest in the field equipment to any person, including other clients of the PCSP.
28. The client shall indemnify and save harmless the PCSP from and against any claim, demand, or action, irrespective of the nature of the cause of the claim, demand, or action, alleging loss, costs, expenses, damages, or injuries (including injuries resulting in death) arising out of the client's use or possession of the field equipment.
29. The PCSP shall not be liable in respect of any claim, demand or action, irrespective of the nature of the cause of the claim, demand or action alleging any loss, injury or damages, direct or indirect, which may result from the client's use or possession of the field equipment. The PCSP shall not be liable in any way for loss of revenue or contracts, or any other consequential loss of any kind resulting from or attributable in any way to the agreement.
30. The client shall at all times keep the field equipment free of all liens, charges and encumbrances and from distress, seizure, execution or other legal process. If, at any time, the field equipment is not free of all liens, charges and encumbrances or from distress, seizure, execution or other legal process, then the client shall promptly notify the PCSP accordingly and shall forthwith remove and discharge the same at the client's own expense.

² Field equipment means any and all equipment (e.g. tents, stoves), clothing, vehicles (e.g. snowmobiles, ATVs) and/or consumables (e.g. toilet paper, bear spray) provided by the PCSP to support the client's field work as set out in the project agreement.

31. The client shall be responsible for all recoverable expenditures incurred by the PCSP in connection with the use of field equipment, including:
 - Replacement costs of expendable items (i.e. items that are not returnable to the PCSP and/or are one-time use only).
 - Replacement costs for any loss or damage of field equipment issued to the client due to misuse, abuse or neglect.
 - Fuel and lubricants required to properly operate the field equipment during the usage period.
32. Field equipment may not be left in the field from one season to the next or “transferred” to other individuals or projects. The client remains responsible for the equipment provided by the PCSP to the client at all times.
33. The usage period shall commence on and include the date of the actual delivery of the field equipment to the client or the client’s agent, including any carrier charged with delivering the equipment to the client.
34. The usage period shall end on and include the date of actual return of the field equipment to the PCSP warehouse from which it was issued.
35. The usage period shall not exceed one field season. If the field equipment is not returned to the PCSP by the end of the field season, the client shall be charged the full replacement cost and the client shall be invoiced accordingly.
36. The client shall be responsible for the normal care and maintenance of the field equipment and ensure that the field equipment is kept in a secure area and protected from rot, mildew, rodents and the elements while in his or her possession.
37. The client shall not remove, alter, disfigure, mark or cover any numbering, lettering or insignia displayed upon the field equipment and shall ensure that the field equipment is not subjected to careless or needless rough usage.
38. The PCSP ensures routine maintenance is conducted on field equipment as per manufacturers’ recommendations. However, if field equipment requires maintenance while in the client’s care, the client shall ensure that the service is conducted by a qualified person.³ All field equipment maintenance requirements and servicing undertaken by the client are to be reported immediately to the PCSP.
39. The PCSP shall have the right, upon reasonable notice to the client, to enter upon the premises where the field equipment is kept or used for the purpose of inspecting the field equipment, and the client shall afford the PCSP all necessary facilities for the purpose of such inspection.
40. The client shall be responsible for loss and damage (normal wear and tear excluded) to the field equipment during the usage period and the appraisal of any such loss or damage will be based on the replacement value for the field equipment.
41. The client shall immediately notify the PCSP of any loss or damage to the field equipment during the usage period. The risk of loss of or damage to the field equipment and all other liabilities of the client in respect of the field equipment shall pass to the client during the usage period. The foregoing shall be without prejudice to any claims which the client may have against a common carrier or other third party in respect of such loss or damage.

³ As per the *Canada Labour Code* Part II, Occupational Health and Safety, section 157 Regulations, a qualified person means “in respect of a specified duty, a person who, because of knowledge, training and experience, is qualified to perform that duty safely and properly.”

PCSP trucks and vans

42. To use a PCSP truck or van in Resolute, the client must obtain prior approval from the PCSP. The client must have a valid driver's licence. A minimum or daily rate may apply for use of the vehicle. The client is responsible for loss and damage (normal wear and tear excluded) to any PCSP vehicle in his or her possession.

A helicopter releases a sling load in the Blue Mountains on Ellesmere Island, Nunavut.



