Program Information

National Science Foundation Introduction

The purpose of this *United States Antarctic Program (USAP) Field Manual* is to provide an overview of USAP field logistics, operations, and safety. It contains information relevant to field deployments and living and working in an Antarctic field camp and is intended to enhance your success in the field. It is your responsibility to be familiar with the skills and techniques covered in this manual.

This is intended to be a reference manual and it should be taken into the field with you. Safety, environmental stewardship, and your health are of paramount importance. Continued vigilance and action in these areas are essential to maintain a safe and productive environment for work in Antarctica.

The harsh conditions encountered in the field, coupled with relatively short deployments and important scientific objectives, require effective leadership and constant risk management from all team members. Reducing the risk of injury and illness depends on a combination of systematic risk assessment, hazard elimination or control, appropriate use of personal protective equipment, and safe work practices.

This manual is designed to be used in conjunction with the *USAP Field Practices Manual* located on www.usap.gov. The *Field Practices Manual* provides pre-deployment, planning information that is useful during the Support Information Packet (SIP) process. Using these manuals and adhering to the guidelines set forth will enhance both your safety and productivity while working in Antarctica.

We wish you a very safe and productive field season.

Kelly Falkner	*Director, Office of Polar Programs*
Scott Borg	*Section Head, Antarctic Sciences*
Stephanie Short	*Section Head, Antarctic Infrastructure and Logistics*

First Aid Emergency Response Checklist

- **Survey the scene.**
  Is it safe? What happened? How many are injured? Who can help?
- **Do a primary assessment of the victim(s).**
  Do an ABC check - Airway, Breathing, Circulation.
- **Call or radio for help.**
  Alert other field team members or people in the vicinity. Request medevac if needed.
- **Do a secondary assessment of the victim(s).**
  Interview the victim(s), check vitals, conduct head-to-toe exam.
- **Call Palmer Station physician.**
  If advanced medical care is required, if medications need to be administered, or if medical advice is required.
- **Stabilize the patient(s) until help arrives.**
  Keep patient(s) warm and dry, move to shelter if possible, and provide food and warm liquids if appropriate. Improvise toilet equipment, if necessary.
- **Provide updates to the Palmer Station physician.**
- **Notify the Palmer Station manager or the marine projects coordinator (MPC) on the supporting vessel as soon as possible.**
  See page 28 of this manual for radio frequencies and page 32 for Iridium phone contact numbers.

USAP Operational Risk Management

Probability	Consequences				
	None (0)	Trivial (1)	Minor (2)	Major (4)	Death (8)
Certain (16)	0	16	32	64	128
Probable (8)	0	8	16	32	64
Even Chance (4)	0	4	8	16	32
Possible (2)	0	2	4	8	16
Unlikely (1)	0	1	2	4	8
No Chance 0%	0	0	0	0	0

None	No degree of possible harm
Trivial	Incident may take place but injury or illness is not likely or it will be extremely minor
Minor	Mild cuts and scrapes, mild contusion, minor burns, minor sprain/strain, etc.
Major	Amputation, shock, broken bones, torn ligaments/tendons, severe burns, head trauma, etc.
Death	Injuries result in death or could result in death if not treated in a reasonable time.

USAP 6-Step Risk Assessment

USAP 6-Step Risk Assessment	
1) Goals	Define work activities and outcomes.
2) Hazards	Identify subjective and objective hazards.
3) Safety Measures	Mitigate risk exposure. Can the probability and consequences be decreased enough to proceed?
4) Plan	Develop a plan, establish roles, and use clear communication, be prepared with a backup plan.
5) Execute	Re-assess throughout activity.
6) Debrief	What could be improved for the next time?

Field Camp Put-In Procedures

Planning for camp put-in:

- Review the daily communication schedule and confirm check-in times with Palmer Station or supporting vessel.
- Make sure Iridium satellite phones are programmed with contact phone numbers (e.g., vessel bridge, Palmer Station medical).
- Charge batteries for Iridium satellite phones, VHF radios, and all other electronics.
- Review the cargo plan and the order in which items will go ashore. Life safety and communication equipment should go in first. Identify who will assist on deck, who will facilitate cargo operations at the shore landing zone, and who will lead the camp set up.
- A day or two before put-in, coordinate with the marine projects coordinator (MPC) to hold a safety briefing in the lounge with the shore party, any ship volunteers, and ASC staff.
- Review the environmental and field camp end-of-season report forms and instructions. Be prepared to record the required data daily.

On day of camp put-in:

- Evaluate shore landings. Two landing sites are preferred in case one is inaccessible by ice, swell, or wildlife.
- Determine the best location for the camp site. Observe the terrain for hazards to avoid, and identify the most protected areas for your shelters. The camp should be placed well above the high tide and storm surge lines and be sheltered from the wind.
- Determine if a source of fresh water is available.
- Assist in unloading cargo from the boats.
- Guide volunteers on the safest way to move cargo to the camp site.
- Place the cargo in an area that keeps it out of the way when camp is constructed.

Before the vessel departs:

- Establish a shelter. Set up at least one tent. (A large, communal tent is preferred.)
- Establish a heat source. (Light a camp stove.)
- Establish communications with the camp point-of-contact (POC), confirming that a shelter is erected and a stove is functioning. The vessel cannot depart until there is a reliable communications link.

Day one:

- Set-up all sleeping tents.
- Outfit the kitchen tent and create a food storage area.
- Check that all tent anchors are well set and all guy lines are taut.

In the first 24 hours:

- Place all fuel containers and all equipment with a fuel tank (e.g., generators) in secondary containment.
- Identify disposal locations for human waste and gray water.
- Establish a survival cache away from camp, in a well-sheltered area.

Field Camp Daily Tasking

Communications:

- Complete the daily check-in call before the appointed time. Some locations may require more than one call during the day.

Housekeeping, health and safety:

- Inspect the camp area daily. All tent guy-lines should be taut. Everything should be secure. Wind can increase at any time.
- Maintain an awareness of weather conditions.
- Check for and clean up any pollutant spills.
- Ensure waste is properly sorted, per vessel or Palmer Station requirements.

Record keeping:

- Record any pollutant spills using the Field Spill Reporting Sheet.
- Record the data required in the environmental and field camp end-of-season reports, such as water and fuel usage, the number of people in camp, estimates of human waste and gray water discharge, and weather information (see page 17 of this manual).

Resupply:

- If there is no fresh drinking water available near the camp, conduct a daily inventory of bottled water. Maintain a seven-day emergency supply for everyone at camp, and let the supporting vessel know when a water resupply is required.

Field Camp Pull-Out Procedures

In the days leading up to pull-out:

- Package equipment and cargo that is not being used. This can be time consuming. Label all Rubbermaid bins with the contents.
- Re-package and label hazardous cargo.
- Identify a staging area next to the landing zone and place cargo there when it is packaged and ready to go. Keep it well above the high tide and storm surge lines, and tie it down.
- Communicate with the MPC regarding pull-out details, such as the estimated number of small boat trips it will take to remove all personnel and cargo. Determine how many vessel staff can assist ashore.

Day of pull-out:

- Assess the landing site for ice and swell conditions. Report this information to the MPC, along with local weather conditions and any other pertinent information regarding the pull-out.
- If the weather window allows for camp pull-out, take down all tents.
- Transport all remaining items to the loading zone.
- Visually scan the camp site to ensure all items are removed.

On board the vessel:

- Take the time necessary to clean and return all equipment to its proper storage area or department. See “Camp Gear Return Procedure” for details.
- Hose off or brush off muddy and dirty items on deck. Review the Environmental section of this manual for information on preventing cross contamination when visiting multiple locations. Techniques include using the boot wash station and cleaning all equipment, including camera tripods.
- Hang tents and other wet items in the Baltic Room to dry.

Camp Gear Return Procedures

Grantees using field gear are responsible for unpacking, cleaning, sorting, and assisting in returning all equipment to the Field Room in Punta Arenas (PA). Work with the field supervisor, if present. Otherwise, arrange gear return with the MPC or Palmer Station lab supervisor. Returns can take anywhere from an hour to two days, depending on the type of gear and its condition. Most groups re-deploy three days after the vessel arrives in Chile. Please plan accordingly.

- Remove all duct tape and tags from the gear.
- At the PA warehouse, empty the contents of the sleep kits and put all items to be laundered inside one or two salt/concrete bags.
- Report any damage to the field supervisor, or affix a tag to each damaged item with an explanation of the problem. The field supervisor will inspect the gear and compare it to your RSP allocations. If there are discrepancies, it could delay your redeployment.
- If field cargo or equipment needs to be shipped off the vessel, use the Marine Operations Cargo Application (MOCA) database to create a Transportation Control Number (TCN). Use the Peninsula field project code (879) when creating TCNs, and email a list of them to the field supervisor.
- Field cargo or equipment shipped from Palmer Station is assigned a shipping number from the Maximo materials management database. Palmer Logistics personnel will assign these numbers. As with TCNs, a list of these numbers should be emailed to the field supervisor. (See the Cargo Operations section for more information.)

Items Needing Extra Attention:

- **Tents** – All communal cook tents must be set up in the PA warehouse, swept out, and scrubbed. The field supervisor or MPC can coordinate with DAMCO to determine the best warehouse and location for this. If there are holes in the tent or any other problems, such as cut guy lines, affix a tag explaining the problem to the outside of the tent bag.
- **Dishes, thermos™ bottles, food coolers, stoves, water coolers, and five-gallon buckets** – These items are to be returned clean. Ask the MPC for the best location on the vessel to wash and dry kitchen items.
- **Equipment** – Please inform the field supervisor, in person or by email, if there are any problems with field equipment.
- **Pee bottles and toilet seats** – Clean and bleach these items. It is easiest to do this on the vessel, as there is not much space in the warehouse. Please do not leave them for other people to wash. Do not dump bleach overboard or down drains. See the marine laboratory technician (MLT) for assistance.
- **Jerry cans** – Please label any full or partially full jerry cans with 1) the type of fuel, and 2) the word “FIELD.” Request that the MPC ask DAMCO to place these in hazardous storage.

Environmental Guidelines

Environmental stewardship and protection in the Antarctic is essential. The United States is a signatory to the Antarctic Treaty (1959) and the Protocol on Environmental Protection to the Antarctic Treaty (Protocol, 1991). These agreements are implemented under the Antarctic Conservation Act of 1978, Public Law 95541 (16 U.S.C. 2401 *et seq*), as amended by the Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227.

The Antarctic Treaty sets Antarctica aside for peaceful purposes, primarily scientific research, cooperation, and the exchange of information. The Protocol commits to comprehensive protection of the Antarctic environment, including a ban on commercial mineral exploration. Through its six Annexes, it requires an environmental impact assessment of all proposed actions and the conservation of native fauna and flora (including management activities to limit introduction of non-native species). The Protocol also establishes protocols for waste disposal and waste management, prohibits marine pollution, and establishes a process for area protection and management. USAP participant adherence to Protocol obligations relies on educational programs for each of these areas.

U.S. Federal regulations implementing the ACA can be found in the Code of Federal Regulations (CFR) Title 45, sections 640, 641, and 670 through 674. For questions or to obtain additional information, contact ASC Environmental (Environmental@usap.gov).

Antarctic Specially Managed Areas (ASMAs)

ASMAs are areas in which careful planning and coordination are required to avoid activity conflicts, improve coordination among field parties, and reduce the risk of cumulative environmental impacts.

There are three ASMAs located in the Peninsula region: Admiralty Bay, King George Island (ASMA 1); Deception Island (ASMA 4); and Southwest Anvers Island and Palmer Basin (ASMA 7). Before entering and/or conducting research in these ASMAs, be sure to understand the management objectives and requirements for working there (www.ats.aq/e/ep_protected.htm).

Antarctic Specially Protected Areas (ASPAs)

ASPAs are areas designated to protect outstanding environmental, scientific, historic, aesthetic, or wilderness values. This includes protecting ongoing scientific research from inadvertent disruption or

contamination. ASPAs require an ACA permit to enter. There are numerous ASPAs located along the Peninsula. Management plans for each one, including the values to be protected and an environmental code of conduct, can be found at www.ats.aq/. The Peninsula area ASPAs include:

- Harmony Cove, ASPA 33
- Dion Islands, ASPA 107
- Green Island, ASPA 108
- Moe Island, ASPA 109
- Lynch Island, ASPA 110
- Southern Powell Island, ASPA 111
- Coppermine Peninsula, ASPA 112
- Litchfield Island, ASPA 113
- Lagotellerie Island, ASPA 115
- Avian Island, ASPA 117
- Fildes Peninsula, ASPA 125
- Byers Peninsula, ASPA 126
- Rothera Point, ASPA 129
- Potter Peninsula, ASPA 132
- Clerva Point, ASPA 134
- Biscoe Point, ASPA 139
- Chile Bay (Discovery Bay), ASPA 144
- South Bay, ASPA 146
- Ablation Valley and Ganymede Heights, Alexander Island, ASPA 147
- Mount Flora, Hope Bay, ASPA 148
- Cape Shirreff, ASPA 149
- Ardley Island, Maxwell Bay, King George Island (25 de Mayo), ASPA 150
- Lions Rump, ASPA 151
- Western Bransfield Strait, ASPA 152
- Eastern Dallmann Bay, ASPA 153
- Marion Nunataks, Charcot Island, ASPA 170
- Narebski Point, ASPA 171

Historic Sites and Monuments (HSMs) have their own management plan and requirements. Peninsula HSMs are:

- San Martin abandoned station, HSM 26
- Charcot's Cairn 1909, HSM 27
- Charcot's Cairn 1904, HSM 28

- Lighthouse “Primero de Mayo,” HSM 29
- Shelter ‘Gabriel Gonzalez Videla’, HSM 30
- Prat Base Monolith, HSM 32
- Gonzalez Pacheco Shelter, HSM 33
- Arturo Prat’s Bust, HSM 34
- Virgin of Carmen Statue, HSM 35
- Dallman Expedition Plaque, HSM 36
- O’Higgins Historic Site, HSM 37
- Hope Bay Hut, HSM 39
- General San Martin’s Bust, HSM 40
- Paulet Island Hut, HSM 41
- Scotia Bay Huts, HSM 42
- Polish Eagle Plaque, HSM 50
- Great Wall Station Monolith, HSM 52
- Endurance Memorial Site, HSM 53
- East Base, HSM 55
- Waterboat Point Hut, HSM 56
- MacFarlane’s Plaque, HSM 57
- San Telmo Cairn, HSM 59
- Wooden Pole and Cairn (I) and Wooden Plaque and Cairn (II) at Penguins Bay, southern coast of Seymour Island (Marambio Base), James Ross Archipelago, HSM 60
- Port Lockroy, HSM 61
- Base F Wordie House, HSM 62
- Base Y, HSM 63
- Base E, HSM 64
- Un-Named Cove, HSM 74
- Antarctic Treaty Monument, HSM 82
- Base W, Detalille Island, Lallemand Fjord, Loubet Coast, HSM 83
- Hut at Damoy Point, Dorian Bay, Weincke Island, Palmer Archipelago, HSM 84
- No. 1 Building at Great Wall Station, HSM 86
- Lame Dog Hut, St. Kliment Ohridski Base, Livingston Island, HSM 91

Several Peninsula ASPAs and HSMs are located within Peninsula ASMAs. In ASMA 1, the protected areas are:

- Western Shore of Admiralty Bay, ASPA 128
- Puchaslki Grave, HSM 51

In ASMA 4, the protected areas are:

- Whalers Bay, HSM 71
- Aguirre Cerda Station Ruins, HSM 76
- Parts of Deception Island, ASPA No. 140
- Port Foster, ASPA 145
- Four Sites with Visitor Guidelines:
  - Pendulum Cove
  - Baily Head
  - Whalers Bay
  - Teflon Bay

In ASMA 7, the protected areas are:

- Litchfield Island, ASPA 113
- Biscoe Point, ASPA 139

In addition to the ASPAs in ASMA 7, there are 16 Restricted Areas (Bonaparte Point, Christine Island, Cormorant Island, Dream Island, Elephant Rocks, Hermit Island, Humble Island, Joubin Islands, Laggard Island, Limitrophe Island, Norsel point, Rosenthal Islands, Shortcut Island, Shortcut Point, Stepping Stones, and the southwest portion of Torgersen Island. Torgersen Island is also a Site with Visitor Guidelines (described separately). Contact the MPC or station manager for up-to-date information on entering these areas.

Sites with Visitor Guidelines

The purpose of Sites with Visitor Guidelines is to provide specific instructions on conducting activities at frequently visited Antarctic sites. This includes practical guidance on visiting these sites, taking into account their environmental values and sensitivities. Recreational visits to Sites with Visitor Guidelines should be reported in your end-of-season report or to your MPC. For more information and a list of sites, visit: www.ats.aq/e/ats_other_siteguidelines.htm.

For more information on ASMAs, ASPAs, or HSMs, refer to www.ats.aq or contact ASC Environmental at Environmental@usap.gov.

ACA Permits

An ACA permit is required to: 1) enter and work in an ASPA; 2) take native mammals or birds, or remove or damage quantities of native terrestrial or freshwater plants such that their local distribution or abundance would be significantly affected; 3) engage in harmful interference with native mammals, birds, non-marine invertebrates and non-marine plants; 4) introduce non-native species into Antarc-

tica; or 5) export native mammals or birds or parts thereof. The term "take" also applies to dead mammals or birds, bird eggs, or any animal parts, such as teeth, feathers, or bones.

Processing time for ACA permits is three months. Violations of the ACA or of the conditions of a permit will result in fines. Research with marine invertebrates, plants, and fish do not require an ACA permit.

An ACA permit is not needed for entry into an ASMA. However, personnel entering or working in an ASMA are required to know and follow the code of conduct specified in the applicable ASMA management plan. If there are questions regarding ASMAs, ASPAs, or ACA permits, refer to the permit's language, consult with the field supervisor or MPC, or contact the NSF ACA permit officer at acapermits@nsf.gov.

Specimen Collection and Permits

Refer to the project's permit regarding specimen collection. The following applies to all research conducted in the Antarctic:

- Collecting souvenirs is not allowed. Do not remove any specimens from Antarctica, including feathers, rocks, or shells, without a permit from the NSF. This includes historical evidence of humanity's presence, (e.g., whale bones from early whaling expeditions).
- Do not take, handle or remove items that could potentially be historic artifacts. From the Antarctic Treaty Guidelines: "If there is uncertainty as to the age of a newly discovered historic artifact/site it should be treated as a pre-1958 artifact/site until its age has been established." If any USAP participant finds something that MAY have historical significance, the location should be noted with GPS, a photo of the artifact should be taken, and ASC or NSF Environmental should be notified of the artifact's presence (Environmental@usap.gov).
- The Marine Mammal Protection Act of 1972 prohibits U.S. citizens from taking or importing marine mammals or parts of marine mammals into the United States without a permit.

Environmental Training

All personnel deploying to and/or conducting field work along the Antarctic Peninsula are required to attend environmental trainings (provided by the field supervisor or designee) to ensure they understand what is expected of them under the ACA and the Antarctic Treaty.

Spill Prevention, Clean-Up, and Reporting

- All fuels, chemicals, and hazardous liquid wastes should be stored with secondary containment. Where secondary containment is not feasible, best management practices should be employed to protect the environment from a release. These practices include regular inspections of all liquid stores during transport, using absorbent materials, using two people for transfers, ensuring spill response capabilities are available, and any other means as necessary or prudent.
- Primary storage containers should be of durable construction and sealed when not in use.
- Appropriate secondary containment and spill kits must be available for any fueling operation to reduce the occurrence of spills.
- All spills of designated pollutants (e.g., fuel, glycol, transmission fluid) need to be reported immediately upon their discovery, regardless of the volume spilled.
- For camps with a camp manager, spills should be reported directly to the camp manager. For camps without a camp manager, spills should be reported to the Palmer Station manager, the MPC on the vessel, or whoever is designated as the POC for the daily check-in.
- All spills must be cleaned to the greatest extent practicable and disposed of through the hazardous waste system.

Camp Waste Management

Waste management should be discussed with the field supervisor and/or each project implementer before camp personnel deploy to the field. Protocols may vary depending on the type of camp and location (e.g., if the camp is in or near an ASPA). In general, everything taken into the field must be brought out, with the exception of human waste and gray water at most Peninsula field camps.

- Wastes generated at field camps are removed by the camp staff and grantees and transported to supporting stations or ships for disposal.
- Peninsula field camps dispose of food waste and gray water into the intertidal zone, though there are some exceptions where everything must be packed out (i.e. when camps are in or near certain ASPAs).
- Raw chicken products are not allowed at field camps because avian food and food by-products have been

identified as sources of pathogens and microorganisms that may threaten indigenous wildlife communities. *Avian products (eggshells or meat) must be incinerated on the vessel or at Palmer Station, or disposed of in Punta Arenas*.

- It will simplify the camp pullout process if items are consolidated and/or compressed, which makes it easier to pack them.

Waste Packing for Incineration

All camp solid waste must be properly sorted and bagged for return to the vessel. Most non-hazardous waste will be incinerated on the vessel, but the following items cannot go in the incinerator and should be bagged separately for disposal in Punta Arenas:

- Any and all glass, including broken glass
- Metal
- Wire or wire rope
- Electronics
- Batteries
- Aerosol cans
- Hazardous waste items, as listed below

Hazardous Waste

The ACA has strict guidelines on hazardous waste, which requires special handling and labeling. Be sure to remove all hazardous waste from the field at the end of each season.

Questions regarding hazardous waste management should be directed to the MPC, who will work with the marine laboratory technician aboard the research vessel. Hazardous waste includes:

- Fuel and fuel-contaminated material
- Lab waste
- Chemical containers
- Aerosols
- Radioactive material
- Batteries
- Biohazardous waste

Human Waste

- Human waste must not be discharged onto ice-free land, onto sea ice, or in blue-ice areas. Discharge can only occur in the intertidal zone, and only if planned for in advance. If working in an ASPA, please review the specific

ASPA management plan to ensure discharge of human waste in the intertidal zone is acceptable (refer to http://www.ats.aq/devPH/apa/ep_protected.aspx?lang=e#).

- Typically, human waste is collected in five-gallon buckets lined with biodegradable bags. The bags are disposed of in the intertidal zone and the buckets reused. Discuss bathroom set-up with the Peninsula field supervisor.
- Discharging urine on land is not allowed anywhere in Antarctica. Field participants must carry and use a pee-bottle when bathrooms or tidal areas are not available. Urine in pee bottles should be disposed of upon return to the field camp or the vessel, or it may be disposed of in a tidal area (as noted above) where it is easily dispersed in the marine environment.

Usage Rates for Buckets and Containers

Human Waste Type	Container Type	Persons/Days
Fecal Waste	5-gallon bucket (1)	5 people for 5 days (minimum)
Urine	5-gallon bucket (1)	1 person for 5 days
Gray Water	5-gallon bucket (1)	1 person for 5 days

Interactions with Animals

- Personnel should not interfere with wildlife unless they have an ACA permit and are specifically trained for the activity being conducted.
- In general, maintaining a distance of 15 to 20 feet from animals should be sufficient, but if an animal's behavior is altered or disturbed, the distance should be increased.

Non-Native Species

- No non-native species of animal or plant may be introduced onto land, ice shelves, or into water in the Antarctic Treaty area, except in accordance with an ACA permit.
- To avoid introducing non-native species, personnel must clean all science gear and personal equipment before arriving in Antarctica.
- Boot washing stations should be used before departing the vessel for field sites, and they should be used between field sites.
- To avoid cross contamination, personnel must also clean all other gear and personal equipment before transiting between Antarctic field sites.

- If a suspected non-native species is observed in Antarctica, it should be reported immediately to the camp manager or daily check-in POC.

Sample Site Markings

Should a research group need to mark sample sites, reusable and recoverable flags should be used. If flags cannot be used, the only acceptable paint marker is chalk paint, which can be washed or worn away. Prior approval for using paint markings should be obtained from NSF/OPP Environmental personnel.

Environmental End-of-Season (EOS) Report

At the conclusion of field activities, all science groups must submit an Environmental EOS report to Environmental@usap.gov. The EOS form (a Microsoft Excel-based template) is available on the vessel intranet, or science personnel can email the above address to obtain it.

To make the process simpler and more accurate, the report should be populated with information throughout the season.

General Information Required

The following information must be tracked and quantified in the EOS report. Please refer directly to the report form for specifics.

Section A – Field Camp Summary

Part 1: Camp or site information

Part 2: Fuel use

Part 3: Hazardous materials use (non-fuel)

Part 4: Waste disposition

4a: Containerized waste

4b: Discharged sanitary waste

Part 5: Items remaining at camp closeout (fuel, hazardous materials, waste)

Part 6: Fuel, waste handling, spill prevention and spill response suggestions

Section B – Summary of Field Activities

Part 1: Equipment deployed

Part 2: Materials released

Part 3: Spills

EOS Report Form Instructions

- Please complete the EOS report form thoroughly and send it electronically as a Microsoft Excel file to ASC Environmental (Environmental@usap.gov).
- Completing the form is a requirement for each science group and ASC work center. All EOS reports are submitted to the NSF, and data in the reports are compiled in the USAP Master Permit report.
- All principal investigators (PIs) or their designated environmental POC must complete the form. Field camp managers must complete a form separately.
- Please use the drop-down menus in the Microsoft Excel spreadsheet form for consistent reporting.
- For all field parties, please submit GPS coordinates of any science equipment installations, sampling or coring locations, temporary camps, releases (planned and unplanned), any equipment left in the field over the winter, and/or disturbances of any kind (past or present). GPS data should be reported in decimal degrees to five decimal places.
- Specific to field parties operating in an ASMA or ASPA, please submit GPS coordinates for each of the following environmental disturbances:
  - Sample sites
  - Soil pits
  - Non-established helicopter landing sites
  - Tent sites outside facility zones (remote camps) – please take GPS coordinates of the camp perimeter
  - Fuel storage locations outside facility zones
  - Waste handling and storage sites outside facility zones
  - Any releases of fuel (intentional or unintentional), equipment, or any other material.
- Refer to the ASMA or ASPA management plan at www.ats.aq/documents/ATCM38/WW/atcm38_ww005_e.pdf for additional details.
- Contact ASC Environmental (at the above email address) with any questions or comments regarding the EOS form or any other environmental issue.
- Please save and send the form with the file name: Group number_PI_YearEOS.xlsx (e.g., B-001_Smith_2017_EOS.xlsx)

Emergency Management

The RVIB *Nathaniel B. Palmer* (NBP) and R/V *Laurence M. Gould* (LMG) bridges are staffed 24/7 and can connect the caller to the MPC in the event of an emergency. The Iridium phone line at Palmer Station rings in several locations and someone will answer during the day or night. Depending on the situation, the MPC or Palmer staff will gather information to assess needs and risks and determine appropriate actions.

If There is an Emergency

- Notify the vessel bridge or Palmer Station immediately (see page 28 of this manual for radio frequencies).
- If it is a medical emergency – Use Iridium, if possible, to call the Palmer Station doctor. If working from a ship, inform the MPC as well (see page 32 of this manual for Iridium numbers).

Emergency Management at a Field Camp

In the event of an emergency or search-and-rescue (SAR) event at a Peninsula field camp, the ASC camp manager or science field team leader becomes the on-site incident commander. This individual is responsible for establishing communication with the supporting vessel or station and providing a situation report.

If the field team is supported by a vessel, the incident commander will contact the master of the vessel, the MPC, and the chief scientist. If the team is supported by Palmer Station, the incident commander will contact the station's communication technician. Coordination between the incident commander, the NBP and/or the LMG, and Palmer Station will determine which resource could provide the proper response.

If it is a medical emergency, communication and consultation between the incident commander, the vessel emergency medical technician (EMT), and the Palmer Station physician will be initiated immediately to determine treatment protocols.

Broader Crisis Management and Recovery

Under international search and rescue arrangements, Peninsula field camps fall within the Chilean Search and Rescue Region. Therefore, the Search and Rescue (SAR) Service of Chile will conduct broader crisis management and recovery, to include international coordination. The Chilean Rescue Coordination Centre (RCC)

is the lead for International Maritime Organization and International Civil Aviation Organization (IMO/ICAO) purposes.

In all emergencies, the NSF/OPP will be made aware and will be involved in any international coordination efforts.

Camp Supplies for Emergency Planning

Field camps should have enough food, water, and fuel on hand for seven days beyond the planned stay, in case of vessel pick-up delays. Generally, the extra food takes the form of dehydrated meals. Additional water could be from containers, snow melt, or streams, depending on the location. Plan for five liters of water per person per day. This includes water for drinking, cooking, cleaning, and personal hygiene.

Team members must also bring a sufficient amount of personal medication and other supplies to accommodate an extended stay in the field.

Day Trips

Projects intending to remain in the field for one day or part of a day must have at least two people, a sufficient number of survival bags, proper clothing, and two VHF radios or two Iridium phones with spare batteries. All personnel should keep in mind there is a chance that weather or other circumstances may cause them to remain in the field overnight.

Emergency Response Timeline

For a distress call or for failure to check in from:

Palmer: Glacier travel, local and extended boating area, or field camp
Vessel: Small boat operations, sea ice (snowmobile or foot travel), island team, or field camp

Uncertainty Phase for Late Check-in		
Palmer Station foot travel (glacier/ backyard/island drop-off)	5 min	Palmer Station manager notified
Palmer Station small boat - local and extended area	5 min	
Vessel - small boat, snowmobile, sea ice foot travel	5 min	Vessel MPC notified
Vessel - island team	5 min	
Established field camp (Palmer or vessel deployed)	60 min	Station manager or MPC notified

Alert Phase for Late Check-in		
Palmer Station foot travel (glacier/ backyard/island drop-off)	5 min	Palmer Station manager alerts OSAR/GSAR teams
Palmer Station small boat - local and extended area	5 min	
Vessel - small boat, snowmobile, sea ice foot travel	15 min	MPC alerts vessel staff
Vessel - island team	30 min	
Established field camp (Palmer or vessel deployed)	6 hrs	SAR teams/vessel staff alerted

Deployment Phase for Late Check-in		
Palmer Station foot travel (glacier/ backyard/island drop-off)	10 min	Palmer Station OSAR/GSAR teams deploy
Palmer Station small boat - local and extended area	10 min	
Vessel - small boat, snowmobile, sea ice foot travel	30 min	Vessel staff deploys
Vessel - island team	1 hr	
Established field camp (Palmer or vessel deployed)	24 hrs*	SAR team or vessel staff deploys*

Distress Call

Palmer Station Manager or Vessel MPC notified immediately

SAR team or vessel staff alerted immediately

SAR team or vessel staff deploys as soon as possible

*Exact time depends on vessel location

Recovery and de-briefing

Peninsula Survival Bags

Needed - When disembarking from a small boat onto shore or sea ice. Bag will be left with disembarking personnel.

Not Needed - At a location with a survival cache, at a camp with all the components of a survival bag (e.g., Cape Shirreff), or if a boat remains with the field team and the boat's kit has enough supplies for everyone.

Survival Bag Contents

Supports two people for three days

- 2 ea sleeping bags (0 degree Marmot Trestles)
- 2 ea bivy bag
- 2 ea ensolite™ pad, 24"x48"
- 1 ea Fitzroy bivy tent, with instructions
- 1 ea collapsible snow shovel
- 1 ea First Aid kit

Tent stake bag:

- 10 ea assorted stakes
- 2 ea ice screws
- 2 ea snow flukes
- 1 ea plastic mallet/hammer

Cook & Stove Set Bag:

- 1 cook set, 1-2 pots with lids
- 1 ea MSF Whisperlite™ stove w/instructions & repair kit
- 4 bx matches, 35/bx wrapped in foil
- 1 ea MSR® fuel bottle, 20-30 oz., full

Toilet Paper:

- 1 roll toilet paper

Food Bag:

- 6 ea dehydrated meals
- 3 ea large chocolate bars or 6 ea small
- 12 ea tea bags, assorted
- 12 ea hot chocolate
- 2 pk Mainstay™ food bars, 9 bars/pk (2 per person per day)
- 18 ea water packets, 6 oz.

Utensil set contains:

- 1 ea pot handle
- 2 ea mug, hard plastic
- 2 ea spoon
- 1 ea Leatherman™ or Swiss army knife

Ziplock™ Bag:

- May contain a book or game, not essential
- 1 ea survival manual
- 50 ft parachute cord
- 1 ea contents list

Survival Caches

Peninsula Survival Cache Locations

In the Palmer Station Boating Area, eleven survival cache locations across the standard, extended, and beyond extended boating areas provide coverage to places that are most frequented by scientists and operational support staff. These locations are listed below. The number in parentheses refers to the number of complete cache-barrel sets. (Note: Two backup cache-barrel sets are maintained at Palmer Station.)

Within the standard boating area:

Humble Island (2)

Christine Island (2)

Outcast Islands (1)

Cormorant Island (1)

Within the extended boating area:

Dream Island (2)

Access Point (1)

Beyond the extended boating area:

Gossler Island 405 (1)

Wauwermans Island 514 (1)

Joubin Island 8 (2)

Joubin Island 1 (1)

Joubin Island 76 (1)

Survival Cache GPS Waypoints

As Listed in GPS	Description	Coordinates
CHRS-C	Christine Cache	S64 47.537 W64 01.263
CHRS-L	Christine Landing	S64 47.584 W64 01.099
CORM-C	Cormorant Cache	S64 47.588 W63 57.960
CORM-L	Cormorant Landing	S64 47.533 W63 57.977
DREM-C	Dream Cache	S64 43.533 W64 13.426
DREM-L	Dream Landing	S64 43.493 W64 13.376
HERM-C	Hermit Cache	S64 47.900 W64 01.006

HERM-L	Hermit Landing	S64 47.938 W64 00.957
HUMB-C	Humble Cache	S64 45.905 W64 04.989
HUMB-L	Humble Landing	S64 45.896 W64 04.964
JANS-C	Janus Cache	S64 47.008 W64 05.978
JANS-L	Janus Landing	S64 46.963 W64 06.163
OLDP-C	Old Palmer SAR Cache	S64 45.866 W64 04.530
OLDP-L	Old Palmer Primary	S64 45.870 W64 04.664
OUTC-C	Outcast Cache	S64 48.322 W64 08.079
OUTC-L	Outcast Landing	S64 48.307 W64 08.020
SHRT-C	Shortcut Cache	S64 46.960 W64 02.570
SHRT-L	Shortcut Landing	S64 46.961 W64 02.620
STEP-C	Stepping Stone Cache	S64 47.058 W63 59.509
STEP-L	Stepping Stone Landing	S64 47.036 W63 59.484
TORG-C	Torgersen Cache	S64 46.306 W64 04.528
TORG-L	Torgesen Landing	S64 46.296 W64 04.541

Survival Cache Barrel Contents

Barrel 1:

- 1 radio
- 1 razor blade taped to barrel lid
- 1 pocket knife with can opener
- 1 roll toilet paper
- 1 box matches (water/wind proof)
- 1 First Aid kit
- 1 book: *Medicine for Mountaineering*
- 1 headlamp
- 2 sets long underwear (tops and bottoms)
- 2 pair glove liners
- 2 pair socks
- 2 balaclavas
- 2 sets boot liners
- 1 tent
- 1 sleeping bag
- 2 sleeping pads
- 2 USCG emergency rations (8 days each)
- 12 bags water, 4 oz. each

Barrel 2:

- 1 book: Antarctic Survival
- 1 book: *Knot Tying*
- 1 deck of cards
- 1 signal flag
- 1 signal mirror

- 1 coil of parachute cord (50 ft)
- 5 candles
- 1 box matches (water/wind proof)
- 2 emergency space blankets
- 2 all-weather tarps/blankets
- 2 sets cold weather mittens
- 1 piezoelectric lighter (yellow)
- 1 set rain gear (jacket and pants)
- 1 sleeping bag
- 2 sleeping pads
- 2 sets silverware
- 1 mess kit (dish, pot, skillet, cups)
- 1 stove, with pump and directions
- 2 bottles fuel
- 4 energy bars
- 4 meals, dehydrated
- 12 bags water, 4 oz. each

Barrel 3:

- 1 box matches (water/wind proof)
- 5 candles
- 1 coil of parachute cord (50 ft)
- 3 emergency space blankets
- 1 roll duct tape
- 1 tube sunblock
- 2 sets long underwear (tops and bottoms)
- 2 pair glove liners
- 2 pair socks
- 2 balaclavas
- 2 sleeping bags
- 4 meals, dehydrated
- 2 USCG emergency rations (8 days each)
- 12 bags water, 4 oz. each
- 1 whistle