PROGRAM INFORMATION

U.S. National Science Foundation Introduction

The "United States Antarctic Program Field Manual" provides an overview of field logistics, operations and safety within the U.S. Antarctic Program (USAP). It contains information relevant to living and working in an Antarctic field camp and is intended to enhance your success in the field. This reference manual provides valuable knowledge. Read it before deploying, and take it into the field with you. It is your responsibility to be familiar with the skills and techniques covered in this manual.

The harsh conditions encountered in the field setting, coupled with the need to conduct important scientific objectives in short periods, require effective leadership and constant risk management from all team members. Safety, environmental stewardship and your health are of paramount importance. Continued vigilance and action in these areas are essential.

This manual is designed to be used with the "U.S. Antarctic Program Participant Guide" available at https://www.usap.gov. The participant guide provides general programmatic information that complements the field manual. Using these materials and adhering to their guidelines will enhance your safety and productivity while working in Antarctica.

We wish you a safe and successful field season.

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Emergency Management

An essential part of field planning is anticipating emergencies. USAP supports scientific research at and around U.S. National Science Foundation (NSF) Palmer Station and in field camps along the Antarctic Peninsula. Management of emergency situations usually involves boat response. Before deploying to

the field, all station and vessel teams conduct field planning sessions to identify how to respond to emergency situations.

Under international search and rescue (SAR) arrangements, Antarctic Peninsula region field stations and camps fall within the Chilean Search and Rescue Region. Therefore, the Search and Rescue Service of Chile will conduct broader crisis management and recovery, including any necessary international coordination. The Chilean Rescue Coordination Centre is the lead for International Maritime Organization and International Civil Aviation Organization purposes. When planning field activities for the season, it is important for research teams to note appropriate contact information, including that of other nearby stations. However, unless directly supported by another station or agency, contact with another country should be initiated through NSF.

Who to Contact

If an emergency occurs at a field camp and the USAP support vessel is in the area, notify the Bridge immediately. Vessels are staffed 24/7.

In all other cases, contact NSF Palmer Station directly. The Iridium phone line at Palmer Station rings in several locations, and the phone line is monitored 24 hours per day. If you receive no response, the next point of contact is U.S. National Science Foundation McMurdo Station Central Communications (Central Comms).

Emergency Iridium Numbers

Contact	Number
Palmer Station Doctor	00-697-720-568-2778
Palmer Station	00-8816-763-15071
McMurdo Central Comms	00-8816-763-12464
McMurdo Medical	00-8816-763-15142

For non-emergency numbers, see the Communications section. For a medical emergency, call the Palmer Station doctor. If they are unreachable, call McMurdo Medical.

When an emergency call is made, the person answering the phone will collect the caller's name, phone number and location; classify the situation (e.g., injury or illness, spill, aircraft mishap, vehicle accident, loss of shelter); and gather the information necessary to assess needs and risks and determine appropriate actions. No emergency looks the same, so this manual cannot pinpoint specific courses of action. But the following information provides field party members with resources to help manage incidents in the field.

Emergency Response Guidelines

When responding to an emergency, first survey the scene. Is it safe? What happened? How many people are involved? Assess the situation, and determine if the emergency is mechanical/logistical or medical.

Mechanical or Logistical

Problem-solve to the best of your ability.

Medical

1. Conduct a primary assessment using the ABCDEs.

   Airway

   Breathing

   Circulation

   Disability

   Exposure

2. Provide necessary first aid to stabilize the patient.
3. Radio for help if needed. Alert other field team members of the situation.
4. Contact your emergency point of contact (POC) to give an initial report of the following:

   A. Patient's condition (if applicable)

   B. Plan of action

   C. Resources or support needed

5. Establish a callback time with the emergency POC.
6. Perform a secondary assessment.
    A. Interview the patient.
    B. Take vitals.
    C. Conduct a head-to-toe physical assessment.
    D. Continue monitoring.
7. Provide care and comfort.
    A. Keep the patient warm, dry and sheltered if possible.
    B. Reassure them and offer food or warm liquids, if appropriate.
    C. Improvise toilet equipment if needed.
8. Prepare documentation.
    A. Take detailed notes throughout the incident.
    B. Complete a subjective, objective, assessment, and plan (SOAP) note. (A SOAP note is an organized way to take notes about a patient. See the References section for a template.)
9. Conduct an inventory of available resources.
    A. Other people
        i. Define roles and responsibilities. Check in with team members to determine who will do what while the situation develops.
    B. Standard operating procedures
    C. Wilderness Medical Guidebook.
    D. Palmer Station doctor or NSF McMurdo Station medical team
    E. Equipment (e.g., first aid, medical, mechanical)

10. Reporting
    A. Notify the appropriate manager and other involved parties about the incident.
    B. Complete and submit the required incident report as soon as possible. (See the References section for a sample of the Emergency Incident Worksheet).

PRO TIPS

- Be prepared before making a call. Iridium phone calls can drop or cut out momentarily. Have a concise message ready when first establishing a call.
- Prepare focused questions.
- Be ready to take notes, or have someone available to do so.
- Have your documentation ready. Use the Emergency Incident Worksheet if helpful.
- If possible, have a plan ready to share.
- Understand the urgency of the situation.
- Know your location.
- Understand and communicate weather and terrain factors.
- Understand the timetable for evacuation.
- State requests for any additional needed resources (e.g., gear, food, support).
- Be prepared with a backup plan.
- Determine timelines for continued communication with your emergency contact.

Response Timeline

Emergency response times will vary by location. See the next flowchart for details by location.

▼ Missed Check-in or Distress Call

▼ Uncertainty Phase

05 min	**Palmer Station Foot Travel** Glacier, Backyard, island dropoff **Palmer Station Small Boat** Local and extended area	Palmer Station manager notified
05 min	**Vessel** Small boat, snowmobile, sea-ice foot travel **Vessel** Island team	Vessel CPC notified
60 min	**Established Field Camp** Palmer or vessel deployed	Palmer Station manager or CPC notified

▼ Alert Phase

05 min	**Palmer Station Foot Travel** Glacier, Backyard, island dropoff **Palmer Station Small Boat** Local and extended area	Palmer Station manager alerts OSAR/GSAR teams
05 min	**Vessel** Small boat, snowmobile, sea-ice foot travel **Vessel** Island team	CPC alerts vessel staff
60 min	**Established Field Camp** Palmer or vessel deployed	SAR team or vessel staff alerted

▼ Deployment Phase

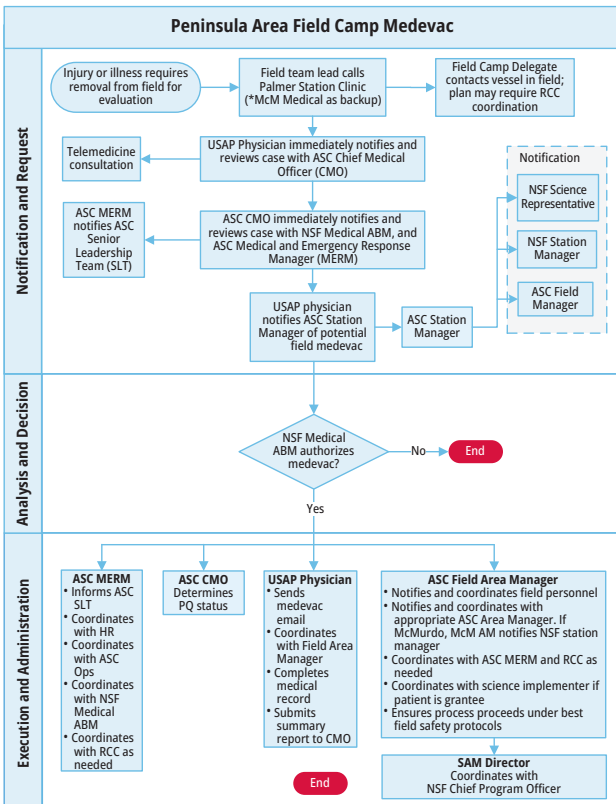
10 min	**Palmer Station Foot Travel** Glacier, Backyard, island dropoff **Palmer Station Small Boat** Local and extended area	Palmer Station OSAR/ GSAR teams deploy
30 min	**Vessel** Small boat, snowmobile, sea-ice foot travel **60 Vessel** Island team	Vessel staff deploy
24* hr	**Established Field Camp** Palmer or vessel deployed	SAR team or vessel staff deploy

■ Recovery and Debrief

Note: CPC = commercial project coordinator. GSAR = glacier search and rescue. OSAR = ocean search and rescue. SAR = search and rescue.
* Actual time varies by vessel location.

Medevacs

A decision about the need for a medical evacuation (medevac) will be reached with guidance from the USAP support vessel or Palmer Station. Medevacs require considerable resources and involve many stakeholders to successfully execute.



Field Deployment Emergency Planning

The more you know about available resources prior to deployment, the wiser your decisions will be in an emergency.

USAP Six-Step Risk Assessment

No.	Step	Task
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	Reassess throughout activity.
6	Debrief	What could be improved for the next time?

Questions to Consider

- What are the roles and responsibilities of each person? Consider medical, technical and communication skills.
- When will you be furthest away from additional resources (e.g., other camps, groups)?
- Where do you anticipate your highest level of hazards?
- Is there anything unusual you can anticipate?
- How will extreme weather affect your plans, and what are your thresholds for weather?
- Where does emergency gear live (e.g., first aid, communication resources, paperwork that could be helpful in talking you through steps to responding to an incident, mechanical backups)?
- Establish relationships with people you would rely on in an emergency. Before going into the field, introduce yourself and your team to emergency contacts (e.g., vessel captain/first mate, Palmer Station manager, Palmer Station medical staff).

Scenarios to Discuss

- High likelihood / low consequence
- High likelihood / high consequence (entirely avoid or actively mitigate these, which hopefully are few)
- Low likelihood / high consequence
- Low likelihood / low consequence

USAP Operational Risk Management

The following matrix is used across USAP to help determine the probability of an incident and the consequence level. During planning, this matrix can be utilized to reduce the overall risk of a project while balancing goals, priorities and logistics. In the field, this tool can be used daily to discuss hazards as they are encountered.

Risk Matrix

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

Note: None = No degree of possible harm. Trivial = Incident may take place, but injury or illness is unlikely or will be extremely minor. Minor = Mild cuts/scrapes, mild contusion, minor burns, minor sprain/strain, etc. Major = Amputation, shock, broken bones, torn ligaments/tendons, severe burns, head trauma, etc. Death = Injuries that can/do result in death if untreated in a reasonable time.

Survival Bags

All field parties participating in boating, including those going ashore or transiting more than 300 meters (~985 feet) on sea ice, are required to bring survival bags. The Peninsula survival bag is designed for use by field parties for emergencies in which they may be stranded away from a supporting vessel. Enough survival bags must be brought ashore for the entire field party, for any shore landing where the small boat and driver is not standing by.

While the bag is designed for survival purposes, it can also be used in medical emergencies. The bag contains emergency shelter, a sleeping bag, a stove and minimal food and water. The bag does not negate the need for each participant to pack their own day pack with extra clothes and warm layers, water, food, personal medications, lip balm and sunscreen.

A tag on the inside of each bag lists its contents, which are also covered in the "Peninsula Field Training" and "Sea Ice and Remote Shore Safety" training for grantees. If a survival bag is used, it should be returned to "Peninsula Field" under cargo code 879 and tagged with the missing and used items. Also email this information to the Peninsula field supervisor.

Palmer Boating Area Caches

Survival caches provide emergency supplies in places most frequented by scientists and operational support staff in the local, regional and extended rigid hull inflatable boat (RHIB) boating areas (i.e., the Palmer Station boating area). Survival caches are barrels of emergency supplies on islands. Like survival bags, each cache contains emergency shelter, a sleeping bag, a stove and minimal food and water. Unlike survival bags, each cache contains a radio that is tested and supplied each season by Palmer Station Communications.

A complete list of cache contents is covered in the mandatory "Boating 1: Passenger" training. Contents are also detailed in "Palmer Station Island Cache and Survival Bag Procedure" (PAL-SOP-0025) on the USAP Master List and on the Boathouse SharePoint site.

A list of cache locations is on the Pre-boating Checklist that each group must complete before riding in or piloting a Zodiac. The locations are also detailed in the mandatory, three-part “Passenger,” “Operator” and “Competent Crew” boat courses. Cache locations are also preprogrammed into all Palmer global positioning system (GPS) units at the start of each season.

Two additional cache-barrel sets are maintained at Palmer Station as backup, if extra barrels are needed or to swap out used or damaged caches (see local information on caches).