



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/travelanddeployment/541/>. 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. The Emergency Operations Center (EOC) is on call 24/7. The EOC is initiated by the U.S. National Science Foundation (NSF) station manager after receiving initial information from U.S. National Science Foundation McMurdo Station Central

Communications (Central Comms). Central Comms staff 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 information to assess needs and risks and determine appropriate actions. If a search and rescue (SAR) is launched, it may involve the USAP SAR team and/or the joint search and rescue team (JSART) comprising USAP and Antarctica New Zealand personnel.

Who to Contact

If an emergency occurs, contact Central Comms.

Central Comms Emergency Numbers

Type	Number
Phone	x42586
VHF Radio	Channel 3
HF Radio	7.995 MHz 11.553 MHz
Iridium	00-8816-763-12464
HF = high frequency. MHz = megahertz. VHF = very high frequency.	

For non-emergency numbers, see the Communications section. For a medical emergency, 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 for you as a responder? What happened? How many

people are involved? Assess the situation, and determine if the emergency is mechanical/logistical or medical. Gather as much information as you can before jumping in. Emergencies by nature can be confusing and complex. As we like to say in the mountains, go slow to go fast!

Mechanical or Logistical

Problem-solve to the best of your ability.

Medical

1. Conduct a primary assessment using the ABCDEs:
 - A**irway
 - B**reathing
 - C**irculation
 - D**isability
 - E**xposure
2. Provide necessary first aid to stabilize the patient.
3. Radio for help if needed. Alert other field team members of the situation.
4. Call Central Comms 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 Central Comms.
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. Deep Field Camp Medical Manual
 - E. NSF McMurdo Station medical team
 - F. Equipment (e.g., first aid, medical, mechanical)
10. Decide and plan.
- A. With the EOC's assistance, a decision will need to be made.
 - i. You are on the ground and best able to determine how outside parties can help.
 - ii. Have a list of questions and requests ready for the EOC.
 - iii. Determined what you need to immediately stabilize the situation.
 - B. Continue monitoring the situation by documenting, clearly communicating to your team and establishing regular check-in times.

11. 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 to Central Comms. Phone calls from Iridium or Starlink 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 as a guide to help organize thoughts.
- 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 Central Comms.

Response Timeline

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

Three groups monitor the below types of travel when there is a missed check-in or distress call.

Central Comms		Firehouse	Scott Base
Foot Travel	Fixed Wing	Foot Travel	Assist Requests
Local Vehicle	Field Camp	Local Vehicle	
Vehicle Traverse	Other Stations	Vehicle Traverse	
Helicopter	SAR Satellite Beacon	Other Stations	

▼ Missed Check-in or Distress Call

▼ Uncertainty Phase

05 min	Foot Travel or Local Vehicle
15 min	Helicopter
30 min	Fixed Wing
60 min	Field Camp or Vehicle Traverse

EOC team notified
Pager 365
EOC established
SAR team notified

▼ Alert Phase

30 min	Foot Travel, Local Vehicle or Helicopter
60 min	Fixed Wing
2 hr	Vehicle Traverse
6 hr	Field Camp

EOC activated
SAR team
USAP SAR pager 568
JSART pager 567
SAR members report to designated areas
Briefing sheet completed

▼ Deployment Phase

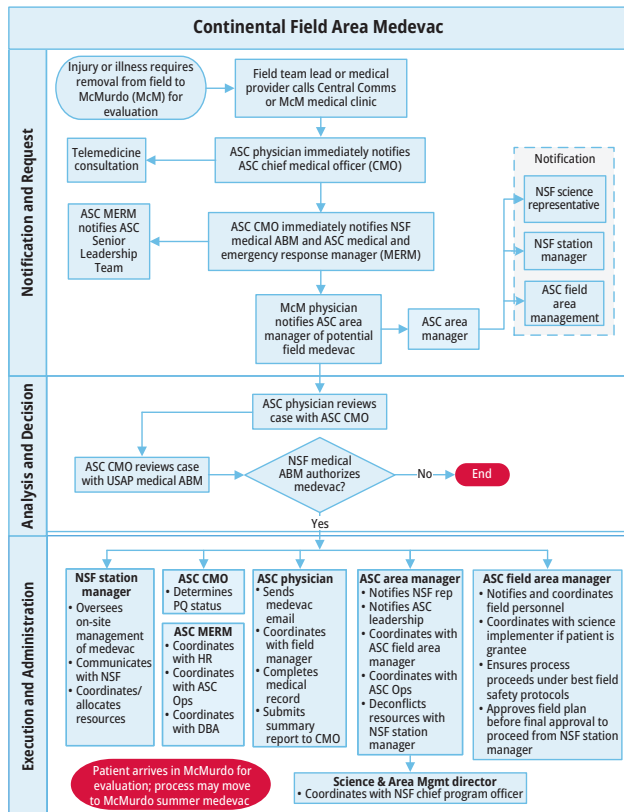
60 min	Foot Travel, Local Vehicle or Helicopter
90 min	Fixed Wing
2 hr	Vehicle Traverse
24 hr	Field Camp

SAR team deploys

■ Recovery and Debrief

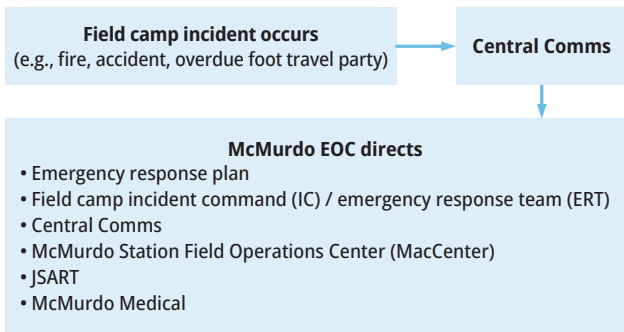
Medevacs

A decision about the need for a medical evacuation (medevac) will be reached with guidance from McMurdo Medical. Medevacs require considerable resources and involve many stakeholders to successfully execute.



Field Emergency Planning

Response to an emergency in the field could take from an hour to several days, depending on a variety of factors. While multiple resources are available to provide support via communication devices (e.g., Central Comms, SAR, Medical, Field Safety), field teams must be prepared to manage people and the situation until help arrives.



Steps for field camp staff receiving outside distress call

- Record vital information
- Have caller contact McMurdo if possible
- Relay information to Central Comms and confirm they heard from party in distress

USAP Operational Risk Management

The following risk 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.

USAP also uses the six-step risk assessment as a way to help define what the team is doing, whether for a day trip, activity or entire field season.

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?

It also helps teams understand the emergencies that may arise given the field work and location and plan for them accordingly. The risk assessment is highly useful in early

season discussions to ensure the team has a shared understanding of goals, objectives, hazards and how handle them in real time, all of which is essential to effective RM.

Emergency Response Planning

Before deploying, it is important that all team members understand what to do in emergencies. While this manual offers useful guidelines, teams must discuss likely scenarios, available resources and what managing emergencies would look like for them, so each person can make wise decisions in such situations.

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 and make time to meet face-to-face with Central Comms, McMurdo Medical and SAR.

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

Survival Bags

All field parties traveling off established roadways beyond McMurdo town limits or away from any camp in the deep field, as well as passengers who disembark a helicopter at any location other than an established field camp, are required to bring survival bags. The survival bag is designed for use in emergencies where parties may be stranded away from McMurdo Station or a field camp for longer than planned.



While the bag is designed for survival purposes, it could 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 survival bag is for backup. Do not rely on it for gear you plan to use during the day. Keep the bag sealed unless you need it for an emergency or survival situation. A tag on the inside of each bag lists its contents. If a survival bag is used, it should be returned to the Berg Field Center (BFC) and tagged with the missing and used items.

Survival Bags

Bag Type	Local	
Appearance	Shiny red dry bag	
Not Required	Within McMurdo town limits or on established roadways (e.g., Phoenix Road, Williams Field Road)	
Required	For travel off established roads past McMurdo town limits (e.g., Cape Evans, Cape Royds, Windless Bight)	
Supports	2 people for 3 days	
Contents	2 sleeping bags 2 bivvy bags 2 Ensolite pads, 24" × 48" 1 mountain tent (w/ instructions and repair kit) 1 collapsible snow shovel 1 snow saw 1 first-aid kit 2 white gas bottles (20 or 30 oz in Ziploc bag and polyvinyl chloride [PVC]) Tent Stake Bag 10 assorted stakes 2 ice screws 0 or 1 snow fluke 1 hammer Cook and Stove Set Bag 1 cook set 1 or 2 pots w/lid 1 signal mirror 1 MSR WhisperLite stove (w/instructions, repair kit, and 4 35-match boxes) wrapped in foil Toilet Paper Bag 1 toilet paper roll Food Bag 6 dehydrated meals 3 large or 6 small chocolate bars 12 assorted tea bags 12 hot chocolate packets 2 packs of 9 Mainstay food bars (2 bars/person/day) or 10 Bumper Bars Utensil Set 1 pot handle 2 hard-plastic mugs 2 spoons	

Bag Type	Local	
Contents (continued)	1 tube/bottle burning paste wrapped in foil 1 pocketknife Clothing Bag 1 bag of miscellaneous clothing (e.g., hat, mittens, gaiter)	Ziploc Bag 0 or 1 book or game 1 survival manual 50' of paracord 1 contents list
Notes	Bag contains all components. Open only in emergency.	

Bag Type	Deep Field	Helicopter
Appearance	Shiny blue dry bag	Orange bag
Not Required	For travel via LC-130, Twin Otter, or Basler to fixed camp (aircraft carries bags for all passengers)	If disembarking helicopter at fixed camp, location with survival cache, or tent camp with all survival bag components
Required	When traversing away from any fixed camp (usually daily)	If disembarking helicopter at any other location
Supports	2 people for 3 days	2 people for 3 days
Contents	Same as local survival bag EXCLUDING white gas bottles and book/game	Same as local survival bag
Notes	Bag excludes fuel bottles, which cannot be flown on LC-130s. Obtain bottles from the BFC, then have Science Cargo hazardous-certified them. Add fuel from camp stock to bag.	Bag contains all components. Open only in an emergency.

Survival caches provide emergency supplies and are staged at fixed camps. Like survival bags, each cache contains emergency shelter,

a sleeping bag, a stove, minimal food and other pertinent items for camp. When setting up a tent camp, survival bags will substitute for the survival cache.

Survival Cache

Appearance	Orange locker (typically)	
Not Required	N/A	
Required	As needed in emergency	
Supports	Varies by camp	
Contents	Sleeping bags Ensolite pads, 24" × 48" Mountain tents (except in caches at large camps, which have Jamesways or Rac-Tents) Collapsible snow shovel Snow saw / ice ax Sledgehammer First-aid kit First-aid books (e.g., Medicine for Mountaineering, Cold Injuries) Coleman fuel Matches Assorted stakes Ice screws Snow flukes Pots w/lid (10-/5-/3-quart) Frying pan Plates Signal mirror Coleman 2-burner stove MSR WhisperLite stove Human waste buckets Pee bottles Toilet paper rolls Dehydrated meals Meals, Ready-to-Eat (MREs) Oatmeal Hot chocolate packets Bars (granola, chocolate) Pot grips Hard-plastic mugs Utensils (fork, knife, serrated knife, spoon) Pocketknife Cleaning pads/scrubbies 100' of paracord	
Notes	Caches are staged at fixed camps. Exact quantities and supplies vary by cache, based on average camp population and camp criteria.	

