

Chapter 5

Field-Safety Training

5.1 McMurdo Field-Safety Training Requirements

Field-safety training and equipment shakedowns must be scheduled during your stay in McMurdo prior to your field deployment.

All new personnel, regardless of their skill level and experience, must complete an overnight two-day field safety course that includes cold weather camping skills, cold weather first aid, and emergency shelter building. For deep-field groups, this requirement is in addition to the equipment shakedown trip.

We strongly advise that deep-field groups include a safety guide/mountaineer who has previous Antarctic “deep- field” experience. This person should have considerable crevasse rescue experience, back country medical training, and Union Internationale Des Association De Guides De Montagne (UAIGM) or equivalent guide experience.

The NSF realizes there are some mountaineers and researchers in the program with extensive Antarctic Field Experience. Those individuals may be exempt from particular training courses. Researchers may formally request exemption from Field Training for themselves or personnel in their group on their SIP.

Field Support personnel will work with NSF to determine training requirements for individual groups. Training requirements will be indicated in each project's Research Support Plan.

Training and shakedown time in McMurdo is intended to increase your groups overall skill level. Training includes how to use equipment and systems that are unique to working in polar environments, such as roped travel with Nansen sleds through crevassed areas and setting up and securing polar tents in high wind. This training is not intended to teach novices how to be mountaineers in two days.

Remote groups working in the field without a mountaineer/safety guide must demonstrate an acceptable level of proficiency as follows:

In glacial terrain, each member must be able to hold a fall, put in equalized anchors, escape from the system, rappel to the victim, improvise a chest harness, prussik out of a crevasse, prepare the crevasse edge, rescue a victim with a 2:1, 3:1 or 6:1 rope hoist, and be able to perform advanced first aid.

Each field group must do an overnight equipment shakedown trip. This is mandatory and will be tailored to your group's specific needs. The equipment shakedown and field-safety training course may be combined in one overnight course for Dry Valley groups. Remote groups must plan for three to four days of field-safety training/equipment shakedown in McMurdo prior to field deployment.

5.1 a McMurdo Field-Safety Course Descriptions

USAP personnel who are returning and who have previously attended the Snowcraft I course must attend the half day refresher course called the Push Course. The following skills are reviewed in this course:

- Cold weather injuries: prevention and treatment.
- Risk Assessment/Risk Management overview.
- Tent set up and anchor options.
- Stove operation and troubleshooting.
- VHF and HF radio set-up and operation.
- Survival bag review.
- Spill Kit review.

Returning personnel who also require the Helicopter Training or Dry Valleys Environmental Orientation will have these presentations incorporated into their Push Course.

Snowcraft I: Snowcraft I is an overnight course designed to familiarize personnel with cold weather camping procedures. Topics are addressed at the fundamental level and assume no previous knowledge of outdoor skills. The topics covered include cold injury prevention and treatment, terrain awareness and hazard analysis (crevasses, weather, emergency scenarios), layering and thermal regulation, snow shelters and use of field stoves, ski travel, ice ax introduction, environmental awareness (clean camping techniques), movement on snow, and spill response clean-up in the field.

Snowcraft II: The Snowcraft II course is a review of cold weather camping procedures, as well as an introduction to basic mountaineering techniques. The course is designed for science parties and support personnel who will be working in glacial terrain and may be exposed to crevasse danger. This course builds on a preexisting base of outdoor skills gained by personnel who have attended Snowcraft I training or other outdoor training programs. Topics include basic crampon technique, self-arrest and use of the ice ax, roping up and roped travel techniques, crevasse rescue (self-rescue and pulley systems), terrain awareness (walking tour through crevassed terrain), overnight shelters, and spill response clean-up in the field.

Crevasse Rescue: Crevasse rescue is a course that builds on the basic glacier skills learned in Snowcraft II. The course is designed to teach and demonstrate the acceptable level of proficiency of a glacier traveler. Each member must be able to hold a fall, put in equalized anchors, escape from the system, rappel to the victim, improvise a chest harness, prussik out of the crevasse, prepare the crevasse edge, and rescue the victim with a 2:1, 3:1, or 6:1 rope hoist. The course can also be tailored to address roped snowmobile travel and snowmobile extraction.

Dry Valleys: Personnel who are new to the program and working in the Dry Valleys will attend the basic Snowcraft I course and on day-two will receive instruction on camping, movement, and emergency procedures in rocky, windy, dry-cold environments.

All personnel going to the Dry Valleys must view a

video that provides information on protecting that unique and fragile environment. The *Dry Valleys Code of Conduct* video is brief yet extremely important. An FSTP Instructor will answer questions afterwards and provide updated information.

Helicopter Training: Personnel who will be using helicopters must attend the Helicopter Training Course. This brief training, about 45 minutes, focuses on how to safely operate in and around helicopters. The two part course is required each season. First, a Helicopter Safety video will be shown. Then an FSTP Instructor will provide additional information and instruction.

Field Party Shakedown: This is a mobile course designed to test the equipment issued to your group and to offer a review of the travel and camp procedures that you intend to use. This can be taught by either the FSTP staff or your group's field mountaineer (when the mountaineer's qualifications meet or exceed those required of the FSTP staff). Generally, the field mountaineer and the FSTP staff work together on group instruction. This course assumes previous field experience in Antarctica or comparable regions and does not address the fundamental subjects covered in Snowcraft I (the course may be combined with the icefall phase of Snowcraft II). The topics covered vary from group to group and may include sledging and the use of snowmobiles, rope systems for glacial terrain, crevasse rescue, campsite evaluation, environmental impacts, and radio procedures.

Sea Ice: This is a one-day course designed for all personnel working on or crossing over the sea ice.

Topics are taught at a fundamental level and assume no previous knowledge of sea ice conditions or cold weather survival skills. The topics covered include ice dynamics (the type and nature of ice cracks), crack profile and the use of Kovacs augers for profiling, safe crossing standards for vehicles, alternative shelters, the use of camp stoves, radio communications, check-out/check-in procedures, and spill response clean-up in the field.

High-Altitude Lecture/Demonstration: This lecture/demonstration is designed to familiarize personnel going to high elevations on the continent with altitude sickness, which is a potentially lethal disorder that is often preventable. This presentation is available to all personnel going above eight thousand (8,200) feet. Taught at a basic level, the lecture's goal is to give personnel a working knowledge of the prevention, diagnosis, and treatment of acute mountain sickness and high-altitude pulmonary and cerebral edema. The instructor will focus on actions that contribute to successful acclimatization and will also discuss possible responses to altitude-related emergencies, including evacuation. A demonstration of the operation of a Gamow Bag, a portable hyperbaric chamber, will also be given.

Radio Training: Radio training is included with the field-safety courses. Instruction for set-up and use of HF and VHF is offered. Field personnel should make sure to check out their radios from the Field Party Communications Shop (see Chapter 9, section 9.3) prior to the course so radios can be tested during the course.

5.2 Peninsula-Area Field-Safety Training Requirements

Field-safety training courses must be successfully completed prior to heading out into the field. All USAP personnel at Palmer Station who intend to travel off station via zodiac are required to attend a Boating Course and the Islands Survival Course. In addition, personnel who will work on the sea ice must take a Sea Ice Safety Course.

USAP personnel who are returning to Palmer Station may take an abbreviated course that allows them to demonstrate their proficiency in lieu of attending a full Islands Survival Course again.

The NSF realizes there are a handful of researchers in the program with extensive field and boating experience. Those individuals will meet with the Station Manager and the Boating Coordinator to discuss appropriate training. Comments and concerns that help support personnel to further refine training and safety practices are encouraged.

Researchers may formally request exemption from Field Training for their group on their SIP. The Palmer Laboratory Supervisor will work with NSF to determine training requirements for individual groups. Training requirements will be indicated in each project's Research Support Plan.

5.2 a Peninsula-Area Field-Safety Course Descriptions

USAP personnel who are returning to Palmer Station may take an abbreviated course, which reviews the skills below, in lieu of attending a full Islands Survival Course again. To be exempt from the Islands Survival Course, returning USAP participants who are planning on boating must first demonstrate proficiency in the following areas (using island survival cache gear):

- Set up a tent on rocky terrain, emphasizing wet and windy conditions.
- Operate an MSR stove.
- Discuss the prevention and treatment of hypothermia.

Zodiac Safety Training: The Palmer Station Boating Coordinator teaches Boating Safety. The Boating Safety Course includes a short safety video, followed by reviews of outboard engine operation, minor engine repair, survival bag contents, boat features, check-out procedures, and an area orientation. Students will also receive hands-on practice in the safe operation of Zodiacs, proper island landing and mooring procedures, and man-overboard drills. In order to pass the course, the students will be required to read local boating and access regulations, as well as demonstrate proficiency in the handling of a Zodiac.

Sea Ice Safety Training: The Sea Ice Course covers the station guidelines and checkout procedures; safe sea-ice travel; cold injuries and first-aid; emergency procedures;

and an explanation of the risk assessment/ risk management plan that will be required of all projects that wish to travel on the sea ice.

Islands Survival Course: All research vessel support field groups and Palmer Station personnel intending to use Zodiacs must attend the Islands Survival Course. The course is taught at a basic level and focuses on setting up a survival camp using island survival cache gear. Topics to be covered are risk assessment and risk management plan, camp site analysis, mountaineering tent set-up under adverse weather conditions, anchoring tent guy lines in snow and on rocky terrain, stove operation, methods to stay warm and dry, cold injuries and first-aid, and emergency procedures. You will need to allocate several hours for this training.