
FIELD CAMP
OPERATIONS

Overview

USAP opens Support Information Packages (SIPs) between March and April for PIs to fill out. The SIP covers science objectives, grantee participant team information, USAP equipment requested, cargo, lab consumables, camp equipment needs and personnel support requested. During the SIP process, the Peninsula field supervisor, science implementer and PI discuss the project's scientific objectives and field gear.

Landing sites, alternate landing sites, camp sites, sampling sites, fresh water sources and all-terrain vehicle (ATV) or snowmobile routes must also be discussed. Locations must be identified using ArcGIS maps or satellite imagery and submitted to the ASC Environmental team for review, which may submit a report to NSF for approval based on the project's environmental impacts. Available satellite imagery, weather reports and tide charts must be used to plan for primary and alternative landing sites, camp sites and tent orientation. (It is important to more closely inspect local features upon arriving at a site.)

As planning progresses, a virtual meeting with all field party participants (e.g., camp managers, camp assistants, mountaineers, scientists) is held to discuss field gear and criteria for running a successful camp. At the meeting, the list of USAP-supplied camp gear and a recommended packing list for participants are distributed and discussed, as are approved locations of landing sites and camp sites, camp timing, and restricted areas.

Peninsula field camp participants must deploy early for field safety training and to pack field gear. Plan to spend four workdays in Punta Arenas on these activities. Camp managers, field camp assistants and mountaineers may need to be in Punta Arenas anywhere from 10 days to two weeks in advance to test, repair and pull gear.

Gear must be manifested, packed and onloaded using Maximo the day before the vessel departs. All time in Chile for grantee

field participants is paid out of the grants. PIs should budget for hotels and meals accordingly.

Ensure you follow USAP HPAI guidelines and do not visit seabird colonies or come into contact with concentrations of birds — particularly Magellanic penguin colonies — in or around Punta Arenas before departing for Antarctica.

Punta Arenas Schedule

A typical grantee schedule in Punta Arenas spans six days, with more time required if science gear must be assembled, calibrated or tested.

Day 1: Arrive in Punta Arenas in the afternoon or evening.

Day 2: Try on ECW gear. Choose and pack sleep kits and set up sleep tents to ensure all pieces and parts work and to gain familiarity.

Day 3: Set up the communal tent. Pack kitchen gear, field gear, medical kits, water, fuels, tools and science gear. Discuss waste management.

Day 4: Pack and label dry food. Test Iridium phones, VHF and HF radios and any personal InReach devices. These items should be stored as break bulk on the ship so batteries can be charging en route.

Day 5: Load gear into the container or as break bulk onto the USAP support vessel. Fresh, frozen and refrigerated food will be delivered directly to the vessel. Assist crew with stowage. Use any excess time to discuss and create a field plan.

Day 6: Set sail. Attend all shipboard safety trainings.

Shore Landing

Antarctic shore landings involve a level of risk. Dynamic conditions can occur across four areas: ship, small boat, surf zone and shore. The weather, wind, sea state and sea ice are capable of rapidly changing during installation or removal.

Day Trips

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

Field Camps

Field camps must maintain enough food, water and fuel on hand for seven days beyond the planned stay, in case of vessel pickup delays. Generally, extra food is made up of dehydrated meals. Extra water can be sourced from containers, snowmelt or streams based on the location.

Plan for five liters of water per person per day, which includes water for drinking, cooking, cleaning and personal hygiene. Team members must also bring enough personal medication and other supplies in case of an extended stay in the field.

Field Plan

Before going into a field camp, the Peninsula field supervisor or field risk manager, camp managers, field camp assistant and participants are responsible for creating a field plan for the camp. The plan names the participants, GPS coordinates, medical lead, science objectives and relevant contact information (i.e., Iridium numbers, InReach information).

The field plan is submitted to the USAP support vessel or Palmer Station manager and the field risk manager (i.e., the check-in party), providing them a quick guide for emergencies. It does not constitute the safety detail for camp participants. Rather, it starts the conversation among the group about the who, what, where and how of responding to an emergency. Safety concerns while in camp may evolve and change during the season, but the details of the plan will not.

The safety of all members of the party is paramount. During the field plan meeting, take the following steps to develop the plan, revisiting it after camp is established:

- Develop a general emergency plan.
- Discuss how it should be implemented in different situations the team may encounter.
- Discuss any job or camp hazards before initiating any work.
- Discuss methods of incident and injury prevention.
- Make risk mitigation a daily strategy and discussion topic.
- Emphasize the importance of staying safe given the remoteness of the research location.
- Be certain everyone is familiar with the use of all communication equipment, and set up a schedule to check the equipment throughout the time at camp.
- Encourage field team members to be their own advocates and raise any work or camp safety issues they observe.
- Encourage team members to watch out for each other's safety and well-being.

All field team members have the right to stop any operation if they observe something unsafe.

Camp Put-in

While crossing the Drake Passage, use the time to meet with the vessel captain, any shipboard support staff, ASC staff or Palmer Station management whose support you will need during camp put-in or takeout:

- Ask the vessel captain for galley support on put-in day (e.g., bagged lunches, build-your-own sandwiches).
- Review the daily communication schedule, and confirm check-in times with Palmer Station or another designated POC.

- Ensure Iridium phones are programmed with contact numbers (e.g., vessel Bridge, Palmer Station manager, Palmer Station Medical). The entire project team must test all VHF field radios and Iridium phones and review the communications plan with the USAP support vessel or Palmer Station manager. All team members must know how to use the equipment and know where emergency phone numbers are stored.
- Charge batteries for Iridium phones, VHF radios and all other electronics.
- Review the cargo plan with the ship's crew and support staff and the order in which items will go ashore. Life safety and communication equipment must go in first. Identify who will assist on deck to create cargo loads, who will facilitate cargo operations at the shore landing zone, and who will lead the camp setup.
- One or two days before put-in, coordinate a safety briefing with the field team, ship's crew and any ship volunteers who will help. Assign duties, outline communication protocols, review what to bring and wear and conduct a safety briefing for camp put-in activities.
- Review the HPAI and environmental EOS report forms and instructions. Be prepared to record EOS data daily.
- Each member of the field camp party and any volunteers must pack their own day pack with the following items at minimum: rain gear, warm layers, extra hat, gloves, socks, water, lunch, snacks, sunscreen, lip balm, sunglasses and any personal medications.

HPAI Prevention

All USAP participants must decontaminate boots, clothing and equipment before and after any shore landing, using a broad-spectrum disinfectant (e.g., 70% ethanol, Virkon S, F10, soap + 10% bleach solution, 0.1% iodine solution). If you are accessing multiple islands, bring a spray bottle of disinfectant to use between sites. Only approved personnel may access

wildlife colonies. For more information, see Palmer Area HPAI Response (PAL-SOP-0030) on the USAP Master List.

Put-in Day

On the day of put-in, the vessel captain, chief scientist, field camp manager, Palmer Station manager and any supporting ship crew meet to discuss the viability of the operation based on the forecast, current weather, sea conditions and ice conditions. If the decision is made to attempt an installation, the full team is mobilized.

During the installation, all parties continue to monitor environmental conditions and the safety of the operation. If weather deteriorates, the attempt is abandoned and all personnel are recalled until conditions abate and another attempt can be made.

Camp put-ins require multiple trips in small boats (i.e., inflatable, RHIB or landing craft) operated by vessel crew. Prioritize cargo so that items are offloaded in the appropriate order. Field team members must ensure all essential, life-sustaining supplies and equipment are on the first boat in case deteriorating weather or ocean conditions prevent a complete camp put-in. This includes radios, satellite phones and survival bags. The next loads should include tents, sleep kits, stoves, matches, field-party personal bags and enough food, fuel and water for an extended period. Field teams must be flexible.

Order of Operations

1. Send out a reconnaissance boat to evaluate shore landings. Two landing sites are preferred in case one is inaccessible by ice, swell or wildlife.
2. Load the first boat with life safety equipment: survival bags, Iridium phone, medical kit, shovels and picks.
3. Subsequent boat loads include tents, tent stakes and web slings, water, the stove and the ATV if assigned.
4. Once on site, determine how to situate the camp. Observe the terrain for hazards to avoid and identify the

most protected areas for shelters. Place the camp well above the high-tide and storm-surge lines and so it is sheltered from wind.

5. Assist in unloading cargo from the boats. Cargo often needs to be moved in stages: from shore, to higher ground, to camp.
6. Guide volunteers on the safest way to move cargo to the camp site. (See the Risk Management section for lifting techniques.)
7. Place the cargo in staging areas that keeps it out of the way of small boats that are offloading and away from where camp is being constructed.
8. Confirm the viability of the fresh water source. Determine whether it needs to be melted, filtered or boiled. Do not to trample this area during put-in and taint the water source.
9. Set up the toilet tent and waste and hygiene stations.
10. Establish a survival cache away from camp, in a well-sheltered area.
11. Set up all sleeping tents.
12. Outfit the kitchen tent, and create a food storage area.
13. Identify disposal locations for human waste and gray water.
14. Check that all tent anchors are well set and all guylines are taut.
15. Secure all cargo, or stow it inside a tent.
16. Place all fuel containers and equipment with a fuel tank (e.g., generators) in secondary containment.

Before Vessel Departure

- Establish a shelter. Set up at least the communal tent.
- Establish a heat source (e.g., lighting a camp stove).

- Establish Iridium phone communications with the camp POC, confirming a shelter has been erected and a stove is functioning. The USAP support vessel cannot depart until there is a reliable communications link.

Proper Gear

It is imperative to stay warm and dry in Antarctica. This is especially true in Peninsula field camps, where the weather is cold and wet and there are no quick or easy ways to dry clothing or warm up. The marine environment on the Peninsula experiences an average of 28 inches of precipitation per year, with temperatures ranging from -40°C to 4.44°C (-40°F to 40°F).

The standard ECW gear that USAP issues includes two types of waterproof garments: a water-resistant, breathable shell for working on land and a non-breathable, polyvinyl chloride (PVC) rain jacket and bib pant. The PVC gear is generally preferred by researchers working from small boats, who can get soaked from sea spray, and by persons working on land in wet, muddy conditions.

Sunglasses are also necessary. Goggles are provided, and personal, glacier-rated sunglasses are strongly recommended. These protect eyes from sun and wind and help prevent snow blindness. See the "United States Antarctic Program Field First-Aid" manual for details.

Footwear

To keep feet warm, they need to be dry, so you may need to change socks throughout the day. Feet and socks get damp or wet from sweat or stepping in water when exiting a small boat or walking in a stream. Post-holing through snow can cause snow to enter boots. Wearing gaiters can prevent snow and mud from entering boots, but in some cases you may need to carry a second pair.

Peninsula personnel are issued steel-toe, rubber work boots. Steel-toe boots are required when working on the deck of a research vessel. Researchers are advised to wear the issued

rubber boots during boating and shore landings and to change into hiking boots for shore work. Last but not least, dry your feet and socks thoroughly each night to avoid starting the day with wet socks or boots.

Gloves and Mittens

Waterproof rubber or neoprene gloves are essential for small-boat activities, and warm, dry gloves are necessary on shore. Bring several pairs of various gloves (including liners and mittens) as they can get wet during the day.

Small-Boat Clothing

No amount of careful preparation for a shore expedition will help if you get soaked during the ride ashore. Dress for two situations: clothing to keep you warm and dry in the boat (sometimes for a considerable length of time) and clothing to stay warm on shore. In a small boat, all your outer layers must be waterproof (e.g., boots, pants, jacket, gloves).

How you wear your clothes is important too. Waterproof gloves are useless if they fill with water because they were not tucked into your jacket sleeve. And your waterproof jacket is no comfort if a wave splashes down your neck through your unworn hood. Since waterproof layers are not very breathable, it is often best to shed them once arriving ashore to prevent wetting out from sweat.

Site Selection

Camp site selection is determined during the SIP process, following ACA protocols and any relevant regulations for ASMAs and ASPAs. The Peninsula field supervisor, environmental manager, and field risk manager can assist in making recommendations. Details such as terrain, weather patterns, flora, fauna, distance to the work site and logistics are considered when choosing the camp location. Once on site, the field lead is responsible for adjusting the camp site as necessary.

Wildlife, Vegetation and Sensitive Areas

Participants must not interfere with wildlife unless they have an ACA permit and a specific reason to do so. Avoid seabird nests and colonies, paths in which penguins walk to and from the ocean and seal haul-out areas. Consider any existing vegetative ground cover (e.g., mosses, grasses, lichens), and avoid trampling and disturbing it as much as possible. Also avoid camping in areas that drain into sensitive sites (e.g., streams, ponds, lakes, nesting areas). At the end of the field season, disassemble any rock cairns and leave the area in its original state.

Topography and Weather

Consider the lay of the land and how storms will impact the camp. Choosing areas with physical features that block wind can be ideal, but be aware that leeward sites will accumulate snow. Consider how meltwater or rainwater may enter camp or accumulate in low spots. Be aware of tide lines, glacier wall calving and rock fall hazards. In addition, select an area where topography does not interfere with VHF radio and Iridium satellite communications. This will be particularly important if you have an emergency.

When possible, position camp near the research study sites to decrease commute times. Conversely, it may be best to establish camp as close to the put-in area as possible to maximize the efficiency and safety of camp put-in and takeout. Identify alternative boat landing sites in case weather or ocean conditions during camp takeout differ from those during camp put-in (i.e., varying wind and wave action may prohibit boat landings at previously used sites). These factors may play a role in determining the best location for camp.

Camp Layout

The layout of camp can be discussed ahead of time and adjusted once actual conditions are observed. Consider where to erect tents (e.g., for berthing, kitchen, meeting). Establish a bathroom area with or without a tent. Store outside gear. And

establish an emergency cache. Discuss camp layout regarding possible whiteout conditions, accounting for obstacles between tents and the feasibility of erecting rope lines between berthing, kitchen and bathroom tents.

Survival Cache and Emergency Shelter

A survival cache should be set up a short distance from camp, about 200 to 300 meters (655 to 985 feet) upwind, in case the main tent with food and supplies is destroyed by fire or storm. The cache must contain a basic assortment of survival gear, with the minimum amount of each item determined by the number of people in camp and remoteness of the location. Critically, this cache must be securely anchored and its items kept dry.

The survival cache can consist of the issued survival bags, supplemented with a radio and batteries, water bottles and other crucial items specific to the field team. The bags can be stashed in a cave, anchored to the ground or buried in snow and flagged.

If the need arises for an emergency shelter, the first and most important order of business is to arrange for protection from wind. Spend some time looking around camp and investigate locations for physical features that provide a break from the prevailing wind and could be used in an emergency. Identifying those locations ahead of time can be crucial to an emergency response. Erecting rock walls or snow walls, digging snow trenches, building other types of snow shelters or erecting makeshift shelters out of piles of gear and tarps are all options for staying out of the wind, snow or rain in an emergency.

Shelters

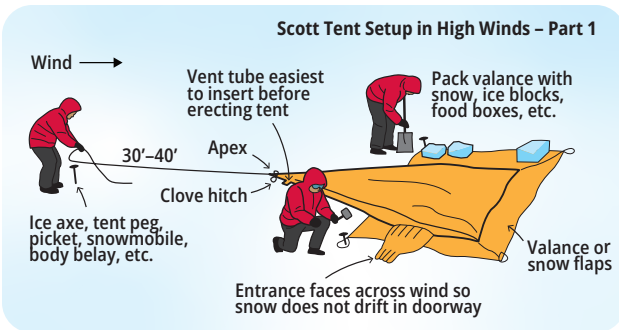
Tents must have a solid anchor for every guyline, and these should be checked daily to ensure they are tensioned. Loose guylines make the tent more prone to wind damage and make catastrophic failures in a storm more likely. Avoid using "hard" knots (i.e., any knot that cannot be adjusted). Instead, use taut-line hitches or trucker's hitches, as they are easy to

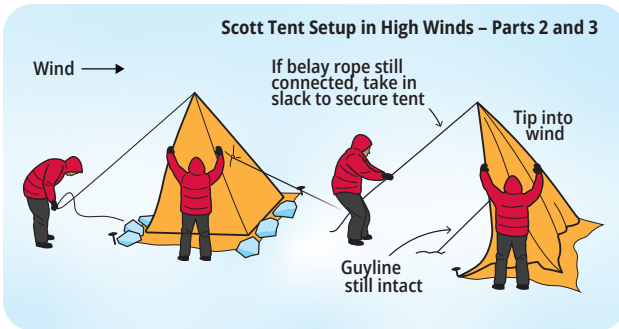
tension and undo. Field team members should practice and become familiar with such knots before deploying. See the References section for steps on making a variety of knots.

Establishing Wind Direction

The most important factor in setting up a tent is securely anchoring it to withstand high winds. Field teams must first determine the prevailing wind direction by observing patterns in the snow or sand. Long rows of snow drifts (i.e., sastrugi) in, for example, a north-south orientation indicate the prevailing wind is either from the north or south. Next, look for etching at the ends. If the prevailing wind is from the south, the snow at the southern end of the sastrugi will be etched. Sand can also form sastrugi-like drifts that help determine wind direction. Shorebirds often face into the wind, so wildlife can be an indicator too.

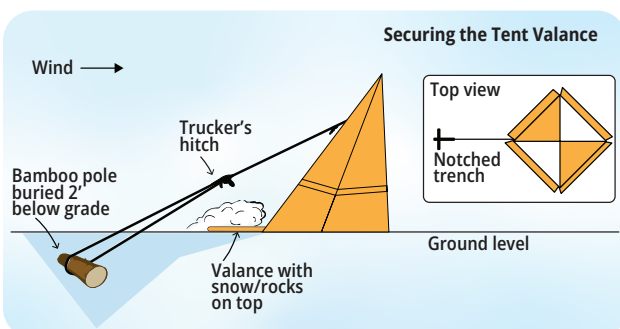
Orient the tent with the main door opening downwind, at a 45-degree angle to the prevailing wind. This helps prevent drifting that blocks the door and sheds the wind load.





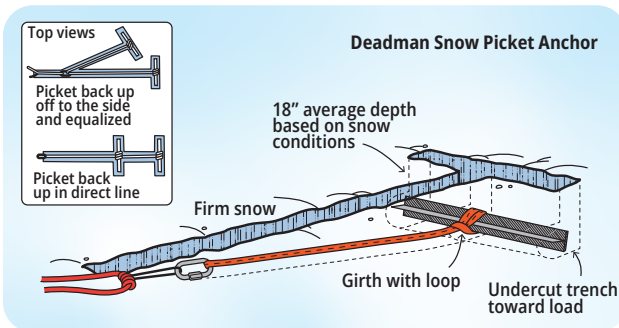
Anchoring the Tent

If tents have a valance (i.e., skirt) on the tent fly or body (see figure part 1 above), these should be fanned out flat and weighted down with snow or rocks to help keep the tent anchored in windy conditions. This also prevents wind from going underneath the valance and lifting and damaging the tent and helps keep it warmer. Do not to pile rocks onto the tent wall, which could wear and tear the fabric in high winds.



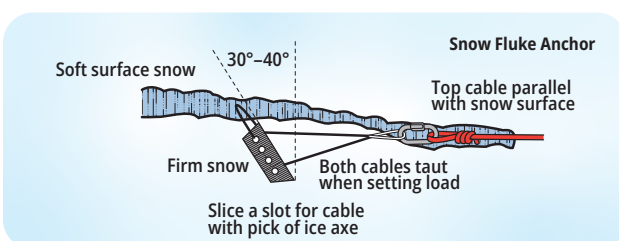
Substrate conditions inform how best to anchor a tent. If the snow or soil surface is **firm** (i.e., hardpacked), hammer in long stakes or sections of bamboo angled slightly away from

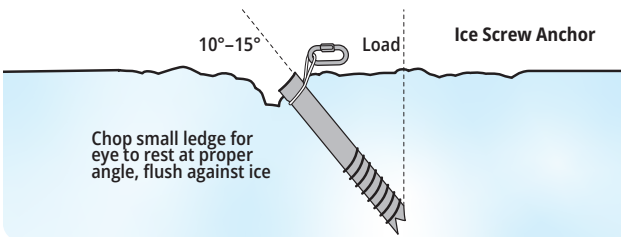
the tent and attach guylines to the stakes. If the snow is **soft**, bury a long stake or piece of bamboo (i.e., deadman) in a slot perpendicular to the angle of pull, with a guyline attached at the midpoint.

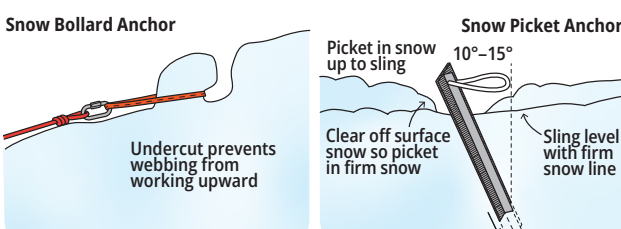


The guyline runs in a straight line from the deadman to the tent via a slot cut in the snow. Do not bury deadman too close to the tent, or it will be pulled upward when the line is tensioned. In very soft snow, the deadman anchor must be buried two feet deep or more. In soft sand and rocky terrain, rock bags can be the best way to anchor a tent. Fill rock bags with rocks, tie them up, then guy the tent to the bag. Use a looped line or web sling around the deadman so the guylines can be easily tensioned or adjusted daily.

Snow flukes and snow bollards are other ways to anchor tents or other objects in hard snow areas.







PRO TIPS

- If anchoring on rocky land, especially in a volcanic area with sharp rocks, be aware that the guyline exiting the ground from the deadman could wear down in windy conditions. Frequently monitor the line, and replace it if necessary.
- Alternatively, create a makeshift sheath around the line using rock sample bags or whatever may be on hand. Placing a length of bamboo between the guyline and ground may also help keep the line off sharp rocks.

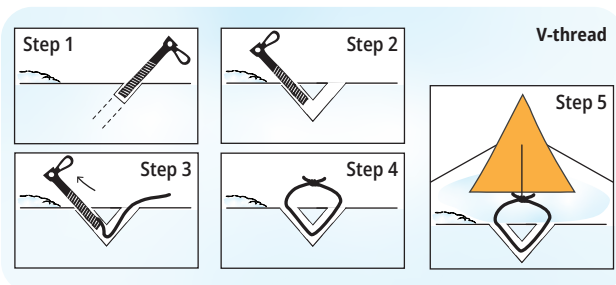
Snow Walls

Having enough snow to create snow walls (i.e., blocks cut from snow) that will shelter tents is rare on the Peninsula but not out of the question. If it is a windy day or the camp is at a windy location, field teams may need to construct snow walls before setting up a tent. Ideally, blocks are cut from hardpack with a saw, but a shovel or ice ax may work. Since snow conditions can change over a small area, probe the snow

to see if there is an area harder than others. If only soft snow conditions exist, try packing down the snow with boots then check if it hardens (i.e., sinters) after an hour or more.

Tents on Sea Ice

If the snow on the ice is deep enough, anchor the tent as described above. Otherwise, clear off any snow, and anchor the tent to the ice with ice screws. Team members may also drill V-threads, two holes that intersect to form a V-shaped channel. Use an ice screw or ice drill to create the holes, and feed a guyline through the channel. Feed it to the bottom of the V on one side, then insert an ice screw on the other side. Twist the ice screw, and the teeth should grab the line and pull it out as the ice screw is withdrawn from the hole. The line can then be attached to the tent.



On sea ice, a glacier, rock or dirt, create a wind break by repositioning snowmobiles, sleds and ATVs. In thick snow, you can opt to dig a trench.

Camp Medical

Before arriving at camp, team members must discuss relevant medical concerns with the appointed field safety or medical lead. First-aid kits will be supplied and located in an agreed central location. The field lead (ASC camp manager, field coordinator or grantee) will most likely be in control of the prescription medical kit. Any medical interventions at camp

involving more than basic first aid must be coordinated by the medical lead with the Palmer Station physician or support vessel medical staff. Ensure everyone is familiar with the location of medical supplies and knows what to do in case of a medical emergency. See the "United States Antarctic Program Field First-Aid" manual for more information.

Drinking Water

Depending on the location of the camp, there may be access to fresh drinking water. Any fresh water from lakes, streams, a glacier or snow must be filtered, sterilized with chlorine (e.g., household bleach) or boiled. The Peninsula field supervisor determines if your campsite has a reliable fresh water source and provides filtration and sterilization materials.

The fresh water source may need to be supplemented or be altogether unavailable. In these cases, bottled water is purchased in Punta Arenas and supplied to the camp. The Peninsula field supervisor calculates the appropriate amount of bottled water needed for the group, including an emergency stash in case camp resupply or takeout is delayed. Practicing water conservation at camp is important, as is maintaining a rolling inventory of bottled water during the field season.

Fire Prevention

Fire prevention is crucial in remote camps. Losing supplies or shelter to fire can immediately create an emergency situation. During training, ensure all field team members know how to properly operate stoves, lamps, heaters and generators.

- Minimize hazards in areas where combustible equipment is set up. Move stove and heater away from tent walls, and keep loose materials such as jackets or towels away.
- Ensure all equipment remains in proper working order during the field season.
- Place small propane heaters only on aluminum tables.

- Check propane cylinders for damage or leaks before using them.
- Store propane cylinders outside the tent whenever possible, with long propane hoses running from the tank to the inside of the tent where the stove or heater is located.
- Release pressure in any liquid fuel canisters outside the tent before packing or storing them.
- Operate and store generators at least 15 meters (~50 feet) away from any tent to prevent carbon monoxide (CO) poisoning.
- Do not dry clothes on a heater or stove. Use a clothespin to hang wet clothing on a string inside the tent.
- Line the inside of the tent behind the cooking stove with foil (duct tape and string can also be used) so the tent is not splattered with cooking grease and becomes a fire hazard. Change the foil frequently. Foil also helps protect the tent fabric from burning or melting.
- Fire extinguishers, CO detectors and smoke detectors are standard issue for field camps. Place them in appropriate and accessible areas, and ensure all field team members know their location and proper use.

Field Camp Daily Tasking

Communications

- Complete the daily check-in call at or before the appointed time. Some locations may require more than one call during the day.
- Ask for a local weather report during check-in, and communicate any pertinent information.
- Report any medical issues.

Housekeeping, Health and Safety

- Inspect the camp area daily. Ensure everything is secure and all tent guylines are taut. Wind can increase at any time, and snow or rain can dampen objects stowed outside.
- Take daily weather observations, including temperature and wind speed. Maintain awareness of weather conditions.
- Inventory drinking water and cooking water. Haul, melt and boil or filter water as needed. It is imperative that at all times the camp maintain a seven-day emergency supply of water for all persons at camp. If water is running low, alert the supporting vessel or station.
- Check waste levels (e.g., urine, solid human waste, gray water, food trash, biomedical waste), and bag or dispose of waste according to environmental guidelines.
- Check handwashing stations for adequate supplies, and replenish as necessary.
- Ensure the communal tent space is clean, tidy and stocked with essentials.
- Ensure waste is properly sorted per USAP support vessel or Palmer Station requirements.
- Ensure all Iridium phones, HF and VHF radios, other communications devices and backup power pack are charged. Set up solar panels, or start up a generator to charge them.
- Refuel generators, the ATV, stoves, and other items that need fuel.
- Check for leaks, and clean up spills of any kind.
- Restock grab-and-go foods and snacks.
- Prepare and cook evening meals as assigned.

Recordkeeping

- Record any pollutant spills using the Field Spill Reporting Sheet.
- Record the required data in the environmental EOS reports (e.g., water and fuel usage, number of people in camp, estimates of human waste and gray water discharge, weather information).
- See the Environmental Policies section for details on the above.

Camp Takeout

The camp takeout schedule must be coordinated with the USAP support vessel POC or Palmer Station manager, who will confer with other stakeholders. The camp manager or field team member assigned to communications is responsible for providing all requested information to the incoming vessel. This person must know the condition of the landing site and the current wind, sea and ice conditions. Any animal activity that will impact operations must also be noted.

- Communicate with the POC regarding takeout details (e.g., estimated number of cargo loads needed to remove all cargo, samples and personnel).
- Determine how many vessel staff and volunteers can assist ashore.
- Identify a cargo staging area next to the landing zone. Keep it well above the high-tide and storm-surge lines, and tie it down.
- Package equipment and cargo that is no longer being used ahead of time, and move the items near the landing site. This can be time consuming, so begin the process early.
- Move samples to the cargo staging area throughout the season as practicable.
- Repackage and label hazardous cargo.

- Move full waste containers to the cargo staging area.
- Designate roles for camp participants. At shore, haul gear or take down the remaining tents.

It helps to bring a scale to preweigh and group cargo according to the small boats' payload.

Order of Operations

The camp takeout procedure is similar to the put-in but in reverse.

1. Assess the landing site for ice and swell conditions. Report this information to the POC, along with local weather conditions and any other pertinent information regarding the takeout.
2. If the weather window allows, take down all personal tents. Leave the toilet and communal tent as the final tents.
3. Direct volunteers and staff in the order of cargo.
4. Transport all remaining items to the cargo staging area.
5. Scan the camp site to ensure all items are removed, including tent stakes, deadmen and waste.
6. Make survival bags and lifesaving equipment the final load.

Tasks on Vessel

Many tasks must be performed on the vessel after returning from the field. These include cleaning and drying tents, drying sleep kits, sanitizing pee bottles, storing food properly, cleaning and sanitizing kitchen gear, cleaning generators and emptying their fuel, rinsing the ATV and trailer with fresh water, washing dry bags and plastic bins and labeling broken or damaged equipment. All cargo and samples must be entered into the USAP cargo system (Maximo) for offload. Work with the field supervisor, science implementer or Palmer Station logistics personnel (Palmer.Logistic@usap.gov) to achieve this.

There are no cleaning facilities at the Punta Arenas warehouse. Hose off, scrub or brush off muddy and dirty items on deck. Use the boot wash station, and clean all equipment, including camera tripods and dry bags. Review the Environmental Policies section for preventing cross-contamination when visiting multiple locations. See the next subsections for details on specific items handled on vessel.

Tents

All tents can be scrubbed, rinsed and dried on ship, including the communal tents. Ask the ship's crew for a space to dry them. Tents may need to be set up in the Punta Arenas warehouse for inspection. If there are holes in the tent or any other problems (e.g., cut guylines), affix a tag explaining the problem on the outside of the tent bag.

Kitchen Items

Dishes, Thermos bottles, food coolers, stoves, water coolers and five-gallon buckets must be cleaned. Coordinate with the ship crew to use the galley or best location on the vessel to wash and dry kitchen items.

Pee Bottles and Toilet Seats

Soak pee bottles, toilet seats, waste buckets and carboys with 10% bleach solution (1:10 bleach-to-water ratio) for 10 minutes. Do not leave these items for other people to wash. Do not dump bleach overboard or down drains. See the laboratory protocols for proper waste disposal.

Fuel Cans aka Jerricans

Label any full or partially full fuel cans with (1) the type of fuel and (2) the text "PEN FIELD." These items must be given an SN in Maximo and put in the appropriate hazardous storage in the yard.

Stoves

Clean stoves with a degreaser, and dispose of grease in the designated sink onboard. Dry the stove before putting it away.

Backpacks

Empty all pockets and scrub backpacks with soap. Hang to dry.

Punta Arenas Gear Return

Grantees using field gear are responsible for unpacking, sorting and helping to return all equipment to the Field Room in Punta Arenas. Work with the Peninsula field supervisor if present. Otherwise, arrange gear return with the Palmer Station lab supervisor or Palmer Station Logistics. Returns can take from one hour to two days based on the gear and its condition. Most groups redeploy three days after the vessel arrives in Chile, so plan accordingly.

- To return cargo and field gear from Palmer Station or a vessel, use the Peninsula field project code (879), enter the information into Maximo, and email a list of items by cargo number to the Peninsula field supervisor.
- At the Punta Arenas warehouse, empty the contents of the sleep kits. Count, bag and label all items to be laundered. Track wool or special-wash items separately.
- Remove all duct tape and tags from the gear.
- Report any damage to the field supervisor, or affix a tag to each damaged item with an explanation of the problem.
- The field supervisor inspects the gear and compares it to your Research Support Plan (RSP) allocations. Discrepancies can delay your redeployment.
- Inform the field supervisor, in person or by email, if there are any problems with field equipment, including broken, missing or non-working parts. There is no penalty for regular wear-and-tear on gear. This information is critical to the next user's safety.