Chapter 6
McMurdo Area Helicopter Transportation

Figure 6-1: USAP Helicopters. (photo by Jack Hawkins)

The USAP operates a fleet of four helicopters in the McMurdo area. Two of these are the model AS350B2 aircraft, known as either "squirrels" or "A-Stars," and two are Bell model 212s, civilian versions of the Huey (see figure 6-1). The USAP operates this fleet under the civilian Federal Aviation Regulations. The helicopters are single-piloted, which means the pilots are responsible for all aspects of the aircraft's operation. All USAP personnel must attend a helicopter training course prior to boarding the aircraft for the first time. Helicopter training is part of the Field Safety Training Program.

6.1 Helicopter Pad (Heli-pad)

The administrative and logistics functions for helicopter transportation are located at the Heli-pad. The helicopter hangar is used for aircraft maintenance and also houses various administrative offices. The smaller silver structure located to the side of the Hangar is the Passenger Terminal. This is where you report for your flight. **Note:**

- Never drive onto the Heli-pad without radio clearance.
- Never walk onto the Heli-pad itself without escort.
- You can walk to the Passenger Terminal without clearance or escort.

Seven helicopter support staff members work with passengers and their cargo to plan flight schedules and manifest cargo. One of five Heli-techs will brief you in the passenger Terminal and later escort you to your Helicopter. The Senior and Assistant Helicopter Coordinators have offices in the Hangar.

6.2 Preparations: Flight Requests and Cargo

You will attend a Science In-brief on day two of your arrival in McMurdo. After going over your schedule with the Senior Helicopter Coordinator, a pager will be issued to your group. Unsettled weather can cause sudden changes to flight schedules. The pager will

greatly expedite notifying you of flight delays, changes or cancellations.

Three days before your flight, confirm your helicopter flight request with the Senior Helicopter Coordinator. Your request must include estimated cargo weights, the number of people needing to fly, and a list of hazardous cargo. Unexpected or emergency helicopter requests should be communicated to the Senior Helicopter Coordinator as soon as possible.

Two days before your flight, turn in all hazardous cargo to USAP Cargo.

One day before your flight, bring all non-hazardous cargo to the Heli-pad. Special arrangements can be made for gear or equipment that needs to be used until the day of the flight. All equipment must be weighed, numbered, and marked with the following information:

- Science group number and item number (e.g., GO-078-O/1, GO-078-O/2, etc.)
- Location for delivery (e.g., Lake Hoare)
- Weight (in pounds)

List all items, including weight and estimated cube, on a manifest form. Be sure to include on the manifest form each piece of cargo that you are dropping off. Give the completed form to one of the Heli-techs when turning over your cargo. A Heli-tech will prepare your cargo load(s) and a final manifest, which will be given to the pilot for your flight the following day. You will also want to schedule a transportation time that will get

you to the Heli-pad a minimum of 30 minutes prior to your flight; 45 minutes early is preferable.

The Heli-pad staff will determine which of the two types of aircraft will be used for your helicopter support. The aircraft have different load carrying capacities, depending upon on your destination, cargo weight, and fuel onboard. The type of aircraft assigned to your project may be affected by other flight requirements scheduled that day.

6.3 Hazardous Cargo

Hazardous cargo is handled differently than non-hazardous cargo; it is first sent to USAP Cargo instead of being dropped at the Heli-pad. A listing of common hazardous equipment and materials is in Appendix A of this manual. Identify any and all hazardous material in your field supplies, including science supplies, BFC equipment, and MEC equipment.

Deliver your hazardous cargo to USAP Cargo at least 48 hours before your flight. Record each piece of hazardous cargo on a manifest form. It is then the responsibility of USAP Cargo to package all hazardous materials in accordance with USAP hazardous cargo regulations. The Heli-pad staff will transport your hazardous cargo to the Heli-pad.

When transporting hazardous cargo from one field site to another, be sure to provide the pilot with a copy of the hazardous cargo manifest. Notify the pilot of any changes to the hazardous cargo manifest, as well. The

pilot requires this hazardous cargo documentation on all flights. This important information relates directly to safety and environmental concerns.

Save all hazardous shipping containers and reuse them for transporting hazardous items in the field. Burn off excess fuel in stoves before transport, and only transport fuel in certified containers. The pilot or heli-tech will load hazardous items in specific areas of the helicopter.

6.4 Resupply Cargo

To reduce your initial put-in flight hours, use the resupply system during the season. If you will be moving camp locations during the season or using helicopter support for day trips from your camp location, resupply is an economical use of helicopter time to receive additional food, fuel, and equipment since the helicopter is coming to support your group and may have room in the cargo compartment for the requested items.

The following is how you must prepare your resupply. You will store the resupply in your allocated cage space at the BFC. You must inventory each box and mark the outside of the box or tag the item using the following information:

- Science group number and item number (e.g., GO-078/1, GO-078/2, etc.)
- Weight (in pounds)
- HAZARDOUS (if appropriate)

Give copies of the resupply inventory to the BFC Supervisor and the Senior Helicopter Supervisor, and take a copy with you into the field. By following this plan, it will be easy for you to pass resupply information to the Heli-pad staff. You simply have to ask for Box #, and so on, in your cage.

When asking for hazardous resupply from the field, please give two days notice for the BFC staff to deliver the resupply to USAP Cargo for proper packaging for the resupply flight.

6.5 On the Day of Your Flight

On the day of your flight, check the flight schedule early. The schedule will appear on the local area network (LAN) under Operational Info/Helicopter Operations. If a member of your party was issued a pager at the Science In-brief, it is critical that it remains switched on for the day of a scheduled flight. This will enable the Senior Helicopter Coordinator to quickly notify you of any schedule changes. If your group doesn't have a pager, it is important that Heli-pad staff know where to contact you on the day of your flight. Changes to flight schedules often occur and are generally the result of deteriorating weather.

You must be at the Heli-pad 30-45 minutes prior to the flight. This means that ALL personnel and equipment must be there by that time. It is also required that you be dressed in ECW issue clothing and footwear from the CDC. In consideration of your own safety, you won't be allowed to board a helicopter unless you are properly attired.

6.6 Helicopter Loading and Unloading

In McMurdo, the Heli-pad staff will work with the pilot to load and unload the helicopter. At field locations, your group must work with the pilot to perform these tasks. The pilot is ultimately responsible for passenger safety and will determine if the aircraft can be loaded or unloaded with the rotors running. At certain times, the pilot may request that Heli-pad staff accompany the aircraft into the field to help safely load or unload cargo for field parties.

6.6a The Boarding Process at the Heli-pad

A Heli-tech will lead you to the helicopter when the pilot is ready for boarding. At the helicopter, a final safety briefing will be given by either the pilot or a heli-tech, and locations of survival bags will be pointed out. Once you are seated, strap yourself in and connect your helmet to the helicopter intercom system. Do not talk to the pilot during take-off or landing.

6.6b Survival Equipment

Thirty-five pounds of survival equipment for each passenger will be included on each flight. It is in your best interest to ensure that this equipment is on board before take-off from McMurdo. The Heli-pad staff will assist with placing the survival equipment/bags on the helicopter. A pilot will not be allowed to leave you at a field site without a survival bag.

6.7 Estimated Flight Times

Following are flight time estimates (one way) for planning flights:

Allen Hills	1 hour
Cape Crozier	35 minutes
Cape Bird	30 minutes
Dry Valleys	30-45 minutes
Koettlitz Glacier	30 minutes
Marble Point	30 minutes
Minna Bluff	30 minutes
Mount Erebus	30 minutes

6.8 Clothing for the Flight

The following items must be worn for every flight:

- Bunny boots or plastic insulated climbing boots
- Thermal insulated long underwear (top/bottom)
- Wind pants with pile pants underneath
- Pile jacket
- Parka with hood or jacket layering system
- Mittens or gloves with liners
- Bear paws (shove them in your pocket or have them close by)
- Hat
- Sunglasses

Additional Items to Pack for Day Trips:

- Sunscreen
- Water bottle

- Thermos with hot liquid
- High energy food
- Ear plugs

Keep in mind that there is a chance you may get stuck in the field overnight. You will be dropped off with survival bags, but you'd be wise to pack some extra food (e.g., chocolate/trail mix), extra warm clothes, reading material, and a toothbrush.

6.9 Day Trips

If you plan to be left in the field for the day, you must have at least two people, survival bags, proper clothing, and a VHF Radio. After you are dropped off, the pilot cannot leave until you have communicated with him on the VHF radio.

If you are traveling to the Dry Valleys, and away from established camps, you must have personal urine bottles and plastic bags for human waste.

6.9a Radio Equipment

All groups departing for the field will need VHF radios that have the Field Party Frequency Plan. During the pilot brief, discuss which channel you will use for helicopter/field team communications ("Helo Ops").

For a field camp put in, you must have the following radio equipment:

- HF Radio(s)
- Handsets

- Antennas
- Batteries and recharging capabilities for the duration of your stay in the field
- Back-up radio (complete)

After the pilot drops you off, and before he/she can leave you in the field, you must establish communications with McMurdo ("Mac Ops"). If you cannot establish communication because of radio malfunction, you'll be flown back to McMurdo. (**Note**: Be sure to test your radio equipment before deploying to the field.)

6.10 Daily Communications

Every field group must make daily radio contact with the Field Operation Communications Center (FOCC) (Call sign "Mac Ops"). Established field camps with phones can simply call in. Those camps using HF radio communication have various options if radio contact with McMurdo is poor: you may relay between another field group, South Pole, or Scott Base. The required daily check-in is extremely important, and various levels of SAR response will be initiated if a field party fails to make its daily check-in. (See Chapter 9: Field Radios for more detailed information.)

Each morning starting at 8:30a.m., a member of the Heli-pad Staff will have HF radio communications with all helicopter supported camps in the Dry Valleys and Ross Island area. The day's flight schedule, weather, resupply, and other information is passed at that time. You will be asked to provide a local weather observation between 7:00-7:30a.m. on the day of your flight.

Also, if you have changes or information to pass about your support for that day, you must contact the Heli-pad staff at that time. This information is best received before 7:30 a.m. and is important for the helicopter pilots and operational plan for that day. Again, established camps with phones will conduct all of the above communications over the phone. Before returning from the field, all field groups need to contact Housing in McMurdo, via HF radio or phone, to make arrangements for accommodations.

Figure 6-2: Field camp retrograde. (photo by Paula Adkins)

6.10a Field Resupply

In camps that have phone access to McMurdo, field groups can call individual departments for resupply items. These departments will notify the Heli-pad of the resupply. However, all resupply requests communicated via radio must be communicated directly to the Heli-pad staff. The Heli-pad staff will coordiate the requests directly with the appropriate work centers, which will

then supply the weight of the item(s) to the Heli-pad staff for load planning and delivery.

6.10b Schedule Changes

New flight requests and changes to schedules must be submitted three days before the flight. You may pass written requests to the Heli-pad staff via a pilot, or communicate verbal requests over the radio. Before camp put in, you must confirm with the Senior Helicopter Coordinator a plan of your entire season, from put-in to pull-out. This plan should include estimated dates for camp moves, day trips, close support, and resupply.

6.11 Retrograde from the Field

The most efficient way to retrograde material from the field is to use resupply flights, camp moves, and day-use helicopter flights to retrograde waste and extra field gear. This will eliminate the need for excessive dedicated flights for your pull-out.

During the daily HF radio/phone communications with the Heli-pad staff, field groups can pass information concerning retrograde so it can be incorporated into the flight schedule. Remember that the helicopters can retrograde sling loads back to McMurdo or for staging at Marble Point, so don’t let packaging, boxes, and barrels pile up at camp... Retrograde it early! (See figure 6-2). Please refer to Chapter 15: “Waste Handling in the Field” for proper packaging and labeling of retrograde items.

NEVER APPRDACH A HELICOPTER FROM THE UPHILL SIDE. LEAVE AND APPROACH ON THE DOWNHILL SIDE. ALWAYS CARRY LONG LOADS LOW AND LEVEL.

NEVER APPROACH A HELICOPTER FROM THE REAR.

Figure 6-3: How NOT to approach a helicopter

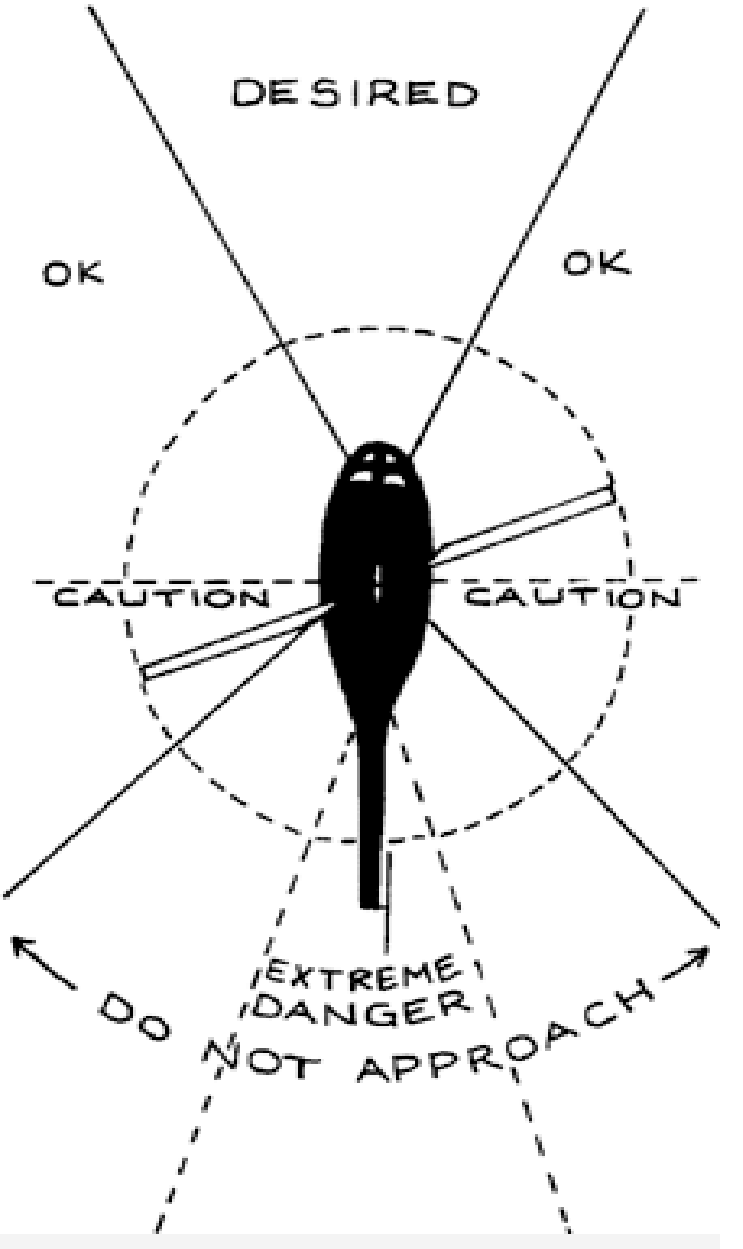

Figure 6-4: Helicopter danger zones

6.12 Camp Pull-Out

If you have retrograded material and equipment throughout the season, your camp pull out should be relatively easy. It's best to leave two team members in the field to accompany the last pull-out flight. They can ensure that all the equipment is picked up and that nothing blows away.

6.13 Helicopter Safety Guidelines

- NEVER approach a helicopter until you receive a thumbs up signal from the pilot.
- NEVER walk near the tail rotor. Always approach from the front of the helicopter.
- Carry long loads such as bamboo poles, Scott tents, or survey rods low and level to the ground.
- Remain seated with seat belts fastened at all times.
- Wear helmets.
- Do not smoke in or near the helicopter.
- Assume the crash position when warned by the Pilot.
- In the event of an emergency, remain in the aircraft until all motion has stopped.
- Know the location and operation of emergency exits.
- Know the location of first aid kits
- ALWAYS obey the Pilot's orders.
- Know the location of aircraft survival equipment.
- Any movement on the Helicopter Pad must be

authorized by the Heli-pad staff either on the pad or in the hangar.

(See Figures 6-3 and 6-4 on the previous pages.)

6.14 Planning Information for Helicopters

Since weight is critical in determining cargo capacity, each passenger will be weighed before the flight. In addition, all cargo will be weighed and its volume (cube) determined.

6.14a Bell 212 Helicopter

The Bell 212 helicopter can hold up to 9 passengers (with only personal gear; with that many passengers, the cargo compartments will be required to accommodate survival bags.

Fuel	Payload*	Operating Radius	Endurance w/ 30 minutes fuel reserve
Full internal fuel (1,400 lbs)	2,500 lbs	125 miles	2 hrs. 30 min.
Full internal & 1 aux fuel cell	2,000 lbs	160 miles	3 hrs. 15 min.
Full internal & 2 aux fuel cell	1450 lbs	200 miles	4 hrs.

*Payloads account for pilot and his/her survival equipment aboard aircraft already.

Planning for Cargo Using the Bell 212 Helicopter

- Cargo Hatch Door Size: 7’8" x 4’2"
- Cargo Compartment Size: 7’8" x 4’2" x 7’11"

6.14b A-Star 350 Helicopter

The A-Star helicopter can comfortably hold 4 passengers with minimal gear (approx. 1000 lbs), but 3 passengers are preferred since this allows considerably more space for cargo.

Fuel	Payload*	Operating Radius	Endurance w/ 30 minutes fuel reserve
Full internal fuel (940 lbs)	600 lbs	160 miles	2 hrs. 30 min.

*Payloads account for pilot and his/her survival equipment aboard aircraft already.

Planning for Cargo Using the A-Star 350 Helicopters

- Cargo Hatch Door Size: 5’6" x 3’6"
- Cargo Compartment Size: 16" x 20" x 27"