



COMMUNICATIONS

Regional Travel

Persons traveling off established roadways in areas around McMurdo Station must maintain communication with Central Comms. Established roadways include snow roads to the Long Duration Balloon Facility (LDBF), Williams Airfield, and Phoenix Airfield, as well as dirt roads between McMurdo Station, Scott Base, T-site and Arrival Heights. (Note that field camps and U.S. National Science Foundation Amundsen-Scott South Pole Station have their own rules for regional travel.)

Solo travel away from McMurdo Station — whether one person or multiple people on one snowmobile — must obtain NSF authorization first. If the solo travel is authorized, NSF and Field Safety coordinate a well-managed plan for the travel that accounts for the location and type of work involved.

When traveling off established roads, do the following:

- Check out by radio with Central Comms. (This also ensures the radio works.)
- Check in before your ETR, as failure to do so will initiate an emergency response.
- Maintain awareness of and abide by the following weather conditions.

Weather Conditions

Weather	Description	Travel Requirement
Condition 1	When visibility is < 100 feet, wind speed is > 55 knots (60 miles per hour [mph]) or wind chill is > -100°F (-73°C)	No travel of any kind
Condition 2	When visibility is > 100 feet but < 0.25 miles, wind speed is 48 to 55 knots (about 55 to 60 mph) or wind chill is -75°F to -100°F (-24°C to -38°C)	No solo/snowmobile travel
Condition 3	Any weather conditions with better visibility, wind speed or wind chill than Condition 2	Follow standard travel procedures

Radio and Phone Best Practices

For Checkout

Using your VHF radio, follow these best practices:

1. Listen before transmitting to ensure the channel is not in use.
2. Hail the party you are calling (e.g., "Central Comms, Central Comms. This is <vehicle number or call sign> calling on <channel name>.").
3. Pause for a moment after pressing to transmit, to ensure the entire transmission gets through.
4. Wait for acknowledgment.
5. Transmit the following information:
 - A. Vehicle number(s)
 - B. Event number (or department)
 - C. Destination
 - D. Number of people on board
 - E. Driver name (one name per group)
 - F. Point of contact (POC) in McMurdo Station and phone/pager number
 - G. ETR to McMurdo Station or estimated time of arrival (ETA) at destination
6. Keep the radio batteries warm, and always carry a spare battery or spare radio.
7. To conserve power, do not overuse repeaters.
8. Use the following phonetic alphabet when letters or groups of letters must be pronounced separately (e.g., unusual words, call signs, during noisy conditions).

Phonetic Alphabet for Radio

Letter	Code Word	Letter	Code Word
A	Alfa	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliett	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

For Overnight Stays

- Before departing McMurdo Station, provide the names of all persons in the traveling party.
- Provide a one-way checkout when leaving for the destination, a morning check-in from the destination and a one-way checkout before your return.

If You Are Late

Five minutes after a missed check-in, the EOC is activated, including the NSF station manager, ASC station manager, deputy field area manager, SAR supervisor, information technology (IT) manager and fire chief. The EOC meets in Building 165 (BL165) to gather relevant information and attempt to contact the group. **Call Central Comms beforehand if you need more time and want to change your check-in time. There is NO grace period for check-ins.**

Field Camp Communication

Field camps must have at least two unique types of communication devices that are approved and issued by USAP. Field camps may use any combination of the following: VHF radio (when repeaters are operational), HF radio, Iridium satellite phone or telephone (e.g., radiophone, Voice over Internet Protocol [VoIP]).

Before Leaving McMurdo

- Contact the communications coordinator at BL159 (x42378) to arrange pickup of communications equipment.
- Test the equipment by calling Central Comms.
- Ensure you have a copy of the “Radio Communications Equipment User Guide.”

At Put-in (Arrival at Field Site)

- Make the put-in call to Central Comms before the aircraft departs camp.
- Provide the following information:
 - Location name
 - Camp leader name
 - Number of people (by event number)
- Confirm the daily check-in time and coordinates of the site.

For Daily Check-in

- Check-in with Central Comms before your scheduled time.
- Provide the following information:
 - Location name
 - Number of people (by event number)
 - Confirmation all is well (or not)

At Takeout (Return From the Field)

- Notify Central Comms when leaving the camp vacant.

For Day Trips via Aircraft

- No communications with Central Comms is required because the flight is tracked by McMurdo Station Field Operations Center (MacCenter) and Aviation Operations (AvOps).
- Establish communications with the helicopter pilot on VHF Channel 7 “Helo Ops” (i.e., Helicopter Operations) before the helicopter departs.
- Central Comms is available for communications checks, message relays, or recording locations.

In Emergencies

- Call Central Comms and notify them of the emergency.
- Medical staff call the Central Comms transfer line and indicate if the emergency is URGENT.

If You Are Late

One hour after a missed check-in, the EOC will start activating a rescue. Based on the late team’s location, this could mean vehicles are in motion, helicopters are in the air, and many people are searching for the team. To avoid unneeded rescues, ensure you always check in or call Central Comms for an extension if you are running late.

Communication Devices

USAP uses five systems for field party communications, based on the field party location: telephones, HF radios, Iridium satellite phones, VHF radios and Garmin inReach devices.

Telephones

Field camps in the McMurdo region that are equipped with telephone service can call Central Comms by dialing x42000.

This number rolls over to four available lines, so callers are always able to get through.

HF Radios

All deep field camps (and early season camps without repeater coverage) are issued an HF radio as they are beyond the range of VHF. HF can provide long-distance communication via groundwave or skywave, surpassing VHF's line-of-sight limitations. HF radio can be adjusted to change how the signal is controlled. However, users should follow the standard setup instructions for the Barrett PRC-4090 (newer backpack HF transceiver) or Barrett PRC-2090 (older backpack HF transceiver) and verify that radio settings are correct before making adjustments. The handset and long-line dipole antenna must be attached to the radio before operation. Select channel/frequency using the up/down arrows for McMurdo Station individual frequency.

The long-line dipole must be elevated at least four feet off the ground. Ensure all shorting bars are connected, except for the desired frequency. **Remember when plugged into the radio, the long line is an active wire and electrical shock can occur.**

PRO TIPS

- Use the following HF radio frequencies for the McMurdo region:
 - Central Comms: 7.995 or 11.553 MHz
 - Air Traffic Control (for field party emergencies only): 9.032 MHz
- At South Pole Station, the US-17 circuit is used to pass information between outlying stations and McMurdo Station, as well as for daily camp check-ins. Use the following continuously monitored frequencies in the order listed:
 - Primary: 7.995 MHz
 - Secondary: 4.770 MHz
 - Tertiary: 11.553 MHz

- Speak loudly into the microphone, and follow the radio best practices described above.
- When conducting communications checks with Central Comms before departing McMurdo Station, point the antenna at Black Island.
- The loss of saved frequency programming in the available channels does not render the radio inoperable. Manually tune the radio to the desired frequency, and operate using radio best practices.
- Charge the battery (AC or DC power), and keep it warm for best battery life and performance.

Iridium Satellite Phones

Deep field camps are also issued at least two Iridium satellite phones. Field parties working away from McMurdo Station will be issued Iridium phones. Any team spending one or more nights in the field will be issued a second phone, known as the community Iridium phone. These phones operate in the ultra high frequency (UHF) range of the radio spectrum. Instead of directly connecting to other radios (i.e., via line of sight or via line of sight to repeaters), they connect to satellites orbiting Earth. To make calls, ensure you have a clear view of the sky and, if possible, move to an area free from obstructions to obtain the best reception. Iridium coverage is not guaranteed in and around McMurdo Sound.

Iridium phones are administered by the U.S. Department of Defense. Dialing sequences to and from other commercial Iridium phones may vary. If a field party has multiple Iridium phones, the one with the lowest phone number is designated as the “Alpha” (i.e., primary) line. The next ones are “Bravo,” “Charlie” and so on. All Iridium phones issued at McMurdo Station are preprogrammed with several important operational numbers (see next table) that are also printed and attached to the outside of the phone’s storage case. The phone’s number is printed and attached to the phone case and the outside of the phone.

Iridium Phone Numbers

Department	Type	Preprogrammed Position	Number
Automated Transfer	Automated Transfer	MR01	00-697-720-568-1000
Central Comms	Satellite Phone	MR02	00-8816-763-12464
	Operator Transfer	MR03	00-697-720-568-1042
This Phone	Satellite Phone	MR04	00-8816-763-XXXXX
Field Ops	Camps Office	MR05	00-697-720-568-1056
	Traverse Office	MR06	00-697-720-568-1183
Fixed Wing	Office	MR07	00-697-720-568-1043
Helo Ops	Office	MR08	00-697-720-568-1180
	Satellite Phone	MR09	00-8816-763-29073
Medical	Clinic	MR10	00-697-720-568-1181
	Satellite Phone	MR11	00-8816-763-15142
S&TPS Manager	Office	MR12	00-697-720-568-1175
SAHPR Advocate	Office	MR13	00-697-720-568-1083
SAR Field Training	Office	MR14	00-697-720-568-1182
	Satellite Phone	MR15	00-8816-763-15141
Weather Charleston	Satellite Phone	MR16	00-8816-763-15168
Weather McMurdo	Satellite Phone	MR17	00-8816-763-20030

Dialing Calls

Below are instructions for calling from or to Iridium phones. If you have any questions or need help, call the Central Comms transfer line, which is staffed 24 hours per day and connect you to anyone in USAP or the U.S.

Getting Started

1. Power up the phone.
2. Wait for the phone to register with the network and display a signal level. This may take several minutes.

Iridium to Iridium

1. Dial 00 to access the satellite network.
2. Dial 8816.
3. Dial the Iridium number using the XXX-XXXXX format.
4. Example: 00-8816-763-12464 for Central Comms Iridium.

Iridium to U.S. Phone or USAP Direct Inward Dialing (DID) Line

1. Dial 00 to access the satellite network .
2. Dial 697 to connect to the Federal Telephone System (FTS).
3. Dial the area code. (Do not dial 1 beforehand.)
4. Dial the seven-digit number.
5. Example: 00-697-720-568-1042 to call the Central Comms transfer line.

Iridium to Non-U.S. Phone

1. Dial 00 to access the satellite network.
2. Dial 698 (code for international calls).
3. Dial the country code.
4. Dial the area code.
5. Dial the number.
6. Example: 00-698-64-3-358-8139 to call USAP Christchurch.

Iridium to US Toll-free Line

1. Dial 00 to access the satellite network
2. Dial 699 (code for toll-free calls).
3. Dial the appropriate toll-free prefix (e.g., 1-800, 1-888 or 1-887)
4. Dial the seven-digit phone number.
5. Example: 00-699-1-800-XXX-XXXX.

Phone to Iridium

If calling from a regular phone, dial the U.S. phone number (using the Hawaii 808 area code) corresponding to the Iridium number.

Iridium to U.S. Phone Number Conversion

Iridium Number	Equivalent U.S. Phone Number
8816-763-0XXXX	1-808-786-XXXX
8816-763-1XXXX	1-808-659-XXXX
8816-763-2XXXX	1-808-434-XXXX
8816-763-3XXXX	1-808-684-XXXX
8816-763-4XXXX	1-808-851-XXXX

Getting Text Messages

Friends and family can send short text messages to an Iridium phone. People sending a text message should enter the initials of the intended recipient at the start of the message and their own initials at the end. Otherwise, camp members will not know the intended recipient of the message.

Generally, friends and family should have only the Bravo (i.e., secondary) Iridium number so the Alpha line is used for work purposes only. They should be informed that the Iridium phones are a shared resource. As a team, you can determine which phone can be used for texts.

Text messages can be sent from a computer to Iridium phone as follows:

Option 1: The message can be sent via <https://messaging.iridium.com>. The sender fills out the form on the webpage by entering the Iridium phone number (e.g., 8816763XXXXX) and composing a message that is no more than 160 characters.

Option 2: The message can be sent via email, using the 8816763XXXXX@inah.pac.disa.mil format, where the last five digits of the Iridium phone are inserted at the Xs. Your message will be sent in plain-text format (not rich text or HTML). Leave the subject line blank, type 160 characters maximum in the body of the email, starting with the recipient's initials and abbreviating when possible. Exclude hyperlinks, signatures, photos, documents and other attachments.

In the field, check for Iridium text messages as follows:

1. Turn on the phone, and let it connect.
2. Messages should automatically download, with an icon appearing on the phone screen.
3. Follow the prompts to check the inbox.
4. Delete messages from the inbox and outbox when finished, as the phone can store only a limited number of messages.
5. If messages are not downloading or you missed a message, call your own phone number (preprogrammed in the phone), which will push any messages stuck in queue.

Troubleshooting the Phone

If the Iridium phone is malfunctioning, first disconnect and reconnect all accessories (e.g., battery, antenna, adapters) to ensure there are solid contacts. If possible, move to an area clear of obstructions. Then try operating the phone again.

Also protect the antenna, as plastic will become brittle and crack in cold environments. Be gentle when swapping out Iridium components. Most of the adapters are made of thin plastic, especially the 9575s. Work from sheltered

environments when possible, and do not force any connections. Replacement phones are limited.

VHF Radios

VHF radio is the primary form of wireless communication at and around McMurdo Station. The radio is a shared resource monitored by multiple users. If you are not within line of sight or repeater coverage, you may not reach your audience. In this case, move to higher ground to acquire line of sight, or have a third party relay messages for you. If you are still unable to make contact, use the Iridium phone or HF radio.

Use the best practices described above during radio communications, which should be brief and on topic. This is especially true when using the VHF field party repeaters, which operate on renewable energy sources and can become disabled during poor weather or heavy communications traffic. Always refer to the frequencies by the channel name, not the channel number.

Air-to-Ground VHF Frequency Assignments for McMurdo Station

Frequency (MHz)	Name	Description
118.2	APPR (Approach) – Air Traffic Control	Frequency for controlled airfields
118.5	HELOFF (Helicopter Flight Following) – Air Traffic Control	Use to coordinate helicopter movements
121.5	GUARD/VHF (Guard)	Aircraft emergency and distress
123.45	ANG (Air National Guard)	Common air-to-air frequency
126.2	TOWER (Military Common – Air Traffic Control)	Frequency for controlled airfields
129.7	TIBA (Traffic Information Broadcast by Aircraft)	Primary Antarctic operational frequency
134.1	GRND (Ground – Air Traffic Control)	Frequency for controlled airfields

Most users will receive VHF radios with preprogrammed frequencies. South Pole Station uses the same authorized VHF frequencies as McMurdo Station, but the channels are not permanently assigned to specific functional areas, so your McMurdo Station-issued VHF radios may not be usable at South Pole Station. Instead, VHF assignments for channel 1 through channel 7 are determined seasonally or on demand. The 129.7 MHz frequency is reserved for monitoring aircraft, same as McMurdo Station.

Preprogrammed VHF Radio Channels

McMurdo VHF Radio		Field Party VHF Radio	
Channel	Functional Area	Channel	Functional Area
1	i-Net	1	i-Net
2	Fire	2	Fire
3	MacOps*	3	MacOps*
4	Science	4	Science
5	MCC / Fleet Ops	5	MCC / Fleet Ops
6	Air / Tower	6	Air / Tower
7	Helo Ops	7	Helo Ops
8	Power and Water	8	Power and Water
9	Fuels	9	Fuels
10	Linepersons	10	FP Taylor Valley
11	AGE / ANG	11	FP Wright Valley
12	FP Hut Point Peninsula	12	FP Hut Point Peninsula
13	FP Mount Aurora	13	FP Mount Aurora
14	FP Mount Terror	14	FP Mount Terror
15	FP Mount Erebus	15	FP Mount Erebus
16	Marine 16	16	FP Beacon Valley

Note: Fleet Ops = Fleet Operations. FP = field party. MCC = Movement Control Center.

* Channel name is MacOps, i.e., McMurdo Station Operations, which is now Central Comms.

McMurdo Station deploys three types of VHF system: simplex, simplex with base station and semiduplex.

Simplex

In this system, each unit communicates directly with other units. All units use the same frequency to transmit and receive, so communications are one-way and transmit one at a time. Aerospace Ground Equipment / Air National Guard (AGE/ANG), Marine 16, Science, Tower/Airfield, Utilities and all airband channels use simplex VHF.

Simplex With Base Station

A base station is utilized when buildings or hills block radio signals. An antenna is placed at the highest available point (e.g., hill, tall building, radio tower), and the radio at the tower (i.e., the base station) is connected to a remote dispatcher's console. All units, including the base station, transmit and receive on the same frequency. If two units cannot communicate directly, the dispatcher relays the messages. Fire, Fuels, i-Net and Helo Ops use simplex VHF with the McMurdo Station base station. Note that the following ASC functional areas use simplex VHF that is not monitored by Central Comms:

- i-Net (for shuttle operations; antenna at T-site)
- Helo Ops (for communication between the helo hangar, helicopters and helo field parties)
- Science Net (for communications between field parties)

Semiduplex

For areas farther from McMurdo Station (e.g., camps in the Dry Valleys), semiduplex VHF repeaters are used. The repeater is installed on the highest available point, receives a signal on one frequency (F1) and automatically retransmits the signal on another frequency (F2). The control point at the dispatcher's desk transmits and receives just like a mobile radio. Central Comms, all field party repeaters, all flight-following repeaters and the MCC use the McMurdo Station semiduplex VHF.

Semiduplex VHF Channel Use

Name	Repeater Location	Coverage
MacOps*	Crater Hill (above McMurdo Station)	McMurdo Station area and sea ice areas south of Erebus tongue
Mount Aurora	Black Island	McMurdo Station area, sea ice area south of Erebus tongue and ice shelf
Hut Point Peninsula	Crater Hill	McMurdo Station area and sea ice, ice shelf, Windless Bight and Hut Point Peninsula
Wright Valley	Mount Newall	Wright Valley, New Harbor and sea ice areas
Taylor Valley	Mount Coates	Taylor Valley, including Lake Hoare, Lake Fryxell, Lake Bonney and F6
Mount Terror	Mount Terror	Cape Crozier, Windless Bight, areas south of Ross Island
Mount Brooke	Varies	Repeater location and use varies each season
Mount Erebus	Mount Erebus	Line of sight to west side of Mount Erebus
* Channel name is MacOps, now known as Central Comms.		

inReach Devices

USAP has a limited number of Garmin inReach devices for field teams to efficiently communicate short messages to McMurdo Station. Note that messages on USAP inReach devices transmit to an email account that many individuals can access. As such, do not rely on these to send private or sensitive messages.

While inReach is not considered a primary form of communication within USAP, it is becoming increasingly popular in the field. Many people bring their own inReach devices to Antarctica. When doing so, you must register your inReach with Central Comms before deploying the field.