Continental Field Manual

Communications

Regional Travel Communication Requirements

*This refers to NSF McMurdo Station regional travel only. NSF South Pole Station and field camps have their own rules for travel away from station/locations.

Travel off established roadways is tracked by Central Comms.

Established roadways include snow roads to the Long Duration Balloon (LDB) site, Williams Field, and Phoenix Runway, and dirt roads between NSF McMurdo Station, Scott Base, T-Site, and Arrival Heights.

Requirements
- Check-out by radio (to ensure it's working).
- Check-in before estimated time of return (ETR). Failure to do so initiates emergency response.

Solo Travel
Requires NSF authorization and additional requirements. This process involves both NSF and Field Safety to determine a well managed plan that is dependent on location and type of work.

Defined as: a) single person traveling alone or b) any number of people traveling on a single snowmobile.

Weather
Condition 3: Standard travel procedures in place.

Condition 2: No snowmobile travel/no solo travel.

Condition 1: No travel of any kind allowed.

Check-Out Procedure
Use VHF radio. "Central Comms, Central Comms this is (vehicle number or call-sign) calling on (channel name)"

Provide the following when prompted:

- Vehicle number(s).
- Event number (or department).
- Destination.
- Number of people on board.
- Driver name (one name per group).

- Point of contact (in McMurdo Station) and phone/pager number.
- ETR to McMurdo Station or estimated time of arrival (ETA) at destination.

Overnight Stays

- Before departing McMurdo Station, provide the names of all members.
- Provide one-way check-out to site, morning check-in at site, and one-way checkout for return.

If You Are Late

After five minutes the Emergency Operations Center (EOC) is activated. This includes the NSF station manager, ASC station manager, deputy field area manager, search and rescue supervisor, information technology manager, and fire chief.

Call to extend time. There is NO grace period!

Field Camp Communication Requirements

Field camps are required to have a minimum of two unique types of voice communications, which must be approved devices issued by the USAP. Field camps may use any combination of the following: VHF radio, HF radio, Iridium® Satellite Phone or Telephone (e.g., radiophone or VoIP).

Before Departing NSF McMurdo Station

- Comms equipment pickup: contact communications coordinator at Building 159, ext. 42378.
- Test the gear - call Central Comms. for communications check.
- Ensure you have a copy of Radio Communications Equipment User Guide.

Arrival at Field Site

Put-in call required before aircraft departs camp:

- Location name.
- Camp leader name.
- Number of people (by event number).
- Confirm daily check-in time and coordinates of site.

Daily Check-In Call

Check-in before your scheduled time:

- Location name.
- Number of people (by event number).

- All is well.

Return from the Field (Pull-Out)

Notify Central Comms when leaving camp vacant.

Aircraft Daytrips

- No communications with Central Comms required - the flight is tracked by MacCenter and Aviation Ops.
- Establish communications with helicopter pilot on VHF Channel 7 before the helicopter departs.
- Central Comms is available for comms checks, message relays, or to record a location.

Emergencies

- Notify Central Comms directly.
- Medical - call Central Comms transfer line and indicate if URGENT.

If you are late

After one hour the Emergency Operations Center (EOC) is activated. This includes the NSF station manager, ASC station manager, emergency communications manager, field science manager, information technology manager, and fire chief .

NSF McMurdo Station Vicinity Communications Systems

Communication Systems

USAP uses five systems for field party communications, depending on field party location: telephone, VHF radio, HF radio, Iridium® satellite phone and InReach® devices.

Telephone

Field camps in the McMurdo Station vicinity that are equipped with telephone service can contact Central Comms directly by dialing 42000. This number rolls over to four available lines, so callers are always able to get through.

HF Radio

Speak clearly, loudly, slowly. Point the antenna at Black Island for comms check with Central Comms before departing McMurdo Station.

7.995 MHz: Central Comms

11.553 MHz: Central Comms

9.032 MHz: Air Traffic Control – only field party emergencies

Iridium® Satellite Phones

If your field team has multiple Iridium®® phones, the lowest phone number is assigned as ALPHA (primary) phone followed by BRAVO, CHARLIE, etc. For any group spending one night or more in the field, a community phone will be issued to the team. See below for expectations.

All Iridium® phones issued at McMurdo Station are pre-programmed with several important operational numbers.

Pre-Programmed Iridium Numbers		
MR1	MacOps 00-8816-763-12464	Calls cannot be transferred
MR2	MacOps Transfer 00-697-720-568-1042	Calls can be transferred to McMurdo business lines
MR3	MacWeather 00-8816-763-20030	McMurdo weather department
MR4	Helo Ops 00-8816-763-29073	Helo hangar
MR5	Medical 00-8816-763-15142	**Do not use unless directed** Call MacOps for emergencies
MR6	Search & Rescue 00-8816-763-15141	**Do not use unless directed** Call MacOps for emergencies

These numbers are also printed and attached to the outside of your phone's storage case for redundancy. Your phone number is printed and attached to the phone's case as well as the outside of your phone. MR# stands for Memory Recall number. These are simply numbered storage slots in the phonebook. The order of these phone number assignments is consistent across all McMurdo Station satellite phones.

Iridium® Text Messages

Receiving Messages
Power up phone, place a call to ensure message download, and call MacOps to confirm you received message.

Sending Messages
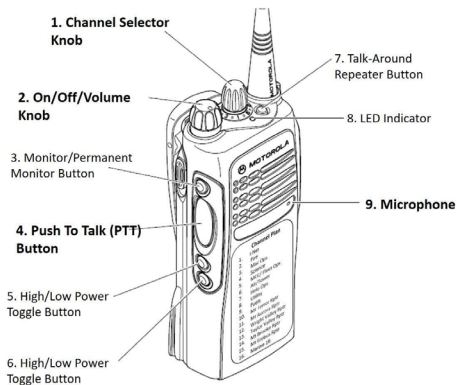Messages can be sent from computer to Iridium® but cannot be sent directly from Iridium® handset.

Option 1: Send message using website: http://inah.pac.disa.mil/sms.shtml

Option 2: Send message via email using format:

8816xxxxxxxx@inah.pac.disa.mil

- Must be PLAIN text.
- Limit of 120 characters.
- Indicate who message is from in the text body.
- Do not include subject, signature or other 'extra' text.

Radios

1. Channel Selector Knob
2. On/Off/Volume Knob
3. Monitor/Permanent Monitor Button
4. Push To Talk (PTT) Button
5. High/Low Power Toggle Button
6. High/Low Power Toggle Button
7. Talk-Around Repeater Button
8. LED Indicator
9. Microphone

VHF Radio

VHF radio is the primary form of wireless communication in and around McMurdo Station. This is a shared resource monitored by multiple users. Users should maintain proper radio etiquette when transmitting on this or any radio network. Always refer to the frequencies by the channel name and not the channel number. Radio communications 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 in periods of poor weather and heavy communications traffic.

McMurdo Station deploys three VHF systems:

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 one-at-a-time.

These functional areas use a simplex system: Science, Tower/Airfield, Utilities,

Aerospace Ground Equipment/Air National Guard (AGE/ANG), Marine 16, and all air band channels.

Simplex with Base Station

Where buildings and hills block radio signals, a base station is used. An antenna is placed at the highest point, such as a hill, a tall building, or a radio tower. The radio at the tower, called a "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 can't communicate directly, the dispatcher relays messages.

These functional areas use the McMurdo Station base station: I-Net, Fire, Fuels and Helo Ops.

Semi-Duplex

For areas farther from McMurdo Station, such as camps in the McMurdo Dry Valleys, semi-duplex repeaters are used. A repeater is a radio receiver/transmitter combination. The repeater is installed on a hill, a tall building, or a radio tower. It receives a signal on one frequency (F1) and automatically retransmits the signs on another frequency (F2). The control point at the dispatcher's desk transmits and receives just like a mobile radio.

These functional areas use the McMurdo Station semi-duplex system: Central Comms, all field party repeaters, all flight-following repeaters, and the Movement Control Center (MCC).

VHF Radio Operations

- Listen before transmitting to ensure channel is not in use.
- Hail Central Comms and wait for reply before giving checkout information.
- Key-pause-talk to ensure entire transmission gets through.
- Keep batteries warm and always carry a spare.
- Do not overuse repeaters to conserve power.

Call Signs

Whenever isolated letters or groups of letters must be pronounced separately, e.g. to identify unusual words, call-signs, or in conditions of difficult communication, the following phonetic alphabet should be used:

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

VHF Channel Use

	VHF Channel Use		
	Name	**General Use**	
Simplex (Line of Sight)	I-Net	Shuttle operations; antenna at T-site (not monitored by MacOps)	
	Science Net	Comms between field parties (not monitored by MacOps)	
	Helo Ops	Comms between helo hangar, helicopters, helo field parties (not monitored by MacOps)	
	Name	**Repeater Location**	**Areas of Coverage**
Semi-Duplex (Repeaters increase range)	Mac Ops	Crater Hill (above McMurdo Station)	McMurdo Station area, sea ice areas south of Erebus tongue
	Mount Aurora	Black Island	McMurdo Station area, sea ice area south of Erebus tongue, ice shelf
	Wright Valley	Mount Newall	Wright Valley, New Harbor, sea ice areas
	Taylor Valley	Mount Coates	Taylor Valley (Lake Hoare, Lake Fryxell, Lake Bonney, F6)
	Mount Terror	Mount Terror	Cape Crozier, Windless Bight, areas south of Ross Isand
	Mount Brooke	Varies	Repeater location and use varies each season
	Mount Erebus	Mount Erebus	Line of sight to west side of Mount Erebus

Communications

VHF Radio Operations
Listen before transmitting (to ensure channel is not in use).
Hail MacOps and wait for reply before giving checkout information.
Key-pause-talk to ensure entire transmission gets through.
Keep batteries warm (and always carry a spare).
Do not over-use repeaters (power conservation).

VHF Frequency Assignments at NSF McMurdo Station

VHF Frequency Assignments at 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 - used 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 radios with pre-programmed frequencies and there is no need to manually enter these.

	Field Party Plan
1	I-Net
2	Fire
3	**MacOps (repeater)**
4	Science
5	MCC/Fleet Ops (repeater)
6	Helo FF (no repeater)
7	Helo Ops
8	**Taylor Valley (repeater)**
9	**Mount Brooke (repeater)**
10	**Mount Terror (repeater)**
11	**Mount Aurora (repeater)**
12	**Wright Valley (repeater)**

	McMurdo Station Plan
1	I-Net
2	Fire
3	**MacOps (repeater)**
4	Science
5	MCC/Fleet Ops (repeater)
6	Airfield Tower
7	Helo Ops
8	Utilities
9	Fuels
10	**Mount Terror**
11	**Mount Aurora (repeater)**
12	**Wright Valley (repeater)**
13	**Taylor Valley (repeater)**
14	**Mount Brooke (repeater)**
15	**Mount Erebus (repeater)**
16	Marine 16

South Pole Station uses the same authorized VHF frequencies as McMurdo Station, but the channels are not permanently assigned to specific work centers or functions, so you may not be able to use your McMurdo Station-issued radio at South Pole Station. Instead, VHF assignments for channels 1 through 7 are determined seasonally or on demand. 129.7 MHz is reserved for monitoring aircraft, same as McMurdo Station.

Deep Field to NSF McMurdo Station

HF Radio

All deep-field camps are issued an HF radio. Users should follow the setup instructions to verify that radio settings are correct. The antenna should be elevated at least four feet off the ground. Ensure all shorting bars are connected, except for the desired frequency. Speak LOUDLY into the microphone.

Note: The loss of saved frequency programming in the nine available channels indicates an internal battery failure and does not render the radio inoperable. Manually tune the radio to the desired frequency and operate normally.

At South Pole Station, the US-17 circuit is used for passing information between outlying stations and McMurdo Station, as well as for daily camp check-ins. The following two frequencies are monitored continuously and used in the listed order of priority:

Primary	Secondary	Tertiary
7.995 MHz	4.770 MHz	11.553 MHz

Iridium® Phone

Deep-field camps are also issued at minimum two Iridium® satellite phones. Iridium® satellite phones, or "sat phones" are devices that operate in the UHF (Ultra High Frequency) portion of the radio spectrum. Instead of connecting to other radios directly (through line of sight or line of sight to repeaters), they connect to satellites orbiting the Earth. The signal from the phone bounces from satellite to satellite as needed to direct the call to the intended target.

To support this radio connection, users should make calls when they have a clear view of the sky. Iridium® satellite coverage is not guaranteed in and around McMurdo Sound, and users should keep this in mind when attempting to access the satellite phone network. When possible, move to an area free from obstructions to obtain the best reception possible.

Community Phone

If you will be overnighting in the field, the USAP requires that you have at least two satellite phones available to your group. This additional phone is known as the Community Phone and is intended to be a safety and morale line. The Community Phone should be stored in a central location so all team members have easy access to it. A list of helpful phone numbers (e.g., NSF, USAP confidential victim advocate, ASC HR, on station counselor)

are provided with the phone. Groups who are working alone in isolated environments will be issued their own Community Phone. Other groups, who work at shared sites will also share a Community Phone. The phone will be staged in a central location at camp.

Iridium® Text Messages

Friends and family can send short text messages to an Iridium® phone. However, unless there is an email data kit installed, an Iridium® phone cannot send outgoing text messages. 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, the camp members won't know to whom to pass the message.

Note: Generally, friends and family should only be provided the secondary Iridium® number (Bravo Phone), keeping the primary Iridium® (Alpha Phone) for business/logistical purposes. 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.

Receiving Messages

To check for Iridium® text messages in the field, power up the Iridium® and place a call. This places the Iridium® phone in the satellite constellation and begins the download of queued messages. The Alpha line may be used.

If there is no need to talk to anyone in particular, call this number: 00-697-720-568-2211. Once the device attempts to connect, you can end the call. At this point, the satellites should forward any queued messages.

Iridium® Email

It is possible to send an email to an Iridium® phone. The Iridium® email address is 8816763XXXXX@inah.pac.disa.mil, where the last five digits of the Iridium® are inserted for the X's.

- Select the Plain Text option (it is easy to do this in Outlook, in the "format" tab).
- Leave the subject line blank.
- Type in the body of the email. There is a 120-character limit.
- Abbreviate where possible.
- The message should start with camp recipient's initials, so camp personnel know to whom to pass the message.
- Do not include a signature line or any other extras.

People can also send messages through the Iridium® website, which is http://

inah.pac.disa.mil/sms.shtml. Fill out the form on the homepage by entering the Iridium® phone number (Ex.8816763XXXXX) and a message that is no more than 160 characters. To check for Iridium® text messages in the field, power up the Iridium® and place a call. This begins the message download. The Alpha line may be used. Fill out the form on the homepage by entering the Iridium® phone number (Ex.8816763XXXXX) and a message that is no more than 160 characters. To check for Iridium® text messages in the field, power up the Iridium® and place a call. This begins the message download. The Alpha line may be used.

No automated "read confirmation" is sent to the message originator. If the originator requests or requires confirmation that the message was read, the recipient should call the originator.

Note: Generally, friends and family should only be provided the secondary Iridium® number (Bravo Phone), keeping the primary Iridium® (Alpha Phone) for business purposes. They should be informed that the Iridium® phones are a shared resource.

Iridium® Troubleshooting

Disconnect and reconnect all accessories (i.e., battery, antenna, adapters) to ensure there are solid contacts. If possible, move to an area clear of obstructions.

Note: Protect the antenna! Plastic cracks! Be gentle when swapping out Iridium® components. Most of the adapters are made out of thin plastic - especially for the 9575s. Plastic does not hold up well in cold environments and will become brittle and crack. Work from sheltered environments when you can and don't force any connections. We have limited replacements.

InReach® Devices

USAP has a limited number of InReach® devices that are issued to field teams. They are not considered one of the two primary forms of communication but are becoming an increasingly popular communication tool in the field. Many people bring their personal InReach®. Anyone bringing their own device must register these with Central Comms prior to deployment to the field.

USAP InReach® devices are a useful and efficient way to communicate short messages back to McMurdo Station. Due to the way they are managed, messages are not private as they go to an email that many people can access. Please do not rely on these to send private and sensitive messages.

Before going into the field, it is important to discuss with the support team

(i.e., Field Safety, Science implementers, Aviation support) how you will primarily communicate. Pre-determine your communication needs so all teams involved will know what to expect.

Frequently Used Iridium® Numbers

Department	Routing	Number
MacOps	Iridium	00 8816 763 12464
MacOps Transfer	Via Denver	00 697 720 568 1042
MacWeather	Iridium	00 8816 763 20030
Aviation		
Aviation Operations Supervisor	Via Denver, NZ Telecom	**00 697 720 568 1043** 00 698 64 24 09 2529
Fixed-Wing Operations Supervisor	NZ Telecom	00 698 64 24 09 2697
Helo Hangar Office	Via Denver, NZ Telecom, Iridium	**00 8816 763 29073** 00 697 720 568 1002 00 698 64 24 09 2277
Science Support		
Berg Field Center (BFC)	Via Denver, NZ Telecom	**00 697 720 568 1021** 00 698 64 24 09 2348
BFC Food Room	NZ Telecom	00 698 64 24 09 2461
Crary Lab Supervisor	Via Denver, NZ Telecom	**00 697 720 568 1045** 00 698 64 24 09 4169
Field Safety Training	NZ Telecom	00 698 64 24 09 2345
Field Support Supervisor	NZ Telecom	00 698 64 24 09 2067
Field Support Manager	Via Denver, NZ Telecom	**00 697 720 568 1003** 00 698 64 24 09 2545
Deputy Field Area Manager	NZ Telecom	00 698 64 24 09 3189
Mechanical Equipment Center (MEC)	NZ Telecom	00 698 64 24 09 2352
Science Construction	Via Denver, NZ Telecom	**00 697 720 568 1016** 00 698 64 24 09 2221
Information Technology & Communications		
Communications and Technicians	Via Denver, NZ Telecom	**00 697 720 568 1061** 00 698 64 24 09 2796
Crary IT Support	NZ Telecom	00 698 64 24 09 4242
Chalet		
Chalet Administrator – Grantee Travel	NZ Telecom	00 698 64 24 09 2734
Medical		
Clinic Front Desk	Via Denver, NZ Telecom, Iridium	**00 697 720 568 1048** 00 698 64 24 09 2551 00 8816 763 15142
*Bold Indicates Preferred Number		