Communications

Regional Travel Communication Requirements

Travel off established roadways is tracked by MacOps.

Established roadways include ice road to Ice Runway, snow roads to the Long Duration Balloon (LDB) site and Phoenix Runway, and dirt roads between McMurdo, 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)

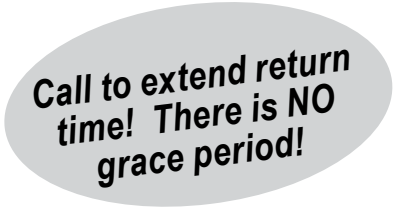
Solo Travel: Requires NSF authorization and additional requirements. Defined as: a) single person traveling alone or b) any number of people traveling on a single snowmobile.

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. "MacOps, MacOps, 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) and phone/pager number
- ETR to McMurdo or estimated time of arrival (ETA) at destination



Overnight Stays

- Before departing McMurdo, 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, emergency communications manager, field science manager, information technology manager, and the fire chief.

Field Camp Communication Requirements

Before Departing McMurdo:

- Comms equipment pickup: contact communications coordinator at Bldg 159, ext 2378
- Test the gear - call MacOps for comms check

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

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 MacOps when leaving camp vacant

Aircraft Daytrips:

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

EMERGENCIES

- Notify MacOps directly
- Medical - call MacOps transfer line and indicate if URGENT or not

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 the fire chief.

Communication Systems

The USAP uses four systems for field party communications, depending on field party location: telephone, VHF radio, HF radio, and Iridium satellite phone.

Telephone

Field camps in the McMurdo vicinity that are equipped with telephone service can contact MacOps directly by dialing **2586**. That number rolls over to four available lines, so callers are always able to get through.

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. Proper radio etiquette should be maintained 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 deploys three different VHF systems:

1) **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.

2) **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 base station: I-Net, Fire, Fuels, and Helo Ops.

3) **Semi-Duplex.** For areas farther from McMurdo, such as camps in the 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, and it auto-

VHF Channel Use			
Simplex (Line of sight)	**Name**	**General Use**	
	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)	
Semi-Duplex (Repeaters increase range)	**Name**	**Repeater Location**	**Areas of Coverage**
	MacOps	Crater Hill (above McM)	McMurdo area, sea ice areas south of Erebus tongue
	Mount Aurora	Black Island	McMurdo 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

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).

matically retransmits the signal it receives on one frequency (F1) 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 semi-duplex system: MacOps, all field party repeaters, all flight-following repeaters, and the Movement Control Center (MCC).

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.

Field Party Plan

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

*Channels monitored by MacOps are in **BOLD**.*
Channels 13-16 not available on all radios.

McMurdo Plan

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

South Pole Station uses the same authorized VHF frequencies as McMurdo, but the channels are not permanently assigned to specific work centers or functions, as they are at McMurdo. Instead, VHF assignments for channels 1 thorugh 7 are determined seasonally or on demand. 129.7 MHz is reserved for monitoring aircraft, same as McMurdo Station.

HF Radio

If field parties are issued an HF radio, team members should follow the setup instructions to verify that radio settings are correct. (**Note:** Point the antenna toward Black Island for comms check with MacOps **before** departing McMurdo.)

The antenna should be elevated at least four feet off the ground. Ensure all shorting bars are connected, except for the desired frequency. MacOps continuously monitors the following two frequencies:

7.995 MHz	11.553 MHz

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

Primary	Secondary	Tertiary
7.995 MHz	4.770 MHz	11.553 MHz

Note: The loss of saved frequency programming in the nine available channels of the radio indicates an internal battery failure and does not render the unit inoperable. Manually tune the radio to the desired frequency and operate normally. Always speak clearly, loudly, and slowly into the microphone.

Phonetic Alphabet

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

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		

Iridium Phone

Deep-field camps are also issued Iridium (satellite) phones. 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.

Note: The Iridium phones issued by the USAP are administered by the Department of Defense. Dialing sequences to and from other commercial Iridium phones may vary.

Note: If your field party has multiple units, the Iridium with the lowest phone number is designated as the Alpha line. The next ones are Bravo, Charlie, Delta, and so on.

The following numbers are pre-programmed into the Iridium phones. Additional numbers and dialing sequences are available from MacOps.

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 Mc-Murdo 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

Iridium Dialing Instructions

From Iridium to Iridium: Dial 00-8816-763-XXXXX

1. Power up the Iridium phone.
2. Wait for the telephone to register with the network and show a signal level in display.
3. Dial 00 to access the satellite network.
4. Dial 8, the country code for Iridium phones.
5. Dial the area code and eight-digit Iridium number.

Example: 00 8 (816) 763-12464 for MacOps

To a commercial (non-USAP) Iridium phone: Dial 00 698 (8816 or 8817) XXX-XXXXX.

From Iridium to a regular phone:
(whether in U.S. or McMurdo via Denver)

1. Power up the Iridium phone.
2. Wait for the telephone to register and display a signal level.
3. Dial 00 for an international call.
4. Dial 697 to connect to FTS (Federal Telephone System).
5. Dial area code (DO NOT dial “1” before dialing the area code).
6. Dial seven-digit telephone number.
   Example: 00 697 (720) 568-1042 for the MacOps transfer line

From Iridium to any McMurdo or Scott Base extension:
(via NZ Telecom)

1. Power up the Iridium phone.
2. Wait for telephone to register and display a signal level.
3. Dial 00.
4. Dial 698 (this code also works for all international calls).
5. Dial NZ country code 64.
6. Dial 2409.
7. Dial McMurdo four-digit phone extension.
   Example: 00 698 64 2409 2586 for MacOps

From Iridium to a U.S. Toll Free number:
Dial 00 699 1 (800/888/877) XXX-XXXX.

From Iridium to an international number:
Dial 00 698 + country code + city code + local number.

To a USAP Iridium from any phone:

Any USAP Iridium phone may be dialed via a U.S. domestic phone by using a Hawaii area code. Replace the Xs below with the last four digits of the Iridium number.

If SIM card’s last five digits start with a 1: Dial 808-659-XXXX

If SIM card’s last five digits start with a 2: Dial 808-434-XXXX

If SIM card’s last five digits start with a 3: Dial 808-684-XXXX

If SIM card’s last five digits start with a 4: Dial 808-851-XXXX

If SIM card's last five digits start with a 5: Dial 808-852-XXXX

For example, if the Iridium number is 8816 763 2XXXX, dial 808-434-XXXX.

Iridium Text Messages

Iridium phones cannot send outgoing text messages. However, short text messages can be sent from a computer to an Iridium phone. There are two ways to do this:

Option 1: Send the message via the commercial website https://messaging.iridium.com/

Follow these directions:

- In the cell labeled "Handset or Pager Number" enter the phone number (8816763XXXXX) of the target phone.
- In the cell labeled "Message Text" type the message. Use standard characters only. There is a 160 character limit.
- In the cell labeled "Reply Email" the sender's address can be entered to let the recipient know who the message is from. This cell is optional.
- In the cell labeled "Prove you are not a robot" enter the code presented immediately above. If only a small black and white box is visible, try a different browser. Some versions of Internet Explorer are not compatible with this function.
- When ready to send, click the "I am not a robot" button and the message will be sent. "Your message has been successfully submitted" will display, but this does not confirm delivery, nor does it confirm that the message has been read.

Option 2: Send the message via email. Use the following address, with the target phone's number in place of the x's:
8816763xxxxx@inah.pac.disa.mil

- The message must be in PLAIN text. In the outgoing message in Outlook, go to "Format Text" and select "Plain Text."
- Leave the subject line blank.
- Type in the body of the email. There is a 120-character limit.
- The message should start with camp recipient's initials, so camp personnel know to whom to pass the message.
- The sender's initials should come at the end of the message body.
- Do not include a signature line or any other extras.

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, and they should be informed that the Iridium phones are a shared resource.

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 Troubleshooting

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

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	Iridium via Denver NZ Telecom	**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
Science & Tech Projects 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		
Comms Techs	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 a preferred number.		