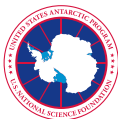


UNITED STATES ANTARCTIC PROGRAM

Field Manual



Continental Version 2027



This manual was prepared for the U.S. National Science Foundation (NSF) Office of Polar Programs by Antarctic Support Contract (ASC) field area and other personnel. It brings together decades of first-hand field experience in Antarctica with the United States Antarctic Program.

Published September 2026.

Please send suggestions and corrections to DEN-FieldSafety@usap.gov.

Originally written and compiled by Cara Ferrier, Meghan Walker and Kaia Webster. Edited by Kate Koons, Becky Carson, Daniel Keady and Shasta Sevcik. Designed by Edrienne Su. Survival bag photos by ASC. Ralph Voltz adapted ASC's helicopter approach, helicopter safety and camp layout figures and Mimi Fujino's Scott tent and anchor figures. Edrienne Su generated the clothing layers figure (November 2025) and heat loss/gain (June 2026) and emergency shelter figures (June 2026; based on Scott tent figures) via Adobe Firefly using Gemini's Nano Banana Pro; adapted Laura McGladrey's / Responder Alliance's stress continuum (<https://www.responderalliance.com/stress-continuum>), GHG's tent valence and V-thread figures, Mimi Fujino's sled, grid north, and sea ice crack figures, and the skiway figure from the fixed-wing camp layout; and designed the sling-loading figures. Hand signal figure by GHG. See also References.

This photo by Greg Neri / NSF (<https://creativecommons.org/licenses/by-nc-nd/4.0/>). Cover photo by Michael Kingsbury.





Emperor penguins,
McMurdo Sound

Table of Contents

Program Information	12
U.S. National Science Foundation Introduction	13
Emergency Management	13
Who to Contact	14
Emergency Response Guidelines	14
Mechanical or Logistical	15
Medical	15
Response Timeline	17
Medevacs	19
Field Emergency Planning	20
USAP Operational Risk Management	20
Emergency Response Planning	22
Questions to Consider	22
Scenarios to Discuss	22
Survival Bags	23
Environmental Policies	28
Policy and Designations	29
Antarctic Specially Managed Areas	29
Antarctic Specially Protected Areas	30
Historic Sites and Monuments	30
Visitor Site Guidelines	30
ACA Permits	31
Specimen Collection and Permits	31
Environmental Training	32
Wildlife	32
Highly Pathogenic Avian Influenza	32
Non-native Species	33
Sample Site Markings and Equipment Installation	33
Spill Prevention, Cleanup and Reporting	34
Waste Management	34
Hazardous Waste	35
Human Waste	35
Environmental EOS Report	36
Risk Management	38
Hazards and Risks	39
RM Process	40

Practical RM in the Field	41
Conduct Daily Briefings and Debriefings	41
Morning Brief	41
Afternoon Debrief	41
Assess Likelihood Versus Consequence	42
Use Common Language	42
Practice Situational Awareness	42
Positive Work Environment	42
Self-awareness	43
Stress Management	44
Fatigue Management	46
Rest and Duty Cycles	47
Lifting and Carrying	47
Before Lifting.	48
While Lifting	48
Staying Warm	48
Clothing	50
Layering	51
Base Layers	51
Insulation Layers	51
Shell Layers	52
Damp or Wet Clothes.	53
Sleeping in the Field	53
Staying Found	54
Hygiene	55
Camp	55
Personal	56
Shower	56
Bathroom	56
Menstrual	57
Communications	58
Regional Travel	59
Radio and Phone Best Practices	60
For Checkout.	60
For Overnight Stays	61
If You Are Late	61
Field Camp Communication	62
Before Leaving McMurdo	62

At Put-in (Arrival at Field Site)	62
For Daily Check-in	62
At Takeout (Return From the Field)	63
For Day Trips via Aircraft	63
In Emergencies	63
If You Are Late	63
Communication Devices.	63
Telephones	63
HF Radios	64
Iridium Satellite Phones	65
Dialing Calls	67
Getting Started	67
Iridium to Iridium	67
Iridium to U.S. Phone or USAP Direct Inward Dialing (DID) Line	67
Iridium to Non-U.S. Phone	67
Iridium to US Toll-free Line	68
Phone to Iridium	68
Getting Text Messages	68
Troubleshooting the Phone	69
VHF Radios	70
Simplex.	72
Simplex With Base Station	72
Semiduplex	72
inReach Devices.	73
Field Camp Operations	74
Overview	75
Day Trips	75
Field Planning	76
Field Planning Checklists	77
All Field Parties	77
Fixed Wing-supported	79
Helicopter-supported.	81
Camp Put-in	83
Before Departing McMurdo Station	83
At Camp Arrival and Before Aircraft Takeoff.	83
After Aircraft Departure	84
Site Selection.	85

Wildlife, Vegetation and Sensitive Areas	85
Topography and Weather	86
McMurdo Dry Valleys.	86
Camp Layout.	86
Survival Cache and Emergency Shelter	88
Shelters.	90
Establishing Wind Direction	91
Anchoring the Tent	92
Snow Walls	94
Tents on Sea Ice and Blue Ice Glaciers.	95
Camp Medical	96
Drinking Water	96
Fire Prevention	96
Field Camp Daily Tasking	97
Communications	97
All Field Camps	97
Fixed Wing-supported Camps.	98
Helicopter-supported Camps	98
Housekeeping, Health and Safety	99
Recordkeeping	100
Camp Takeout	100
Days Before Takeout	100
Day of Takeout	101
Hut Tasking	101
On Return to McMurdo	102
Initial Tasks	102
Tents	102
Kitchen Items	103
Climbing Ropes and Equipment	103
Pee Bottles and Toilet Seats	103
Trash	103
Human Waste	103
Cage.	103
Fuel Cans aka Jerricans	103
Food.	104
Stoves	104
Backpacks.	104

Field Gear	106
Predeployment	107
Stoves	107
Safety	107
Use in Scott Tents	108
CO Risks	109
MSR WhisperLite Stove	110
Assembly	110
Priming.	110
Lighting.	111
Cooking	111
Shutoff	111
Troubleshooting	112
Coleman Gas Stove	113
Setup	113
Tank Pressurization	113
Lighting.	114
Shutoff	114
Troubleshooting	115
Coleman Propane Stove	117
Setup	118
Lighting	118
Shutoff	118
Storage.	118
Heaters.	118
Preway Diesel (AN-8) Heater	119
Lighting.	119
Shutoff	120
Kuma Arctic Heater	121
Lighting.	121
Shutoff	122
Empire Vented Propane Heater	123
Lighting.	123
Shutoff	123
Sleds.	124
Nansen Sleds	124
Siglin UHMW Sleds.	124
Komatik Sleds	124
Banana Sleds.	124

Loading and Securing Cargo	124
Pulling Sleds by Snowmobile	126
Snowmobiles.	126
Safety	127
Precheck	127
Startup	128
Preventive Maintenance.	128
Daily	128
Weekly	129
Loading.	129
Towing	129
Communication.	129
Driving	131
Honda Generator	131
Safety	131
Precheck	132
Startup	132
Shutoff	133
Troubleshooting	133
Mini Portable Field Power Systems	134
Aircraft and Cargo.	136
Cargo Requirements	137
Hazardous Cargo	138
Preparation	139
Retrograde	139
Resupply	140
Frozen Food	141
Fixed Wing Support	141
LC-130	142
Basler	142
Twin Otter.	143
Camp Put-in	143
Radio Issue	144
Skiway Preparation	144
Recce	145
Bag Drag (LC-130s Only).	145
Flight Day	146
Takeout	147

Helicopter Support	148
Helicopter Pad	149
Safety	149
Camp Put-in	152
Radio Issue	152
Field Plan	152
Cargo	153
Flight Day	153
Loading and Unloading	154
Boarding	154
Disembarking	154
Day Trips	155
In-field Coordination	155
Sling Loads	155
Takeout	159
Retrograde of Samples	159
Weather and Sea Ice	162
Antarctic Weather	163
Storms Around McMurdo	163
Working in the Continental Environment.	164
Forecasting	164
Terminal Aerodrome Forecasts	164
Weather Observations in the Field	165
Daily Tasking.	165
Observation Site Setup	167
Grid Markers.	167
Visibility Markers	169
Kestrel Setup	169
Reference Altitude and Barometric Pressure	169
AF Form 3803	170
Latitude and Longitude	170
Time	170
Wind / Speed.	171
Visibility.	171
Weather and Obstructions to Vision	172
Cloud Layers	174
Temp and Dew Point	175
Sta Pressure	175

Total Sky Cover	176
RMK	176
Call-ins and TAF Requests	179
Sea Ice Assessment	183
Weather	184
Thickness	184
Color.	184
Temperature.	185
Sea Ice Cracks	185
Sea Ice Travel and Work	186
Profiling a Sea Ice Crack	187
References	190
SOAP Note	191
Emergency Incident Worksheet	193
Form 3803.	194
Knots	195
Figure 8 on a Bight.	195
Bowline.	195
Clove Hitch (aka Double Hitch)	195
Round Turn and Two Half Hitches	196
Sheepshank Knot	196
Sheet Bend	196
Tautline Hitch	196
Square Knot (aka Reef Knot)	197
Prusik Knot	197
Trucker's Hitch	197
Water Knot	197
Double Fisherman's Stopper	197
Alpine Butterfly Loop	198
Common Conversions of Measure	207
New Zealand Daylight Savings Time – Zulu Time Conversions	208
Temperature Conversions	209
Wind Chill Chart.	210
Maps	211
McMurdo Dry Valleys and Ross Island Science Logistics Sites	211
Taylor Valley Camps	212
McMurdo Dry Valleys ASMA	213

Ross Island and Vicinity ASPAs	214
USAP Stations and Deep Field Camps	215
Glossary	216