

UNITED STATES ANTARCTIC PROGRAM

# Field Manual



Peninsula Version 2026



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

Published January 2026.

Please send suggestions and corrections to [DEN-FieldSafety@usap.gov](mailto:DEN-FieldSafety@usap.gov).

Originally written and compiled by Cara Ferrier, Jennifer Blum and Daniel Powers. Edited by Kate Koons, Diane Hutt, Jessie Crain and Sara Eckert. Designed by Edrienne Su. Ralph Voltz adapted Mimi Fujino's Scott tent and anchor figures. Edrienne Su generated the clothing layers figure using Gemini 3's Nano Banana Pro via Adobe Firefly (November 2025) and adapted Laura McGladrey's / Responder Alliance's stress continuum (<https://www.responderalliance.com/stress-continuum>), GHG's tent valence and V-thread figures and Mimi Fujino's sea ice crack figure. Hand signal figure by GHG. See also References.

This photo by Ben Dillon / NSF (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Cover photo by Dr. Selena Smith, University of Michigan.



Gentoo penguin,  
Palmer Station

# Table of Contents

<b>Program Information</b> . . . . .	<b>10</b>
U.S. National Science Foundation Introduction . . . . .	11
Emergency Management . . . . .	11
Who to Contact . . . . .	12
Emergency Response Guidelines . . . . .	13
Mechanical or Logistical . . . . .	13
Medical . . . . .	13
Response Timeline . . . . .	15
Medevacs . . . . .	17
Field Deployment Emergency Planning . . . . .	18
Questions to Consider . . . . .	18
Scenarios to Discuss . . . . .	19
USAP Operational Risk Management . . . . .	19
Survival Bags . . . . .	20
Palmer Boating Area Caches . . . . .	20
<b>Environmental Policies</b> . . . . .	<b>22</b>
Policy and Designations . . . . .	23
Antarctic Specially Managed Areas . . . . .	23
Antarctic Specially Protected Areas . . . . .	24
Visitor Site Guidelines . . . . .	25
ACA Permits . . . . .	25
Specimen Collection and Permits . . . . .	26
Environmental Training . . . . .	26
Wildlife . . . . .	26
Highly Pathogenic Avian Influenza . . . . .	27
Non-native Species . . . . .	27
Sample Site Markings and Equipment Installation . . . . .	28
Spill Prevention, Cleanup and Reporting . . . . .	28
Waste Management . . . . .	29
Packing for Incineration . . . . .	29
Hazardous Waste . . . . .	30
Human Waste . . . . .	30
Environmental EOS Report . . . . .	31
Report Instructions . . . . .	31
<b>Risk Management</b> . . . . .	<b>34</b>
Hazards and Risks . . . . .	35
RM Process . . . . .	36

Practical RM in the Field . . . . .	37
Conduct Daily Briefings and Debriefings . . . . .	37
Morning Brief . . . . .	37
Afternoon Debrief . . . . .	37
Assess Likelihood Versus Consequence . . . . .	38
Use Common Language . . . . .	38
Practice Situational Awareness . . . . .	38
Positive Work Environment . . . . .	38
Self-awareness . . . . .	39
Stress Management . . . . .	40
Fatigue Management. . . . .	42
Rest and Duty Cycles . . . . .	42
Lifting and Carrying . . . . .	42
Before Lifting. . . . .	43
While Lifting . . . . .	43
Staying Warm . . . . .	44
Clothing . . . . .	45
Layering . . . . .	46
Base Layers . . . . .	46
Insulation Layers . . . . .	46
Shell Layers . . . . .	47
Damp or Wet Clothes. . . . .	48
Sleeping in the Field . . . . .	48
Staying Found . . . . .	49
Hygiene . . . . .	50
Camp . . . . .	50
Personal . . . . .	51
Bathroom . . . . .	51
Menstrual . . . . .	52
<b>Communications . . . . .</b>	<b>54</b>
Radio and Phone Best Practices . . . . .	55
VHF Radios . . . . .	57
Iridium Satellite Phones . . . . .	58
Dialing Calls . . . . .	59
Iridium to Iridium . . . . .	59
Iridium to Commercial (Non-USAP) Iridium . . . . .	59
Iridium to Standard U.S. Phone . . . . .	59
Iridium to U.S. Toll-free Number. . . . .	59

Iridium to International Phone . . . . .	60
Iridium to International Number. . . . .	60
Any Phone to USAP Iridium . . . . .	60
Getting Text Messages . . . . .	61
Troubleshooting the Phone . . . . .	62
HF Radio . . . . .	62
Check-ins for Overnight or Multiday Camping . . . . .	63
Communicating Over Poor Signals . . . . .	63
<b>Field Camp Operations . . . . .</b>	<b>66</b>
Overview . . . . .	67
Punta Arenas Schedule . . . . .	68
Shore Landing . . . . .	68
Day Trips . . . . .	69
Field Camps . . . . .	69
Field Plan . . . . .	69
Camp Put-in . . . . .	70
HPAI Prevention . . . . .	71
Put-in Day . . . . .	72
Order of Operations . . . . .	72
Before Vessel Departure . . . . .	73
Proper Gear . . . . .	74
Footwear . . . . .	74
Gloves and Mittens . . . . .	75
Small-Boat Clothing . . . . .	75
Site Selection. . . . .	75
Wildlife, Vegetation and Sensitive Areas . . . . .	76
Topography and Weather . . . . .	76
Camp Layout. . . . .	76
Survival Cache and Emergency Shelter . . . . .	77
Shelters. . . . .	77
Establishing Wind Direction . . . . .	78
Anchoring the Tent . . . . .	79
Snow Walls . . . . .	81
Tents on Sea Ice . . . . .	82
Camp Medical . . . . .	82
Drinking Water . . . . .	83
Fire Prevention . . . . .	83
Field Camp Daily Tasking . . . . .	84

Communications . . . . .	84
Housekeeping, Health and Safety . . . . .	85
Recordkeeping . . . . .	86
Camp Takeout . . . . .	86
Order of Operations . . . . .	87
Tasks on Vessel . . . . .	87
Tents . . . . .	88
Kitchen Items . . . . .	88
Pee Bottles and Toilet Seats . . . . .	88
Fuel Cans aka Jerricans . . . . .	88
Stoves . . . . .	88
Backpacks. . . . .	89
Punta Arenas Gear Return . . . . .	89
<b>Field Gear . . . . .</b>	<b>90</b>
Predeployment . . . . .	91
Stoves . . . . .	91
Safety . . . . .	91
Use in Scott Tents . . . . .	92
CO Risks . . . . .	93
MSR WhisperLite Stove . . . . .	93
Assembly . . . . .	93
Priming. . . . .	94
Lighting. . . . .	94
Cooking . . . . .	94
Shutoff . . . . .	95
Troubleshooting . . . . .	95
Coleman Gas Stove . . . . .	97
Setup . . . . .	97
Tank Pressurization . . . . .	97
Lighting. . . . .	97
Shutoff . . . . .	98
Troubleshooting . . . . .	99
Coleman Propane Stove . . . . .	101
Setup . . . . .	101
Lighting . . . . .	102
Shutoff . . . . .	102
Storage. . . . .	102
Partner Steel Four-burner Stove . . . . .	102

Heaters. . . . .	102
Mr. Heater Single-tank Top Heater . . . . .	103
Mr. Heater Portable Buddy Heater . . . . .	103
Century Primus Heater . . . . .	104
Sleds. . . . .	104
Nansen Sleds . . . . .	104
Siglin UHMW Sleds. . . . .	104
Banana Sleds. . . . .	105
Paris Pulk Sleds . . . . .	105
Loading and Securing Cargo . . . . .	105
Pulling Sleds by Snowmobile . . . . .	106
Snowmobiles. . . . .	106
Safety . . . . .	106
Precheck . . . . .	107
Startup . . . . .	108
Preventive Maintenance. . . . .	108
Daily . . . . .	108
Weekly . . . . .	109
Loading. . . . .	109
Towing . . . . .	109
Communication. . . . .	110
Driving . . . . .	111
ATVs . . . . .	111
Startup . . . . .	112
Driving . . . . .	112
Braking . . . . .	112
Shutoff . . . . .	112
Honda Generator . . . . .	113
Safety . . . . .	113
Precheck . . . . .	114
Startup . . . . .	114
Shutoff . . . . .	115
Troubleshooting . . . . .	115
Solar Recharging Systems . . . . .	116
<b>Cargo Operations . . . . .</b>	<b>118</b>
Cargo Requirements . . . . .	119
Weight and Dimensions . . . . .	119
Waterproofing . . . . .	119

Labeling . . . . .	120
Hazardous Cargo on Vessels . . . . .	120
Shipping to the U.S. . . . .	121
Retrograde Cargo . . . . .	121
More About Science Samples . . . . .	121
Grantee Tasks in Punta Arenas . . . . .	123
<b>Weather and Sea Ice . . . . .</b>	<b>124</b>
Antarctic Weather . . . . .	125
Working in the Peninsula Environment . . . . .	125
Forecasting . . . . .	126
Weather Observations in the Field . . . . .	127
Kestrel Setup . . . . .	128
Reference Altitude and Barometric Pressure . . . . .	128
Sea Ice Assessment . . . . .	129
Thickness . . . . .	130
Color. . . . .	130
Temperature. . . . .	130
Sea Ice Cracks . . . . .	131
Sea Ice Travel and Work. . . . .	132
Profiling a Sea Ice Crack. . . . .	133
Marine Ice Floe Work. . . . .	134
<b>References . . . . .</b>	<b>136</b>
SOAP Note . . . . .	137
Emergency Incident Worksheet . . . . .	139
Knots . . . . .	140
Figure 8 on a Bight. . . . .	140
Bowline. . . . .	140
Clove Hitch (aka Double Hitch) . . . . .	140
Round Turn and Two Half Hitches . . . . .	141
Sheepshank Knot . . . . .	141
Sheet Bend . . . . .	141
Tautline Hitch . . . . .	141
Square Knot (aka Reef Knot) . . . . .	142
Prusik Knot . . . . .	142
Trucker's Hitch . . . . .	142
Water Knot . . . . .	142
Double Fisherman's Stopper . . . . .	142
Alpine Butterfly Loop . . . . .	143

Common Conversions of Measure . . . . .	152
Chilean Standard Time – Zulu Time Conversions . . . . .	153
Temperature Conversions . . . . .	154
Wind Chill Chart. . . . .	155
Maps . . . . .	156
Palmer Station Boating Area . . . . .	156
Palmer Station Small-Boat Operating Range . . . . .	157
Joubin Islands . . . . .	158
Glossary . . . . .	159