

**UNAVCO Polar GPS System Component List SNOW SITE**

Version 1.0, December 7 2012

PROJECT

STATION NAME

PREPARED BY

DATE SHIPPED


COMPONENT	NOMINAL #	ACTUAL #	NOTES
-----------	-----------	----------	-------

X = DEFAULT

(X) = OPTIONAL

**MONUMENT**

1.5" pipe mast	1		record length
w/ 3/8" through hole on one end			
GPS antenna pipe adapter	1		
w/ 5/8" x 1.25" cap screw			
w/ 5/16" bolt and locknut			
w/ 1/2" allen wrench			
flange foot pipe fitting	(1)		
w/ 3x 5/16" bolts + locknuts			flange feet to plywood footer
plywood footer	(1)		
w/ 3x holes to match flange foot			

**2-POLE FRAME AND SNOW ANCHORING**

1.5" aluminum pipes, 2 per panel	4 (2)		record length
w/ bolt hanger on top of each pipe			
w/ bolt and locknut on bolt hangers			
locking carabiner	12 (6)		recommend 2 spares
guy wires	16 (8)		record length
w/ thimble			recommend 2 spare guy wires
w/ swage ferrule			
w/ clean cut on free end, taped			
Gripple	8 (4)		recommend 2 spares
w/ 2 locking screws			
w/ operation tested on each one			
snow anchor stake	8 (4)		recommend 1 spare
5/16-18 x 3" bolts	25		
5/16-18 locknuts	25		
12" metal cable tie downs	25		

### TRIPOD FRAME AND SNOW ANCHORING

tripod top section	(1)		
w/ spacing for 50W or 80W panels			record 50W or 80W
w/ 3x bolt hangers on top of tripod			
w/ bolt and locknut on bolt hangers			
w/ disassembled joints labeled			
w/ assembled joints tightened			
w/ internal pipe couplers attached			
tripod extension legs	(3)		record length
w/ holes for internal pipe couplers			
w/ disassembled joints labeled			
w/ 3x flange foot fittings			
w/ foot orientations labeled			
w/ 9x 5/16" bolts and locknuts			flange feet to plywood footer
plywood footer			
w/ 9x holes to match flange feet			
w/ foot orientations labeled			
5/16-18 x 3" bolts	(25)		
5/16-18 x 2.5" bolts	(10)		
5/16-18 locknuts	(35)		
locking carabiner	(6)		recommend 2 spares
guy wires	(6)		record length
w/ thimble			recommend 2 spare guy wires
w/ swage ferrule			
w/ clean cut on free end, taped			
Gripple	(6)		recommend 2 spares
w/ 2 locking screws			
w/ operation testing each one			
snow anchor stake	(3)		recommend 1 spare
12" metal cable tie downs	(25)		

### SOLAR PANELS

80-watt panels	2 (3)		
w/ external solar cable			
w/ straight gland fitting			
w/ 90 degree gland fitting			
w/ angle braces			
w/ backing plate			
w/ 1 wood + 2 foam ribs, glued			
w/ biteproof sheathing on cable			
50-watt panels	(3)		
w/ external solar cable			
w/ straight gland fitting			
w/ 90 degree gland fitting			
w/ angle braces			

w/ backing plate			
w/ 2 foam ribs, glued			
w/ biteproof sheathing on cable			
saddle clamp	8 (12)		four per panel, recommend 1 spare
w/ 1 V-bolt each			
w/ 2 washers and locknuts each			
rubber mount gaskets	8 (12)		four per panel, recommend 1 spare

#### WIND TURBINES

Forgen 500-LT, side-mount, 3-phase	2 (0)		
w/ rectifier box attached			
w/ connectorized cable			
w/ side mount bracket			
w/ two adapter plates attached			
w/ biteproof sheathing on cable			
saddle clamp	4 (0)		
w/ 1 V-bolt each			
w/ 2 washers and locknuts each			
18" pipe extension, drilled	2 (0)		
external pipe coupler fitting, drilled	2 (0)		
5/16-18 x 3" bolts + locknuts	4 (0)		

#### MAIN ENCLOSURE

enclosure (MM24 or MM36)	1		
w/ system name labeled on outside			
w/ foam inserts			
w/ vent plug			
w/ ground plate			
w/ 2 ground wires (ring terminals)			
w/ 2 ground wires (alligator clips)			
plywood footer, 2' x 4'	1		
battery bulkhead connector	(1,2)		
solar bulkhead connector	2 (3)		
wind bulkhead connector	2 (0)		
met bulkhead connector	(1)		
bulkhead dust cap	4 (2-8)		
GPS surge protector	1		
w/ 90V gas cap			
N dust cap	1		
Iridium surge protector	1 (0,2)		
TNC bulkhead connector (for radio)	(1)		
TNC dust cap	1 (0,2)		

## AUXILIARY ENCLOSURE

enclosure (MM24 or MM36)	(1,2)		
w/ system name labeled on outside			
w/ foam inserts			
w/ vent plug			
w/ battery bulkhead connector			
internal battery cable	(1,2)		
external battery cable	(1,2)		
w/ biteproof sheathing on cable			
plywood footer, 2' x 4'	(1,2)		

## GPS ELECTRONICS BOARD

NetRS receiver	1		record UID
NetRS A power cable	1		recommend 1 spare
NetRS B power cable	1		recommend 1 spare
NetRS dongle	1		
NetR9 receiver	(1)		record UID
NetR9 power cable	(1)		recommend 1 spare
NetR9 4GB USB memory stick	(1)		
w/ USB mini-flat cable			
NetR9 Iridium filter	(1)		only if Iridium used
w/ second internal antenna cable			
GPS internal antenna cable	1		recommend 1 spare
serial surge protector	1 (2,3)		one for each dial-up modem and one for met
serial null modem	(1)		may be needed for weather station
solar charge regulator, new TC	1		
wind charge regulator, new TC	1 (0)		
Dial-up Iridium modem	1 (0,2)		record UID
			record UID
Dial-up modem power/serial cable	1 (0,2)		recommend 1 spare
Xeos Iridium modem	(1)		record UID
Xeos modem power / serial cable	(1)		recommend 1 spare
Xeos modem ethernet / serial cable	(1)		recommend 1 spare
Iridium SIM card	1 (0,2)		record P phone #
			record S phone #
timer switch	1 (0,2)		record P settings
			record S settings
Iridium internal antenna cable	1 (0,2)		recommend 1 spare
point to point radio	(1)		record UID
radio internal antenna cable	(1)		recommend 1 spare
radio power cable	(1)		recommend 1 spare
radio ethernet cable	(1)		recommend 1 spare
terminal block strip	1		check dividers and jumpers
w/ jumpers on connected blocks			
w/o jumpers on diode blocks			

w/ dividers and end stops			
diodes, 8 amp, 45V	4 (2,5)		one for each panel and Forgen
breakers (10A load, 30A all others)	4 (5,6)		one solar, one wind, one load, one each aux batt
internal solar cable	2 (3)		one per panel
internal wind cable	2 (0)		one per turbine
internal battery cable	(1,2)		one per auxiliary battery bank
internal met cable	(1)		
anti-static bag	1		recommend 1 spare
foam cap	1		
red battery lead wire	1		
black battery lead wire	1		
weatherpack leads from terminal blks	2 (0)		
heat pads with weatherpack ends	2 (0)		

### EXTERNAL ELECTRONICS

GPS antenna	1		record UID
GPS antenna radome	(1)		record S/N
GPS antenna cable with biteproof shth	1		recommend 1 spare, unsheathed
GPS antenna cable unsheathed	(1)		
GPS antenna cable with heavy sheath	(1)		
Iridium antenna	1 (0,2)		
Iridium antenna cable	1 (0,2)		recommend 1 spare
w/ biteproof sheathing on cable			
Iridium antenna mount	1 (0,2)		
w/ wall flange fitting			
w/ saddle clamp w/washers + nuts			
w/ 3/4-NPT pipe nipple			
w/ pipe nipple bushing			
w/ 1.5" pipe extension, drilled			
w/ 5/16-18 x 3" bolt and locknut			
weather station	(1)		record UID
weather station bird spike attachment	(1)		
external met cable	(1)		
w/ biteproof sheathing on cable			
weather station mount	(1)		
w/ wall flange fitting			
w/ saddle clamp w/washers + nuts			
w/ 1" EMT conduit length			
w/ conduit bushing			
w/ 1.5" pipe extension, drilled			
w/ 5/16-18 x 3" bolt and locknut			
point to point radio antenna	(1)		
radio antenna pipe mount	(1)		
radio antenna cable	(1)		
w/ biteproof sheathing on cable			

