

Please review all of the following information, including the gear allocations and field team information, to ensure accuracy. This plan is an agreement between CH2M HILL Polar Services (CPS), formerly VECO Polar Resources, and your group, documenting the logistics support you will receive.

SECTION ONE: PROJECT INFORMATION

Lead Principal Investigator	Mary Albert
Institute	Cold Regions Research and Engineering Laboratory, Geophysical Sciences Division
Project Title / Grant #	Collaborative Research: Firn Structure, Interstitial Processes and the Composition of Firn Air at Summit, Greenland (0520445)
NSF Program and Manager	NSF/OPP ANS, William Wiseman
CPS Project Manager	Sandra Starkweather

Logistics Summary

<p>For this collaborative study of firn air and structure -- 0520445 (Albert, CRREL LEAD), 0520564 (Severinghaus, Scripps) and 0520460 (Battle, Bowdoin) -- investigators will conduct three summers of field work at Summit Station, Greenland.</p> <p>Beginning in 2006 a field team of up to 6 researchers and Ice Coring and Drilling Services (ICDS) personnel will travel to Summit, Greenland, for a 6-week field season. During all three years of the grant, the team will collaborate with the French team lead by Christophe Ferrari to investigate air-snow transfer of gaseous mercury.</p> <p>In 2008, the team will return to Summit for surface measurements. Approximately 5 people will spend 2-3 weeks retrieving and measuring snow metamorphism in the top meters of firn, both in snow pits and using a hand auger, and comparing the measurements to radar & radiometer measurements. ICDS will not drill this year, though they will provide a hand auger, shipped separately to Scotia. The team will conduct the permeability, thermal conductivity, and other measurements in a cold room (covered pit) near the stake forest, in the same pit in which they have been measuring properties other years, and also near Koni's met station. Approximately 4 ice core boxes of firn samples will be sent back to CRREL for analysis.</p> <p>Tom Neumann (UVM) will join the field team to conduct comparison radar measurements. These measurements are experimental, pulled by a snowmobile, and can be done in any undisturbed snow area. Neumann will pull the radar in a grid pattern ~ 1km x .5 km. The radar targets will be the Steffen AWS and drill areas from the 2007 campaign.</p> <p>Note: The PI will travel to Kangerlussuaq with her field team, but will not continue on to Summit. Instead, she will work with Greenlandic colleagues on a Kangerlussuaq-based television outreach effort. The means of payment for costs incurred by the PI is TBD.</p> <p>CPS (formerly VPR) will support the project via ANG arrangements, user days in Greenland, access to Summit infrastructure, establishment of a trench or other cold-room measurement site at Summit, and will coordinate transport of the core from Summit to CRREL in Hanover, NH. ICDS will provide drill support in drilling years. All other logistics will be handled by the investigators from the grant.</p>

For the complete CPS online project record for this grant, including science objectives, go to: http://www.vecopolar.com/arlsr_reports/arlsr_projectsdetail.asp?cbPropNum=0520445

For up-to-date information on the project's schedule, please view the online [Greenland calendar](http://www.vecopolar.com) (<http://www.vecopolar.com> > Greenland > Calendars/Schedules).

SECTION TWO: SEASON FIELD PLANS

Outstanding Actions and Notes

Issue	Responsibility	Date Completed
Review support plan for accuracy and distribute to all field team members	PI	
Obtain all necessary permits for fieldwork	PI	Included with Summit Station permit
Visit all hyperlinks and review all documents referred to in the support plan	Field Team Members	
Contact the GEOSummit Science Coordination Office (SCO) mailto:sco@summitcamp.org regarding your project's plans for the season	PI	GEOSummit meeting, 2/11/08
Medical Clearance completed 6-8 weeks before desired deployment date. The following have been medically qualified: Williamson; Sorg	Courville Hoerhold	
Passports are required for ANG and international travel. It's a good idea to bring two IDs and to pack a copy of your passport in case the original is lost.	Field Team Members	Note
Complete Critical Success Factors	PI	February 2008
Determine means of payment for costs incurred by PI for her stay in Kangerlussuaq	PI	

Allocations and Services

Allocations from NSF Inventory at Summit

Quant/Unit	Item
5 ea	8x8 Arctic Oven sleep tents
8 ea	Thermal sleeping pads
2 ea	Banana sled
1 ea	Plywood floor for cold room (see Other Service)
3 ea	Plywood 4'x8'x 1/2" for snow pit
2 ea	6' table for measurements in the cold room (see Other Service)
2 ea	Handheld radio, VHF
4 a	Folding chair for cold room
1 ea	Occasional use of a snowmobile and Nansen sled for radar measurements (~ 5 days)

Allocations from ICDS

Quant/Unit	Item
1 ea	Hand coring auger with 15 m extensions. (Provided by ICDS, shipped separately to Scotia.) CPS will pay for the return shipment to ICDS.

Other Services

Project Allocations	Comments
16' of table/desk space in the GH	This group will be accommodated in the GH summer office.
Drilling Location	This group will continue work that was started last year near the bamboo forest. (See Appendix)

	SCO was not aware of this hole from last year, but recommends that this work be conducted 50' away from the nearest bamboo forest pole. It is actually 200' away so complies with SCO recommendation.
Cold room	<p>This group requires a 3'x5'x8' deep snow pit ("cold room") covered by plywood near their pit by the Bamboo Forest (see Appendix for location). They will work with the staff to dig the pit. The snow from the excavation must be hauled away using a Siglin sled to avoid causing any drift in the Bamboo Forest during their measurements. At the end of the work, the snow should be returned and the pit restored to a level, even snow surface. Since this pit is located in the CAZ, the electric snow machine must be used for hauling snow. If the machine is not in service, the snow should be hand hauled to the edge of the CAZ (1000') where it can be hauled away by a conventional snow machine.</p> <p>SCO has recommended that this hole be 200 feet away from the nearest bamboo forest pole. The specified location complies with this recommendation.</p>
Frozen Samples	The PI will provide 4 of her own ice core boxes and does not require tubes or eutectics for packing her samples. The samples should be retro'd on the same flight that the group leaves on. The samples will be kept as cold as possible on a standard flight, deeply frozen in Kanger, and flown to Scotia under insulated blankets in the coldest spot on the plane.
Radar Work	The radar is experimental, pulled by a snowmobile, and can be done in any undisturbed snow area, dirty sector is ok. Would be pulled in a grid pattern probably 1km x .5 km. Tom Neumann will spend several days at Summit. He will set up the radar, and drive past the Steffen AWS, and the Albert team's 2007 drill site and do a grid on that side of "town." He'll leave the radar with Zoe in case he doesn't get it done in the available time.

Location Information

Please visit <http://www.vecopolar.com> and navigate to the Greenland menu for en route and location-specific Greenland information. Prior to deployment, your entire field team should be familiar with the content of the *Greenland Guide* and the *Summit Users' Guide*. Both are available electronically via our Web site's Greenland menu.

Cargo and Customs

All cargo required for your project should arrive in Scotia, NY, **no later than 2 weeks prior** to the desired northbound Air National Guard (ANG) flight, must be entered into our online Cargo Tracking System, and must be properly registered with Customs.

For the most current ANG flight schedule go to <http://www.vecopolar.com> and navigate to Greenland > Calendars/Schedules.

If you are a new user requiring access to the Cargo Tracking System, contact Jason Buenning (jason@polarfield.com).

Customs instructions are available on our website at <http://www.vecopolar.com> (go to Greenland > Customs)

The following is our current understanding of your overall cargo requirements:

Cargo List

Items	Weight/Cube
CRREL cargo (permeameter, snow kits, cold weather gear, etc)	800 lb / 50 ft3
ICDS auger on loan to project	

Field Team Information

Name	Location	Date In	Date Out	Email
Zoe Courville*	Kanger	6/2/2008	6/28/2008	zoe.courville@dartmouth.edu
Zoe Courville	Summit	6/3/2008	6/24/2008	zoe.courville@dartmouth.edu
Elyse Williamson	Kanger	6/2/2008	6/28/2008	ekwillia@hamilton.edu
Elyse Williamson	Summit	6/3/2008	6/24/2008	ekwillia@hamilton.edu
Kristina Sorg	Kanger	6/2/2008	6/28/2008	ksorg@bowdoin.edu
Kristina Sorg	Summit	6/3/2008	6/24/2008	ksorg@bowdoin.edu
Maria Hoerhold	Kanger	6/2/2008	6/28/2008	maria_hoerhold@web.de
Maria Hoerhold	Summit	6/3/2008	6/24/2008	maria_hoerhold@web.de
Tom Neumann	Kanger	6/2/2008	6/7/2008	tneumann@uvm.edu
Tom Neumann	Summit	6/3/2008	6/6/2008	tneumann@uvm.edu
Mary Albert**	Kanger	6/2/2008	6/7/2008	mary.r.albert@erdc.usace.army.mil

* Field Team Leader

**Will not travel to Summit. Instead, will remain in Kangerlussuaq for outreach.

Project Contact Information

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	Mary Albert	mary.r.albert@erdc.usace.army.mil	603.646.4422 / 603.646.4278
Collaborator	Mark Battle	mbattle@bowdoin.edu	207.725.3410 /
Collaborator	Jeffrey Severinghaus	jseveringhaus@ucsd.edu	858.822.2483 / 858.822.3310

SECTION THREE: CPS CONTACT INFORMATION

CPS Team Members

Contact for	Name	Email	Primary Phone(s)
Summit operations	Sandy Starkweather	sandy@polarfield.com	Denver: 303.518.8714
Greenland operations (project support)	Jason Buenning	jason@polarfield.com	Denver: 303.638.6669 Greenland: 011.299.524218
Greenland operations (On-island support)	Mark Begnaud	mark@polarfield.com	Denver: 720.320.6160 Greenland: 011.299.524281
Greenland operations (project support)	Robin Abbott	robin@polarfield.com	Denver: 303.748.8507
Medical	Kyli Olson	kyli@polarfield.com	Denver: 303.489.2151

Denver operations	Jill Ferris	jill@polarfield.com	Denver: 720.320.6155
Scotia operations & customs	Earl Vaughn	earl.vaughn@gmail.com yprscotia@hughes.net	Scotia: 518.331.3103

CPS Offices

Denver	Kangerlussuaq	Scotia
CH2M HILL Polar Services Western Office 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	CH2M HILL Polar Services Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Kangerlussuaq, Greenland Tel: 011.299.841598 Fax: 011.299.841599	Earl Vaughn C/O 109 th Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.331.3103 Fax: 518.334.2537

Summit Station

Summer
CH2M HILL Polar Services Attn: Name of Employee/Researcher - Summit Station C/O Earl Vaughn 109 th Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.331.3103 Fax: 518.334.2537

Other

Organization	Internet	Phone
Summit Science Coordination Office	http://www.geosummit.org sco@summitcamp.org	John Burkhart 209.658.7142

SECTION FOUR: SAFETY, ENVIRONMENT, HEALTH and PERMITS

Medical Clearance

Arctic Program participants traveling into the Greenland field are generally required to pass a National Science Foundation (NSF) -mandated physical exam. All field team members should plan to complete their medical clearance process 6-8 weeks prior to their travel to Greenland. For more information refer to CPS' Greenland Guide, available at <http://www.vecopolar.com> under Greenland.

Critical Success Factors

Please list the factors that are most important for the success of your science. We track these factors in order to measure the success of CPS' support. Examples might be the availability of the helicopter or camp gear.

Factors
Critical to the success of the project are: a subsurface "cold room" for making permeability and thermal conductivity measurements near the stake forest
Availability of a 4" coring auger (ICDS responsible for shipping to Scotia)
Heated office space for computer work
Coordination of air transport of the cores to Scotia with arrival of a CRREL-supplied vehicle to take the cores when unloaded from the plane.

Government and Performance Reporting Act of 1993 (GPRA)

NSF/OPP requires your help in complying with the Government Performance and Reporting Act of 1993 (GPRA). One measure of CPS' performance is a "facility-performance metric" which counts the number of productive days your project has in the field while relying on CPS facilities or support. Please keep track of any "lost days" and report these to us at the end of the season.

Appendices

Albert Sampling Site (2006-2008) and Proposed Cold Room Location

