

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	Jack Dibb
Institute	University of New Hampshire, Glacier Research Group
Project Title / Grant #	Collaborative Research: Radical Chemistry over Sunlit Snow: Interactions between HOx and Halogen Chemistry at Summit, Greenland (0612075)
NSF Program and Manager	NSF/GEO/ATM, Ms. Anne-Marie Schmoltner
CPS Project Manager	Sandra Starkweather

Logistics Summary

This collaboration is composed of the following: 0612075 (Dibb, UNH, LEAD), 0612387 (Huey, Gatech), 0612136 (Lefer, U of Houston), 0612426 (Blake, UCI), 0612568 (Brooks, NOAA), and 0612279 (Stutz, UCLA).

The researchers will study photochemical processes during intensive sampling seasons planned for the late-spring/early-summer of 2007 during rapid temperature changes, and mid-summer 2008 when sunlight is at a maximum. Original plans had the timing of the field campaigns reversed, and the change was made to better align with planned airborne campaigns that will be conducted by international groups in support of the IPY POLARCAT initiative. At those times, researchers will participate in a 6-8 week effort to install experiments, and then to collect data from and maintain the same.

During the 2008 campaigns, the research will be conducted at the satellite camp location upwind of local pollution sources from the station from early June until mid-July. The research team may total up to 15, to include one or two teacher participants and to accommodate some turnover between researchers.

CPS (formerly VPR) will provide ANG coordination for field team and cargo transport between Scotia, NY, and Summit, Greenland, and access to infrastructure and services at Summit Station during each year of field work. All other logistics requirements will be paid by the investigators with grant funds.

For the complete CPS online project record for this grant, including science objectives, go to:

http://www.vecopolar.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=0612075

For up-to-date information on the project's schedule, please view the online [Greenland calendar](#)

(<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	February 2008

Medical Clearance completed 6-8 weeks before desired deployment date. Already completed: Cummings - PQ'd 4/9 Tanner - PQ'd 4/9 Lew - PQ'd 2/22 Brooks - PQ'd 4/15	Field Team Members	
Please advise team members to bring 2 forms of ID - including a valid passport (required to fly on the 109 th) - for international travel.	PI	Note
Complete Critical Success Factors	PI	February 2008
Resolve Po210 source research (see below)	CPS	

Allocations and Services

Allocations from Inventory

Quant/Unit	Item
1/ person	Arctic Oven tent on platform, with sleep pads
50 pounds	Eutectic (blue ice) packs
2 ea	Sheets ½ plywood (possibly from scrap pile, don't need full 4 x 8)
8 ea	8 foot 2 x 4's
Use	Electric snow machine and sled at start and end (available after 05/14)
Use	4-stroke snow machine(s) and sled at start and end
3 ea	Banana sleds
2 ea	Wireless hubs/antenna (in SIP and Bally)
1 ea	VHF base station (SIP)
As needed	Hand held radios
1 ea	Microwave, coffee maker, waste basket, 10 gallon water cooler
1 ea	OSHA first aid kit

Other Services

Project Allocations	Comments
2 or 3 AF pallets, 6 or 8 empty drums	To make cargo line at sat camp
Satellite Camp	For details on set up, see excerpt from Summit operations plan in Appendix
Gas Procurement and delivery	CPS will procure and deliver the following gases to Summit for the Dibb-et-al project: 7 cyl. @ Tech gad Helium CGA 580 (3 UNH, 4 UH) 3 cyl. @ UHP (99.99%) Argon 30 cyl. @ UHP ((99.99%) Nitrogen CGA 580 3 cyl. @ UHP (99.99%) Oxygen CGA 540 5 cyl. @ Ultra Zero Air (< 0.1 ppm HC) CGA 590 (4 for Ga Tech, 1 for UNH)
Storage space for tether sonde in Science Barn	
Po210 source	Additional request by Dave Tanner for Greg Huey/GATECH work. CPS is still working out issues of hazardous material (nuclear) import to Greenland. This item has been ordered to secure an on-time delivery, but will not be shipped without import license. The group has said that it is not vital but would make a meaningful improvement to their measurements.

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 with the guidelines provided in 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
See separate list in Appendix	

Support Schedule

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

Field Team Information

Institute	Name	Location	Date In	Date Out	Email
UNH	Luxford, Jeff	Kanger	6/2/08	7/12/08	jack.dibb@unh.edu
UNH	Luxford, Jeff	Summit	6/3/08	7/11/08	jack.dibb@unh.edu
UNH	Ziemba, Luke	Kanger	6/2/08	6/28/08	jack.dibb@unh.edu
UNH	Ziemba, Luke	Summit	6/3/08	6/27 /08	jack.dibb@unh.edu
UNH	Dibb, Jack	Kanger	6/2/08	6/7/08	Tentative
UNH	Dibb, Jack	Summit	6/3/08	6/6/08	jack.dibb@unh.edu
UNH	Kahan, Tara	Kanger	6/23/08	7/12/08	jack.dibb@unh.edu
UNH	Kahan, Tara	Summit	6/24/08	7/11/08	jack.dibb@unh.edu
GA Tech	Cummings, Tony	Kanger	6/2/08	6/28/08	dt8@mail.gatech.edu
GA Tech	Cummings, Tony	Summit	6/3/08	6/27 /08	dt8@mail.gatech.edu
GA Tech	Huey, Greg	Kanger	Backup		dt8@mail.gatech.edu
GA Tech	Huey, Greg	Summit	Backup		dt8@mail.gatech.edu
GA Tech	Houlihan, Sean	Kanger	Backup		dt8@mail.gatech.edu
GA Tech	Houlihan, Sean	Summit	Backup		dt8@mail.gatech.edu
GA Tech	Brough, Neil	Kanger	6/23/08	7/12/08	dt8@mail.gatech.edu
GA Tech	Brough, Neil	Summit	6/24/08	7/11/08	dt8@mail.gatech.edu
GA Tech	Reichardt Helen	Kanger	6/2/08	7/12/08	dt8@mail.gatech.edu
GA Tech	Reichardt, Helen	Summit	6/3/08	7/11/08	dt8@mail.gatech.edu
GA Tech	Jin Liao	Kanger	6/23/08	7/12/08	dt8@mail.gatech.edu
GA Tech	Jin Liao	Summit	6/24/08	7/11/08	dt8@mail.gatech.edu

GA Tech	Tanner, David	Kanger	6/2/08	6/28/08	dt8@mail.gatech.edu
GA Tech	Tanner, David	Summit	6/3/08	6/27/08	dt8@mail.gatech.edu
UH	Lefer, Barry	Kanger	6/2/08	6/28/08	blefer@uh.edu
UH	Lefer, Barry	Summit	6/3/08	6/27/08	blefer@uh.edu
UH	Clements, Craig	Kanger	6/2/08	6/28/08	blefer@uh.edu
UH	Clements, Craig	Summit	6/3/08	6/27/08	blefer@uh.edu
UH	Haman, Christine	Kanger	6/23/08	7/12/08	blefer@uh.edu
UH	Haman, Christine	Summit	6/24/08	7/11/08	blefer@uh.edu
TREC	Beals, Craig	Kanger	6/2/08	7/12/08	Mentored by Barry
TREC	Beals, Craig	Summit	6/3/08	7/11/08	bealsc@billing.k12.mt.us
NOAA	Brooks, Steve	Kanger	6/2/08	6/28/08	steve.brooks@noaa.gov
NOAA	Brooks, Steve	Summit	6/3/08	6/26/08	steve.brooks@noaa.gov
NOAA	Moore, Chris	Kanger	6/2/08	7/12/08	steve.brooks@noaa.gov
NOAA	Moore, Chris	Summit	6/3/08	7/9/08	steve.brooks@noaa.gov
NOAA	Lew, David	Kanger	6/23/08	7/12/08	steve.brooks@noaa.gov
NOAA	Lew, David	Summit	6/24/08	7/11/08	steve.brooks@noaa.gov
UCI	Gorham, Katrine	Kanger	6/2/08	7/12/08	drblake@uci.edu
UCI	Gorham, Katrine	Summit	6/3/08	7/11/08	drblake@uci.edu
UCLA	Hurlock, Stephen	Kanger	6/23/08	7/12/08	jochen@atmos.ucla.edu
UCLA	Hurlock, Stephen	Summit	6/24/08	7/11/08	jochen@atmos.ucla.edu
UCLA	Stutz, Jochen	Kanger	6/2/08	6/28/08	jochen@atmos.ucla.edu
UCLA	Stutz, Jochen	Summit	6/3/08	6/27/08	jochen@atmos.ucla.edu
UCLA	Thomas, Jennie	Kanger	6/2/08	6/28/08	R.Von-Glasow@uea.ac.uk
UCLA	Thomas, Jennie	Summit	6/3/08	6/27/08	R.Von-Glasow@uea.ac.uk
UCLA	Schneider, Max	Kanger	6/23/08	7/12/08	R.Von-Glasow@uea.ac.uk
UCLA	Schneider, Max	Summit	6/24/08	7/11/08	R.Von-Glasow@uea.ac.uk

Project Contact Information

Research Team

Role	Name	Email	Phone / Fax
Collaborator	Donald Blake	drblake@uci.edu	949.824.4195 / 949.824.2905
Collaborator	Steven Brooks	steve.brooks@noaa.gov	865.576.1233 / 865.576.1327
Principal Investigator	Jack Dibb	jack.dibb@unh.edu	603.862.3063 / 603.862.2124
Collaborator	L. Greg Huey	greg.huey@eas.gatech.edu	404.894.5541 / 404.894.6285
Collaborator	Barry Lefer	blefer@uh.edu	713.743.3250 / 713.748.7906
Collaborator	Jochen Stutz	jochen@atmos.ucla.edu	310.825.5364 / 310.206.5219

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
Sat phones & comms	Roy Stehle	roy.stehle@sri.com	Menlo Park: 650.859.2552
Medical & RMI	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 vprscotia@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
Sat Camp ready for occupancy
Cargo to Summit with team or before
Station personnel adhere to clean air operations protocol

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

Cargo List

Excerpts from Summit Ops Plan (Satellite Camp and Flux Facility)

2008 Satellite Camp Plan

Satellite Camp: As in previous years, CPS will construct the satellite camp to support the Dibb et al project. In late April, a construction crew will assemble the Sat Camp package in the same location as in 2006-2007. The Satellite Camp will be located 2,500 feet southwest of the Station power plant along the 247-degree science sector line. The satellite camp structures include a 14' x 40' SIP panel building, a Bally Building, the Penalty Box and an outhouse. The outhouse will be a non-conventional "bag the waste" style facility using a "bag-style" toilet inside a Scott tent shelter. Waste will be collected and transported back to camp by the Sat camp user community. The mobile structure end doors will face north/south (with a small arctic entry – depending on structure this may not be included though the PI's prefer its inclusion), lighting and 120V outlets. Electricity powers the structures through a boost and buck system whereby power from the main generators is boosted to 600V and transported over cable to the sat camp and bucked down to standard 120/208V power. A transformer upgrade is proposed for the site. The power cable is strung above the surface and supported by 4" x 4" x 12' pieces of lumber drilled 3 feet into the snow, and spaced every 50 feet. The Bally Building will be towed to a location similar to last year, upwind of the main mobile science building. The Penalty Box will also be required at the site, located adjacent to the Bally (close enough to have internet cable), with power but minimal heat. Once the structures are in place and set up an electrician will wire the structures, bring power to each, and test the system. The main mobile structure will be outfitted with tables, chairs, coffee/hot water mess, microwave and emergency supplies.

The Mobile Science Facility originally planned for installation this season has been moved to 2009. The traversing sled and SIP panel building that will be installed on top of the sled have been purchased and will be sent to Thule by cargo ship for eventual transport to Summit on the traverse route planned for this season.

Internet access will be installed in both structures via wireless bridges back to the Big House. Ethernet switches will be installed in both structures for wired connections, and a wireless access point will be installed in the residence structure for wireless computer connectivity. A VHF base station will also be placed in the residence structure.

Construction traffic to and from the Sat Camp will travel on a single marked route parallel to the power line. During sat camp construction, personnel will keep foot and vehicle traffic to a minimum and limit it to just around the structures to minimize human impact to the sampling area. All travel to the site will meet approval of the SCO and camp management. June 1 delivery date.

Campaign Flux Facility: A new Campaign Flux Facility (CFF) is planned for two funded projects that require a buried facility for occupancy June 1, 2008. In late April, an HEO will begin excavations and a construction crew will assemble the facility. The detailed requirements for this facility are outlined in the Campaign Flux Facility Project Plan (add link/reference). In broad terms, it is required that it be below grade, located in an upwind location in the Clean Air Zone (CAZ) with an adjacent tower. These experiments are scheduled to operate year-round for the next 3 years. In 2008 CPS will design, procure, deliver and assemble a building that can be installed below grade. The building will be located in a crosswind transect with the Satellite Camp. The Campaign Flux Facility is also an element of the LRP. See appendix A: map of Summit Station. A stop work date of 6/23 is assigned to this project to allow for Sat Camp measurement campaign.