

Please review all of the following information, including the gear allocations and field team information, to ensure accuracy. This plan is an agreement between VPR and your group, documenting the logistics support you will receive.

• Project Information •

| | |
|------------------------------------|--|
| Lead Principal Investigator | Eric Steig |
| Institute | University of Washington, Department of Earth and Space Sciences |
| Project Title / Grant # | Isotopic composition of HNO ₃ and NO _x at Summit Greenland (0454803) |
| NSF Program and Manager | NSF/OPP ANS, Dr. Jane Dionne |
| VPR Project Manager | Sandra Starkweather |

• Logistics Summary •

| | |
|---|--|
| Refer to http://www.vecopolar.com/Files/PDFs/SummitOM2007Plan.pdf | Details of Sat Camp requirements are outlined in this document |
| <p>Over the course of 3 years, this project plans four trips to Summit, Greenland, to characterize variability of isotopes in atmospheric NO₂, NO, HNO₃, and HNO₃ in Summit snow.</p> <p>A team of researchers will travel to Summit in June 2005, March through August 2006, and June/July 2007, where they will conduct continuous atmospheric sampling and will obtain snow and firn samples. During the first summer the team will test their field-sampling equipment and optimize collection protocols. They also plan to document long-term variability in isotope concentrations in 2005 by taking a new 100m core with support from the Ice Coring and Drilling Services Office at University of Wisconsin.</p> <p>In 2007, the University of Washington team will be in the field from early June through early August. The project's researchers will also have access to the clean lab area and millipore water at Summit Station. Atmospheric sampling equipment (aerosol filters and mist chambers) will be set up in the old "Freshies Shack" building, near the Bally Building. Additionally, the team will have some radar equipment on site (a a high-frequency system for examining snow properties in the upper 2 m of the snow pack) which they hope to test as opportunity allows. A graduate student (Koenig) will dig one or two snow pits at a field-chosen location along the line out to last year's Steig bore holes.</p> <p>VPR will support the team via infrastructure at Summit. In addition, VPR science technicians will collect fresh snow samples when no team members are on-station.</p> | |

For the complete VPR online project record for this grant, including science objectives, go to:
http://www.vecopolar.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=0454803

For the most up-to-date information on project schedule, go to:
http://www.trumba.com/calendars/greenland_calendar

• Outstanding Issues •

| Issue | Responsibility | Date Completed |
|---|--------------------|----------------|
| Review support plan for accuracy and distribute to all field team members | PI | 4/27/2007 |
| Obtain all necessary permits for fieldwork | PI | 3/1/2007 |
| Visit all hyperlinks and review all documents referred to in the support plan | Field Team Members | 4/27/2007 |
| Contact the GEOSummit Science Coordination Office (SCO) mailto:sco@summitcamp.org regarding your project's plans for the season | PI | 3/20/2007 |
| Medical Clearance completed 8-6 weeks before desired deployment date | Field Team Members | 4/27/2007 |
| Please note this important information for your field team: Bring 2 different forms of picture ID. Passports are mandatory for entry into Greenland. | Field Team Members | 4/27/07 |
| Complete Critical Success Factors | PI | 4/27/07 |

• Allocations & Services •

Allocations from Inventory

| Quant/Unit | Item |
|------------|---|
| 3 ea | Arctic Oven tents for sleeping |
| 3 ea | Thermarests or pads for sleeping in the tents |
| 1 ea | Oxygen tank (100 lb) |
| 3 ea | Ice core boxes from Kanger inventory |

Other Services

| Project Allocations | Comments |
|---|---|
| Freshie Shack used as lab space, Refer to http://www.vecopolar.com/Files/PDFs/SummitOM2007Plan.pdf | 6/1 to 8/1 (approx.) Located at the Sat Camp. Details of Sat Camp requirements are outlined in referenced document. |
| Access to DI water, counter space and the MilliQ system | |
| Sample storage and shipping. Frozen samples. | Samples will be stored frozen on-site in the ground or in the Green House freezer trench; a small box of samples will leave Summit (kept frozen in a cooler provided by Steig team) during each turnover and hand carried back to Scotia (cooler may need to be kept in freezer in Kanger and/or Scotia); rest of samples will be kept frozen (-5 C) and shipped frozen in 2-3 ice core boxes at end of field season (freezer space needed in Kanger and Scotia) via UPS with shipping paid by Steig group. |
| Power required in Freshie Shack Building: 110 V, 15 amps | 6/1 to 8/1 – Powered off Sat camp |

• 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, if traveling to Summit, 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.lcom)
- ✓ Customs instructions are available on our website at <http://www.vecopolar.com> (go to Greenland > Customs)
- ✓ For Customs requirements please refer to the *Greenland Guide*, also available at <http://www.vecopolar.com> under Greenland.

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

Cargo List

| Items | Weight/Cube |
|---|--------------------------|
| Aluminum case with 3 flow meters, data logger, flow meter batteries, misc. cables, manuals, misc. glassware, electric balance (shipped to NY) | 60 lbs/6ft ³ |
| Aluminum case with misc. tools, Swagelock fittings, tank regulator, Nalgene bottles (shipped to NY) | 50 lbs/6ft ³ |
| Aluminum case with tools (shipped to NY) | 25 lbs/4ft ³ |
| Cardboard box containing empty plastic bottles (each 19x13x14)(shipped to NY) | 10 lbs/2ft ³ |
| Cardboard box containing empty plastic bottles (each 19x13x14)(shipped to NY) | 10 lbs/2ft ³ |
| Wooden box with electronics (shipped to NY) | 90 lbs/19ft ³ |
| Wooden box with electronics (shipped to NY) | 60 lbs/3ft ³ |
| Wooden box with electronics (shipped to NY) | 25 lbs/2ft ³ |
| Cardboard box with 500 ml HCl (Hazardous) | 1 lbs/1ft ³ |
| Ski bag (hand carry, Steig) | 10 lbs/2ft ³ |

• Support Schedule •

For up-to-date information, go to: http://www.trumba.com/calendars/greenland_calendar

| Date | Location | Activity |
|------------------|----------|---|
| 5 June | Summit | Steig, Gleason, Koenig to Summit |
| 7 June | | Steig returns from Summit |
| 5 June – 18 June | Summit | Atmospheric sampling at Freshie shack (Gleason, Koenig), two snowpits, surface snow samples |
| 20 Jun | Summit | Neff to Summit, Koenig returns from Summit |
| 20 June 12 July | Summit | Atmospheric sampling at Freshie shack (Gleason, Neff), surface snow samples |
| 10 July | Summit | Huybers to Summit |
| 12 July May | Summit | Gleason, Neff return from Summit |
| 12 July 7 Aug | Summit | Atmospheric sampling at Freshie shack (Huybers), surface snow samples |

• Field Team Information •

| Name | Location | Date In | Date Out | Email |
|-----------------|---------------|-----------|-----------|--|
| Steig, Eric | Kangerlussuaq | 6/3/2007 | 6/8/2007 | steig@ess.washington.edu |
| Steig, Eric | Summit | 6/4/2007 | 6/7/2007 | steig@ess.washington.edu |
| Gleason, Daniel | Kangerlussuaq | 6/3/2007 | 7/13/2007 | dgleason@gmail.com |
| Gleason, Daniel | Summit | 6/4/2007 | 7/12/2007 | dgleason@gmail.com |
| Koenig, Lora | Kangerlussuaq | 6/3/2007 | 6/22/2007 | lorak@u.washington.edu |
| Koenig, Lora | Summit | 6/4/2007 | 6/20/2007 | lorak@u.washington.edu |
| Neff, Peter | Kangerlussuaq | 6/18/2007 | 7/13/2007 | petestah@u.washington.edu |
| Neff, Peter | Summit | 6/19/2007 | 7/12/2007 | petestah@u.washington.edu |
| Huybers, Kat | Kangerlussuaq | 7/9/2007 | 8/9/2007 | khuybers@u.washington.edu |
| Huybers, Kat | Summit | 7/10/2007 | 8/7/2007 | khuybers@u.washington.edu |

• Project Contact Information •

Research Team

| Role | Name | Email | Phone / Fax |
|------------------------|-------------------|--|-----------------------------|
| Principal Investigator | Eric Steig | steig@ess.washington.edu | 206.685.3715 / 206.543.3836 |
| Co-PI | Meredith Hastings | mhasting@atmos.washington.edu | 206.543-4596 / 206.643.0308 |

VPR Team Members

| Contact for | Name | Email | Primary Phone(s) |
|-----------------------------|--------------------|--|---|
| Greenland operations | Jason Buenning | jason@polarfield.com | Denver: 303.638.6669 Greenland: 011.299.524218 |
| Greenland operations | Mark Begnaud | mark@polarfield.com | Denver: 720.320.6160 Greenland: 011.299.524281 |
| Summit operations | Sandy Starkweather | sandy@polarfield.com | Denver: 303.518.8714 |
| Medical & MAS | 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 |

VPR Offices

| Denver | Kangerlussuaq | Scotia |
|---|--|--|
| VECO Polar Resources Western Office 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445 | VECO Polar Resources 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

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|--|
| Summer |
| VECO Polar Resources 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 |
|------------------------------------|---|--|
| Medical Advisory Services | http://www.mas1.com | 410.257.9504 / 410.257.9505 / 410.257.9506 |
| Summit Science Coordination Office | http://www.geosummit.org sco@summitcamp.org | John Burkhart 011.479.6825011 (Norway) 1.209.658.7142 (USA, messages checked weekly) |

• Safety, Environment, Health, and Permitting •

Permits

All science teams planning to conduct research in Greenland must complete an **annual application** in order to obtain approval from the Danish Polar Center (DPC). The application forms are available from the DPC at <http://www.dpc.dk>. Applications are submitted directly through the DPC, rather than through the U.S. State Department. For assistance with the application process, contact:

Poul Henrik Sorensen

E-mail: phs@dpc.dk

Telephone: +45 3288 0100

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 8-6 weeks prior to their travel to Greenland. For more information refer to VPR's *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 VPR's support. Examples might be the availability of the helicopter or camp gear.

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|---|
| Factors |
| "Our primary focus this field season is the collection of gas and aerosol phase NOy species. It is critical that we be made aware of and coordinate when there is potential for contamination via camp NOx emissions. The location and set up of the Bally Building/Sat Camp is such that we hope to avoid or minimize camp contamination of our sampling equipment." |
| Set-up, placement and power supplied to "Freshie Shack"/Sat Camp, plus staging of oxygen tank. |
| Access to clean (Millipore) water and (temporary) lab bench space throughout the field season. |
| Successful shipping of (frozen) samples from Summit to Seattle at end of field season. |

- Government Performance and 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 VPR's performance is a "facility-performance metric" which counts the number of productive days your project has in the field while relying on VPR facilities or support. Please keep track of any "lost days" and report these to us at the end of the season.