

Please review all of the following information, including the gear allocations and field team members, 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 •

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.

A team of researchers will travel to Summit in July 2005, March through August 2006, and 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.

This project will also have access to the clean lab area and millipore water. Atmospheric sampling equipment (aerosol filters and mist chambers) will be set up at the Bally Building located near the science trench, later moved out to the Satellite Camp. A data logger in the Bally Building will be used to record flow rates and temperatures.

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.

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

• Outstanding Issues •

| Issue | Responsibility | Date Completed |
|---|--|---|
| Review support plan for accuracy and distribute to all field team members | PI | February 28, 2006 |
| Obtain all necessary permits for fieldwork | PI | |
| Visit all hyperlinks and review all documents referred to in the support plan | Field Team Members | February 28, 2006 |
| Contact the GEOSummit Science Coordination Office (SCO) mailto:sco@geosummit.org regarding your project's plans for the season | PI | February 2006 |
| Medical Clearance completed 8-6 weeks before desired deployment date | Joseph Flaherty Meredith Hastings Eric Steig Justin Wettstein | Researchers not listed have completed this action |
| Please note this important information for your field team: Bring 2 different forms of picture ID. Passports are now mandatory for entry into Greenland. Be sure to pack them! | Field Team Members | |
| Complete Critical Success Factors | PI | March 7, 2006 |

• Allocations & Services •

Allocations from Inventory

| Quant/Unit | Item |
|------------|---|
| 1 ea | Arctic Oven tents 8' x 8' for sleeping (see note) |
| 2 ea | Thermarests or pads for sleeping in the tents |
| 2 ea | Helium, spring and summer campaign (100 lb) |
| Lot | Access to DI water, counter space and the MilliQ system |
| 2 ea | Wireless network access cards |

Other Services

| Project Allocations | Comments |
|---|--|
| Bally Building | 3/15 to 5/15 (approx.) Located ~100' East of the science trench tower, oriented with sampling to the South. 5/15 (approx) to 7/15 Located at the Sat Camp. On-site cargo, including 3 black plywood boxes, will be staged in the building. Helium tank (loan from NOAA) will be staged in the building. |
| 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 and shipped frozen in 1-2 ice-core boxes at end of field season (freezer space needed in Kanger and Scotia). |
| Power required in Bally Building: 110 V, ___ amps | 3/15 to 5/15 – Powered off trench. 5/15 to 7/15 – Powered off Sat Camp line. |
| Access to GH Clean Room and Trench | The science techs and several other projects will be sharing space in this area during a busy summer. The Steig group anticipates about 1 hour per day of use in the clean room. They will coordinate with others using a schedule. |

• 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 Robin Abbott (robin@polarfield.com).
- ✓ 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) | 70 lbs/24ft ³ |
| Aluminum case with misc. tools, Swagelock fittings, Helium tank regulator, Nalgene bottles (500, 60 and 30 ml) (shipped to NY) | 50 lbs/24ft ³ |
| Aluminum case with sleeping bags, snow boots (3 pair) (shipped to NY) | 35 lbs/24ft ³ |
| Aluminum case with pump, pump filters (shipped to NY) | 65 lbs/24ft ³ |
| Ski bag (hand carry, Jarvis) | 10 lbs/2ft ³ |
| 1 small box will be hand-carried by each team member (Huybers, Donohoe, Kunasek, Hastings, Steig) | <10 lbs/2ft ³ |

• Support Schedule •

| Date | Location | Activity |
|---------------------|----------|---|
| 15 March | Summit | Otter to Summit |
| 15 March – 21 April | Summit | Bally Building, sampling E of the science trench tower (Jarvis, Huybers) |
| 21-24 April | Summit | Turnover (Jarvis, Huybers, Donahue) |
| 24 April – 7 May | Summit | Bally Building, sampling E of the science trench tower (Donahue) |
| 7 – 21 May | Summit | Bally Building, sampling E of the science trench tower (Donahue, Kunasek) |
| 22-24 May | Summit | Turnover (Donahue, Kunasek, Hastings, Wettstein) |
| 24 May | Summit | Bally Building transfer to Sat Camp (latest date for move, can move as soon as Sat Camp is operational) |
| 24 May – 9 June | Summit | Bally Building, sampling at the Sat Camp (Hastings, Wettstein) |
| 10 – 11 June | Summit | Turnover (Hastings, Wettstein, Steig, Flaherty) |
| 11 June – 9 July | | Bally Building, sampling at the Sat Camp (Steig, Flaherty) |
| 10 July | Summit | Last of Steig group leaves Summit |

Please Refer to On-line Schedule (http://www.trumba.com/calendars/summit_schedule) for Travel Dates. All travelers through Scotia should arrive one day prior to departure day from Scotia.

• Field Team Information •

| Name | Location | Date In | Date Out | Email |
|--------------------|---------------|----------|----------|--|
| Donohoe, Aaron | Kangerlussuaq | 04/19/06 | 05/26/06 | aaron@atmos.washington.edu |
| Donohoe, Aaron | Summit | 04/21/06 | 05/24/06 | aaron@atmos.washington.edu |
| Flaherty, Joseph | Kangerlussuaq | 06/09/06 | 07/16/06 | joef@u.washington.edu |
| Flaherty, Joseph | Summit | 06/10/06 | 07/10/06 | joef@u.washington.edu |
| Hastings, Meredith | Kangerlussuaq | 05/21/06 | 06/14/06 | mhasting@atmos.washington.edu |
| Hastings, Meredith | Summit | 05/22/06 | 06/12/06 | mhasting@atmos.washington.edu |
| Huybers, Kat | Kangerlussuaq | 03/13/06 | 04/29/06 | khuybers@u.washington.edu |
| Huybers, Kat | Summit | 03/15/06 | 04/21/06 | khuybers@u.washington.edu |
| Jarvis, Julia | Kangerlussuaq | 03/13/06 | 04/26/06 | jjarvis@u.washington.edu |
| Jarvis, Julia | Summit | 03/15/06 | 04/23/06 | jjarvis@u.washington.edu |
| Kunasek, Shelley | Kangerlussuaq | 05/07/06 | 05/26/06 | shelfish@u.washington.edu |
| Kunasek, Shelley | Summit | 05/08/06 | 05/24/06 | shelfish@u.washington.edu |
| Steig, Eric | Kangerlussuaq | 06/09/06 | 07/13/06 | steig@ess.washington.edu |
| Steig, Eric | Summit | 06/10/06 | 07/16/06 | steig@ess.washington.edu |
| Wettstein, Justin | Kangerlussuaq | 05/21/06 | 06/14/06 | justinjw@atmos.washington.edu |
| Wettstein, Justin | Summit | 05/22/06 | 06/12/06 | justinjw@atmos.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 / 206 534-0308 |

VPR Team Members

| Contact for | Name | Email | Primary Phone(s) |
|-----------------------------|--------------------|--|---|
| Greenland operations | Robin Abbott | robin@polarfield.com | Denver: 303.748.8507 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 |
| Sat phones & comms | Roy Stehle | roy.stehle@sri.com | Menlo Park: 650.859.2552 |
| Medical & MAS | Jason Buening | jason@polarfield.com | Denver: 303.638.6669 |
| Denver operations | Jill Ferris | jill@polarfield.com | Denver: 720.320.6155 |
| Scotia Operations & Customs | Earl Vaughn | earl.vaughn@nyscot.ang.af.mil vprscotia@direcway.com | Scotia: 518.331.3103 |

VPR Offices

| Denver | Kangerlussuaq | Scotia | Summit |
|---|---|---|--|
| 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 Fax: 518.884.2904 | VECO Polar Resources Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Tel: 321.953.9650 Fax: 321.953.9651 |

Other

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

- Safety, Environment, Health, and Permitting •

Permits

Please refer to VPR's *Greenland Guide*, available at <http://www.vecopolar.com> under Greenland, for information about permits required to conduct fieldwork in Greenland.

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.

| Factors |
|---|
| Our primary focus this field season is the collection of gas and aerosol phase NO _y species. It is critical that we be made aware of and coordinate when there is potential for contamination via camp NO _x 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 Bally Building/Sat Camp, plus staging of helium 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.