

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	Konrad Steffen
Institute	University of Colorado, Boulder, Cooperative Institute for Research in Environmental Sciences
Project Title / Grant #	Greenland Climate Network (GC-Net) (NASAAWS)
NSF Program and Manager	Other Agency - NASA, Dr. Waleed Abdalati
VPR Project Manager	Robin Abbott

• Logistics Summary •

AWS Traverse -

In 1995, this NASA project began the installation of a network of AWS sites on the Greenland Ice cap. Each year, a team of four travels to the project's sites via Twin Otter for maintenance, repairs, and upgrades. VPR supports the team by arranging air support for both the NSF-supported and cost-reimbursable portions of their fieldwork.

This season the Steffen field team will visit 10 AWS sites during the 2006 maintenance traverse. The field team consists of four members (Steffen, Huff, Rignot, Kaser) who will take part in the northern AWS traverse. They will bring two North Face sleeping tents, food, and cooking gear for camping on the ice at Tunu-N during their overnight work, while the Kenn Borek Twin Otter crew will fly to Danmarkshavn for the night. Hotel reservations have been made at the Qaanaaq Hotel from 26 April – 1 May, as well as overnight arrangements at Summit a few days later.

Swiss Camp -

Five members (Zwally, Rial, Frei, Sampson, Koenig) will take the C-130 from Schenectady to Kangerlussuaq on May 7, 2006. Two members (Steffen, Huff) will already be in Kanger after completing the AWS portion of their project. During their stay at Swiss camp they will service the AWS SC, JAR1, JAR2 and the small AWS SM1, SM2, and SM3. They will service the permanent GPS sites up10, SC, D10, JAR1, and JAR2, and a new permanent GPS site will be installed 50 km up glacier from Swiss Camp. Furthermore, they plan to measure the accumulation variability with ground penetrating radar along profiles of 50 km length up glacier from Swiss Camp. They will also derive an accurate digital elevation model for the Swiss Camp area (10x10 km) with a rover GPS system. In the vicinity of the Swiss Camp, they will install 10 seismic instruments to measure the small earthquakes underneath the ice sheet. These instruments (on loan from NSF) will be left in the field until August 2006.

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=NASAAWS

• Outstanding Issues •

Issue	Responsibility	Date Completed
Review support plan for accuracy and distribute to all field team members	PI	
Obtain all necessary permits for fieldwork	PI	Permit # will be: 5112-252
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@geosummit.org regarding your project's plans for visiting Summit this season	PI	
- Provide cost estimate for billable support - Develop a Purchase Order with VPR - Provide bill for actual support	VPR PI VPR	January, 2006 January, 2006
Provide Visa information for Louis Frei (ie: number, type, etc) at least 2 weeks prior to departing on 109 th flight	PI	
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	

• Allocations & Services •

Allocations from Inventory

Northern & Southern AWS Traverse & Petermann Gletscher Project

Quant/Unit	Item	Comments
1 ea	Coleman Stove	
1 gallon	Coleman fuel	
1 ea	Cook Set for 5 people- pans, plates, cups, forks, knives, spoons	
3 ea	Iridium phones	(1 with data port) – will use later at Swiss camp
1 ea	First Aid Kit, Expedition	Will use later at Swiss Camp
1 ea	Size 9 pair of bunny boots, sleep kit for George Kaser	

Swiss Camp Project

Quant/Unit	Item	Comments
1 ea	Electric jack-hammer	Still have it, will ship it from Boulder
3 ea	Iridium phones (1 with data port)	Same phone from AWS traverse
1 ea	First Aid Kit, Expedition	From AWS traverse
3 ea	Arctic Oven Tents 8 x 8	On loan, return end of season
1 ea	Jiffy drill – 5" auger w/ 3ea meter extensions	On loan, return end of season

Swiss Camp Procurements by VPR for 2006

Quant/Unit	Item	Comments
3 ea	Gasoline/Benzine – 55 gal drum	Need at put-in
6 ea	Propane (100 lb cylinder– European)	Need at put-in
2 gallon	Two-cycle oil for skidoo fuel mix	
4	12 oz synthetic chain case oil	For new skidoo

For more information on satellite phones, radios, manuals and other field communications support, please visit the VPR communications website at <http://vpr.sri.com>.

This support will be provided by VPR on a direct-billable basis. Please see Appendix I for an estimated cost.

Other Services

Project Allocations	Comments
Clearances will be arranged for 109 th flights and to enter Thule Air Base to pick up Eric Rignot.	VPR will send paperwork to PI Date of arrival/pick up in Thule is 27 April
Arrange Kenn Borek Air Twin Otter support for Northern traverse and Swiss Camp Put-in: April 26 th – May 9 th .	NSF pays through KB Air agreement; Steffen project reimburses VPR for ½ costs
Book Hotel Qaanaaq for 26 th April – 1 May (Steffen, Huff, Kaser, Rignot & Twin otter crew)	Steffen project pays, or the invoice is sent to VECO with 3% process fees added
Arrangements made at Danmarkshavn for the Kenn Borek Air Twin Otter crew to spend the night and refuel the plane along with 1 drum	Estimated date of arrival is 1 May, 2006
Arrangements made for overnight at Summit Camp - ~02 May (Steffen, Huff, Kaser, Rignot & Twin otter crew)	
Air Alpha helicopter charter arranged for 3 people to be flown to Swiss Camp on 18 May 2006.	Will fly to Ilulissat that morning via Air Greenland commercial airplane
Arrangements made for Air Greenland Twin Otter support for Swiss Camp Pull-Out: 23 & 24 May.	VPR is invoiced and pays - Steffen project reimburses for non-NSF supported portion

• 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..
- ✓ 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.

• Support Schedule •

25 April, 2006: Air National Guard Flight from Schenectady – Kangerlussuaq (Steffen, Huff). (Rignot will fly to Thule with military flight from Baltimore arriving 27 April).

25 April, 2006: George Kaser arrives SFJ on commercial flight from Copenhagen

26 April, 2006, Northern AWS traverse

SFJ – NASA-U	Download data: 1 hour stop
NASA U –Upernavic	refuel plane
Upernavic – GITS	search for station
GITS – Qaanaaq	
Total	~ 7.2 hours

27 April, 2006, Northern AWS traverse: if GITS has been found	
Qaanaaq –GITS	Extend tower: 3 hours
GITS – Thule	
Thule - NEEM1	New AWS: 3.5 hours
NEEM1 - Qaanaaq	
Total	~ 4.0 hours
28 April, 2006, Northern AWS traverse	
Qaanaaq–Petermann ELA	Download data: 1 hour stop
Peterm. ELA - Peterman	remove AWS and GPS: 2.5 hours
Petermann-Qaanaaq	
Total	~ 3.7 hours
29 April, 2006, bad weather day	
30 April, 2006, bad weather day	
1 May, 2006, Northern AWS traverse (bring jet fuel to Humboldt to refuel)	
Qaanaak – Humboldt	Extend AWS tower: 4 hour stop
Humboldt – Tunu N	4 PAX stay with camping gear, extend AWS
Tunu N – DMI	empty flight to coast
Total	~ 5.4 hours
2 May, 2006, northern AWS traverse (bring jet fuel to Tunu N to refuel)	
DMI – Tunu N	pick up 4 PAX and camping gear
Tunu N – NASA E	extend AWS tower: 4 hour stop
NASA E – Summit	download AWS: stay over night
Total	~ 6.3 hours
3 May, 2006, refuel at Summit and stay over night	
Summit – Crawford P	Download AWS: 1.5 hours stop
Crawford P – Swiss camp	Offload cargo, check station
Swiss camp – SFJ	
Total	~ 3.5 hours
4 and 5 May, 2006, bad weather day	
6 May, 2006: southern AWS traverse, 3 PAX	
SFJ – Dye2	Download data: 4 hour stop
Dye2 – Saddle	Download data: 1 hour stop
Saddle – NASA SE	Download data: 1 hour stop
NASA SE – SFJ	
Total	~ 3.3 hours
7 May, 2006: Air National Guard Flight from Schenectady – Kangerlussuaq (Rial, Sampson, Frei, Koenig)	
8 May: George Kaser returns with commercial flight via Copenhagen	
8 May, 2006: 3 PAX with cargo for Swiss Camp	
SFJ – Swiss Camp	Cargo and PAX
Swiss Camp – SFJ	empty flight back
Total	~ 2.5 hours
8 May, 2006: 3 PAX with cargo for Swiss Camp	
SFJ – Swiss Camp	Cargo and PAX
Swiss Camp – SFJ	empty fuel drums out
Total	~ 2.5 hours

9 May, 2006: 1 PAX with cargo for Swiss Camp
 SFJ – Swiss Camp Cargo and PAX
 Swiss Camp – SFJ empty fuel drums out
Total ~ **2.5 hours**

18 May, 2006: 3 PAX, helicopter flight to Swiss Camp (Schroff, Frei, and Grossman)
 SFJ – Swiss Camp Cargo and PAX
 Swiss Camp – SFJ empty flight back
Total ~ **1 hour**

23 and 24 May, 2006, 2003: 10 PAX with cargo from Swiss Camp (3 flights?)
 SFJ – Swiss Camp fuel for next season (propane)
 Swiss Camp – SFJ PAX and cargo
Total ~ **2.5 hours**

26 May, 2006: Air National Guard Flight from Kangerlussuaq to Schenectady
 (Steffen, Zwally, Huff, Rial, Sampson, Frei)

• Swiss Camp Schedule • (Steffen, Neumann, and Anandakrishnan Geobricks) project

Date	Location	Activity
18 April	NY > Kanger	3 people from Neumann project arrive in Greenland
21 April	Kanger > Swiss Camp	Neumann put-in w/ Borek Twin Otter (2 flights) – Setting up tent camp
22 April	Kanger > Swiss Camp	Remaining gear is flown to camp w/ Borek Twin Otter
~03 May	Swiss Camp	Steffen AWS team stop by to drop off gear via Borek Otter
08/09 May	Kanger > Swiss Camp	Camp Put-In with Borek Twin Otter for 7 members of Steffen field team
18 May	Swiss Camp	Helicopter arrives with 3 people for Steffen project
23/24 May	Swiss Camp Pull-Out	Steffen and team pull out of Swiss Camp, (possibility for Neumann/Catania/Rumrill team pull-out during this time)
02 June	Swiss Camp > Kanger	Final pull-out of Neumann project w/ Air GLTwin Otter (if required)
07 June	Kanger > Swiss Camp	Anandakrishnan “Geobricks” project visits Swiss Camp for the day
17 Aug	Moulin > Swiss Camp	Steffen returns to Swiss Camp to pick up GPS units
16-19 Aug	Ilulissat > Swiss Camp GPS sites > Ilulissat	2 people of Neumann project fly on Air Alpha helicopter to pick up GPS units in the area of Swiss Camp

• Field Team Information •

Name	Location	Date In	Date Out	Email
Frei, Hansjurg	Kangerlussuaq	TBD	05/24/06	
Frei, Louis	Kangerlussuaq	05/07/06	05/26/06	
Grossman, Daniel	Kangerlussuaq	TBD	TBD	
Huff, Russell	Kangerlussuaq	04/25/06	05/26/06	russell.huff@colorado.edu
Koenig, Lora	Kangerlussuaq	05/07/06	06/14/06	
Koenig, Lora	Summit	05/24/06	05/12/06	
Rial, Jose	Kangerlussuaq	05/07/06	05/26/06	
Rignot, Eric	Kangerlussuaq	04/27/06 via AMC flight to Thule	5/04/06 via Air GL to Copenhagen	eric@adelie.jpl.nasa.gov
Sampson, Kevin	Kangerlussuaq	05/07/06	05/26/06	
Schroff, Karl	Kangerlussuaq	TBD	05/24/06	
Steffen, Konrad	Kangerlussuaq	04/25/06	05/26/06	konrad.steffen@colorado.edu
Zwally, Jay	Kangerlussuaq	05/07/06	05/26/06	jay.zwally@gsfc.nasa.gov

• Project Contact Information •

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	Konrad Steffen	konrad.steffen@colorado.edu	303 492-4524 / 303 492-1149

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 Buenning	jason@polarfield.com	Denver: 303.638.6669
Thule operations	Susan Zager	susan@polarfield.com	Denver: 720.320.6159
Denver operations	Jill Ferris	jill@polarfield.com	Denver: 720.320.6155
Scotia Operations & Customs	Earl Vaughn	earl.vaughn@nyscot.af.mil vprscotia@direcway.com	Scotia: 518.331.3103
Purchase Orders	Jan Zanetell	Janet.Zanetell@veco.com	303.268.3553

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
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@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 Advisory Systems (MAS)

If you find yourself with a need for medical advice/assistance do not hesitate to contact Medical Advisory Systems. When first arriving to your field location please follow MAS' check in procedure to activate the MAS service. A MAS representative will provide detailed instructions for how to use the MAS service in future emergencies. It is crucial that each field team member understand how to use the MAS service in the field. For further information on MAS please visit our website <http://www.vecopolar.com/> and navigate to Medical>Remote Medical Services/Kits.

MAS Check-In Procedure

Call 410.257.9504/9505/9506 and be ready to provide the following information:

Your Name

Your contact PI information

Camp information (indicate that you are VECO Polar Resources-supported researchers conducting and the location in which you are conducting remote work)

Risk Assessment

Risk	Mitigation
Problems with ground transportation of cargo	Allow ample time to arrive in NY from Boulder and obtain all customs clearances.
Equipment failure	Test systems prior to deployment. Depending on the timing, fly replacement item from SFJ to Ilulissat via commercial GL Air, then Air Alpha helo to Swiss Camp.
Safety – includes weather, accidents, etc	Contact SFJ Met office (299) 841022 for reliable weather forecasts. Always travel in twos. Always carry Iridium phone. Check in with Swiss Camp and Kangerlussuaq office. Crevasse rescue training given to all field members.
Air Support delays during AWS traverse.	Add extra days in the schedule for bad weather or alter or omit destinations so you can meet your time schedule.
Permitting	Submit early and follow up often.

• 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– NASA SWISS CAMP / AWS SUPPORT
Planning field season prior to field deployment
Purchasing fuels and gas for field camp
Cargo shipment via 109th to/from SFJ
Logistics support arranging Twin Otter charter
Logistics support in Kangerlussuaq prior to field work
Communication support during AWS maintenance in the field
Office support at KISS (email, fax, phone)

Factors– NSF PETERMANN GLACIER and AWS SUPPORT
Planning field season prior to field deployment
Logistics support arranging Twin Otter charter
Logistics support in Kangerlussuaq prior to field work
Field equipment and camp equipment support
Communication support during field project
Office support at KISS (email, fax, phone)
Post-expedition briefing and feed back

• 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.