

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	Jihong Cole-Dai
Institute	South Dakota State University
Project Title / Grant #	Collaborative Research: An Isotope MIF Study of Volcanic Events in Greenland Ice Cores (0612461)
NSF Program and Manager	NSF/OPP ANS, Dr. Jane Dionne
VPR Project Manager	Sandra Starkweather

• Logistics Summary •

This is a collaborative project between 0612461 (Cole-Dai, SDSU, LEAD) and 0612422 (Thiemens, UCSD). Researchers plan to collect several shallow ice cores (about 450m total) at an undisturbed site close to Summit Station. In their institute labs, the scientists will experiment on the core using a recently developed isotopic method, which analyzes volcanic sulfate signatures in the ice record.

During summer 2007, a team of 4 researchers and 2 ICDS drillers will travel to Summit Station. They will spend 4 weeks on site drilling two 150 m cores and two 75 m cores (all 4 inch cores). The cores will be retrograded to Kangerlussuaq for storage at -15C until they are returned to Scotia and sent via refrigerated truck to NICL. The field team also will dig a pit for taking snow samples at the study site.

For this project,

- VPR will arrange/pay for Kangerlussuaq user days for the team of up to six transitioning to/from the field, and for the team's stay at Summit Station. VPR also will provide core-storage boxes and a small amount of field/safety equipment and coordinate ANG travel for the team and cargo.
- ICDS will provide the drill rig and a two-person drill team.
- NICL will archive the ice core in its Denver facility.

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=0612461

• Outstanding Issues •

Issue	Responsibility	Date Completed/ Comment
Review support plan for accuracy and distribute to all field team members	PI	
Obtain all necessary permits for fieldwork	PI	Permit No. 07-205 3/10/2007
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	2/27/2007
Medical Clearance completed 8-6 weeks before desired deployment date. As of 5/2/07, the following had completed this process: Cole-Dai (3/7/07), Lanciki (4/11/07), Bergeron (3/13/07)	Thiemens Savarino Gacke	Thiemens and Savarino have submitted paperwork to NSF. Gacke is in progress.
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	
Complete Critical Success Factors	PI	3/29/2007
Determine final drilling site, pending survey	VPR/SCO	

• Allocations & Services •

Allocations from Inventory

Qty	Item
8 ea	8x8 Arctic Oven sleep tents
16 ea	Thermal sleeping pads
2 ea	Nansen sled
1 ea	Siglin sled (for temporary use)
2 ea	Skidoo
2 ea	Survival bags for transit to work site
1 ea	Simple "floorless" tent & field latrine
1 ea	5 kW generator (for standby)
1 ea	1 qt funnel
1 ea	5 gal jerry cans for gasoline
2 ea	55 gallon drum gas for generator
20 ea	1.5" x 12 bamboo with flags
20 ea	1.5"x8" bamboo (no flags)
5 ea	Sheets ½" plywood
7 ea	40 lb case of eutectics (Johnny blue ice)
1 ea	10x20 Arctic Oven work tent
1 ea	Plywood floor for work tent
1 ea	Electric space heaters for work tent
1 ea	Fan for air circulation in work tent

6 ea	Folding chairs for work tent
3 ea	Folding table 2'x6' for work tent
1 ea	Emergency kit (sleeping bag, stove, emergency food) for work tent
1 ea	1-day use of handheld GPS for locating coring site
3 ea	Handheld radio, VHF
3 ea	Shovels, assorted size/handle lengths
2 ea	Small tarps, any color
1 ea	White tarp
1 ea	Small microwave oven for work tent
1 ea	Electric Kettle and/or Hot plate
8 ea	2 Qt Thermoses
6 ea	Utensils and insulated mugs
1 ea	5 gallon water tank for drinking water

Other Services

Project Allocations	Comments
8' of table/desk space in the GH	This group will be accommodated in the GH summer office.
ICDS drillers and 4" drill	Provided by ICDS.
Core boxes and sleeves	Provided by VPR.
Frozen sample handling/shipment	The science group will prepare (box, label internally for science and externally for shipment) firm core and ice samples in the field. Core/samples will need to be stored in cold (appx. -20 C) conditions. VPR will ship the core from Summit to NICL in Lakewood, CO, arranging a truck and driver with robust back-up plan for transporting ice core boxes from Scotia to NICL. VPR will email and phone NICL POC (Eric Craven, nicl@usgs.gov, phone (303) 202-4830) well ahead of time to arrange delivery so that personnel are ready to receive the cores, and to ensure truck clearance to the NICL site.
Drilling Location	Coordinates, north of the skiway in undisturbed snow, pending May survey

• 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 •

Air National Gu All cargo required for your project should arrive in Scotia, NY, **no later than 2 weeks prior** to the desired northbound ard (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)
- ✓ 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
Ice cores and snow samples in core boxes (85 boxes, plus tubes)	984 ft ³ @ 12750 lbs (filled weight)
Ice core processing tools and snow sampling tools, 2 Hardigg boxes	
ICDS Cargo	See Appendix

• Support Schedule •

Date	Location	Activity
6/3/07	Scotia	Travel to Greenland on ANG flight
6/5/07	Kanger	Travel to Summit
6/5-7/10	Summit	Ice coring
7/11	Summit	Pull-out from Summit with ice core cargo
7/13	Kanger	Travel to Scotia with ice core cargo
TBD	Scotia	Ship ice cores to NICL

• Field Team Information •

Affiliation	Name	Location	Date In	Date Out	Email
SDSU	Jihong Cole-Dai	Kangerlussuaq	6/3/2007	7/13/2007	jihong.cole-dai@sdstate.edu
	Jihong Cole-Dai	Summit	6/4/2007	7/12/2007	
UCSD	Mark Thiemens	Kangerlussuaq	6/17/2007	7/13/2007	mht@chem.ucsd.edu
	Mark Thiemens	Summit	6/18/2007	7/12/2007	
UJF	Joel Savarino	Kangerlussuaq	6/3/2007	7/13/2007	jsavarino@lgge.obs.ujf-grenoble.fr
	Joel Savarino	Summit	6/4/2007	7/12/2007	
SDSU	Alyson Lanciki	Kangerlussuaq	6/3/2007	7/13/2007	Alyson.lanciki@sdstate.edu
	Alyson Lanciki	Summit	6/4/2007	7/12/2007	
ICDS	Terry Gacke	Kangerlussuaq	6/3/2007	7/13/2007	tlgontheice@hotmail.com
	Terry Gacke	Summit	6/4/2007	7/12/2007	
ICDS	Beth Bergeron	Kangerlussuaq	6/3/2007	7/13/2007	bellanoche@hotmail.com
	Beth Bergeron	Summit	6/4/2007	7/12/2007	

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	Jihong Cole-Dai	Jihong.cole-dai@sdstate.edu	605 688-4744/ 6050688-6364
Collaborator	Mark Thiemens	mthiemens@ucsd.edu	858 534-6732 /

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
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 yprscotia@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

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 47 96 82 50 11 (Norway) 1 209 658 7142 (USA, messages checked weekly)
NICL Eric Craven (POC)	nicl@usgs.gov	(303) 202-4830

- 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.

Factors
Safe arrival of field team and equipment (ice core drill, boxes, tools, etc at Summit
Providing all requested supplies and infrastructure to assure successful completion of drilling by pull-out date
Safe arrival of ice cores at NICL

- 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.

- Appendices •

ICDS Cargo List

ICDS Cargo List

<u>Item #</u>	<u>Package type</u>	<u>Weight</u>	<u>Cubic feet</u>	<u>Dimensions</u>	<u>Content description</u>
1 of 10	Black hard box	140 lbs.	8 cu.	(105x11x11)	Inner & Outer Barrels
2 of 10	Aluminum box	165 lbs.	8 cu.	(106x12x11)	Inner & Outer Barrels
3 of 10	Hardigg box	182 lbs.	8 cu.	(32x20x20)	EG 5000 Honda Generator
4 of 10	Hardigg box	136 lbs.	12 cu.	(29x27x26)	2 @ Sheave Assemblies
5 of 10	Hardigg box	61 lbs.	7 cu.	(25x24x19)	Electronics Readout Box
6 of 10	Ciba tube	15 lbs.	3 cu.	(7x7x75)	Empty tower tube
7 of 10	Ciba tube	125 lbs.	3 cu.	(7x7x75)	Anti-torque & motor sections
8 of 10	Ciba tube	132 lbs.	3 cu.	(7x7x75)	Anti-torque & motor sections
9 of 10	Ciba tube	136 lbs.	3 cu.	(7x7x75)	Anti-torque & motor sections
10 of 10	Plywood crate	approx. 1600 lbs.	113 cu.	(83x49x41)	400 meter Winch including these listed items: <ul style="list-style-type: none"> <u>3 @ Black tower sleeves w/ ropes</u> <u>12 @ Aluminum Pickets/Anchors</u> <u>2 @ Stainless Steel Core Trays</u> <u>1 @ Spare Winch Gear Reducer</u> <u>1 @ Spare Winch Drive Motor</u> <u>2 @ Variac Controllers (tested 4/18/07)</u> <u>1 @ Box w/ solder iron</u> <u>1 @ Plastic Box with Cutters (15 sets of assorted angles)</u> <u>1 @ Hardigg w/ 2 Drill Heads and parts (1 collett & 1 regular head)</u> <u>1 @ Hardigg w/ 4 Slip Rings (2 downhole & 2 winch)</u> <u>2 @ UHMW "litl men" w/ foam head cover</u> <u>1 @ Steel 100 meter measuring tape</u> <u>1 @ Plastic tool box w/ assorted hand tools</u> <u>1 @ Metal tool box w/ assorted hand tools</u> <u>1 @ Hardigg w/spares, tools, belts, & plugs</u> <u>2 @ 100' Electrical cords (1@ 120 Volt & 1@ 220 Volt)</u> <u>2 @ Tarps w/ropes</u> <u>1 @ Aluminum box w/electronic readout</u> <u>2 @ shovels (1 Aluminum grain scoop & 1 long handle steel)</u>