

• Project Information •

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Institute	Ohio State University, Byrd Polar Research Center, Department of Geological Sciences
Project Title / Grant #	Collaborative Research: IPY: POLENET/Greenland: Using Bedrock Geodesy to Constrain Past and Present Day Changes in Greenland's Ice Mass (0632320)
NSF Program and Manager	US\Federal\NSF\OD\OPP\ARC\ANS, Dr. Jane Dionne
VPR Project Manager	Robin Abbott

• Field Summary •

This grant (a collaboration with Csatho, SUNY, 0632310) is part of the US contribution to the international Polar Earth Observing Network, or POLENET consortium, an IPY-endorsed effort by more than 20 nations to improve geophysical observations of Earth's polar regions, largely using autonomous platforms.

For this POLENET project, the research team will work with colleagues from the Danish National Space Center (DNSC) and the University of Luxembourg (with support from UNAVCO personnel) to construct a network of over 36 continuous GPS stations ringing Greenland's perimeter. This network, called G-NET, will measure "post-glacial rebound"—that is, how much Greenland's land mass rises in response to changes in the ice sheet's weight as it loses mass due to melting. The researchers will install the stations during 2007 and 2008.

In July 2007, Twin Otter advance work pre-staged batteries and established fuel caches to support helicopter operations for the August 2007 installations. Then, in late July/early August, two UNAVCO personnel will travel to Greenland and install the GPS receiver at KAGA, near Ilulissat. A few days later, a field team of about 10 will arrive in Greenland and (with the UNAVCO personnel) disperse in three teams of three to the hubs from which the work will be based: Upernavik/Thule, Narsarsuaq, Ummannaq, and Kulusuk/Tasiilaq. The teams will work simultaneously, spending approximately three weeks in the field.

The installations are planned as day trips requiring two helicopter round trips at each installation. The teams will, however, carry camping and safety gear in the event of delays. Air Greenland will provide helicopter support for these installations via subcontract to VPR. When the work is completed, the researchers will depart Greenland either by ANG flights or, if those are not available, via commercial air.

In August, VPR also will subcontract with Air Greenland for Twin Otter support to lay fuel caches that will enable access to certain sites in the SE area.

In April 2008, a team will return to install the remaining third (northern- and northeastern-most sites). Fixed-wing aircraft will support this effort. The monuments will remain in the field as long as funding and interest in the data continues. At the conclusion of these, NSF will support removal of monuments for which it has custodial responsibility. (See attached map and list of sites).

For this project,

--UNAVCO will provide GPS receivers and technical support as the field team installs the instruments around Greenland, ongoing support to permanent sites, and data storage.

--VPR will provide ANG coordination including cargo shipment to project hubs in Greenland, Twin Otter and helicopter air charters; lodging arrangements within Greenland; and camping equipment, food, and communications / safety gear.

For the complete VECO Polar Resources (VPR) online project record for this grant, including science objectives, go to: http://www.vecopolar.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=0632320

• Outstanding Issues •

Issue	Responsibility	Comments
Review project support plan for accuracy, edit/add as needed, and distribute to all field team members.	PI and team members	Completed
Obtain all necessary 'Area Allotment' permits for fieldwork	Bo Madsen from DNSC submitted in mid-April	Area allotments have been granted. See Appendix for letter with map showing national responsibilities
Receive Charter Agreements from Air Greenland for the helicopter and Twin Otter work so a contract for all flights can be drawn up.	VPR/Air Greenland	Last charter agreement received on 31 July
Visit all hyperlinks and review all documents referred to in this support plan	Field Team Members	
Medical Clearance completed 8-6 weeks before desired deployment date	Team members	All have been approved
University of Luxembourg (Tonie van Dam) will contribute a sum of €40,000 (~US \$54,000) in 2007.	Van Dam/VPR	In process
Important: Bring 2 different forms of picture ID. Passports are mandatory for entry into Greenland.	Field Team Members	
Complete Critical Success Factors	PI	
Designate one person in each group as the 'lead,' the primary person responsible for making decisions in the field.	PI	See designations in field team table (below)
Ship GPS equipment, batteries, and field tools to Stratton Air Base so the 109 th Air Guard C-130s can fly it to Kangerlussuaq, Greenland, during their normal flight periods.	UNAVCO	Completed
Stage equipment at 2007 hub locations	VPR	Ongoing, will be complete on 7 Aug
Arrange for secure storage at hub location(s)	VPR / DNSC	Completed (POC details for cargo below)
Arrange clearances to Thule Air Base/hotel rooms for the Air Greenland pilots putting out fuel caches in July	VPR	Clearances have been obtained
Purchase airline tickets for field team members either to Stratton Air Base or to point of arrival/departure in Greenland.	DNSC, U. Luxembourg, UNAVCO & OSU	Completed by the different parties
In the event fieldwork is not complete by 30 August and 109 th ANG departs, purchase tickets for US participants currently scheduled to return to US via ANG.	VPR	Pending
Carry a credit card to cover unexpected costs. VPR will reimburse legitimate travel/support expenses at the close of the season.	Field Team Members	

Carry some cash for times when credit card isn't taken. Recommended 2000 DKK (USD accepted in Thule)	Field Team Members	
Develop a daily call-in schedule with VPR Kangerlussuaq office for each team.	Team Leaders / VPR	Arranged upon arrival in Kangerlussuaq
Ensure safety procedures are addressed for installation operations. The entire team should meet with the helicopter pilot prior to the flight to go over the 'plan for the day' and get a safety briefing. The team leader should ensure that all safety gear (camping equipment, food, fuel, and Iridium phone) is on the helicopter.	Team leaders	

• Project Allocations & Services •

Allocations from Inventory

Quant/Unit	Item
9 ea	Iridium Phones (3 phones per team) provided by SRI/VPR (team members will pick up the phones in Kangerlussuaq after arriving in Greenland)
3 ea	Air Band radios (one per team)
3 ea	Remote medical kits plus call-in service (one per team) – see MAS section, below.
3 ea	Small GPS unit (1 ea per team)
NOTE	DNCS provides rifles
Camping Equipment for each team of 3 people:	
Below list of equipment is contained in 2 dry bags weighing approx 50lbs ea without the fuel added. All team members must be familiar with the bags' contents prior to going into the field and may want to repack them. All tents should be set up prior to field deployment. Fuel canisters will need to be filled, lighters or matches added, etc	
2 ea	Dry Bags for gear (no backpacks are issued, if you prefer one, bring your own)
1 ea	Tent (REI Geo-Mtn 3) (rocks at the installation site will be used as tent anchors / stakes)
2 ea	Big Agnes Mad house 2 Tent (rocks at the installation site will be used as tent anchors / stakes)
3 ea	Sleeping pads (Thermarest)
~18 ea	Tent stakes
3 ea	Sleeping bags– Kelty Zephyr down, long, 66" shoulder width x 86" long, -15C bag
3 ea	Lightweight Bivy bags
2 ea	Multi-fuel stoves – MSR Dragonfly (1) and Whisperlite (1)
6 ea	Fuel bottles for stoves (22 oz size)
2 ea	Cook pots for boiling water
3 ea	Bowls
3 ea	Spoons
~24 ea	Dehydrated dinners
~24 ea	Power bars
~24 ea	Dried soups
Qty	Hot chocolate/coffee
2 ea	Roll of toilet paper
Qty	Parachute cord
1 ea	Foldable spade
3 ea	Insulated Mugs
3ea	Thermos for hot drinks
1 pkg	Wet wipes (disinfecting towels)
1 ea	Small first aid kit (MAS kit also included in one of the dry bags)
2ea	Dish towels
NOTE	Lighters /matches and fuel are the responsibility of the field team, as are all items not on this list (i.e., additional food, empty jugs for obtaining water, bug spray, cold weather clothing, etc).

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

Other Services

Service	Comments
VPR will purchase Air Greenland airline tickets for US team members for flights to Kulusuk, Tasiilaq, Upernavik, and Uummannaq. VPR also has purchased one ticket to Uummannaq for DNSC, Olesen. Back up tickets for all team members (Madsen, Johns, Kendrick) from Upernavik to Thule have been booked.) All tickets will be distributed in Kangerlussuaq.	Tickets will be changeable 'green' tickets and will be distributed in Greenland. If changes become necessary, please call the Kangerlussuaq office to revise booking. See below schedule for tentative dates. Any unused tickets must be returned to VPR.
VPR will arrange clearances for flying on 109 th US Air National Guard planes as well as for entering Thule Air Base and flying back to US on AMC flight.	See below schedule for tentative dates. If Guard cannot provide return flight, VPR will arrange commercial tickets for US members.
VPR will coordinate and pay for air charters within Greenland.	Flexibility is required when working with Air Greenland, as commercial flights to local villages generally take priority over science charters. This may mean spending nights at the field sites, or waiting in town for helicopter availability. See support schedule for more details.
VPR will arrange and pay (via direct bill if possible) for most accommodations within Greenland.	Some accommodations may require cash payment. Researchers must pay for those out of pocket for later reimbursement by VPR. See Accommodations table for more info. VPR will not pay for/reimburse food, drink, or Internet charges.
VPR will arrange for the staging of cargo from Kangerlussuaq to all hub sites within Greenland. VPR will coordinate with DNSC to ensure secure storage of cargo at hub sites.	Thule, Narsarsuaq, & Kulusuk/Tasiilaq cargo staged by C-130, Upernavik, Uummannaq via Air GL freight system. Air GL is responsible for storage of all cargo shipped via commercial airfreight. Local airport authorities in Kulusuk and Narsarsuaq cargo will receive and store cargo at those sites until the field team arrives.
VPR will arrange a truck for use by the team while at Thule.	See below schedule for tentative dates

• Travel Information •

Locations

Please visit <http://www.vecopolar.com> and navigate to the Greenland menu for en route and location-specific Greenland information for traveling on the 109th Air Guard. Prior to deployment, all team members should become familiar with the content of the *Greenland Guide* available electronically via our web site's Greenland menu (<http://www.vecopolar.com>).

En-route travel

NOTE: All field team members should carry a credit card to cover unexpected costs. VPR will reimburse legitimate expenses submitted on an expense report with receipt(s) attached. Always keep receipts!

Most of the US personnel will arrive in Greenland via the 109th Air National Guard on 6 August. For the return flight from Greenland to the US, a commercial flight may be necessary since the 109th Air Guard will discontinue Greenland operations at the end of August. If fieldwork ends after August 30, VPR will provide commercial tickets for return to the US. The Thule field team members returning to the US will fly from Thule to Baltimore on a military chartered flight that departs every Friday.

NOTE: All non-US participants will be responsible for purchasing their own return flights from Greenland. VPR recommends that all tickets purchased should be changeable and not restricted due to possible schedule changes.

Accommodations

Location	Quantity	Dates	Notes
Narsarsuaq – Hotel Narsarsuaq	2 singles, (Andre, Arne) 1 double, (Dana, Abel)	08/07/07 – 8/22/07	Reserved for field season under “VECO”. Breakfast incl Direct bill to VPR Booking ref: 005735 Phone: 665253
Qaarsut – Rooms arranged at Air Greenland housing, (no hotels)	Accommodation for 2 (Olesen, Brown)		TeleTek / Klaus Georg Jensen will meet GNET team in Qaarsut and assist with installations & accommodation
Uummanaq – Hotel Uummanaq	3 singles (Jensen, Olesen, Brown)	24- 28 Aug	Hotel Phone: 951518
Kulusuk – Hotel Kulusuk Contact person: Yewlin Tay	3 singles (Twin Otter crew)	08/09/07 – 08/14/07 Fuel cache deployments	Breakfast incl Direct bill to VPR Phone: 986993 / Cell: 598180
	2 singles (Nylen, Willis)	08/08/07 – 08/15/07 Installation	
Tasiilaq – Hotel Angmagssalik Contact person: Yewlin Tay	1 single (Kahn)	08/11/07 – 08/29/07	Hotel Angmagssalik Phone: 981293, Cell: 598180 Helicopter coordination during week 1 ops, working closely with Kulusuk team
	2 singles (Willis, Nylen)	08/15/07 - 08/29/07	Kulusuk-based team cargo coordinators move to Tasiilaq after week 1 ops
Upernavik - Contact: Jens Peter Nielsen	Flat/house w/ toilet and cooking facilities; bath for showers nearby (Madsen, Johns, Kendrick)		Payment by cash only (450DKK / night) Jens Peter will provide airport-flat transport Phone: 964232.
Kullorsuaq - Contact: Jens Peter Nielsen	4 bed house w/ toilet and kitchen (Madsen, Johns, Kendrick)		Bring sleeping bag Jens Peter will provide more info on arrival Phone: 964232.
Thule – North Star Hotel	1 single room (Okal)	08/07/07 – 08/24/07	One member will leave 8/24; the others will complete northern sites.
	3 single rooms (Johns, Madsen, Kendrick)	08/20/07 – 09/07/07	

NOTE: Any other costs incurred at the hotel (food, drink, Internet, etc) are the responsibility of the team member and must be paid at checkout.

• Cargo and Customs •

Customs

For US participants, 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.

- ✓ 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). A Customs Registration Form (#4455) is required for any items coming back into the US.

Cargo - (All cargo has been delivered)

Items	Description
Equipment to Ilulissat for KAGA site.	~1500lbs batteries/frames, etc
Equipment at Thule	8900lbs batteries/frames already in Thule along with 23ea/55gal drums (see note below)
Equipment/batteries for Tasiilaq sites (includes empty drums)	~13,000 lbs (5896kg) / 1140 cu ft
Equipment/batteries for Upernavik sites	~ 2130 lbs (966 kg) / 73cu ft (2cu meter)
Equipment/batteries for Uummannaq sites	~ 2155 lbs (978kg) / 73cu ft (2 cu meter)
Equipment/batteries for Narsarsuaq sites	~ 5338lbs (2420kg)/200cu ft (5.6cu meter)
Equipment/batteries to be flown to Thule	24 Solar panels x 28.5 lbs = 684 lbs 24 Hardigg Boxes x ~125lbs = 2500 lbs 6 Antenna Monuments x 32 lbs = 192 lbs 1 Frame = 110lbs 25 batteries (12 batteries for T4 site and 13 batteries for Thule sites) = 1750 lbs Total = 5236 lbs
Terminal covers for the batteries for shipment via Twin Otter and helicopters	
Excess Baggage (Air Greenland has a list of GNET personnel with permission to charge to VECO)	Depending on the timing of events, minimal cargo (i.e. tools, camping bags) may be carried as excess baggage on Greenland passenger flights. VPR has arranged for excess baggage charges to come directly to VPR. Contact Pani Vaengtoft at the Kangerlussuaq Ticket Office (ph: 843615) if there are questions at check-in.

Pre-staged Cargo Details

Thule	In May, 8900 lbs of GNET batteries and frames were delivered to the VPR warehouse along with 23 empty drums. A Twin Otter established fuel caches and some batteries 5-11 July. During the week of 23 July, the remaining gear was flown to Thule via a 109th Air Guard C-130.
Upernavik/ Uummannaq	Cargo bound for this hub was shipped by UNAVCO to Stratton Air Base, flown to Kangerlussuaq on 9 July, and forwarded to Upernavik and Uummannaq by Air Greenland Air Freight soon after.

Kulusuk / Tasiilaq	During the flight week starting on 23 July, a C-130 flew to Kulusuk to deliver the GNET cargo consisting of all GPS batteries and equipment as well as 38 empty steel drums that will be used for putting in a fuel cache to support the helicopter operation during August. VPR provided the C-130 airlift to Kulusuk. The point-of-contact for the delivery with GLV in Kulusuk is Benny Mouzinsky (ph: 986988). Cargo is being stored in the firehouse near the runway. An Air Greenland Twin Otter will fly to Tuktilip and Sodalen in August to put in fuel drums and batteries.
Narsarsuaq	A 109 th C-130 will fly from Kangerlussuaq to Narsarsuaq with all GNET cargo and the passengers on 7 August where everything will be dropped off. The point-of-contact for the delivery with GLV in Narsarsuaq is Knud Erik Kleist (ph: 665266).

• Field Schedule •

For a general project narrative, see Field Summary on the first page of this document.

After arriving on August 6th in Kangerlussuaq, personnel will disperse in three teams to the three project hubs: the southeast team to Kulusuk / Tasiilaq; the northwest team to Upernavik / Thule; and the third team to Narsarsuaq / Uummannaq. The teams will stay in hotels or other lodging arranged by VPR.

Two people on the southeast team (Nylen, Willis) will begin the field season by basing in Kulusuk to organize, prepare, and stage all cargo for the helicopter operations, coordinating closely with the third team member (Kahn) who is staged in Tasiilaq. Each day helicopters will fly from Tasiilaq to Kulusuk to pick up the equipment en route north to the installation site. Once the cargo is well organized, Nylen and Willis will move to Tasiilaq for the rest of the field season.

Helicopters will make two flights to each installation site. On the first, technicians, GPS equipment and camping gear packed into 'dry bags' will be dropped off at the remote site. About 5 hours later, the helicopter will return to the site with the batteries needed to run the GPS monuments; the team will finish the installation in about 1.5 hours. The researchers will then return via helicopter to their hub.

Note: if delays occur with the installation, team members will call to and inform the helicopter that the pick-up needs to be delayed. Each field team should be prepared with camping gear, food, fuel, etc for staying in the field if necessary. Phone numbers to helicopter base and pilots should be obtained before the flight.

PLEASE NOTE: The airports in Greenland work under limited hours of operation. Those wishing to fly outside of those hours must request an airport opening. These can cost ~\$1000 USD for a three-hour increment if requested at the last minute; 24 hour notice reduces the rate by 25%. If you think an airport opening request needs to be made, please alert VPR in Kangerlussuaq and work with your pilot and/or the local airport authorities.

When the work is complete, the teams will leave Greenland either by military flight (if those are available) or via Commercial Air.

Date	Location	Activity
31 July	CPH > Kangerlussuaq	Two UNAVCO people (Nylen, Johns) arrive in Greenland to install the GPS at KAGA site.
01 Aug	Kangerlussuaq > Ilulissat	Two UNAVCO people fly to Ilulissat
2-3 Aug	Heli to KAGA	Installation takes place and UNAVCO team returns to Ilulissat (flight hours paid for by DNSC)
6 Aug	Ilulissat > to Kangerlussuaq	Commercial Air from Ilulissat to Kangerlussuaq (Nylen). Johns will remain in Ilulissat to wait for teammate arriving on 7 Aug.
6 August	Kangerlussuaq	C-130 from NY arrives with 4 field team members (4 from OSU)

KULUSUK & TASIILAQ G-NET TEAM (Helicopter operations highlighted below)		
8 August	Kulusuk/Tasiilaq	Nylen, Willis arrive Kulusuk. They remain for 1 week to organize and prefab monuments, then move to Tasiilaq
9-14 August	Southeast Coast	Air Greenland Twin Otter bases at Kulusuk to fly fuel and batteries at fuel cache sites, Sodalen (68 12' 30"N / 31 23' 39"W) and Tugtilip (66 22' 08"N / 35 07' 50" W). Details below
11 August	Tasiilaq >Kulusuk >Tugtilip>Pilappik (K1) > return	The Bell 222 from Tasiilaq to Kulusuk to pick up 2 people and cargo and fly to Pilappik (K1) via the Tugtilip fuel cache. The team will be dropped off to begin the installation while the helicopter will return to the Tugtilip cache to pick up approx 282 kg of batteries then back to field site to deliver the gear and wait for the 2 team members to complete the installation.
14 August	Tasiilaq> Kulusuk > Tugtilip >Sodalen (V2) > return	The Bell 212 from Tasiilaq departs with one person (Kahn), flies to Kulusuk, picks up 2 people and cargo, flies to Sodalen (V2) via the Tugtilip fuel cache. (All equipment will have been pre-advanced with the Twin Otter for V2 as well as V1) The field team will be dropped off and begin the installation. When finished they will also make preparations for the following day's V1 site. They will remain over night and camp at the site.
15 August	Kulusuk to Tasiilaq	2 people in Kulusuk move to Tasiilaq Hotel Angmagssalik
15 August	Tasiilaq> Kulusuk Tugtilip> Sodalen Gardiner So (V1) return	The Bell 222 from Tasiilaq departs with one person (Kahn) flies to Kulusuk to pick up 2 people and cargo, flies to Gardiner So (K1), drops off the team to begin the installation. The helicopter will then return to Tugtilip to refuel and pick up the 482 kgs of batteries staged there with the Otter, return to the site. Once completed, the helicopter will return to Tasiilaq with all team members.
16 August	Tasiilaq > Kulusuk > Tugtilip> Kronprins Bjerge (K2) > return	The Bell 222 from Tasiilaq departs with three pax, flies to Kulusuk to pick up cargo and flies to Kronprins Frederik (K2), drops off the team for installation. The helicopter returns to Tugtilip to refuel, picks up the 482 kgs of batteries, returns to the site. Once finished, helicopter returns to Kulusuk to pick up the cargo for the following day, then returns to Tasiilaq with all team members and ~450kg cargo.
17 August	Tasiilaq > Pamiattik (K3) > Kulusuk > etc > Tasiilaq	The Bell 212 from Tasiilaq departs with 3 people flies to Pamiattik (K3) where the team and gear will be dropped off. The helicopter will return to Kulusuk to pick up the remaining cargo. Later in the day the helicopter will fly the batteries to the Pamiattik site where the installation will be almost complete. All returns to Tasiilaq.
21 August	Tasiilaq > Kap Poul Lovenom (K4) > Oersted O > Kulusuk etc > Tasiilaq	The Bell 212 from Tasiilaq departs with 3 people flies to Kulusuk to pick up cargo. Flies to Kap Poul Lovenom (K4), drops people and cargo to begin installation. Helicopter returns to Kulusuk (via fuel at Oersted O) to pick up cargo consisting of batteries. Flies to the K4 site. Once finished, helicopter returns to the base in Tasiilaq with the people.
25 August	Tasiilaq > Delmenhorst Nuna (K5) > Kap Poul Lovenorn > etc > Tasiilaq	The Bell 212 from Tasiilaq departs with 3 people flies to Kulusuk to pick up cargo. Then flies to Delmenhorst Nunatak (K5) where they will drop people and cargo. Helicopter to Kap Poul Lovenorn picks up empty fuel drums, returns to Kulusuk. Picks up the remaining cargo consisting of batteries. Flies the batteries to the K5 site for installation. Once finished, helicopter returns to base in Tasiilaq with the people.
31 August	Tasiilaq	DNSC person departs
5 Sept (?)	Tasiilaq	US team (Nylen, Willis) departs and overnights in Nuuk (this date

		may change)
6 Sept	Nuuk	Nuuk to Kangerlussuaq (Nylen, Willis)
7 Sept	Kangerlussuaq	Two team members depart Greenland via CPH (Nylen, Willis)
8 Sept	USA	Arrive US

KULUSUK TWIN OTTER SUPPORT

09 August	Kangerlussuaq > Kulusuk > Sodalen	Twin Otter will transit from Kangerlussuaq to Kulusuk. It will fly to Sodalen to put in 6 drums of Jet A fuel, and return to Kulusuk.
10 August	Kulusuk > Sodalen > Tuktilip	Twin Otter will fly to Sodalen to put in the remaining 4 drums Jet A fuel and 24 closed gel cell batteries. It will return to Kulusuk and then fly to Tuktilip where it will put in a total of 12 drums (double shuttle)
11, 12 August		Weather day / Airport closed on Sunday
13 August	Kulusuk > Tuktilip	Twin Otter will fly to Tuktilip to put in 16 drums and 24 batteries. (Triple shuttle)
14 August	Kulusuk > Kangerlussuaq	Twin Otter returns to Kangerlussuaq.

NARSARSUAQ & UUMANNAQ G-NET TEAM (helicopter operations highlighted below)

7 August	Narsarsuaq	2 people fly to Narsarsuaq (Caccamise, Brown on C-130) Andreas Stemple of U. Luxembourg will arrive via commercial air to Narsarsuaq. Arne Olesen will arrive Narsarsuaq via Copenhagen on 8 Aug
10 Aug	Narsarsuaq > K6	Skiers- 61 to move 3 people/cargo to Hjernefjeldet (K6) site where it will wait for the installation to be completed. It will then fly everyone back to Narsarsuaq at the end of the day.
13 Aug	Narsarsuaq > S3 and S2	Sikorsky-61 to move 3 people/cargo to Timmiarmiut (S3) site where they will stop to depot cargo. It will then fly on to Nunatak 1683 (S2) site and will wait on site while the field team does the installation. At the end of the day the helicopter will return to Narsarsuaq.
14 Aug	Narsarsuaq > S3	AS-350B to move 3 people/cargo to Timmiarmiut (S3) site where the team will complete the installation and return to Narsarsuaq at end of day. The cargo will have been staged at S3 site the day prior with the SK-61 helicopter.
17 Aug	Narsarsuaq > S1	AS-350B will take 3 people/cargo to Nunatak 2820 (S1) site. The helicopter will drop off the first load and then go back to get another. It should take a double shuttle to get everything there. It will then wait until installation is finished and return to Narsarsuaq at the end of the day.
18-22 Aug	Narsarsuaq	WEATHER DAYS
22 Aug	Commercial air	Field team of 2 will travel Narsarsuaq (UAK – Ilulissat (JAV)
23 Aug	Commercial air	Field team of 2 will travel + establish at Qaarsut (JAQ) Airport
24 Aug	Uummannaq > Qaarsut	The Bell 212 from Uummannaq will fly to Qaarsut to pick up 2 people and return them to Uummannaq.
26 Aug	Uummannaq > I2 Rinks Isbrae	In Uummannaq the Bell 212 will pick up 3 passengers and fly them to Rinks Isbrae (I2) site. This will be a double shuttle where the helicopter will wait until the installation is complete approximately 5 hrs later.
28 Aug	Commercial air	For DNSC - Travel UMD-JQA-Aasiaat- Kanger -CPH
29 Aug	Commercial air	For US person Travel UMD > Kangerlussuaq
30 Aug	109 th C-130	From Kangerlussuaq to NY

UPERNAVIK / THULE - NORTHWEST G-NET TEAM (helicopter operations highlighted below)

06 August	Kangerlussuaq	C-130 from NY arrives with 4 field team members from OSU
07 August	Ilulissat	Kendrick flies to Ilulissat and meets up with Johns
07 August	Upernavik	1 person arrives Upernavik (Madsen)
08 August	Upernavik	2 people arrive Upernavik (Johns, Kendrick)
07 August	Thule	1 team member arrives in Thule (Marianne Okal) to organize GNET equipment for Thule helicopter.
Helicopter Operations begin:		
11 August	Upernavik	The Upernavik Bell 212 helicopter moves people to Sermip Nunatak (U2), double shuttle of cargo and then returns with people at end of day.
13 August	Kullorsuaq	The Upernavik Bell 212 helicopter delivers 3 people to Kullorsuaq (U3) to do two installations in that area. They will stop for fuel in Nuussuaq.
16 August	Thule > Astrup Kystland	The Thule Bell 212 helicopter brings equipment to Astrup Kystland (T4) via Savissivik and drops it off on the way to Kullorsuaq where they will pick up 3 field team members and drop them off at Astrup Kystland on return to Thule. The field team will camp for the night.
18 August	Thule > Astrup Kystland > Savissivik	The Thule Bell 212 helicopter brings equipment to Savissivik and offloads the cargo. They then fly to Astrup Kystland to pick up 3 people. From there (T4) they fly to Hafner Bjerg (T3) (via Savissivik to pick up cargo). At Hafner Bjerg the people are dropped off to begin another installation. The helicopter will shuttle gear between Savissivik and Hafner Bjerg before returning to Thule. The team will camp for the night.
20 August	Thule	The Thule Bell 212 picks up team at Hafner Bjerg (T3) via Savissivik and flies them back to Thule.
21 August	Thule	The Thule Bell 212 will fly 3 people to Marie Glacier (T2). The first shuttle will be in the morning and the helicopter will return to Thule. At the end of the day, the helicopter will return with the batteries so the team can install them and then return to town with the helicopter.
23 August	Thule > Hiawatha > Dallas Bugt	The Thule Bell 212 takes field team to Dallas Bugt (T1) for installation. A fuel stop at Qaanaaq will be necessary for this support.
27 August	Thule > Qaanaaq > Hiawatha > Cass Fjord > Kap Morten	The Thule Bell 212 to Kap Morten (T6) via fuel caches along the way. The field team will camp overnight.
28 August	Thule > Qaanaaq > Hiawatha > Cass Fjord > Kap Morten > Cap Godhaab	The Thule Bell 212 to Kap Morten (T6) via fuel caches along the way. The field team will be picked up at Kap Morten and taken to the Kap Godhaab site where they will begin the installation and camp overnight.
30 August	Thule > Qaanaaq > Hiawatha > Cass Fjord > Kap Godhaab	The Thule Bell 212 to Kap Godhaab (T5) via fuel caches along the way. The gear will be shuttled from the cache at Cass Fjord to the camp. The field team will camp overnight.
29 Aug- 7 Sept		WEATHER DAYS
7 Sept	Thule	Northwest US team departs on AMC flight to Baltimore
12 Sept	Thule	DNCS, Madsen departs on Air Greenland plane to CPH

• Field Team Information •

Name	Institute/Role	Location	Email
Southeast Team - Kulusuk / Tasiilaq			
Mike Willis	OSU / Field team leader	Kulusuk / Tasiilaq	willis@geology.ohio-state.edu
Thomas Nylen	UNAVCO	Kulusuk / Tasiilaq	thomasnylen@gmail.com
Shfaqat Abbas Kahn	DNSC	Tasiilaq	abbas@spacecenter.dk
Narsarsuaq / Uummannaq Team			
Dana Caccamise	OSU / Field team leader	Narsarsuaq	danac@osu.edu
Abel Brown	OSU -	Narsarsuaq / Uummannaq	Brown.2179@osu.edu
Arne V. Olesen	DNSC	Narsarsuaq / Uummannaq	avo@space.dtu.dk
Andreas Stemple	U. Luxembourg	Narsarsuaq	andre.stemper@uni.lu
Northwest Team - Upernavik / Thule			
Eric Kendrick	OSU/ Field Team Leader	Upernavik / Thule	Kendrick.42@osu.edu
Finn Bo Madsen	DNSC	Upernavik / Thule	bm@spacecenter.dk
Bjorn Johns	UNAVCO	Upernavik / Thule	johns@unavco.org
Marianne Okal	UNAVCO	Thule	okal@unavco.org

• Project Contact Information •

Co-PIs and Collaborators

Role/Institute	Name	Email	Phone / Fax
US Principal Investigator / OSU	Michael Bevis	mbevis@osu.edu	614 499-5966 /
Collaborator / SUNY Buffalo	Beata Csatho	csatho@buffalo.edu	716 645-6800 / 716 645-3999
Co-PI / KU	Cornelis van der Veen	cjvdv@ku.edu	
Co-PI / OSU	Terry Wilson	twilson@mps.ohio-state.edu	614 292-0723 /
Collaborator / DNSC	Per Knudsen	pk@spacecenter.dk	
Collaborator / DNSC	Rene Forsberg	rf@spacecenter.dk	
Collaborator / U Luxembourg	Tonie van Dam	tonie.vandam@uni.lu	

VPR Team Members

Contact for	Name	Email	Primary Phone(s)
VPR G-Net project manager	Robin Abbott	robin@polarfield.com	Denver: 303.984-1450 x 206 Denver cell: 303 748-8507 Greenland: 011 299 841598 Greenland cell: 011 299 524218
Greenland operations, (Kangerlussuaq on site mgr)	Mark Begnaud	mark@polarfield.com	Kanger Office: 299. 841598 Kanger Cell: 299.524281 Iridium: 88163 145 9737
Greenland operations	Jason Buenning	jason@polarfield.com	Denver: 303.638.6669 Greenland: 011.299.524218
Sat phones & comms	Roy Stehle	roy.stehle@sri.com	Menlo Park: 650.859.2552
Medical & MAS	Kyli Olson	kyli@polarfield.com	Denver: 303.489.2151
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@gmail.com	Scotia: 518.331.3103
Funds Transfers	Jan Zanetell	Janet.Zanetell@veco.com	303.268.3553

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

Other

Organization	Internet	Phone
Medical Advisory Services	http://www.mas1.com	410.257.9504 / 410.257.9505 / 410.257.9506
Accommodations, storage, charter services in Greenland		Please see above tables

• Safety, Environment, Health, and Permitting •

Safety

A GNET Permit Application submitted to the Danish Polar Center / Greenland Homerule includes a map listing all site coordinates. DNCS will provide this map to the DPC / Greenland Homerule who in turn will forward it on to authorities and Greenland Military Command / Air Greenland who are responsible for search-and-rescue operations.

The Danish National Space Center team members will provide three rifles (one for each hub). These rifles will be used for bear protection if required.

VPR will provide camping gear and dehydrated food for each field team member. This equipment should be brought on all helicopter flights.

The VPR office in Kangerlussuaq is the Point of Contact. A daily check-in call to the Kangerlussuaq office—via cell or Iridium phone—is required. VPR will set up a schedule when the teams arrive in Kangerlussuaq in August. Messages can be passed to other team members during daily check-ins.

Local Greenland communications

VPR recommends that each field team have a cell phone for local or intra-Greenland calls. Each Danish team member will bring one. If any others are required they may be purchased at the local Post Office.

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

Permits

Collaborators at DNSC are handling permitting for this project since DNSC is considered government authority in Greenland. In mid-April, Finn Bo Madsen of DNSC submitted the Application for Permit to the Danish Polar Center/Greenland Homerule. The area allotments are to be taken seriously, and in general GNET should stick as close to the location applied for as possible. It has been mentioned to the Home Rule that the locations noted in the application are based on map studies and therefore might change.

The Danish team members (DNSC) know the area allotment conditions and will communicate them to other field members. DNSC is responsible for ensuring that the Allotment conditions are respected. General conditions include restrictions about location: installations must be no closer than 100 meters to the shoreline or to 'trout' streams and that they may not be closer than 20 m to relics of the past.

Medical Advisory Systems (MAS)

If you need medical advice/assistance, don't hesitate to contact Medical Advisory Systems. Doctors are available 24 hrs a day. For further information on MAS, please visit their website <http://www.vecopolar.com> and navigate to Medical>Remote Medical Services/Kits.

MAS Call-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 and the location in which you are conducting remote work)

Risk Assessment

Following is a basic list of potential risks to the project. Each risk can have significant impact on the project's success including significant delays or cancellation.

Customs delays shipments into Greenland	- Ship early
Project costs exceed budget due to unforeseen circumstances only after project starts.	- Ensure the NSF & other funding agencies understand the risks identified in this project plan and the general risky nature of this project budget. - Ensure an NSF representative is closely involved with the project and can make decisions on the direction of the project at any time. - Discuss the nature of risk the NSF is willing to take on this project and what funding may be available as contingency.
Equipment vandalized	- Investigate warehouse options or store in sea (ISO) containers before arrival of field team. - Inform people in the community about the importance of the data to be obtained from the monuments.
Lost equipment	- Develop cargo manifests and ensure Air Greenland or Airport

	<ul style="list-style-type: none"> - Authorities at each location receives equipment. - Take photographs before delivering the cargo.
C-130 schedule delays the cargo from reaching the hub in time.	<ul style="list-style-type: none"> - Delay field season until cargo arrives.
Delay with the helicopter subcontractor to provide an aircraft	<ul style="list-style-type: none"> - Delay flight schedule until the helicopter is available
Equipment arrives damaged at hub locations	<ul style="list-style-type: none"> - Order new equipment to be shipped up on the 109th and air freighted to the location - Minimize number of site installations for the season - Cancel site or delay installation until next season.
Weather delays	<ul style="list-style-type: none"> - Wait at the hub location until weather cooperates - For the NW, move onto the next hub and attempt the site on the way south after completing the northern sites. - Postpone the site for next season.
Installation problems	<ul style="list-style-type: none"> - Have experienced people in the field. - Check batteries and equipment before the installation. - Bring back-up equipment to each hub location.
Communications problems	<ul style="list-style-type: none"> - Purchase and carry cell phones
Dangerous wildlife	<ul style="list-style-type: none"> - Carry rifles provided (1/hub) by DNSC

• 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
Quality of preseason planning
Availability of Air Greenland helicopters
Shipment of cargo to proper locations

• 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 •

Map of G-NET sites

G-NET Locations and Sponsoring Nations

Detailed Flight Plans

NSF Letter of Responsibility

University of Luxembourg Letter of Responsibility

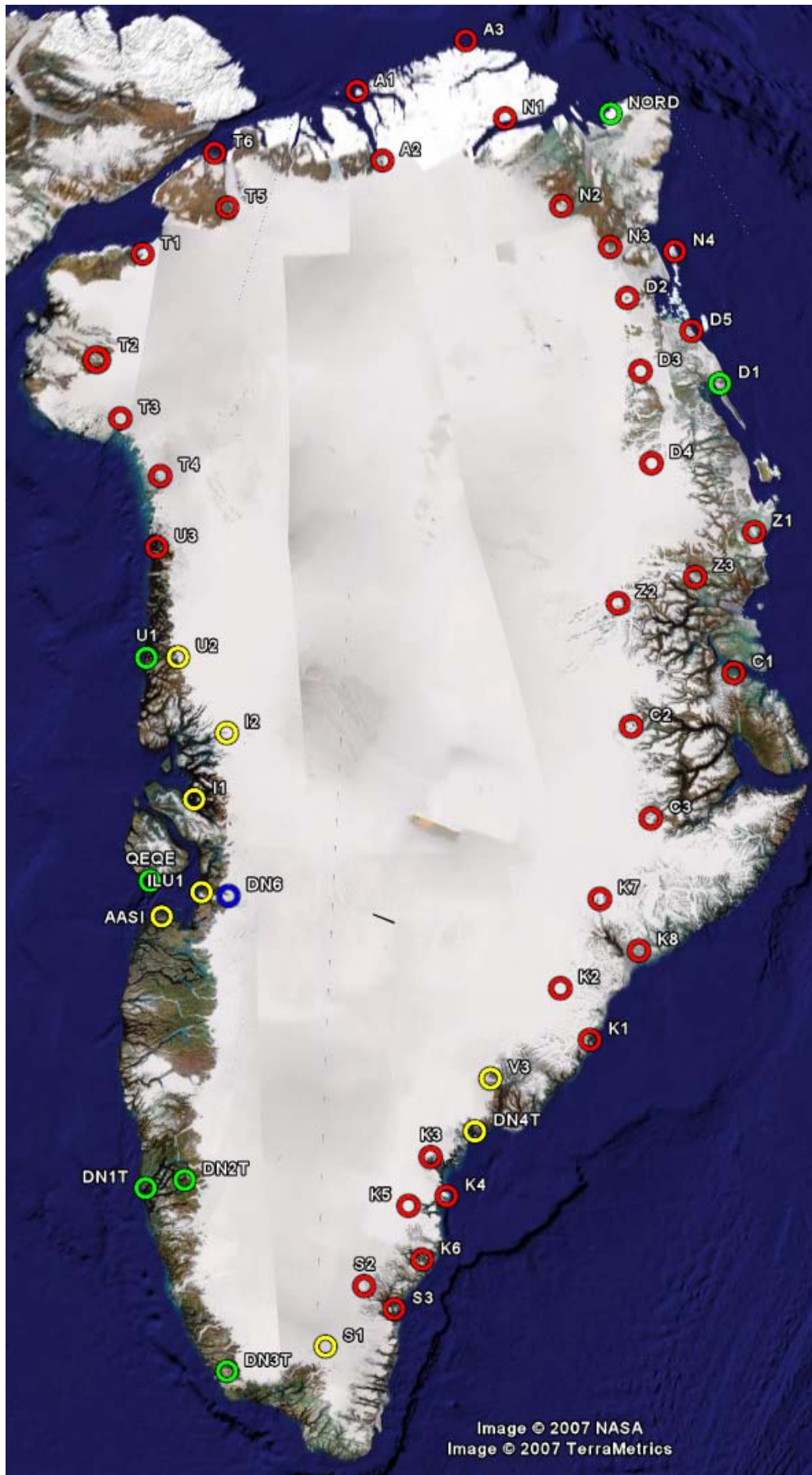


Image © 2007 NASA
Image © 2007 TerraMetrics

T6	Kap Morton	81° 11' 11.318"	-63° 27' 58.739"
T5	Kap Godthåb	80° 21' 17.975"	-59° 58' 23.005"
T1	Kap Agassiz	79° 08' 33.057"	-65° 52' 51.597"
T2	Marie Glacier	77° 12' 42.710"	-69° 39' 50.000"
T3	Haffner Bjerg	76° 26' 17.965"	-62° 15' 39.103"
T4	Astrup Kystland	75° 43' 28.520"	-58° 15' 44.340"
U3	Kullorsuaq	74° 34' 50.868"	-57° 11' 46.878"
U2	Sermip Nuntaa	72° 54' 40.170"	-54° 23' 42.311"
U1	Upernavik	72° 47' 15.449"	-56° 07' 52.146"
I2	RinkIsbræ/Kangilliup Sermia	71° 50' 31,478"	-50° 59' 59.369"
I1	Uummannaq	70° 41' 23.899"	-52° 06' 55.432"
DN1T	Nuuk	64° 10' 43,426"	-51° 43' 42.336"
DN2T	Kapisillit	64° 25' 52.221"	-50° 15' 52.766"
DN3T	Kangilinnguit	61° 13' 44.172"	-48° 05' 40.142"
DN4T	Isortoq	65° 32' 09.007"	-38° 58' 35.771"
DN6	KAGA Jacobshaven	69° 13' 20,280"	-49° 48' 52.560"
S1	Nunatak2820	61° 50' 03.794"	-44° 39' 33.733"
S2	Nunatak1683	63° 00' 17.921"	-43° 12' 25.073"
S3	Timmiarmiut	62° 32' 16.906"	-42° 13' 09.298"
K6	Hjørnefjeldet	63° 23' 40.576"	-41° 09' 56.208"
K5	Delmenhorsts Nunatak	64° 18' 35.934"	-41° 37' 55.500"
K4	Kap Poul Løvenørn	64° 28' 12.675"	-40° 10' 30.484"
K3	Pamiattik	65° 07' 47.254"	-40° 44' 33.770"
V3	Helheim gletcher	66° 24' 04.320"	-38° 12' 56.560"
K1	Pilappik	66° 53' 11.203"	-34° 00' 33.000"
K1A*	Kap Louis Ussing	67° 18' 03.030"	-33° 18' 05.528"
K2	Kronprins Frederik Bjerger	67° 46' 57.677"	-34° 58' 57.236"
V1	Gardiner Sø	68° 34' 58.456"	-33° 03' 07.546"
V2	Sødalen	68° 12' 29.700"	-31° 23' 38.820"
C3	Vindhjørne	70° 16' 53.882"	-29° 45' 26.128"
C2*	Charcot Land	71° 50' 17.153"	-28° 54' 07.910"
C2A	Beta Nunatak	71° 47' 54.120"	-29° 49' 00.850"
C1	Mestersvig	72° 13' 48.681"	-23° 55' 25.974"
Z2	Westfal-Larsens Nunatak	73° 47' 23.910"	-29° 09' 22.300"
V4	Strindberg Land	73° 53' 54.610"	-24° 24' 44.450"
Z1	Daneborg	74° 17' 37.200"	-20° 12' 43.640"
D4	Budolfi Isstrøm	75° 52' 47.900"	-25° 00' 41.540"
D3	Ymer Nunatak	77° 23' 45.519"	-23° 51' 05.831"
D2	Molkte Nunatak	78° 37' 36.554"	-23° 00' 24.267"
D5	Gamma Ø	77° 45' 19.380"	-19° 05' 52.805"
D1	Danmarkshavn	76° 46' 16.481"	-18° 39' 55.918"
N4	Norske Øer	79° 06' 11.602"	-17° 45' 10.170"
N3	Blåsø	79° 33' 40.958"	-22° 52' 46.365"
N2	Leffingwell Nunatak	80° 26' 12.888"	-26° 16' 21.568"
N1	Kap Harald Molkte	82° 09' 22.740"	-29° 53' 56.421"
A5	Kap Morris Jessup	83° 39' 37.583"	-33° 22' 41.343"
A4	John Murray Ø	82° 46' 48.366"	-48° 46' 09.216"
A3	Th. Pedersen Land	81° 34' 44.440"	-44° 39' 00.570"
<i>NORD</i>	<i>Station Nord</i>	82° 09' 22.740"	-29° 53' 56.421"
<i>QEQE</i>	<i>Qeqertarsuaq</i>	82° 09' 22.740"	-29° 53' 56.421"
<i>AASI</i>	<i>Assiat</i>	82° 09' 22.740"	-29° 53' 56.421"
<i>ILUL</i>	<i>Illulissat</i>	82° 09' 22.740"	-29° 53' 56.421"

Italicized site operational.

* Site is an alternative (not additional) site.

**see next page for institution responsible for mobilisation/demobilisation

Institution responsible for mobilisation/demobilisation:

University of Luxembourg /Tonie van Dam

Ohio State University /Mike Bevis (NSF)

UNAVCO Inc /Bjorn Johns

Danmarks Rumcenter /Per Knudsen & Rene Forsberg

NARSARSUAQ DETAILED FLIGHT INFORMATION								
Date	From	To	Distance km	Time @115kts	Fuel cache	Max Endurance between fuel Hrs.	Weight (1 pax=95kgs)	Comment
tentative	Bold locations means refuel							S-61N: full tanks is 4200 lbs; endurance is 4 hrs full tanks fuelburn is 1050 lbs/hr. Available for cargo is 1800kgs with 4 hrs endurénace.Conversion is 2.2lbs/liter
10-Aug-07	Narsarsuaq	Hjornefjeldet K6	325	1.53			3 pax + 725 kg-total 1010 kg	
	Hjornefjeldet	Narsarsuaq	325	1.53		3.05	4 pax + 725 kg-total 1010 kg	
Airborne time	3.05							
13-Aug-07	Narsarsuaq	Timmiarmiut S3	230	1.08			3 pax + 1300 kg	hardware for S2 and S3
	Timmiarmiut S3	Nunatak1683 S2	75	0.35			3 pax + 725 kg	575 kgs hardware for S3 in depot S-61N wait for GNET crew to finish S2
	Nunatak1683 S2	Narsarsuaq	240	1.13		2.56	3 pax + 150 kg	
Airborne time	2.56							
15-Aug-07	Narsarsuaq	Timmiarmiut S3	230	1.08			3 pax + 100 kg	
	Timmiarmiut S3	Narsarsuaq	230	1.08		2.16	3 pax + 150 kg	
Airborne time	2.16							AS350 cruise is 115
17-Aug-07	Narsarsuaq	Nunatak2820 S1	85	0.40			3 pax + 300 kg	personal+tools+frames+solar+GPS
	Nunatak2820 S1	Narsarsuaq	85	0.40		0.80	0 pax + 0 kg	
	Narsarsuaq	Nunatak2820 S1	85	0.40			0 pax + 425 kg	batteries
	Nunatak2820 S1	Narsarsuaq	85	0.40		0.80	3 pax + 150 kg	
Airborne time	1.60							
24-Aug-07	Uummannaq	Qaarsut	22	0.13				
	Qaarsut	UUMMANNAQ	22	0.13				
Airborne time	0.65							
Day 5	Uummannaq	Rink Isbrae	135	0.77			2 pax + 300 kg	B212 cruise speed is 95 kts personal+tools+frames+solar+GPS
	Rink Isbrae	Uummannaq	135	0.77		1.53	0 pax + 0 kg	
	Uummannaq	Rink Isbrae	135	0.77			0 pax + 650 kg	
	Rink Isbrae	Uummannaq	135	0.77		1.53	2 pax + 150 kg	
Airborne time	3.07							
	Total			12.69				
	Blocktime 14*4 min			0.47				
	Grand total estimate			13.16				

NW DETAILED FLIGHT INFORMATION									
Date	From	To	Dist km	Time @95kts	Tank	Fuel cache	Max Endurance between fuel Hrs.	Weight (1 pax=95kgs)	Comment
tentative	Bold locations means refuel								
11-Aug-07	Upernavik	Sermip Nunataa	55	0.31				3 pax + 450 kgs	
	Sermip Nunataa	Upernavik	55	0.31			0.63	0 pax + 0 kgs	
	Upernavik	Sermip Nunataa	55	0.31				0 pax + 491 kgs	
	Sermip Nunataa	Upernavik	55	0.31			0.63	3 pax + 150 kgs	
13-Aug-07	Upernavik	Nuussuaq	153	0.87			0.87	3 pax + 150 kgs + 300 kgs	300 kgs for Astrup Kystland T4
	Nuussuaq	Kullorsuaq	53	0.30			0.30	3 pax + 150 kgs + 300 kgs	300 kgs for Astrup Kystland T4
	Kullorsuaq	Nuussuaq	153	0.87			0.87	ferry	
	Nuussuaq	Upernavik	53	0.30			0.30	ferry	End of charter out of UPV
16-Aug-07	Thule	Savissivik	117	0.66			0.66	0 pax + 700 kgs	Start charter out of THU
	Savissivik	Kullorsuaq	281	1.60			1.60	0 pax + 700 kgs	At Kul: Offload for room of 3 pax + 150 kgs
	Kullorsuaq	Astrup Kystland	128	0.73				3 pax + 450 kgs	
	Astrup Kystland	Kullorsuaq	128	0.73			1.46	0 pax + 0 kgs	
	Kullorsuaq	Astrup Kystland	128	0.73				0 pax + 700 kgs	pick up rest
	Astrup Kystland	Savissivik	184	1.05			1.77	0 pax + 0 kgs	Camp
	Savissivik	Thule	117	0.66				0 pax + 0 kgs	
18-Aug-07	Thule	Savissivik	117	0.66			0.66	0 pax + 700 kgs	offload in Savissivik
	Savissivik	Astrup Kystland	184	1.05				0 pax + 0 kgs	B212 take 2x200 l fuel out of Savissivik
	Astrup Kystland	Savissivik	184	1.05			2.09	3 pax + 150 kgs	
	Savissivik	Haffner Bjerg	90	0.51				3 pax + 450 kgs	
	Haffner Bjerg	Savissivik	90	0.51			1.02	0 pax + 0 kgs	
	Savissivik	Haffner Bjerg	90	0.51				0 pax + 700 kgs	
	Haffner Bjerg	Savissivik	90	0.51			1.02	0 pax + 0 kgs	Camp
	Savissivik	Thule	117	0.66			0.66	0 pax + 0 kgs	
20-Aug-07	Thule	Savissivik	117	0.66				0 pax + 0 kgs	
	Savissivik	Haffner Bjerg	90	0.51				0 pax + 0 kgs	
	Haffner Bjerg	Savissivik	90	0.51			1.02	3 pax + 150 kgs	
	Savissivik	Thule	117	0.66				3 pax + 150 kgs	
21-Aug-07	Thule	Marie Gletcher	112	0.64				3 pax + 450 kgs	
	Marie Gletcher	Thule	112	0.64			1.27	0 pax + 0 kgs	
	Thule	Marie Gletcher	112	0.64				0 pax + 700 kgs	B212 wait for crew to finish
	Marie Gletcher	Thule	112	0.64			1.27	3 pax + 150 kgs	
23-Aug-07	Thule	Qaanaaq	106	0.60			0.60	3 pax + 450 kgs	
	Qaanaaq	Dallas Bugt	185	1.05			1.05	3 pax + 450 kgs	700 kgs is assumed present at Dallas Bugt out with TO
	Dallas Bugt	Qaanaaq	185	1.05	1.05	Dallas	1.05	3 pax + 150 kgs + empty d	Empty drums to Thule/Qaanaaq
	Qaanaaq	Thule	106	0.60			0.60	3 pax + 150 kgs	
27-Aug-07	Thule	Qaanaaq	106	0.60			0.60	3 pax + 450 kgs	
	Qaanaaq	Dallas Bugt	185	1.05	1.05	Dallas	1.05	3 pax + 450 kgs	
	Dallas Bugt	Cass Fjord	150	0.85	0.85	Cass Fjord	1.90	3 pax + 450 kgs	

	Cass Fjord	Kap Morton	118	0.67				3 pax + 450 kgs	700 kgs is assumed present at Cass Fjord out with TO
	Kap Morton	Cass Fjord	118	0.67	1.34	Cass Fjord	2.19	0 pax + 0 kgs	(700 for Kap Morton)
	Cass Fjord	Kap Morton	118	0.67				0 pax + 700 kgs	
	Kap Morton	Cass Fjord	118	0.67	1.34	Cass Fjord	1.34	0 pax + 0 kgs	
	Cass Fjord	Dallas Bugt	150	0.85	0.85	Dallas Bugt	0.85	0 pax + empty drums	
	Dallas Bugt	Qaanaaq	185	1.05			1.05	0 pax + empty drums	
	Qaanaaq	Thule	106	0.60			0.60	0 pax + empty drums	
29-Aug-07	Thule	Qaanaaq	106	0.60			0.60	0 pax + 700 kgs	700 kgs for Kap Godthaab
	Qaanaaq	Dallas Bugt	185	1.05	1.05	Dallas Bugt	1.05	0 pax + 700 kgs	
	Dallas Bugt	Cass Fjord	150	0.85	0.85	Cass Fjord	0.85	0 pax + 700 kgs	
	Cass Fjord	Kap Morton	118	0.67			0.67	0 pax + 355 kgs	At Cass Fjord offload for room of 3 pax + 150 kgs (=435 kgs)
	Kap Morton	Kap Godthaab	113	0.64				3 pax + 700 kgs	
	Kap Godthaab	Cass Fjord	79	0.45	1.76	Cass Fjord	1.09	0 pax + 0 kgs	
	Cass Fjord	Kap Godthaab	79	0.45				0 pax + 700 kgs	B212 wait for crew to finish at Kap Godthaab
	Kap Godthaab	Cass Fjord	79	0.45	0.90	Cass Fjord	0.90	3 pax + 150 kgs	
	Cass Fjord	Dallas Bugt	150	0.85	0.85	Dallas Bugt		3 pax + 150 kgs + empty d	
	Dallas Bugt	Qaanaaq	185	1.05			1.05	3 pax + 150 kgs + empty d	
	Qaanaaq	Thule	106	0.60				3 pax + 150 kgs + empty d	
	Total			38.79					
	Blocktime 54*4 min			3.6					
	Grand total estimate			42.39					
	Fuel cache at Kap Agassiz/Dallas Bugt size=5hrs*370l=1850l~10x200l								
	Fuel cache at Cass Fjord size=7hrs*370l=2590l~13x200l								

TASIILAQ DETAILED FLIGHT INFORMATION								
Date	From	To	Dist km	Time @95kts	Fuel cache	Max Endurance between fuel Hrs.	Weight (1 pax=95kgs)	Comment
tentative	Bold locations means refuel							
Day 1	Tasiilaq	Tugtilip	143	0.81	Tugtilip	0.81	3 pax + 450 kgs	
	Tugtilip	Sodalen	252	1.43	Tugtilip	1.43	3 pax + 450 kgs	Camp at Sodalen. equipment pre-advanced so preparations for Gardiner So can be made in field. At least all equipment for V2 and the equipment that needs preparation for V1 should be present. Crew prepare V1
	Sodalen V2	Tugtilip	252	1.43	Sodalen	1.43	0 pax + 100 kgs	empty drums to Tasiilaq (100 kgs)
	Tugtilip	Tasiilaq	143	0.81	Tugtilip	0.81	0 pax + 100 kgs	empty drums to Tasiilaq (100 kgs)
Airborne time	4.49							
Day2	Tasiilaq	Tugtilip	143	0.81	Tugtilip	0.81	0 pax + 700 kgs	700 kgs is max maybe less
	Tugtilip	Sodalen	252	1.43	Tugtilip	1.43	0 pax + 700 kgs	
	Sodalen	Gardiner So V1	80	0.45			3 pax + 450 kgs	
	Gardiner So	Sodalen	80	0.45	Sodalen	0.91	1 pax + 0 kgs	
	Sodalen	Gardiner So	80	0.45			1 pax + 781 kgs	Helicopter wait for crew to complete V1
	Gardiner So	Sodalen	80	0.45	Sodalen	0.91	3 pax + 150 kgs	
	Sodalen	Tugtilip	252	1.43	Sodalen	1.43	3 pax + 150 kgs + 100 kgs	empty drums to Tasiilaq (100 kgs)
	Tugtilip	Tasiilaq	143	0.81	Tugtilip	0.81	3 pax + 150 kgs	
Airborne time	6.31							
Day3	Tasiilaq	Tugtilip	143	0.81			3 pax + 450 kgs	
	Tugtilip	Kronprins Frederik B	158	0.90	Tugtilip	1.71	3 pax + 450 kgs	
	Kronprins Frederik K2	Tugtilip	158	0.90			0 pax + 0 kgs	
	Tugtilip	Kronprins Frederik B	158	0.90	Tugtilip	1.80	0 pax + 482 kgs	482 kgs pre-advanced with TO
	Kronprins Frederik	Tugtilip	158	0.90			3 pax + 150 kgs	Helicopter wait for crew to complete K2
	Tugtilip	Tasiilaq	143	0.81	Tugtilip	1.71	3 pax + 150 kgs + 100 kgs	empty drums to Tasiilaq (100 kgs)
Airborne time	5.22							
Day 4	Tasiilaq	Tugtilip	143	0.81			3 pax + 450 kgs	
	Tugtilip	Pilappik	77	0.44	Tugtilip	1.25	3 pax + 450 kgs	
	Pilappik K1	Tugtilip	90	0.51			0 pax + 0 kgs	282 kgs pre-advanced with TO
	Tugtilip	Pilappik	77	0.44	Tugtilip	0.95	0 pax + 282 kgs	
	Pilappik K1	Tugtilip	77	0.44			0 pax + 0 kgs	Helicopter wait for crew to complete K1
	Tugtilip	Tasiilaq	143	0.81	Tugtilip	1.25	0 pax + 0 kgs	



National Science Foundation

4201 Wilson Boulevard
Arlington, Virginia 22230

24 July 2007

Niels Andersen (na@space.dtu.dk)
Danish National Space Center
Department of Geodesy
Juliane Maries Vej 30
2100 Copenhagen
Denmark

Dear Prof. Andersen,

The US National Science Foundation (NSF) is funding the installation of up to 37 GPS stations that will become part of the international POLENET (<http://www.polenet.org/>) network. The mechanism of this funding is to Ohio State University, Principal Investigator Michael Bevis, through award number ARC-0632310 "POLENET/Greenland: Using Bedrock Geodesy to Constrain Past and Present Day Changes in Greenland's Ice Mass", commonly referred to as the GNET project.

The stations will be installed during 2007 and 2008. The data from these stations will be most useful the longer they are in place and collecting data. At the same time, we acknowledge the importance of eventually removing the stations.

The NSF hereby acknowledges full responsibility for removing all the GNET stations designated as NSF in the following graphic and table in red, yellow or blue, if and when the stations are no longer being maintained and/or used.

Sincerely,

Renee D. Crain
Office of Polar Programs
Arctic Research Support and Logistics Program

CC:

Finn Bo Madsen, DNSC (bm@space.dtu.dk)
Robin Abbott, VPR (robin@polarfield.com)



Danish National Space Center
Department of Geodesy
Mr. Niels Andersen
Juliane Maries Vej 30
DK- 2100 Copenhagen

Luxembourg, le 30 juillet 2007

Référence: 122 / UL / R&D / ET / nk

Dear Prof. Andersen,

The University of Luxembourg is funding the installation of 6-10 GPS stations that will become part of the international POLENET (<http://www.polenet.org/>) network. The Principal Investigator, Tonie van Dam has been funded through her project "Determining ICE-mass Change in Greenland". Part of her funds, are going directly to VECO to support the internationally supported project commonly referred to as the GNET project.

The stations will be installed during 2007 and 2008. The data from these stations will be most useful the longer they are in place and collecting data. At the same time, we acknowledge the importance of eventually removing the stations.

The University of Luxembourg hereby acknowledges full responsibility for removing all the GNET stations designated as University of Luxembourg in the following graphic and table in yellow, if and when the stations are no longer being maintained and/or used.

Sincerely,

Eric Tschirhart
Chargé de Mission - Recherche

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