

## PROJECT INFORMATION

<b>Lead Principal Investigator</b>	H.A.J. Meijer
<b>Institute</b>	RuG University of Groningen,
<b>Project Title / Grant #</b>	On-site isotope diffusion experiments conducted by Netherlands Arctic Research (NAP)/ALW-NAPSP/07-03 (NAP-ISO)
<b>NSF Program and Manager</b>	NL\Federal\NWO\NAP, Ms. Renee Crain
<b>PFS Project Manager</b>	Katrine Gorham

## LOGISTICS SUMMARY

For this isotope study funded by the Netherlands Arctic Program (NAP) of the Netherlands Organization for Scientific Research (NOW), researchers will conduct shallow ice-core sampling in Greenland. The work will contribute to experimental validation of isotope diffusion models that are used to correct ice core measurements.

The researchers have fielded their research at two sites in Greenland: Summit Station and site S10 about 150 km east of Kangerlussuaq. At the latter, researchers laid down an isotopically enriched snow layer in 2005, which they continued studying until the summer of 2009, when the work was terminated because of extensive melt. In August 2007, the team established an enriched layer at Summit for comparative analyses (and the absence of melt). The Summit Station site receives CPS support on a billable basis.

During the summers of 2008 and 2009, the researchers returned to Summit Station to collect samples at the isotope diffusion site. During 2008 samples were collected from snow pits, while during 2009 researchers used a shallow depth manual corer to obtain samples.

In August of 2010, the researchers will again collect samples at Summit using a shallow depth manual corer. They will spend approximately two days at Summit Station for this work.

CPS will support this project with transport to and from Summit Station of personnel and cargo, Summit user days, and access to the Summit infrastructure and science technical services. CPS will recoup costs associated with this support via a direct-bill arrangement. All other expenses will be arranged by the PI and paid with grant funds.

For the complete CPS online project record for this grant, including science objectives, go to:  
[http://www.polar.ch2m.com/arlss\\_reports/arlss\\_projectsdetail.asp?cbPropNum=NAP-ISO](http://www.polar.ch2m.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=NAP-ISO)

For up-to-date information on the project's schedule, please view the online Greenland calendar (<http://www.polar.ch2m.com> > Greenland > Calendars/Schedules).

## OUTSTANDING ACTIONS AND NOTES

<b>Issue</b>	<b>Responsibility</b>	<b>Date Due</b>	<b>Date Completed</b>
Review support plan for accuracy and distribute to all field team members	PI	7/9/2010	Completed
Obtain all necessary insurance and permits for fieldwork	PI	7/9/2010	Completed
Visit all hyperlinks and review all documents referred to in the support plan	Entire Field Team	7/9/2010	In progress
Contact the GEOSummit Science Coordination Office (SCO) <a href="http://sco.at.summitcamp.org">sco at summitcamp.org</a> regarding your project's plans for the season	PI	7/9/2010	Completed
Complete medical clearance process 6-8 weeks before desired deployment date	Entire field team	7/9/2010	N/A
Provide cost estimate for billable support	CPS	8/1/2010	In progress

Develop a purchase order with CPS prior to field work	PI	TBD	
Provide bill for actual support	CPS	TBD	
<b>Note: Passports are required for Air National Guard and international travel. Also, please bring TWO copies of your passport to Greenland with you.</b>	Entire field team	7/9/2010	Okay
Complete Critical Success Factors	PI	7/9/2010	Completed

## ALLOCATIONS AND SERVICES

### Allocations from Inventory

Quant/Unit	Item
1	4-stroke snowmobile. Note: The snowmobile will be available for the team to use for off-station travel. Summit promotes a pedestrian culture, and the snowmobile is not to be used for transportation around camp.
1	Nansen sled
1	Iridium phone
1	GPS
2	VHF radio
1	2-person survival bags
2	Arctic oven tents

For more information on satellite phones, radios, manuals and other field communications support, please visit the CPS communications Web site at <http://www.polar.ch2m.com/>.

### Other Services

Service	Comments
User days Summit, including meals	<p>The researchers will sleep in tents provided by CPS. Researchers will provide their own sleeping bags and ECW gear.</p> <p>Personnel will use the Big House facilities for meals and observe regular meal times. They should notify the camp manager and chef if they plan to eat outside normal meal times. Any special diets or food allergies should be reported to the chef upon arrival at Summit. If possible, the science group can send an early email to <a href="mailto:manager@summitcamp.org">manager at summitcamp.org</a> to prep the cook for special diet requirements.</p>
ANG passenger travel: Kanger-Summit-Kanger	For all team members
Cargo services: Kanger-Summit-Kanger	
Off-Station Travel	<p>The researchers will travel off station during day trips to collect samples at the isotope diffusion site (see location as indicated in Figure 1 of the appendices).</p> <p>This work will be coordinated with the Camp Manager (Ken Jessen) to ensure that proper off-station check-in and check-out policies are followed. The researchers will adhere to all travel policies and clean air sector protocols, and will plan off-station travel accordingly.</p> <p>For travel to/from the site, the researchers will minimize snow disturbances by traveling in direct routes and using the same path whenever possible.</p>

Access to Big House Freezer Trench	The researchers will use the Big House freezer trench for cutting/packaging/storage of cores. Prior to accessing the trench, the researchers agree to review the relevant AHA with the Camp Manager (Ken Jessen).
Science Tech Time	The Summit Science Techs will provide year-round support for the isotope diffusion site. Due to the nature of the work, support will be minimal at approximately 12hrs/year.
Safety protocols	The researchers will adhere to all safety protocols outlined in the Activity Hazard Analysis' (AHAs). This includes reading and signing off on appropriate AHAs prior to completing relevant tasks. Additionally, the researchers will adhere to the established clean air protocols and travel policies.

## LOCATION INFORMATION

Please visit <http://www.polar.ch2m.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 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 shipped through the U.S. 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 cargo arriving in Kangerlussuaq via Europe with commercial carriers, it must arrive **at least one week** prior to the desired Kangerlussuaq to Summit Air National Guard flight.

For the most current ANG flight schedule go to <http://www.polar.ch2m.com/> and navigate to Greenland > Calendars/Schedules.

If you are a **new user** requiring access to the Cargo Tracking System, contact [Jason Buening](#).

(If you need **technical support** with the Cargo Tracking System, contact [Mike Dover](#) .

Customs instructions are available on our Web site at <http://www.polar.ch2m.com/> (go to Greenland > Customs). More information is available via the *Greenland Guide*, under Greenland on the CPS site.

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

Items	Weight/Cube
1 case, ice core drilling device (already in Kanger)	55 lbs / 3.2 cu ft
1 box, firn cutter (already in Kanger)	22 lbs / 1.5 cu ft
1 box, sample tube racks (3)	7 lbs / 2.4 cu ft
1 box, miscellaneous electronics	50 lbs / 5 cu ft

## SUPPORT SCHEDULE

Approx Date	Location	Activity
8/11/10	Kangerlussuaq	Meijer and Been arrive in Kanger via commercial air.
8/13/10	Summit	Meijer and Been fly with the ANG from Kanger to Summit.
8/15/10	Summit	Meijer and Been fly with the ANG from Summit to Kanger.
8/17/10	Kangerlussuaq	Meijer and Been depart Kanger via commercial air.

For the most up-to-date information on the project's schedule, please view the online Greenland calendar (<http://www.polar.ch2m.com/> > Greenland > Calendars/Schedules).

FIELD TEAM INFORMATION

Name	Location	Date In	Date Out	Email
Meijer, Harro	Kangerlussuaq Summit	08/11/10 8/13/10	08/17/10 8/15/10	<a href="mailto:h.a.j.meijer@rug.nl">h.a.j.meijer@rug.nl</a>
Been, Henk	Kangerlussuaq Summit	08/11/10 8/13/10	08/17/10 8/15/10	

PROJECT CONTACT INFORMATION

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	Harro Meijer	<a href="mailto:H.A.J.Meijer@rug.nl">H.A.J.Meijer@rug.nl</a>	(31) 50 363.4739 /.4760

CPS Team Members

Contact for	Name	Email	Primary Phone
Summit science planning & support	Katrine Gorham	<a href="mailto:Katrine@polarfield.com">Katrine@polarfield.com</a>	Denver: 303.349.2884
Greenland science planning & support	Susan Zager	<a href="mailto:Susan@polarfield.com">Susan@polarfield.com</a>	Denver: 720.320.6159
Greenland science planning & support	Robin Abbott	<a href="mailto:Robin@polarfield.com">Robin@polarfield.com</a>	Denver: 303.748.8507
Kangerlussuaq base operations	Kathy Young	<a href="mailto:Kathy@polarfield.com">Kathy@polarfield.com</a>	Denver: 720.320.6160 Greenland: 011.299.524218
Scotia (Stratton Air Base) operations & customs	Earl Vaughn	<a href="mailto:Earl.Vaughn@gmail.com">Earl.Vaughn@gmail.com</a>	Scotia cell: 518.605.0979
Sat phones & comms	Roy Stehle	<a href="mailto:Roy.Stehle@sri.com">Roy.Stehle@sri.com</a>	Menlo Park: 650.859.2552
Purchase orders	Karen Shaughnessy	<a href="mailto:Karen.Shaughnessy@ch2m.com">Karen.Shaughnessy@ch2m.com</a>	Tel: 720.286.0413 Fax: 720.286.9165

CPS Offices

Denver	Kangerlussuaq	Scotia
Polar Field Services 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	CH2M HILL Polar Services Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Kangerlussuaq, Greenland Tel: 011.299.841598 Fax: 011.299.841599	Earl Vaughn C/O 109 <sup>th</sup> Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.344.2635 Cell: 518.605.0979 Fax: 518.344.2537

Summit Station

Winter	Summer
Polar Field Services Attn: Name of Employee/Researcher 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	CH2M HILL Polar Services Attn: Name of Employee/Researcher - Summit Station C/O Earl Vaughn 109 <sup>th</sup> Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.344.2635 Fax: 518.344.2537

Other

Organization	Internet	Phone
Summit Science Coordination Office (SCO)	<a href="http://www.geosummit.org">http://www.geosummit.org</a> <a href="mailto:sco@summitcamp.org">sco at summitcamp.org</a>	John Burkhart +47 96 82 5011

## SAFETY, ENVIRONMENT, HEALTH and PERMITS

Effective January 1, 2010 the Government of Greenland assumed responsibility for the permitting process for research in Greenland. All science teams planning to conduct research in Greenland must complete an **annual application** in order to obtain approval from the Government of Greenland. The application forms are available from the Department of Domestic Affairs, Nature and Environment at <http://www.nanog.gl/expeditions> or by sending an email to [ekspeditioner at gh.gl](mailto:ekspeditioner@gh.gl). Applications are submitted directly through the Department of Domestic Affairs, Nature and Environment. Be advised that a new fee of 4000 DKK has been put in place for permits. For assistance with the application process, contact:

Martin Schiøtz  
 Head of Section  
 Section of Nature  
 Department of Domestic Affairs, Nature and Environment P.O. Box 1614  
 3900 Nuuk  
 Greenland  
 e-mail: [ekspeditioner at gh.gl](mailto:ekspeditioner@gh.gl)

## RISK ASSESSMENT

See Appendix for Risk Factors and Mitigation.

## 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 CPS' support. Examples might be the availability of the helicopter or camp gear.

Factors
1. Use of snowmobile for one afternoon and one full day.
2. Science tech assistance in digging up, and replacing the temperature data logger.
3. On-station site (clean surface, temperatures below 0°C) for cutting/packing 1 cm slices of cores (if weather permits outside is fine, otherwise somewhere shielded).

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

## APPENDIX

Table 1: Risk factors and mitigation.

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<b>Factor</b>	<b>Mitigation and Control</b>
Heavy lifting/body strains and sprains	-Use proper lifting techniques
Snowmobile Travel	-Participate in a snowmobile training -Have SAR plan in place -Use appropriate Personal Protection Equipment/helmets -Carry Survival Gear on extended trips -Use radio communications between snowmachines -Carry a PLB (Personal Locator Beacon) -Carry a GPS (Global Positioning System) unit
Cold Related Injuries-weather	-Wear proper clothing -Appropriate camping gear, insure sleeping bags are adequately rated -Check the forecast before going out of camp/town -Watch the weather while out -Be mindful of hydration, carry sufficient food -Develop and share your travel plans -Have and share an emergency plan for bad weather
Emergency Plan	-Compile a list of emergency contacts for your field team and share it with critical participants including your home institution and CPS. -Share your satellite phone number as a means for others to contact you.
Communications	-Carry the appropriate communications system (satellite phone and radios) -Assure your phone and/or radio is fully charged before going out and carry a spare battery.
Foot/ski travel	-Have a communication plan in place (carry a radio) -Have a check out policy in place
High Altitude	-Participate in high altitude training -Have medical call in service available -Have SAR plan in place -Have oxygen available in high altitude camps -Develop plan to acclimatize -Consult with physician on use of medication for acclimatization