

Please review all of the following information, including the gear allocations and field team information, to ensure accuracy. This plan is an agreement between CH2M HILL Polar Services (CPS) and your group, documenting the logistics support you will receive.

## PROJECT INFORMATION

|                                    |  |
|------------------------------------|--|
| <b>Lead Principal Investigator</b> | Richard Hindmarsh  |
| <b>Institute</b>                   | British Antarctic Survey, Physical Sciences Division   |
| <b>Project Title / Grant #</b>     | Measuring and modelling the Raymond Effect to infer low strain-rate ice rheology (NERCRadar) |
| <b>NSF Program and Manager</b>     | GB\Federal\NERC, Ms. Renee Crain   |
| <b>PFS Project Manager</b>         | Sandra Starkweather  |

## LOGISTICS SUMMARY

With this NERC-funded project, a research team will conduct radar studies during two field seasons at the site of a former deep core-drilling project called GRIP, in Greenland; and at Dome C in Antarctica. This database carries information on the arctic work only.

During two consecutive field seasons starting in 2008, a field team will travel to Summit Station, Greenland, via the NSF logistics chain from Kangerlussuaq. They will base at the station for about two weeks each season and travel via snowmachine to the study site, GRIP, which is about 30 km from Summit. At times, they will tent-camp at the site. There, they will use a stationary radar to survey a transect about 10 km long. They will take data about every 200m. The work should be finished in about five days (additional time is built in to the schedule for weather delays).

In 2008, a team of three traveled to Summit from Europe early in May. The PI worked on the ice cap for about one week; his two team members remained after his departure for the rest of the month to complete the field work.

In 2009, the team of two will return to Summit in mid-May for 2-3 weeks of measurements.

For each year of the grant, CPS will provide transport to and from Summit for personnel and cargo, Kangerlussuaq and Summit user days, use of on-site Summit facilities and equipment, including snowmachines a sled, fuel, and a generator. CPS will provide this support on a cost-reimbursable basis. All other support will be arranged by the PI and paid from the grant.

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=NERCRadar](http://www.polar.ch2m.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=NERCRadar)

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

| Issue   | Responsibility    | Date Completed |
|---|-------------------|----------------|
| Review support plan for accuracy and distribute to all field team members     | PI                |                |
| Obtain all necessary permits for fieldwork                                    | PI                |                |
| Visit all hyperlinks and review all documents referred to in the support plan | Entire field team |                |

|   |                   |           |
|---|-------------------|-----------|
| Contact the GEOSummit Science Coordination Office (SCO) mail to: <a href="mailto:sco@summitcamp.org">sco at summitcamp.org</a> regarding your project's plans for the season              | PI                |           |
| Provide cost estimate for billable support  | CPS               | 3/26/2009 |
| Develop a purchase order with CPS prior to field work   | PI                |           |
| Provide bill for actual support   | CPS               |           |
| <b>Note: Passports are required for Air National Guard and international travel. It is a good idea to bring two IDs and to pack a copy of your passport in case the original is lost.</b> | Entire field team |           |
| Complete Critical Success Factors   | PI                | Completed |

## ALLOCATIONS AND SERVICES

### Allocations from Inventory

| Quant/Unit              | Item  |
|-------------------------|---|
| 1/ea                    | Arctic Oven Sleep tent 8' x 8' (for the field) old style with two vents & added plastic breather tube (ex Kanger)                                       |
| 2/ea                    | Sleep pads (in on-station sleep tents)  |
| 1/ea                    | Sleep cots (for off-station overnights)   |
| 1                       | 2 Person Kitchen Box  |
| 1                       | Coleman double burner stove   |
| 10                      | Herc straps small   |
| 2                       | Skandic 2-stroke Skidoos for work off station (long days and overnight work are a project requirement) with 12 v cigarette lighter outlets & GPS mounts |
| 1                       | Skidoo spare & basic tool kit   |
| 1 set                   | Towing lines  |
| 600 litres or 3 barrels | barrels of mogas mix, premixed for 2 stroke skidoos (reimbursable support)  |
| 8                       | Plastic fuel cans   |
| 4                       | 2 gallon cans of Coleman or equivalent white gas (cook stove)   |
| 1                       | Fuel funnel   |
| 1                       | Flat front Fossum sled wide   |
| 1                       | Snowsled Nansen, standard width, no keel (no metal parts as used in 2008)   |
| 1                       | Survival Bags (to cover 2-3 persons)  |
| 1                       | ELB   |
| 2                       | VHF handheld radio.   |
| 1                       | Iridium phone & spare batteries   |
| 2                       | Heavy digging shovels, steel spade  |
| 60 litres               | mogas for generator in 20litre plastic fuel jerries (reimbursable support)  |
| 1                       | Honda 2 KW generator for science equipment, oil & spares  |
| 2                       | 55 amp-hour lead acid car battery   |
| 1                       | Insulated battery box with Bulgin 12 V socket (ex Summit 2008)  |
| 2                       | Skidoo helmets  |
| 1 litre                 | 0-30 W generator oil  |
|                         | Floor /bench space for assembly and desk space  |

**Other Services**

| Project Allocations                          | Comments  |
|--|---|
| Freight<br>Kanger ><Summit                   | As needed   |
| Science Support<br>User days Summit and KISS | Miscellaneous services at Summit<br>8 days Kangerlussuaq, 17 days Summit<br>NOTE: This group will work off-station for much of their trip. They will provide their own camp meals when off station and unable to meet scheduled meal times. |
| Air Travel                                   | R/T flights for 2 personnel<br>Kanger><Summit   |
| Fuels  | As noted in inventory allocations (above)   |
| Work space                                   | Floor and bench space for assembly and office tasks—no additional cost  |

**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**

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:

**Cargo List**

| Items | Weight/Cube |
|-------|-------------|
| TBD   |             |
|       |             |

**SUPPORT SCHEDULE**

| Approx Date | Location       | Activity   |
|-------------|----------------|--|
| 05/08/09    | Kanger         | Field team arrives in Greenland                                |
| 05/12/09    | Summit Station | Team arrives at Summit   |
|             | Summit Station | Team sets up equipment, tests equipment, prepares for traverse |
|             | Summit/GRIP    | Begin survey and overnights off-station.                       |
|             | Summit Station | Lower objects down Bob Hawley's Bore Holes                     |
|             | Summit Station | Day and Gillet pack and prepare to depart Summit               |
| 05/29/09    | Summit-Kanger  | Day and Gillet depart Summit                                   |
| 06/1/09     | Kanger-CPH     | Day and Gillet depart Greenland via Comm 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  |
|----------------|---------------|------------|------------|--|
| Gillet, Fabian | Kangerlussuaq | 05/8/2009  | 06/01/2009 | <a href="mailto:FALL_at_pcmail.nerc-bas.ac.uk">FALL at pcmail.nerc-bas.ac.uk</a> |
|                | GRIP          | 05/12/2009 | 05/28/2009 |  |
|                | Summit        | 05/12/2009 | 05/29/2009 |  |
| Day, Crispin   | Kangerlussuaq | 05/08/2009 | 06/01/2009 |  |
|                | GRIP          | 05/12/2009 | 05/28/2009 |  |
|                | Summit        | 05/12/2009 | 05/29/2009 | <a href="mailto:cmjd_at_bas.ac.uk">cmjd at bas.ac.uk</a>                         |

**PROJECT CONTACT INFORMATION**
**Research Team**

| Role                   | Name              | Email  | Phone / Fax                        |
|------------------------|-------------------|--|------------------------------------|
| Principal Investigator | Richard Hindmarsh | <a href="mailto:rcah_at_bas.ac.uk">rcah at bas.ac.uk</a> | (44)122.322.1495 /(44)122.322.1226 |

**CPS Team Members**

| Contact for                        | Name               | Email  | Primary Phone(s)  |
|------------------------------------|--------------------|--|---|
| Summit operations                  | Sandy Starkweather | <a href="mailto:Sandy_at_polarfield.com">Sandy at polarfield.com</a>   | Denver:<br>303.518.8714                                 |
| Greenland on-island support        | Mark Begnaud       | <a href="mailto:Mark_at_polarfield.com">Mark at polarfield.com</a>     | Denver:<br>720.320.6160<br>Greenland:<br>011.299.524218 |
| Greenland on-island support, Cargo | Ed Stockard        | <a href="mailto:Ed_at_polarfield.com">Ed at polarfield.com</a>         | Greenland:<br>011.299.524281                            |
| Scotia operations & customs        | Earl Vaughn        | <a href="mailto:Earl_Vaughn_at_gmail.com">Earl Vaughn at gmail.com</a> | Scotia:<br>518.331.3103                                 |
| Sat phones & comms                 | Roy Stehle         | <a href="mailto:Roy_Stehle_at_sri.com">Roy Stehle at sri.com</a>       | Menlo Park:<br>650.859.2552                             |
| Medical & RMI                      | Kyli Olson         | <a href="mailto:Kyli_at_polarfield.com">Kyli at polarfield.com</a>     | Denver:<br>303.489.2151                                 |
| Denver operations                  | Jill Ferris        | <a href="mailto:Jill_at_polarfield.com">Jill at polarfield.com</a>     | Denver:<br>720.320.6155                                 |
| Purchase orders                    | Steve Heiman       | <a href="mailto:Steve_Heiman_at_ch2m.com">Steve Heiman at ch2m.com</a> | Tel: 720.286.2277<br>Fax: 720.286.9287                  |

**CPS Offices**

| Denver  | Kangerlussuaq  | Scotia   |
|---|--|--|
| CH2M HILL Polar Services<br>Western Office<br>8110 Shaffer Parkway<br>Suite 150<br>Littleton, CO 80127<br>Tel: 303.984.1450/1439<br>Fax: 303.984.1445 | CH2M HILL Polar Services<br>Attn: Name of<br>Employee/Researcher<br>Postboks 1015<br>DK-3910<br>Kangerlussuaq, Greenland<br>Tel: 011.299.841598<br>Fax: 011.299.841599 | Earl Vaughn<br>C/O 109 <sup>th</sup> Aerial Port<br>Bldg. 20<br>Stratton Air Base<br>Scotia, NY 12302-9752<br>Tel: 518.344.2635<br>Cell: 518.331.3103<br>Fax: 518.344.2537 |

**Summit Station**

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

**Other**

| Organization   | Internet  | Phone                           |
|--|---|---------------------------------|
| Remote Medical International (RMI)<br>(see below for Remote Telemed #) | <a href="http://www.remotemedical.com/">http://www.remotemedical.com/</a>   | Office:<br>800.597.4911         |
| Summit Science Coordination Office (SCO)                               | <a href="http://www.geosummit.org">http://www.geosummit.org</a><br><a href="http://www.geosummit.org/sco">sco at summitcamp.org</a> | John Burkhart<br>+47 96 82 5011 |

**SAFETY, ENVIRONMENT, HEALTH and 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. For assistance with the application process, contact:

Poul Henrik Sorensen  
 E-mail: [phs at dpc.dk](mailto:phs@dpcc.dk)  
 Telephone: +45 3288 0100

**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  |
|--|
| 2 stroke skidoos serviceable and available at Summit for the period through 12 <sup>th</sup> to 29 <sup>th</sup> May |
| Transport of personnel, science and field equipment by C-130 to Summit for start of project on 12 <sup>th</sup> May  |
| All requested field camp issue gear and equipment in working order for arrival of science team                       |

**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.