Support Information Package

Nathaniel B. Palmer – 2005–2006 Season

Applicant Version

Project Name:	Maud Rise Nonlinear Equation of State Study (MaudNESS)
Principal Investigator:	Miles McPhee
Event Number:	O–325–N
Award Number:	0337159
Cruise Code:	NBP05–06
Printed on:	Friday, 1 April, 2005 at 16:20 MST
Printed for:	Miles McPhee

Summary of Sections

Project Information

Describe your research project. This information is required.

*** Research Objectives**

Describe your science or technical objectives. Click Help link under Worksheet Tools for an example.
NOTE: This text will be used (in full or in part) to describe your project in the annual Science Planning Summary section titled "Research Objectives".

The region surrounding the Maud Rise seamount in the eastern Weddell Sea is characterized by marginal water column stability and persistent low ice concentrations well inside the limits of the seasonal ice pack. The Weddell Polynya of the 1970s and another notable polynya in 1994 originated nearby. Data from winter cruises in 1986 and 1994 indicate that toward the end of winter, thermobaricity, cabbeling, and possibly other nonlinearities in the equation of state for seawater are important preconditioners for deep convection powerful enough to overcome the large stabilizing buoyancy from ice melt. Satellite data of ice coverage show low ice concentrations over the flanks of the Rise and CTD data from various years indicate a Taylor column circulation trapping a cap of dense water over the Rise itself. Our objectives are:
1) to measure by a combination of techniques how mixing in winter is enhanced by turbulent kinetic energy derived from the potential energy of the water column in this unique environment, and
2) by a combination of CTD, satellite and modeling studies to assess the role of regional circulation in the localization of these mixing processes.

*** Field–Season Overview**

Describe your operational support requirements for the upcoming field season. Click Help link under Worksheet Tools for an example.

The MaudNESS project comprises four phases carried out from the NB Palmer in austral winter, 2005:
(1) A rapid, shallow CTD survey crossing Maud Rise with emphasis on regions with large bathymetric slopes. Drift buoys and subsurface floats will deployed along the survey route.
(2) A drift station with some off?ship experiments will be established near the center of the MR seamount, providing upper ocean measurements in a region expected in a relatively stably stratified environment.
(3) The ship will then return to the region thought most likely to initiate deep convection. An acoustically tracked float will be deployed in the pycnocline (thermocline), marking the water mass. We will then do a series of short (several hour) duration drifts with instrument systems deployed from the ship, with the ship periodically repositioned back to the marked water mass. Measurements in this phase will concentrate on energy levels in the lower mixed layer and pycnocline as the water column approaches instability.
(4) If a widespread region of deep convection occurs (as indicated either by direct measurements, or by remote sensing imagery), the ship will go to that location for an intensive study of "open ocean" deep convective processes.
The fourth phase is dependent on locating a late winter polynya, an event that happens only in some years. Exceptional operational requirements include provision for operating off ship during Phase 2; and operating a combination of profiling systems and fixed instrument masts at depths up to 500 m from the ship during Phase 3, and possibly Phase 4. This will require rapid access through the ice cover and careful consideration of instrument watch circles at all times.
Tentative Cruise Schedule
20 Jul 05: Embark, PUQ (57S,71W)
27 Jul: Arrive ice edge (60S, 0E)
29 Jul: Start CTD survey at 63 15' S, 0E; 75 shallow stations
5 Aug: Begin summit drift station, Phase 2
15 Aug: Recover drift station, move to least stable water column
16 Aug: Deploy tracking float, begin water mass tracking, Phase 3
• The schedule then allows about 20 days for Phases 3 and 4 (tracking and polynya) .
8 Sep: Begin transit to ice edge at 60S, 0E 300 nm @ 5 kt, 6 stations at 3 h

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11 Sep: Leave ice edge, begin transit to PUQ
18 Sep: Disembark, PUQ
```

Project Web Site

If your project maintains a website with information on your Antarctic research project, please list the URL.

```
http://www.oc.nps.navy.mil/~stanton/thermo
```

Project Information :: Participant Roster

There are **20** participants assigned to this project.

Participant Roster		
McPhee, Dr. Miles	**Project Information**	**Deployment Information**
450 Clover Spring Road Naches, WA 98937 mmcphee@starband.net ph: (509) 658-2575 fax: N/A	Project Role: Principal Investigator (PI) SIP Access: Read/Write ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Yakima, WA [Yakima Air Terminal], USA - YKM Nationality of Passport: United States Passport Expiration Date: December, 2007 Age at Deployment: 50-60
Behrens, Mr. Gerhard	**Project Information**	**Deployment Information**
Corvallis, OR 97333-1536 germary@proaxis.com ph: (541) 754-0441 fax: N/A	Project Role: Project Participant SIP Access: None ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Eugene, OR [Mahlon Sweet Field], USA - EUG Nationality of Passport: United States Passport Expiration Date: June, 2013 Age at Deployment: 40-50
D'Asaro, Dr. Eric	**Project Information**	**Deployment Information**
1013 NE 40th Str Seattle, WA 98105 dasaro@apl.washington.edu ph: (206) 685-2982 fax: (206) 543-6785	Project Role: Co-PI SIP Access: Read/Write	Is **NOT** Deploying Airport of Departure: Nationality of Passport: Passport Expiration Date: Age at Deployment:

Goldberg, Mr. Dan	**Project Information**	**Deployment Information**
21A Saint Felix Street Brooklyn, NY 11217 dgoldberg@cims.nyu.ed ph: (212) 998-3245 fax: N/A	Project Role: Project Participant SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying Airport of Departure: New York (Kennedy) Nationality of Passport: United States Passport Expiration Date: March, 2015 Age at Deployment: Under 40

Guest, Dr. Peter	**Project Information**	**Deployment Information**
589 Dyer Rd., Room 254 Monterey, CA 93943-5114 pguest@nps.navy.mil ph: (831) 656-2451 fax: (408) 656-3061	Project Role: Co-PI SIP Access: Read/Write ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Monterey, CA [Monterey Peninsula Airport], USA - MRY Nationality of Passport: United States Passport Expiration Date: March, 2009 Age at Deployment: 40-50

Harcourt, Dr. Ramsey	**Project Information**	**Deployment Information**
1013 NE 40th Street Seattle, WA 98105 harcourt@apl.washington.edu ph: (206) 221-4662 fax: (206) 543-6785	Project Role: Co-PI SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Seattle, WA [Seattle-Tacoma International Airport], USA - SEA Nationality of Passport: United States Passport Expiration Date: April, 2006

		Age at Deployment: 40-50

Holland, Dr. David	**Project Information**	**Deployment Information**
New York, NY 10012 holland@cims.nyu.edu ph: (212) 998-3245 fax: N/A	Project Role: Co-PI SIP Access: Read	Is **NOT** Deploying Airport of Departure: Nationality of Passport: Passport Expiration Date: Age at Deployment:

Morison, Mr. David	**Project Information**	**Deployment Information**
1013 NE 40th Street Seattle, WA 98105 davidm@apl.washington.edu ph: (206) 543-1300 fax: N/A	Project Role: Project Participant SIP Access: None ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Seattle, WA [Seattle-Tacoma International Airport], USA - SEA Nationality of Passport: United States Passport Expiration Date: December, 2015 Age at Deployment: Under 40

Morison, Dr. James	**Project Information**	**Deployment Information**
1013 NE 40th St. Seattle, WA 98105 morison@apl.washington.edu ph: (206) 543-1394 fax: N/A	Project Role: Co-PI SIP Access: Read/Write ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Seattle, WA [Seattle-Tacoma International Airport], USA - SEA Nationality of Passport: United States Passport Expiration Date: June, 2013

		Age at Deployment: 50-60

Muench, Dr. Robin	**Project Information**	**Deployment Information**
1910 Fairview East Suite 102 Seattle, WA 981023620 rmuench@esr.org ph: (206) 726-0501 fax: (206) 726-0524	Project Role: Co-PI SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Seattle, WA [Seattle-Tacoma International Airport], USA - SEA Nationality of Passport: United States Passport Expiration Date: July, 2013 Age at Deployment: 60 or over

Ohmart, Michael	**Project Information**	**Deployment Information**
4803 49th Ave SW Seattle, WA 98116 ohmart@apl.washington.edu ph: (206) 685-9952 fax: (206) 543-6785	Project Role: Project Participant SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Seattle, WA [Seattle-Tacoma International Airport], USA - SEA Nationality of Passport: United States Passport Expiration Date: August, 2013 Age at Deployment: 40-50

Padman, Dr. Laurence	**Project Information**	**Deployment Information**
Earth &Space Research 3350 SW Cascade Avenue Corvallis, OR 97333-1536 padman@esr.org ph: (541) 753-6695	Project Role: Co-PI SIP Access: Read/Write ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Eugene, OR [Mahlon Sweet

fax: (541) 753-1999		Field], USA - EUG Nationality of Passport: Australia Passport Expiration Date: April, 2011 Age at Deployment: 40-50

Richter, Ms. Kristin	**Project Information**	**Deployment Information**
Fantoft Studentboliger Postboks 474 Bergen 5075 Norway kristin.richter@student.uib.no ph: 047 55276210 fax: N/A	Project Role: Project Participant SIP Access: None ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Bergen, [Flesland], Norway - BGO Nationality of Passport: Norway Passport Expiration Date: December, 2015 Age at Deployment: Under 40

Shaw, William	**Project Information**	**Deployment Information**
Oceanography Dept., Code OC/Sh Naval Postgraduate School 833 Dyer Rd, Rm 328 Monterey, CA 93943-5122 wjshaw@nps.edu ph: (831) 656-3270 fax: (831) 656-2712	Project Role: Project Participant SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Monterey, CA [Monterey Peninsula Airport], USA - MRY Nationality of Passport: United States Passport Expiration Date: September, 2014 Age at Deployment: Under 40

Sirevaag, Mr. Anders	**Project Information**	**Deployment Information**

Øvre pinnelien 8 Bergen 5053 Norway anders.sirevaag@bjerknes.uib.no ph: 047 55583824 fax: 047 55589883	Project Role: Project Participant SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Bergen, [Flesland], Norway - BGO Nationality of Passport: Norway Passport Expiration Date: November, 2014 Age at Deployment: Under 40

Stanton, Timothy	**Project Information**	**Deployment Information**
Oceanography Dept., Code OC/St Naval Postgraduate School 833 Dyer Rd, Rm 328 Monterey, CA 93943-5122 stanton@nps.edu ph: (831) 656-3144 fax: (831) 656-2712	Project Role: Co-PI SIP Access: Read/Write ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Monterey, CA [Monterey Peninsula Airport], USA - MRY Nationality of Passport: United States Passport Expiration Date: November, 2012 Age at Deployment: 50-60

Stockel, James	**Project Information**	**Deployment Information**
Oceanography Dept., Code OC/Sl Naval Postgraduate School 833 Dyer Rd, Rm 328 Monterey, CA 93943-5122 stockel@nps.navy.mil ph: (831) 656-3256 fax: (831) 656-2712	Project Role: Project Participant SIP Access: Read ✓ Send Medical Reports ✓ Send Project Updates	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Monterey, CA [Monterey Peninsula Airport], USA - MRY Nationality of Passport: United States Passport March, 2009

		Expiration Date: Age at Deployment: 40-50

TBA 5	Project Information	Deployment Information
Address TBA	Project Role: Project Participant SIP Access: None	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Nationality of Passport: United States Passport Expiration Date: Age at Deployment:

TBA 6	Project Information	Deployment Information
Address TBA	Project Role: Project Participant SIP Access: None	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Nationality of Passport: United States Passport Expiration Date: Age at Deployment:

TBA 7	Project Information	Deployment Information
Address TBA	Project Role: Project Participant SIP Access: None	✓ Is Deploying ✓ Has Current Passport Airport of Departure: Nationality of Passport: United States Passport Expiration Date: Age at Deployment:

Project Information :: Project Schedule

Your project is scheduled on cruise **NBP05–06**.

Departure Date	Departure Port	Return Date	Return Port
N/A	N/A	N/A	N/A

Comments:

current schedule is 20 Jul 05 to 18 Sep 05, dep, arr at PA

Project Information Comments

The following comments have been left for this section:

20 participants are listed. This includes 2 coPIs who are not participating in the field work and 3 TBAs as placeholders. We anticipate that 1 or 2 of the TBAs may not materialize. Passport dates for D. Morison and K. Richter are placeholders. Goldberg is not certain what airport he will leave from–– Kennedy is listed.
Sirevaag and Richter will come from Norway
–– Miles McPhee, 03/31/2005 05:47 PM

Permits

Individuals and groups traveling to Antarctica are responsible for obtaining any and all required permits. An initial assessment of permit needs should be made by the individual (or group) based on planned itinerary, the nature of interactions with wildlife, materials to be handled and shipped to or from Antarctica, and the need to enter Antarctic Specially Protected Areas. The National Science Foundation (NSF), the National Marine Fisheries Service (NOAA/NMFS), U.S. Department of Agriculture (USDA), U.S. State Department (DOS), and the New Zealand Ministry of Agriculture and Forestry (MAF) have regulations governing the taking of marine mammals, plants, introduction of non–indigenous species, importation and exportation, transshipment of specimens, and research vessel clearances for work in foreign exclusive economic zones.

Permits :: Antarctic Conservation Act (ACA)

The Antarctic Conservation Act of 1978 (ACA), Public Law 95–541, conserves and protects the native mammals, birds, and plants of Antarctica and the ecosystems of which they are a part. It is unlawful, unless authorized by permit, to:

- Take native mammals, birds, or plants
- Engage in harmful interference
- Enter Antarctic specially designated areas
- Introduce species to Antarctica
- Import certain Antarctic items into the United States
- [Introduce substances designated as pollutants]
- [Discharge designated pollutants]

Note: The items listed in the brackets above, refer to Waste Management Permits. USAP participants are covered under the USAP Master Waste Permit and do not need to apply for a separate waste permit.

For information on the Antarctic Conservation Act and its regulations, see www.nsf.gov/od/opp/antarct/aca/nsf01151/aca_nsf_01_151.pdf. It takes approximately 12 weeks to process an ACA permit. If you have any questions, please contact Nadene Kennedy at NSF, nkennedy@nsf.gov.

For maps and management plans for Antarctic Specially Protected Areas (ASPA's – formerly referred to as SPA's and SSSI's), please see www.cep.aq/default.asp?casid=5132

Please check each item that applies to your project. This information is required.

Antarctic Conservation Act (ACA)	Yes	No
* Taking native mammals or birds, or parts thereof ("Taking" means to kill, injure, capture, handle, or molest a native mammal or bird.)		×
* Harmful interference (take mammals or birds or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected)		×
* Entering Antarctic Specially Protected Area (ASPA's) – formerly SPA's and SSSI's		×
* Introducing species to Antarctica		×
* Importing certain Antarctic items into the United States		×
* Exporting Antarctic items from the United States		×
* Do you currently have an active ACA Permit? **(If you answer yes, you must enter the Permit No.**		×

and Expiration date below)		

Permit No.

Expiration Date

Note: If you are working with Antarctic mammals, you must submit a copy of a valid Marine Mammal Protection Act permit to the NSF Permit Office before your Antarctic Conservation Act application can be forwarded for approval.

Permits :: Marine Mammal Protection Act (MMPA)

The Marine Mammal Protection Act of 1972 (MMPA) establishes a moratorium on the "taking" of marine mammals in U.S. waters by any person and by U.S. citizens in international waters, as well as a moratorium on the importing of marine mammals and marine mammal products into the United States. However, certain activities are exempted if authorized by permit:

- Scientific research
- Enhancing the survival or recovery of a marine mammal species or stocks
- Commercial and educational photography
- First–time import for public display
- Capture of wild marine mammals for public display
- Incidental take during commercial fisheries
- Incidental take during non–fishery activities

For more information about the Marine Mammal Protection Act and its regulations, please refer to the following website: www.nmfs.noaa.gov/pr/permits/ Please read all the information carefully, and follow the steps offered to help determine which type of marine mammal permit or authorization you will need. If you have any questions, please do not hesitate to contact the NOAA/National Marine Fisheries Service's Permits, Conservation and Education Division at **(301) 713–2289**.

NOAA Fisheries recommends submitting an application for a Scientific Research Permit under the MMPA only at least 6 months in advance of the intended research start date. Those MMPA applications that involve mammals listed as threatened or endangered under the Endangered Species Act (ESA) will require additional review, so applications should be submitted at least 8 months in advance.

Please check each item that applies to your project. This information is required.

Marine Mammal Protection Act (MMPA)	**Yes**	**No**
* Permit to Take Marine Mammals for Scientific Research and/or Enhancement		×
* Authorization to Import and/or Export Marine Mammal Parts		×
* Permit to take animals listed under the Endangered Species Act		×
* Permit to Import Marine Mammals for Public Display		×
* Permit to Take Marine Mammals for Commercial or Educational Photography		×
* Marine Mammal Authorization for Commercial Fisheries Interactions		×
* Small Take Authorizations for Incidental Harassment of Marine Mammals		×
* Do you currently have an active MMPA Permit? **(If you answer yes, you must enter the Permit No. and Expiration date below)**		×

Permit No.

Expiration Date

Permits :: USDA Import Authorization Permit

The United States Department of Agriculture (USDA) has regulations governing the importation of organisms and samples into the United States. It is the responsibility of the PI to determine if a USDA permit is required. Permits can take up to 16 weeks to process. You will need this permit to bring certain samples into the United States. (Complete V.S. Form 16–3 or 16–7). See www.aphis.usda.gov/forms/index.html. You can also apply online at https://web01.aphis.usda.gov/IAS.nsf/Mainform?OpenForm. Please check each item that applies to your project. This information is required.

USDA Import Authorization Permit	Yes	No
* Animal material of any kind		×
* Plant material of any kind, including seeds		×
* Viruses, Bacteria or cell cultures		×
* Rock Samples		×
* Soil Samples		×
* Sediment Samples		×
* Ice Samples		×
* Seawater Samples	✓	
* Freshwater Samples		×
* Air Samples		×

Permits :: Research Vessel Clearances for Work in Foreign EEZ's

If your proposed cruise entails scientific data collection in waters that are in the Exclusive Economic Zone (EEZ) of any foreign country, a Research Vessel Clearance must be filed with the Department of State. No Clearances are required for work in the International Waters surrounding Antarctica. Ms. Alice Doyle (alice.doyle@usap.gov) will work with you to complete the necessary Clearance forms and will submit the forms through NSF to the State Department. You should read about the process for filing for Clearances at: www.state.gov/g/oes/ocns/rvc/3504.htm and note the need for filing 6 months in advance of the cruise. Also note the post cruise obligations of the PI to file Preliminary and Final Reports.

Please check each item that applies to your project. This information is required.

DOS Research Vessel Clearances for Work in Foreign EEZ's	Yes	No
* Data or samples to be collected in Foreign EEZ		×
* Harmful substances will be used		×
* Drilling will be carried out in Foreign EEZ		×
* Explosives will be used in Foreign EEZ		×
* Laying, servicing, recovery of equipment in Foreign EEZ		×

Permits :: New Zealand Ministry of Agriculture and Forestry

The New Zealand Ministry of Agriculture and Forestry (MAF) requires permits to transship and import samples through and into New Zealand. Due to the large volume of permit requests and processing limitations, MAF permits should be in place prior to deployment. On–ice applications will be limited to emergency situations. Please contact Andrea Tibbotts at Raytheon Polar Services (NZ) Limited, andrea.tibbotts@iac.org.nz, with questions regarding MAF procedures applications.

Please check each item that applies to your project. This information is required.

New Zealand Ministry of Agriculture and Forestry Permit Form A	Yes	No
* Importing samples into New Zealand en route to Antarctica?		×
New Zealand Ministry of Agriculture and Forestry Permit Form B	**Yes**	**No**
* Importing samples into New Zealand from Antarctica?		×
New Zealand Ministry of Agriculture and Forestry Permit Form C	**Yes**	**No**
* Transshipping samples from Antarctica through New Zealand?		×

Permits :: Permit Applicants

Please identify each team member who will be applying for permits.

Note: "Accompanied" specimens will be transported with you on the flight or as checked baggage. "Unaccompanied" specimens will be shipped separately

USDA Import Authorization Permit
Applicant 1: Holland, Dr. David

Permits :: Permit Applications

The following table lists the various permits you may require and the **minimum lead times** required for filing these permits with the appropriate agencies.

Permit	Lead Time
U.S. Department of Agriculture Permit	16 weeks

Permits Comments

There are no comments entered for this section.

Cargo

Cargo Requirements	Yes	No
* Do you have any cargo requirements?	✓	
* Will you have any scientific samples to ship after the cruise?	✓	
* Do you have Call Forward Cargo from the Punta Arenas warehouse or from Christchurch?	✓	

Cargo :: Cargo List

List all items to be shipped as cargo. All southbound cargo must be at Port Hueneme, CA six weeks prior to your departure to Antarctica or to a vessel. If this is not possible contact your RPSC POC as soon as possible. For past cruise sample shipment, please make sure to make timely arrangements for any required permits/documentation if you are importing biological specimens (see Permits section of Polar Ice).

Item Name	Qty	Total Wt (lbs.)	Len. (in.)	Width (in.)	Ht. (in.)	Cooling Needed	Oversize	Keep Dry	Do Not Freeze	Hazardous	Radioactive	Biological Specimen	Fragile	Explosive
McPhee #1 SBE9+ box	1	59	38	13	10								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #2 Hardigg packing box	1	108	26	24	24								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #3 custom sontek adv box	1	53	30	21	15								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #4 plywood packing box	1	122	35	23	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #5 &#6 banded deployment derricks	2	150	48	87	5									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #7 plywood packing box	1	115	35	22	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #8 plywood winch box	1	120	19	18	18									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #9 plywood box general supplies	1	121	32	21	18									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee #10 Hardigg case	1	70	23	18	19									

Direction: Southbound **Date Required at Destination:** 07/16/2005														
Sirevaag wood box #1	1	55	30	20	16									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Sirevaag wood SBE #2	1	55	35	12	14								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Sirevaag alum box #3	1	77	24	24	16									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Sirevaag alum #4	2	55	24	16	16									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Sirevaag #6 collaps. ladder	1	25	48	15	9									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
D'Asaro #1#2 #3 Tuffbin	3	50	20	21	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
D'Asaro #4, #5,#6,#7 Orange,blue,green	4	50	22	22	16									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
D'Asaro Trackpoint Console	1	50	27	26	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
D'Asaro Trackpoint cables	1	50	26	26	15									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
D'Asaro Trackpoint transducer	1	75	37	21	17									
Direction: Southbound **Date Required at Destination:** 07/16/2005														

D'Asaro Trackpoint holder	1	50	72	20	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Lagrangian Floats	6	170	72	15	15					✓				
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Rafos Floats	20	30	100	10	10									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Explosive bolts	1	10	10	10	10					✓				
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – Winch	1	300	36	36	36									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison Winch Gliding Pulley	1	50	36	24	4									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison Winch Spares	1	200	36	20	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – SeaBird 911+ CTD	1	70	40	8	8				✓					
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – SeaBird sensors (2 each SBE3, SBE4, and Pumps)	1	30	18	18	8				✓					
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – SeaBird 911 Deck Unit	1	30	20	20	8				✓					
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – Helo Hut Cover and Door	1	300	96	36	12									

Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – Helo Hut Frame Tubes	1	200	96	12	12									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – Helo Hut Skis	4	65	60	8	10									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Morison – Small tools, documentation, clothing	1	100	36	20	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 1 Microstructure package	1	110	71	18	18								✔	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. 4 buoys + 4 T-strings on palet	1	900	90	36	30									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton 4 buoy floats	2	60	31	31	32									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton 4 radomes	1	50	48	48	48									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 2 Sea cats + flux probe	1	130	37	21	17								✔	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton Deep Frame winch	1	800	50	48	45									
Direction: Southbound **Date Required at Destination:** 07/16/2005														

Stanton. Hardig 3 buoy tophats	1	125	25	23	23								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 4. 2 Poweredge Linux computers	1	175	39	23	23								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 5. Computer monitors &misc	1	150	25	23	23								✓	
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 7. UW Cables, tools	1	180	37	21	17									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton. Hardig 8. Winch controllers and misc	1	120	37	21	17									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – VMP Instrument	1	150	87	19	17									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – VMP Winch drum and cable	1	300	33	32	17									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – VMP controller, power supply, cables	1	150	57	17	10									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – VMP fin, buoyancy, drag brushes	1	100	57	28	18									
Direction: Southbound **Date Required at Destination:** 07/16/2005														

Padman – Computer, monitor, printer	1	70	31	17	16									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – monitor, personal items	1	70	33	33	20									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Padman – tools, personal items	1	80	33	33	18									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Stanton Buoy batteries, hazmat	1	30	24	12	12					✓				
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Guest – Rawinsondes Cardboard Boxes	2	40	24	18	10									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Guest – Met Tower Unboxed Metal Frame	1	30	120	12	12									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Guest – Rawinsonde Receiver Plastic Container	1	40	48	24	24									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Guest – Kite Supplies Wooden Box	1	25	48	10	6									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
Guest – Met Instruements Plastic Container	1	50	48	24	24									
Direction: Southbound **Date Required at Destination:** 07/16/2005														

Guest - Antennas Plastic Tube	1	15	60	6	6									
Direction: Southbound **Date Required at Destination:** 07/16/2005														
McPhee call forward #12 Plywood packing box (from Polarstern)	1	183	90	14	12									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #1 Hardigg plastic container (from Polarstern)	1	55	23	18	19									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #23 Sontek ADV wood box (from Polarstern)	2	128	27	18	14									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #4 Hardigg plastic container (from Polarstern)	1	66	19	19	17									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #5 SBE wood box (from Polarstern)	1	51	32	14	11									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #6 Hardigg plastic container (from Polarstern)	1	66	23	18	19									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call	1	121	26	24	24									

forward #7 Hardigg plastic container (from Polarstern)														
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #8 plastic toolbox (from Polarstern)	1	46	26	19	11									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #9 self contained derrick folded (from Polarstern)	1	70	50	7	27									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #10 Hardigg plastic container (from Polarstern)	1	108	23	23	19									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
McPhee call forward #11 Plywood packing box (from Polarstern)	1	143	33	21	18									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
Muench call forward #1 wooden box (from Polarstern)	1	121	44	13	20									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
Muench call forward #2 wooden box (from Polarstern)	1	165	63	15	18									

Direction: Northbound **Date Required at Destination:** 11/19/2005														
Muench call forward #3 wooden box (from Polarstern)	1	172	68	15	18									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
Muench call forward #4 plastic container (from Polarstern)	1	48	26	14	20									
Direction: Northbound **Date Required at Destination:** 11/19/2005														
Stanton call forward #1 large wood box (from Polarstern)	1	367	67	14	20									
Direction: Northbound **Date Required at Destination:** 11/19/2005														

Cargo :: Cargo List :: Hazardous Cargo

Destination	Item Name	* Proper Shipping Name	* Qty Hazardous Items	* Unit of Measure	UN Number	Temperature Sensitive
Southbound	Explosive bolts	Cartridge Activated Devices	10	each	UN0173	
Southbound	Lagrangian Floats	Lagrangian Floats	6	each	UN3091	
Southbound	Stanton Buoy batteries, hazmat	Buoy battery packs	5	each	UN3090	

Describe any ice and freeze–safe requirements.

Comments:

```
Each Lagrangian box contains a single float.
    Each float contains a lithium battery pack containing
         15 Electrochem BCXII-DD batteries each with 10 g of lithium
          8 Electrochem CSC-DD batteries each with 10.2 g of lithium
    The batteries cannot be shipped separately from the float.
The Stanton buoy battery packs have 24 cells each, with 5 gm of lithium per
cell.
```

Cargo :: Scientific Sample List

Please list the scientific samples you will ship after the cruise.

Please provide information on your sample container, such as 1L Nalgene bottle, 1ul cryovial and your preservative, such as frozen at –20C, 4% formalin solution, 95% ethanol.

Item Name	Type of Sample	Qty	Sample Container	Preservative	Cooling Requirements	Transport Method
deltaO18-- Goldberg	melted ice core sample	288	1 oz Nalgene	none	+1 to +4C (keep chilled)	Scientific Samples Unaccompanied

Note: If you are planning on shipping samples on dry ice, you cannot handcarry or check as baggage more than 2 kg of dry ice PER PERSON.

Cargo :: Call Forward Cargo

Indicate the cargo to be called forward and the source warehouse.

Transportation Control Number (TCN)	* Offloaded from Cruise No.	* Warehouse Location	Item Description
n/a	NBP05-06	Punta Arenas, Chile	16 boxes of scientific equipment now aboard Polarstern will be offloaded in PA on Apr 5 2005-- see comments and cargo list - Northbound

Comments:

There are a total of 16 items: 12 for McPhee, 3 for Muench, 1 for Stanton to be offloaded from the Polarstern (Alfred Wegener Institute) in Punta Arenas on 5 Apr 2005. Manifests and descriptions have been sent to Karl Newyear for forwarding to Milenko Buljan, AGUNZA.
Please note that the boxes were labeled "Cruise NBP05-06" instead of NBP05-05. All of these items are included in the cargo list as "Northbound"

Cargo Comments

The following comments have been left for this section:

We anticipate leaving no equipment in Punta Arenas, and by agreement with Karl Newyear, have not repeated all of the SB cargo items as NB. The drift buoys and floats will not return, however it is requested that the shipping crates be returned. This will mean no decrease in volume but some decrease in weight.
We have listed the Call forward cargo to be offloaded from the Polarstern in April as northbound, since it is not listed as southbound.
-- Miles McPhee, 03/29/2005 06:12 PM

Environmental Requirements

Describe your project's impact on the Antarctic environment. This information is required.

Impacts	Yes	No
* Physical disturbance of land areas		✗
* Construction of a field camp requiring full–time personnel for camp operations		✗
* Conducting remote field deployment		✗
* Perturbation experiments, i.e., re–routing water flow or manipulating the habitat of birds or mammals		✗
* Use of explosives – ADD DETAIL		✗
* Ice, rock, or sediment coring		✗
* Drilling or the release of drilling fluids		✗
* Excavation of soil or snow		✗
* Placement of temporary scientific equipment for more than one season that may be irretrievable		✗
* Erecting any structure with a longevity of more than one year		✗
* Excavation, blasting, or drilling (other than drilling ice cores of 5 meters or less)		✗
Research–Related Wastes	**Yes**	**No**
* Generating any hazardous wastes in the field		✗
Hazardous Materials Used in the Field	**Yes**	**No**
* Use of any hazardous materials in the field		✗
* Managing the fuel used at your field camp		✗
* Performing lab work in the field		✗
Releases to the Environment	**Yes**	**No**
* Any permanent releases into the environment of any hazardous material, science equipment, or wastewater	✓	
* Excluding the emissions from the combustion of fossil fuels, releasing any solid, liquid, or gaseous substance (e.g., scientific materials, wastewater, equipment) while in the field		✗

Describe all activities that may affect the Antarctic Environment or any future scientific investigations. Be specific.

```
26 neutrally buoyant floats will be released.
4 ice drift buoys will be deploye
```

Environmental Requirements :: Projected Release

Describe any solid, liquid, or gaseous substances (e.g., scientific materials, wastewater, equipment) you will be releasing while in the field, excluding air emissions from the combustion of fossil fuels. A release is defined as any intentional discharge or emission to the air, water, land, or ice of the Antarctic environment, and includes the placement of equipment that may be abandoned or become irretrievable.

* Substance Name	* Substance Type	* Release Amount	* Unit of Measure	* Total Number of

				Releases Per Field Season
Lagrangian Float	Equipment: Sampling devices	6	each	1
Rafos Float	Equipment: Sampling devices	20	each	1
ice drift buoy	Equipment: Cables, detectors, monitoring sensors, or probes	4	each	1

Environmental Requirements Comments

There are no comments entered for this section.

Major Systems and Equipment

Please indicate your major systems and equipment support requirements. All answers are required.

Requirement	Yes	No
* Will your project require Coring and Bottom Sampling; Nets, Traps and Trawls; or winches and Wire?	✓	
* Will your project require Aquaria and Deck Incubators; Water Column Sampling; or Uncontaminated Seawater Supply?	✓	
* Will your project require Underwater Imagery?		✗
* Will your project require Geophysical Systems; Remote Sensing; or Sonars?	✓	
* Will your project require Laboratory and Science Vans, or temperature controlled lab space?	✓	
* Will your project require Marine Mammal Survey equipment?		✗
* Do you require any ice coring equipment?	✓	

Major Systems and Equipment :: Navigation, Underwater and Meteorological Data

Navigation and Time Data

Seapath 200 GPS receiver
The Seapath 200 receiver provides five−meter position accuracy. The unit also provides accurate time, heading and velocity. The GPS signal is received using a dual−antenna array located atop the science mast. The signal is then sent to the receiver located in the forward dry lab and is logged by the ship's Data Acquisition System (DAS). The ship gets the system time for its computer from the rubidium clock. The time used is GMT time. Every five minutes, the dedicated time computer checks its system clock against the GMT time and makes adjustments if necesary. The time computer is the master clock for ship systems, including all computer workstations.

P−Code GPS receiver
The Trimble P−Code is the backup GPS receiver for the vessel. It will output many different NMEA serial strings as needed. The P−Code provides 7−meter accuracy in anti−spoofing mode and 13−meter accuracy when the receiver is not keyed in anti−spoofing mode.

Meteorological Data

The following Meteorological Data is recorded every second. The values are averaged over a 10−second interval.

- Port wind speed (average, minimum and maximum)
- Port wind direction and standard deviation
- Starboard wind speed (average, minimum and maximum)
- Starboard wind direction and standard deviation
- Temperature (deg C), minimum and maximum
- Relative humidity, single sample point, minimum and maximum
- Barometric pressure
- PSP radiometer (short wave solar radiation)
- PIR radiometer (long wave solar radiation)
- PAR radiometer (Photosynthetically Active Radiation, 400−700nm)
- GUV radiometer (Ground UV, 305, 313, 320, 340, 380, 395 nm and PAR, 400−700 nm)

Continuous Surface Seawater Data

The continuous surface seawater system is a Sea−Bird thermosalinograph interfaced to a Turner fluorometer and a WET−Labs transmissometer. The following Continuous Surface Seawater Data is collected routinely:

- Primary Temperature
- Secondary Temperature
- Conductivity
- Calculated Salinity
- Fluorescence
- Transmissivity

Major Systems and Equipment :: Cart Contents

You have requested the following inventory item(s):

Aquaria and Deck Incubators

Aquaria	
Product Name	**Qty**
Tank, polyethylene double wall w/2" insulation. Portable to back deck. I.D. 44" L x 39" W x 27" H, 678−L volume. 3 tanks available in Aquarium Room, 2 tanks available in Wet Lab.	1

Ice Coring

Ice Coring Equipment	
Product Name	**Qty**
Hand saw	1
Ice thickness measuring kit	1
Power heads (Jiffy or Badger)	1
Shovel	1
Sled	1

Laboratory &Science Vans and Walk−in Cooler

Walk−In Cooler (Constant Temperature Room)	
Product Name	**Qty**
Constant Temperature Room, opens to main corridor and to Biolab, temperature to −10ºC +/− 1ºC	N/A

Remote Sensing/Ice Imagery

Remote Sensing/Ice Imagery	
Product Name	**Qty**
GOES hemisphere imagery, TeraScan satellite−imaging, resolution 7 km per pixel	N/A
Infrared HRPT imagery, TeraScan satellite−imaging, resolution 1.1 km per pixel. See complete description.	N/A
Total ice concentration as a percentage, TeraScan satellite−imaging, SSMI data, resolution 12.5 km per pixel. See complete description.	N/A
Visible DMSP imagery, TeraScan, satellite−imaging, resolution 0.5 km per pixel. See complete description.	N/A

Sonar Systems

Hull−mounted Sonars	
Product Name	**Qty**
Hull−mounted 12 kHz sonar, Precision Depth Recorder, Raytheon PTR, for 12 kHz pinger tracking	N/A
Hull−mounted 3.5 kHz and 12 kHz sonar, Knudsen 320 B/R; 3.5 kHz for sub−bottom profiling or 12 kHz for bottom−tracking	N/A
Hull−mounted 3.5 kHz or 12 kHz sonar, Bathy 2000W, 3.5 kHz for sub−bottom profiling or 12 kHz for bottom−tracking, 8300 Watts	N/A
Hull−mounted ADCP, 38kHz phased array, RD Instruments OS−38 (Ocean Surveyor), for current profiling and measuring	N/A

backscatter in water column–deep and medium resolution (1200–M). See complete description.	
Hull–mounted ADCP, RDI, 150 kHz Narrow–Band, VM–150, for current profiling and measuring backscatter in water column – shallow and high–resolution (400–M). See complete description.	N/A
Hull–mounted Bioacoustic Sonar, 38kHz, 120 kHz and 200 kHz, Simrad EK–500, 38kHz for bottom tracking and biomass measurements (acoustic backscatter), 120 and 200kHz for biomass measurements	N/A
Hull–mounted multibeam sonar, 12 kHz, Simrad EM–120, for swath bathymetry. The Simrad EM–120 requires significant support and its use will require review early in the planning process. The data must be edited for all but the coarsest of uses. Data editing services are not provided by RPSC.	N/A

Water Column Sampling – CTD

CTD Rosette and Bottles		
Product Name	**Qty**	**Maximum Depth**
Rosette Frame, 24 Position, Sea–Bird Electronics	N/A	5000 m

CTD Sensors	
Product Name	**Qty**
Bottom Contact Switch, Sea–Bird Electronics	N/A
Conductivity and Temperature sensor, max depth 6800–M,	N/A

Sea−Bird Electronics (primary and secondary sets) see calibration information.	
Dissolved Oxygen sensor, max depth 7000−M, Sea−Bird Electronics see calibration information.	N/A
Pressure sensor, max depth 6800−M, Sea−Bird Electronics see calibration information.	N/A
Pumps, max depth 6800−M, Sea−Bird Electronics (primary and secondary)	N/A

Expendable Probes	
Product Name	**Qty**
XBT (Expendable Bathythermograph), Sippican T−11, 460−M @ 6kts, high resolution (18cm)	48
XBT (Expendable Bathythermograph), Sippican T−5, 1830−M @ 6kts	24
XBT (Expendable Bathythermograph), Sippican T−7, 760−M @ 15kts	60

Winches and Wire

Hydrographic and Trawl Winches	
Product Name	**Qty**
Winch, hydrographic, located in Baltic room, DUSH−5, for CTD deployments	N/A
↳ **You have also selected the following to be included with the above product:** • 0.322 EM cable, 3 conductor, 10,000−M, for DUSH−5 • 0.322 EM cable, 3 conductor, 10,000−M, for DUSH−5	
Winch, hydrographic, waterfall, DUSH−5−5	N/A

↳You have also selected the following to be included with the above product: • 0.322 EM cable, 3 conductor, 10,000–M, for DUSH–5–5 • 5/16" wire rope, 10,000–M

Utility Winches	
Product Name	**Qty**
Winch, Deck Utility	2
↳You have also selected the following to be included with the above product: • 1/4" wire rope, 300–M	
Winch, Tugger, for moving gear on deck and equipment recovery	N/A

Additional Notes on your Major inventory requirements

```
occasional swath bathymetry
Kovacs corers
ice augurs, 10" power heads
2" Kovacs drills

XBT - These provide us with an ability to rapidly sample as we search for an active convective
event, and while we are setting up more sophisticated equipment.. T-7 are the standard product and
will be useful for future cruises if we don't need them. The T-5 is the only way to get down deep
if a fully developed deep convective event occurs. T-11's provide backup for getting finescale
structure if conditions don't favor the regular fine/microscale measurements.

CTD - T and C sensors *must* be freshly calibrated: the accurate determination of T, S, and
density is critical to MaudNESS goals, where extremely small total changes in density can be
expected.

Water sampling - Salinity standards, sufficient for 500 samples.
                           24 bottles for the Autosal.
                           O2 titration reagents, sufficient for 200 samples.
                           delta-O18 sample bottles, for 200 samples

TeraScan - Access to near-real-time weather and ice concentration imagery is
                  essential to the success of this project. We require that RPSC
                  provide skilled operators for this system.

Hull-mounted sonars - We are aware that some units might conflict acoustically (e.g., EK-500 38
kHz channel and Ocean Surveyor), but require selective access to all units depending on science
needs.
```

Major Systems and Equipment :: Coring and Bottom Sampling

Please select the coring and bottom sampling equipment your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Nets and Trawls

Please select the nets, traps and trawls that your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Winches and Wire

Please select the winches and wire equipment your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Aquaria and Deck Incubators

Please select the aquaria and deck incubators your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Water Column Sampling – CTD

Please select the water column sampling systems your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Remote Sensing/Ice Imagery

Please select the remote sensing systems your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Sonar Systems

Please select the sonar systems your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Geophysical Systems

Please select the geophysical systems your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment :: Laboratory &Science Vans and Walk–in Cooler

Please indicate your laboratory and science van, and temperature controlled lab space requirements for your project.

(Inventory Suppressed for Printing)

Describe any electrical support requirements:

```
band saw for ice core processing
```

Describe computer support requirements:

Describe specific concerns you need addressed:

Major Systems and Equipment :: Ice Coring

Please select the ice coring equipment your project will require.

(Inventory Suppressed for Printing)

Major Systems and Equipment Comments

There are no comments entered for this section.

Vehicle Support

Please indicate your vehicle requirements. All answers are required.

Requirement	Yes	No
* Will your project require the use of any boats or snowmobiles?	✓	

Please describe any additional vehicle requirements.

```
1 snowmobile required, 2nd backup desirable
nansen sled
Mark III Zodiac
```

Vehicle Support :: Cart Contents

You have requested the following inventory item(s):

Vehicle Requirements

Snowmobile	
Product Name	**Qty**
Skandic SWT Ski–Doo, Deep Snow Flotation	1

Additional Notes on your Vehicle inventory requirements

```
one snowmobike required 2nd desirable
Mark III Zodiac
Nansen sled
```

Vehicle Support :: Vehicle Requirements

Please select your boat requirements from the following list.

(Inventory Suppressed for Printing)

Vehicle Support Comments

There are no comments entered for this section.

Laboratory

Please indicate your laboratory, office space, and equipment requirements. All questions are required.

Note: Lab van data is contained in the Systems tab.

Laboratory, Office Space and Equipment	Yes	No
* Do you require laboratory space on board the Nathaniel B. Palmer?	✓	
* Do you have requirements for laboratory instruments, or small science equipment?	✓	
* Will your project require the use of radioisotopes? (unless this is a sealed source, you must also request a rad van under the Systems tab)		✗
* Will your project require the use of liquid cryogens or ice?		✗
* Will your project require the use of compressed gases?	✓	
* Will you need to weigh out chemicals before the cruise, while the ship is in port?	✓	

Laboratory :: Cart Contents

You have requested the following inventory item(s):

Analytical Instruments and Equipment

Oxygen Titrator

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Oxygen titrator (Langdon/LDEO amperometric), auto, with printer, PC clone, dosimats, etc (please request chemicals under 'Supplies' tab)	1	✓		✓	

Salinometer

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Salinometer, Autosal, Guildline 8400B	1	✓		✓	
Square sample bottles	1	✓		✓	
Standard Seawater, IAPSO	1	✓		✓	

Additional Notes on your Laboratory inventory requirements

```
Water sampling - Oxygen titrator
                 Salinometer
                 Salinity standards, sufficient for 500 samples.
                 24 bottles for the Autosal.
```

O2 titration reagents, sufficient for 200 samples.
delta-O18 sample bottles, for 200 samples

There will not be a lab specialist in the Science party: we are assuming that a Raytheon tech will be able to train up people and help with O2 and S lab work.

Laboratory :: Lab Space

Click on the following link to access the deck diagrams. After you download the diagram, print the drawing. Mark the counter space and work area that you intend to use during your cruise. After you finish marking the diagrams, please fax them to the Marine SIP Administrator at 303.792.9006. Be sure to include your name and project number on each diagram. diagrams

Please click Continue when finished.

Laboratory :: Analytical Instruments and Equipment

Please select your analytical instrument and equipment requirements for this project.

(Inventory Suppressed for Printing)

Laboratory :: Compressed Gases

Describe the type and amount of compressed gases that your project will require in the following table.

* Qty of Cylinders	* Cylinder size (cubic ft.)	Description (include purity and CGA fittings)	Regulators Needed	Qty of Regulators
1	300	dry nitrogen	Brass	1
18	300	helium for weather balloons	Brass	1

Laboratory :: Pre-weigh Chemicals in Port

If you need to pre-weigh chemicals on an electronic balance in port before the cruise, please describe your requirements below.

oxygen titrations planned

Laboratory Comments

The following comments have been left for this section:

Need table or bench in Helo Hanger for Rawinsonde System

−− Peter Guest, 03/31/2005 02:03 PM

Supplies

Please indicate your non−stocked materials and equipment requirements. This question is required.

Supplies	Yes	No
* Will your project require consumable materials or equipment not normally stocked (e.g., chemicals, explosives, etc.)?	✓	

Supplies :: Non−Stocked Materials and Supplies

Please complete this table to request supplies not stocked on the vessels (that is, items not available on the standard lists). Lab supplies are not stocked on the Research Vessels. Instead, you are asked to request all of the supplies your project requires in the following table. Complete this form for each vendor.

For large material lists, you may download a blank pre-formatted Excel spreadsheet, save it to your computer, fill it out, then upload the file. The uploaded Excel file MUST be in the same format as originally downloaded.

Vendor 1.	Vendor Subtotal	Date Req'd	Home Institution Delivery (Needs NSF approval)
RGL Consulting www.rglscientific.com 3956 Sherwood Road Victoria, British Columbia, Other V8N 4E6 Canada Phone: 001 250-592-8861 Fax: 001	$10,600.00	16 Jul 2005	

↳ Qty	Units	Description	Mfg. Name	Mfg. Part #	Vendor Part #	Accept Subs?	If Not, Explain (required if don't accept subs)	Unit Price	Cubic Feet Per Unit	Total Weight (lb) Per Unit	Comments
6	EA	Temperature sensor for CMiPS	FP07 thermistor, 1/4" sting	FP07-38-6	FP07-38-6		Only manufacturer for specialized microstructure sensors for CMIPS	$1,200.00	0.1	0.1	For use with Raytheon-owned CTD-mounted Microstructure Profiling System (CMiPS)
		Is Hazardous?									
2	EA	Conductivity sensor for CMiPS	Sea-Bird micro-conductivity probe	SBE7-38	SBE7-38		Only manufacturer for specialized microstructure sensors for CMIPS	$1,700.00	0.1	0.1	For use with Raytheon-owned CTD-mounted Microstructure Profiling System (CMiPS)
		Is Hazardous?									

Vendor 2.	Vendor Subtotal	Date Req'd	Home Institution Delivery (Needs NSF approval)
	$0.00	16 Jul 2005	

↳ Qty	Units	Description	Mfg. Name	Mfg. Part #	Vendor Part #	Accept Subs?	If Not, Explain (required if don't accept subs)	Unit Price	Cubic Feet Per Unit	Total Weight (lb) Per Unit	Comments
200	EA	D-cell Alkaline battery	D-cell Alkaline battery			✔		$0.00	0.0	0.0	For use with Raytheon-owned CTD-mounted Microstructure Profiling System (CMiPS)
		Is Hazardous?									
3	EA	Marine Gel Cell 12 V Batt ery				✔		$0.00	0.0	0.0	
		Is Hazardous?									
1	EA	Charger for above				✔		$0.00	0.0	0.0	
		Is Hazardous?									

Vendor 3.	Vendor Subtotal	Date Req'd	Home Institution Delivery (Needs NSF approval)
Fisher Scientific https://www1.fishersci.com/index.jsp 600 Business Center Drive Pittsburgh, Pennsylvania 15205 United States Phone: 001 8009260505 Fax: 001 4124907286	$209.67		

↳ Qty	Units	Description	Mfg. Name	Mfg. Part #	Vendor Part #	Accept Subs?	If Not, Explain (required if don't accept subs)	Unit Price	Cubic Feet Per Unit	Total Weight (lb) Per Unit	Comments
4	CAS	sample bottles 1oz 72 per case	Nalgene	03-313-4A	2189-0001	✓		$46.74	0.0	8.0	
		Is Hazardous?									
1	ROL	2" parafilm 250' roll	Parafilm	13-374-16	PM996	✓		$22.71	0.0	3.0	
		Is Hazardous?									

Current Total: **$10,809.67**

Supplies Comments

There are no comments entered for this section.

Computers

Please answer the following questions concerning your computer requirements. All answers are required.

Computer Support	Yes	No
* Are you bringing your own computers or data systems not supplied by the USAP?	✓	
* Are you bringing your own software to install on USAP computer systems?		✗
* Are you connecting your computer(s) to onsite equipment, instruments, or networks?	✓	
* Do you require the use or installation of lab–supplied software?	✓	
* Do you require computer or software support from onsite staff?	✓	
* Do you require a USAP laptop?	✓	
* Do you require a USAP computer?	✓	
E–Mail and Data Transmission	**Yes**	**No**
* Do you have e–mail requirements?	✓	
* Do you have data transport requirements?	✓	
Computer Peripherals	**Yes**	**No**
* Do you need printing or plotting capabilities?	✓	
* Do you require any external media for data storage?		✗

Computers :: General Computer Support

Please define your general computer support requirements by clicking the above section links or the Continue button.

Computers :: General Computer Support :: Self–Supplied Computer Hardware

Many grantees find that bringing their own computers is the most convenient way to meet their computing needs.

Vessel LAN Notes:

The LAN connection is a 10/100 Base–T connector. Your computer must have built–in or external 10/100 Base–T connectivity hardware to access the vessel intranet; this hardware will not be supplied by the station or vessel. All computers including personal computers require current anti–virus software and/or security patches.

You have indicated your plan to bring your own computer(s) to the vessel. Please describe these computer(s).

* Type of Computer	* Quantity	OS Version Number	Operating System (OS)	LAN Connection(s) Required
Linux	2	McPhee	Linux	✓
PC	1	XP McPhee	Windows xp	✓
Macintosh	3	Morison	OS10	✓
PC	3	Padman/Muench	Windows XP	✓

PC	1	Padman	Windows 2000	✓
Linux	2	Stanton	Linux	✓
PC	4	Stanton	WindowsXP	✓
Linux	4	Stanton inbedded contollers	fixed IP's	✓
PC	1	Ohmart Laptops	Windows 98/DOS	
Linux	2	Sirevaag laptops	linux	✓
PC	1	Harcourt Laptop	Windows XP	✓

Describe instruments or equipment you are connecting to your computer:

Seabird deck units-- McPhee
Vertical Microsstructure Profiler (VMP) -- Padman/Muench
CTD-Mounted Microstructure Profiling System (CMiPS) -- Padman/Muench
CTD / Microstructure profiler and winch - Stanton
Deep ADCP/T-string/turbulence frame frame and winch - Stanton
Iridium modem and RF link in crows nest- Stanton
Lagrangian floats - Ohmart
SBE deck unit-- Sirevaag

Describe any additional connectivity or application requirements you have:

Routine access to ship network for position, ADCP, CTD and underway systems data -- Padman/Muench

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Computers :: General Computer Support :: Computer Hardware Resources

PC, Mac, Sun and SGI workstations are publicly available in various labs. Remember, ship resources are limited. If necessary, a desktop computer can be issued for your group's exclusive use in your lab space.

* Type of Computer	* Quantity	LAN Connection(s) Required	Additional Software Required
PC	1	✓	✓
PC	1		
MAC	1	✓	

Describe instruments or equipment you are connecting to this computer, and any applicable configuration, software and interface requirements:

Linux desktop requested, memory upgraded to 1GB.
-FORTRAN compiler (f77 fine, actually already included with Linux distribution, so no action necessary)
-MATLAB
-netCDF Libraries for FORTRAN, and NetCDF Toolbox for MATLAB.

Describe any additional connectivity or application requirements you have, if applicable:

Real time ship's ADCP, Met, GPS and winch line out data should be available along with winch line-out and pressure from other over-the-side instruments on the ship.

Computers :: General Computer Support :: Available Computer Software Resources

The standard software spin includes various packages and utilities. Additionally, certain limited availability software can be allocated to your group.

Describe your additional software application requirements.

* Software	* Qty
MatLab (SUN/SGI/Mac/PC)	1

Computers :: General Computer Support :: Laptops Issued for Field Use

The vessels issue laptop computers for use during your cruise for equipment or instrumentation only. We are not able to issue laptops for any other purpose.

* Type of Computer	* Quantity
PC Laptop	1

Describe instruments or equipment you are connecting to this computer, if applicable:

Please describe how you will use these computer(s), and any additiional software or hardware that will be required.

AsPect ice monitoring-- no special software

Computers :: General Computer Support :: Computer Technician Support

Indicate the type of support your computer systems and software will require from on–site technical staff.

Type of support	# of hours
Network Configuration	8

If you have indicated that you need support, please explain what this support involves on the part of the vessel technical staff.

scanning for viruses, network configuration

Computers :: E−Mail and DataTransmission

Please define your e−mail and data transmission requirements by clicking the above section links or the Continue button.

Computers :: E−Mail and DataTransmission :: LAN and E−Mail Accounts

LAN and E−Mail Accounts

USAP Vessel E−Mail Use Policy

USAP participants and support staff on USAP research vessels may use the vessel email systems for both program and private email reception and transmission, subject to general email policies for the USAP. Each standard user is allowed a quota of 25KB (25600 bytes) per user per day (including incoming as well as outgoing email traffic) calculated and accumulated for the duration of the cruise and expendable when and how the user sees fit.

This quota is exclusive of specific Science Information Package (SIP) requirements. The SIP process contains dialogue for grantee requests for additional data/document transfers. The quota is calculated using the current HSD budget, prorated on a per user basis assuming full berthing and a full ship's operating schedule. RPSC shall advise the NSF when analysis of financial records and data transmission records indicate that a change in quotas or pricing are required, and the NSF shall establish said quotas and prices as required.

The initial account quotas have been derived using FY 2001 communications budget constraints and assume full berthing and 365 days on charter. These assumptions leave approximately 10 − 15 percent budgetary overhead. Users who exceed their email quota by over $10 will have to pay for the excess. Payment for this excess usage will be made in cash or check to the MPC at the end of each cruise. The PI for each grantee will be ultimately responsible for ensuring that they payment is made for each grantee who accumulates a balance due. All collections shall adhere to the current USAP standard policy for collection of funds from grantees in the field. All funds collected will be transferred into the operating budget for vessel satellite communications. Adequate records shall be kept for collection.

Standard account
A per message size filter of 100kB outbound and 75kB inbound will be in effect. This will prevent extremely large messages from being sent to or from the ship except via approved accounts and will prevent a user's quota from unwittingly be consumed by a large inbound "spam" message.

100kB will allow for high−resolution images to be sent, while protecting them from using their allotment too quickly. However, these size limits are subject to review and could easily be adjusted as needed.

For a legitimate and approved request, the limit can be adjusted for a single email transmission, or for the duration of a cruise as necessary and by individual user account.

General Guidelines

A user's email allotment for a cruise will be based upon the cruise length (plus 4 days for port call time) multiplied by the current daily quota. For example, a 42 day cruise at 25kB/day would produce an allotment of: (42+4) days * 25kB/day = 1150 kB or 1.12 MB. Allotments and usage will be calculated using the compressed file size of each email message sent from or to the user across the HSD connection. The user will be financially responsible for any usage over the per cruise allotment. Initial transfer rate as of 4/01/02 is approximately 360kB/min of compressed data at $10/min, or a transmission cost of 360 KB @ $10.00. The billing is based on actual compressed bytes transmitted, and will be prorated on an average cost per byte. The billing rate and the policy itself are sent to the individual accounts at the beginning of the cruise, stated and explained during the IT orientation at the beginning of the cruise, and posted prominently in multiple locations on the ship. Accounting information is provided daily to each account user, and this information is collated and maintained by the IT staff and an end of cruise report is submitted to the MPC. Payment shall be made to the MPC in either cash or personal check.

The user's total on and off ship email usage will be calculated each day, and record of it placed in their home directory for review of current usage, remaining allocation, and current user–borne cost.

Users who have exceeded their allotment by over $10 will receive an invoice at the end–of the cruise, both hardcopy and electronic, showing their usage during the cruise, the amount they owe and instructions to settle the account with the MPC. All accounts must be settled on a per cruise basis, even for users who are remaining aboard for subsequent cruise.

Users who do not settle their bills will have future email access restricted to 3kB/message. The NSF (Al Sutherland, Pat Smith, and Brian Stone) will be notified of those violators of the policy.

The Principal Investigator (PI) for each science group shall be responsible for the email usage bill for members of that science group. The PI will be given a running account of the email usage of those grantees for whom they are responsible.

If a user is receiving excessive (in size or volume) email from a particular address and is unsuccessful in requesting an end to the email from the sender, email from the sender shall be blocked at the server in Denver.

Computers :: E–Mail and DataTransmission :: Data Transfer Requirements

The standard e–mail allotments for cruise participants are 25kB/day plus 4 days port call; the outbound message size limit is 100kB and the inbound limit is 75kB. Please list any data transfer you require in excess of these limits in the tables below. NOTE: At least one row in one of the tables is required, but you do not need to fill in both tables unless you have both data transfer and excess data transfer requirements.

Excess E–Mail Transfers

* Qty of Data (KB)	* Frequency
33	Day

Excess Data Transfers

* Qty of Data (KB)	* Frequency
2000	Day

Include explanation/justification for excess transfers:

The MaudNESS program relies on our ability to rapidly respond to observations and predictions of the onset of deep convective events. To this end we require significant shore-to-ship data transfers. These consist of:

~1 MB/day for additional satellite imagery (AMSR, Quickscat, Envisat) for ice concentration and motion. Maximum single-file size ~600kB. This allowance excludes 8 x ~1MB RADARSAT images during the cruise, which are to be provided by Raytheon via the NIC.

The satellite imagery is complementary to the near-real-time images from the ship's TeraScan system. In the event that TeraScan fails (as during AnSlope 3), we would need additional shore-to-ship transmissions to partially offset the data loss.

~1MB/day for model grids from atmospheric forecast models (Polar MM5, ECMWF), for forcing on-board coupled ice/ocean numerical models.

For the last ~3 weeks of the cruise, a participant elementary school teacher (G. Behrens) wants to send more than his usual allowance of files/images back to the US for his class. We estimate 100 kB/day for 20 days, averaging ~33 kB/day extra over the duration of the cruise.

For each of these uses (satellite, model grids, K-12 outreach) we request a waiver of the 75kB/file rule.

Computers :: Computer Peripherals

Please define your computer peripheral requirements by clicking the above section links or the Continue button.

Computers :: Computer Peripherals :: Printers and Plotters

The following printers are available through standard network interfaces in all labs. Please select the printers and plotters you anticipate using.

* Type of Printer or Plotter	Heavy Use?
Color LaserJet	
Black and White LaserJet	
Large Format color plotter	

Computers Comments

The following comments have been left for this section:

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for some reason the excess data transmission justification box does not accept text.
Justification for excess data transfer request of 2 MB per day:

We expect conUS support from NYU (coPI Holland) and UWAPL (coPI Lindsay) involving numerical modeling and weather/imagery not availlable as std ship items . These possibly include AMSR and Envisat data as discussed at the Mar 7 meeting.
−− Miles McPhee, 03/30/2005 05:44 PM

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justification comments have now been added to the appropriate box
−− Miles McPhee, 03/31/2005 03:47 PM

Communications

Please indicate your communications requirements. All answers are required.

Requirement	Yes	No
* Will your project require the installation of communications equipment (voice, data, or video)?	✓	
* Does your team have voice communication requirements using HF or VHF field radios?	✓	
* Will your team be bringing equipment that operates at radio frequencies, or using RF equipment not issued through RPSC?	✓	
* Do you have other communications requirements?	✓	

Communications :: Field Radios

Describe your HF/VHF radio requirements.

5 vhf for ice camp support

Communications :: Intercontinental Voice Calls

Indicate the total and type of voice calls your team expects to make.

Type of Call	Length of Call (min)	# of Calls per Week
Float deployment issues	5	2

Communications :: Terrestrial and Satellite Frequency Registration

All communications links used in Antarctica require frequency registration. Use the following table to describe the communications links, equipment, and locations. You should be able to find most of this information in the specifications that came with your equipment.

Complete this table for equipment other than the standard HF and VHF field radios issued from RPSC inventory. First, name the sites where this equipment will be used, then describe the equipment.

NOTE: This table facilitates the initial registration. Frequency registration for satellite access/links requires more information than what is requested here. Approval to use satellite should be obtained from the satellite provider.

Registration 1

Site Information

Equipment Application	Type of Service	Activation Date	Deactivation Date	Transport Category
Data Telemetry	Data	20 Jul 2005	30 Apr 2006	
Equip Used Before	**When**	**Where**	**Transmission Bandwidth**	

Transmitter Information				
Transmitter Brand/Model	**Frequency Range**	**Power Output (W)**	**Qty Same or Similar Units**	**Transmitter Antenna Gain (dB)**
Iridium	1516-1620MHz	10	6	3
Transmitter Antenna Type	**Transmitter Antenna Height (m)**			
Patch	1			

Receiver Information				
Receiver Brand/Model	**Tuning Increments**	**Power Output (W)**	**Qty Same or Similar Units**	**Receiver Antenna Gain (dB)**
Iridium	none		6	3
Receiver Antenna Type	**Receiver Antenna Height (m)**			
Patch	1			

Registration 2

Site Information				
Equipment Application	**Type of Service**	**Activation Date**	**Deactivation Date**	**Transport Category**
Iridium (Stanton)	Data	02 May 2005	03 Apr 2006	LO satellite
Equip Used Before	**When**	**Where**	**Transmission Bandwidth**	
✔	01 Nov 2001	North Pole	Spread spectrum	

Transmitter Information				
Transmitter Brand/Model	**Frequency Range**	**Power Output (W)**	**Qty Same or Similar Units**	**Transmitter Antenna Gain (dB)**
Motorola 9505	1516-1620 MHz	1	5	3
Transmitter Antenna Type	**Transmitter Antenna Height (m)**			
Helical	1			

Receiver Information				
Receiver Brand/Model	**Tuning Increments**	**Power Output (W)**	**Qty Same or Similar Units**	**Receiver Antenna Gain (dB)**
Motorola 9505	none	0	5	3
Receiver Antenna Type	**Receiver Antenna Height (m)**			
Helical	1			

Registration 3

Site Information				
Equipment Application	**Type of Service**	**Activation Date**	**Deactivation Date**	**Transport Category**
RS232 modems	Data link	18 Jul 2005	14 Sep 2005	low power data link
Equip Used Before	**When**	**Where**	**Transmission Bandwidth**	
✓	01 Feb 2005		900 MHz spread spectrum	

Transmitter Information				
Transmitter Brand/Model	**Frequency Range**	**Power Output (W)**	**Qty Same or Similar Units**	**Transmitter Antenna Gain (dB)**
XT09-10KI-R	900-930 MHz	0.1	1	3
Transmitter Antenna Type	**Transmitter Antenna Height (m)**			
whip	2			

Receiver Information				
Receiver Brand/Model	**Tuning Increments**	**Power Output (W)**	**Qty Same or Similar Units**	**Receiver Antenna Gain (dB)**
Same	none		1	3
Receiver Antenna Type	**Receiver Antenna Height (m)**			
	0			

Registration 4

Site Information				
Equipment Application	**Type of Service**	**Activation Date**	**Deactivation Date**	**Transport Category**

Rawinsonde Coms	Data	18 Jul 2005	14 Sep 2005	

Equip Used Before	When	Where	Transmission Bandwidth	
✓		Many places	1 Mhz	

Transmitter Information

Transmitter Brand/Model	Frequency Range	Power Output (W)	Qty Same or Similar Units	Transmitter Antenna Gain (dB)
Vaisala RS-80G Rawinsonde	400-405 MHz	0.5	80	3

Transmitter Antenna Type	Transmitter Antenna Height (m)	
small omni	1	

Receiver Information

Receiver Brand/Model	Tuning Increments	Power Output (W)	Qty Same or Similar Units	Receiver Antenna Gain (dB)
Vaisala	.1Mhz	0	1	6

Receiver Antenna Type	Receiver Antenna Height (m)	
omni	1	

Registration 5

Site Information

Equipment Application	Type of Service	Activation Date	Deactivation Date	Transport Category
Ship - Ice Data Telemetry (Guest)	Data	18 Jul 2005	14 Sep 2005	

Equip Used Before	When	Where	Transmission Bandwidth	
✓		many places		

Transmitter Information

Transmitter Brand/Model	Frequency Range	Power Output (W)	Qty Same or Similar Units	Transmitter Antenna Gain (dB)
Freewave Model FGR-115RC	902-928 MHz	0.1	1	6

Transmitter Antenna Type	Transmitter Antenna Height (m)	
omni	1	

Receiver Information				
Receiver Brand/Model	**Tuning Increments**	**Power Output (W)**	**Qty Same or Similar Units**	**Receiver Antenna Gain (dB)**
same	none		1	6
Receiver Antenna Type	**Receiver Antenna Height (m)**			
	1			

Communications :: Other Requirements

Please describe any additional communications requirements.

The Stanton Iridium modem and RS232 data link will be in the ice lookout room connected to 110 volts and ethernet through our terminal server. Antennas will be on top with an open sky view

Guest will have Rawinsonde receiver antenna on helo deck.
Ship - Ice telemetry with clear view of ice camp.
Small GPS antenna on helo deck (rawinsonde system).

Communications Comments

There are no comments entered for this section.

Scientific Services

Please indicate your scientific services support requirements. All answers are required.

Requirement	Yes	No
* Does your project require shipboard technician support?	✓	
* Do you require data to be collected for your project?	✓	
* Do you expect to get off the ship and on to the ice for your research?	✓	

Please describe your need for any additional scientific services.

Scientific Services :: Shipboard Technician Support

Marine Projects Coordinator

The Marine Projects Coordinator is the liaison between your team and the vessel crew, harbor agents, and the RPSC office. This individual, along with the senior marine technician and the ship's captain, will determine whether it is safe to deploy gear in rough seas, ice, or other extreme conditions.

If you have any concerns about safety and ship operation, or if there is anything you wish ship personnel to know, please describe it.

Many of the safety concerns were addressed during the Mar 7 Seattle meeting, and summarized by Newyear in his distributed notes. These include an emergency platform and path marking equipment. A protocol for off-ice operation safety should be developed, including VHF comms, minimum party size, weather limitations, flotation devices, transportation, bridge sign in/out procedures, etc. Most of the science party is experienced, however there will be several members with no previous polar experience.

Marine Electronics Technician

The Marine Electronics Technician calibrates and maintains the ship's sensor systems throughout the year including standard systems such as sonars, seismic equipment, and the TeraScan system.

Electronics Technician–related issues include specialized equipment you are bringing, power requirements, data lines, cabling requirements, or any concerns the electronics technician needs to know.

Please describe any additional electronics technician support requirements.

The project is highly dependent on having the best remote sensing support available, including all Terascan products, and Quickscat images.

Marine Science Technician

The Marine Science Technician maintains the ship's lab instruments and equipment throughout the year.

Marine science technician–related issues include support for lab instruments or equipment, special configuration of lab spaces, lack of

compatibility with other research, or any concerns the marine science technician needs to know.

Please describe any additional marine science technician support requirements.

We will be using both ship ADCPs throughout (coordinated by Muench), as well as the fathometer. The ship CTD will be used during ingress and egress, and during the Phase 1 shallow survey. In the event of a sizable polynya (Phase 4), we will use the ship CTD with the VMP microstructure package attached.

Marine Technician

Marine technician–related issues include any special or ship modifications required for your sampling equipment, special rigging that may be required for deployment and recovery of your equipment and instruments, special space requirements or lab modifications, any over–the–side activities you are planning, any woodworking or other fabrications.

Please describe any additional marine technician support requirements.

Main items are (1) moonpool clearing and profiling winch system van; (2) watch circle considerations for ocean instrumentation, including fairleading the deep turbulence mast forward; (3) provision for fantail deployment of the helo hut microstructure profiler in Phase 3, and (4) acoustic float tracking from the ship. These have all been discussed at length with RPSC personnel.

Marine Computer Staff

The Network Administrator and Systems Analyst maintain the ships' IT infrastructure and services, including network support, e–mail support, operating the ship's Data Acquisition system (DAS) and archiving cruise data. Refer to the Computers tab to enter your requirements.

Scientific Services :: Data Management Support

Vessel Data Formats

Marine data formats available on the vessels include MGD77, JGOFS, and the standard raw data logging format. A detailed description of the MGD77 and JGOFS datasets can be found here.

Data Sets

An MGD77 data set will be provided routinely. If you require a JGOFS data set or you have a requirement for special data types and formats, please indicate this in the table below.

* Data Set	* Description of Special DataTypes and Formats
JGOFS	standard

Scientific Services :: On–The–Ice Support

Please describe the type of ice you are looking for (e.g., new ice, old ice, sea ice with algae, etc.).

We will be operating in late winter in the Maud Rise region, and expect 1 m or less ice thickness.

Please describe the type of work you expect to accomplish (e.g., coring, water sampling, observations of wildlife, direct interactions with wildlife, etc.).

The main thrust of on-ice work is to move some measurement systems (met tower, near surface ocean turbulence mast, tethered microstucture profiler) away from direct influence of the ship, and from interference with ship based measurement systems. In addition there will be a program of ice column monitoring (temperature, thickness) and sampling as described in the systems tab.
We will also deploy 4 ice drifting buoys.

Please describe the equipment you expect to use (e.g., hand or motorized corers/augers, saws, hand–pulled sleds, generators, etc.).

Snowmobile and backup if available
Nansen sled and hand pulled sleds
heat for user supplied ski-equipped shelter (helo hut)
fuel required (kerosene or diesel) for shelter heater
2 kw generator for the microstructure profiler-- users will supply at least 2 1 kw inverter type generators.
hydrohole equipment including ice saws, power auger, ice tongs, ice chisels, shovels, and kitchen strainers.
various coring/ice sampling equipment as detailed in the systems tab
request 2 ea 12v automobile type batteries be obtained in PA for offship winch
we may require a stock of wood (1/2", 5/8" plywood), 2x4s, 2x6s for improvising A frames and shelters off ship, beyond the normal ship supply. Specifically: 8 sheets 1/2" ply, 4 sheets 5/8" ply, 24 ea 8' 2x4 (or equiv); 12 ea 8' 2x6 (or equiv).

NOTE: The vessel has a limited supply of equipment. Providing your requirements well in advance will help to ensure the equipment is available.

Scientific Services Comments

There are no comments entered for this section.

Global Positioning Support

GPS capabilities are available on the vessel. See Systems tab, "Navigation, Underwater and Meteorological Data" section, you do not need to request those here.

Requirement	Yes	No
* Do you have requirements for survey–grade Global Positioning System (GPS) support?		×

Global Positioning Support Comments

There are no comments entered for this section.

Diving Support

Please indicate your diving requirements. All questions are required.

Diving Support	Yes	No
* Will your project involve research diving?		✖

Diving Support Comments

There are no comments entered for this section.