Support Information Package

Nathaniel B. Palmer – 2007–2008 Season

Applicant Version

Project Name:	Sea Ice Mass Balance in the Antarctic–SIMBA Drift Station
Principal Investigator:	Stephen Ackley
Event Number:	O–270–N
Award Number:	N/A
Cruise Code:	NBP07–09
Printed on:	Saturday, 24 March, 2007 at 07:47 MST
Printed for:	Stephen Ackley

Summary of Sections

Project Information

Welcome to the first page of this worksheet where you will define your project's support requirements. You may navigate through all required pages by clicking the "Continue" button, or select a specific page by clicking any tab or link in the left navigation bar. Your information is automatically saved as you navigate from each page. If you would like to see the overall worksheet site map with a brief description of the information we gather on each page, click the "Site Map" link under **Worksheet Tools** in the left navigation bar and hover your mouse over the "i" icons.

Use this page to describe your research project. This information is required.

*** Research Objectives**

This program is the International Polar Year sea ice drift station for Antarctic Sea Ice, a component of the overall project, Antarctic Sea Ice, endorsed internationally by the Joint Committee for IPY (www.ipy.org). Additionally, the buoys to be deployed have been endorsed as an IPY contribution to the WCRP/SCAR International Programme on Antarctic Buoys (IPAB). The major goal of this study is to investigate the evolution of the sea ice cover in the Bellingshausen-Amundsen-Ross Seas (BeAR Sea Ice Massif) during the late winter-spring-summer transition period. A ship-based study will focus on the first half of the period when the net radiation balance is still negative (September-October). The ship studies will be extended to include the remaining evolution of the summer ice cover using autonomous mass balance buoys and high temporal motion buoys, and complementary satellite measurements. While prior survey information has been conducted in the region, time-series measurements on sea ice mass balance are crucial data in interpreting the mechanisms of air-ice-ocean interaction. Additional collaborative projects will be conducted on the biology and biogeochemistry of sea ice, seals and other marine mammals, and physical oceanography of the Amundsen Sea.

*** Field-Season Overview**

NB Palmer 60 day cruise, Sept 1-Oct 31 2007
Transit from Punta Arenas Chile rtn to Punta Arenas
30 day "Drift Station" in 10km box in Amundsen Sea Ice Zone
10 Sea Ice Drifter Buoy and 23 Argo Float Deployments Inbound and Outbound
Sea Ice Time Series at Drift Station and 3 Mass Balance Buoys, Temp profiles, Snow depth, ice thickness, ocean heat flux, underice radiation
Sea Ice Properties at Drift Station and Buoy Sites, Thickness profiles + Cores
ROV Deployment at Stations en route and Drift Station
Radiation and Micrometeorology at Drift Station
Ocean Ice and Met Obs , In Transit and on section stations, Argo Float Deployments
Seal Satellite Tagging and Physiology
Ice Biogeochemistry and Biology Time Series at Drift Station + Core Sampling on Sections
Contemporaneous Satellite Data from Envisat, DMSP,ICESat, AMSR-E
Surface Validation of Satellite Data through Geophysical Surveys by EMI, DC resistivity and Surface Leveling

Project Web Site
Important: Please leave blank if the project does not have a website.

www.utsa.edu/lrsg/Antarctica/SIMBA

Project Information :: Participant Roster

There are **30** participants assigned to this project.

Ackley, Mr. Stephen F. (m)	**Project Information**	**Deployment Information**
Earth and Env Sci Dept UTSA I UTSA Circle San Antonio, TX 78249 stephen.ackley@utsa.edu ph: (210) 341-6556 fax: (210) 341-6556 Inst: University of Texas	Project Role: Principal Investigator (PI) SIP Access: Read/Write ✔ Send Medical Reports ✔ Send Project Updates ✔ Project IT Contact	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio International Airport], USA - SAT Nationality of Passport: United States Passport Expiration Date: June, 2012 Age at Deployment: 60 or over

Anderson, Sarah (f)	**Project Information**	**Deployment Information**
107 River Ridge Boerne, TX 78006 sarah.anderson@boerne-isd.net ph: (830) 357-2242 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio International Airport], USA - SAT Nationality of Passport: United States Passport Expiration Date: January, 2011 Age at Deployment: 40-50

Becquevort, Sylvie (f)	**Project Information**	**Deployment Information**

Brussels 12345 Belgium sbecq@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Brabant, Frederic (m)	**Project Information**	**Deployment Information**
Brussels 12345 Belgium fbrabant@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

DeJong, Jeroen (m)	**Project Information**	**Deployment Information**
Brussels 12345 Belgium jdejong@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU

		Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

DeLille, Bruno (m)	**Project Information**	**Deployment Information**
Liege 12345 Belgium Bruno.Delille@ulg.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Dumont, Isabelle (f)	**Project Information**	**Deployment Information**
Brussels 12345 Belgium idumont@ulb.ac.be ph: (219) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration: January, 2010

		Date: Age at Deployment: Under 40

Fritsen, Dr. Christian H. (m)	**Project Information**	**Deployment Information**
2215 Raggio Parkway Reno, NV 89512 cfritsen@dri.edu ph: (775) 673-7487 fax: (775) 673-7485 Inst: Desert Research Institute (Division of Earth and Ecosystem Sciences)	Project Role: Project Participant SIP Access: Read/Write	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Reno, NV [Reno/Tahoe Cannon International Airport], USA - RNO Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: 40-50

Geilfus, Nicolas-Xavier (m)	**Project Information**	**Deployment Information**
Liege 12345 Belgium nxgeilfus@student.ulg.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Johnson, Keith (m)	**Project Information**	**Deployment Information**
Sydney 12345 Canada JohnsonK@pac.dfo-mpo.gc.ca ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Victoria, BC [Victoria International Airport], Canada - YYJ Nationality of Passport: Canada Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Lewis Jr., Mr. Michael John (m)	**Project Information**	**Deployment Information**
10921 Hollow Ridge Helotes, TX 78023 michael.lewis@swri.org ph: (210) 522-3533 fax: (210) 522-5093 Inst: University of Texas	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio International Airport], USA - SAT Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: 40-50

Masson, Florence (f)	**Project Information**	**Deployment Information**

Brussels 12345 Belgium fmasson@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Papakyriakou, Tim (m)	**Project Information**	**Deployment Information**
Winnipeg 12345 Canada papakyri@cc.umanitoba.ca ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying Airport of Departure: Winnipeg St Andrews, MB [Winnipeg St Andrews Airport], Canada - CYAV Nationality of Passport: Canada Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Saunders, Ms. Beverly Anne Cosgrove (f)	**Project Information**	**Deployment Information**
4610 Tamaron Hill San Antonio, TX 78253 beverly_saunders@hotmail.com ph: (210) 846-6995 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio

		International Airport], USA - SAT Nationality of Passport: Canada Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Schoemann, Veronique (f)	**Project Information**	**Deployment Information**
Brussels 12345 Belgium vshoem@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Stammerjohn, Ms. Sharon E. (f)	**Project Information**	**Deployment Information**
PO Box 1000, 61 Route 9W Palisades, NY 109648000 sharons@ldeo.columbia.edu ph: (845) 365-8353 fax: N/A Inst: Columbia University (Lamont-Doherty Earth Observatory, Oceanography)	Project Role: Project Participant SIP Access: None	✔ Is Deploying Airport of Departure: New York, NY [John F. Kennedy International Airport], USA - JFK Nationality of Passport: United States Passport Expiration

		Date: Age at Deployment: Under 40

Stewart, Dr. Brent Scott (m)	**Project Information**	**Deployment Information**
2595 Ingraham Street San Diego, CA 92109 bstewart@hswri.org ph: (619) 226-3875 fax: (619) 226-3944 Inst: Hubbs-Sea World Research Institute	Project Role: Co-PI SIP Access: Read/Write	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Diego, CA [San Diego International/Lindbergh Field Airport], USA - SAN Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: 40-50

Tison, Dr. Jean-Louis (m)	**Project Information**	**Deployment Information**
Brussels 12345 Belgium jtison@ulb.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Co-PI SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: Belgium Passport Expiration Date: January, 2010 Age at Deployment: 40-50

Vancoppenolle, Martin (m)	**Project Information**	**Deployment Information**
Louvain 12345 Belgium vancop@astr.ucl.ac.be ph: (210) 341-6556 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: Brussels (Bruxelles), [National/Zaventem], Belgium - BRU Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Wagner, Ms. Penelope Mae (f)	**Project Information**	**Deployment Information**
708 W. Lynwood San Antonio, TX 78212 penelopewagner@yahoo.com ph: (210) 269-3901 fax: N/A Inst: (Other)	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio International Airport], USA - SAT Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: Under 40

Weissling, Mr. Blake Paul (m)	**Project Information**	**Deployment Information**

26735 Autumn Glen Boerne, TX 78006 bweissling@hotmail.com ph: (210) 849-2379 fax: N/A Inst: University of Texas	Project Role: Project Participant SIP Access: None	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Antonio, TX [San Antonio International Airport], USA - SAT Nationality of Passport: United States Passport Expiration Date: June, 2012 Age at Deployment: 50-60

Yochem, Dr. Pamela K. (f)	**Project Information**	**Deployment Information**
2595 Ingraham Street San Diego, CA 92109 pyochem@hswri.org ph: (619) 226-3870 fax: (619) 226-3944 Inst: Hubbs-Sea World Research Institute	Project Role: Co-PI SIP Access: Read/Write	✔ Is Deploying ✔ Has Current Passport Airport of Departure: San Diego, CA [San Diego International/Lindbergh Field Airport], USA - SAN Nationality of Passport: United States Passport Expiration Date: January, 2010 Age at Deployment: Under 40

TBA 1	**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 2	**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 3	**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 4	**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 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:

TBA 8	**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:

Additional information or comments concerning your participant roster.

Project Information :: Project Schedule

Your project is scheduled on cruise **NBP07−09**.

Departure Date	Departure Port	Return Date	Return Port
01 Sep 2007	PUQ	31 Oct 2007	PUQ

Additional information or comments concerning your project schedule.

Project Information Comments

There are no comments entered for this section.

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), New Zealand Environmental Risk Management Authority (ERMA), 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, genetically modified organisms (GMO), and research vessel clearances for work in foreign exclusive economic zones.

Below is a summary of informational links concerning the various permits.

Antarctic Conservation Act (ACA)
- **For information on the ACA and its regulations, see www.nsf.gov/od/opp/antarct/aca/nsf01151/aca_nsf_01_151.pdf and www.nsf.gov/od/opp/antarct/aca/nsf01151/aca_nsf_01_151.pdf**
- **For questions, contact Nadene Kennedy at NSF nkennedy@nsf.gov**
- **For maps and management plans for Antarctic Specially Protected Areas (ASPA's), see http://www.cep.aq/apa/aspa/index.html**

Marine Mammal Protection Act (MMPA)
- **For information about the MMPA and its regulations, see www.nmfs.noaa.gov/pr/permits/**

United States Department of Agriculture (USDA)
- **For information on the USDA and its regulations, see www.aphis.usda.gov/forms/index.html**
- **Apply online at https://web01.aphis.usda.gov/IAS.nsf/Mainform?OpenForm**

Environmental Risk Management Authority (ERMA)
- **For questions, contact the GMO Group at Raytheon Polar Services (NZ) at gmo@usap.gov**

Foreign Country Exclusive Economic Zone Clearance (EEZ)
- **For information on the foreign EEZ clearance process, see www.state.gov/g/oes/ocns/rvc/3504.htm**

New Zealand Ministry of Agriculture and Forestry (MAF)
- **For questions, contact Raytheon Polar Services (NZ) Limited at CHC–MAFPermits@usap.gov**

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 http://www.cep.aq/apa/aspa/index.html

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)**		✗

Current ACA Permit	
Permit Number	
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.

Additional information or comments concerning your activities governed by the Antarctic Conservation Act.

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)**		✗

Current MMPA Permit	
Permit Number	
Expiration Date	

Additional information or comments concerning your activities governed by the Marine Mammal Protection Act.

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		✗

Additional information or comments concerning your activities governed by the United States Department of Agriculture.

Permits :: Environmental Risk Management Authority (ERMA)

The New Zealand Environmental Risk Management Authority (ERMA) controls the movement of new and genetically modified organisms into and through New Zealand.If any of your specimens/samples meet the ERMA definition of a Genetically Modified Organism, please complete the following questionnaire (Word document) and forward it to the **GMO Group** at Raytheon Polar Services (NZ) , gmo@usap.gov. Due to the time required to process applications to carry GMOs, notification must be given at least 12 weeks prior to deployment.The following flowchart (Powerpoint document) outlines New Zealand permit processing.

Additional information or comments concerning your activities governed by the New Zealand Environmental Risk Management Authority.

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. For more information on the foreign EEZ clearance process, please refer to www.state.gov/g/oes/ocns/rvc/3504.htm. 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. Clearance requests are submitted through RPSC who will review the forms

and submit them through the NSF to the State Department.

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		✘

Additional information or comments concerning your activities in a foreign Exclusive Economic Zone.

Permits :: New Zealand Ministry of Agriculture and Forestry

The New Zealand Ministry of Agriculture and Forestry (MAF) requires permits to transship through or import samples into New Zealand. The agency is VERY diligent in monitoring and scrutinizing all science samples and requires specific permits for each item. Apply for all required permits as early as possible. Please view the help link in the lefthand menu for more details on permit regulations and contact information.

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 Raytheon Polar Services (NZ) Limited at CHC–MAFPermits@usap.gov with questions regarding MAF procedures and applications.

Transshipment of samples through New Zealand – MAF Permit C
Transshipment refers to samples shipped back from McMurdo via air through New Zealand or to samples offloaded from the RV Nathaniel B. Palmer in New Zealand. Samples shipped to the US from McMurdo on the resupply vessel do not require a MAF permit and you can check No for this question. You can expect samples shipped on the resupply vessel from McMurdo to arrive at your US–based institution no later than April 10.

The following flowchart (Powerpoint document) outlines New Zealand permit processing.

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?		✖

Additional information or comments concerning your activities governed by the New Zealand Ministry of Agriculture and Forestry.

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

Antarctic Conservation Act Permit Application form (MS Word document)

Please review each permit application and email to Nadene Kennedy, ACA Permit Officer, at nkennedy@nsf.gov.

Antarctic Conservation Act (ACA)
Applicant 1: Stewart, Dr. Brent
Applicant 2: Yochem, Dr. Pamela

Marine Mammal Protection Act (MMPA)
Applicant 1: Stewart, Dr. Brent
Applicant 2: Yochem, Dr. Pamela

USDA Import Authorization Permit
Applicant 1: Stewart, Dr. Brent
Applicant 2: Yochem, Dr. Pamela
Applicant 3: Ackley, Mr. Stephen
Applicant 4: Fritsen, Dr. Christian
Applicant 5: Tison, Dr. Jean-Louis

Additional information or comments.

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
Antarctic Conservation Act (ACA)	12 weeks
Marine Mammal Protection Act (MMPA)	32 weeks
U.S. Department of Agriculture Permit	16 weeks
New Zealand Environmental Risk Management Authority (ERMA)	12 weeks

Permits Comments

There are no comments entered for this section.

Samples

Please answer the following question concerning your sample shipment requirements. An answer is required.

Sample Requirements	Yes	No
* Will you be shipping any scientific samples?	✓	

Samples :: Sample List

You are responsible for making TIMELY arrangements for any required import permits or documentation for your samples (see Permits section).

IMPORTANT NOTICE – SHIPMENT OF 'KEEP CHILLED' SAMPLES

We at RPSC will do everything we can to ensure success of Keep Chilled (+2 to +10C) shipments, including adding Keep Chilled cooling agents at stop over locations. However, RPSC can not guarantee Keep Chilled temperatures during the times shipments are outside our custody.

SHIPMENT OF FROZEN SAMPLES

For ease of sample storage and shipment, most samples will be packed up in inner sample boxes and labeled with shipping information as they are created. Each inner sample box is packed into a larger thermosafe, which then gets filled with ice according to the cooling requirements. Please choose the size and number of the inner sample container you need. If you are shipping large specimens, for example frozen birds, which will not fit into the sample box listed, please describe the appropriate dimensions so that adequate packing can be provided. Dry shippers and core boxes are also options under 'Sample Container' below.

Inner sample box dimensions
Large 10"L x 8"W x 6"H
Extra Large 14"L x 8"W x 8"H

If you do supply your own container, please note that it is illegal to use dry ice in domestic coolers such as Igloo or Coleman.

Dry Shippers
Airlines are very cautious about accepting dry shippers for transport. The use of dry shippers is discouraged unless absolutely necessary. Current flight regulations dictate that you cannot handcarry or check into baggage more than 2 kg of dry ice.

Samples without MAF Permit Requirement
Add any samples that do NOT require a MAF permit here. All information is required.

Sample Description	No. of Sample Containers Needed	Type/Size of Sample Container	Preservative Used	Cooling Requirements	Transport Method	Date Required at Home Institution
Seawater samples for Microscopy	2	Large Inner Box	formalin/lugos	+2 to +10C (keep chilled)	Unaccompanied	16 Nov 2007

Frozen filters for Carbon/ Nitrogen and phosphorous analysis	2	Large Inner Box	frozen	-21 to -70C (dry ice)	Unaccompanied	16 Nov 2007
Water Samples for Geochemical Analysis	4	Wooden Box	none	Do not freeze	Unaccompanied	16 Nov 2007
Biomedical samples from seals	2	Large Inner Box	frozen	-21 to -70C (dry ice)	Unaccompanied	16 Nov 2007
Biomedical samples from seals	1	Large Inner Box	formalin	Do not freeze	Unaccompanied	16 Nov 2007
Biomedical samples from seals	1	Large Inner Box	ethyl alcohol	Do not freeze	Unaccompanied	16 Nov 2007

Additional information or comments concerning your sample requirements.

Samples Comments

There are no comments entered for this section.

Cargo

Please answer the following question concerning your cargo requirements. An answer is required.

Cargo Requirements	Yes	No
* Do you have any cargo requirements?	✓	
* Do you have Call Forward Cargo from the warehouse in Punta Arenas, Chile or from Christchurch, New Zealand?		✗

Cargo :: Cargo List

List all items to be shipped as cargo. DO NOT use this table for samples, baggage, handcarry items, or items the RPSC is purchasing and shipping for you.

All southbound cargo must be at Port Hueneme, CA by the shipping cut–off deadline published at http://www.usap.gov/logistics/. If this is not possible, contact your RPSC POC as soon as possible. Northbound peninsula cargo is normally sent comair due to insufficient volume to send by surface shipments. Arrival at final destination is normally within three weeks of the cargo's arrival in Punta Arenas. If you anticipate a large volume of cargo to be sent back north, the preferred mode will be surface. Since comsur shipments are sent only when there is enough accumulated volume to make a surface shipment efficient, cargo that has been identified for comsur should be given a ROS date that indicates when cargo is required at the final destination. If the cargo gets within three weeks of its ROS date and there is still not enough volume to justify sending a container, it will be diverted to comair in order to meet its ROS date.

SOUTHBOUND

Item Name	Qty	Total Wt (lbs.)	Len. (in.)	Width (in.)	Ht. (in.)	Cooling Needed	Oversize	Keep Dry	Do Not Freeze	Hazardous	Radioactive	Fragile	Explosive
Two Argo Floats	11	220	81	22	16					✓			
	Date Required at Destination: 08/15/2007												
Single Argo Float	1	130	81	22	16					✓			
	Date Required at Destination: 08/15/2007												
Toolbox	1	80	36	18	18								
	Date Required at Destination: 08/15/2007												
Lithium Battery Packs (6) for IMBs	1	36	13	11	13					✓			
	Date Required at Destination: 08/15/2007												
Thermistor Strings for IMBs	1	40	60	12	12							✓	
	Date Required at Destination: 08/15/2007												
Electronics Enclosures for IMBs	3	50	24	24	12							✓	
	Date Required at Destination: 08/15/2007												
Sensors and Cables for IMBs	1	50	24	24	12							✓	
	Date Required at Destination: 08/15/2007												
Mounting Poles for Sounders and Sensors on IMBs	1	75	90	12	12								
	Date Required at Destination: 08/15/2007												

Angle Steel for Box Stands	1	80	96	4	4								
	Date Required at Destination: 08/15/2007												
Plywood	1	50	48	3	3								
	Date Required at Destination: 08/15/2007												
Lead-Acid Batteries	1	200	48	48	16					✓			
	Date Required at Destination: 08/15/2007												
Pelicases for Ice Drifter buoys	10	30	36	30	16								
	Date Required at Destination: 08/15/2007												
D Cell Battery Packs for Ice Drifter Buoys	10	50	34	28	6					✓			
	Date Required at Destination: 08/15/2007												
Electronic Boards and antennas for Ice Drifter Buoys	1	10	24	14	14							✓	
	Date Required at Destination: 08/15/2007												
EM-31 EMI Device	1	30	72	14	14					✓		✓	
	Date Required at Destination: 08/15/2007												
Wenner Array Components	1	75	48	24	12							✓	
	Date Required at Destination: 08/15/2007												
Chemicals	12	15	12	12	12					✓			
	Date Required at Destination: 08/15/2007												
Frame for EMI Device	1	30	84	24	6								

	Date Required at Destination: 08/15/2007												
Electronics Enclosure for Datafor EMI	1	30	24	24	12							✓	
	Date Required at Destination: 08/15/2007												
Laser Level	1	30	24	12	12							✓	
	Date Required at Destination: 08/15/2007												
Tripod and Survey Rod	1	40	48	12	12								
	Date Required at Destination: 08/15/2007												
Office Supplies and Books	3	40	24	12	12								
	Date Required at Destination: 08/15/2007												
DRI-Radiometers	2	50	40	30	20							✓	
	Date Required at Destination: 08/15/2007												
Snow Density Kit	2	50	24	14	14								
	Date Required at Destination: 08/15/2007												
Igloo with Veterinary Medical Supplies and Equipment	1	100	40	24	24				✓			✓	
	Date Required at Destination: 08/15/2007												
Seal Capture Nets	2	20	48	48	12								
	Date Required at Destination: 08/15/2007												

NORTHBOUND

Item Name	Qty	Total Wt (lbs.)	Len. (in.)	Width (in.)	Ht. (in.)	Cooling Needed	Oversize	Keep Dry	Do Not Freeze	Hazardous	Radioactive	Fragile	Return by Air (comair)?
Toolbox	1	80	36	18	18								
	Date Required at Destination: 11/15/2007												
EM-31 EMI Device	1	30	72	14	14							✓	
	Date Required at Destination: 11/15/2007												
Wenner Array Components	1	75	48	24	12								
	Date Required at Destination: 11/15/2007												
Chemicals	12	15	12	12	12								
	Date Required at Destination: 11/15/2007												
Frame for EMI Device	1	30	84	24	6								
	Date Required at Destination: 11/15/2007												
DRI-Radiometers	2	50	40	30	20							✓	
	Date Required at Destination: 11/16/2007												
Electronics Enclosure for Datafor EMI	1	30	24	24	12								
	Date Required at Destination: 11/15/2007												
Laser Level	1	30	24	12	12							✓	
	Date Required at Destination: 11/15/2007												
Tripod and Survey Rod	1	40	48	12	12								

	Date Required at Destination: 11/15/2007												
Frame for EMI Device	1	30	84	24	6								
	Date Required at Destination: 11/15/2007												
Office Supplies and Books	3	40	24	12	12								
	Date Required at Destination: 11/15/2007												
Snow Density Kit	2	50	24	14	14								
	Date Required at Destination: 11/15/2007												
Snow Density Kit	2	50	24	14	14								
	Date Required at Destination: 11/15/2007												
Igloo with Veterinary Medical Supplies and Equipment	1	100	48	24	24				✔			✔	
	Date Required at Destination: 11/15/2007												
Seal Capture Nets	2	20	48	48	12								
	Date Required at Destination: 11/15/2007												

Describe completely any additional cargo requirements.

Cargo :: Cargo List :: Hazardous Cargo

Destination	Item Name	* Proper Shipping Name	* Qty Hazardous Items	* Unit of Measure	UN Number	Temperature Sensitive
Southbound	Chemicals	Chemicals	12	each		✓
Southbound	D Cell Battery Packs for Ice Drifter Buoys	Battery Packs D Cells	10	each		
Southbound	EM-31 EMI Device	EM 31 Meter	1	each		
Southbound	Lead-Acid Batteries	Lead-Acid Sealed Batteries	1	each		
Southbound	Lithium Battery Packs (6) for IMBs	Lithium Batteries	1	each		
Southbound	Single Argo Float	Argo Float	1	each		
Southbound	Two Argo Floats	Argo Floats	11	each		

Describe any ice and freeze–safe requirements.

Some Chemicals are Do Not Freeze

Cargo Comments

There are no comments entered for this section.

Environmental Requirements

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

Environmental 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		✗
* 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 a lab or a field location	✓	
Hazardous Materials Used in the Field	**Yes**	**No**
* Use of any hazardous materials in the field	✓	
* 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	✓	
* Releasing any solid, liquid, or gaseous substance (e.g., scientific materials, wastewater, equipment) while in the field, excluding the emissions from the combustion of fossil fuels,	✓	

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

```
Deployment of automatic systems including: XBT's, Argo Floats, Ice Drift Buoys with batteries,
Ice Mass Balance buoys with Lithium Batteries.
Deployment of satellite-linked radio transmitters on seals.
```

Environmental Requirements :: Research–Related Wastes

Describe any waste your project will generate.

* Material	Haz?	* Qty	* Unit of Measure	Location of Use
D Cell Battery Packs	✓	10	each	Amundsen Sea Pack Ice
Lithium Battery Packs	✓	6	each	Amundsen Sea Pack Ice
Lithium Battery Packs	✓	69	each	Southern Ocean (Pacific)
Lithium Battery	✓	20	each	Southern Ocean
90% acetone	✓	16	liters	Biolab
gluteraldehyde lab waste	✓	3	kilograms	biolab
1% gluteraldeyde	✓	20	liters	biolab

Describe completely any additional research–related wastes.

Dcell Battery Packs (160 D Cells each) will be released into the ocean when the ice melts and sink. Six Lithium battery packs will be sunk when Ice Mass Balance buoys melt out at ice edge and sink. Argo floats will operate for 3–4 years, each contains 3 Lithium battery packs. XBTs will be used throughout the cruise and will remain in the ocean.
Each satellite–linked radio transmitter contains one AA or C–cell lithium battery, which may be shed by the seal into the ocean within 1–2 years of deployment.

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
Ice Mass Balance Buoy	Equipment: Cables, detectors, monitoring sensors, or probes	3	each	3
Ice Drifters	Equipment: Cables, detectors, monitoring sensors, or probes	10	each	10
XBT	Equipment: XBT probes	84	each	84
Buoy Stands	Equipment: Poles, lumber	3	each	3

Describe completely any additional releases.

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.

Major Systems and Equipment Requirements	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?	✓	
* Do you require any moorings or sediment traps?	✓	

Major Systems and Equipment :: Navigation, Underway 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, Deck Incubators and Seawater Supply

Uncontaminated Seawater System	
Product Name	**Qty**
Required in Hydrolab (see lab diagrams under Laboratory/Lab Space)	1
Required in Wetlab (see lab diagrams under Laboratory/Lab Space)	1

Ice Coring

Ice Coring Equipment	
Product Name	**Qty**
Hand saw	2
Ice thickness measuring kit	2
Kovac corers	2
Power heads (Jiffy or Badger)	2
Shovel	2
Sled	2

Laboratory &Science Vans and Walk−in Cooler

Freezer Van

Product Name	Qty
Freezer Van –25ºC – Designed for processing ice cores at –25ºC temperature. See complete description.	1

Radioisotope Vans

Product Name	Qty
Rad Van #4 – Designed for research involving radioisotopes. This van is the preferred lab for Carbon 14 (14C) research. See complete description. See diagrams.	1

TMC Lab and Garage Van

Product Name	Qty
TMC Lab and Garage Van – Contains a garage section for the deployment of a Trace Metal Clean rosette and a lab section for sample processing. See complete description.	1

Walk–In Cooler (Constant Temperature Room)

Product Name	Qty
Constant Temperature Room, opens to main corridor and to Biolab, temperature to –10ºC +/– 1ºC, "Big Antarctica"	1
Constant Temperature Room, opens to main corridor, temperature to –10ºC +/– 1ºC, "Little Antarctica"	1

Mooring Systems

Anchors

Product Name	Qty
Please specify anchor requirements in 'Comments' field below	1

Floats

Product Name	Qty
Please specify float requirements in 'Comments' field below	1

Remote Sensing/Ice Imagery

Remote Sensing/Ice Imagery	
Product Name	**Qty**
Total ice concentration as a percentage, TeraScan satellite−imaging, SSMI data, resolution 15 km per pixel. See complete description.	1
Visible/Infrared DMSP imagery, TeraScan, satellite−imaging, resolution up to 0.55 km per pixel. See complete description.	1
Visible/Infrared HRPT imagery, TeraScan satellite−imaging, resolution 1.1 km per pixel. See complete description.	1

Sonar Systems

Hull−mounted Sonars	
Product Name	**Qty**
Hull−mounted ADCP, 38kHz phased array, RD Instruments OS−38 (Ocean Surveyor), for current profiling and measuring backscatter in water column−deep and medium resolution (1200−M). See complete description.	1
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.	1
Hull−mounted multibeam sonar, 12 kHz, Simrad EM−120, for swath bathymetry. See complete description.	1

Water Column Profiling and CTD

CTD Rosette and Bottles		
Product Name	**Qty**	**Maximum Depth**
Rosette Frame, 24 Position, Sea−Bird Electronics	1	
Sample bottle, 10−L, bullister type, SIO	24	
You have also selected the following to be included with the above product: • N−Butyl / Buna−N O−Rings • Silicone O−Rings • Viton O−Rings		

CTD Sensors

Product Name	Qty
Bottom Contact Switch, Sea−Bird Electronics	1
Conductivity and Temperature sensor, depth rating 6800−M, Sea−Bird Electronics (primary and secondary sets) see calibration information.	1
Dissolved Oxygen sensor, depth rating 7000−M, Sea−Bird Electronics see calibration information.	1
Fluorometer, depth rating 6000−M, WetLabs see calibration information.	1
PAR sensor (Photosynthetically Active Radiation, 400−700nm), depth rating 1000−M, Biospherical Instruments. see calibration information.	1
Pressure sensor, depth rating 6800−M, Sea−Bird Electronics see calibration information.	1
Pumps, depth rating 6800−M, Sea−Bird Electronics (primary and secondary)	1
Transmissometer, (25cm pathlength), depth rating 6000−M, WETLabs see calibration information.	1

Expendable Probes

Product Name	Qty
XBT (Expendable Bathythermograph), Sippican T−5, 1830−M @ 6kts	12
XBT (Expendable Bathythermograph), Sippican T−6, 460−M @ 15kts	36
XBT (Expendable Bathythermograph), Sippican T−7, 760−M @ 15kts	36

FRRF (Fast Repetition Rate Fluorometer)

Product Name	Qty
FRRF (Fast Repetition Rate Fluorometer), Chelsea Instruments, for measurement of variable fluorescence parameters in real time and in−situ. Please note: this system is generally in use by LTER from November to March.	1

Radiometers			
Product Name	**Qty**	**Maximum Depth**	**# of Casts**
PRR (Profiling Reflectance Radiometer), Biospherical Instruments, water–column and ground profiling sets which include: PAR (400–700 nm), Natural Fluorescence (upwelling radiance only), 313, 320, 340, 380, 395, 412, 443, 490, 510, 555, 565, 625, 665 &670 nm– upwelling radiance and downwelling irradiance	1		
UV–Meter, Profiling (PUV), and Ground (GUV), 305, 313, 320, 340, 380, 395 nm, and PAR (400–700 nm), biospherical Instruments see calibration information.	1		

Winches and Wire

Utility Winches	
Product Name	**Qty**
Winch, Deck Utility	1
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	1

Additional Notes on your Major Systems and Equipment inventory requirements

We are also planning to use the ROV and its support van that Vernon Asper has in storage at Punta Arenas. Prior to the cruise the system needs to be checked out and repaired if necessary. There may also be a need for spare parts to be obtained and taken on SIMBA. At last report there was a leak in the van that needs fixing. We also need to have an RPSC technical person trained to operate the ROV prior to deploying on the SIMBA cruise. Vernon is planning to use the ROV immediately following the SIMBA cruise to deploy the PRIMO observatory at Palmer Station.

Major Systems and Equipment :: Coring and Bottom Sampling

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

(Inventory Suppressed for Printing)

Describe completely any additional coring and bottom sampling requirements.

Major Systems and Equipment :: Nets and Trawls

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

(Inventory Suppressed for Printing)

Describe completely any additional net, trap and trawl requirements.

Major Systems and Equipment :: Winches and Wire

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

(Inventory Suppressed for Printing)

Describe completely any additional winch and wire requirements.

Major Systems and Equipment :: Aquaria, Deck Incubators and Seawater Supply

Please select the aquaria, deck incubators and uncontaminated seawater systems your project will require.

(Inventory Suppressed for Printing)

Describe completely any additional aquaria, deck incubator and seawater supply requirements.

Major Systems and Equipment :: Water Column Profiling and CTD

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

(Inventory Suppressed for Printing)

Describe completely any additional water column sampling requirements.

Major Systems and Equipment :: Remote Sensing/Ice Imagery

Please select the remote sensing systems your project will require.

The NBP has a fully functional TeraScan system on the bridge. This system can receive visible, infrared, and microwave data from several satellite systems. Orbital geometry will determine how often satellite passes can be captured. RPSC personnel will provide requested imagery to the science party for planning purposes and to the bridge for navigation.

To obtain real−time SeaWiFS (ocean color) imagery instead of processed data with a 2−week delay, the PI must obtain a permit. Further information

(Inventory Suppressed for Printing)

Describe completely any additional remote sensing requirements.

TERRAScan system on board.

Major Systems and Equipment :: Sonar Systems

Please select the sonar systems your project will require.

(Inventory Suppressed for Printing)

Describe completely any additional sonar requirements.

Major Systems and Equipment :: Geophysical Systems

Please select the geophysical systems your project will require.

(Inventory Suppressed for Printing)

Describe completely any additional geophysical requirements.

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:

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)

Describe completely any additional ice coring requirements.

The ice thickness measuring kit should have 10 -1meter extension augers available. For deploying thermister strings and various buoy components we additionally need ,5",7",and 9" power augers, or augers that can be fitted to the existing power heads. For smaller holes, the corers and ice thickness drills can be used which will be necessary for the thermister strings.

Major Systems and Equipment :: Mooring Systems

Please select the mooring and sedimant trap equipment your project will require.

(Inventory Suppressed for Printing)

Describe completely any additional mooring and sediment trap requirements.

```
1 round float approx. 0.5m to 1m diameter, to hang over side on rope for Aspect ice
observation thickness gauge.

1 weight or steel wheel, used to clear ice from moonpool to conduct CTD operations.
```

Major Systems and Equipment Comments

There are no comments entered for this section.

Vehicle Support

Please indicate your vehicle requirements. All answers are required.

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

Vehicle Support :: Cart Contents

You have requested the following inventory item(s):

Vehicle Requirements

Boat

Product Name	Qty	Reason for Use
Zodiac Mark V, 19 ft.	1	Transportation from ship to ice floe(s) for seal handling and tagging

Snowmobile

Product Name	Qty
Skandic SWT Ski–Doo, Deep Snow Flotation	2

Additional Notes on your Vehicle Support inventory requirements

3 Nansen Sleds

Vehicle Support :: Vehicle Requirements

Please select your boat requirements from the following list.

(Inventory Suppressed for Printing)

Describe completely any additional vehicle requirements.

2 SkiDoos with 3 Nansen Sleds

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 Requirements	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?	✓	
* Do you require nutrient analyses and/or oxygen titrations?	✓	

Laboratory :: Cart Contents

You have requested the following inventory item(s):

Analytical Instruments and Equipment

Bath

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Bath, Circulating, Neslab RTE–10, –25°C to +150°C, +/– 0.01°C, Bath 8.8" x 9.4" x 6", 10L	1	✓			
Bath, circulating, Neslab RTE–110D, –30º to 130ºC, +/– 0.01ºC, Bath 5" x 5" x 5", 5L	1	✓			
Bath, Circulating, Neslab RTE–17, –25°C to	1	✓			

+150°C, +/– 0.01°C, Bath 8.8" x 9.4" x 9", 17L					

Centrifuge

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Centrifuge, clinical, non–refrigerated, 3300 rpm max, 1580 xg max Clay Adams Dynac	1	✓		✓	

You have also selected the following to be included with the above product:

- Rotor, fixed, 24–place, for 15ml tubes, for Clay Adams Dynac II

Centrifuge, micro, non–refrigerated, 14000 rpm max, Eppendorf 5415C	1	✓			

You have also selected the following to be included with the above product:

- Rotor, fixed, 18–place, for 1.5–2ml microfuge tubes, 11mm bore, 14,000 rpm max / 16,000 x g, for Eppendorf 5415C

Conductivity Meter

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Conductivity Meter, portable, Orion 115	1	✓			

You have also selected the following to be included with the above product:

- Conductivity Cell, 1.0k constant, plastic body with thermistor, Orion 011050

Dispenser

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Dispenser, 10–50ml, bottle top, 28, 38, 45mm adapters, Brinkmann 50–10–050–2	1	✓			
Dispenser, 2–10ml, bottle top, 24, 28, 38mm adapters, Brinkmann 50–10–030–8	1	✓			

Dispenser, repipet, 0–5ml, with square amber glass jar	1	✓			

Fluorometer

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Fluorometer, digital, Turner 10–AU–005 (benchtop). Please select filters required.	1	✓			

You have also selected the following to be included with the above product:

- Attenuator plate, 1:5, Turner Designs 10–318(square)/10–318R(round)
- Cuvette Holder, 13mm and 25mm, Turner Designs 10AU–030
- Filter, >570nm, cs 3–66, em:rhodamine, Turner Designs 10–052
- Filter, >570nm, cs–16, em:chlorophyll, Turner Designs 10–053
- Filter, >610nm, cs 29, em:chlorophyll, Turner Designs 10–054
- Filter, >665nm, cs2–64, em:chlorophyll acidification method, Turner Designs 10–051/10–51R
- Filter, 1 N.D., square, Turner Designs 10–032
- Filter, 2 N.D., square, Turner Designs 10–035
- Filter, 340 – 500nm, cs 5–60, ex: chlorophyll acidification method, Turner Designs 10–050/10–050R
- Filter, 410 – 600nm, em: Ammonium/DOM, round, Turner Designs 10–110R–C
- Filter, bandpass 7–37, 300–400nm, square, Turner Designs 10–069
- Solid Standard, Secondary Chl–A standard

Freezer/Refrigerator

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Freezer, –20ºC, upright, 15 cu ft, 17 x 50 x 23"D, Fisher Scientific	1	✓		✓	
Freezer, ultralow, –40º to –80ºC, chest, 20 cu ft, 70L x 19W x 26"D, Revco	1	✓		✓	

Hood

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Hood, absorber, portable, 31.5x25" working space, 87 cu ft/min, Captair Labx	1	✓			
You have also selected the following to be included with the above product: • Filters for Formaldehyde use					
Hood, fume, 32Dx48"W working area, Fisher Hamilton Safeair, installed in Bio Lab	1	✓			

Hot Plate/Stirrer

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Hot Plate/Stirrer, 6x8", 65º to 510ºC, Corning PC–320	1	✓			

Ice Maker

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Ice maker – shaved ice – installed in Hydro Lab	1	✓			

Incubator

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Incubator, lighted, –10º to +50ºC, +/– 1–3ºC, Percival Model I–36LLVL, in Aft Dry Lab	1	✓		✓	

Irradiance Sensor

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Irradiance Sensor, quantum, BNC 50', LI–COR LI–190SA	1	✓			
Irradiance Sensor, underwater spherical,	1	✓			

LI–COR LI–193SA					

You have also selected the following to be included with the above product:
- Data Logger, Li–Cor LI–1000
- Irradiance Sensor, frame, lowering, f/LI–193SA

Liquid Scintillation Counter

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Liquid scintillation counter, w/monitor, external disk, printer, Beckman LS6500. If requested, you must also request a rad van under the Systems tab.	1	✓	✓		

You have also selected the following to be included with the above product:
- Quench Standards, 14–C
- Quench Standards, 3–H
- Rack Adapters for 2ml microfuge tubes
- Rack Adapters for 4ml bio vials
- Racks for 20 ml scintillation vials
- Racks for 7 ml scintillation vials
- Unquenched Standards, blank, 3–H, 14–C

Microscope

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Illuminator, fiber optic, two arm, Dolan–Jenner MI–150F	1			✓	
Microscope, compound, Brightfield, DIC, Epi–Fluorescence, Phase Contrast, Objectives (10X Ph1, 20X Ph2, 40X Ph2, 100X Ph3) Zeiss Axioskop 50	1	✓		✓	

You have also selected the following to be included with the above product:
- Cold Stage, for slides, –1.8ºC to ambient temperature, +/– 0.1ºC, Instec STC 200
- Microscope Imaging, Camera, Digital, Nikon Coolpix 5000
- Reticle, dia 26mm linear 0–100um, Klaraman KR–207
- Reticle, dia 26mm, 100 div grid, Klaraman KR–406A
- Reticle, dia 26mm, full x hairs, Klaraman KR–301

Microscope, Compound,	1	✓			

Brightfield, DIC, Epi–Fluoroscent, Phase Contrast (10X), Objectives (10X Ph1, 20X, 40X, 60X, 100X) Nikon E800					

You have also selected the following to be included with the above product:

- Cold Stage, for slides, –1.8ºC to ambient temperature, +/– 0.1ºC, Instec STC 200
- Epi–Fluoroscent Filter, Nikon E800 – BLUE (96165)
- Epi–Fluoroscent Filter, Nikon E800 – BLUE LP (11001)
- Epi–Fluoroscent Filter, Nikon E800 – DAPI (31000)
- Epi–Fluoroscent Filter, Nikon E800 – FITC (31001)
- Epi–Fluoroscent Filter, Nikon E800 – RHODAMINE/TRITC (31002)
- Epi–Fluoroscent Filter, Nikon E800 – TEXAS RED (96109)
- Microscope Imaging, Camera, Digital, SPOT RT Slider
- Microscope Imaging, Camera, Video, Sony DXC–390
- Reticle, dia 26mm linear 0–100um, Klaraman KR–207
- Reticle, dia 26mm, 100 div grid, Klaraman KR–406A
- Reticle, dia 26mm, full x hairs, Klaraman KR–301

Microscope, Stereo, Leica/Wild M3C with standard base	1	✓			

You have also selected the following to be included with the above product:

- Cold Stage, for Petri Dish, –1.8ºC to ambient temperature, +/– 0.1ºC
- Microscope Imaging, Camera, Digital, Nikon Coolpix 1500

Vibration free table, installed in Microscope Room	1	✓			

Nutrient Analyzer

Product Name	Qty
Nutrient Analyzer, Lachat Quickchem 8000, 5–channel nitrate, nitrite, ammonia, phosphate, and silicate rapid flow analyzer with auto sampler. Please provide details in 'Nutrient analysis and oxygen titrations' section. See complete description.	1

pH Meter

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
pH meter, digital, –2–19.99, resolution 0.01/0.1, temp –5º to 105ºC in 0.1ºC, Orion	1			✓	

520A					

↳ **You have also selected the following to be included with the above product:**
- pH Electrode, Triode, Orion 9157BN

↳ ***Pipettor***

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Pipettor, adjustable volume, 0.5–10ul, Rainin/Gilson P–10	2	✓		✓	
Pipettor, adjustable volume, 1–10 ml, Rainin/Gilson P–10ML	3	✓	✓	✓	✓
Pipettor, adjustable volume, 10–100ul, Rainin/Gilson P–100	2	✓	✓	✓	
Pipettor, adjustable volume, 100–1000ul, Rainin/Gilson P–1000	3	✓	✓	✓	✓
Pipettor, adjustable volume, 2–20ul, Rainin/Gilson P–20	2	✓	✓	✓	
Pipettor, adjustable volume, 50–200ul, Rainin/Gilson P–200	3	✓	✓	✓	✓
Pipettor, adjustable volume, 500–2500 ul, autoclavable, Eppendorf 4810	2	✓	✓	✓	
Pipettor, adjustable volume, 500–5000ul, Rainin/Gilson P–5000	3	✓	✓	✓	✓
Pipettor, fixed volume, 100ul, Eppendorf Series 2000–2247 115–5	2	✓	✓	✓	
Pipettor, repeater, 1–5000ul, Eppendorf 4780, for combi–tips	2	✓	✓	✓	

↳ ***Pump***

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Pump, vacuum, diaphragm, Gast DOAP104AA	4	✓	✓	✓	

You have also selected the following to be included with the above product:
- Vacuum trap, 20L glass carboy

Refractometer

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Refractometer, clinical, handheld, temperature compensated, Schuco 5711–2021	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				

Scanning Spectrofluorometer

Product Name	Qty
Spectrofluorometer, scanning, HORIBAJOBIN YVON Fluoromax–3, red sensitive PMT, fully automated emission shutter, Thermostated 4–position sample holder, Datamax software	1

You have also selected the following to be included with the above product:
- Option 1) 1938 Cut–on, high–pass filters with low fluorescence background, set of 5 filters 1x2 inch cut–on at 370, 399, 450, 500, and 550nm
- Option 3) Quartz Cuvette – 4ml, 1cmx1cm
- Option 4) Low volume cell 250uL

Spectrophotometer

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Spectrophotometer, UV/VIS, Scanning, dual beam, Perkin Elmer Lambda 18	1			✓	

You have also selected the following to be included with the above product:
- Labsphere, Perkin–Elmer RSA–PE–18
- Specify cell requirements for Perkin Elmer Lambda 18

Water Filtration

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Filtration Assembly, polysulfone, 250mL funnel with 25mm base	2	✓	✓		
Filtration manifold, 6–place, PVC	3	✓		✓	
Glass Base, 25mm fritted glass screen	1				
Glass Base, 25mm, stainless steel screen	4	✓			

You have also selected the following to be included with the above product:
- Glass Funnel, 1000ml with 25mm flange
- Glass Funnel, 150ml with 25mm flange
- Glass Funnel, 15ml with 25mm flange
- Glass Funnel, 300ml with 25mm flange

Glass Base, 47mm, stainless steel screen	4	✓			

You have also selected the following to be included with the above product:
- Glass Funnel, 300ml with 47mm flange

Water Purification System

Product Name	Qty	Dedicated	Use with Rads	General Use	Live Use
Seawater Purification, Cole Parmer "Big Blue" 10" high capacity with 50um, 25um, 10um, 5um filters	1	✓			
Seawater Purification, US Filter PP, 0.2um filter	1	✓			
Water Purification System, Barnstead Diamond UV, virtually TOC–free, installed in Hydro Lab	1			✓	
Water Purification System, E–Pure, 4	1			✓	

module w/ pump, installed in Aft Dry Lab					

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 the PI name and project number on each diagram. See diagrams

Please click Continue when finished.

Laboratory :: Analytical Instruments and Equipment

Please select your analytical instrument and equipment requirements for this project. If you need instruments to be purchased that are not listed in the table below, please list them in the Vendor Supplies tab.

(Inventory Suppressed for Printing)

Describe completely any additional instrument requirements. NOTE: Items that need to be ordered should be listed in the Vendor Supplies tab.

two cases of Standard Seawater, IAPSO as salinity standard

Clinical centrifuge from Crary Lab: Triac centrifuge (capable of spinning blood vacutainers, urine tubes, microhematocrit tubes) - Crary#D8301 and accessories (e.g., buckets for blood tubes, microhematocrit insert)

BMS hemoglobinometer from Crary Lab: Crary #0063626

Thermolyne Speci-Mix Rocker from Crary Lab: Crary#0063375 and plastic tube holder F/0063375

Spirocrit microhematocrit tube reader from Crary Lab: Crary#D2649

Laboratory :: Radioactive Materials

The use of radioactive materials (open and sealed sources) in Antarctica requires strict adherence to the Antarctic Conservation Act and the license conditions specified in your institution's U.S. Nuclear Regulatory Commission or State licensing authority's radioactive materials use license.

Select this project's Home Institution Radiation Safety Officer (RSO):

This project does not have an RSO assigned to it.

Institutional Radioactive Materials Use License Number(s)

NRC License No.	State	Other	Exp Date or Date of Timely Renewal Letter
No data entered for this grid			

Please identify all proposed users of radioisotopes:

Rads User?	Team Member
	Ackley, Mr. Stephen
	Anderson, Sarah
	Becquevort, Sylvie
	Brabant, Frederic
	DeJong, Jeroen
	DeLille, Bruno
	Dumont, Isabelle
✓	Fritsen, Dr. Christian
	Geilfus, Nicolas–Xavier
	Johnson, Keith
	Lewis Jr., Mr. Michael
	Masson, Florence
	Papakyriakou, Tim
	Saunders, Ms. Beverly
✓	Schoemann, Veronique
	Stammerjohn, Ms. Sharon
	Stewart, Dr. Brent
	Tison, Dr. Jean–Louis
	Vancoppenolle, Martin
	Wagner, Ms. Penelope
	Weissling, Mr. Blake
	Yochem, Dr. Pamela
✓	TBA 1
✓	TBA 2

	TBA 3
	TBA 4
	TBA 5
	TBA 6
	TBA 7
	TBA 8

Radioisotopes to be Used

Please identify the radioisotopes you plan to use in Antarctica. If the one you plan to use is not on the list, use the "Other" box.

* Isotope	Other Isotope	Chemical Form or Sealed Source	Activity Stored on Station	Activity to be received this season (mCi)	* Total Activity (mCi)	Location	* Actual Use From Date	* Actual Use To Date
14C - Sodium Bicarbonate		in water	0.00	20.00	20.00	Nathaniel B. Palmer	01 Sep 2007	01 Nov 2007
3H - Leucine		in ethanol	0.00	5.00	5.00	Nathaniel B. Palmer	01 Sep 2007	01 Nov 2007
55Fe - Ferrous Chloride (FeCl2)		in water	0.00	5.00	5.00	Nathaniel B. Palmer	01 Sep 2007	01 Nov 2007

Experimental Protocols and Safety Procedures

Please attach to this form a description of the experimental protocol(s) and safety procedures to be used (please note that ALARA principles must be employed for all potential personnel exposures or releases to the environment):

- field and laboratory locations;
- chemical reactions and procedures, be specific about the radioisotope(s) and quantities utilized in different phases of the protocol;
- reference citations or standard operating procedures for methods if appropriate;
- describe any required leak testing of any sealed source radioisotopes including frequency and procedure to be followed;
- physical manipulations (e.g., centrifugation, etc) to be done;
- identify specific equipment or facilities critical to the protocol (e.g., fume hood, etc), including shared–use equipment that will be required (e.g., LSC, gamma counter, etc.);
- please describe any other special radioassay requirements;
- describe the radiation safety procedures that will be implemented during the project (e.g., storage of materials, shielding, contamination monitoring and control, personnel monitoring, etc);
- include precautions taken to reduce or prevent the intentional or inadvertent release of radioactivity to the environment (e.g., C–14 acidification, in–situ incubation, etc);
- detail swipe protocols to be followed by users while in Antarctica (include frequency and number of swipes);
- please provide any other information regarding material or support requirements.

No file uploaded.

Radioactive Wastes

Select the type and enter amounts of radioactive wastes you expect to generate. Please use this grid to characterize the waste as completely as possible. Historically, the USAP has been able to dispose of all LLRW generated in Antarctica. The USAP will continue to do so if the PI provides complete information about the waste streams and characterization of all waste generated in the field.

* Type	Constituents/ Cocktail	* Isotope	Activity (mCi)	* Amount	* Unit of Measure
Dry Solids	pipett tips, lab coating,m gloves	3H - Leucine	1.00	25	cubic feet
Liquid with hazardous constituents	Seawater with 5% TCA and 0.5 % formalin	3H - Leucine	3.00	10	liters
Scintillation vials	LSC vials with Cytoscint	3H - Leucine	1.00	2000	7 ml Vials
Dry Solids	pipett tips, lab coating,m gloves	14C - Sodium Bicarbonate	2.50	25	cubic feet
Liquid (water/seawater)	seawater	14C - Sodium Bicarbonate	15.00	50	liters
Scintillation vials	LSC vials with Cytoscint	14C - Sodium Bicarbonate	2.50	2000	20 ml Vials
Dry Solids	pipett tips, lab coating,m gloves	55Fe - Ferrous Chloride (FeCl2)	2.50	25	cubic feet
Liquid with hazardous constituents	seawater	55Fe - Ferrous Chloride (FeCl2)	3.00	10	liters
Scintillation vials	LSC vials with Cytoscint	55Fe - Ferrous Chloride (FeCl2)	2.50	2000	7 ml Vials

Please give details on any additional radioisotope requirements below.

Primary production and bacterial production assay details forthcoming

Iron uptake assay details forthcoming

Laboratory :: Cryogens and Ice

Enter your cryogens and ice requirements for the cruise in the table(s) below. Please note that these requirements do not include or affect cryogens required for sample shipment.

Note: At least one entry in either table is required, although both tables do not need to be filled out unless you have both liquid cryogen and ice requirements.

Liquid Nitrogen

Please enter your liquid nitrogen requirements in the following table.

* Amount (Liters)	# of Storage Dewars	Dewar Size
50	1	35 L wide-mouth w/dipsticks

If you have cryogen requirements, please give details below.

Need to keep some filters in cryovials on liquid nitrogen until end of cruise.

Ice

Please enter your ice requirements in the following table. Please note that these ice requirements are not for cargo.

* Ice Type	* Amt Needed During Cruise (lbs.)
No data entered for this grid	

If you have ice requirements, please give details below.

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	3	Dry Nitrogen	Brass	1

Please list any additional compressed gas requirements.

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.

Laboratory :: Nutrient, Oxygen and Salinity Measurements

Please define your lab analysis and titration activities in the following table. Please request the nutrient analyzer, oxygen titrator and/or autosal under the 'Analytical Instruments and Equipment' section.

* Type of Lab Work	* Number of Samples	* Type of Operation	Need Analyst?	Need Training?
Nutrient analysis	400	12 hr	✓	
Oxygen Titration	150	12 hr	✓	
Salinity measurements	150	12 hr	✓	

If you indicated a need for any analyst assistance or training in the table above, please provide details:

Laboratory Comments

There are no comments entered for this section.

Vendor 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.)?	✓	

Vendor 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.

Vendor 1.	Vendor Subtotal	Date Req'd
Trident Sensors Ltd www.tridentsensors.com Unit 125 ATC,Dunsold Park Cranleigh, Surrey, Other GU6 8TB United Kingdom Phone: 44 1483 548992	$20,000.00	30 May 2007

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
10	ASY	HELIX (Ver2 OEM Board Set with GPS Engine Interfaced to Iridium 9601 Short Burst Data Transceiver	Trident Sensors				Proven Use in Polar Regions	$1,800.00	0.1	0.5	Electronic Components for GPS/Iridium drifter buoys, will be coupled with GPS and Iridium Antennas, D Cell Battery Packs in Plastic Cases
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
10	ASY	Combined IridiumGPS, Patch or	Trident Sensors				Compatible with HELIX	$200.00	0.1	0.5	

		Stub, with Cables to connect to HELIX Board Set (Item 1)					Boards				
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			

Vendor 2.	**Vendor Subtotal**	**Date Req'd**
Home Depot HomeDepot.com Oxnard, California 93030 United States Phone: 001 8059830653 Fax: 001	$770.00	

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
8	EA	12v sealed lead/acid batt ery	Sears Diehard			✔		$75.00	1.0	25.0	To be delivered to Port Hueneme for shipping with project
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
12	EA	8ft				✔		$10.00	0.3	10.0	Will be cut

		lengths of 2" x2" galvanized angle steel with holes for assembly by bolts									on ship and assembled into stands for data boxes on Ice Mass Balance buoys. To be delivered to Port Hueneme for shipping with project.
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
1	BOX	1" 1/4x20 bolts, with nuts and washers				✔		$10.00	0.1	5.0	Used for assembling angle steel into stands for data buoys. To be delivered to Port Hueneme for shipping with project.
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
4	SHT	4x8 1/2" plywood				✔		$10.00	1.2	15.0	To be cut on ship for stands for IMB buoys with angle steel

											frame. Delivered to Port Hueneme for shipping with project gear.
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			

Vendor 3.	**Vendor Subtotal**	**Date Req'd**
All-Pelican-Cases-for-Less.com www.all-pelican-cases-4-less.com 1267 Vernon Way El Cajon, California 92020 United States	$1,088.40	30 May 2007

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
10	CAS	PeliCase 1600	Pelican	1600		✔		$108.84	3.0	30.0	No refrigeration required
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			

Vendor 4.	**Vendor Subtotal**	**Date Req'd**
Cellpack Solutions Ltd www.cellpacksolutions.co.uk Unit 128 Tedco Business Work South Shields, Tyne and Wear, Other NE331RF	$3,000.00	30 May 2007

United Kingdom

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
10	PAC	12 v D Cell Battery Pack	Any Battery Cell Pack Manufacturer	Custom Built Packs to Specification in Comment		✔		$300.00	1.4	50.0	Each Battery Pack will consist of 20 "sticks" of 8 D cells each. Each 12v stick will be diode-protected. The sticks will be connected (all positives together and all negatives together)to make one 12v battery per Pack, with two wires, one positive and one negative per pack. The Pack will be in two layers of sticks with dimensions to be less than 55cm x 42cm in length and width, and less than 15cm in height (to fit in the base of a 1600 PeliCase). Nominal rating of

											the Pack is >200amp-hr
	Deliver to Home Inst.?			**Temperature Requirement:** No refrigeration required				**Is Hazardous?** ✓			

Vendor 5.	Vendor Subtotal	Date Req'd
Benthos Inc. www.benthos.com 49 Edgerton Drive North Falmouth, Massachusetts United States Phone: 1 (508) 563-1000 x. 568 Fax: 1 (508) 563-6444	$9,960.00	01 May 2007

↳ 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
3	EA	Sonar altimeter	Sonar Altimeter	PSA-916	PSA-916		Campatibility of all electronics	$2,995.00	0.0	0.0	Quote # 86290 Doug McGowen dmcgowen@benthos.com
	Deliver to Home Inst.? ✓		**Temperature Requirement:** No refrigeration required					**Is Hazardous?**			
3	EA	Cable	10M pigtail for PSA-916	10M pigtail for PSA-916	10M pigtail for PSA-916		Campatibility of all electronics	$300.00	0.0	0.0	Quote # 86290 Doug McGowen dmcgowen@benthos.com
	Deliver to Home Inst.? ✓		**Temperature Requirement:** No refrigeration required					**Is Hazardous?**			
1	LOT	Shipping	Shipping	Shipping	Shipping			$75.00	0.0	0.0	Quote # 86290 Doug

											McGowen dmcgowen@benthos.com
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			

Vendor 6.	**Vendor Subtotal**	**Date Req'd**
Campbell Scientific, Inc. http://www.campbellsci.com 815 West 1800 North Logan, Utah 84321 United States Phone: 1 (435) 750-9681 Fax: 1 (435) 750-9540	$17,943.48	01 May 2007

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	Com
3	EA	Enclosure 16x18	Enclosure 16x18, No entry	END16/18-NC-MM	15873-49		Mounting plate in bottom pre-drilled for following electronics	$345.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous**			
3	EA	Datalogger-CR1000	CR1000 Datalogger	CR1000-ST-SW-NC	16130-23		Campatibility of all electronics	$1,305.72	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous**			
3	EA	Multiplexor	16 or 32 Channel Multiplexer	AM16/32-ST-SW	19232-1		Campatibility of all electronics	$620.00	0.0	0.0	Quot josh

	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Snow depth sounder	CSC Ultrasonic Distance sensor	SR50A-L24	10729-78		Campatibility of all electronics	$91.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	cable	Sensor cable 24ft				Campatibility of all electronics	$13.92	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	mounting adapter	SR50A mounting stem	SR50A mounting stem	19484		Campatibility of all electronics	$46.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Air temperature probe	107 Air temperature probe	107-L20	107-L20		Campatibility of all electronics	$78.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Cable for Air temperature probe	Cable for ait temp probe 20 ft	9661	9661		Campatibility of all electronics	$7.20	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Solar shield	RM Youn 6-plate Solar Radiation shield	41303-5A	4020		Campatibility of all electronics	$115.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**

3	EA	Barometer	Vaisala PTB101B barometer	CS105	8739		Campatibility of all electronics	$570.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Data Cable	9pin Femail to 9pin Male Serial Data cable	10873	10873		Campatibility of all electronics	$2.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Data Cable	Robust CSI/O Cable 2 ft	SC12	16675		Campatibility of all electronics	$14.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Satelite Transmitter	ARGOS Platform PTT	ST-20	18575		Campatibility of all electronics	$1,610.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
3	EA	Antenna	AGOS 0db OMNI Marine 1/2 wave dipole antenna		12022		Campatibility of all electronics	$230.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
1	EA	Water depth recorder	Pressure Systems 500 Transducer	CS408-L30-15	16510-62		Campatibility of all electronics	$1,200.00	0.0	0.0	Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**
1	EA	Cable	30ft polyure	Cable for above			Campatibility	$51.00	0.0	0.0	Quot

			Cable	transducer			of all electronics					josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	
3	EA	GPS reciever	Garmin GPS reciever w/antennae	GPS16-HVS	19216		Campatibility of all electronics	$165.00	0.0	0.0		Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	
1	EA	Keyboard	Keyboard display for CR1000	CR1000KD	16136		Campatibility of all electronics	$222.46	0.0	0.0		Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	
1	EA	RS232 Interface	Optically isolate Interface	SC32B	17229		Campatibility of all electronics	$77.38	0.0	0.0		Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	
1	EA	Software, Datalogger	Loggernet	data logger software	16344		Campatibility of all electronics	$527.12	0.0	0.0		Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	
1	LOT	Shipping	Freight	Freight	16103			$227.00	0.0	0.0		Quot josh
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required									**Is Hazardous**	

Vendor 7.	Vendor Subtotal	Date Req'd
Satlantic www.satlantic.com RICHMOND TERMINAL - PIER 9, 3481	$5,050.00	01 May 2007

NORTH MARGINAL ROAD
Halifax
Canada
Phone: 1 (902) 492-4780
Fax: 1 (902) 492-4781

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
1	EA	Radiometer	Irradiance Sensor – Radiometer Under water (442,450, 491, 555nm)	OCR-504-Irradiance			accuracy needed and compatible with Campbell Products	$4,700.00	0.0	0.0	QUOTATION: 1 Cyril Dempse cyril@satlar
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required								**Is Hazardous?**	
1	EA	Cable, underwater, 10 lon g	10 Meter Pigtail	10 Meter Pigtail			Cable mates with above item	$250.00	0.0	0.0	QUOTATION: 1 Cyril Dempse cyril@satlar
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required								**Is Hazardous?**	
1	LOT	Shipping		Shipping				$100.00	0.0	0.0	QUOTATION: 1 Cyril Dempse cyril@satlar
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required								**Is Hazardous?**	

Vendor 8.	Vendor Subtotal	Date Req'd

Sea-Bird Electronics, Inc. www.seabird.com 1808 136th Place NE Bellevue, Washington 98005 United States Phone: 1 (425) 643-9866 x. 211 Fax: 1 (425) 643-9954	$8,835.56	01 May 2007

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
2	EA	Temperature Conductivity sensor	MicroCAT C and T (pressure optional) Sensor with Serial	SBE 37SI	SBE 37SI		accuracy needed and compatible with Campbell Products	$3,355.94	0.0	0.0	Quote # 45960Q-2 Andrew Ziegwied aziegwied@seabird.com
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
2	EA	Plastic housing credit	Substitute 250 meter plastic housing (CREDIT)	1a	1a		accuracy needed and compatible with Campbell Products	$0.00	0.0	0.0	Quote # 45960Q-2 Andrew Ziegwied aziegwied@seabird.com
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
2	EA	Depth	20 meter	1b	1b		accuracy	$1,011.84	0.0	0.0	Quote # 45960Q-2

		pressure gauge	strain gauge pressure sensor				needed and compatible with Campbell Products				Andrew Ziegwied aziegwied@seabird.com
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			
1	LOT		Shipping					$100.00	0.0	0.0	Quote # 45960Q-2 Andrew Ziegwied aziegwied@seabird.com
	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required						**Is Hazardous?**			

Vendor 9.	**Vendor Subtotal**	**Date Req'd**
Tadiran Battery http://www.tadiranbat.com 2 Seaview Blvd. Port Washington, New York 11050 United States Phone: 1 (800) 537-1368	$3,600.00	01 May 2007

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	Comment
6	EA	Battery Pack, Lithium	TLP-93181D/OCN2	TLP-93181D/OCN2	TLP-93181D/OCN2		Limited Size for lots of amp hours., Fits inside bouy container	$600.00	0.0	0.0	Email Qu dkcampbe Long del will rep borrowed project

	Deliver to Home Inst.? ✓	**Temperature Requirement:** No refrigeration required	**Is Hazardous?** ✓

Vendor 10.	Vendor Subtotal	Date Req'd
Fisher Scientific 2000 Park Lane Pittsburgh, Pennsylvania 15275 United States Phone: 001 8007667000	$212.58	

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
3	CAN	Hydrochloric acid certified ACS plus	Fisher chemical	A144-212	A144-212			$65.51	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required						**Is Hazardous?** ✓			
1	BOT	10% Buffered Formalin, 32 oz.	Fisher PROTOCOL	23-305510	23-305510	✓		$16.05	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?** ✓			

Vendor 11.	Vendor Subtotal	Date Req'd
Invitrogen http://www.invitrogen.com/ 1600 Faraday avenue	$169.00	

California, Other 92008 United States Phone: 1 760-603-7200 Fax: 1 760-602-6500		

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
1	PAC	sytox green acid stain -5 mM solution in DMSO	invitrogen	S7020	S7020			$169.00	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** Keep frozen at -20C						**Is Hazardous?** ✓			

Vendor 12.	Vendor Subtotal	Date Req'd
Sigma aldrich www.sigmaaldrich.com PO Box 14508 St Louis, Other 63178 United States Phone: 1 800-325-3010 Fax: 1 800-240-4668	$889.60	

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	Commer
1	PAC	Phosphoric acid, ACS reagent, >85% wt. % in H2O	Sigma-Aldrich	438081	438081-500ML			$55.70	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		
1	PAC	Tris-EDTA Buffer 100 x concentrate	Sigma	T92285	T9285-100ML			$16.40	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		
2	PAC	4-methylumbelliferyl B-D-glucopyranoside	Sigma	M3633	M3633-100 MG			$32.70	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** Keep frozen at -20C							**Is Hazardous?** ✓		
1	PAC	L-Leucine-7-amido-4-methylcoumarim hydrochloride	Sigma	L2145	L2145-25MG			$168.00	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** Keep frozen at -20C							**Is Hazardous?** ✓		
1	CAS	Formaldehyde solution, ACS reagent, 37 wt.% in H2O	Sigma-Aldrich	252549	252549-6x500ML			$189.50	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		
2	PAC	4,6-Diamidino-2-phenylindole dihydrochloride	Sigma	D9542	D9542-10MG			$73.70	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** Keep frozen at -20C							**Is Hazardous?** ✓		
1	KG	Trichloroacetic acid, purum p.a., >99%	Fluka	91232	91232-1KG			$84.10	0.0	0.0	

	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		
1	L	RBS 25 solution	Fluka	83460	83460-1L			$48.50	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		
2	EA	Reagent Acohol	Sigma	R8382	R8382-1GAL			$57.30	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** No refrigeration required							**Is Hazardous?** ✓		

Vendor 13.	**Vendor Subtotal**	**Date Req'd**
VWR http://www.vwrsp.com/ 1310 Goshen Parkway West Chester, Other 19380 United States Phone: 1 800-932-5000	$34.00	

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**
2	PAC	Gluteraldehyde 25 % Bio g rade	ELECTRON MICROSCOPY SCIENC NM		100504-004			$17.00	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** Keep chilled						**Is Hazardous?** ✓			

Vendor 14.	**Vendor Subtotal**	**Date Req'd**
Wildlife Computers	$37,000.00	

Redmond, Washington 98052 United States Phone: 001 4258813048 Fax: 001		

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
20	EA	SPOT 5 Flipper Tag	SPOT 5 Flipper Tag	SPOT 5			Sole provider of tag-mountable instruments	$1,850.00	0.0	0.0	
	Deliver to Home Inst.? ✓		**Temperature Requirement:** N/A					**Is Hazardous?**			

Vendor 15.	Vendor Subtotal	Date Req'd
Fuhrman Diversified, Inc. www.fdiequipment.com Seabrook, Texas 77586-1501 United States Phone: 001 2814741388 Fax: 001	$1,400.00	

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

2	EA	Flexi-net	Fuhrman Diversified, Inc.	DSAL-TI5A/53 DG	DSAL-TI5A/53 DG		Custom-designed nets for pinniped capture	$700.00	0.0	0.0	
	Deliver to Home Inst.?					**Temperature Requirement:** N/A			**Is Hazardous?**		

Vendor 16.	**Vendor Subtotal**	**Date Req'd**
Fisher Scientific 2000 Park Lane Pittsburgh, Pennsylvania 15275 United States Phone: 001 8007667000	$5,504.56	

↳ 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
1	CAS	Johnny Plastic-Ice	Pelton Shepherd	XC-24 BR	XC-24 BR	✔		$200.00	3.0	60.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
10	BOX	Whatman GFF fitlers, 100 per box 25 mm diameter	Whatman	1825-025	09-874-64	✔		$80.00	0.5	1.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		

10	BOX	Whatman GFF fitlers, 100 per box 47 mm diameter	Whatman	1825-047	09-874-71	✔		$108.00	0.5	1.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
2	CAS	Culture tubes	Fsicherbrand	14-961-27	14-961-27	✔		$73.50	2.0	10.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
4	CAS	Scintillation vials	Kimble	58511B	03-337-24B	✔		$194.00	2.0	5.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
1	CAS	Carboys		02-963BB	02-963BB	✔		$475.00	4.0	5.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
2	PKG	Pipette tips 100-1000ul	Fischer Brand	21-381-8c	21-381-8c	✔		$174.00	1.0	5.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
2	PKG	Pipette tips 1-200ul	Fischer Brand	02-681-152	02-681-152	✔		$74.00	1.0	2.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
2	PKG	Pipette tips 1-10 millili ter	Fischer Brand	02-681-412	02-681-412	✔		$58.00	1.0	2.0	
	Deliver to Home Inst.?				**Temperature Requirement:** N/A				**Is Hazardous?**		
2	PKG	Pipette tips 1000-5000ul	Fischer Brand	21-195-3	21-195-3	✔		$43.50	1.0	2.0	

	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
15	EA	5 gal pail wiht lids	Lab safety inc.	11614W	NC9005935	✔		$12.95	2.0	1.0	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
2	EA	Graduated Cylinder 500ml	Fischer Brand	03-007-43	03-007-43	✔		$23.83	1.0	1.0	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
2	EA	Graduated Cylinder 100ml	Fischer Brand	03-007-41	03-007-41	✔		$13.03	0.5	0.5	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
2	EA	Graduated Cylinder 1000ml	Fischer Brand	03-007-44	03-007-44	✔		$30.74	0.5	0.5	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
1	EA	Graduated Cylinder 2000ml	Fischer Brand	03-007-45	03-007-45	✔		$64.54	0.5	0.5	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
5	PKG	Capsule filters		WP4Hy410F0	WP4Hy410F0	✔		$61.36	0.0	0.0	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			
6	EA	filter forceps	millipre	XX62 000 06	XX62 000 06	✔		$12.07	0.2	0.2	
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			

5	L	HPLC grade Acetone, 4l	Fisher	A949-4	A949-4	✓		$110.87	1.0	5.0	20 LITERS IN TOTAL
	Deliver to Home Inst.?				**Temperature Requirement:** N/A			**Is Hazardous?**			

Vendor 17.	**Vendor Subtotal**	**Date Req'd**
CLS America, Inc. http://www.clsamerica.com 1441 McCormick Drive, Suite 1050 Largo, Maryland 20774 United States Phone: 001 3019254411 Fax: 001 3019258995	$1,200.00	

↳ 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
3	EA	ARGOS platform ID	Argos System				IDs are necessary for transmitting IMB remote buoy data to Argos satellite	$400.00	0.0	0.0	Campbell Scientific will be requesting ID numbers to place on Argos transmitters. IDs to be purchased in PI Stephen Ackley's name. Monthly charges will be billed to grant. Contact

											Stephen Ackley for specification on data requirements.
	Deliver to Home Inst.?	**Temperature Requirement:** N/A						**Is Hazardous?**			

Current Total: **$116,657.18**

Describe completely any additional vendor supply requirements.

Vendor Supplies :: Non–Stocked Materials and Supplies :: Deliver to Home Institution

Vendor supplied items that are delivered to the home institution require prior NSF approval. Please select the home institution contact and provide a justification for each vendor below that is shipping supplies to your home institution.

Vendor	Date Req'd	Home Institution Delivery To
Benthos Inc. **49 Edgerton Drive** **North Falmouth, Massachusetts** **United States** **Phone: 1 (508) 563–1000 x. 568** **Fax: 1 (508) 563–6444**	01 May 2007	Ackley, Mr. Stephen

↳ Qty	Units	Description
3	EACH	Sonar altimeter
3	EACH	Cable
1	LOT	Shipping

Justification: IMB components delivered for final assembly and calibration to constructor Bruce Elder at: USA CRREL 72 Lyme Rd Hanover, NH O3755

Vendor	Date Req'd	Home Institution Delivery To
Campbell Scientific, Inc. **815 West 1800 North** **Logan, Utah 84321** **United States** **Phone: 1 (435) 750–9681** **Fax: 1 (435) 750–9540**	01 May 2007	Ackley, Mr. Stephen

↳ Qty	Units	Description
3	EACH	Enclosure 16x18
3	EACH	Datalogger-CR1000
3	EACH	Multiplexor
3	EACH	Snow depth sounder
3	EACH	cable
3	EACH	mounting adapter

3	EACH	Air temperature probe
3	EACH	Cable for Air temperature probe
3	EACH	Solar shield
3	EACH	Barometer
3	EACH	Data Cable
3	EACH	Data Cable
3	EACH	Satelite Transmitter
3	EACH	Antenna
1	EACH	Water depth recorder
1	EACH	Cable
3	EACH	GPS reciever
1	EACH	Keyboard
1	EACH	RS232 Interface
1	EACH	Software, Datalogger
1	LOT	Shipping

Justification: IMB components delivered for final assembly and calibration to constructor Bruce Elder at: USA CRREL 72 Lyme Rd Hanover, NH 03755

Vendor	Date Req'd	Home Institution Delivery To
Satlantic **RICHMOND TERMINAL - PIER 9, 3481 NORTH MARGINAL ROAD** **Halifax** **Canada** **Phone: 1 (902) 492-4780** **Fax: 1 (902) 492-4781**	01 May 2007	Ackley, Mr. Stephen

↳ Qty	Units	Description
1	EACH	Radiometer
1	EACH	Cable, underwater, 10 long
1	LOT	Shipping

Justification: IMB components delivered for final assembly and calibration to constructor Bruce Elder at: USA CRREL 72 Lyme Rd Hanover, NH 03755

Vendor	Date Req'd	Home Institution Delivery To
Sea-Bird Electronics, Inc.	01 May 2007	Ackley, Mr. Stephen

1808 136th Place NE **Bellevue, Washington 98005** **United States** **Phone: 1 (425) 643-9866 x. 211** **Fax: 1 (425) 643-9954**		

↳ Qty	Units	Description
2	EACH	Temperature Conductivity sensor
2	EACH	Plastic housing credit
2	EACH	Depth pressure gauge
1	LOT	

Justification: IMB components delivered for final assembly and calibration to constructor Bruce Elder at: USA CRREL 72 Lyme Rd Hanover, NH 03755

Vendor	Date Req'd	Home Institution Delivery To
Tadiran Battery **2 Seaview Blvd.** **Port Washington, New York 11050** **United States** **Phone: 1 (800) 537-1368**	01 May 2007	Ackley, Mr. Stephen

↳ Qty	Units	Description
6	EACH	Battery Pack, Lithium

Justification: IMB components delivered for final assembly and calibration to constructor Bruce Elder at: USA CRREL 72 Lyme Rd Hanover, NH 03755

Vendor	Date Req'd	Home Institution Delivery To
Wildlife Computers **Redmond, Washington 98052** **United States** **Phone: 001 4258813048** **Fax: 001**		Stewart, Dr. Brent

↳ Qty	Units	Description
20	EACH	SPOT 5 Flipper Tag

Justification: SPOT 5 Satellite Tags needed for calibration and check out prior to deployment by Dr. Brent Stewart

Please list any additional requirements for items delivered to your home institution.

Vendor Supplies Comments

There are no comments entered for this section.

Computers

Ensure your project team is familiar with the most current Information Security Awareness materials. Information Security Awareness training is a Federal requirement and must be completed prior to obtaining access to the USAP network.

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 or e–mail transmission requirements above the standard allotment of 25 KB/day?	✓	
Outreach Efforts	**Yes**	**No**
* Do you have NSF aproval/funding for an outreach proposal?		✗
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.

Please familiarize your project team with the most current USAP Computer Screening Requirements materials.

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. In order to comply with Federal Information Security Management Act of 2002 (FISMA) regulations, all network devices connected to the USAP network are required to follow Standard Configuration Settings. Please contact USAP Information Security (infosec@usap.gov) with questions regarding standard configurations.

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
PC	5	2000	windows	

Please provide your home–station IT security contact in the event of questions or a computer incident involving your computer equipment on the Ice.

* Contact Name	Contact Title	* Institution Name	* Contact Phone	Contact E–Mail
Ima Itguy		UTSA	210 341 6556	ima.itguy@utsa.edu

Describe instruments or equipment you are connecting to your computer:

data collection devices for emi, altimeter, etc

Describe any additional connectivity or application requirements you have:

none

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
Software Installation	80
Hardware Installation	80
Network Configuration	80
Data Archiving	80

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

Usual ship support for operations like met data, CTDdata, Swath Bathymetry data, ADCP data and operation of special sensors like EMI ice thickness data, rail-mounted radiometers, and archiving of satellite imagery, etc. Assistance with downloading and archiving of onsite data loggers for temperature, met data, ice thickness data.

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

Please answer the following required questions concerning your connected computer(s) to the USAP network. If you are unsure on how to answer the first question, please choose "Yes". You must also fill out the IT contact grid below so that we can contact you about your equipment and/or network.

The NSF is required to conduct periodic vulnerability assessments on the USAP network and attached devices in accordance with U.S. Government regulatory compliance guidelines. Please contact USAP Information Security (infosec@usap.gov) with questions regarding periodic vulnerability assessments.

	Yes	No
* Are any of your computers potentially sensitive to periodic network scanning and should be excluded from such network scanning?		✘
* Are you bringing equipment that will create a scientific or private network that will need to be connected to the USAP network infrastructure on the Ice?		✘

Please provide the name of the person that is designing your network.

* Contact Name	Contact Title	* Institution Name	* Contact Phone	Contact E–Mail
No data entered for this grid				

Additional information or comments concerning your network connections.

Computers :: E–Mail and Data Transmission

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

Computers :: E–Mail and Data Transmission :: 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 the 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 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 Data Transmission :: Data Transfer Requirements

The standard e–mail allotments for individual cruise participants are 25kB/day while at sea, plus 25kB/day for 4 port days. The outbound message size limit is 100kB (per message) and the inbound limit is 75kB. Please list any grant specific data transmission requirements above the standard allotment. This would include individual messages or images over message size limit, or total volumes of data in excess of the standard 25kB/day allotment. Be aware that current data/imagery/email transmission via InMarSat costs approximately $25 per MB.

List the total data volume (for all data, imagery and email) you require in kilobytes and the frequency of transmission, e.g. "500kB per week". Also, please indicate if the transmission requirements is bi–directional (i.e. both to and from the ship).

* Qty of Data (KB)	* Frequency	Bi–directional?
500	Day	

In your justification/explanation for this request, if you have multiple data types in your total transmission request (data/imagery/email), please list the size of each type of transfer required and a separate explanation in the table below.

Type of Transmission	Size/Frequency	Justification
imagery	High resolution radar imagery used for ice navigation and site selection	High resolution radar imagery used for ice navigation and site selection

Include any additional explanation/justification for excess transfers:

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?
Large Format color plotter	

Please list any additional printer requirements.

Computers Comments

There are no comments entered for this section.

Communications

Please indicate your communications requirements. All answers are required.

Communications Requirements	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 require the use of single channel Iridium for e–mail purposes?		✗
* Do you have other communications requirements?		✗

Communications :: Field Radios

Describe your HF/VHF radio requirements.

Standard ship provided handsets for communication with field parties, several on ice simultaneously.

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
No data entered for this grid		

Describe any additional voice call requirements.

Communications Comments

There are no comments entered for this section.

Scientific Services

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

Scientific Services Requirements	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.

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.

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.

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.

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
Other Data Set	EMI Device Output, coded with position and time

Describe completely any additional data support requirements.

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.).

all available to characterize the region.

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

Coring, thickness/snowdepth surveys, buoy installations,seal handling and tagging, traverses with emi devices, DC resistivity surveys.

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

Hand and motorized augers/corers, skidoo pulled sleds, generators,hand-pulled sleds.

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.

High precision (survey grade) GPS equipment is also available from UNAVCO for use on the vessels and ashore. This is in addition to the GPS equipment already on the vessels, and is provided on a project–by–project basis. The equipment can be delivered to the cruise, or to the field party in advance for familiarization and training. By requesting survey grade equipment in the SIP, you will be contacted by UNAVCO to determine your specific requirements. Training and technical support are also available. For more information regarding UNAVCO Polar support see http://facility.unavco.org/project_support/polar/.

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

Global Positioning Support :: GPS Contact

Who is your deploying GPS contact?

* GPS Contact
Lewis Jr., Mr. Michael

Additional information or comments concerning your GPS contact.

Global Positioning Support :: GPS Requirements

Please complete the following to assist UNAVCO in planning your GPS support. You will be contacted by UNAVCO regarding your GPS requirements. UNAVCO provides comprehensive support for both GPS campaigns and continuous GPS stations. Power and data telemetry systems are also available. For more detailed information see http://facility.unavco.org/project_support/polar/.

* Range of Accuracy	* Qty of Receivers
1–5 meters	3

Please describe what you would like to accomplish using GPS.

Used by survey crews on skidoos to provide site coordinates

Global Positioning Support :: Project GPS Information

Please provide details about your project's GPS experience, requirements, and support needs.

GPS Experience	Yes	No	Description (if applicable)
* Do you have experience with geodetic surveys?	✓		Field qualified Geophysicists currently actively using GPS in research and consulting
* Is GPS support detailed in your proposal?		✗	
Special GPS Requirement	**Yes**	**No**	**Description (if applicable)**
* Real–time (RTK) GPS equipment	✓		
* Long–term (1–13 months) data collection		✗	
* Continuous stations (multi–year data collection)		✗	
Training	**Yes**	**No**	**Description (if applicable)**
* Training required to operate the GPS equipment (Trimble 5700/R7/NetRS)		✗	
* Assistance required for processing GPS data (Trimble Geomatics Office software)		✗	

Please describe your need for any additional Global Positioning Support.

Accurate positioning for level surveys and onice measurements for correspondence with satellite imagery.

Global Positioning Support Comments

There are no comments entered for this section.

Diving Support

Please indicate your diving requirements. All questions are required.

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

Diving Support Comments

There are no comments entered for this section.