



**Raytheon**

**Polar Services**

# UNITED STATES ANTARCTIC PROGRAM

**NBP07-09 SIMBA  
Cruise Planning Meeting  
Friday, 30 March 2007**



# CRUISE OBJECTIVES

**Raytheon**

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- **SCIENCE OUTLINE AND GOALS**



# CRUISE SCHEDULE

**Raytheon**

- **OVERALL TIMEFRAME**
  - **Discussed at AGU:**
    - 15 days transit to drift station
    - 10 days on drift station
    - 3-4 days off station placing buoy
    - 7 days back on same drift station
    - 3-4 days off station placing buoy
    - 7 days back on same drift station
    - 15 days transit to PA



# CRUISE SCHEDULE

**Raytheon**

- **ESTIMATES FOR PLANNING**
  - **Based on experience from similar cruise in 2005:**
    - Drift station may not hold together for 10 days
    - 1.5-2 knots is more realistic in the Amundsen Sea at the time of year
    - Getting back to the same floe as the original drift station may be very difficult
    - Estimates for open water transit times are probably OK
  - **Plan stop at Palmer Station at beginning**
    - Pick up second snowmobile



# MAJOR OPERATIONS

**Raytheon**

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- **ICE BUOYS**
  - **DRIFTERS**
  - **SEAL TAGS**
  - **CTD DEPLOYMENTS + XBTs**
  - **SWATH BATHYMETRY**
  - **NUTRIENT ANALYSIS**
  - **TRACE METAL WORK**
  - **ICE CORING**
  - **14C? 3H? 55Fe**
  - **O<sub>2</sub> TITRATIONS + SALINITY MEASUREMENTS**
  - **ROV? AUTOSUB?**



# MAJOR OPERATIONS

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- **SEAL TAGS**
    - Number of animals to be tagged?
    - Target species?
    - What else (blood or tissue samples?)



# MAJOR OPERATIONS

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- **CTD DEPLOYMENTS**
  - **Options:**
    - Moonpool
    - Aft
- **XBTs**
  - 72 ea. T-6 probes
  - Deployed where, and frequency?



# MAJOR OPERATIONS

**Raytheon**

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- **SWATH BATHYMETRY (MULTIBEAM)**
    - Where?





# MAJOR OPERATIONS

**Raytheon**

- **NUTRIENT ANALYSIS**
  - **Options for 12hr operations:**
    - RPSC MST runs nutrients (requested in SIP)
    - Member of science party runs nutrients (training required)
  - **RPSC provides nutrient tech**
    - 12 hr operations: would need dedicated technician, i.e. 2 MSTs and 1 nutrient tech (see personnel), also need 1 of science party for assistance
  - **Science party provides tech**
    - Need to set up training
    - Need a minimum of 2 MSTs to provide backup for nutrients (see personnel)
  - **IF 24hr operations:**
    - need at least one member of science party and RPSC tech, or two to three members of science party to run instrument



# MAJOR OPERATIONS

**Raytheon**

- **TRACE METAL WORK**
  - **Equipment**
    - Trace metal rosette?
      - Science party must provide
    - TMC garage van
      - Lab space sufficient?
  - **Lab setup**
    - Clean room?
    - Equipment needed?
    - Laminar flow hoods needed?
  - **Winch/wire setup?**
    - RPSC can provide cleaned Dynacon winch and Spectraline (ca. 5000ft, 5mm)
  - **Supplies needed?**
    - No trace metal work-specific lab supplies requested in SIP



# MAJOR OPERATIONS

**Raytheon**

- **TRACE METAL WORK: 'garage van'**



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# ICE CORING

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- **EQUIPMENT**



# MAJOR OPERATIONS

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- **Radioisotopes (14C, 3H, 55Fe)**
  - **Permitting**
    - Under which license?
    - Info needed: chemical form, activity?
  - **Equipment**
    - Lab equipment needed?
    - Two rad vans?
    - Will isotopes be restricted to vans?
  - **Deck incubations?**
    - UV-transparent incubators, 4x4ft, usually on helo deck
  - **Supplies needed?**
    - No supplies listed in SIP (e.g. scint cocktail and vials)
  - **Waste**
    - Any mixed or biohazard waste (what type of experiment?)



# MAJOR OPERATIONS

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- **OXYGEN TITRATIONS**
  - Supplies needed?
  - Who will run instrument?
  - Training needed?
- **SALINITY MEASUREMENTS**
  - Who will run instrument?



# MAJOR OPERATIONS

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- **ROV**
  - **Vern Asper's ROV mentioned at AGU meeting**
    - Is Asper aware?
    - Needs assembly – by who, and when?
    - Training needed? Test run? When?
    - Deckspace?
    - Hyball alternative?
  
- **AUTOSUB**
  - **Availability?**



# MAJOR OPERATIONS

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- **VAN REQUIREMENTS**
  - Freezer van (temperature?)
  - TMC garage van
  - Rad van – two?
  - ROV van?
  - Moonpool van?
  - Autosub vans (2 vans and gantry crane)
  
- **DECK SPACE??**





# DECK SETUP

- **WINCH/WIRE CONFIGURATION**
  - CTD
  - Trace metal rosette
- **VAN PLACEMENTS**
  - **Helo deck**
    - Rad vans
  - **Main deck**
    - TMC garage van
    - Freezer van
    - Autosub, ROV, etc...
- **DECK INCUBATIONS?**
  - **Helo deck**





# LAB SETUP

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- **LAB SPACE ALLOCATION**
  - Ice core processing
  - Trace metal work?
- **LAB EQUIPMENT NEEDS**
  - Vessel lab equipment
  - Items requested from Crary lab / McMurdo (for seal work?)



# SUPPLIES

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- **REQUESTED SO FAR:**
  - ice mass balance buoys
  - 10 ea. drifters
  - satellite trackers
  - XBTs
  - **Flags and Poles**
    - Options:
      - Pole diameter  $\frac{3}{4}$ ", length 8 ft – 1" / 10 ft also available
      - Flag material UV-inhibited nylon or vinyl
- **OUTSTANDING(?):**
  - salinity standards
  - trace metal supplies and chems
  - filters for laminar flow hoods
  - supplies for radioisotope work
  - nutrient analysis supplies and chems
  - oxygen titration supplies and chems



# BUDGET

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- **NUMBERS...**
  - **~\$160K budgeted for SIMBA cruise**
  - **Current SIP supplies total \$117K**
  - **Buoy assembly estimated at ~\$60K**
  - **Not included:**
    - Lab supplies for radioisotope work
    - Lab supplies for trace metal work (incl. HEPA filters)
    - Nutrient supplies and chems
    - Oxygen titration supplies and chems
    - XBTs
    - Salinity standards
  - **Current total: ~\$170K**
  - **Grand total?**



# PERSONNEL

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- **RPSC SUPPORT STAFF ROLES (NBP)**
  - **Marine Projects Coordinator - MPC**
    - is the senior RPSC person on board
  - **Marine Science Technicians - MSTs**
    - vessel lab operations, assists with lab instrument set up, hazardous waste disposal, sample packaging, and monitors radioisotope use
  - **Marine Technicians - MTs**
    - deployment of all over-the-side operations, deck safety
  - **Electronics Technicians - ETs**
    - electronic science equipment and some of the ship's operational systems
  - **IT staff – network admins and systems analysts**
    - maintain the ship's network, handle satellite data transfers, assist with setup and networking of personal computers, Terascan support, multibeam data processing, compile end-of-cruise data report



# PERSONNEL

**Raytheon**

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## BERTHING ALLOCATIONS

- **Science Party:**
  - ORW lists 20 cruise participants
  - SIP lists 30 participants
- **Reality:**
  - RPSC: 13 (1 MPC, 3 MSTs, 4 MTs, 2 ETs, 3 IT staff)
  - Science: 20 (as listed in ops review), maybe up to 6 more
- **RPSC staffing rationale:**
  - MSTs: three for nutrients, autosal, and maybe oxygen titrations, as well as trace metal work and rads
  - MTs: four, since it will be a very long cruise with a lot of CTD casts, both normal and trace metal, and on-ice work
  - ETs: standard
  - IT: two network admins standard, plus a dedicated senior analyst for multibeam operations



# DEPLOYMENT DETAILS

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- **PQ PROCESS**
  - **US cruise participant PQ**
    - PQ deadline: at least three weeks before the cruise
    - PQ status can be checked online in POLAR ICE
  - **Foreign participant PQ**
    - All personnel must be listed on SIP
    - Foreign participant PQ status will be tracked together with all other cruise participants
  
- **TICKETING OPTIONS**
  - **‘Normal’ ticketing through RPSC travel**
  - **Reimbursement options**
    - MUST be worked through RPSC travel office
    - Flights MUST be booked on US flag carrier or code share flight
    - Reimbursement can only be up to the amount RPSC would have spent on a ticket from the US



# CARGO

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- **SHIPPING ITEMS TO THE VESSEL**
  - **Items must arrive in Port Hueneme, CA, by:**
    - 24 June for surface shipment (comsur)
    - 7 August for air shipment (comair)
  - **Packing and shipping information can be found at:**
    - <http://www.usap.gov/logistics/>
  - **Heavy, bulky, or hazardous items:**
    - please accommodate for extra time
  - **Shipping chemicals or hazardous substances:**
    - Don't. If you have to, include all paperwork (MSDS) and make sure packaging is in accordance with IATA regulations
  - **Wooden crates:**
    - USDA-Aphis regulations on wood packaging materials – e.g. wooden crates
    - Check <http://www.aphis.usda.gov/ppq/wpm/import.html>.





# CARGO

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- **HANDCARRYING ITEMS**
    - American Airlines only allows 2 pieces of checked luggage that weigh no more than 50 pounds each
  - **DIRECT SHIPMENTS TO CHILE**
    - Please inform your POC of items to be shipped (number, size, etc.), approximate arrival dates, and tracking numbers if available



# CARGO

**Raytheon**

- **SAMPLE SHIPMENT**
  - **Sample shipment via Port Hueneme**
  - **Types of samples listed in SIP:**
    - Seawater (Keep Chilled)
    - Filters with residue (Frozen a-20 to -70C/dry ice)
    - Water samples (No refrigeration required)
    - Biomedical samples from seals (Frozen a-20 to -70C/dry ice)
    - Biomedical samples from seals (formalin)
    - Biomedical samples from seals (ethanol)
  - **Size of sample container in SIP is missing**
    - Small or large inner box
    - Dry shipper
    - Ice core box



# IT ISSUES

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- **MULTIBEAM**
- **SATELLITE IMAGERY**
  - Terascan Support
  - Radarsat Imagery
- **EXCESS DATA TRANSFER**
  - **SIP lists 500kB/day excess data**
    - Is this for outreach? If not, need to request more
    - Need justification for outreach
- **INFOSEC REQUIREMENTS**
- **INMARSAT FOOTPRINT**



# PERMITS

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- **ENVIRONMENTAL RELEASES**
    - Buoy
    - Drifters
    - Satellite tags
  - **MARINE MAMMAL PERMIT**
  - **ACA PERMIT**
  - **USDA REQUIREMENTS**
  - **CITES?**



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# QUESTIONS?

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