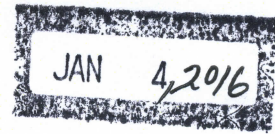
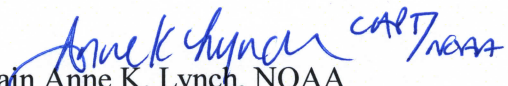




UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center - Atlantic
Norfolk, Virginia 23510-1114



MEMORANDUM FOR: Captain Robert Kamphaus, NOAA
Commanding Officer, NOAA Ship *Ronald H. Brown*

FROM:  Captain Anne K. Lynch, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for RB-16-01
Extended Continental Shelf Mapping-Kingman Palmyra


Attached is the final Project Instruction for RB-16-01, Extended Continental Shelf Mapping-Kingman Palmyra, which is scheduled aboard NOAA Ship *Ronald H. Brown* during the period of January 5 – February 9, 2016. Of the 33 DAS scheduled for this project, 33 days are funded by Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to ChiefOps.MOA@noaa.gov at Marine Operations Center-Atlantic.

cc:
Andrew Armstrong
Christopher Beaverson

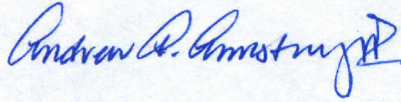


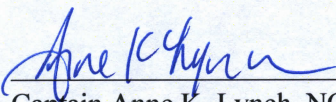
Project Instructions

Date Submitted: December 14, 2015
Platform: NOAA Ship *Ronald H. Brown*
Project Number: RB-16-01
Project Title: Extended Continental Shelf Mapping-Kingman Palmyra
Project Dates: January 5 - February 9, 2016

Prepared by:  Dated: 12/24/2015
Andrew Armstrong
Chief Scientist
Joint Hydrographic Center, NOAA/NOS/OCS

Approved by: _____ Dated: _____
Program Director Name
Title
Affiliation (Program or Lab)

Approved by:  Dated: 12/24/2015
Andrew Armstrong
Co-Director Joint Hydrographic Center
NOAA/NOS/OCS

Approved by:  Dated: 1/4/2016
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

Leg 1 will stage on January 4, 2016. January 5 – 8, 2016 are underway days. Leg 2 will stage January 11, 2016. January 12 – February 9, 2016 are underway days. The science party plans to disembark on February 9.

B. Days at Sea (DAS)

Of the 33 DAS scheduled for this project, 33 DAS are funded by Line Office Allocation (OAR). This project is estimated to exhibit a medium Operational Tempo--Continuous data acquisition at 10 - 11 kts. Minimal deck operations will be required.

C. Operating Area (include optional map/figure showing op area)

The operating area for Leg 1 of this project is offshore the southern and southeastern coast of Oahu. The operating area for Leg 2 is in the vicinity of Kingman Reef and Palmyra Atoll in the Line Islands area of the central tropical Pacific

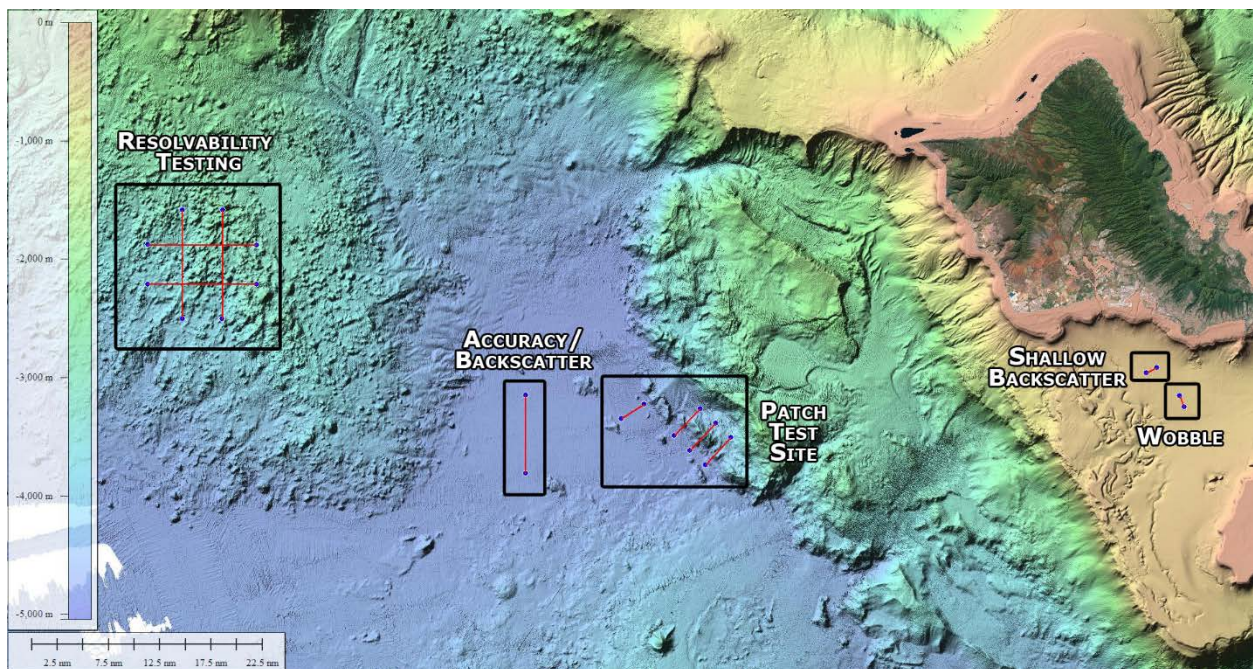
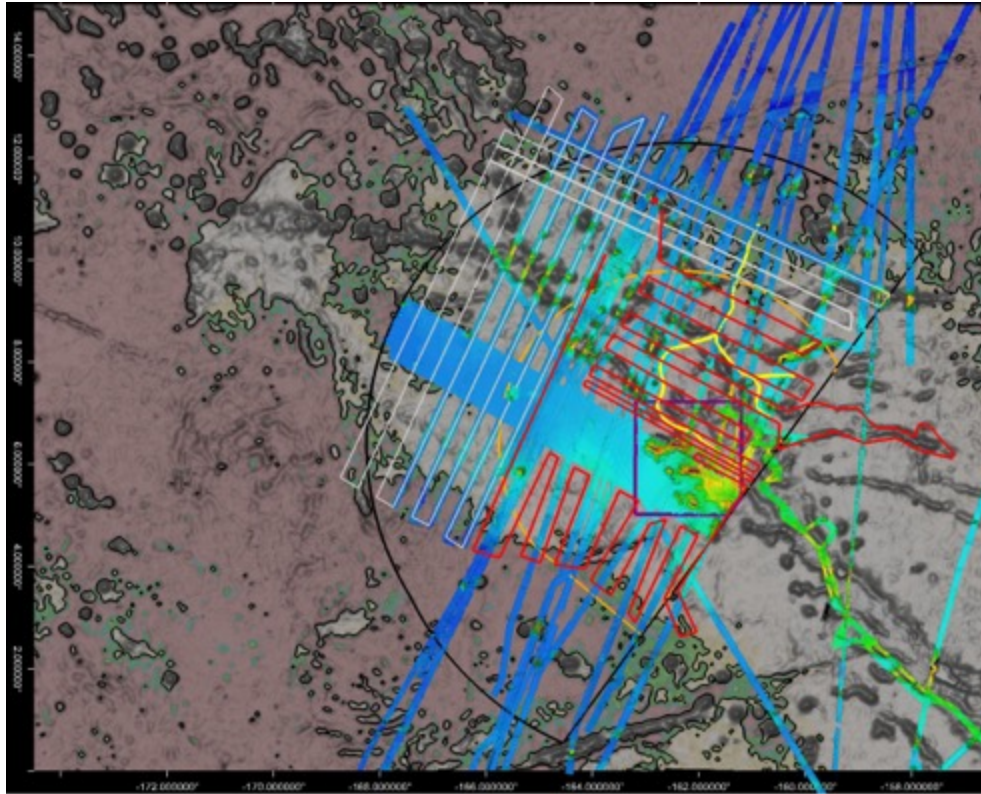


Figure 1. Leg 1 operational area



gray tracklines are 2015 *Kilo Moana* lines
 red tracklines are proposed (v. 3) 2016 *Ron Brown* lines
 yellow lines are Meghan Jones' interpretation of channels from GLORIA data
 orange half circle is U.S. EEZ
 black circle is U.S. 350 NM

Figure 2 Leg2 operational area

D. Summary of Objectives

The objective of Leg 1 is to establish that the Kongsberg EM 122 Multibeam Echo Sounding system installed aboard *Ronald H. Brown* is fully operational; to characterize its operational capability; and to complete system calibrations necessary for extended continental shelf seafloor mapping.

The objective of Leg 2 is to acquire multibeam echo sounder swaths and high resolution subbottom profiles across the Line Island Ridge elevated seafloor platform in the vicinity of Kingman Reef and Palmyra Atoll. These data sets will be used to assess the potential for U.S. Extended Continental Shelf (ECS) in this region and to establish the outer limits of any U.S. ECS in the region. The cruise will also include, at the request of the Government of Kiribati, similar data acquisition in the waters of Kiribati.

E. Participating Institutions

Participating institutions are the NOAA/University of New Hampshire Joint Hydrographic Center, the Office of Coast Survey Hydrographic Surveys Technology Branch, the NOAA National Centers for Environmental Information, the National Geospatial Intelligence Agency, and U.S. Fish and Wildlife Service.

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Armstrong, Andrew	Chief Scientist	01/4/2016	02/09/2016	M	NOAA	USA
Rice, Glen	Physical Scientist	01/4/2016	01/09/2016	M	NOAA	USA
Johnson, Paul	Senior Scientist	01/4/2016	01/09/2016	M	UNH	USA
Gardner, James	Co-Chief Scientist	01/4/2016	01/09/2016	M	UNH	USA
Miller, Joyce	Watch Leader	01/11/2016	02/09/2016	F	UNH	USA
Fessenden, William	Data Manager	01/11/2016	02/09/2016	M	UNH	USA
Nifong, Kelly	Watch Stander	01/11/2016	02/09/2016	F	UNH	USA
Kidd, John	Watch Stander	01/11/2016	02/09/2016	M	NOAA	USA
DiStefano, Massimo	Watch Stander	01/11/2016	02/09/2016	M	UNH	Italy
Mosher, David	Co-Chief Scientist	01/11/2016	02/09/2016	M	UNH	Canada
Eakins, Barry	Senior Scientist	01/11/2016	02/09/2016	M	NOAA/CIRES	USA
Armstrong, David	Watch Stander	01/11/2016	02/09/2016	M	NGA	USA
<i>Force, Michael</i>	<i>Bird Observer</i>	<i>01/11/2016</i>	<i>02/09/2016</i>	<i>M</i>	<i>USFWS</i>	<i>Canada</i>

G. Administrative

1. Points of Contacts: Chief Scientist—Andrew Armstrong, Co-Director, Joint Hydrographic Center, andy.armstrong@noaa.gov

Leg 1 Project Operation Lead—Glen Rice, NOAA/NOS/OCS/HSTB, glen.rice@noaa.gov

2. Diplomatic Clearances

The Department of State is working with the government of Kiribati outside normal procedures to obtain consent for NOAA Ship *Ronald H. Brown* to

conduct seafloor mapping. A diplomatic note is expected before entry into Kiribati's jurisdictional waters.

3. Licenses and Permits

Clearance to enter and conduct mapping in the Pacific Remote Islands Marine National Monument has been requested by NOAA Office of Ocean Exploration and Research.

II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. Project Itinerary:

Leg 1: Stage in Pearl Harbor 4 January 2016. Sail from Pearl Harbor 5 January 2016, steam to calibration site, and perform a 750-m CTD cast with simultaneous recording of all sound speed sensors and deployment of an XSV and/or XBT. Upon completing the CTD cast and applying the resultant sound speed correctors, begin multibeam system calibrations and performance tests. Upon completion of calibrations and tests, 8 January, return to Pearl Harbor.

Leg 2: Stage in Pearl Harbor 11 January 2016. Sail from Pearl Harbor 12 January 2016, steam to project area in the vicinity of Kingman Reef and Palmyra Atoll. Acquire multibeam and subbottom data continuously throughout the transit to the project area. Beginning at Lat 10° 00.02' N, Lon 162° 44.47' W, carry out multibeam echo sounding and subbottom profiling along designated track lines. Depart area when project time is complete and steam, while continuing to acquire multibeam and subbottom data, to Pearl Harbor for ETA on 9 February 2016.

B. Staging and Destaging:

Leg 1: Science team will arrive 4 January to configure multibeam and subbottom systems, set up science party-provided data processing computers and conduct inport system checks. After completion of cruise, science party will leave systems configured for subsequent mapping cruise, and disembark.

Leg 2: Science team will arrive 11 January to confirm readiness of multibeam, subbottom, and data processing systems. After completion of cruise, science team will destage the data processing system, compile all cruise data, and disembark on 9 February.

C. Operations to be Conducted:

Leg 1: Calibration and System performance tests, including: sound speed calibration station for simultaneous comparison of CTD, TSG, SVP, XBT, and XSV; underway tests of multibeam and subbottom profiler synchronization; multibeam bias (patch tests), wobble, accuracy, system performance, and backscatter along provided track lines.

Leg 2: Continuous multibeam and subbottom data acquisition throughout the leg. Deployment of XBT and or XSV every 6 hours, plus whenever sound speed regime changes. RHB will follow track lines provided by Chief Scientist or watch leader.

D. Dive Plan

Dives are not planned for this project

E. Applicable Restrictions

Conditions which preclude normal operations: Multibeam echo sounding can be adversely affected by high sea states, ship-generated electrical or physical noise, or operation of echo sounders at similar frequency. Data quality is degraded by other than straight ship tracks and by variation in heading while maintaining track. Mitigation measures may include suspension of noise-generating activity such as needle-gunning, reducing speed, altering trim slightly by trimming slightly down by the bow.

III. Equipment

A. Equipment and Capabilities provided by the ship (itemized)

1. Kongsberg EM 122 Multibeam Echo Sounder and associated systems, including calibrated transducer sound speed sensor.
2. Knudsen 3260 3.5 kHz chirp subbottom profiling echo sounder
3. POS/MV with Marine Star GPS enhancement (provided by Office of Coast Survey)
4. Calibrated CTD and operators to deploy and recover CTD and download CTD data (no water samples are required).
5. XBT launch and recording system
6. Sound speed application software (both UNOLS and NOAA VelociPy)
7. Calibrated TSGs
8. SCS and data network and data storage.

B. Equipment and Capabilities provided by the scientists (itemized)

1. Data processing laptops, with all software necessary for processing multibeam and subbottom profile data.
2. RAID drives for science party storage of cruise data.
3. Multibeam echo sounder and subbottom profiler watch standing and data processing
4. Supply of XBTs and XSVs

IV. Hazardous Materials

A. Policy and Compliance

No Hazardous Materials are being brought aboard the ship for this project

D. Radioactive Materials

No Radioactive Isotopes are planned for this project

V. Additional Projects

A. Supplementary (“Piggyback”) Projects

A bird observer from the U.S. Fish and Wildlife Service may be added to the Science Party for bird observations on a “not to interfere” basis. If aboard, the observer will observe and record bird species and abundance from a suitable location on the flying bridge or, with permission of the Commanding Officer and Officer of the Deck, from the pilot house during inclement weather.

ARGO floats or other non-anchored buoys may be deployed at, or as close as practicable to locations designated by the sponsoring program. The ship may be slowed briefly for these deployments, but will not divert from mapping tracks to launch floats. The mapping watch must be notified and approve of each deployment.

Any other “Piggyback” projects can be accommodated as long as they do not require adjustment to the primary science party berthing plan or interfere in any way with the mapping objectives. Interference includes slowing the ship, stopping the ship, changing course of the ship, impeding CTD and/or XBT operations, impeding 3.5-kHz data collection, curtailing MBES operations or occupying the MBES computer lab.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

The science party will submit all raw and processed data to NCEI as soon as post-cruise quality assurance is completed, normally within 3 months of the end of the cruise. The PI encourages OMAO to submit all data via the R2R process.

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.
- D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together

on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance (http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using

this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757-441-6320
Fax 757-441-3760
Email MOA.Health.Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

The Chief Scientist does not anticipate any work with suspended loads other than the possibility of a small number (1 to 3) of CTD casts. The science party is not equipped with steel-toed footwear, and therefore not able to provide on-deck support for CTD deployment and/or recovery.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to

the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged through the ship's Commanding Officer at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.) This email will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National)

VIII. Appendices

1. Figures, maps, tables, images, etc.
Leg 1—Calibration cruise timetable submitted separately to Ops RHB.
2. Leg 1—Station/Waypoint List (coordinates in Latitude, Longitude: degrees.decimal)

Waypoint	Longitude	Latitude	Line	Descriptio
1	-158.677	21.07341	1	Pitch
2	-158.632	21.11766	1	Pitch
3	-158.756	21.14896	2	Roll
4	-158.797	21.12544	2	Roll
5	-158.704	21.09719	3	Yaw1
6	-158.659	21.14144	3	Yaw1
7	-158.65	21.04962	4	Yaw2
8	-158.605	21.09387	4	Yaw2
9	-158.962	21.03651	5	Accuracy
10	-158.962	21.16414	5	Accuracy
11	-159.621	21.3435	6	Resolve1
12	-159.431	21.34345	6	Resolve1
13	-159.431	21.40808	7	Resolve2
14	-159.621	21.40816	7	Resolve2
15	-159.491	21.46499	8	Resolve3
16	-159.491	21.28749	8	Resolve3
17	-159.56	21.28749	9	Resolve4
18	-159.56	21.46499	9	Resolve4
19	-157.825	21.15839	10	Wobble
20	-157.817	21.14018	10	Wobble
21	-157.883	21.19638	11	ShallowBS
22	-157.864	21.20509	11	ShallowBS