UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center
439 W. York Street
Norfolk, VA 23510-1114

FEB 9, 2015

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-15-02
Tropical Oceans Atmosphere (TAO) 125W/140W

Attached is the final Project Instruction for RB-15-02, Tropical Oceans Atmosphere (TAO) 125W/140W, which is scheduled aboard NOAA Ship *Ronald H. Brown* during the period of February 25 – April 1, 2015. Of the 36 DAS scheduled for this project, 36 DAS are funded by an OMAO NWS line office allocation.

This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to **OpsMgr.MOA@noaa.gov** at Marine Operations Center-Atlantic.

cc:

Final Project Instructions

Date Submitted: January 2, 2015

Platform: NOAA Ship *Ronald H. Brown*

Project Number: RB-15-02

Project Title: Tropical Oceans Atmosphere (TAO) 125W/140W

Project Dates: February 25 – April 1, 2015

Prepared by: B. Lake Dated: 2/2/15
Brian Lake
Oceanographer
National Data Buoy Center

Approved by: Dated: 2/2/15
Jeff Jenner
Operations Manager
National Data Buoy Center

Approved by: Dated: 2/2/15
Steve Cucullu
Operations Branch Chief
National Data Buoy Center

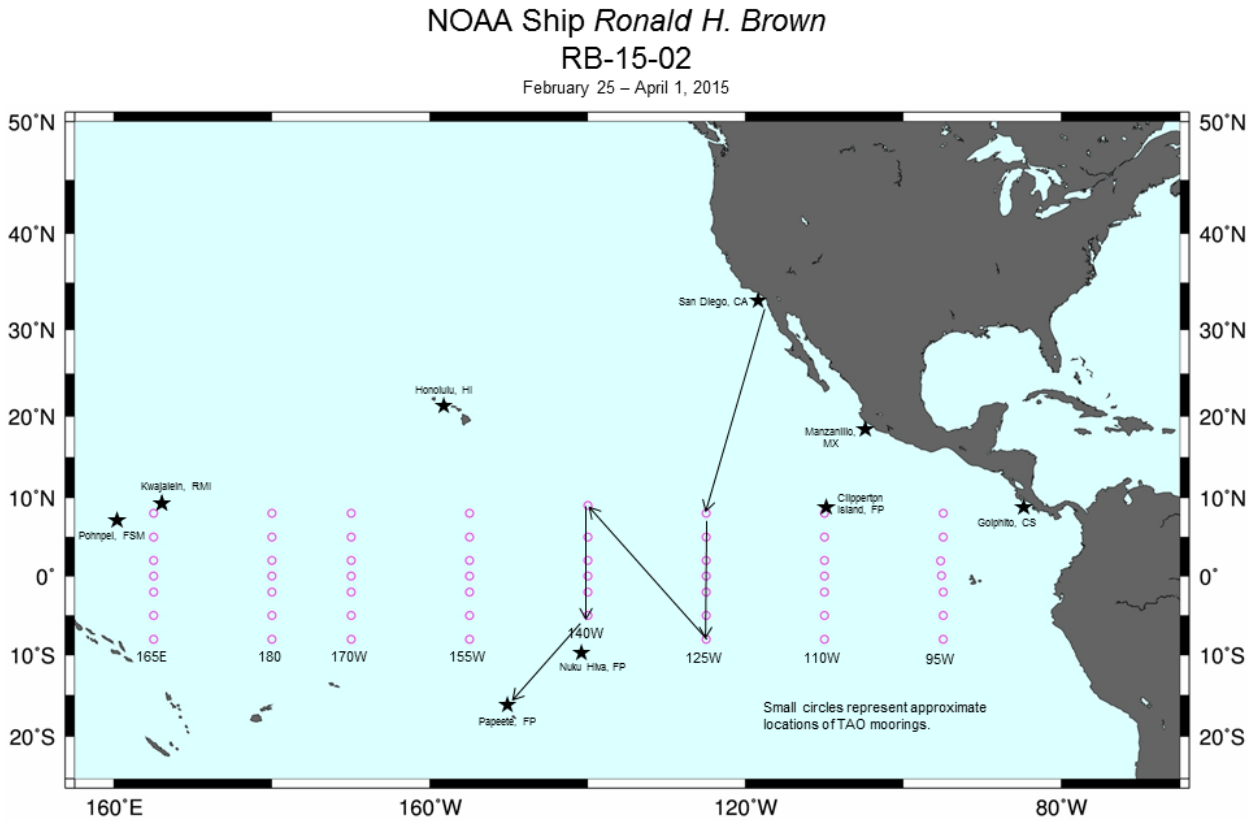
Approved by: Anne K Lynch CAPT/NOAA Dated: 2/9/2015
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period
Load ship – February 23 – 24, 2015.
Underway – February 25 – April 1, 2015.
Unload ship – April 2, 2015.

B. Days at Sea (DAS)
Of the 36 DAS scheduled for this project, 36 DAS are funded by OMAO NWS Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area



D. Summary of Objectives

The objective of this cruise is the maintenance of the TAO Array along the 125°W and 140°W meridians. The scientific complement for the cruise will embark in San Diego on

February 24, 2015. The ship will depart on February 25, 2015 to commence operations as listed in Section II. After completion of operations, NOAA Ship *Ronald H. Brown* will proceed to Papeete, FP, arriving on or about April 1, 2015. All dates and times referred to in these cruise instructions are in Pacific Standard Time (PST).

E. Participating Institutions

National Data Buoy Center. Argo Floats from PMEL and Global Drifting Buoys from AOML will also be deployed during this cruise

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

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
William Thompson	Cruise Lead	2/24/15	4/1/15	M	NDBC	US
Stefan Beccera	Lead Tech.	2/24/15	4/1/15	M	NDBC	US
Casey Burge	Support Tech.	2/24/15	4/1/15	M	NDBC	US

G. Administrative

1. Points of Contacts:

Project Coordinator: Brian Lake
National Data Buoy Center
7600 Sand Point Way NE
Seattle, WA 98115
W: 206-526-4891
C: 206-290-7983
Brian.Lake@noaa.gov

NDBC Ops: Jeff Jenner
National Data Buoy Center
Stennis Space Center, MS 39529
W: 228-688-2784
C: 228-364-2581
Jeff.Jenner@noaa.gov

2. Diplomatic Clearances
EEZ Clearance required for France (Marquesas).

3. Licenses and Permits
None Required

II. Operations

A. Project Itinerary

Depart San Diego on February 25, 2015, conduct operations as outlined in Section II, and arrive in Papeete, FP on April 1, 2015.

B. Staging and Destaging

Staging will take place in San Diego, CA on February 23 – 24, 2015. Destaging will take place in Papeete, FP on April 2, 2015.

C. Operations to be conducted

The details of station work are summarized in Appendix A. The cruise will involve underway operations between stations, including CTDs, Argo Float and AOML drifter deployments (Section II). During the cruise, it is requested that the vessel provide to the Cruise Lead an updated operations spreadsheet (similar to Appendix A) with actual times and speeds made good for the entire cruise. NDBC will provide regular updates of buoy positions during the cruise in order to recover those adrift.

2.01 Underway Operations

2.01.1 ADCP

A ship-mounted ADCP system will be used to continuously measure the currents in the upper ocean along the trackline. At a minimum, data from the ADCP will be logged from the start of the transit once in international waters (or waters for which there is research clearance) and continue until leaving international waters. For calibration purposes it is essential that bottom tracking be activated at the start and end of a cruise when in water depths shallower than 500m. The ship's Survey Technician will be in charge of data storage (hard drive to disks and/or CD's as necessary). The ADCP will be interfaced to the ship's GPS receiver and will receive data at one-second intervals. The clock on the ADCP IBM computer will NOT be reset while underway. ADCP operating parameters will not be changed without the permission of the Cruise Lead, in consultation with Dr. Eric Firing, and after informing TAO personnel of the intended parameter change. All ADCP data will be provided to the Cruise Lead and sent to Dr. Eric Firing at the University of Hawaii.

Accurate ship navigation is essential for valid ADCP current measurements. The ship will

provide a fully operational GPS receiver and Seapath 200 system (or equivalent) for navigation input. Ship's ET will select proper GPS codes to enable ADCP navigation data collection. The ADCP will be interfaced with the ship's gyro so that accurate heading information is available to the ADCP. A manual comparison of the ADCP heading/gyro reading will be logged by the Electronics Technician while the ship is dockside, at the beginning of a cruise and checked periodically throughout the cruise. For calibration purposes, "Bottom Tracking" should be activated whenever the ship is transiting water shallower than 500m.

Due to compatibility problems, the ADCP is not interfaced to SCS, so GPS navigation and gyro inputs must be connected directly to the ADCP system. If the ADCP becomes interfaced to the SCS, then the ADCP data will be recorded on both the ADCP recording system and the SCS. Appropriate data storage systems will be connected to the ADCP system for ADCP data collection. The ADCP data recorded on the IBM has course and speed information from the navigation data that is exactly time coincident with the ADCP ensembles.

The ADCP system will be operated by ship personnel and will continuously log data to the ADCP storage disks during the entire cruise. If necessary, the ADCP data disks will be changed when full. Full disks will be labeled and backed up. An ADCP log will be maintained by the Electronics Technician and a check of the ADCP recording of heading, time, velocity and navigation information will be done periodically to ensure the system is operating properly. Any inconsistencies, such as heading, time, and/or navigation input not in agreement with actual/expected, will be noted in the log and reported to the Commanding Officer and Cruise Lead.

Principle Investigator:

Dr Eric Firing, University of Hawaii efiring@iniki.soest.hawaii.edu

2.01.2 SST and SSS

Sea surface temperature and salinity will be recorded continuously with a SEABIRD SBE-21 accurate to within 0.1 C and 0.01 psu. The Survey Technician will translate the data from the thermosalinograph to ASCII. It is the vessel's responsibility to ensure that the thermosalinograph is calibrated, at a minimum, annually.

2.02 CTD Observations

A Sea-Bird 911 plus CTD with dual temperature and conductivity sensors will be the primary system and will be provided by the program. A backup Sea-Bird 911 plus CTD with dual sensors is also required and will be provided by the ship.

At a minimum, 1000 meter CTD casts shall be conducted at each mooring site for sensor

inter-comparison purposes. As time permits, additional or deeper CTD's should be conducted whenever addition of the CTD's will not impact scheduled mooring work. For example, if the ship would arrive at the next mooring site in the middle of the night, it is preferable to do CTD's on the way, rather than remain hove to waiting for daylight. Another example would be when mooring operations are significantly ahead of schedule. Beyond those at mooring sites, CTD's should be conducted in the following order of priority:

- 1000m CTD's at one-degree latitude intervals between 8° N and 8° S, along the ship's trackline.

- Extend 1000m CTD's at mooring sites to a minimum of 3000m or a maximum depth of 200m from the bottom. Four to six deep casts are optimal, occurring at the beginning and end of the cruise as well as at both equatorial sites.

For each cast, the CTD operator should be notified at least 30 minutes prior to arriving on station in order to ready the underwater package and power up the instrumentation (i.e. turn on the deck unit) giving the electronics time to equilibrate.

Once the CTD has been deployed, it should be held at 10 m for 2 minutes to activate the pumps and remove any air bubbles in the sensor tubing. The winch operator should then raise the package to just beneath the surface being careful to not let the sensors come out of the water. The CTD operator will hit "markscan" and then instruct the winch operator to start down.

Descent rates should be 30 m/min from 0-50 m, 45 m/min from 50-200 m, and 60 m/min beyond 200 m. An entry in the Marine Operations Abstract should be made for each CTD cast at the maximum cast depth by the bridge watch. Ascent rates should not exceed 60 m/min. If possible, all 8 Niskin bottles should be closed at specified depths in the water column. After recovery and data acquisition is completed, the deck unit should be turned off.

CTD data will be acquired and processed on the ship's computer equipped with SEASOFT software. The capability to display CTD data using the SCS system and monitors will be available. The CTD operator will complete the CTD cast logs. The CTD operator or bridge watch will maintain the CTD weather log.

Water samples for salinity analysis will be taken from 8 depths per station instead of 12 and running 40 samples per standard instead of 36. The Survey Technician will run salinity analysis on the ship's autosalinometer within 2-3 days after the samples are collected using ACI2000 software. The autosalinometer will be standardized with IAPSO standard seawater, provided by the program, before each salinity run. Bottle salinity data will be used post-cruise at NDBC for conductivity sensor calibration.

The Cruise Lead in consultation with the FOO will set a cruise CTD operator schedule for the science party to assist and cover 24 hour CTD operations as needed relative to the CST's workload.

The Survey Technician will complete the NDBC provided CTD logs. Instructions for filling out the CTD logs are contained in Appendix B: NDBC CTD Procedures.

2.03 Mooring Operations

Mooring Operations are scheduled to be conducted as shown in Appendix A. Operations will be conducted from 8N 125W to 8S 125W and then to 8N 140W to 5S 140W. The following mooring operations are anticipated, though the work may be changed by direction of the Cruise Lead in consultation, with the Commanding Officer.

Location	***Mooring Type***	***Operation***	***Status***
8°N 125°W	Refresh	Recover/Deploy	
5°N 125°W	Refresh	Deploy only	
2°N 125°W	Refresh	Recover/Deploy	
0° 125°W	Refresh/Flux	Recover/Deploy	
2°S 125°W	Refresh	Recover/Deploy	
5°S 125°W	Refresh	Recover/Deploy	
8°S 125°W	Refresh	Recover/Deploy	
8°N 140°W	Refresh/CO2	Recover/Deploy	
5°N 140°W	Refresh	Recover/Deploy	No buoy on station
2°N 140°W	Refresh	Recover/Deploy	
0° 140°W	Refresh/CO2/Flux	Recover/Deploy	
0° 140°W	ADCP	Recover/Deploy	
2°S 140°W	Refresh	Recover/Deploy	
5°S 140°W	Refresh	Recover/Deploy	

2.05 Navigation

Navigation will be based on the best available information, including GPS, dead reckoning, radar and visual bearings as appropriate. GPS is vital to the efficient deployment of a mooring and is the preferred navigational aid in the project area. Radar ranges and visual bearings to buoys may be required during deployment and recovery operations. Navigation events (such CTD casts) will be captured using the Scientific Computer System (SCS).

2.06 Multi-Beam

Multi Beam swath surveys are requested for all mooring sites of this cruise as defined above. The center beam information of the Multi Beam system will be used to observe and record bottom depth for this and future mooring deployments. The Cruise Lead will provide areas and coverage parameters for the surveys relative to time available as the cruise progresses. Contoured plots of mooring site surveys will be generated by the Chief Survey Technician.

2.07 Underway Measurements in support of Global Carbon Cycle Research (GCC)

2.07.1 Request:

As part of the ongoing research to quantify the CO2 uptake by the world's oceans we have installed underway systems on BROWN. After initial start-up, which requires about one hour of monitoring, the system needs checking twice a day requiring a total of about 20-minutes. We would also request weekly data downloads and transmission such that we can perform on shore near-real-time quality control to assess if the instrument is operating satisfactorily. All costs of the email transmissions and survey technician overtime would be covered by AOML. In the event of system malfunction that cannot be easily repaired, we will ask the Survey Technician to shut the system down.

2.07.2 Introduction:

The underway sensors on RHB will be used in support of the objectives of the Global Carbon Cycle Research (GCC) to quantify the uptake of carbon by the world's ocean and to understand the bio-geochemical mechanisms responsible for variations of partial pressure of CO2 in surface water (pCO2). This work is a collaborative effort between the CO2 groups at AOML and PMEL.

The semi-automated instruments are installed on a permanent basis in the hydrolab of RHB and are operated by personnel from AOML and PMEL. All work is performed on a not-to-interfere basis and does not introduce any added ship logistic requirements other than the continuous operation of the bow water pump and thermosalinograph. This effort requires one permanent berth for the operator of the systems. The instrumentation is comprised of an underway system to measure pCO2, a SOMMA (single operator multi-parameter metabolic analyzer) -coulometer system to measure total Dissolved Inorganic Carbon (DIC), - a Turner Designs fluorometer, and a YSI oxygen probe. An oxygen titrator and stand-alone fluorometer will be used to calibrate the underway oxygen and fluorometer, respectively. All the instruments are set up along the port side bulkhead and aft bench in the hydrolab. The batch oxygen and DIC samples will be analyzed in AOML.

2.07.3 Rationale:

Current estimates of anthropogenic CO2 uptake by the oceans range from 1 to 2.8 Gigatons per year. The CO2 fluxes between air and water are poorly constrained because of lack of seasonal and geographic coverage of delta pCO2 (the air-water disequilibrium) values and incomplete understanding of factors controlling the air-sea exchange of carbon dioxide. Seasonal and temporal coverage can be increased dramatically by deploying pCO2 analyzers on ships.

The effort on RHB is expanded beyond the historical scope of the underway programs by incorporating additional sensors to improve our understanding of the factors controlling pCO2

levels.

2.07.4 Sensor Suite and Maintenance:

2.07.4.1 Underway pCO2 system

This system consists of a large (40-liter) air-water equilibrator requiring an unobstructed drain at floor level for the 15 L/min outflow, an infra-red analyzer with valves and flow meters, and a computer controlling the operating sequence and which also logs the data. The underway pCO2 system is an integrated package for measurement of pCO2 in air and water and support sensors necessary to reduce the data (such as equilibrator temperature, location, salinity, sea surface temperature and barometric pressure). This system is an upgrade from the initial systems and requires routine checks at 6-12 hour intervals, including logging of mercury thermometers in the equilibrator.

2.07.4.2 Oxygen sensor

This is a compact pulsed electrode unit which also contains a temperature sensor. This is a new sensor built by Dr. Langdon at LDEO. Water requirement is 2-Liter/minute with a bench top drain. One foot of bench space is required. During this cruise the data will be validated against samples taken four times a day and analyzed by potentiometric winkler titrations.

2.07.4.3 Turner Designs Fluorometer

This instrument, which was jointly purchased by AOML and MOC-A for BALDRIGE, requires a water throughput of about 5 L/min. Periodic cleaning of the flow through cell (2-14 days) is required. The signal of the fluorometer is logged on the shipboard SCS system or on the computer logging the underway pCO2 data. Aliquots of seawater are extracted twice per day and analyzed for chlorophyll and phaopigments on a separate fluorometer following routine procedures to calibrate the fluorometer signal. This information will be particularly useful to extrapolate the observations from the NASA SEAWIFS satellite to in situ pigment concentrations.

2.07.5 Summary - Ship infrastructure support:

2.07.5.1 Continuous seawater supply: 20 lpm minimum, 40 lpm maximum for instruments, and 75 lpm throughput to assure short residence time of water in line and minimal heating.

2.07.5.2 Access to TSG and SCS data: Temperature at intake, salinity from TSG, fluorometer signal, wind speed (true and relative), wind direction (true and relative), time, latitude, longitude, and ship speed.

2.07.5.3 Bench space, hydrolab space, access to bow water line and drains.

Principal investigators:

Dr Rik Wanninkhof, AOML	305-361-4379	Rik.Wanninkhof@noaa.gov
Dr Richard Feely, PMEL	206-526-6214	Richard.A.Feely@noaa.gov

Specific questions should be directed to:

Robert Castle, AOML	305-361-4418	Robert.Castle@noaa.gov

2.08 Atlantic Oceanographic and Meteorological Laboratory (AOML) Surface Drifters

The Global Drifter Center at NOAA/AOML requests drifter deployments on an ancillary basis. The drifters are small, easily deployed devices that are tracked by ARGOS and provide Sea Surface Temperature (SST) and mixed layer currents. The global array of drifters provides SST ground truth for NOAA's polar orbiting satellite AVHRR SST maps. They also provide data to operational meteorological and ocean models, and research ocean current data sets.

Drifter Positions - TBA

Principal Investigator

Shaun Dolk, NOAA/AOML	(305) 361-4546	Shaun.Dolk@noaa.gov

2.09 Pacific Marine Environmental Laboratory (PMEL) Argo Profiling CTD Floats

Nine (9) Argo floats are scheduled for deployment on this cruise. Individual deployment positions can be shifted by a degree or so along the ship track if more convenient. Each float weighs about 56 lbs. The boxes weigh about 200 lbs. full and are 82" long x 17" high x 23" long. Boxes cannot be stored or transported on their small ends. The floats are sensitive to high temperatures, so as space for a pair of floats becomes available on the computer lab rack, it will be desirable to move floats from the next box to the rack at the earliest convenient time. A manual for float testing and deployment has been sent to the ship. Float deployment locations are as follows:

Drifter Positions - TBA

Gregory Johnson	(206) 526-6806	pmel_floats@noaa.gov
Elizabeth Steffen	(206) 526-6747	pmel_floats@noaa.gov

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations: Poor weather conditions may delay or cancel certain procedures, such as small boat operations and CTD casts. Decisions will be made on a case by case basis after consultation between the ship's crew and captain and the chief cruise lead. The primary consideration is the safety of the ship's crew and scientists. Possible mitigation strategies include waiting until conditions improve, canceling CTD casts, and recovering moorings without small boat operations. Unforeseen circumstances such as equipment failure may also cause a delay or cancelation of certain operations. Appropriate courses of action will be determined after discussion among the captain, crew, and Cruise Lead.

III. Equipment

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

- Narrow band Acoustic Doppler Current Profiling (ADCP) system.
- Hydro winch with slip rings and sufficient CTD cable for casts up to 5500 meters.
- GPS Navigation equipment.
- Marine Operations Abstracts (OCS Worksheet 001).
- Deck machinery for mooring recovery and deployment.
- Laboratory and storage space.
- PC based SCS workstation.
- Sea surface temperature and salinity system (thermosalinograph).
- Zodiac, or equivalent, and motor for servicing moorings.
- Recently calibrated Seabird CTD, 2T/C sensor pairs, rosette frame and pylon, and deck unit.
- Electronic & mechanical terminations for CTD.
- Fathometer capable of depth readouts to 6000 meters.

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

- One Seabird CTD, two temperature/conductivity T/C pairs, rosette frame and pylon..
- All components of the planned moorings.
- Peck & Hale Release-A-Matic hook.
- CTD spare parts and supplies.
- Consumables - i.e. copy/printer paper, data storage media, pens and pencils.

IV. Hazardous Materials

A. Policy and Compliance

The Cruise Lead is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all

hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per FEC 07, the scientific party will include with their project instructions and provide to the CO of the respective ship 60 to 90 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents
- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories

For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program.
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of scientific chemicals is not permitted during projects aboard NOAA ships.

B. Inventory

Common Name of Material	**Qty**	**Notes**	**Trained Individual**	**Spill control**
Lithium batteries	43-16 D-cell batteries	Fire Hazard	Brian Lake	Class D fire extinguisher will be

Common Name of Material	Qty	Notes	Trained Individual	Spill control
				available
Lithium batteries	600 AA batteries	Fire Hazard	Brian Lake	Class D fire extinguisher will be available
Paint	8 1-gallon can	Fume Hazard	Brian Lake	Tarp

C. Radioactive Isotopes

No Radioactive Isotopes are planned for this cruise.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

See section II

C. 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.

A. Data Classifications: *Under Development*

a. OMAO Data

b. Program Data

B. Responsibilities: *Under Development*

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre-Project Meeting: The Cruise Lead 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 Cruise Lead 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 Cruise Lead, and members of the scientific party and is normally arranged by the Operations Officer and Cruise Lead.

D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Cruise Lead. The form is available at http://www.omao.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 Cruise Lead. The Cruise Lead 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 Cruise Lead 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 Cruise Lead 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 Cruise Lead will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Cruise Lead 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 Cruise Lead or the NOAA website http://www.corporateservices.noaa.gov/noaaforms/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 Cruise Lead 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 Cruise Lead to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Cruise Lead may be relayed to the program office. Sometimes it is necessary for the Cruise Lead to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Cruise Lead. 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.

IX. Appendices

A. TAO Operations spreadsheet (Station/Waypoint List)

B. Load list

D. EEZ Clearances