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

May 27, 2016

MEMORANDUM FOR: Master David Nelson, NOAA
Commanding Officer, NOAA Ship *Oregon II*

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

SUBJECT: Project Instruction for R2-16-02
SEAMAP Summer Groundfish

Attached is the final Project Instruction for R2-16-02, SEAMAP Summer Groundfish, which is scheduled aboard NOAA Ship *Oregon II* during the period of June 7 – July 20, 2016. Of the 38 DAS scheduled for this project, 38 days are funded by a 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.

Attachment

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
3209 Frederic St.
Pascagoula, MS 39567

Project Instructions

Date Submitted: 02/10/2016

Platform: NOAA Ship OREGON II

Cruise Number: R2-~~16-03 (318)~~ 16-02 KMJ

Project Title: SEAMAP Summer Groundfish

Cruise Dates: 06/07/2016 - 07/20/2016

Prepared by: JOHNSON.KIMBERLEY.A.1132959010 Digitally signed by JOHNSON.KIMBERLEY.A.1132959010 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=JOHNSON.KIMBERLEY.A.1132959010 Date: 2016.05.02 10:18:41 -05'00' Date: 05/02/2016
Field Party Chief

Approved by: DESFOSSE.LISA.L.1365834519 Digitally signed by DESFOSSE.LISA.L.1365834519 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=DESFOSSE.LISA.L.1365834519 Date: 2016.05.12 10:24:45 -05'00' Date: 05/12/2016
Lab Director

Approved by: BRAINERD.THEOPHILUS.R.DR.1365819285 Digitally signed by BRAINERD.THEOPHILUS.R.DR.1365819285 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=BRAINERD.THEOPHILUS.R.DR.1365819285 Date: 2016.05.12 20:24:52 -04'00' Date: 05/12/2016
Dr. Bonnie Ponwith
Director, SEFSC

Approved by: Anne K Lynch Date: 5/26/2016
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

Sample the northern Gulf of Mexico (GOM) with Southeast Area Monitoring and Assessment Program (SEAMAP) standard trawl sampling gear to determine the abundance and distribution of benthic fauna from June 7 to July 20, 2016.

B. Days at Sea (DAS)

Of the 38 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 38 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area

United States northern GOM between 81°00' and 97°30' W in depths of 5 to 60 fm. A map of the area of operations are found in Figure 1. Station locations will be provided to the Operations Officer via email for importing into Nobeltec Visual Navigation Suite software and MX512A GPS.

D. Summary of Objectives

1. Primary Objectives

- **a.** Sample the northern GOM with SEAMAP standard trawl sampling gear to determine the abundance and distribution of benthic fauna.
- **b.** Collect size measurements to determine population size structures.
- **c.** Transmit realtime shrimp biological data weekly to Gulf States Marine Fisheries Commission (GSMFC) in Ocean Springs, MS.
- **d.** Record profiles of the water column for temperature, salinity, fluorescence, dissolved oxygen, and turbidity using a Conductivity/Temperature/Depth (CTD) unit at SEAMAP stations.
- **e.** Collect at-depth water samples daily and perform benchtop dissolved oxygen tests using the benchtop Winkler Titration method on triplicate samples and handheld Orion 3 Star Portable Dissolved Oxygen Meter. Transmit the processed CTD profiles to a previously setup FTP site as often as time permits to NOAA National Coastal Data Development Center at Stennis Space Center, MS and other researchers to map the hypoxic zone.
- **f.** Assess the occurrence, abundance and geographical distribution of the early life stages of ichthyoplankton using a bongo frame fitted with a 0.335 mm net and neuston frame fitted with a 0.950 mm net at selected SEAMAP stations.
- **g.** Assess the functionality of an EchoLogger AA400 autonomous hydroacoustic altimeter on the trawl foot-rope.

2. Secondary Objectives

- **a.** Conduct additional trawl sampling.
- **b.** Conduct additional CTD casts.

E. Participating Institutions

1. National Marine Fisheries Service (NMFS) – Pascagoula Laboratory
2. University of Mississippi
3. Texas A&M University – Corpus Christi

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

Name (Last, First)	Title	Leg	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Johnson, Kimberley	FPC	1	6/7/2016	6/20/2016	F	NMFS Pascagoula	U.S.
DeBose, Andre	Watch Leader	1	6/7/2016	6/20/2016	M	NMFS Pascagoula	U.S.
Grace, Mark	Watch Leader	1	6/7/2016	6/20/2016	M	NMFS Pascagoula	U.S.
Moser, John	Fisheries Biologist	1	6/7/2016	6/20/2016	M	NMFS Pascagoula	U.S.
Hoffmayer, Eric	Fisheries Biologist	1	6/7/2016	6/20/2016	M	NMFS Pascagoula	U.S.
Hannan, Kristin	Fisheries Biologist	1	6/7/2016	6/20/2016	F	Riverside Pascagoula	U.S.
Brown, Warren	FMES	1	6/7/2016	6/20/2016	M	Riverside Pascagoula	U.S.
DeBose, Andre	FPC	2	6/22/2016	7/5/2016	M	NMFS Pascagoula	U.S.
Hamilton, Alonzo	Watch Leader	2	6/22/2016	7/5/2016	M	NMFS Pascagoula	U.S.
Stepongzi, Christina	Fisheries Biologist	2	6/22/2016	7/5/2016	F	Riverside Pascagoula	U.S.
Grace, Mark	Fisheries Biologist	2	6/22/2016	7/5/2016	M	NMFS Pascagoula	U.S.
Moser, John	Fisheries Biologist	2	6/22/2016	7/5/2016	M	NMFS Pascagoula	U.S.
Pollack, Adam	Fisheries Biologist	2	6/22/2016	7/5/2016	M	Riverside Pascagoula	U.S.
Brown, Warren	FMES	2	6/22/2016	7/5/2016	M	Riverside Pascagoula	U.S.
Johnson, Kimberley	FPC	3	7/11/2016	7/20/2016	F	NMFS Pascagoula	U.S.
Hamilton, Alonzo	Watch Leader	3	7/11/2016	7/20/2016	M	NMFS Pascagoula	U.S.
Hendon, Michael	Watch Leader	3	7/11/2016	7/20/2016	M	NMFS Pascagoula	U.S.
Salisbury, Joey	Fisheries Biologist	3	7/11/2016	7/20/2016	M	Riverside Pascagoula	U.S.
Stepongzi, Christina	Fisheries Biologist	3	7/11/2016	7/20/2016	F	Riverside Pascagoula	U.S.
Wallace, Taniya	Fisheries Biologist	3	7/11/2016	7/20/2016	F	Riverside Pascagoula	U.S.

G. Administrative

1. Points of Contacts:
Kimberley A. Johnson
NMFS
3209 Frederic St.
Pascagoula, MS 39567
(228) 549-1692
Kim.A.Johnson@noaa.gov

Alternate:
Gilmore Pellegrin
NMFS 3209 Frederic St.
Pascagoula, MS 39567
(228)-549-1688
Gilmore.Pellegrin@noaa.gov

2. Diplomatic Clearances
None Required.

3. Licenses and Permits
This project will be conducted under the Scientific Research Permit (U.S.) issued by National Marine Fisheries Service on April 23, 2013 to Brandi Noble

NMFS Highly Migratory Species Division Scientific Research Permit
NMFS Southeast Regional Office
Flower Gardens National Marine Sanctuary
FKNMS Scientific Research Permit: Permit No. FKMS-2012-073
NMFS Sea Turtle Permit
Texas Scientific Research Permit: SPR-0596-796
Louisiana Saltwater Scientific Collection Permit: Permit No. 1953
Mississippi Saltwater Scientific Collection Permit
Alabama Saltwater Scientific Collection Permit
Florida Special Activity License: Permit No. SAL-14-0135-SR

II. Operations

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

A. Project Itinerary

Leg	Dates	Depart/Arrive	Sea Days
I	06/07/2016 06/20/2016	Depart Pascagoula, MS Arrive Galveston, TX	14

II	06/22/2016 07/5/2016	Depart Galveston, TX Arrive Pascagoula, MS	14
III	07/11/2016 07/20/2016	Depart Pascagoula, MS Arrive Pascagoula, MS	10

B. Staging and Destaging:

Pascagoula, MS/Pascagoula, MS

C. Operations to be conducted:

NOAA Ship *Oregon II* will depart Pascagoula, MS on June 7, 2016 to conduct the SEAMAP Bottomfish survey. The 38-day cruise will be conducted in three legs, requiring 24 hr operations with two scientific watches: 12 am – 12 pm, 12 pm – 12 am. The ship is requested to trawl at preselected stations between depths of 5 and 60 fm, from the south Texas coast eastward to south Florida (Figure 1). The FPC will provide sampling locations in electronic files suitable for importing into NobelTec navigation software and MX512A GPS. Trawling stations will consist of CTD casts followed by trawling tows. There may be occasions when the scientific party will request a second CTD cast at trawl sites (based on dissolved oxygen concentrations and magnitude of catch). Ichthyoplankton stations will consist of bongo tow followed by neuston tow and CTD cast. In some instances, trawl and ichthyoplankton sampling will be combined at one sampling site (at the discretion of the FPC). Such instances will consist of bongo tow, neuston tow, CTD cast then trawl tow. Trawling and/or plankton station locations are not to be moved without prior consultation with the Watch Leader on watch or the FPC.

During the first leg, a test cast of the CTD will be conducted in 100 m of water as soon as possible. The data will be transmitted back to the lab to ensure the CTD is properly functioning. The Engineering Department is requested to test the conveyor system during the CTD cast. Any problems encountered during the test can then be corrected prior to arriving on the first station. Communication between the scientists and the bridge while on station will be accomplished via hand held radios. During rough weather, the Watch Leader with consultation from the ship's crew will determine which sampling gear can be deployed safely. The FPC should be notified of any delays in sampling due to mechanical, medical, or weather issues as well.

1. STATION OPERATIONS

Ten min prior to arrival on station, the bridge watch is asked to notify scientists so that preparations can be made. Smoking is not permitted near or while handling any plankton nets due to the likelihood of burning holes in the nets.

a. <u>CTD Cast</u>

CTD profiles and environmental data collection will be performed at each station. We request that the ship come to a complete stop, after which the CTD array is to be

deployed to just below the water's surface where it will sit for 3 min. The goal is to allow the unit to equilibrate to ambient temperature but not come out of the water. After the 3-min soak, the unit is to be lowered to approximately 2 m above the bottom or a maximum depth of 200 m. Upon completing the cast, the CTD should be carefully set on deck, taking care not to jar the sensitive electronics. At least once a day, a water sample will be taken during a CTD cast. During these casts, three Niskin bottles will be attached to the rosette sampler and a cast will be made as previously described with the exception that the CTD unit will be held at maximum depth for 1 min during which time the water bottles will be triggered. Additional environmental data will be collected during daylight hours including water color, percent cloud cover, and wave height. We request that the ship's thermosalinograph (TSG) be operational 24 h/day. The FPC will transmit data to an FTP site of NOAA's National Coastal Data Development Center located at the Stennis Space Center, Bay St. Louis, Mississippi.

b. <u>Trawl Sampling</u>

One 30 min tow will be conducted with a standard SEAMAP 40-ft trawl towed at a speed of 2.5 kt. Bridge watches are requested to conduct trawling operations such that each tow occurs completely within a 2.5 mile radius of provided station locations. During deployment, the deck department will deploy the gear at a rate that allows the doors to properly spread just after being submerged. The net is to be kept moving across the bottom, so that the tickler chain is towed gently across the bottom, and the doors gently glide across the top of the substrate. Tow direction will be at the discretion of the OOD. Upon retrieval, the deck department will bring the gear shipboard at a rate that allows the doors to meet, without crossing. If, at any time, the deck department or OOD notices an issue with the gear, deployment or retrieval, they will notify the Watch Leader or FPC immediately. We ask that the gear not be streamed between stations when transit time is 1 h or greater. The deck department is requested to shake down the net after each station to remove all organisms. The handling of the gear will be conducted by the deck department, unless otherwise instructed by the crew. After clearance from the deck department, the scientists will collect all the organisms in baskets and begin weighing, identifying, measuring, and sampling the biota. After the catch is removed from the deck, the deck department will inspect the trawl net for any tears and holes in the net, report any findings to the watch leader, and repair the net as best as possible. The net is to be cleaned out of any debris, sargassum, or organisms and the cod end is to be tied closed by the deck department prior to arrival at the next station. They are also asked to inspect tickler chain length at approximately 24-h intervals giving due consideration to weather conditions and work demands. If the net needs to be replaced, the deck department is to provide the watch leader with the net number of the damaged net and the replacement net. During legs with a Fisheries Methods and Equipment Specialist (FMES) aboard, the FMES and deck department will collaborate to evaluate the gear and perform repairs. At any time that the trawl is not secured by the deck department, the scientific party will don personal protective equipment (PPE), which includes, but not limited to, work vest and hardhat. In case of extreme mud in the net, the deck department, OOD,

and Watch Leader will determine the best way to wash down the gear before the catch is emptied from the net.

The ship's conveyor belt and salt water pumps are needed to properly process catches. The scientific party will secure wet-lab gear to avoid it from falling into the fish discharge chute and clogging it. Likewise, they will monitor the discharge chute to avoid backups into the wet lab. After catches are processed, scientific specimens will be frozen or preserved in ethanol or formalin. The remaining catch will be discharged from the vessel via the conveyor belt, unless sampling gear is in the water. If sampling gear is in the water, the catch is to remain onboard until the gear is secured on deck in order to avoid the capture of discharged samples and contaminating the upcoming catch. The scientific party will wash the wet lab and sampling equipment as often as possible given work demands and weather conditions. To avoid damage to any other equipment, areas under the work tables and conveyor belts in the wet lab will be kept clear, unless it is in waterproof containers or not damaged by water.

c. <u>EchoLogger AA40 Precision Autonomous Hydroacoustic Altimeter</u>

When sea conditions allow, the FPC will request that the net be brought near the railing so that a FMES (or deck department personnel) will have access to the foot-rope in order to attach the altimeter. Once the tow is completed, the net will need to brought to the railing again so that the altimeter can be removed for data download.

d. <u>Bongo sampling</u>

The SEAMAP bongo plankton sampler is comprised of two 61 cm diameter collars with two 0.335 mm mesh nets. Prior to deployment of the bongo sampler, the Watch Leader must run software programs in preparation for the bongo tow. The Watch Leader (lab scientist) will inform the deck scientist when to power up the SBE-19 SEACAT. The bongo sampler is towed in an oblique path from near bottom (or 200 m maximum) to the surface. The SBE-19 SEACAT which is mounted above the bongo array on the sea cable will be used to monitor the depth of the bongo net. Vessel speed should be adjusted during the bongo tow to maintain a 45° wire angle in order to uniformly sample throughout the water column. If angle exceeds 55°, falls below 35° or if the combined variation exceeds 15°, then the tow will be repeated (the samples will be saved until a better tow is completed). The net depth will be monitored by the Watch Leader. The deck scientist will report wire angles occasionally during downcast. Upon reaching maximum sampling depth, the Watch Leader will request the winch operator to stop payout and begin retrieval (do not allow net to settle). At that time, the wire angle and wire out should be reported to the Watch Leader from the deck. The winch operator is asked to retrieve the bongo array at a rate of 20 m per min in depths of 100 m or deeper. Retrieval rate for shallower stations will be determined by Watch Leaders depending on station depth. We ask that the wire angle and amount of wire out be reported from the deck to the Watch Leader at one min intervals.

We ask that the deck department inform the Watch Leader when the bongo array breaks the surface at which time the winch operator is asked to immediately pull the frame from the water so that it stops fishing. The sample will be rinsed into the cod end of the net with a seawater hose while the net hangs over the side (weather permitting). In high winds, the scientist may request that the net is brought directly on board and rinsed down completely on deck.

Great care must be taken not to rest the frame on the nets, scrape the net with the frame against the deck, or walk on the plankton nets. The abrasions can easily cause holes in the nets requiring repair or replacement of these expensive sampling devices.

If bottom sediment is present in both samples, the tow will be repeated. Any marginal sample will be saved until completion of the next tow. If bottom sediment (no more than 2 Tb) is present in only one sample the tow need not be repeated. Right bongo samples will be preserved in 95% Ethyl alcohol (ETOH) and transferred to new 95% ETOH after 24 h. Left bongo samples will be preserved in 10% formalin initially and transferred to 95% ETOH after 36 h.

e. Neuston sampling

The neuston net is a 1 x 2 m frame outfitted with a 0.950 mm mesh net. Each neuston tow will be conducted for 10 min at a vessel speed of approximately 2 kt to keep half the frame submerged in the water (i.e., maintain a sampling depth of 0.5 m). If necessary, the ship will steam forward in a wide arc to keep the neuston net (mouth opening) out of the influence of the prop wash. The duration of a neuston tow may be shortened to no less than 5 min when high concentrations of jellyfish, sargassum, floating weed and/or debris are present in the water, or weather requires it. After retrieval, the sample is rinsed into the cod end with seawater while the net hangs over the side (if windy, deck scientist may request net to be brought directly on board and rinsed on deck). Neuston samples will be preserved in 95% ETOH initially and transferred to new 95% ETOH after 24 h.

While on board the NOAA ship all spent formalin and ethanol will be kept separate and collected into individual 55 gallon drums for recycling/disposal on land. The lab will be responsible for storing and shipping the spent chemicals.

f. Modifications to Field Operations

Sampling protocol may be altered by the FPC or Watch Leader in order to optimize sampling for time conservation. The FPC may alter the project instructions in order to accomplish mission objectives but will do so only after consulting with the CO. If additional time becomes available during a leg, the FPC will provide the ship with further station locations at that time, after consulting with the CO.

g. Mitigation Measure for Protected Species

Under the Preferred Alternative, the SEFSC will initiate a formalized "Move-on" Rule. If any marine mammals, sea turtles or other protected species are sighted around the vessel before setting the gear, the vessel may be moved away from the animals to a different section of the sampling area if the animals appear to be at risk of interaction with the gear at the discretion of the Field Party Chief (Chief Scientist) and Scientific Watch Leader. In most cases, fishing gear is not deployed if marine mammals or sea turtles have been sighted near the ship unless those animals do not appear to be in danger of interactions with the gear, as determined by the judgment of the FPC (Chief Scientist) and Scientific Watch Leader.

The SEFSC will initiate a process for its FPC (Chief Scientist), Scientific Watch Leaders and vessel officers to communicate with each other about their experiences with protected species interactions during research work with the goal of improving decision-making regarding avoidance of adverse interactions. As noted in the Status Quo Alternative description of mitigation measures, there are many situations where professional judgment is used to decide the best course of action for avoiding protected species interactions before and during the time research gear is in the water. The intent of this mitigation measure would be to draw on the collective experience of people who have been making those decisions, provide a forum for the exchange of information about what went right and what went wrong, and try to determine if there are any rules-of-thumb or key factors to consider that would help in future decisions regarding avoidance practices. The SEFSC would coordinate not only among its staff but also with those from other fisheries science centers with similar experience.

The SEFSC deploys a wide variety of gear to sample the marine environment during all of their research cruises, such as plankton nets, oceanographic sampling devices, video cameras, and ROVs. These types of gear are not considered to pose any risk to protected species because of their small size, slow deployment speeds, and/or structural details of the gear and are therefore not subject to specific mitigation measures. However, the officer on watch and crew monitor for any unusual circumstances that may arise at a sampling site and use their professional judgment and discretion to avoid any potential risks to protected species during deployment of all research equipment.

i. Monitoring methods

The officer on watch (or member of the Scientific Party), and crew standing watch on the bridge visually scan for marine mammals, sea turtles, and other ESA-listed species (protected species) during all daytime operations. Bridge binoculars are used as necessary to survey the area upon arrival at the station, during visual and sonar reconnaissance of the trawl line to look for potential hazards (e.g., commercial fishing gear, unsuitable bottom for trawling, etc.), and while the gear is deployed. If any marine mammals or sea turtles are sighted by the bridge or deck crew prior to setting the gear or at any time the gear is in the water, the bridge crew and/or Chief Scientist are alerted immediately.

Environmental conditions (e.g., lighting, sea state, precipitation, fog, etc.) often limit the distance for effective visual monitoring of protected species.

ii. Operational procedures

If any marine mammals, sea turtles or other protected species are sighted around the vessel before gear deployment, in most cases, gear is not deployed unless those animals do not appear to be in danger of interactions with the gear, as determined by the judgment of the Field Party Chief/Scientific Watch Leader (Chief Scientist). The vessel may be moved or gear deployment may be delayed until the animals no longer appear to be at risk of interaction with the gear.

If trawling operations have been delayed because of the presence of marine mammals or sea turtles, the vessel resumes trawl operations only when these species have not been recently sighted or otherwise determined to no longer be at risk. This decision is at the discretion of the Field Party Chief (Chief Scientist) or Scientific Watch Leader and is dependent on the situation.

Once the trawl net is in the water, if protected species are sighted before the gear is fully retrieved, the most appropriate response to avoid incidental take is determined by the professional judgment of the Field Party Chief (Chief Scientist) or Scientific Watch Leader in consultation with the officer on watch as necessary. These judgments take into consideration the species, numbers, and behavior of the animals, the status of the trawl net operation (net opening, depth, and distance from the stern), the time it would take to retrieve the net, and safety considerations for changing speed or course. Most marine mammals have been caught during haul-back operations, especially when the trawl doors have been retrieved and the net is near the surface and no longer under tension. In some situations, risk of adverse interactions may be diminished by continuing to trawl with the net at depth until the marine mammals and/or sea turtles have left the area before beginning haul-back operations. In other situations, swift retrieval of the net may be the best course of action. The appropriate course of action to minimize the risk of incidental take of protected species is determined by the professional judgment of the Field Party Chief (Chief Scientist) or Scientific Watch Leader based on all situational variables, even if the choices compromise the value of the data collected at the station.

Care is taken when emptying the trawl, including opening the cod end as close as possible to the deck of the checker (or sorting table) in order to avoid damage to protected species that may be caught in the gear but are not visible upon retrieval. The gear is emptied as quickly as possible after retrieval in order to determine whether or not protected species are present.

iii. Tow duration

In 2008, standard tow durations for bottom trawl surveys were reduced from 55 min to 30 min or less at targeted depth, excluding deployment and retrieval time, to reduce the likelihood of attracting and incidentally taking protected species. These short tow durations decrease the opportunity for curious marine mammals to find the vessel and investigate. Tow times are less than the 55 min tow time restriction required for commercial shrimp trawlers not using turtle excluder devices (TEDs) (50 CFR 223.206). The resulting distance towed is typically one to two nautical miles or less, depending on

the survey and trawl speed. Short tow times reduce the likelihood that captured sea turtles would drown.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (http://www.ndc.noaa.gov/dr.html) and require the approval of the ship's CO.

Scientific dives are not planned for this project. If the ship must conduct dive ops while at sea the CO will confer with the FPC as to when the dive ops will occur so the dive will have the least impact on the scientific work.

E. Applicable Restrictions

Conditions which preclude normal operations: adverse weather conditions

III. Equipment

A. Equipment and Capabilities Provided by the Ship:

1. SCS version 451.1063
2. Because of the importance of the CTD equipment package to record environmental data and the need for the Scientific Computing System (SCS), an Electronics Technician is imperative.
3. Trawl winch with sufficient wire to fish in 60 fm depths and meter readouts to determine warp length
4. Hydrographic winch with wire and meter readout to accomplish CTD/bottle casts and bongo tows up to a 200 m depth. Winch speed should be variable to include 50 m/min during pay-out and 20 m/min during haul back (for bongo tows). Spare slip rings for each winch. Fully functional wire readouts for each winch.
5. Winch, crane, and wire for deploying neuston net.
6. Three (3) touch screen monitors for the Fishery Scientific Computing System (FSCS).
7. One (1) Primary SBE 9plus CTD configured as follows;
   - **a.** Unit should be mounted horizontally and mounted in the water sampling frame. The frame should be examined to ensure it is in good physical condition and there are no breaks present in any of the welds supporting the frame.
   - **b.** The standard 12 position SBE 32 Carousel should be properly mounted in the water sampler section of the frame and tested to ensure that all 12 bottle positions are working properly and respond to software requests for firing.
   - **c.** The internal Digiquartz pressure sensor should be in good working order and have a calibration/service date not to exceed 365 days.
   - **d.** The primary sensor suite should be installed and consist of the following (the sensors should have a calibration date as recent as possible, not to exceed 365 days):
     - **i.** One (1) SBE 3 Premium Temperature sensor
     - **ii.** One (1) SBE 4 Conductivity sensor
     - **iii.** One (1) SBE 43 Dissolved Oxygen sensor
     - **iv.** One (1) "Y" air bleeder valve. Valve should be checked to ensure it is not clogged.
     - **v.** One (1) Wetlabs Wetstar pumped fluorometer

vi. One (1) SBE 5T pump that has been checked by Seabird within the last 365 days for proper operation

vii. One (1) Wetlabs C-Star transmissometer

viii. Proper plumbing. Tubing should be checked to ensure it meets Seabird's recommended method of plumbing and is free from cracks and holes. With red end caps for proper storage between stations.

e. The secondary sensor suite should be installed and consist of the following (the sensors should have a calibration date as recent as possible, not to exceed 365 days):

i. One (1) SBE 3 Premium Temperature sensor

ii. One (1) SBE 4 Conductivity sensor

iii. One (1) SBE 43 Dissolved Oxygen sensor

iv. One (1) "Y" air bleeder valve. Valve should be checked to ensure it is not clogged

v. One (1) Wetlabs Wetstar pumped fluorometer

vi. One (1) SBE 5T pump that has been checked by Seabird within the last 365 days for proper operation

vii. One (1) Wetlabs C-Star transmissometer

viii. Proper plumbing. Tubing should be checked to ensure it meets Seabird's recommended method of plumbing and is free from cracks and holes.

f. The unit should be properly terminated and connected to a properly functioning SBE 11 Deck Unit. The deck unit should be connected to allow the following:

i. Proper control of the SBE Water Sampler Carousel via the SEASAVE application

ii. Integration of a proper NMEA signal from a GPS unit.

8. A second SBE 9plus profiler should be available as well. Unit does not have to be configured as a complete functioning ready-to-install on the sea-cable unit; however, it should have the following components available:

a. Sensors for a Primary suite (with a calibration date as recent as possible, not to exceed 365 days):

i. One (1) SBE 3 Premium Temperature sensor

ii. One (1) SBE 4 Conductivity sensor

iii. One (1) SBE 43 Dissolved Oxygen sensor

iv. One (1) "Y" air bleeder valve. Valve should be checked to ensure it is not clogged.

v. One (1) Wetlabs Wetstar pumped fluorometer

vi. One (1) SBE 5T pump that has been checked by Seabird within the last 365 days for proper operation.

vii. One (1) Wetlabs C-Star transmissometer

viii. Proper plumbing. Tubing should be checked to ensure it meets Seabird's recommended method of plumbing and is free from cracks and holes.

b. Sensors for a complete Secondary suite (with a calibration date as recent as possible, not to exceed 365 days):

i. One (1) SBE 3 Premium Temperature sensor

ii. One (1) SBE 4 Conductivity sensor

iii. One (1) SBE 43 Dissolved Oxygen sensor

iv. One (1) "Y" air bleeder valve. Valve should be checked to ensure it is not clogged.

v. One (1) Wetlabs Wetstar pumped fluorometer

vi. One (1) SBE 5T pump that has been checked by Seabird within the last 365 days for proper operation.

vii. One (1) Wetlabs C-Star transmissometer.

viii. Proper plumbing. Tubing should be checked to ensure it meets Seabird's recommended method of plumbing and is free from cracks and holes.

9. A second SBE 11 Deck Unit should be on the ship to be put into service if needed.

10. Two (2) fully operational SBE 19 SEACAT profilers should be available. One of the units should be installed on the sea cable. Both units should have calibration dates not to exceed 365 days.

11. Two (2) functional SBE 36 Deck units should be available, one for backup, which are configured for the model SEACAT being supplied.

12. Two (2) PDIM units should be available for use with the SBE 19 units. One of these PDIM units should be installed on the primary SBE19 on the sea cable. These PDIM units should also be the proper units that are used with the model SEACAT being used.

13. A fully functional SBE 21 thermosalinograph should be available for the survey. The unit should have calibrations that do not exceed 365 days. The calibration data must be verified/entered into the SEABIRD-TSB.CAL file in the Ship Directory of SCS.

14. The Turner 10-AU Fluorometer associated with the flow-through system should be verified as working. Proper spare bulbs should be made available to the rotating ET so they can be replaced as needed during the survey.

15. It is highly desirable to have the following additional spare sensors on-board if possible:
- **a.** One (1) SBE 43 DO Sensor
- **b.** One (1) SBE 3 Temperature Sensor
- **c.** One (1) SBE 4 Conductivity Sensor
- **d.** One (1) Wetlabs Wetstar pumped fluorometer
- **e.** One (1) Wetlabs C-Star Transmissometer
- **f.** One (1) SBE 5T Pump

16. Copies of all calibration sheets for CTD profilers, TSG, and spare sensors should be provided to the laboratories' Shipboard System Specialist prior to sailing.

17. CTD capable winch and J-frame for CTD casts, with sufficient electromechanical cable for casts to 200 m.

18. NMEA GPS input to CTD header file.

19. Inside and outside conveyor belts for processing catches.

20. Freezer space for preserving scientific specimens.

21. SCS data requested: The SCS system should be fully operational for the duration of the survey. Due to the nature of the survey work, we request that all the events (CTD, Bongo, Neuston, and trawls) be conducted from the dry lab. A listing of any sensors that will not be functional for the survey should be provided prior to sailing to the FPC, taking into consideration that event templates will have to be checked by the Shipboard System Specialists to ensure there will be no impact or an alternative sensor can be selected.
- **a.** SIMRAD – primary
  - **i.** UTC time
  - **ii.** Latitude
  - **iii.** Longitude
  - **iv.** Speed over ground
  - **v.** Course over ground
- **b.** SIMRAD – secondary
  - **i.** Latitude
  - **ii.** Longitude
  - **iii.** Speed over ground
  - **iv.** Course over ground
- **c.** Furuno doppler speed log
  - **i.** Speed through the water
  - **ii.** Speed over ground

d. EQ50 and EK60 depth in meters
e. Gyro-heading
f. Air temperature (°C)
g. Corrected barometric pressure
h. True wind speed
i. True wind direction
j. Information should be passed to the Rotating ET to ensure the following:
  i. The Automatic Logger Control on the SCS Server must be enabled anytime ACQ is started and should use the default of 0:00:00 (Midnight GMT).
  ii. The contents of the Eventdata folder should be allowed to remain present for the duration of the survey (they should not be deleted between legs). This will ensure that event IDs do not restart for the respective events during the survey.
k. SEASAVE SOFTWARE: Prior to sailing, the proper .CON files should be built in SEASAVE. The software should be set to look for the proper .CON file for the respective instrument.
l. It is also highly desirable that the ASCII Out function be allowed to feed CTD data into SCS via serial cable.

22. DRYLAB REMOTE COMPUTERS - Due to the nature of the work involved with data collection for this survey, it is recommended that all three (3) FSCS Remote units be verified for the following prior to sailing:
a. All three computers are 100% operational
b. All three computers are properly setup to interface as SCS clients
c. Two (2) of the units have a functioning copy of Microsoft Office XP Professional. The Office suite must provide at minimum the following programs: Word, Excel, PowerPoint and Access.
d. All three computers must be able to print to a functioning printer.

23. FPC COMPUTER - It is requested the following software be installed on the computer in the FPC's stateroom:
a. Microsoft Office XP Professional or Microsoft Office 2003 Professional consisting of the following minimum components
  i. Microsoft Word 2002 or Greater
  ii. Microsoft Excel 2002 or Greater
  iii. Microsoft Access 2002 or Greater
  iv. PowerPoint 2002 or Greater
  v. QGIS
  vi. SAS (Statistical Analysis System) – It is recommended that the lab's Shipboard Systems Specialist be permitted to install this software to ensure the latest version of the software is installed. This software is licensed for installation on the ship. The *Oregon II* domain user Admin.Science has sufficient permissions to perform installation.

24. Due to the reporting requirements of this survey, we request an increase in Internet bandwidth so that two data packages can be transmitted to shore in near real-time. CTD data are processed at sea and transmitted to the National Centers for Environmental Information (NCEI). These data are then shared with the National Data Buoy Center (NDBC), Global Temperature Salinity Profile Program (GTSPP), Naval Oceanographic Office (NAVOCEANO), and Fleet Numerical in Monterey, California (FNMOC). The optimal reporting frequency is near real-time, but at least every 4 to 6 hours so internet dependability is essential. Secondly, biological data are transmitted to the Southeast Area Monitoring and Assessment Program (SEAMAP) Information System through the Gulf States Marine Fisheries Commission (GSMFC) which distributes the information to management agencies, fishermen, processors and researchers.

B. Equipment and Capabilities Provided by the Scientists:

1. Ten 40-ft semi-balloon trawls
2. Four sets of 8' x 40" wooden doors
3. Four 30-fm trawl bridles
4. Four 18-fm lazy lines
5. Equipment and materials for repair and maintenance of trawl gear
6. EchoLogger AA40 Precision Autonomous Hydroacoustic Altimeter and base
7. 12 plastic fish baskets
8. Four deck shovels
9. Sorting rakes and trays
10. Latex and Nitrile puncture resistant work gloves, and goggles
11. Five Marel 1100 electronic weighing scales
    a. Two 30-kg capacity
    b. Three 3-kg capacity
12. Three electronic fish measuring boards
13. Handheld Orion 3 star meter and equipment box
14. Five hundred plastic specimen bags
15. Flowmeters (6)
16. 2- 61 cm bongo frames, chain and weight, (6) 0.335 mm nets, (2) 0.950 mm nets, (2) 0.505 mm nets
17. 2- 1 x 2 m neuston frames, (4) 0.950 mm nets
18. Bongo/neuston gear and equipment box
19. Plankton sampling supplies box
20. Plankton preserving jars, lids and labels
21. Chemical transfer pumps
22. Triton (R) X-100
23. Six Niskin bottles
24. Four Garden hoses for washing down nets, nozzles, and hose repair parts
25. Plankton transfer table
26. Five gallon buckets
27. Various clerical supplies
28. Spare batteries for the SBE 19 SEACAT profilers
29. Spent chemical collection drum
30. 30 ml glass burette and stand
31. 10 ml disposable pipettes and dispenser
32. Magnetic stirrer and stir bar
33. 100 ml glass beakers
34. Fish and Invertebrate identification reference materials

IV. Hazardous Materials

A. Policy and Compliance

The FPC 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 quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and

chemical safety and spill response procedures. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 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
- A SDS 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 showing that all chemicals were removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. SDS 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. If the spill is severe enough to require a respirator the scientific party will act as support. Overboard discharge of hazardous materials is not permitted aboard NOAA ships.

B. Inventory

Common Name of Material	**Qty**	**Notes**	**Trained Individual**	**Spill control**
Formaldehyde solution (37%)	5 x 1l	Alkalinity, Stored in ship chem. lkr	Johnson, Kimberley	F
Ethyl alcohol, 95%	2*55g	Alkalinity, Stored in ship chem. lkr	Johnson, Kimberley	E
Alkaline iodide	1 x 1l	Located in Chemistry lab.	Johnson, Kimberley	U
Manganous sulfate	1 x 1l	Located in Chemistry lab.	Johnson, Kimberley	U
Phenylarsine oxide, 0.375N	1 x 1l	Located in Chemistry lab.	Johnson, Kimberley	U

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Starch Indicator	1 x 1l	Located in Chemistry lab.	Johnson, Kimberley	U
Sulfuric Acid, 95-98%	1 x 1l	Located in Chemistry lab.	Johnson, Kimberley	A

C. Chemical safety and spill response procedures

A: ACID

- Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas.
- Ventilate closed spaces before entering them.
- Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.
- **Large Spills**: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
- **Small Spills**: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
- Never return spills in original containers for re-use.

E: ETHANOL

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

F: FORMALIN/FORMALDEHYDE

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

U: UNIVERSAL CHEMICALS, ALL OTHER CHEMICALS

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.

- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Formaldehyde neutralizer	5 gallon bucket	Formaldehyde	30lbs per 5 gallon bucket
Universal Spill CleanUp Kit	5 gallon kit	Ethanol, Alkaline iodide, Manganous sulfate, Phenylarsine oxide, Starch indicator	5 gallons per kit
Formalin Spill Control	11 oz. bottle	Formaldehyde	40 oz of 10% or 9 oz of 37%
Kitty litter	3*5 gallon bucket	Ethanol, Alkaline iodide, Manganous sulfate, Phenylarsine oxide, Starch indicator	30 gallons of chemical per bucket
PIG® HazMat Spill Kit in Bucket	5 gallon kit	Sulfuric acid, Ethanol, Alkaline iodide, Manganous sulfate, Phenylarsine oxide, Starch indicator	5 gallons of chemical

V. Additional Projects

A. Supplementary ("Piggyback") Projects
No Supplementary Projects are planned.

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.

A. Data Classifications: *Under Development*

1. OMAO Data

2. Program Data

B. Responsibilities: *Under Development*

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre-Project Meeting: The FPC and CO 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 FPC in arranging this meeting.

B. Vessel Familiarization Meeting: The CO 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 CO is responsible for conducting a meeting no earlier than 24 hr before or no later than seven 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, vessel coordinator, FPC, and members of the scientific party and is normally arranged by the Operations Officer and FPC.

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.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 up to 12 scientists. Meals will be served three 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 FPC. The FPC and CO 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 FPC 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 FPC 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 FPC will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the FPC 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 CO. 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

I. 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/noaaforms/eforms/nf57-10-01.pdf.

I. 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).

I. 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.

I. 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).

I. 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
E-mail MOA.Health.Services@noaa.gov

Prior to departure, the FPC 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's 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 FPC to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the FPC may be relayed to the program office. Sometimes it is necessary for the FPC to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the FPC. 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 e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessel 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 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 three 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.

Foreign National access must be sought not only for access to the ship involved in the project but also for any Federal Facility access (NOAA Marine Operations Centers, NOAA port offices, USCG Bases) that foreign nationals might have to traverse to gain access to and from the ship. The following are basic requirements.

Full compliance with NAO 207-12 is required.

Responsibilities of the FPC:

1. Provide the CO 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 FPC 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 CO and the FPC 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 CO:

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 FPC 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 FPC 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 FPC of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the FPC can take steps to prevent unlicensed export of Program controlled technology. The CO and the FPC 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

IX. Appendices

A. Figures, maps, tables, images, etc.

Figure 1. Cruise track with standard SEAMAP shrimp/bottomfish stations for NOAA Ship *Oregon II* cruise R2-16-02 (317), 7 June – 20 July, 2016.