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 3, 2015

MEMORANDUM FOR: Master Donn Pratt, NOAA
Commanding Officer, NOAA Ship *Gordon Gunter*

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

SUBJECT: Project Instruction for GU-15-01
SEAMAP Winter Ichthyoplankton

Attached is the final Project Instruction for GU-15-01, SEAMAP Winter Ichthyoplankton, which is scheduled aboard NOAA Ship *Gordon Gunter* during the period of February 27 to April 2, 2015. Of the 33 DAS scheduled for this project, 33 DAS 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

cc:
MOA1

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

3209 Frederic Street
Pascagoula, MS 39567

Project Instructions

Date Submitted: 01/23/2015

Platform: NOAA Ship GORDON GUNTER

Cruise Number: 15-01

Project Title: SEAMAP Winter Ichthyoplankton

Cruise Dates: 02/27/2015 - 04/02/2015

Prepared by: BOND.PAMELA.J.1365874154 Digitally signed by BOND.PAMELA.J.1365874154 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=BOND.PAMELA.J.1365874154 Date: 2015.01.23 16:27:55 -06'00' Date: 01/23/2015
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: 2015.01.26 09:56:49 -06'00' Date: 01/26/2015
Lab Director

Approved by: Theo R. Brainerd Digitally signed by Theo R. Brainerd DN: cn=Theo R. Brainerd, o=NOAA/NMFS, ou=SEFSC, email=theo.brainerd@noaa.gov, c=US Date: 2015.01.26 11:53:41 -05'00' Date: 01/26/2015
Dr. Bonnie Ponwith
Director, SEFSC

Approved by: Anne K Lynch CAPT NOAA Date: 02/02/15
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

February 27 to April 2, 2015

B. Days at Sea (DAS)

Of the 33 DAS scheduled for this project, 33 DAS are funded by a Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area

United States northern Gulf of Mexico (GOM) along the continental shelf break from 82º00' to 97º00' W and 25º00' to 30º00' N. A list of the station locations and a map of the area of operations are found in Table 1 and Figure 1.

D. Summary of Objectives

1. *Primary Objectives*

a. Assess the occurrence, abundance and geographical distribution of the early life stages of winter spawning fishes (especially groupers and tilefishes) from mid continental shelf to deep GOM waters using a bongo frame fitted with 0.335 mm nets and a neuston frame fitted with a 0.950 mm net at selected Southeast Area Monitoring and Assessment Program (SEAMAP) stations.
b. Describe the pelagic habitat of fish larvae through measurements of various physical and biological parameters:
    i. Record profiles through the water column of temperature, salinity, fluorescence, dissolved oxygen, and turbidity using a Conductivity/Temperature/Depth (CTD) unit at SEAMAP stations.
    ii. Measure chlorophyll *a* in replicate water samples taken at surface, maximum chlorophyll layer and near bottom (to a maximum of 200 m) depths using bench top fluorometry.
    iii. Detect and measure frontal features along the survey cruise track using data from the ship's Fluoro-thermosalinograph flow-through system (TSG).
c. Measure the vertical distribution of fish larvae by sampling at discrete depths in the water column at selected locations along the SEAMAP plankton survey grid using a 1 m Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS).
d. Map the distribution of fish eggs and invertebrate zooplankton along the cruise track using a Continuous Underway Fish Egg Sampler (CUFES).

e. Collect detailed observations of net-caught jellyfish and ctenophores.

E. Participating Institutions

F. Personnel (Science Party)

Name (Last, First)	Title	Leg	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Bond, Pam	FPC	1 and 2	Feb. 27, 2015	Apr. 02, 2015	F	NMFS	US
Millett, Andy	WL	1 and 2	Feb. 27, 2015	Apr. 02, 2015	M	Riverside	US
Drass, Denice	WL	1	Feb. 27, 2015	Mar. 14, 2015	F	NMFS	US
Moser, John	WS	1	Feb. 27, 2015	Mar. 14, 2015	M	NMFS	US
DeBose, Andre	WS	1	Feb. 27, 2015	Mar. 14, 2015	M	NMFS	US
Hamilton, Alonzo	WS	1	Feb. 27, 2015	Mar. 14, 2015	M	NMFS	US
Wright, Emmy	WS	1	Feb. 27, 2015	Mar. 14, 2015	F	Riverside	US
Johnson, Kim	WS	2	Mar. 17, 2015	Apr. 02, 2015	F	NMFS	US
Jackson, Lauren	WS	2	Mar. 17, 2015	Apr. 02, 2015	F	Riverside	US
Stepongzi, Chrissy	WS	2	Mar. 17, 2015	Apr. 02, 2015	F	Riverside	US
Huddleston, David	WL	2	Mar. 17, 2015	Apr. 02, 2015	M	Riverside	US
Meaker, Madalyn	WS	2	Mar. 17, 2015	Apr. 02, 2015	F	Riverside	US

FPC= Field Party Chief, WL= Watch Leader, WS= Watch Stander

G. Administrative

1. Points of Contact:
   a. Field Party Chief: Pam Bond; 3209 Frederic St. Pascagoula, MS 39567; (228) 549-1651; Pam.Bond@noaa.gov
   b. Operations Officer: Marc Weekley; NOAA Ship *Gordon Gunter*, 151 Watts Ave, Pascagoula, MS 39567; (228) 762-6422; OPS.Gordon.Gunter@noaa.gov

2. Diplomatic Clearances: None Required

3. Licenses and Permits:

   This project will be conducted under the following permits:
   1. Alabama Scientific Collecting Permit issued by the Alabama Department of Conservation and Natural Resources
   2. Florida Special Activity License issued by the Florida Fish and Wildlife Conservation Commission
   3. Louisiana Saltwater Scientific Collecting Permit issued by Louisiana Department of Wildlife and Fisheries
   4. Mississippi Saltwater Scientific Collecting Permit issued by Mississippi Department of Marine Resources
   5. Texas Scientific Permit issued by Texas Parks and Wildlife

Department

6. Southeast Fisheries Science Center Scientific Research Permit (SRP) and Turtle Excluder Device (TED) Exemption issued

II. Operations

The Field Party Chief (FPC) is responsible for ensuring 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	Date	Location
1	February 27, 2015	Depart Pascagoula, MS
	March 14, 2015	Arrive Pascagoula, MS
Leg	Date	Location
2	March 17, 2015	Depart Pascagoula, MS
	April 02, 2015	Arrive Pascagoula, MS

B. Staging and Destaging

PASCAGOULA/PASCAGOULA

C. Operations to be conducted

NOAA Ship *Gordon Gunter* will depart Pascagoula, Mississippi on February 27, 2015 to conduct the winter SEAMAP Ichthyoplankton survey. The 33-day cruise will be divided into two legs: Leg 1, 16 days; Leg 2, 17 days. The station positions and primary gear to be used at each of the 131 targeted stations (Figure 1) are listed in Table 1. Sampling will begin in the western GOM with the break between legs occurring approximately midway through the cruise track. The station order will be provided prior to sailing and is subject to change by the FPC during the survey after consultation with the CO. The survey will require 24 hr operations with two scientific watches: 12 am – 12 pm, 12 pm – 12 am.

Standard SEAMAP sampling protocols will be followed at each station for the primary gear: oblique bongo tow to a maximum depth of 200 m, a 10 min neuston tow, and a CTD profile to a maximum depth of 200 m. The MOCNESS will be used during both legs of the survey. The egg samples will be collected in transit between stations using the CUFES in conjunction with TSG flow-through data.

Prior to arrival at the first station the SBE 9/11 plus CTD and the SEACAT SBE 19 CTD (with a weight) will be deployed in water depth greater than 100 m in order to test the functionality of the winches, hydraulics, CTD array, and SEACAT. Any problems encountered during the test can then be corrected prior to arriving on the first station. The Chief Engineer will be made aware of expected time of arrival at the first

station so the salt water pumps can be turned on and ready.

Communication between the scientists and the bridge while on station will be accomplished via hand held radios. During rough weather, the watch leader and OOD with consultation from the ship's crew will determine which sampling gear can be deployed safely. The FPC should be notified of any change to station location or delays to sampling due to mechanical, medical, or weather issues as well.

PRIMARY STATION OPERATIONS – At the Bridge's 10 min warning, scientists and deck personnel will proceed to duty stations and prepare for station. Scientists and deck personnel should be ready and standing by for bridge's call that the ship is on station and ready to proceed. Smoking is not permitted near or while handling any plankton nets due to the likelihood of burning holes in the nets.

Bongo Sampling

The SEAMAP bongo plankton sampler is comprised of two, 61 cm diameter collars with two, 0.335 mm nets. Prior to deployment of the bongo sampler, the watch leader must run software programs and prepare them for the bongo cast. The lab scientist should wait for the bridge and deck to relay their readiness to deploy gear, hit ok on the program, have the deck turn on the magnetic switch at the appropriate time, and wait for data to begin scrolling. There is a small delay (~20 sec to 1 min, longer if problems occur) between the switch and data scroll, therefore, the lab scientist will relay to the deck when to put the net into the water. The bongo sampler is towed in an oblique path from near bottom, or 200 m max, to the surface. The SBE-19 SEACAT which is mounted above the bongo array on the sea cable will be used to monitor the tow path of the bongo net. Vessel speed should be adjusted during the bongo tow to maintain a 45º wire angle in order to uniformly sample throughout the water column. If angle exceeds 55º, falls to 35º or if combined variation exceeds 15º, then tow must be repeated (the samples will be saved until a better tow is completed). The net depth will be monitored on the dry lab computer by the watch leader. The deck scientist (or winch operator) will report wire angles periodically during downcast. On the watch leader's command at max depth, the winch operator will stop payout of cable and immediately start 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 watch leader will ask the winch operator to slowly retrieve the bongo array at 20 m per min for tow depths of 100 m or deeper; for shallower stations the retrieval rate will be determined at each station based on station depth. The wire angle and remaining wire out should be reported from the deck to the watch leader regularly or as requested (on upcast or downcast).

The deck personnel should report when the bongo array breaks the surface. Time will be recorded to the second (by the lab scientist) when net breaks surface and flowmeters stop turning, at which time the winch operator immediately pulls the frame from the water; taking care not to let the bongo array continue to fish once it breaks the surface. When possible, the sample will be rinsed into cod end of net with seawater hose while the net hangs over the side. 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 must 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.

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 0.54 m). If necessary, the ship should 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, ctenophores, Sargassum, floating weed and/or debris are entering the net, or weather requires it. After retrieval, the sample is rinsed into cod end with seawater while net hangs over 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.

SEAMAP CTD Profiles

After the CTD array is overboard, clear of all personnel and being lowered to just below the surface, the watch leader (lab scientist) will turn on the power to the unit and start the CTD recording. The unit must remain at the surface for 3 min for temperature equilibration, after which time the unit is lowered to approximately 2 m above the bottom or a max depth of 200 m. After the cast, the CTD should be carefully set on deck, taking care not to jar the sensitive electronics. During each CTD profile, water samples will be collected at the surface, bottom (or max depth), and at the observed (during the downcast) chlorophyll max. The unit needs to be rinsed with fresh water after every cast and the caps replaced to keep the unit filled with water. Once a day, the deck scientist should flush the CTD unit with fresh water, add 60 ml of Triton-X, drain, rinse again with fresh water, and replace the caps to keep the unit filled with fresh water. Additional environmental data that will be collected at each designated plankton station during daylight hours are secchi disc depth, water color Forel-Ule, percent cloud cover, and sea condition. The TSG will be in use 24 h/day. Dissolved oxygen concentrations from sensors on the CTD will be verified using an Orion 3 Star Portable D.O. meter made by Thermo Scientific at the beginning of each leg and then every five days by the FPC.

1 m MOCNESS Sampling

A 1 m MOCNESS equipped with a maximum of nine, 0.505 mm mesh nets will be deployed from the stern with the port trawl winch using 1/2 in conducting wire and poded termination. Prior to deployment, the ship speed will be maintained at 2 kt. Once deployed, a series of up to nine nets can be opened independently at specific depths to obtain a discrete sample of that depth bin. Winch and ship speed will be controlled by the watch leader throughout the tow via communication with the deck and bridge. This is

done in order to maintain the gear in a specific depth stratum and allow the net to filter the targeted volume of water, i.e. 250 – 350 m^3 per net. In order to ensure enough volume is filtered for each depth bin, a 'bounce' method will be used during the retrieval. The MOCNESS will be brought up to the top of the depth bin, lowered back down to the bottom of the bin, and then brought back up to the top. This method allows for consistency in sampling each of the depth bins during the tow. After retrieval, samples will be rinsed into cod ends with seawater before bringing the MOCNESS on deck. The sample in net 0 (surface to max depth) will be initially preserved in 10% formalin and transferred to 95% ETOH after 36 h. Samples from the remaining nets will be initially preserved in 95% ETOH and transferred to fresh 95% ETOH after 24 h. More detailed protocols for conducting a MOCNESS event will be provided by the FPC.

Egg sampling

A CUFES will be used to sample fish eggs and invertebrate zooplankton from near surface waters at regular intervals throughout the survey. The system consists of a concentrator and collector that are connected to the ship's main sea chest and associated pump. This pump will be running continuously throughout the survey once the first CUFES sample is taken. The Bridge will be notified when a CUFES sample is taken, if requested, otherwise the CUFES log book will remain available for officers to copy for their records. No special operations by the ship will be needed for sampling while underway; however, a sample may be collected on station during CTD deployment and may require the ship to hold position until sampling is complete. Samples will be preserved and remain in 95% ETOH.

Jellyfish data collection

Jellyfish and select ctenophores collected in plankton samples will be rinsed, removed from the sample (when time permits), identified, counted, measured, and weighed. These data will be recorded on special data sheets and noted in the SEAMAP Access database.

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. The watch schedule for the scientific party will be posted. At times the schedule may change due to unforeseen circumstances during the cruise. If the schedule does change the ship will be notified.

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

Inclement weather

III. Equipment

A. Equipment and Capabilities Provided by the Ship

1. Because of the importance of the CTD equipment package to record environmental data and the need for the Scientific Computing System (SCS) to populate the Fishery Scientific Computing System (FSCS), an Electronics Technician is imperative.
2. Hydrographic winch with wire and meter readout to accomplish CTD/bottle casts and bongo tows up to a 500 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.
3. Winch, block and wire for deploying neuston net.
4. ADCP
5. 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.

6. 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.

7. A second SBE 11 Deck Unit should be on the ship to be put into service if needed.
8. 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.
9. Two (2) functional SBE 36 Deck units should be available (1 for backup) that are configured for the model SEACAT being supplied.
10. 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 SEACATs being used.
11. 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.
12. 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.
13. 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
14. Copies of all calibration sheets for CTD profilers, TSG, and spare sensors should be provided to the laboratories' Shipboard System Specialist prior to sailing.
15. CTD capable winch and J-frame for CTD casts, with sufficient electromechanical cable for casts to 500 m.
16. NMEA GPS input to CTD header file.
17. <u>SCS data requested</u>: The SCS system should be fully operational for the duration of the survey. 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 MX 512
    i. SIMRAD MX 512UTC time
    ii. Latitude
    iii. Longitude
    iv. Speed over ground
    v. Course over ground
b. Furuno GP-90 GPS
    i. Latitude
    ii. Longitude
    iii. Speed over ground
    iv. Course over ground
c. Sperry 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.

18. It is also highly desirable that the ASCII Out function be allowed to feed CTD data into SCS via serial cable.

B. Equipment and Capabilities Provided by the Scientists

1. Flowmeters (6)
2. 2- 61 cm bongo frames, chain and weight, (6) 0.335 mm nets
3. 3- 1 x 2 m neuston frames, (4) 0.950 mm nets, (2) 0.500 mm nets
4. 1 m MOCNESS frame, (9) 0.505 mm nets, and electronic equipment
5. Conducting wire (1/2-in) and corresponding block for MOCNESS tows
6. Bongo/neuston gear and equipment box
7. Plankton sampling supplies box

8. Plankton preserving jars, lids and labels
9. Turner Designs 10-AU benchtop Fluorometer
10. Chemical transfer pumps
11. GF/F filters
12. 6 Niskin bottles
13. 4 Garden hoses for washing down nets, nozzles, and hose repair parts
14. Plankton transfer table
15. 5 gal buckets
16. Various clerical supplies
17. Spare batteries for the SBE 19 SEACAT profilers
18. CUFES concentrator and collector

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
- 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 showing that all chemicals were 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 hazardous materials is not permitted aboard NOAA ships.

B. Inventory

Common Name of Material	**Qty**	**Notes**	**Trained Individual**	**Spill control**
Formaldehyde solution (37%)	2 x 10 gal carboy		See C.1 Below	See C.1 Below
Ethanol	3 x 55 gal drum		See C.1 Below	See C.1 Below
Triton X (1%)	1 x 2 gal carboy		See C.1 Below	See C.1 Below
Methanol	10 x 1 gal plastic bottles		See C.1 Below	See C.1 Below

C. Chemical safety and spill response procedures

1. Precaution – all personnel handling chemicals will wear the appropriate PPE. All personnel are trained in handling chemicals.
2. Prevention – all chemicals will be secured before the survey departs. All personnel will be aware of the location of all chemicals. A MSDS for all chemicals brought aboard will be given to the ship before sailing.
3. Response – if a spill occurs scientists will immediately leave the area and alert the bridge. Scientists will defer to the ship's spill plan for a cleanup. Kitty litter and formalin neutralizing agent will be on board for potential spill cleanups.

D. Radioactive Materials:

No Radioactive Isotopes are planned for this project.

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:

The FPC is responsible for submission of a ROSCOP II form (NOAA, Form 2423) to the National Oceanographic Data Center within 30 days after cruise termination.

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 h 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 h 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 seven 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

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.

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
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

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

IX. Appendices

Table 1. NOAA Ship *Gordon Gunter* cruise GU-15-01, plankton stations 27 February – 02 April 2015. Bongo and neuston tows will be taken at all stations in addition to CTD. Station order is subject to change.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B001	PN, MOC	29º 00'00	88º 00'00
B002	PN, MOC	29º 00'00	87º 00'00
B007	PN	25º 00'00	85º 00'00
B016	PN, MOC	28º 00'00	90º 00'00
B017	PN, MOC	28º 00'00	91º 00'00
B022	PN, MOC	28º 00'00	92º 00'00
B023	PN, MOC	28º 00'00	93º 00'00
B030	PN	26º 01'00	96º 00'00
B031	PN	27º 00'00	96º 00'00
B053	PN, MOC	27º 30'00	94º 00'00
B056	PN, MOC	27º 30'00	93º 00'00
B057	PN, MOC	27º 30'00	92º 00'00
B060	PN	27º 30'00	91º 00'00
B061	PN	27º 30'00	90º 00'00
B072	PN	24º 30'00	85º 00'00
B073	PN	25º 30'00	85º 00'00
B080	PN	28º 30'00	87º 00'00
B081	PN	28º 30'00	88º 00'00
B083	PN	28º 00'00	89º 00'00
B102	PN	24º 30'00	82º 30'00
B105	PN	24º 30'00	83º 00'00
B106	PN	25º 00'00	83º 00'00
B107	PN	25º 30'00	83º 00'00
B108	PN	26º 00'00	83º 00'00
B109	PN	26º 30'00	83º 00'00
B110	PN	27º 00'00	83º 00'00
B116	PN	29º 00'00	83º 30'00
B117	PN	28º 30'00	83º 30'00
B118	PN	28º 00'00	83º 30'00
B119	PN	27º 30'00	83º 30'00
B120	PN	27º 00'00	83º 30'00
B121	PN	26º 30'00	83º 30'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B122	PN	26º 00'00	83º 30'00
B123	PN	25º 30'00	83º 30'00
B124	PN	25º 00'00	83º 30'00
B125	PN	24º 30'00	83º 30'00
B128	PN	24º 30'00	84º 00'00
B129	PN, MOC	25º 00'00	84º 00'00
B130	PN, MOC	25º 30'00	84º 00'00
B131	PN, MOC	26º 00'00	84º 00'00
B132	PN, MOC	26º 30'00	84º 00'00
B133	PN	27º 00'00	84º 00'00
B134	PN	27º 30'00	84º 00'00
B135	PN	28º 00'00	84º 00'00
B136	PN	28º 32'00	84º 00'00
B137	PN	29º 00'00	84º 00'00
B141	PN	29º 00'00	84º 30'00
B142	PN	28º 30'00	84º 30'00
B143	PN	28º 00'00	84º 30'00
B144	PN, MOC	27º 30'00	84º 30'00
B145	PN, MOC	27º 00'00	84º 30'00
B146	PN, MOC	26º 30'00	84º 30'00
B147	PN, MOC	26º 00'00	84º 30'00
B148	PN, MOC	25º 30'00	84º 30'00
B149	PN, MOC	26º 00'00	85º 00'00
B150	PN, MOC	26º 30'00	85º 00'00
B151	PN, MOC	27º 00'00	85º 00'00
B152	PN, MOC	27º 30'00	85º 00'00
B153	PN, MOC	28º 00'00	85º 00'00
B154	PN, MOC	28º 30'00	85º 00'00
B155	PN	29º 00'00	85º 00'00
B158	PN	29º 30'00	85º 31'00
B159	PN, MOC	29º 00'00	85º 30'00
B160	PN, MOC	28º 40.2'00	85º 30'00
B161	PN	28º 00'00	85º 30'00
B164	PN	28º 30'00	86º 00'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B165	PN, MOC	29º 12'00	86º 00'00
B166	PN	29º 30'00	86º 00'00
B167	PN	30º 00'00	86º 00'00
B168	PN	30º 00'00	86º 30'00
B169	PN, MOC	29º 30'00	86º 30'00
B170	PN, MOC	29º 00'00	86º 30'00
B171	PN, MOC	29º 30'00	87º 00'00
B172	PN	29º 59'00	87º 00'00
B173	PN	29º 59'00	87º 30'00
B174	PN	29º 30'00	87º 30'00
B175	PN, MOC	29º 00'00	87º 30'00
B176	PN	29º 30'00	88º 02.4'00
B177	PN	30º 00'00	87º 57'00
B178	PN	30º 00'00	88º 28.2'00
B179	PN	29º 30'00	88º 30'00
B180	PN, MOC	29º 00'00	88º 30'00
B184	PN, MOC	28º 30'00	89º 00'00
B185	PN	28º 00'00	89º 30'00
B186	PN, MOC	28º 30'00	89º 30'00
B189	PN	28º 30'00	90º 00'00
B190	PN, MOC	28º 05'00	90º 30'00
B191	PN	28º 30'00	90º 30'00
B194	PN	28º 30'00	91º 00'00
B195	PN, MOC	28º 00'00	91º 30'00
B196	PN	28º 30'00	91º 30'00
B201	PN	28º 30'00	92º 00'00
B202	PN, MOC	28º 00'00	92º 30'00
B203	PN	28º 30'00	92º 30'00
B208	PN	28º 30'00	93º 00'00
B209	PN, MOC	28º 00'00	93º 30'00
B210	PN	28º 30'00	93º 30'00
B215	PN	28º 30'00	94º 00'00
B216	PN, MOC	28º 00'00	94º 00'00
B217	PN, MOC	28º 00'00	94º 30'00
B218	PN	28º 30'00	94º 30'00
B222	PN	28º 30'00	95º 00'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B223	PN, MOC	28º 00'00	95º 00'00
B224	PN, MOC	27º 30'00	95º 00'00
B225	PN, MOC	27º 30'00	95º 30'00
B226	PN	28º 00'00	95º 30'00
B228	PN	28º 30'00	95º 30'00
B231	PN	28º 00'00	96º 00'00
B232	PN, MOC	27º 33'00	96º 00'00
B234	PN	27º 30'00	96º 30'00
B237	PN, MOC	27º 00'00	96º 30'00
B239	PN, MOC	26º 30'00	96º 30'00
B240	PN	26º 30'00	96º 00'00
B242	PN	27º 00'00	95º 30'00
B243	PN, MOC	27º 30'00	94º 30'00
B244	PN, MOC	27º 30'00	93º 30'00
B245	PN, MOC	27º 30'00	92º 30'00
B246	PN	27º 30'00	91º 30'00
B247	PN	27º 30'00	90º 30'00
B250	PN	28º 00'00	88º 30'00
B251	PN	28º 30'00	88º 30'00
B252	PN	28º 30'00	87º 30'00
B253	PN	28º 30'00	86º 30'00
B262	PN	25º 00'00	84º 30'00
B263	PN	24º 30'00	84º 30'00
B316	PN	26º 01'00	96º 30'00
B320	PN, MOC	29º 48'00	87º 00'00
B322	PN, MOC	29º 15'00	88º 00'00
B323	PN	29º 13.2'00	88º 30'00
B325	PN, MOC	28º 19.8'00	90º 00'00
B326	PN, MOC	27º 45'00	95º 30'00

PN – Denotes bongo, standard neuston and CTD
MOC – Denotes MOCNESS

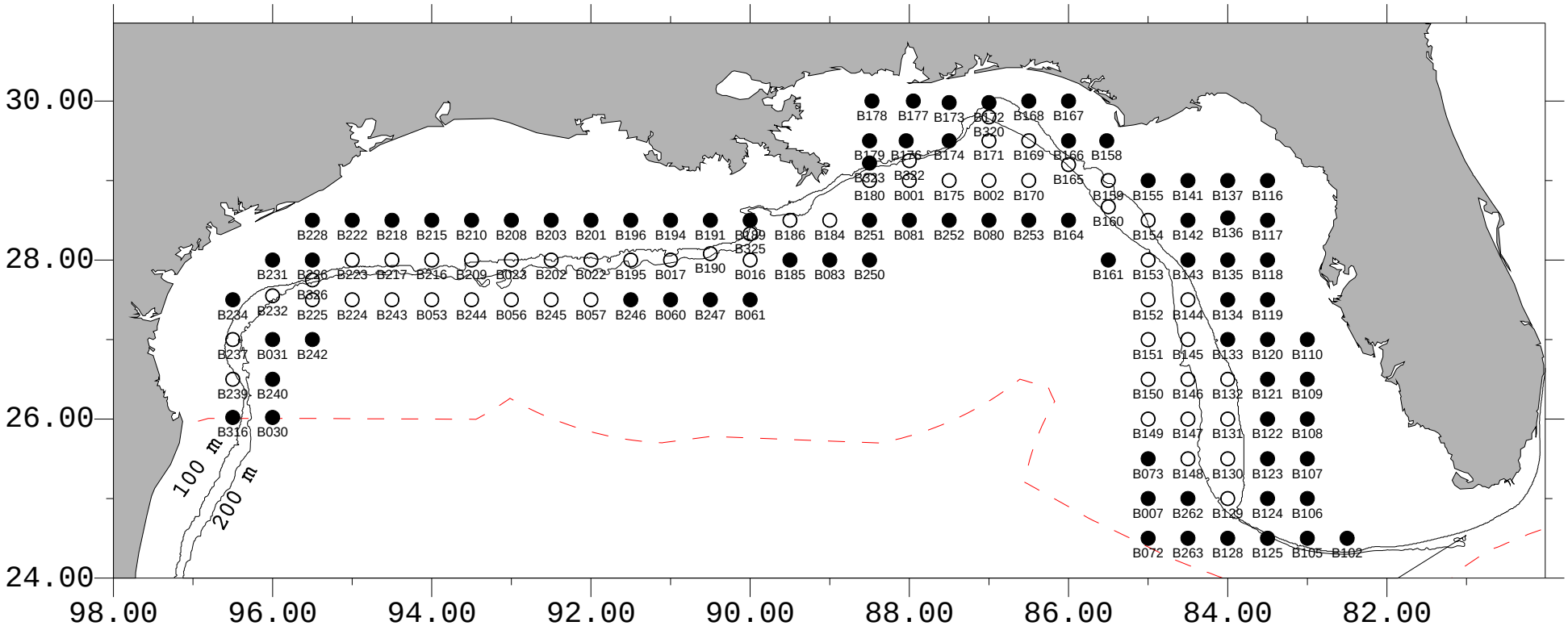

Figure 1. Cruise track with standard SEAMAP plankton stations for NOAA Ship *Gordon Gunter* GU-15-01 February 27 – April 02, 2015. Closed circles represent stations where bongo, neuston, and CTD are to be completed. MOCNESS stations are represented with an open circle.