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

AUG 20 2013

MEMORANDUM FOR: Commander Peter Fischel, NOAA
Commanding Officer, NOAA Ship *Pisces*

FROM: Captain Anita L. Lopez, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for PC-13-05
SEAMAP Fall Ichthyoplankton

Attached is the final Project Instruction for PC-13-05, SEAMAP Fall Ichthyoplankton, which is scheduled aboard NOAA Ship *Pisces* during the period of 21 August – 28 September, 2013. Of the 36 DAS scheduled for this project, 36 DAS are program funded by NMFS. This project is estimated to exhibit a High Operational Tempo. Acknowledge receipt of these instructions via e-mail to **OpsMgr.MOA@noaa.gov** at Marine Operations Center-Atlantic.

Personnel list has been updated to include: Leg 1: Pam Bond - NOAA and Elizabeth Council – University of Miami volunteer, Leg 2: Alyssa Bennett – Auburn volunteer and Hanna Bernard – University of West Florida volunteer.

Attachment

cc:
MOA1

US Department of Commerce

National Marine Fisheries Service

3209 Frederic St.

Pascagoula, MS 39567

AUG 20 2013

Project Instructions

Date Submitted:

Platform: NOAA Ship *Pisces*

Project Number: PC-13-05 (28)

Project Title: SEAMAP Fall Ichthyoplankton

Project Dates: 21 August – 28 September 2013

Prepared by: Glenn Zapfe Digitally signed by Glenn Zapfe DN: cn=Glenn Zapfe, o, ou=NOAA/NMFS/Mississippi Laboratories, email=glenn.zapfe@noaa.gov, c=US Date: 2013.07.15 09:39:58 -05'00' Date: 29 May, 2013

Glenn A. Zapfe
Field Party Chief
NMFS, Pascagoula Laboratory

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: 2013.07.25 12:14:46 -05'00' Date: _____

Dr. Lisa Desfosse
Director, Mississippi Laboratory
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Dr. Bonnie Ponwith
Director, SEFSC
NMFS, Miami, FL

Approved by: _____ Date: 19 AUG 13

Captain Anita L. Lopez, NOAA
Commanding Officer
Marine Operations Center - Atlantic

Commanding Officer
NOAA Ship *Pisces*

PROJECT INSTRUCTIONS
NOAA Ship *Pisces* Cruise PC-13-05 (28)

I. Overview

A. Project Period: August 21 to September 28, 2013

B. Operating Area: United States northern Gulf of Mexico (GOM) from 081°30' to 097°15' W and 24°43' to 30°30' N in 5 to 600 fm. A list of the primary station locations and a map of the area of operations are found in Table 1 and Figure 1 respectively.

C. Summary of Objectives:

1. ***Primary Objectives***

a. Assess the occurrence, abundance and distribution of the early life stages of fall spawning fishes, especially king and Spanish mackerel, red drum, and snappers during the Southeast Area Monitoring and Assessment Program (SEAMAP) fall plankton survey of U.S. continental shelf waters in the GOM.

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. Map the distribution of fish eggs and invertebrate zooplankton along the cruise track using a Continuous Underway Fish Egg Sampler (CUFES).

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

e. 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) during both legs of the survey.

2. ***Secondary Objectives***

a. Collect CUFES samples along the cruise track normally sampled by the Louisiana and Mississippi state partners.

b. Examine the spatial resolution of red and vermillion snapper distribution as compared with the standard 30 nm station grid by adding sampling stations at the 15 nm center points between standard stations in targeted areas. These stations will be sampled with a standard bongo, neuston, and CTD cast.

D. Participating Institutions:

1. National Marine Fisheries Service (NMFS) – Pascagoula Laboratory

E. Personnel (Science Party)

Name	Title	Sex	Organization	Citizenship
LEG 1 (Aug 21 – Sept 7, 2013)				
Glenn Zapfe	Field Party Chief	M	NMFS	US
Andy Millet	Watch Leader	M	IAP	US
John Moser	Watch Leader	M	NMFS	US
Brittany Palm	Watch Stander	F	IAP	US
Joey Salisbury	Watch Stander	M	IAP	US
Plus up to 2 additional scientists to be named later				
LEG 2 (Sept 11 – 28, 2012)				
Glenn Zapfe	Field Party Chief	M	NMFS	US
Andy Millet	Watch Leader	M	IAP	US
Denice Drass	Watch Stander	F	NMFS	US
Mike Felts	Watch Leader	M	IAP	US
Alonzo Hamilton	Watch Stander	M	NMFS	US
Plus up to 2 additional scientists to be named later				

F. Administrative:

1. Points of Contact:
   a. Field Party Chief: Glenn Zapfe; 3209 Frederic St., Pascagoula, MS 39567; (228) 549-1650; Glenn.Zapfe@noaa.gov
   b. Operations Officer: LT Kyle Byres; NOAA Ship *Pisces*, 151 Watts Ave, Pascagoula, MS 39567; (228) 327-7905; OPS.Pisces@noaa.gov

2. Diplomatic Clearances: This cruise does not involve research under the jurisdiction of any other country. No diplomatic clearance has been requested.

3. Licenses and Permits:
   This cruise will be conducted under the following permits:
   a. Florida State Permit
   b. Alabama State Permit
   c. Mississippi State Permit
   d. Louisiana State Permit
   e. Texas State Permit
   f. Southeast NMFS Regional Permit
   g. Sea Turtle Permit

II. Operations

A. Project Plan/Itinerary:

Leg	Date	Location	Days
1	08/21/13	Depart Pascagoula, MS	18
	09/07/13	Arrive Pascagoula, MS	
2	09/11/13	Depart Pascagoula, MS	18
	09/28/13	Arrive Pascagoula, MS	

B. Staging and Destaging: PASCAGOULA / PASCAGOULA

C. Operations to be conducted:

Operational Plans:

NOAA Ship *Pisces* will depart Pascagoula, MS on August 21, 2013 to conduct the SEAMAP Fall Plankton survey. The 36-day cruise will be conducted in 2 – 18 day legs. The station positions and primary gear to be used at each of the 143 targeted standard SEAMAP 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 as provided is subject to change by the Field Party Chief (FPC) during the survey after consultation with the Commanding Officer (CO). The survey will require 24 hr operations with 2 scientific watches: 12 am – 12 pm, 12 pm – 12 am.

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. Saltwater supply will be needed on the back deck and starboard deployment area for rinse down of gear. Ample pressure will be needed for rinse down of the plankton nets and may have to be increased during the survey if the pressure is not adequate.

Standard SEAMAP sampling protocols will be followed at each station for the primary gear: oblique bongo tow to a max depth of 200 m, 10 min neuston tow, and CTD profile to a max depth of 200 m. The MOCNESS will be used during both legs of the survey. In addition, the TSG and CUFES will be in use throughout the survey.

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 mesh 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 45° wire angle in order to uniformly sample throughout the water column. If angle exceeds 55°, falls to 35° OR if combined variation exceeds 15°, then the 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 usually 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 the 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 the cod end of the net with a 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. The bongo frame and net are placed 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 1 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 0.5 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, ctenophores, Sargassum, floating weed and/or debris are entering the net, 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.

CTD profiles and environmental data collection

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 5 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 stern winch using conducting wire and poded termination. Prior to deployment, the ship speed will be maintained at 2 kt. However, once the MOCNESS is lowered into the water, the props will be disengaged to avoid damage to the nets by the ship's prop wash. The props will be reengaged once the watch leader has relayed to the bridge that the nets are at a safe depth. Once deployed, a series of up to 9 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. The watch leader will let the bridge know when to disengage the props as the nets reach the surface during retrieval. 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. In the areas where the SEAMAP state partners collect standard plankton samples (i.e., bongo, neuston, CTD), *Pisces* will steam the track line while CUFES samples are collected. The FPC will remain in contact with the state partners and in the event that they are unable to sample any of their designated stations, *Pisces* will stop at these stations and deploy the standard gear.

Spatial Resolution Sampling

Examination of the spatial resolution of our sampling grid will be conducted by sampling between standard SEAMAP grid stations at the 15 nm point (Table 2). These 37 stations are located off of Texas, Louisiana, and Florida (Figure 1). Sampling at these stations will be conducted using a bongo tow, a neuston tow, and a CTD cast. Remaining survey time and weather will determine priority of these samples.

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: N/A

E. Applicable Restrictions: N/A

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 10 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. Base frame for deck mounting the MOCNESS winch
5. ADCP
6. CUFES collector, concentrator, hoses, and pump located at the seachest
7. Vacuum pressure for chlorophyll extractions
8. 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. SCS data requested: 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. K60 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:
        iii. 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).
        iv. The contents of the Event data 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.

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. 2- 1 x 2 m neuston frames, (4) 0.950 mm nets
4. 1 m MOCNESS frame, (9) 0.505 mm nets, and electronic equipment
5. CUFES sampling supplies
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. Formalin and ethyl alcohol
12. Triton (R) X-100
13. Methanol and filters
14. 6 Niskin bottles
15. Garden hoses for washing down nets, nozzles, and hose repair parts
16. Plankton transfer table
17. 5 gallon buckets
18. Various clerical supplies
19. Spare batteries for the SBE 19 Seacat profilers
20. Winch, block, wire, and podded termination for deploying the MOCNESS sampling system.

IV. Hazardous Materials

A. Policy and Compliance:

The FPC shall be responsible for complying with OMAO Document Management System (DMS), Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemicals brought aboard. The amount of hazardous material arriving and leaving the vessel shall be reported to the Environmental Compliance Officer (ENS James Europe) by the FPC.

B. Radioactive Isotopes: N/A

C. Inventory: Expected hazardous materials to be brought on board for this cruise are:

1. Ethanol – 165 gallons
2. Formaldehyde – 10 gallons
3. Methanol – 8 gallons
4. Triton-X – 2 gallon carboy of 1% dilution

V. Additional Projects

A. Supplementary ("Piggyback") Projects: N/A

B. NOAA Fleet Ancillary Projects: N/A

V. Disposition of Data and Reports

A. Data 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.

B. Project Meetings:

Welcome aboard Meeting: On the ship prior to departure, the FPC will conduct a meeting of the scientific party to train them in sample collection and inform them of cruise objectives. Some vessel protocols, e.g., meals, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Cruise Meeting: If need be, upon completion of the cruise, a post-cruise meeting will be held and attended by the ship's officers, the FPC and members of the scientific party, the Vessel Coordinator, and the Port Captain to review the cruise. Concerns regarding safety, efficiency and suggestions for improvement for future cruises should be discussed. Minutes of the post-cruise meeting will be taken by the Pascagoula Port Captain and distributed to all participants with e-mail to the CO.MOC.Atlantic@noaa.gov and ChiefOps.MOA@noaa.gov . A cruise report will be prepared by the FPC and submitted to the Director, SEFSC, within 30 days after the cruise is completed.

C. Ship Operation Evaluation Report:

Within 7 days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the FPC. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfaction@noaa.gov . If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

A file copy of each completed evaluation form will be sent to the SEFSC Mississippi Laboratory Director and the SEFSC Vessel Coordinator.

VI. Miscellaneous

A. Meals and Berthing:

Meals and berthing are required for up to 7 scientists per leg. Meals will be served 3 times daily throughout the cruise. 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 7 days prior to the survey.

Berthing requirements, including number and gender of the scientific party, will be

provided to the ship by the FPC. The FPC and OPS 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 cruise 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 7, 1999 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, Revised: 12/11) must be completed in advance by each participating scientist. The NHSQ can be obtained from the FPC or the NOAA website at http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the 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.

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 a listing of emergency contacts to the Operations Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number.

C. Shipboard Safety:

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. 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.

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 vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required 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 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 these requirements prior to boarding the ship is preferable. Non-NOAA personnel using the ship's computers or connecting their own computers to the ships network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms: N/A

Table 1. NOAA Ship *Pisces* cruise PC-13-05 (28), plankton stations 21 August – 28 September 2013. 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
B030	PN	26°01'00	96°00'00
B316	PN	26°01'00	96°30'00
B032	PN	26°01'00	97°00'00
B238	PN	26°30'00	97°00'00
B239	PN	26°30'00	96°30'00
B031	PN	27°00'00	96°00'00
B328	PN	27°00'00	96°40'00
B051	PN	27°00'00	97°12'00
B235	PN	27°30'00	97°00'00
B234	PN	27°30'00	96°30'00
B233	PN	28°00'00	96°30'00
B327	PN	28°20'00	96°20'00
B230	PN	28°30'00	96°00'00
B231	PN MOC	28°00'00	96°00'00
B232	PN MOC	27°33'00	96°00'00
B225	PN MOC	27°30'00	95°30'00
B326	PN	27°45'00	95°30'00
B226	PN MOC	28°00'00	95°30'00
B228	PN	28°30'00	95°30'00
B221	PN	29°00'00	95°00'00
B222	PN	28°30'00	95°00'00
B223	PN MOC	28°00'00	95°00'00
B243	PN	27°30'00	94°30'00
B217	PN	28°00'00	94°30'00
B218	PN	28°30'00	94°30'00
B219	PN	29°00'00	94°30'00
B220	PN	29°25'36	94°30'00
**B213 (LA)*	CUFES	29°30'00	94°00'00
B214	PN	29°00'00	94°00'00
B215	PN	28°30'00	94°00'00
B216	PN MOC	28°00'00	94°00'00
B244	PN	27°30'00	93°30'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B209	PN	28°00'00	93°30'00
B210	PN MOC	28°30'00	93°30'00
B211	PN	29°00'00	93°30'00
*B212 (LA)	CUFES	29°32'12	93°32'12
*B206 (LA)	CUFES	29°30'00	93°00'00
B207	PN	29°00'00	93°00'00
B208	PN MOC	28°30'00	93°00'00
B023	PN MOC	28°00'00	93°00'00
B245	PN	27°30'00	92°30'00
B202	PN	28°00'00	92°30'00
B203	PN MOC	28°30'00	92°30'00
B204	PN	29°00'00	92°32'30
*B205 (LA)	CUFES	29°25'00	92°27'24
B200	PN	29°00'00	92°00'00
B201	PN MOC	28°30'00	92°00'00
B022	PN MOC	28°00'00	92°00'00
B246	PN	27°30'00	91°30'00
B195	PN	28°00'00	91°30'00
B196	PN MOC	28°30'00	91°30'00
*B197 (LA)	CUFES	29°00'00	91°30'00
*B193 (LA)	CUFES	28°47'00	90°53'00
B194	PN	28°30'00	91°00'00
B017	PN MOC	28°00'00	91°00'00
B247	PN	27°30'00	90°30'00
B190	PN	28°05'00	90°30'00
B191	PN	28°30'00	90°30'00
*B192 (LA)	CUFES	28°54'00	90°33'00
*B188 (LA)	CUFES	29°00'00	90°00'00
B189	PN	28°30'00	90°00'00
B016	PN MOC	28°00'00	90°00'00
B186	PN	28°30'00	89°30'00
*B187 (LA)	CUFES	28°57'48	89°33'18
*B183 (MS)	CUFES	29°00'00	89°00'00
B184	PN	28°30'00	89°00'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
*B180 (MS)	CUFES	29°00'00	88°30'00
*B323 (MS)	CUFES	29°13.2'00	88°30'00
*B179 (MS)	CUFES	29°30'00	88°30'00
*B178 (MS)	CUFES	30°00'00	88°28.2'00
*B177 (AL)	CUFES	30°00'00	87°57'00
*B176 (MS)	CUFES	29°30'00	88°02.4'00
*B322 (MS)	CUFES	29°15'00	88°00'00
B174	PN	29°30'00	87°30'00
*B173 (AL)	CUFES	29°59'00	87°30'00
*B321 (AL)	CUFES	30°14'18	87°30'00
B319	PN	30°20'00	87°00'00
B172	PN	29°59'00	87°00'00
B320	PN	29°48'00	87°00'00
B169	PN	29°30'00	86°30'00
B168	PN	30°00'00	86°30'00
B318	PN	30°18'00	86°28'00
B167	PN	30°00'00	86°00'00
B166	PN	29°30'00	86°00'00
B165	PN	29°12'00	86°00'00
B157	PN	29°48'00	85°30'00
B158	PN	29°30'00	85°31'00
B156	PN	29°30'00	84°56'00
B140	PN	29°30'00	84°30'00
B138	PN	29°30'00	84°00'00
B139	PN	29°45'00	84°00'00
B115	PN	29°30'00	83°37'00
B114	PN	28°54'00	83°15'00
B116	PN	29°00'00	83°30'00
B137	PN	29°00'00	84°00'00
B141	PN	29°00'00	84°30'00
B155	PN	29°00'00	85°00'00
B159	PN	29°00'00	85°30'00
B160	PN	28°40.2'00	85°30'00
B154	PN	28°30'00	85°00'00
B142	PN	28°30'00	84°30'00
B136	PN	28°32'00	84°00'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B117	PN	28°30'00	83°30'00
B113	PN	28°30'00	83°04'00
B112	PN	28°00'00	83°00'00
B118	PN	28°00'00	83°30'00
B135	PN MOC	28°00'00	84°00'00
B143	PN	28°00'00	84°30'00
B153	PN	28°00'00	85°00'00
B144	PN	27°30'00	84°30'00
B134	PN MOC	27°30'00	84°00'00
B119	PN MOC	27°30'00	83°30'00
B111	PN	27°30'00	83°00'00
B097	PN	27°00'00	82°32'00
B110	PN	27°00'00	83°00'00
B120	PN	27°00'00	83°30'00
B133	PN	27°00'00	84°00'00
B145	PN	27°00'00	84°30'00
B146	PN	26°30'00	84°30'00
B132	PN MOC	26°30'00	84°00'00
B121	PN	26°30'00	83°30'00
B109	PN	26°30'00	83°00'00
B098	PN	26°30'00	82°30'00
B096	PN	26°00'00	82°00'00
B099	PN	26°00'00	82°30'00
B108	PN	26°00'00	83°00'00
B122	PN MOC	26°00'00	83°30'00
B131	PN	26°00'00	84°00'00
B147	PN	26°00'00	84°30'00
B148	PN	25°30'00	84°30'00
B130	PN MOC	25°30'00	84°00'00
B123	PN	25°30'00	83°30'00
B107	PN MOC	25°30'00	83°00'00
B100	PN	25°30'00	82°30'00
B095	PN	25°30'00	82°00'00
B088	PN	25°28'30	81°43'00

Table 1 continued.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
B089	PN	25°00'00	81°33'30
B094	PN	25°00'00	82°00'00
B101	PN	25°00'00	82°30'00
B106	PN MOC	25°00'00	83°00'00
B124	PN	25°00'00	83°30'00
B129	PN MOC	25°00'00	84°00'00
B262	PN	25°00'00	84°30'00

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

*– Denotes stations where plankton will be sampled by state SEAMAP partners. As this cruise progresses, the FPC will remain in contact with the coordinators for the state vessels. In the event that the state vessels may be unable to sample these stations, PN gear will be deployed by *Pisces* at these stations.

Table 2. Plankton stations to examine spatial resolution aboard NOAA Ship *Pisces* cruise PC-13-05 (28) from 21 August to 28 September 2013. Bongo and neuston tows will be taken at all stations in addition to CTD. Station order is subject to change and survey time/weather will determine priority of these samples.

SEAMAP ISS Number	Plankton Gear	Latitude	Longitude
LU001	PN	27°15'00	96°15'00
LU002	PN	27°45'00	96°15'00
LU003	PN	28°15'00	95°45'00
LU004	PN	27°45'00	95°45'00
LU005	PN	28°45'00	94°45'00
LU006	PN	28°15'00	94°45'00
LU007	PN	27°45'00	94°45'00
LU008	PN	28°15'00	94°15'00
LU009	PN	28°45'00	94°15'00
LU010	PN	28°45'00	93°45'00
LU011	PN	28°45'00	83°45'00
LU012	PN	28°45'00	84°15'00
LU013	PN	28°15'00	84°15'00
LU014	PN	28°15'00	83°45'00
LU015	PN	27°45'00	83°45'00
LU016	PN	27°45'00	84°15'00
LU017	PN	27°15'00	84°15'00
LU018	PN	27°15'00	83°45'00
LU019	PN	26°45'00	83°15'00
LU020	PN	26°45'00	83°45'00
LU021	PN	26°15'00	83°45'00
LU022	PN	26°15'00	83°15'00
LU023	PN	28°15'00	93°45'00
LU024	PN	28°15'00	93°15'00
LU025	PN	28°45'00	93°15'00
LU026	PN	28°45'00	92°45'00
LU027	PN	28°15'00	92°45'00
LU028	PN	28°15'00	92°15'00
LU029	PN	28°45'00	92°15'00
LU030	PN	28°15'00	91°45'00
LU031	PN	25°45’00	84°15’00
LU032	PN	25°45’00	83°45’00
LU033	PN	25°45’00	83°15’00
LU034	PN	25°45’00	82°45’00
LU035	PN	25°15’00	84°15’00
LU036	PN	25°15’00	83°45’00
LU037	PN	25°15’00	83°15’00

PN – Denotes bongo, standard neuston and CTD

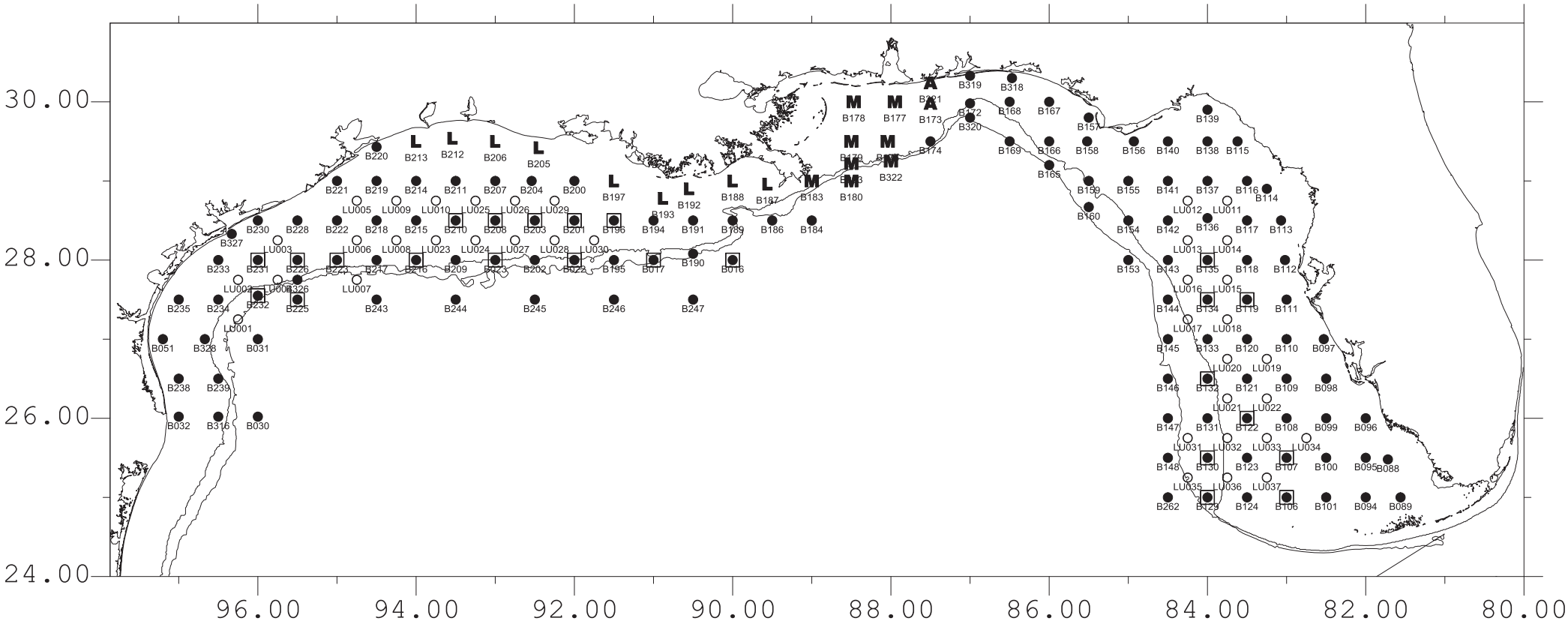

Figure 1. Cruise track with standard SEAMAP plankton stations for NOAA Ship *Pisces* PC-13-05 (28) August 21 – September 28, 2013. Closed circles represent stations where bongo, neuston, and CTD are to be completed. MOCNESS stations are represented with an open box around a closed circle. The spatial resolution stations are represented by an open circle. Stations sampled by state SEAMAP partners are represented by the corresponding first letter (A = Alabama, L = Louisiana, M = Mississippi).