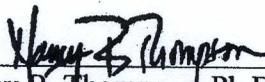


Final Cruise Instructions

Date Submitted: 13 July 2010
Platform: NOAA Ship *Henry B. Bigelow*
Cruise Number: HB 10-06
Project Title: Deepwater Horizon CM252 Subsurface Monitoring Cruise
Cruise Dates: on or about 17 July to 30 August

Approved by:



Nancy B. Thompson, Ph.D.
Science and Research Director
Northeast Fisheries Science Center

Date:

7/15/2010

Approved by:



Captain Michael S. Devany, NOAA
Commanding Officer
Marine Operations Center – Atlantic

Date:

7/16/2010

COMMANDING OFFICER
NOAA Ship *Henry B. Bigelow*

CRUISE INSTRUCTIONS: HB 10-06, Deepwater Horizon CM252 Subsurface Monitoring Cruise

Cruise Dates: on or about 17 July to 30 August

Area of Operation: Waters in the vicinity of the Deepwater Horizon MC-252 Incident (1.5 – 25 km). (Figure 1).

Objectives: The principal objective of the survey is collect data relative to the dynamics of the plume of oil originating from the Deepwater Horizon CM252 well and to evaluate the effect of dispersants on the plume. The survey is part of a larger, multiship project lead by the Subsurface Monitoring Unit. There are four primary cruise missions. 1) Conduct acoustic surveys in the vicinity of the site to map the subsurface plume over time using primarily the EK60. 2) Perform conductivity temperature depth (CTD) profiles to map the plume and to provide near-real time guidance in the collection of water samples to study the plume. 3) Collect water from beneath, within, and above a high fluorescence-low dissolved oxygen layer at about 800-1200 m (Figure 2) for polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC) and dissolved oxygen. Direct dissolved oxygen measures using the Winkler method are required because *in-situ* sensors are potentially compromised by materials in the plume. 4) Laser in situ scattering transmissometer (LISST) measurements in surface layers to quantify oil droplet size. Instrumentation to address this fourth objective has still not been obtained. The survey will start at the noted time with or without this instrumentation.

The survey mission is still evolving and several secondary objectives may be addressed. 5) Collect Acoustic-Doppler Current Profiler data to measure flow of oil away from the wellhead, both at depth and in the surface layer. The shipboard ADCP data will be integrated with from fixed ADCPs deployed in the surrounding area. 6) Collect water samples for bacterial and microzooplankton work. Samples will be preserved and analyzed onshore. 7) Conduct gas chromatograph analyses of water samples to measure in near-real time oil concentrations. 8) Conduct sea-bird and marine mammal observations during the transit from Newport, RI to Key West, FL and again on the return transit.

Owing to the changing situation in the Gulf, there will likely be changes to this cruise plan. These changes will be made by agreement between the Chief Scientist, the Subsurface Monitoring Unit, and the Ship's command.

Planned Itinerary: The cruise will be divided into four parts:

Part 1 - Transit

Departure from Newport July 17 or 18

Arrival Key West July 22 or 23 (fuel, stores, sci/crew arrival)

Part 2 - Leg 1

Depart Key West July 24 or 25

Arrive on site July 25/26

Tentative water barge dates: 7/30, 8/6 (more often if needed for sample transfer)

Arrive Pascagoula Aug 11 (water, stores as needed, crew transfer) - have not confirmed space available

Part 3 - Leg 2

Depart Pascagoula Aug 12

Tentative water barge date 8/18

Depart site on Aug 19/20

Arrive Key West Aug 21/22 perform acoustic calibrations

Key West Aug 23 (fuel, stores, pre-bid inspections for shipyard)

Part 4 - Transit

Depart Key West Aug 25

Arrive Newport Aug 30

There are several uncertainties that could delay the beginning of the cruise or could delay the beginning of Leg 1 or Leg 2.

The time of departure from Newport, RI is still uncertain owing to the Henry Bigelow needing to pass ASA inspection. If departure from Newport is substantially delayed, the need to split the cruise into two legs will be revisited.

There are a number of cruise personnel requested from the SMU that have not yet been identified. These personnel were requested 11 July 2010. Delays in identifying these personnel could result in delays in sailing, since all these personnel are required under the guidance provided by the SMU to the Chief Scientist.

Mission critical supplies and equipment have been arranged and are being shipped to either Newport RI or Key West FL. Problems with some of these shipments could result in delay since much of the ordered materials are mission critical

The end point of the cruise is fixed. The ship needs to be in Key West for post-cruise acoustic calibrations and pre-bid inspections for shipyard work. Following these inspections, the ship transits back to Newport to make preparations for the Northeast Fisheries Science Center bottom trawl survey. This survey provides the primary fishery independent data for numerous fish stocks managed by the New England Fishery Management Council, Mid-Atlantic Fishery Management Council, and Atlantic States Marine Fisheries Commission.

Operational Plans: The Bigelow will conduct regular surveys within 1.5 – 5 km of the Deepwater Horizon MC-252 site. The operational plan is still under development but will likely include a 24 hour cycle of acoustic surveys, LISST deployments, CTD deployments, and water chemistry measurements. The cycle will be repeated daily with potential adaptive modifications depending on the observed conditions.

Start	End	Dur.	Activity
7:00	8:00	1:00 hrs	acoustic survey (circular 1.5 km radius; 5.1 nm distance)
8:00	8:30	0:30 hrs	choose transect direction

8:30	12:00	3:30 hrs	acoustic survey (transect; start at well head and work out)
12:00	12:30	0:30 hrs	choose and steam to LISST locations
12:30	15:30	3:00 hrs	LISST deployments
15:30	16:00	0:30 hrs	choose and steam to CTD locations
16:00	1:00	9:00 hrs	3 CTD profiles
1:00	1:30	0:30 hrs	steam to acoustic survey starting point
1:30	2:30	1:00 hrs	acoustic survey (circular 1.5 km radius; 5.1 nm distance)
2:30	3:00	0:30 hrs	choose transect direction
3:00	6:30	3:30 hrs	acoustic survey (transect; start at well head and work out)

THIS IS A TENTATIVE PLAN AND IS STILL UNDER DEVELOPMENT BY THE SUBSURFACE MONITORING UNIT AND MAY CHANGE DURING THE COURSE OF THE CRUISE. THESE CHANGES MAY RESULT FROM CHANGES IN THE STATUS OF THE INCIDENT AND MAY INCLUDE THE SHIP WORKING FARTHER AFIELD FROM THE INCIDENT SITE

Time will also need to be given for taken on water and for offloading samples. The daily science plan will include these activities.

Acoustic Operations:

- Will use primarily on the EK60
- Will be preformed at 5 knots with the keel down depending on weather conditions
- A calibration will be required in the vicinity of Key West after the cruise. The specific details will be worked out in partnership with the ship's command.
- In transit from Key West to the study site and noise floor check will be conducted. This involves stream at various speeds (3, 4,5,6,7,8,10,12 kts) and evaluating data quality.
- The two survey tech will work primarily with the acoustic systems and acoustic data collection and processing
- Acoustic data will be pre-processed and sent to shore for more detailed analysis

CTD Operations

- SeaBird 911 CTD and rosette will be terminated to the aft winch
- Sensors will be installed in Key West
- Test cast will be performed at dock in Key West prior to sailing to ensure system is functional
- Oil will be cleared from surface using hoses prior to deployment
- Other de-fouling actions may be necessary and will be determined in the field
- Two ship crew members will deploy and retrieve the CTD on the deck. One member of the science party will run the computer associated with the CTD

Water Chemistry Measurements

- Dissolved Oxygen
 - Water samples will be collected using niskins bottles on the CTD
 - Water will be removed from each of the 12 bottles and carried into the Chemistry lab
 - All decontamination procedures will be followed at the threshold to the ship

- Dissolved oxygen will be calculated using an auto-titrator and protocols provided by the SMU
- Chemical waste from the titrations will be stored in approved containers and properly disposed of
- Hydrocarbon Analysis
 - Water samples will be collected using niskins bottles on the CTD
 - Water will be removed from each of the 12 bottles and carried into the Chemistry lab
 - All decontamination procedures will be followed at the threshold to the ship
 - Two types of samples will be preserved for later VOC and THC/PAH analyses
 - Samples will be processed in the Chemistry Lab
 - Samples will then be moved to the walk-in refrigerator for storage until they can be transported off the ship
- After sample collection niskin bottles will be washed with detergent and water prior to redeployment

LISST Deployments

- A Laser In-situ Scattering Transmissometer (LISST) will be deployed several times daily during high sun hours
- The LISST will be connected to the forward winch and deployed in archive-mode (e.g., no termination between the wire and LISST necessary)
- The LISST will be deployed to 250 m using the wire out indicator on the winch as the depth sensor.

ADCP Operations

- Once acoustic operations are running, the acoustic team will evaluate the possibility of developing ADCP data in support of the project
- Initial efforts will occur during non-acoustic surveys to ensure acoustic data is not compromised

Other Operations

- Owing to changing conditions in the field, other operations may be added after consultation with the SMU and the ship's command
- Gas chromatograph measurements could be performed on the vessel
- Bacterial and microzooplankton samples could be collected

Permissions to Enter Restricted Zone in Study Region – Access and acoustic operations in the area around the wellhead is restricted. Entrance and acoustic operations must be approved by SIMOps (BP). All monitoring vessels are being coordinated through the Subsurface Monitoring Unit and represented by Chad Smith to Simops (617-999-4163 and chad.smith@darkwatermarine.com).. The Ship will work with SMU Operations to gain necessary approvals to work in the vicinity of the well head. The Chief Scientist will need to communicate the 24 plan to the OpsOfficer 24 hours in advance to ensure proper authorizations for entry and acoustics are obtained. Some acoustic restrictions may be frequency specific so close coordination is necessary between the Chief Scientists, the Ops Officer and SMU Operations.

A moored ADCP array may be deployed in the area during operations and the ship should consult with the Notice to Mariners for more information and request updates from SMU Operations.

Chain-of-Custody Procedures – A sampling representative has been requested through SMU Staffing. This person will be responsible for ensuring chain of custody procedures are followed during science operations. This person has not yet been identified by SMU Staffing.

Water Sample Pick-up – The samples collected for VOC and THC/PAH must be analyzed within a specific amount of time. To accomplish this, water samples will be picked up every 3-4 days. Pick-ups will be made within approximately 60 nm of the Louisiana coast. At least 24 hour notice is required to ensure sample pick-ups are possible. The Natural Resource Damage Assessment team coordinates these pick-ups: SMU Ops (ops.smu@noaa.gov), Tom Moore (Tom.Moore@noaa.gov), Chad Smith (chad.smith@darkwatermarine.com), and the Field Operation Team are the contacts (dwhnrdafieldops@gmail.com).

Disposition of Samples and Data: All samples and data will be provided to the Subsurface Monitoring Unit. These data will be transmitted during the cruise and a compilation will be created and provided at the end of the cruise. A cruise report, and a completed Ship Operations Evaluation Form, will be submitted to the NEFSC Vessel Coordinator within 20 days following completion of the cruise.

Potable Water Storage and Usage: - The ship will not be able to make water while in the study region. This will either require resupply at port or water supply from shore. The Subsurface Monitoring Unit may be able to provide the ship water on site. Potable water is available from M/V Fox on VHF 16. They are working the area and should be hailed 24-48 hrs prior to needing water

Gear Transfers in Pascagoula – During the import in Pascagoula, a four seam trawl, a rockhopper sweep, one pair of trawl doors and rigging will be loaded onto Bigelow and transported back to the NEFSC. Staff at the NEFSC will coordinate with staff at the SEFSC to have the gear at the ship for loading. The ship will only be in Pascagoula overnight, so making sure the gear is ready to be loaded is important aspect of this transfer.

Hazardous Material: The Chief Scientist is responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Details regarding those requirements will be provided by the Chief of Operations, Marine Operations Center – Atlantic upon request and may be reached at 757-441-6842.

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 chemical brought aboard and a chemical hygiene plan. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Chief Scientist.

Medical Clearances: NOAA Fleet Medical Policy requires all personnel embarking on NOAA vessels to furnish a completed copy of the NOAA Health Services Questionnaire (NHSQ) to the Health Services Office of the Marine Operations Center. This form should be submitted 30 days in advance of sailing, but no later than 7 days in advance of sailing. The Chief Scientist is responsible for the timely submission of NHSQs for scientific personnel to the Health Services Office.

In addition to the NHSQ, a Respiratory Questionnaire and a tuberculosis test are required.

Accident/Illness Reporting: Mishaps, injuries and near misses must be reported to the vessel's Executive Officer and Medical Person in Charge so that appropriate reporting can be made through the OMAO chain of command. In addition, all work-related mishaps involving scientific staff that result in an employee injury or illness, or any work related mishap or near miss, including those that do not require first aid or medical attention, must be reported within 24 hours of occurrence to the NOAA Fisheries Deputy Assistant Administrator for Operations. The reporting will be accomplished using a Mishap Reporting Form, via email, originating from the Chief Scientist, through the OMI Facility Operations and Safety (FOS) Branch (Jack.Emberg@noaa.gov with copies sent to Linda.Arlen@noaa.gov and Joseph.Finnegan@noaa.gov

Communications: Routine communications will be conducted between the *Bigelow* and Woods Hole via email. Satellite based voice communication are available (INMARSAT B, Iridium) and cellular phone, if needed. There is also a regularly schedule morning call (08:30) between the SMU and the Chief Scientist where science mission and objectives will be discussed. The science objectives may require moving large amounts of data during the cruise. These activities may be restricted by the 128K bandwidth of the ship.

Cruise Blog – Pending approval by NOAA, the Chief Scientist will provide updates of the cruise progress through the NEFSC cruise blog.

Email Contact: The following should be included as recipients of the daily e-mail message:

Frank.Almeida@noaa.gov	Deputy Center Director
Nancy.Thompson@noaa.gov	Center Director
Co.Henry.Bigelow@noaa.gov	Commanding Officer
Thomas.Noji@noaa.gov	EPD Division Chief
Wendy.Gabriel@noaa.gov	Fisheries and Ecosystems Monitoring and Analysis Division Chief
Russ.Brown@noaa.gov	Ecosystems Surveys Branch Chief
Charles.Byrne@noaa.gov	NEFSC Vessel Coordinator
Michael.S.Abbott@noaa.gov	NEFSC Port Captain
Apryl.Corey@noaa.gov	NEFSC Port Office
Chief.SMU@noaa.gov	SMU Unit Chief
Ops.SMU@noaa.gov	SMU Operations
smu.missionplanning.smu@noaa.gov	SMU Mission Planning

Safety and Environmental Issues: Working in the vicinity of the Deepwater Horizon CM252 site requires additional precautions to ensure the safety of the cruise personnel.

- HazWoper Training – All personnel must complete this training. There are two options; either ride the vessel from Newport to Key West and take the training enroute or take the training online prior to departure (online training is 24 hours in duration). No one will be allowed to sail without the proof of completing the training. The Chief Scientist has requested clarification on this requirement from SMU Staffing and will pass any updates on to the ship's command and the NEFSC.
- Personal Protective Equipment – All personnel working on deck should have the following PPE
 - Boots
 - Tyvek Suits
 - Eye Protection
 - Masks
 - Respirators (fitted to each individual on the vessel)
 The Ship is responsible for providing PPE to all personnel
- Air quality monitoring equipment will be deployed on the vessel and operated by an environmental hygienist. This position will be part of the scientific crew and will be responsible for monitoring air quality. This person has been requested from SMU Staffing. There is every likelihood that the ship will need to break operations and move away from the study region to ventilate the ship.
- Vessel Oil Containment Plan procedures – The ship will develop and implement a plan (pathways defined from side and back sampling decks)
- Equipment decontamination – May be needed depending on local conditions. Detergent and water will be used to clean non-sensitive equipment and specialized cleaners will be used for specific equipment.
- CAPT Slagle at the SMU will ensure ship understands the requirements for working at the site (PPE, Hazwoper training, fit testing, wage mariner pay, etc).

IT Security: Any computer that will be hooked into the ship's network must be scanned for viruses by the ship's Electronics Technician before being used on the vessel. Such computers must also have a running virus-scan. Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking. Network connections are made via Ethernet.

Vessel Sensor and Logging Requirements: The *Bigelow's* SCS system is a PC-based server, which continuously collects and distributes scientific data from various navigational, oceanographic, meteorological, and sampling sensors throughout the cruise. Date and time for data collections from computers, instrumentation, and log sheet recordings will be synchronized using the vessel's GPS master clock and Dimension IV software. The *Bigelow's* ET are responsible for ensuring data collection.

The ship's Scientific Computer System (SCS) will be required for logging data on a routine basis and data requirements will be coordinated with the Commanding Officer and Electronics Technician at the beginning of the cruise. **Any changes to the settings in the SCS system during the cruise should be immediately communicated to the Chief Scientist.**

Protected Resources:

Northern right whale protection: The vessel is requested to adhere to right whale protection regulations. Information on Seasonal Management Area (SMA) and Dynamic Management Area (DMA) regulations for protecting right whales from collisions with vessels are provided through the U.S. Coast Guard's "Notices To Mariners", NOAA weather radio, the NOAA Protected Resources website (<http://www.nmfs.noaa.gov/pr/shipstrike/>) and the Right Whale Sighting Advisory System (SAS) website (<http://rwhalesightings.nefsc.noaa.gov/>). The vessel is requested to use caution and proceed at speeds below 10 kts in areas used by right whales (as reported in the proceeding). Intentionally approaching within 500 yards of right whales is prohibited, unless the Chief Scientist is in possession of an ESA/MMPA permit allowing such approaches.

Whale sightings: Sightings of right whales, or dead or entangled whales of any species, are extremely valuable and reports are urgently requested. Protocols for reporting sightings are described in the Guide to Reporting Whale Sightings placard. The placard is available online

(http://www.nero.noaa.gov/whaletrp/plan/disent/Guide%20to%20reporting%20Whale%20Sightings%20FINAL%20complete_8.7.07.pdf) and laminated copies will be provided by the Protected Species Branch. It is requested that this placard be kept on the bridge for quick reference and to facilitate rapid reporting (via satellite phone if necessary). Opportunistic sightings of other marine mammal species that are live and well may be reported using the Platforms of Opportunity (POP) forms and protocols.

Endangered Species Act and Marine Mammal Protection Act reporting requirements: This reporting is required and is in addition to the reports in the above two sections. If the ship has an interaction with a whale, dolphin, porpoise, marine turtle or seal (e.g., collision with a whale or bycatch of a sea turtle), the NMFS Northeast Regional Office must be notified by telephone or e-mail within 24 hours of the interaction. For interactions with marine turtles or large whales contact Pasquale Scida (978-281-9208 or Pasquale.Scida@noaa.gov); for interactions with other species contact David Gouveia (978-281-9280 or David.Gouveia@noaa.gov). In addition, if any large whale is struck, the Science and Research Director must be notified as soon as possible, but in all cases the Director shall be notified within 24 hours of the strike.

Foreign National Access and Deemed Export Controls:

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>). The foreign national's sponsor is responsible for obtaining clearances and export licenses required and for providing for required escorts by the NAO. Programs sponsoring foreign nationals should consult with their designated line office personnel to assist with the process (<http://deemedexports.noaa.gov/contacts.html>).

The following are basic requirements. Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist: Ensure the following is provided to the Commanding Officer before any foreign national will be allowed on board for any reason:

1. Written notification identifying the NOAA Program individual who is responsible for ensuring compliance with NOAA and export regulations for the foreign national (see Foreign National Sponsor responsibilities below).
2. A copy of the DOC/OSY clearance authorization for access by the foreign national.
3. A copy of Appendix B of NAO 207-12 with NOAA Chief Administrative Officer concurrence endorsement.
4. Written notification that the foreign national has been cleared against the State, Commerce and Treasury departments' Lists to Check.
<http://www.bis.doc.gov/ComplianceAndEnforcement/ListsToCheck.htm>
5. Provide the NOAA Foreign National List spreadsheet for each foreign national in the scientific party.
6. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
7. 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 Regional Security Officer.
8. Export Control - The Chief Scientist is responsible for complying with NAO 207-12 and the development of Technology Access Control Plans for items they bring aboard. The Chief Scientist must notify the Commanding Officer of any export controlled items they bring aboard and any access restrictions associated with these items. [NOTE: The NEFSC currently neither possesses nor utilizes technologies that are subject to Export Administration Regulations (EAR).]

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

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist of the NOAA Foreign National List spreadsheet for each foreign national in the scientific party.
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 cruise, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program

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

7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

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 Departmental Sponsor/NOAA 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, 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 Guest) as required by NAO 207-12 Section 5.03.h.

Watches: Vessel operations will be conducted 24 hours per day. The acoustic watches will be from 1200 to 2400 and from 2400 to 1200. The LISST operator will work from 1200 to 2400 and will contribute to water chemistry operations when not involved in LISST ops. The CTD and water chemistry watches will work from 1500 to 0300. Scientific personnel will be on duty for 12 hour watches each day depending on roles.

Meals and Berthing: Meals and berthing are required for up to 15 scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the cruise, and ending two hours after the termination of the cruise. Berthing requirements, including number and gender of the science crew, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. **Any changes to the gender composition of vessel personnel should be immediately communicated to the Ecosystem Surveys Branch Cruise Staffing Coordinator, Katie Sowers (508-495-2342, Katherine.Sowers@noaa.gov).** To maximize the efficiency of the scientific mission, the vessel command shall consider the scientific party's need to distribute personnel numbers equally between day and night watches when assigning shared berthing between scientists and crew members.

All NOAA Scientists will have proper travel orders when assigned to a NOAA ship. The Chief Scientist will ensure that all non-NOAA and/or non-Federal employee scientists aboard will also have proper orders or the means to support themselves in the event that the ship becomes uninhabitable and/or the galley is closed during a port call during any part of the scheduled 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 survey.

Pre-Cruise Meeting: Prior to departure the Chief Scientist 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, watches, etiquette, etc., will be presented by the ship's Operations Officer.

Post Cruise Reporting Requirements: Within 20 days of the completion of each cruise leg, a Ship Operation Evaluation form is to be completed by the Chief Scientist. 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

Upon completion of the cruise, a post-cruise meeting will normally be held at 10:15 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist and members of the scientific party, the Vessel Coordinator and the Port Captain to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed. Minutes of the post-cruise meeting will be distributed to all participants with email to the CO.MOC.Atlantic@noaa.gov and ChiefOps.MOA@noaa.gov

Personnel List (Scientific):

Transit Newport - Key West

Seabird Observer	Marie-Caroline Martin	CUNY / NEFSC
Seabird Observer	Tim White	CUNY / NEFSC
Science Staff	Betsy Broughton	NOAA NEFSC
Science Staff	Liz Baskin	MAST

Leg 1

Berth	Role	Person	
1	Chief Scientist	Jon Hare	NOAA NEFSC
2	Acoustic LD	TBD - SMU provided	
	Acoustic TD	Jim Burkitt	ST Bigelow
3	Acoustic LN	Vince Guida	NOAA NEFSC
	Acoustic TN	Nick Mitchell	ST Bigelow
4	CTD 1	Tamara Holzwarth-Davis	NOAA NEFSC
5	LISST	Betsy Broughton	NOAA NEFSC
6	WC - PAH / TCA	Ashok Deshpande	NOAA NEFSC
7	WC - PAH / TCA	Ashok student?	
8	WC - dO	Liza Baskin	MAST
9	GC ?	TBD - SMU provided	
10	Data Manager	TBD - SMU provided	
11	Industrial Hygenist	TBD - SMU provided	
12	NRDA	TBD - SMU provided	
13	BP / Entrix	TBD - SMU provided	
14	Press	TBD	
15			

Leg 2

Berth	Role	Person	
1	Chief Scientist	Vince Guida	NOAA NEFSC
2	Acoustic LD	SMU provided	CCOM UNH
	Acoustic TD	Nick Mitchell	ST Bigelow
	Acoustic LN	Jim Burkitt	
3	Acoustic TN	Steve Fromm	ST Bigelow
4	CTD 1	Cristina Bascunan (?)	
5	WC - PAH / TCA	Allison Candelfino	
6	WC - PAH / TCA	Dave Packer (?)	
7	WC - dO	Rich Langton (?)	
8	LISST	Betsy Broughton	NOAA NEFSC
9	GC ?	SMU provided	
10	Data Manager	SMU provided	
11	Industrial Hygenist	SMU provided	
12	NRDA	SMU provided	
13	BP / Entrix	SMU provided	
14	Press	???	
15			

Transit Key West - Newport

No Scientists

There are a number of cruise personnel requested from the SMU that have not yet been identified. Delays in identifying these personnel could result in delays in sailing, since all these personnel are required under the guidance provided by the SMU to the Chief Scientist

Equipment and Supply List:

The following sampling and scientific equipment will be placed aboard the *Bigelow* prior to departure:

Acoustic Operations:

Ship provided	EK60, ME70, and ADCP
SMU Provided	Computers and software for processing and developing products
NEFSC Provided	Equipment and supplies for calibration

CTD Operations

Ship provided	winch and termination Seabird 911 CTD with rosette altimeter
SMU Provided	CDOM fluorometer Transmissometer
NEFSC provided	12 5L Teflon lined niskin bottles dO2 sensor CTD supplies

LISST Operations

Ship provided	winch / no termination
NEFSC provided	LISST (300 m rating) Computer for operating LISST

Dissolved Oxygen

SMU Provided	auto-titration unit Training on auto-titration unit
NEFSC Provided	supplies and chemical list to be provided as an addendum

Hydrocarbon Analysis

NEFSC Provided	walk-in refrigerator for sample storage 196 dozen of 40-mL, 300-Series, amber VOA vials with 0.125" septum and containing 0.5ml 1:1 HCL (ICHEM part #S346D0.5012) 196 dozen of 1-liter, 300-Series, amber bottles (ICHEM part #349-1000) 0.5 dozen of Alkonox detergent cartons 1 dozen boxes of Nitrile gloves, Large/Ex-Large 1 case of Laboratory Aprons, Large/Ex-Large 1 dozen Safety Glasses 1 dozen glass funnels for transferring the water samples from the Niskin bottles. 1 dozen rolls of duct tape
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5 jumob coolers with sufficient blue ice for packing.
50+ COC forms
50+ Sample log sheets
1 dozen of Sharpie markers
Refrigerator lock
1 dozen of wide rolls of scotch tape
400 dozen of waterproof NRDA labels
Assortment of bungee cords
DI filter apparatus

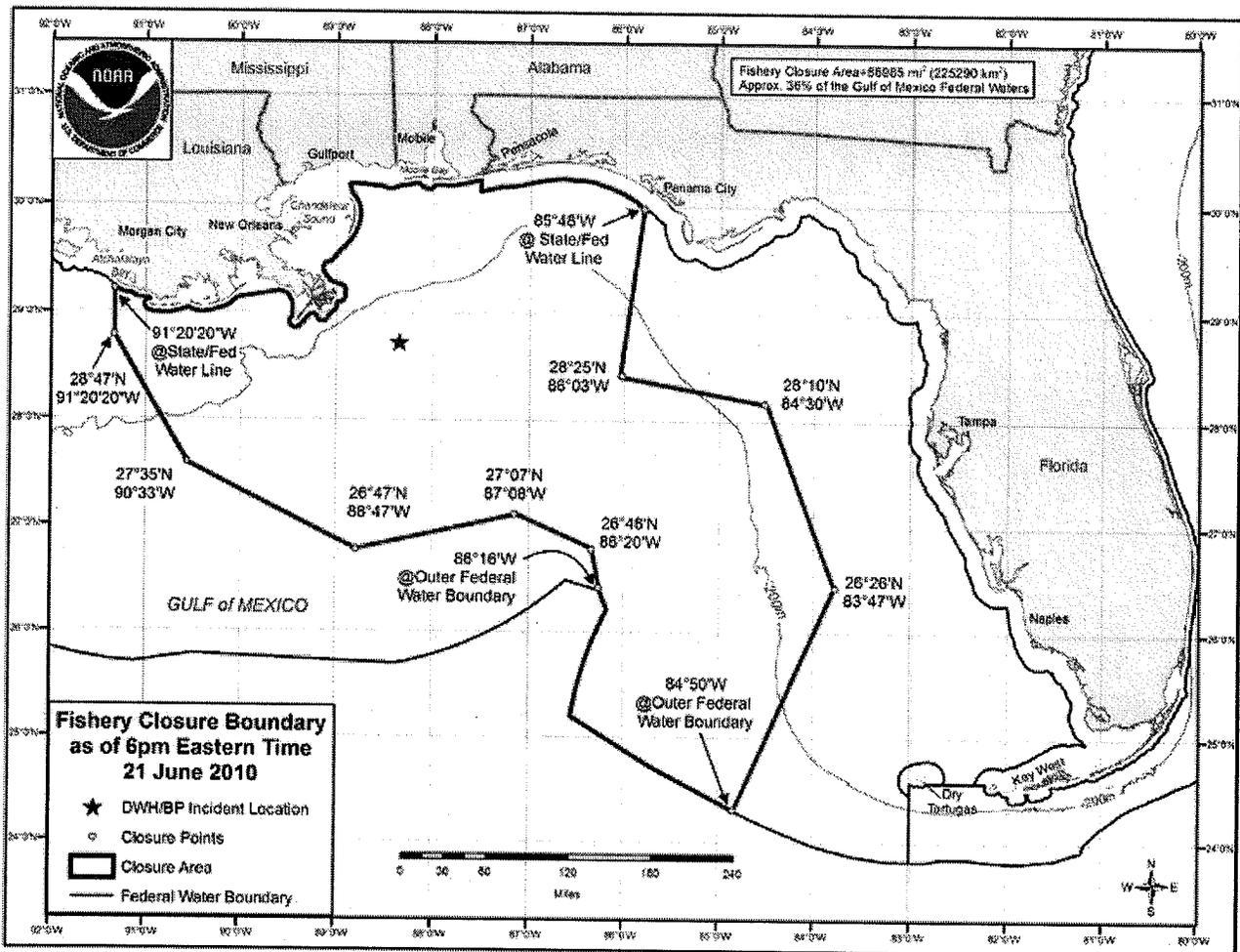


Figure 1. Area of operations include Key West, FL to Pascagoula, MS (near Gulfport). Most of the operations will be conducted within 5 nm of the Deepwater Horizon CM252 Incident Site

RV Brooks McCall Cruise 5 Station 57

May 31, 2010 (28 42.30558 N 88 24.099 W)

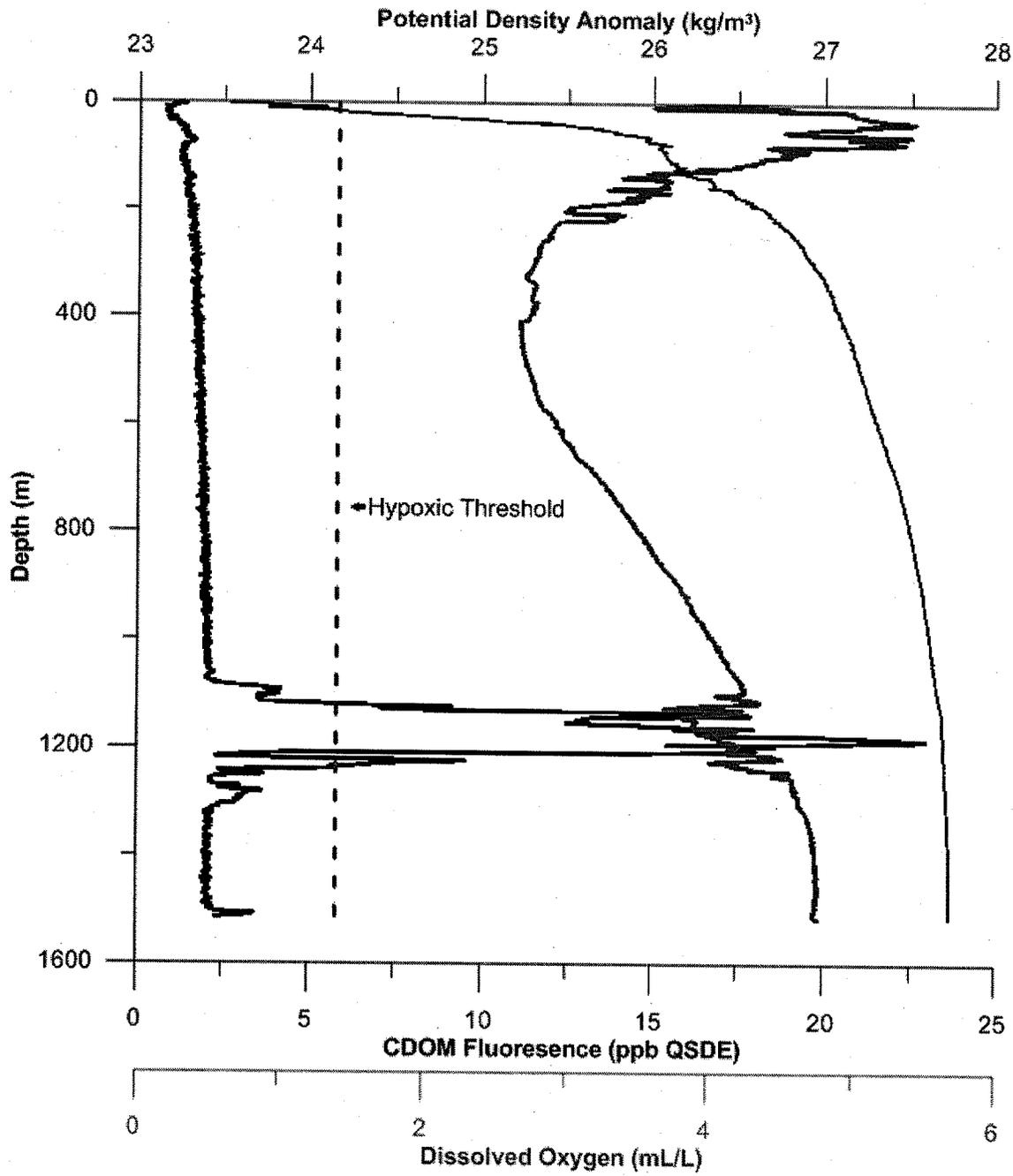


Figure 2 Vertical profile show DO₂ depression coincident with fluorescence peaks between 1100 and 1200m

Table 1. Scientific Computer Sensors, and logging rates of those sensors, required during the *Bigelow* cruise 10-06. Additional sensors may be requested.

Sensor Name	Units	Log Rate (secs)
ADCP-Depth	(Meters)	1
ADCP-F/A-GroundSpeed	(Knots)	1
ADCP-F/A-WaterSpeed	(Knots)	1
ADCP-P/S-GroundSpeed	(Knots)	1
ADCP-P/S-WaterSpeed	(Knots)	1
Air-Temp	(Degrees C)	1
Baro-Press	(Millibars)	1
CenterBoardPos-Value	(Position)	1
Date	(Date)	1
Doppler-Depth	(Meters)	1
Doppler-KeelOffset	(Meters)	1
Doppler-P/S-BottomSpeed	(Knots)	1
Doppler-P/S-WaterSpeed	(Knots)	1
EK60-18kHz-Depth	(Meters)	1
EK60-38kHz-Depth	(Meters)	1
ES60-200hz-Depth	(Meters)	1
ES60-50hz-Depth	(Meters)	1
GYRO	(Degrees)	1
ITI-BearingToTarget	(Degrees)	1
ITI-Depth	(Meters)	1
ITI-DoorSpread	(Meters)	1
ITI-HdRopeBottomDist	(Meters)	1
ITI-HdRopeFtRopeDist	(Meters)	1
ITI-HorizRange	(Meters)	1
ITI-RangeToTarget	(Meters)	1
ITI-SlantRange	(Meters)	1
ITI-Time	(Time)	1
ITI-TrawlDepth	(Meters)	1
ITI-TrawlWaterTemp	(Degrees C)	1
ME70-Depth	(Meters)	1
Mid-SeaTemp-C	(Degrees C)	1
MX420-COG	(Degrees)	1
MX420-Lat	(DEGMIN)	1
MX420-Lon	(DEGMIN)	1
MX420-SOG	(Knots)	1
MX420-Time	(Time)	1

PASHR-Hdg-Qual	(Value)	1
PASHR-Hdg-True	(Degrees)	1
PASHR-Heave	(Centimeters)	1
PASHR-Pitch	(Degrees)	1
PASHR-Pitch-Qual	(Value)	1
PASHR-Roll	(Degrees)	1
PASHR-Roll-Qual	(Value)	1
PASHR-Time	(Time)	1
PI32-Depth1000-VAL	(Meters)	1
PI32-DEPTH300-VAL	(Meters)	1
PI32-DS-VAL	(Meters)	1
PI32-HR-VAL	(Meters)	1
PI32-WS-VAL	(Meters)	1
PORTTrawlWinchLineOut	(Meters)	1
PORTTrawlWinchLinespeed	(Meters/sec)	1
PORTTrawlWinchTension	(Kilos)	1
POSMV-COG	(Degrees)	1
POSMV-Elevation	(Value)	1
POSMV-hdops	(Value)	1
POSMV-Heading	(Degrees)	1
POSMV-Lat	(DEGMIN)	1
POSMV-Lon	(DEGMIN)	1
POSMV-Quality	(Value)	1
POSMV-Sats	(Value)	1
POSMV-SOG	(Knots)	1
POSMV-Time	(Time)	1
SAMOS-AirTemp-Value	(Degrees C)	1
SAMOS-TRUE-WIND-DIR-Value	(Degrees)	1
SAMOS-TRUE-WIND-Spd-Value	(Knots)	1
SCANMAR-DEPTH-VAL	(Meters)	1
SCANMAR-DOOR-SPREAD	(Meters)	1
SCANMAR-Height	(Meters)	1
SCANMAR-WING-SPREAD	(Meters)	1
Shaft-RPM-Value	(Value)	1
STBDTrawlWinchLineOut	(Meters)	1
STBDTrawlWinchLinespeed	(Meters/sec)	1
STBDTrawlWinchTension	(Kilos)	1
YOUNG-TWIND-Direction	(Degrees)	1
YOUNG-TWIND-Speed	(Knots)	1