

W00231

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

<i>Type of Survey</i>	Outside Source Data
<i>Project No.</i>	NF-10-01-02-CRER-RFR
<i>Registry No.</i>	W00231

LOCALITY

<i>State</i>	USVI
<i>General Locality</i>	Caribbean Sea
<i>Sub-locality</i>	Vicinity of Virgin Passage

2010

CHIEF OF PARTY
Data collected ancillary to
project NF-10-01 and NF-10-02

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER: W00231
HYDROGRAPHIC TITLE SHEET		
State: <u>USVI</u>		
General Locality: <u>Caribbean Sea</u>		
Locality: <u>Vicinity of Virgin Passage</u>		
Scale: <u>1:100,000</u> Date of Survey: <u>15 Mar 2010 - 15 Mar 2010</u>		
Instructions Dated: <u>02 FEB 2010</u> Project Number: <u>NF-10-01_02-CRER-RFR</u>		
Vessels: <u>NOAA ship Nancy Foster</u>		
Chief of Party: <u>Data collected ancillary to project NF-10-01 and NF-10-02</u>		
Surveyed by: <u>Nancy Foster personnel</u>		
Soundings by: <u>Kongsburg-Simrad EM 1002 MultiBeam system</u>		
Graphic record scaled by: <u>N/A</u>		
Graphic record checked by: <u>N/A</u>		
Protracted by: <u>N/A</u> Automated plot by: <u>N/A</u>		
Verification by: <u>Atlantic Hydrographic Branch</u>		
Soundings in: Feet: _____ Fathoms: _____ Meters: <u>X</u> at MLW: _____ MLLW: <u>X</u>		
<i>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Revisions and Red notes were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.</i>		
<i>Outside source survey W00231 was submitted without a formal report. The following was included as the body of the Descriptive Report and contains the metadata for this survey.</i>		
Remarks: <u>All times are in UTC</u> <u>UTM Zone 20</u>		



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 2 2010

MEMORANDUM FOR: Commander Ralph R. Rogers, NOAA
Commanding Officer, NOAA Ship *Nancy Foster*

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

SUBJECT: Cruise Instructions for NF-10-01 CRER / NF-10-02 RFR
Coral Reef Ecosystem Research / Reef Fish Resources

Attached are final cruise instructions for NF-10-01/NF-10-02 CRER/RFR , which is scheduled aboard NOAA Ship *Nancy Foster* during the period of February 16 – March 15, 2010. 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
Atlantic Oceanographic and Meteorological Laboratory
4301 Rickenbacker Causeway Miami FL 33149
TEL: 305-361-4328
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FEB 2 2010

FINAL CRUISE INSTRUCTIONS

Date Submitted: 26 January 2010
Platform: NOAA Ship *Nancy Foster*
Cruise Number: NF-10-01 / NF-10-02
Project Title: Coral Reef Ecosystem Research / Reef Fish Resources
Cruise Dates: 16 February 2010 – 2 March 2010 (NF-10-01)
5 – 15 March 2010 (NF-10-02)


Prepared by:


Mr. Ryan H. Smith
Chief Scientist
NOAA/AOML/PhOD

Dated:

1/26/2010

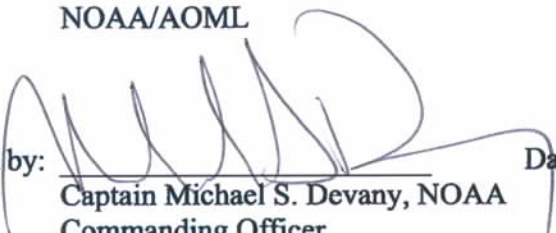
Approved by:


Dr. Robert M. Atlas
Director
NOAA/AOML

Dated:

1/27/10

Approved by:


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

Dated:

1/29/10



I. OVERVIEW

The United States Virgin Islands' (USVI) Grammanik Bank, located to the south of St. Thomas, is the site of a multi-species spawning aggregation for economically important fish including yellowfin grouper, Nassau grouper, tiger grouper, and dog snapper. Fishing pressure at this suspected source of larval recruits prompted the US Caribbean Fishery Management Council (CFMC) in 2005 to close the bank yearly from February to April. A series of banks south of the USVI (St. Thomas and St. John) and the British Virgin Islands (BVI) provide similar habitats and spawning aggregation sites. Prior to the inception of this study, the biological and physical processes which drive production on these banks, the circulation connecting these banks, and the flows across these banks had not been quantified. As the 2005 management decisions were made in the absence of these data, regional Marine Protected Area (MPA) designations and temporary closures are presently based on professional judgment rather than quantifiable, defensible scientific information. In addition, meeting new annual catch limit (ACL) requirements of the Magnuson-Stevens reauthorization has become a priority of the CFMC. However, data limitations preclude comprehensive stock assessments for most fisheries in the region.

To address these data gaps, National Oceanic and Atmospheric Administration (NOAA) scientists from the Southeast Fisheries Science Center (SEFSC) and the Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, Florida, working with scientists from the University of the Virgin Islands (UVI) and Department of Planning and Natural Resources (DPNR) in St. Thomas, are presently conducting a multi-year, interdisciplinary research project utilizing the NOAA Ship *Nancy Foster* to conduct biological and physical oceanographic surveys of the Virgin Islands (VI) bank ecosystems and surrounding regional waters. The long-term sustainability of fisheries in the VI and surrounding regions will depend on a comprehensive understanding of regional spawning aggregations, larval transport, and overall larval recruitment in the study area.

Scientific Objectives:

This endeavor, titled the **USVI Larval Reef Fish Distribution and Supply Study**, is directed at answering one over-arching question:

How are the unprotected VI banks, MPAs such as the Hind Bank Marine Conservation District, seasonally closed areas such as Grammanik Bank, inshore areas and adjacent islands ecologically linked via regional reef fish larval dispersal, transport, and life-history patterns?

Data collected from this program will not only provide information on a data-poor region, but have the potential to address two specific needs identified through a comprehensive review process recently completed by SEFSC and CFMC. First, should fish stocks be delineated from individual island groups (e.g. Puerto Rico, St. Thomas/St. John, and St. Croix), from the US

Caribbean, or from the broader Caribbean region? This interdisciplinary effort will provide information on the interconnectivity of fish populations and assist in this stock delineation. Secondly, *indices of abundance* have been identified as a critical component of the length-based assessment methods currently employed in the US Caribbean. However, regional indices are lacking, or in some cases nonexistent. This endeavor will serve to improve existing and generate new indices of abundance for the study area.

In efforts to develop more specific hypotheses, project scientists began collecting data in 2007. Since that time, annual research cruises to the study area have sampled water properties, currents, and dispersal and transport of settlement-stage larvae in the VI and neighboring regions. Data collection efforts in the northeastern Caribbean will continue in 2010.

This year, two NOAA Ship *Nancy Foster* research cruises will work together in support of the USVI Larval Reef Fish Distribution and Supply Study. The adjacent cruises NF-10-01-CRER and NF-10-02-RFR will conduct operations similar to project cruises performed in previous years aboard the *Foster* and will serve to provide the data required for scientists to gain a better understanding of regional spatial variation in the supply of settlement-stage fishes, and an insight into the effectiveness of existing CFMC management decisions.

These cruise instructions outline operations to be conducted aboard the NOAA Ship *Nancy Foster* between February 16, 2010 and March 15, 2010 in support of the USVI Larval Reef Fish Distribution and Supply Study.

Operations will include bongo and 1-meter MOCNESS tows, as well as CTDO₂/LADCP and radiometer casts profiling temperature, salinity, dissolved oxygen, water optics, and water velocity. Six shallow water moorings will be deployed. Continuous surface measurements of temperature, salinity, water optics, and water velocity will be collected via the ship's flow-through system and hull-mounted ADCP. 12 satellite-tracked, Lagrangian surface drifters will also be deployed to study regional circulation. Bathymetric data will be collected from the ship's depth sounders. Satellite imagery of sea surface temperature, altimetry, and ocean color will be used to aid in the interpretation of shipboard and drifter observations.

A. CRUISE PERIOD

February 16, 2010 through March 15, 2010

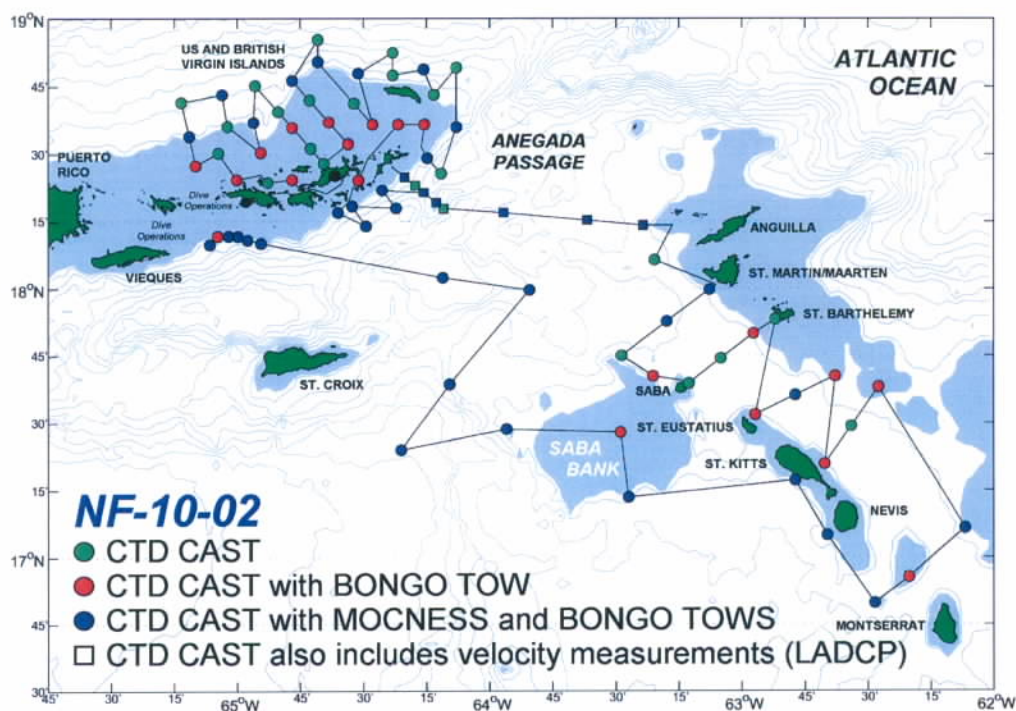
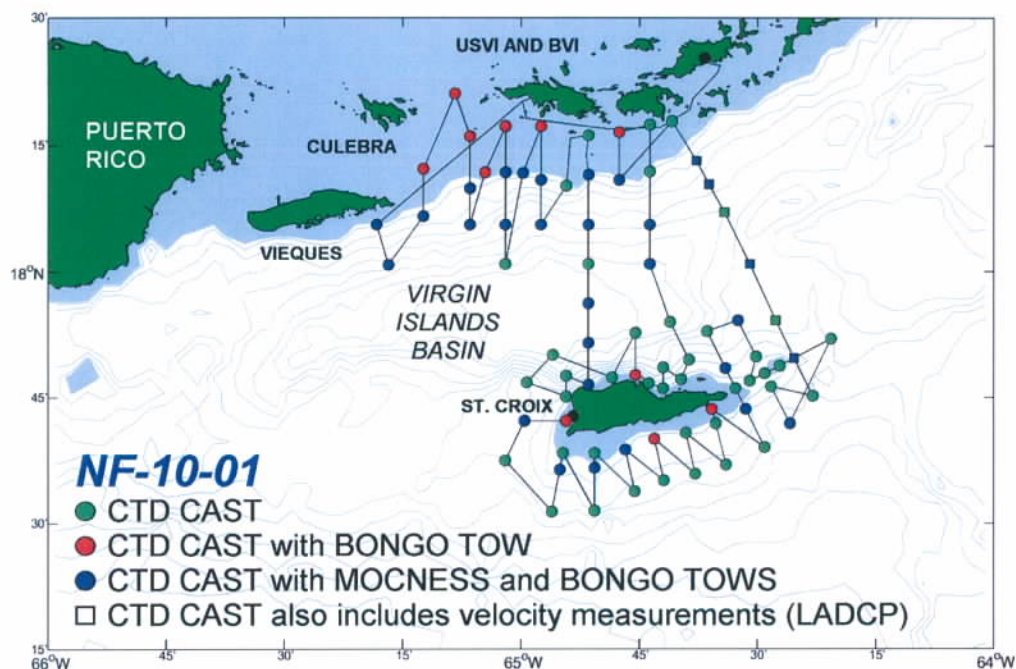
NF-10-01-CRER:

- 2/16/2010 - Depart from Charleston, SC (transit to work area)
- 2/21/2010 - Arrive at Frederiksted, St. Croix, USVI
- 2/23/2010 - Depart from Frederiksted (begin science operations)**
- 3/02/2010 - Arrive at Road Town, Tortola, BVI

NF-10-02-RFR:

- 3/05/2010 - Depart from Road Town (continue science operations)
- 3/15/2010 - Arrive at Charlotte Amalie, St. Thomas, USVI

B. OPERATING AREA



The chartlets above show the preliminary survey tracks and station locations for NF-10-01 and NF-10-02. A waypoint list can be found in Appendix C.

C. SUMMARY OF OPERATIONAL OBJECTIVES

- 1) Collect physical and biological data from 100% of all planned historical project CTDO₂/LADCP cast and net tow stations located throughout the VI and Leeward Islands (LI).
- 2) Collect physical and biological data from 100% of all planned new project CTDO₂/LADCP cast and net tow stations located throughout the VI and LI.
- 3) Collect profiling reflectance radiometer data in the upper water column (0 to 50 m) at stations occurring during suitable daylight hours.
- 4) Collect a single merged (complete and continuous) sea surface flow-through data set (SST, SSS, and chl_a) for the entire cruise period devoid of time, position, or data dropouts.
- 5) Collect a complete and continuous TRDI VMDas 150 kHz hull-mounted ADCP data set with directional GPS heading input (POSMV) for the entire cruise period devoid of time, position, or data dropouts.
- 6) Deploy three ADCP moorings across the eastern entrance to Vieques Sound between Vieques and Culebra, Puerto Rico (PR).
- 7) Deploy three ADCP moorings across Virgin Passage between Culebra, PR and St. Thomas, USVI.
- 8) Conduct a 48-hour specialized 150 kHz hull-mounted ADCP slow speed time-series at Vieques Sound and Virgin Passage using WinRiver II acquisition software.
- 9) Deploy 12 satellite-tracked SVP Lagrangian drifting bouys.
- 10) Collect a complete and continuous bathymetric time-series (ascii) from the ship's Knudsen depth sounder for the entire cruise period (with time, position, and quality flag) devoid of time, position, or data dropouts.

D. PARTICIPATING INSTITUTIONS

United States Department of Commerce
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Atlantic Oceanographic and Meteorological Laboratory
Physical Oceanography Division (US DOC NOAA/AOML/PhOD)
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United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center (US DOC NOAA/NMFS/SEFSC)
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Conservation and Fisheries Department
Government of the Virgin Islands
P.O. Box 3323
Road Town, Tortola
British Virgin Islands VG1110
TEL: 001 284 494 5681

E. SCIENTIFIC PERSONNEL

<u>Name</u>	<u>Sex</u>	<u>Nationality</u>	<u>Affiliation</u>
Ryan Smith	M	USA	NOAA/AOML/PhOD
Elizabeth Johns	F	USA	NOAA/AOML/PhOD
Nelson Melo	M	USA	NOAA/AOML/PhOD
Grant Rawson	M	USA	NOAA/AOML/PhOD
David Lindo Atichati	M	Spain	NOAA/AOML/PhOD
John Lamkin	M	USA	NOAA/NMFS/SEFSC
Trika Gerard	F	USA	NOAA/NMFS/SEFSC
Estrella Malca	F	USA	NOAA/NMFS/SEFSC
Samantha Whitcraft	F	USA	NOAA/NMFS/SEFSC
Alex Ender	F	USA	NOAA/NMFS/SEFSC
Barbara Muhling	F	Australia	NOAA/NMFS/SEFSC
Aki Shiroza	M	Japan	NOAA/NMFS/SEFSC
Sarah Privoznik	F	USA	NOAA/NMFS/SEFSC
Christine Quigley	F	USA	NOAA/NMFS/SEFSC
Francisco Fuenmayor	M	USA	NOAA Corps. (SEFSC)
Kevin Brown	M	USA	UVI, St. Thomas
Blake Bennett	M	USA	UVI, St. Thomas
TBA	M	UK	BVI - CFD, Tortola

Only 15 scientific personnel will be aboard at any given time. Some members of the science party will only be participating on NF-10-01, others only on NF-10-02.

F. ADMINISTRATIVE

1. Points of Contact

Chief Scientist / Co-Principal Investigator	Mr. Ryan Smith Atlantic Oceanographic and Meteorological Laboratory 4301 Rickenbacker Causeway, Miami, FL 33149 USA Telephone: 305-361-4328 Facsimile: 305-361-4412 Ryan.Smith@noaa.gov
Co-Principal Investigator	Dr. Elizabeth Johns Atlantic Oceanographic and Meteorological Laboratory 4301 Rickenbacker Causeway, Miami, FL 33149 USA Telephone: 305-361-4360 Facsimile: 305-361-4412 Libby.Johns@noaa.gov
Co-Principal Investigator	Dr. John Lamkin Southeast Fisheries Science Center - NOAA Fisheries 75 Virginia Beach Drive, Miami, FL 33149 USA Telephone: 305-361-4226 Facsimile: 305-361-4478 John.Lamkin@noaa.gov
Co-Principal Investigator	Dr. Trika Gerard Southeast Fisheries Science Center - NOAA Fisheries 75 Virginia Beach Drive, Miami, FL 33149 USA Telephone: 305-361-4493 Facsimile: 305-361-4478 Trika.Gerard@noaa.gov
Alternate Point of Contact	LT Hector Casanova Atlantic Oceanographic and Meteorological Laboratory 4301 Rickenbacker Causeway Miami, FL 33149 USA Telephone: 305-361-4544 Facsimile: 305-361-4449 Hector.Casanova@noaa.gov

2. Diplomatic Clearances

Research clearance has been requested through Wendy Bradfield-Smith at NOAA/NMAO in Norfolk, VA for the following countries:

<i>granted</i>	Antigua and Barbuda
<i>pending</i>	Guadeloupe/France, for Guadeloupe, Saint Martin and Saint Barthelemy
<i>pending</i>	Netherlands Antilles, for Saba, Sint Eustatius, and Sint Maarten
<i>granted</i>	Saint Kitts and Nevis
<i>granted</i>	United Kingdom, for Anguilla, British Virgin Islands, and Montserrat

3. Licenses and Permits

Not Applicable.

II. OPERATIONS

A. CRUISE PLAN ITINERARY

02/16/2010	Depart:	Charleston, SC <i>transit to work area, no scientists aboard</i>
02/21/2010*	Arrive:	Frederiksted, St. Croix, USVI
02/23/2010	Depart:	Frederiksted, St. Croix, USVI (1000)
03/02/2010**	Arrive:	Brewers Bay, St. Thomas, USVI (0700) <i>small boat transfer</i>
03/02/2010	Depart:	Brewers Bay, St. Thomas, USVI (0900)
03/02/2010	Arrive:	Road Town, Tortola, BVI (1200)
03/05/2010	Depart:	Road Town, Tortola, BVI (1000)
03/15/2010*	Arrive:	Charlotte Amalie, St. Thomas, USVI (1200)

*The scientific party will meet the ship in Frederiksted and will require berthing while the ship is in port. Scientific party members will remain aboard through the ship's arrival at Charlotte Amalie, disembarking the morning of 03/16/2010.

A small boat transfer of UVI mooring gear will take place at the UVI university dock located at Brewer's Bay, St. Thomas (directly north of west end of St. Thomas airport). **This date may change and additional small boat transfers between St. Thomas and the ship may be added depending upon possible modifications to station locations resulting from scientific data yielded during the course of the cruise.

The NOAA Ship *Nancy Foster* (NF) will depart Charleston, SC on 02/16/2010 and transit to Frederiksted, St. Croix, arriving on 2/21/2010. The NF will depart Frederiksted at 1000 on 2/23/2010 and commence scientific operations. Over the next several days, stations will be occupied around St. Croix and on the southern side of St. Thomas and the BVI. On or about 03/02/2010, the NF will arrive in Brewer's Bay, St. Thomas, where a two hour small boat transfer of mooring gear will take place. Following this transfer, the NF will transit to Road Town, Tortola, BVI. Arrival in Road Town is estimated for 1200 on 03/02/2010. Following the ship's arrival, a small open house / guided tour will be given to select members of the British Virgin Islands' Conservation and Fisheries Department between 1400 and 1600 on 03/02/2010.

The NF will depart Road Town on 03/05/2010 at 1000 and proceed to the banks north of St. Thomas and the BVI. Scientific operations will resume and continue, eventually working across Anegada Passage and into the Leeward Islands (LI). Following the completion of scheduled LI stations, the NF will reoccupy stations south of St. Thomas. Once these stations have been completed, mooring and dive operations will be conducted across sections between Vieques and Culebra, and Virgin Passage (Culebra and St. Thomas). If time allows, after all moorings (6) have been deployed, the NF will steam a slow-speed (3KT) hull-mounted ADCP time-series survey across the two sections (yielding multiple section occupations). This survey will conclude on 03/15/2010. Following this time-series survey, the NF will transit to Charlotte

Amalie, St. Thomas, arriving before 1600 on the 15th. All scientific personnel will disembark the ship the following morning (03/16/2010).

While underway, scientific operations will be conducted on a 24 hour basis. Scientific personnel will stand 12 hour watch schedules set by the Chief Scientist. Scientific shifts will run from 0000 to 1200 and from 1200 to 0000.

The Chief Scientist is authorized to alter the project instructions and station plan, following a consult with the Commanding Officer, as needed throughout the cruise, to focus scientific investigation and to maximize data collection. Additionally, sampling protocol may be altered by the Chief Scientist or Watch Leader in order to optimize the scientific survey effort. A copy of all foreign clearance documents will be provided to the Commanding Officer at least one week prior to sailing.

B. STAGING AND DESTAGING

All scientific gear will be loaded aboard the NF in Charleston, SC on February 4, 2010, prior to the ship's CONUS departure. Following the cruise, all gear will remain onboard until the NF returns to Charleston in April, 2010. This equipment will be collected shortly after the ship's CONUS arrival on 04/14/2010.

C. OPERATIONS TO BE CONDUCTED

1. Approximately 165 CTDO₂ profiles (up to full depth profiles).
2. Approximately 50 reflectance radiometer profiles (0-50 m profiles).
3. Approximately 170 net tows (70 1-m MOCNESS, 100 bongo).
4. Continuous hull-mounted ADCP survey.
5. Continuous flow-through TSG/chl_a survey.
6. Continuous bathymetric survey.
7. Mooring/Dive operations.
8. Specialized Vieques Sound / Virgin Passage hull-mounted ADCP survey.
9. Drifter deployments

Station Operations

Station operations will utilize of the majority of the main deck. Any small boat stored on the main deck must not interfere with J-Frame (CTDO₂/LADCP casts, bongo tows) or A-Frame (1-m MOCNESS tows) operations!

CTDO₂/LADCP Operations: CTDO₂ casts will include either the ship's or AOML's CTD frame, the ship's CTD unit, AOML's Lowered ADCP unit (on some casts), and the ship's Rosette sampler. Approximately 165 casts will be conducted. Many will be conducted to full water

column depth. These casts will be performed using the ship's Markey winch (spooled with .322 conducting cable) in conjunction with the ship's J-Frame boom and a metered block.

Reflectance Radiometer Profiles: A reflectance radiometer will be utilized during suitable daylight hours to measure reflectance in the upper 50 m of the water column. These casts will be conducted following CTDO₂/LADCP operations where/when applicable. The radiometer is a small instrument tethered to its own reinforced data cable. The instrument is lowered/raised by hand and reflectance radiometer casts do not require the use of any deck equipment (winches, A/J frames, cranes, etc.). Each cast can typically be completed in five minutes.

Net / Trawl Operations: Operations will vary, utilizing either bongo or 1-m MOCNESS rigs. Trawl type and location will depend on the work area and scientific results yielded during the course of the cruise. Approximately 170 tows will be conducted. MOCNESS tows will be performed using the ship's newly acquired Almon-Johnson winch (spooled with .322 conducting cable) via the ship's A-Frame boom and a metered block. Bongo tows will be performed using the ship's DT winch, J-Frame boom and a non-metered block (this block should be mounted aft of the metered CTD block).

Underway Operations

The ship shall continuously collect position (GPS), hull-mounted ADCP, meteorological, thermosalinograph (TSG), chl_a fluorometer, and bathymetric data while underway. Directional GPS information from the ship's POSMV GPS should be properly interfaced with the ship's hull mounted ADCP and SCS system. To augment the ship's existing TSG chl_a fluorometer, a self-contained optical instrumentation suite may be added to the ship's flow-through system downstream of existing equipment. This suite will log its data internally and not require a SCS hook-up to log data. It will however, require a NMEA GGA GPS position string (4800 bps) exported from the SCS system (this port currently exists in the ship's wet lab).

Drifting buoy deployments will be conducted periodically throughout the cruise. 12 satellite-tracked SVP Lagrangian surface drifters will be deployed by hand at predetermined coordinates while the ship is underway.

Mooring and Dive Operations

See Appendix A.

Small Boat Operations

Small boat operations will be required as needed throughout the cruise.

D. DIVE PLAN

See Appendix A.

E. APPLICABLE RESTRICTIONS

None.

III. EQUIPMENT

A. EQUIPMENT AND CAPABILITIES PROVIDED BY THE SHIP **ITEMS SHOWN IN RED ARE NF-10-01/02 MISSION CRITICAL!**

The following NF communications devices should be on board, in working order, and available for use during NF-10-01/02:

- 1) INMARSAT-B and C
- 2) HF SSB/DSC transceiver
- 3) cellular telephone
- 4) Iridium Telephone
- 5) VHF Radios
- 6) handheld NOAA radios for ship-to-launch and deck communications

The following NF navigational devices should be on board, in working order, and available for use during NF-10-01/02:

- 1) 200 kHz and 50 kHz single beam transducer with Furuno FE-700 echo sounder
- 2) Transas ES2 and ECDIS, software Navi-Sailor 2400
- 3) Transas ES2 for transiting, operations, and video feed from lab
- 4) RADAR: S-band/X-band w/ ARPA
- 5) Dynamic Positioning Displays: forward and aft console
- 6) Furuno Universal AIS FA-100
- 7) gyrocompass: 2 Meridian Surveyors and 9 repeaters
- 8) NAVTEX
- 9) Young Wind Tracker

The following NF scientific gear should be on board, in working order, and available for use during NF-10-01/02:

- 1) 200 kHz single beam transducer with Knudsen echo sounder for shallow water surveying
- 2) 150 kHz Ocean Surveyor hull-mounted ADCP
- 3) 12 kHz transducer with Knudsen echo sounder for deep water surveying (~5000m depth)
- 4) Kongsburg-Simrad EM 1002 MultiBeam system
- 5) Applanix POS M/V
- 6) SBE 45 MicroTSG
- 7) SBE 21 TSG with fluorometer
- 8) SBE 19 CTD
- 9) SBE 9/11+ CTD and deck unit system configured with a 12-bottle rosette sampler and 12 Niskin bottles. Data acquisition via SeaSave v7 or later version. All sensors should be calibrated prior to cruise. SPARE CABLES; COND, TEMP, AND O2 SENSORS; AND SPARE PUMP MUST ALSO BE AVAILABLE FOR USE WITH THIS GEAR!
- 10) SCS with real-time file access
- 11) Scientific freezer space for samples (-80°C preferred, -45°C will work)
- 12) Headset communication devices (either VHF, NOAA, or telephone) for simultaneous communications between winch operator, dry lab, and bridge

The following NF deck equipment should be on board, in working order, and available for use during NF-10-01/02:

- 1) A-Frame – for tows off of the fantail
- 2) J-Frame – for net tows and CTD casts off of the port side
- 3) Hydrographic Winch #1 (Markey) – spooled with ~5000 m of .322 conductor cable (wire rope) and configured for use with the ship's J-Frame (winch should be able to pay-out / haul-in cable at 60 meters per minute)
- 4) Hydrographic Winch #2 (Almon-Johnson) – spooled with ~1000 m (or more) of .322 conductor cable (wire rope) and configured for use with the ship's A-Frame
- 5) Hydrographic Winch #3 (DT) spooled with hydrowire, conductor cable (wire rope), or synthetic line (at least 100 m), configured for use with the ship's J-Frame
- 6) Three metered blocks (one spare) for use with the Markey and Almon-Johnson winches
- 7) Two non-metered blocks (one spare) for use with bongo tow operations
- 8) Air-tuggers, as needed
- 9) Deck cranes, as needed
- 10) Portable deck cleats as needed
- 11) Quick-release 55-gallon drum storage on 01 deck for two drums of ethanol to be used in the preparation of scientific samples.

The following NF small boats should be on board, in working order, and available for use during NF-10-01/02:

- 1) At least two NF small boats should be aboard and available for use in dive/mooring operations and gear/personnel transfers during the course of the cruise.
- 2) ANY SMALL BOAT STORED ON THE MAIN DECK MUST NOT INTERFERE WITH J-FRAME (CTDO₂/LADCP CASTS, BONGO TOWS) OR A-FRAME (I-M MOCNESS TOWS) OPERATIONS.

B. EQUIPMENT AND CAPABILITIES PROVIDED BY THE SCIENTISTS

In addition to the suite of oceanographic and meteorological instruments on board the NF, the science party has loaded the following scientific gear on board:

NOTE: This equipment list is preliminary, a updated final list, with approximate weights will be delivered to the ship at the time of loading in Charleston.

- 1 24-bottle CTD package w/ bottles, pylon, altimeter, and fluorometer attached (large, white frame)
- 1 12-bottle CTD package w/ SBE 9plus, bottles, and pylon attached (small white frame)
- 1 pallet jack (blue)
- 1 case, 300 kHz RDI WHADCP w/ mounting brackets
- 1 case, 300 kHz RDI BBADCP w/ mounting brackets and cables
- 1 case, SBE-19 CTD w/ cables
- 2 boxes, chlorophyll
- 1 box, 8 alkaline LADCP internal battery packs
- 1 box, misc. CTD tubing and fittings
- 1 box, misc. CTD bottle hardware, lanyards, and hand tools
- 4 cases, 24 empty salinity sample bottles each
- 5 cases, 20 empty oxygen sample flasks each
- 1 box, dissolved oxygen sampling gear:
 - 500 ml sodium iodide (HAZMAT)
 - 500 ml manganese chloride (HAZMAT)
 - wooden bottle holder
 - rubber tubing
- 1 case, CTD sensors: 2 pumps, 1 C, 1 T, 1 O₂
- 20 SVP drifting buoys
- 1 LADCP laptop computer (in black pelican case)
- 1 box, misc. office supplies
- 1 bongo frame w/ nets already attached & secured
- 1 45 kg weight for Bongo frame w/ cable line already attached

- 7 buckets for sample collection
- 1 wooden table, w/ top and white sink
- 2 rolls of carpet
- 2 long pieces of wood (2x4x7feet)
- 1 green bag w/ black nets (all MOC Nets)
- 30 boxes of 12 units each of EMPTY glass jars w/ lids (360 jars)
- 2 55 gallon drums of Ethanol (**HAZMAT**)
- 2 plastic 5 gal. EMPTY carboy
- 2 black plastic trunks with gear (*ELH Box 1 & ELH Box 2*)
- 6 metal boxes w/ MOC gear:
(*ELH Box 3, ELH Box 4, ELH Box 5, ELH Box 6, ELH Box 7, ELH Box 8*)
- 1 blue Rubbermaid bin (*ELH Box 9*)

ELH BOX # 1 (Large black trunk)

Toolbox (screwdrivers, wrenches, hammer, pliers, etc)

Duct Tape

Zip ties (small, medium, multicolored)

Glass dishes for microscope & tweezers for fish

Head lights

Microscope (w/ built in camera)

Monitor (for MOC computer)

nozzles for hose (2)

Pencil sharpener

Power strips

Rubber bands

Scissors

Shackles (for MOC)

Squeeze bottles

Sunscreen

Trash bags (large black)

Vials for fish (in 2 small cardboard boxes)

Water proof paper

xtra hose

Xtra lids for glass jars

xtra line

Zip lock bags (1 gal & smaller)

ELH BOX # 2 (Large Black trunk)

Boots (all)

Foul weather gear

Helmets (all)

Hose for Ethanol drums

John's life jacket

Pump for Ethanol drums
small aquarium nets (2)
Zip ties (Black large ones)

ELH BOX # 3 (Metal box)

Brackets
Electrical Tape
Cod ends for Bongo
Cod ends for MOC
Flowmeter (for bongo, 2)
Hose for rinsing samples & Hose for sink (blue one)
Shackles & Foam
Sieves (3) for washing down sample
Squeeze bottles (Ethanol & for Salt Water)
The Box (has electrical tape, pencils, labels, sharpees, etc)
Triangular angle measuring tool

ELH BOX # 4 (Metal Box)

Motor & Net release
Battery chargers (2)
Flowmeters (2)

ELH BOX # 5 (Metal Box)

Nicropress & Nicropress tool
Cable & Clamps
Fuses & Dummy plugs

ELH BOX # 6 (Metal Box)

Keyboard computer w/ power plugs, mouse
MOC Software

ELH BOX # 7 (Metal Box)

Batteries (2) & Battery Housings (2)

ELH BOX # 8 (Metal Box)

Underwater units (2) & All Cables!

ELH BOX # 9 (blue Rubbermaid bin)

Coffee maker & filters
Extension cord (orange)
Ziploc bags
xtra bongo net

*All **HAZMAT** items listed will be stored aboard the NF in accordance with NOAA ship regulations and safe handling procedures outlined in each HAZMAT MSDS.*

IV. HAZARDOUS MATERIALS

A. POLICY AND COMPLIANCE

The NF will operate in full compliance with all environmental compliance requirements imposed by NOAA. All hazardous materials and substances needed to carry out the objectives of the embarked science mission, including ancillary tasks, are the direct responsibility of the embarked designated Chief Scientist, whether or not the Chief Scientist is using them directly. The ship's Environmental Compliance Officer (ECO) will work with the Chief Scientist to ensure that this management policy is properly executed, and that any problems are brought promptly to the attention of the Commanding Officer. Scientific HAZMATs will not be left aboard without a trained spill responder from the science party remaining aboard with them.

The scientific party, under supervision of the Chief Scientist, shall be prepared to respond fully to emergencies involving spills of any mission HAZMAT. This includes providing properly trained personnel for response, as well as the necessary neutralizing chemicals and clean-up materials. Ship's personnel are not first responders and will act in a support role only in the event of a spill.

The Chief Scientist is directly responsible for the handling, both administrative and physical, of all scientific party hazardous wastes. No liquid wastes shall be introduced into the ship's drainage system. No solid waste material shall be placed in the ship's garbage.

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

B. RADIOACTIVE ISOTOPES

Not Applicable.

C. INVENTORY

The Chief Scientist will provide the Commanding Officer with an inventory indicating the amount, concentrations, and intended storage area of each hazardous material brought on board, and for which the Chief Scientist is responsible (see Appendix B). This inventory shall be updated at time of offload, accounting for the amount of material being removed, as well as the amount consumed in science operations and the amount being removed in the form of waste.

D. MSDS

All hazardous materials require a Material Safety Data Sheet (MSDS). Copies of all MSDSs shall be delivered to the ship at least two weeks prior to sailing. The Chief Scientist shall have copies of each MSDS available when the hazardous materials are loaded aboard. Hazardous material for which the MSDS is not provided will not be loaded aboard.

V. ADDITIONAL PROJECTS

A. SUPPLEMENTARY (“PIGGYBACK”) PROJECTS

None.

B. NOAA FLEET ANCILLARY PROJECTS

Any additional work will be subordinate to the primary project and will be accomplished only with the concurrence of the Commanding Officer and the Chief Scientist.

The following projects will be conducted by ship's personnel in accordance with the general instructions contained in the MOC Directives, and conducted on a not-to-interfere basis with the primary project:

- 1) SEAS Data Collection and Transmission
- 2) Marine Mammal Reporting
- 3) Bathymetric Trackline
- 4) Weather Forecast Monitoring
- 5) Sea Turtle Observations
- 6) Automated Sounding Aerological Program

VI. DISPOSITION OF DATA AND REPORTS

A. DATA RESPONSIBILITIES

The Chief Scientist and Co-Principal Investigators will be responsible for the disposition, feedback on data quality, and archiving of data collected on board the ship for the primary project. They will also be responsible for the dissemination of copies of these data to participants in the cruise and to any other requesters based on the timelines outlined the project's original DOS research clearance request. The ship may assist in copying data and reports insofar as facilities allow.

The Chief Scientist will receive all original data gathered by the ship for the primary project, and this data transfer will be documented on NOAA Form 61-29 "Letter Transmitting Data". The Chief Scientist in turn will furnish the ship a complete inventory listing all data gathered by the scientific party detailing types and quantities of data.

The Commanding Officer is responsible for all data collected for ancillary projects until those data have been transferred to the project's Principal Investigators or their designees. Data transfers will be documented on NOAA Form 61-29. Copies of ancillary project data will be provided to the Chief Scientist when requested.

Either the ship's Survey Technician (ST) or Electronics Technician (ET) will translate the data from the SCS to an ASCII format and provide the data to the science party as required throughout the course of the cruise.

B. PRE AND POST CRUISE MEETING

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. Safety information and other vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Per OMAO policy, daily safety meetings will be held. The Chief Scientist, ship command and department heads will be in attendance. This meeting will be held at a predetermined time to accommodate watch standers' schedules. The first daily safety meeting will include an Operational Risk Assessment for each type of operation expected during the project. Any safety issues that are noted during the project will be addressed at the daily safety meeting.

Post-Cruise Meeting: Upon completion of the cruise, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist and members of the scientific party 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 by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. SHIP OPERATION EVALUATION REPORT

Within seven days of the completion of the cruise, 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

VII. MISCELLANEOUS

A. 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. 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.

Berthing requirements, including number and gender of the scientific party, 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. The Chief Scientist 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 Chief Scientist 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 Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event

that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 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: 08/08) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website at [NOAA HEALTH SERVICES QUESTIONNAIRE](#). 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.

Prior to departure, the Chief Scientist must provide a listing of emergency contacts to the Executive 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 over the side (including CTD and net operations), 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

The Chief Scientist or designated representative will have access to ship's telecommunications systems on a cost-reimbursable basis. Where possible, it is requested that direct payment (e.g. by credit card) be used as opposed to after-the-fact reimbursement. Ship's systems include:

E-MAIL

Embarking scientists will be able to access existing email accounts through the ship's satellite internet connection.

OTHER MEANS OF CONTACT

NANCY FOSTER (WTER)

IN PORT

Home Port (Charleston, SC):

843-308-0750, 0780 (Voice)

843-308-0201 (Fax)

Cellular:

843-991-6326 (Ship)

843-697-0584 (CO)

843-697-0901 (OOD)

NANCY FOSTER (WTER)

AT SEA

Inmarsat B:

011-874-336-991-211 (Voice)

011-874-336-991-212 (Data)

011-874-336-991-213 (Telex)

011-874-391-031-069 (HSD)

Iridium:

011-8816-7632-5653

808-434-5653

Program contacts:

Ryan Smith

ryan.smith@noaa.gov

305-361-4328

Elizabeth Johns

libby.johns@noaa.gov

305-361-4360

John Lamkin

john.lamkin@noaa.gov

305-361-4226

Trika Gerard

trika.gerard@noaa.gov

305-361-4493

Hector Casanova

hector.casanova@noaa.gov

305-361-4544

E. INFORMATION TECHNOLOGY (IT) SECURITY

Any computer that will be hooked into the ship's network must comply with the NMAO 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.

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.

F. FOREIGN NATIONAL GUESTS

All foreign national access to the vessel shall be in accordance with [NAO 207-12](#) and [RADM De Bow's March 16, 2006 memo](#). National Marine Fisheries Service personnel will use the [Foreign National Registration System \(FRNS\)](#) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated NMFS Deemed Exports point of [contact](#) to assist with the process.

The following are basic requirements. Full compliance with [NAO 207-12](#) is required.

Responsibilities of the Chief Scientist:

- 1) Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail will identify the guest's DSN and will serve as evidence that the requirements of [NAO 207-12](#) have been complied with.
- 2) Escorts – The 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.
- 3) Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators ([NAO 207-12](#) Appendix A) at least annually or as required by the servicing Regional Security Officer.
- 4) Export Control - 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 or the DSN of the FRNS e-mail granting approval for the foreign national guest's visit.
- 5) Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
- 6) Export Control - 8 weeks in advance of the 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 DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen, 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.

APPENDIX A. Proposed Dive Operations

This appendix also includes a description of planned mooring operations.

These proposed dive operations may be modified based on NOAA Dive Office regulations.

NOAA Ship *Nancy Foster*: NF1001 / NF1002

Dates: February 16 – March 15, 2010

Vessel: NOAA Ship NANCY FOSTER (diving via small boat)

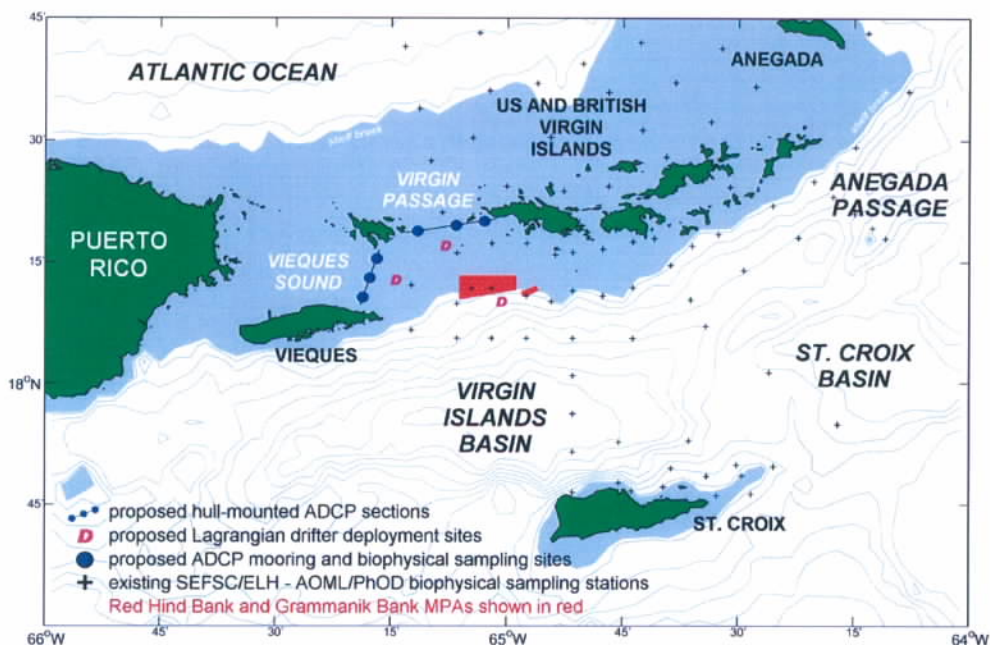
Cruise ID: Coral Reef Ecosystem Research (NF-10-01-CRER)
Reef Fish Resources (NF-10-02-RFR)

Location: Northeastern Caribbean Sea (Puerto Rico and USVI)
specifically Vieques Sound, between Vieques and Culebra, and
Virgin Passage, between Culebra and St. Thomas (see attached chartlets)

Divers: Nelson Melo, University of Miami
AAUS/IANTD certified diver

Grant Rawson, University of Miami
AAUS/IANTD certified diver

NF NOAA Corps. officers who would like to participate (tba)
NOAA working divers

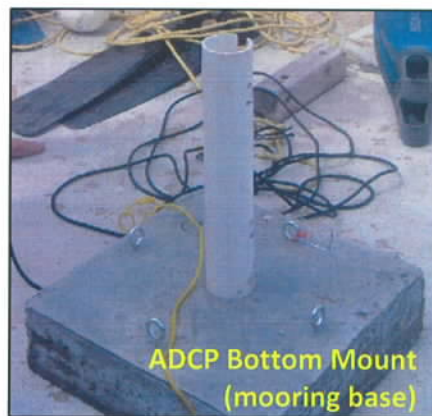
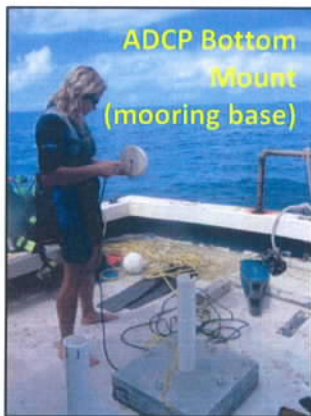


Summary:

Scientists from NOAA/OAR/AOML and NOAA/NMFS/SEFSC in Miami, FL have been funded to monitor water flow through two channels in the northeastern Caribbean Sea. This endeavor will require the deployment of six small bottom-mounted acoustic Doppler current profiler (ADCP) moorings in the waters west of St. Thomas, USVI during the 2010 NOAA Ship *Nancy Foster* field season.

During NF-10-01-CRER and NF-10-02-RFR this February and March, three ADCP bottom mounts will be deployed across the eastern entrance to Vieques Sound between Vieques and Culebra. Three ADCP bottom mounts will also be deployed across Virgin Passage, between Culebra and St. Thomas. Photos of these bottom mounts are shown below. Chartlets of the proposed mooring deployment locations are shown on the next page. These bottom mounts will be deployed by hand over the side of a small boat (lowered to the bottom by a line) to depths of 75-85 feet. No divers will be involved with the bottom mount deployments (or in the water at the time of deployment).

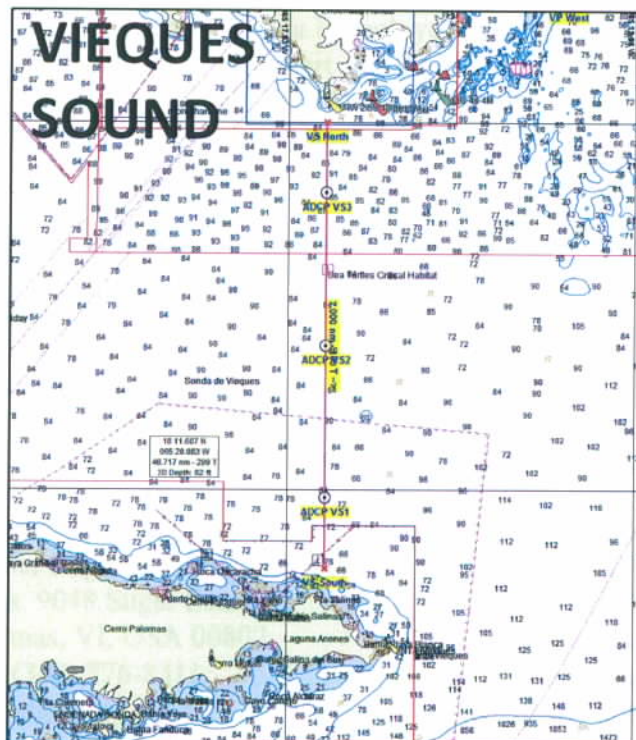
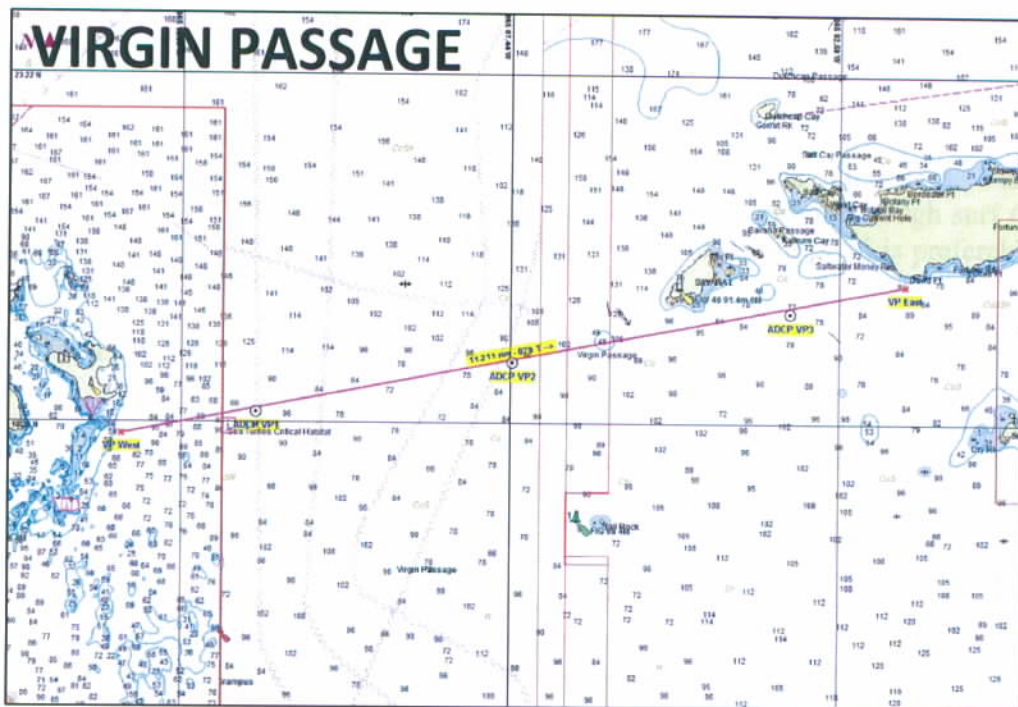
Following the bottom mount deployments, divers will insert a small (3" x 22"), neutrally buoyant self contained ADCP into each mooring base.



NortekUSA Aquadopp®

three self-contained
ADCPs (3"x22")

Chartlets:



Approximate mooring locations and depths:

ADCP VP1 (80 feet)
18°18.5'N 65°11.2'W

ADCP VP2 (80 feet)
18°19.2'N 65°07.4'W

ADCP VP3 (75 feet)
18°19.9'N 65°03.3'W

ADCP VS1 (80 feet)
18°10.4'N 65°17.2'W

ADCP VS2 (85 feet)
18°12.8'N 65°17.2'W

ADCP VS3 (85 feet)
18°15.2'N 65°17.2'W

APPENDIX I

Tides and Water Levels

No tidal records were submitted with the survey deliverables

APPENDIX II

Supplemental Survey Records and Correspondence

No supplemental and correspondence records were
submitted with the survey deliverables

APPENDIX III

Feature Report

AWOIS: NONE

DtoNs: NONE

MARITIME BOUNDARY: NONE

WRECKS: NONE

APPROVAL PAGE

W00231

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- W00231_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- W00231_GeoImage.pdf

The survey evaluation and verification has been conducted according to current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

LT Abigail Higgins

Chief, Atlantic Hydrographic Branch