U.S. DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: W00216

LOCALITY

State: U.S. Virgin Islands

General Locality: Caribbean Sea

Sub-locality: 5nm SE St. Johns Island

2011

CHIEF OF PARTY
Timothy Battista

LIBRARY & ARCHIVES

DATE:

NOAA FORM 76-35A (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

W00216

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State:	**U.S. Virgin Islands**
General Locality:	**Caribbean Sea**
Sub-Locality:	**5nm SE St. Johns Island**
Scale:	**1:40,000** Date of Survey: **March 30 to April 3, 2011**
Instructions Dated:	**14 February 2011** Project Number: **M-I907-NF-11**
Vessel:	**NOAA Ship *Nancy Foster***
Chief of Party:	**Timothy Battista**
Surveyed by:	**CCMA Biogeography Branch**
Soundings by:	**Reson 7125 SV, Kongsberg EM1002**
Graphic record scaled by:	**N/A**
Graphic record checked by:	**N/A**
Protracted by:	**N/A**
Automated Plot:	**N/A**
Verification by:	
Soundings in:	**Meters at MLLW**

Remarks:
1) All Times are in UTC.
2) This is a Coral Reef Mapping Project and Hydrographic Survey.

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Descriptive Report to Accompany Hydrographic Survey W00216
Project M-I907-NF-11
U.S. Virgin Islands
Caribbean Sea
Scale 1:40,000
March 30 – April 3, 2011
NOAA Ship *Nancy Foster*

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions M-I907-NF-11, dated February 14, 2011. Data acquisition was conducted from March 30-April 3, 2011.

North Western Limit	South Western Limit	South Eastern Limit	North Eastern Limit
18°14’42.74” N 064°43’12.81” W	18°12’43.44” N 064°41’14.95” W	18°14’01.55” N 064°39’10.60” W	18°16’08.12” N 064°39’32.80” W

The purpose of this project is to map critical coral habitats and to update the nautical charts in the area. Most of the bathymetry is from surveys completed from 1970-1989 with partial bottom coverage. This project responds, in part, to the U.S. Coral Reef Task Force (USCRTF) that was established by Presidential Executive Order 13089. The USCRTF mission is to lead, coordinate, and strengthen U.S. government actions to better preserve and protect coral reef ecosystems. The National Oceanic and Atmospheric Administration’s (NOAA) Center for Coastal Monitoring and Assessment (CCMA) Biogeography Team is supporting the USCRTF mandate. The Biogeography Team completed its eighth year of an ongoing scientific research mission on board the NOAA Ship *Nancy Foster*.

Table 1: Hydrographic Survey Statistics

	Linear Nautical Miles
LNM Single beam mainscheme only	N/A
Multibeam mainscheme only	115.95
LNM Lidar mainscheme only	N/A
Side Scan Sonar mainscheme only	N/A
Lineal nautical miles of any combination of the above techniques (specify methods	115.95
LNM Crosslines singlebeam and multibeam combined	10.77
LNM Lidar Crosslines	N/A
Development lines non mainscheme	0
LNM shoreline/nearshore investigations	
Number of Bottom Samples	0
Number of items investigated that required additional time/effort in the field beyond the above survey operations	0
Total number of square nautical miles	8.81

Fig. 1. W00216 Survey Area.

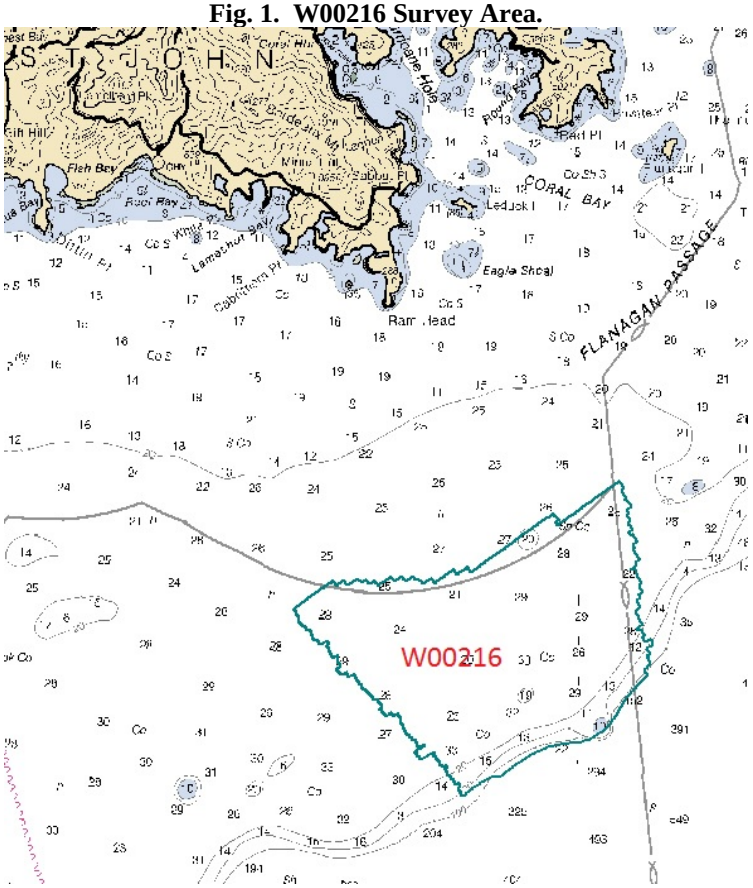


Table 2: MB Acquisition Dates

Calendar Date	Julian Day
30-March-2011	089
31-March-2011	090
1-April-2011	091
2-April-2011	092
3-April-2011	093

B. DATA ACQUISTION AND PROCESSING

Refer to *M-I907-NF-11 Data Acquisition and Processing Report* (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, as well as any deviations from the DAPR, are included in this descriptive report.

B1. EQUIPMENT AND VESSEL

The NOAA Ship *Nancy Foster* acquired Reson 7125 SV and EM1002 multibeam echosounder soundings and sound-velocity profiles with SBE equipment. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the DAPR.

B2. QUALITY CONTROL

B2.a System Certification and Calibration

Refer to NOAA Ship *Nancy Foster*'s DAPR for a complete description of system integration and initial calibration results for equipment and sensors used for this survey.

B2.b Sounding Coverage

As per the Project Instructions, this survey was conducted using complete coverage multibeam specifications. Bathymetry coverage was monitored by creating BASE surfaces with 2-meter, 4-meter, 8-meter and 16-meter resolutions as per HSSD 5.2.2.2, "Complete Multibeam Coverage." Data densities in within the BASE surfaces generally meet the five soundings per node criteria, except in areas where multibeam data were shadowed by features of significant height from surrounding bathymetry.

B2.c Crosslines

Multibeam echosounder cross-lines totaling 10.7 nm were acquired during the course of the survey, comprising 9.28 % of multibeam mainscheme hydrography.

B2.d Junctions and Prior Surveys

No prior surveys or junction comparisons assigned in the project instructions.

B2.e Systematic Errors

No significant artifacts due to systematic errors were observed in the data. Occasional small artifacts of up to 0.3m affecting the outer beams of the 7125 were observed though. They appear to be caused by sound velocity. Due to the consistency of the sound velocity in the area and agreement between the SBE 19 and the SV-71 at the surface, this has been ruled out. During the dry dock installation it has been learned that the elements were painted with anti-fouling paint and this may be the cause of the problem. The 7125 will be pulled from the hull before the 2012 season to be tested at the Reson facility and re-certified. Areas of higher standard deviation can be found around significant reef structures. An area of overlapping mainscheme data shows the extent of standard deviations.

Fig. 2. Reson 7125 outer beam error

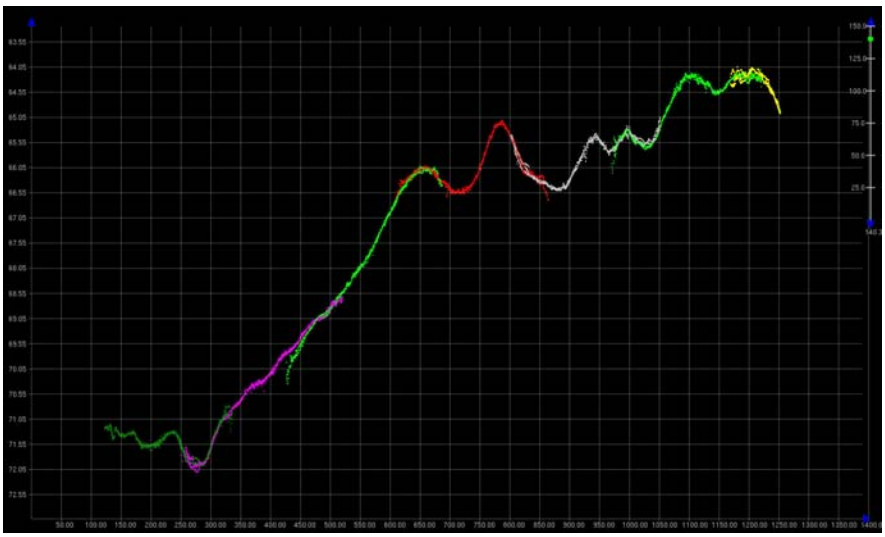
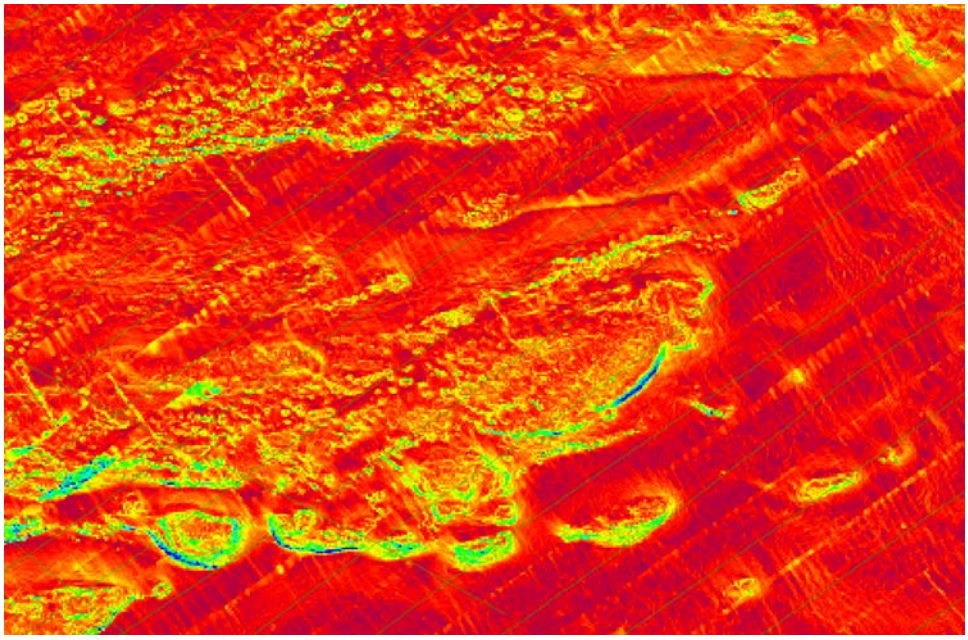


Fig. 3. Standard deviation example. Color map: dark red 0.01, blue 0.5 std deviation



B3. CORRECTIONS TO ECHO SOUNDINGS

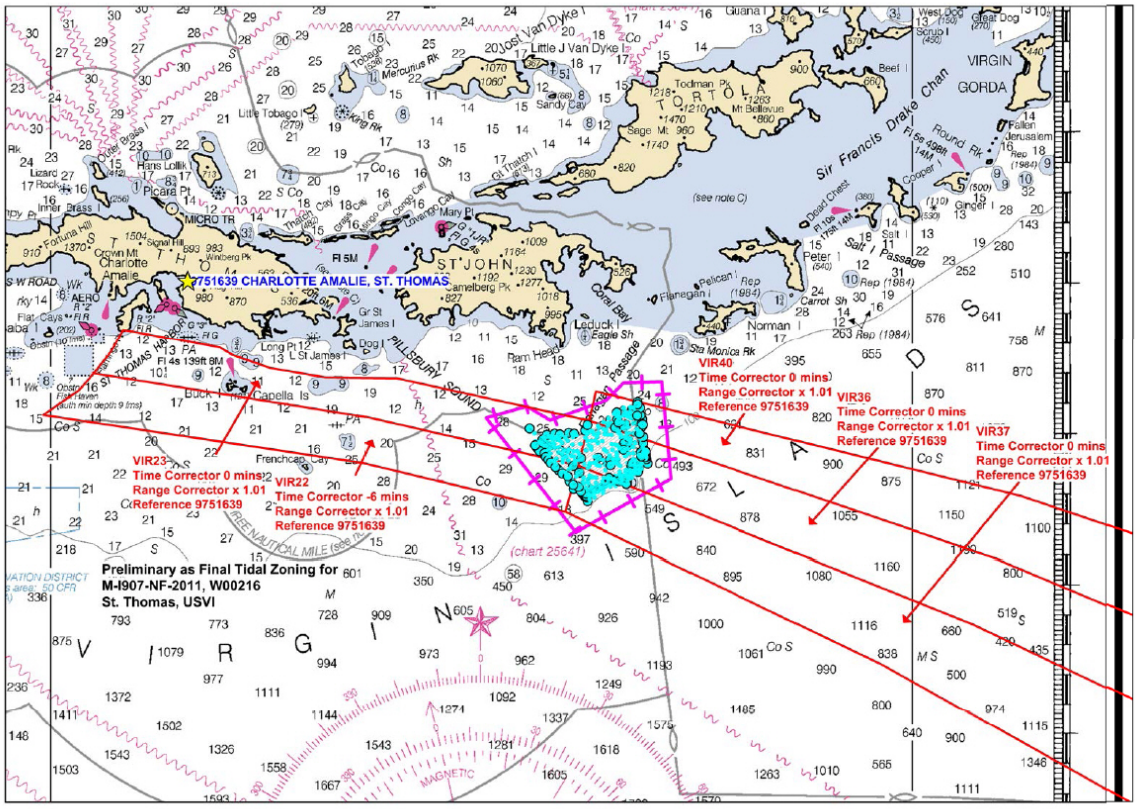
HDCS sounding data were reduced to mean lower-low water (MLLW 83-01 Tidal Epoch) using final tidal zoning supplied by CO-OPS and verified water levels from the tide gauge located at Charlotte Amalie, U.S.V.I. (975-1639).

All datum reduction procedures conform to those outlined in the DAPR**.**

All methods and instruments used for sound velocity correction were as described in the DAPR.

Sound velocity corrections for this survey were applied using only data from the ship's SBE 19 *Plus*. Application in CARIS HIPS was nearest in distance within time (six hours) for all data.

Fig 4. Final Tide Zoning W00216



B4. DATA PROCESSING

B4.a Total Propagated Error

The Total Propagated Error (TPE) values used in Caris for this survey were derived using the HTD 2007-10 as a guide. Tidal error values entered into Caris are assumed to be 1 sigma, therefore the value supplied by CO-OPS was divided by 2 to approximate the required 1 sigma error level. These values were calculated for all MBES data immediately following CARIS Merge. The project-specific parameters for TPE calculation for W00216 are as follows:

Table 3: TPE Parameters

Project	Vessel	Tide Values		Sound Speed Values	
		Measured	Zoning	Measured	Surface
W00216	NF	0.0	0.61	4.0	1.0

B4.b BASE Surfaces and Mosaics

Survey W00216 BASE surfaces were created using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The parameters contained in the NOAA xml file provided with HTD 2009-2 were used to modify the values required for CUBE processing. Finalized BASE surface used final uncertainty from the "Greater of the two" option and resolution dependent depth thresholds were applied as necessary. Refer to the 2009 DAPR, 2009 *Field Procedures Manual*, and Caris HIPS and SIPS *User Guide* for further discussion. Table 4 describes all BASE Surfaces submitted as part of Survey W00216:

Table 4: BASE Surfaces

Field Sheet W00216	*Resolution*	*Type*	*Description*	*Depth Threshold*
NOAA_2m_CUBE	2m	CUBE	Bathy/Coverage	No
NOAA_4m_CUBE	4m	CUBE	Bathy/Coverage	No
NOAA_8m_CUBE	8m	CUBE	Bathy/Coverage	No
NOAA_16m_CUBE	16m	CUBE	Bathy/Coverage	No
NOAA_2m_CUBE_Final	2m	CUBE	Bathy/Coverage	18m-40m
NOAA_4m_CUBE_Final	4m	CUBE	Bathy/Coverage	36m-80m
NOAA_8m_CUBE_Final	8m	CUBE	Bathy/Coverage	72m-160m
NOAA_16m_CUBE_Final	16m	CUBE	Bathy/Coverage	144m-1000m
NOAA_1m_CUBE	1m	CUBE	Bathy/Coverage	No
NOAA_1m_Final_No_Threshold	1m	CUBE	Habitat mapping	No
NOAA_2m_Final_No_Threshold	2m	CUBE	Habitat mapping	No

B4.c Data Cleaning

The survey data was cleaned using the swath and subset editor tools in Caris. Areas of the BASE surfaces that indicated a high standard deviation, hypothesis count or uncertainty were examined and cleaned as required such that no residual outliers existed within the surfaces.

C. VERTICAL AND HORIZONTAL CONTROL

As per *FPM* Section 5.2.3.2.3, an HVCR report was not filed, as no horizontal and vertical control stations were established by the field party for this survey. A summary of horizontal and vertical control for this survey follows.

C1.a Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83), Zone 20 North. Differential GPS (DGPS) was the sole method of positioning. Differential corrections from a U.S. Coast Guard beacon located at Isabel, Puerto Rico were used during this survey.

C1.b Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at Charlotte Amalie (975-1639) served as datum control for W00216. A request for delivery of final approved tides for this survey was forwarded to N/OPS1 in accordance with the *FPM* and project letter instructions. Verified tides have been applied to all sounding data.

D. RESULTS AND RECOMMENDATIONS

D1. CHART COMPARISON

No chart comparisons were assigned in the project instructions.

D1.a Prior and Junctions

No prior surveys or junction comparisons were assigned in the project instructions.

D2. ADDITIONAL RESULTS

D2.a Automated Wreck and Obstruction Information Service (AWOIS) Items

No AWOIS Items were assigned in the project instructions.

D2.b Shoreline

There is no shoreline within the sheet limits of survey W00216.

D2.c Charted Features

There are no charted features within the sheet limits of survey W00216.

D2.d Charted Pipelines and Cables

There are no charted pipelines or cables within the sheet limits of survey W00216.

D2.e Bridges, Ferry Routes, and Overhead Cables

There are no ferry routes, bridges, or overhead cable crossings within the limits of survey W00216.

D3. DANGERS TO NAVIGATION AND SHOALS

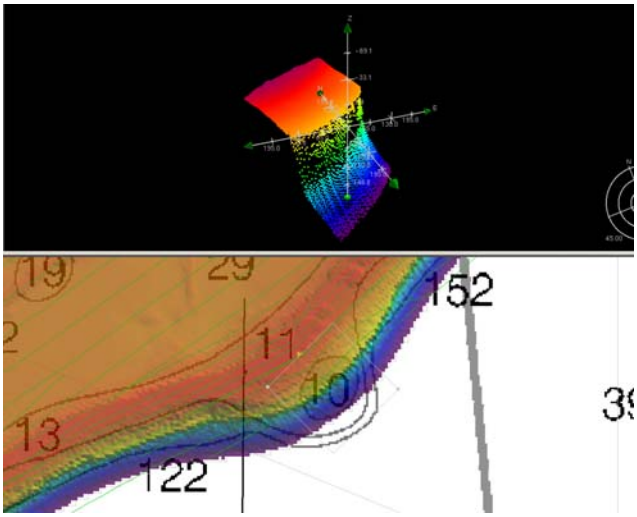
D3.a Dangers to Navigation

No dangers to navigation were found or reported to the NOAA's Office of Coast Survey.

D3.b Shoals

A 10 fathom shoal located at 18° 13' 28.91"N 064° 39' 44.91"W was discredited. True depth is approximately 200 meters. Recommend to update the depths based on the results of this survey and to remove the 10 fathom shoal. Otherwise shoals are adequately depicted as currently charted.

Fig. 5. 10 fathom shoal discredited



D4. AIDS TO NAVIGATION

There are no charted Aids to Navigation (ATON) within the limits of W00216.

D5. COAST PILOT INFORMATION

The Hydrographer has no recommendations for changes or addenda to the Coast Pilot.

D6. MISCELLANEOUS BOTTOM SAMPLES

No bottom samples were collected for W00216.

D7. ENVIRONMENTAL CONDITIONS AND NOTES

No environmental conditions or notes are required for W00216.

D8. ADEQUACY OF SURVEY

This survey is considered complete and adequate to supersede charted depths within the common area as per requirements specified in the Project Letter Instructions.

Summary and Recommendations for Additional Work

No additional work is needed to complete this survey. No changes significant to navigation have been noted and it is recommended that this survey receive normal processing priority.

E. APPROVAL

As Lead Hydrographer, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Office of Coast Survey Hydrographic Surveys Division's *Field Procedures Manual*, and NOS *Hydrographic Surveys Specifications and Deliverables*. Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to N/CS33, Atlantic Hydrographic Branch.

The Data Acquisition and Processing Report for M-I907-NF-11 is submitted separately and contains additional information relevant to this survey.

Michael Stecher

NOAA Contractor

Lead Hydrographer

CCMA Biogeography Branch

Appendix I

DANGERS TO NAVIGATION

No dangers to navigation were reported for survey W00216.

Appendix II
SURVEY FEATURES REPORT

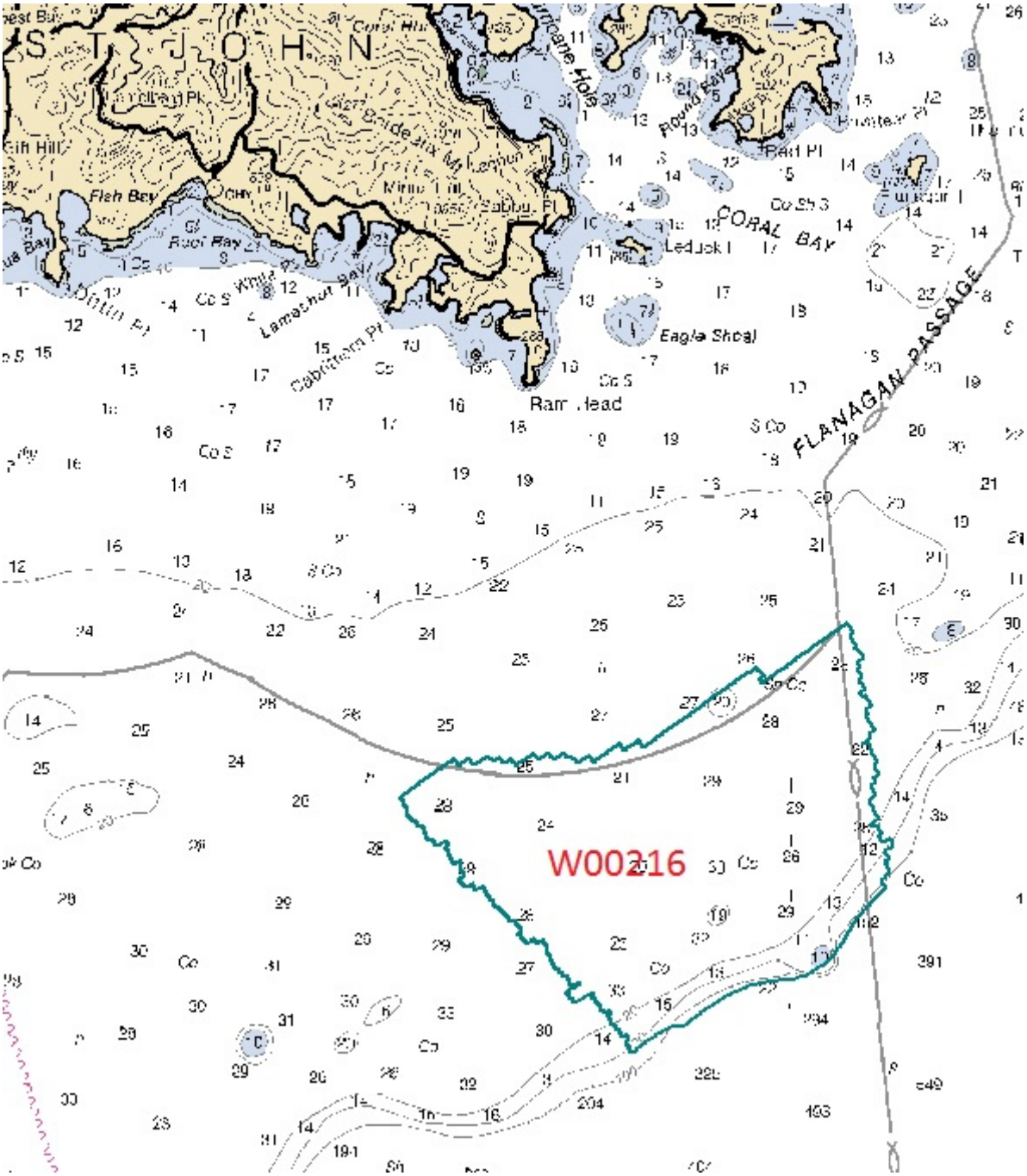
1. AWOIS Items – none

2. Charted Features – none

3. Uncharted Features – none

Appendix III

Final Progress Sketch and Survey Outline



Appendix IV

TIDES AND WATER LEVELS

1. Tide Notes
2. Request for Approved Tides
3. Final Tide Notes

WATER LEVEL INSTRUCTIONS
M-I907-NF-2011 St Thomas, USVI
(01/05/2011 CFL)

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated April 2010, and OCS Field Procedures Manual (FPM), dated May 2010. Specifically reference Chapter 4 of the HSSD and Sections 1.5.8, 1.5.9, 2.4.3, and 3.4.2 of the FPM.

1.2. Vertical Datums

The tidal datums for this project are referenced to Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

The operating National Water Level Observation Network (NWLON) stations at Vieques (975-2695) and Charlotte Amalie (975-1639) serve as datum control for the survey area including determination at each subordinate station.

1.2.1. Water Level Data Acquisition Monitoring

The Commanding Officer (or Team Leader) and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Commanding Officer (or Team Leader) is required to monitor the pertinent water level data via the CO-OPS Web site at http://tidesandcurrents.noaa.gov/hydro.shtml, email data transmissions through TIDEBOT, or through regular communications with CO-OPS/Engineering Division (ED) personnel before and during operations. During traditional non duty hours, the Commanding Officer/Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by Email: CORMS@noaa.gov. Problems or concerns regarding the acquisition of valid water level data identified by the Commanding Officer/Team Leader shall be communicated with CO-OPS/ED (Bruce Servary, 301-713-2897 ext. 183, Email: nos.coops.oetteam@noaa.gov) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations. In addition, CO-OPS is required to coordinate with the Commanding Officer (or Team Leader) before interrupting the acquisition of water level data for the NWLON stations mentioned above for any reason during periods of hydrography.

1.2.2. NWLON Water Level Station Operation and Maintenance

The operating water level stations at Vieques (975-2695) and Charlotte Amalie (975-1639) will also provide water level reducers for this project. Therefore it is critical that they remain in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at Vieques (975-2695) and Charlotte Amalie (975-1639) by NOAA Ship Nancy Foster personnel.

CO-OPS/FOD is responsible for the operation and maintenance of all NWLON primary control stations. If a problem is identified at an NWLON primary control station, FOD shall make all reasonable efforts to repair the malfunctioning station. However, CO-OPS may request assistance from the NOAA ship or NRT personnel in the actual repair of the water level station to facilitate a rapid repair. CO-OPS/FOD and the Commanding Officer (or Team Leader) shall maintain the required communications until the repairs to the water level station have been completed.

1.3. Tide Reducer Stations

1.3.1. No subordinate water level stations are required for this project, however, supplemental and/or back-up water level stations may be necessary depending on the complexity of the hydrodynamics and/or the severity of the environmental conditions of the project area. The installation and continuous operation of water level measurement systems (tide gauges) at subordinate station locations is left to the discretion of the Commanding Officer (or Team Leader), subject to the approval of CO-OPS. If the Commanding Officer (or Team Leader) decides to install additional water level stations, then a 30-day minimum of continuous data acquisition is required. For all subordinate stations, data must be collected throughout the entire survey period for which they are applicable, and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards.

Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of St Thomas is 0.12 meters at the 95% confidence level, and includes the estimated gauge measurement error, tidal datum computation error, and tidal zoning error. Based on this analysis no subordinate stations will be required. It should be noted that the tidal error component can be significantly greater than stated if a substantial meteorological event or condition should occur during time of hydrography.

1.3.2. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

1.3.3. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

1.3.4. This section is not applicable for this project.

1.4. Discrete Tidal Zoning

1.4.1. The water level stations at Vieques (975-2695) and Charlotte Amalie (975-1639) are the reference stations for preliminary tides for hydrography in St Thomas. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Vieques (975-2695) and Charlotte Amalie (975-1639) during the acquisition and preliminary processing phases of this project. **Preliminary data may be retrieved in one month increments over the Internet from the CO-OPS SOAP web services at http://opendap.co-ops.nos.noaa.gov/axis/text.html.** The Commanding Officer (or Team Leader) must notify CO-OPS/ED personnel immediately of any problems concerning the preliminary tides. Preliminary data are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the preliminary tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

Zone	Time Corrector(mins)	Range Ratio	Predicted Reference Station
VIR3B	-12	x1.2	975-1639
VIR4A	-12	x1.08	975-1639
VIR4B	-6	x1.08	975-1639
VIR5	+6	x1.08	975-2695
VIR6	+6	x1.08	975-2695
VIR20	-12	x0.95	975-1639
VIR21	-6	x0.95	975-1639
VIR22	-6	x1.01	975-1639
VIR23	0	x1.01	975-1639
VIR36	0	x1.01	975-1639
VIR37	0	x1.01	975-1639
VIR38	-6	x0.95	975-1639
VIR40	0	x1.01	975-1639

1.4.2. Polygon nodes and water level corrections referencing Vieques (975-2695) and Charlotte Amalie (975-1639) are provided in CARIS® format denoted by a *.zdf extension file name.

NOTE: The tide corrector values referenced to Vieques (975-2695) and Charlotte Amalie (975-1639) are provided in the zoning file "I907NF2011CORP" for this project and are in the fourth set of correctors designated as TS4. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo® representation of West longitude

"Preliminary" data for the control water level stations, Vieques (975-2695) and Charlotte Amalie (975-

1639), are available in near real-time and verified data will be available on a weekly basis for the previous week. **These water level data may be obtained from the CO-OPS SOAP web services at http://opendap.co-ops.nos.noaa.gov/axis/text.html.**

Please contact CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and CO-OPS' Operational Engineering Team (OET) at nos.coops.oetteam@noaa.gov at least three business days before survey operations begin, and within 1 business day after survey operations are completed so that the appropriate CO-OPS National Water Level Observation Network (NWLON) control water level station(s) is/are added to or removed from the CO-OPS Hydro Hotlist (HHL) (http://tidesandcurrents.noaa.gov/hydro). Include start and end survey dates, full project number (e.g. OPR-H355-TJ-10), and control and subordinate station numbers. Also the notification must go to both teams because station configuration is done by OET and addition/removal of stations to the HHL is done by HPT.

It is important to know that the addition of a water level station to the HHL ensures the station is monitored by CORMS and any problems are reported daily. In addition, stations that are on the HHL will not be taken offline for scheduled maintenance and are given priority for maintenance should a station cease normal operation during scheduled times of hydrography. CO-OPS will notify a field unit within 1 business day if a HHL water level station ceases operation during scheduled times of hydrography. This is in addition to the daily CORMS report that CORMS sends to NOAA field units, if the field unit's e-mail address is added to the CORM's daily e-mail list. If the stations are listed on HHL, then weekly priority processing will occur and, for those water level stations, verified 6-minute water level data will be made available every week on Monday or Tuesday. If Monday happens to be a federal holiday, then the 6-minute verified water level data will be made available on the following Tuesday or Wednesday.

1.4.3 Zoning Diagram(s)

Zoning diagrams, created in MapInfo® and Adobe PDF, are provided in digital format to assist with the zoning in section 1.4.1.

1.4.4 Final Zoning

Upon completion of project M-I907-NF-2011, submit a Pydro generated request for final tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to Final.Tides@noaa.gov . Provide the project number, as well as a sheet number, in the subject line of the email.
CO-OPS will review the times of hydrography, final tracklines, and six-minute water level data from all applicable water level gauges. After review, CO-OPS will send a notice indicating that the tidal zoning scheme sent with the project instructions has been approved for final zoning. If there are any discrepancies, CO-OPS will make the appropriate adjustments and forward a revised tidal zoning scheme to the field group and project manager for final processing.

1.5 TideBot

Preliminary and verified six minute water level time series data may be retrieved from the CO-OPS

database via TideBot application. TideBot delivers timely preliminary/verified tidal and Great Lakes six minute water level observations via email to users on a scheduled, recurring basis. To access TideBot through an email account, send an email to TideBot@noaa.gov with the word "help" as the subject. An email reply will be sent with instructions on how to subscribe to TideBot for time series data retrieval.

1.6 Water Level Records

Submit water level data and required station documentation as specified in the latest version of the NOS Hydrographic Surveys Specifications and Deliverables (HSSD) document. For projects where the water level data is not transmitted via GOES satellite, please submit data on a monthly basis.

1.6.1 Water level records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS
Chief, Engineering Division
N/OPS1 - SSMC4, Station 6531
1305 East-West Highway
Silver Spring, MD 20910

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Ship NANCY FOSTER (MOA-NF)
439 West York St
Norfolk, VA 23510-1145

August 29, 2011

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: Mike Stecher, NOAA Ship NANCY FOSTER (MOA-NF)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final TCARI grid
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.:	M-I907-NF-11
Registry No.:	W00216
State:	Virgin Islands
Locality:	St. John
Sublocality:	5m SE St. John Island

Attachments containing:

1) an Abstract of Times of Hydrography,
2) digital MID MIF files of the track lines from Pydro

cc: N/CS33

Generated by Pydro v9.10 (r2824) on Mon Aug 29 21:18:45 2011 [UTC]

Request for Approved Tides Times of Hydrography

Year_DOY	Min Time	Max Time
2011_089	22:29:32	23:59:57
2011_090	00:00:03	12:02:31
2011_091	00:36:09	10:41:15
2011_092	21:34:28	23:26:53
2011_093	00:23:56	03:51:13

UNITED STATES DEPARMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 12, 2011

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: M-I907-NF-2011
HYDROGRAPHIC SHEET: W00216

LOCALITY: 5m SE of St. John Island, St. John, VI
TIME PERIOD: March 30 - April 3, 2011

TIDE STATION USED: 975-1639 Charlotte Amalie, VI
Lat.18° 20.15'N Long. 64° 55.2' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.227 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project M-I907-NF-2011, W00216, during the time period between March 30 to April 3, 2011.

Please use the zoning file "I907NF2011CORP" submitted with the project instructions for St. Thomas, USVI. Zones VIR22, VIR23, VIR36, VIR37 and VIR40 are the applicable zones for W00216.

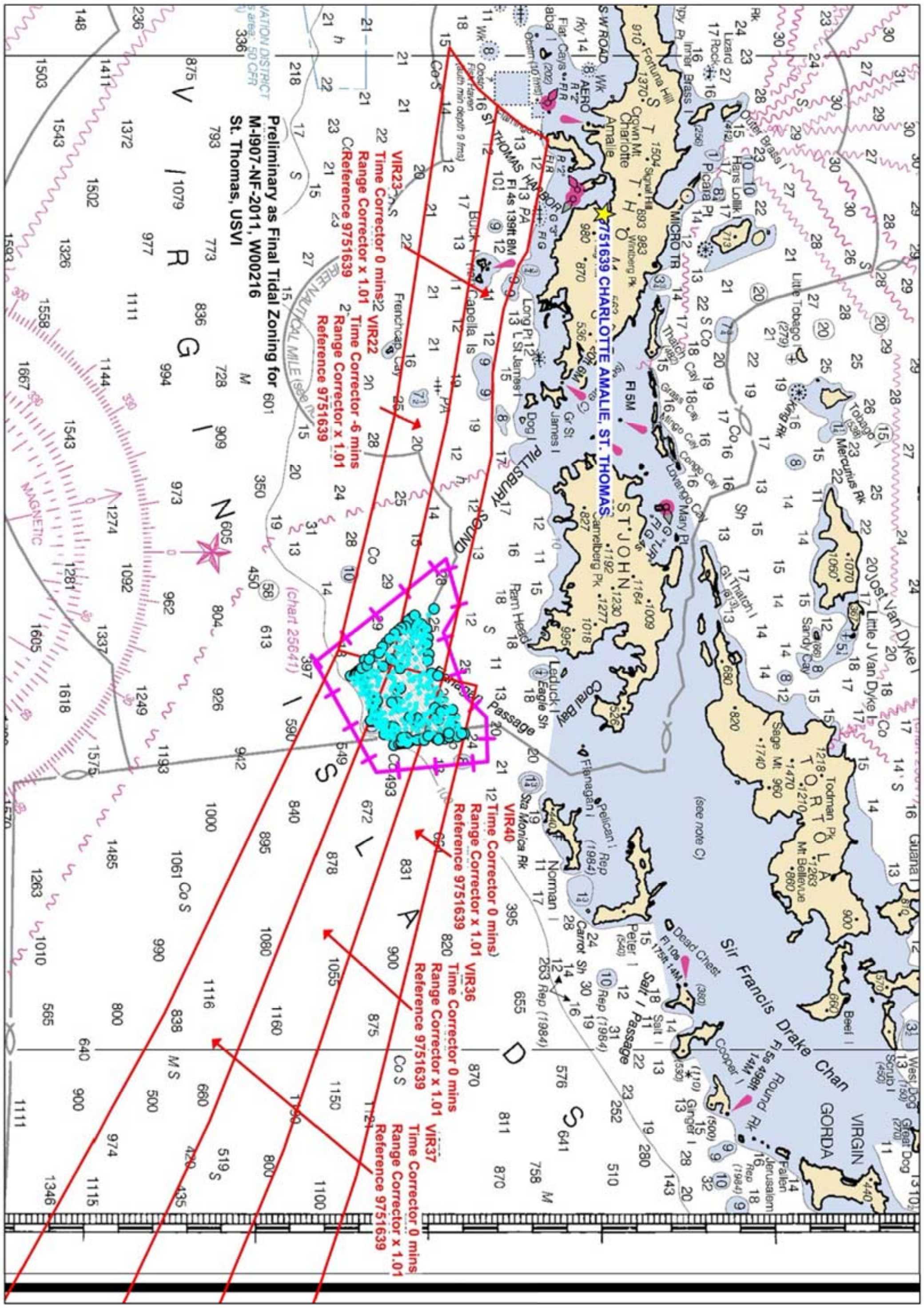
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Gerald Hovis

Digitally signed by Gerald Hovis
DN: cn=Gerald Hovis, o=Center for Operational Oceanographic Products and Services, ou=NOAA/NOS/CO-OPS/OD/PSB, email=gerald.hovis@noaa.gov, c=US
Date: 2011.09.09 15:56:09 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final Tidal Zoning for
M-I907-NF-2011, W00216
St. Thomas, USVI
9751639 CHARLOTTE AMALIE, ST. THOMAS
VIR23
Time Corrector 0 mins
Range Corrector x 1.01
Reference 9751639
VIR22
Time Corrector -6 mins
Range Corrector x 1.01
Reference 9751639
VIR40
Time Corrector 0 mins
Range Corrector x 1.01
Reference 9751639
VIR36
Time Corrector 0 mins
Range Corrector x 1.01
Reference 9751639
VIR37
Time Corrector 0 mins
Range Corrector x 1.01
Reference 9751639

Appendix V

SUPPLEMENTAL SURVEY RECORDS & CORRESPONDENCE

No supplemental survey or correspondence records for W00216