U.S. DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: W00221

LOCALITY

State: Puerto Rico

Sub-locality: Offshore of Cabo San Juan

2012

CHIEF OF PARTY
Timothy Battista

DATE: April 2012

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

REGISTRY NUMBER:

W00221

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:	**Puerto Rico**
General Locality:	**North Atlantic Ocean**
Sub-Locality:	**Offshore of Cabo San Juan**
Scale:	**1:20,000** Date of Survey: **April 4 to April 20, 2012**
Instructions Dated:	**27 March 2012** Project Number: **M-I907-NF-12**
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:	***Atlantic Hydrographic Branch***

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

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. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

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Descriptive Report to Accompany Hydrographic Survey W00221
Project M-I907-NF-12
Puerto Rico
North Atlantic Ocean
Scale 1:20,000
April 4 – April 20, 2012
NOAA Ship *Nancy Foster*

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Project Instructions M-I907-NF-12, dated March 27, 2012. Data acquisition was conducted from April 4-April 20, 2012.

North Western Limit	South Western Limit	South Eastern Limit	North Eastern Limit
18°31’39.22” N 065°34’32.01” W	18°24’38.55” N 065°34’43.00” W	18°22’57.78” N 065°30’13.49” W	18°27’13.82” N 065°28’37.09” W

Most of the available bathymetry is from surveys completed from 1970-1989 with partial bottom coverage. The purpose of this project is to map critical coral habitats and to update the nautical charts in the area. 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 has completed its ninth 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	328.69
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	328.69
LNM Crosslines singlebeam and multibeam combined	27.4
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	31.54

Fig. 1. W00221 Survey Outline

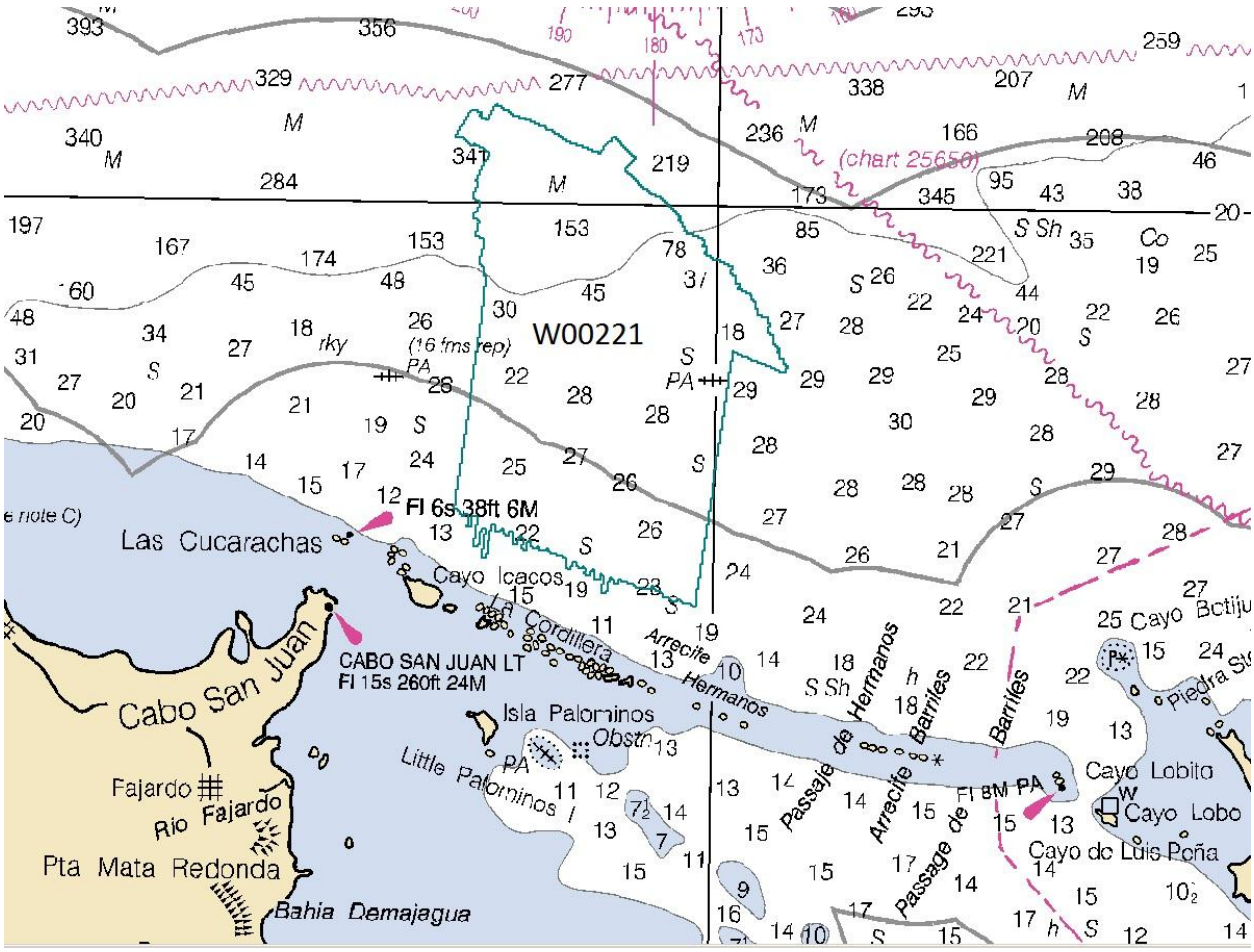


Table 2: MB Acquisition Dates and Times

2012_095	01:00:33	05:06:23
2012_100	08:36:20	23:58:32
2012_101	00:41:17	23:59:26
2012_102	00:14:24	11:56:35
2012_105	01:16:05	12:02:32
2012_108	15:39:27	23:55:30
2012_109	00:33:09	23:58:38
2012_110	00:16:44	07:08:21
2012_111	03:40:15	16:36:06

B. DATA ACQUISTION AND PROCESSING

Refer to M-I907-NF-12 Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessel, quality control procedures and data processing methods. Additional information to supplement the sounding and survey data as well as deviations from the DAPR, are included in this descriptive report.

B1. EQUIPMENT AND VESSEL

Vessel configurations, equipment operation, data acquisition and processing are consistent with procedures described in the M-I907-NF-12 DAPR.

B2. QUALITY CONTROL

B2.a System Certification and Calibration

Refer to the M-I907-NF-12 DAPR for a complete description of system integration and calibration results for the equipment and sensors used for this survey.

B2.b Sounding Coverage

As per the Project Instructions, this survey was conducted using the complete coverage multibeam specification as defined in the Hydrographic Survey Specifications and Deliverables (HSSD). While conducting the survey, bathymetric coverage was monitored by creating CUBE surfaces with 2-meter, 4-meter, 8-meter and 16-meter resolutions as per HSSD 5.2.2.2. Sounding densities generally meet the five soundings per node criteria, except in areas where multibeam data were shadowed by features of significant height and from ping drop outs from the Reson 7125.

B2.c Crosslines

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

B2.d Junctions and Prior Surveys

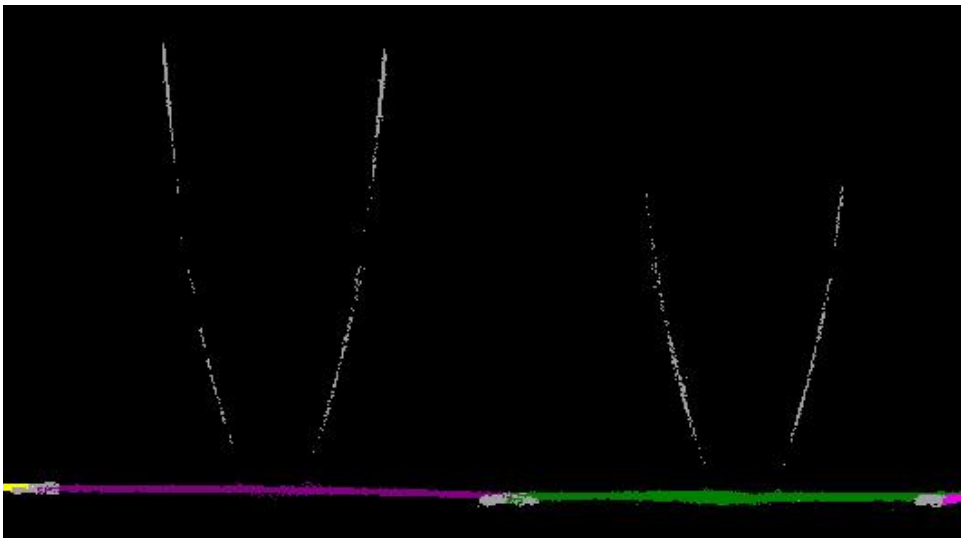
No prior surveys or junction comparisons assigned in the project instructions.

B2.e Systematic Errors

No significant artifacts due to systematic errors were observed in the data. Although consistent “range ringing” was encountered throughout the survey that had to be filtered out during acquisition or edited during post-processing. All attempts were made to tune the sonar during

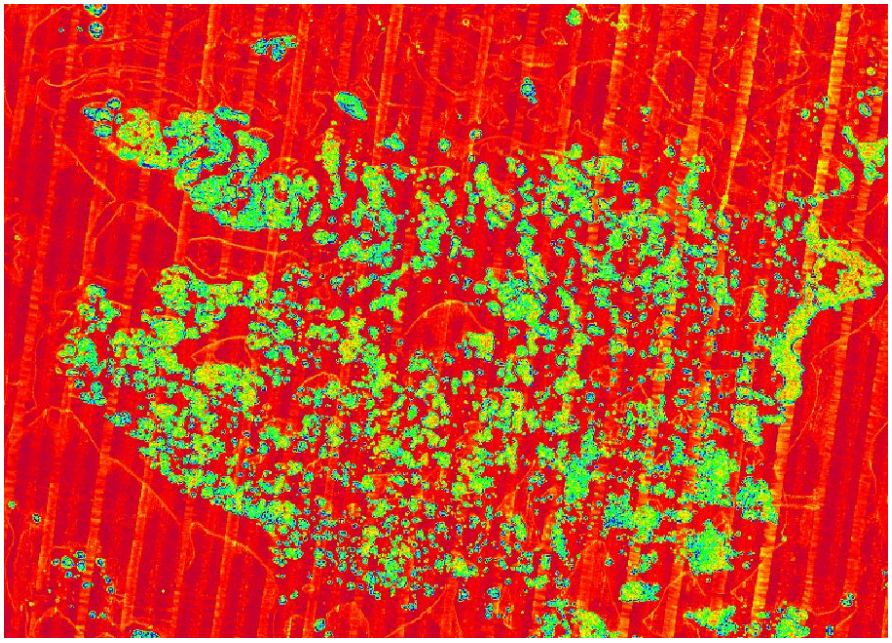
acquisition to eliminate or reduce this issue.

Fig. 2. Reson 7125 "range ring"



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



B3. CORRECTIONS TO ECHO SOUNDINGS

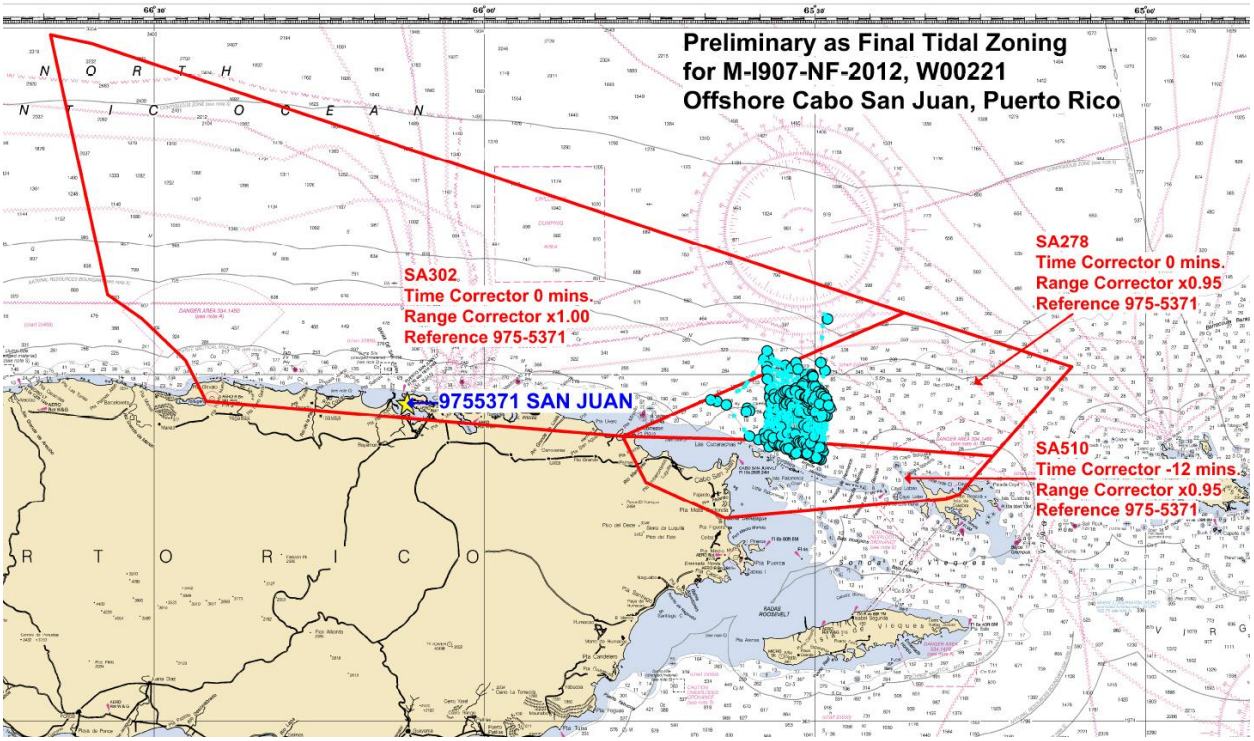
HDCS sounding data were reduced to mean lower-low water (MLLW 83-01 Tidal Epoch) using final tidal zoning supplied by CO-OPS and verified water levels from the tide gauge located at San Juan, Puerto Rico. (975-5371).

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 W00221



B4. DATA PROCESSING

B4.a Total Propagated Error

The Total Propagated Error (TPE) values used in Caris for this survey were derived using the Field Procedures Manual, 2012 (FPM) Table 4-10 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 W00221 are as follows:

Table 3: TPE Parameters

Project	Vessel	Tide Values		Sound Speed Values	
		Measured	Zoning	Measured	Surface
W00221	NF	0.030	0.045	4.0	1.0

B4.b BASE Surfaces and Mosaics

Survey W00221 BASE surfaces were created using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The parameters contained in the NOAA xml file provided with the FPM were used for CUBE processing. Finalized CUBE surfaces used final uncertainty from the "Greater of the two" option, and resolution dependent depth thresholds were applied as necessary. Refer to the M-I907-NF-12 DAPR, HSSD and the Caris user guide for further discussion. Table 4 describes all CUBE surfaces submitted as part of Survey W00221:

Table 4: CUBE Surfaces

Field Sheet W00221	Resolution	Type	Description	Depth Threshold
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_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_4m_CUBE_Final_No_Threshold	4m	CUBE	Bathy/Coverage	No
NOAA_8m_CUBE_Final_No_Threshold	8m	CUBE	Bathy/Coverage	No
NOAA_16m_CUBE_Final_No_Threshold	16m	CUBE	Bathy/Coverage	No

B4.c Data Cleaning

The survey data was edited using the swath and subset editor tools in Caris. Areas of the CUBE surfaces that indicated a high standard deviation, hypothesis count or uncertainty were examined and edited as required such that no residual outliers remained 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. Additional correctors were required from Omnistar after the ship left the coverage area of station Isabel.

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 San Juan (975-5371) served as datum control for W00221. 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.

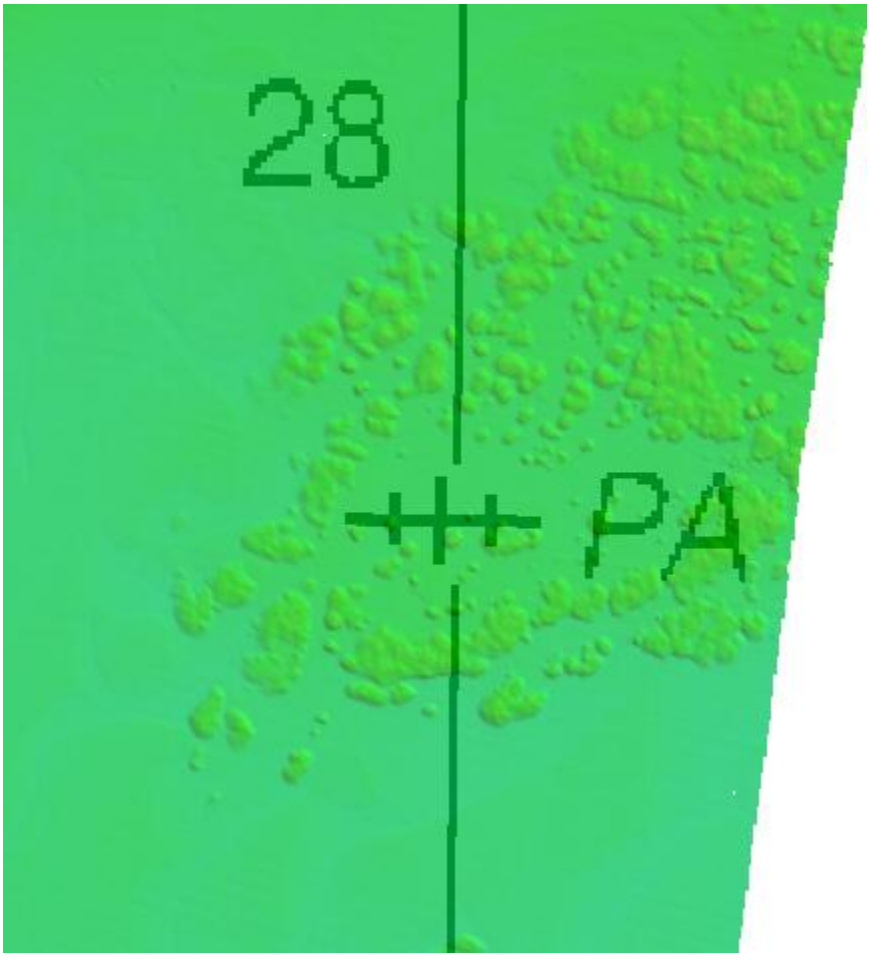
D2.b Shoreline

There is no shoreline within the sheet limits of survey W00221.

D2.c Charted Features

A sunken wreck, not dangerous to surface navigation charted at 18-26-59.62 N 065-30-00.24 W is recommended for removal from chart 25640 and 25650.

Fig 5. Charted Sunken Wreck



D2.d Charted Pipelines and Cables

There are no charted pipelines or cables within the sheet limits of survey W00221.

D2.e Bridges, Ferry Routes, and Overhead Cables

There are no ferry routes, bridges, or overhead cable crossings within the limits of survey W00221.

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

There are no shoals within the limits of survey W00221

D4. AIDS TO NAVIGATION

There are no charted Aids to Navigation (ATON) within the limits of W00221.

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 W00221.

D7. ENVIRONMENTAL CONDITIONS AND NOTES

No environmental conditions or notes are required for W00221.

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 the 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-12 is submitted separately and contains additional information relevant to this survey.

Michael Stecher

NOAA Contractor

Lead Hydrographer

CCMA Biogeography Branch

APPENDIX I
TIDES AND WATER LEVELS

WATER LEVEL INSTRUCTIONS
M-I907-NF-2012 Puerto Rico Mapping Project
(4/2/2012 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 2011, and OCS Field Procedures Manual (FPM), dated May 2011. 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.

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 (Colleen Roche at 301-713-2897, 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. The Hydro Hot List (HHL)

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), as well as any required subordinate 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. The notification must be sent to both teams as OET is responsible for configuring the station in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Control or Subordinate	Type (e.g. NWLON, PORTS©, etc)	Comment
San Juan	9755371	Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of M-I907-NF-2012

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. However, platforms should view the HHL each morning of active survey operations and click on the eyeball icon to double check that there are no problems with the required stations on that day. If a platform notices problems with data on their survey day of operation, please contact HPT at nos.coops.hpt@noaa.gov, CORMS at CORMS@noaa.gov, and their respective headquarters point of contact at HSD or NSD. Stations on the HHL 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. To be added to the CORMS daily HHL report, the platform should contact CO-OPS' Data Monitoring and Analysis Team (DMAT) at nos.co-ops.dmat@noaa.gov and request to be added.

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.

1.3. Tide Reducer Stations

1.3.1. CO-OPS Long Term Water Level Station Operation and Maintenance

The NWLON station San Juan, PR (9755371) will provide water level reducers for this project. Therefore it is critical that it remain in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at San Juan, PR (9755371) 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.

1.3.2. Subordinate Station Requirements

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.

1.3.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of the Puerto Rico Mapping Project is 0.09 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 a subordinate station will not 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.

1.3.4. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

1.3.5. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

1.3.6. This section is not applicable for this project.

1.4. Discrete Tidal Zoning

1.4.1. The water level station at San Juan, PR (9755371) is the reference station for preliminary tides for hydrography in the Puerto Rico Mapping Project area. The time and height correctors listed below for applicable zones should be applied to the preliminary data at San Juan, PR (9755371) 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
SA278	0	x0.95	9755371
SA302	0	x1.00	9755371
SA510	-12	x0.95	9755371

1.4.2. Polygon nodes and water level corrections referencing San Juan, PR (9755371) are provided in CARIS® format denoted by a *.zdf extension file name.

NOTE: The tide corrector values referenced to San Juan, PR (9755371) are provided in the zoning file "I907NF2012CORP" 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 station, San Juan, PR (9755371), 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.**

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-2012, 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 and Fetchtides

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

Alternately, users may download preliminary and verified six minute water level time series data from the CO-OPS database via the Fetchtides application. Fetchtides provides a mechanism to store imported data locally and combine multiple days worth of data into one CARIS readable tide (.tid) file. Fetchtides is available for download at Hydrosoft Online (https://inside.nos.noaa.gov/hydrosoft/hydrosoftware.html). For more information, please see the Fetchtides User Manual in the FPM chapter 3 appendix.

1.6 Water Level Records

This section is not applicable for this project.

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

September 12, 2012

MEMORANDUM FOR: Gerald Hovis, Chief, Products and Services Branch, N/OPS3

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 zoning in MapInfo and .MIX format
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
solmarhydro@gmail.com

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

Project No.:	M-I907-NF-12
Registry No.:	W00221
State:	Puerto Rico
Locality:	
Sublocality:	Offshore of Cabo San Jaun

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 v12.3(r3923) on Wed Sep 12 17:58:12 2012 [UTC]

Request for Approved Tides

Times of Hydrography

Year_DOY	Min Time	Max Time
2012_095	01:00:33	05:06:23
2012_100	08:36:20	23:58:32
2012_101	00:41:17	23:59:26
2012_102	00:14:24	11:56:35
2012_105	01:16:05	12:02:32
2012_108	15:39:27	23:55:30
2012_109	00:33:09	23:58:38
2012_110	00:16:44	07:08:21
2012_111	03:40:15	16:36:06

Page 2

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 20, 2012

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: M-I907-NF-2012
HYDROGRAPHIC SHEET: W00221

LOCALITY: Offshore Cabo San Juan, Puerto Rico
TIME PERIOD: April 4-20, 2012

TIDE STATION USED: 975-5371 San Juan, PR
Lat. 18° 27.5'N Long. 66° 07.0' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.400 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project M-I907-NF-2012, W00221, during the time period between April 4 and April 20, 2012.

Please use the zoning file I907NF2012CORP submitted with the project instructions for M-I907-NF-2012. Zones SA278, SA302 and SA510 are the applicable zones for W00221.

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).

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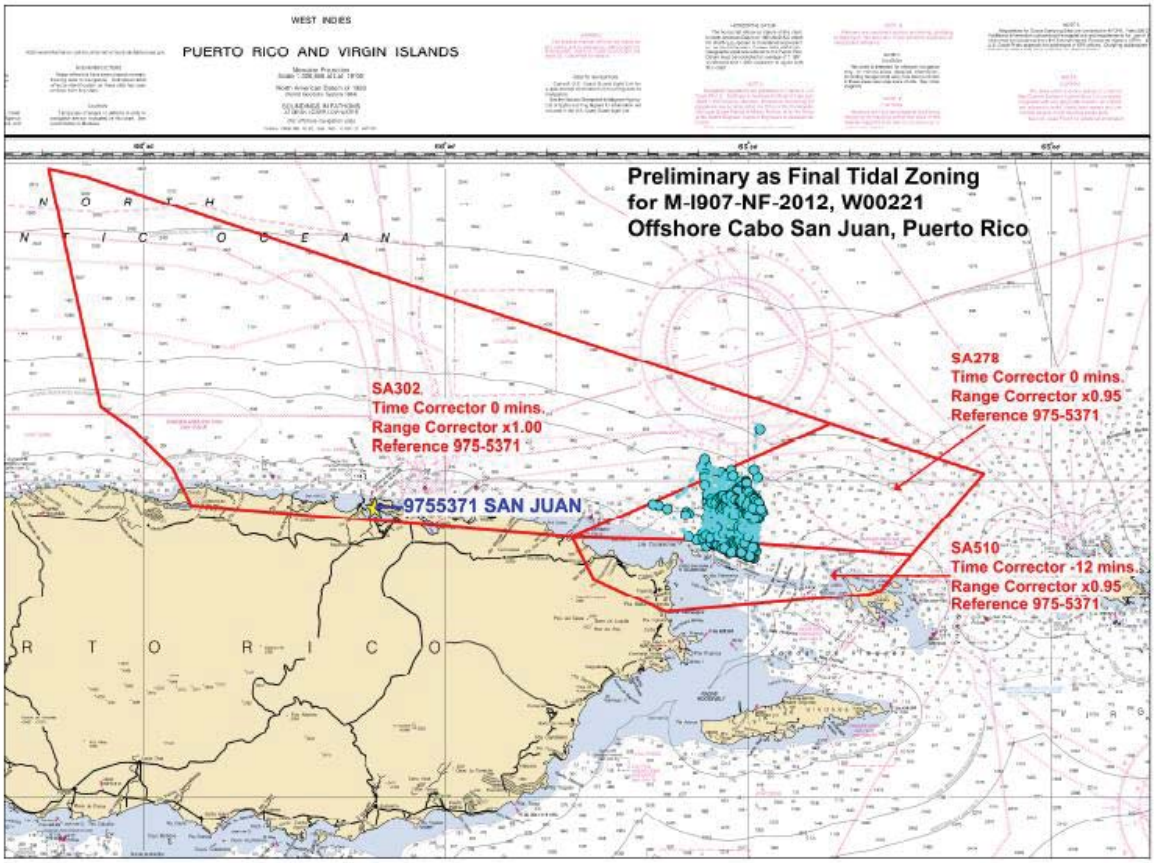
Date: 2012.09.25 09:12:24 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


WEST INDIES
PUERTO RICO AND VIRGIN ISLANDS
Preliminary as Final Tidal Zoning
for M-I907-NF-2012, W00221
Offshore Cabo San Juan, Puerto Rico
NORTH ATLANTIC OCEAN
SA302
Time Corrector 0 mins.
Range Corrector x1.00
Reference 975-5371
9755371 SAN JUAN
SA278
Time Corrector 0 mins.
Range Corrector x0.95
Reference 975-5371
SA510
Time Corrector -12 mins.
Range Corrector x0.95
Reference 975-5371
PUERTO RICO

APPENDIX II
SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

No supplemental survey records or correspondence for W00221.

APPENDIX III
FEATURE REPORT
DtoN – none
AWOIS – none
Wrecks – one
Maritime Boundary - none

W00221 Wrecks

Registry Number: W00221
State: Puerto Rico
Locality: North Atlantic Ocean
Sub-locality: Offshore of Cabo San Juan
Project Number: M-I907-NF-12
Survey Date: 04/20/2012

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
25650	36th	12/01/2011	1:100,000 (25650_1)	USCG LNM: 6/18/2013 (7/2/2013) NGA NTM: 4/10/2004 (7/6/2013)
25640	43rd	11/01/2008	1:326,856 (25640_1)	[L]NTM: ?

* Correction(s) - *source: last correction applied (last correction reviewed--"cleared date")*

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck PA	GP	[None]	18° 26' 58.1" N	065° 30' 03.7" W	---

1 - Wrecks

1.1) Wreck PA

Survey Summary

Survey Position: 18° 26' 58.1" N, 065° 30' 03.7" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2012-111.00:00:00.000 (04/20/2012)

Dataset: W00221_wreck.000

FOID: US 0000725278 00001(0226000B111E0001)

Charts Affected: 25650_1, 25640_1

Remarks:

$CSYMB/remrks: Field unit remarked in the DR Section D2.c, page 8 as recommended for removal from chart 25640 and 25650.

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00221_wreck.000	US 0000725278 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Cartographic symbol ($CSYMB)

Attributes: NINFOM - Delete charted wreck

NTXTDS - ENC US3PR10M,ED11,Update 1

SORDAT - 20120420

SORIND - US,US,graph,W00221

Office Notes

SAR: The wreck was disproved using full MBES coverage.

COMPILE: Concur. Delete charted non-dangerous wreck PA, depth unknown. Update area with present survey depths.

APPROVAL PAGE

W00221

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

- W00221_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- W00221_GeoImage.pdf

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

Approved:_____

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Date: 2013.08.30 15:22:01 -04'00'

LT Abigail Higgins, NOAA
Chief, Atlantic Hydrographic Branch