F00602

NOAA Form 76-35A

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey:	Field Examination
Registry Number:	F00602

LOCALITY

State:	Virginia
General Locality:	Approaches to Chesapeake Bay, VA
Sub-locality:	5NM East of Cape Henry to CBBT

2011

CHIEF OF PARTY
CDR Lawrence T. Krepp, NOAA

LIBRARY & ARCHIVES

Date:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		**F00602**

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:	**Virginia**
General Locality:	**Approaches to Chesapeake Bay, VA**
Sub-Locality:	**5NM East of Cape Henry to CBBT**
Scale:	**10000**
Dates of Survey:	**06/14/2011 to 06/15/2011**
Instructions Dated:	**07/15/2011**
Project Number:	**OPR-D304-TJ-11**
Field Unit:	**NOAA Ship Thomas Jefferson S-222**
Chief of Party:	**CDR Lawrence T. Krepp, NOAA**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	
Verification by:	**Atlantic Hydrographic Branch**
Soundings Acquired in:	**meters at Mean lower low water**
H-Cell Compilation Units:	***meters at Mean lower low water***

Remarks:

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

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Descriptive Report to Accompany Survey F00602

Project: OPR-D304-TJ-11

Locality: Approaches to Chesapeake Bay, VA

Sublocality: 5NM East of Cape Henry to CBBT

Scale: 1:10000

June 2011 - June 2011

NOAA Ship Thomas Jefferson S-222

Chief of Party: CDR Lawrence T. Krepp, NOAA

A. Area Surveyed

The Area surveyed comprises two separate locations. The western portion of the survey area in in the vicinity of the third and fourth islands of the Chesapeake Bay Bridge Tunnel (CBBT). The eastern portion of the survey area is in the vicinity of the inbound lane of the Northeast Approaches to Chesapeake Bay.

A.1 Survey Limits

Data was acquired within the following survey limits:

Northeast Limit	Southwest Limit
37.0492226944 N 75.7979446111 W	36.9389863889 N 76.0830448056 W

Table 1: Survey Limits

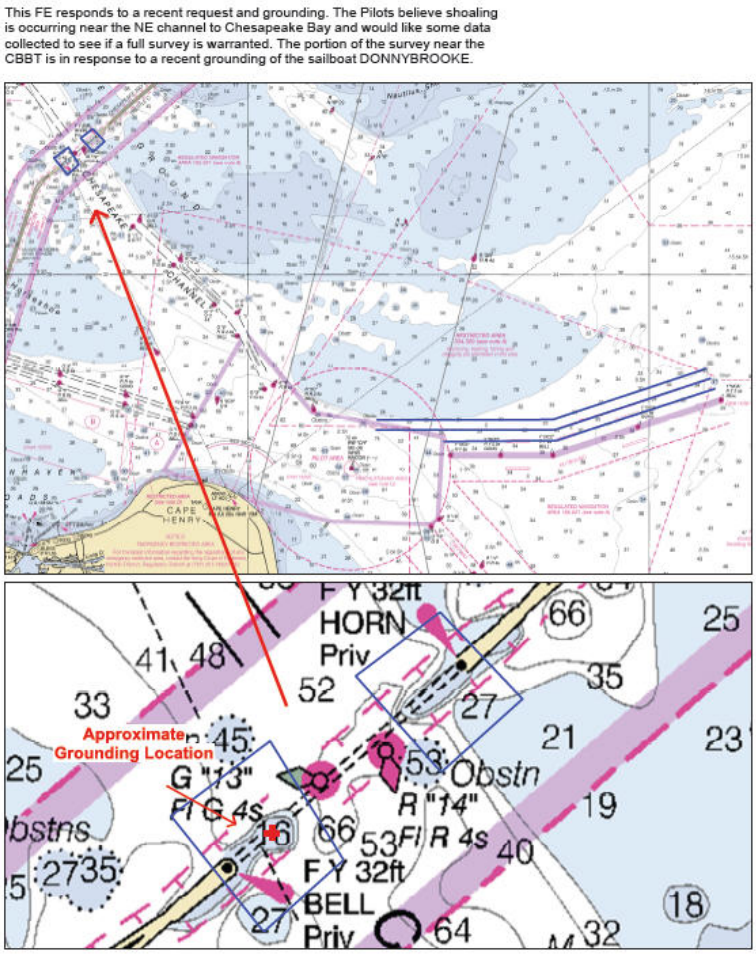


Figure 1: Survey Limits

This field examination was not assigned with formalized Project Instructions. The Survey Limits were provided in the form of a memo and MapInfo Tables of the survey areas.

A.2 Survey Purpose

This FE responds to a recent request and grounding. The Pilots believe shoaling is occurring near the NE channel to Chesapeake Bay and would like some data collected to see if a full survey is warranted. The portion of the survey near the CBBT is in response to a recent grounding of the sailboat DONNYBROOKE

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Refer to "CBBT verification of tunnels_090611.pdf" in Appendix V for details on the completeness of tunnel refurbishment that may impact this survey.

A.4 Survey Coverage

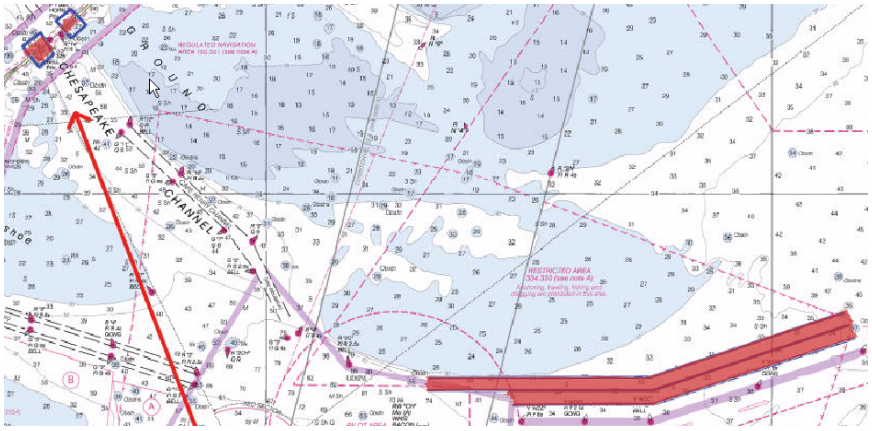


Figure 2: Coverage

Formalized Project Instructions for this field examination were not provided to the field unit . Survey coverage was in accordance with the requirements of Mark Frieze email dated 9 June 2011, and CDR Rick brennen e-mail 10 June 2011 and included in Appendix V of this report.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*S222*	*3102*	*Total*
LNM	**SBES Mainscheme**	0	0	0
	MBES Mainscheme	54.11	6.17	60.28
	Lidar Mainscheme	0	0	0
	SSS Mainscheme	4.61	2.85	7.46
	SBES/MBES Combo Mainscheme	0	0	0
	SBES/SSS Combo Mainscheme	0	0	0
	MBES/SSS Combo Mainscheme	0	0	0
	SBES/MBES Combo Crosslines	0	0	0
	Lidar Crosslines	0	0	0
Number of Bottom Samples				0
Number of DPs				0
Number of Items Items Investigated by Dive Ops				0
Total Number of SNM				2.86

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates
06/14/2011
06/15/2011

Table 3: Dates of Hydrography

A.6 Shoreline

No shoreline features assigned with OPR-D304-TJ-11 fell within the boundaries of F00602.

A.7 Bottom Samples

Bottom samples were not required in this survey area.

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the 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, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	*3102*	*S222*
LOA	31 feet	208 feet
Draft	).775 meters	4.78 meters

Table 4: Vessels Used

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
RESON	7125 SV1	MBES
RESON	7125 ROV	MBES
Klein	5000 w/ Hull-mounted, light-weight towfish	SSS
Klein	5000 w/ Towed, heavy-weight towfish	SSS

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

This survey was a field examination and not a full Navigation Area survey. Limited time available and adherence to normal traffic patterns while surveying are reasons that crosslines were not acquired. Quality control from concurrent surveys provided reasonable assurance that systems were in good working order and data were accurate.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.000meters	0.085meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
3102	4 meters/second	N/A meters/second	0.2 meters/second
S222	4 meters/second	1 meters/second	0.2 meters/second

Table 7: Survey Specific Sound Speed TPU Values

B.2.3 Junctions

There are no contemporary surveys that junction with this survey.

B.2.4 Sonar QC Checks

Crosslines were not acquired during this survey. Quality assurance via examination of the Standard Deviation layer of CUBE surfaces were not performed. Quality assurance for this FE is inferred from quality assurance performed during concurrent surveys on OPR-D304-TJ-11

B.2.5 Equipment Effectiveness

B.2.5.1Thermocline

In the Northeastern Approach to Chesapeake Bay, thermocline severly impacted the quality of side scan sonar imagery. Since the purpose of surveying in this area was to detect general shoaling in the vicinity of the inbound lane of the Northeast Approaches, side scan sonar operations were stopped and set line spacing MBES bathymetry was used to investigate the area for shoaling.

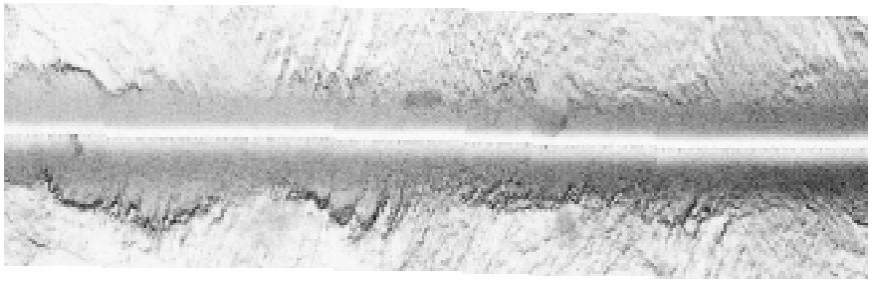


Figure 3: Thermocline

B.2.6 Factors Affecting Soundings

B.2.6.1 None Exist

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Casts were taken by MVP approximatly every 30 mins (ship), and CTDs were taken every 2 hours (launch). Two DQA comparisons were performed one for 3102 and S222 and were less than 2m/sec difference. Methods were as listed in the DAPR

The survey area was small enough that zoning for sound speed variation was not warranted.

B.2.8 Coverage Equipment and Methods

All Equipment and survey methods were used as detailed in the DAPR. The western area of the survey in the vicinity of the third and fourth islands of the CBBT were acquired by object detection multibeam and the Northeast Approaches inbound traffic lane was surveyed using set line spacing MBES.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Corrections to echo soundings were as detailed in the DAPR

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter was not collected for this survey.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: NOAAProfileField.xml.

The CARIS applications HIPS/SIPS, BathyDataBase (BDB), and others use S-57 format to define features by attributes and attribute values. NOAA has customized these files to add non-IHO sanctioned attributes to allow additional information to be conveyed from the field unit to the processing branches and to Marine Charting Division. The field unit further customized these files to make certain attributes mandatory when creating features and feature reports. The NOAA_Profile_Field.xml file is included in the S-57 Features folder of this survey's data submission package.

B.5.2 Surfaces

The following CARIS surfaces were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00602_CombFinal_50cm.csar	CUBE	0.5 meters	1.43 meters - 22.58 meters	NOAA_0.5m	Object Detection
F00602_East_CU_50cm_Final	CUBE	0.5 meters	9.28 meters - 19.09 meters	NOAA_0.5m	MB Set Line Spacing
F00602_NW_CU_50cm_Final	CUBE	0.5 meters	1.43 meters - 22.58 meters	NOAA_0.5m	Object Detection
F00602_CBBT_1m_Mos	SSS Mosaic	1.0 meters	0 meters - 1 meters	N/A	100% SSS
F00602_SE_1m_mos	SSS Mosaic	1.0 meters	0 meters - 1 meters	N/A	100% SSS

Table 8: CARIS Surfaces

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the DAPR

C.1 Vertical Control

The vertical datum for this project is Mean lower low water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Chesapeake Bay Bridge Tunnel, VA	8638863

Table 9: NWLON Tide Stations

File Name	Status
8638863.tid	Verified Observed

Table 10: Water Level Files (.tid)

File Name	Status
D304TJ2011CORP_Rev.zdf	Final
D00151CORF.zdf	Final

Table 11: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 07/12/2011. The final tide note was received on 09/15/2011.

Tide note specifies that D304TJ2011CORP_Rev.zdf be used for zoning. Prior to receiving the zone file specified for this project, zoning from a 2009 Field Examination was used for preliminary analysis. Upon receipt of D304TJ2011CORP_Rev.zdf and notice that preliminary zoning was accepted as final, the values in the zoning file were compared. Aside from having different names, the files are identical in the area of this survey. Therefore it was deemed unnecessary to spend additional time and resources to process the data with the new file, as there would be no resultant change in processed depths from the survey. A detailed line query of the survey lines will indicate that D00151CORF.zdf is applied to the processed data.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The following DGPS Stations were used for horizontal control:

DGPS Stations
Diver, VA freq= 289

Table 12: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
12205	1:80000	32	12/2009	05/28/2011	05/28/2011
12207	1:80000	22	10/2009	05/21/2011	05/21/2011
12208	1:50000	14	08/2009	05/21/2011	05/21/2011
12221	1:80000	81	04/2011	05/21/2011	05/21/2011
12222	1:40000	52	09/2009	05/21/2011	05/21/2011

Table 13: Largest Scale Raster Charts

12205

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

12207

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

12208

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

12221

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

12222

In the eastern portion of the survey area in the vicinity of the traffic separation zone and precautionary area, 28 charted depths were compared to surveyed soundings. The surveyed soundings were generally deeper except for an area on the north side. Slight encroachment is occurring where the surveyed 30 ft curve is extending toward a 32ft charted depth. The south island in Chesapeake channel has shoaling in the vicinity of the 16 foot sounding with 4 ft being the shoalest depth encountered. The area needs to be redefined with a foul area as mentioned in the DTON report since rip rap block has been placed in the area. The north tunnel is similarly addressed by the DTON report in Appendix I and the hob files located in the S-57 Features folder with the survey submission.

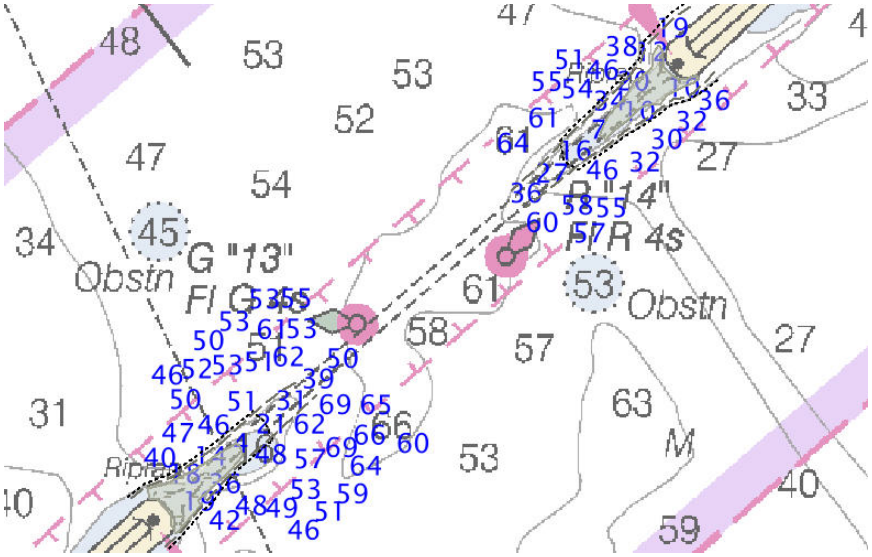


Figure 4: Tunnels

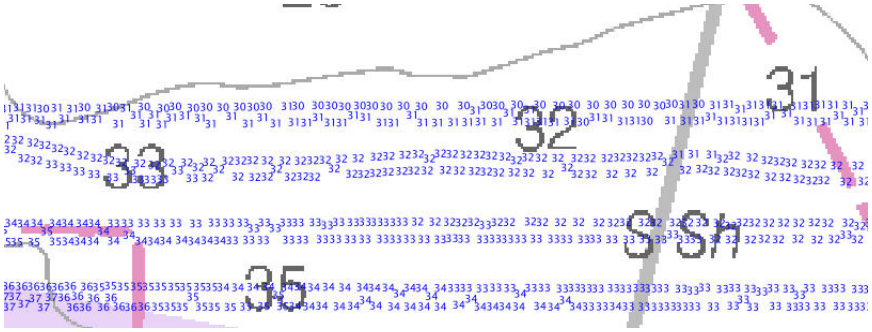


Figure 5: Encroachment

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5VA13M	1:40000	12	06/10/2008	06/10/2008	NO
US5VA11M	1:50000	9	05/16/2008	08/04/2008	NO

Table 14: Largest Scale ENCs

US5VA13M

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

US5VA11M

A detailed chart comparison was completed for NOS 12222. Comparisons to other available charts provided no additional changes worth noting. Refer to 12222 discussion for a detailed comparison to charted information.

D.1.3 AWOIS Items

No AWOIS items were assigned.

D.1.4 Charted Features

No Charted features of the type PA, ED, PD or REP were found in the survey. See DToN report for specific additions to the chart.

D.1.5 Uncharted Features

Refer to the Shoals and Hazardous Features section of this Descriptive Report

D.1.6 Dangers to Navigation

Danger to Navigation Reports are included in Appendix I of this report.

D.1.7 Shoal and Hazardous Features

The following are recommend charting:
- Add a Foul Line as depicted in DTON report, refer to Appendix I.
- Update the High Water shoreline.
- Update to depict Rip Rap that extends from High Water shoreline across the entire channel. (dashed line)
- Add an un-surveyed area (gray area extending from charted shoreline to the charted 16' sounding).
- Add a Precautionary Note at all openings with verbiage similar to the following: "The CBBT is undergoing a scour remediation project where additional rock is being added to cover tunnel and bridge ways. Mariners should cross the tunnels between prescribed buoys and channel ways as the tabulated depths in these areas will be maintained. Due to the remediation project, areas outside the designated channel may not have reliable depths over Rip Rap areas marked by the dashed lines.
- Although these two tunnel openings were the only ones surveyed, consideration should be given to address the areas around all CBBT openings in a similar manner. See DToN section D.1.5

D.1.8 Channels

Two channels are located in the vicinity of this survey: the inbound lane of the Northeast Approach to Chesapeake Bay and Cape Henry Channel. Survey work around the CBBT tunnel at the Cape Henry Channel does not address tabulated depths from US Army Corps of Engineers (USACOE). The Inbound lane of the Northeast Approach is not a federally maintained waterway, and therefore there are no tabulated depths available for comparison.

D.2 Additional Results

D.2.1 Shoreline

A small area of shoreline surrounds the tunnel entrance and is appended by the foul area described in the DTON report. The shoreline is charted correctly. No S-57 Features in a Composite Source File were assigned for this survey area for investigation.

D.2.2 Prior Surveys

Prior survey comparisons exist for this survey, but were not reviewed.

D.2.3 Aids to Navigation

Nine ATONs appear in this survey and appear to be on station and serving their intended purposes.

D.2.4 Overhead Features

No overhead features exist in this survey.

D.2.5 Submarine Features

No Submarine features are in this survey.

D.2.6 Ferry Routes and Terminals

No Ferry Routs exist in this survey.

D.2.7 Platforms

No platforms exist in this survey.

D.2.8 Significant Features

No significant features were observed in this survey except those listed in the Feature Report in Appendix II.

D.2 Construction and Dredging

CBBT Scour Remediation Project is 66% complete, anticipating 350,000 tons of block in surrounding tunnel entrances. On September 6 2011, Bob Johnson Director of Maintenance was called. He conformed that the Chesapeake Channel and Thimble Shoal Channel tunnels are complete. The Chesapeake channel tunnel received full work, the thimble shoal channel was worked on the sides. There is still more work to be done on the trestles. The tunnels were exposed and about 8 feet of block put over them. the channel depths were maintained. The final surveys went to VRMC (Virginia Marine resources committee) and USACOE and should be avaialble for cross checking depths.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
LT Michael C. Davidson	Field Operations Officer	05/25/2012	Digitally signed by Michael C. Davidson Date: 2012.05.25 4'00'
CDR Lawrence T. Krepp	Commanding Officer	05/25/2012	
CHST Peter G. Lewit	Sheet Manager	05/25/2012	

F. Table of Acronyms

Acronym	Definition
AFF	Assigned Features File
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Staiton
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSDM	Hydrographic Survey Specifications and Deliverables Manual

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Porpagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Exectutive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

Appendix I: Tides and Water Levels

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

July 12, 2011

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

FROM: CDR Lawrence T. Krepp, NOAA, NOAA Ship THOMAS JEFFERSON (MOA-TJ)

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

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

Project No.:	OPR-D304-TJ-11
Registry No.:	F00602
State:	Virginia
Locality:	Approaches to Chesapeake
Sublocality:	Chesapeake Channel

Attachments containing:

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

cc: N/CS33

Year_DOY	Min Time	Max Time
2011_165	04:40:05	11:03:26
2011_166	15:05:48	19:14:41

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 15, 2011

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D304-TJ-2011
HYDROGRAPHIC SHEET: F00602

LOCALITY: Chesapeake Channel, Approaches to Chesapeake Bay, VA
TIME PERIOD: June 14 - 15, 2011

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, VA
Lat. 36° 58.0'N Long. 76° 06.8' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.814 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-D304-TJ-2011, F00602, during the time period between June 14 and June 15, 2011.

Please use the zoning file "D304TJ2011CORP_Rev" submitted with the project instructions for Approaches to Chesapeake Bay, VA. Zones SCB11, SCB12, SA50D, SA50E, SA51 and SA56 are the applicable zones for F00602.

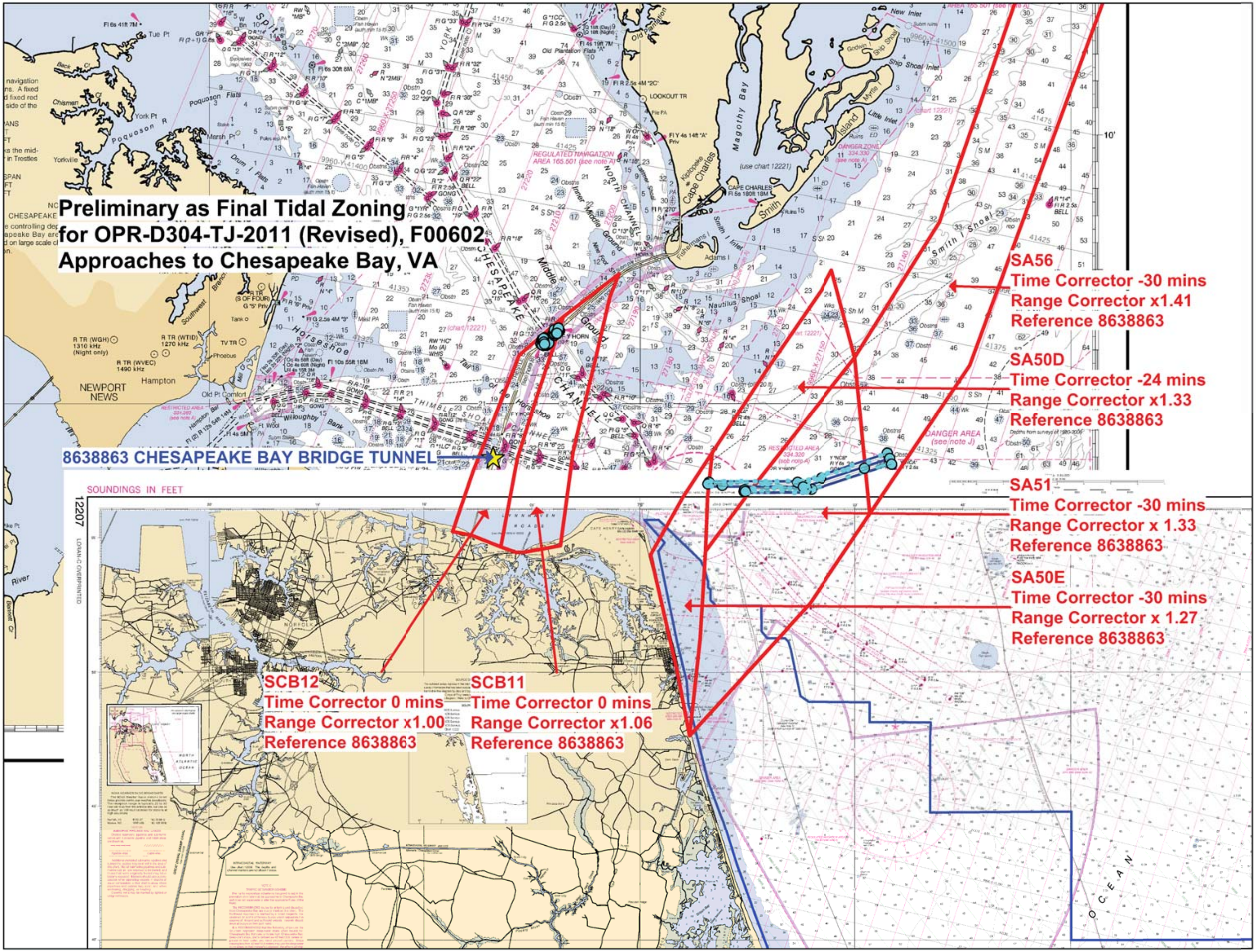
Refer to attachments for zoning information.

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: 2011.09.15 09:24:02 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final Tidal Zoning
for OPR-D304-TJ-2011 (Revised), F00602
Approaches to Chesapeake Bay, VA
8638863 CHESAPEAKE BAY BRIDGE TUNNEL
SA56
Time Corrector -30 mins
Range Corrector x1.41
Reference 8638863
SA50D
Time Corrector -24 mins
Range Corrector x1.33
Reference 8638863
SA51
Time Corrector -30 mins
Range Corrector x 1.33
Reference 8638863
SA50E
Time Corrector -30 mins
Range Corrector x 1.27
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Time Corrector 0 mins
Range Corrector x1.06
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LORAN-C OVERPRINTED
NEWPORT NEWS
Hampton
Cape Charles
Smith Island
Magothy Bay
CHESAPEAKE
NORTH CHANNEL
THIMBLE SHOAL
DANGER AREA
REGULATED NAVIGATION AREA 165.501

Appendix II: Supplemental Survey Records and Correspondence

From	<Michael.Davidson@noaa.gov>
Sent	Monday, March 28, 2011 8:39 am
To	richard.t.brennan@noaa.gov , sarah.mrozek@noaa.gov
Cc	ops.thomas.jefferson@noaa.gov , co.thomas.jefferson@noaa.gov , chiefst.thomas.jefferson@noaa.gov
Bcc	
Subject	TJ beginning work on OPR-D304-TJ-11
Attachments	Draft_OPR-D304-TJ-11_ApproachesToChesapeakeBay_Instructions-1.pdf 1.2MB

Mid-Atlantic Nav Manager(s),

NOAA Ship Thomas Jefferson will begin survey operations on OPR-D304-TJ-11 on Wednesday evening or Thursday morning. We will begin working on the sheets labeled Sheet 1 and Sheet 7 first. I will be contacting Mr. T.D. Woodward, USACE regarding our survey operations as required in our project instructions (see attached). Please feel free to notify any of our local interests of our survey operations as you see fit.

Let me know if you have any questions or need any further information. Once we receive our final project instruction, I will forward a courtesy copy.

Thank you for your time.

V/R,
Mike

--
LT Michael C. Davidson
Operations Officer
NOAA Ship Thomas Jefferson
439 W York St
Norfolk, VA 23510
michael.davidson@noaa.gov
757-441-6323 ship's landline
757-647-0187 ship's cell

http://www.cbbt.com/scourproject.html

Article found by Thomas Jefferson 16 June 2011

scour remediation project

The Chesapeake Bay Bridge-Tunnel is currently undergoing a Scour Remediation Project. This project consists of placing a stone blanket over portions of the Thimble Shoal Tunnel and the Chesapeake Channel Tunnel in areas where the cover materials have eroded over the years. Work will also be performed in designated areas along Trestle B northbound and Trestle C northbound. This involves filling localized scour holes with riprap at some bent locations immediately followed by placing longitudinal riprap dikes on the east and west sides of the trestles at designated locations or by placing riprap as scour protection blankets beneath and on the east and west sides of the trestles at the designated locations.

The project was awarded in January 2008 to Skanska USA Civil SE, Inc. of Norfolk, VA in the amount of $19 million. All work will be waterborne, thus not interrupting the flow of traffic and it will include the placement of approximately 260,000 tons of stone. It is estimated to take three years to complete the project in its entirety.

The District routinely performs hydrographic surveys to monitor scour across the facility.

To date, this project is 66% complete and more than 196,876 tons of stone have been placed.

Barge of Stone Arriving from the Quarry in Havre de Grace, MD

Tugs Position the Rig Prior to Stone Placement

Front End Loader Filling the "Skid Pan"

Rip Rap Stone Being Placed with a "Skid Pan"

Home | Capital Projects | Employment | Requests for Proposals | Meeting Agenda | Public Notices | News Releases Surplus Equipment Sale | iPod Driving Tour

This Website current as of June 16, 2011

Subject: CBBT verification of tunnels
From: "peter.lewit" <Peter.Lewit@noaa.gov>
Date: 9/6/2011 1:02 PM
To: "michael.davidson.atsea" <michael.davidson.atsea@noaa.gov>, Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, "Peter.Lewit" <Peter.Lewit@noaa.gov>

I spoke with Bob Johnson director of maintenance for the CBBT Sep 6 2011. He said that both tunnels at
Chesapeake Channel and Thimble Shoal Channel are complete. The Chesapeake channel tunnel received full work and Thimble shoal tunnel was worked on the sides. There is still more work to be done on the trestles.
The tunnels were exposed and about 8 ft of block put over them. I didn't get specifics on the how far out they went, however he said
they maintained the depth of the channels. The final surveys went out to VMRC (Virginia Marine Resources Committee) , Army Corps of
Engineers to name a few, that information should be available for cross checking the soundings against the chart.
Contact Dir of Maintenance (757) 331-2960

Appendix III: Feature Report

DtoNs: 2

AWOIS: 0

Wrecks: 0

Maritime Boundary: 0

F00602_Feature_Report

Registry Number: F00602
State: Virginia
Locality: Approaches to Chesapeake Bay, VA
Sub-locality: 5NM East of Cape Henry to CBBT
Project Number: OPR-D304-TJ-11
Survey Dates: 20110614 - 20110615

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12222	51st	01/01/2009	1:40,000 (12222_1)	[L]NTM: ?
12208	13th	08/01/2008	1:50,000 (12208_1)	[L]NTM: ?
12221	80th	01/01/2009	1:80,000 (12221_1)	[L]NTM: ?
12280	8th	03/01/2008	1:200,000 (12280_2)	[L]NTM: ?
13003	49th	04/01/2007	1:1,200,000 (13003_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	DTON #01	Obstruction	[None]	37° 02' 12.7" N	076° 04' 38.7" W	---
1.2	DTON #02	Obstruction	[None]	37° 02' 50.3" N	076° 03' 45.7" W	---

1 - Dangers To Navigation

1.1) DTON #01

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 02' 12.7" N, 076° 04' 38.7" W
Least Depth:	[None]
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2011-166.00:00:00.000 (06/15/2011)
Dataset:	F00602_DtoNs.000
FOID:	0_ 0000008335 00001(FFFE0000208F0001)
Charts Affected:	12222_1, 12208_1, 12221_1, 12280_2, 13003_1

Remarks:

DTON 1 .Remove charted 16 feet and append contours. Remove 4.8 meters (15 foot) depth and and append contours from ENC US5VA13m located at 37 02 16.26n 076 04 26.76W. Chart Foul Line as depicted. The charted charted dashed tunnel line is incorrectly classified and should be changed to Rip Rap classification and

enlarged to current extent.Add unsurveyed area.

Add Precautionary Note at all openings: The CBBT is undergoing a scour remediation project where additional rock is being added to cover tunnel and bridge ways. Mariners should cross between prescribed buoys and channel ways as these will have the least impact in depth change. Areas between buoys and the bridge/tunnel descents may not have reliable depths over the Rip Rap areas as marked by the dashed lines due to remediation or spillage. Although these two tunnel openings were the only ones surveyed,the areas around all CBBT openings should be similarly charted.

Feature Correlation

Source	Feature	Range	Azimuth	Status
F00602_DtoNs.000	0_ 0000008335 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	CATOBS - 6:foul area

EXPSOU - 2:shoaler than range of depth of the surrounding depth area

NATSUR - 9:rock

NINFOM - Add foul area obstruction

SORDAT - 20110615

SORIND - US,US,graph,F00602

TECSOU - 3:found by multi-beam

WATLEV - 4:covers and uncovers

Office Notes

SAR: The DTON has been applied to the chart, recommend to update. Compile: Chart obstruction foul area

Feature Images

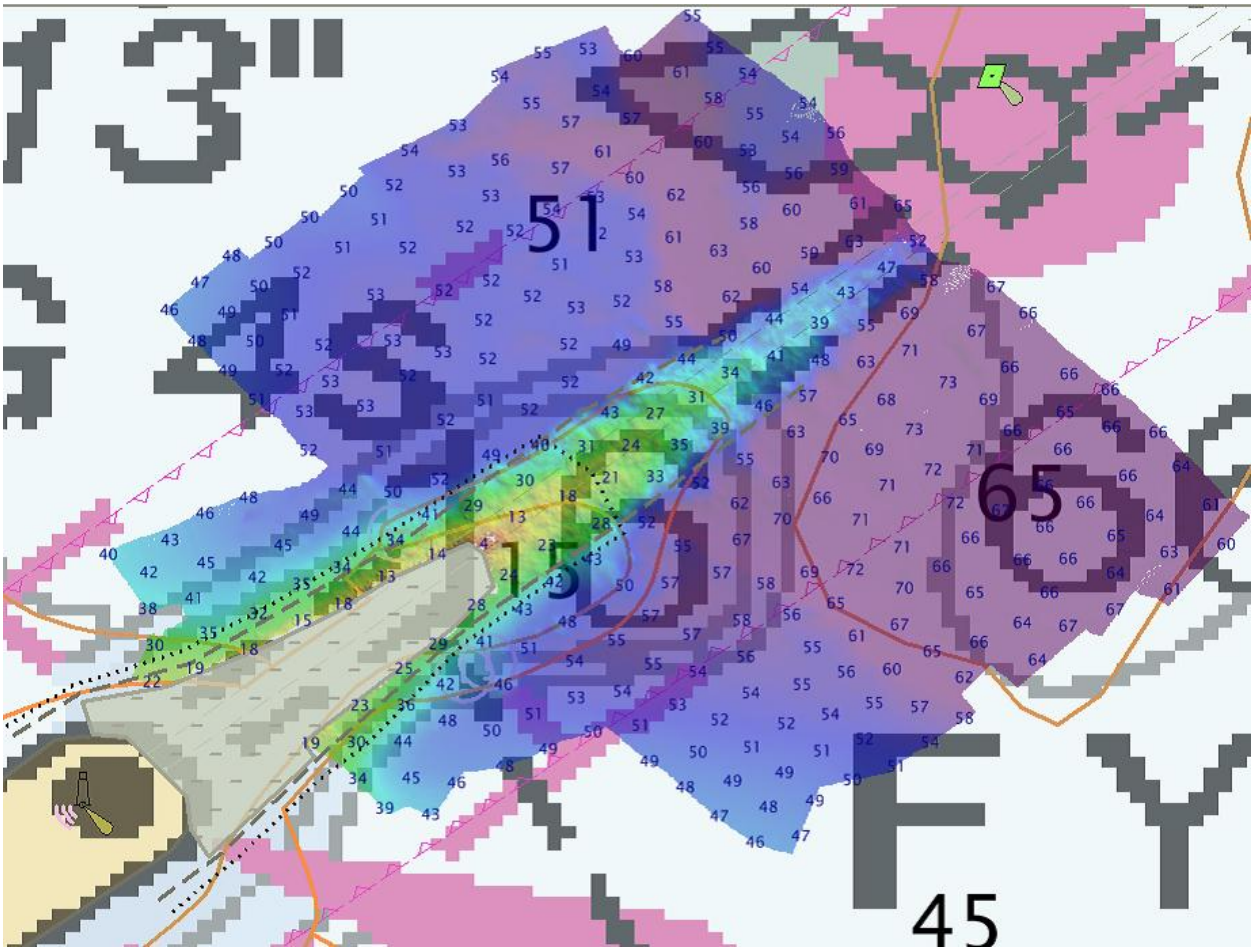

Figure 1.1.1

1.2) DTON #02

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 02' 50.3" N, 076° 03' 45.7" W
Least Depth:	[None]
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2011-166.00:00:00.000 (06/15/2011)
Dataset:	F00602_DtoNs.000
FOID:	0_ 0000008336 00001(FFFE000020900001)
Charts Affected:	12222_1, 12208_1, 12221_1, 12280_2, 13003_1

Remarks:

DTON 2. Chart Foul Line as depicted, The charted charted dashed tunnel line is incorrectly classified and should be changed to Rip Rap classification and enlarged to current extent. Add unsurveyed area.Append Contours

Add Precautionary Note at all openings: The CBBT is undergoing a scour remediation project where additional rock is being added to cover tunnel and bridge ways. Mariners should cross between prescribed buoys and channel ways as these will have the least impact in depth change. Areas between buoys and the bridge/tunnel descents may not have reliable depths over the Rip Rap areas as marked by the dashed lines due to remediation or spillage. Although these two tunnel openings were the only ones surveyed, the areas around all CBBT openings should be similarly charted.

Feature Correlation

Source	Feature	Range	Azimuth	Status
F00602_DtoNs.000	0_ 0000008336 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	CATOBS - 6:foul area
	EXPSOU - 2:shoaler than range of depth of the surrounding depth area

NATSUR - 9:rock

NINFOM - Add foul area obstruction

SORDAT - 20110615

SORIND - US,US,graph,F00602

TECSOU - 3:found by multi-beam

WATLEV - 4:covers and uncovers

Office Notes

SAR: The DTON has been applied to the chart, recommend to update. Compile: Chart obstruction foul area

Feature Images

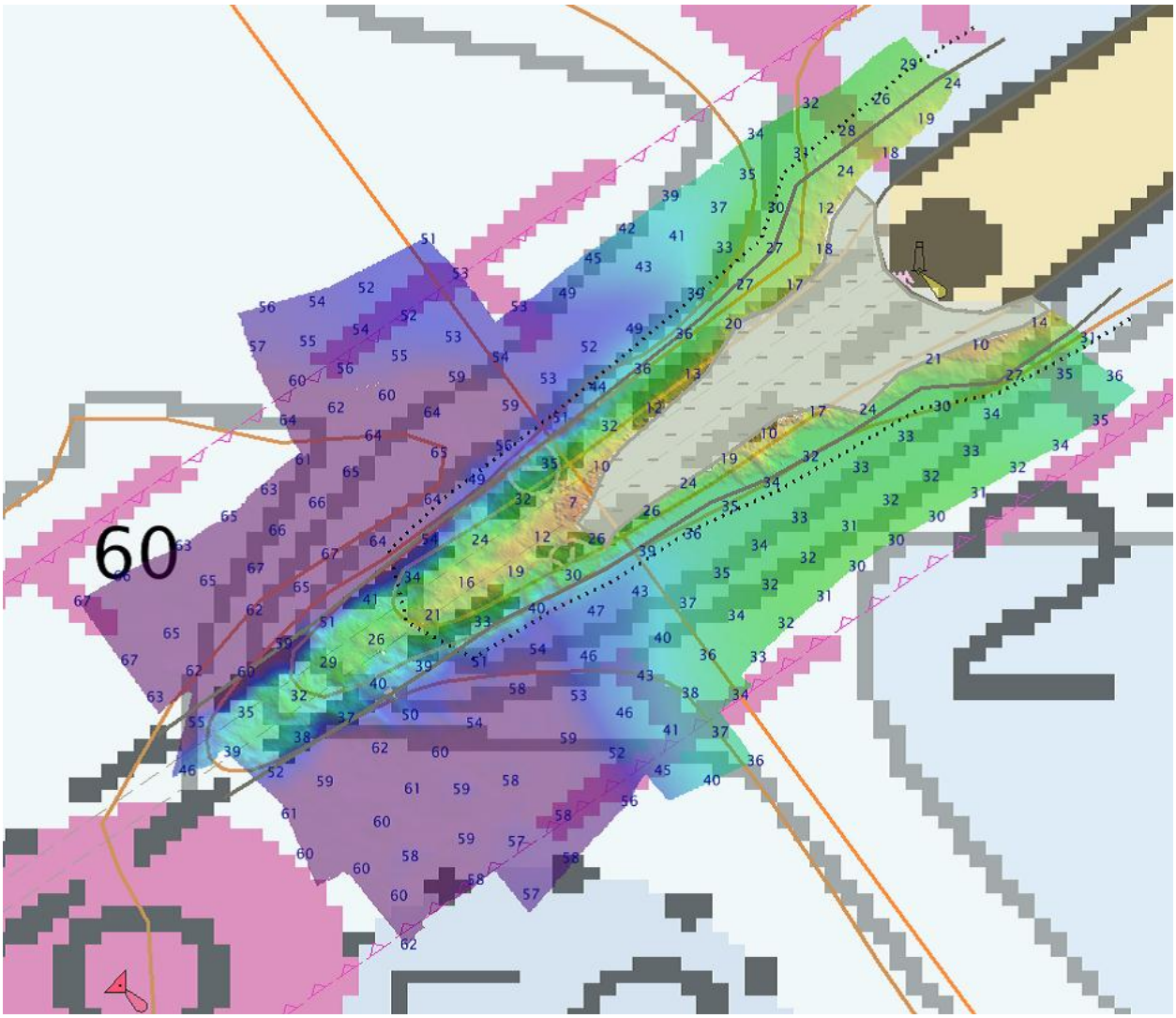

Figure 1.2.1

APPROVAL PAGE

F00602

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

- F00602_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- F00602_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.

Digitally signed by HIGGINS.ABIGAIL.SARAH.1267671750
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=HIGGINS.ABIGAIL.SARAH.1267671750
Date: 2013.03.08 11:21:50 -05'00'

Approved: _____

LT Abigail Higgins
Chief, Atlantic Hydrographic Branch