H12343

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12343

LOCALITY

State: Virginia

General Locality: Approaches to the Chesapeake Bay, VA

Sub-locality: Sandbridge Beach to False Cape

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	**H12343**

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 the Chesapeake Bay, VA**		
Sub-Locality:	**Sandbridge Beach to False Cape**		
Scale:	**1:20,000**	Date of Survey:	**06/07/2011 to 06/14/2011**
Instructions Dated:	**06 April, 2011**	Project Number:	**OPR-D304-TJ-11**
Vessel:	**NOAA Ship *Thomas Jefferson***		
Chief of Party:	**CDR Lawrence T. Krepp, NOAA**		
Surveyed by:	***Thomas Jefferson* Personnel**		
Soundings by:	**Singlebeam Echo Sounder Multibeam Echo Sounder**		
Imagery by:	**Side Scan Sonar**		
Verification by:	***Atlantic Hydrographic Branch Personnel***		
Soundings Acquired in:	**Meters at MLLW**		

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 Rednotes 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/.

Remarks:
1) All Times are in UTC.
2) This is a Navigable Area Hydrographic Survey.
3) Projection is NAD83, UTM Zone 18.

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Descriptive Report to Accompany Hydrographic Survey H12343

Project OPR-D304-TJ-11
Approaches to the Chesapeake Bay, VA
Sandbridge Beach to False Cape
Scale 1:20,000
June 7th – June 14th, 2011
NOAA Ship *Thomas Jefferson*
Chief of Party: CDR Lawrence T. Krepp

A Area Surveyed

A.1 Survey Limits

Data was acquired within the following survey limits:

Northern limit	Southern limit	Eastern limit	Western limit
36° 45’ 04.66”N	36° 36’ 46.84”N	075° 49’ 35.49”W	075° 55’ 16.47”W

Table 1: Survey Limits

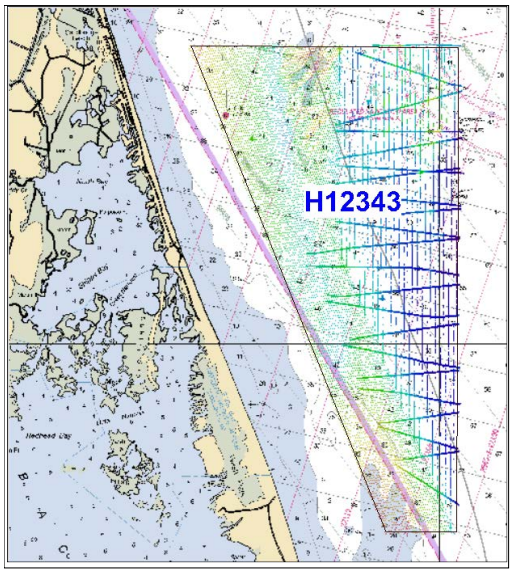


Figure 1: H12343 Survey Area

Survey Limits and coverage were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. The project will address the concerns raised by the Virginia Pilots about the under keel clearance of deep draft coal ships transiting through the area southeast of the deep draft lane sea buoy.

A.3 Survey Quality

This hydrographic survey was completed as specified by 'Hydrographic Survey Project Instructions OPR-D304-TJ-11 Approaches to Chesapeake Bay Change 01', dated 6th April, 2011. 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.

A.4 Survey Coverage

In accordance with the Project Instructions, this survey was conducted using 200% SSS coverage with concurrent VBES bathymetry and object detection MBES developments over navigationally significant features. Three gaps in VBES coverage exists. One extends approximately 450m from position 36-41-54.63N, 075-51-49.13W to 36-41-41.05N, 075-51-48.85W (Figure 2). The second gap extends approximately 500m from position 36-44-39.49N, 075-50-26.71W to 34-44-55.49N to 075-50-26.88W (Figure 3). The third gap extends approximately 200m from 36-41-35.57N to 075-53-14.25W (Figure 3).

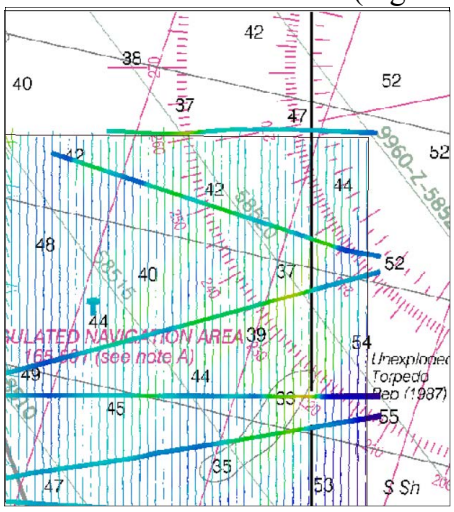


Figure 2. Data Gap in NE of Sheet

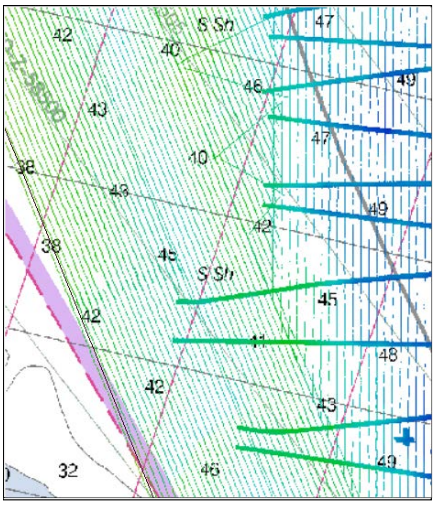


Figure 3. Data Gaps in Center of Sheet

A.5 Survey Statistics

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

	Linear Nautical Miles
LNM Single beam mainscheme only	N/A
LNM Multibeam mainscheme only	N/A
LNM Lidar mainscheme only	N/A
LNM Side Scan Sonar mainscheme only	N/A
Lineal nautical miles of any combination of the above techniques (SSS 200%, MBES)	645
LNM Crosslines singlebeam and multibeam combined	52
LNM Lidar Crosslines	N/A
LNM development lines non mainscheme	0.57
LNM shoreline/nearshore investigations	N/A
Number of Bottom Samples	3
Number of items investigated that required additional time/effort in the field beyond the above survey operations	N/A
Total number of square nautical miles	23.24

Table 2: Hydrographic Survey Statistics

Calendar Date	Julian Day
07-June-11	158
08-June-11	159
09-June-11	160
10-June-11	161
11-June-11	162
12-June-11	163
13-June-11	164
14-June-11	165

Table 3: Dates of Hydrography

A.6 Shoreline

Approximately 8.5 NM of shoreline was assigned as part of survey H12343. Due to time limitations, it was decided to limit survey to offshore of the 30 ft. contour only. 4 features from the project's composite source file are located within the boundaries of this survey.

A.7 Bottom Samples

A total of 3 bottom samples were acquired. A list of all bottom samples acquired during Survey H12343 is contained in Appendix V of this report.

B Data Acquisition and Processing

Refer to ***OPR-D304-TJ-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, and any deviations from the DAPR are included in this descriptive report.

B.1 Equipment and Vessels

B.1.1 Vessels

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

Hull ID	**S-222**	**3101**	**3102**
LOA	**208'**	**31'**	**31'**
Draft	**15'**	**3'**	**3'**

Table 4: Vessels Used

B.1.2 Equipment

Data were acquired by NOAA Ship *Thomas Jefferson, Hydrographic Survey Launch (HSL) 3101 and HSL 3102.* NOAA Ship *Thomas Jefferson* acquired Reson 7125 multibeam echo sounder (MBES) soundings and sound velocity profiles. HSL 3101 and 3102 acquired Vertical Beam echo sounder (VBES) soundings and sound velocity profiles. Sea bed samples were collected by HSL 3101. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the *DAPR*. The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
RESON	7125 SV1	Multibeam Sonar
RESON	7125 ROV	Multibeam Sonar
ODOM	Echotrak CV200	Vertical beam Sonar
KLEIN	5000	Side Scan Sonar
Seabird	Seacat 19+	CTD
Brooke Ocean	MVP100	Sound Speed

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

MBES and VBES cross-lines totaling 52 LNM, approximately 8.1% of acquired mainscheme, were acquired during the course of the survey. As per email dated 10 Sept, 2009 from AHB located in the Descriptive Report, Appendix 5, quality control was performed using the standard

deviation layer of the survey's CUBE surface. Areas of unusually high standard deviation (>0.5m) were investigated and resolved in processing, except where caused by areas of high bathymetric relief or as described in Section B.5 Data Processing.

B.2.2 Uncertainty

For the 2011 field season, Total Propagated Error (TPE) parameters for sound, speed, and tides are calculated separately for each project. The Survey specific parameters for H12343 as follows:

Measured	Zoning
0.00	0.085

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S-222	4	1	0.2
3101	4	NA	0.2
3102	4	NA	0.2

Table 7: Survey Specific Sound Speed TPU Values

These values were calculated for all MBES data following CARIS Merge.

B.2.3 Junctions

The following junctions were made with this survey:

Registry #	Scale	Year	Field Unit	Junction Side
H12342	1:20,000	2011	*Thomas Jefferson*	East
H12316	1:20,000	2011	*Thomas Jefferson*	North

Table 8: Junctioning Surveys

The soundings that junction between H12342 and H12343 agree within 1 foot. The soundings that junction between H12316 and H12343 agree within 1 foot.

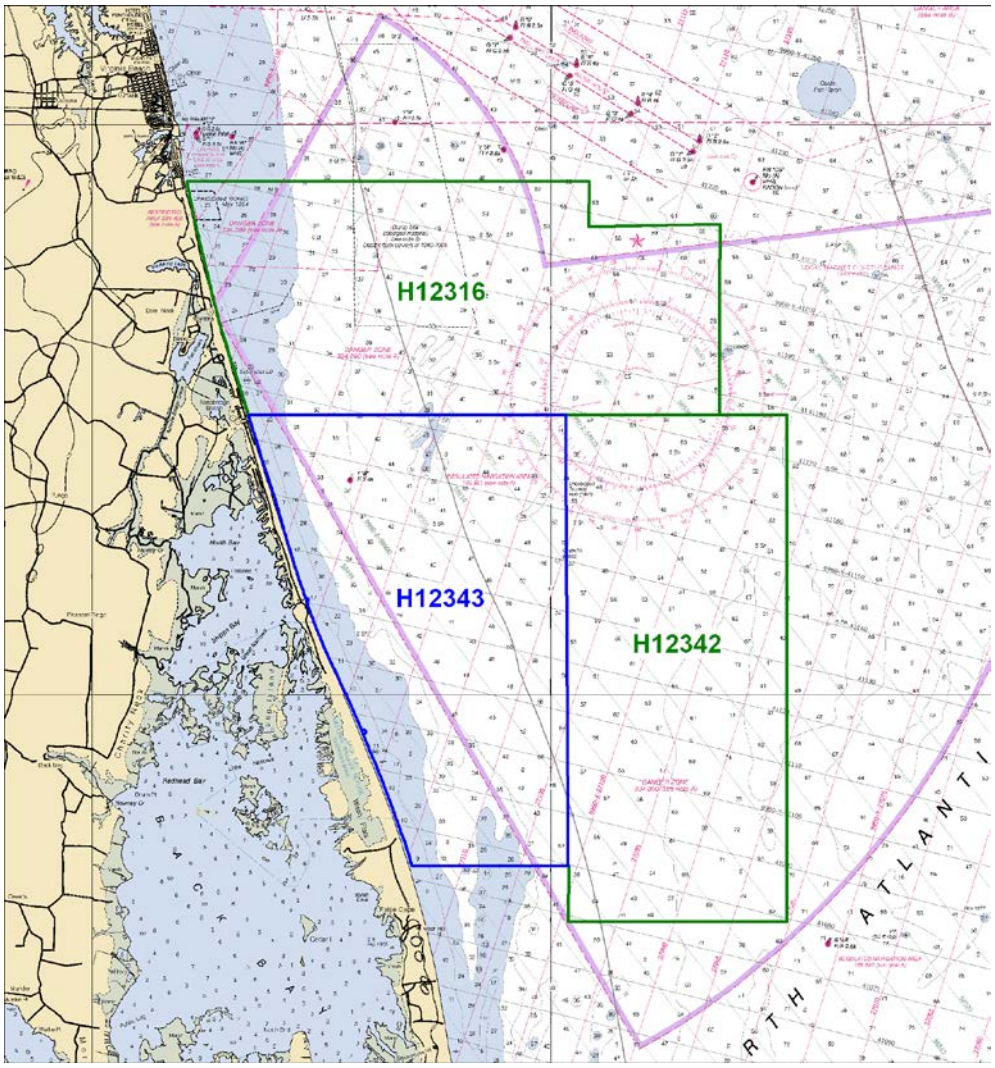


Figure 2: Junctioning Surveys

B.2.4 Sonar QC Checks

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

B.2.5 Sound Speed Methods

Sound Speed Casts were taken at least once per day per platform for VBES data using the Seabird Seacat 19+ CTD's. The Moving Vessel Profiler (MVP) was used to collect sound speed for MBES from the ship. A file detailing all sound velocity casts is located in Separate II of this Descriptive Report.

B.2.6 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Sounding

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified water levels from Chesapeake Bay Bridge Tunnel (8638863), and Duck, NC (851370) using preliminary zoning accepted as final zoning and illustrated in Figure 3.

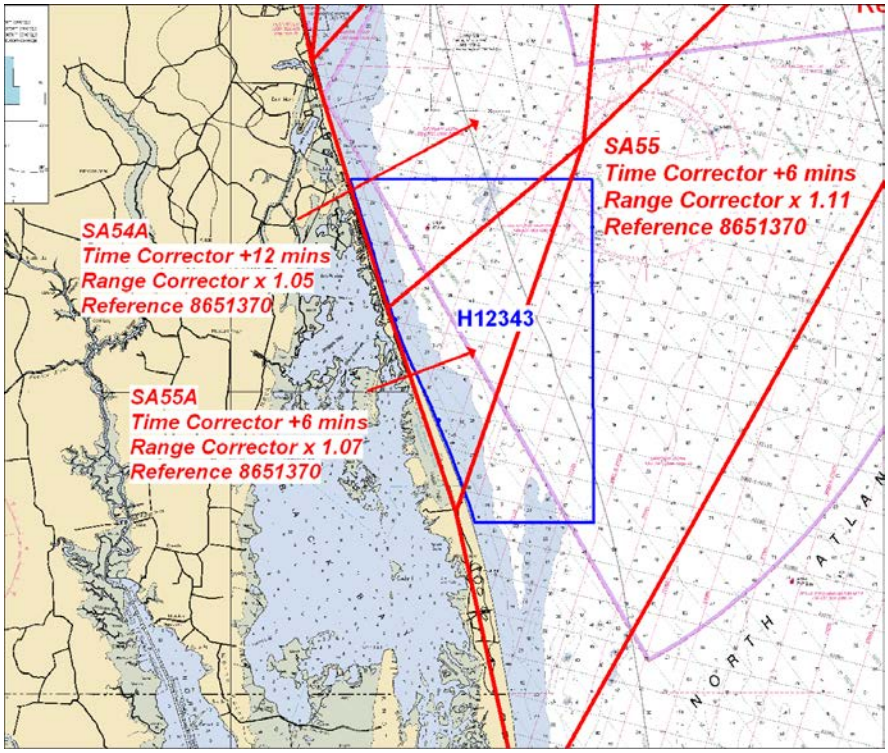


Figure 3: Final Tide Zoning

All Data reductions procedures conform to those 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 Software Updates

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

B.5.1 Surfaces

The following CARIS surfaces are included:

Name of Surface	*Resolution*	*Type*	*Purpose*
~~H12341~~***H12343***_MB_Cube_MLLW_2m_Final	2m	CUBE	Bathymetry
H12343_VB_Uncert_MLLW_4m_Final	4m	Uncertainty	Bathymetry
H12343_Dev1_Cube_MLLW_50cm_Final	0.5m	CUBE	Development
H12343_Dev2_Cube_MLLW_50cm_Final	0.5m	CUBE	Development
H12343_Dev3_Cube_MLLW_50cm_Final	0.5m	CUBE	Development
H12343_SS100_1m	1m	Mosaic	100% Coverage
H12343_SS200_1m	1m	Mosaic	200% Coverage

Table 9: CARIS Surfaces

All MBES data for this survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to NOAA _0.5m for object detection surfaces and NOAA_2m for all main scheme surfaces. Refer to the *2011 Data Acquisition and Processing Report*, *2011 Field Procedures Manual*, and *CARIS HIPS and SIPS User Guide* for further discussion.

For all VBES data, Uncertainty Weight grids were created within CARIS Hips and Sips.

The survey data were cleaned using the swath and subset editor tools in CARIS. Areas of surfaces that indicated high standard deviation were examined and cleaned as required such that all but two of the nodes in the combined meet the IHO Order I depth accuracy requirements.

C Vertical and Horizontal Control

In accordance with FPM section 5.2.3.2.3, an HVCR report was not created because horizontal and vertical control stations were not established by the field party for this survey. A summary of horizontal and vertical control for this survey follows.

C.1 Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) stations at the Chesapeake Bay Bridge Tunnel, VA (8638863) and Duck, NC (8651370) will serve as datum control for H12343. A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 17 June 2011 in accordance with the FPM and project letter instructions.

C.2 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. The differential corrections from U.S. Coast Guard beacon at Driver, VA (289 kHz) were used during this survey.

D Results and Recommendations

D.1 Chart Comparison

Survey H12343 was compared to Chart 12207 (22nd Ed., October 2009, 1:80,000), and Chart 12208 (14th Ed., August 2009, 1:50,000), the largest scale chart covering a portion of the survey area. In the northern section, soundings generally agreed within 2-3ft. In the southern section of the survey, soundings generally agreed within 4-6 ft. This difference reflects the sources of the charted soundings and their respective ages. The main exceptions to this are two charted shoal areas in the northern section of the sheet. The northernmost shoal area has shifted to the S while the second shoal area has shrunk considerably (Figure 4).

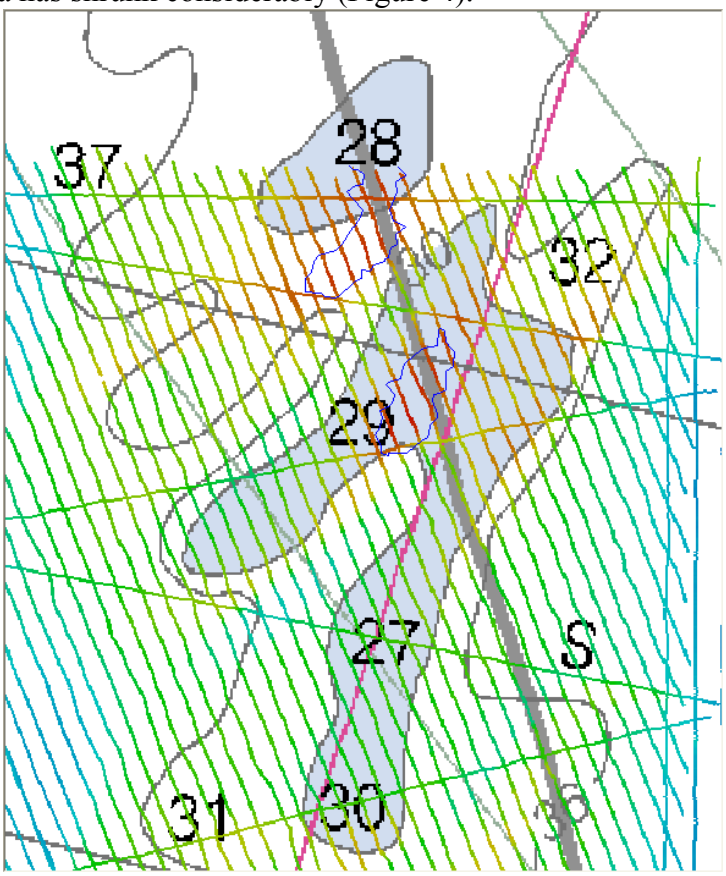


Figure 4: New 30ft. Contour in Northern Section of Sheet (light blue line)

D.1.1 AWOIS Items

One Assigned AWOIS item was investigated. See Feature Report Appendix II. A portion of the investigation circle resides in adjoining survey H12342. No evidence of the feature was seen.

D.1.2 Charted Features

A charted obstruction PA (pipes) is reported as AWOIS 14882. See above. Three charted nearshore wrecks were not investigated. See Feature Report Appendix II.

D.1.3 Uncharted Features

Three uncharted features were reported. See Feature Report Appendix II.

D.1.4 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.5 Shoal and Hazardous Features

There were no significant uncharted shoals discovered during this survey. A charted shoal located at 36° 44’ 58N, 075° 52’ 45W has migrated approximately 250m to the S (Figure 4).

D.1.6 Channels

No USACE maintained channels exist within the limits of survey H12343.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not investigated during the course of data acquisition on survey H12343

D.2.2 Prior Surveys

Results of prior surveys are represented by charted features and soundings, as discussed in the chart comparison section above.

D.2.3 Aids to Navigation

There is one charted Aid to Navigation (ATON) within the limits of H12343. This was found to be on station and serving its intended purpose.

D.2.4 Overhead Features

There are no bridges or overhead cable crossings within the limits of the survey.

D.2.5 Submarine Features

No charted cables or pipelines were observed in this survey, so any which do exist are assumed to be properly buried.

D.2.6 Ferry Routes and Terminals

There are no ferry routes within the limits of the survey.

D.2.7 Platforms

There are no platforms within the limits of the survey.

D.2.8 Significant Features

There were no significant uncharted features discovered during this survey.

D.2.9 Construction and Dredging

No construction or dredging was observed within the limits of the survey.

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.

The Data Acquisition and Processing Report for OPR-D304-TJ-11 is submitted separately and contains additional information relevant to this survey.

Approved and Forwarded:

LT William Winner, NOAA Field Operations Officer	CDR Lawrence T. Krepp, NOAA Commanding Officer

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

June 17, 2011

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

FROM: CDR Lawrence Krepp, 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

Commanding Officer
NOAA Ship Thomas Jefferson
439 West York Street
Norfolk, VA 23510

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

Project No.:	OPR-D304-TJ-11
Registry No.:	H12343
State:	Virginia
Locality:	Approaches to Chesapeake Bay
Sublocality:	Sandbridge Beach to False Cape

Attachments containing:

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

cc: N/CS33
MOA-TJ

Year_DOY	Min Time	Max Time
2011_158	13:21:20	20:51:21
2011_159	13:17:31	21:20:45
2011_160	12:31:52	21:12:07
2011_161	12:27:05	20:57:00
2011_162	12:34:05	21:08:13
2011_163	12:47:25	20:50:43
2011_164	12:58:20	17:50:49
2011_165	13:37:21	18:26:34

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : June 28, 2011

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D304-TJ-2011_Rev
HYDROGRAPHIC SHEET: H12343

LOCALITY: Sandbridge Beach to False Cape, Appr. to Ches. Bay, VA
TIME PERIOD: June 7 - June 14, 2011

TIDE STATION USED: 865-1370 Duck, NC
Lat. 36° 11.0'N Long. 75° 44.8' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.027 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-D304-TJ-2011_Rev, H12343, during the time period between June 7 and June 14, 2011.

Please use the zoning file "D304TJ2011CORP_Rev" submitted with the project instructions for OPR-D304-TJ-11_Rev. Zones SA54A, SA55A and SA55 are the applicable zones for H12343.

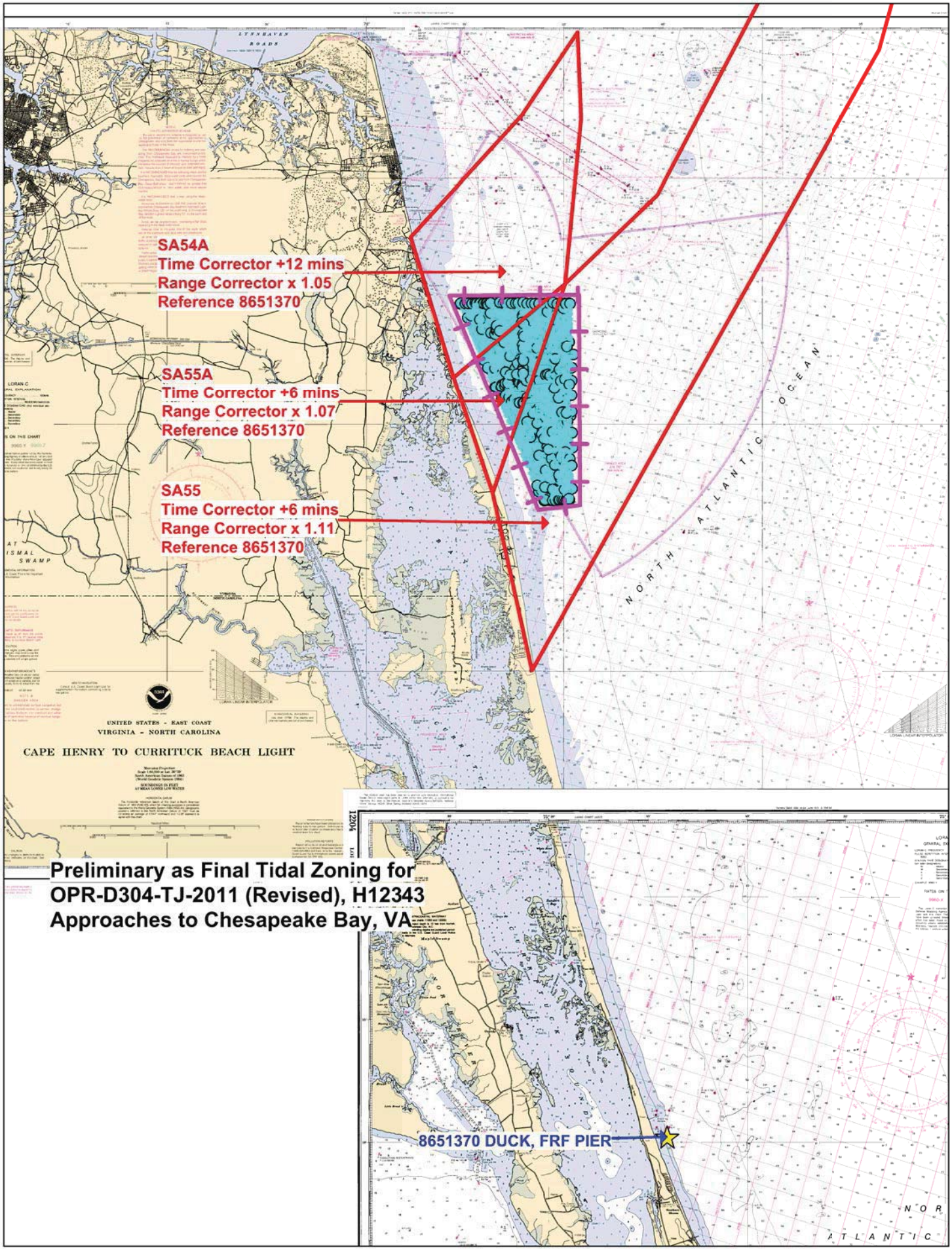
Refer to attachments for zoning information.

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).

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=NOAA/NOS/CO-OPS, ou=Oceanographic Division, email=peter.stone@noaa.gov, c=US
Date: 2011.06.30 15:21:30 -04'00'

CHIEF, OCEANOGRAPHIC DIVISION



Preliminary as Final Tidal Zoning for OPR-D304-TJ-2011 (Revised), H12343 Approaches to Chesapeake Bay, VA

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

U.S. DEPARTMENT OF COMMERCE
(10-95)NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OCEANOGRAPHIC LOG SHEET - M

BOTTOM SEDIMENT DATA

VESSEL No.	PROJECT NO.	YEAR	SURVEY TITLE:	SURVEY NO:	CHECKED BY:	DATE CHECKED:
3101	OPR-D304-TJ-11 FIELD NO. SHEET LETTER: N/A	2011	Sandbridge Beach to False Cape	H112343	DBW	10/18/2011

POSITION NUMBERS	DAY OF THE YEAR	SAMPLE POSITION LATITUDE (o ' ") North	SAMPLE POSITION LONGITUDE (o ' ") West	DEPTHS (METERS)	TYPE OF SAMPLER	APPROXIMATE PENETRATION (CENTIMETERS)	LENGTH OF CORE	FIELD DESCRIPTION SIZE OR CONSISTENCY COLOR-NOUN (USE STANDARD ABBREVIATIONS)	REMARKS (Unusual conditions ,cohesiveness, dented cutter, stat.no.,type of bottom, relief .i.e slope plain disposition etc.)
1	159	36/37/47	075/51/24		Ponar		5 cm	Fine Sand/Broken Shells	
2	159	36/38/56	075/53/03		Ponar		5 cm	Sand	
3	159	36/39/33	075/51/25		Ponar		5 cm	Sand/Broken Shells	

Subject: Re: Crossline comparison
From: Chris van Westendorp <Christiaan.VanWestendorp@noaa.gov>
Date: Thu, 10 Sep 2009 13:00:35 -0400
To: "mark.blankenship" <Mark.Blankenship@noaa.gov>
CC: LCDR Rick Brennan <Richard.T.Brennan@noaa.gov>, Castle Parker <Castle.E.Parker@noaa.gov>, Edward Owens <Edward.Owens@noaa.gov>, LT Jasper Schaer <jasper.schaer@noaa.gov>, CDR Shep Smith <Shep.Smith@noaa.gov>, Daniel Wright <Daniel.Wright@noaa.gov>

Mark,

Per 5.1.4.3 of the HSSD, AHB authorizes TJ to use the Standard Deviation layer to conduct surface difference comparison and analysis on future survey submissions of multibeam data. This meets the crossline comparison requirement laid out in HSSD.

Please let me know if you have any questions or need for further clarification.

R/
LCDR Chris van Westendorp, NOAA

mark.blankenship wrote:

> Chris,
> You mentioned in the meeting today that AHB was not going to require the multiple CUBE surface comparison, instead allowing us to use a single surface standard deviation layer to do our checks with. Is there any memo coming out for that?
> Mark

LCDR Chris van Westendorp <christiaan.vanwestendorp@noaa.gov>
Atlantic Hydrographic Branch
NOAA OCS

APPENDIX III

FEATURES REPORT

(NO DTONS, WRECKS, OR MARITIME BOUNDARIES)

H12343_AWOIS Items

Registry Number: H12343

State: Virginia

Locality: Approaches to Chesapeake Bay

Sub-locality: Sandbridge Beach to False Cape

Project Number: OPR-D304-TJ-11

Survey Date: 06/07/2011 to 06/14/2011

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12208	13th	08/01/2008	1:50,000 (12208_1)	[L]NTM: ?
12207	21st	03/01/2004	1:80,000 (12207_1)	[L]NTM: ?
12205	31st	12/01/2007	1:80,000 (12205_1)	[L]NTM: ?
12200	49th	06/01/2007	1:419,706 (12200_1)	[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	AWOIS 14882 - Charted dangerous Obstruction PA (pipes) depth unknown	AWOIS	[no data]	[no data]	[no data]	---

1.1) AWOIS #14882 - AWOIS 14882 - Charted dangerous Obstruction PA (pipes) depth unknown

No Primary Survey Feature for this AWOIS Item

Search Position: 36° 42' 21.0" N, 075° 49' 51.0" W
Historical Depth: [None]
Search Radius: 500
Search Technique: MBES, SSS
Technique Notes: Verify existence of Obstn.

History Notes:

LNM 15/93; 5th CGD -- Obstn PA (pipes). (LAH 3/18/2010)

Survey Summary

Charts Affected: 12208_1, 12205_1, 12207_1, 12200_1, 13003_1

Remarks:

Assigned radius completed with 200% side scan sonar, no items found. Item is Disproved.

Feature Correlation

Source	Feature	Range	Azimuth	Status
AWOIS_EXPORT	AWOIS # 14882	0.00	000.0	Primary

Hydrographer Recommendations

Remove charted Obstn PA (pipes) at location 36.706N, 075.831W from the chart.

S-57 Data

[None]

Office Notes

SAR note: Charted feature disproved using 200% coverage side scan sonar.

COMPILATION: Concur. Delete charted dangerous Obstruction PA (pipes) depth unknown. Update area with present survey depths.

Feature Images

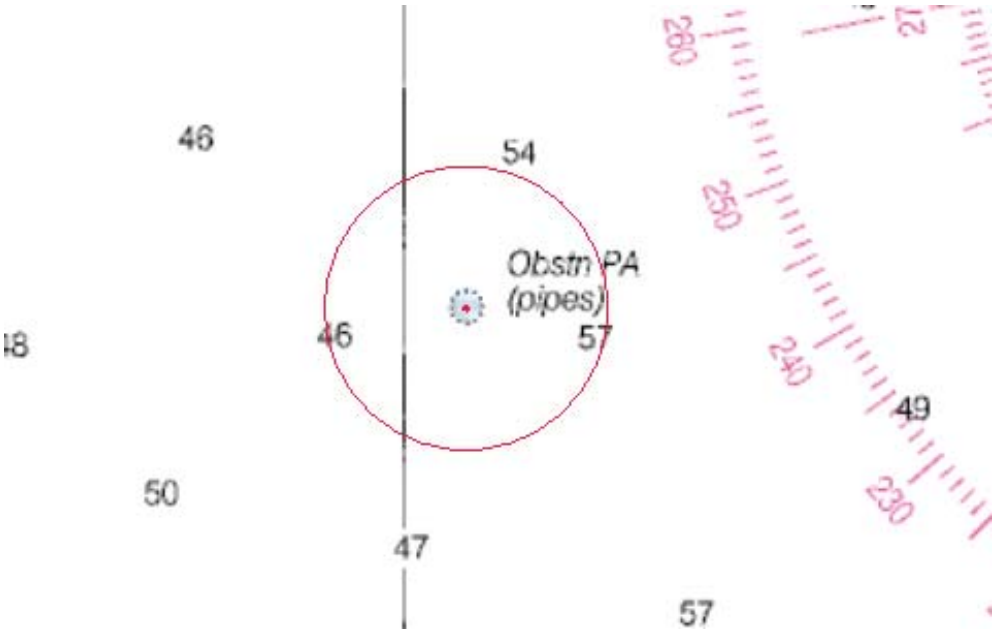


Figure 1.1.1

APPROVAL PAGE

H12343

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

- H12343_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12343_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.

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Date: 2013.02.27 13:39:28 -05'00'

Approved: _____

LT Abigail Higgins
Chief, Atlantic Hydrographic Branch