

H12182

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:	H12182
LOCALITY	
State:	Virginia
General Locality:	Southern Chesapeake Bay, VA
Sub-locality:	Approach to York River Entrance Channel
2010	
CHIEF OF PARTY CDR Shepard M.Smith NOAA	
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# HYDROGRAPHIC TITLE SHEET

**H12182**

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: **Southern Chesapeake Bay, VA**

Sub-Locality: **Approach to York River Entrance Channel**

Scale: **1:20,000** Date of Survey: **03/16/10 to 03/24/10**

Instructions Dated: **2 March 2010** Project Number: **OPR-E350-TJ-10**

Vessel: **NOAA Ship *Thomas Jefferson***

Chief of Party: **CDR Shepard M. Smith , NOAA**

Surveyed by: ***Thomas Jefferson* Personnel**

Soundings by: **Reson 7125 multibeam echo sounder.**

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***

Soundings in: **Meters at MLLW**

***H-Cell compilation units in: Feet at MLLW***

Remarks: ***Bold, Italic, Red notes in the Descriptive Report were made during office processing.***  
***1) All Times are in UTC.***  
***2) This is a Navigable Area Hydrographic Survey.***  
***3) Projection is NAD83, UTM Zone 18 **N**.***

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**Descriptive Report to Accompany Hydrographic Survey H12182**

Project OPR-E350-TJ-10  
 Southern Chesapeake Bay, VA  
 Approach to York River Entrance Channel  
 Scale 1:20,000  
 March 16th – March 24th, 2010  
**NOAA Ship *Thomas Jefferson***

**A. AREA SURVEYED**

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-E350-TJ-10\*, dated 16<sup>th</sup> February 2010, and Change No. 1 to Final Instructions OPR-E350-TJ-10\*, dated 2<sup>nd</sup> March 2010. *\*Filed with original field records.*

Northern limit	Southern limit	Eastern limit	Western limit
37°06'43.72" N	37°05'22.68" N	076°06'23.01" W	076°08'12.52" W

Data acquisition was conducted from March 16<sup>th</sup> to March 24<sup>th</sup>, 2010. *Concur.*

This project is part of an ongoing project begun in 1999 that responds to requests from the Maryland and Virginia Pilots Associations. The movement of commercial shipping in the southern portion of the Chesapeake Bay increasingly relies on modern bathymetric surveys and object detection in this active area. Over the next several years, there are plans for vessels with increasingly deeper drafts to be transiting the area. These plans have created a critical need for updated bathymetry and object detection in the approaches to the Chesapeake Bay. Additionally, H12182 refers to a re-survey request. This sheet marks the region that needs to be re-addressed from a prior 2002 hydrographic survey in this area. This project will cover approximately 45 SNM of critical survey area as designated in NOAA Hydrographic Survey Priorities, 2009 edition. H12182 accounts for 2.61 SNM of the total 45 SNM planned for OPR-E350-TJ-10.

	Linear Nautical Miles
LNM Single beam mainscheme only	N/A
LNM Multibeam mainscheme only	198.61
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)	N/A
LNM Crosslines singlebeam and multibeam combined	7.34
LNM Lidar Crosslines	N/A
LNM development lines non mainscheme	8.88
LNM shoreline/nearshore investigations	N/A
Number of Bottom Samples	5
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	2.61

Table 1: Hydrographic survey statistics.

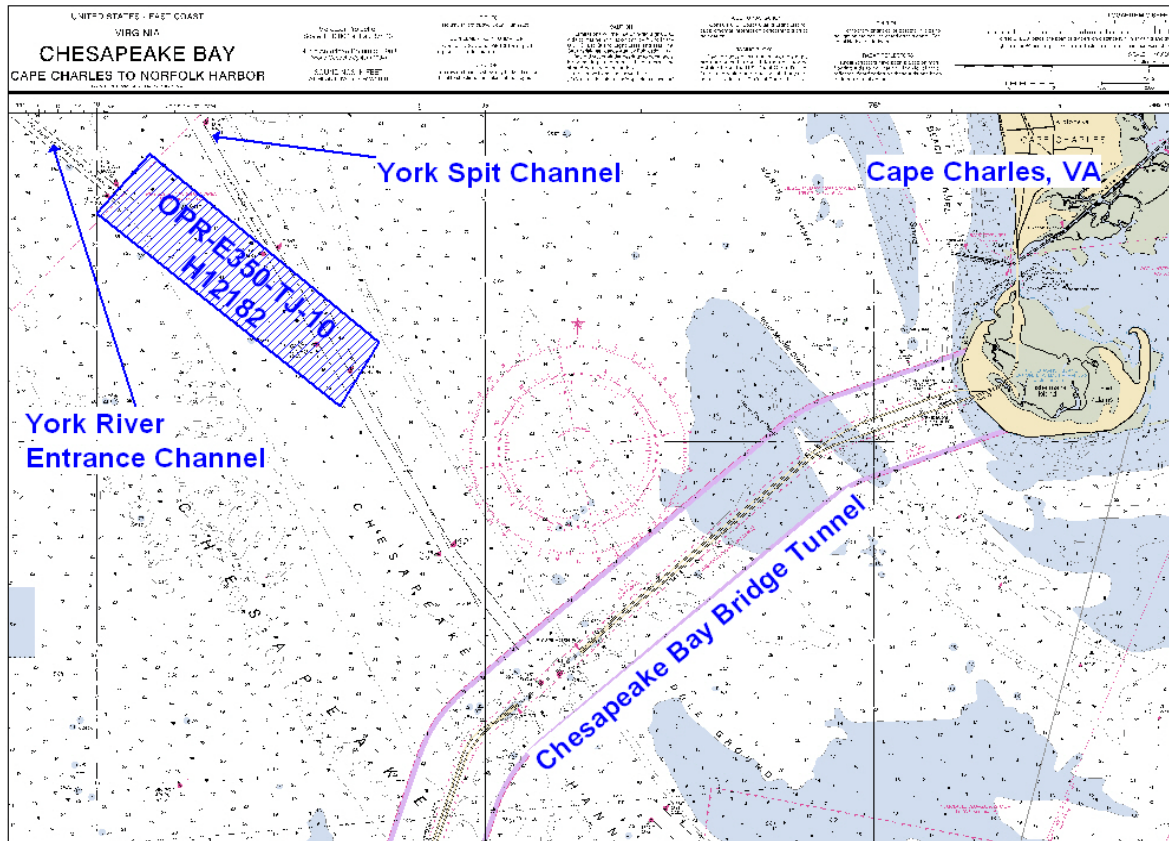


Fig. 1: H12182 survey area.

Calendar Date	Julian Day
16-March-10	075
17-March-10	076
18-March-10	077
19-March-10	078
23-March-10	082
24-March-10	083

**Table 2: MBES acquisition dates.**

## **B. DATA ACQUISITION AND PROCESSING** *See also H-Cell Report.*

Refer to *OPR-E350-TJ-10 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**

Data were acquired by the NOAA Ship *Thomas Jefferson*. NOAA Ship *Thomas Jefferson* acquired Reson 7125 multibeam echo sounder (MBES) bathymetry and sound velocity profiles. Additionally, data were acquired by HSL 3102. HSL 3102 acquired Reson 7125-SV MBES bathymetry, sound velocity profiles, and sea bed samples. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the *DAPR\**.

### **B 2. QUALITY CONTROL**

#### **B 2.1 System Certification and Calibration**

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.

*\*Filed with original field records.*

#### **B.2.2 Sounding Coverage**

The Letter Instruction for H12182 required either 200% SSS with concurrent SB or MB, or 100% SSS with Complete MB with Object Detection MB over all navigationally significant features. However, at the start of the survey, the ship's SSS winch was inoperable. A request was submitted to HSD Ops to approve Object Detection MB for the entire survey. On March 14, 2010, HSD Ops approved the use of Object Detection MB throughout H12182. The correspondence is in Appendix V\*\*. *\*\*Appended to this report.*

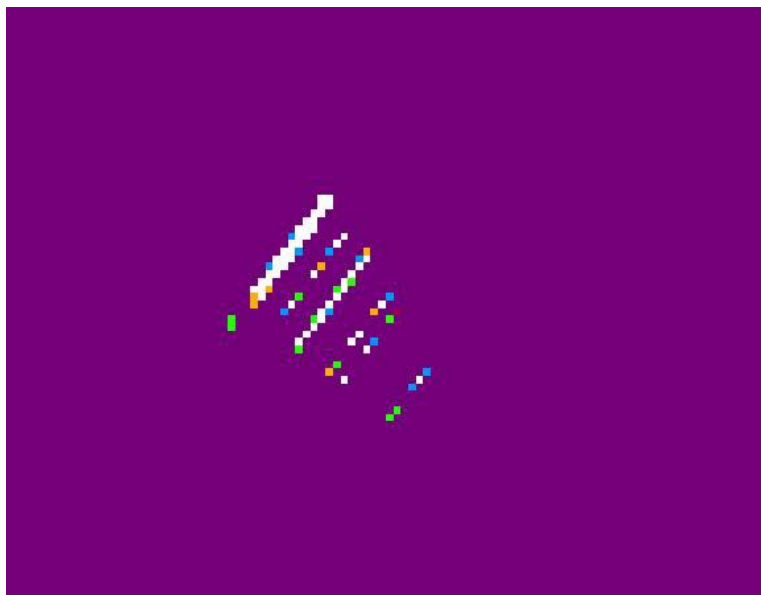
Coverage requirements for this survey were not met in all areas within the assigned survey limits. Along the outer perimeter of the survey, 15 narrow slivers of the assigned survey area were not ensonified. The largest of these areas is 1270 meters long and up to 8 meters wide. There is no reason to believe that any anomalies exist in these gaps. The hydrographer

recommends superseding the chart within the surveyed area that is outlined in the *H12182\_Survey\_Outline.hob* file included with the survey deliverables in the *CARIS\HOBs* folder. **Concur.**

Data acquisition was extended outside the assigned survey area in two locations to investigate charted obstructions that fell outside the assigned limits. These charted obstructions are AWOIS items #13069 (37°06'59.08" N, 076°09'26.54" W) and #13070 (37°06'04.85" N, 076°08'01.09" W). These AWOIS items were not assigned with this project, but the decision to survey them was made due to their immediate proximity to the survey and the relatively little additional effort required to do so. The survey outline for H12182 includes these additional areas.

A holiday exists in the data in the vicinity of AWOIS #13069. The holiday is in one of the areas outside the originally assigned survey limits described in the previous paragraph. The holiday measures approximately 57m by 2m and lies 37m to the northwest of AWOIS #13069. The obstruction listed as AWOIS #13069 was fully ensonified and the holiday is unlikely to conceal any significant contacts. **Concur.**

Additionally, small deficiencies in sounding density are present throughout the survey area. These areas of low density (fewer than 5 soundings per node) were created during the data cleaning process. The soft sediment in the survey area caused difficulty in maintaining robust bottom detection, resulting in frequent blowouts in the MBES data. These blowouts were particularly persistent on the western edge of the sheet, south of the York River Entrance Channel and in the York Spit Channel. At times, data cleaning resulted in small holidays in addition to low sounding density. Figure 2 below illustrates the most severe instance of holidays created by data cleaning (the largest area in the figure is 9m x 1m). Despite the low density areas and holidays mentioned here, H12182 meets the coverage requirement of 99% of all nodes populated with a sounding density greater than 5 soundings per node. **Concur.**



**Fig. 2: Low sounding density and holidays created by data cleaning. Purple indicates sounding density equal to or greater than 5 and white indicates no soundings contributing to a node.**



### B 2.3 Crosslines

Multibeam echosounder cross-lines totaling 7.34 LNM, approximately 3.69% of the total multibeam hydrography, were acquired during the course of the survey. Quality control was performed using the standard deviation layer of the survey's CUBE surface as per the email dated 10 Sept, 2009 from the Atlantic Hydrographic Branch, located in the Descriptive Report, Appendix V ("Re\_Crossline comparison")\*. \*\**Appended to this report.*

### B 2.4 Junctions and Prior Surveys

The following recent surveys junction with H12182 (Fig. 3).

Registry #	Scale	Date	Field Party	Junction side
H11205	1:10,000	2006	NOAA Ship Rude	North
H11206	1:10,000	2006	NOAA Ship Rude	South

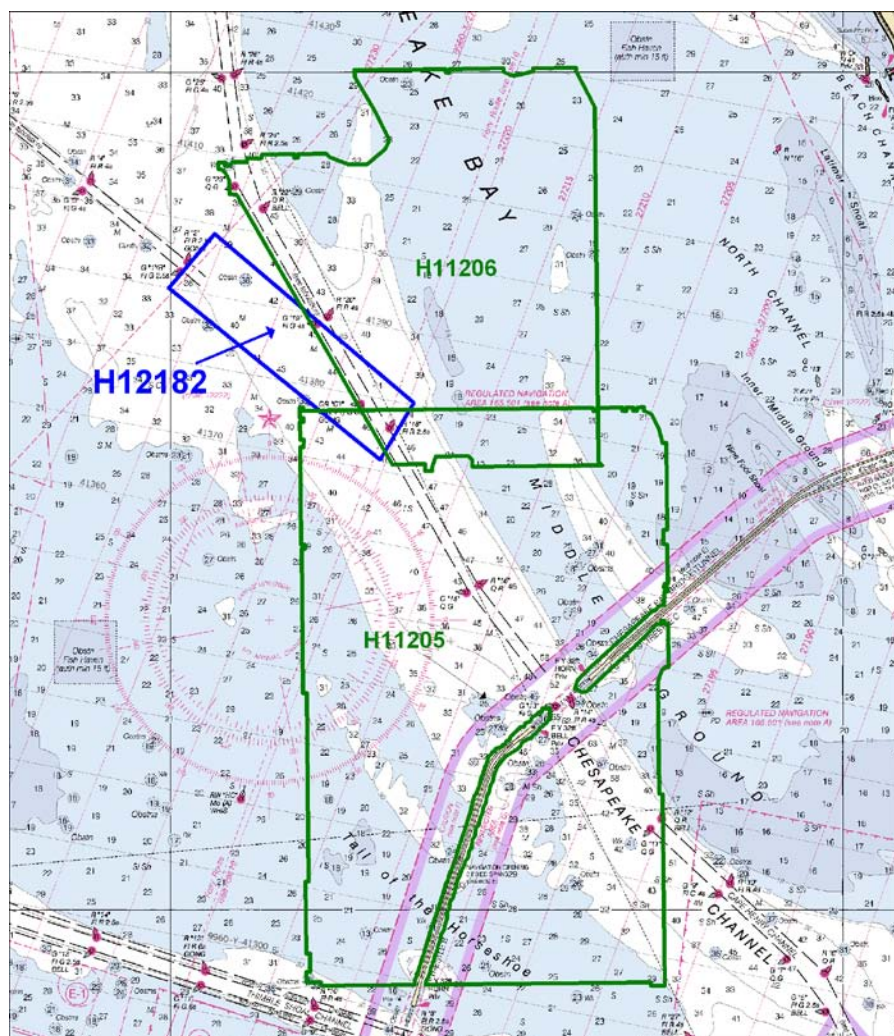


Fig. 3: Junction surveys.



Most soundings at junction between H11205 and H12182 agree within 20cm. Most soundings at junction between H11206 and H12182 agree within 30cm. **Concur.**

## B 2.5 Systematic Errors

The Total Propagated Uncertainty (TPU) was estimated for each node in the final surface, and these uncertainties fell well within the accuracy requirements of this survey, IHO Order 1. In addition, the standard deviation layer for this survey's bathymetry surface (H12182\_CUBE\_NOAA\_50cm\_Final) was examined for evidence of systematic errors in excess of the TPU. Any problems were corrected, except as noted below. **Concur.**

Sound velocity artifacts are present in the MBES data for H12182. At the onset of survey H12182, the Moving Vessel Profiler (MVP) on the ship was inoperable due to a faulty data cable in the sensor. Manual CTD casts were taken once every 3 to 4 hours to provide necessary sound velocity correctors. The frequency of CTD casts was sufficient to meet Order 1 specifications and increasing the frequency would have impacted survey efficiency. The 4m/s sound speed value and the 0.2m/s surface sound values entered in the TPU table are adequate to capture the variability evident in the area that was not captured in the casts. See section B 4.1 Total Propagated Uncertainty for further detail on TPU. **Concur.**

Vertical offsets affecting individual lines are present in the survey. These vertical offsets are likely caused by a combination of the limitations of discrete zoning due to localized weather and from the error due to currents in the area on the dynamic draft look-up table for the ship. The 0.065m value for measured tides and zoning and the additional 0.5m/s entered into *TPU/StdDev* section of the HVFs for all vessels utilized during this survey appear to be reasonable and adequately capture the uncertainty of survey soundings for H12182. **Concur.**

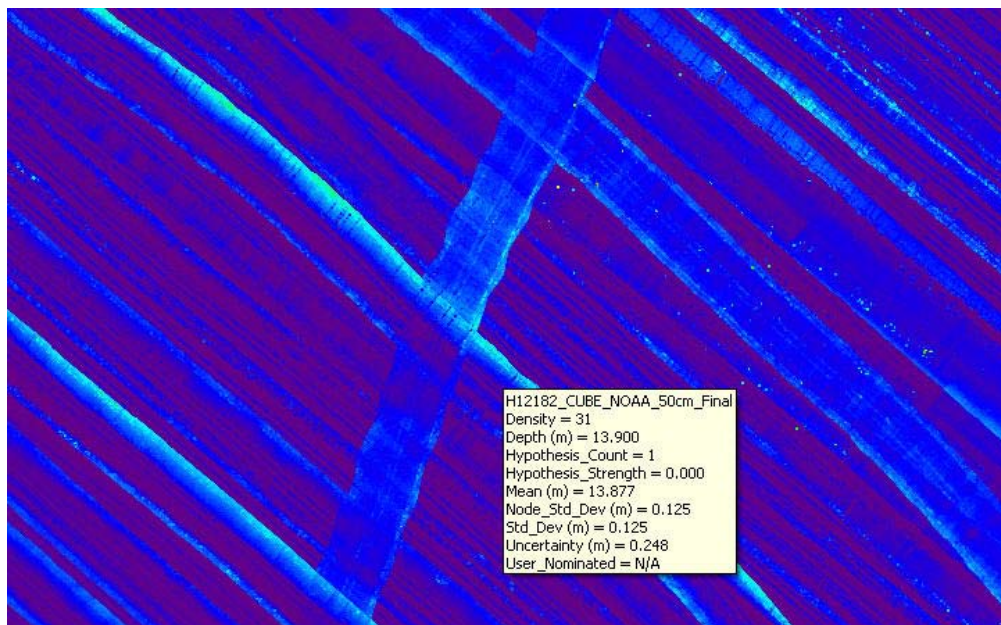
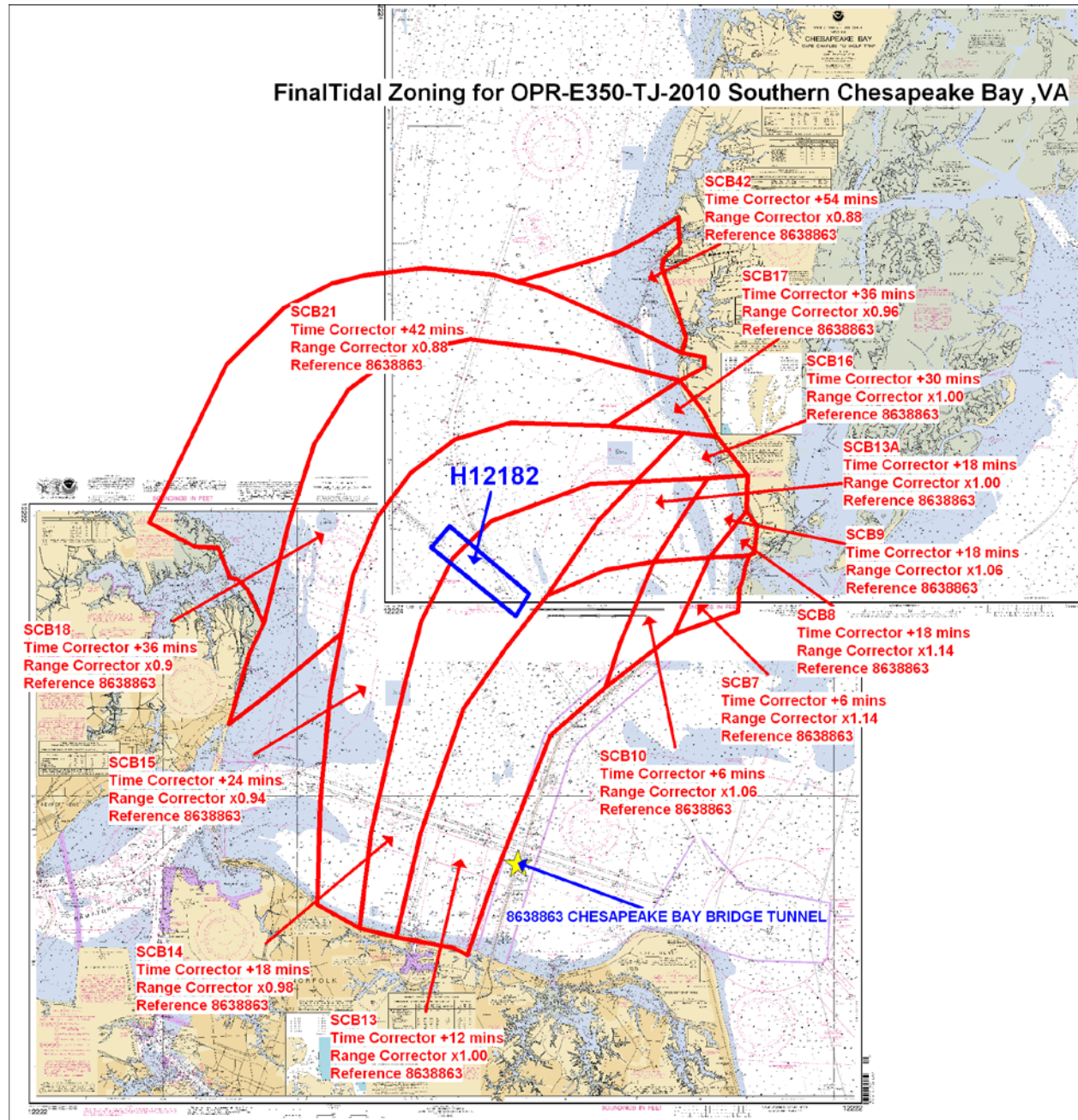


Fig. 4: Standard deviation artifacts caused by systematic errors.

### B 3. CORRECTIONS TO ECHO SOUNDING

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified water levels from Chesapeake Bay Bridge Tunnel, VA (8638863), and using preliminary zoning accepted as final zoning (Fig. 5).



**Fig. 5: Final tide zoning.**

All other 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\*. A table detailing all sound velocity casts is located in Separate II\* of this Descriptive Report.

Sound velocity corrections for this survey were applied using the ship's Conductivity, Temperature, and Depth (CTD) profiler and Moving Vessel Profiler (MVP). During SVP application in CARIS, all casts were applied with the *Nearest in time* profile selection method. **Concur.**

## B 4. DATA PROCESSING

### B 4.1 Total Propagated Uncertainty

For the 2010 field season, Total Propagated Uncertainty (TPU) parameters for sound, speed, and tides are calculated separately for each project. The project-specific parameters for OPR-E350-TJ-10, survey H12182 are as follows:

Project	Vessel	Tide Values Combined Measured & Zoning	Sound Velocity Values	
			CTD/MVP	Surface
H12182	S222	0.065	4	0.2
H12182	3102	0.065	4	0.2

**Table 3: TPU parameters.**

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

During H12182, a *Vessel Speed* uncertainty value of 0.53m/s was used in the *TPU/StdDev* section of the HFVs for all vessels, corresponding to the speed of the observed currents in the area. See section B.2 **B.4** Error Modeling in CARIS Hips of this project's DAPR\* for more detail.

Additionally, a value of 0.1m was used for 3102's *Position Nav* section of the *TPU/StdDev* in the *TJ\_3102\_Reson7125\_400KHZ.hvf* for H12182. On DN076 and DN077 the PPK navigation solution for the ship failed to load properly, and therefore, the traditional DGPS horizontal positioning value of 0.5m was used in the *TJ\_S222\_RESON7125\_STBD.hvf* for H12182. See section B.2 **B.4** Error Modeling in CARIS Hips of this project's DAPR\*, and section C. Horizontal and Vertical Control of this DR for more details. **\*Filed with original field records.**

### B 4.2 BASE Surfaces

The following table describes all BASE Surfaces submitted as part of Survey H12182:

<i>Name of Surface</i>	<i>Resolution</i>	<i>Type</i>	<i>Purpose</i>
H12182_CUBE_NOAA_50cm	0.5m	CUBE	Object Detection
H12182_CUBE_NOAA_50cm_Final	0.5m	CUBE	Object Detection

**Table 4: BASE surfaces.**



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 on all surfaces. Refer to the *2010 Data Acquisition and Processing Report\**, *2010 Field Procedures Manual*, and *CARIS HIPS and SIPS User Guide* for further discussion. ***\*Filed with original field records.***

### **B 4.3 Data Cleaning**

The survey data were cleaned using the swath and subset editor tools in CARIS. All areas of the BASE surface that indicated a high standard deviation were examined and cleaned as required such that no residual errors exist in the surface that exceed the IHO order 1 depth accuracy requirements. ***Concur.***

## **C. HORIZONTAL AND VERTICAL CONTROL**

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

### **C 1.1 Horizontal Control**

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

Additionally, POSPac files were logged in POSView and processed through POSPac MMS 5.3 to create Smoothed Best Estimate Trajectory (SBET) files. These SBET files were applied as Post Processed Kinematic (PPK) navigation to improve the horizontal positioning of survey data. RMS error files, containing horizontal error estimates associated with the SBET files, were also applied.

SBET files were successfully applied to all data from DN082 and DN083. On DN075, line 402\_1230 did not load because MBES acquisition started before POSPac logging was initiated in POSView; all other lines from DN075 loaded successfully and PPK navigation and RMS errors were applied. On DN076, the SBET file could not be successfully created in POSPac MMS and therefore, no PPK navigation or RMS errors were applied to data from DN076 (Fig. 6). On DN077, three POSPac files were generated during acquisition. Of the three files from DN077, two failed to successfully generate SBET files (Fig. 7). The one SBET file generated from DN077 was used to apply PPK navigation to 14 of the survey lines. Of these 14 lines, PPK navigation was successfully applied to line 611\_2336, but the RMS error associated with the PPK navigation data failed to load; all other lines loaded the RMS error successfully. Finally, on DN078, PPK navigation and the RMS error file was applied to all survey lines except line 605\_0006. Line 605\_0006 failed to load because MBES data acquisition began before the POSPac file had logged for a sufficient length of time to generate a navigation solution for the time stamps associated with line 605\_0006.

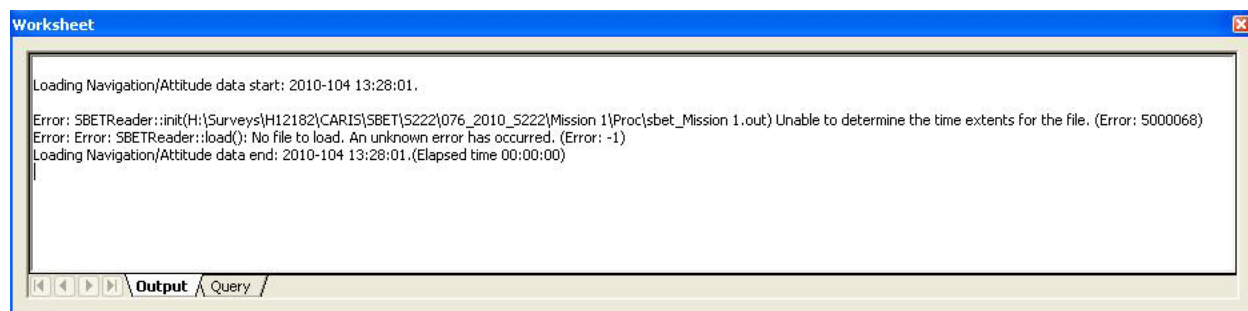


Fig. 6: SBET failure message in CARIS Load Attitude/Navigation.

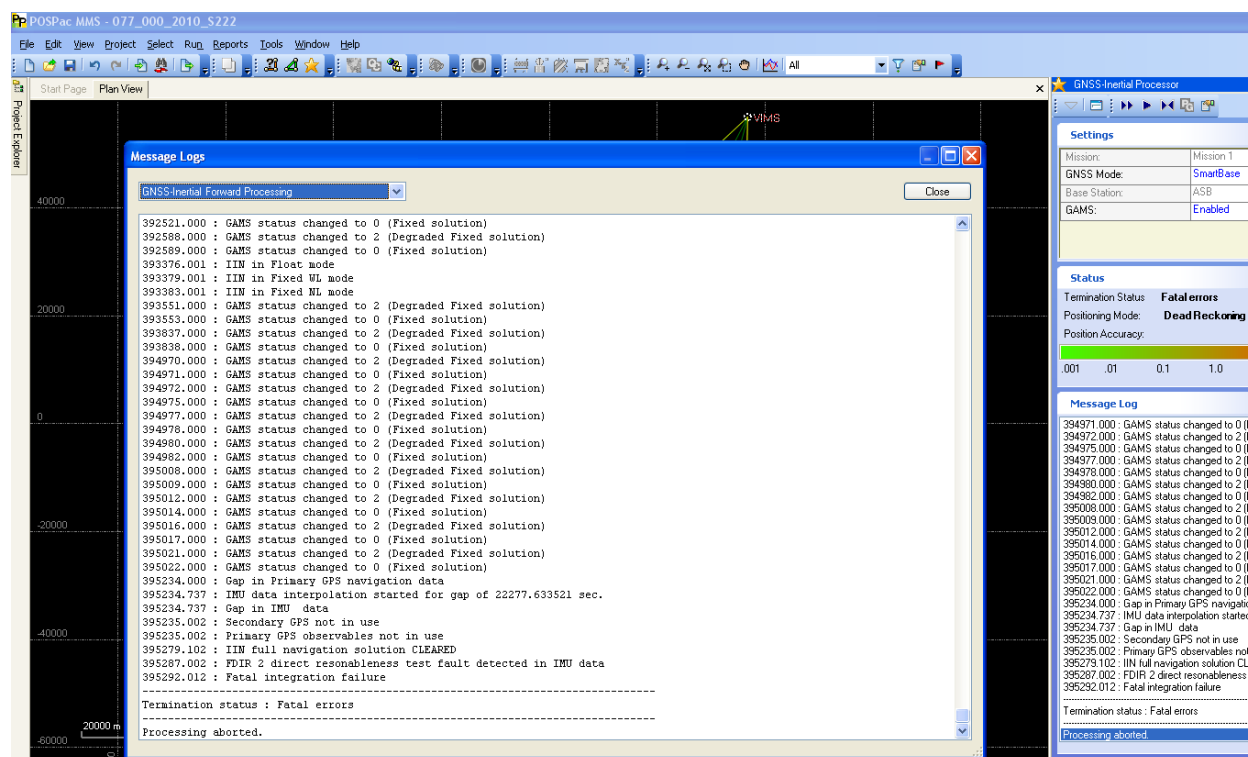


Fig. 7: SBET fatal error in POSpac MMS.

All days that failed to load PPK navigation data were associated with S222. DN083 MBES was acquired by HSL 3102 and all lines from this platform loaded PPK navigation successfully. Refer to section B 4.1 Total Propagated Uncertainty of this DR for details about how the success or failure of loading PPK navigation affected TPU values in the HVF.

No horizontal control stations were established by the field party for this survey. **Concur.**

## C 1.2 Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at the Chesapeake Bay Bridge Tunnel, VA (8638863) serves as datum control for H12182. A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 25 March 2010 in accordance with the FPM and project letter instructions. As per the tide note dated March 31, 2010, preliminary zoning was accepted as final, and applied with verified tides (Appendix IV\*\*). *Concur.*

## D. RESULTS AND RECOMMENDATIONS *See also H-Cell Report.*

### D 1. Chart Comparison

#### D 1.1 Chart 12222 Comparison

Survey H12182 was compared to Chart 12222, (52nd Ed., 09/01/2009, Corrected through NM Sep. 5/09 and LNM Sep. 1/09, 1:40,000), the largest scale chart covering the survey area. Generally soundings agreed with the chart to within 1 foot throughout the survey area. Exceptions are the obstruction at 37°07'31.4" N, 076°08'53.3" W, which is approximately 2 ft deeper than charted, and the obstruction at 37°06'04.8" N, 076°08'00.8" W, which is approximately 4 ft deeper than charted. *Concur.*

#### D 1.2 ENC US5VA13M Comparison

Soundings are generally comparable with charted depths, with differences in charted and survey soundings of 0.3 meters or less. *Concur.*

### D 2. Additional Results

#### D 2.1 Automated Wreck and Obstruction Information System (AWOIS) Items

Three AWOIS items were investigated for this survey. See the feature report, Appendix II\*\* for details on these. *Concur.* *\*\*Appended to this report.*

#### D 2.4 Shoreline

There is no shoreline within the limits of the survey. *Concur.*

#### D 2.5 Charted Pipelines and Cables

There are no cables or pipelines within the limits of the survey. *Concur.*

#### D 2.6 Bridges, Ferry Routes, and Overhead Cables

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



### D 3. Dangers to Navigation and Shoals

#### D 3.1 Dangers to Navigation

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

#### D 3.2 Shoals

There were no significant uncharted shoals discovered during this survey. *Concur.*

There were two areas of potential shoaling detected within the survey area. In both instances, the areas are deeper than the tabulated depths and therefore the areas are not considered to be navigationally significant and no charting action is required. *Concur.*

Depths are shallower along the centerline of York Spit Channel than the outer edges of the channel. The project depth for York Spit Channel listed on NOAA Chart 12222, corrected through NM 4/24/10 and LNM 4/20/10, is 50 feet. The tabulated depths on the same chart list 41.9 feet in the left outside quarter, 49.1 feet in the left inside quarter, 48.9 feet in the right inside quarter, and 47.4 feet in the right outside quarter. Contrary to the tabulated depths, survey data from H12182 indicates that the outside quarters of York Spit Channel within the survey area are actually deeper than the center of the channel (Fig. 8). Constituent reports have been sent to the points of contact listed in the project instructions for informational purposes only. *Concur.*

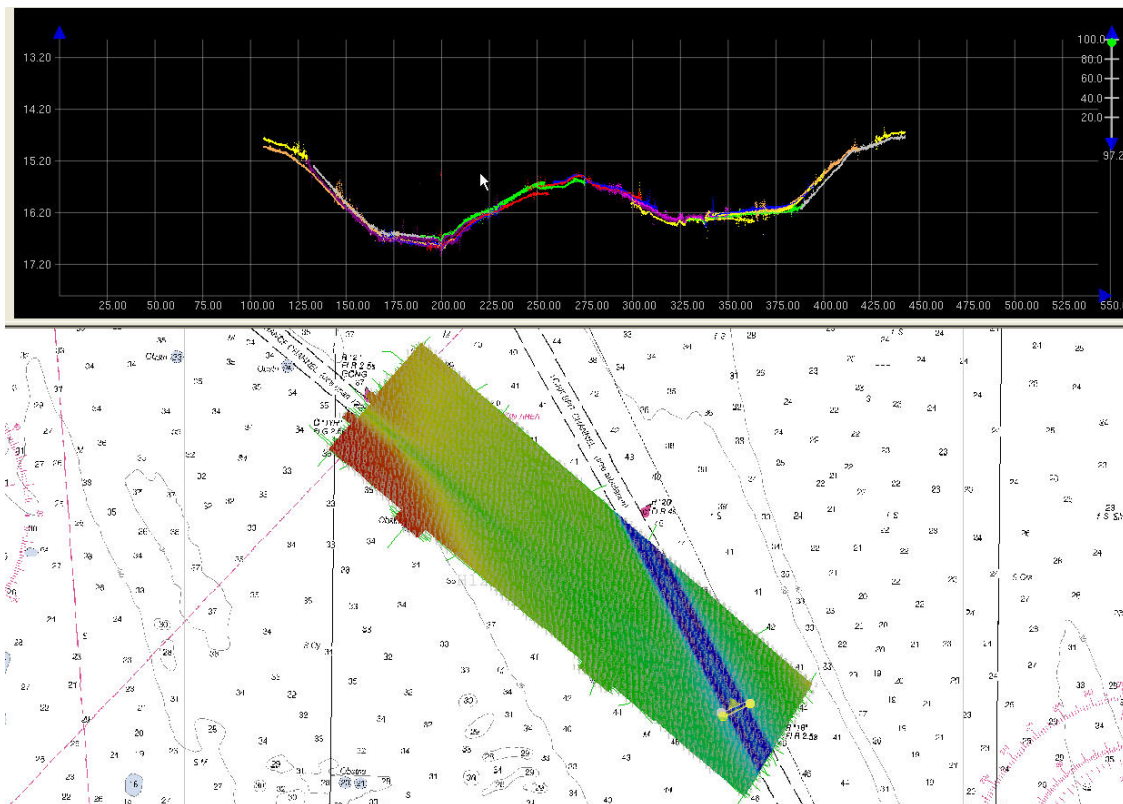


Fig. 8 – Shoaling along centerline of York Spit Channel

York River Entrance Channel, east of green buoy “1YR” and red buoy “2”, also shows signs of potential shoaling. The project depth for York River Entrance channel as listed on chart 12238 is 37 feet, with 37.0 along the left outside quarter, 38.1 along the left inside quarter, 38.3 along the right inside quarter, and 37.4 along the right outside quarter. The least depth derived from H12182 in the area in question is 37.75 feet, which is ~~greater~~ **deeper** than the tabulated depths and is therefore not considered navigationally significant (Fig. 9). Constituent reports have been sent to the points of contact listed in the project instructions for informational purposes only.

**Concur.**

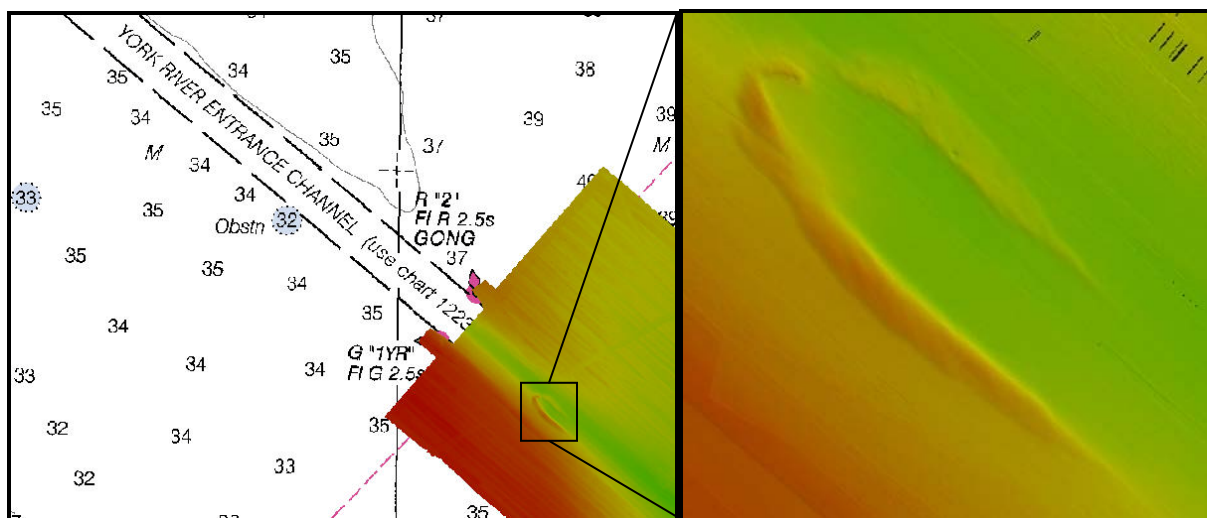


Fig. 9 – Shoal area near York River Entrance Channel

#### D 4. Aids to Navigation

There are five charted Aids to Navigation (ATON) within the limits of H12182. Four of the five ATON's were found to be in their charted position and serving their intended purpose. Lighted aid G “19” (York Spit Channel) was found to be 36 meters southeast of its charted position, based on its buoy block (Fig. 8). The USCG and NOAA Navigation Manager were notified of the discrepancy. The correspondence is in Appendix V\*\*. **\*\*Appended to this report.**

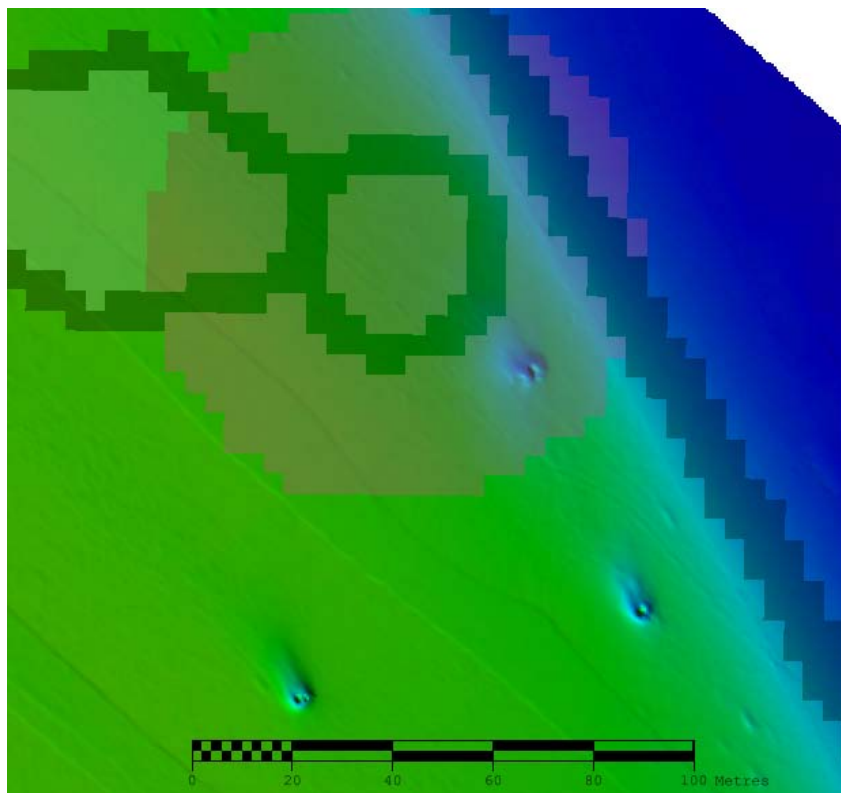


Fig. 10: Buoy block for lighted aid G “19” of the York Spit Channel.

## D 5. Coast Pilot Information

The relevant Coast Pilot sections were reviewed and no changes were noted. A memo detailing this finding was submitted to NSD’s Coast Pilot Branch via email on 4/17/2010 in accordance with FPM Section 5.2.3.2.5. See Appendix V\*\* for correspondence. *Concur.*

## D 6. Miscellaneous

### D 6.1 Bottom Samples

Bottom samples were collected in accordance with NOAA Hydrographic Survey Specifications and Deliverables. A Hydrographic Object (\*.hob) file outlining the location and nature of all bottom samples acquired during survey H12182 is included in the *CARIS\HOBs* folder included with the survey deliverables. A total of five bottom samples were acquired. A table of all bottom samples acquired during survey H12182 is also contained in Appendix V\*\* of this report.

*Concur. \*\*Appended to this report.*

### D 6.2 Environmental Conditions and Notes

During survey acquisition on H12182, the soft sediment in the survey area created bottom detection difficulties for the MBES. Frequent blowouts were caused by insufficient Receiver

Gain which generated areas of inadequate density and occasional holidays when the blowouts were cleaned from the data. Refer to section B 2.2 Sounding Coverage of this DR for further discussion on how this environmental condition affected the survey.

No other noteworthy environmental conditions were encountered in the survey area during survey acquisition.

### **D 6.3 Geographic Names**

It was noted that the name of “Seashore State Park” was changed to “First Landing State Park” in 1995, but chart 12222 still shows the old name. See correspondence with NDB in Appendix V\*\*. **\*\*Appended to this report.**

### **D 7. Adequacy of Survey**

This survey is considered complete and adequate to supersede charted depths and features within the survey outline submitted with this survey. Refer to *H12182\_Survey\_Outline.hob*, included with the survey deliverables in the *CARIS\HOBs* folder. **Concur.**

### **D 8. 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. **Concur.**


**E. APPROVAL**

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

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


The *Data Acquisition and Processing Report* for OPR-E350-TJ-10 is submitted separately and contains additional information relevant to this survey.

Approved and Forwarded:

 Mark Blankenship  
2010.04.27  
01:55:41 -04'00'

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LT Mark A. Blankenship, NOAA  
Field Operations Officer


 Digitally signed by  
Shepard Smith  
Date: 2010.04.27  
06:41:54 -05'00'

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CDR Shepard M. Smith, NOAA  
Commanding Officer


In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Managers:

 Digitally signed by  
Michael C. Davidson  
Date: 2010.04.23  
16:27:48 Z

---

LT Michael C. Davidson, NOAA

 James J. Miller II  
2010.08.17  
08:56:50 -04'00'

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James J Miller II, NOAA, ERT

# **Appendix I**

## **Dangers to Navigation**

**-None reported**



## **Appendix II**

### **Survey Features Report**

#### **1. AWOIS Items**

**3**

#### **2. Uncharted Features**

**1**

#### **3. Charted Features**

**0**

# AWOIS Items Feature Report

**Registry Number:** H12182  
**State:** Virginia  
**Locality:** Southern Chesapeake Bay  
**Sub-locality:** Approaches to York River Entrance Channel  
**Project Number:** OPR-E350-TJ-10  
**Survey Dates:** 03/16/2010 - 03/18/2010

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12222	52nd	09/01/2009	1:40,000 (12222_1)	USCG LNM: 01/12/2010 (01/19/2010) NGA NTM: 07/18/2009 (01/23/2010)
12224	24th	02/01/2006	1:40,000 (12224_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	AWOIS #13068 - 40ft Obstruction	Obstruction	12.29 m	37° 07' 31.4" N	076° 08' 53.3" W	13068
1.2	AWOIS #13069 - 33ft Obstruction	Obstruction	10.03 m	37° 06' 59.2" N	076° 09' 26.7" W	13069
1.3	AWOIS #13070 - 43ft Obstruction	Obstruction	13.17 m	37° 06' 04.8" N	076° 08' 00.8" W	13070

**1 - DR\_AWOIS**

## 1.1) AWOIS #13068 - 40ft Obstruction

### Primary Feature for AWOIS Item #13068

**Search Position:** 37° 07' 31.1" N, 076° 08' 53.4" W  
**Historical Depth:** 11.58 m  
**Search Radius:** 0  
**Search Technique:** [None]  
**Technique Notes:** [None]

#### History Notes:

H11028/02 -- OPR-E350-RU-02; THREE SSS CONTACTS WERE FOUND DURING 200% SSS COVERAGE. THE CONTACTS WERE FURTHER INVESTIGATED WITH SWMB WHICH REVEALED A LEAST DEPTH OF 38 FT AND A 40 M-LONG LINEAR OBJECT IN POSITION: 37 07 31.10 N, 076 08 53.39 W (NAD 83). HYDROGRAPHER RECOMMENDS CHARTING A 38 OBSTN WITH A DANGER CURVE IN THE ABOVE SURVEYED POSITION. UPDATED JCM 4/19/2005.

### Survey Summary

**Survey Position:** 37° 07' 31.4" N, 076° 08' 53.3" W  
**Least Depth:** 12.29 m (= 40.33 ft = 6.722 fm = 6 fm 4.33 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.010$  m ; TVU (TPEv)  $\pm 0.244$  m  
**Timestamp:** 2010-076.09:19:57.523 (03/17/2010)  
**Survey Line:** h12182 / tj\_s222\_reson7125\_stbd / 2010\_076 / 440\_0901  
**Profile/Beam:** 17118/500  
**Charts Affected:** 12222\_1, 12224\_1, 12221\_1, 12280\_2, 13003\_1

#### Remarks:

Found charted AWOIS item #13068. Based on MBES investigation, feature appears to be a linear object, with approximate dimensions of 40m long, azimuth 006 degrees.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12182/tj_s222_reson7125_stbd/2010_076/440_0901	17118/500	0.00	000.0	Primary
OPR-E350-TJ-10_H12182_AWOIS	AWOIS # 13068	9.93	010.3	Secondary

## Hydrographer Recommendations

Revise charted obstruction.

### Cartographically-Rounded Depth (Affected Charts):

40ft (12222\_1, 12224\_1, 12221\_1, 12280\_2)

6 ¾fm (13003\_1)

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
SORDAT - 20100324  
SORIND - US,US,graph,H12182  
TECSOU - 3:found by multi-beam  
VALSOU - 12.294 m  
WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification. Delete charted 38ft obstruction. Add 40ft obstruction at survey position. Update AWOIS database.

## Feature Images

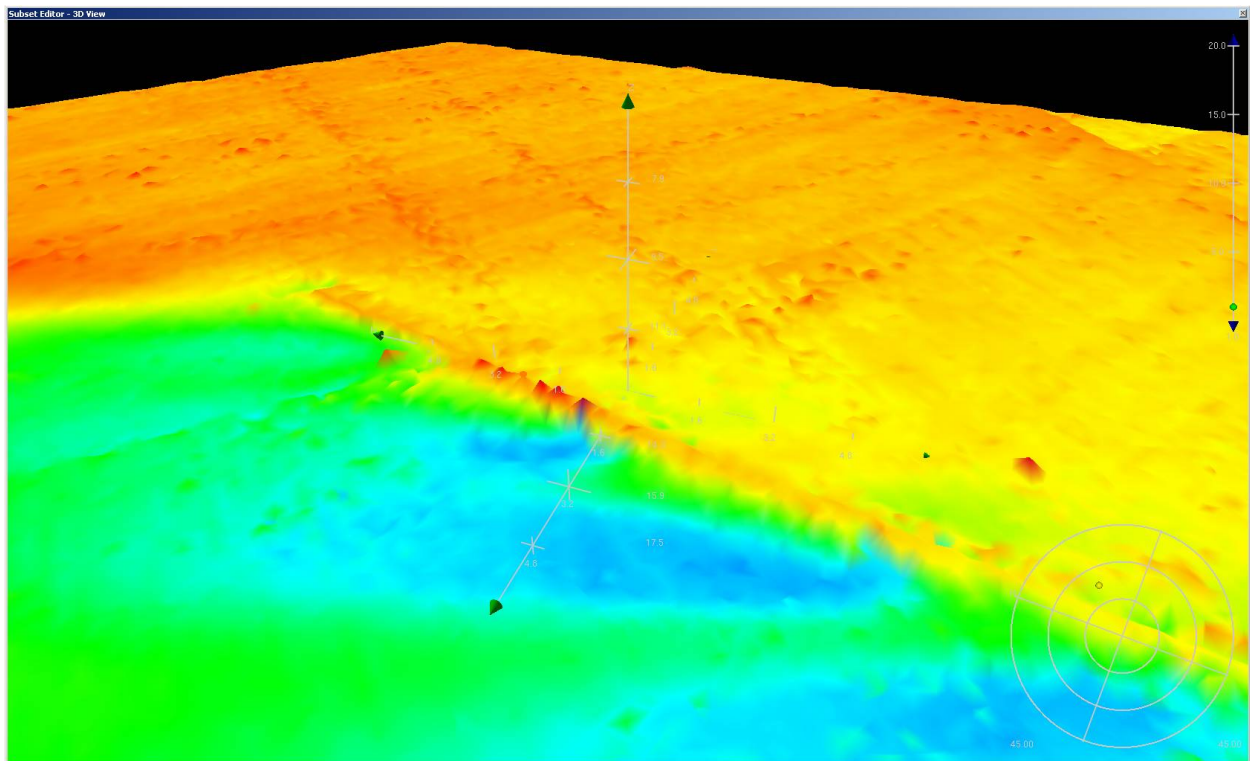


Figure 1.1.1



## 1.2) AWOIS #13069 - 33ft Obstruction

### Primary Feature for AWOIS Item #13069

**Search Position:** 37° 06' 59.1" N, 076° 09' 26.5" W  
**Historical Depth:** 9.75 m  
**Search Radius:** 0  
**Search Technique:** [None]  
**Technique Notes:** [None]

#### History Notes:

H11028/02 -- OPR-E350-RU-02; SSS CONTACT IDENTIFIED WITH 200% SSS COVERAGE AND INVESTIGATED FURTHER WITH SWMB WITH REVEALED A LEAST DEPTH OF 32 FT IN POSITION 37 06 59.08 N, 076 09 26.54 W (NAD 83). HYDROGRAPHER RECOMMENDS CHARTING A 32 OBSTN WITH DANGER CURVE IN THE SURVEYED POSITION GIVEN ABOVE. UPDATED JCM 4/19/2005.

### Survey Summary

**Survey Position:** 37° 06' 59.2" N, 076° 09' 26.7" W  
**Least Depth:** 10.03 m (= 32.91 ft = 5.484 fm = 5 fm 2.91 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 0.224$  m ; TVU (TPEv)  $\pm 0.200$  m  
**Timestamp:** 2010-075.13:32:09.822 (03/16/2010)  
**Survey Line:** h12182 / tj\_s222\_reson7125\_stbd / 2010\_075 / 301\_1325  
**Profile/Beam:** 6349/121  
**Charts Affected:** 12222\_1, 12224\_1, 12221\_1, 12280\_2, 13003\_1

#### Remarks:

Found charted AWOIS item #13069. Based on MBES investigation, feature appears to be a rectangular object, with approximate dimensions of 6m long, 2m wide, azimuth 353 degrees.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12182/tj_s222_reson7125_stbd/2010_075/301_1325	6349/121	0.00	000.0	Primary
OPR-E350-TJ-10_H12182_AWOIS	AWOIS # 13069	5.38	315.9	Secondary

## Hydrographer Recommendations

Revise charted obstruction.

### Cartographically-Rounded Depth (Affected Charts):

33ft (12222\_1, 12224\_1, 12221\_1, 12280\_2)

5 ½fm (13003\_1)

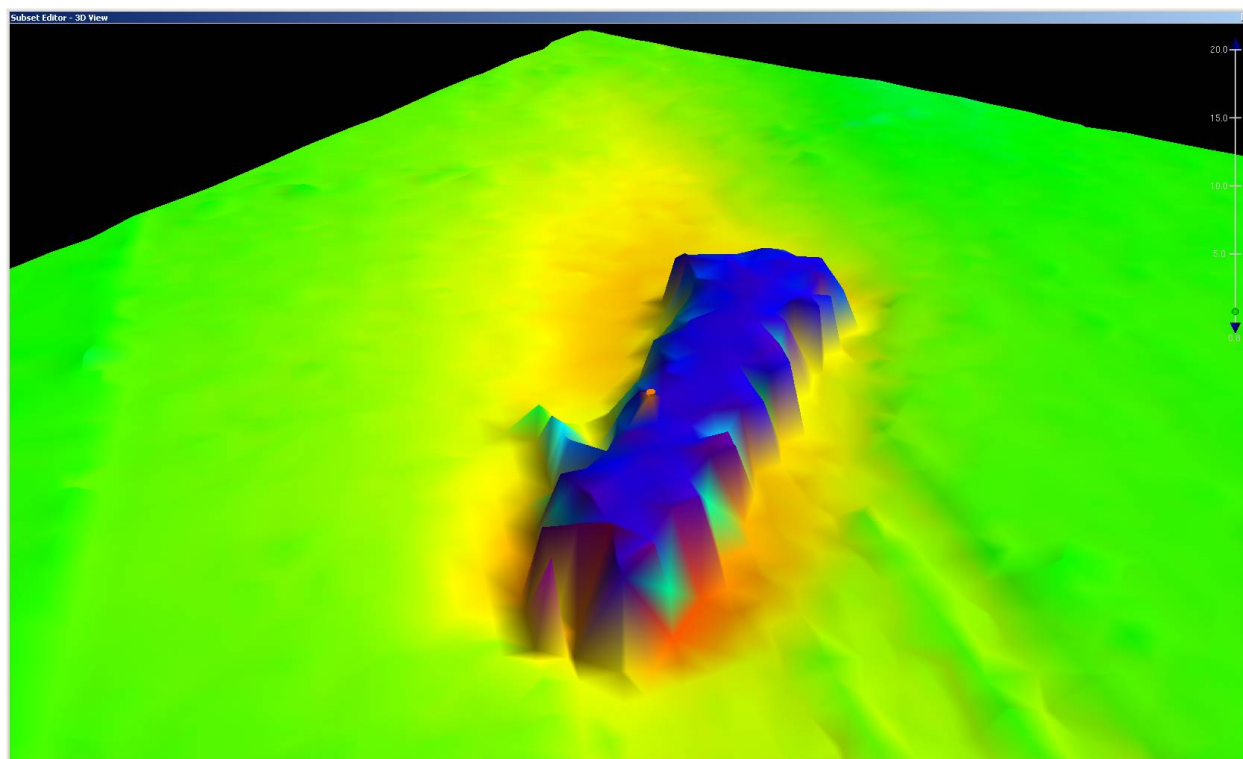
## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
SORDAT - 20100324  
SORIND - US,US,graph,H12182  
TECSOU - 3:found by multi-beam  
VALSOU - 10.030 m  
WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification. Delete charted 32ft obstruction. Add 33ft obstruction at survey position. Update AWOIS database.

## Feature Images



*Figure 1.2.1*

### 1.3) AWOIS #13070 - 43ft Obstruction

#### Primary Feature for AWOIS Item #13070

**Search Position:** 37° 06' 04.8" N, 076° 08' 01.1" W  
**Historical Depth:** 11.89 m  
**Search Radius:** 0  
**Search Technique:** [None]  
**Technique Notes:** [None]

#### History Notes:

H11028/02 -- OPR-E350-RU-02; THIS CONTACT WAS IDENTIFIED WITH 200% SIDE SCAN SONAR COVERAGE AND FURTHER INVESTIGATED WITH SWMB AND DIVE OPERATION. THE CONTACT WAS CONFIRMED BY DIVERS TO BE A SUNKEN MOORING BUOY. THE LEAST DEPTH WAS DETERMINED BY SWMB TO BE 39 FT (12.05 M, APPROVED TIDES CORRECTED) AT POSITION LAT. 37 06' 04.85" N, LONG. 076 08' 01.09 W. THE HYDROGRAPHER RECOMMENDS CHARTING A 39 OBSTN WITH DANGER CURVE IN THE SURVEYED POSITION GIVEN ABOVE. UPDATED JCM 4/19/2005.

#### Survey Summary

**Survey Position:** 37° 06' 04.8" N, 076° 08' 00.8" W  
**Least Depth:** 13.17 m (= 43.21 ft = 7.201 fm = 7 fm 1.21 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.008$  m ; TVU (TPEv)  $\pm 0.228$  m  
**Timestamp:** 2010-077.04:43:38.661 (03/18/2010)  
**Survey Line:** h12182 / tj\_s222\_reson7125\_stbd / 2010\_077 / 508\_0442  
**Profile/Beam:** 867/101  
**Charts Affected:** 12222\_1, 12224\_1, 12221\_1, 12280\_2, 13003\_1

#### Remarks:

Found charted AWOIS item #13070. Based on MBES investigation, feature appears to be a circular object, with an approximate diameter of 1.5m.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12182/tj_s222_reson7125_stbd/2010_077/508_0442	867/101	0.00	000.0	Primary
OPR-E350-TJ-10_H12182_AWOIS	AWOIS # 13070	6.84	112.1	Secondary

## Hydrographer Recommendations

Revise charted obstruction.

### Cartographically-Rounded Depth (Affected Charts):

43ft (12222\_1, 12224\_1, 12221\_1, 12280\_2)

7 ¼fm (13003\_1)

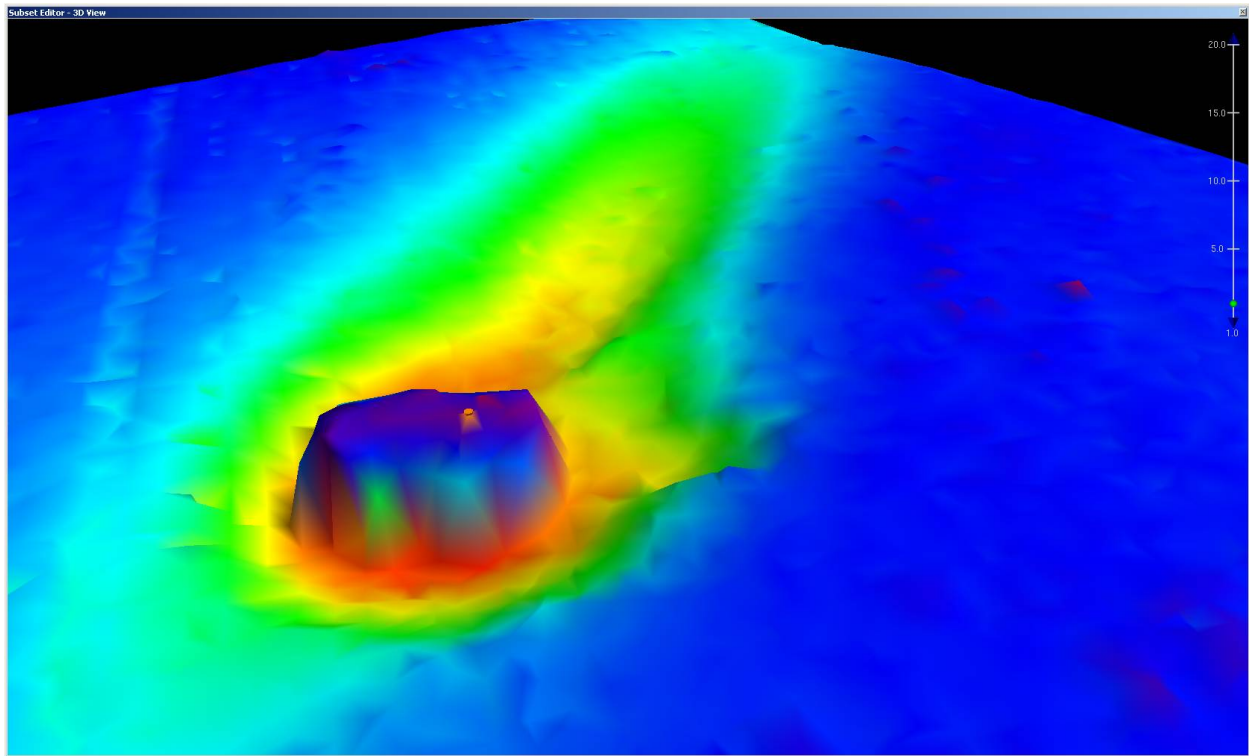
## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
SORDAT - 20100324  
SORIND - US,US,graph,H12182  
TECSOU - 3:found by multi-beam  
VALSOU - 13.169 m  
WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification. Delete charted 39ft obstruction. Add 43ft obstruction at survey position. Update AWOIS database.

## Feature Images



*Figure 1.3.1*



# Uncharted Items Feature Report

**Registry Number:** H12182  
**State:** Virginia  
**Locality:** Southern Chesapeake Bay  
**Sub-locality:** Approaches to York River Entrance Channel  
**Project Number:** OPR-E350-TJ-10  
**Survey Date:** 03/16/2010

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12222	52nd	09/01/2009	1:40,000 (12222_1)	USCG LNM: 01/12/2010 (01/19/2010) NGA NTM: 07/18/2009 (01/23/2010)
12224	24th	02/01/2006	1:40,000 (12224_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	36ft Obstruction	Obstruction	11.15 m	37° 07' 06.4" N	076° 09' 17.4" W	---

## **1 - DR\_UnCharted**

## 1.1) 36ft Obstruction

### Survey Summary

**Survey Position:** 37° 07' 06.4" N, 076° 09' 17.4" W  
**Least Depth:** 11.15 m (= 36.58 ft = 6.097 fm = 6 fm 0.58 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.230$  m ; **TVU (TPEv)**  $\pm 0.206$  m  
**Timestamp:** 2010-075.17:25:28.948 (03/16/2010)  
**Survey Line:** h12182 / tj\_s222\_reson7125\_stbd / 2010\_075 / 408\_1707  
**Profile/Beam:** 16938/431  
**Charts Affected:** 12222\_1, 12224\_1, 12221\_1, 12280\_2, 13003\_1

#### Remarks:

Uncharted obstruction found. Based on MBES investigation, feature appears to be a rectangular object, with approximate dimensions of 4m long, 2.5m wide, azimuth 040 degrees.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12182/tj_s222_reson7125_stbd/2010_075/408_1707	16938/431	0.00	000.0	Primary
h12182/tj_s222_reson7125_stbd/2010_075/408_1707	16938/431	0.00	000.0	Secondary

### Hydrographer Recommendations

Feature is considered to be significant, but not a DTON (danger to navigation). Add obstruction.

#### Cartographically-Rounded Depth (Affected Charts):

36ft (12222\_1, 12224\_1, 12221\_1, 12280\_2)

6fm (13003\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20100324  
 SORIND - US,US,graph,H12182  
 TECSOU - 3:found by multi-beam  
 VALSOU - 11.150 m

WATLEV - 3:always under water/submerged

## **Office Notes**

Concur with clarification. Add 36ft obstruction at survey position.

## Feature Images

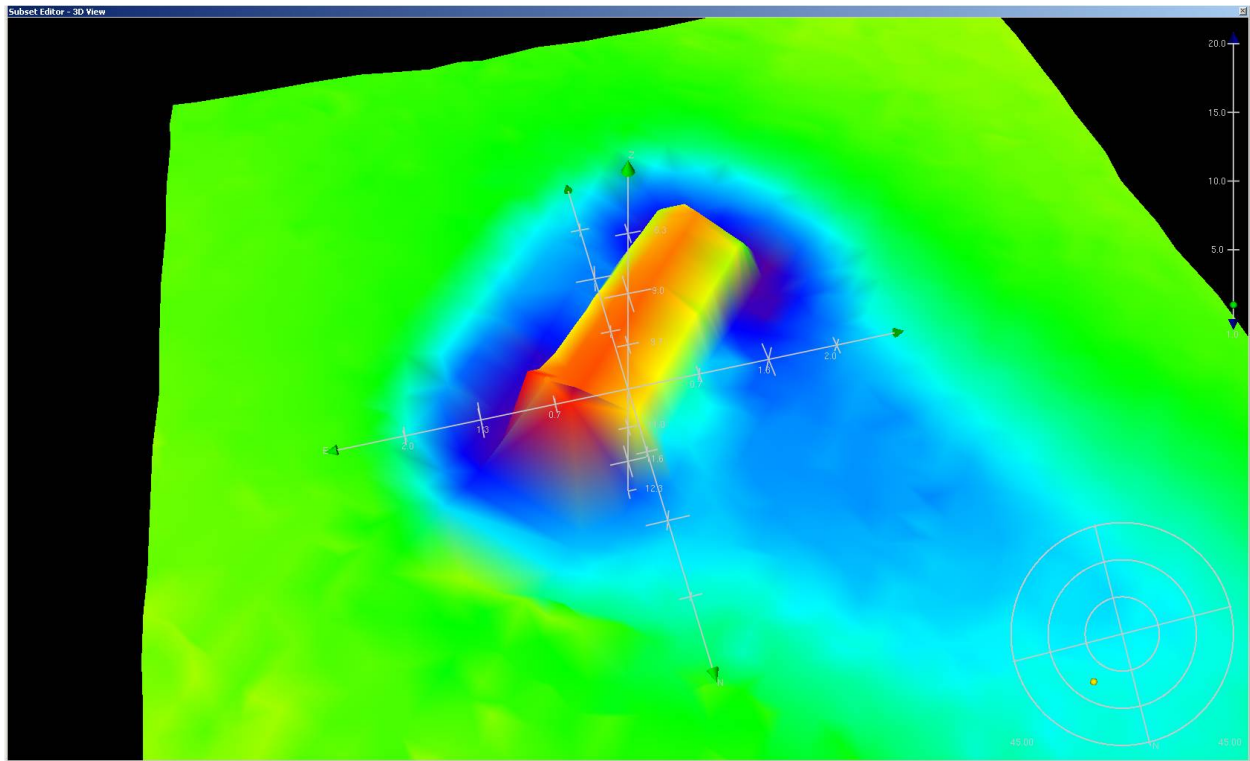
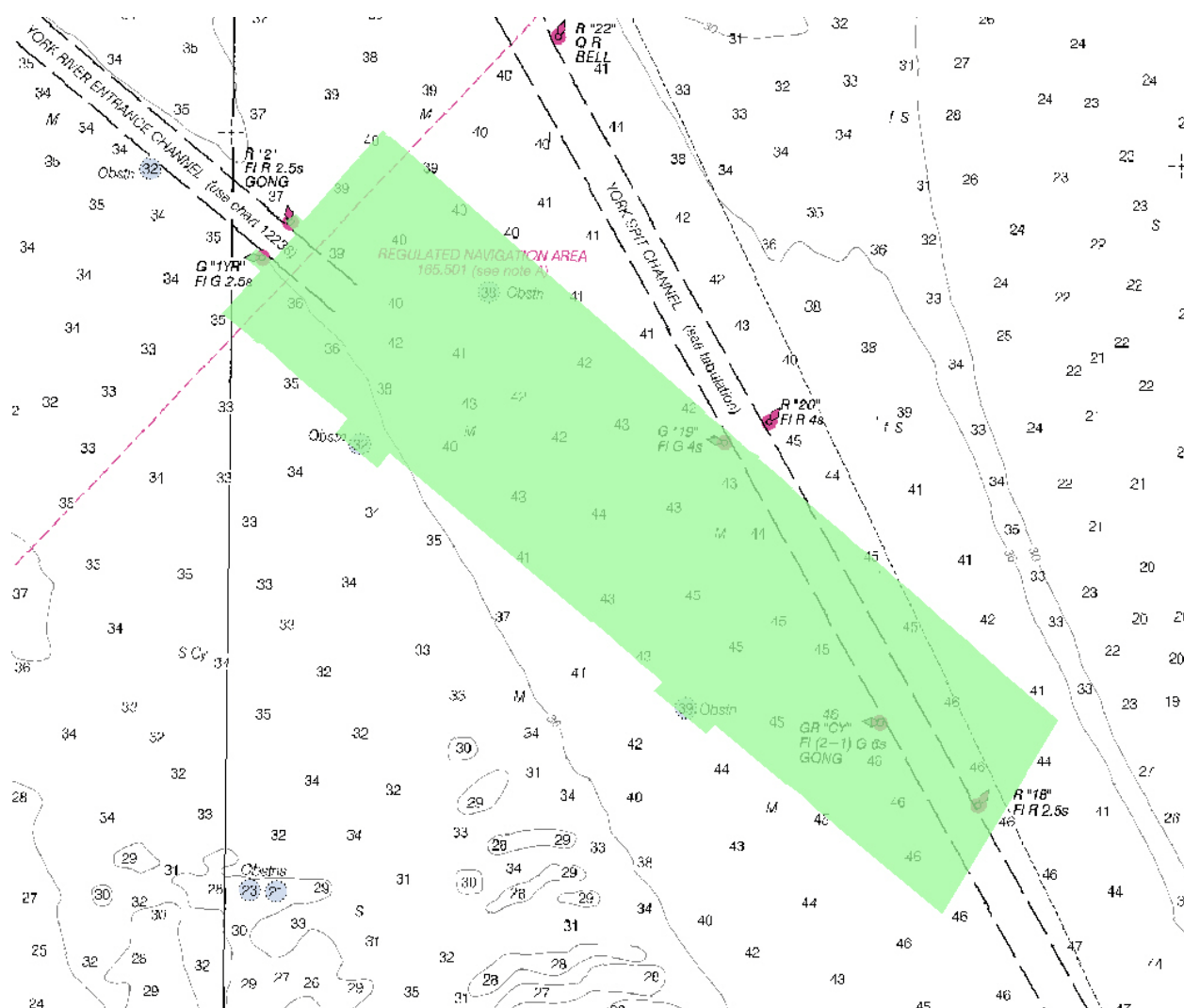


Figure 1.1.1

## Appendix III

### Progress Sketch



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	<b>Thomas Jefferson</b>												
2	<b>Survey Progress Estimate</b>												
3													
4	<b>CY2010 Field Season</b>												
5													
6	<b>OPS</b>					<b>FIELD</b>							
7	Project Number and Name	Sheet Identifier	Registry Number	HQ Estimated SNM	SNM Completed Survey Outline	Date Field Work Began	Date Field Work Completed	Smooth Tides Request Date	Smooth Tides Received Date	Estimated Date of Survey Submission	March Cumulative % Complete	April Cumulative % Complete	May Cumulative % Complete
8	OPR-E350	1	H12180	17		3/16/10	4/8/10	4/9/10		4/16/10	54%	87%	
9		2	H12181	25	20.58	3/17/10	3/24/10	3/25/10	4/2/10	4/16/10	100%		
10		3	H12182	3	2.67								
11					23.25								

## **Appendix IV**

### **Tides and Water Levels**

- 1. Request for Approved Tides**
- 2. Final Tide Notes**



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

March 25, 2010

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

FROM: CDR Shepard M. Smith, 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-E350-TJ-10  
Registry No.: H12182  
State: Virginia  
Locality: Southern Chesapeake Bay  
Sublocality: Approach to York River Entrance 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
2010_075	12:30:49	23:56:45
2010_076	00:26:44	23:49:27
2010_077	00:03:06	23:58:07
2010_078	00:06:34	04:54:18
2010_082	19:07:31	21:56:12
2010_083	13:38:56	17:12:15



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

## **TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** March 31, 2010

**HYDROGRAPHIC BRANCH:** Atlantic  
**HYDROGRAPHIC PROJECT:** OPR-E350-TJ-2010  
**HYDROGRAPHIC SHEET:** H12182

**LOCALITY:** Approach to York River Entrance Channel, VA  
**TIME PERIOD:** March 16 - 24, 2010

**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**  
Use zone(s) identified as: SCB14 and SCB15

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**

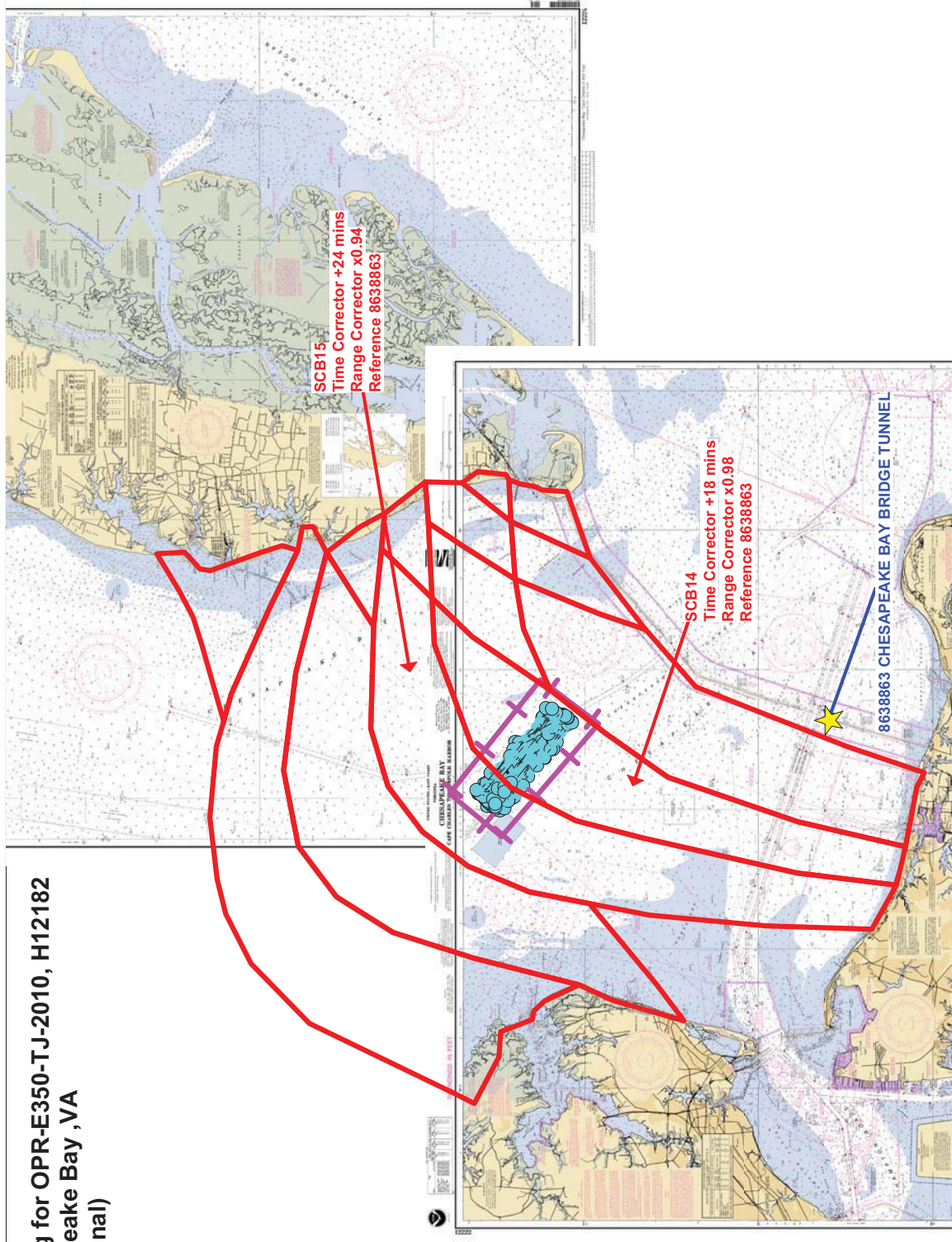
Digitally signed by Peter J. Stone  
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/  
NOS, email=peter.stone@noaa.gov, c=US  
Date: 2010.04.01 17:21:04 -04'00'

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CHIEF, OCEANOGRAPHIC DIVISION



Final Tidal Zoning for OPR-E350-TJ-2010, H12182  
Southern Chesapeake Bay , VA  
(Preliminary as Final)



## **Appendix V**

### **Supplemental Survey Records & Correspondence**

U.S. DEPARTMENT OF COMMERCE  
(10-95) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
OCEANOGRAPHIC LOG SHEET - M  
BOTTOM SEDIMENT DATA

[illegible]

**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](mailto:christiaan.vanwestendorp@noaa.gov)>

Atlantic Hydrographic Branch

NOAA OCS

**Subject:** [Fwd: Re: H12182 Coverage Method]

**From:** CO Thomas Jefferson <CO.Thomas.Jefferson@noaa.gov>

**Date:** Thu, 25 Mar 2010 23:15:08 -0400

**To:** \_NMAO MOA OPS Thomas Jefferson <OPS.Thomas.Jefferson@noaa.gov>, Mark Blankenship <Mark.Blankenship@noaa.gov>, "Michael C. Davidson" <Michael.Davidson@noaa.gov>

----- Original Message -----

**Subject:** Re: H12182 Coverage Method

**Date:** Sun, 14 Mar 2010 14:52:47 -0400

**From:** James Crocker <[James.M.Crocker@noaa.gov](mailto:James.M.Crocker@noaa.gov)>

**To:** CO Thomas Jefferson <[CO.Thomas.Jefferson@noaa.gov](mailto:CO.Thomas.Jefferson@noaa.gov)>

**References:** <[4B9D0F2D.8000507@noaa.gov](mailto:4B9D0F2D.8000507@noaa.gov)>

If that's all you can do, it will be fine. This area was assigned to address pilots concern about shoaling and complete MB with 100% SS would be best but OB MB would meet the requirement.

CO Thomas Jefferson wrote:

> Jim,  
>  
> We are having trouble getting our SSS winch operable on the ship. The  
> weather for the next few days looks like it will be too rough for  
> launch work on the sheets (20kt NW). We are dying to get to work, and  
> we have the energy audit folks aboard to make measurements while we  
> are operating.  
>  
> What would you think about letting us do H12182 with OD multibeam  
> only, while we are waiting to get the winch working?  
>  
> This question may be moot if we get the winch working tomorrow morning  
> as planned.  
>  
> Our estimate is that it would double the number of miles for the  
> sheet, but it is a small sheet, and it would get us doing something  
> productive sooner.  
>  
> Shep  
>  
> --  
> CDR Shepard Smith, NOAA  
> Commanding Officer  
> NOAA Ship Thomas Jefferson  
> 439 West York St  
> Norfolk, VA 23510  
> 757-647-0187

--  
CDR Shepard Smith, NOAA  
Commanding Officer  
NOAA Ship Thomas Jefferson  
439 West York St  
Norfolk, VA 23510  
757-647-0187

From	<a href="mailto:CO.Thomas.Jefferson@noaa.gov">CO Thomas Jefferson &lt;CO.Thomas.Jefferson@noaa.gov&gt;</a>	
Sent	Wednesday, April 14, 2010 10:32 pm	
To	<a href="mailto:Sarah.Mrozek@noaa.gov">Sarah Mrozek &lt;Sarah.Mrozek@noaa.gov&gt;</a> <a href="mailto:jwalters@lantD5.USCG.mil">jwalters@lantD5.USCG.mil</a>	
Cc	<a href="mailto:_NMAO.MOA.OPS.Thomas.Jefferson@noaa.gov">_NMAO MOA OPS Thomas Jefferson &lt;OPS.Thomas.Jefferson@noaa.gov&gt;</a> <a href="mailto:James.Miller@noaa.gov">James Miller &lt;James.Miller@noaa.gov&gt;</a> ')"> "Michael C. Davidson" <Michael.Davidson@noaa.gov>	
Bcc		
Subject	G "19" off station 36 meters	
Attachments	<a href="#">vCard(CO Thomas Jefferson)</a>	1K

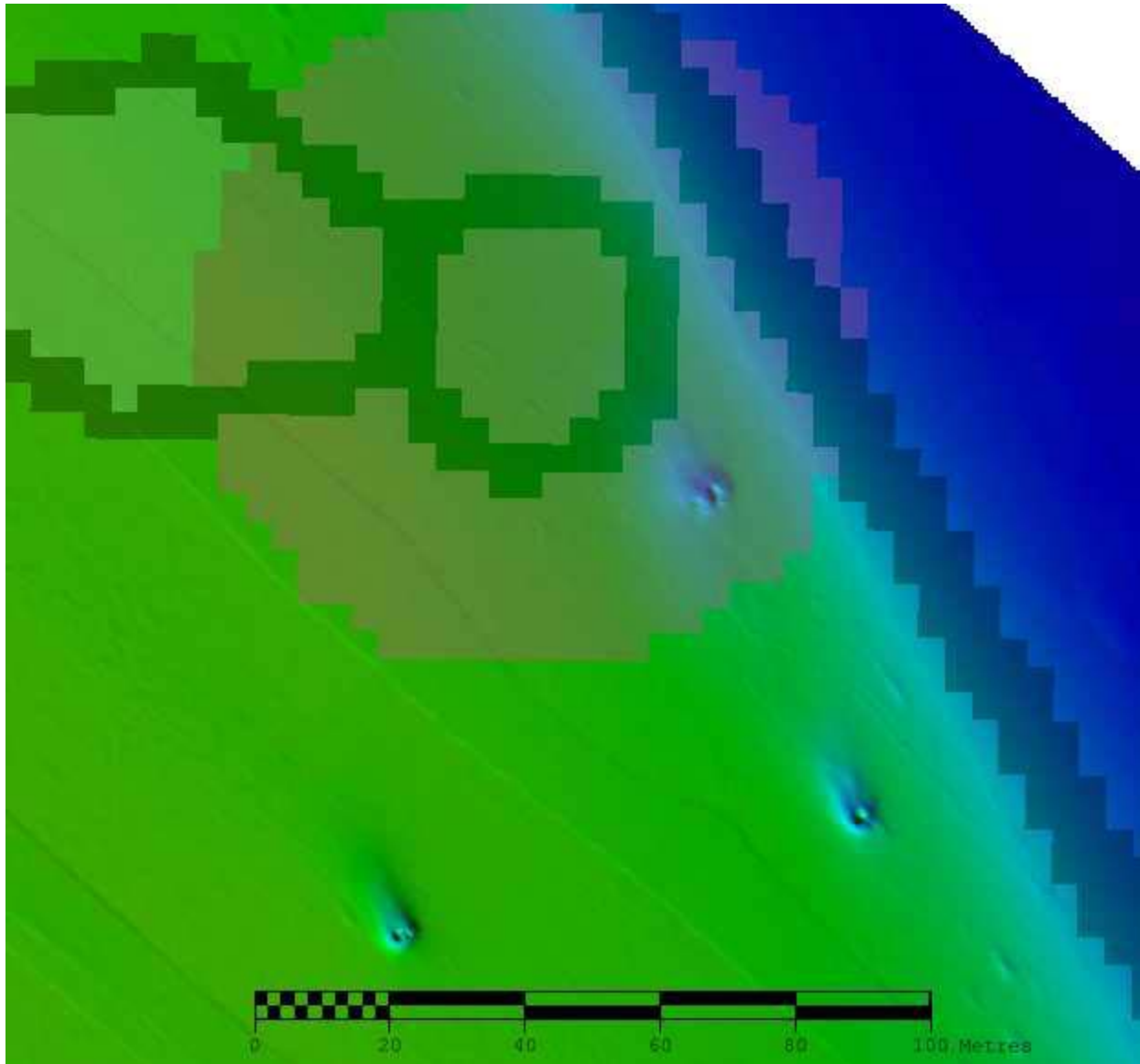
Sarah and Mr. Walters,

While we were surveying in the vicinity of the York Spit Channel in March, we noticed that the G "19" buoy is off station by about 36 meters, measuring from the buoy block to the charted buoy location. In addition, there are two other apparently derelict buoy blocks in the general vicinity. We will be providing additional information in a more professional form over the next week, but I wanted to get this information out sooner in case the USCG was concerned about it. I do not consider it dangerous, since both the buoy and the charted location are approximately the same distance from the edge of the channel, but we thought we would pass it on nonetheless. The other nav aids were all right on.

Best,

Shep





--  
CDR Shepard Smith, NOAA  
Commanding Officer  
NOAA Ship Thomas Jefferson  
439 West York St  
Norfolk, VA 23510  
757-647-0187

From	<a href="mailto:CO.Thomas.Jefferson@noaa.gov">CO Thomas Jefferson &lt;CO.Thomas.Jefferson@noaa.gov&gt;</a>	
Sent	Wednesday, April 14, 2010 10:39 pm	
To	<a href="mailto:OPS.Thomas.Jefferson@noaa.gov">NMAO MOA OPS Thomas Jefferson &lt;OPS.Thomas.Jefferson@noaa.gov&gt;</a> <a href="mailto:Michael.C.Davidson@noaa.gov">")" &gt; "Michael C. Davidson" &lt;Michael.Davidson@noaa.gov&gt;</a> <a href="mailto:James.Miller@noaa.gov">James Miller &lt;James.Miller@noaa.gov&gt;</a> <a href="mailto:Daniel.Wright@noaa.gov">daniel wright &lt;Daniel.Wright@noaa.gov&gt;</a>	
Cc		
Bcc		
Subject	[Fwd: Re: Seashore State Park renamed "First Landing State Park" in 1995.]	
Attachments	<a href="#">vCard(CO_Thomas_Jefferson)</a>	1K

See correspondence below. May as well hang it on H12182.

----- Original Message -----

**Subject:**Re: Seashore State Park renamed "First Landing State Park" in 1995.  
**Date:**Wed, 14 Apr 2010 18:26:11 -0400  
**From:**meredith.westington <[Meredith.Westington@noaa.gov](mailto:Meredith.Westington@noaa.gov)>  
**Organization:**NOAA/NOS/Office of Coast Survey  
**To:**CO Thomas Jefferson <[CO.Thomas.Jefferson@noaa.gov](mailto:CO.Thomas.Jefferson@noaa.gov)>  
**CC:**LCDR Rick Brennan, NOAA <[Richard.T.Brennan@noaa.gov](mailto:Richard.T.Brennan@noaa.gov)>, Jeffrey Ferguson <[Jeffrey.Ferguson@noaa.gov](mailto:Jeffrey.Ferguson@noaa.gov)>  
**References:**<[4BC63EE1.4030809@noaa.gov](mailto:4BC63EE1.4030809@noaa.gov)>

Hi Shep,

Good catch! Since I grew up in Virginia Beach, it will always be "Seashore State Park" to me, but I'll send a note to NDB and copy you!

By the way, you can also send this discrepancy to MCD via <http://ocsdata.ncd.noaa.gov/idrs/discrepancy.aspx> or e-mail directly to [OCS.NDB@noaa.gov](mailto:OCS.NDB@noaa.gov). It helps NDB log the change, if you can attach a pdf of the GNIS record of the official name. No worries on this one though...I'll move it along in about 5 minutes...stay tuned.

Thanks,  
Meredith

CO Thomas Jefferson wrote:

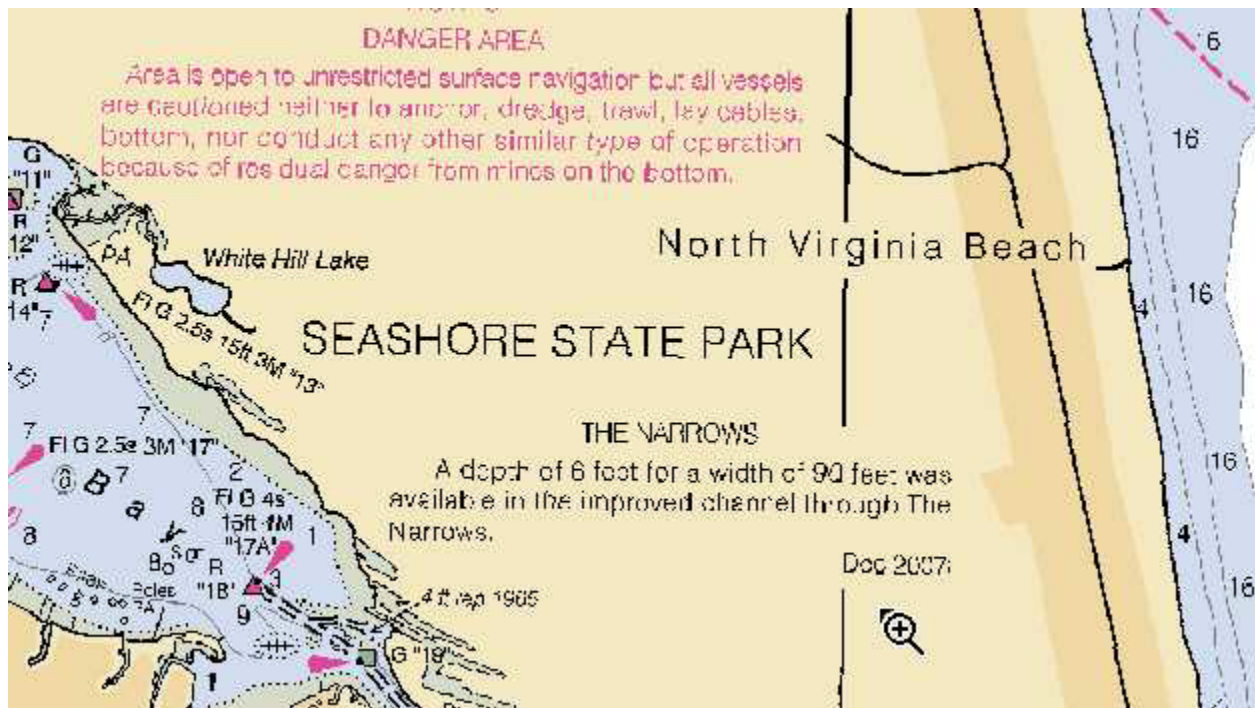
Hi Meredith,

I don't know the proper route to handle this issue, so I thought I would just write directly to you.

On Chart 12222 (and others, I expect), there is a geographic name "Seashore State Park" on Cape Henry. This park was renamed "First Landing State Park" in 1995. You can google it for a source if you need it.

Best,

Shep



--  
CDR Shepard Smith, NOAA  
Commanding Officer  
NOAA Ship Thomas Jefferson  
439 West York St  
Norfolk, VA 23510  
757-647-0187

--  
CDR Shepard Smith, NOAA  
Commanding Officer  
NOAA Ship Thomas Jefferson



**UNITED STATES DEPARTMENT COMMERCE**

National Oceanic and Atmospheric Administration  
Office of Marine and Aviation Operations  
NOAA Ship *Thomas Jefferson* S-222  
439 West York Street  
Norfolk, VA 23510-1114

April 11, 2010

Memorandum For:                   Nautical Data Branch

From:                               CDR Shepard M. Smith, NOAA  
  Commanding Officer, NOAA Ship *Thomas Jefferson*

Subject:                            Coast Pilot Report, H12182

We reviewed the Coast Pilot as might be affected by this survey, and have no comments to forward as a result.

The general comments about the area will be reviewed as part of one of the other surveys in this project.

Subject: Re: H12182 missing survey lines  
From: Michael.Davidson@noaa.gov  
Date: Wed, 25 Aug 2010 01:38:03 +0000 (GMT)  
To: James J Miller <James.J.Miller@noaa.gov>

Hi James,

I have the lines. We arrive in Norfolk on Sunday night and will be alongside in Norfolk on Monday. I will hand deliver the missing lines then.

I think the problem was caused by the limited read/write of the portable hard drive. I have noticed a few times that if I start moving data and then grab another folder and start to move it onto the portable as well, the drive can't handle the two transfers at the same time and it just drops one transfer in mid-stream. This occurred a few times earlier this season and I have since changed the way that I transfer the data to avoid this type of situation.

Not sure how this didn't get noticed before it left the ship, but I do remember that survey going off the ship at the very last moment. Hopefully, this is an isolated incident.

Thanks,  
Mike

----- Original Message -----

From: James J Miller <James.J.Miller@noaa.gov>  
Date: Tuesday, August 24, 2010 8:26 pm  
Subject: H12182 missing survey lines

> > Mike,

> >

> > I recently began the SAR process for the Chesapeake Bay survey we did  
> > together, H12182. In the data package we received, we have been unable  
> > to locate 16 survey lines from day 077. Do you still have the data for  
> > survey 12182 aboard? Here is a list of the 16 survey lines we are  
> > missing, all of which were acquired on Julian Day 077:

> >

> > 400\_0348

> > 400\_0357

> > 401\_0324

> > 403\_0303

> > 404\_0232

> > 425\_0207

> > 426\_0124

> > 426\_0151

> > 427\_0058

> > 428\_0031

> > 443\_0003

> > 443\_0523

> > 445\_0457

> > 446\_0547

> > 447\_0620

> > 448\_0700

> >

> > These 16 lines are not present in the data we received, nor are they  
> > present in the submitted H12182\_dump.txt directory file. Please  
> > forward the data at the earliest opportunity.

> >

> > Thanks,

> > James J Miller

> >

**Subject:** Re: TJ survey H12182

**From:** "J. Corey Allen" <Corey.Allen@noaa.gov>

**Date:** Wed, 15 Sep 2010 11:10:27 -0400

**To:** James J Miller <James.J.Miller@noaa.gov>

**CC:** Castle E Parker <Castle.E.Parker@noaa.gov>

James,

Thank you for following up on this matter. I did received all of the items listed in the PI, so you can check off that SAR box.

Corey

James J Miller wrote:

Corey,

My name is James J Miller, and I am completing the Survey Acceptance Review (SAR) for a 2010 Thomas Jefferson survey, project OPR-E350-TJ-10, survey H12182. Part of the Project Letter Instructions for this survey was to provide ERS survey data (raw POSpac data, reference station data (CORS, etc.), processed SBETs, and processed CARIS files (bathy, SVP, and surfaces) for additional analysis to you, Corey Allen.

Did you receive any such correspondence from the survey crew of the Thomas Jefferson? They conducted the survey in March and April of 2010, and they would have contacted you around that time.

Thank you for your assistance.

**James J Miller**

Physical Scientist

Atlantic Hydrographic Branch

439 W York St

Norfolk, VA 23510

[james.j.miller@noaa.gov](mailto:james.j.miller@noaa.gov)

(757) 441-6746 Ext. 107

--

J. Corey Allen

Physical Scientist, Operations Branch

Hydrographic Surveys Division

Office of Coast Survey

NOAA

[Corey.Allen@noaa.gov](mailto:Corey.Allen@noaa.gov)

301.713.2777 x103 (Work)

301-717-7271 (Cell)



## AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	H12182
PROJECT No.	OPR-E350-TJ-10
FIELD UNIT	NOAA SHIP THOMAS JEFFERSON
DATE OF SURVEY	20100316 - 20100324
LARGEST SCALE CHART	<i>12222_1, edition 52, 20090901, 1:40,000</i>
ADDITIONAL CHARTS	N/A
SOUNDING UNITS	<b>FEET</b>
COMPILER	James J. Miller II

Source Grids	File Name
	H:\Compilation\H12182_E350_TJ\AHB_H12182\SAR Final Products\GRIDS
	<b>H12182_CUBE_NOAA_50cm_Final.csar</b>
Surfaces	File Name
	H:\Compilation\H12182_E350_TJ\AHB_H12182\COMPILE\Working
<i>Combined</i>	<b>N/A</b>
<i>Interpolated TIN</i>	\Interpolated TIN\H12182_8m_InterpTIN.csar
<i>Shifted Interpolated TIN</i>	\Shifted Surface\H12182_8m_InterpTIN_shifted.csar
Final HOBs	File Name
	H:\Compilation\H12182_E350_TJ\AHB_H12182\COMPILE\Final_Hobs
<i>Survey Scale Soundings</i>	<b>H12182_SS_Soundings.hob</b>
<i>Chart Scale Soundings</i>	<b>H12182_CS_Soundings.hob</b>
<i>Contour Layer</i>	<b>H12182_Contours.hob</b>
<i>Feature Layer</i>	<b>H12182_Features.hob</b>
<i>Meta-Objects Layer</i>	<b>H12182_MetaObjects.hob</b>
<i>Blue Notes</i>	<b>H12182_BlueNotes.hob</b>
<i>ENC Retain Soundings</i>	<b>N/A</b>

Meta-Objects Attribution	
Acronym	Value
<b>M_COVR</b>	
CATCOV	1 – coverage available
SORDAT	20100324
SORIND	US,US,graph,H12182
<b>M_QUAL</b>	
CATZOC	6 – zone of confidence U (data not assessed)
INFORM	NOAA Ship Thomas Jefferson
POSACC	10.0 m
SORDAT	20100324
SORIND	US,US,graph,H12182
SUREND	20100324
SURSTA	20100316
<b>DEPARE</b>	
DRVALV 1	10.029 m
DRVALV2	16.732 m
SORDAT	20100324
SORIND	US,US,graph,H12182
<b>M_CSCL</b>	

CSCALE	N/A
SORDAT	N/A
SORIND	N/A

SPECIFICATIONS:

- I. COMBINED SURFACE:
  - a. Number of ESAR Final Grids: 1
  - b. Resolution of Combined (m): 50 cm
  
- II. SURVEY SCALE SOUNDINGS (SS):
  - a. Attribute Name: Depth
  - b. Selection criteria: Radius, Shoal bias
  - c. Radius value is: mm at map scale
    - i. Use single-defined radius: 1.00
    - ii. And/Or use radius table file: N/A [XXk = chart scale]
  - d. Queried Depth of All Soundings
    - i. Minimum: 10.029 m
    - ii. Maximum: 16.732 m
  
- III. INTERPOLATED TIN SURFACE:
  - a. Resolution (m): 8 m
  - b. Interpolation method: Natural Neighbor
  - c. Shift value: -0.75 ft [only include applicable shift values]  
[-0.75 feet (And/Or) -0.75 fathoms]
  
- IV. CONTOURS:
  - a. Attribute Name: Depth
  - b. Use a Depth List: H12182\_depth\_contours.txt
  - c. Output Options: Create contour lines
    - i. Line Object: DEPCNT
    - ii. Value Attribute: VALDCO
  
- V. FEATURES:
  - a. Number of Chart Features: 8 [all features included in H-Cell]
  - b. Number of Non-Chart Features: 1 [all features submitted by field & not included in H-Cell]
  
- VI. CHART SURVEY SOUNDINGS (CS):
  - a. Number of ENC CS Soundings: 40
  - b. Attribute Name: Depth
  - c. Selection criteria: Radius, Shoal bias
  - d. Radius value is: Distance on the ground (m)
    - i. Use single-defined radius: 410.0 m
    - ii. And/Or use radius table file: N/A [XXk = chart scale]
    - iii. Enable Filter: Interpolated !=1
  - e. Number Survey CS Soundings: 48
  
- VII. NOTES:
 

[Type text]

**ATLANTIC HYDROGRAPHIC BRANCH  
H-CELL REPORT to ACCOMPANY  
SURVEY H12182 (2010)**

This H-Cell Report has been written to supplement and/or clarify the original Descriptive Report (DR) and pass critical compilation information to the cartographers in the Marine Chart Division.

**B. DATA ACQUISITION AND PROCESSING**

**B.2 QUALITY CONTROL**

**B.2 H-Cell**

The AHB source depth grid for the survey's nautical chart update product was a 50cm resolution BASE surface (\*.CSAR). The survey scale soundings were created from the surface at a single defined radius of one millimeter (at chart scale) at the 1:40,000 chart scale. A TIN was created from the survey scale soundings, from which an interpolated surface was generated. The chart scale soundings were selected from the filtered interpolated surface using a single defined radius of 410m (on the ground). The chart scale soundings are a subset of the survey scale soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth contours were created from a shifted interpolated TIN surface of 8m resolution, with the contours in feet (36 feet). The depth contours are forwarded to MCD for reference only. The contours were utilized during chart scale sounding selection and quality assurance efforts at AHB. The depth contours are incorporated into the SS H-Cell product as per 2009 H-Cell Specifications.

The pre-compilation products or components (Stand Alone \*.HOB files, or SAHOB) are detailed in the H12182 AHB Compilation Log contained within this document. The SAHOB files included depth areas (DEPARE), depth contours (DEPCNT), soundings (SOUNDG), meta-objects (M\_QUAL, M\_COVR), cartographic Blue Notes (\$CSYMB), and features (OBSTRN and SBDARE).

As dictated by Hydrographic Technical Directive 2008-8, these SAHOB files were combined into two separate files in S-57 format. Both S-57 files were exported from CARIS Bathy DataBase in meters and then processed in CARIS HOM to convert the metric units to feet. The final products are two S-57 files, in Lat/Long NAD-83. One S-57 file contains the chart scale soundings, the meta-objects, the Blue Notes, and the features (H12182\_CS.000), and the other S-57 file contains the depth contours and the survey scale soundings (H12182\_SS.000). Finally, quality assurance and topology checks were made utilizing CARIS S-57 Composer 2.1 validation checks and DKART Inspector 5.0 validation tests.

H12182 CARIS H-Cell final deliverables include the following products:

H12182_CS.000	1:40,000 Scale	H-Cell with chart scale soundings, meta-objects, blue notes, and features
H12182_SS.000	1:40,000 Scale	H-Cell with survey scale soundings and depth contours

#### **B.2.4 Junctions**

Survey H12182 (2010) does not junction with any recent surveys. Most present survey depths compare within 2 feet of the charted hydrography to the east, north, west, and south.

#### **B.4 DATA PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

CARIS Bathy DataBase version 2.1/SP1/HF10  
CARIS Bathy DataBase version 2.3/HF16  
CARIS Bathy DataBase version 3.0/HF5  
CARIS HIPS/SIPS version 7.0/SP2/HF3  
CARIS S-57 Composer version 2.1/HF4  
CARIS HOM version 3.3/SP3/HF8  
DKART Inspector 5.0  
PYDRO 9.10

#### **C. HORIZONTAL AND VERTICAL CONTROL**

There was no Horizontal and Vertical Control Report (HVCR) submitted with survey H12182 for project OPR-E350-TJ-10. The hydrographer made adequate mention of horizontal and vertical control used for this survey in DR section C. Horizontal control used during data acquisition for this survey is based upon the North American Datum of 1983 (NAD83), UTM Projection Zone 18 North.

#### **D. RESULTS AND RECOMMENDATIONS**

##### **D.1 CHART COMPARISON**

##### **12222 (52nd Edition, Sep/2009)**

Chesapeake Bay – Cape Charles to Norfolk Harbor  
Corrected through NM 08/07/2010  
Corrected through LNM 07/27/2010  
Scale 1:40,000

**ENC Comparison****US5VA13M**

Chesapeake Bay – Cape Charles to Norfolk Harbor  
Edition 19

Application Date 2010/03/12

Issue Date 2010/07/07

Chart 12222

**D.2 ADDITIONAL RESULTS**

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons and recommendations in section D and Appendix I and II of the Descriptive Report. In addition, the hydrographer recommends that any charted features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted.

**D.6 MISCELLANEOUS**

Chart compilation was completed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division in Silver Spring, Maryland. See section D.1 of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

**D.7 ADEQUACY OF SURVEY**

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted. Refer to the Descriptive Report (section D and Appendices I and II) for further recommendations by the hydrographer.

**APPROVAL SHEET  
H12182**

**Initial Approvals:**

The completed survey has been inspected with regard to survey coverage, delineation of depth contours, disposition of critical depths, cartographic symbolization, and verification or disproof of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive review per the Hydrographic Surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

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**James J. Miller II**  
Physical Scientist  
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: \_\_\_\_\_  
**Richard T. Brennan**  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch