NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Hydrographic**

Field No. **David Evans and Associates, Inc.**

Registry No. **H11653**

LOCALITY

State **VIRGINIA**

General Locality **Central Chesapeake Bay**

Sublocality **Rappahannock Spit**

2007

CHIEF OF PARTY

Jonathan L. Dasler, PE (OR) , PLS (OR,CA)

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NOAA FORM 77-28
(11-72)

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

REGISTRY No

HYDROGRAPHIC TITLE SHEET

H11653

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

FIELD No

David Evans and Associates, Inc.

State **Virginia**

General Locality **Central Chesapeake Bay**

Sub-Locality **Rappahannock Spit**

Scale **1:10,000** Date of Survey **June 19, 2007 to September 26, 2007**

Instructions dated **February 22, 2007** Project No. **OPR-E349-KR-07**

Vessel **R/V Sealth**

Chief of party **Jonathan L. Dasler, PE (OR) , PLS (OR,CA)**

Surveyed by **Jason Creech, John Staly**

Soundings by echo sounder, hand lead, pole **RESON 7125-B, EdgeTech 4200-FS, EdgeTech 4200-HFL**

Graphic record scaled by **N/A**

Graphic record checked by **N/A** Automated Plot **N/A**

Verification by *NOAA, Atlantic Hydrographic Branch*

Soundings in **Meters** *Feet* **at MLLW** *Charted depths in feet at MLLW*

REMARKS: **All times are UTC** *Bold, Italic, Red notes in the Descriptive Report were made during office processing.* **The purpose of this contract is to provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of the assigned area.** *NAD-83 UTM 18N*

SUBCONSULTANTS: **Global Seas, LLC, 2001 Sixth Ave Suite 3420, Seattle, WA 98121**

John Oswald and Associates, 2000 E Dowling Road, Suite 10, Anchorage, AK 99507Meters

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537

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****Filed with original field records.***

Acronyms and Abbreviations

AHB	Atlantic Hydrographic Branch
AtoN	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
CO-OPS	Center for Operational Oceanographic Products and Services
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DEA	David Evans and Associates, Inc.
DtoN	Danger to Navigation
DGPS	Differential Global Positioning System
ECN	Electronic Navigational Chart
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
IHO	International Hydrographic Organization
LNM	U.S. Coast Guard Local Notice to Mariners
MBES	Multibeam Echo Sounder
MCD	Marine Chart Division
MLLW	Mean Lower Low Water
MVP	Moving Vessel Profiler
NAD83	North American Datum of 1983
NM	U.S. Notice to Mariners
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NWLON	National Water Level Observation Network
R/V	Research Vessel
SVP	Sound Velocity Profile
TPE	Total Propagated Error
ZDF	Zone Definition File

Descriptive Report to Accompany Hydrographic Survey H11653
Project OPR-E349-KR-07
Central Chesapeake Bay, Virginia
Rappahannock Spit
Scale 1:10,000
June 2007 - September 2007
David Evans and Associates, Inc.
Lead Hydrographers: Jonathan L. Dasler, Jason C. Creech

A. AREA SURVEYED

David Evans and Associates, Inc. (DEA) conducted hydrographic survey operations in Chesapeake Bay, Virginia. The survey area (Figure 1) encompasses portions of the Rappahannock Spit and extends from the mouth of the Rappahannock River northward to Fleets Bay.

Survey H11653 was conducted in accordance with the Statement of Work* for OPR-E349-KR-07; dated February 22, 2007. ***Concur.***

The project instructions required 200% side scan sonar coverage of the survey area with multibeam sonar data acquired in conjunction with side scan operations. The survey was conducted over a 65-meter set line spacing (75-meter side scan sonar range) in deeper areas, and 40-meter line spacing (50-meter side scan sonar range) in shoal areas. Fifteen (15) bottom samples were also acquired for this survey. Three (3) Automated Wreck and Obstruction Information System (AWOIS) item investigations were assigned to this project. ***Concur.***

Data acquisition was conducted from June 19, 2007 (Day Number 170) to September 26, 2007 (Day Number 269). Table 1 presents a detailed list of acquisition dates. ***Concur.***

****Filed with original field records***.

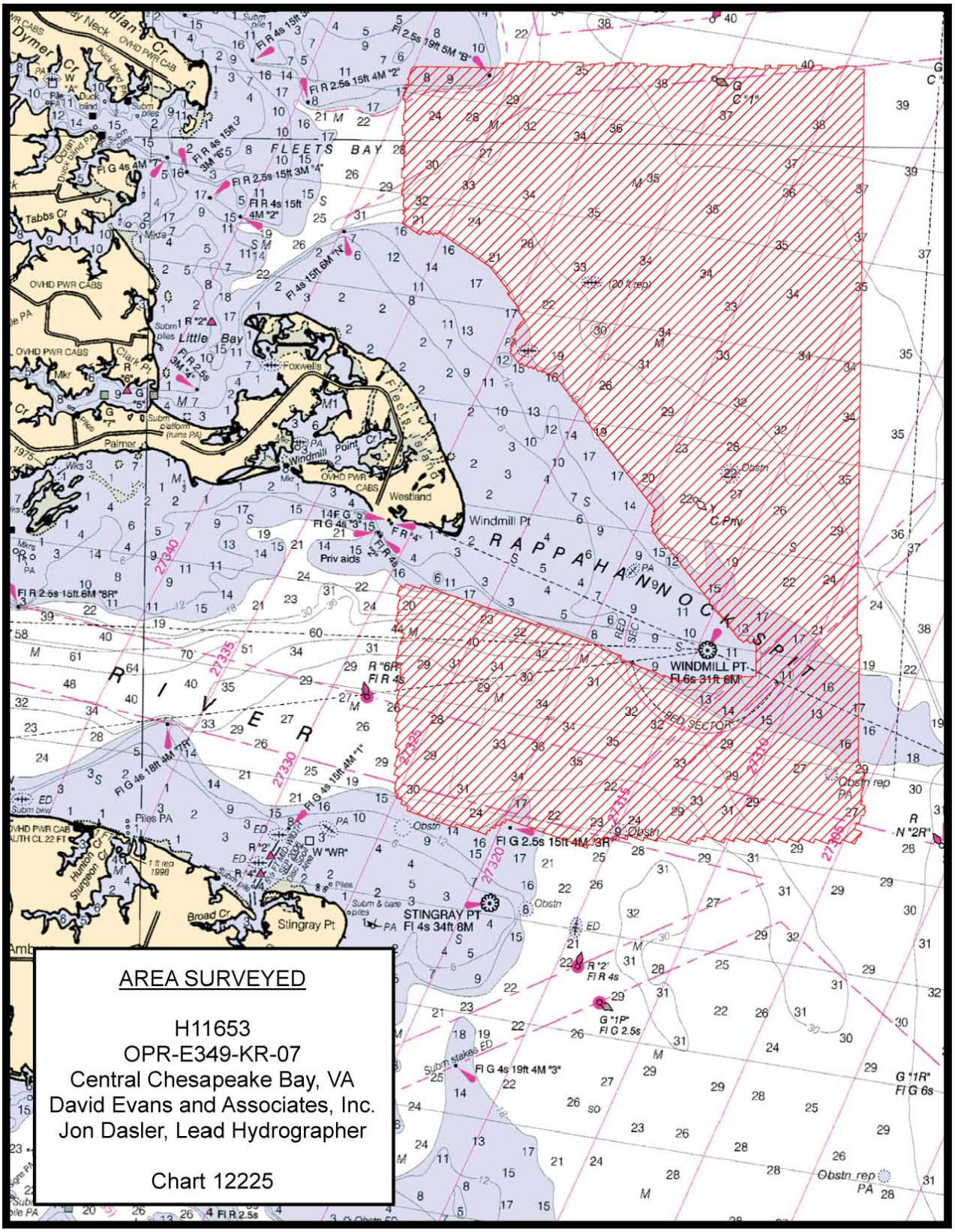

Figure 1. H11653 Survey Area

Table 1. H11653 Days of Acquisition

Dates of Acquisition	
Month	**Dates**
June 2007	9,18-19, 28-29
July 2007	18-20, 22, 24-26, 29
August 2007	1-4
September 2007	13, 22, 26

Detailed survey statistics of H11653 are provided in table 2.

Table 2. H11653 Survey Statistics

Survey Statistics	*Research Vessel (R/V) Sealth*
VBES (mainscheme nm)	-
MBES (mainscheme nm)	-
LIDAR (mainscheme nm)	-
SSS (mainscheme nm)	-
Combination lines (SSS and MBES nm)	625.24
Crosslines (MBES nm)	40.05
Lidar Crosslines (nm)	-
Developments (MBES nm)	17.70
Shoreline (nm)	-
Number of Bottom Samples	15
Number of Item Investigations that required additional survey effort (DPs)	-
Total number of square nautical miles	18.6

B. DATA ACQUISITION AND PROCESSING *See also the Evaluation Report.*

B1. Equipment

Equipment and vessel used for data acquisition and survey operations during this survey are listed below in Table 3.

Table 3.R/V SEALTH Equipment and vessel specifications

R/V SEALTH	
	
Hull Registration Number	SFU399054D99
Official Number (O/N)	1080270
Builder	All American Marine, Bellingham, Washington
Design	Teknicraft Catamaran
Year Built	2000
Length Overall	55'
Beam	20'
Draft, Maximum	2'9"
Cruising Speed	24 knots
Primary Echosounder	RESON 7125-B
Side Scan Sonars	Edgetech 4200-FS 100/400 kHz Edgetech 4200-HFL 300/600 kHz
Sound Velocity Equipment	Brooke Ocean MVP-30 Reson SVP-70 Sea-Bird SEACAT SB-19 CTD Profiler
Positioning & Attitude	Applanix POS/MV 320 v4

There were no vessel or equipment configurations used during data acquisition that deviated from those described in the *OPR-E349-KR-07 Data Acquisition and Processing Report** (DAPR) ***Filed with original field records***.

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B2. Quality Control

B2.a Crosslines

A total of 40 nautical miles of crosslines, or 6.4% percent of mainscheme lines, were run for analysis of survey accuracy. Crosslines were run perpendicular to mainscheme lines across the entire surveyed area providing a good representation for analysis of consistency.

Crossline analysis was performed using the Caris Hydrographic Information Processing System (HIPS) QC Report tool, which compares crossline data to a gridded surface and reports results by beam number. All crosslines were compared to each of the five combined uncertainty and bathymetry estimator (CUBE) surfaces that were used to depict Multibeam Echo Sounder (MBES) coverage. The QC Report tabular output and plots are included in Separate IV *Crossline Comparisons*. The results of the analysis exceeded the requirements set in the National Ocean Service (NOS) *Hydrographic Surveys Specifications and Deliverables* * (April 2007). ***Concur.***

B2.b Uncertainty

The calculated uncertainty values of all nodes of the unfinalized CUBE surfaces range from 0.256 meters to 0.335 meters. The calculated uncertainty values of all nodes of the unfinalized 25-centimeter CUBE surface used to depict the Windmill Point Fish Haven, range from 0.259 meters to 0.330 meters.

During HIPS processing, the "greater of the two" option was selected, where the calculated uncertainty from total propagated error (TPE) is compared to the standard deviation of the soundings influencing the node, and the greater value is assigned as the final uncertainty of the node. As a result, the uncertainty of the finalized surface and associated Bathymetric Attributed Grids (BAGs) increased for nodes where the standard deviation of the node was greater than the calculated uncertainty. No area within the survey exceeds International Hydrographic Organization (IHO) Order 1 specifications for depth accuracy.

Uncertainty values for the survey are greatest in the near nadir beams of the swath and decrease in the outer swath, which is contrary to normal convention. It appears that this irregularity is caused by an excessively high minimum pulse length value in the HIPS DeviceModels.xml file. The xml file uses 0.3 milliseconds (ms) which is the maximum pulse length value for the Reson 7125 and should use the published minimum value of 0.01 ms. This issue has been brought to the attention of Caris technical personnel. The anomaly is not significant and does not affect data quality. ***Concur.***

B2.c Junctions ***See also the Evaluation Report.***

Survey H11653 junctions with survey H11654 to the south. A junction comparison will be included with the H11654 Descriptive Report. ***Concur.***

****Filed with original field records***.

B2.d Quality Control Checks

Quality control checks were performed on a periodic basis as required in the NOS *Hydrographic Surveys Specifications and Deliverables* (April 2007). Methodology can be found in the DAPR*. The results from the positioning system checks and leadline-to-sonar comparison are included in Separate I *Acquisition and Processing Logs* of this report. Sound speed profiler weekly evaluation tables are included in Separate II *Sound Speed Data* of this report.

Side scan data were evaluated multiple times for contacts, with reviews occurring during data acquisition, contact verification and bottom tracking, and again during mosaic generation. Side scan contacts were compared to multibeam data in CARIS HIPS.

Multibeam data were processed and reviewed in CARIS HIPS and then draped over side scan mosaics to review for contacts and for least depths determination.

B2.e Unusual Conditions or Data Degradation

The quality of the side scan sonar imagery was negatively impacted in some areas by large schools of fish and other material suspended in the water column. At times the suspended material masked the imagery of the bottom, but the primary impact was on bottom tracking for slant range corrections, which was later corrected during data processing. The specific nature of the suspended material is not known; however, it is likely biological. Though imagery was degraded at times there was never an instance where the horizontal range of the side scan swath was reduced or where significant contacts were masked.

There is an error in the Reson 7125 bottom tracking algorithm that causes bottom detection (beams 86-115 and 140-168) to lock on to stronger sonar returns bleeding over from more nadir returns. This may be related to the amplitude bottom detection used near nadir and the bottom detection locking on to the strong nadir return signal, rather than the actual bottom return for that designated beam area. These artifacts occur in two areas near nadir and are more prevalent on a hard bottom, such as a dredged channel, when the amplitude of the nadir return is the strongest. The artifacts run along track and can exceed 20 cm in the raw soundings, but are reduced to 5 cm to 10 cm in the CUBE surface. Attempts to remove these artifacts during survey operations with changes in sonar settings were unsuccessful. Reson is aware of this issue and is working towards a resolution with a different bottom tracking algorithm. ***Concur.***

***Filed with original field records**.

B2.f Object Detection and Coverage Requirements

Survey speeds were maintained at less than 9 knots so that object detection requirements were exceeded throughout the survey.

Demonstration of 200% side scan sonar coverage was achieved by producing 50-centimeter mosaics for each 100% coverage. All survey holidays were filled prior to survey operations ending.

Shallow water multibeam survey coverage was demonstrated by producing five CUBE surfaces at 1 meter over the survey area. These surfaces were also used for seafloor depiction for the entire survey area. An additional CUBE surface was created at 25 cm resolution to better depict

the Windmill Point Fishing Reef and decrease sounding designation. The Disambiguation Method Configuration used to create all CUBE surfaces was set to "Deep" which corresponds to the NOS *Hydrographic Surveys Specifications and Deliverables'** (April 2007) Complete Multibeam Coverage requirements.

Large along track multibeam holidays were filled before survey operations ended, but complete 100 percent multibeam coverage was not achieved as it was not required for this survey. ***Concur.***

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11653 are detailed in the DAPR*. There were no deviations from the acquisition or processing methodology as described in the DAPR*.

No additional calibration tests were required for this survey. ***Concur.***

B4. Data Processing (Data Representation)

B4.a Multibeam

CUBE surface resolutions and depth ranges were set in accordance with the NOS *Hydrographic Surveys Specifications and Deliverables* (April 2007). Final CUBE surfaces were created at a resolution of 1 meter and used to meet both seafloor depiction and demonstration of coverage requirements. In order to keep CUBE surfaces at a manageable size, the survey area was broken up into five Field Sheets (H11653_ 1of3, etc.). When combined the five Fields Sheets encompass the entire area of acquired multibeam bathymetry. In addition a 25 cm CUBE surface was created to depict varied seafloor topography of the Windmill Point Fishing Reef. A BAG was created for each CUBE surface and both the CUBE and BAG surfaces have been included with the digital data. ***Concur.***

C. HORIZONTAL AND VERTICAL CONTROL ***See also the Evaluation Report.***

See Also OPR-E349-KR-06 Horizontal and Vertical control Report filed with original field records.
A complete description of horizontal and vertical control for survey H11653 can be found in the OPR-E349-KR-07 *Horizontal and Vertical Control Report*, submitted under separate cover. A summary of horizontal and vertical control for this survey follows. ***Concur.***

C1. Vertical Control

The vertical datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at Windmill Point, Virginia (863-6580) served as the primary water level station. Water level data from subordinate gauges installed at the Rappahannock Front Range, Virginia (863-2837) and Gaskins Point, Virginia (863-2869) were not applied to this survey. Data were reduced in CARIS HIPS using the zone definition file (ZDF) NOAA0008_WP. ***Concur.***

****Filed with original field records*.**

C2. Discussion of Tide Zoning

Evaluation of tides was accomplished through comparison of zoned water levels from the primary station to the secondary station, crossline comparisons, and by visually comparing adjacent lines during CARIS subset editing.

No changes were made to the preliminary zoning, which was generated by the Center for Operational Oceanographic Products and Services (CO-OPS). ***Concur.***

C3. Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential Global Positioning System (DGPS) was the sole method of positioning during acquisition, with differential corrections received from the U.S. Coast Guard beacon at Driver, Virginia (289 kHz) and a secondary beacon at Annapolis, Maryland (301 kHz). Some DGPS outages from the primary beacon occurred during survey operations. The system was set up to automatically switch to the secondary beacon when the primary signal was lost so all data were collected in DGPS mode. ***Concur.***

Navigation and attitude data were post-processed using Applanix POSPac software, which resulted in a kinematic navigation solution relative to NAD83 with real-time error estimates. The global positioning system (GPS) station DVL-Marina was used as the master station during post processing. Differential navigation and real-time attitude logged during acquisition was overwritten with post-processed data during HIPS processing. Post-processed navigation, attitude and error estimates were applied to all HIPS data. ***Concur.***

D. RESULTS AND RECOMMENDATIONS ***See also the Evaluation Report.***

D1. Chart Comparison

D1.a Survey Agreement with Chart

During the course of data acquisition and processing H11653 was compared to the largest scale raster charts. The results of these comparisons are described below, as well as in Sections D2.b through D2.f of this report.

Contours and soundings used during the chart comparison were generated from combined HIPS product surfaces. Soundings were generated from a 5-meter HIPS product surface (1:10,000) of the entire survey area, which was compiled from the five finalized 1-meter CUBE surfaces. Two sets of contours were generated from 5-meter and 50-meter HIPS product surfaces (1:10,000). Contours from the 50-meter surface were used during the chart comparison while the large scale contours (5-meter surface) were used to examine the data for systematic artifacts that would not be apparent in the small scale contours. The product surfaces, contours, and soundings were created solely for the chart comparison and have not submitted as a final deliverable.

H11653 contours and soundings were compared in CARIS HIPS to the depths and contours on the charts listed in Table 4.

Table 4. Charts compared to H11653

Chart	Scale	Edition	Edition Date	Issue Date	Latest LNM	Cleared Through Date
12225	1:80,000	56	08/01/2007	02/16/2008	07/08	02/12/2008
12235	1:40,000	31	08/01/2006	02/16/2008	07/08	02/12/2008
12280_2	1: 200000	7	03/01/2007	02/16/2008	07/08	02/12/2008
US5VA41M			01/17/2008			02/28/2008

Survey H11653 depths were compared to the charted soundings on Charts 12225, 12235, 12280, as well as the corresponding Electronic Navigational Chart (ENC). The results of the chart comparison were identical. The discussion of the comparison will be limited to the two largest scale charts of the survey area; 12225 and 12235. ***Concur.***

Depths from survey H11653 are generally one foot (0.3 meter) to three feet (9.8 meter) deeper than charts 12225 and 12235. Some significant movement of shoals, which is discussed in detail in section D1.b, was along the Rappahannock Spit and in the vicinity of Bluff Point. ***Concur.***

The hydrographer thoroughly examined the results of the weekly leadline-to-sonar comparisons in order to determine if the difference between the charted depth and the current survey may have been a result of the unaccounted offset. No systematic offset was observed between the lead line and sonar.

Raw NOAA survey data from H08082 (1954), H08188 (1954) and H08191 (1955) were downloaded from the National Geophysical Data Center (NGDC) website as a third source of comparison. The raster charts list source data for this area from NOS surveys that occurred between 1940 and 1969. Consequently, the downloaded prior survey data is most likely the source data for current charts of the area. As with the comparison to the charts, H11653 depths were generally one foot (0.3 m) to three feet (9.8 m) deeper than the prior survey data. ***Concur.***

Based on the distribution of the differences, the hydrographer believes that the differences between the chart and survey data are the result of natural changes to the seafloor that have occurred since the source data surveys were performed over fifty years ago. ***Concur.***

The latest electronic and raster versions of Charts 12225 and 12235 were reviewed to ensure that all U.S. Coast Guard Local Notice to Mariners (LNM) issued during survey acquisition on H11653 were applied and addressed by this survey.

D1.b Comparison to Significant Shoals

The current survey located all charted significant shoals with some significant differences identified between the shoals as currently charted.

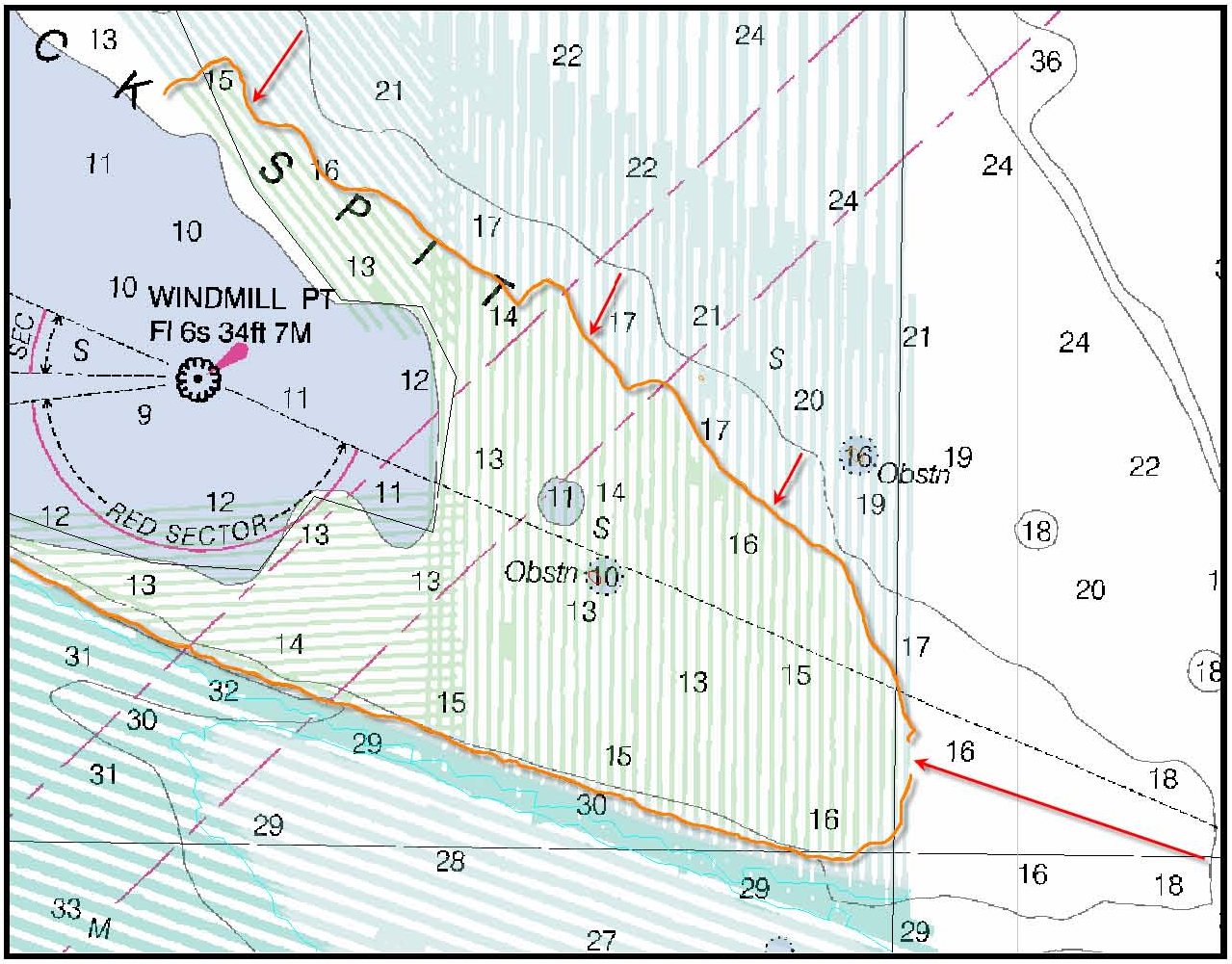

Figure 2. Shoreward Migration of the Rappahannock Spit

Figure 2 depicts shoreward migration of the Rappahannock Spit. The red arrows indicate the movement of the 18-foot contour from its charted location (12235_1) to surveyed location which is depicted by the orange contour. In addition, the 12-foot contour was not located at its charted position and has moved far enough shoreward that it was not developed within the area surveyed. ***Concur. Recommend re-drawing the 18ft contour to represent changes in the Rappahannock Spit.***

The surveyed least depth found on the Rappahannock Spit was an uncharted 10-foot obstruction which was submitted as Danger to Navigation (DtoN) #4. This item has been added to current charts and is also visible in Figure 2. ***Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.***

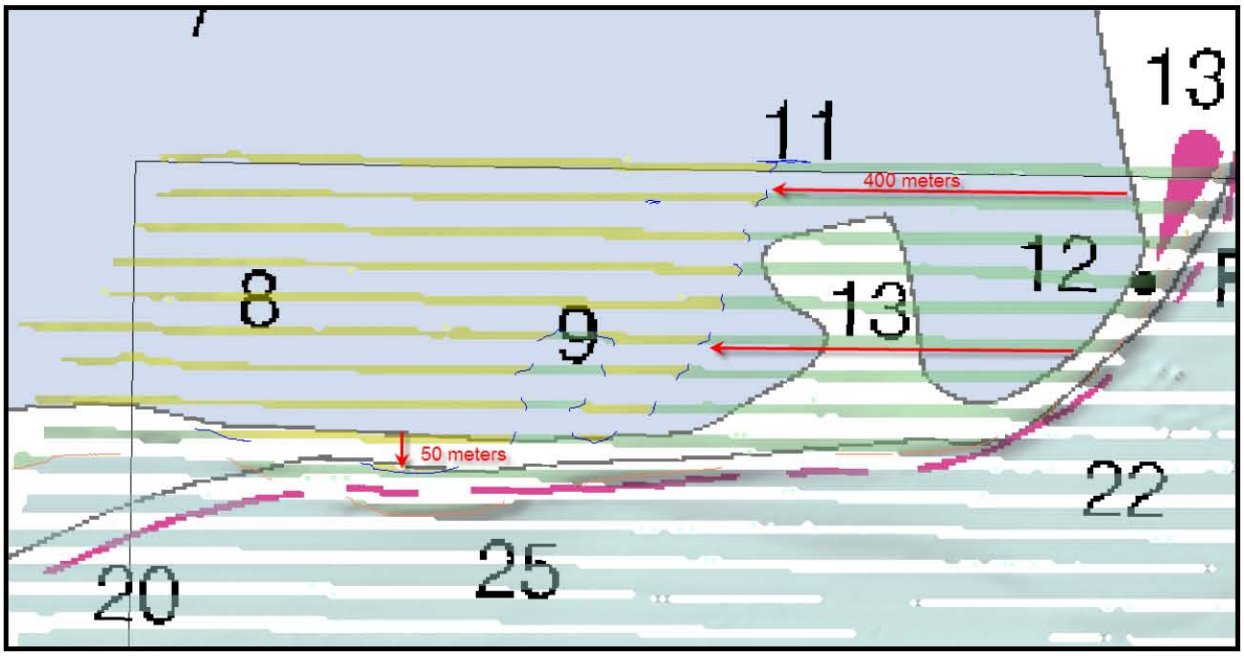

Figure 3. Migration of the shoal offshore of Bluff Point

The 11-foot sounding located on the Rappahannock Spit at 37-35-36 N, 076-13-21W was not found during survey operations. The surveyed least depth in this area was 14.6 feet. ***Concur with clarification. 11 foot sounding is outside survey bounds. Retain as charted.***

Figure 3 depicts migration of the 12-foot contour (12235_1) on the shoal offshore of Bluff Point near Fleets Bay in the northwest corner of the survey area. The 12-foot contour has migrated approximately 1,312 feet (400 meters) westward. A small section of the contour has migrated 164 feet (50 meters) southward. ***Concur. Recommend re-drawing the 12ft contour to represent changes in the shoal offshore of Bluff Point near Fleets Bay.***

D1.c Comparison to Charted Features ***See Also Appendix II of the Descriptive Report***

There are three AWOIS items located within the limits of survey H11653. All significant contacts, including those located within the AWOIS search radius, were investigated with multibeam sonar. No other charted features were located within the survey area.

The charted wreck (20 ft rep) (AWOIS 13994) at 37-38-52.75N, 076-15-23.40W was found approximately 262 feet (80 meters) southwest of its charted location and was investigated with MBES. The AWOIS search radius for this item was 1,640 feet (500 meters). The hydrographer

recommends removing the reported annotation from the chart and charting based on current hydrography. ***Concur with clarification. Delete charted AWOIS item #13994 dangerous sunken wreck, least depth "20 ft rep". Chart AWOIS item #13994 dangerous sunken wreck least depth 32 ft at the survey position. This wreck is distributed over an area approximately 66 ft (20 m) wide, 130 ft (40 m) long and rises 3.3 ft (1 m) above the natural bottom.***

The charted wreck (PA; AWOIS 13995) at 37-38-17.76N, 076-16-05.06W was disproved with 200% side scan sonar. An independent AWOIS investigation of the ~~500~~ ***400*** meter search radius was not required as the 200% side scan coverage acquired during mainscheme hydrography is sufficient to disprove this item. The hydrographer recommends removing the ~~obstruction~~ ***wreck*** from the charts. ***Do not concur. Disproval criteria of 200% side scan coverage and or 100% multibeam coverage for 400 meter search radius was <u>not</u> met. Retain AWOIS 13995 as charted, dangerous sunken wreck least depth unknown with text "PA" at the charted position.***

The charted obstruction (rep PA; AWOIS 13996) at 37-34-49.92N, 076-12-52.20W was disproved with 200% side scan sonar. An independent AWOIS investigation of the 1,640 feet (500 meters) search radius was not required as the 200% side scan coverage acquired during mainscheme hydrography is sufficient to disprove this item. The hydrographer recommends removing the obstruction from the charts. ***Concur. Delete AWOIS 13996 dangerous obstruction, least depth unknown and text "Obstn rep PA". Chart survey soundings.***

D1.d Comparison of Soundings in Designated Anchorages and Along Channels

There are no anchorage grounds or designated channels in survey H11653.

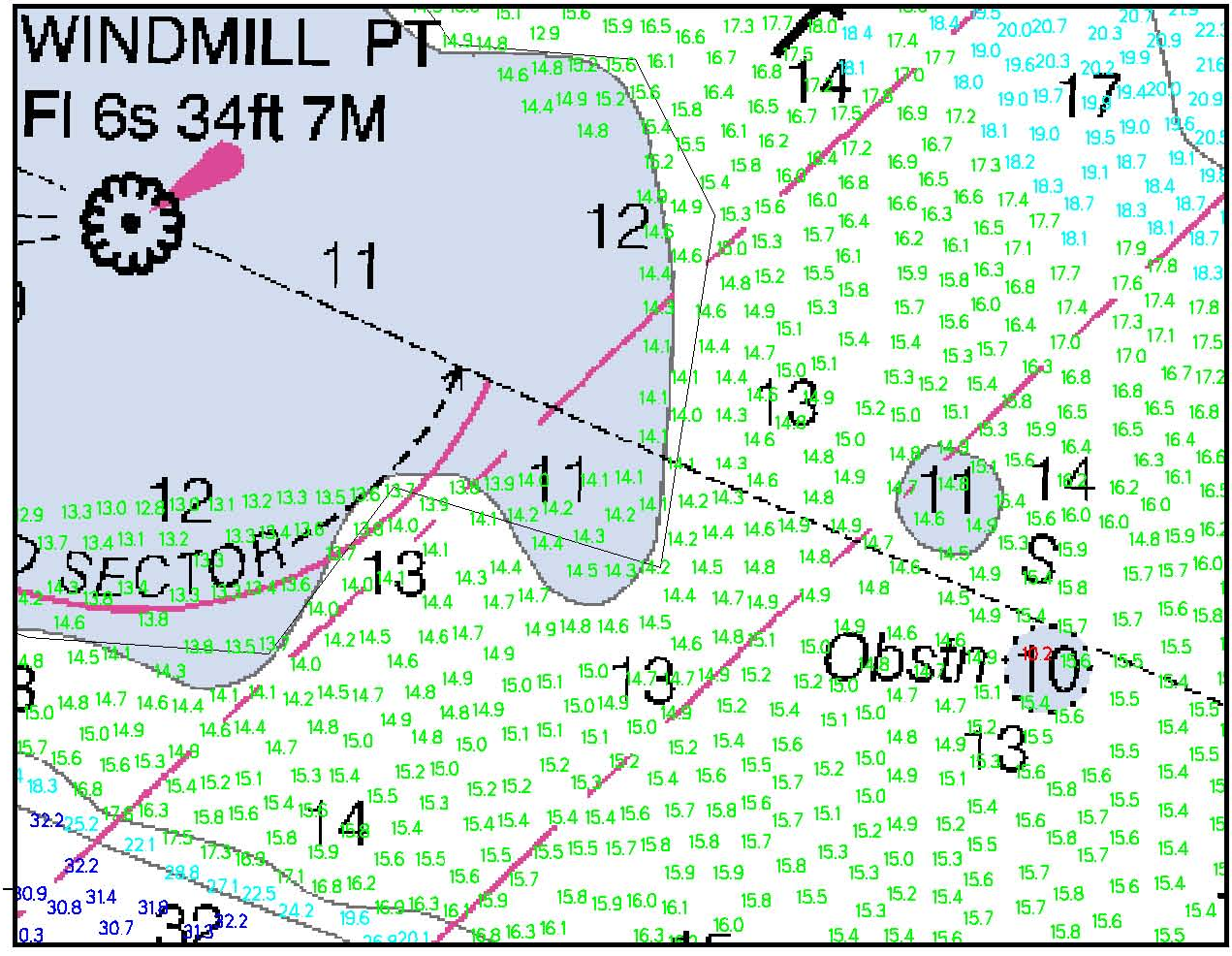

Figure 4. Reported vessel traffic over Rappahannock Spit

There have been reports that local vessels use the corridor between the charted fish trap areas east of Windmill Point Light (Figure 4) to pass over Rappahannock Spit. As discussed in section D1.b the results of the survey show the Rappahannock Spit to have migrated since it was last charted and depths in this area are now one foot (0.3 meters) to three feet (9.8 meters) deeper than depicted on the charts. ***Concur.***

D1.e New Submerged Features

A new obstruction was found at 37-40-33.83N, 076-16-16.54W which is approximately 325 meters east of Bluff Point Light "B". This item was not submitted as a danger to navigation due to charted depths that are shoaler than surveyed depths in this area which minimize its significance. The least depth of the obstruction is 24.7 feet (7.52 meters) which is comparable to the charted depths in the vicinity while the surrounding surveyed depths are deeper by more than three feet. This obstruction is approximately 6.5 feet (2 metes) wide, 6.5 feet (2 meters) long and rises 3.3 feet (1 meter) above the natural bottom. ***Concur. There is a designated sounding on the shoals point.***

D1.f Dangers to Navigation See Also Appendix I of the Descriptive Report

Seven (7) DtoNs were located during survey H11653 and have been submitted to Atlantic Hydrographic Branch (AHB). All DtoNs have been reviewed by AHB and passed on to the Marine Chart Division (MCD). Copies of the AHB DtoN submissions are included in Appendix I *Danger to Navigation Reports*. ***Concur.***

All submitted dangers to navigation on survey H11653 have been applied to the most recent electronic navigational charts. Six (6) of the seven (7) total dangers have been applied to the most recent versions of the raster charts. DtoN #7 was submitted during the final phases of H11653 processing and though it has been passed on to MCD it had not been added to the charts at the time of this report was prepared. Dton #7 was included in the Fifth District Local Notice to Mariners (09/08). ***Concur.***

The least depths of several of the DtoNs were preliminary and reduced to MLLW using unverified water levels. Since submission, the DtoNs have been reduced to MLLW with zoned verified water levels. All DtoNs are included in the S-57 feature file and should be charted as depicted in the file. ***Concur.***

D2. Additional Results

D2.a Shoreline Investigations

Shoreline verification was not required for survey H11653. ***Concur.***

D2.b Comparison with Prior Surveys

Comparison with prior surveys was not required under this task order. ***Concur.***

D2.c Aids to Navigation (AtoN)

All U.S. Coast Guard aids to navigation (AtoN) within the survey limits were found to be correctly charted and serve their intended purpose. ***Concur.***

D2.d Overhead Clearance

There are no overhead bridges, cables or other structures, which would impact overhead clearance in the survey area. ***Concur.***

D2.e Cables, Pipelines and Offshore Structures

There were no charted or observed submarine cables or pipelines, drilling structures, production platforms, or well heads within the survey area. ***Concur.***

D2.f Environmental Conditions and Scientific Significance

Although the survey exceeds IHO Order 1 accuracy requirements, environmental conditions degraded the quality of the survey data. The open waters of the Chesapeake Bay are notorious for localized wind-driven water level deviations that can not always be recorded or modeled with stationary gauges. At times tide error approaches 20 cm, but is typically much less. The hydrographer recommends that any future surveys in areas frequently subjected to meteorological conditions that locally affect tidal ranges, and which require stringent survey accuracies, such as Object Detection surveys, use kinematic GPS methodology for water level correction. ***Concur.***

D2.g Construction Projects

No construction or dredging activities were observed during survey operations. ***Concur.***

D2.h Bottom Characteristics

Bottom samples were obtained on Day Number 196 (July 15, 2007) and are included in the S-57 attributed feature file in the *Supporting Data* folder. A table listing the position and description of each bottom sample is included in Appendix 5 *Supplemental Survey Records and Correspondence*, along with photographs of each sample. ***Concur.***

E. LETTER OF APPROVAL

DAVID EVANS AND ASSOCIATES INC.

LETTER OF APPROVAL

OPR-E349-KR-07
REGISTRY NO. H11653

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of survey H11653 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and associated data have been closely reviewed and are considered complete and adequate as per the OPR-E349-KR-07 *Statement of Work*.

_____

Jonathan L. Dasler, PE (OR) , PLS (OR,CA)
Lead Hydrographer

_____

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc.
September 2007

F. SUPPLEMENTAL REPORTS

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

Title	Submittal Date
OPR-E349-KR-07 Data Acquisition and Processing Report	March 19, 2008
OPR-E349-KR-07 Horizontal and Vertical Control Report	TBD

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Digitally signed by Jon Dasler
DN: cn=Jon Dasler, email=jld@deainc.com, o=David Evans and Associates, Inc., c=US
Date: 2008.03.19 13:44:58 -07'00'

Jonathan L. Dasler, PE (OR) , PLS (OR,CA)
Lead Hydrographer

Digitally signed by Jason Creech
DN: cn=Jason Creech, email=jasc@deainc.com, o=David Evans and Associates, Inc., c=US
Date: 2008.03.19 13:44:17 -07'00'

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc.
September 2007

F. SUPPLEMENTAL REPORTS

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

Title	Submittal Date
OPR-E349-KR-07 Data Acquisition and Processing Report	March 19, 2008
OPR-E349-KR-07 Horizontal and Vertical Control Report	TBD

APPENDIX I
DANGER TO NAVIGATION RECORDS

DANGER TO NAVIGATION 1

1 - DToNs

From: Stephen Gottschalk [Stephen.Gottschalk@noaa.gov]
Sent: Friday, August 17, 2007 9:07 AM
To: mcd.dton@noaa.gov
Cc: Doug Baird; Tim Osborn; gene_parker; Robert Newton
Subject: H11653 DtoN 1,obstruction, AHB to MCD submission

Attachments: H11653_dton1.zip; Card for Stephen Gottschalk

Good Day,

Please find attached a zip file concerning an obstruction in survey H11653 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email at address below or call 757-441-6413.

Thank you for your assistance with this matter, Stephen Gottschalk

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 08/03/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	GP	2.95 m	37° 34' 18.900" N	076° 15' 03.170" W	---

1.1) Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 34' 18.900" N, 076° 15' 03.170" W
Least Depth:	2.95 m
Timestamp:	2007-215.00:00:00.000 (08/03/2007)
GP Dataset:	H11653.txt
GP No.:	1
Charts Affected:	12235_1, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Annapolis, MD. Horizontal Datum is NAD83.

The obstruction is located at the entrance to the Rappahannock River, NE of Stingray Point Light and SW of Windmill Point Light. It is a linear feature that is approximately 298.5 ft (91 m) long, 49.2 ft (15 m) wide and rises 15.6 ft (4.8m) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 9 ft dangerous obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

9ft (12235_1, 12225_1, 12280_2)

1 ½fm (13003_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	QUASOU - 6:least depth known
	RECDAT - 20070818
	SORDAT - 20070803

SORIND - US,US,surve,H11653

TECSOU - 3:found by multi-beam

VALSOU - 2.954 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

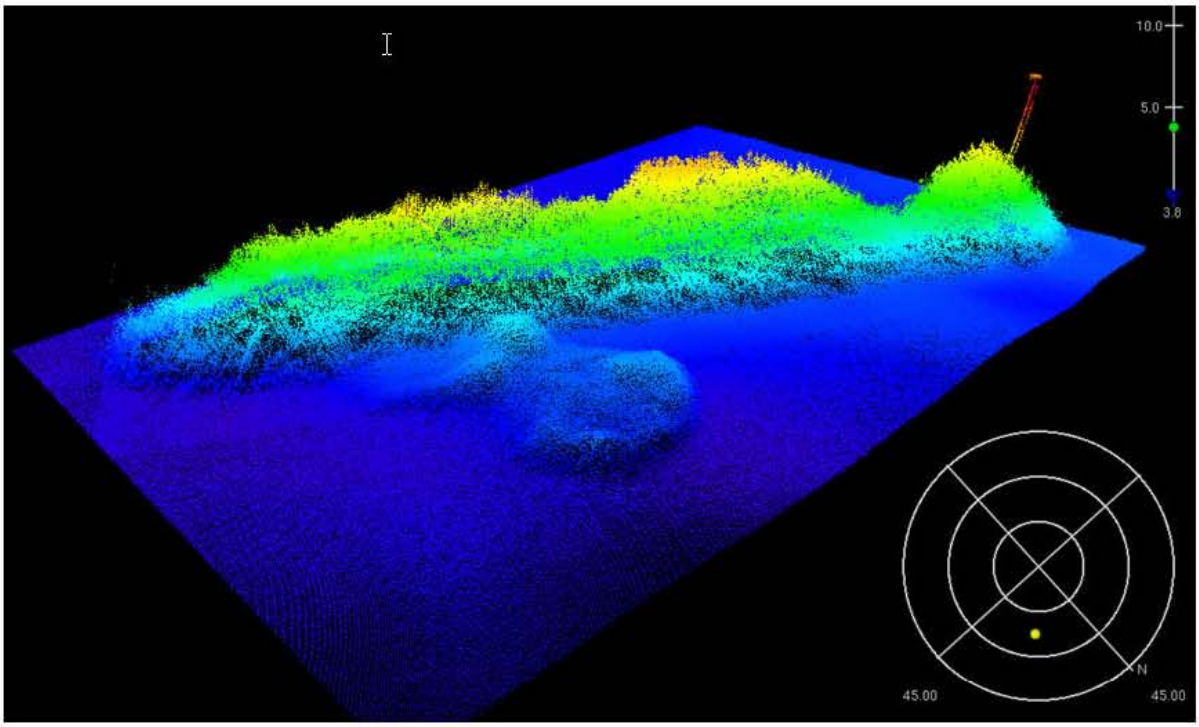


Figure 1.1.1

Chartlet to Accompany Danger to Navigation Report

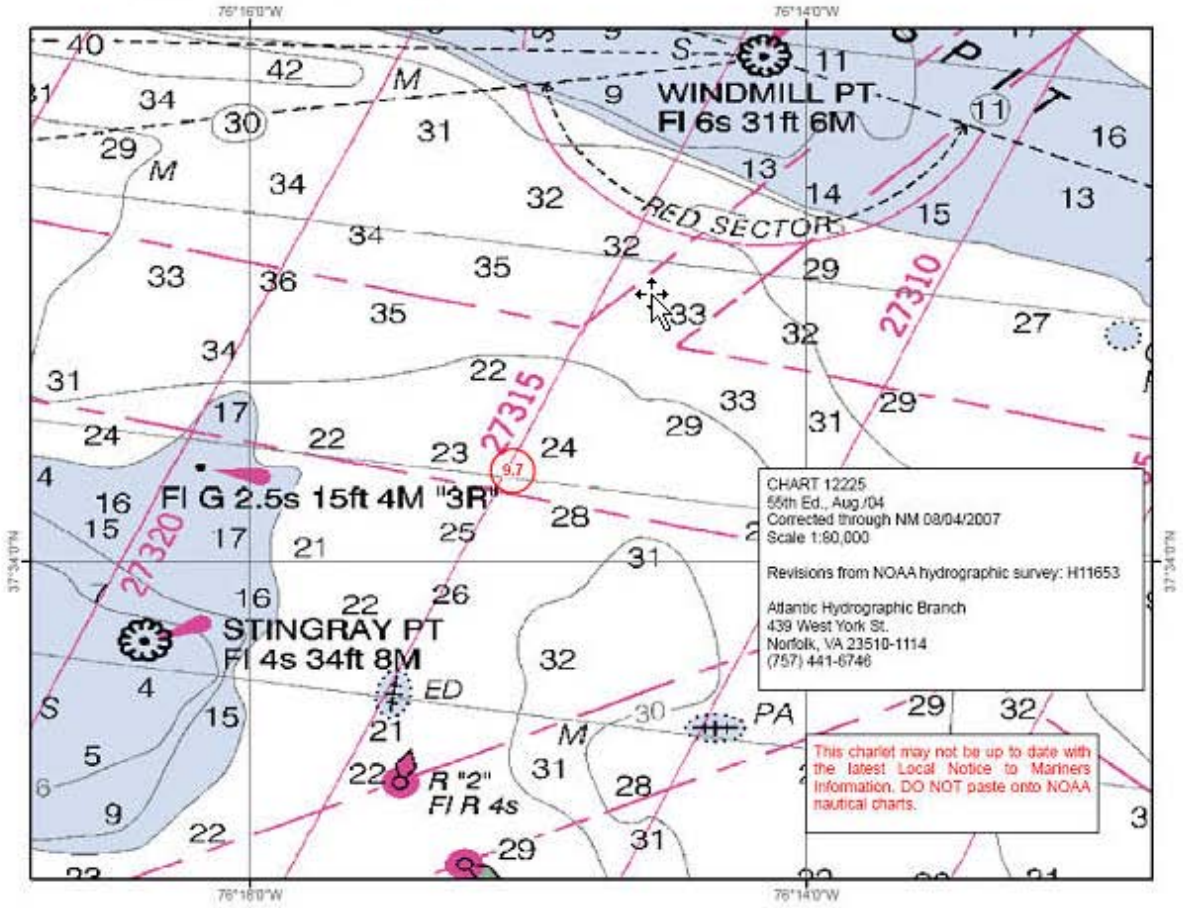


Figure 1.1.2

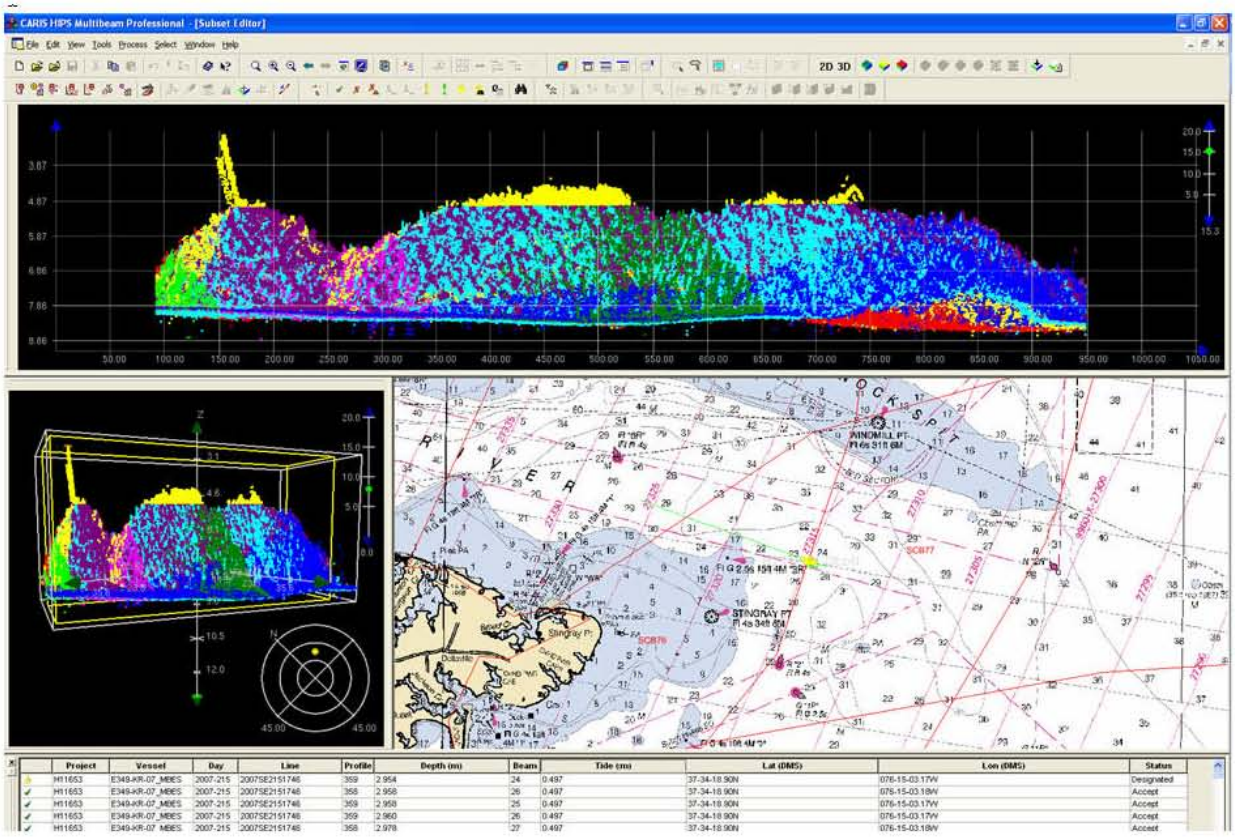

CARIS HIPS Multibeam Professional - [Subset Editor]
File Edit View Tools Process Select Window Help
2D 3D
WINDMILL PT
STINGRAY PT
Project
Vessel
Day
Line
Profile
Depth (m)
Beam
Tide (m)
Lat (DMS)
Lon (DMS)
Status

Figure 1.1.3

DANGER TO NAVIGATION 2

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 09/13/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction - 22 ft	GP	6.67 m	37° 37' 17.000" N	076° 13' 56.750" W	---
1.2	Buoy	GP	[None]	37° 37' 03.940" N	076° 14' 17.910" W	---

1 - DToNs

1.1) Obstruction - 22 ft

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 37' 17.000" N, 076° 13' 56.750" W

Least Depth: 6.67 m

Timestamp: 2007-256.00:00:00.000 (09/13/2007)

GP Dataset: H11653_dton2.txt

GP No.: 1

Charts Affected: 12235_1, 12285_18, 12285_19, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using preliminary zoned water levels from Rappahannock Light (863-2837). Positions are referenced from the USCG DGPS beacon at Driver, VA. Horizontal Datum is North American Datum of 1983 (NAD83).

This obstruction is part of the Windmill Point Artificial Reef which is an uncharted fish haven managed by the Virginia Marine Resources Commission (VMRC). According to the VMRC, the reef consists of 120 reef balls and over 500 tons of concrete pipe.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_dton2.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 22 ft obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

22ft (12235_1, 12285_18, 12285_19, 12225_1, 12280_2)

3 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: NATCON - 2:concreted

QUASOU - 6:least depth known

RECDAT - 20071012

SORDAT - 20070913

SORIND - US,US,surve,H11653

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 6.675 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes *See also Evaluation Report*

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

1.2) Buoy

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 37' 03.940" N, 076° 14' 17.910" W

Least Depth: [None]

Timestamp: 2007-256.00:00:00.000 (09/13/2007)

GP Dataset: H11653_dton2_buoy.txt

GP No.: 1

Charts Affected: 12235_1, 12285_18, 12285_19, 12225_1, 12280_2, 13003_1

Remarks:

Positions are referenced from the USCG DGPS beacon at Driver, VA. Horizontal Datum is North American Datum of 1983 (NAD83).

The uncharted buoy lies 80 meters south of the reef's southern approximate boundary line. The buoy is yellow and marked with "WP VMRC Fishing Reef".

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_dton2_buoy.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart private aid at the given location.

S-57 Data

Geo object 1: Buoy, special purpose/general (BOYSPP)

Attributes: BOYSHP - 2:can (cylindrical)

CATSPM - 56:artificial reef mark

COLOUR - 6:yellow

RECDAT - 20071015

SORDAT - 20070913

SORIND - US,US,surve,H11653

Office Notes *See also Evaluation Report*

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

Figure 1.2.1

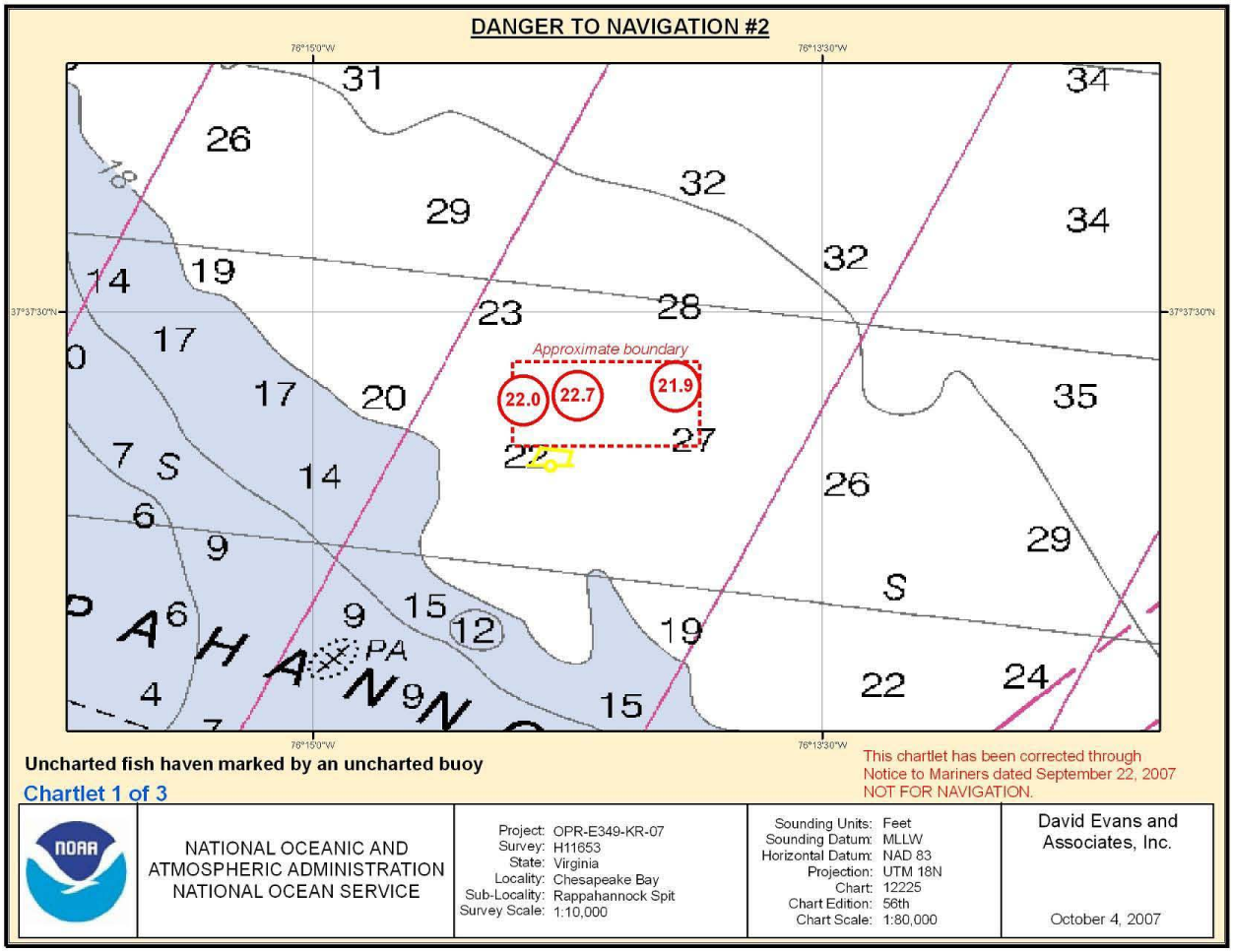

DANGER TO NAVIGATION #2
76°15'0"W
76°13'30"W
37°37'30"N
Approximate boundary
22.0
22.7
21.9
Uncharted fish haven marked by an uncharted buoy
Chartlet 1 of 3
This chartlet has been corrected through Notice to Mariners dated September 22, 2007
NOT FOR NAVIGATION.
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
Project: OPR-E349-KR-07
Survey: H11653
State: Virginia
Locality: Chesapeake Bay
Sub-Locality: Rappahannock Spit
Survey Scale: 1:10,000
Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Projection: UTM 18N
Chart: 12225
Chart Edition: 56th
Chart Scale: 1:80,000
David Evans and Associates, Inc.
October 4, 2007

Figure 1.2.2

DANGER TO NAVIGATION 3

From: Stephen Gottschalk [Stephen.Gottschalk@noaa.gov]
Sent: Monday, October 15, 2007 6:31 AM
To: mcd.dton@noaa.gov
Cc: gene_parker; Robert Newton; Helen.Stewart@noaa.gov
Subject: H11653 DtoN 2, Obstruction and Buoy, AHB to MCD submission

Attachments: H11653_dton2.zip; Card for Stephen Gottschalk

Good Day,

Please find attached a zip file concerning survey H11653 Danger to Navigation 2 for submission to Marine Chart Division (MCD). The survey has not yet been submitted to AHB.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by the Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email at address below or call 757-441-6413.

Thank you,
Stephen Gottschalk

From: Mark.Opdyke@noaa.gov
Sent: Monday, January 28, 2008 1:19 PM
To: NOS OCS MCD Navigation Dangers
Cc: Castle E Parker; Crescent Moegling; Doug Baird; Shep Smith;
Robert.Newton@noaa.gov; Howard.Danley@noaa.gov
Subject: H11653 DToN Report#4 submission to MCD

Attachments: H11653_DToN#4.zip

Good Day,

Please find attached a zip file for survey H11653 DToN Report #4 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations. The item is an obstruction located east of the Windmill Point light near Rappahannock Spit.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email me or call 757-441-6413.

Thank you for your assistance with this matter,

Mark Opdyke

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 09/13/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	GP	4.91 m	37° 35' 41.890" N	076° 12' 42.560" W	---

1 - DR_DToN

1.1) Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 35' 41.890" N, 076° 12' 42.560" W

Least Depth: 4.91 m

Timestamp: 2007-256.00:00:00.000 (09/13/2007)

GP Dataset: H11653_DToN#3.xls

GP No.: 1

Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified zoned water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Driver, VA. Horizontal Datum is North American Datum of 1983 (NAD83).

The obstruction is located approximately 1.1 nautical miles east of the Windmill Point light. It is approximately 3.3 ft (1 m) wide, 9.8 ft (3 m) long and rises 4.9 ft (1.5 m) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_DToN#3.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart obstruction at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

16ft (12235_1, 12285_18, 12225_1, 12280_2)

2 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 6:least depth known

SORDAT - 20070913

SORIND - US,US,surve,H11653

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 4.91 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

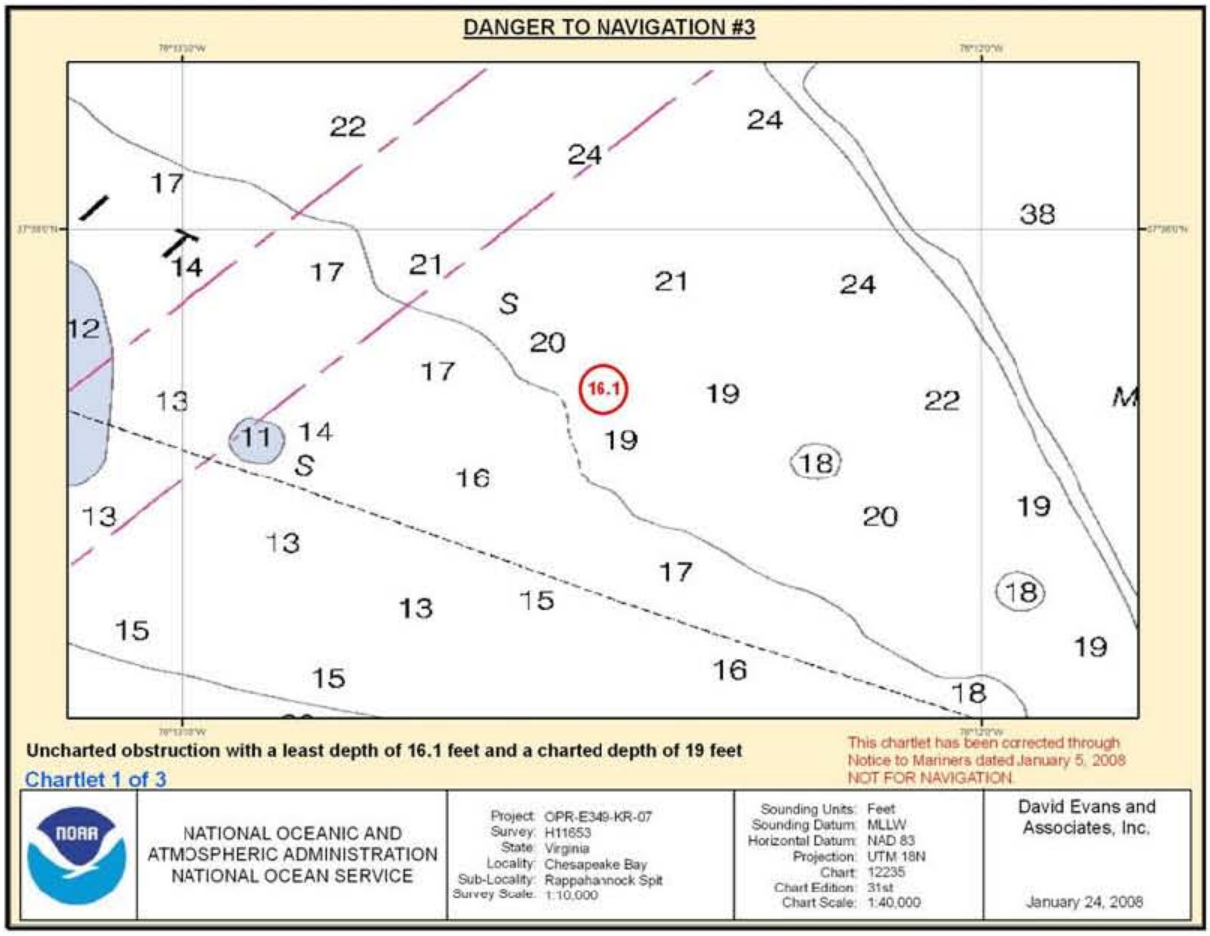


Figure 1.1.1

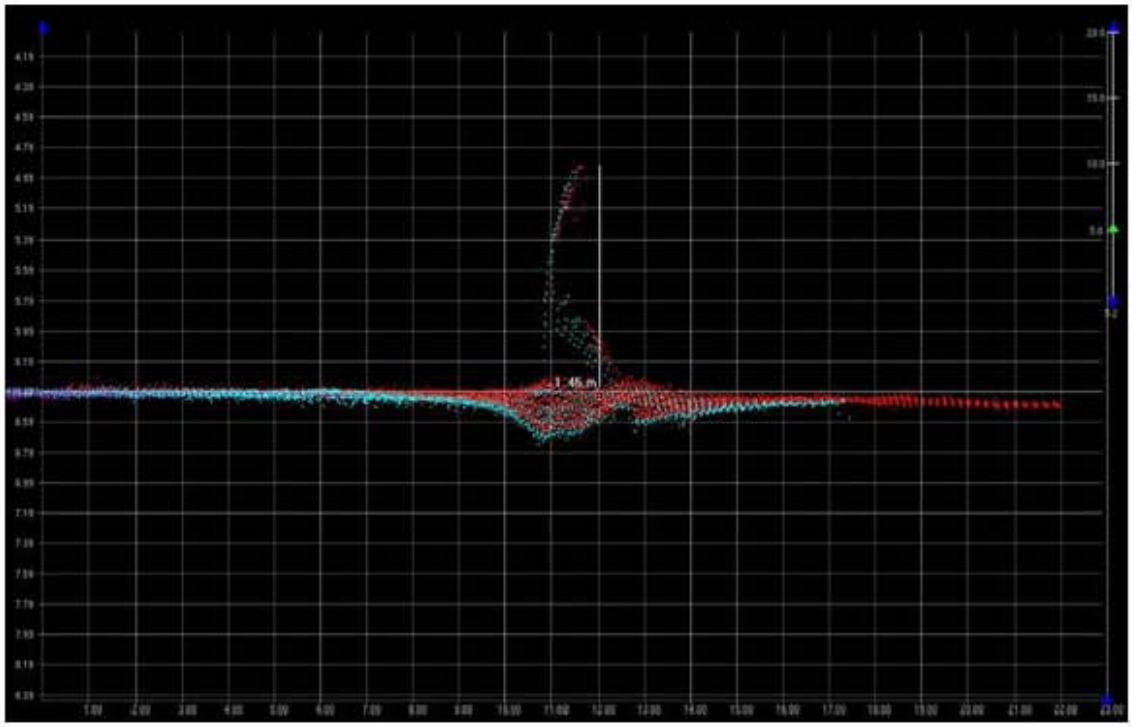


Figure 1.1.2

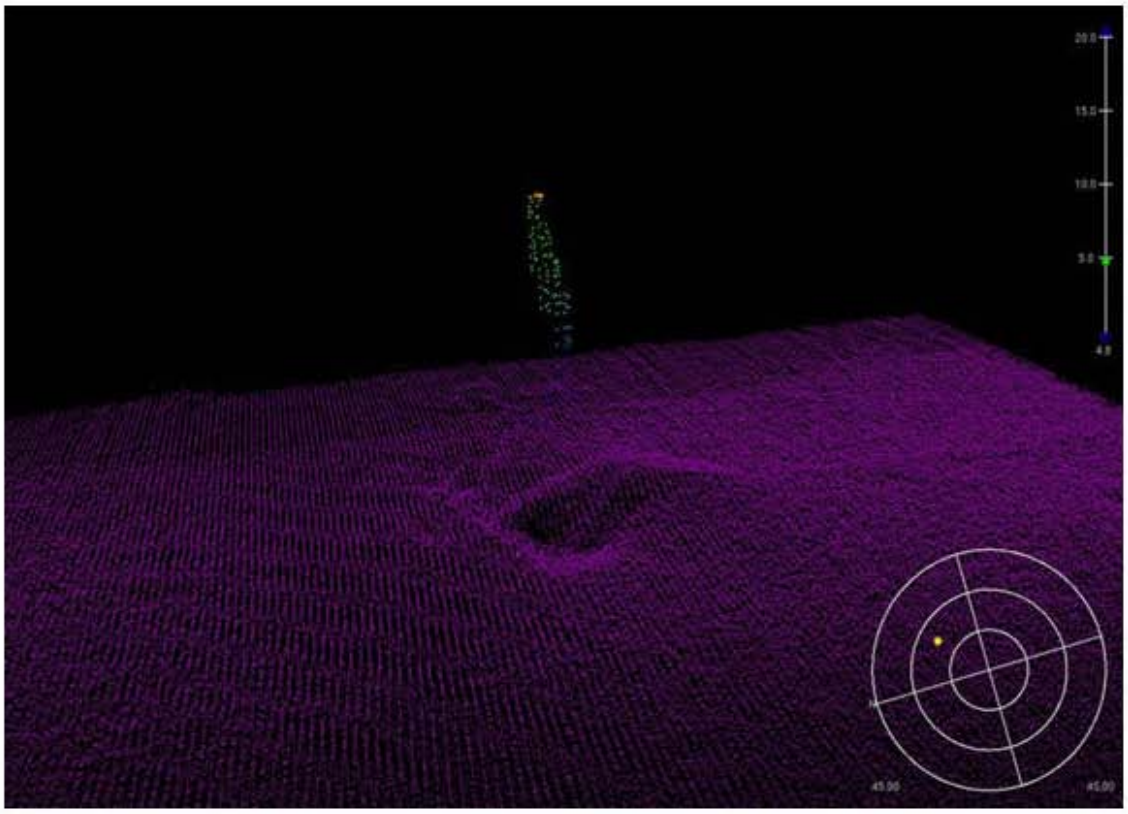


Figure 1.1.3

DANGER TO NAVIGATION 4

From: Mark.Opdyke@noaa.gov
Sent: Monday, January 28, 2008 1:19 PM
To: NOS OCS MCD Navigation Dangers
Cc: Castle E Parker; Crescent Moegling; Doug Baird; Shep Smith;
Robert.Newton@noaa.gov; Howard.Danley@noaa.gov
Subject: H11653 DToN Report#4 submission to MCD

Attachments: H11653_DToN#4.zip

Good Day,

Please find attached a zip file for survey H11653 DToN Report #4 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations. The item is an obstruction located east of the Windmill Point light near Rappahannock Spit.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email me or call 757-441-6413.

Thank you for your assistance with this matter,

Mark Opdyke

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 09/13/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	10ft Obstruction	GP	3.11 m	37° 35' 28.720" N	076° 13' 15.810" W	---

1 - DR_DToN

1.1) 10ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 35' 28.720" N, 076° 13' 15.810" W
Least Depth:	3.11 m
Timestamp:	2007-256.00:00:00.000 (09/13/2007)
GP Dataset:	H11653_DToN#4.xls
GP No.:	1
Charts Affected:	12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified zoned water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Driver, VA.

The obstruction is located approximately 0.8 nautical miles east of the Windmill Point light. It is approximately 16.4 ft (5 m) wide, 23.0 ft (7 m) long and rises 4.6 ft (1.4 m) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_DToN#4.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart obstruction at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

10ft (12235_1, 12285_18, 12225_1, 12280_2)

1 ¾fm (13003_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20070913
	SORIND - US,US,surve,H11653
	TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 3.109 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

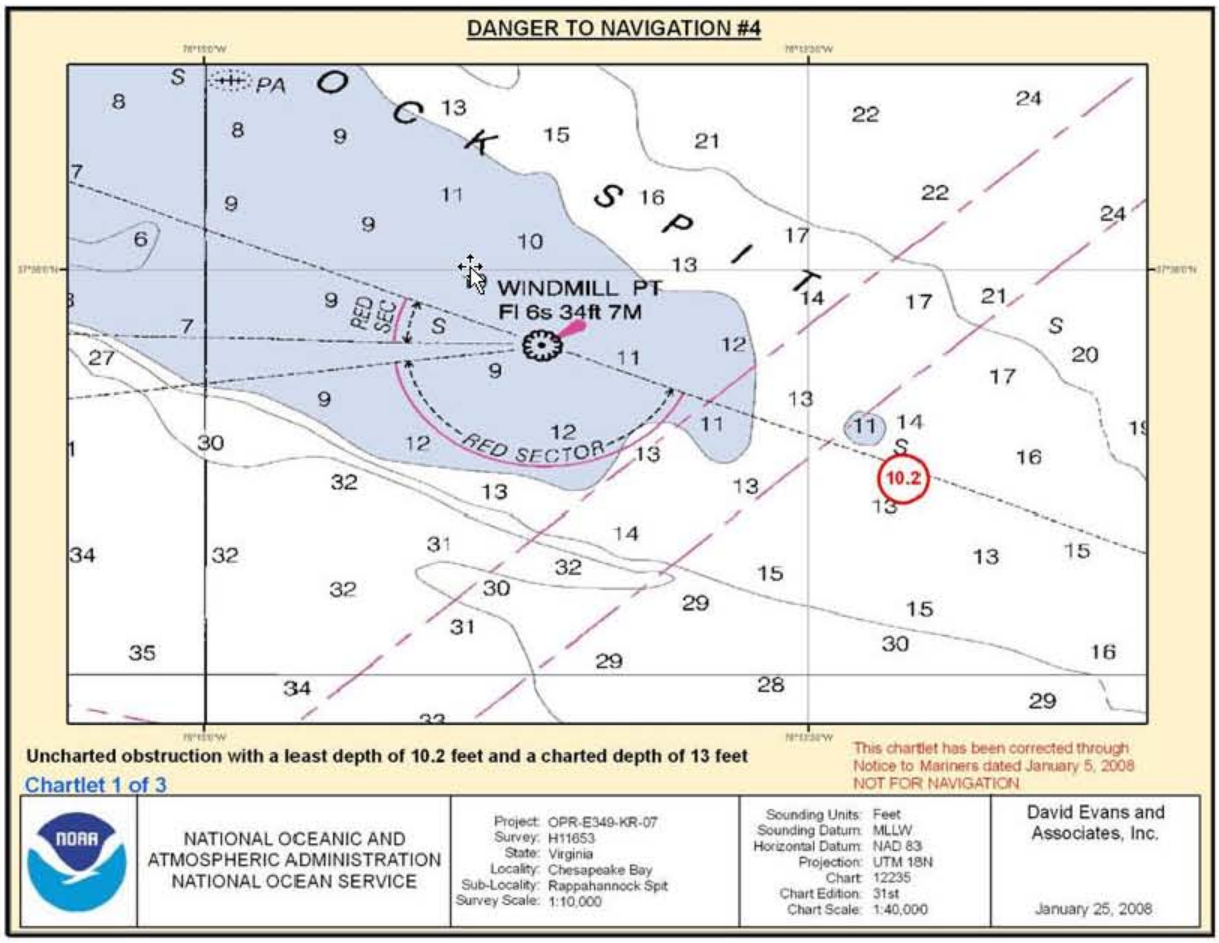


Figure 1.1.1

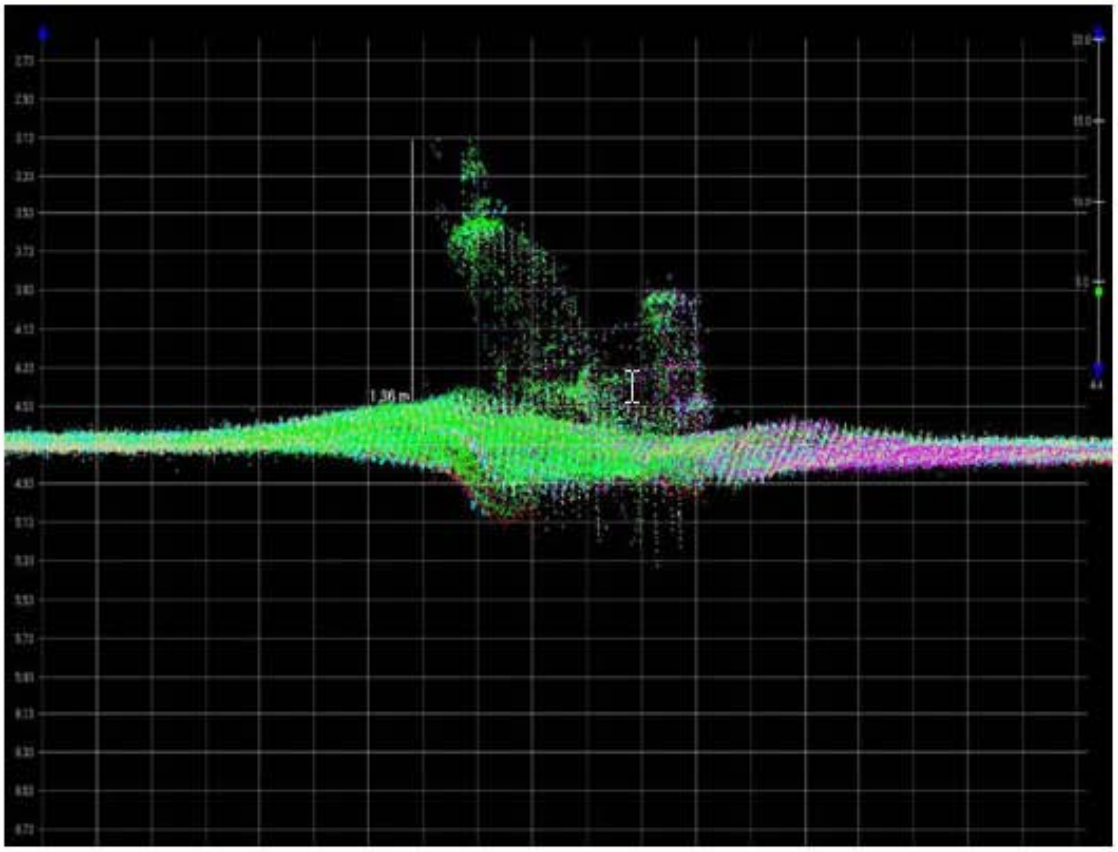


Figure 1.1.2

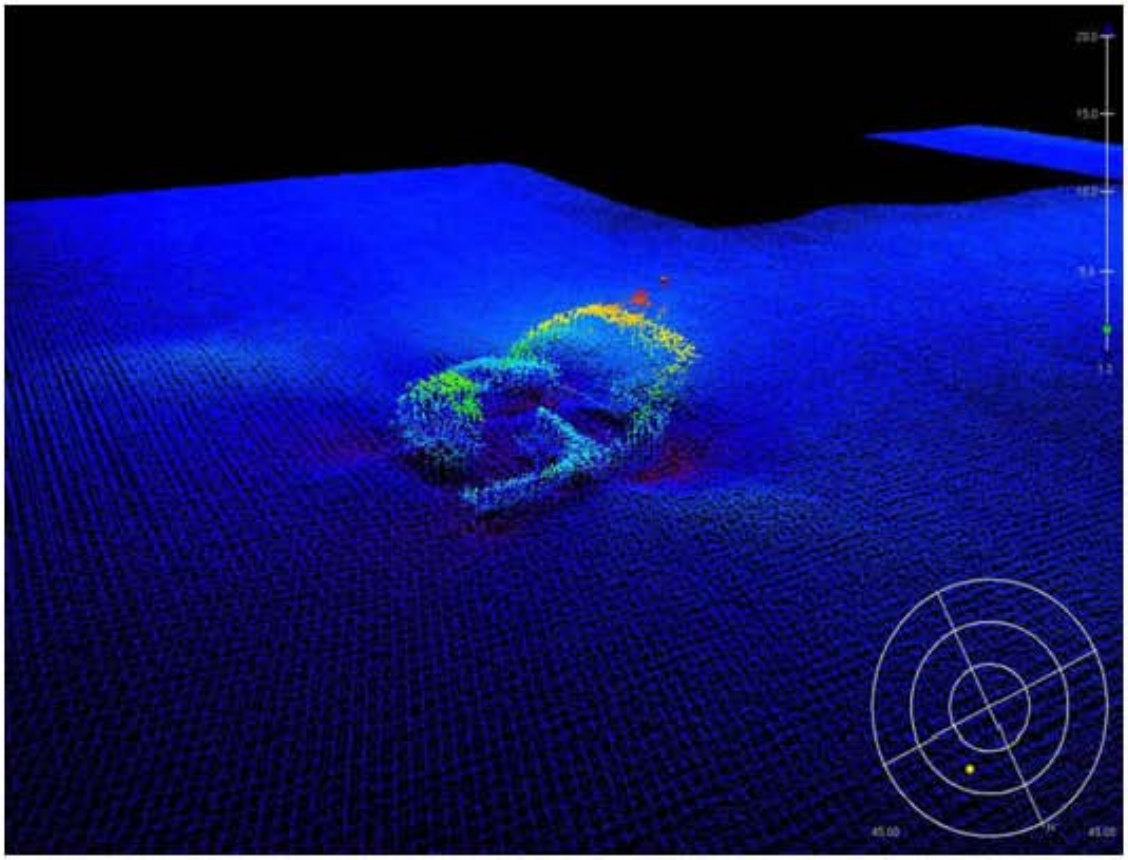


Figure 1.1.3

DANGER TO NAVIGATION 5 & 6

From: Mark.Opdyke@noaa.gov
Sent: Monday, February 11, 2008 5:26 AM
To: NOS OCS MCD Navigation Dangers
Cc: Castle E Parker; Crescent Moegling; Doug Baird; Shep Smith;
Robert.Newton@noaa.gov; Howard.Danley@noaa.gov
Subject: H11653 DToN Report#5 and #6 submission to MCD

Attachments: H11653_DToN#5.zip; H11653_DToN#6.zip

Good Day,

Please find attached a zip file for surveys H11653 DToN Report #5 and DToN Report #6 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations. The item is an obstruction located east of the Windmill Point light near Rappahannock Spit.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email me or call 757-441-6413.

Thank you for your assistance with this matter,

Mark Opdyke

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 09/13/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck	GP	8.90 m	37° 35' 43.620" N	076° 16' 32.050" W	---

1 - Dangers to Navigation

1.1) GP No. - 1 from H11653_DToN#5.xls

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 35' 43.620" N, 076° 16' 32.050" W
Least Depth:	8.90 m
Timestamp:	2007-256.00:00:00.000 (09/13/2007)
GP Dataset:	H11653_DToN#5.xls
GP No.:	1
Charts Affected:	12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified zoned water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Driver, VA.

The wreck is approximately 15 ft (4.5 m) wide, 28 ft (8.5 m) long and rises 5.0 ft (1.5 m) above the natural bottom. It is located approximately 1.1 nautical miles south of Windmill Point.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_DToN#5.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart wreck at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

29ft (12235_1, 12285_18, 12225_1, 12280_2)

4 ¾fm (13003_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 2:dangerous wreck
	HEIGHT - 1.5 m
	SORDAT - 20070913
	SORIND - US,US,surve,H11653

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 8.903 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

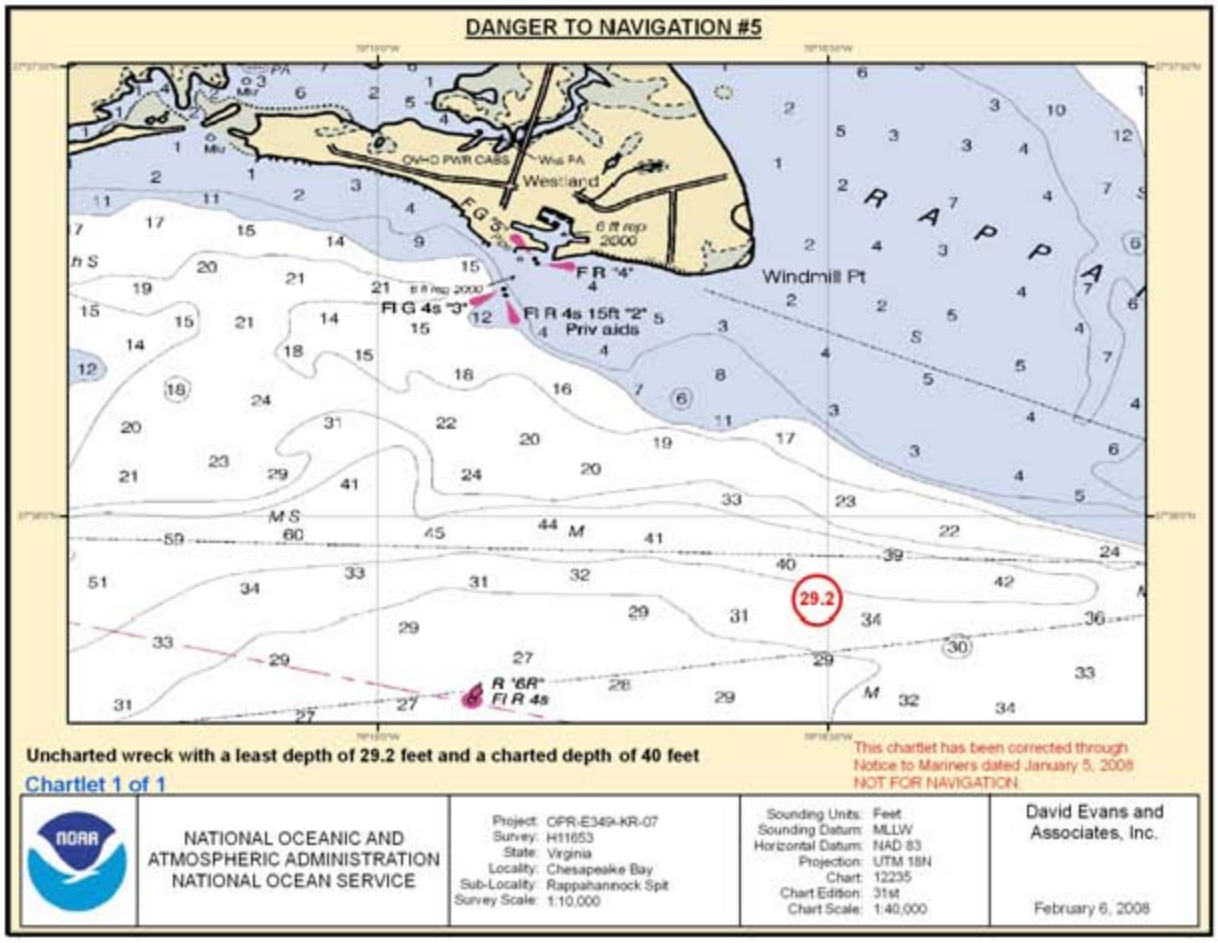


Figure 1.1.1

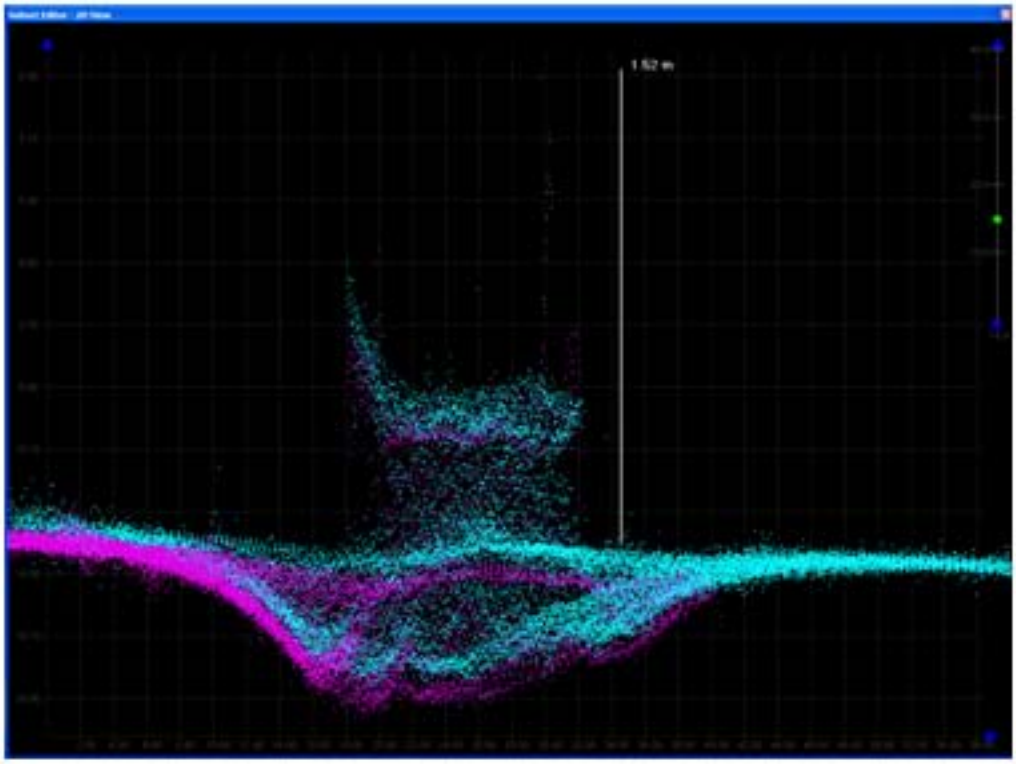


Figure 1.1.2

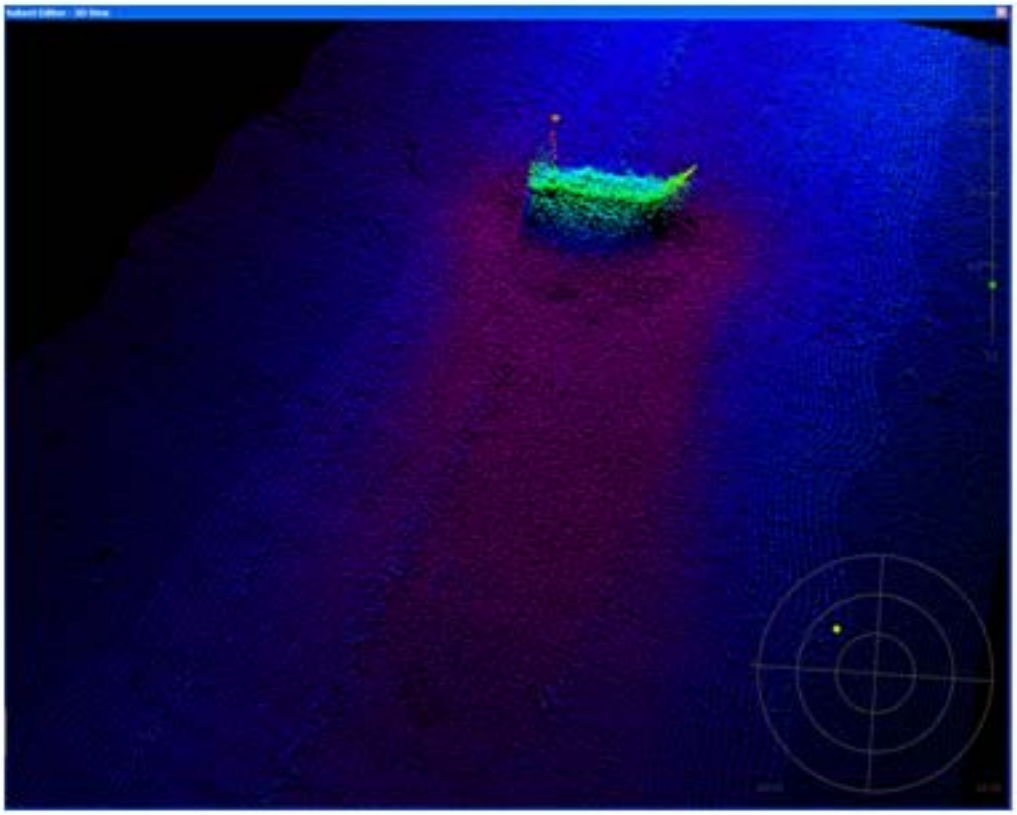


Figure 1.1.3

DANGER TO NAVIGATION 6

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahannock Spit

Project Number: OPR-E349-KR-07

Survey Date: 09/13/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	GP	5.80 m	37° 39' 23.070" N	076° 17' 20.210" W	---

1 - Dangers to Navigation

1.1) Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position:	37° 39' 23.070" N, 076° 17' 20.210" W
Least Depth:	5.80 m
Timestamp:	2007-256.00:00:00.000 (09/13/2007)
GP Dataset:	H11653_DToN#6.xls
GP No.:	1
Charts Affected:	12235_1, 12285_18, 12285_19, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified zoned water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Driver, VA.

The obstruction is located approximately 1.2 nautical miles northeast of North Point. It is approximately 7 ft (2 m) wide, 10 ft (3 m) long and rises 5 ft (1.5 m) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_DToN#6.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart obstruction at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

19ft (12235_1, 12285_18, 12285_19, 12225_1, 12280_2)

3fm (13003_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20070913
	SORIND - US,US,surve,H11653
	TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 5.799 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts. Retain as charted.

Feature Images

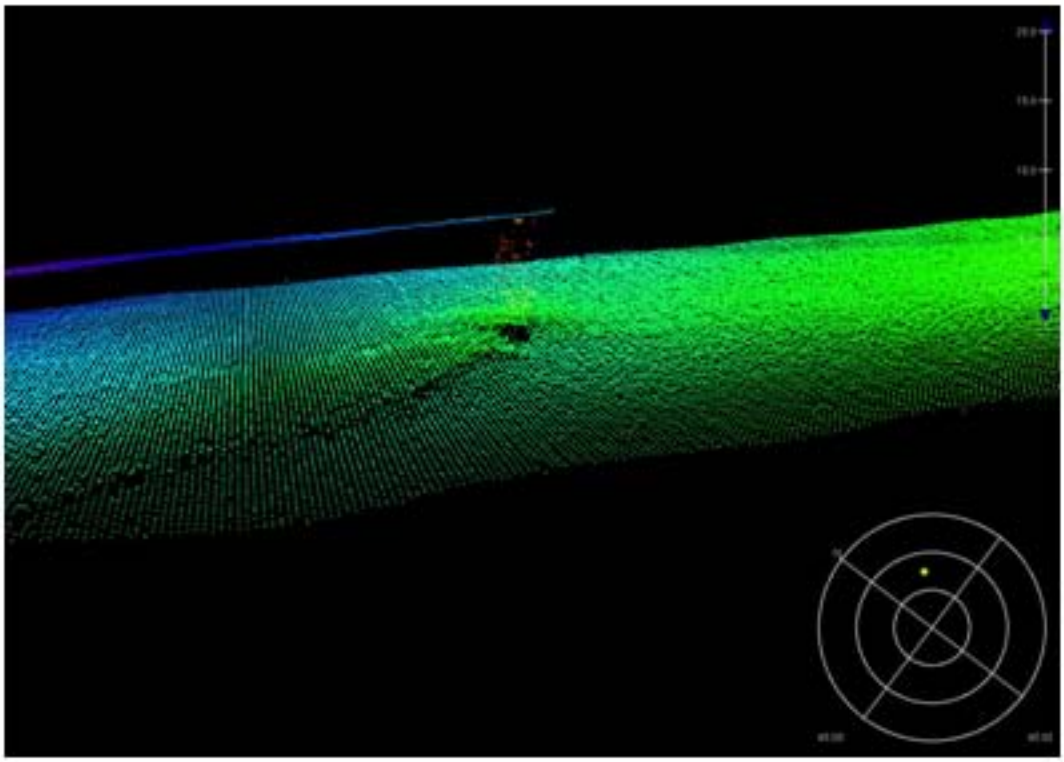


Figure 1.1.1

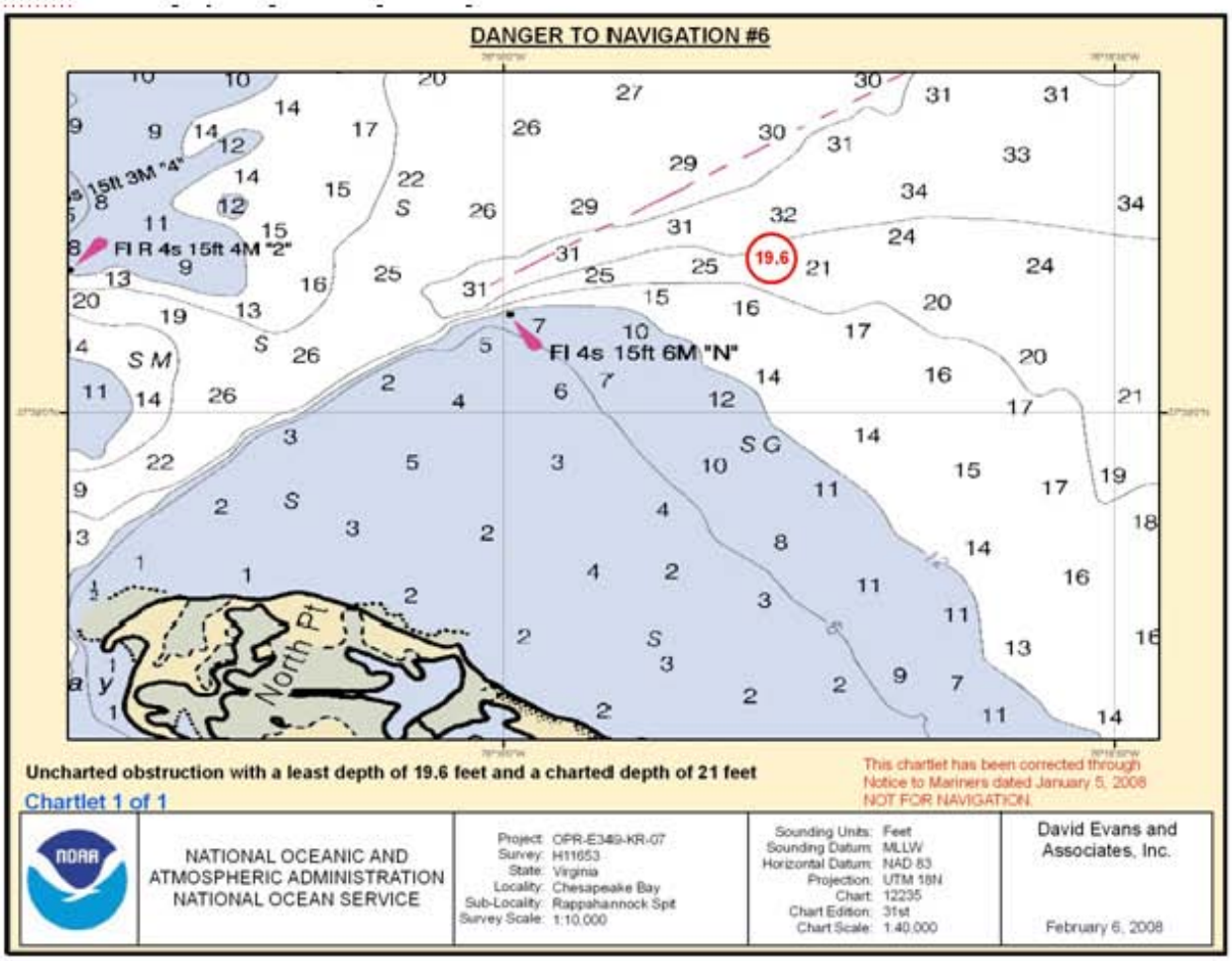

DANGER TO NAVIGATION #6
15ft 3M "4"
Fl R 4s 15ft 4M "2"
Fl 4s 15ft 6M "N"
19.6
North Pt
Uncharted obstruction with a least depth of 19.6 feet and a charted depth of 21 feet
Chartlet 1 of 1
This chartlet has been corrected through Notice to Mariners dated January 5, 2008
NOT FOR NAVIGATION
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
Project: OPR-E349-KR-07
Survey: H11653
State: Virginia
Locality: Chesapeake Bay
Sub-Locality: Rappahannock Spit
Survey Scale: 1:10,000
Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Projection: UTM 18N
Chart: 12235
Chart Edition: 31st
Chart Scale: 1:40,000
David Evans and Associates, Inc.
February 6, 2008

Figure 1.1.2

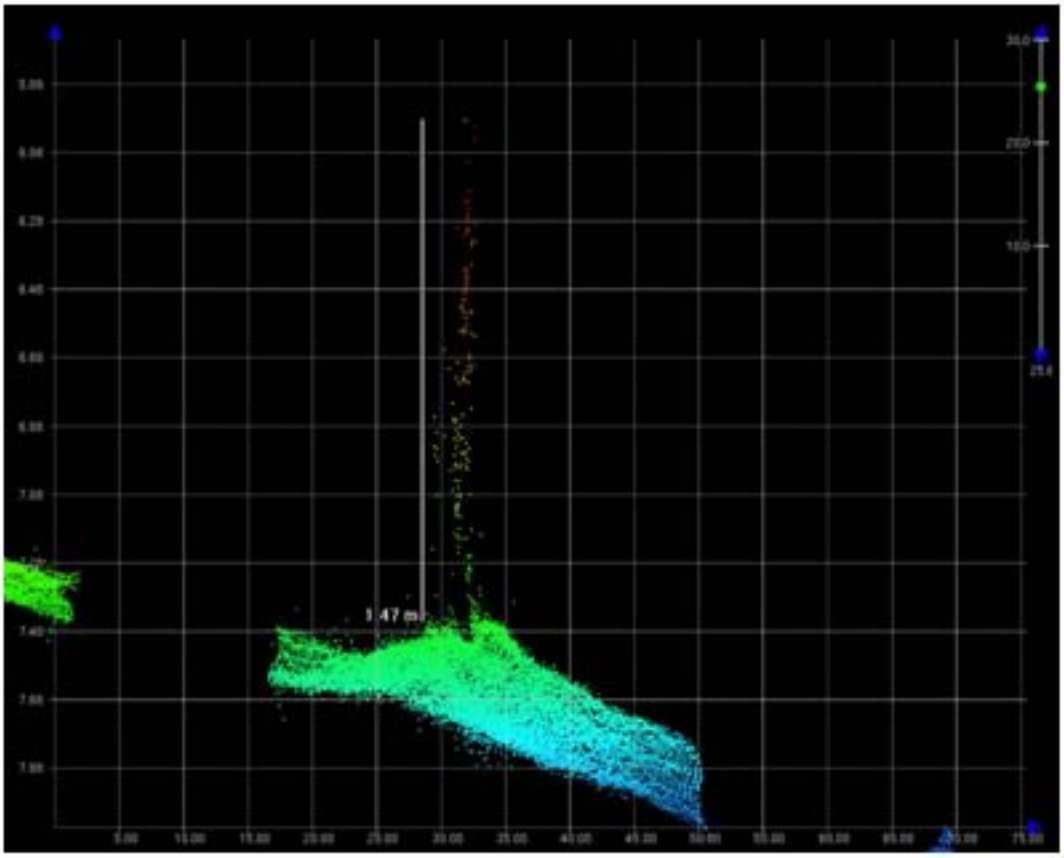


Figure 1.1.3

DANGER TO NAVIGATION 7

From: Robert.Newton [Robert.Newton@noaa.gov]
Sent: Wednesday, February 13, 2008 9:25 AM
To: _NOS OCS MCD Navigation Dangers; Howard Danley
Cc: Castle E Parker; Crescent Moegling; Doug Baird; Shep Smith; Mark Opdyke
Subject: H11653 DToN Report #7 Submission to MCD

Attachments: H11653_DToN#7.zip

Good Day,

Please find attached a zip file for survey H11653 DtoN report #7 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations. The item is an obstruction near the Rappahanock Spit..

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email me or call 757-441-6413.

Thank you for your assistance with this matter,

Robert Newton

Registry Number: H11653

State: Virginia

Locality: Chesapeake Bay

Sub-locality: Rappahanock Spit

Project Number: OPR-E349-KR-07

Survey Date: 07/28/2007

Charts Affected

Number	Version	Date	Scale
12235	31st Ed.	08/01/2006	1:40000
12285	37th Ed.	11/01/2005	1:40000
12225	55th Ed.	08/01/2004	1:80000
12280	6th Ed.	09/01/2005	1:200000
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	Obstruction	9.07 m	37° 39' 16.540" N	076° 14' 08.860" W	---

1 - Danger To Navigation

1.1) Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 39' 16.540" N, 076° 14' 08.860" W

Least Depth: 9.07 m

Timestamp: 2007-209.00:00:00.000 (07/28/2007)

GP Dataset: H11653_DToN#7.xls

GP No.: 1

Charts Affected: 12235_1, 12285_18, 12285_19, 12225_1, 12280_2, 13003_1

Remarks:

Depths are reduced to Mean Lower Low Water using verified zoned water levels from Windmill Point (863-6580). Positions are referenced from the USCG DGPS beacon at Driver, VA.

Horizontal Datum is North American Datum of 1983 (NAD83).

The obstruction is located approximately 3.1 nautical miles northeast of Windmill Point. It is approximately 10 ft (3 m) wide, 33 ft (10 m) long and rises 6.9 ft (2.1 m) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11653_DToN#7.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart an obstruction at the surveyed location.

Cartographically-Rounded Depth (Affected Charts):

30ft **29 ft** (12235_1, 12285_18, 12285_19, 12225_1, 12280_2)

5fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 6:least depth known

SORDAT - 20070728

SORIND - US,US,survy,H11653

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 9.07 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235; 32nd Ed., May 2008 and smaller scale charts as dangerous obstruction least depth 30 feet. Final processing changed the least depth from 30 ft to 29 ft. Revise the least depth to 29 feet at the survey positi

Feature Images

Chartlet to Accompany Danger to Navigation Report

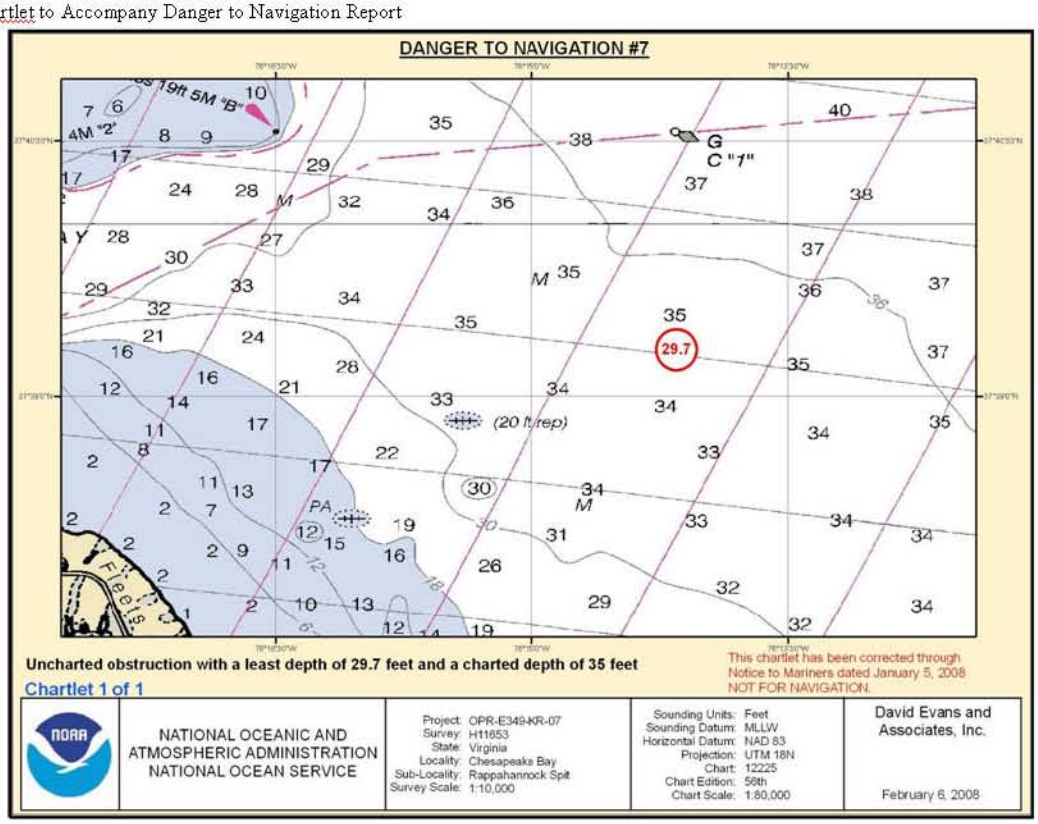


Figure 1.1.1

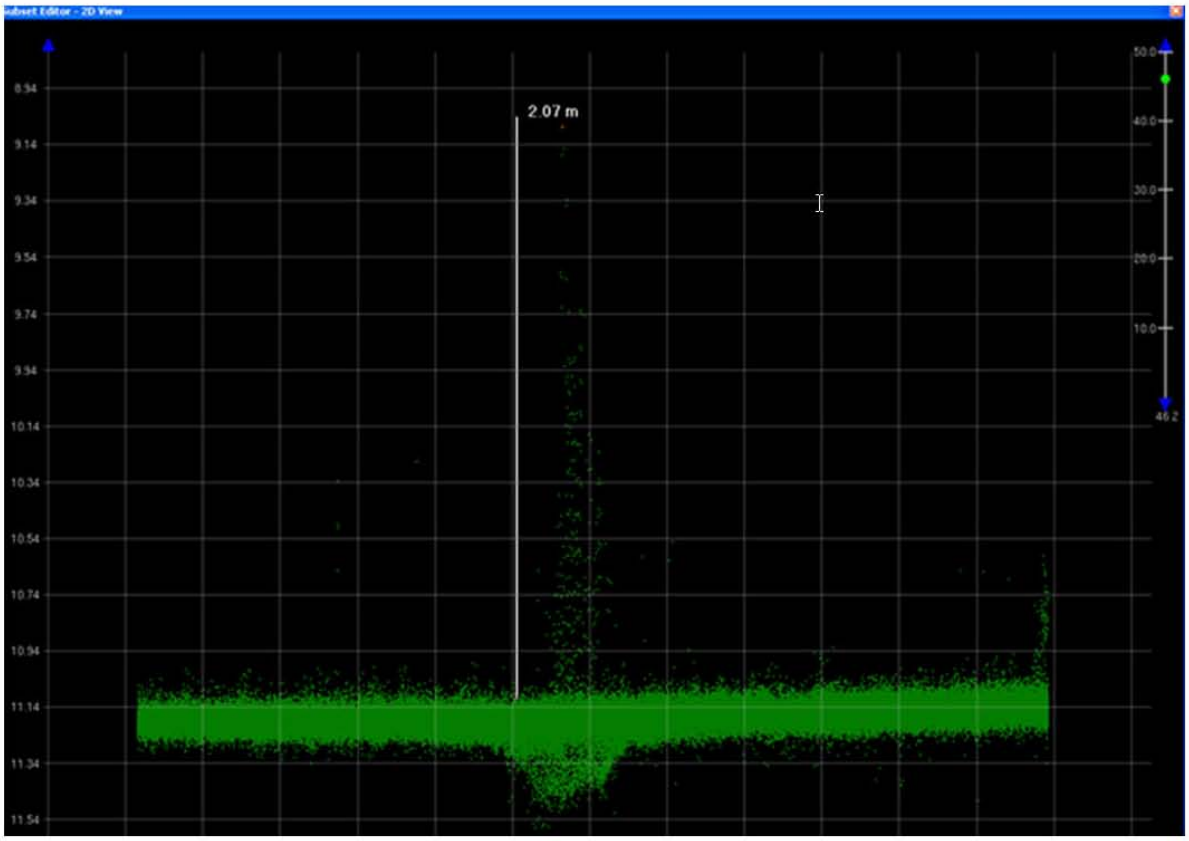

Subset Editor - 2D View
2.07 m
8.94
9.14
9.34
9.54
9.74
9.94
10.14
10.34
10.54
10.74
10.94
11.14
11.34
11.54
50.0
40.0
30.0
20.0
10.0
46.2

Figure 1.1.2

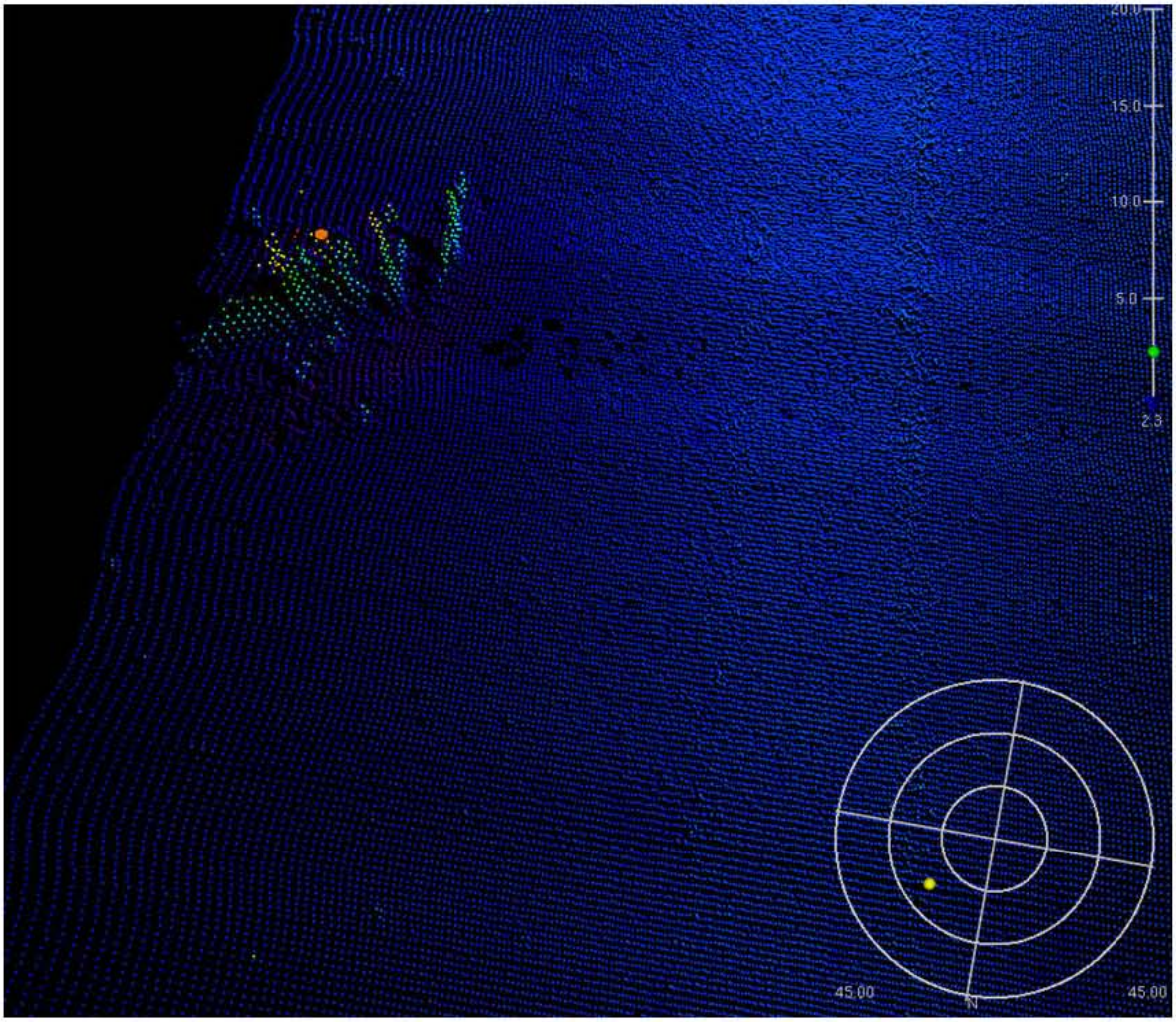


Figure 1.1.3

APPENDIX II
SURVEY FEATURE REPORT

Registry Number:	H11653
State:	Virginia
Locality:	Central Chesapeake Bay
Sub-locality:	Rappahannock Spit
Project Number:	OPR-E349-KR-07
Survey Date:	6/09/2007-9/28/2007

List of Features

List of Figures

AWOIS # 13994

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS #13994	500 m	37/38/52N	076/15/25 W

SURVEYED

FEATURE	DEPTH	LATITUDE (N)	LONGITUDE (W)
WRECK	32.3 ft (9.83m)	37/38/49.84N	076/15/24.49W

Remarks:
AWOIS item 13994, the charted (chart 12235) Wreck (20 ft rep), was covered with 200% SSS. The item was found within the AWOIS radius. Contact 179-170731-P. The least depth of 32.26 ft was determined with MBES.

Hydrographer Recommendation:
The hydrographer recommends charting the feature as per S57 feature file.

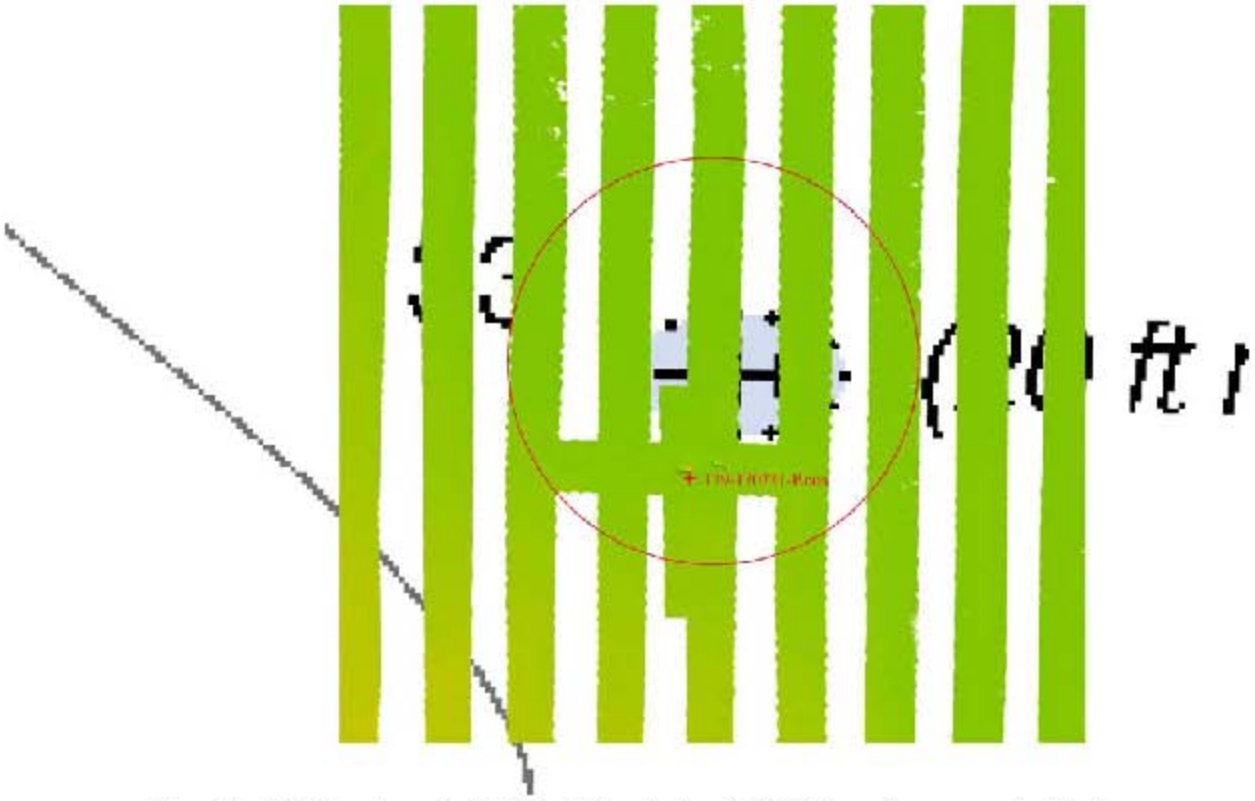


Figure 1: AWOIS radius, chart 12235, SSS contact and MBES (green) coverage depicted.

Concur with clarification. Delete charted AWOIS item #13994 dangerous sunken wreck, least depth "20 ft rep". Chart AWOIS item #13994 dangerous sunken wreck least depth 32 ft at the survey position. This wreck is distributed over an area approximately 66 ft (20 m) wide, 130 ft (40 m) long and rises 3.3 ft (1 m) above the natural bottom.

AWOIS # 13995-Disproved

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS #13995	400 m	37/38/18N	076/16/06W

SURVEYED

FEATURE	LEAST DEPTH FOUND	LATITUDE (N)	LONGITUDE (W)
Disproved	18.6 ft (5.68m)	37/38/17.56N	076/16/05.49W

Remarks:
AWOIS item 13995, the charted (chart 12235) Wreck PA, was covered with 200% SSS. No significant item was found within the AWOIS radius. Contacts 214-152240-P, 214-150419-P and 205-164606-S. The least depth within the AWOIS search radius was 18.6 feet (5.68m). The item has been disproved.

Hydrographer Recommendation:
The hydrographer recommends removing the charted wreck and charting as per survey data.

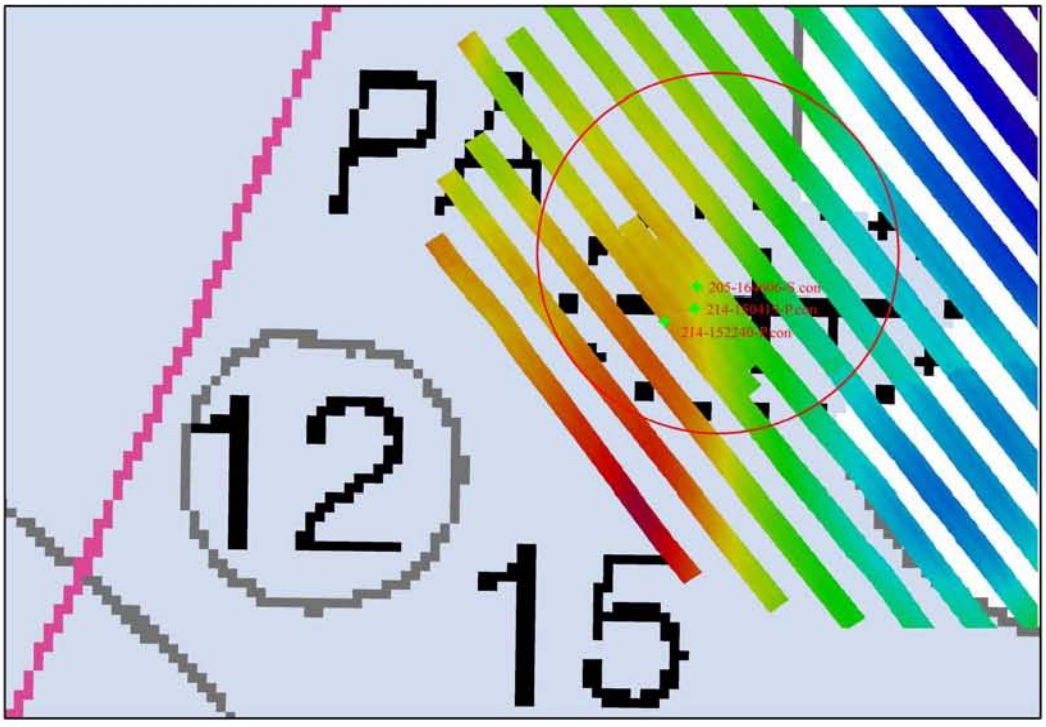


Figure 2: AWOIS radius, chart 12235, SSS contacts, and MBES coverage depicted.

Do not concur. Disproval criteria of 200% side scan coverage and or 100% multibeam coverage for 400 meter search radius was not met. Retain AWOIS 13995 as charted, dangerous sunken wreck least depth unknown with text "PA" at the charted position.

AWOIS # 13996-Disproved

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS #13996	500 m	37/34/48N	076/12/54W

SURVEYED

FEATURE	LEAST DEPTH FOUND	LATITUDE (N)	LONGITUDE (W)
Disproved	28.5ft (8.678m)	37/34/48.47N	076/12/52.78W

Remarks:
AWOIS item 13996, the charted (chart 12235) position approximate obstruction (Obstn PA), was covered with 200% SSS. Nothing was found within the AWOIS radius. The least depth within the AWOIS search radius is 28.5feet. The item has been disproved.

Hydrographer Recommendation:
The hydrographer recommends removing the position approximate obstruction from the chart and charting as per survey data.
Concur. Delete AWOIS 13996 dangerous obstruction, least depth unknown and text "Obstn rep PA". Chart survey soundings.

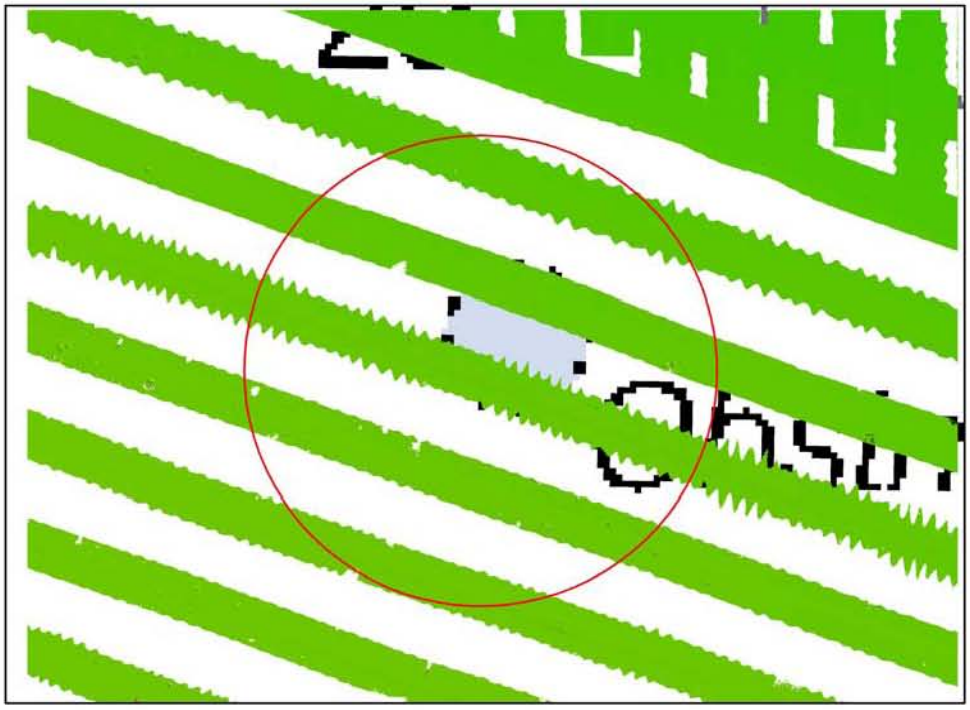
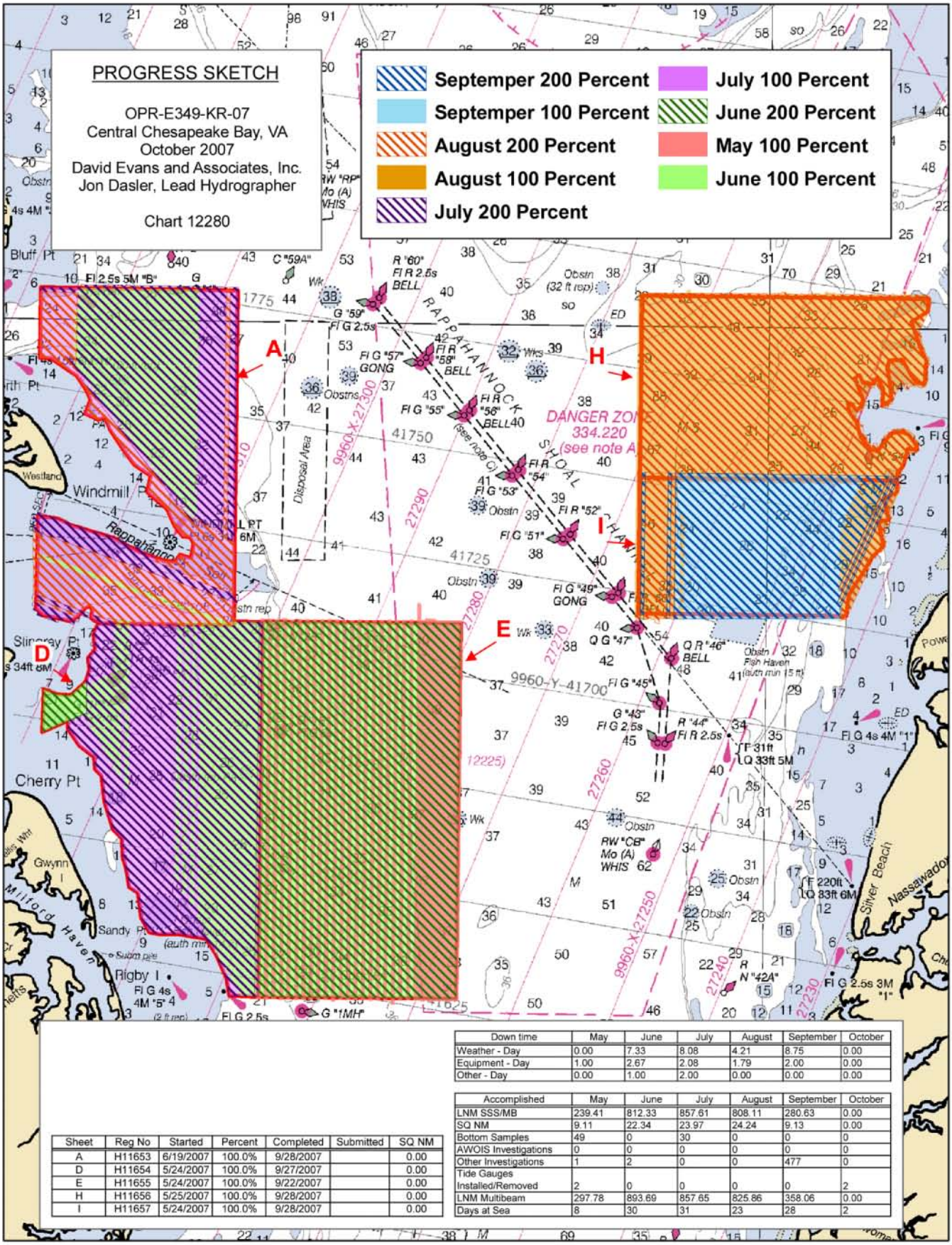


Figure 3: AWOIS radius, chart 12235 and MBES (green) coverage depicted.

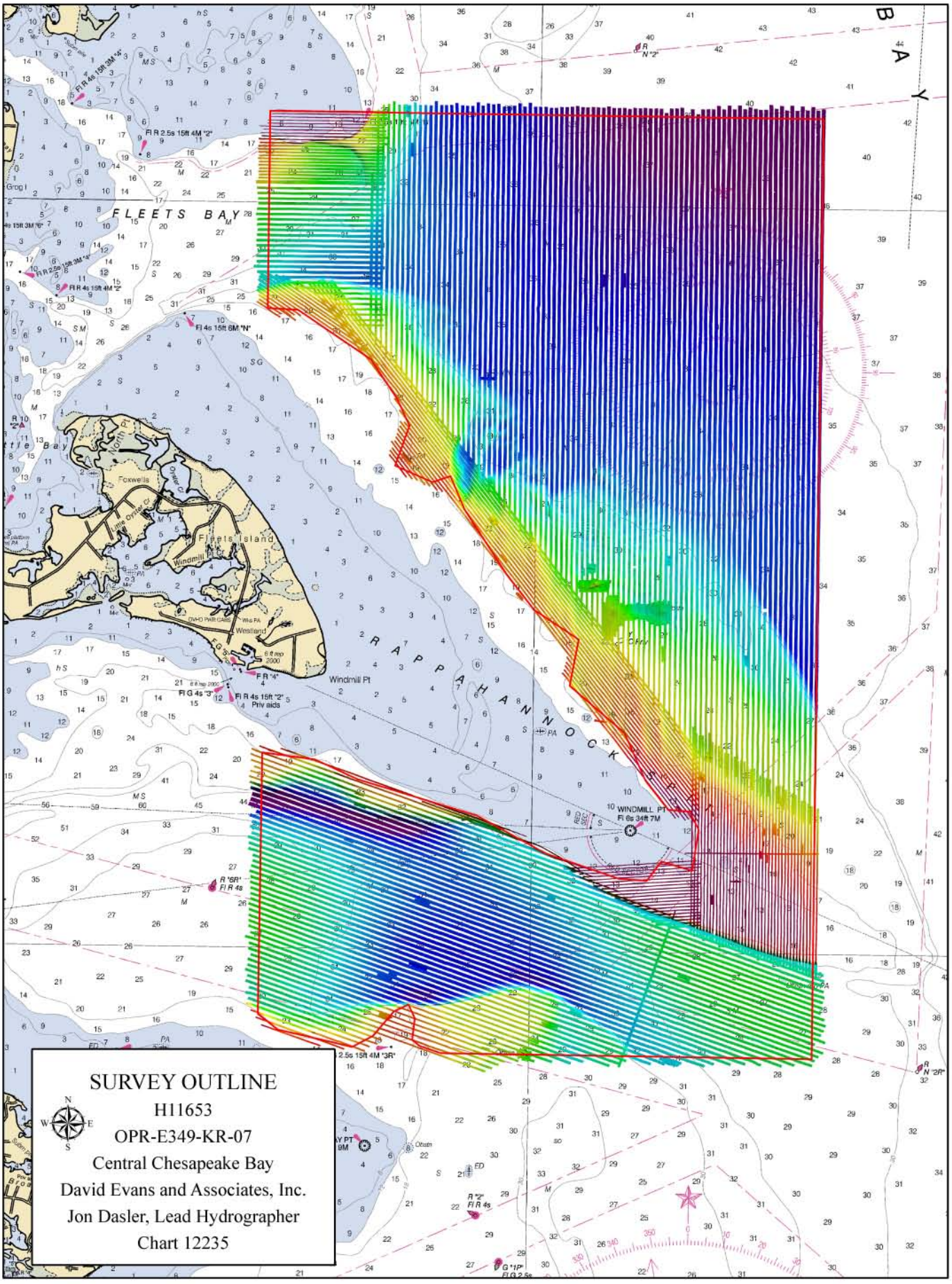
APPENDIX III
FINAL PROGRESS SKETCH AND SURVEY OUTLINE



Sheet	Reg No	Started	Percent	Completed	Submitted	SQ NM
A	H11653	6/19/2007	100.0%	9/28/2007		0.00
D	H11654	5/24/2007	100.0%	9/27/2007		0.00
E	H11655	5/24/2007	100.0%	9/22/2007		0.00
H	H11656	5/25/2007	100.0%	9/28/2007		0.00
I	H11657	5/24/2007	100.0%	9/28/2007		0.00

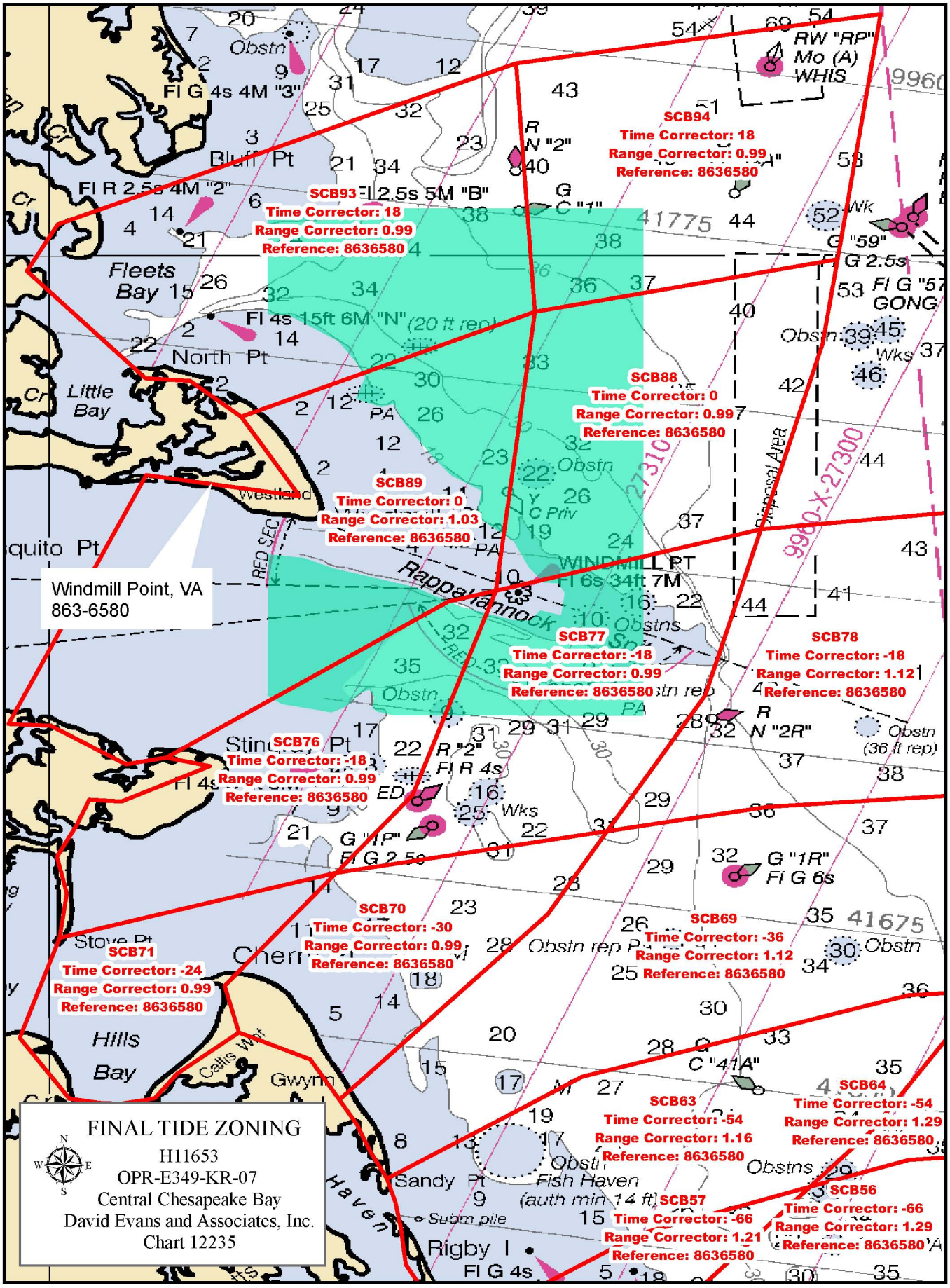
Down time	May	June	July	August	September	October
Weather - Day	0.00	7.33	8.08	4.21	8.75	0.00
Equipment - Day	1.00	2.67	2.08	1.79	2.00	0.00
Other - Day	0.00	1.00	2.00	0.00	0.00	0.00

Accomplished	May	June	July	August	September	October
LNM SSS/MB	239.41	812.33	857.61	808.11	280.63	0.00
SQ NM	9.11	22.34	23.97	24.24	9.13	0.00
Bottom Samples	49	0	30	0	0	0
AWOIS Investigations	0	0	0	0	0	0
Other Investigations	1	2	0	0	477	0
Tide Gauges Installed/Removed	2	0	0	0	0	2
LNM Multibeam	297.78	893.69	857.65	825.86	358.06	0.00
Days at Sea	8	30	31	23	28	2


FLEETS BAY
Fleets Island
Foxwells
Windmill Pt
Westland
RAPPAHANNOCK RIVER
WINDMILL PT
Fl 6s 34ft 7M
Fl R 4s 15ft 4M "2"
Fl 4s 15ft 6M "N"
Fl R 2.5s 15ft 4M "2"
Fl G 4s "3"
Fl R 4s 15ft "2"
Priv aids
F R "4"
2.5s 15ft 4M "3R"
R "6R" Fl R 4s
R "2" Fl R 4s
G "1P" Fl G 2.5s
R N "2"
R N "2R"
SURVEY OUTLINE
H11653
OPR-E349-KR-07
Central Chesapeake Bay
David Evans and Associates, Inc.
Jon Dasler, Lead Hydrographer
Chart 12235

APPENDIX IV
TIDES AND WATER LEVELS

H11653 Abstract of Hydrography		
Day	**Start**	**End**
170	12:02:10	12:42:16
179	13:44:38	21:49:14
180	13:25:45	22:14:56
199	15:31:19	21:08:27
200	16:34:36	20:21:50
201	12:46:16	16:37:55
203	12:09:49	13:34:22
205	12:53:06	20:47:52
206	11:58:29	21:59:23
207	12:22:09	22:23:07
208	12:34:40	20:12:55
209	12:16:41	21:14:53
210	12:15:05	19:30:20
212	13:19:06	18:59:22
213	11:55:26	21:49:43
214	11:44:31	20:18:02
215	11:59:18	17:58:05
216	12:11:01	19:46:50
256	12:00:09	21:39:52
265	12:41:56	16:53:15
269	16:52:26	17:04:01


SCB94
Time Corrector: 18
Range Corrector: 0.99
Reference: 8636580
SCB93
Time Corrector: 18
Range Corrector: 0.99
Reference: 8636580
SCB88
Time Corrector: 0
Range Corrector: 0.997
Reference: 8636580
SCB89
Time Corrector: 0
Range Corrector: 1.03
Reference: 8636580
SCB77
Time Corrector: -18
Range Corrector: 0.99
Reference: 8636580
SCB78
Time Corrector: -18
Range Corrector: 1.121
Reference: 8636580
SCB76
Time Corrector: -18
Range Corrector: 0.99
Reference: 8636580
SCB70
Time Corrector: -30
Range Corrector: 0.99
Reference: 8636580
SCB71
Time Corrector: -24
Range Corrector: 0.99
Reference: 8636580
SCB69
Time Corrector: -36
Range Corrector: 1.12
Reference: 8636580
SCB63
Time Corrector: -54
Range Corrector: 1.16
Reference: 8636580
SCB64
Time Corrector: -54
Range Corrector: 1.29
Reference: 8636580
SCB57
Time Corrector: -66
Range Corrector: 1.21
Reference: 8636580
SCB56
Time Corrector: -66
Range Corrector: 1.29
Reference: 8636580
Windmill Point, VA
863-6580
FINAL TIDE ZONING
H11653
OPR-E349-KR-07
Central Chesapeake Bay
David Evans and Associates, Inc.
Chart 12235

FINAL TIDE ZONING
H11653
OPR-E349-KR-07

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
SCB76	-18	x0.99	8636580
SCB77	-18	x0.99	8636580
SCB88	0	x0.99	8636580
SCB89	0	x1.03	8636580
SCB93	18	x0.99	8636580
SCB94	18	x0.99	8636580

APPENDIX V
SUPPLEMENTAL SURVEY AND CORRESPONDENCE

From: gene_parker [Castle.E.Parker@noaa.gov]
Sent: Monday, October 15, 2007 6:51 AM
To: Jason Creech; Jon Dasler
Subject: [Fwd: H11653 DtoN 2, Obstruction and Buoy, AHB to MCD submission]

Attachments: H11653_dton2.zip

FYI... H11653 DtoN#2 was submitted this morning. We've dropped two features within the fish haven based upon charted soundings. AHB submitted the priv nav aid and 21.9-ft Obstn. The two items dropped will be handled during AHB compilation. AHB will recommend the limits of the fish haven during survey compilation. The attached docs are for your inclusion with DR Appendix 1. If you want to include DEA's DtoN submission, place in Appendix 5, Supplemental Correspondence.

Thanks for your efforts and level of documentation, grade A, and we thank you. Hope you guys have a great week! Gene

-------- Original Message --------
Subject: H11653 DtoN 2, Obstruction and Buoy, AHB to MCD submission
Date: Mon, 15 Oct 2007 09:31:25 -0400
From: Stephen Gottschalk <Stephen.Gottschalk@noaa.gov>
Organization: NOAA
To: mcd.dton@noaa.gov
CC: gene_parker <Castle.E.Parker@noaa.gov>,Robert Newton <Robert.Newton@noaa.gov>, Helen.Stewart@noaa.gov
References: <46041B2D.CD12C634@noaa.gov> <460ACA80.E657FB14@noaa.gov><461FB735.41952CF3@noaa.gov> <470FB410.AA953314@noaa.gov>

Good Day,

Please find attached a zip file concerning survey H11653 Danger to Navigation 2 for submission to Marine Chart Division (MCD). The survey has not yet been submitted to AHB.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by the Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email at address below or call 757-441-6413.

Thank you,
Stephen Gottschalk

H11653 Bottom Samples

Sample	Day Number	Latitude	Longitude	Raw Depth (ft)	COLOR	NATSUR	NATQUA
A01	196	37.66841667	-76.27696433	28	2	1,3	1
A02	196	37.65065367	-76.27643683	18	8	4,17	2
A03	196	37.59589611	-76.27586483	32	7	2,3	5
A04	196	37.57726056	-76.27516083	30	2	2,3	5
A05	196	37.66794167	-76.25362167	34	2	2,3	5
A06	196	37.650706	-76.2533185	33	2	1,3	1
A07	196	37.631662	-76.2536885	23	8	4,17	3
A08	196	37.59624113	-76.25253697	15	7	4	1
A09	196	37.57864767	-76.25198767	22	7	4	2
A10	196	37.66814217	-76.23070333	36	2	2,3	5
A11	196	37.650324	-76.23080967	33	2	2,3	5
A12	196	37.6324485	-76.23046733	31	7	2,4	5
A13	196	37.61423	-76.2306285	23	8	4	3
A14	196	37.59621583	-76.22575717	13	8	4	1
A15	196	37.5792045	-76.22807167	28	7	1,2	1


A 1


A 2


A3


A4


A 5


A 0 6


A 07


A8


A 9


A 1 0


A11


A 12


A 1 3


A 14


A15

Windmill Point Reef

Windmill Point Reef was established in July 2004. This square reef site is located 1.4 nautical miles north of Windmill Point Light. The center of the reef is marked with a yellow VMRC buoy designated "WP".

Funded with Saltwater Fishing License revenue, 120 reef balls were purchased for this site and deployed. There are two fields of 60 reef balls each, located on the east and west side of the buoy. Immediately east and west of the reef ball deployments are two deployments of 500+ tons each of concrete pipe, donated by Hanson Pipe Company. The deployment of the pipe was also funded with Saltwater Fishing License revenue.

NOAA Chart 12225

Windmill Point Reef

Beginning at a point in the Chesapeake Bay that is 1.72+/- nautical miles easterly of the eastern most point of Windmill Point and 4.31+/- nautical miles northeasterly of the eastern most point of Sting Ray Point, said point being the Southwest Corner of Windmill Point Reef and having NAD 1983 geographic coordinates of 37° 36.917' N., 76° 14.583' W.; thence in a northerly direction 4248.02 feet to the Northwest Corner, located at 37° 37.617' N., 76° 14.583' W.; thence in an easterly direction 4223.42 feet to the Northeast Corner, located at 37° 37.617' N., 76° 13.078' W.; thence in a southerly direction 4248.02 feet to the Southeast Corner, located at 37° 36.917' N., 76° 13.078' W.; thence in a westerly direction 4224.09 feet to the Southwest Corner, said point being the point of beginning.

EMAILS TO VA MARINE RESOURCES COMMISSION
INQUIRING ABOUT WINDMILL POINT'S FISH HAVEN PERMIT

From	<Kelly.Schill@noaa.gov>
Sent	Thursday, September 11, 2008 2:57 pm
To	mike.meier@mrc.virginia.gov
Cc	Castle.E.Parker@noaa.gov
Subject	Survey H11653 Fish Haven Inquiry

Mike Meier,

I am emailing you to check up on how things are coming along. We spoke yesterday about a fish haven north of Windmill point. Please send the permit so we can make recommendation to Marine Chart Division in order to update the nautical chart accurately.

I was informed that you could send other fish haven permits to the Nautical Data Branch, Marine Chart Division to ensure that VRMC fish havens are charted accurately. The point of contact for the MCD is Stephen Soherr, Acting Branch Chief-Nautical Data Branch. His email is: steve.soherr@noaa.gov

I hope this helps and I look forward to your response at your earliest convenience.

Sincerely,
Kelly M. Schill

_____

Kelly M. Schill
Hydrographic Contractor
NOAA Atlantic Hydrographic Branch
Norfolk, VA
Ph: 757-441-6746

From "Meier, Mike (MRC)" <Mike.Meier@mrc.virginia.gov>
Sent Thursday, September 11, 2008 3:14 pm
To Kelly.Schill@noaa.gov Subject Reef Descriptions Attachments
Reef Descriptions.doc

<<Reef Descriptions.doc>> **Here is the points file for our reef sites. All of our reefs are covered under a Corps General Permit. Per our conversation yesterday, I have requested updated paperwork from the USACOE. I will do so immediately; however, they are usually extremely S-L-O-W to respond.**

From	<Kelly.Schill@noaa.gov>
Sent	Friday, September 12, 2008 1:16 pm
To	mike.meier@mrc.virginia.gov
Cc	castle.e.parker@noaa.gov
Subject	Permit

Mike Meier,

The points file is enough to recommend a fish haven to be charted. However, Marine Chart Division will not chart the fish haven unless a permit is submitted.

Who is your point of contact in accessing the permit, so that we may acquire and submit it with the survey to MCD.

Thank you for your time,
Kelly M. Schill

_____

Kelly M. Schill
Hydrographic Contractor
NOAA Atlantic Hydrographic Branch
Norfolk, VA
Ph: 757-441-6746

From	"Meier, Mike (MRC)" <Mike.Meier@mrc.virginia.gov>

Sent	Friday, September 12, 2008 1:33 pm
To	Kelly.Schill@noaa.gov
Subject	RE: Permit

My USACOE contact is Rick Henderson. His office is at FT Norfolk. His direct phone # is 201-7653.
Let me know if you need anything else.

-----Original Message-----
From: Kelly.Schill@noaa.gov [mailto:Kelly.Schill@noaa.gov]
Sent: Friday, September 12, 2008 1:16 PM
To: Meier, Mike (MRC)
Cc: Castle.E.Parker@noaa.gov
Subject: Permit

Mike Meier,

The points file is enough to recommend a fish haven to be charted. However, Marine Chart Division will not chart the fish haven unless a permit is submitted.

Who is your point of contact in accessing the permit, so that we may acquire and submit it with the survey to MCD.

Thank you for your time,
Kelly M. Schill

_____

Kelly M. Schill
Hydrographic Contractor
NOAA Atlantic Hydrographic Branch
Norfolk, VA
Ph: 757-441-6746

Version 1.0

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

AHB PRE-COMPILATION PROCESS

REGISTRY No.	H11653
PROJECT No.	OPR-E349-KR-07
FIELD UNIT	DEA
PRE-COMPILER	KELLY SCHILL
LARGEST SCALE CHART	12235, edition 32, 200805
CHART SCALE	1:40000
SURVEY SCALE	1:10000
DATE OF SURVEY	June 19, 2007 to September 26, 2007
CONTENT REVIEW DATE	September 15, 2008

Components	File Names
Product Surface	PS_H11653_10k_100mrad_4mres.hns
Shifted Surface	PS_H11653_10k_100mrad_4mres_Shifted.hns
Contour Layer	PS_H11653_10k_100mrad_4mres_Contours.hob
Survey Scale Soundings	H11653_SS_Soundings.hob
Chart Scale Soundings	H11653_CS_Soundings.hob
ENC Retain Soundings	H11653_Soundings_ENC.hob
Feature Layer	H11653_Features.hob
Meta-Objects Layer	H11653_MetaObjects.hob
Blue Notes	H11653_BlueNotes.hob

SPECIFICATIONS:

I. COMBINED SURFACE:
   a. File name: ____H11653_AHB_2m_Combined.hns
   b. Resolution: ___2_____m
   c. Final Grid Location: H:\Compilation\H11653_E349-DEA\H11653_E349-DEA\AHB_H11653\E-SAR Final Products\GRIDS

II. PRODUCT SURFACE (SOUNDINGS):
   a. Scale: 1:10,000_
   b. Radius:_100___m
   c. Resolution: 4__m

   d. Depth
      i. Minimum: ____2.47___m
      ii. Maximum: ____13.48__m

   PRODUCT SURFACE (CONTOURS):
   a. Scale: 1:10,000_
   b. Radius:_100___m
   c. Resolution: 4__m

III. SHIFTED SURFACE:
   Single Shift Value:_-0.229m_____ *[-0.229m (feet), (≤ 10 fathoms)]*
   [-1.372m (fathoms), (> 10 fathoms)]

IV. CONTOUR LAYER:
   a. Use a Depth List: H11653_NOAA_depth_curves_list.txt

Depth List: 1.829
3.658
5.486
9.114
10.973
18.288

b. Output Options:
   i. Create contour lines:
      1. Line Object: DEPCNT
      2. Value Attribute: VALDCO

V. SOUNDING SELECTION:

a. Selection Criteria:
   i. Radius
   ii. Shoal biased
   iii. Use Single-Defined Radius: 92 distance on ground (ft)
   iv. Filter: Generalized !=1

VI. FEATURES:

a. Brought in from Survey
   Total No. 31

b. Brought in from ENC
   ENC: 0
   Total No. 31

VII. META-OBJECTS:

a. M_COVR attributes

Acronym	Value
INFORM	H11653, OPR-E349-KR-07, David Evans and Associates, Inc.
SORDAT	20070928
CATCOV	coverage available
SORIND	US,US,survy,H11653

b. M_QUAL attributes

Acronym	Value
CATZOC	zone of confidence U (data not assessed)
INFORM	H11653, OPR-E349-KR-07, David Evans and Associates, Inc.
POSACC	10
SORDAT	20070928
SORIND	US,US,survy,H11653
SUREND	20070926
SURSTA	20070619
TECSOU	

c. DEPARE attributes

Acronym	Value
DRVALV 1	8.104 ft
DRVALV2	51.969 ft
SORDAT	20070926
SORIND	US,US,nsurf,H11653
INFORM	

d. M_CSCL attributes – N/A

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11653 (2007)

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

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

CARIS HIPS/SIPS version 6.1 SP2 HF 1
CARIS Bathy Manager version 2.1 HF 1-8
CARIS HOM ENC version 3.3 SP3 HF 1-7
DKART INSPECTOR, version 5.0 SP1 Build 732

B.2 QUALITY CONTROL

B.2.1 H-CELL

The AHB source depth grid for the survey's nautical chart update product entailed sourced the contractor's seven original grids (five 1 meter grids, one cross line 1 meter grid, and one 0.25 meter grid of the fish haven. All seven final grids were combined at a two meter resolution, then created a product surface grid with a resolution of 4m. The survey scale selected soundings were extracted from the 4m product surface. The selected sounding set is approximately 16 to 32 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale sounding selections. Office personnel used the surface model as reference when selecting the chart scale soundings, ensuring that the selected soundings portray the bathymetry within the common area.

Depth curves were created from a 4m TIN interpolated grid from the 4 meter product surface grid. The 4m interpolated grid was shifted by a factor of 0.229 meters to allow for NOAA depth curve practices. The depth curves are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB. The depth curves are incorporated into the S57 US511653_CS.000 H-Cell deliverable.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Pre-Compile Process Log attached prior to this document. The SAHOB files included depth curves (DEPCNT), sounding selections (SOUNDG), features (OBSTRN, WRECKS, BOYSPP, SBDARE), depth area (DEPARE), Meta objects (M_COVR, M_QUAL), and cartographic Blue Notes. The individual SAHOB files were

inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC_CS.000) with all values measured in feet following NOAA sounding rounding rules.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The H11653 CARIS H-Cell final deliverables include the following products:

US511653_CS.000	**1:40,000 Scale**	**H11653 H-Cell with Chart Scale Selected Soundings**
US511653_SS.000	**1:10,000 Scale**	**H11653 Selected Soundings (Survey Scale)**
US511653_Bluenotes.000	**1:40,000 Scale**	**H11653 Cartographic Notes**

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. The field unit applied verified water levels in conjunction with the final tidal zoning. The final zoning solution was evaluated and accepted by the contract field unit. Proper zoning evaluation was conducted during data processing such that no artifacts remain within the common area of the final tidal zone boundaries. Vertical datum for all soundings are reference to Mean Lower Low Water (MLLW).

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 18. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. The horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) during H-Cell processing. The S-57 H-CELL format serves as the exchange file format submitted to Marine Chart Division.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

12235 (32nd Edition, May./08)
Corrected through NM 05/13/2008
Corrected through LNM 05/17/2008

ENC COMPARISON **US5VA41M**

Rappahannock River Entrance Piankatank and Great Wicomico Rivers
Edition 11
Application Date 2008-03-08
Issue Date 2007-09-03
Chart 12235

D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section "D" and Appendix 1&2 of the Descriptive Report. The survey did not reveal or detail Non-Skin-of-the-Earth (Group 2) features during data verification and product generation. The following exception is noted:

Windmill Point Reef – The Fish Haven at Windmill Point remains uncharted. DToN number two from survey H11653 established a least depth of 22 feet for the shoalest feature in the area and for the yellow Buoy marking the area. Inquiries made by AHB with Mr. Mike Meier of the **VA MARINE RESOURCES COMMISSION** resulted in AHB acquiring a points file that was used to establish the permitted bounds of the fish haven as a cartographic area in the submitted H-Cell *US511653_Bluenotes.000.* Email records of these discussions are located in *Appendix V Supplemental Correspondence* of this document. The shoalest obstructions within the permitted area are being submitted as dangerous obstructions in the H-Cell *US511653_CS.000.* The final disposition of the Windmill Point Fish Haven and obstructions within are deferred to the Marine Chart Division (MCD).

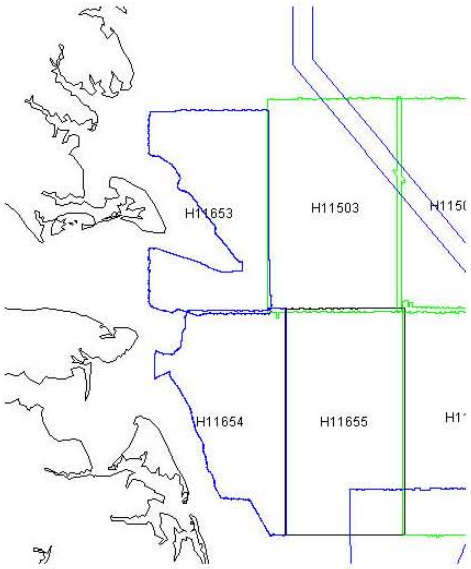
Description of Windmill Point Reef is as follows:

Windmill Point Reef was established in July 2004. This square reef site is located 1.4 nautical miles north of Windmill Point Light. The center of the reef is marked with a yellow VMRC buoy designated "WP". 120 reef balls were purchased for this site and deployed. There are two fields of 60 reef balls each, located on the east and west side of the buoy. Immediately east and west of the reef ball deployments are two deployments of 500+ tons each of concrete pipe, donated by Hanson Pipe Company. Windmill Point Reef Beginning at a point in the Chesapeake Bay that is 1.72+/- nautical miles easterly of the eastern most point of Windmill Point and 4.31+/- nautical miles northeasterly of the eastern most point of Sting Ray Point, said point being the Southwest Corner of Windmill Point Reef and having NAD 1983 geographic coordinates of 37° 36.917' N., 76° 14.583'W.; thence in a northerly direction 4248.02 feet to the Northwest Corner, located at 37°37.617' N., 76° 14.583' W.; thence in an easterly direction 4223.42 feet to the Northeast Corner, located at 37° 37.617' N., 76° 13.078' W.; thence in a southerly direction 4248.02 feet to the Southeast Corner, located at 37° 36.917' N., 76° 13.078' W.; thence in a westerly direction 4224.09 feet to the Southwest Corner, said point being the point of beginning.

Virginia Saltwater Recreational Fishing Development Fund (VSRFDF)
http://www.mrc.virginia.gov/vsrfdf/windmillpt_reef.shtm

D.1.2 Junctions

Survey H11653 junctions with surveys H11654 to the south and H11503 to the east. Surveys H11654 has not yet been processed by AHB, therefore, junction analysis will be performed during office compilation of H11654. Survey H11503 has been applied to the chart. No junction analysis was performed.



D.2 COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4 of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. The following NOS Raster Chart and Electronic Navigation Chart (ENC) were used for compilation of the present survey:

Raster Chart: **12235_1 (32nd Edition, May./08)** 1:40,000 Scale
Corrected through NM 05/13/2008
Corrected through LNM 05/17/2008

ENC: **US5VA41M**
Rappahannock River Entrance Piankatank and Great Wicomico Rivers
Edition 11
Application Date 2008-03-08
Issue Date 2007-09-03
Chart 12235

D.3 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 File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further survey requirements recommended by the hydrographer.

APPROVAL SHEET
H11653

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval 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 reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Kelly Schill
I attest to the accuracy and integrity of this document
2008.09.19 08:44:12 -04'00'

Kelly Schill
Hydrographic Intern
Atlantic Hydrographic Branch

Edward Owens
I am the author of this document
2008.09.18 16:38:41 -04'00'

Edward A. Owens
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:

Shepard Smith
I am approving this document
2008.09.18 18:18:41 -04'00'

Shepard M. Smith
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Crescent Moegling
Survey Review Completed.
2008.11.05 13:57:29 -05'00'