

NOAA FORM 77-28
(11-72)

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

REGISTRY No

HYDROGRAPHIC TITLE SHEET

H12040

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 Southern Chesapeake Bay, VA

Sub-Locality South of Smith Point

Scale 1:10,000

Date of Survey June 21, 2009 to December 7, 2009

Instructions dated June 1, 2009

Project No. OPR-E349-KR-09

Vessel R/V Theory

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

Surveyed by David Evans and Associates, Inc.

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

Graphic record scaled by N/A

Graphic record checked by N/A

Automated Plot N/A

Verification by *Atlantic Hydrographic Branch (bold, red, italic font)*

Soundings in Meters at MLLW

REMARKS: All times are UTC.

The purpose of this contract is to provide NOAA with modern, accurate hydrographic survey data with which to update nautical charts of the assigned area.

SUBCONSULTANTS: Zephyr Marine, P.O. Box 1575, Petersburg, AK 99833

Geomatics Data Solutions, 4128 Ingalls Street, San Diego, CA 92103

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Acronyms and Abbreviations

AML	Applied Microsystems, Ltd
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
CO-OPS	Center for Operational Oceanographic Products and Services
CTD	Conductivity, Temperature and Depth
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DEA	David Evans and Associates, Inc.
DN	Day Number
DTON	Danger to Navigation
ENC	Electronic Navigation Charts
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
IHO	International Hydrographic Organization
IAKAR	Inertially-Aided Kinematic Ambiguity Resolution
MLLW	Mean Lower-Low Water
MVP	Moving Vessel Profiler
NAD83	North American Datum of 1983
NGS	National Geodetic Survey
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NWLON	National Water Level Observation Network
OCS	Office of Coast Survey
OPUS	On-line Positioning User Service
POS/MV	Position and Orientation System for Marine Vessels
R/V	Research Vessel
SBET	Smooth Best Estimate and Trajectory
SVP	Sound Velocity Profiler
TPE	Total Propagated Error
ZDF	Zone Definition File

Descriptive Report to Accompany Hydrographic Survey H12040

Project OPR-E349-KR-09

Southern Chesapeake Bay, Virginia

South of Smith Point

Scale 1:10,000

June 2009 – December 2009

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 the Southern Chesapeake Bay, Virginia. The survey area (Figure 1) extends north from the entrance of the Great Wicomico River to south of Smith Point.

Survey H12040 was conducted in accordance with the *Statement of Work* and *Hydrographic Survey Project Instructions* for OPR-E349-KR-09 dated June 2009 and the Draft National Ocean Service (NOS) Skunk Stripe Specifications issued to DEA via email by the Chief of the Data Acquisition and Control Branch. A copy of this email is included in Appendix IV - *Supplemental Records and Correspondence*.

The project instructions required 200% side scan coverage of the survey area with multibeam sonar data acquired in conjunction with side scan sonar operations. The survey was conducted over 80m set line spacing and 130m set line spacing per 100% coverage (50m and 75m side scan sonar ranges, respectively). Automated Wreck and Obstruction Information System (AWOIS) items and significant side scan contact investigations were acquired to meet complete coverage requirements. The in shore limit of hydrography was defined as the most seaward of either the survey polygon depicted by the *OPR-E349-KR-09_region.shp* file provided by Office of Coast Survey (OCS) staff or the surveyed 18-foot contour. *

Twenty-three (23) bottom samples were acquired for H12040. Four (4) AWOIS item investigations were assigned to this survey for full investigation. *

Data acquisition was conducted from June 21, 2009 (Day Number 172) to December 7, 2009 (Day Number 341). Table 1 lists specific dates of acquisition.

*** See H-Cell Deliverables**

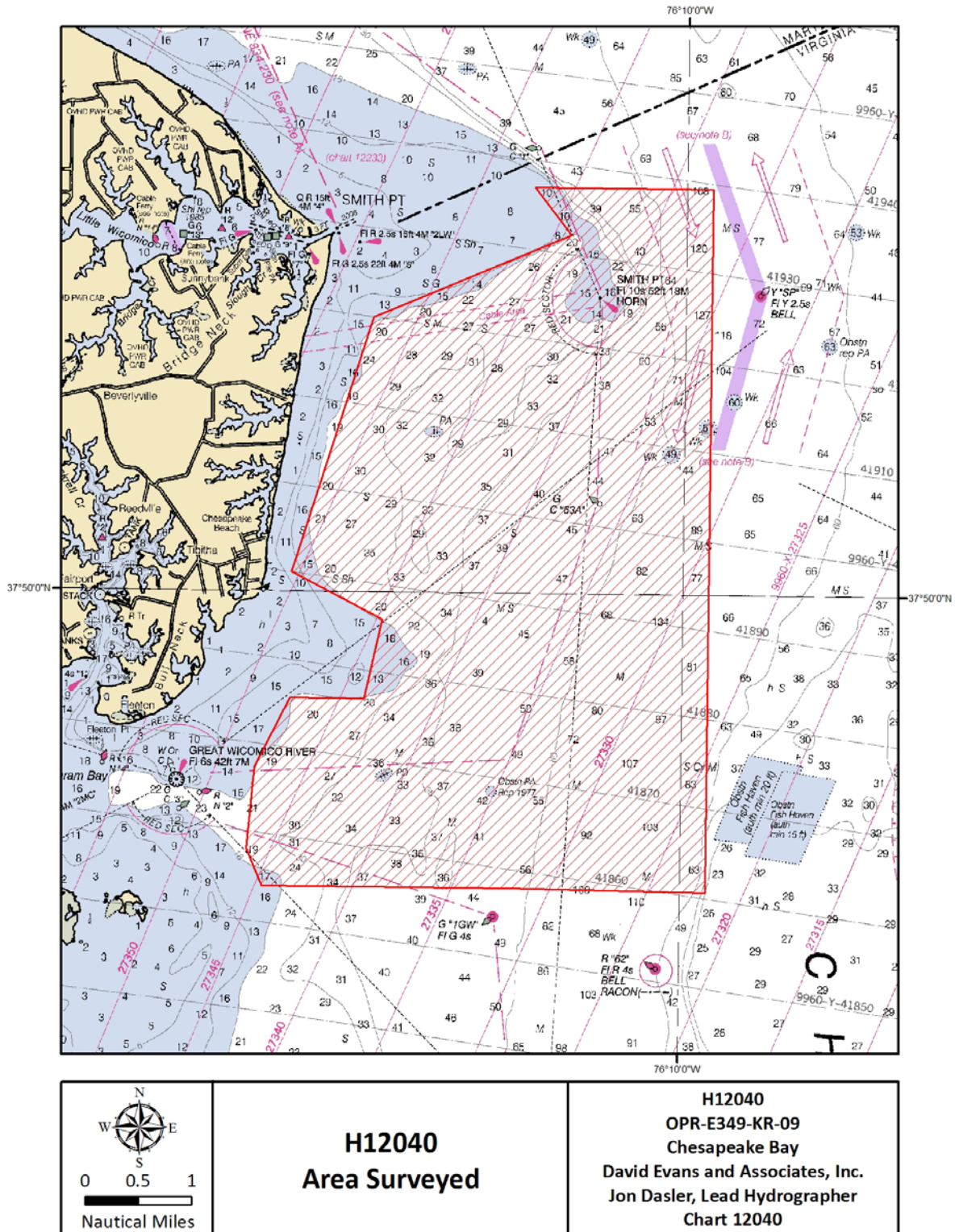


Figure 1. H12040 Survey Area

Table 1. H12040 Days of Acquisition

Dates of Acquisition	
Month	Dates
June 2009	21-23, 29-30
July 2009	1-7, 9-13, 15, 17, 21-30
August 2009	1-3, 28, 29
November	15, 18, 19
December	7

Detailed survey statistics of H12040 are provided in Table 2.

Table 2. H12040 Survey Statistics


Survey Statistics	Research Vessels (R/V) THEORY
MBES (mainscheme nm)	779.60
Crosslines (MBES nm)	41.74
Developments (MBES nm)	31.96
Number of Item Investigations that required additional survey effort	57
Total number of square nautical miles	23.09

B. DATA ACQUISITION AND PROCESSING

B1. Equipment

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

Table 3. R/V Theory Equipment and vessel specifications

R/V Theory	
	
Hull Registration Number	IAR34CATA808
Official Number (O/N)	1217549
Builder	Armstrong Marine
Design	Catamaran
Year Built	2008
Length Overall	36'
Beam	13'
Draft, Maximum	3'
Cruising Speed	26 knots
Max Survey Speed	9 knots
Primary Echosounder	RESON 7125-B
Side Scan Sonar	Edgetech 4200-FS and 4200-FSL
Sound Velocity Equipment	Brooke Ocean MVP-30 with AML Smart SV & P 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-09 Data Acquisition and Processing Report (DAPR)**. **Included with survey deliverables.*

B2. Quality Control

Quality control is discussed in detail in Section B of the DAPR*. The results from the positioning system comparison and bar-to-multibeam comparison is included in Separate I *Acquisition and Processing Logs*** and the sound velocity profile sensor weekly evaluation table can be found in Separate II *Sound Speed Data*** section of this report. Data were reviewed at multiple levels of data processing including: CARIS Hydrographic Information Processing System (HIPS) conversion, subset editing, and analysis of anomalies revealed in combined uncertainty and bathymetry estimator (CUBE) surfaces. Both baring and submerged significant features identified during survey were noted in the acquisition logs and saved to Hypack target files, Isis cursor log files, or Target Pro contact files and then displayed during HIPS editing to aid in the interpretation of data and act as a check during feature compilation. **Concur.** *****Included with survey deliverables. **Submitted with original field reports.***

B2.a Crosslines

A total of 41.7 nautical miles of crosslines, or 5.1% of mainscheme lines, were run for analysis of survey accuracy. Crosslines were run in a direction perpendicular to mainscheme lines across the entire surveyed area providing a good representation for a analysis of consistency. All crosslines were used for crossline comparisons. **Concur.**

Crossline analysis was performed using the CARIS HIPS QC Report tool, which compares crossline data to a gridded surface and reports results by beam number. Crosslines were compared to a 1 meter CUBE surface that encompassed the entire survey area. Because 200 kHz and 400 kHz frequencies were used, the crossline analysis was done per frequency and using all the crosslines. These surfaces were not included with the deliverables due to file size. The QC Report tabular outputs and plots are included in Separate IV *Crossline Comparisons***. The results of the analysis meet the requirements as stated in the NOS *Hydrographic Surveys Specifications and Deliverables* (April 2009) for all frequency comparisons. **Concur.** *****Submitted with original field reports.***

B2.b Uncertainty

The calculated uncertainty values of all nodes within the unfinalized CUBE surfaces range from 0.185 meters to 0.493 meters. The higher value is in deep water at the terminus and outer swath of a cross-line. No area within the survey exceeds International Hydrographic Organization (IHO) Order 1 specifications for depth accuracy. **Concur.**

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. **Concur.**

B2.c Junctions

H12040 junctions with survey H12041 to the east, and with surveys H12042 and H12043 to the south. At the time of writing: surveys H12041, H12042 and H12043 have not been completely

processed. Junction analysis between these surveys and H 12040 will be discussed in their respective descriptive reports. **Concur.**

B2.d Unusual Conditions or Data Degradation

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, when the amplitude of the nadir return is the strongest. The artifacts run along track and can exceed 20 centimeters in the raw soundings, but are reduced to 5 to 10 centimeters in the CUBE surface. On July 8, 2009 (DN 189) Reson engineers replaced the topside unit processor for the 7125. Testing results for the 200 kHz and 400 kHz frequency of the sonar demonstrated improvement in the bottom detection routine; however, the 200 kHz still contained larger bottom detection artifacts. As such, data acquisition commenced using the 400 kHz frequency after mid-day on DN190 through the rest of the project. The port and starboard swath width of data acquired using the 200 kHz frequency from the start of the project to July 8, 2009 was reduced by 20 degrees to minimize bottom tracking artifacts. **Concur.**

There is vertical offset between data collected using the Reson 7125 at 200 kHz and the Reson 7125 at 400 kHz, where the 200 kHz data is approximately 10 centimeters deeper than the 400 kHz data. The frequency dependant offset appears to be the result of increased sediment penetration by the 200 kHz into muddy unconsolidated sediments. The original vessel survey, vessel files, and weekly bar checks were reviewed to verify that the vertical offset was not a result of an incorrect offset entry. **Concur.**

B2.e Object Detection and Coverage Requirements

Survey speeds were maintained to meet object detection requirements were met or exceeded throughout the survey. **Concur with clarification. For feature development, object detection requirements were met, and for standard mainscheme and crossline acquisition, a variation of the complete coverage requirements as dictated in the email from DACB Chief (included in DR Appendix V) were met.**

Demonstration of 200% side scan sonar coverage was achieved by producing two separate 100% 50-centimeter mosaics. A fill plan was created for all holidays in water depths 18 feet or deeper. **Concur.**

Multibeam data were acquired in conjunction with side scan sonar. A fill plan was created for all significant holidays that extended across the multibeam trackline. The coverage requirement for the Draft NOS Skunk S tripe Specifications survey was achieved. The sounding density requirement of 95% of all nodes populated with at least 3 soundings per node was verified by exporting the density child layer of each CUBE surface (finalized using depth thresholds) to an ASCII text file and compiling statistics on the density values. All 2 and 4 meter surfaces (H12040_1of6 to H12040_6of6) created using the Draft Skunk S tripe Specifications were reviewed in this manner. Density statistics of individual investigation surfaces using Complete Coverage requirements were not created but there was a manual review to ensure that

each significant feature had either a designated sounding from a nadir beam or the node overlying the least depth had a density of at least three soundings. ***Concur with clarification. 3 soundings per node density requirement also a variation of the standard requirement as dictated in the email from DACB Chief (included in DR Appendix V).***

B3. Corrections to Echo Soundings

Data reduction procedures for survey H12040 are detailed in the *OPR-E349-KR-09 DAPR**, submitted under a separate cover. The multibeam filter that was applied to the multibeam sonar was dependant on frequency. In general, Reson 7125 acquired using the 400 kHz frequency were unfiltered and used the entire 128 degree swath. All Reson 7125 survey lines acquired using 200 kHz frequency were reduced by 20 degrees to eliminate noise in outer beams. For detailed information pertaining to applied filters please refer to the multibeam processing logs in Separate I *Acquisition and Processing Logs***. ****Included with survey deliverables.***
*****Submitted with original field reports.***

The survey area for H12040 contains several fish pound net areas (Figures 2 and 3) foul with baring and submerged stakes. The least depths of baring features were marked as "Examined" and the rest of the structure was flagged as "Rejected" to the mudline. "Examined" soundings were marked to delineate the extents of the pound net area and approximately every 30 meters.

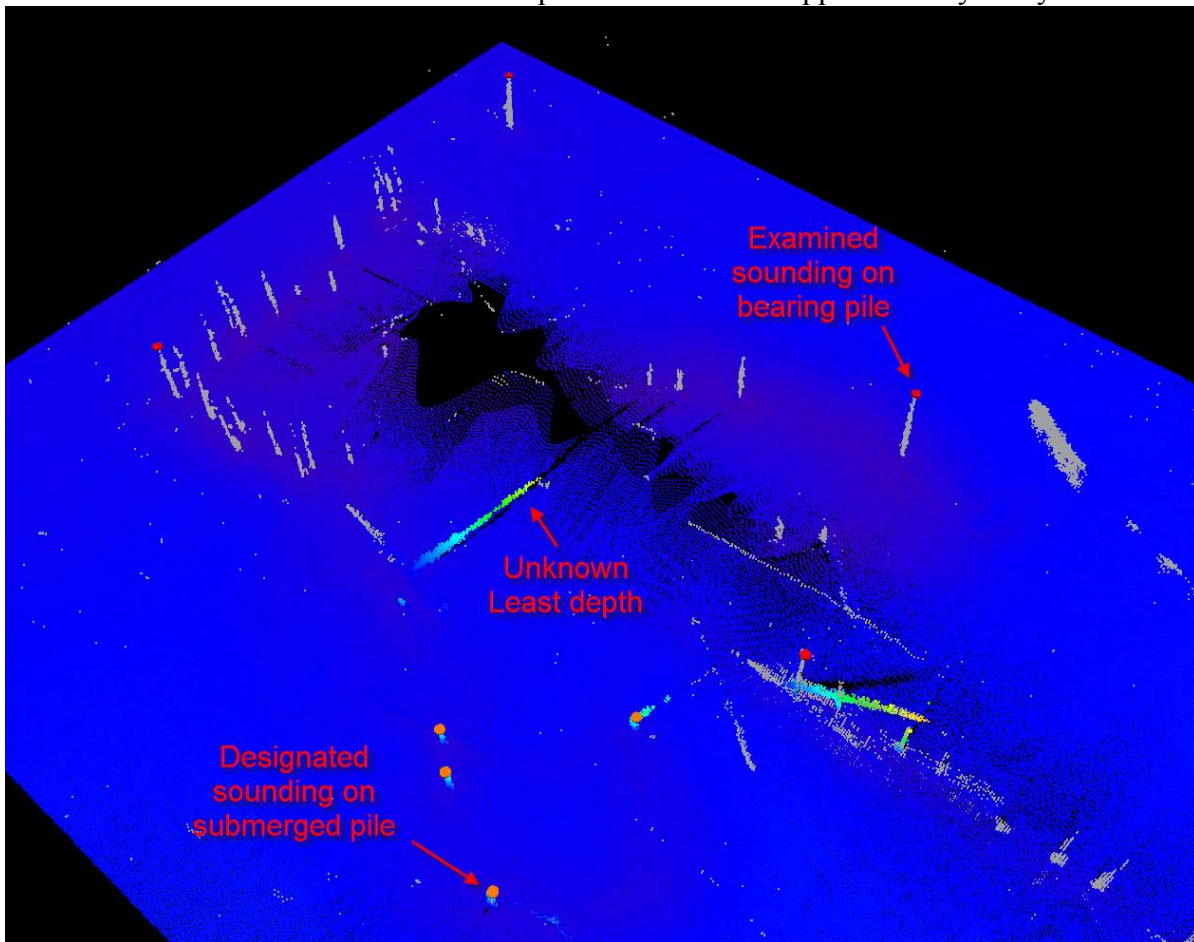


Figure 2. MBES 3D Perspective of a Typical Pound Net

It should be noted that the pound net areas are non-permanent structures licensed per year. The structures are required to be removed each year, however in some instances the structures are

pulled out and tossed to the bottom or broken off beneath the water surface. The use of the examined sounding flags to track bearing items aided hydrographers during the feature management compilation process. Baring features are not included in the finalized bathymetric sounding set. Submerged features were marked “Accepted” in the dataset with a “Designated” sounding on the least depth. This was done to ensure that the generated surface represented the true seafloor and submerged features. **Concur.**

The areas were surveyed with 200% side scan, however it was too hazardous for the survey vessel to obtain 100% multibeam in these areas. Features with unknown least depths remain in the dataset as “Accepted”, without a designated sounding. **Concur.**



Figure 3. Photograph of a Typical Pound Net

B3.a Deviations from DAPR*

There are no deviations from the OPR-E349-KR-09 DAPR*. **Concur. * Included with survey deliverables.**

B3.b Additional Calibration Tests

The initial system calibration tests for the *R/V Theory* were performed on June 19, 2009 (DN170). Additional tests were performed periodically to verify the adequacy of the known

system biases. Additional discussion on calibration tests can be found in the *OPR-E349-KR-09 DAPR**. **Concur.** **Included with survey deliverables.*

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 2009) and the Draft NOS Sunk Ship Specifications. **Concur.**

In order to keep CUBE surfaces at a manageable size, the main survey area was broken up into six (6) Field Sheets (H12040_1of6, etc.). When combined the Field Sheets encompass the entire area of acquired multibeam bathymetry. CUBE surfaces using complete coverage specifications were created over each multibeam investigation of a significant contact. The name of each Field Sheet corresponds to the primary side scan sonar contact name. A BAG was created for each finalized CUBE surface and both the CUBE and BAG surfaces have been included with the digital data. All investigation CUBE surfaces were combined into a single grid prior to BAG creation. **Concur.**

C. HORIZONTAL AND VERTICAL CONTROL

Traditional zoning from water level stations was used for OPR-E349-KR-09 with zoning and verified water level files provided by Center for Operational Oceanographic Products and Services (CO-OPS). **Concur.**

Prior to survey acquisition, two global positioning system (GPS) base stations with a dual frequency (L1/L2) receiver were established to enable post-processing of survey vessel navigation and attitude data. These sites were located in Sunnybank, VA (SUN) and south of Sunnybank, VA near the Dameron Marsh spit (SMITH). The base stations logged raw dual frequency (L1/L2) GPS observables at one second epochs. The SUN base station was used for post-processing for survey H12040 up to and including D N228, thereafter the SMITH base station was used. Base station positions relative to the North American Datum of 1983 (NAD83) (CORS96) (Epoch 2002) were derived from the National Geodetic Survey (NGS) On-line Positioning User Service (OPUS) and were based on a 24-hour data file, with one second-epoch logging prior to commencement of survey operations. **Concur.**

DGPS navigation was logged during acquisition but ultimately overwritten with a post-processed Inertially-Aided Kinematic Ambiguity Resolution (IAKAR) navigation solution. The HIPS Load Attitude and Navigation tool was used to load position, heading and attitude data from a smoothed best estimate trajectory (SBET) file created from Applanix POSPac 5.2 MMS. Post-processed uncertainty estimates for position, attitude and heading were applied using the HIPS Load Error Tool and used during the calculation of TPE. **Concur.**

A complete description of horizontal and vertical control for survey H12040 can be found in the *OPR-E349-KR-09 Horizontal and Vertical Control Report**, submitted under separate cover. A

summary of horizontal and vertical control for this survey follows. **Concur. *Not included with survey deliverables.**

C1. Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary water level stations at Windmill Point, Virginia (863-6580) and Lewisetta, Virginia (863-5750) served as control for datum determination and provided water level correctors for the project. **Concur.**

C2. Discussion of Tide Zoning

Tide zoning was included within the Tide and Water Levels Instructions for OPR-E349-KR-2009. A modified version of the HIPS Zone Definition File (ZDF) *E349KR2009_RevisedCORP* provided by CO-OPS was used to apply zoned tides to the multibeam data. The modified file, named *E349KR2009_RevisedCORP_1s*, used a HIPS Interval value of 1 second rather than the default value of 360 seconds which was used in the file received by CO-OPS. The interval value controls the frequency of tide zoning interpolation. The default value of 360 seconds is too infrequent to properly correct for the assigned zoning boundaries where it would be possible for the survey vessel to pass through a zone without a zoned tide corrector being applied if the vessel was not within the zone boundary for longer than 359 seconds. No modifications were made to zone boundaries or time and range correctors. **Concur.**

Table 4 includes the zoning information for each zone used for the survey.

Table 4. Tide Zones

Zone	Reference Station	Corrector (min.)	Ratio
SCB107	8636580	48	0.99
SCB108	8636580	48	1.12
SCB116	8635750	-84	1.05
SCB117	8635750	66	0.99
SCB121	8635750	-72	0.93
SCB122	8635750	-72	1.05
SCB133	8635750	-60	1.05
SCB134	8635750	-60	0.93
SCB135	8635750	-48	0.93
SCB136	8635750	-48	1.05

It is difficult to associate a precise vertical error due to tides. However, this survey included the logging of GPS water levels and follow-on deliverables will include soundings reduced to chart datum from GPS observations. Errors observed are a composite from various sources such as measurement error, tides, heave, refraction, transducer draft, and settlement and squat. Though vertical errors are still visible in the data they are small and are generally 10 cm or less as this survey is relatively close to the Lewisetta NWLON station. In some extreme cases errors

approach 25 cm, however this is well within the 20 cm to 45 cm maximum allowable error for tides and water levels. The largest contributing factor to water level errors in the Chesapeake Bay is meteorological influences which cannot be accounted for by zoning. The hydrographer strongly recommends the application of GPS tides to improve vertical accuracy when applying this survey to the nautical chart. **Concur.**

C3. Horizontal Control

The horizontal datum for this project is NAD83. Differential GPS (DGPS) corrections were received from the U.S. Coast Guard (USCG) beacon at Driver, Virginia (301 kHz) or from the secondary beacon at Annapolis, MD (289 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. All of the primary navigation data were collected in DGPS mode. Additionally, during acquisition GPS base stations were constructed and logged data simultaneously with acquisition to provide post-processed IAKAR navigation solutions. **Concur.**

Navigation and attitude data were post-processed using Applanix POSPac MMS software, which produced an IAKAR navigation solution relative to NAD83. The real-time navigation and attitude logged during acquisition was overwritten with post-processed data during HIPS processing. Post-processed navigation, attitude and GPS heights were applied to all HIPS data though only the navigation and attitude were used in the creation of the survey deliverables. As discussed in the DAPR*, post-processed GPS heights were used to compute a GPS tide using an ellipsoid to MLLW separation file created using VDatum. Though present for each survey line GPS Tides were not applied to the survey data during the merge process (the Apply GPS Tides box was not checked during merge in Caris HIPS) and are for reference only. Further discussion on the computation of GPS tides and the creation of the separation model can be found in the pending OPR-E349-KR-09 Ellipsoid Referenced Survey Deliverables**. **Concur. *Included with survey deliverables. **Not included with survey deliverables.**

D. RESULTS AND RECOMMENDATIONS

D1. Chart Comparison

D1.a Survey Agreement with Chart

During the course of data acquisition and processing H12040 was compared to the largest scale raster and electronic navigation charts (ENC). The results of these comparisons are described below, as well as in Sections D1.b through D1.f of this report. **Concur.**

Contours and soundings used during the chart comparison were generated from combined HIPS product surfaces. Soundings and contours were generated from a 50-meter HIPS product surface (1:10,000) of the entire survey area, which was compiled from all finalized CUBE surfaces for the survey. The product surfaces, contours, and soundings were created solely for the chart comparison and have not been submitted as a final deliverable. **Concur.**

In addition, a surface was generated from the ENC's that correspond to the largest scale raster charts in the area. A Difference surface was produced using the ENC and the 50-meter combined surface to aid in the chart comparison. **Concur.**

H12040 contours and soundings were compared in CARIS HIPS to the depths and contours on the charts listed in Table 5.

Table 5. Charts compared to H12040

Chart	Scale	Edition	Edition Date	Issue Date	Latest LNM	Cleared Through Date
12225	1:80,000	58	05/01/2009	---	49/09	11/17/09
12228	1:40,000	32	03/01/2008	---	49/09	12/01/2009
12233	1:40,000	37	01/01/2007	---	47/09	12/08/2009
12235	1:40,000	32	05/01/2008	---	49/09	12/08/2009
US5VA16M	---	15	---	11/19/2009	---	11/10/2009
US5VA27M	---	10	---	10/27/2009	---	12/08/2009
US5VA41M	---	19	---	12/15/2009	---	12/08/2009

With the exception of the shipping lane east of Smith Point, survey H12040 depths are generally one to five feet (0.30 to 1.52 meters) deeper than charted (Figure 4). **Concur.**

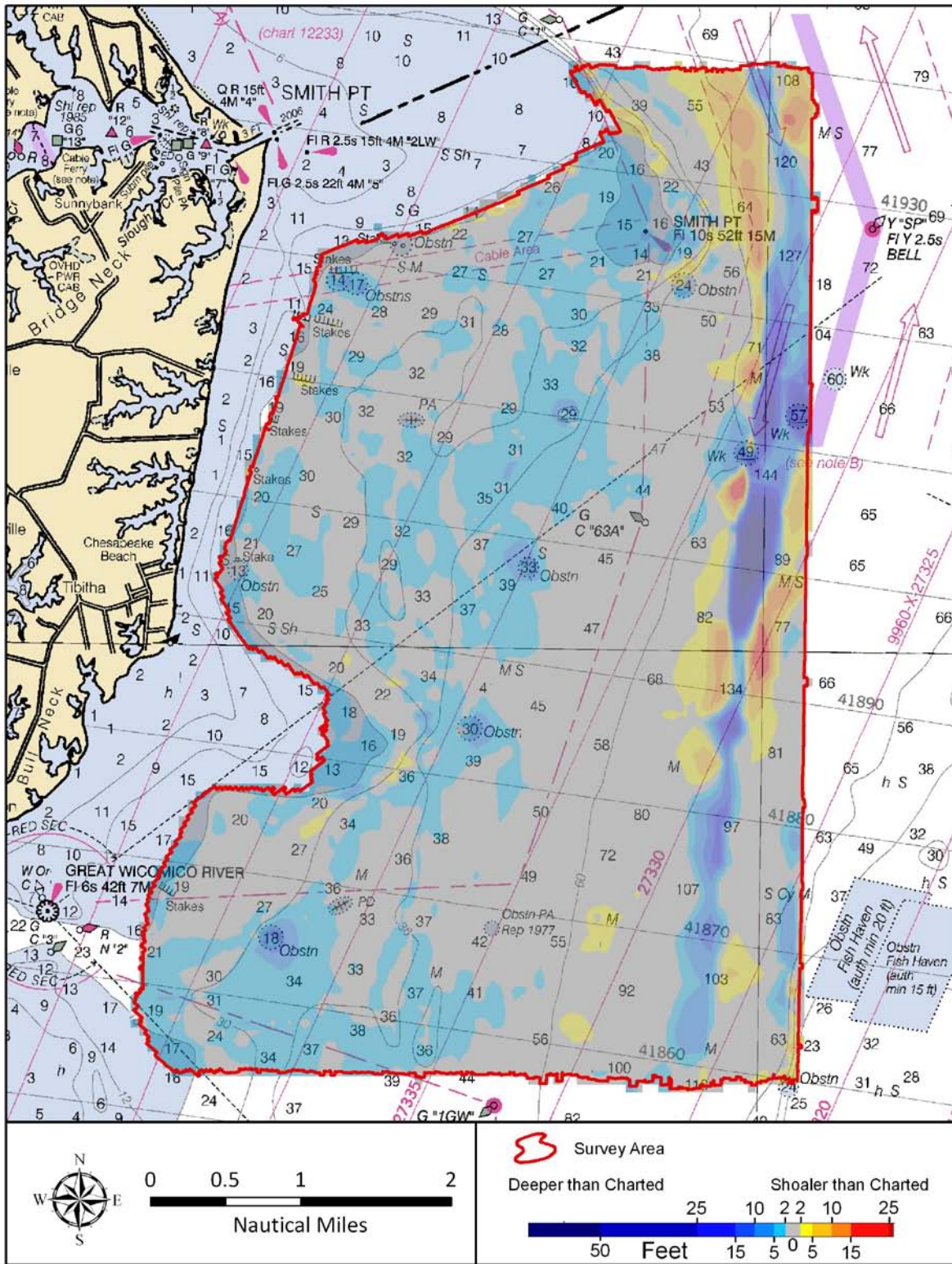


Figure 4. Difference image of depth discrepancies between H12040 and Chart 12225

The most significant discrepancies between the chart and H12040 are discussed below.

1. There are some significant differences between survey and charted depths in the shipping lanes near the traffic separation zone (Figure 4). Shoaling of up to 20 feet (6.10 meters) has been observed along the eastern edge and within the southbound lane. This same area also shows severe deepening with some surveyed depths over 50 feet (15.24 meters) deeper than charted. **Concur.**

D1.b Comparison to Significant Shoals

H12040 survey area contains one significant shoal (Figure 5) marked by the Smith Point Light. Surveyed depths in this area are generally one to two feet (0.30 to 0.61 meters) deeper than charted. The west side of the shoal has retreated approximately 400 meters eastward. The 12 foot contour due west of the shoal has migrated approximately 100 meters seaward. **Concur.**

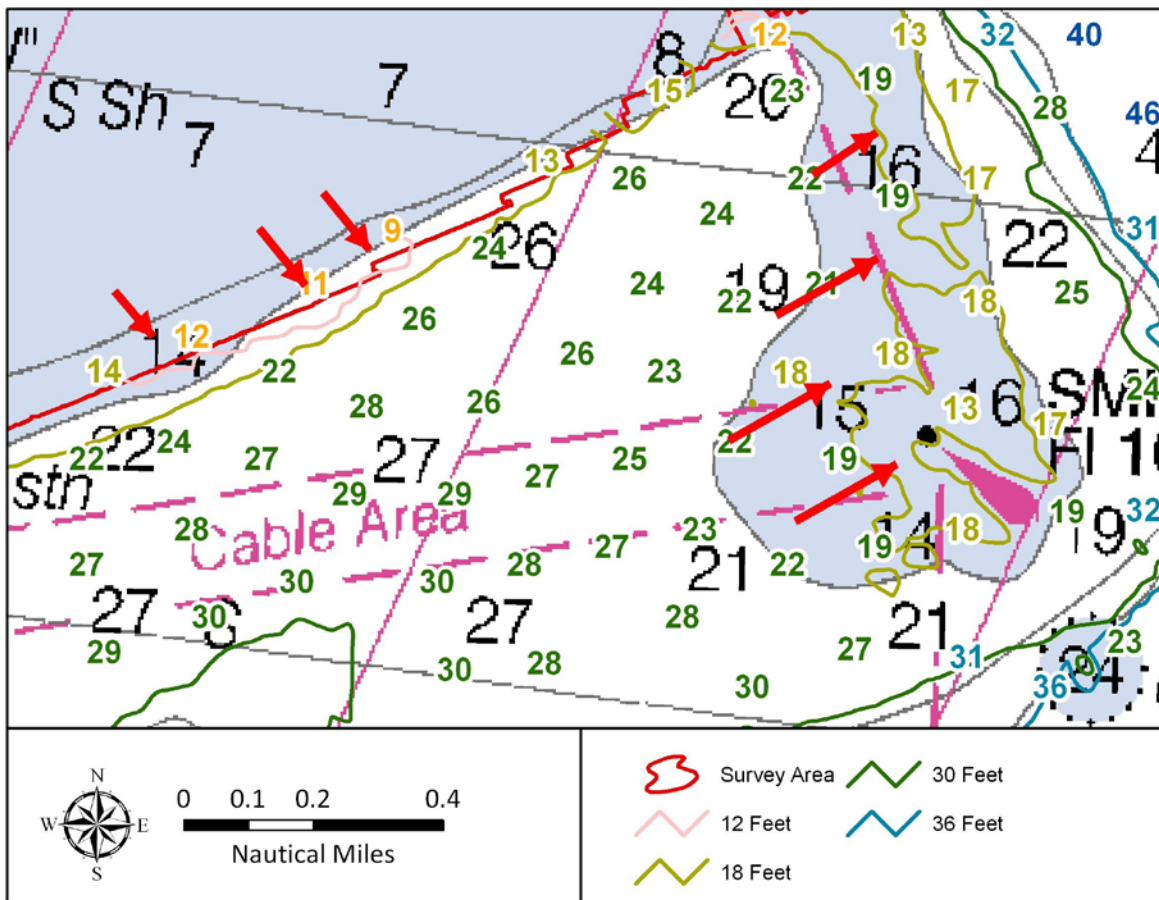


Figure 5. Smith Point Shoal (Chart 12225)

The latest electronic and raster versions of the relevant charts were reviewed to ensure that all U.S. Coast Guard Local Notice to Mariners (LNM) issued during survey acquisition, impacting the survey area, were applied and addressed by this survey.

D1.c Comparison to Charted Features

Four (4) AWOIS items were assigned for investigation (Figure 6). A complete description is available in Appendix II Survey Feature Report*. **Concur.** *Included with survey deliverables.

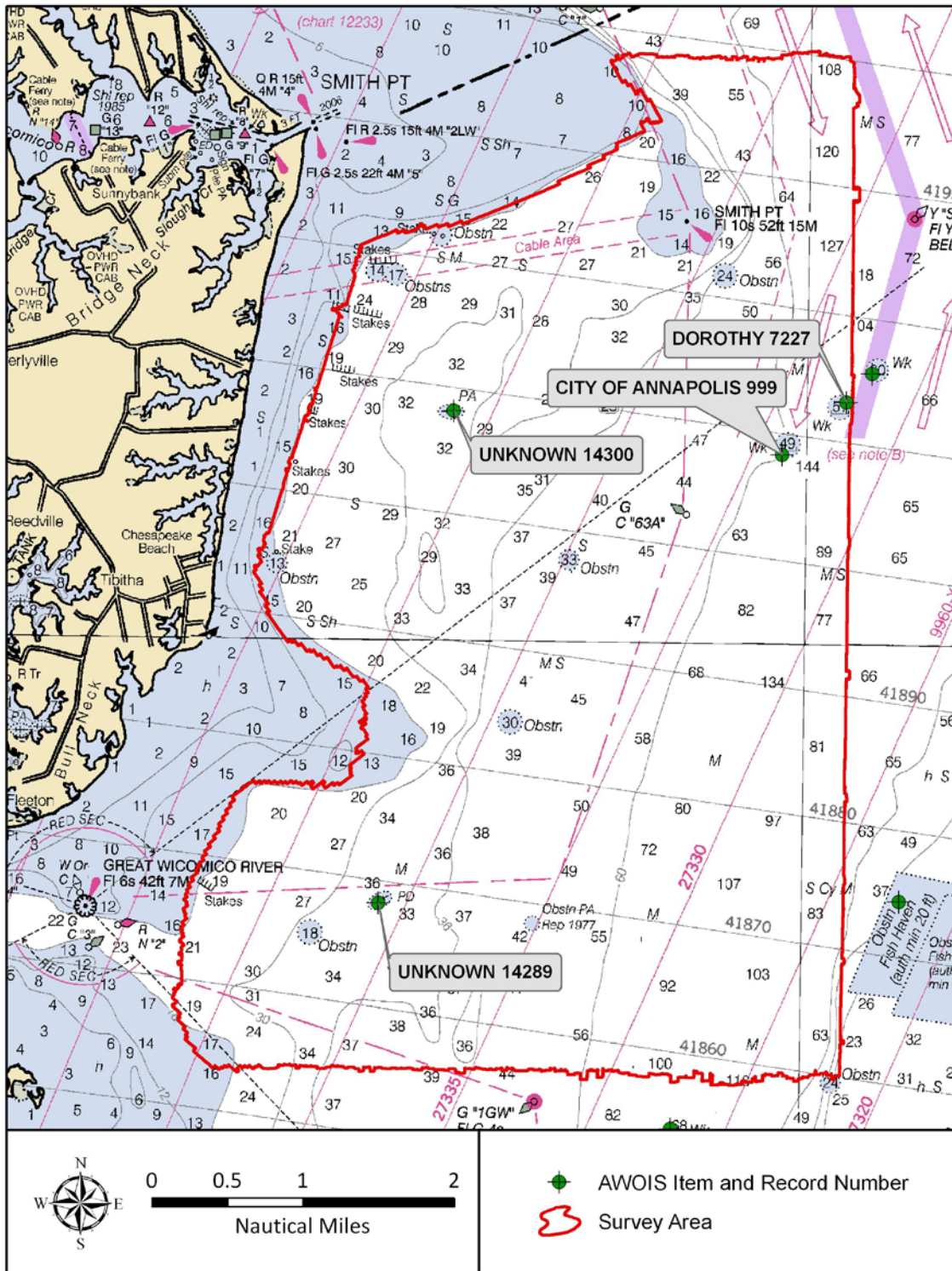


Figure 6. H11859 AWOIS Items

Assigned AWOIS items for H12040 are listed as follows: **See also Appendix II*

- The charted 49-foot Wreck (City of Annapolis), AWOIS item 999, was located with 200% side scan sonar at position 37/51/19.017N, 76/10/11.436W. The multibeam least depth is 60 feet (18.2 meters). Contact 182-144523-P. The hydrographer recommends charting the wreck as depicted in the S-57 feature file and removing the wire drag clearance symbol from all charts. *Concur.*
- The charted 57-foot Wk (Dorothy), AWOIS 7227, was located with 200% side scan sonar and complete multibeam coverage at position 37/51/36.419N, 76/09/41.274W. The multibeam least depth is 71 feet (21.6 meters). Contact 174-140245-S. The hydrographer recommends charting the wreck as depicted in the S-57 feature file and removing the wire drag clearance symbol from all charts. *Concur.*
- The charted Wreck PD, AWOIS item 14289, at position 37/48/15.47N, 76/13/31.79W was disproved with 200% side scan sonar. Two side scan contacts (205-204338-S and 205-182641-S) found within the AWOIS radius were investigated with complete multibeam coverage, however no significant features were detected. The hydrographer recommends removing the wreck from all charts. *Concur.*
- The charted Wreck PA, AWOIS item 14300, at position 37/51/31.41N, 76/12/57.15W was disproved with 200% side scan sonar. No significant contacts were detected within the AWOIS radius. The hydrographer recommends removing the wreck from all charts. *Concur.*

The charted Obstn PA Rep 1977 at 37/48/05.933N, 76/12/16.654W, was disproved with 200% side scan sonar. The hydrographer recommends removing the obstruction from all charts.

Concur.

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

H12040 survey area does not contain any anchorage area or channels. *Concur.*

D1.e New Submerged Features

New submerged features are listed in tabular format in Appendix II *Survey Feature Report**. The most significant features were reported in the S-57 feature file. Several new items of interest are discussed below. *Concur. *Also see Appendix II for red notes and charting recommendations from the reviewer.*

Eight new pound nets were located in H 12040 survey area. Both the seaward and surveyed extents of the pound nets were designated and included in the S-57 feature file as line features. All baring pound nets were submitted as Dangers to Navigation. The submerged ruins of two new pound nets are included in the feature file as area obstructions. *Concur.*

D1.f Dangers to Navigation

Fifteen (15) Dangers to Navigation (Dton) were located during survey H12040 and have been submitted to AHB. All Dtons were reviewed by AHB and forwarded on to the Marine Chart Division (MCD). *Concur.*

All DTNs are included in the S-57 feature file and should be charted as depicted in the file (Table 6). ***Concur. All submitted DTNs reside on the most recent chart update used during review.***

Table 6. H12040 DtoN Charting Status

DtoN	Feature	Applied to Raster Chart	Applied to ENC	AHB Submitted to MCD
1	Obstruction	Yes	Yes	Yes
2	Obstruction	Yes	Yes	Yes
3	Wreck	Yes	Yes	Yes
4	Obstruction	Yes	Yes	Yes
5	Obstruction	Yes	Yes	Yes
6	Sounding	Yes	Yes	Yes
7	Obstruction	Yes	Yes	Yes
8	Obstruction	Yes	Yes	Yes
9.1 - 9.8	Stakes	Yes	Yes	Yes
9.9 - 9.16	Stakes	Yes	Yes	Yes
9.17 - 9.24	Stakes	Yes	Yes	Yes
9.25 - 9.32	Stakes	Yes	Yes	Yes
9.33 - 9.40	Stakes	Yes	Yes	Yes
9.41 - 9.48	Stakes	Yes	Yes	Yes
10.1	Stake	Yes	Yes	Yes
10.2-10.4	Stakes	Yes	Yes	Yes
10.5 - 10.6	Stakes	Yes	Yes	Yes
10.7	Stake	Yes	Yes	Yes
11	Obstruction	Yes	Yes	Yes
12	Obstruction	Yes	Yes	Yes
13	Obstruction	No	Yes	Yes
14	Obstruction	No	Yes	Yes
15.1	Obstruction	No	No	Yes
15.2	Obstruction	No	No	Yes

D.2 Additional Results

D2.a Shoreline Investigations

Shoreline investigation was not required for OPR-E349-KR-09. **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 serving 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

The charted cable area running from shore to Smith Point Lighthouse was not observed in the survey data. **Concur.**

D2.f Environmental Conditions Impacting the Quality of the Survey

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 tides that cannot always be recorded or modeled with stationary gauges. 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 active construction projects were observed in H12040 survey area. **Concur.**

D2.h Bottom Characteristics

Twenty-three (23) bottom samples were obtained on June 23, 2009 (Day Numbers 174) 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 V *Supplemental Survey Records and Correspondence**, along with photographs of each sample. **Concur. *Included with survey deliverables.**

E. LETTER OF APPROVAL

The letter of approval for this report and accompanying data follows on the next page.



DAVID EVANS
AND ASSOCIATES INC.

LETTER OF APPROVAL

OPR-E349-KR-09
REGISTRY NO. H12040

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of survey H12040 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-09 *Statement of Work Statement* and *Hydrographic Survey Project Instructions* dated June 2009.

Jonathan L. Dasler, PE (OR), PLS (OR, CA)
ACSM/THSOA Certified Hydrographer
Chief of Party

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc.
December 2009

F. SUPPLEMENTAL REPORTS

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

<u>Title</u>	<u>Submittal Date</u>
OPR-E349-KR-09 Data Acquisition and Processing Report	12/18/09
OPR-E349-KR-09 Horizontal and Vertical Control Report	TBD

APPENDIX I
DANGER TO NAVIGATION REPORTS

DANGER TO NAVIGATION 1

H12040 Danger to Navigation

Registry Number: H12040
State: Virginia
Locality: Southern Chesapeake Bay
Sub-locality: South of Smith Point
Project Number: OPR-E349-KR-09
Survey Dates: 06/22/2009 - 11/18/2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12235	32nd	05/01/2008	1:40,000 (12235_1)	[L]NTM: ?
12285	39th	03/01/2008	1:80,000 (12285_1) 1:40,000 (12285_2) 1:40,000 (12285_18)	[L]NTM: ?
12228	32nd	03/01/2008	1:40,000 (12228_1)	USCG LNM: 06/16/2009 (07/28/2009) NGA NTM: 08/02/2008 (08/08/2009)
12225	58th	05/01/2009	1:80,000 (12225_1)	USCG LNM: 06/16/2009 (06/30/2009) NGA NTM: 08/02/2008 (07/04/2009)
12230	64th	03/01/2009	1:80,000 (12230_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	KR DTON #1: 33 ft Obstruction	Obstruction	10.21 m	37° 50' 32.8" N	076° 11' 58.8" W	---
1.2	KR DTON #2: 24ft Obstruction	Obstruction	7.27 m	37° 52' 26.1" N	076° 10' 42.1" W	---
1.3	KR DTON #3: 30ft Obstruction	Obstruction	9.35 m	37° 49' 27.6" N	076° 12' 27.2" W	---
1.4	KR DTON #4: 16ft Obstruction	Obstruction	4.86 m	37° 52' 40.9" N	076° 13' 04.8" W	---
1.5	KR DTON #5: 17ft Obstruction	Obstruction	5.23 m	37° 52' 24.9" N	076° 13' 27.2" W	---
1.6	KR DTON #6: 29ft Sounding	Obstruction	8.82 m	37° 51' 33.7" N	076° 11' 39.3" W	---
1.7	KR DTON #7: 18ft Obstruction	Obstruction	5.65 m	37° 48' 02.9" N	076° 14' 06.0" W	---
1.8	KR DTON #8: 14ft Obstruction	Obstruction	4.32 m	37° 52' 26.8" N	076° 13' 36.9" W	---

1.9	KR DTON #9.1 - 9.8: Visible Pound Net	Obstruction	[None]	37° 52' 29.6" N	076° 13' 27.5" W	---
1.10	KR DTON #9.9 - 9.16: Visible Pound Net	Obstruction	[None]	37° 52' 08.0" N	076° 13' 35.9" W	---
1.11	KR DTON #9.17 - 9.24: Visible Pound Net	Obstruction	[None]	37° 52' 10.4" N	076° 13' 51.0" W	---
1.12	KR DTON #9.25 - 9.32: Visible Pound Net	Obstruction	[None]	37° 51' 45.3" N	076° 13' 47.9" W	---
1.13	KR DTON #9.33 - 9.40: Visible Pound Net	Obstruction	[None]	37° 51' 29.1" N	076° 14' 06.1" W	---
1.14	KR DTON #9.41 - 9.48: Visible Pound Net	Obstruction	[None]	37° 48' 18.9" N	076° 14' 55.6" W	---
1.15	Stake	GP	-1.88 m	37° 52' 41.3" N	076° 13' 08.4" W	---
1.16	Stakes	GP	-1.67 m	37° 52' 40.5" N	076° 13' 03.9" W	---
1.17	Stakes	GP	-1.01 m	37° 51' 09.9" N	076° 14' 16.5" W	---
1.18	Stake	GP	-1.83 m	37° 50' 34.1" N	076° 14' 25.4" W	---
1.19	KR DtoN #6: 31ft Sounding	Shoal	9.62 m	37° 51' 04.5" N	076° 12' 12.6" W	---
1.20	KR DTON #7: 13ft Obstruction	Obstruction	4.04 m	37° 50' 29.8" N	076° 14' 25.3" W	---
1.21	19ft OBSTRN	Obstruction	5.90 m	37° 48' 51.3" N	076° 14' 05.1" W	---
1.22	17ft OBSTRN	Obstruction	5.16 m	37° 50' 48.5" N	076° 14' 19.1" W	---
1.23	50ft OBSTRN	Obstruction	15.39 m	37° 47' 13.1" N	076° 11' 59.9" W	---
1.24	34ft OBSTRN	Obstruction	10.33 m	37° 47' 49.3" N	076° 13' 05.4" W	---

1 - Danger To Navigation

1.1) KR DTON #1: 33 ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 50' 32.8" N, 076° 11' 58.8" W
Least Depth: 10.21 m (~~= 33.49 ft = 5.581 fm = 5 fm 3.49 ft~~) **10.109m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-173.21:11:01.000 (06/22/2009)
GP Dataset: H12040_DtoN_1.xls
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

The obstruction appears to be a circular mound which rises 3.6m (11.8ft) off the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_1.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Field Unit recommends to chart 33 ft obstruction.

Cartographically-Rounded Depth (Affected Charts):

33ft (12235_1, 12285_18, 12225_1, 12280_2)

5 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - 33 ft Obstruction
 QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 3:found by multi-beam

VALSOU - ~~10.207 m~~ **10.109m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235_1; 32th Ed., 1:40,000 and smaller scale charts as a obstruction, least depth 33 feet. Office processing determined that the position and least depth are different from the initial DToN submission to MCD. Delete charted obstruction, least depth 33 feet. Chart an obstruction, least depth 33 feet at the present survey position in Latitude 37°50' 32.764" N, Longitude 076°11'58.758" W.

Feature Images

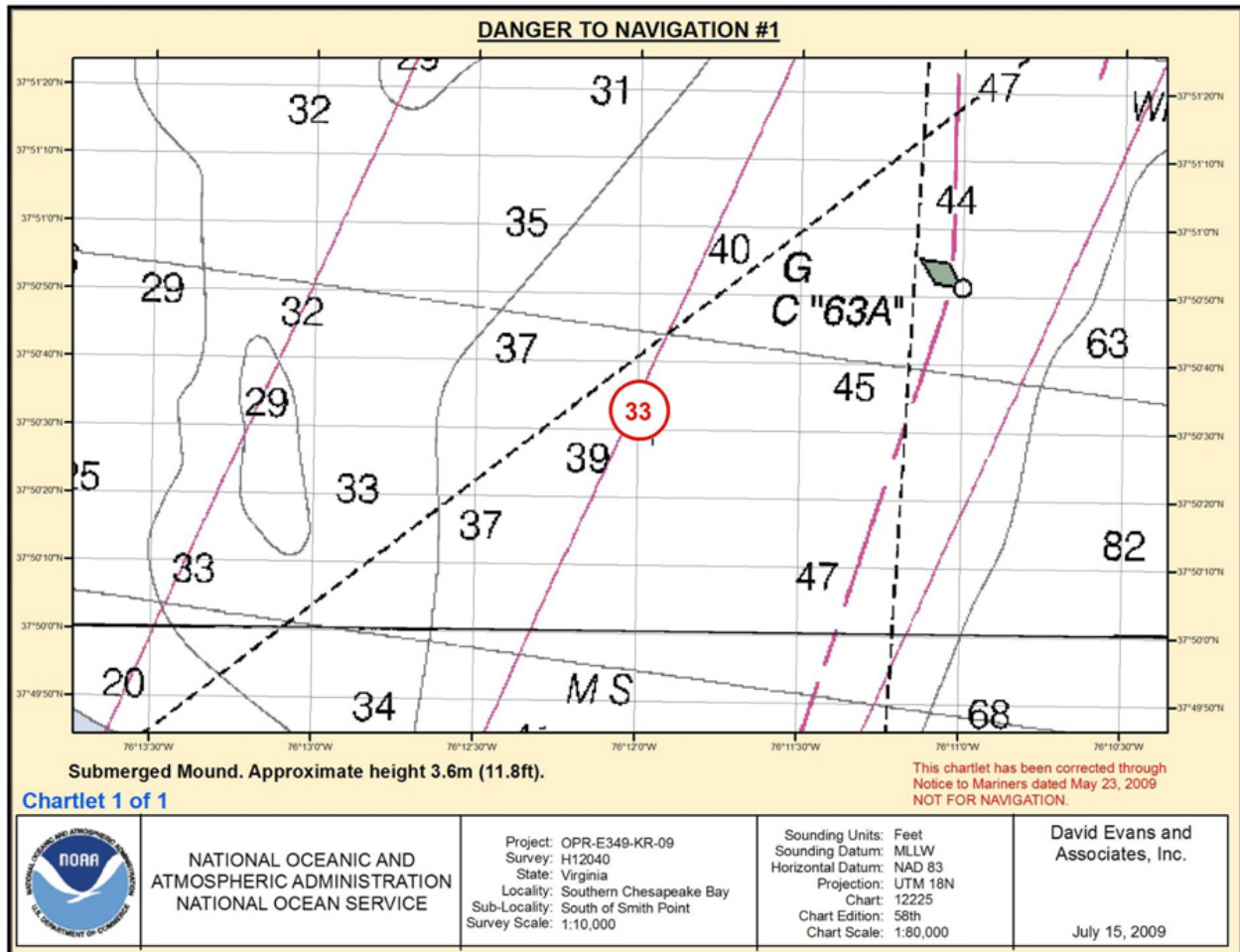


Figure 1.1.1

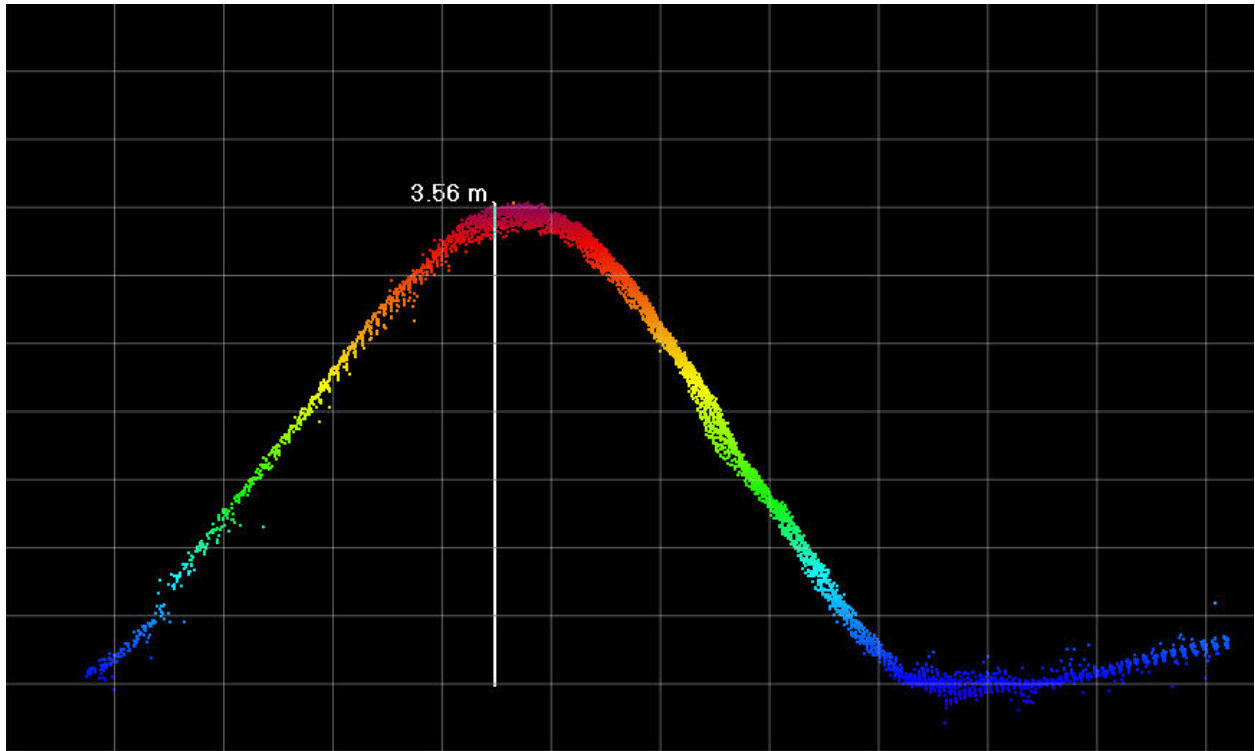


Figure 1.1.2

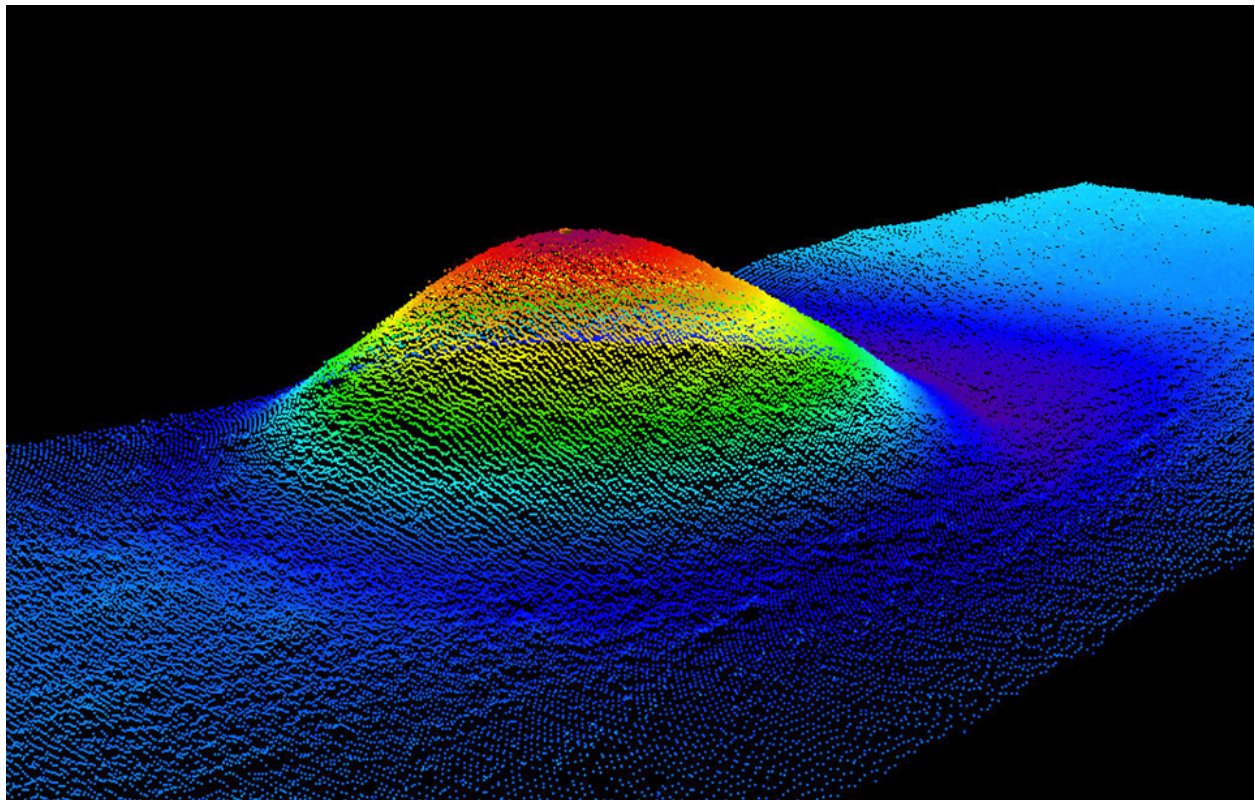


Figure 1.1.3

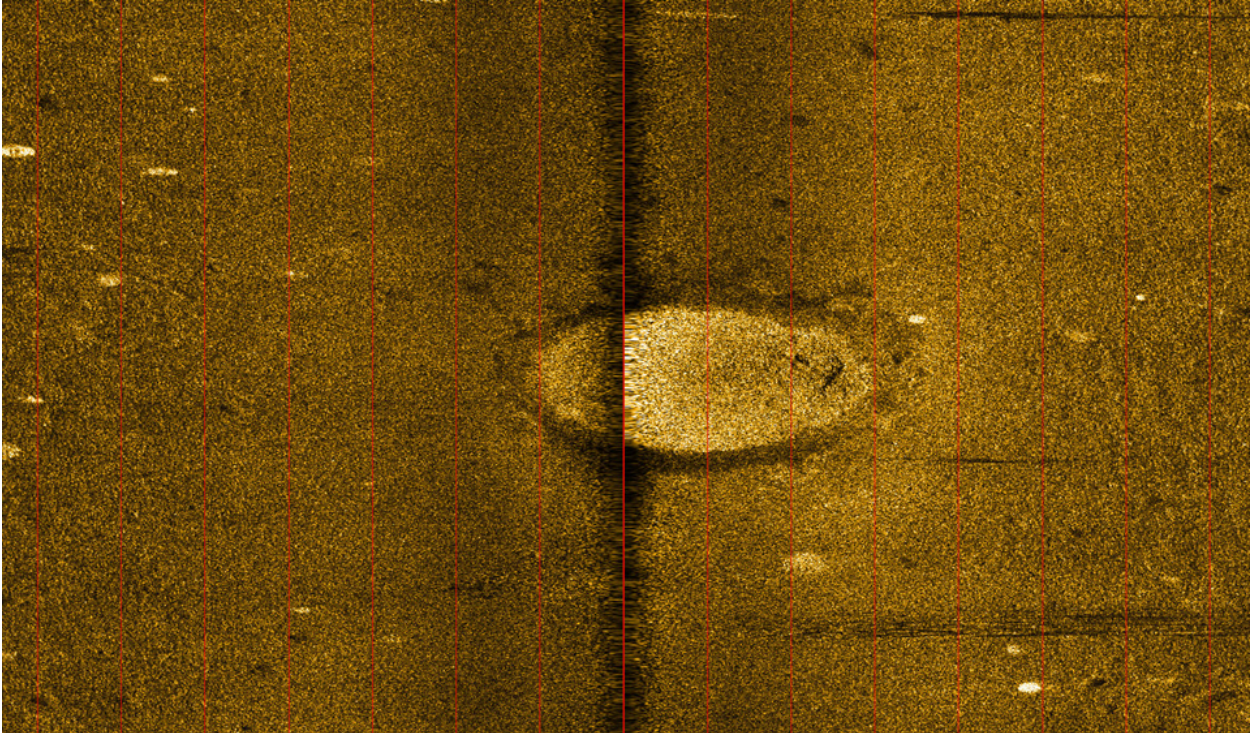


Figure 1.1.4

1.2) KR DTON #2: 24ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 26.1" N, 076° 10' 42.1" W
Least Depth: ~~7.27 m (= 23.84 ft = 3.974 fm = 3 fm 5.84 ft)~~ **7.130m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-196.11:49:21.000 (07/15/2009)
GP Dataset: H12040_DtoN_2.xls
GP No.: 1
Charts Affected: 12228_1, 12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

The obstruction is a submerged linear structure rising approximately 4.7m (15.4ft) from the natural bottom. It is associated with a rectangular feature approximately 7m (23ft) wide by 13m (42.6ft) long.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_2.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend to chart 24ft obstruction at surveyed location.

Cartographically-Rounded Depth (Affected Charts):

24ft (12228_1, 12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2)
 4fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - ~~7.267 m~~ **7.130m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235_1; 32th Ed., 1:40,000 and smaller scale charts as a obstruction, least depth 24 feet. Office processing determined that the position and least depth are different from the initial DToN submission to MCD. Delete charted obstruction, least depth 24 feet. Chart an obstruction, least depth 23 feet at the present survey position in Latitude 37°52' 26.057" N, Longitude 076°10'42.128" W.

Feature Images

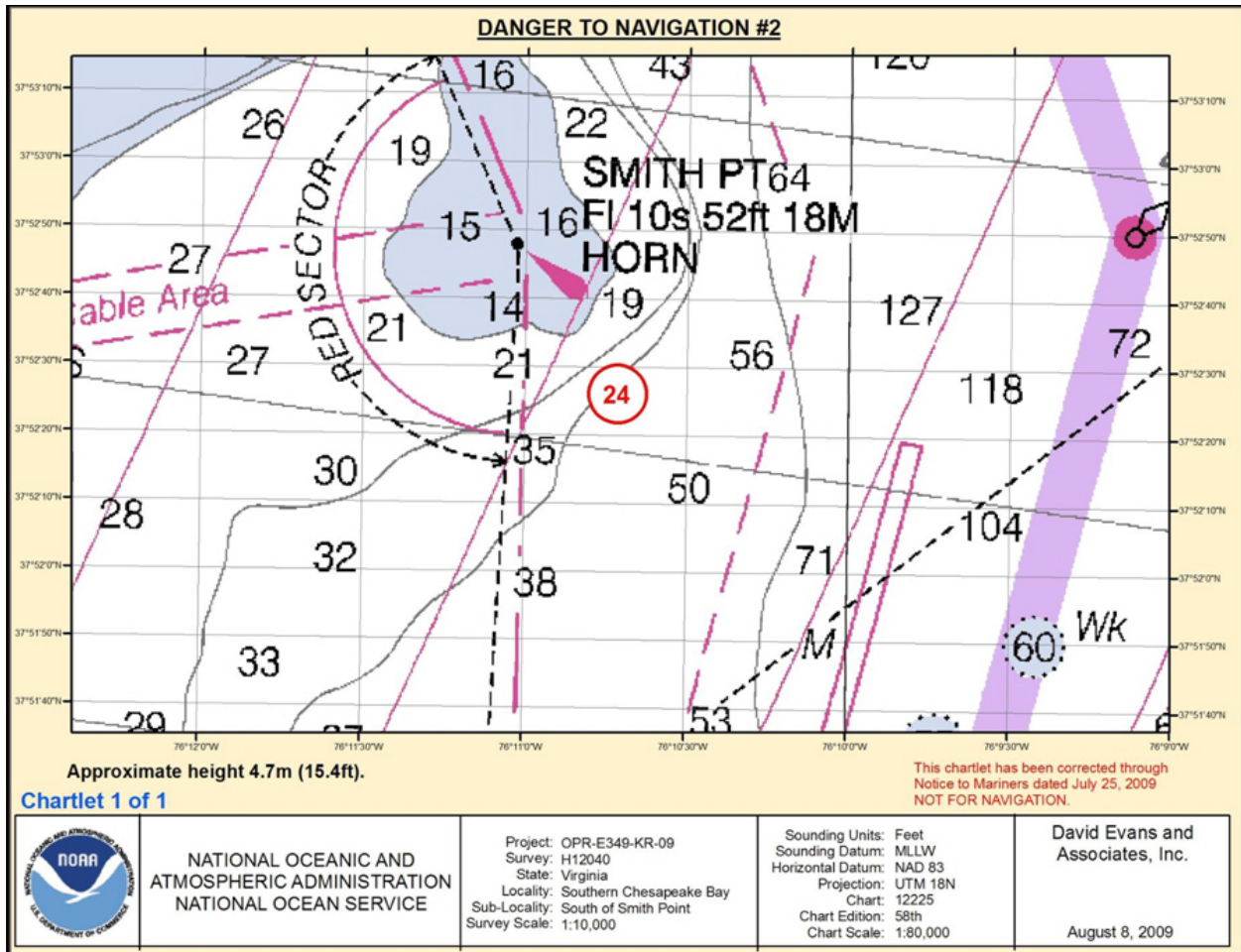


Figure 1.2.1

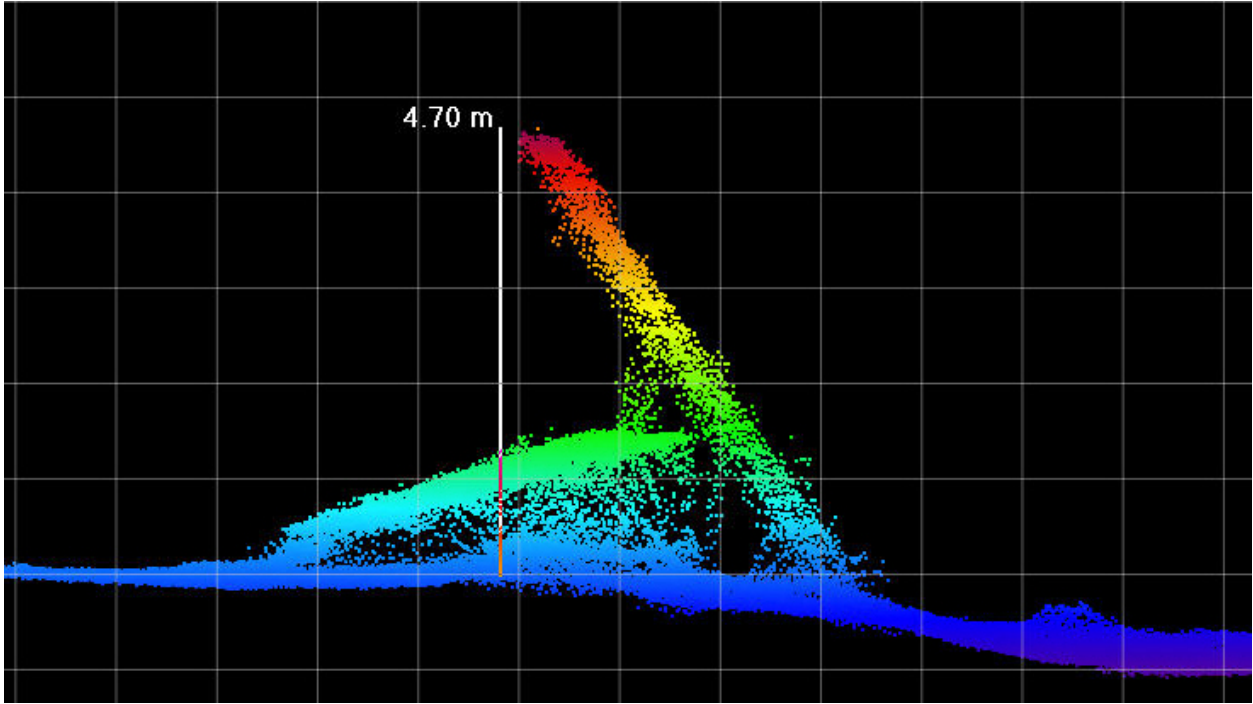


Figure 1.2.2

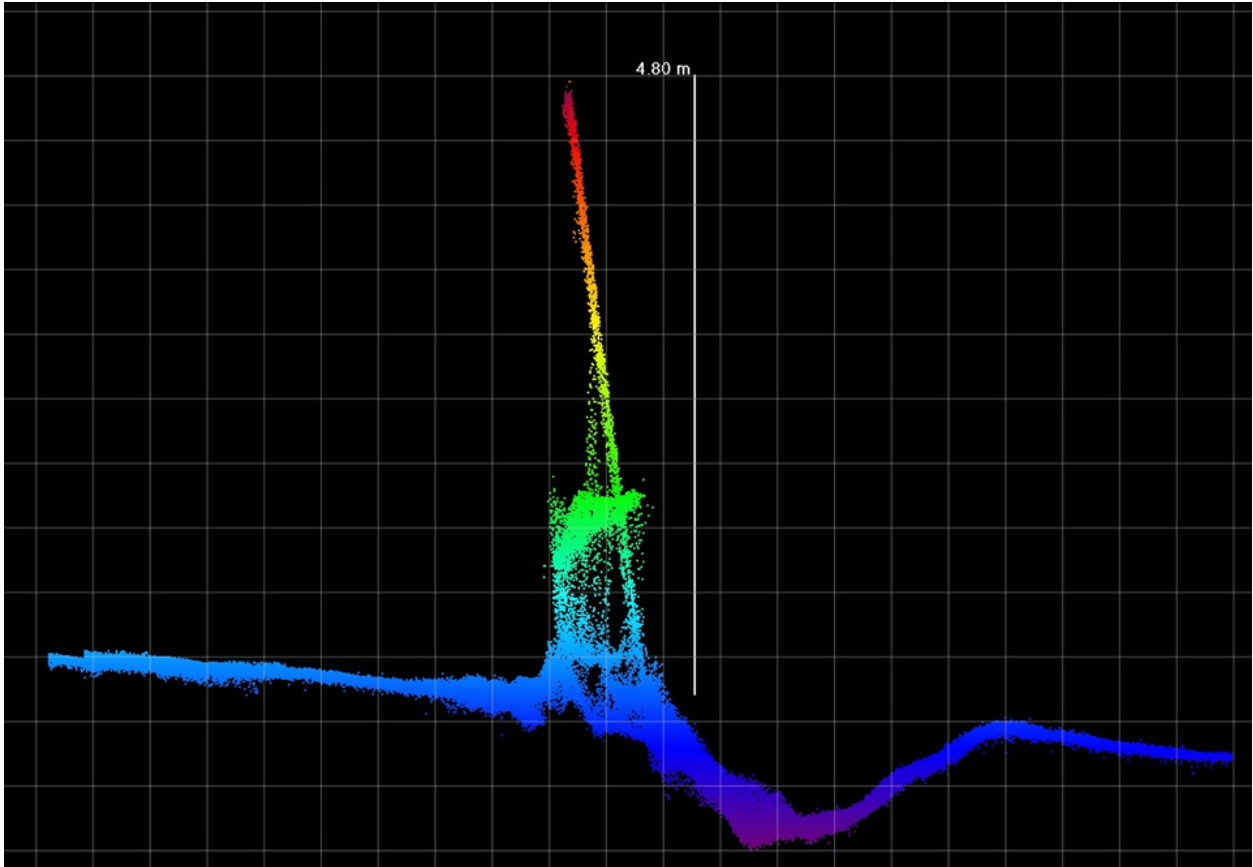


Figure 1.2.3

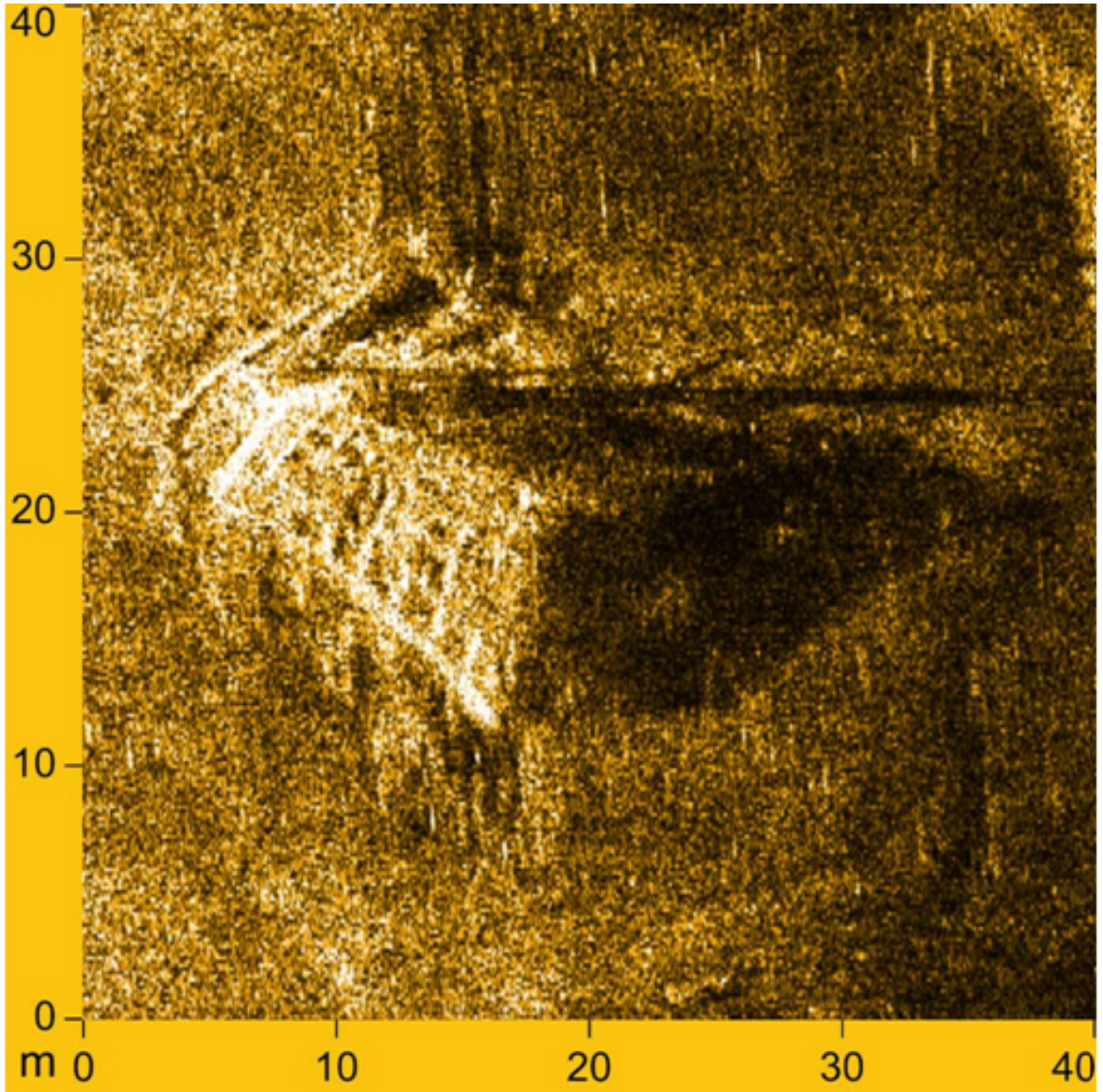


Figure 1.2.4

1.3) KR DTON #3: 30ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 49' 27.6" N, 076° 12' 27.2" W
Least Depth: 9.35 m (~~= 30.69 ft = 5.115 fm = 5 fm 0.69 ft~~) **9.341m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-198.16:25:11.000 (07/17/2009)
GP Dataset: H12040_DtoN_2.xls
GP No.: 2
Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

Obstruction is a linear feature approximately 9m (29.5ft) long, rising approximately 3.2m (10.5ft) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_2.xls	2	0.00	000.0	Primary

Hydrographer Recommendations

Recommend to chart 30ft obstruction at surveyed location.

Cartographically-Rounded Depth (Affected Charts):

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

5fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - ~~9.354 m~~ **9.341m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235_1; 32th Ed., 1:40,000 and smaller scale charts as a obstruction, least depth 30 feet. Office processing determined that the position and least depth are different from the initial DToN submission to MCD. Delete charted obstruction, least depth 30 feet. Chart an obstruction, least depth 30 feet at the present survey position in Latitude 37°49'27.648" N, Longitude 076°12'27.194" W.

Feature Images

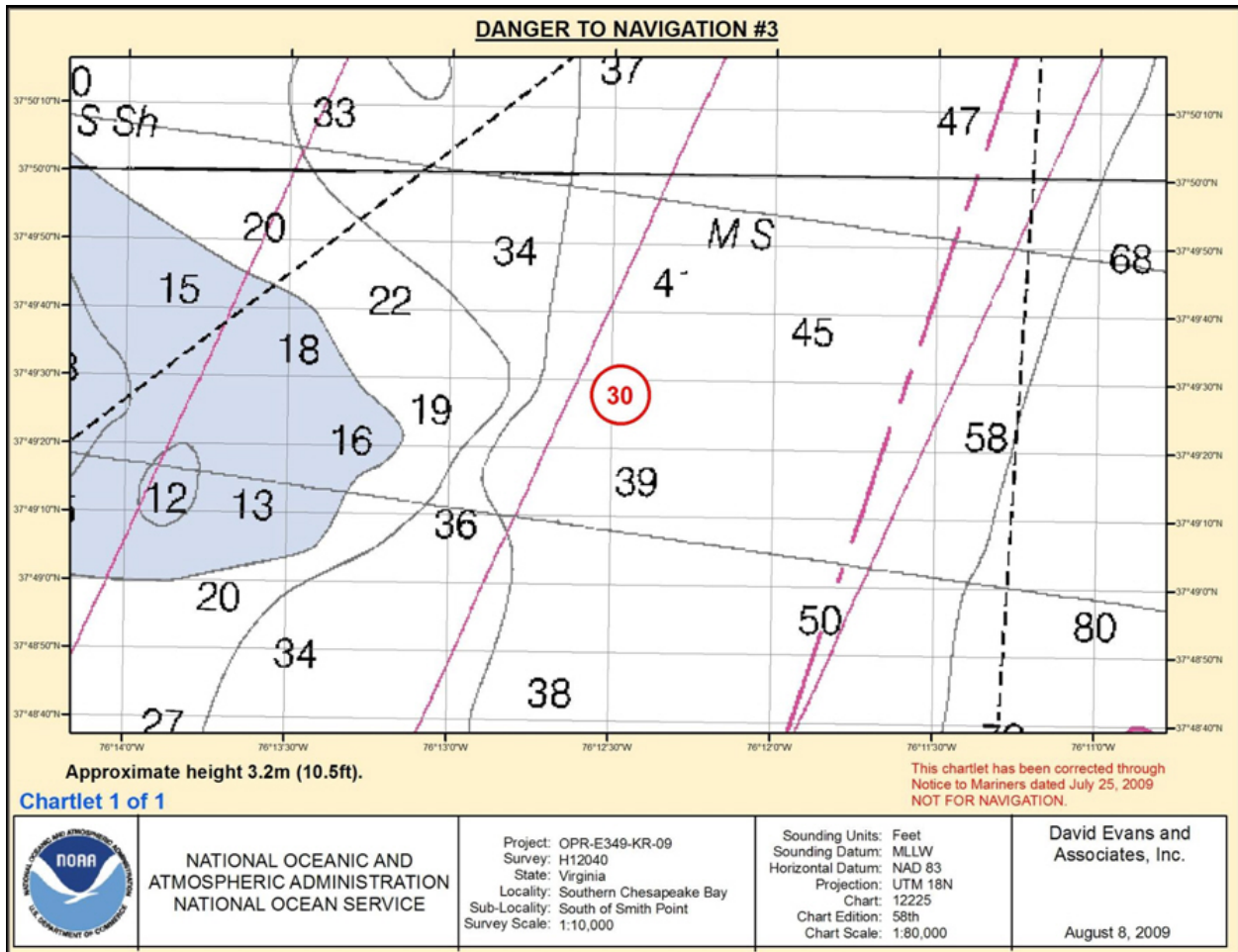


Figure 1.3.1

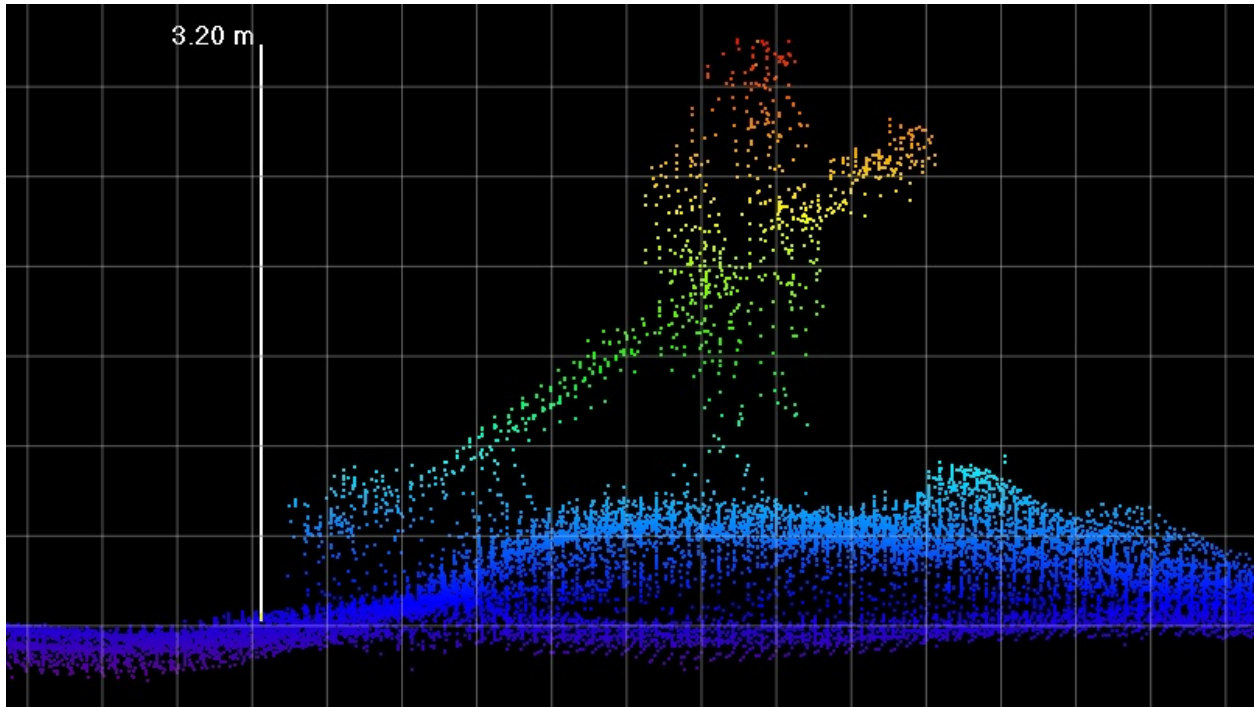


Figure 1.3.2

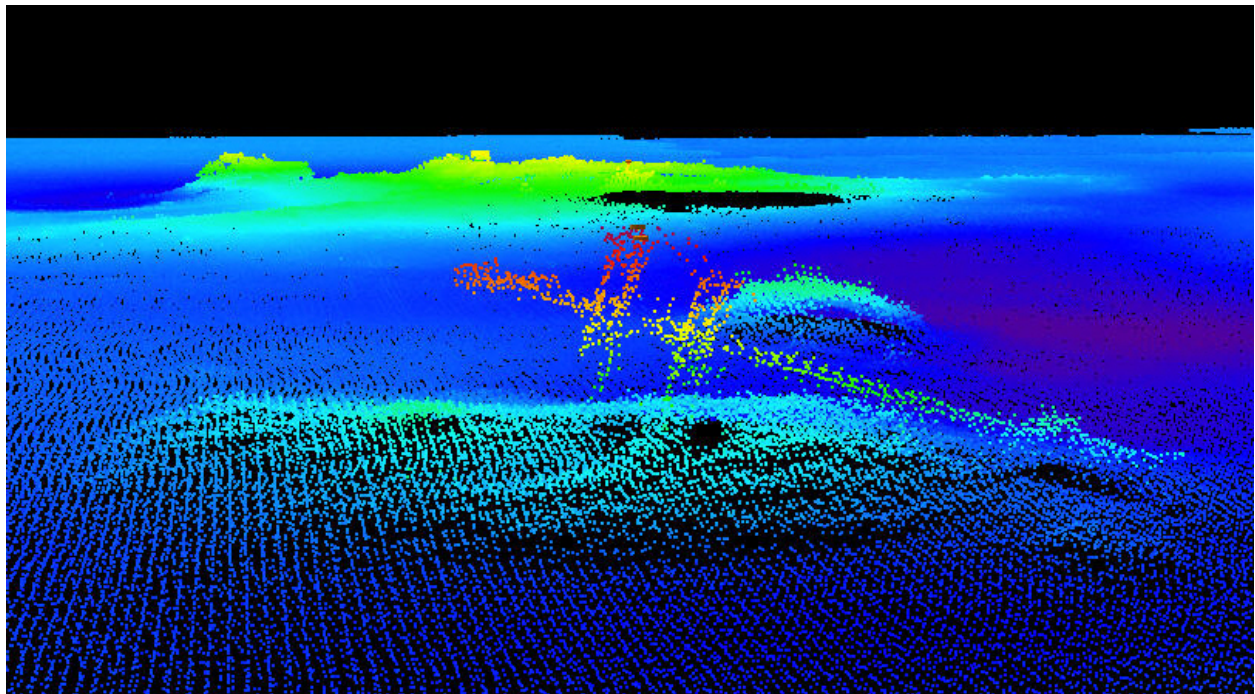


Figure 1.3.3

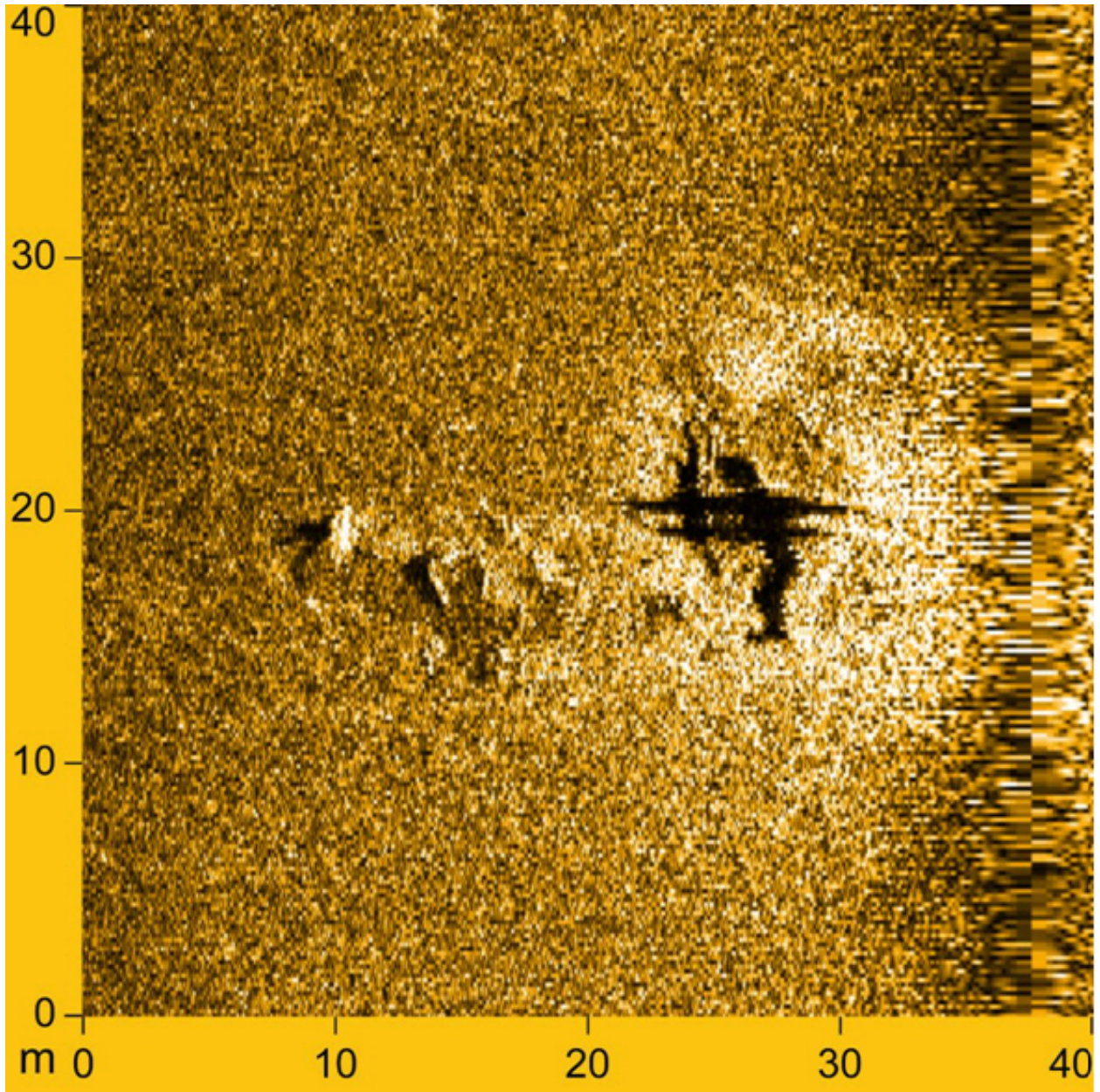


Figure 1.3.4

1.4) KR DTON #4: 16ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 40.9" N, 076° 13' 04.8" W
Least Depth: 4.86 m (= 15.96 ft = 2.660 fm = 2 fm 3.96 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None]; TVU (TPEv) [None]
Timestamp: 2009-196.13:00:50.000 (07/15/2009)
GP Dataset: H12040_DtoN_2.xls
GP No.: 3
Charts Affected: 12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

This danger submission appears to be the ruins of a pound net. The piles are typically spaced 10m (32.8ft) apart. The ruins can be seen in sidescan data running shoreward approximately 120m (393.7ft) from three seaward baring piles. The shallowest submerged pile rises approximately 1.2m (3.9ft) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_2.xls	3	0.00	000.0	Primary

Hydrographer Recommendations

Recommend to chart 16ft obstruction at surveyed location. Uncharted baring piles mentioned by the field unit will be forthcoming as separate Dangers to Navigation.

Cartographically-Rounded Depth (Affected Charts):

16ft (12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2)
 2 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 1:snag / stump
 QUASOU - 6:least depth known
 SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - 4.864 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart as obstruction area.

Feature Images

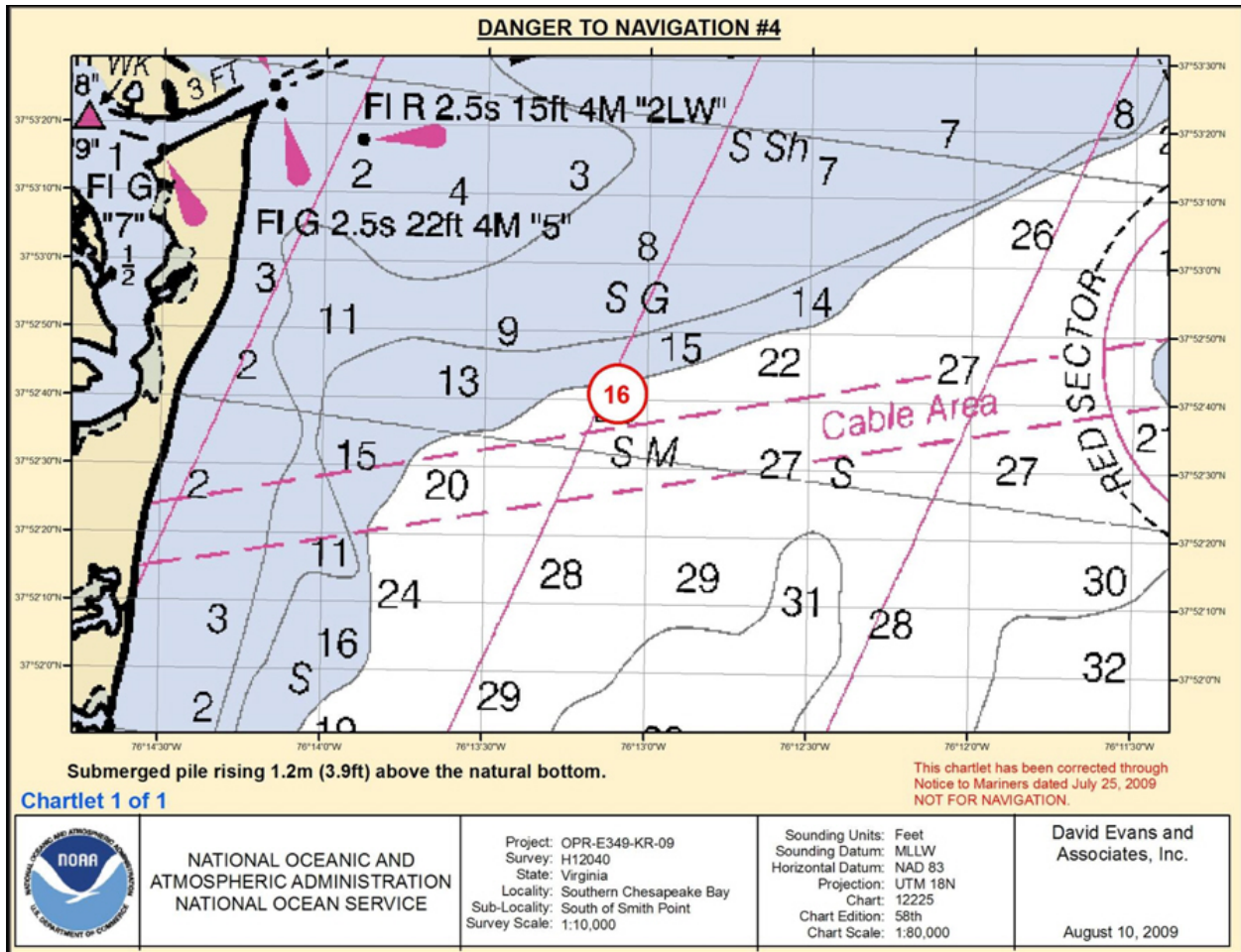


Figure 1.4.1

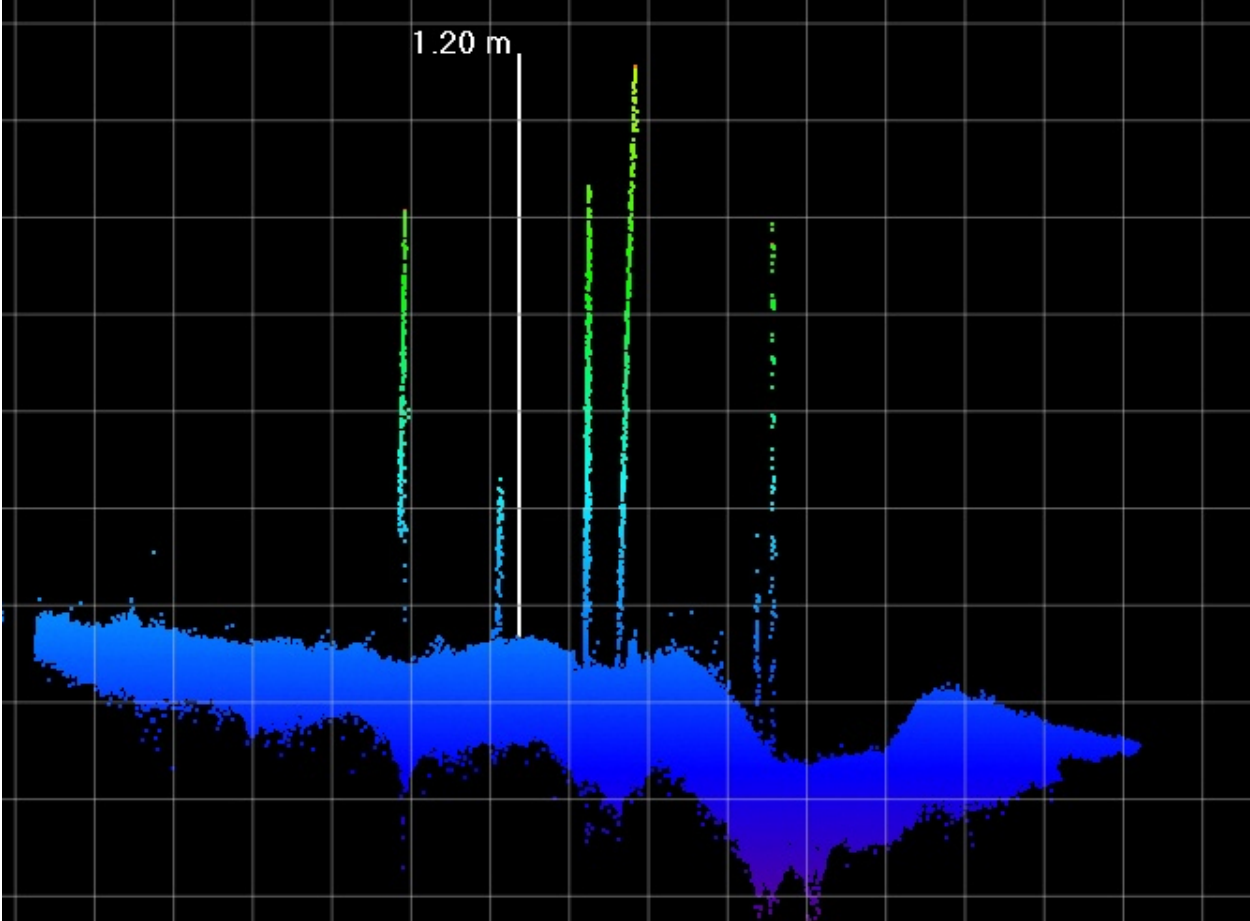


Figure 1.4.2

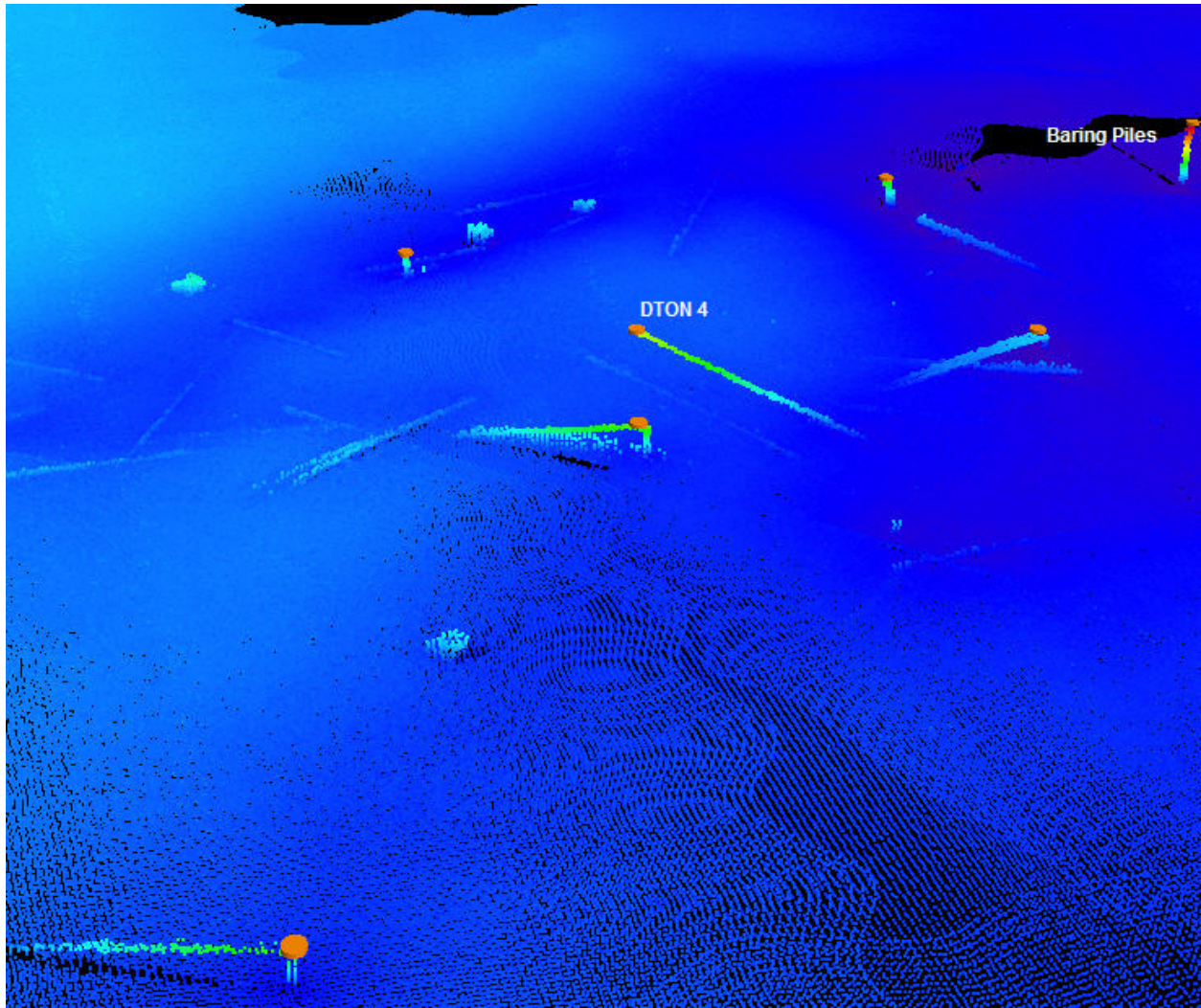


Figure 1.1.3

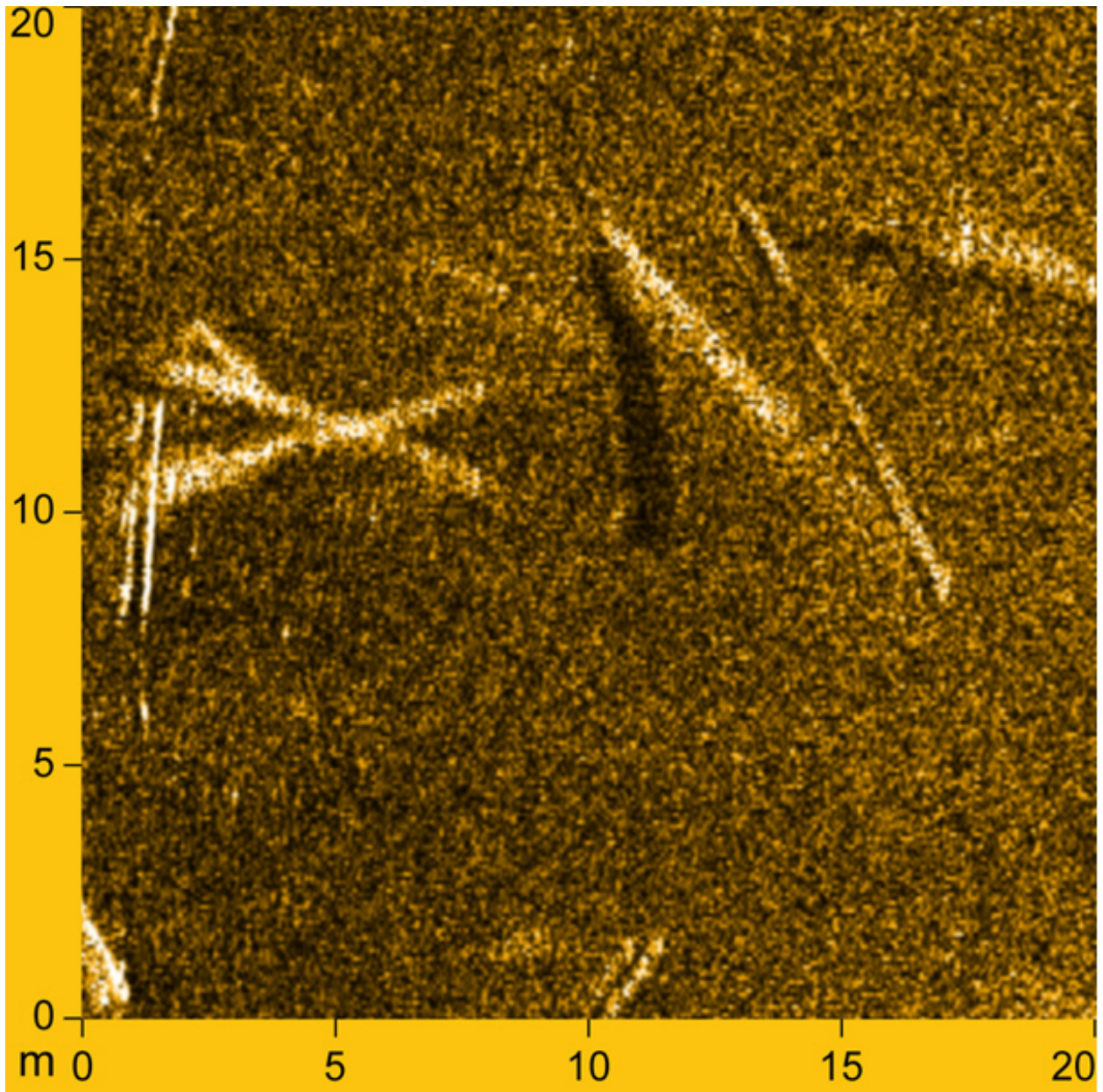


Figure 1.4.4

1.5) KR DTON #5: 17ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 24.9" N, 076° 13' 27.2" W
Least Depth: 5.23 m (= 17.16 ft = 2.860 fm = 2 fm 5.16 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None]; TVU (TPEv) [None]
Timestamp: 2009-211.15:20:53.000 (07/30/2009)
GP Dataset: H12040_DtoN_2.xls
GP No.: 4
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

This danger submission is an area approximately 60m (196.8ft) in diameter of submerged piles that appears to be the ruins of a pound net. The shoalest pile rises approximately 2.5m (8.2ft) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_2.xls	4	0.00	000.0	Primary

Hydrographer Recommendations

Do not concur. Chart area obstruction covering all submerged stakes in area.

Cartographically-Rounded Depth (Affected Charts):

17ft (12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2)
 2 ¾fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 1:snag / stump
 QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040

QUASOU - 6:least depth known

SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - 5.901 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart as area obstruction.

DEA DtoN #14 as referred to in the following images. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

Feature Images

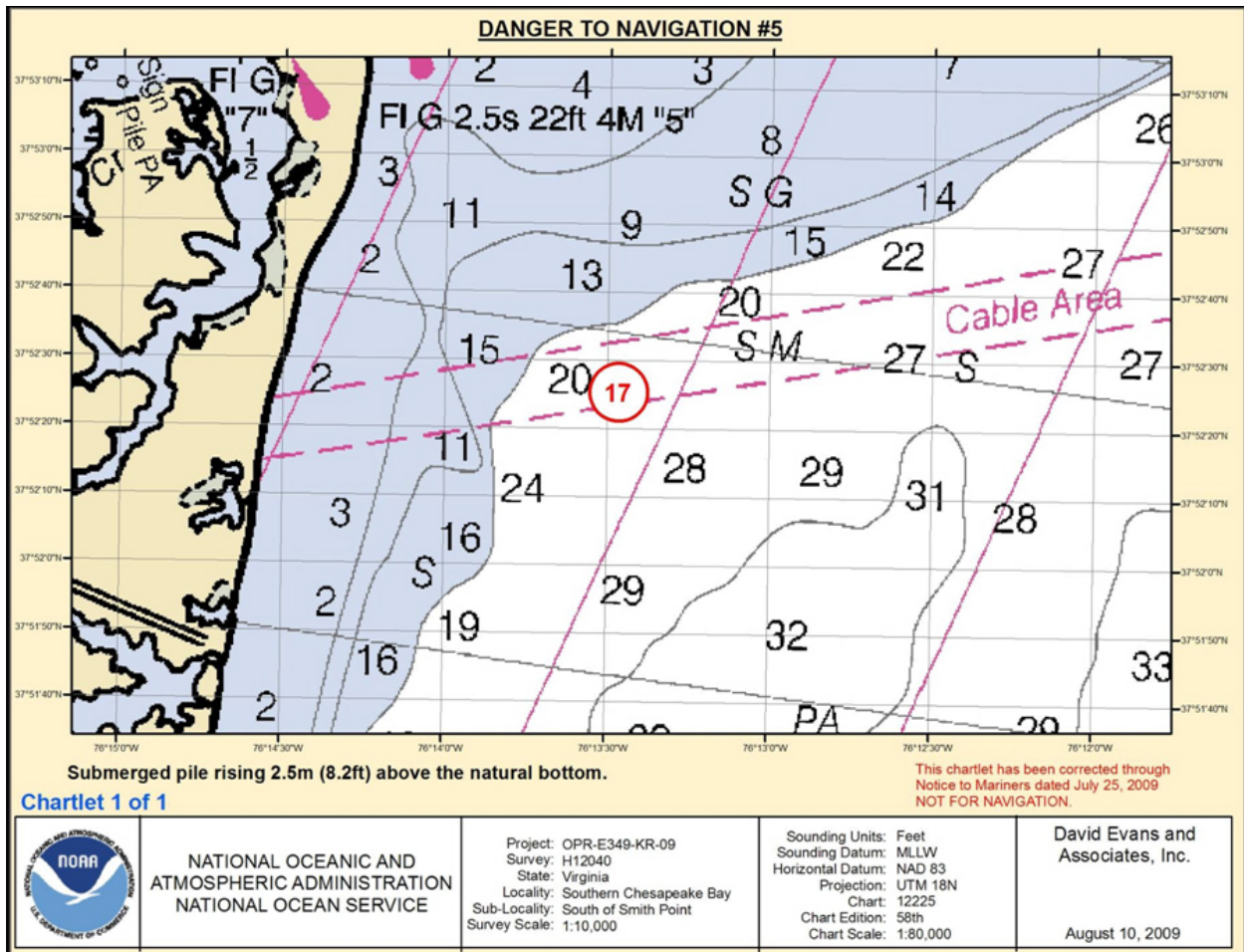


Figure 1.5.1

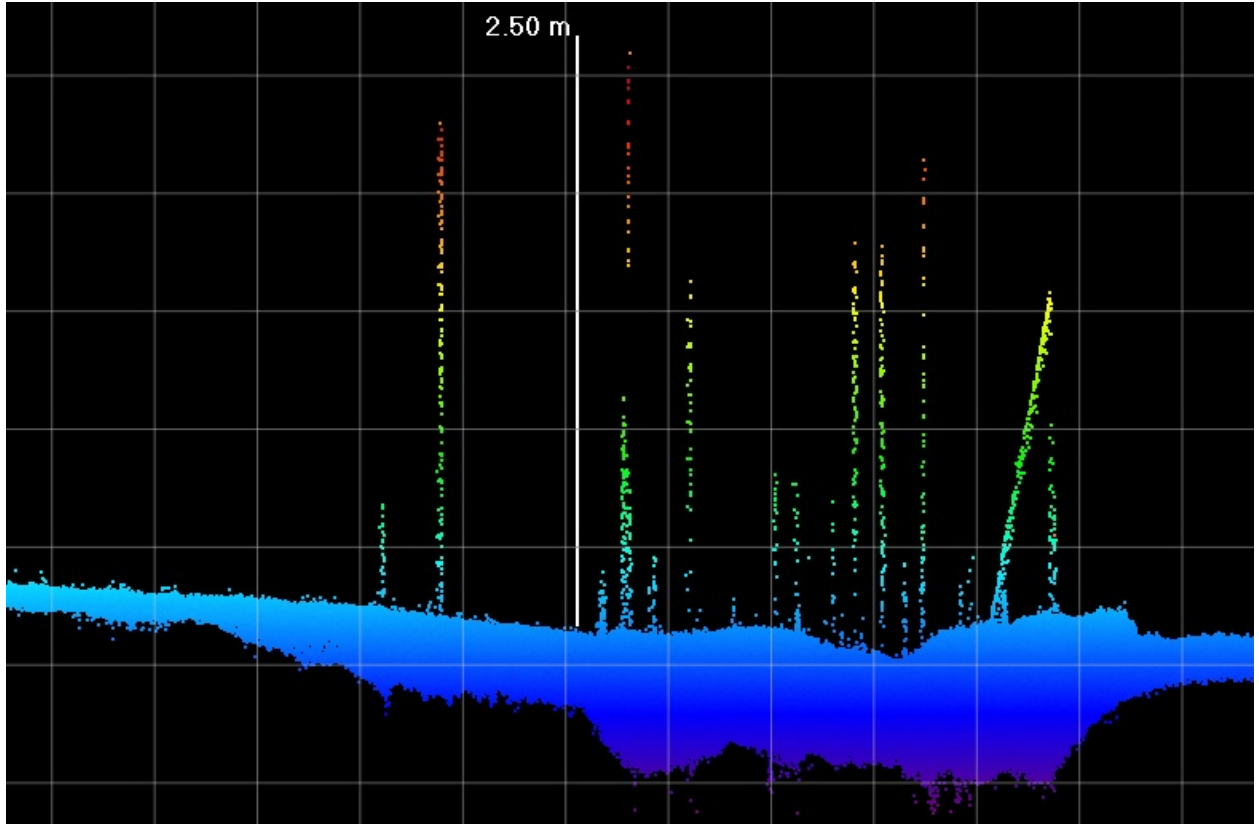


Figure 1.5.2

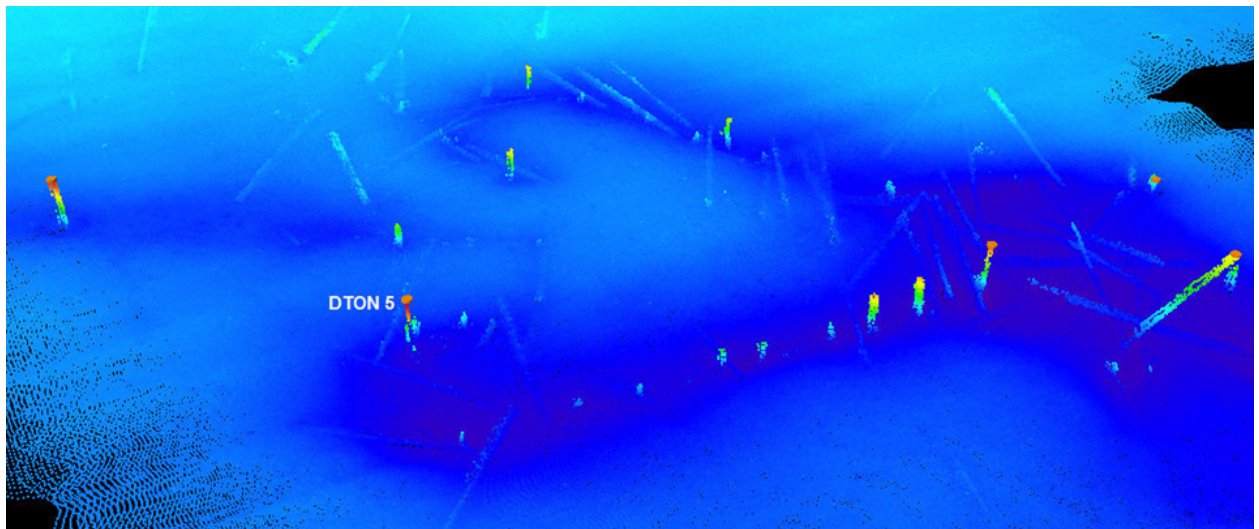


Figure 1.5.3

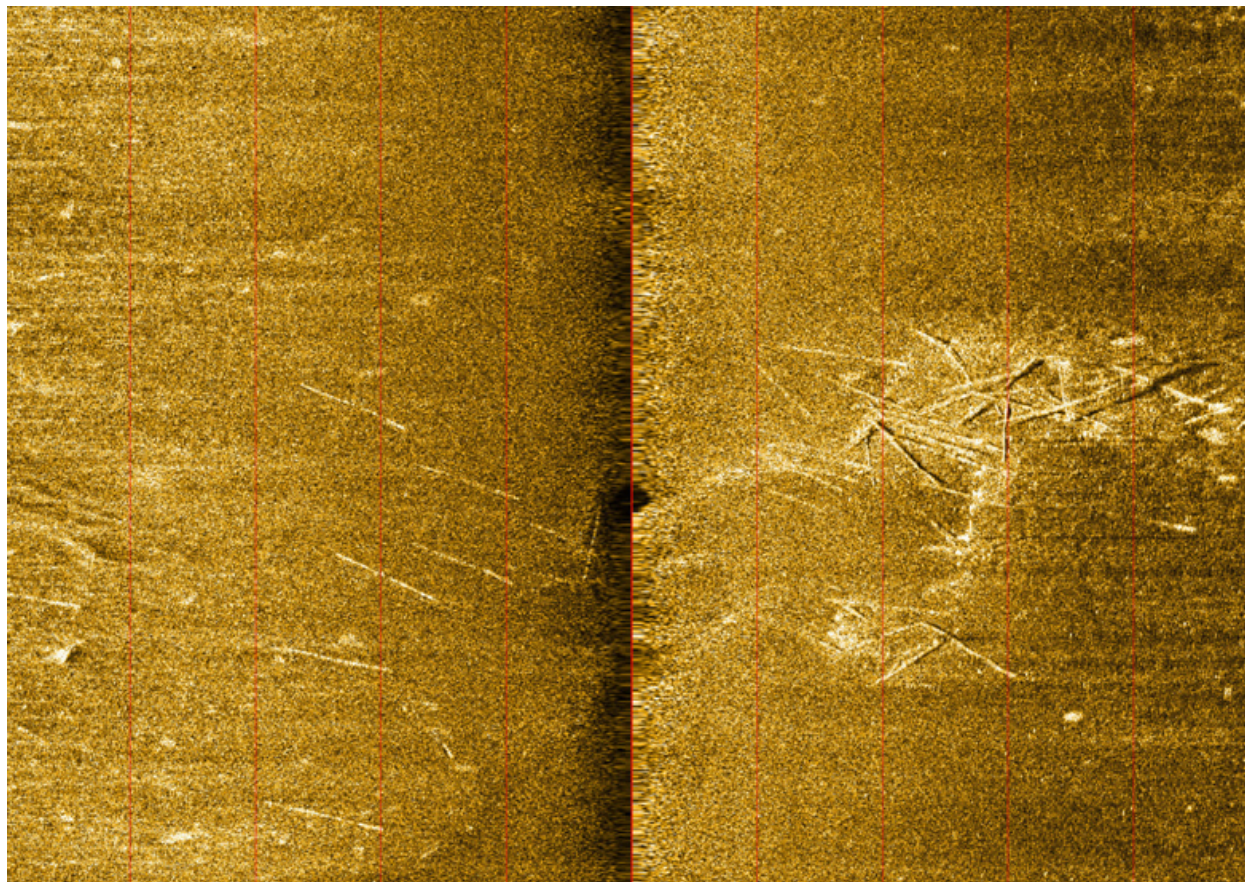


Figure 1.5.4

1.6) KR DTON #6: 29ft Sounding

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 51' 33.7" N, 076° 11' 39.3" W
Least Depth: 8.82 m (~~= 28.93 ft = 4.822 fm = 4 fm 4.93 ft~~) **8.761m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-210.12:36:40.000 (07/29/2009)
GP Dataset: H12040_DtoN_2.xls
GP No.: 5
Charts Affected: 12228_1, 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

The obstruction appears to be a circular mound with a radius of 20m (65.6ft) which rises approximately 2.8m (9.2ft) off the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_2.xls	5	0.00	000.0	Primary

Hydrographer Recommendations

Do not concur with field unit. Multibeam bathymetry indicates a natural rise and not an obstruction. Recommend this feature to be represented with a sounding.

Cartographically-Rounded Depth (Affected Charts):

29ft (12228_1, 12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

4 $\frac{3}{4}$ fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - ~~8.818 m~~ **8.761m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart as 28ft sounding.

Feature Images

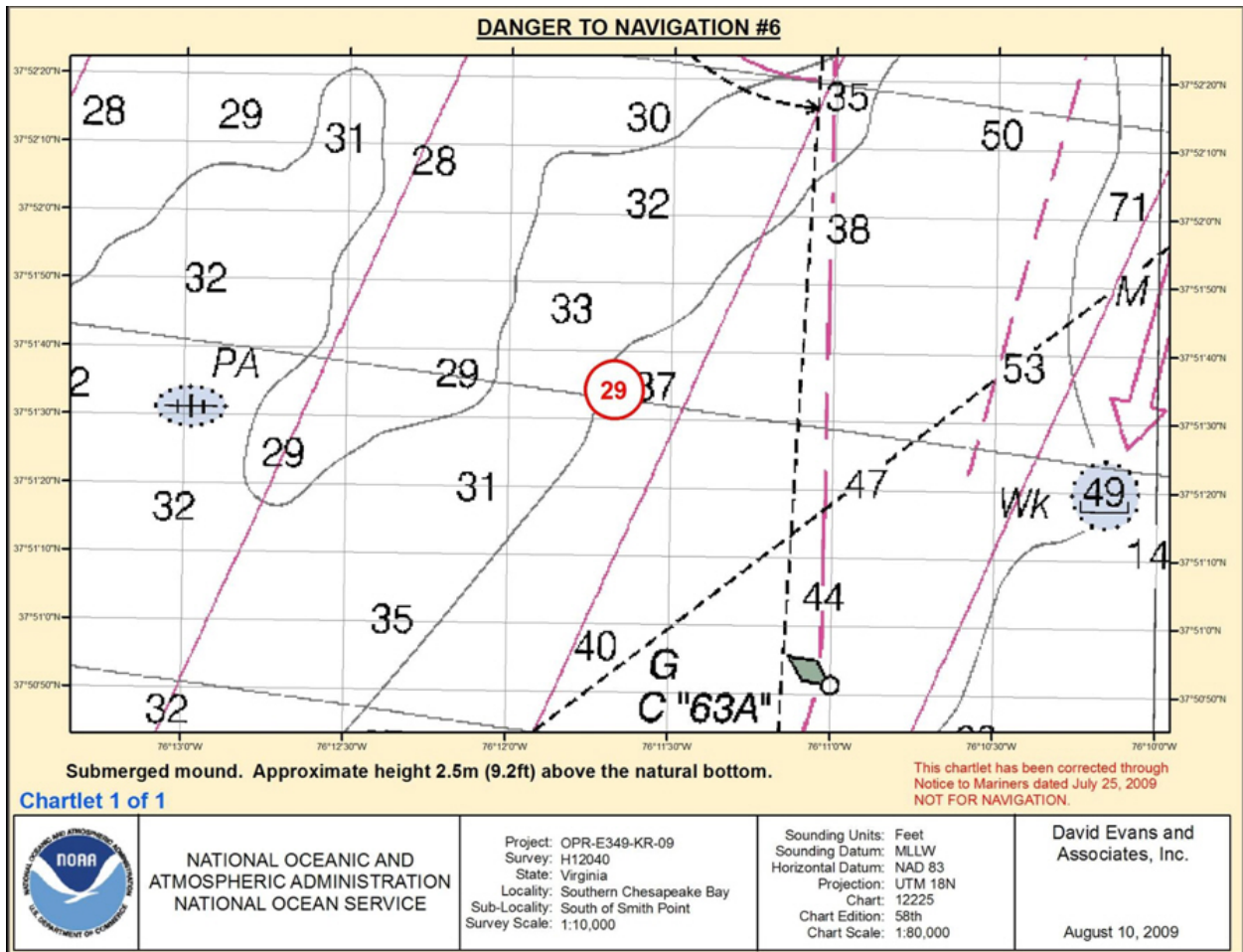


Figure 1.6.1

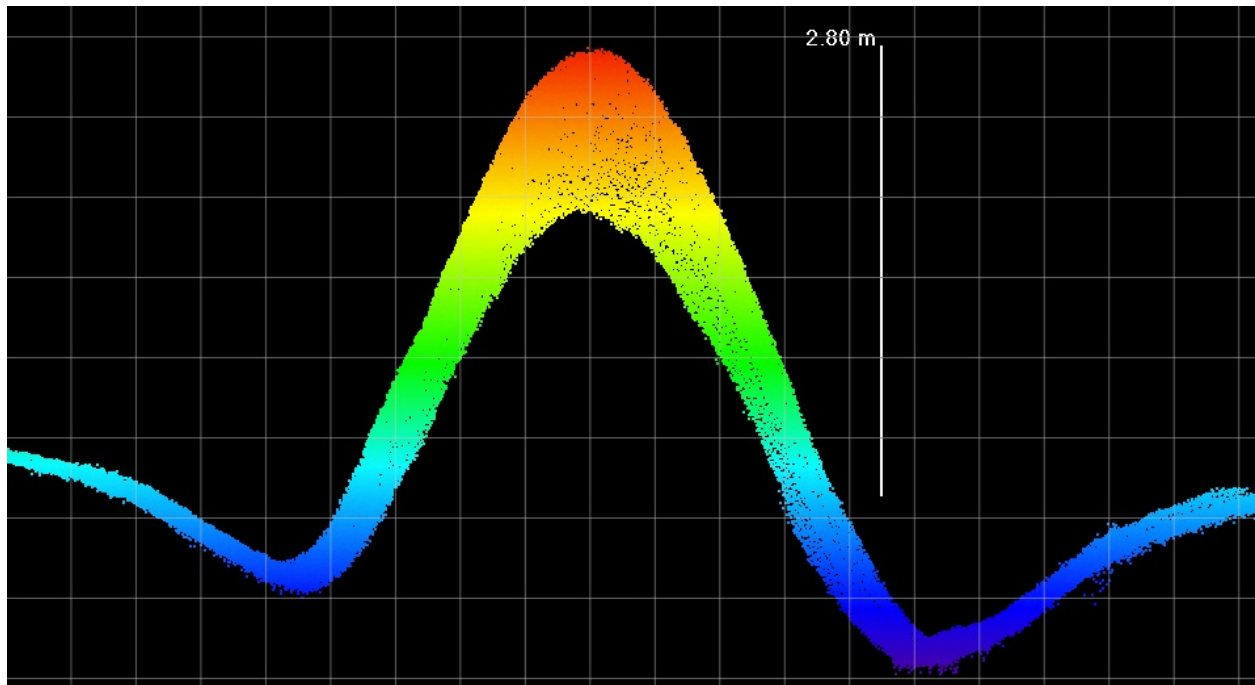


Figure 1.6.2

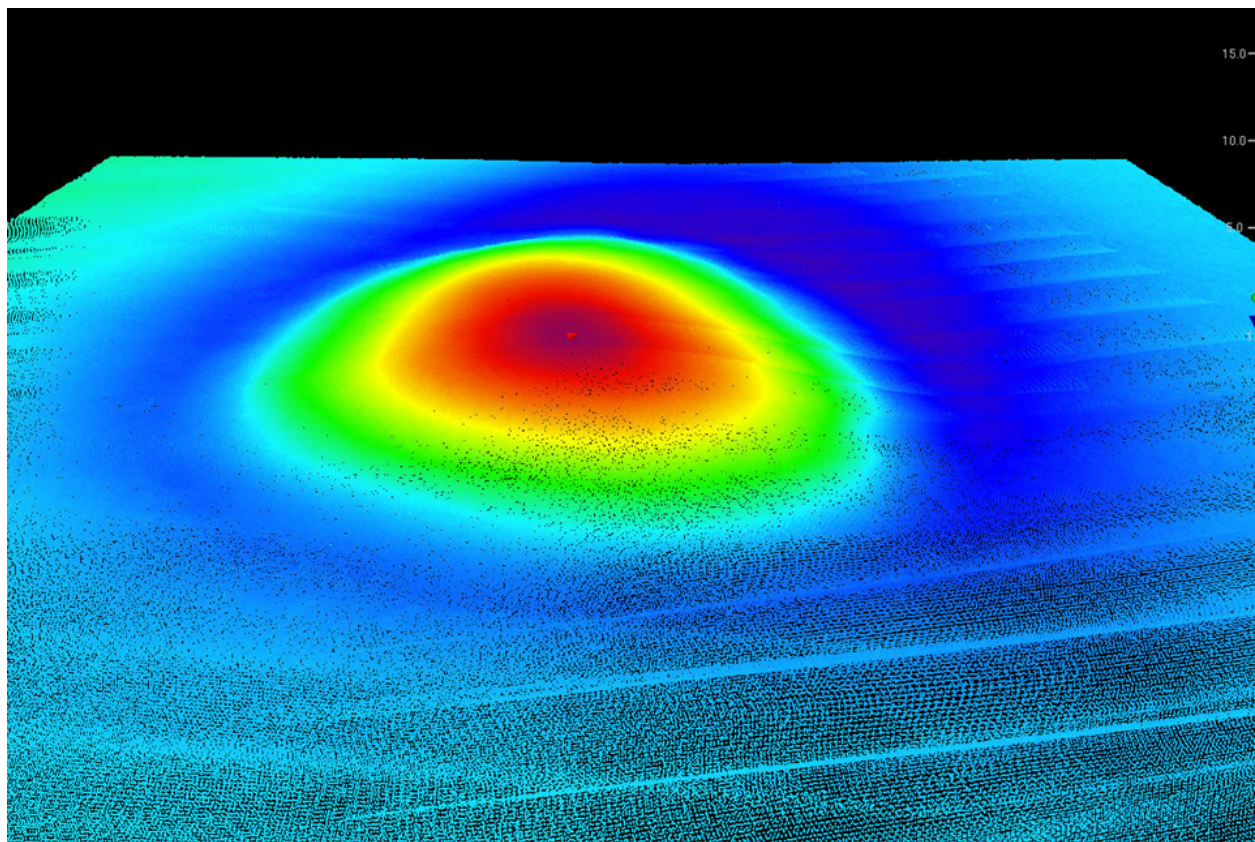


Figure 1.6.3

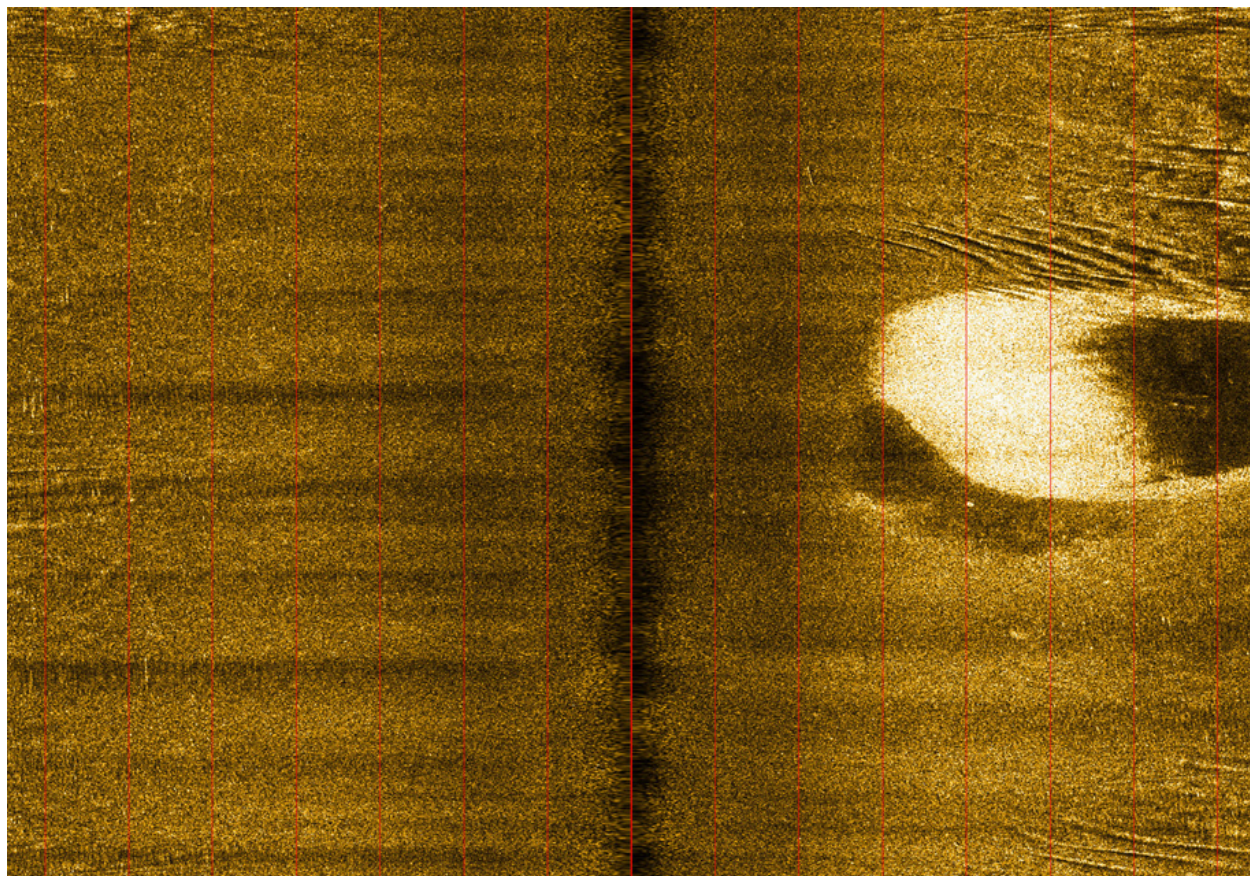


Figure 1.6.4

1.7) KR DTON #7: 18ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 02.9" N, 076° 14' 06.0" W
Least Depth: ~~5.65 m (= 18.54 ft = 3.090 fm = 3 fm 0.54 ft)~~ **5.643m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-214.13:41:47.000 (08/02/2009)
GP Dataset: H12040_DtoN_3.xls
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

An obstruction rising approximately 4.5m (14.8ft) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_3.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 18ft obstruction at surveyed location.

Cartographically-Rounded Depth (Affected Charts):

18ft (12235_1, 12285_18, 12225_1, 12280_2)

3fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 2,3:found by side scan sonar,found by multi-beam
 VALSOU - ~~5.651 m~~ **5.643m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235_1; 32th Ed., 1:40,000 and smaller scale charts as a obstruction, least depth 18 feet. Office processing determined that the position and least depth are different from the initial DToN submission to MCD. Delete charted obstruction, least depth 18 feet. Chart an obstruction, least depth 18 feet at the present survey position in Latitude 37°48'02.947" N, Longitude 076°14'06.040" W.

Feature Images

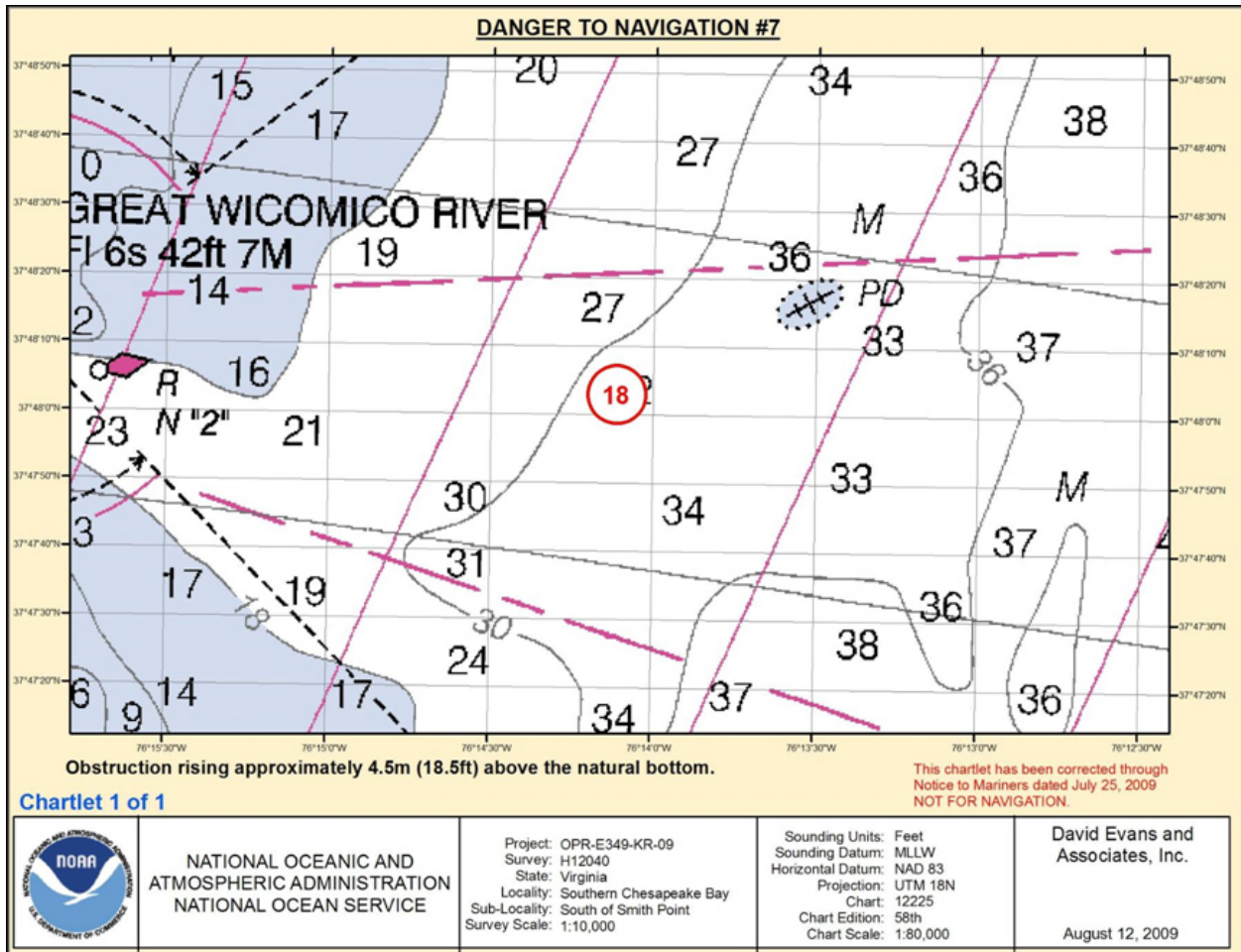


Figure 1.7.1

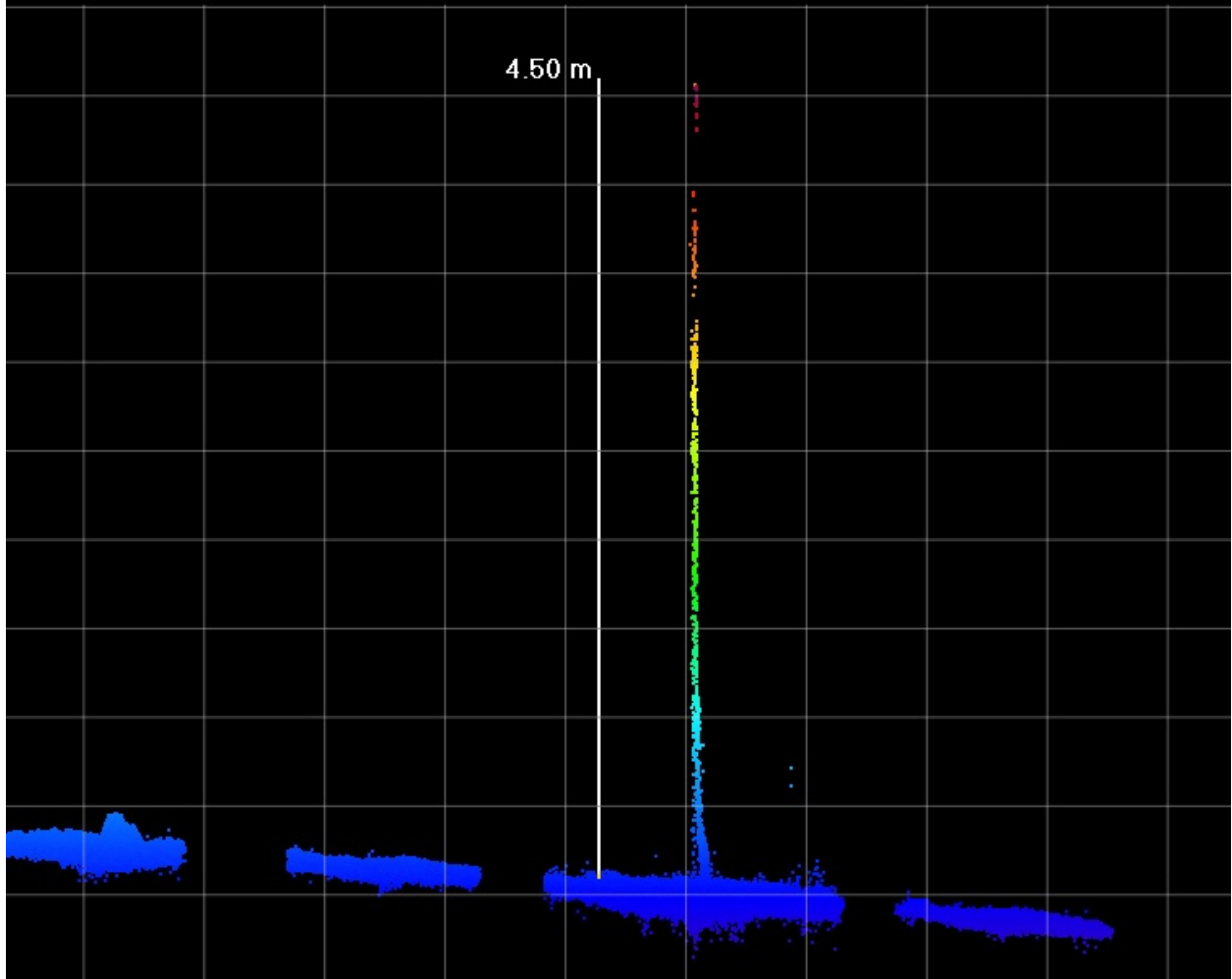


Figure 1.7.2

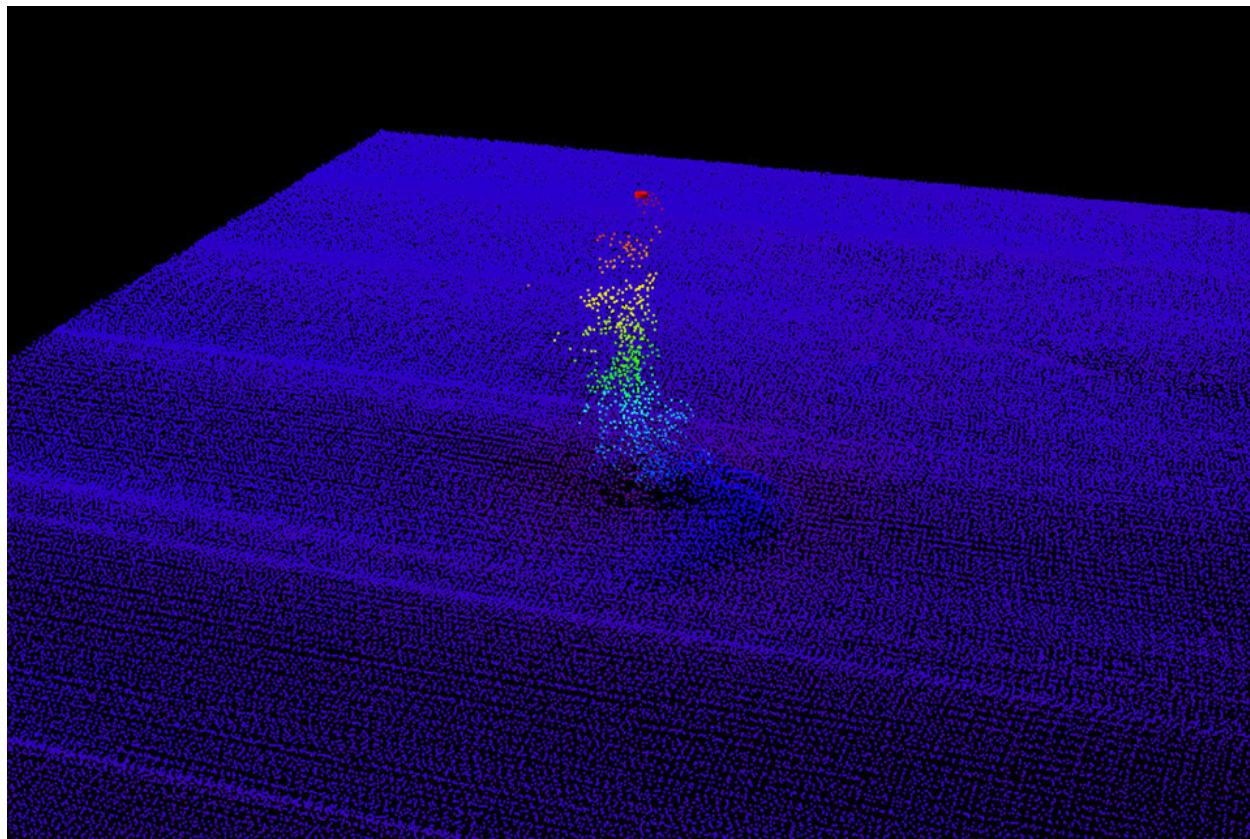


Figure 1.7.3

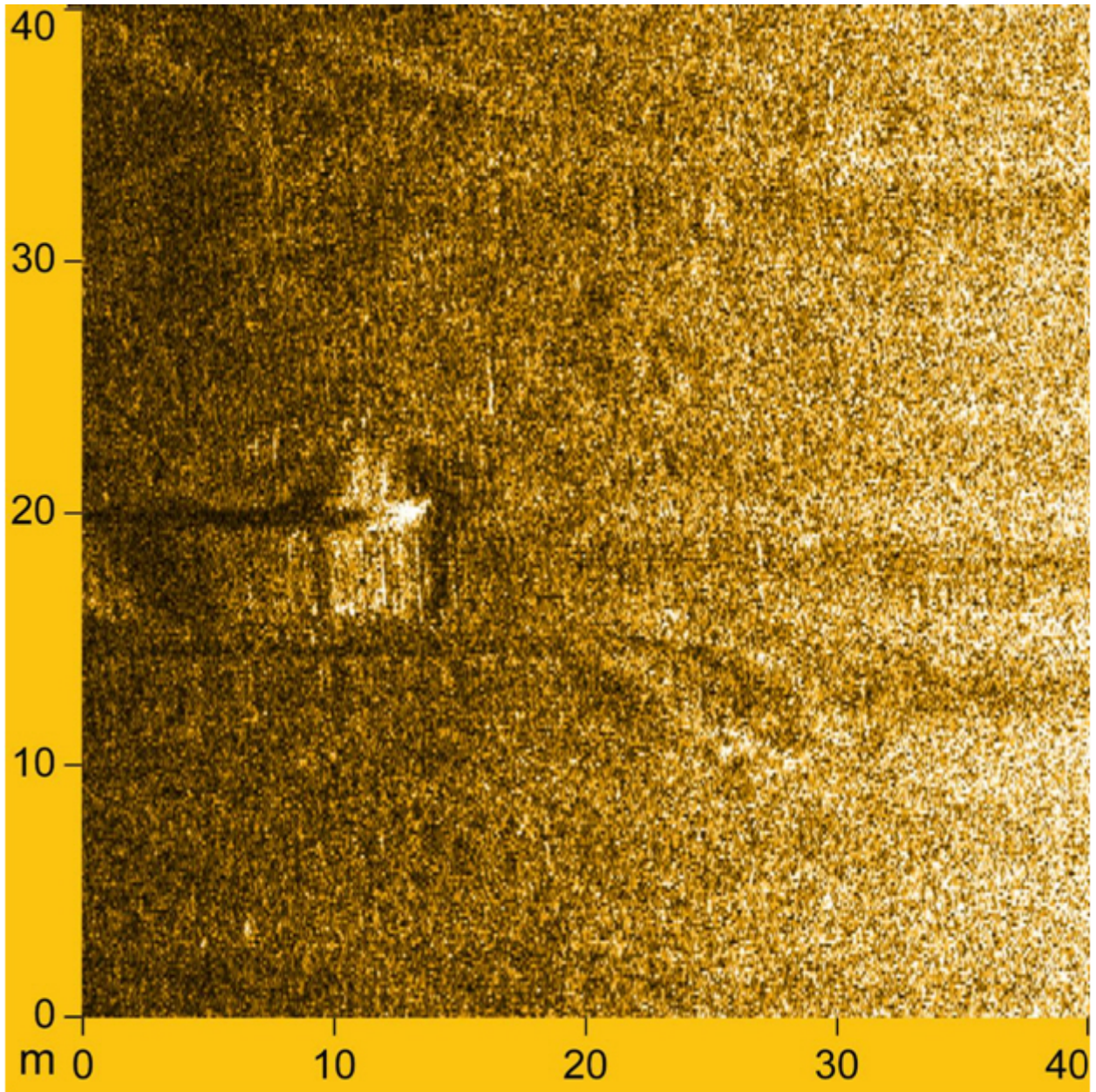


Figure 1.7.4

1.8) KR DTON #8: 14ft Obstruction

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 26.8" N, 076° 13' 36.9" W
Least Depth: 4.32 m (= 14.18 ft = 2.363 fm = 2 fm 2.18 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-211.15:29:32.000 (07/30/2009)
GP Dataset: H12040_DtoN_3.xls
GP No.: 2
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

An obstruction rising approximately 2.5m (8.2ft) above the natural bottom.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_3.xls	2	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 14ft obstruction at surveyed location.

Cartographically-Rounded Depth (Affected Charts):

14ft (12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2)

2 ¼fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091207
 SORIND - US,US_graph,H12040
 TECSOU - 2,3:found by side scan sonar,found by multi-beam
 VALSOU - 4.321 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Several submerged piles in area. Chart obstruction area.

Feature Images

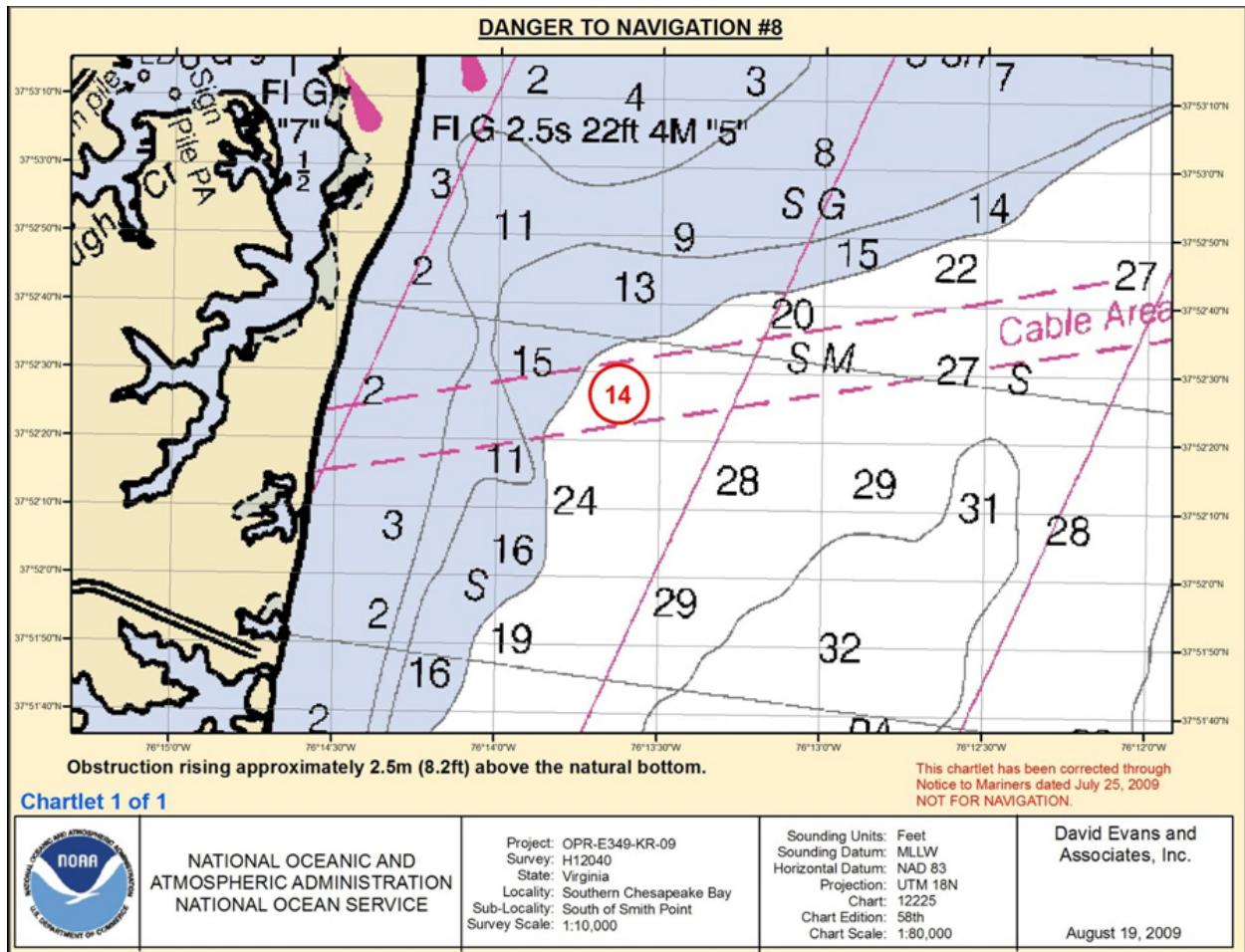


Figure 1.8.1

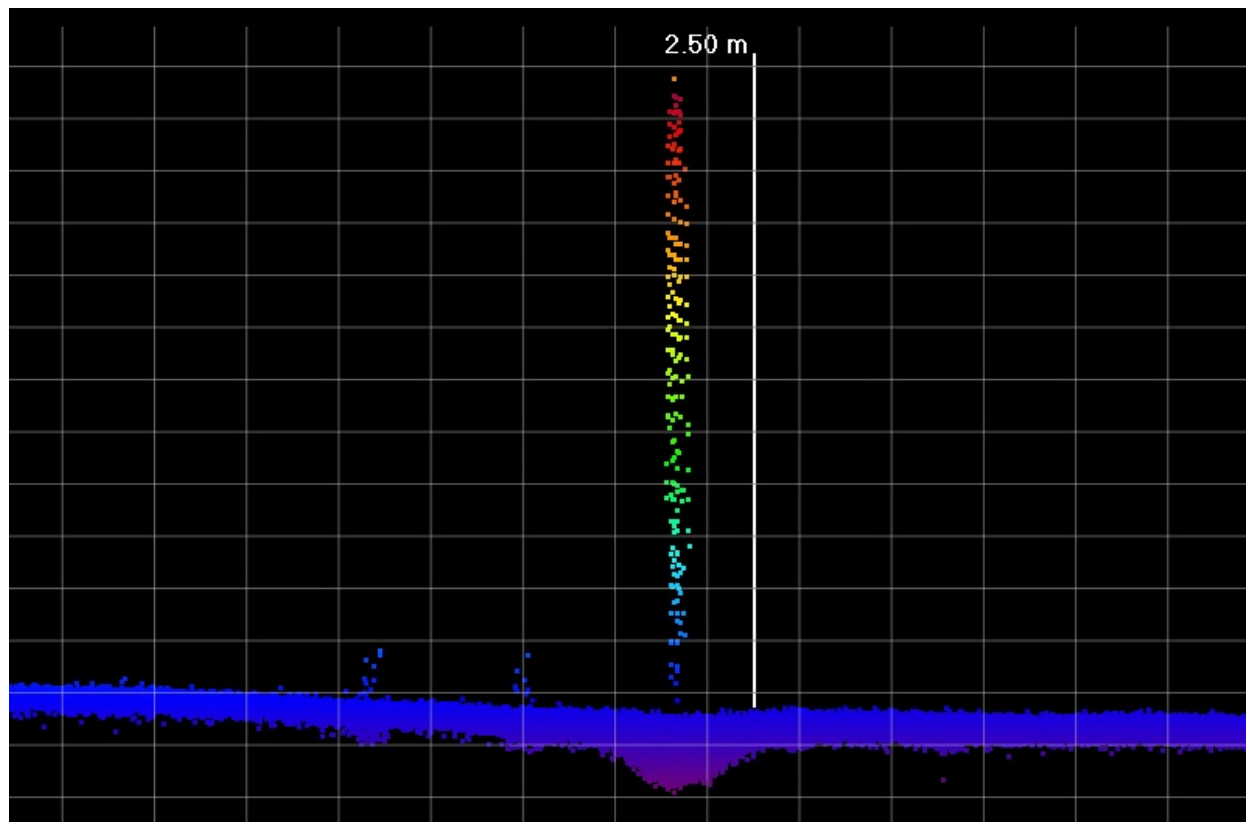


Figure 1.8.2

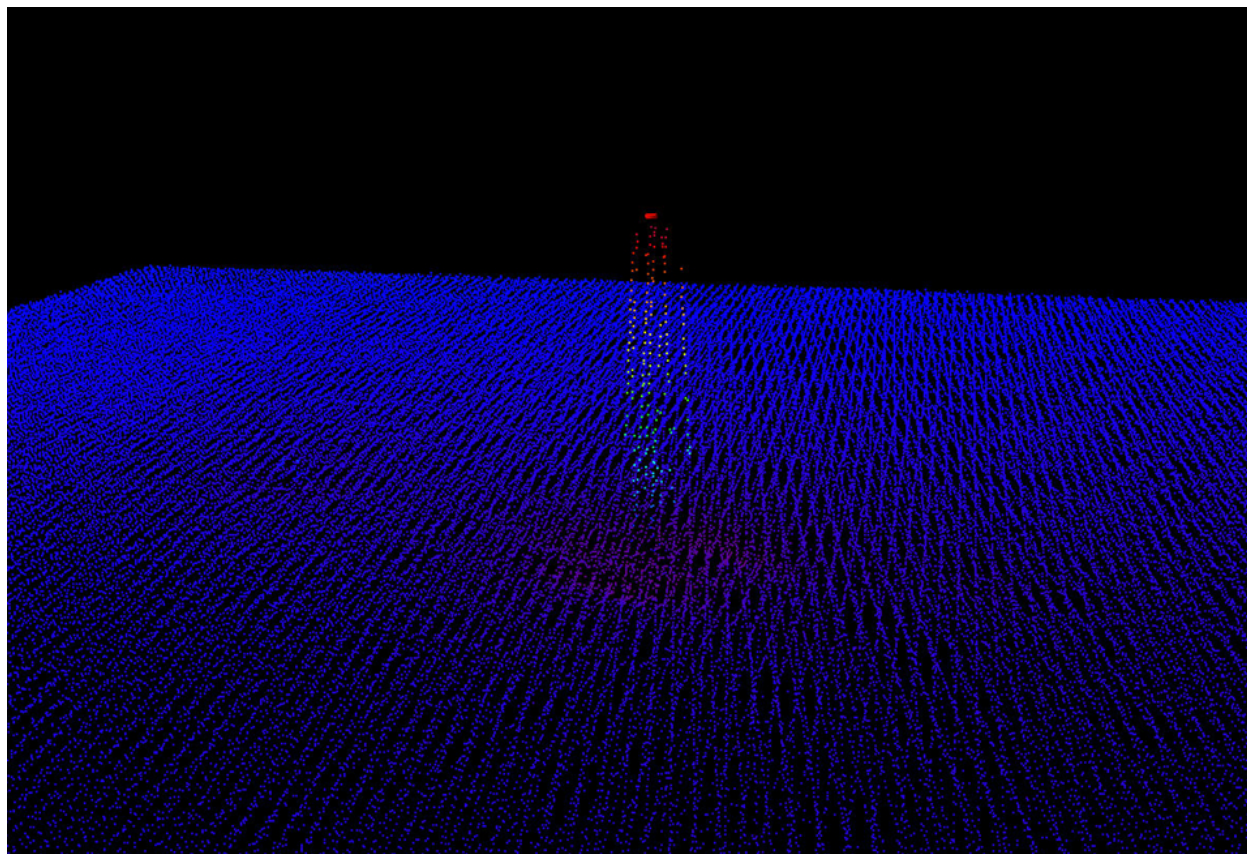


Figure 1.8.3

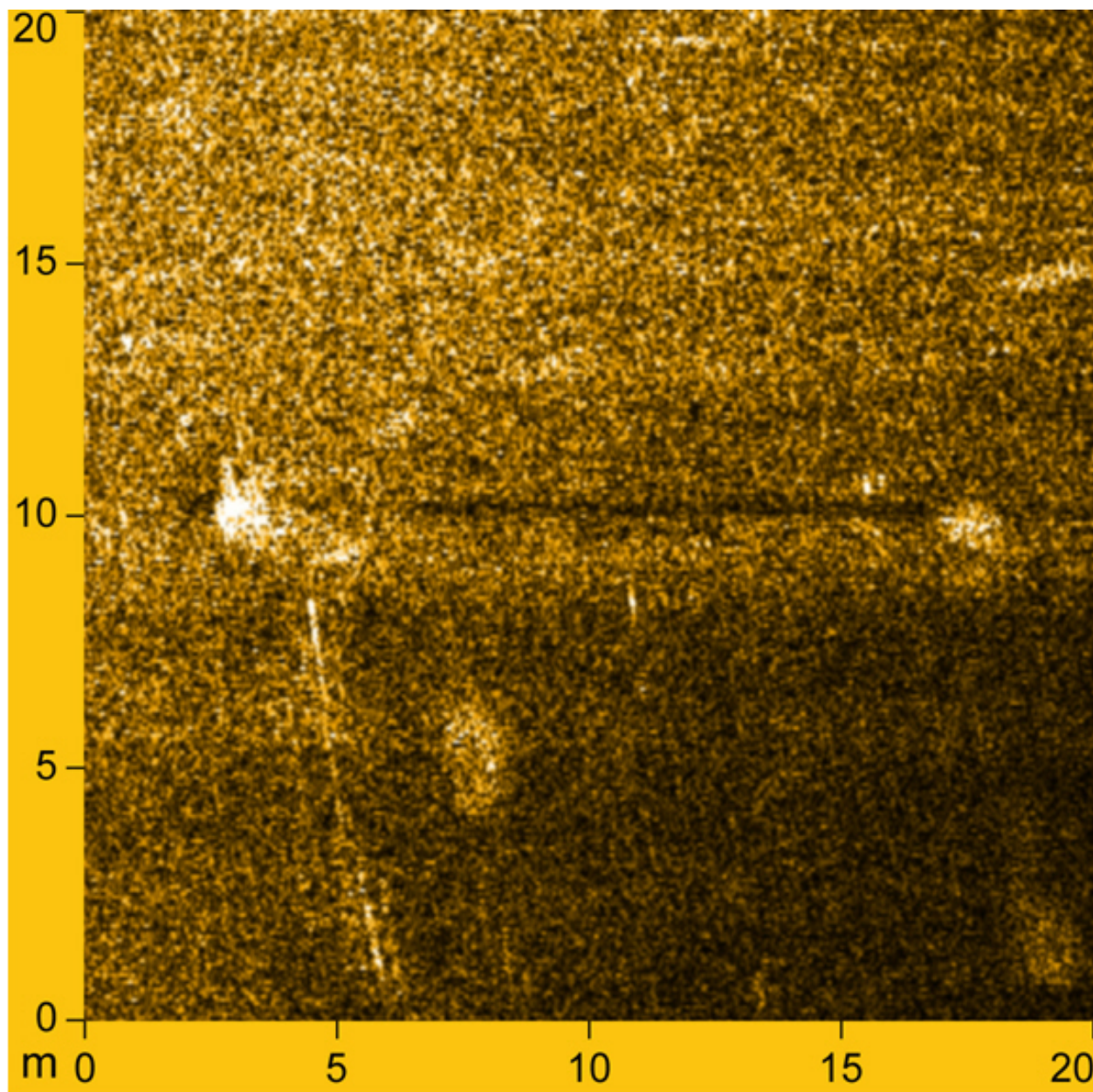


Figure 1.8.4

1.9) KR DTON #9.1 - 9.8: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 29.6" N, 076° 13' 27.5" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.12:00:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°52'29.129" , -076°13'39.943"),
- (2. 37°52'29.712" , -076°13'29.352"),
- (3. 37°52'30.144" , -076°13'29.676"),
- (4. 37°52'30.356" , -076°13'29.395"),
- (5. 37°52'30.083" , -076°13'27.602"),
- (6. 37°52'29.647" , -076°13'27.480"*),
- (7. 37°52'29.071" , -076°13'29.287"),
- (8. 37°52'29.392" , -076°13'29.528")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

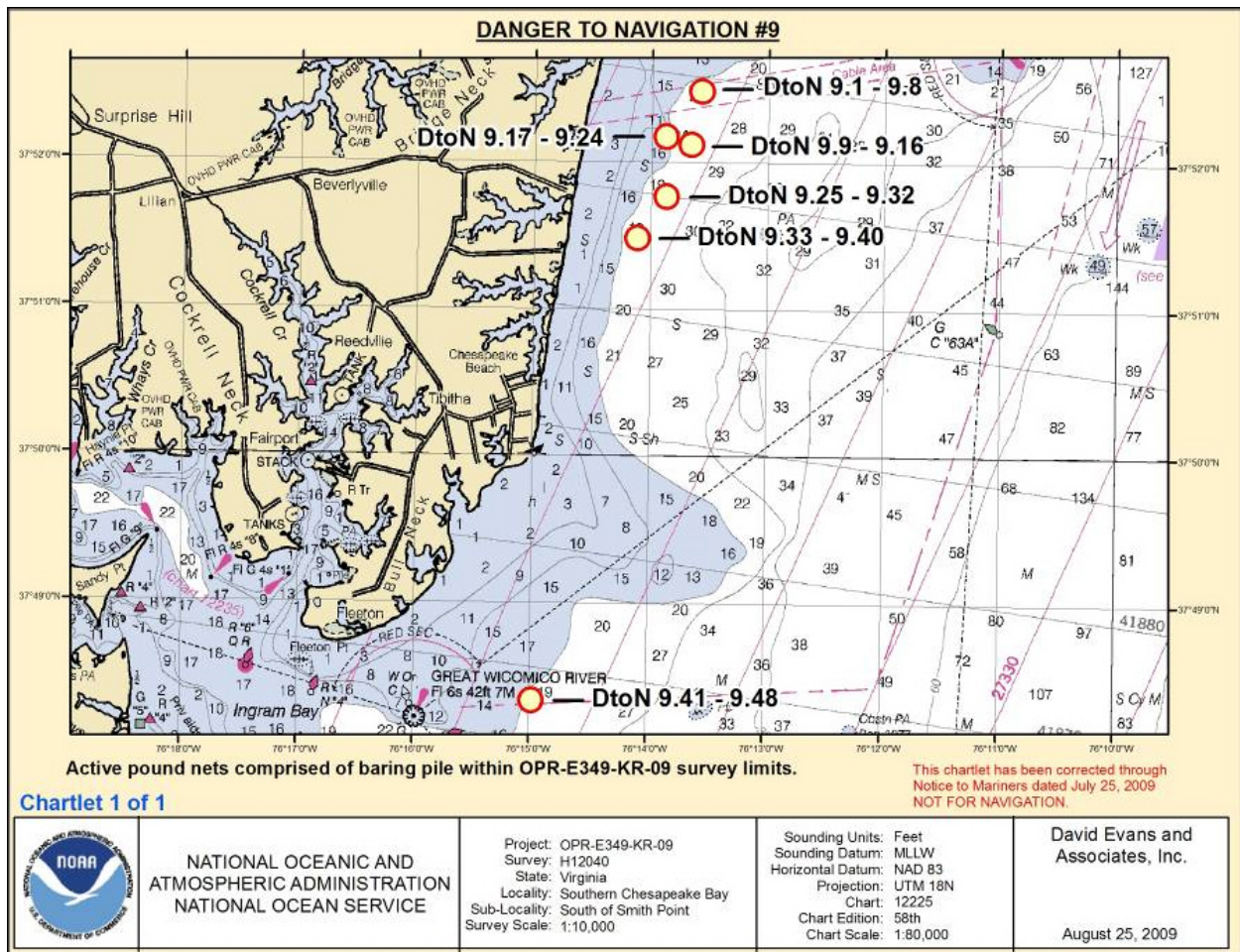


Figure 1.9.1

Pound Net 9.1 – 9.8



Figure 1.9.2

Pound Net 9.1 – 9.8

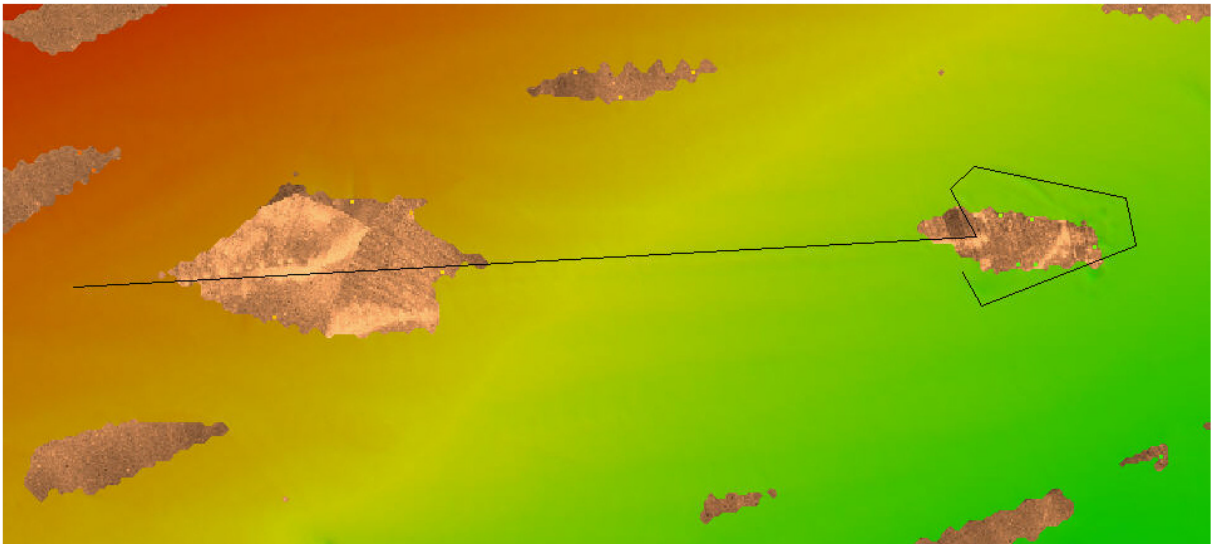


Figure 1.9.3

1.10) KR DTON #9.9 - 9.16: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 08.0" N, 076° 13' 35.9" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.11:60:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 2
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	2	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°52'09.696" , -076°13'48.007"),
- (2. 37°52'08.033" , -076°13'37.499"),
- (3. 37°52'08.537" , -076°13'37.798"),
- (4. 37°52'08.810" , -076°13'37.387"),
- (5. 37°52'08.047" , -076°13'35.864"*),
- (6. 37°52'07.187" , -076°13'35.994"),
- (7. 37°52'07.208" , -076°13'37.963"),
- (8. 37°52'07.828" , -076°13'38.089")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

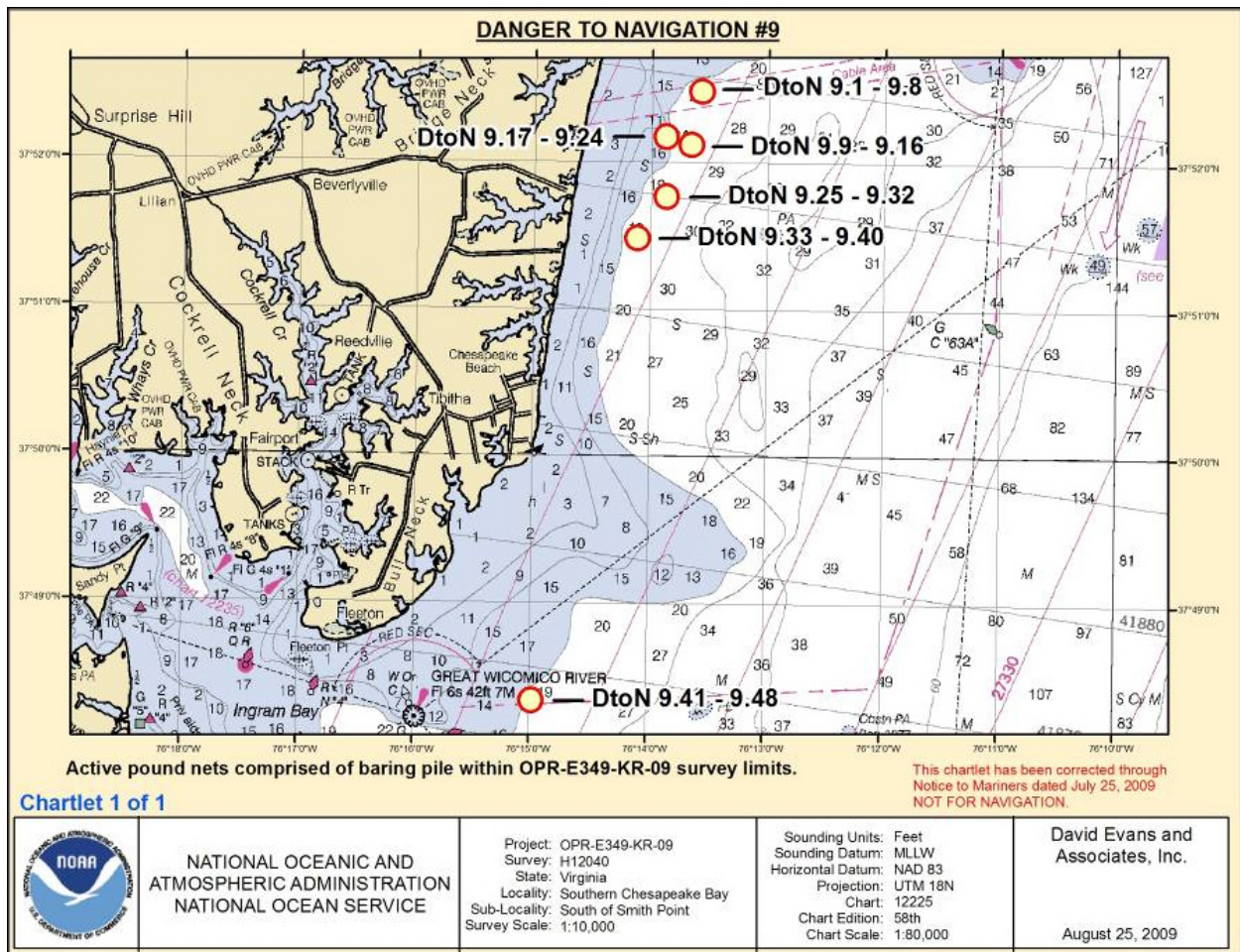


Figure 1.10.1

Pound Net 9.9 – 9.16



Figure 1.10.2

Pound Net 9.9 – 9.16

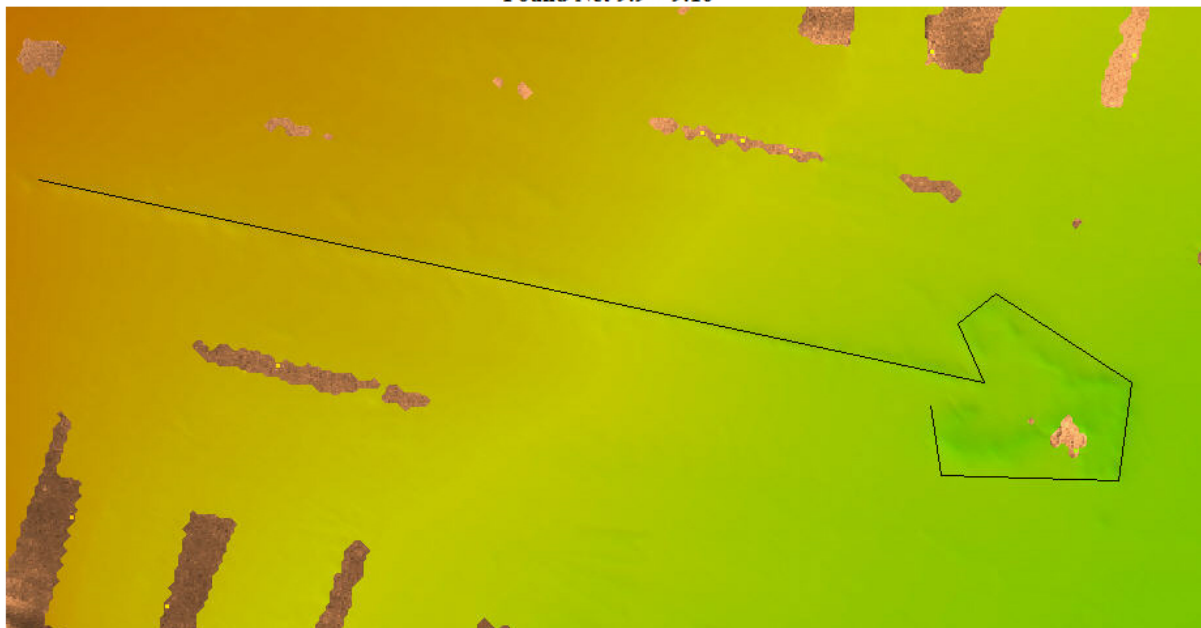


Figure 1.10.3

1.11) KR DTON #9.17 - 9.24: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 10.4" N, 076° 13' 51.0" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.11:60:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 3
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	3	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°52'09.912" , -076°13'52.882"),
- (2. 37°52'09.437" , -076°13'52.752"),
- (3. 37°52'09.592" , -076°13'51.089"),
- (4. 37°52'10.427" , -076°13'50.999"*),
- (5. 37°52'11.341" , -076°13'52.237"),
- (6. 37°52'10.708" , -076°13'52.842"),
- (7. 37°52'10.200" , -076°13'52.507"),
- (8. 37°52'11.424" , -076°13'58.814")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

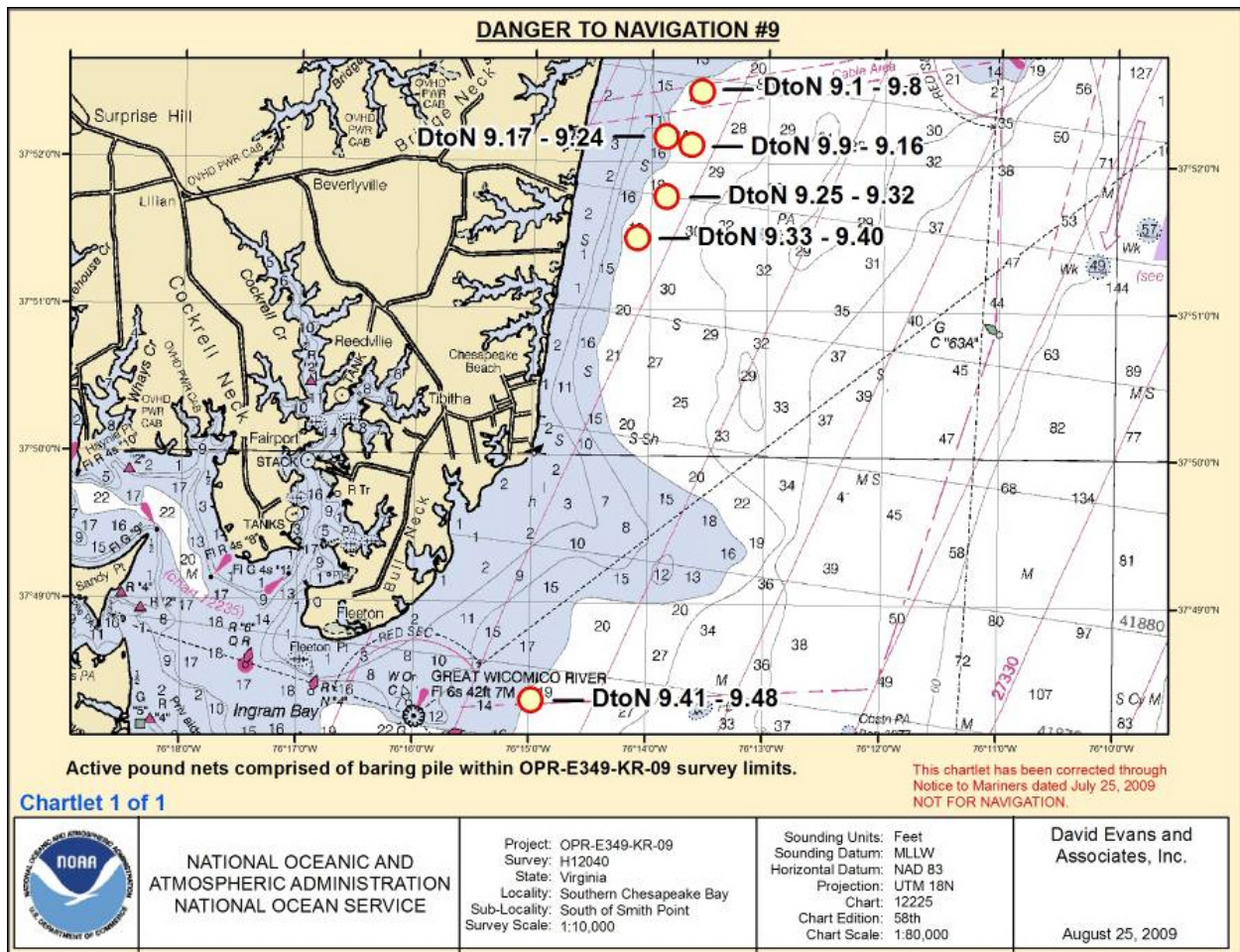


Figure 1.11.1

Pound Net 9.17 – 9.24



Figure 1.11.2

Pound Net 9.17 – 9.24

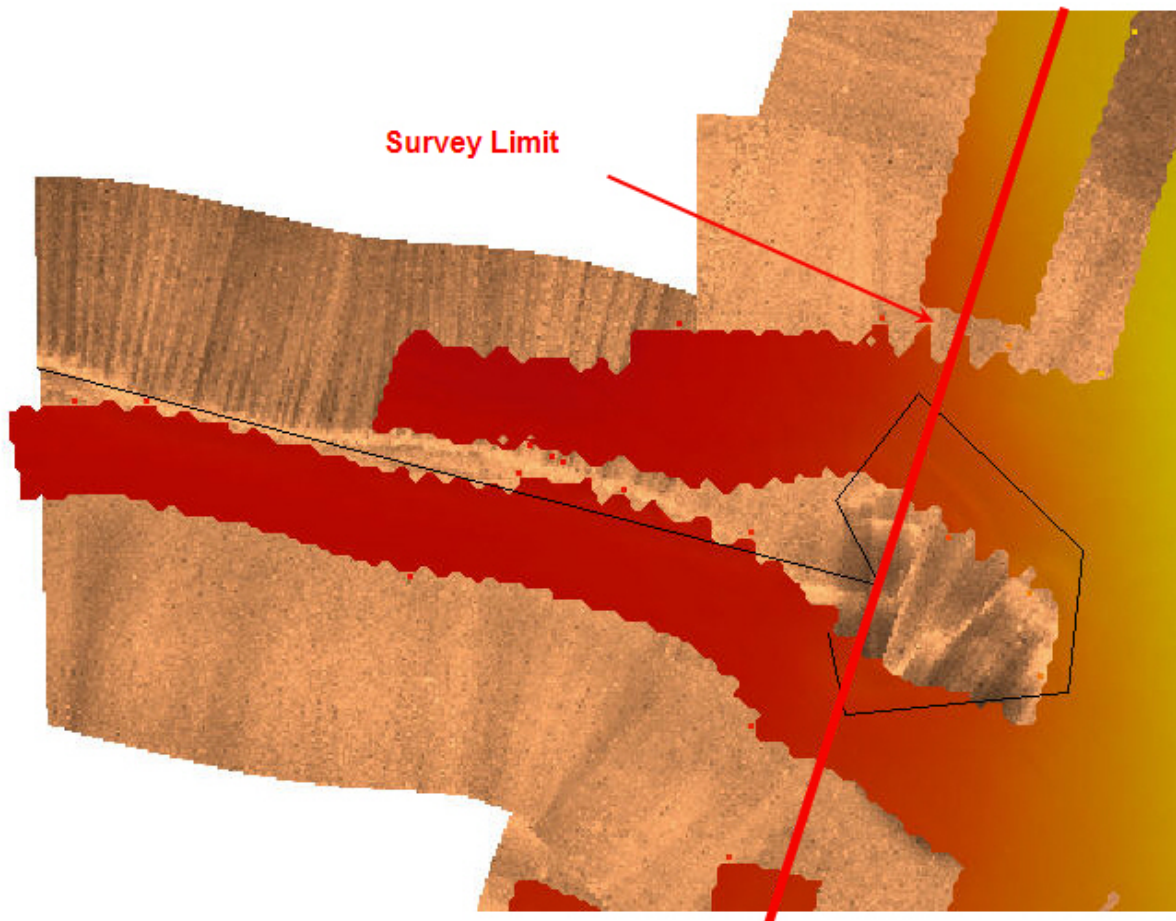


Figure 1.11.3

1.12) KR DTON #9.25 - 9.32: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 51' 45.3" N, 076° 13' 47.9" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.11:60:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 4
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	4	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°51'46.562" , -076°13'58.375"),
- (2. 37°51'45.374" , -076°13'49.638"),
- (3. 37°51'45.886" , -076°13'49.573"),
- (4. 37°51'46.069" , -076°13'49.152"),
- (5. 37°51'45.281" , -076°13'47.910"*),
- (6. 37°51'44.597" , -076°13'48.108"),
- (7. 37°51'44.633" , -076°13'50.020"),
- (8. 37°51'45.065" , -076°13'50.041")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

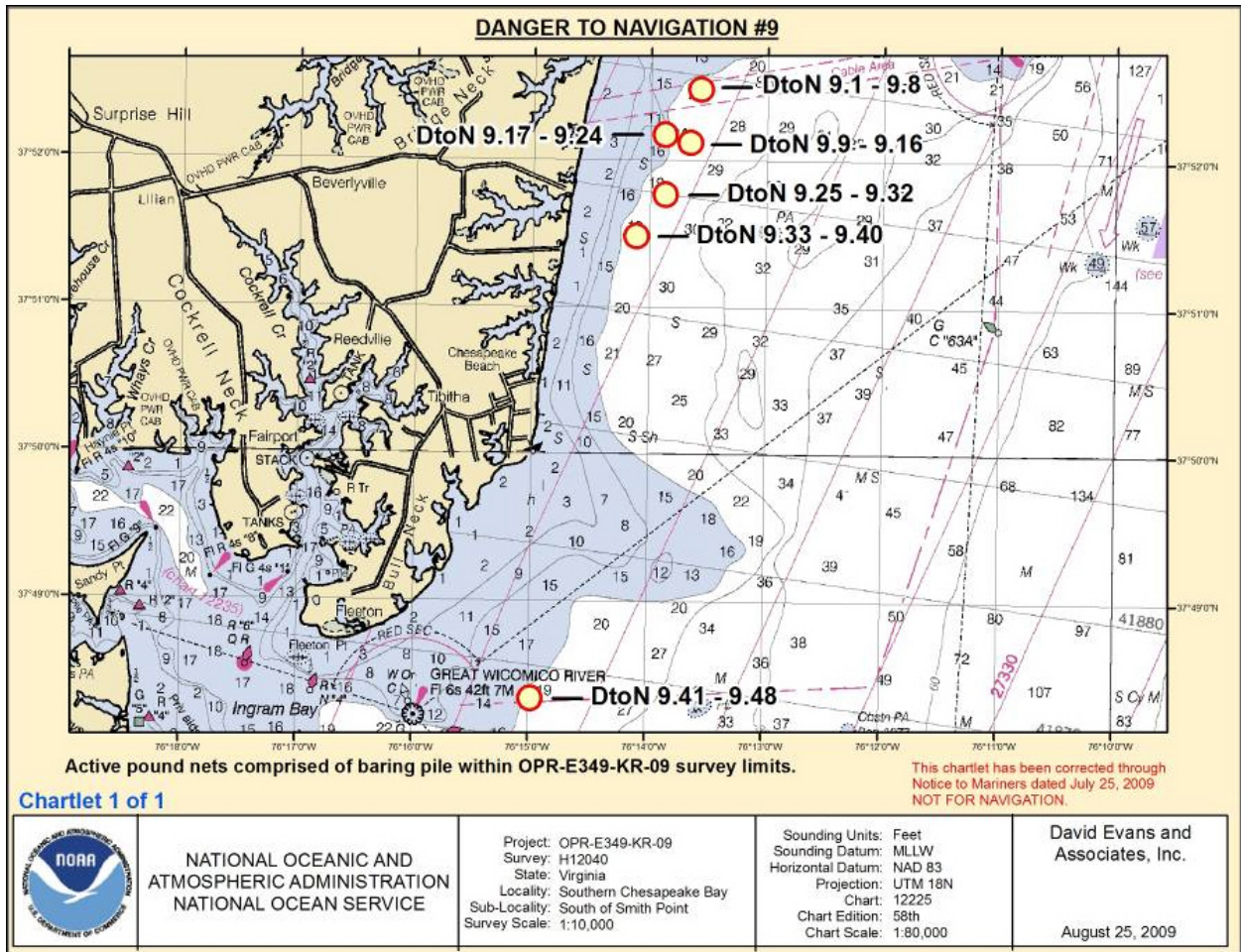


Figure 1.12.1

Pound Net 9.25 – 9.32



Figure 1.12.2

Pound Net 9.25 – 9.32

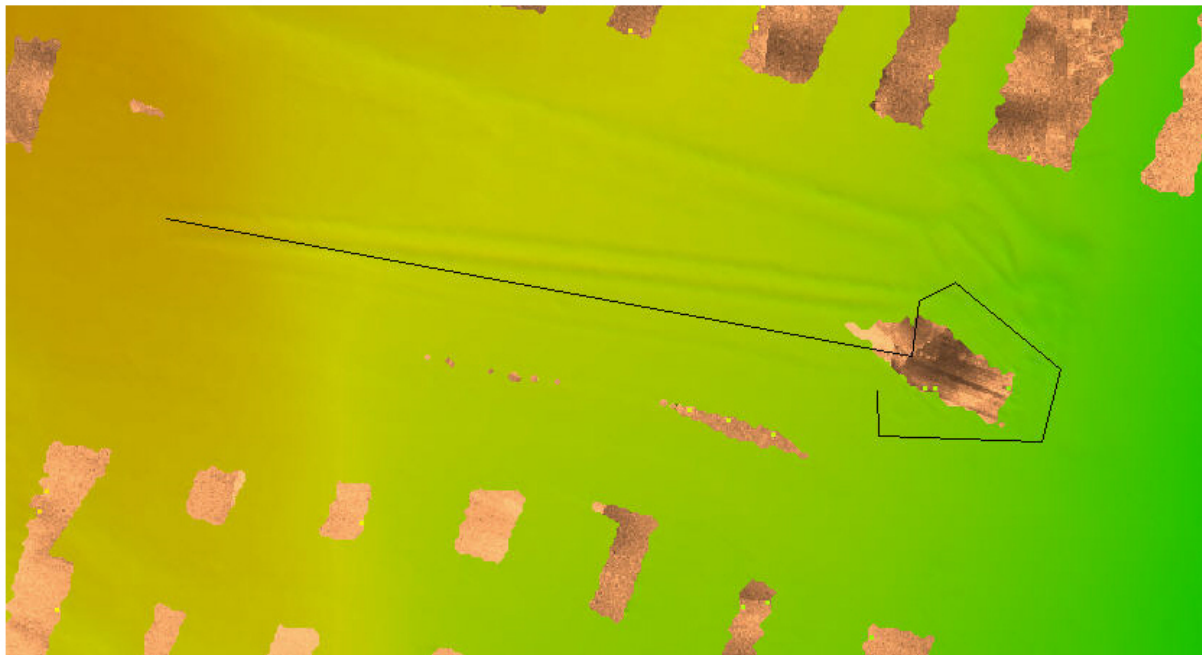


Figure 1.12.3

1.13) KR DTON #9.33 - 9.40: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 51' 29.1" N, 076° 14' 06.1" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.11:60:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 5
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	5	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°51'29.408" , -076°14'08.992"),
- (2. 37°51'29.117" , -076°14'07.487"),
- (3. 37°51'29.635" , -076°14'07.915"),
- (4. 37°51'29.952" , -076°14'07.462"),
- (5. 37°51'29.113" , -076°14'06.108"*),
- (6. 37°51'28.357" , -076°14'06.353"),
- (7. 37°51'28.480" , -076°14'07.958"),
- (8. 37°51'28.998" , -076°14'08.081")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

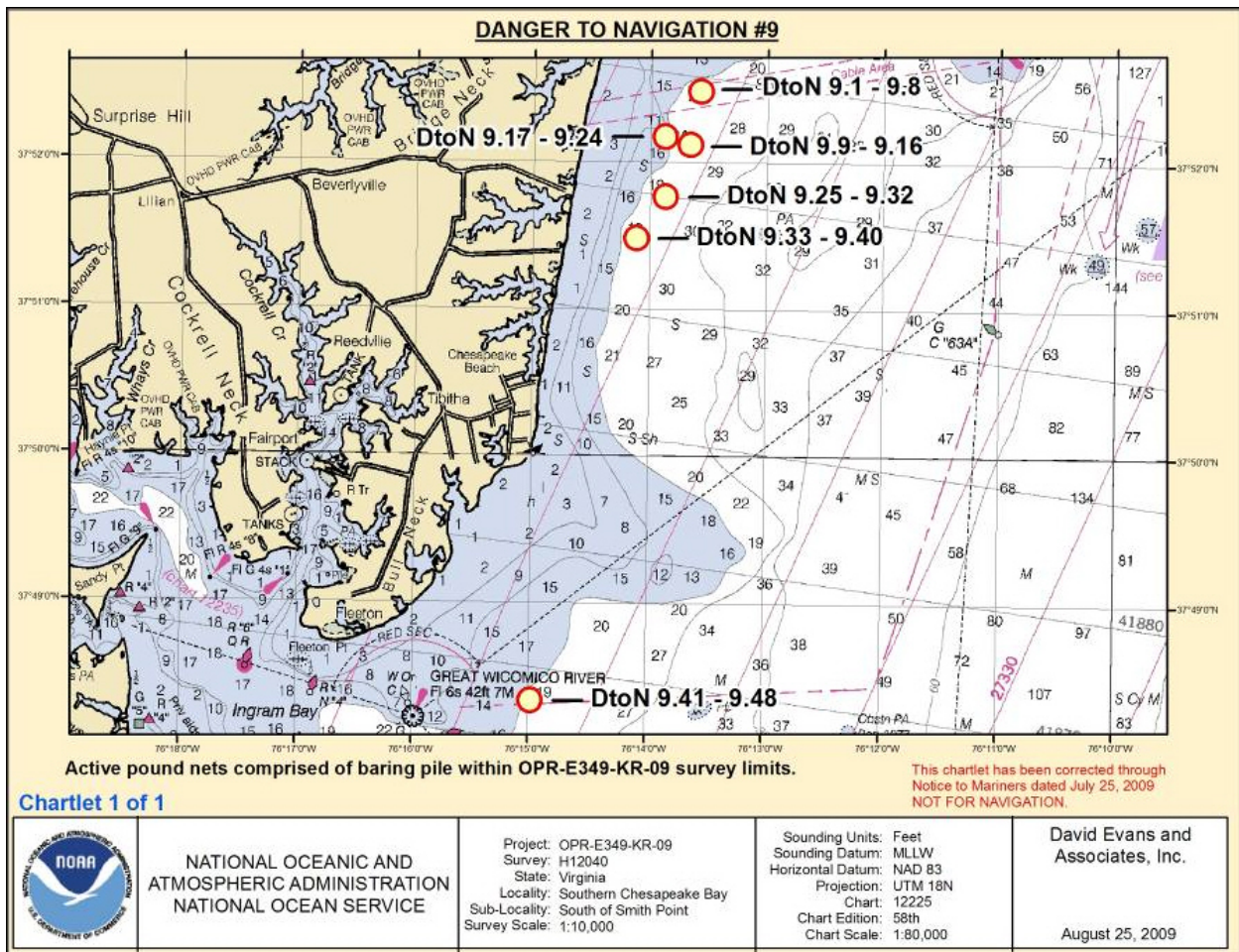


Figure 1.13.1

Pound Net 9.33 – 9.40



Figure 1.13.2

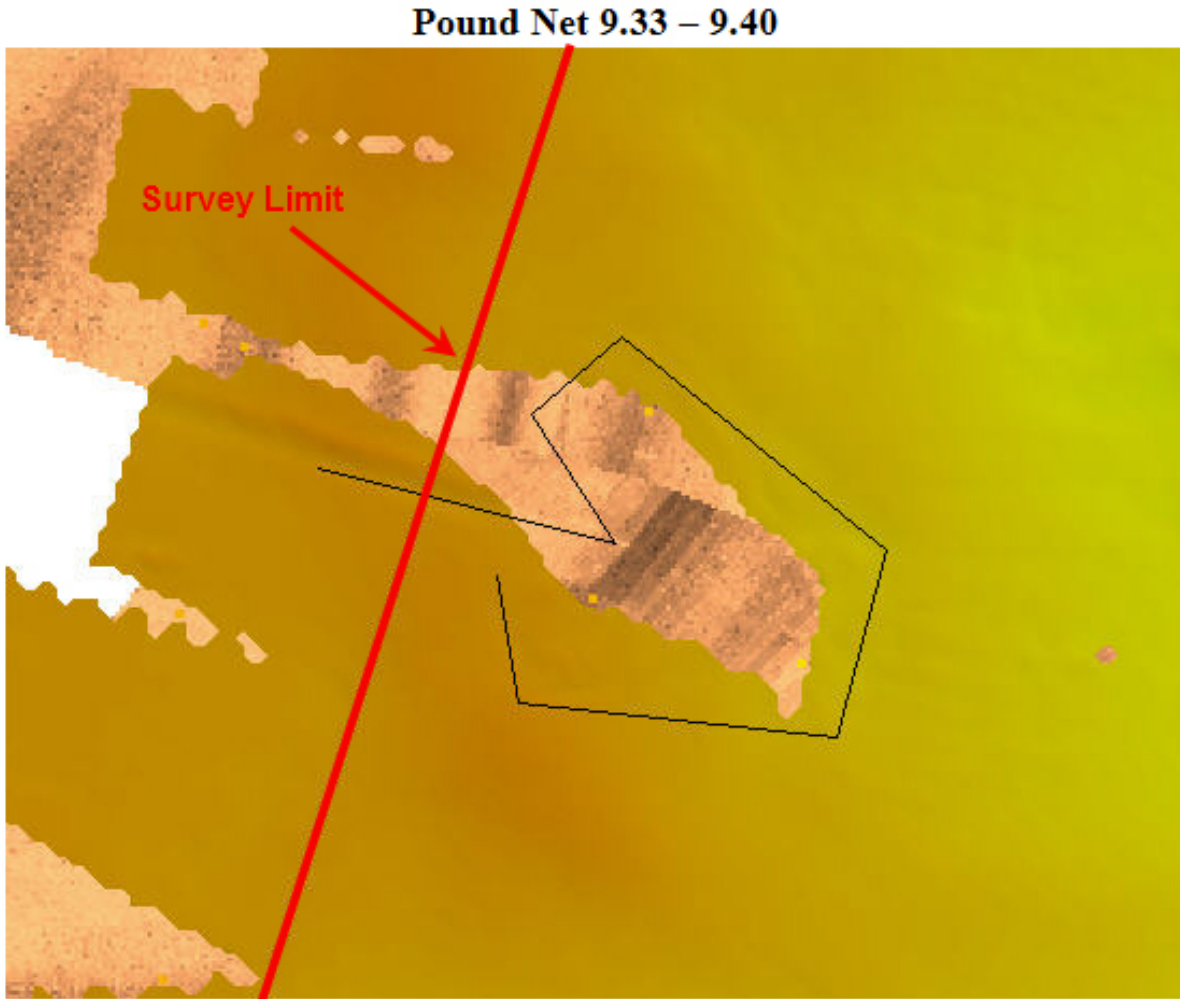


Figure 1.13.3

1.14) KR DTON #9.41 - 9.48: Visible Pound Net

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 18.9" N, 076° 14' 55.6" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-215.11:60:00.000 (08/03/2009)
GP Dataset: H12040_DtoN_4.xls
GP No.: 6
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

Most seaward baring pile which is part of an active pound net.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_4.xls	6	0.00	000.0	Primary

Hydrographer Recommendations

Each pound net is composed of several baring piles. 8 of the most significant baring piles were selected to represent the generalized shape of the pound net. Recommend to chart the pound net as a line object using the 8 baring piles, in this exact order:

- (1. 37°48'22.489" , -076°15'02.668"),
- (2. 37°48'19.400" , -076°14'56.692"),
- (3. 37°48'19.948" , -076°14'56.677"),
- (4. 37°48'19.969" , -076°14'56.234"),
- (5. 37°48'18.911" , -076°14'55.637"*),
- (6. 37°48'18.446" , -076°14'56.191"),
- (7. 37°48'18.914" , -076°14'57.365"),
- (8. 37°48'19.246" , -076°14'57.232")

* Most seaward baring pile (position of DtoN as submitted)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Baring pile which is part of an active pound net.
QUASOU - 2:depth unknown
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
WATLEV - 2:always dry

Office Notes

Concur with clarification. Retain as charted from ENC.

Feature Images

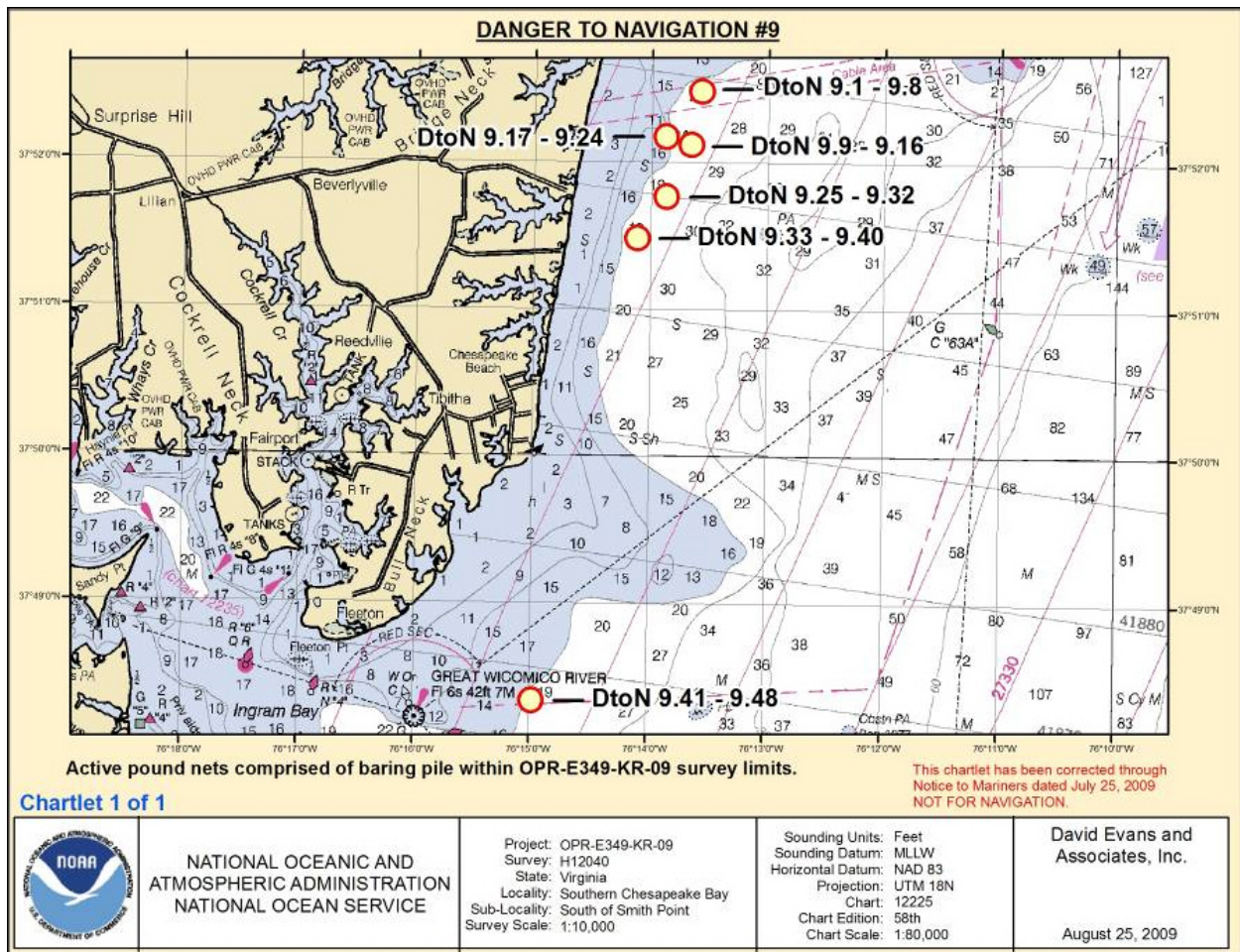


Figure 1.14.1

Pound Net 9.41 – 9.48



Figure 1.14.2

Pound Net 9.41 – 9.48

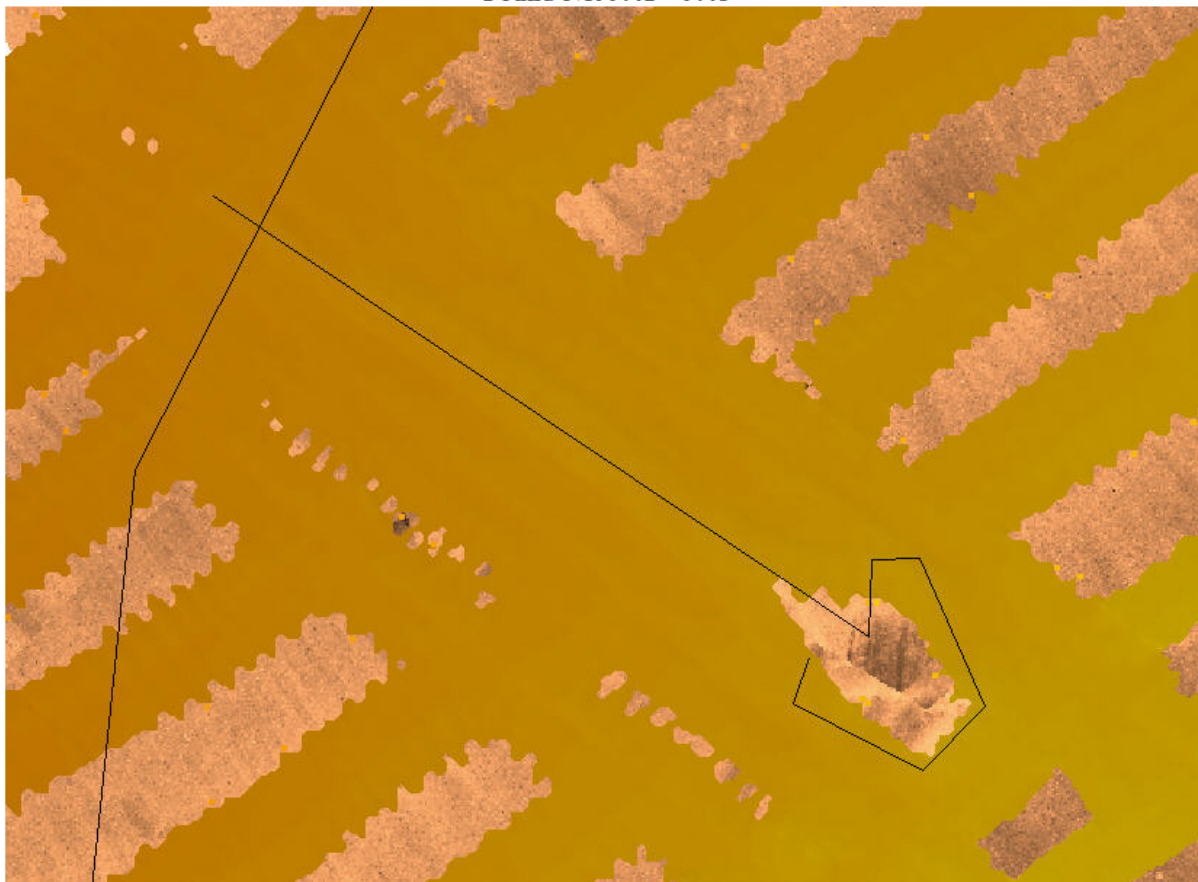


Figure 1.14.3

1.15) Stake

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 41.3" N, 076° 13' 08.4" W
Least Depth: -1.88 m (= -6.17 ft = -1.028 fm = -1 fm 0.17 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-196.12:43:15.000 (07/15/2009)
GP Dataset: H12040_DtoN_10.xls
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

Single stake.

Height of stake is estimated and reduced to Mean High Water using post-processed GPS water levels, and should be considered preliminary.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_10.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart stake at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

-6ft (12235_1, 12285_18, 12285_2, 12225_1, 12230_1, 12285_1, 12280_2)

-1fm (13003_1)

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 1:stake
 CONVIS - 1:visual conspicuous
 HEIGHT - 1.88 m

OBJNAM - Stake

SORDAT - ~~20090816~~ **20091207**

SORIND - ~~US,US,survey,H12040~~ **US,US,graph,H12040**

Office Notes

Concur. Chart stake per survey findings.

Feature Images



Figure 1.15.1

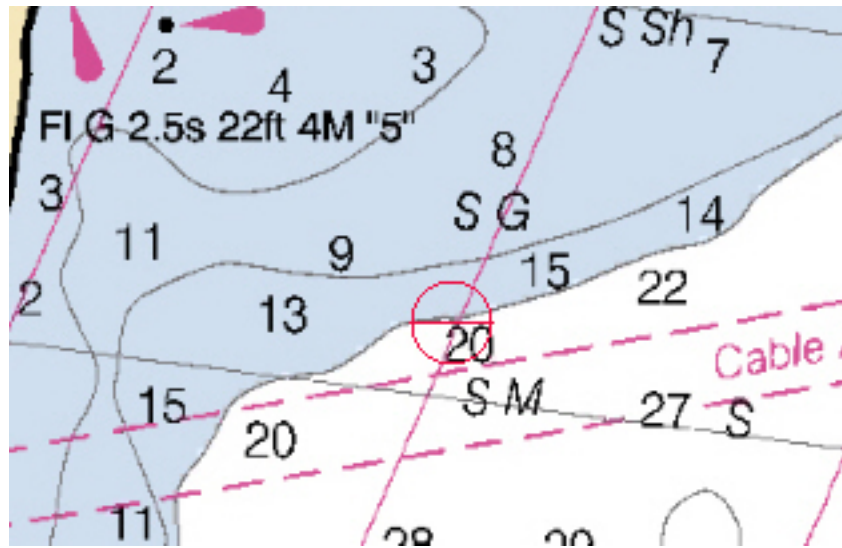


Figure 1.15.2

1.16) Stakes

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 52' 40.5" N, 076° 13' 03.9" W
Least Depth: -1.67 m (= -5.48 ft = -0.913 fm = 0 fm 0.52 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-196.13:00:38.000 (07/15/2009)
GP Dataset: H12040_DtoN_10.xls
GP No.: 4
Charts Affected: 12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2, 13003_1

Remarks:

Three closely spaced stakes.

Height of stakes are estimates and reduced to Mean High Water using post-processed GPS water levels, and should be considered preliminary.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_10.xls	4	0.00	000.0	Primary

Hydrographer Recommendations

Chart stakes at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

-6ft (12235_1, 12285_18, 12225_1, 12230_1, 12285_1, 12280_2)

0 $\frac{3}{4}$ fm (13003_1)

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 1:stake
 CONVIS - 1:visual conspicuous
 HEIGHT - 1.67 m

OBJNAM - Stakes

SORDAT - ~~20090816~~ **20091207**

SORIND - ~~US,US,survey,H12040~~ **US,US,graph,H12040**

Office Notes

Concur. Chart stakes per survey findings.

Feature Images



Figure 1.16.1

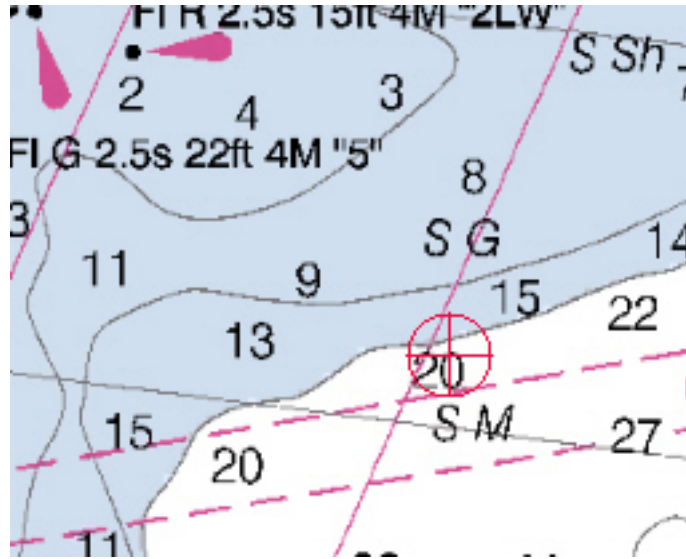


Figure 1.16.2

1.17) Stakes

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 51' 09.9" N, 076° 14' 16.5" W
Least Depth: -1.01 m (= -3.31 ft = -0.552 fm = 0 fm 2.69 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-228.13:29:55.000 (08/16/2009)
GP Dataset: H12040_DtoN_10.xls
GP No.: 6
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

Two closely spaced stakes.

Height of stakes are estimates and reduced to Mean High Water using post-processed GPS water levels, and should be considered preliminary.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_10.xls	6	0.00	000.0	Primary

Hydrographer Recommendations

Chart stakes at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

-4ft (12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

0 ½fm (13003_1)

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 1:stake
 CONVIS - 1:visual conspicuous
 HEIGHT - 1.01 m

OBJNAM - Stakes

SORDAT - ~~20090816~~ **20091207**

SORIND - ~~US,US,survey,H12040~~ **US,US,graph,H12040**

Office Notes

Concur. Chart stakes per survey findings.

Feature Images

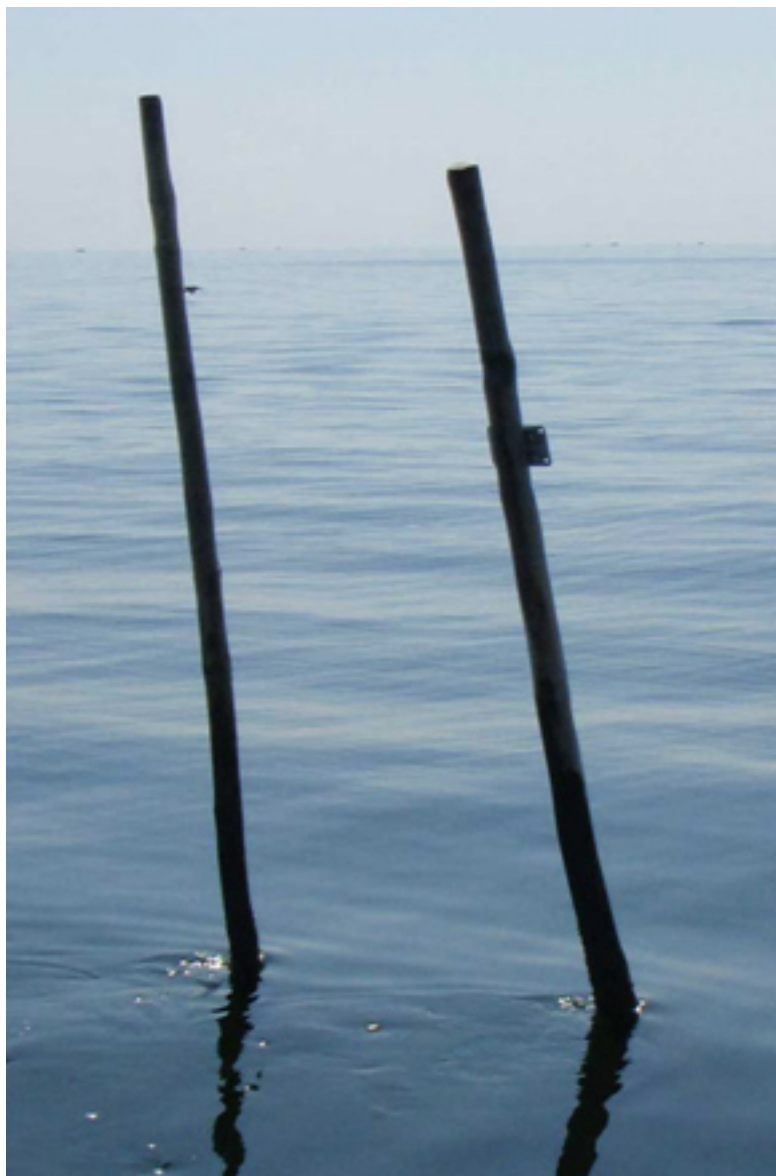


Figure 1.17.1

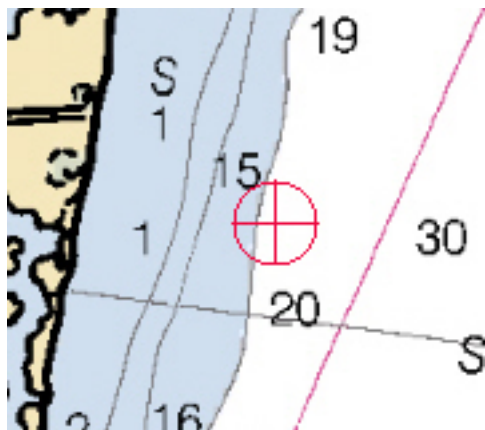


Figure 1.17.2

1.18) Stake

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 50' 34.1" N, 076° 14' 25.4" W
Least Depth: -1.83 m (= -6.00 ft = -1.001 fm = -1 fm 0.00 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None]; TVU (TPEv) [None]
Timestamp: 2009-204.21:12:23.000 (07/23/2009)
GP Dataset: H12040_DtoN_10.xls
GP No.: 7
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

Single stake.

Height of stake is estimated and reduced to Mean High Water using post-processed GPS water levels, and should be considered preliminary.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_10.xls	7	0.00	000.0	Primary

Hydrographer Recommendations

Chart stake at surveyed position.

Cartographically-Rounded Depth (Affected Charts):

-6ft (12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

-1fm (13003_1)

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 1:stake
 CONVIS - 1:visual conspicuous
 HEIGHT - 1.83 m

OBJNAM - Stake

SORDAT - ~~20090816~~ **20091207**

SORIND - ~~US,US,survey,H12040~~ **US,US,graph,H12040**

Office Notes

Concur. Chart stake per survey findings.

Feature Images



Figure 1.18.1

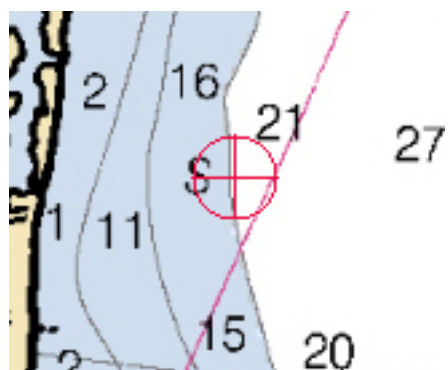


Figure 1.18.2

1.19) KR DtoN #6: 31ft Sounding**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 51' 04.5" N, 076° 12' 12.6" W
Least Depth: 9.62 m (~~= 31.56 ft = 5.261 fm = 5 fm 1.56 ft~~) **9.528m**
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-210.13:24:42.000 (07/29/2009)
GP Dataset: H12040_DtoN_11.txt
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to Mean Lower Low Water using post-processed GPS water levels, and should be considered preliminary.

Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_11.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

A circular mound with an approximate radius of 33m rising 2.2m above the natural bottom was found during survey.

Cartographically-Rounded Depth (Affected Charts):

31ft (12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

5 ¼fm (13003_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: OBJNAM - 31ft Sounding
 QUASOU - 6:least depth known
 SORDAT - ~~20090729~~ **20091207**

SORIND - ~~US,US,survey,H12040~~ *US,US,graph,H12040*

TECSOU - 1,2,3:found by echo-sounder,found by side scan sonar,found by multi-beam

VERDAT - 12:Mean lower low water

Office Notes

Concur. Chart as 31ft sounding.

Feature Images

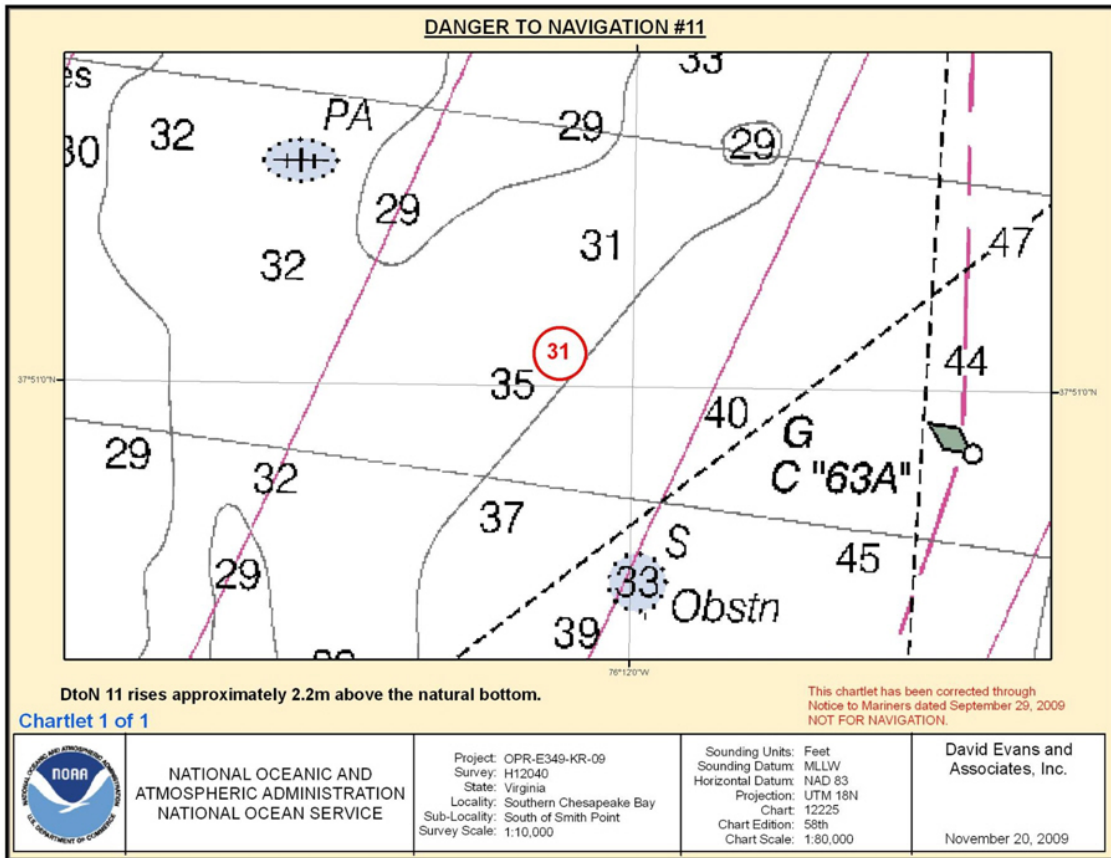


Figure 1.19.1

DtoN #11 MBES 2d View

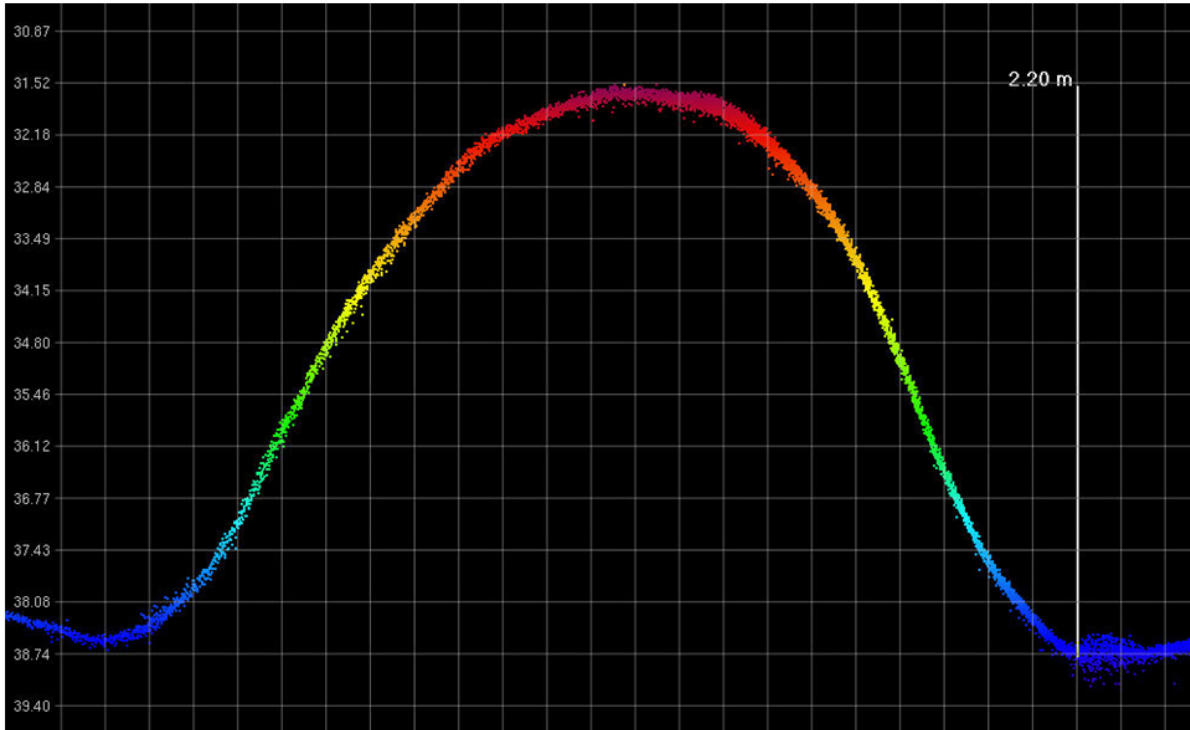


Figure 1.19.2

DtoN #11 MBES 3d View

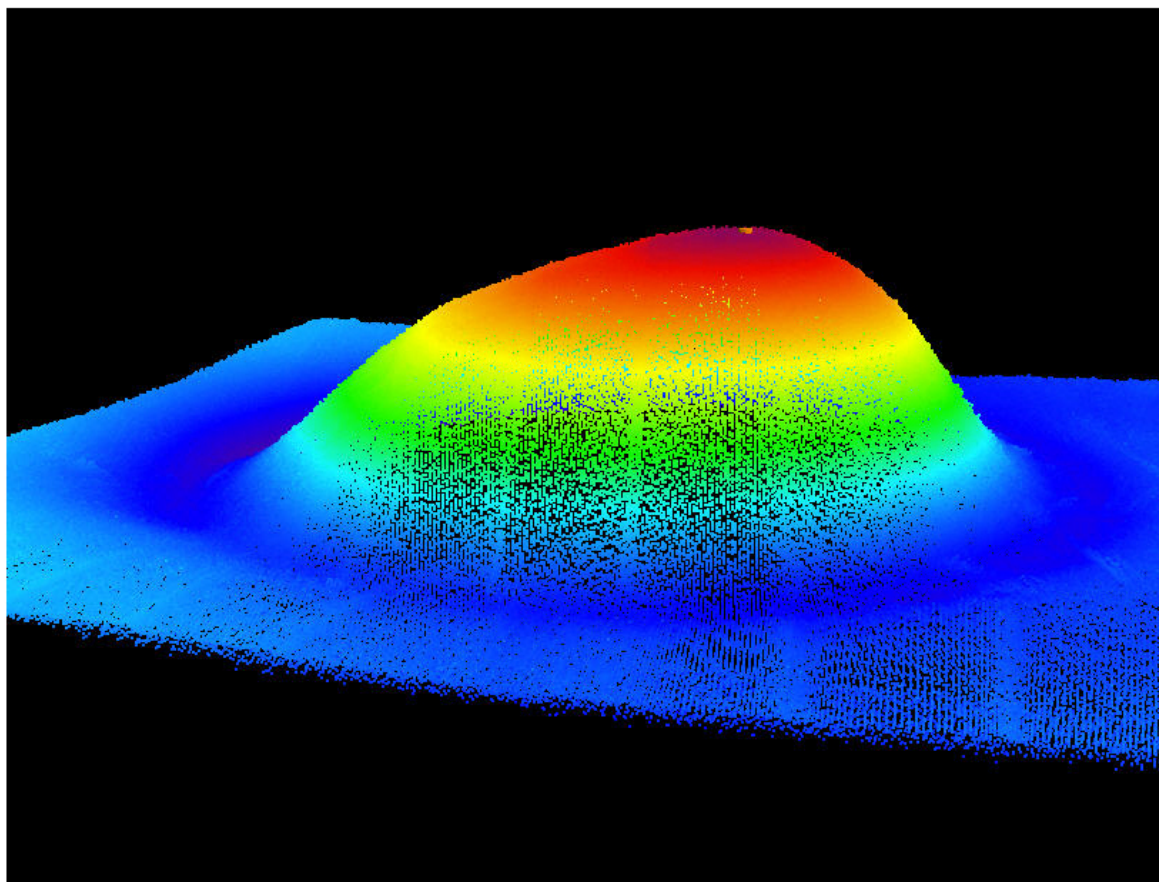


Figure 1.19.3

DtoN #11 Sidescan Sonar View
173-203120-S

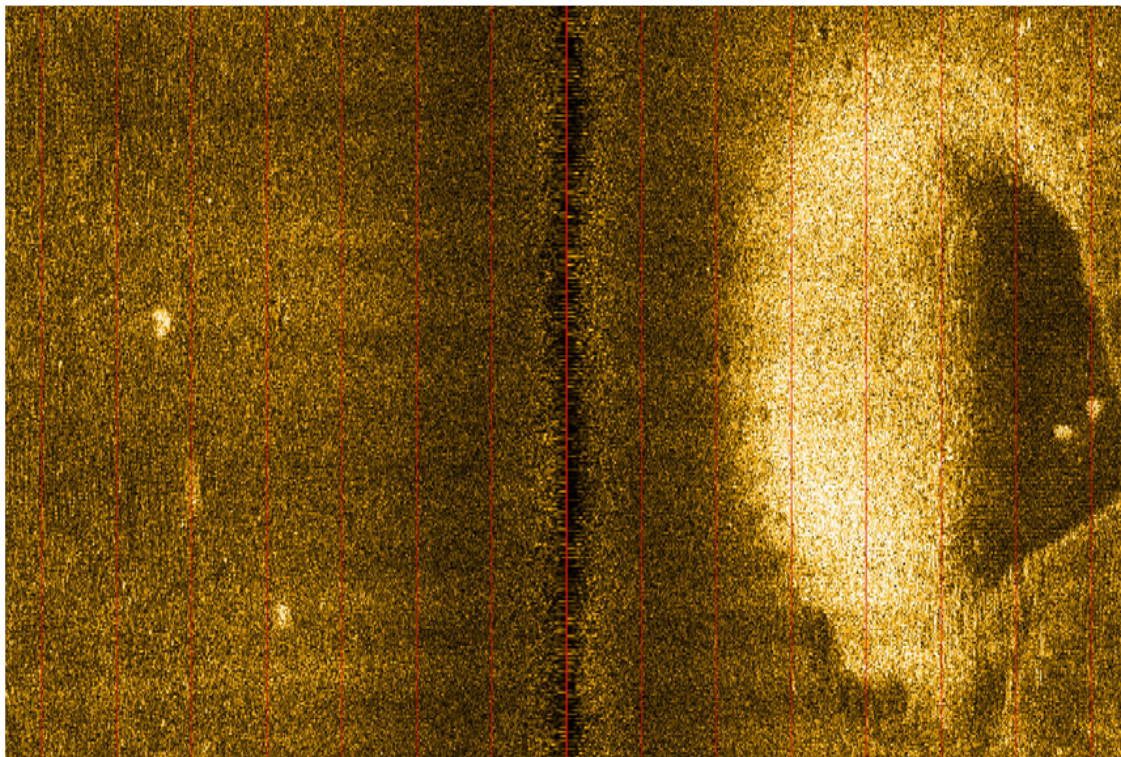


Figure 1.19.4

1.20) KR DTON #7: 13ft Obstruction**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 50' 29.8" N, 076° 14' 25.3" W
Least Depth: 4.04 m (= 13.24 ft = 2.207 fm = 2 fm 1.24 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None]; TVU (TPEv) [None]
Timestamp: 2009-205.14:40:38.000 (07/24/2009)
GP Dataset: H12040_DtoN_12.txt
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to

■ Mean Lower Low Water using post-processed GPS water levels, and should be considered

■ preliminary.

Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on NAD83.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_12.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

The DtoN appears to be a submerged stake rising 2.2m above the natural bottom.

Cartographically-Rounded Depth (Affected Charts):

13ft (12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

2 ¼fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: OBJNAM - 13ft Obstruction

QUASOU - 6:least depth known

SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - 4.037 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Several submerged stakes found in the area. Chart as obstruction area.

Feature Images

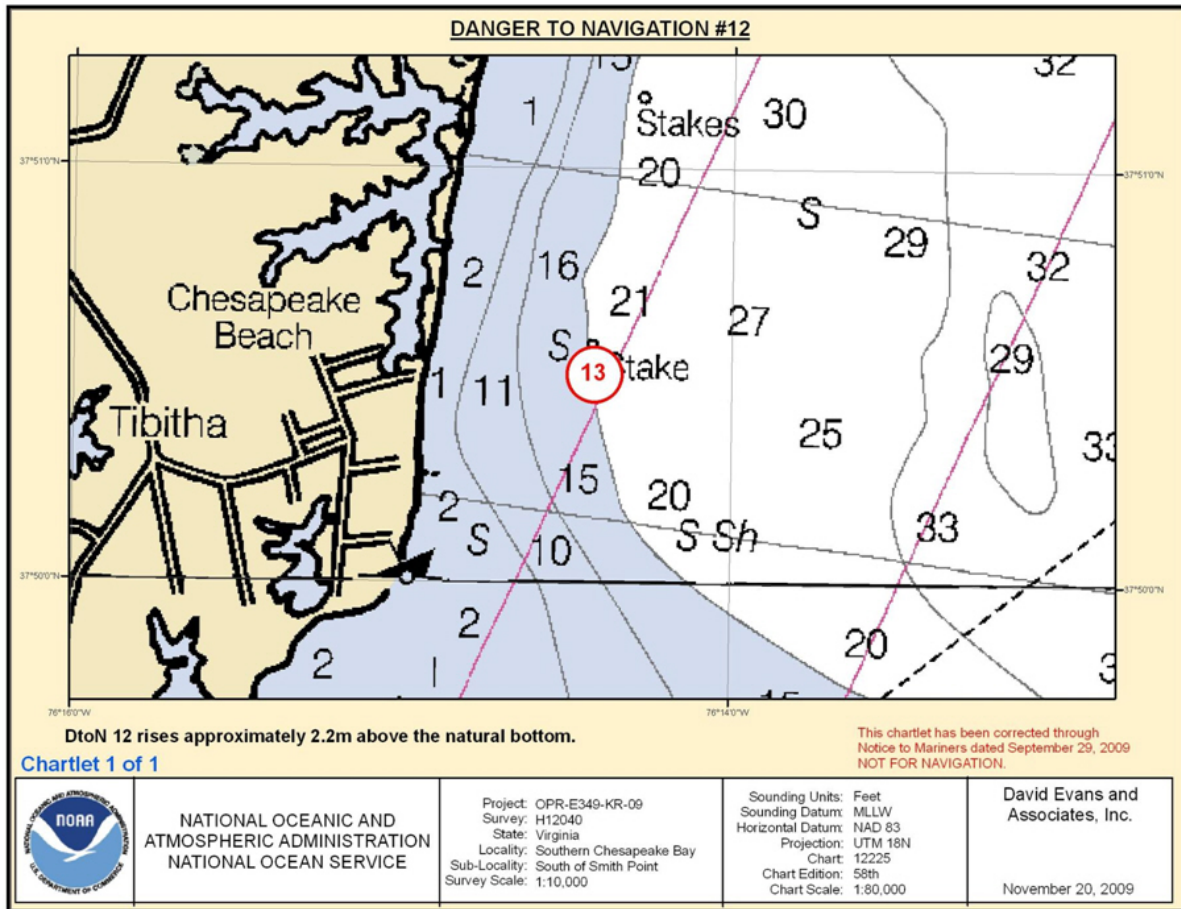


Figure 1.20.1

DtoN #12 MBES 2d View

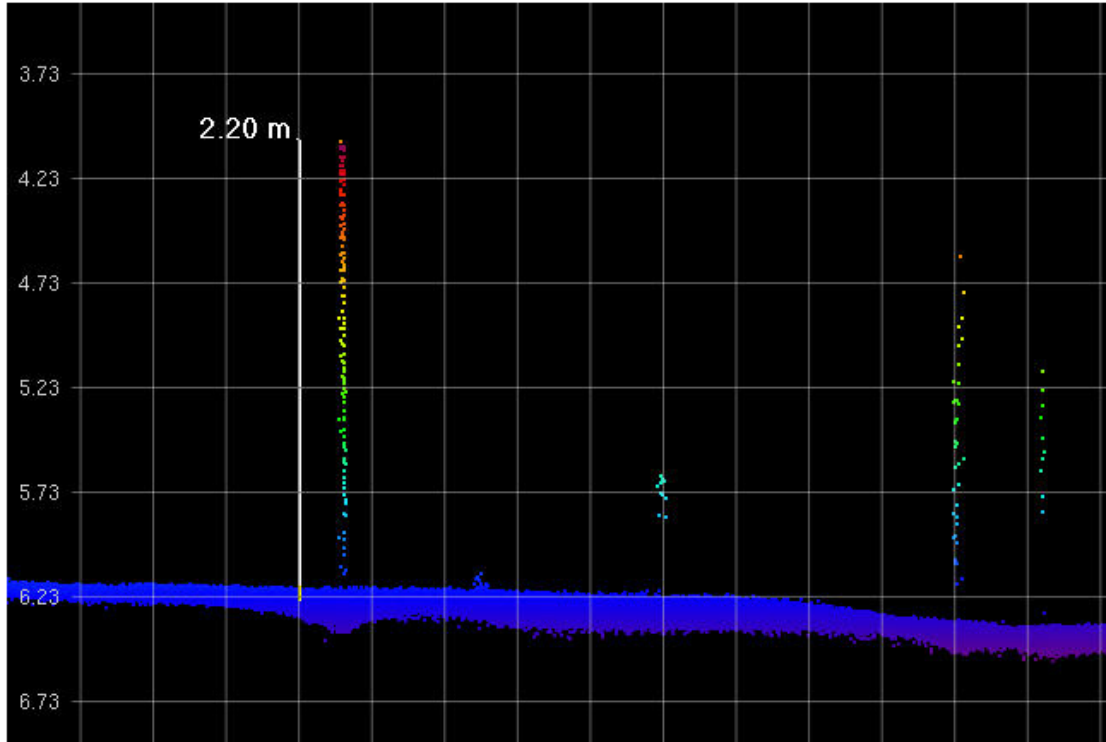


Figure 1.20.2

DtoN #12 MBES 3d View

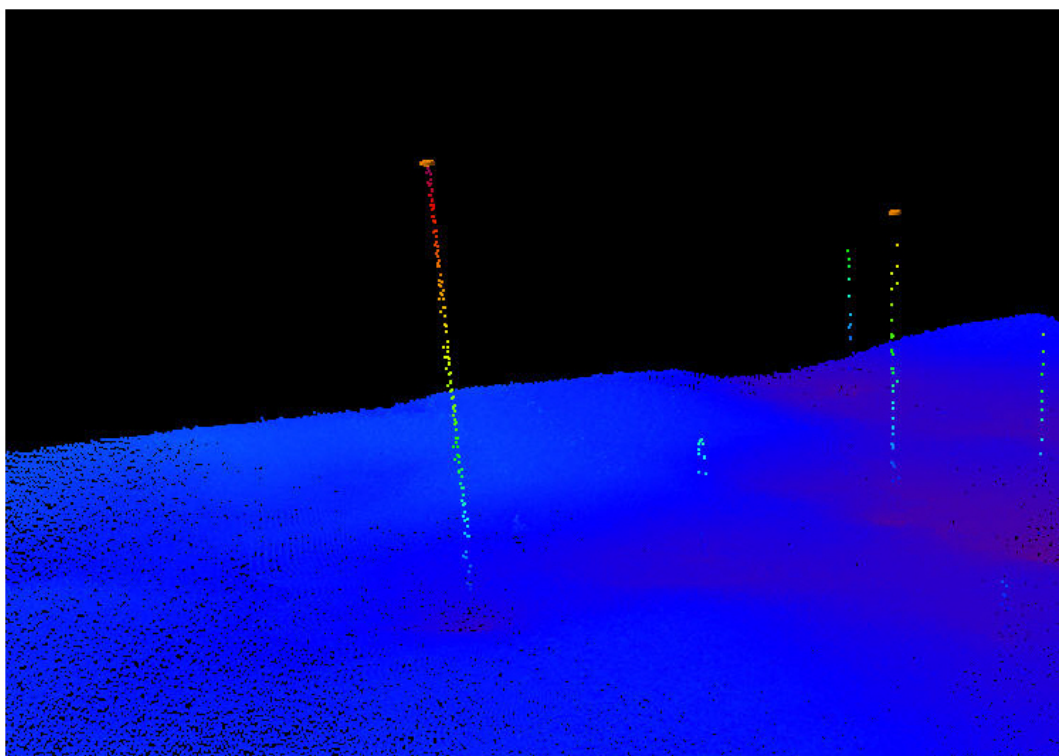


Figure 1.20.3

DtoN #12 Sidescan Sonar View
205-174605-S

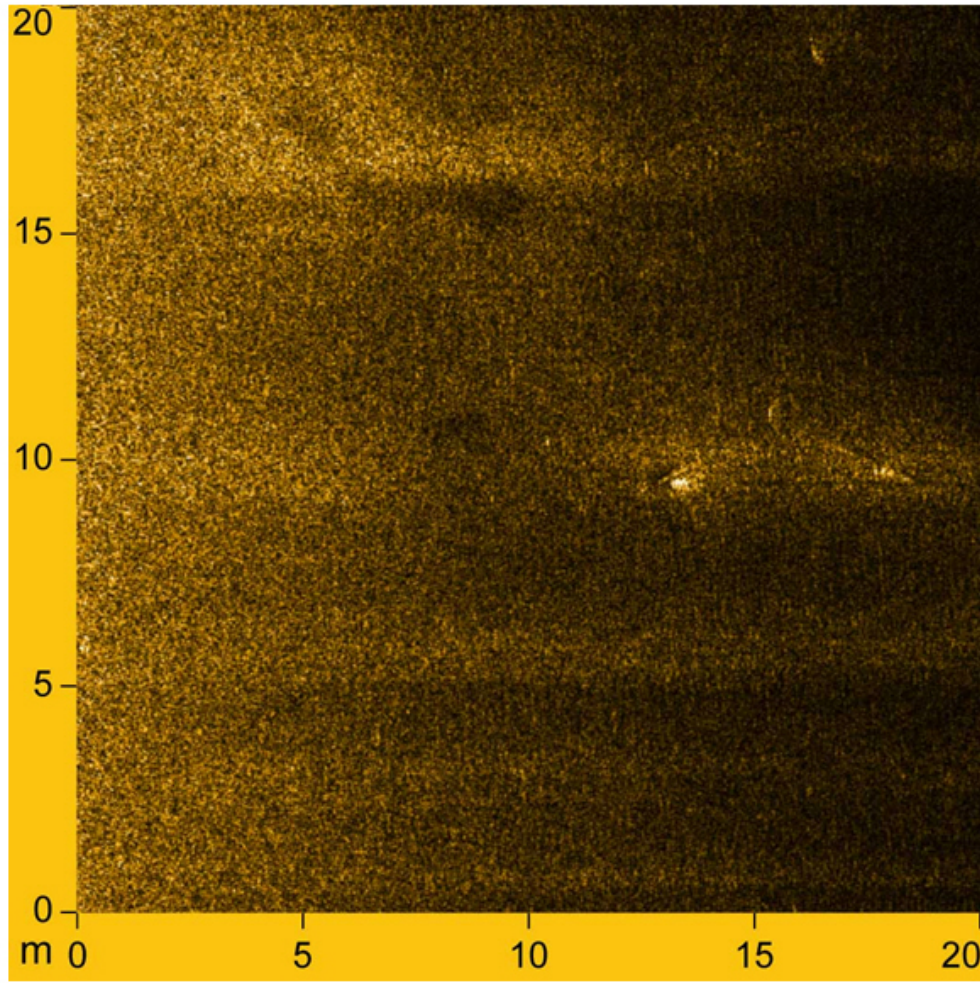


Figure 1.20.4

1.21) 19ft OBSTRN**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 48' 51.3" N, 076° 14' 05.1" W
Least Depth: 5.90 m (~~= 19.36 ft = 3.227 fm = 3 fm 1.36 ft~~) **5.896m**
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-319.16:09:29.000 (11/15/2009)
GP Dataset: H12040_DtoN_#08.xls
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to Mean Lower Low Water using post-processed GPS water levels, and should be considered preliminary.

Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on NAD83.

DtoN 14 is a linear feature that stands approximately 1.0m proud.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_#08.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 19ft Obstruction at survey location.

Cartographically-Rounded Depth (Affected Charts):

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

3 ¼fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - 19ft Obstruction

QUASOU - 6:least depth known

SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - ~~5.901 m~~ **5.896m**

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart as 19ft CS sounding.

DEA DtoN #14 as referred to in the following images. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

Feature Images

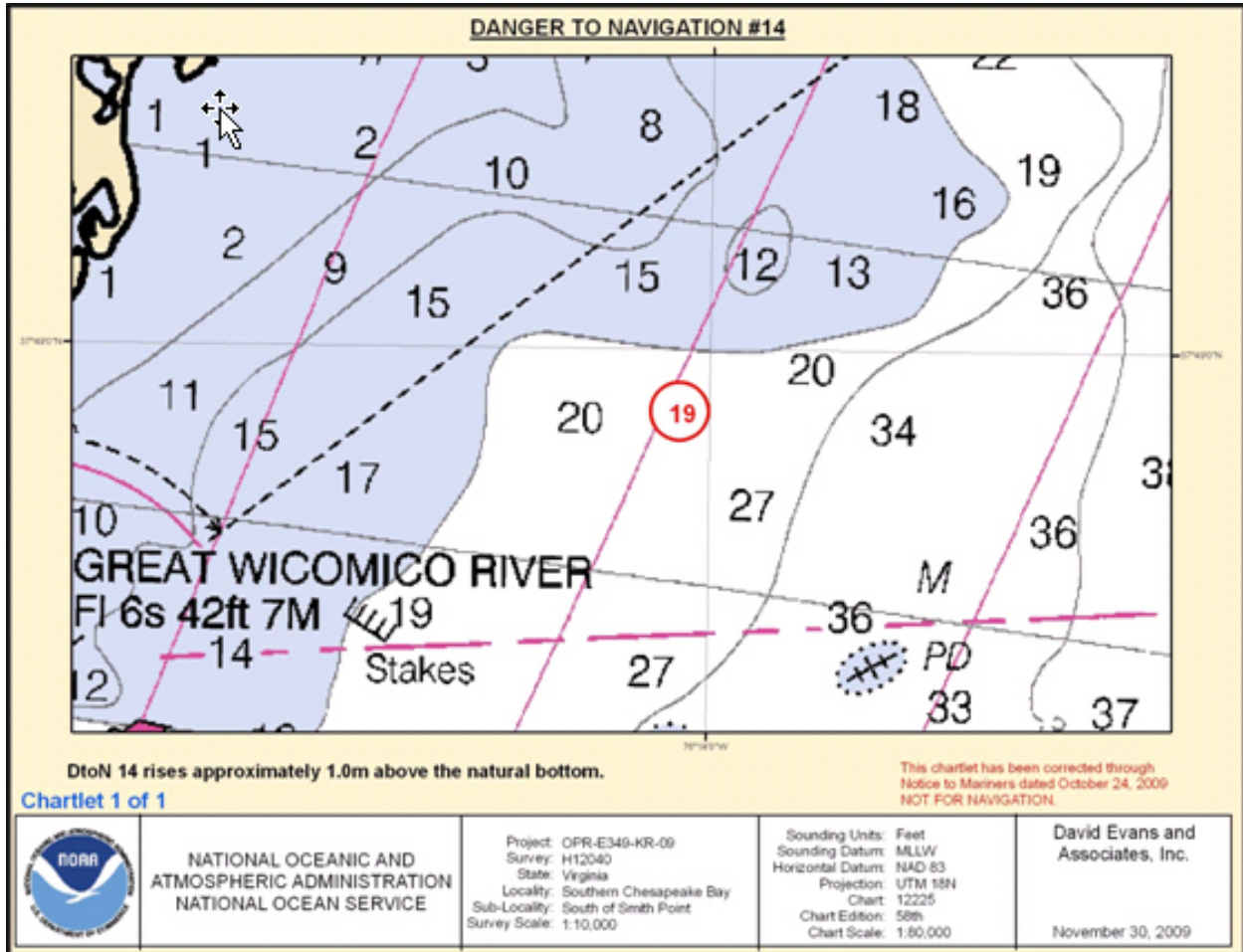


Figure 1.21.1

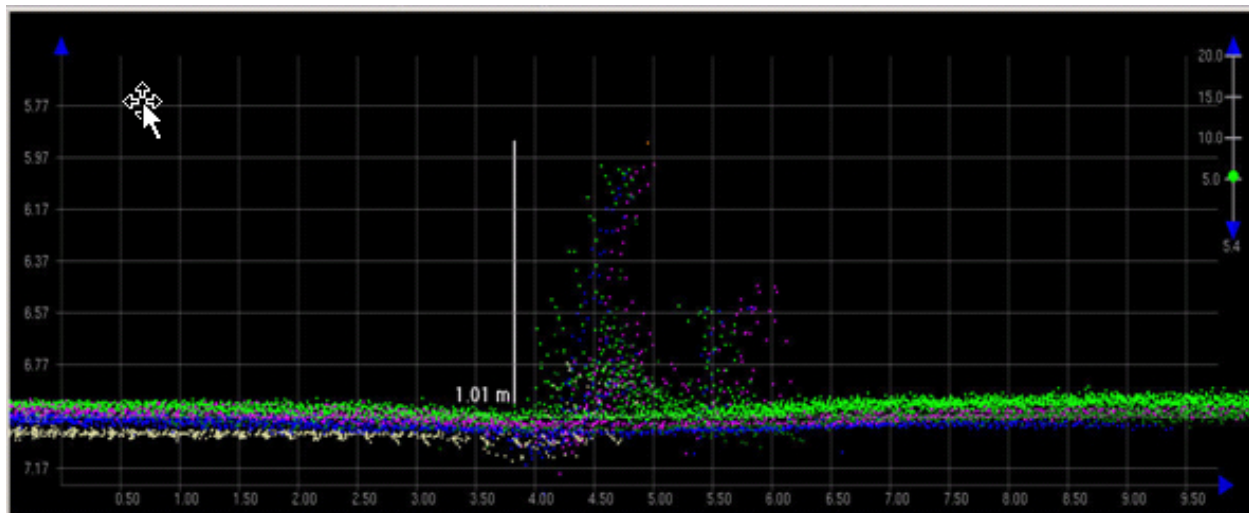


Figure 1.21.2

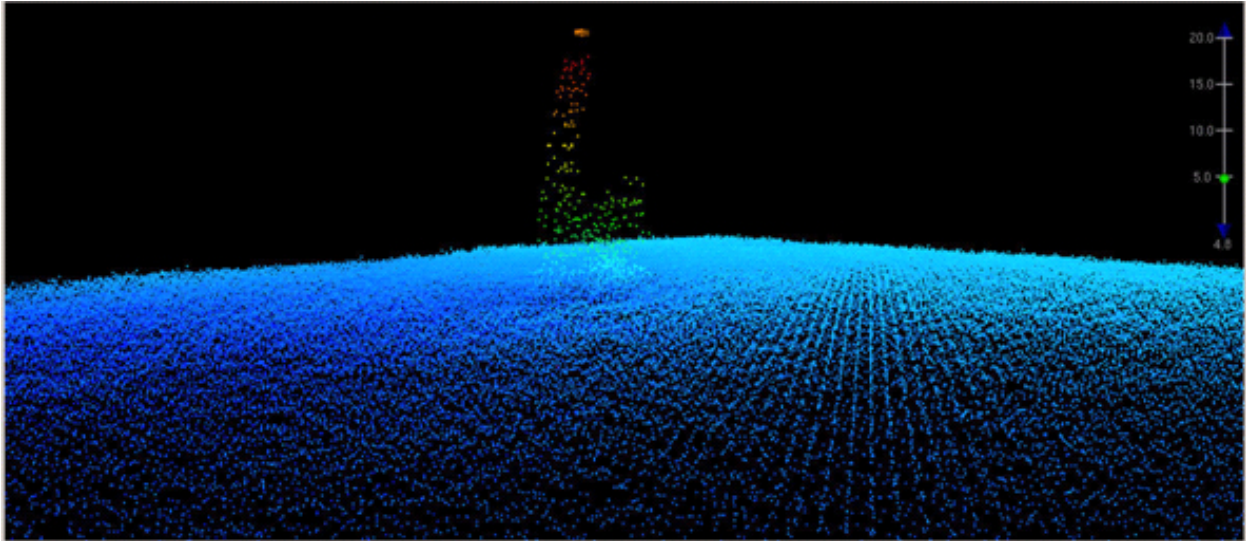


Figure 1.21.3

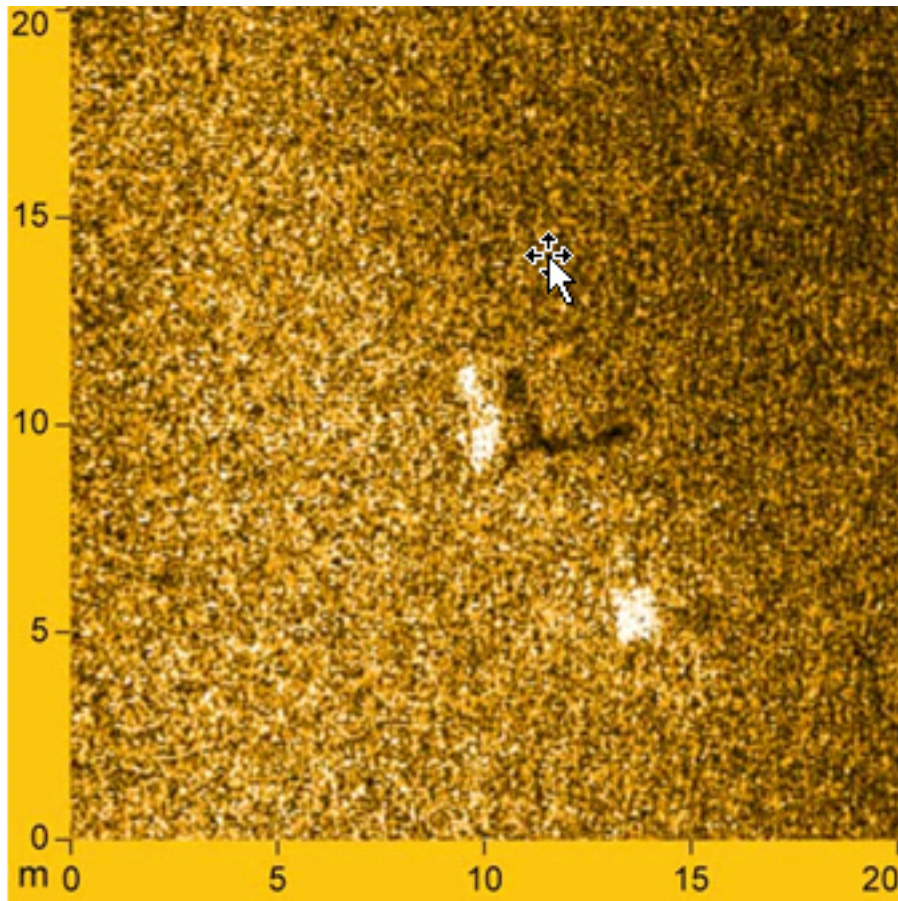


Figure 1.21.4

1.22) 17ft OBSTRN**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 50' 48.5" N, 076° 14' 19.1" W
Least Depth: 5.16 m (~~= 16.94 ft = 2.824 fm = 2 fm 4.94 ft~~) **5.176m**
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-322.12:17:54.000 (11/18/2009)
GP Dataset: H12040_DtoN_#08.xls
GP No.: 2
Charts Affected: 12235_1, 12285_18, 12225_1, 12285_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to Mean Lower Low Water using post-processed GPS water levels, and should be considered preliminary. Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on NAD83.

DtoN 13 is a linear feature that stands approximately 1.5m proud.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_#08.xls	2	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 17ft Obstruction at survey location.

Cartographically-Rounded Depth (Affected Charts):

17ft (12235_1, 12285_18, 12225_1, 12285_1, 12280_2)

2 ¾fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - 17ft Obstruction

QUASOU - 6:least depth known
SORDAT - 20091207
SORIND - US,US,graph,H12040
TECSOU - 2,3:found by side scan sonar,found by multi-beam
VALSOU - ~~5.164 m~~ **5.176m**
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Shown on chart 12235_1; 32th Ed., 1:40,000 and smaller scale charts as a obstruction, least depth 17 feet. Office processing determined that the position and least depth are different from the initial DToN submission to MCD. Delete charted obstruction, least depth 17 feet. Chart an obstruction, least depth 17 feet at the present survey position in Latitude 37°50'48.441 N, Longitude 076°14'19.108 W.

DEA DtoN #13 as referred to in the following images. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

Feature Images

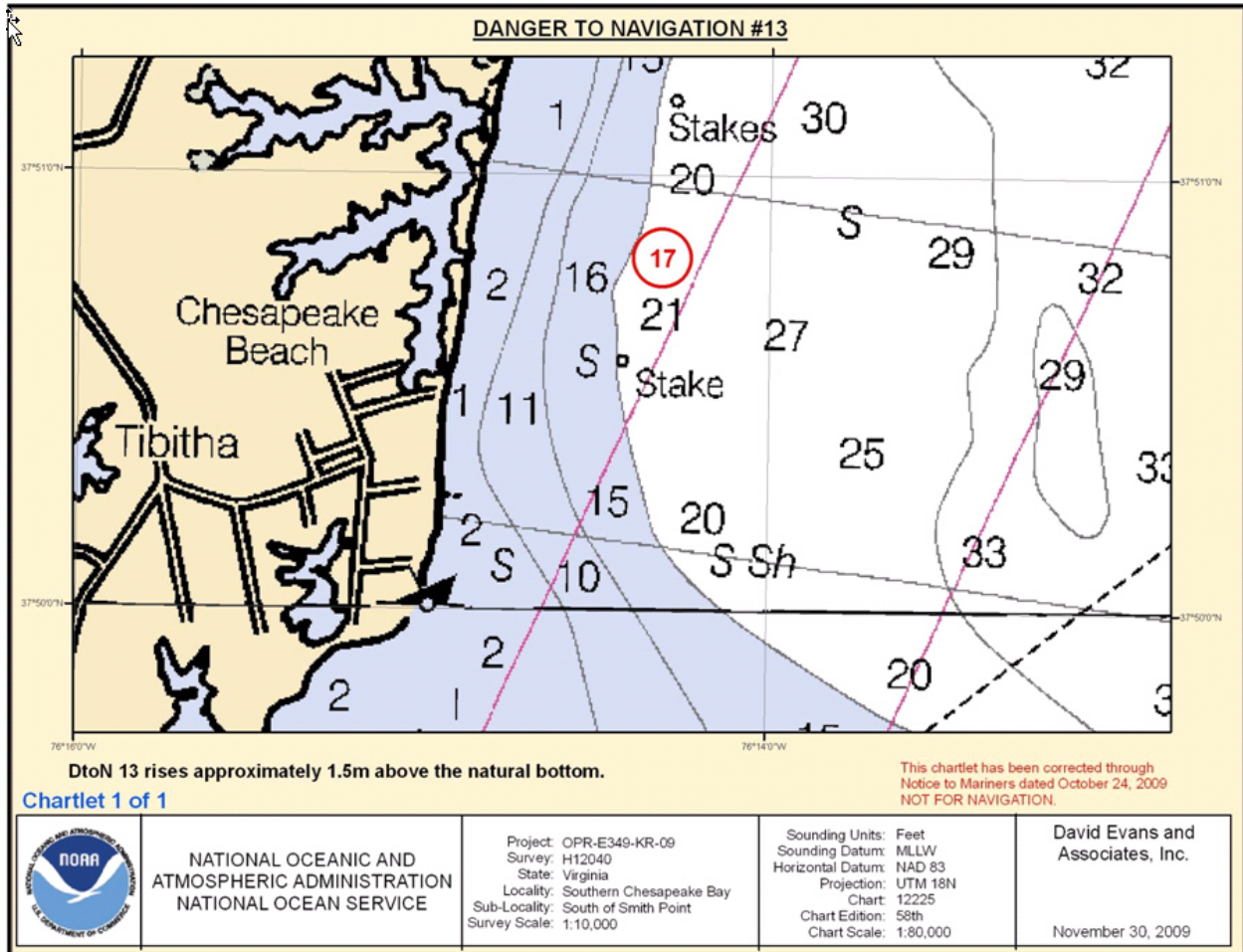


Figure 1.22.1

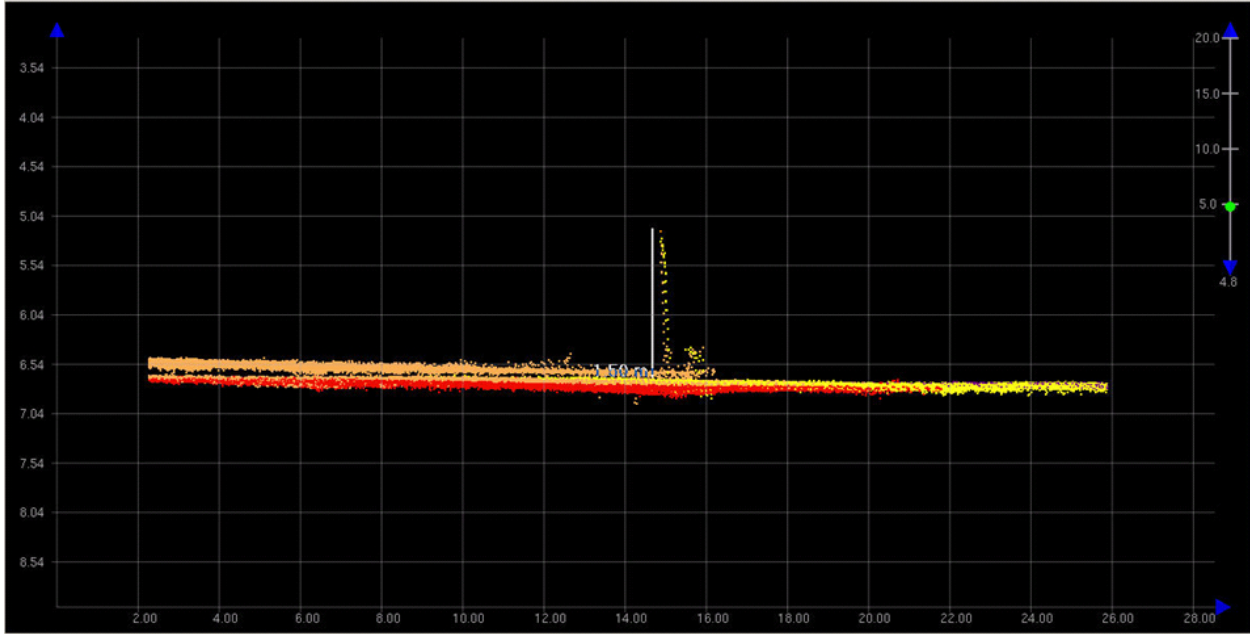


Figure 1.22.2

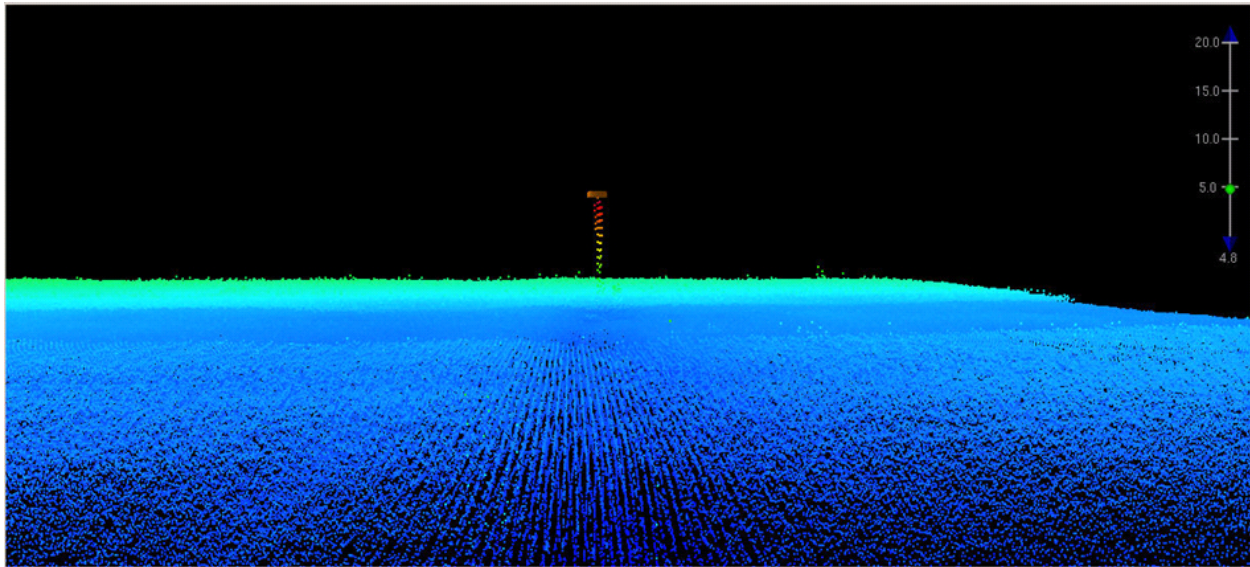


Figure 1.22.3

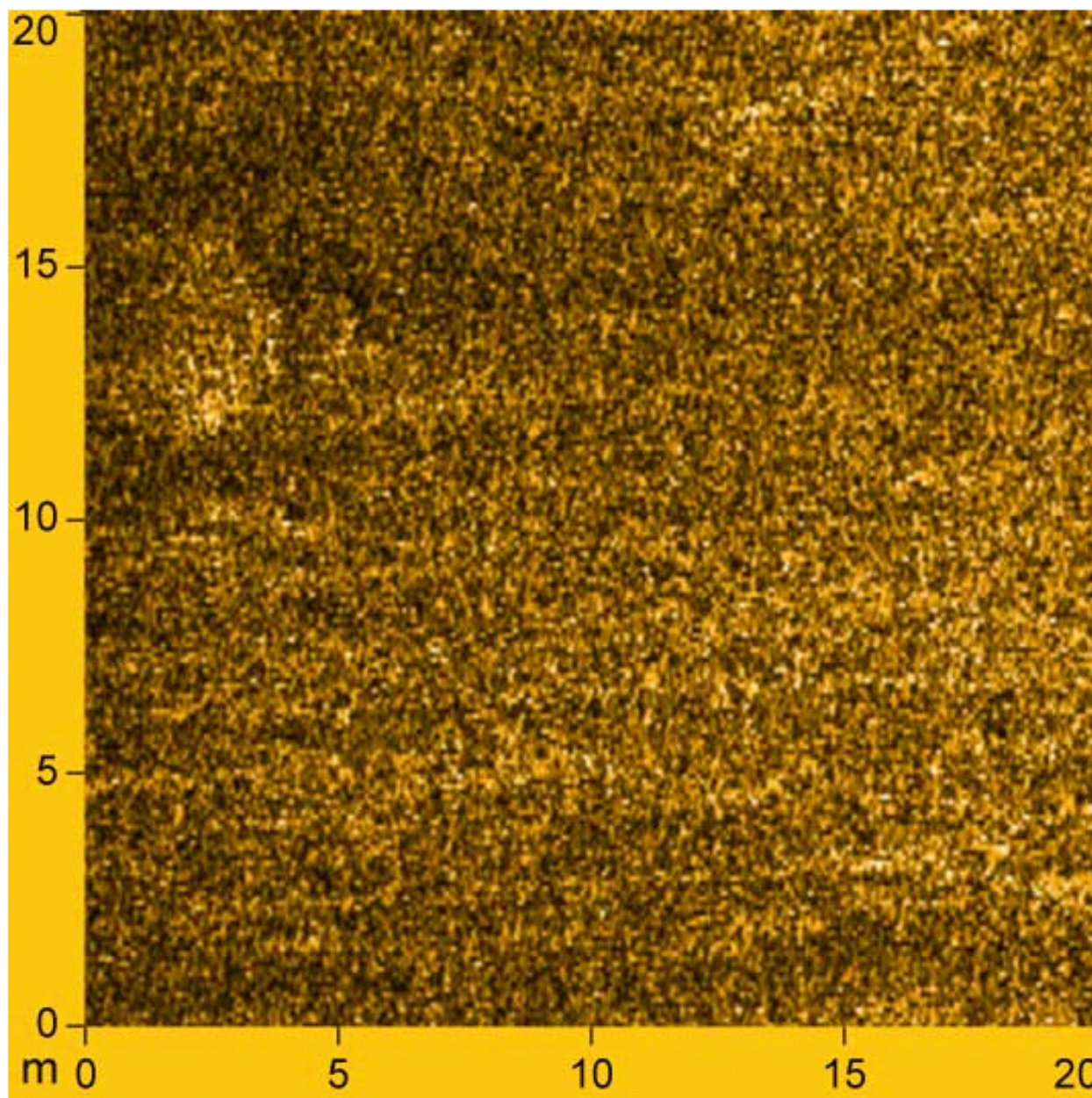


Figure 1.22.4

1.23) 50ft OBSTRN**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 47' 13.1" N, 076° 11' 59.9" W
Least Depth: 15.39 m (= 50.50 ft = 8.416 fm = 8 fm 2.50 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-194.16:01:24.000 (07/13/2009)
GP Dataset: H12040_DtoN_09.txt
GP No.: 1
Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to Mean Lower Low Water using zoned, verified water levels, and should be considered preliminary.

Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on NAD83.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_09.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 50ft Obstruction at survey location.

Cartographically-Rounded Depth (Affected Charts):

50ft (12235_1, 12285_18, 12225_1, 12280_2)

8 ¼fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - Obstrn
 QUASOU - 6:least depth known
 SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - 15.391 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. DTON #15.1 was not included in H12040 DEPARTURE.

This feature is addressed in junction survey H12043.

DEA DtoN #15.1 as referred to in the following images. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

DtoN #15.1 MBES 2d View

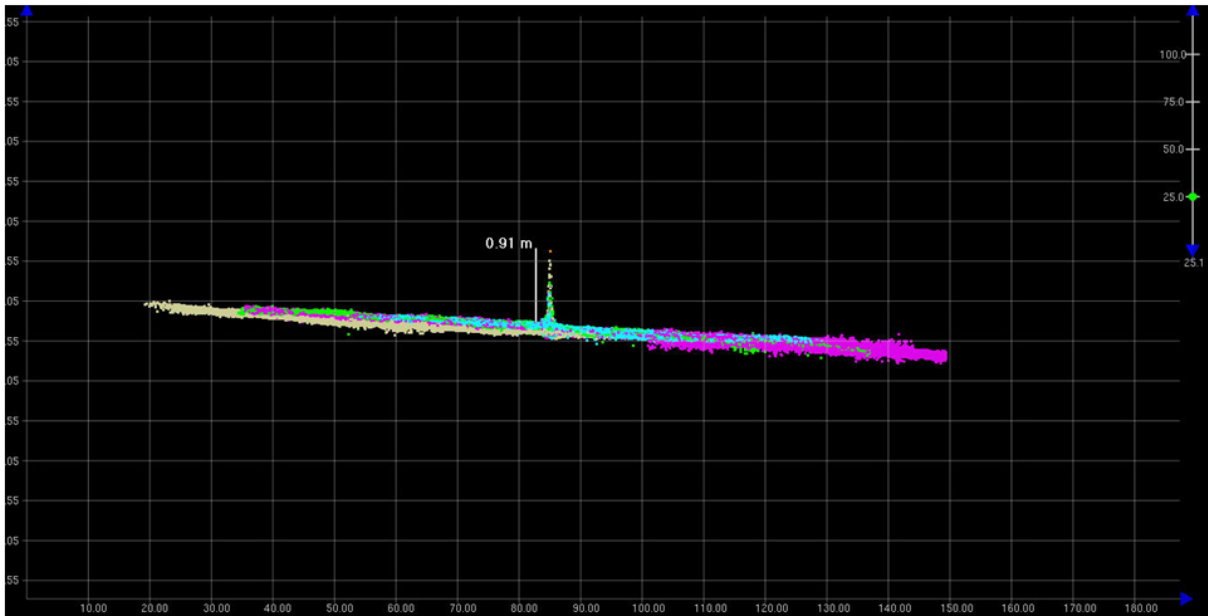


Figure 1.23.2

DtoN #15.1 MBES 3d View

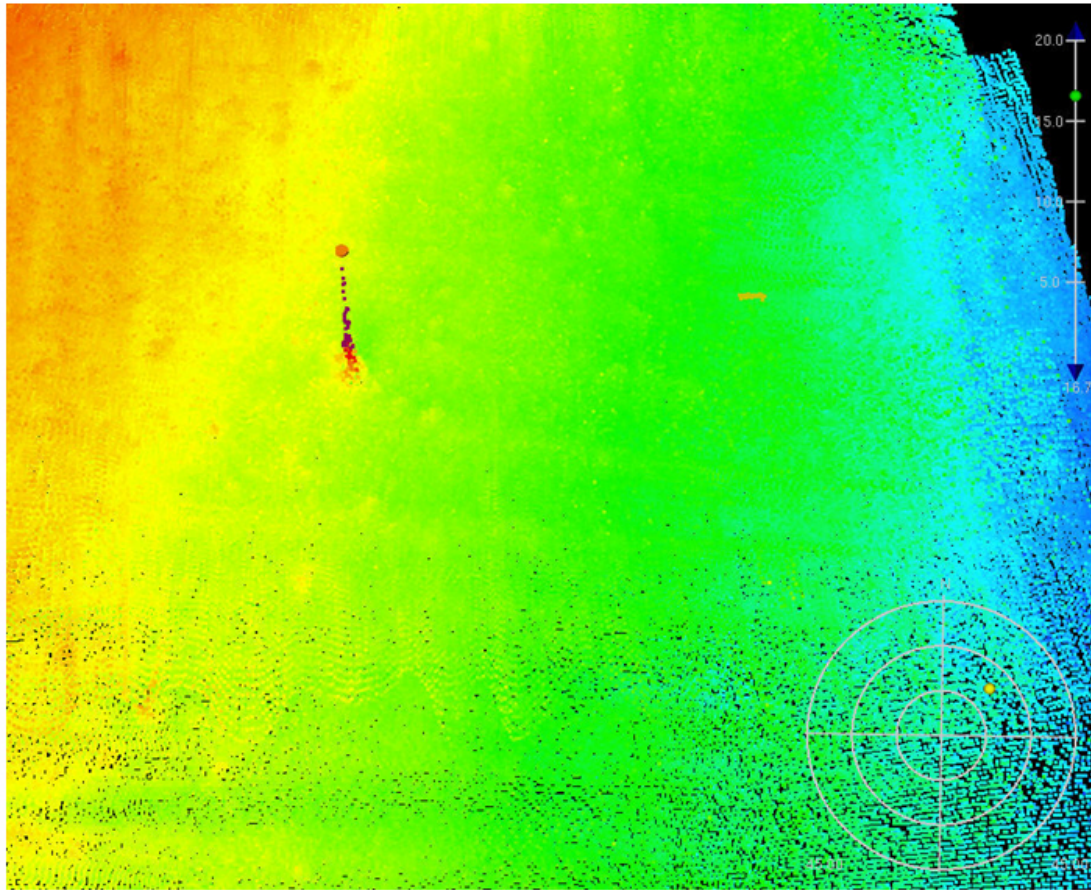


Figure 1.23.3

**DtoN #15.1 Sidescan Sonar View
173-213615-S**

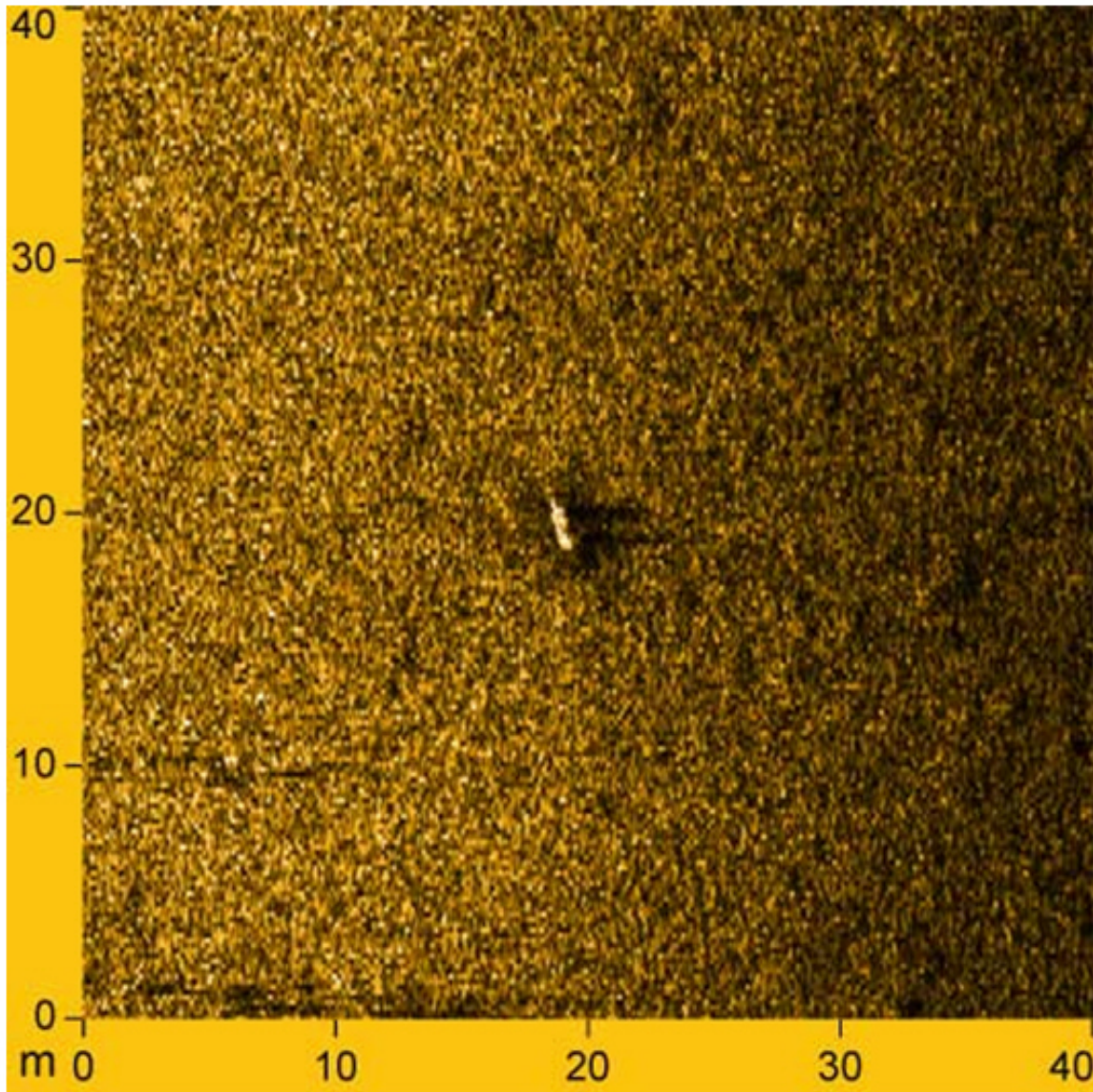


Figure 1.23.4

1.24) 34ft OBSTRN**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 37° 47' 49.3" N, 076° 13' 05.4" W
Least Depth: 10.33 m (= 33.90 ft = 5.650 fm = 5 fm 3.90 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2009-206.16:33:25.000 (07/25/2009)
GP Dataset: H12040_DtoN_09.txt
GP No.: 2
Charts Affected: 12235_1, 12285_18, 12225_1, 12280_2, 13003_1

Remarks:

The least depth was acquired with a Reson 7125 shallow water multibeam sonar, reduced to Mean Lower Low Water using zoned, verified water levels, and should be considered preliminary.

Positions are referenced from post-processed navigation using a contractor installed GPS base station and are on NAD83.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H12040_DtoN_09.txt	2	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 34ft Obstruction at survey location.

Cartographically-Rounded Depth (Affected Charts):

34ft (12235_1, 12285_18, 12225_1, 12280_2)

5 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - Obstrn
 QUASOU - 6:least depth known
 SORDAT - 20091207

SORIND - US,US,graph,H12040

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

VALSOU - 10.332 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart as 34ft CS sounding.

DEA DtoN #15.2 as referred to in the following images. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

Feature Images

DtoN #15.2 MBES 2d View

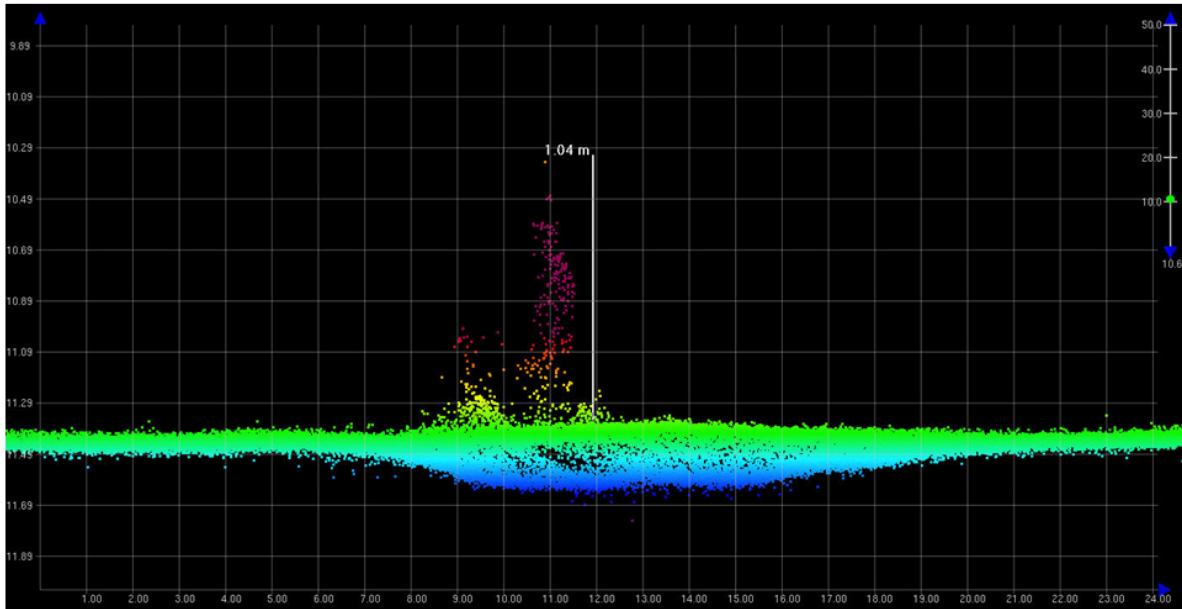


Figure 1.24.1

DtoN #15.2 MBES 3d View

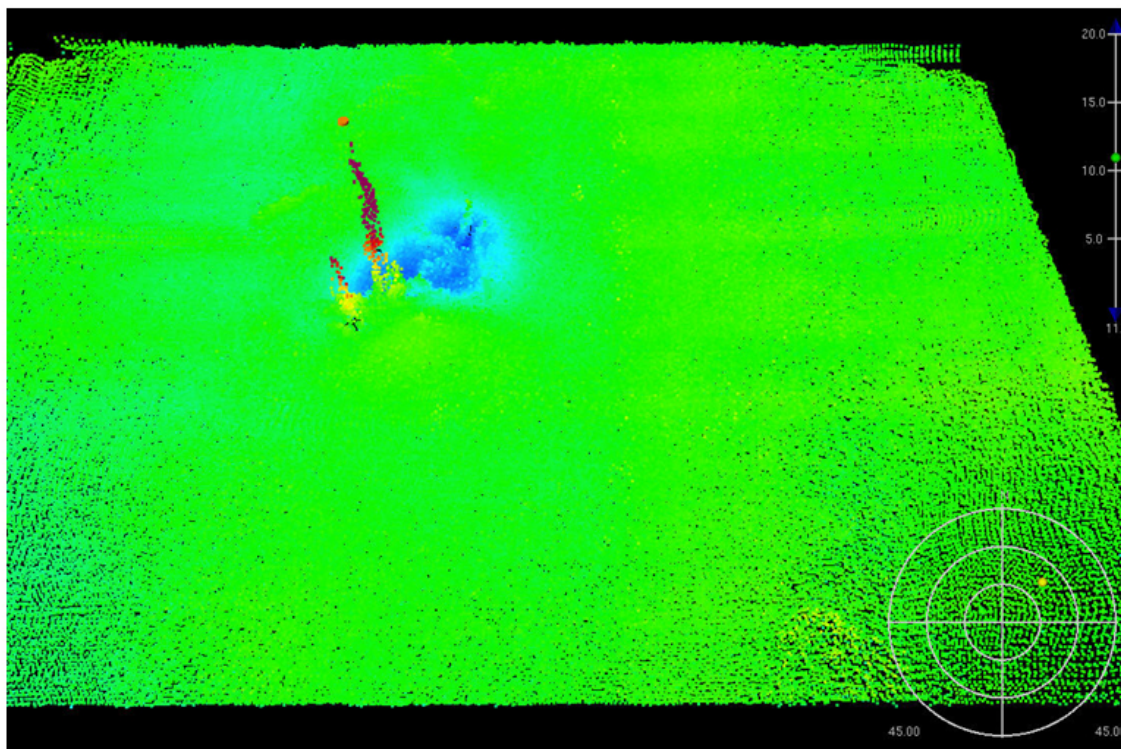


Figure 1.24.2

**DtoN #15.2 Sidescan Sonar View
206-150124-P**

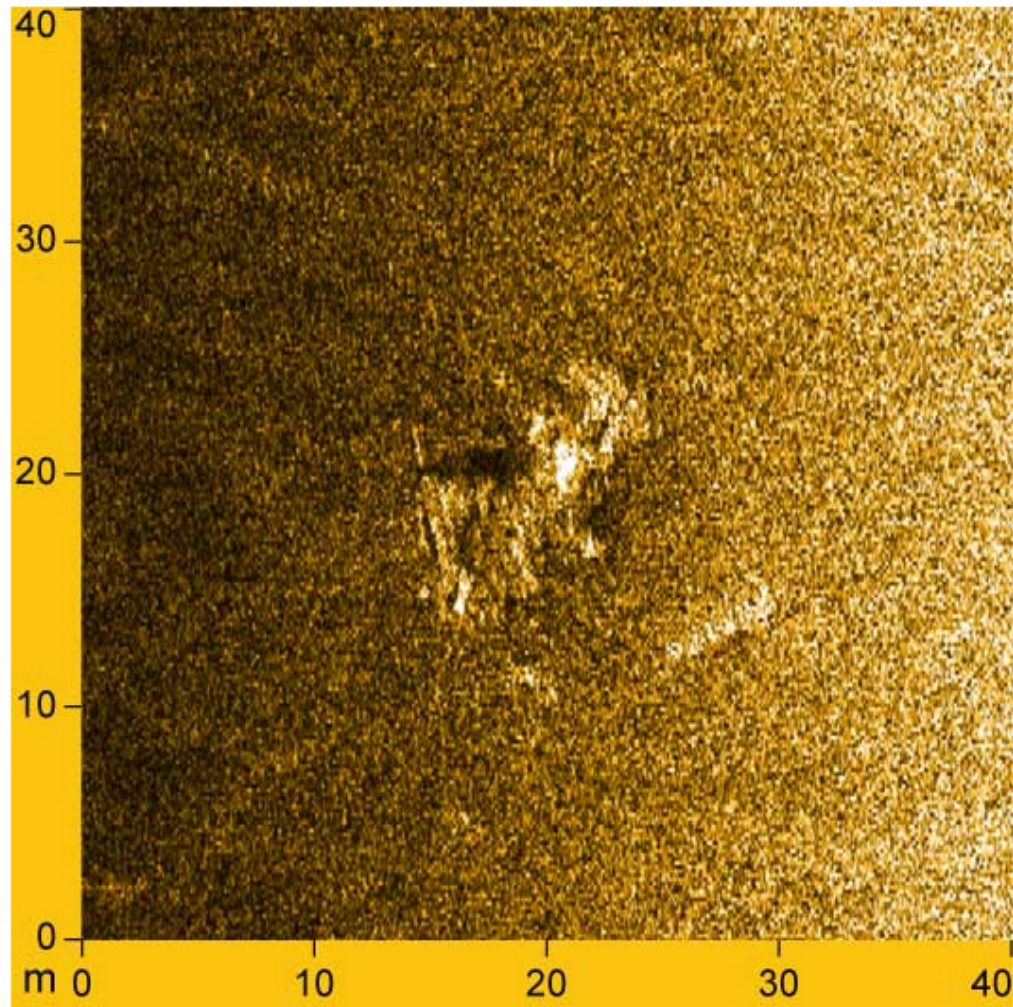


Figure 1.24.3

APPENDIX II
SURVEY FEATURE REPORT

Registry Number: H12040
State: Virginia
Locality: Southern Chesapeake Bay, Virginia
Sub-locality: South of Smith Point
Project Number: OPR-E349-KR-09
Survey Date: June 21 to December 7, 2009

List of Features

AWOIS 999	2
AWOIS 14289	6
AWOIS 14300	7

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AWOIS 999

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS 999	100m	37/51/15.46	76/10/11.98

SURVEYED

FEATURE	LEAST DEPTH	LATITUDE (N)	LONGITUDE (W)
WRECK	60 ft (18.2m)	37/51/19.017	76/10/11.436

Remarks:

The charted wreck, AWOIS 999 (City of Annapolis), was located at the charted position with 200% side scan coverage. The multibeam least depth on the wreck is 60 feet (18.3 meters). Contact 182-144523-P.

Hydrographer Recommendation:

Hydrographer recommends removing the wire drag clearance symbol from all charts and charting the area in accordance with the current survey data. *Concur. See also DR section D1.c, feature 1.*

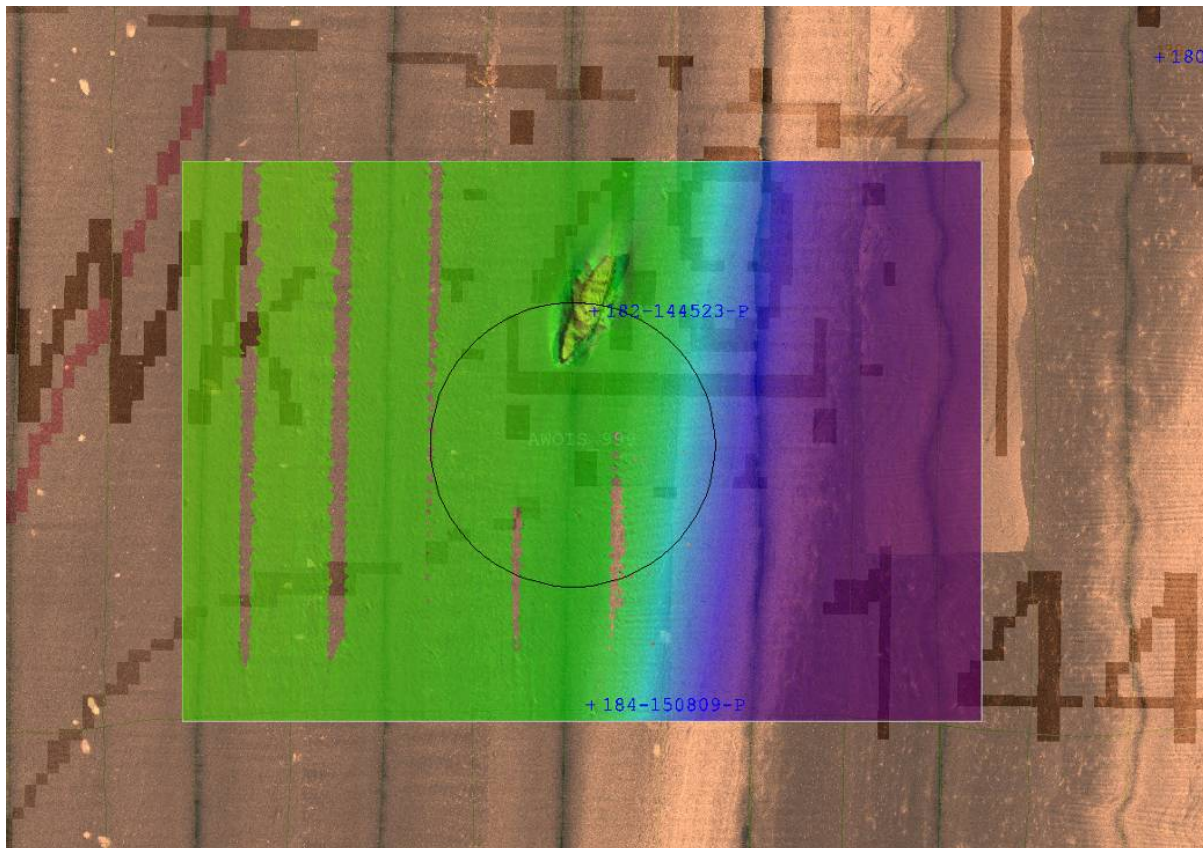


Figure 1. AWOIS 999 Radius. Multibeam with concurrent side scan sonar and contact. Chart 12225.

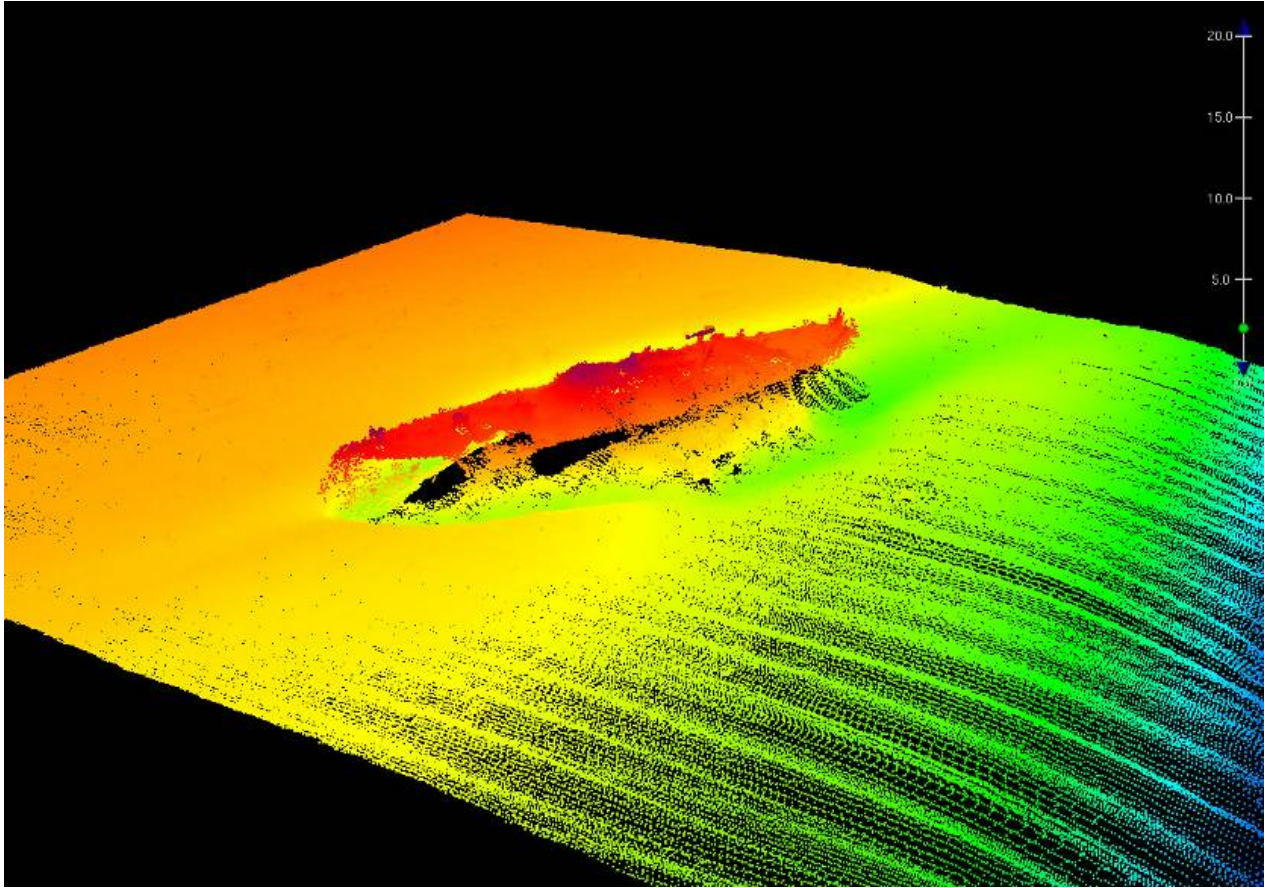


Figure 2. AWOIS 999 CARIS 3D View

AWOIS 7227

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS 7227	100m	37/51/36.63	76/09/40.08

SURVEYED

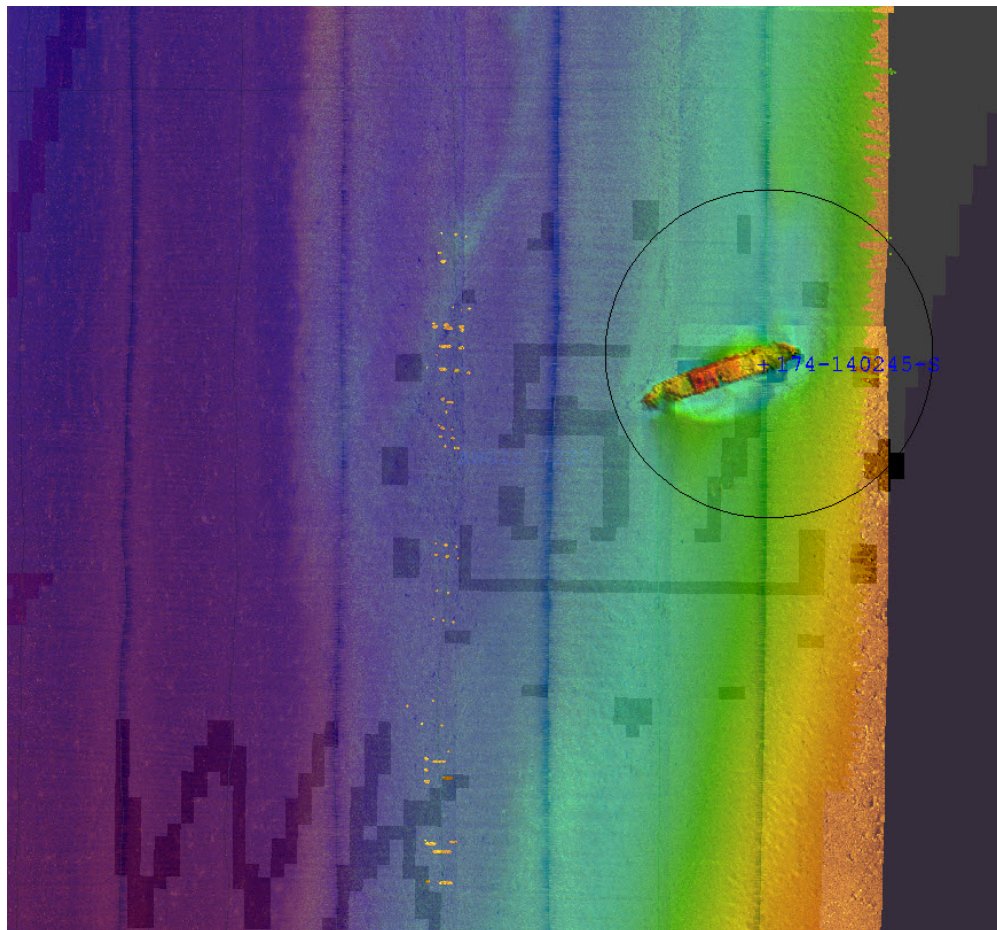
FEATURE	LEAST DEPTH	LATITUDE (N)	LONGITUDE (W)
WRECK	71 ft (21.6m)	37/51/36.419	76/09/41.274

Remarks:

The charted wreck, AWOIS 7227 (Dorothy), was located at the charted position with 200% side scan coverage and complete multibeam coverage. The multibeam least depth on the wreck is 71 feet (21.6 meters). Contact 174-140245-S.

Hydrographer Recommendation:

The hydrographer recommends charting the wreck as depicted in the S-57 feature file and removing the wire drag clearance symbol from all charts. *Concur. See also DR section D1.c, feature 2.*



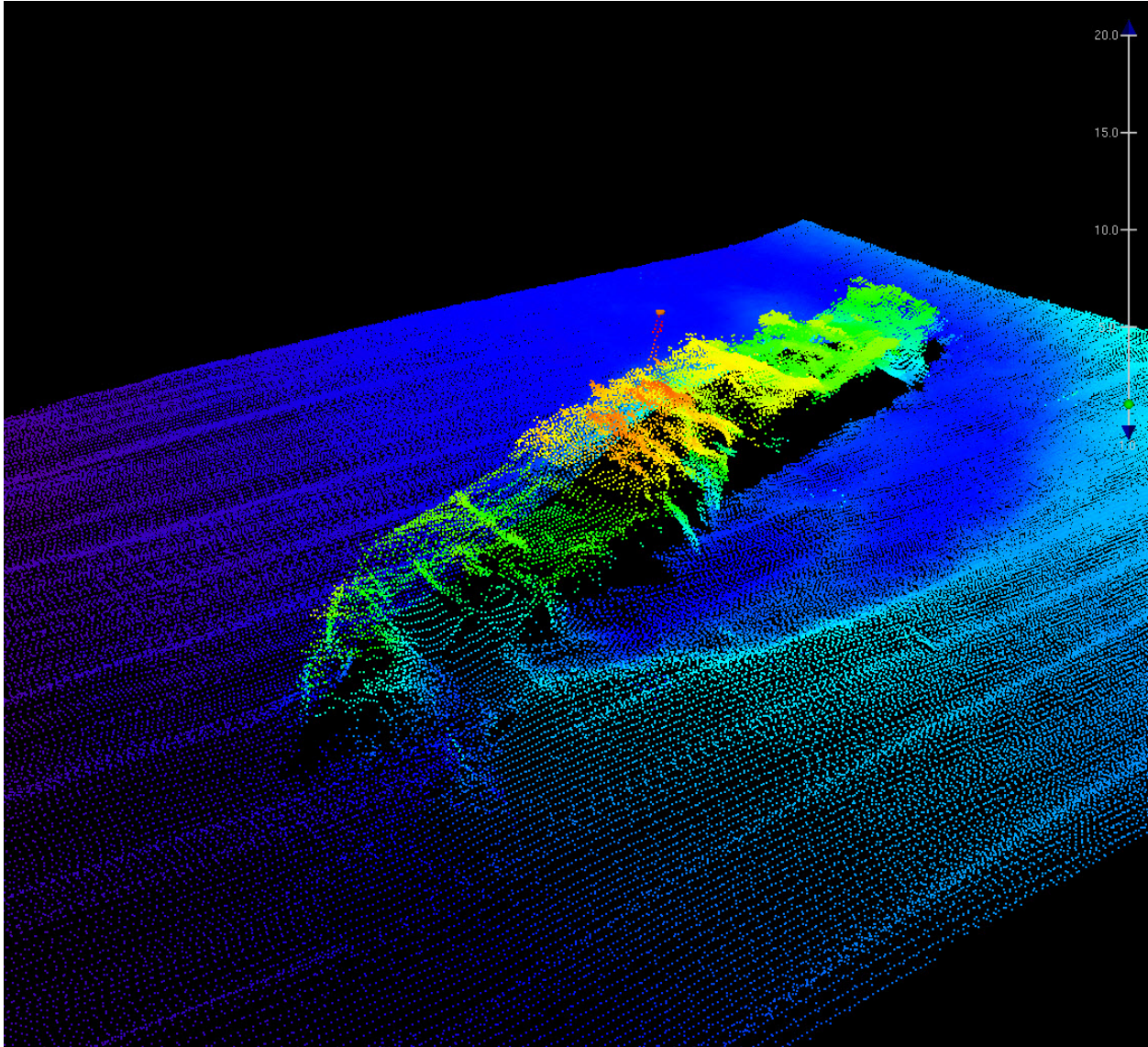


Figure 4. AWOIS 7227 CARIS 3D View

AWOIS 14289

REPORTED

FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS 14289	200m	37/48/15.47	76/13/31.79

SURVEYED

FEATURE	LEAST DEPTH	LATITUDE (N)	LONGITUDE (W)
DISPROVAL N/A		N/A	N/A

Remarks:

AWOIS 14289, charted PD submerged wreck, was disproved with 200% side scan. Two side scan contacts (205-204338-S and 205-182641-S) found within the AWOIS radius were investigated with complete multibeam coverage, however no significant features were detected.

Hydrographer Recommendation:

The hydrographer recommends removing the charted wreck and charting the area in accordance with the current survey data. *Concur. See also DR section D1.c, feature 3.*

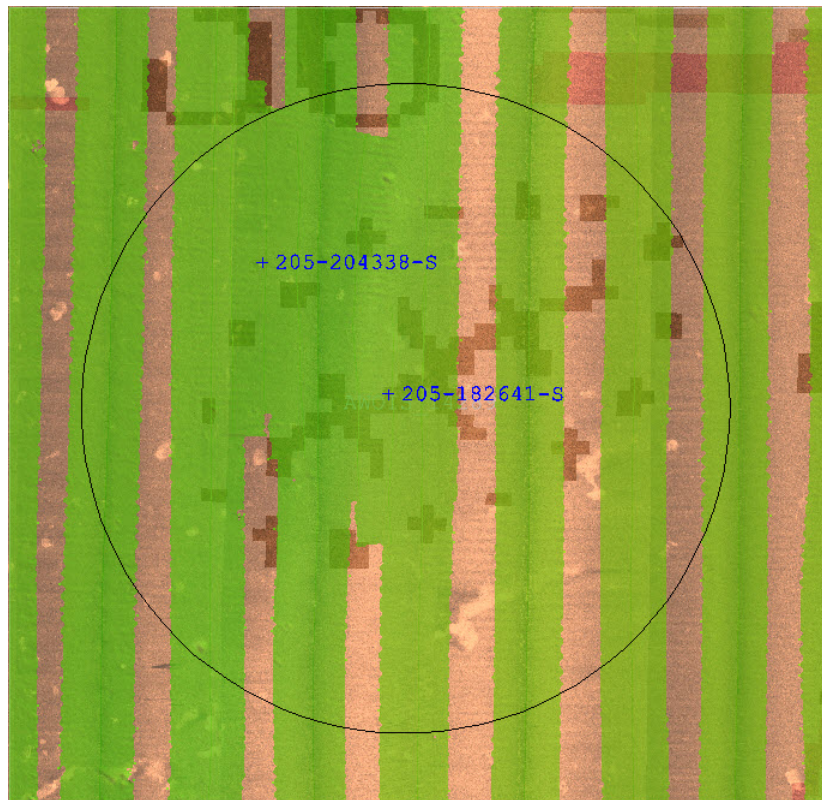


Figure 5. AWOIS 14289 Radius. Multibeam with concurrent side scan sonar imagery and contacts. Chart 12225.

AWOIS 14300

REPORTED			
FEATURE	RADIUS	LATITUDE (N)	LONGITUDE (W)
AWOIS 14300	500m	37/51/31.41	76/12/57.15

SURVEYED			
FEATURE	LEAST DEPTH	LATITUDE (N)	LONGITUDE (W)
DISPROVAL N/A		N/A	N/A

Remarks:

AWOIS 14300, charted PA submerged wreck, was disproved with 200% side scan. No significant features were detected within the AWOIS radius.

Hydrographer Recommendation:

The hydrographer recommends removing the charted wreck and charting the area in accordance with the current survey data. *Concur. See also DR section D1.c, feature 4.*



Figure 6. AWOIS 14300 Radius. Multibeam with concurrent side scan sonar. Chart 12225.

Appendix II
S-57 Features

H12040 Survey Features OBSTRN

Disproved:

ENC or RNC Latitude	ENC or RNC Longitude	Surveyed Latitude	Surveyed Longitude	Remarks
37.801648N	076.204626W	--	--	Disproved by survey H12040 with 200% side scan sonar
				Concur. Remove Obstruction from chart.

NEW:

ENC Latitude (N)	ENC Longitude	Surveyed Latitude	Surveyed Longitude	Remarks
--	--	37.894066N	076.161290W	Two objects 20m apart rising approximately 0.95m off the natural seafloor. Corresponds with Feature 192-131318-P. Located in 25m of water.
				Do not concur. Chart as 78ft sounding on northwest object.
--	--	37.852565N	076.201983W	Mound rises approximately 0.9m from natural seafloor
				Do not concur. Represent the feature as a survey scale sounding. This sounding is not selected for chart scale disposition due to shoaler depths within the near vicinity.
--	--	37.816016N	076.224240W	Mound rises approximately 0.7m from natural seafloor
				Do not concur. Chart 28 ft sounding in this position.
--	--	37.878021N	076.218002W	H12040 DTON # 4. Submerged piles. Corresponds with features 196-130055-S. 196-130100-S.
				Concur with clarification. Several submerged piles in area. Chart obstruction area.
--	--	37.874103N	076.226920W	H12040 DTON # 8. Submerged piles near pound net approximately 2.5m proud.

H12040 Survey Features OBSTRN

				<i>Concur with clarification. Several submerged piles in area. Chart obstruction area.</i>
--	--	37.830719N	076.197583W	Mound approximately 2m from the natural seafloor
				<i>Do not concur. Chart as 43ft CS sounding.</i>
--	--	37.842911N	076.240962W	Submerged pile approximately 4.4m from natural seafloor. 30m shoreward from DtoN 10.7
				<i>Concur with clarification. Several submerged piles in area. Chart obstruction area.</i>
--	--	37.800821N	076.235009W	H12040 DTON # 7. Object rises approximately 4.6m from the natural seafloor.
				<i>Concur. Chart obstruction per present survey findings.</i>
--	--	37.873907N	076.178364W	H12040 DTON # 2. Obstruction.
				<i>Concur. Chart obstruction per present survey findings.</i>
--	--	37.824344N	076.207551W	H12040 DTON # 3. Possible mast. Object rises approximately 3.0 from natural seafloor.
				<i>Concur. Chart obstruction per present survey findings.</i>
--	--	37.859381N	076.194248W	H12040 DTON # 6. Mound. Height approximately 3.5m from the natural seafloor.
				<i>Do not concur. Chart as 28ft CS sounding.</i>
--	--	37.878014N	076.218069W	Submerged piles in DTON # 4 area. Corresponds with features 196-130100-S, 196-134318-P.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>

H12040 Survey Features OBSTRN

--	--	37.878397N	076.220757W	Suspected pound net ruins. Five stakes rising off the natural bottom up to 1.4m proud. 150m shoreward of submit DTON 10.1.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>
--	--	37.833960N	076.192819W	Object with a height approximately 0.75m from natural seafloor
				<i>Do not concur. Chart as 46 ft CS sounding.</i>
--	--	37.814237N	076.234746W	H12040 DTON #14 Submerged Pile. Piles may be associated with pound net ruins.
				<i>Do not concur. Chart as 19ft CS sounding.</i>
--	--	37.873590N	076.224220W	H12040 DTON # 5. Foul area with pound net ruins.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>
--	--	37.884534N	076.177824W	Object with a height approximately 0.9m above seafloor.
				<i>Do not concur. Represent the feature as a survey scale sounding. This sounding is not selected for chart scale disposition due to shoaler depths within the near vicinity.</i>
--	--	37.879849N	076.199269W	Mound approximately 0.8m from the natural seafloor
				<i>Not significant to chart as an obstruction. Chart as 26ft CS sounding</i>
--	--	37.801677N	076.195960W	Feature rises approximately 1m from the natural seafloor
				<i>Do not concur. Represent the feature as a survey scale sounding. This sounding is not selected for chart scale disposition due to shoaler depths within the near vicinity.</i>
--	--	37.878053N	076.218327W	Submerged pile between submit DTON # 4 and DTON 10. Corresponds with features 196-130055-S. 196-134318-P
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>

H12040 Survey Features OBSTRN

--	--	37.842545N	076.192784W	Mound rises approximately 2.4m from natural seafloor
				<i>Do not concur. Chart as 39ft CS sounding.</i>
--	--	37.842941N	076.240286W	Two submerged piles approximately 4.1m proud. Near submitted DTON #10.7.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>
--	--	37.846792N	076.238637W	H12040 DTON # 13 Submerged Pile. suspected pound net ruins.
				<i>Concur. Chart obstruction per present survey findings.</i>
--	--	37.869904N	076.211145W	Object approximately 0.9m proud
				<i>Do not concur. Chart as 29ft CS sounding.</i>
--	--	37.842433N	076.199652W	H12040 DTON # 1. Submerged mound rising approximately 3.5m.
				<i>Concur. Chart obstruction per present survey findings.</i>
--	--	37.894178N	076.161124W	Two objects 20m apart rising approximately 1m from the seafloor. Also reported in H12041 feature report and S-57 feature file.
				<i>Do not concur. Chart as 78ft CS sounding.</i>
--	--	37.862510N	076.223899W	Mound rises approximately 0.7m from natural seafloor
				<i>Do not concur. Chart as 30ft CS sounding.</i>
--	--	37.786966N	076.199969W	H12040 DTON # 15.1 . Obstruction stands 0.9m proud.
				<i>Concur with clarification. DTON #15.1 was not included in H12040 DEPARE. This feature is adressed in junction survey H12043.</i>
--	--	37.854739N	076.201816W	Mound rises approximately 1.9m from the natural seafloor.

H12040 Survey Features OBSTRN

				<i>Concur with clarification. Chart as 30ft CS sounding.</i>
--	--	37.807839N	076.210948W	Object approximately 0.8m proud.
				<i>Concur with clarification. Chart as 37ft CS sounding.</i>
--	--	37.842799N	076.240384W	Submerged pile in DTON #10.7 area.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>
--	--	37.839001N	076.187805W	25m long linear object approximately 0.5m proud.
				<i>Concur with clarification. Chart as 49ft CS sounding.</i>
--	--	37.851235N	076.203506W	DTON H12040 DTON # 11. Submerged mound with a height approximately 2m from the seafloor.
				<i>Concur with clarification. Chart as 31ft CS sounding.</i>
--	--	37.797014N	076.218179W	H12040 DTON 15.2. Obstruction 1.0m proud.
				<i>Do Not Concur. Chart as 34ft CS sounding.</i>
--	--	37.841580N	076.240332W	H12040 DTON # 12.1. Submerged Pile. Rises approximately 2.2m from natural seafloor.
				<i>Do not concur. Several submerged stakes found in the area. Chart as obstruction area.</i>
--	--	37.862917N	076.230326W	Obstruction area feature of pound net ruins. Generalized surveyed lat/lon.
				<i>Concur. Chart obstruction area per present survey findings.</i>
--	--	37.852856N	076.238075W	Obstruction area feature of pound net ruins. Generalized surveyed lat/lon.

H12040 Survey Features OBSTRN

				<i>Concur with clarification. Chart obstructions per present survey findings.</i>
--	--	--	--	---

H12040 Survey Features PILPNT

New:

ENC	Latitude (N)	ENC Longitude (W)	Surveyed Latitude (N)	Surveyed Longitude (W)	Remarks
--	--		37.877949N	076.217816W	H12040 DtoN # 10.1.
					<i>Do not concur. Another PILPNT in close proximity.</i>
--	--		37.878143N	076.219006W	H12040 DtoN # 10.1. Baring pound net stakes
					<i>Concur. Chart PILPNT per present survey findings</i>
--	--		37.852759N	076.237910W	H12040 DTON # 10.6. Numerous submerged piles in this area. Pound net ruins.
					<i>Concur. Chart PILPNT per present survey findings</i>
--	--		37.877838N	076.217770W	H12040 DTON # 10.4. Pound Net Area. Area foul with pound net ruins. including 3 baring piles and several submerged piles.
					<i>Do not concur. Another PILPNT in close proximity.</i>
--	--		37.842795N	076.240069W	H12040 DTON # 10.7. Pound Net Area. Baring pile.
					<i>Concur. Chart PILPNT per present survey findings</i>
--	--		37.877921N	076.217763W	H12040 DtoN # 10.1.
					<i>Concur. Chart PILPNT per present survey findings</i>

H12040 Survey Features FSHFAC

New:

ENC	Latitude (N)	ENC Longitude (W)	Surveyed Latitude (N)	Surveyed Longitude (W)	Remarks
--	--	--	37.874944N	76.22488W	Numerous baring piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.
--	--	--	37.858085N	76.235384W	Numerous baring piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.
--	--	--	37.86265N	76.23041W	Numerous baring and submerged piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface and submerged piles range from 0.5m to 3.5m in heights from the natural bottom. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.
--	--	--	37.869507N	76.231207W	Numerous baring piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.
--	--	--	37.868888N	76.227208W	Numerous baring and submerged piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface and submerged piles range from 1m to 4m in heights from the natural bottom. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.
--	--	--	37.805394N	76.249118W	Numerous baring piles were found within the Fishing Facility. Baring stakes have an average height of 2m above the surface. Complete multibeam ensonification of these features was not possible due to concerns for safety of the vessel. Generalized surveyed lat/lon.

All FSHFAC are visible pound nets, previously submitted as DTON's and currently have adequate chart representation. Retain all FSHFAC's from ENC

H12040 Survey Features WRECKS

Disproved:

ENC	Latitude (N)	ENC Longitude (W)	Surveyed Latitude (N)	Surveyed Longitude (W)	Remarks
37.858583N	076.216224W	--	--		Disproved by survey H12040 with 200% side scan sonar
					Concur. Remove wreck from the chart. See also DR section D1.c, feature 4.
37.804382N	076.225625W	--	--		Disproved by survey H12040 with 200% side scan sonar
					Concur. Remove wreck from the chart. See also DR section D1.c, feature 3.

New:

ENC	Latitude (N)	ENC Longitude (W)	Surveyed Latitude (N)	Surveyed Longitude (W)	Remarks
--	--	--	37.855283N	076.169843W	AWOIS item # 999 (CF 108) Charted wreck. Wreck located with a height approximately 5.1m from the natural seafloor.
					Concur. Remove wire drag clearance symbol and chart wreck per present survey findings. See also DR section D1.c, feature 1.
--	--	--	37.842136N	076.168724W	Uncharted wreck located in SSS and investigated with MBES. Feature is approximately 3m from the natural seafloor. Located in deep water and not submitted as a danger..
					Concur. Chart non-dangerous wreck with VALSOU of 147.5722ft.
--	--	--	37.894992N	076.172006W	Uncharted wreck with a height of approximately 2.0m from the seafloor. Not a DTON based on surrounding water depth.
					Concur. Chart non-dangerous wreck with VALSOU of 69.9409ft.
--	--	--	37.860116N	076.161465W	AWOIS item # 7227 (CF 109) Charted wreck. Wreck deeper than charted. Also in survey in H12041.
					Concur. Remove wire drag clearance symbol and chart wreck per present survey findings. See also DR section D1.c, feature 2.

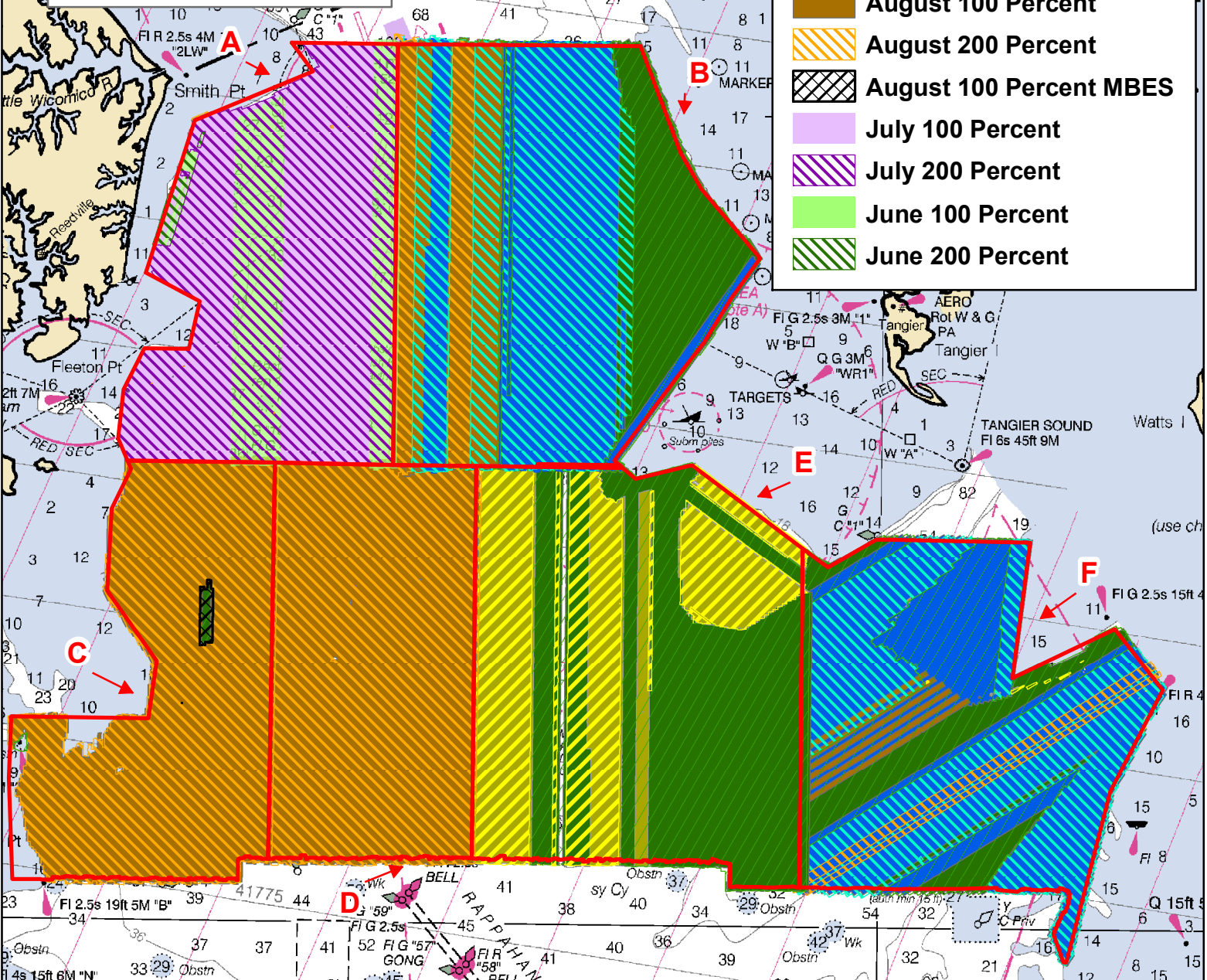
APPENDIX III
FINAL PROGRESS SKETCH AND SURVEY OUTLINE

PROGRESS SKETCH

OPR-E349-KR-09
 Southern Chesapeake Bay, VA
 November 2009
 David Evans and Associates, Inc.

Chart 12280

- November 100 Percent
- November 200 Percent
- October 100 Percent
- October 200 Percent
- September 100 Percent
- September 200 Percent
- August 100 Percent
- August 200 Percent
- August 100 Percent MBES
- July 100 Percent
- July 200 Percent
- June 100 Percent
- June 200 Percent

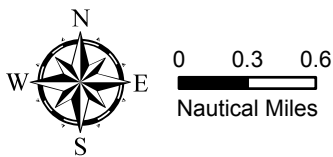
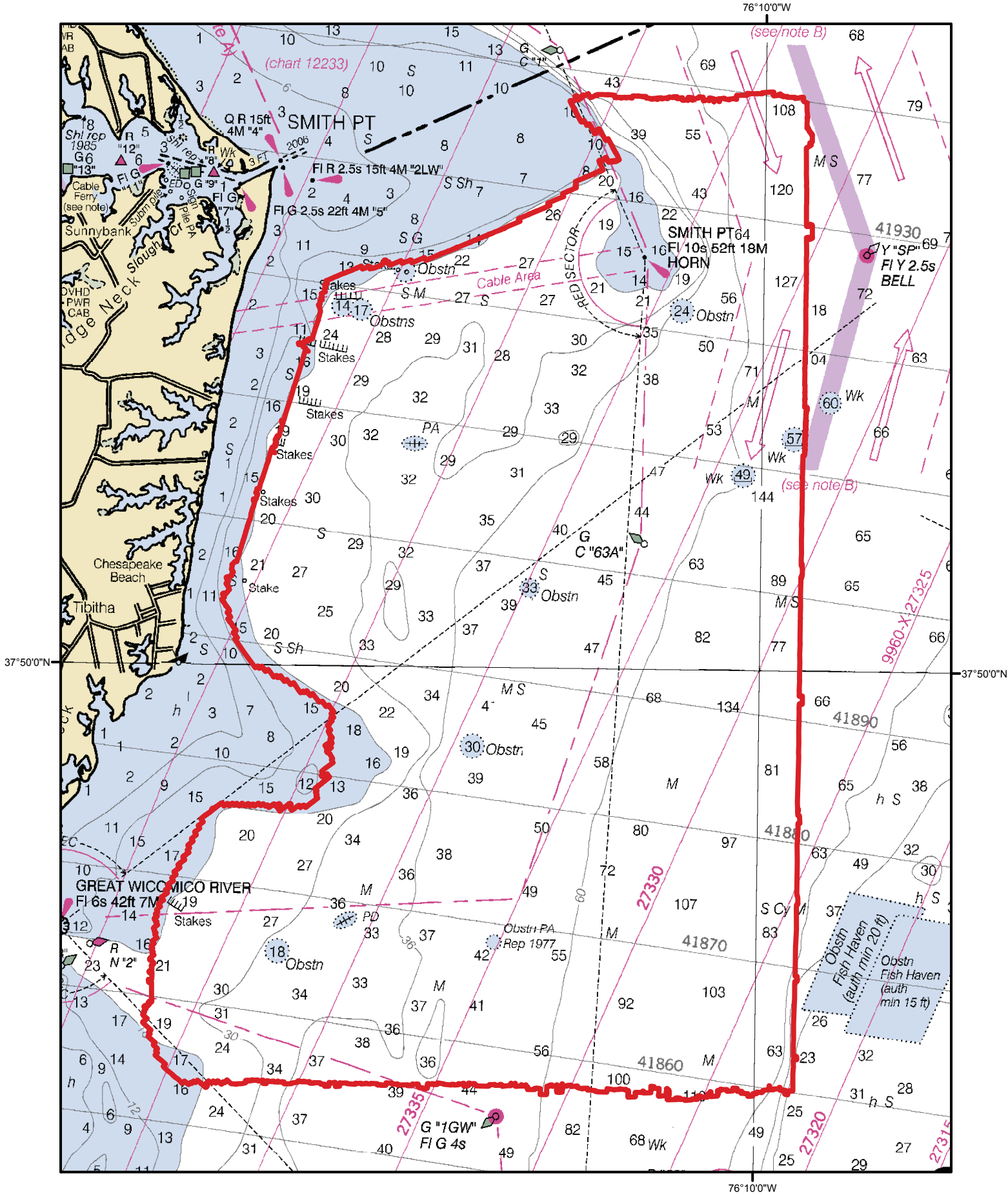


Reg No	Started	Percent	Completed	Submitted	SQ NM
H12040	6/21/2009	99.00%			< 0.01
H12041	8/28/2009	99.00%			
H12042	8/4/2009	97.00%			
H12043	8/13/2009	97.00%			
H12044	10/4/2009	94.00%			14.24
H12045	8/26/2009	94.00%			0.02

Down time	June	July	August	September	October	November
Weather - Day	0.5	3.0	6.5	18.1	16.2	11.8
Equipment - Day	5.5	2.5	2.1	0.8	1.0	1.0
Other - Day	0.0	1.0	0.5	0.0	0.0	0.0

Accomplished	June	July	August	September	October	November
LNM MBES/SSS	114.42	595.77	1484.44	1120.50	1094.72	429.05
LNM XL	7.94	33.81	109.16	0.00	65.03	32.52
SQ NM	4.03	18.36	48.73	34.85	33.01	14.26
Bottom Samples	23	110	0	0	0	0
AWOIS Investigations	0	0	13	0	1	5
Other Investigations	0	0	0	0	0	0
Tide Gauges Installed/Removed	0	0	1	0	0	1
Days at Sea	10	31	31	30	31	22*

* 2 vessels used during 22 days at sea



Survey Outline

H12040
OPR-E349-K9-09
Southern Chesapeake Bay
David Evans and Associates, Inc.
Jon Dasler, Lead Hydrographer
Chart 12225

APPENDIX IV
TIDES AND WATER LEVELS

OPR-E349-KR-09**H12040****Times of Hydrography**

Date	Julian Date	Min Time	Max Time
06/21/2009	172	13:11	21:57
06/22/2009	173	12:17	22:35
06/23/2009	174	12:50	14:46
06/29/2009	180	12:08	22:16
06/30/2009	181	16:55	18:32
07/01/2009	182	14:20	22:05
07/02/2009	183	12:24	22:06
07/03/2009	184	12:17	22:25
07/04/2009	185	12:23	21:53
07/05/2009	186	12:18	16:13
07/06/2009	187	12:08	22:26
07/07/2009	188	13:33	20:07
07/09/2009	190	12:12	20:59
07/10/2009	191	13:59	22:33
07/11/2009	192	13:12	18:27
07/12/2009	193	12:13	17:52
07/13/2009	194	11:46	19:45
07/15/2009	196	11:48	15:24
07/17/2009	198	11:49	18:22
07/21/2009	202	15:58	22:24
07/22/2009	203	12:14	22:00
07/23/2009	204	12:38	22:16
07/24/2009	205	12:04	22:10
07/25/2009	206	12:34	19:25
07/26/2009	207	12:52	17:18
07/27/2009	208	11:49	18:22
07/28/2009	209	12:05	20:12
07/29/2009	210	12:03	13:25
07/30/2009	211	12:35	22:01
08/01/2009	213	12:30	22:30
08/02/2009	214	12:08	14:50
08/03/2009	215	12:35	20:00
08/16/2009	228	11:57	15:32
08/28/2009	240	15:12	15:16
08/29/2009	241	13:37	13:55
11/15/2009	319	16:05	17:16
11/18/2009	322	11:59	12:27
11/19/2009	323	15:33	15:39
12/07/2009	341	12:40	15:44

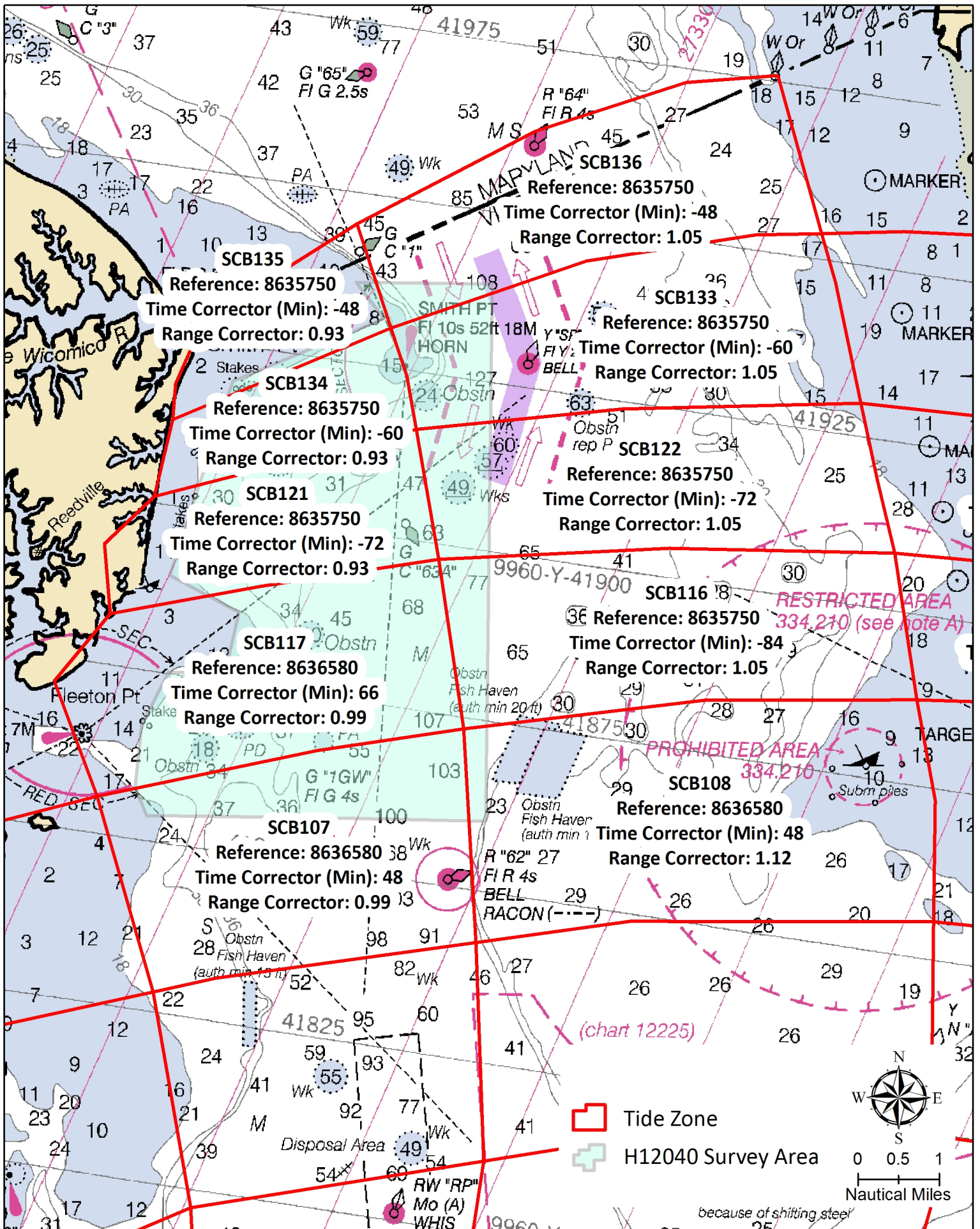
OPR-E349-KR-09**H12040****Times of Hydrography**

Date	Julian Date	Min Time	Max Time
06/21/2009	172	13:11	21:57
06/22/2009	173	12:17	22:35
06/23/2009	174	12:50	14:46
06/29/2009	180	12:08	22:16
06/30/2009	181	16:55	18:32
07/01/2009	182	14:20	22:05
07/02/2009	183	12:24	22:06
07/03/2009	184	12:17	22:25
07/04/2009	185	12:23	21:53
07/05/2009	186	12:18	16:13
07/06/2009	187	12:08	22:26
07/07/2009	188	13:33	20:07
07/09/2009	190	12:12	20:59
07/10/2009	191	13:59	22:33
07/11/2009	192	13:12	18:27
07/12/2009	193	12:13	17:52
07/13/2009	194	11:46	19:45
07/15/2009	196	11:48	15:24
07/17/2009	198	11:49	18:22
07/21/2009	202	15:58	22:24
07/22/2009	203	12:14	22:00
07/23/2009	204	12:38	22:16
07/24/2009	205	12:04	22:10
07/25/2009	206	12:34	19:25
07/26/2009	207	12:52	17:18
07/27/2009	208	11:49	18:22
07/28/2009	209	12:05	20:12
07/29/2009	210	12:03	13:25
07/30/2009	211	12:35	22:01
08/01/2009	213	12:30	22:30
08/02/2009	214	12:08	14:50
08/03/2009	215	12:35	20:00
08/16/2009	228	11:57	15:32
08/28/2009	240	15:12	15:16
08/29/2009	241	13:37	13:55
11/15/2009	319	16:05	17:16
11/18/2009	322	11:59	12:27
11/19/2009	323	15:33	15:39
12/07/2009	341	12:40	15:44

**FINAL TIDE ZONING
H12040
OPR-E349-KR-09**

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
SCB107	48	0.99	8636580
SCB108	48	1.12	8636580
SCB116	-84	1.05	8635750
SCB117	66	0.99	8635750
SCB121	-72	0.93	8635750
SCB122	-72	1.05	8635750
SCB133	-60	1.05	8635750
SCB134	-60	0.93	8635750
SCB135	-48	0.93	8635750
SCB136	-48	1.05	8635750

NOTE: Global Positioning System (GPS) water levels were acquired directly at the survey vessel however, traditional zoning from water level stations were used for submittal. Zoning and verified water level files were provided by CO-OPS.



APPENDIX V
SUPPLEMENTAL RECORDS AND CORRESPONDENCE

Jason Creech

From: Matthew Wilson [Matthew.Wilson@noaa.gov]
Sent: Wednesday, June 17, 2009 12:20 PM
To: Jason Creech
Cc: Castle.E.Parker@noaa.gov
Subject: Re: Question Regarding Final Tide Notes

Jason,

Regarding your question about deliverables:

To rehash, for the upcoming Ches Bay sheets, DEA has planned a set line spacing survey (200%SSS w/ concurrent MB and MB developments). DEA inquired to AHB whether 1m res grids are acceptable, and if the "Deep" CUBE setting is acceptable when creating the grids.


- for a "skunk stripe" survey of 200% SSS run concurrently with MB, according to the 2009 NOS Specs, the MB coverage requirements are the same within the swath as for Complete Coverage requirements. Complete MB requirements specify a resolution of 1m for Depth Range of 0-23m.
Hence, 1m res MB grids are acceptable.

- Deep CUBE setting is to be used when small features are located separately with SSS. SSS is your primary means of object detection, hence the Deep CUBE setting is appropriate.

--

Respectfully,

Matthew J. Wilson
Physical Scientist
NOAA Atlantic Hydrographic Branch
757-441-6746x112
matthew.wilson@noaa.gov

 You replied on 10/21/2009 11:41 AM.

Jason Creech

From: Ben Evans [Benjamin.K.Evans@noaa.gov] **Sent:** Wed 9/23/2009 7:56 AM
To: [Jason Creech](#)
Cc: [Lori.Knell](#); [Jon Dasler](#)
Subject: [Suspected Spam] Re: skunk stripe specs

Attachments:

Jason,

I was out of Coast Survey for advent of the new density requirements, so may not have the whole story on the reason they were introduced. However, my understanding of the history and the physics is that this requirement are not really related to object detection at all (that would be grid resolution), but rather improving the statistical confidence of the CUBE depth and uncertainty solutions for each node. So, in my opinion it is appropriate that a sounding density requirement apply to multibeam bathymetry associated with side scan.

I've addressed your more specific questions inline in red below.

I am not sure of the source of CAPT Lowell's comments on this issue, and it is certainly possible that he has been present for higher level discussions than I have been privy to. However, as chief of the marine chart division, this issue would not normally fall within his purview or authority.

Thanks - again, please let me know if I can answer any further questions. Once everything's clear, I'll ask Lor to summarize for the record.

Thanks,

Ben

Jason Creech wrote:

Ben

Thanks for getting back to me on this. We've had some discussion in-house on the proposed skunk stripe multibeam requirements and **I've included questions/comments in your original email below.**

We do have a general question about the necessity to have any density requirements for skunk stripe data and are wondering if you can briefly discuss what is pushing this requirement? It may be helpful if you could bring us up to date on the new density requirements in general. We're getting lots of questions from our staff.

Please let me know if I need to clarify any of my comments.

Thanks again for having this conversation with us.

Jason

From: Ben Evans [<mailto:Benjamin.K.Evans@noaa.gov>]
Sent: Friday, September 18, 2009 10:59 AM
To: Jason Creech
Cc: Lori.Knell
Subject: skunk stripe specs

Jason,

Got your message, and am now back at my desk. We actually had some internal

discussions on skunk stripe multibeam requirements earlier this week, and arrived at a set of revised specifications which we think are more appropriate for this work:

For main scheme multibeam bathymetry acquired concurrently with 200% side scan coverage ("skunk stripe"):

- Grid resolutions of 2m for depths less than 20 meters and 4m for depths 20 - 40 meters are acceptable. Ok, this is coarser than we are currently using but will minimize sounding density issues. We are in the process of updating our surfaces to meet this new standard.
- Minimum sounding density shall be 3 soundings per node. Is this a hard minimum or do you mean 95% of all nodes populated with 3 or more? With skunk stripe there will always be some nodes on the edge of the swaths that have less than 3 nodes. We've looked at some test lines with the resolutions proposed above and we see less than 1% of soundings with less than 3 soundings per node. **Yes - sorry, I should have been more specific: 95% of nodes shall have 3 soundings (and you're right, the edge effects complicate this - again, part of the justification for relaxing the resolution and density specs)**
- Small holidays in the multibeam coverage due to mid-water targets or attitude dynamics are acceptable where adjacent soundings show no evidence of significant shoaling, and the 200% side scan coverage does not indicate the presence of a feature. Ok, this is how we have always interpreted the specs. We don't fill small holidays where we have underlying 200% SSS that does not indicate the presence of a contact or shoal.

For multibeam developments of targets identified in side scan sonar:

- Coverage as per the "Complete Multibeam Coverage" specification (Section 5.1.2.2) over the feature and the immediate surrounding seabed (with designated soundings as required). As we read the Specs, Complete Coverage requires Object detection for significant shoals and features in waters shoaler than 30m. In water deeper than 30m we will use Complete Multibeam Coverage. We always designate significant features even if the grid represents the feature. We aren't currently running separate investigations if we feel that we get a valid least depth of significant features during mainscheme survey. If significant features are outside of the survey line or not completely ensonified we run an item investigation. We do have concerns about density requirements over significant features and the immediate seabed. Is there really the need to have more than 4 soundings on the seabed at the base of a significant feature if this feature is properly ensonified and the least depth is designated? Of course there may be areas on the edges of grids that could be out of spec. due to edge effect discussed above or due to shadows cast by the significant features that are being investigated. **Again, I should have been more clear here. What was intended is that multibeam developments meet the baseline "complete" specification, i.e., for this purpose omit the 7th bullet on page 91.**

However, I do note that given the relaxed requirements for skunk stripe multibeam, a higher resolution and density grid (and possibly additional development lines to support it) may be required for near-nadir contacts covered by main scheme multibeam.

As for the "immediate seabed" statement - you have interpreted it correctly. The intent is that we would have "complete" multibeam coverage of the contact and the *immediate* area (no more than a couple of grid cells-width) around its base. This will provide at least some indication of the full relief and any scour associated with the feature, which can augment the side scan imagery interpretation and , if necessary or desired, feature identification.

Regarding tools for demonstrating sounding density:

- You may use any method to evaluate the density and resolution requirements you would like, provided that you can demonstrate these results to NOAA. **We are currently using ArcGIS to analyze the HIPS density layer exported to raster. I believe Caris is working on an update to the Surface QC Tool that will validate surface bases on user input density.**
- For the purposes of this requirement, NOAA will not differentiate between the soundings actually falling within the square grid cell, and the soundings within the circular capture radius (provided the maximum sounding propagation distance is set to no greater than the grid resolution divided by $\sqrt{2}$), as required by the Specs and Deliverables)
- **We note that the density layer feature in CARIS may be helpful. I see that you used the word "may" here. Are you aware of any issues where HIPS is not reporting density as defined by HSSD? No issues that I'm personally aware of - the intent here is to provide a possible solution (which it doesn't sound like you need, as you've already got your ArcGIS analysis) without being perscriptive.**

Let me know what you think - if this works for you, we'll formalize it in an email for the record. If you'd like to discuss this further, feel free to give me a call.

Thanks,

Ben

--

LCDR Ben Evans, NOAA
Chief, Data Acquisition and Control Branch (N/CS35)
NOAA Office of Coast Survey
SSMC3, Station 6815
1315 East West Highway
Silver Spring, MD 20910
voice: (301) 713-2700 x111
fax: (301) 713-4533
cell: (240) 687-4602

Shyla Allen

From: Jason Creech
Sent: Friday, July 31, 2009 11:30 AM
To: Shyla Allen; Michael Christy; John Staly; Amanda Bittinger
Cc: Jon Dasler
Subject: AHB discussion

I just got off the phone with Matt Wilson at AHB and have answers (**my interpretation in red**) to our questions...

1. Early on we discussed submitting 1m CUBE surfaces over the survey area, but after reading more into the 2009 Specs propagation requirements and receiving the new CUBEparms.xml file we are wondering if we should just follow the depth dependent grid-resolution thresholds that are in the 2009 specs? This would mean that we would create both 1 and 2 meter surfaces for some areas. We could also use thresholds when finalizing.

Matt said to create surfaces bases on the depth dependent grid-resolution thresholds. He will follow up with us regarding using the threshold option when finalizing. This is something that they do at the end of compilation but he is not sure if they need it at time of delivery.

I just got the following reply...

Just getting back to you regarding your question. The 1m and 2m surfaces will be fine as deliverables for the Chesapeake sheet we had discussed (you don't need to depth threshold). However please include the fieldsheets you use to create the surfaces.

2. We are currently preparing our MBES and SSS fill plans for H12040 and will most likely start acquiring fill tomorrow. We have a question about what truly constitutes a holiday in skunk stripe data. We are running fill if we have a large along track holiday (rejected line, disconnected sounder, etc), but do we need to worry about small 5 node holidays or gaps in the outer swath considering that we have 200 SSS?

Not a concern unless there is a significant contact that falls on the holiday. We don't have to meet the complete coverage MBES requirement for node population. If we have lots of outages or sparse data we should probably fill, but don't worry about isolated cases.

3. I asked about the following requirement in the 2009 specs.

If charted sounding falls between 2 sounding lines, and the charted depth is shoaler than adjacent depths from both lines, then the field unit must "split" the lines to verify or disprove the charted sounding.

Matt said not to do this unless there appears to be a feature or significant sounding that was missed by the skunk stripe data. If the whole chart or sections of the chart appear to be shoaler than the survey we should run splits. That would be a lot of splits!

Please let me know if you have any questions.

Jason

Jason Creech
Lead Hydrographer



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Shyla Allen

From: Gerald.Hovis [Gerald.Hovis@noaa.gov]
Sent: Tuesday, October 27, 2009 2:16 PM
To: Jason Creech
Cc: Ben Evans; Lori.Knell
Subject: Re: [Fwd: Discrete Zoning error for OPR-E349-KR-2009]

Jason,

Yes you are correct.....all measurement errors should be 0.02. My mistake.

Jerry

Creech wrote:

> Jerry
>
> Thanks for the zoning uncertainty estimates. I'd like to have a value
> checked before we move forward.
>
> Windmill Point and Tangier Island
> Is the 0.04 m Processing Error correct? If so the TPE (95% CI) should
> be 0.172m. If the TPE (95% CI) is truly 0.156 then the Processing
> error should be 0.02 (the same as Lewisetta to WP).
>

> Thanks again.

> Jason
>
>
>
>
>

> -----Original Message-----

> From: Ben Evans [mailto:Benjamin.K.Evans@noaa.gov]
> Sent: Friday, October 23, 2009 10:31 AM
> To: Jason Creech
> Cc: Lori.Knell
> Subject: [Fwd: Discrete Zoning error for OPR-E349-KR-2009]
>

> Jason,
>

> See below for zoning uncertainty estimates.
>

> Ben
>
>

> ----- Original Message -----

> Subject: Discrete Zoning error for OPR-E349-KR-2009
> Date: Fri, 23 Oct 2009 13:27:56 -0400
> From: Gerald.Hovis <Gerald.Hovis@noaa.gov>
> To: Lori.Knell <Lori.Knell@noaa.gov>, Benjamin K Evans
> <Benjamin.K.Evans@noaa.gov>
> CC: NOS.COOPS.HPT@noaa.gov
> References: <4AD491FE.7080805@noaa.gov> <4ADF3E09.9010800@noaa.gov>
> <4ADF629B.9000209@noaa.gov> <4AE0BDE1.7060106@noaa.gov>
>
>
>

> Ben/Lori/Jason,


>
> Please pass on to Jason Creech.
>
> Below is a summary of the errors we compute when providing the TPE for
> a
>
> project. Remember that our error at 95% CI is given as:
>
> @ 95% CI = b + 1.96s
> b = systematic errors and biases.
> s = random errors at the one-standard deviation level.
>
> Where
> TPE @ 95% CI = Datum Error + 1.96*SQT((Measurement Error)2+(Processing
> Error)2+(Zoning Error)2)
>
> And
> Zoning Error (at the 95% confidence interval) = 1.96 * SQT((Sum of
> differences2)/(# of measurements))
>
> Datum Error being a bias is not included in the root mean square,
> however, Processing Error ,Measurement Error, and Tidal Zoning Error
> being random errors are included.
>
> Also see.....http://vdatum.noaa.gov/docs/est_uncertainties.html
>
> The specific errors you requested are below but remember that one
> cannot
>
> just take the arithmetic sum of all values to get the total error.
>
> The Error Estimation between Lewisetta and Windmill Point:
> Datum Error (tertiary station) = 0.03 m (idealized based
> on 3 months of data)
> Datum Error (Windmill Pt) = 0.018 m (actual)
> Measurement Error = 0.01 m
> Processing Error = 0.02 m
> Zoning Error = 0.049 m
> /*Zoning Error (95% CI) = 0.099 m */_
> TPE (95% CI) = 0.124 m
>
> The Error Estimation between Windmill Point and Tangier Island:
> Datum Error (tertiary station) = 0.03 m (idealized based
> on 3 months of data)
> Datum Error (Tangier Island) = 0.018 m (actual)
> Measurement Error = 0.01 m
> Processing Error = 0.04 m
> Zoning Error = 0.067 m
> /*Zoning Error (95% CI) = 0.133 m */_
> TPE (95% CI) = 0.156 m
>
> Jerry
>
>
>
>
>



You replied on 10/21/2009 7:10 AM.

Attachments can contain viruses that may harm your computer. Attachments may not display correctly.

Jason Creech

From: Lori.Knell [Lori.Knell@noaa.gov] **Sent:** Tue 10/13/2009 10:23 AM
To: Jason Creech
Cc: Benjamin.K.Evans@noaa.gov; Jon Dasler
Subject: Revised tides for OPR-E349-KR-09
Attachments:  E349KR2009_Rev.zip(592KB)

Jason,

These are the revised tide requirements for the Chesapeake Bay project.

This email contains a .ZIP file containing all pertinent MapInfo files, as well as tidal zoning graphics in PDF, are attached to this email.

Six minute predictions for Lewisetta, VA (863-5750) and Windmill Point, VA (863-6580) may be retrieved in one month increments over the internet from the CO-OPS Home Page at <http://tidesandcurrents.noaa.gov/olddata/> by clicking on "Predicted Water Level". Additionally, the files are

posted to the Sharepoint website under the project name

"OPR-E349-KR-2009 Revised Project Instructions" in Project Support

Templates > FY09 > TO CO-OPS > From HSD > KR > OPR-E349-KR-2009 Revised.

If you have any questions about this please let me know.

Thanks, Lori

--

Lori Knell

Physical Scientist, Data Acquisition Control Branch

Hydrographic Surveys Division

NOAA

Lori.Knell@noaa.gov

301.713.2700 x114

Jason Creech

From: Jason Creech
Sent: Thursday, July 16, 2009 1:21 PM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; Castle.E.Parker@noaa.gov; Jon Dasler
Subject: H12040_DTON_1 Submission
Attachments: H12040_DtoN_1.doc; H12040_DtoN_1.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_1. The attached file includes the danger report, standard chartlet, and supporting images. As I mentioned on the phone this report also includes the ASCII file required by the 2009 Specs. Please let me know if you have any questions, require any additional information, or have any feedback on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer



David Evans and Associates, Inc. | Marine Services Division
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Office: 360.314.3200 | Direct: 804.516.7829 | Fax: 360.314.3250
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Jason Creech

From: Matthew Wilson [Matthew.Wilson@noaa.gov]
Sent: Friday, July 17, 2009 11:00 AM
To: Jason Creech
Cc: Lori.Knell; Castle.E.Parker@noaa.gov; Jon Dasler
Subject: Re: H12040_DTON_1 Submission

Jason,

I received the H12040 DtoN Report #1, and went ahead and took it myself through the DtoN work-flow to familiarize myself with the process. The Report was complete and met with the 2009 HSSD as submitted, I've already processed it through here and sent it up to the Marine Chart Division.

As for your question regarding the ascii text file, the .txt you submitted worked just fine and meets with the HSSD requirements (lat, lon, depth, feature, date, time). However if it doesn't make any difference to you, the following format for the date and time is best:

YYYY MM DD HH MM SS

But like I said, what you submitted meets spec.

I'll be in touch next week, we are still discussing best practices to validate the requirement of 95% node population with at least 5 soundings.

Matt

Jason Creech wrote:

>
> Matt
>
>
>
> Attached is a Danger to Navigation report for H12040_DTON_1. The
> attached file includes the danger report, standard chartlet, and
> supporting images. As I mentioned on the phone this report also
> includes the ASCII file required by the 2009 Specs. Please let me know
> if you have any questions, require any additional information, or have
> any feedback on this danger to navigation.

>
>
>
> Thanks,
>
> Jason
>
>
> **Jason Creech**
> Lead Hydrographer
>
> **David Evans and Associates, Inc. | Marine Services Division**
> *2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
> Office: 360.314.3200 | Direct: 804.516.7829 | Fax: 360.314.3250
> _jasc@deainc.com <mailto:v@deainc.com> | www.deainc.com
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>
>
>

--

Respectfully,

Matthew J. Wilson
Physical Scientist
NOAA Atlantic Hydrographic Branch
757-441-6862x112
matthew.wilson@noaa.gov

Jason Creech

From: Jason Creech
Sent: Tuesday, August 11, 2009 6:02 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_1 Submission
Attachments: H12040_DtoN_2.doc; H12040_DtoN_2.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_2. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech Lead Hydrographer

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jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/11/2009

Jason Creech

From: Jason Creech
Sent: Tuesday, August 11, 2009 6:21 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_3 Submission
Attachments: H12040_DtoN_3.doc; H12040_DtoN_3.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_3. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Also, I just sent an email with subject line H12040_DTON_1, but it was actually for H12040_DTON_2. The email body and attachments were correct. I need coffee.

Thanks,
Jason

Jason Creech Lead Hydrographer

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8/11/2009

Jason Creech

From: Jason Creech
Sent: Wednesday, August 12, 2009 6:49 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_4 Submission
Attachments: H12040_DtoN_4.doc; H12040_DtoN_4.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_4. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

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8/12/2009

Jason Creech

From: Jason Creech
Sent: Wednesday, August 12, 2009 6:54 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_5 Submission
Attachments: H12040_DtoN_5.doc; H12040_DtoN_5.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_5. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

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jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/12/2009

Jason Creech

From: Jason Creech
Sent: Wednesday, August 12, 2009 6:58 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_6 Submission
Attachments: H12040_DtoN_6.doc; H12040_DtoN_6.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_6. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

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jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/12/2009

Jason Creech

From: Matthew Wilson [Matthew.Wilson@noaa.gov]
Sent: Wednesday, August 19, 2009 8:54 AM
To: Jason Creech
Subject: [Fwd: Dangers to Navigation - H12040 Report #2]

Attachments: H12040_DtoN_#02.pdf



H12040_DtoN_#02
.pdf (10 MB)

Jason,

Here is the letter for the last DtoN submission. The attachment is a zip file but still it is 14MB, that's why it got kicked back I believe. I'm forwarding the letter from MCD without the attachment. This time I will attempt to attach just the PDF which is 10MB, not the zip file. Hopefully this will work, let me know. Do you need the XML file too?

Matt

--

Respectfully,

Matthew J. Wilson
Physical Scientist
NOAA Atlantic Hydrographic Branch
757-441-6862x112
matthew.wilson@noaa.gov

Jason Creech

From: Jason Creech
Sent: Wednesday, August 19, 2009 7:22 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_7 Submission
Attachments: H12040_DtoN_7.txt; H12042_DtoN_7.doc

Matt

Attached is a Danger to Navigation report for H12040_DTON_7. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

www.deainc.com

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8/19/2009

Jason Creech

From: Jason Creech
Sent: Wednesday, August 19, 2009 12:28 PM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_8 Submission
Attachments: H12040_DtoN_8.doc; H12040_DtoN_8.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_8. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
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jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/19/2009

Jason Creech

From: Matthew Wilson [Matthew.Wilson@noaa.gov]
Sent: Friday, August 21, 2009 4:53 AM
To: OCS.NDB@noaa.gov; James.M.Crocker@noaa.gov; LCDR Rick Brennan, NOAA; Castle.E.Parker; Sarah.Mrozek@noaa.gov; Howard.Danley@noaa.gov; Jason Creech
Subject: H21040 DtoN Report #3 submission to MCD
Attachments: H12040_DtoN_#03.zip



H12040_DtoN_#03
.zip (6 MB)

Good Day,

Please find attached a zip file for survey H12040 DtoN report #3 for submission to Marine Chart Division (MCD).

The information originates from a NOAA contractor (David Evans and Associates, Inc.) and was submitted to the Atlantic Hydrographic Branch (AHB). The contents of the attached WinZip file were generated at AHB, and these contents contain a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email or by phone at 757-441-6862.

Thank you for your assistance with this matter.

--
Respectfully,

Matthew J. Wilson
Physical Scientist
NOAA Atlantic Hydrographic Branch
757-441-6862x112
matthew.wilson@noaa.gov

Jason Creech

From: Jason Creech
Sent: Tuesday, August 25, 2009 1:10 PM
To: Matthew Wilson
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_9 Submission
Attachments: H12040_DtoN_9.doc; H12040_DtoN_9.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_9, which identifies all 6 baring pound nets within the survey area. The attached files include the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/25/2009

Jason Creech

From: Matthew Wilson [Matthew.Wilson@noaa.gov]
Sent: Thursday, August 27, 2009 7:59 AM
To: OCS.NDB@noaa.gov; James.M.Crocker@noaa.gov; LCDR Rick Brennan, NOAA; Castle.E.Parker; Sarah.Mrozek@noaa.gov; Howard.Danley@noaa.gov; Jason Creech
Subject: H12040 DtoN Report #4 submission to MCD
Attachments: H12040_DtoN_#04.zip



H12040_DtoN_#04
.zip (6 MB)

Good Day,

Please find attached a zip file for survey H12040 DtoN report #4 for submission to Marine Chart Division (MCD).

The information originates from a NOAA contractor (David Evans and Associates, Inc.) and was submitted to the Atlantic Hydrographic Branch (AHB). The contents of the attached WinZip file were generated at AHB, and these contents contain a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email or by phone at 757-441-6862.

Thank you for your assistance with this matter.

--
Respectfully,

Matthew J. Wilson
Physical Scientist
NOAA Atlantic Hydrographic Branch
757-441-6862x112
matthew.wilson@noaa.gov

Jason Creech

From: Jason Creech
Sent: Friday, August 28, 2009 9:42 AM
To: 'Matthew Wilson'
Cc: 'Lori.Knell'; 'Castle.E.Parker@noaa.gov'; Jon Dasler
Subject: H12040_DTON_10 Submission
Attachments: H12040_DtoN_10.doc; H12040_DtoN_10.txt

Matt

Attached is a Danger to Navigation report for H12040_DTON_10. The attached files include the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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8/28/2009

Jason Creech

From: ocs.ndb [OCS.NDB@noaa.gov]
Sent: Monday, August 31, 2009 4:48 AM
To: Andrew Kampia; Castle E Parker; Dave Neander; Ed Martin; Howard Danley; Jim Crocker; Joseph Robinson; Ken Forster; Kevin Shaw; Mark Griffin; NDB e-Mailbox; Richard Sillcox; Rick Brennan; Robert Ramsey; Stephen Hill; Tara Wallace; Tom Loeper; Travis Newman; Wes.Dukes@noaa.gov; Jason Creech; Sarah.Mrozek@noaa.gov
Subject: [Fwd: H12040 DtoN#5]
Attachments: H12040 DtoN#5



H12040 DtoN#5

L-1230-2009 and DD-15467 have been registered by the Nautical Data Branch and directed to Products Branch C for processing.

The DtoNs reported are visual conspicuous stakes located south of Smith Point in Chesapeake Bay, VA.

The following products are affected:

12235 kapp 571
12230 kapp 567
12225 kapp 563
12285 kapp 644
12280 kapp 2975

The following ENC's are affected:

US5VA41M
US3EC08M

References:

H12040
OPR-E349-KR-09

This information was discovered by a NOAA contractor and submitted by AHB.

Jason Creech

From: Wes.Dukes@noaa.gov
Sent: Friday, August 28, 2009 12:08 PM
To: OCS NDB
Cc: Castle E. Parker; Howard Danley; James M. Crocker; Jason Creech; Richard T Brennan; Sarah Mrozek
Subject: H12040 DtoN#5
Attachments: H12040_DtoN_#05.zip



H12040_DtoN_#05
.zip (698 KB)

Good Day,

Please find attached a zip file for survey H12040 DtoN report #5 for submission to Marine Chart Division (MCD).

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch. 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,

Wes Dukes

Jason Creech

From: Jason Creech
Sent: Monday, November 30, 2009 8:32 AM
To: 'Castle.E.Parker@noaa.gov'
Cc: 'Lori.Knell'; Jon Dasler; 'Matthew Wilson'; 'AHB.DtoN@noaa.gov'
Subject: H12040_DTON_11 Submission
Attachments: H12040_DtoN_11.doc; H12040_DtoN_11.txt

Gene

Attached is a Danger to Navigation report for H12040_DTON_11. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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11/30/2009

Jason Creech

From: Nicole.Trenholm@noaa.gov
Sent: Monday, November 30, 2009 12:12 PM
To: OCS.NDB@noaa.gov
Cc: Richard Brennan; Castle.E.Parker; Sarah.Mrozek@noaa.gov; Jason Creech; Jon Dasler; James M Crocker; Lori.Knell@noaa.gov
Subject: H12040 DtoN #06
Attachments: H12040_DtoN_#06.zip



H12040_DtoN_#06
.zip (3 MB)

Good Day,

Please find attached a zip file for survey H12040 DtoN #11, 35 ft sounding for submission to Marine Chart Division (MCD). Just to clarify, images included in the PDF reference a DtoN #11 which is the contract assigned number for the DtoN which is equivalent to the assigned number DtoN #6 from AHB.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch. 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 757.441.6746 x107.

Thank you for your assistance with this matter,

Nikki Trenholm

Jason Creech

From: Jason Creech
Sent: Monday, November 30, 2009 11:56 AM
To: 'Castle.E.Parker@noaa.gov'
Cc: 'Lori.Knell'; Jon Dasler; 'Matthew Wilson'; 'AHB.DtoN@noaa.gov'
Subject: H12040_DTON_12 Submission
Attachments: H12040_DtoN_12.doc; H12040_DtoN_12.txt

Gene

Attached is a Danger to Navigation report for H12040_DTON_12. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,
Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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11/30/2009

Jason Creech

From: Nicole.Trenholm@noaa.gov
Sent: Monday, November 30, 2009 12:42 PM
To: OCS.NDB@noaa.gov
Cc: Richard Brennan; Castle.E.Parker; Sarah.Mrozek@noaa.gov; Jason Creech; Jon Dasler; James M Crocker; Lori.Knell@noaa.gov
Subject: H12040 DtoN #07
Attachments: H12040_DtoN_#07.zip



H12040_DtoN_#07
.zip (2 MB)

Good Day,


Please find attached a zip file for survey H12040 DtoN #07, 13 ft sounding for submission to Marine Chart Division (MCD). Just to clarify, images included in the PDF reference a DtoN #12 which is the contract assigned number for the DtoN which is equivalent to the assigned number DtoN #07 from AHB.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch. 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 757.441.6746 x107.

Thank you for your assistance with this matter,

Nikki Trenholm

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Jason Creech

From: Jason Creech **Sent:** Thu 12/3/2009 6:57 AM
To: Castle.E.Parker@noaa.gov
Cc: 'Lori.Knell'; Jon Dasler; Matthew Wilson; AHB.DtoN@noaa.gov
Subject: H12040_DTON_13 Submission
Attachments:  H12040_DTON_13.doc(759KB)  H12040_DtoN_13.txt(3KB)

Gene

Attached is a Danger to Navigation report for H12040_DTON_13. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,


Jason

Jason Creech
Lead Hydrographer



David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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Jason Creech

From: Jason Creech **Sent:** Thu 12/3/2009 6:59 AM
To: Castle.E.Parker@noaa.gov
Cc: 'Lori.Knell'; Jon Dasler; Matthew Wilson; AHB.DtoN@noaa.gov
Subject: H12040_DTON_14 Submission
Attachments:  H12040_DTON_14.doc(799KB)  H12040_DtoN_14.txt(3KB)

Gene

Attached is a Danger to Navigation report for H12040_DTON_14. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,

Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Phone: 804.516.7829 | Fax: 360.314.3250

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Jason Creech

From: Casie.Carrott@noaa.gov
Sent: Thursday, December 03, 2009 9:21 AM
To: OCS.NDB@noaa.gov
Cc: Castle.E.Parker; james.m.crocker@noaa.gov; LCDR Rick Brennan, NOAA; Lori.Knell@noaa.gov; sarah.mrozek@noaa.gov; Jason Creech
Subject: H12040 DtoN #08

Follow Up Flag: Follow up
Flag Status: Red

Attachments: H12040_DtoN_#08.zip



H12040_DtoN_#08
.zip (2 MB)


Good Day,

Please find attached a zip file for survey H12040 DtoN report #08, 19ft Obstruction and 17ft Obstruction , for submission to Marine Chart Division (MCD).



The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch. 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, Casie Carrott

 Attachments can contain viruses that may harm your computer. Attachments may not display correctly.

Jason Creech

From: Jason Creech **Sent:** Thu 12/17/2009 9:52 AM
To: castle.e.parker@noaa.gov
Cc: Jon Dasler; Lori.Knell; Matthew Wilson; AHB.DtoN@noaa.gov
Subject: H12040_DTON_15 Submission
Attachments:  [H12040_DTON_15.doc\(1MB\)](#)  [H12040_DtoN_15.txt\(210B\)](#)

Gene


Attached is a Danger to Navigation report for H12040_DTON_15. The attached file includes the danger report, ASCII text file, standard chartlet, and supporting images. Please let me know if you have any questions or require any additional information on this danger to navigation.

Thanks,


Jason

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
jasc@deainc.com | Office: 804.516.7829 | Cell: 804.516.7829 | Fax: 360.314.3250

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Jason Creech

From: Nicole.Trenholm@noaa.gov [Nicole.Trenholm@noaa.gov] **Sent:** Thu 12/17/2009 12:29 PM
To: OCS.NDB@noaa.gov
Cc: Richard Brennan; Castle.E.Parker; Jon Dasler; Lori.Knell; Jason Creech; Benjamin K Evans; James M Crocker; Mark.T.Lathrop@noaa.gov
Subject: H112040 DtoN #9
Attachments:  [H12040_DtoN_#09.zip\(2MB\)](#)

Good Day,

Please find attached a zip file for survey H12040 DtoN #15.1, 50 ft obstrn and DtoN #15.2, 34 ft obstrn for submission to Marine Chart Division (MCD)

DEA DtoN #15.1 and #15.2 are referred to within the .PDF. Not all DtoNs submitted by the field unit are submitted to MCD by AHB, so the naming conventions are changed.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch. 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 757.441.6746 x107.

Thank you for your assistance with this matter,

Nikki Trenholm

OPR-E349-KR-09 Bottom Sampling

Sheet A, H12040

Sample	Time (UTC)	Day Number	Easting	Northing	Depth (m)	COLOR	NATSUR	NATQUA
A1	16:17:41	174	391522.69	4183625.40	11.5	7-7	2-3	1-1
A2	16:30:08	174	393534.50	4183656.84	12.5	7	4	2
A3	17:04:09	174	395282.06	4183764.48	24.0	7	3	1
A4	16:48:44	174	397519.35	4183650.05	22.2	4-4	4-3	2-1
A5	17:23:20	174	391546.47	4185667.33	7.6	8	4	1
A6	17:32:57	174	393556.50	4185671.96	12.0	7	4	2
A7	17:42:50	174	395521.77	4185677.87	22.0	7	3	1
A8	17:59:55	174	397467.95	4185614.47	26.0	7	3	2
A9	18:38:39	174	391845.40	4187615.03	6.1	8	4	2
A10	18:29:15	174	393521.31	4187650.00	11.8	7-7	4-3	2-1
A11	18:19:24	174	395549.08	4187657.20	17.4	7	3	1
A12	18:08:54	174	397492.10	4187687.34	25.3	4	4	1
A13	18:48:59	174	391517.96	4189691.13	9.1	7	3	1
A14	18:56:07	174	393546.19	4189646.15	10.4	7-7	4-3	1-1
A15	19:03:52	174	395525.08	4189643.03	14.0	7	2	2
A16	19:17:54	174	397705.13	4189548.35	27.4	7	4	2
A17	20:11:05	174	391819.33	4191648.41	7.0	8	4	2
A18	20:04:16	174	393524.22	4191648.68	10.0	7-7	4-3	1-2
A19	19:43:51	174	395561.21	4191626.50	10.9	7	3	2
A20	19:43:51	174	397303.70	4191711.89	22.3	7	3	1
A21	20:21:46	174	393552.30	4193339.41	4.0	8	4	2
A22	20:32:27	174	395541.43	4193658.12	7.0	8-1	4-17	2-2
A23	20:41:55	174	397218.08	4193644.32	23.8	7-2	3-3	2-2

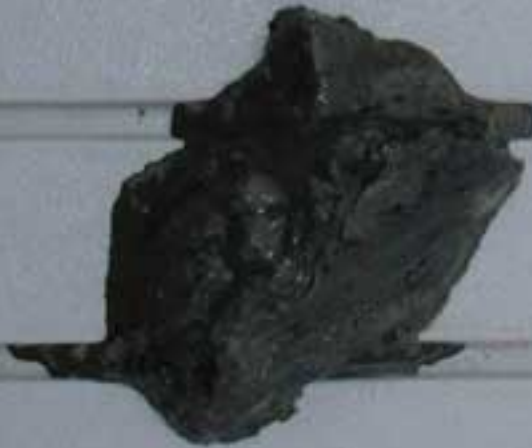
A

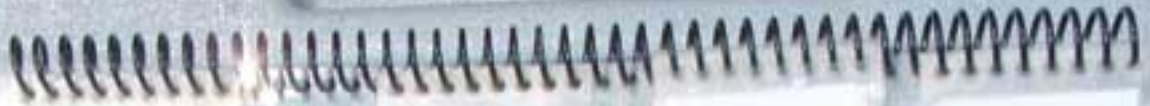
0

0

1

2 cm





A 0 0 2

2 cm



A

0

0

3

2 cm



A

0

0

4



A

0

0

6

2 cm



A

0

0

7

2 cm





A

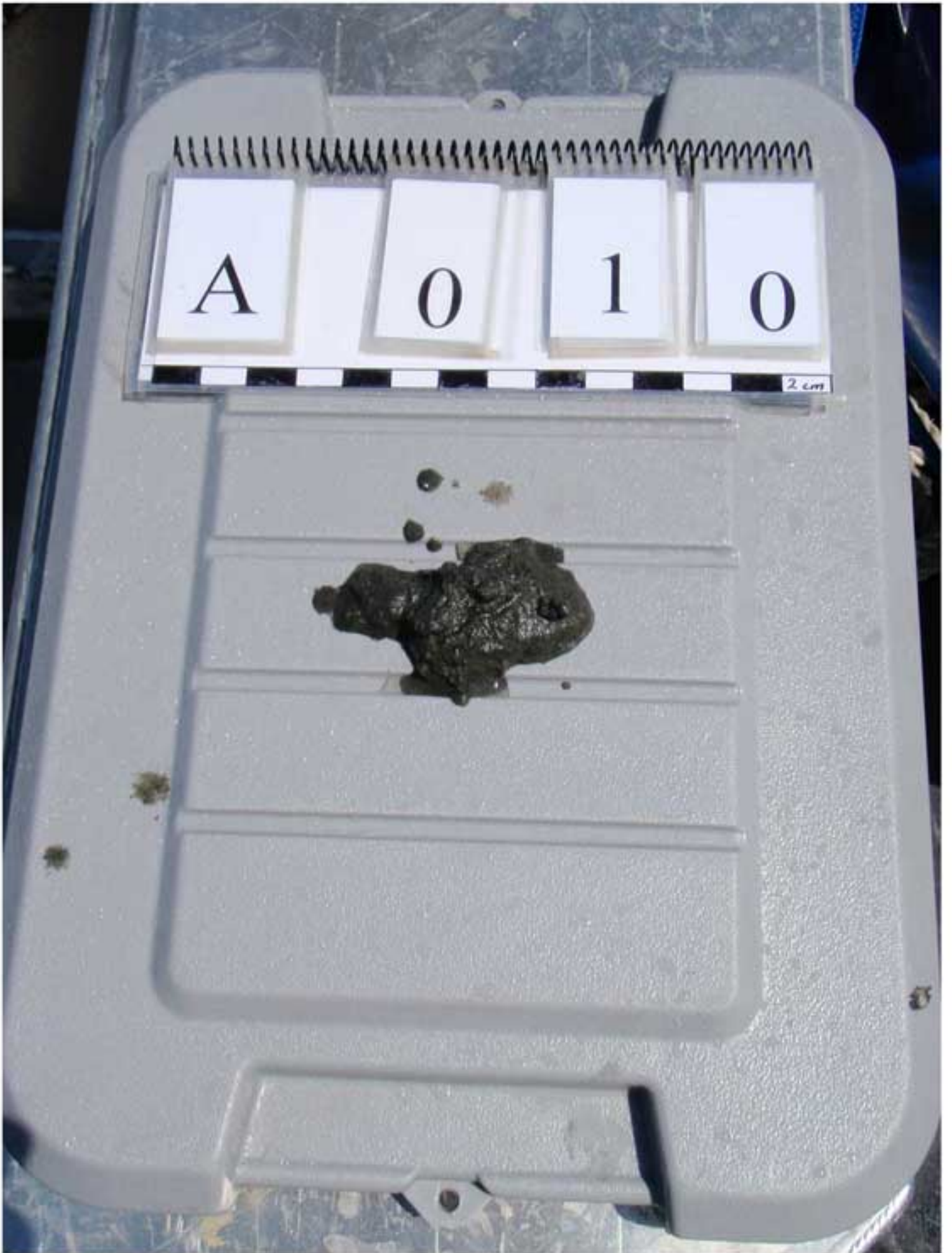
0

0

9

2 cm





A

0

1

1

2 cm



A 0 1 2

2 cm



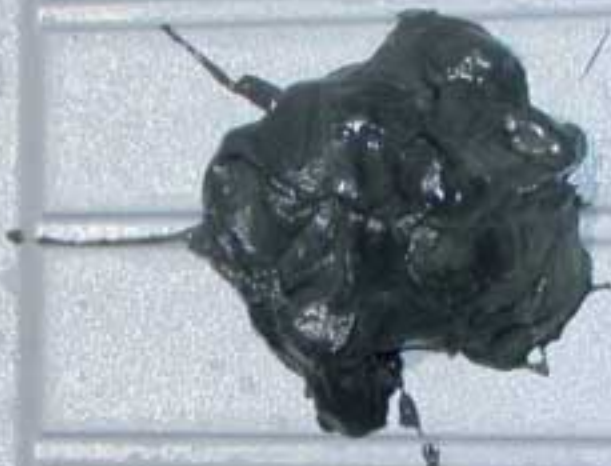
A

0

1

3

2 cm



A

0

1

4

2 cm



A

0

1

5

2 cm



A

0

1

6

2 cm



A

0

1

7

2 cm





A

0

1

9

2 cm



A

0

2

0

2 cm





A

0

2

1

2 cm



A

0

2

3

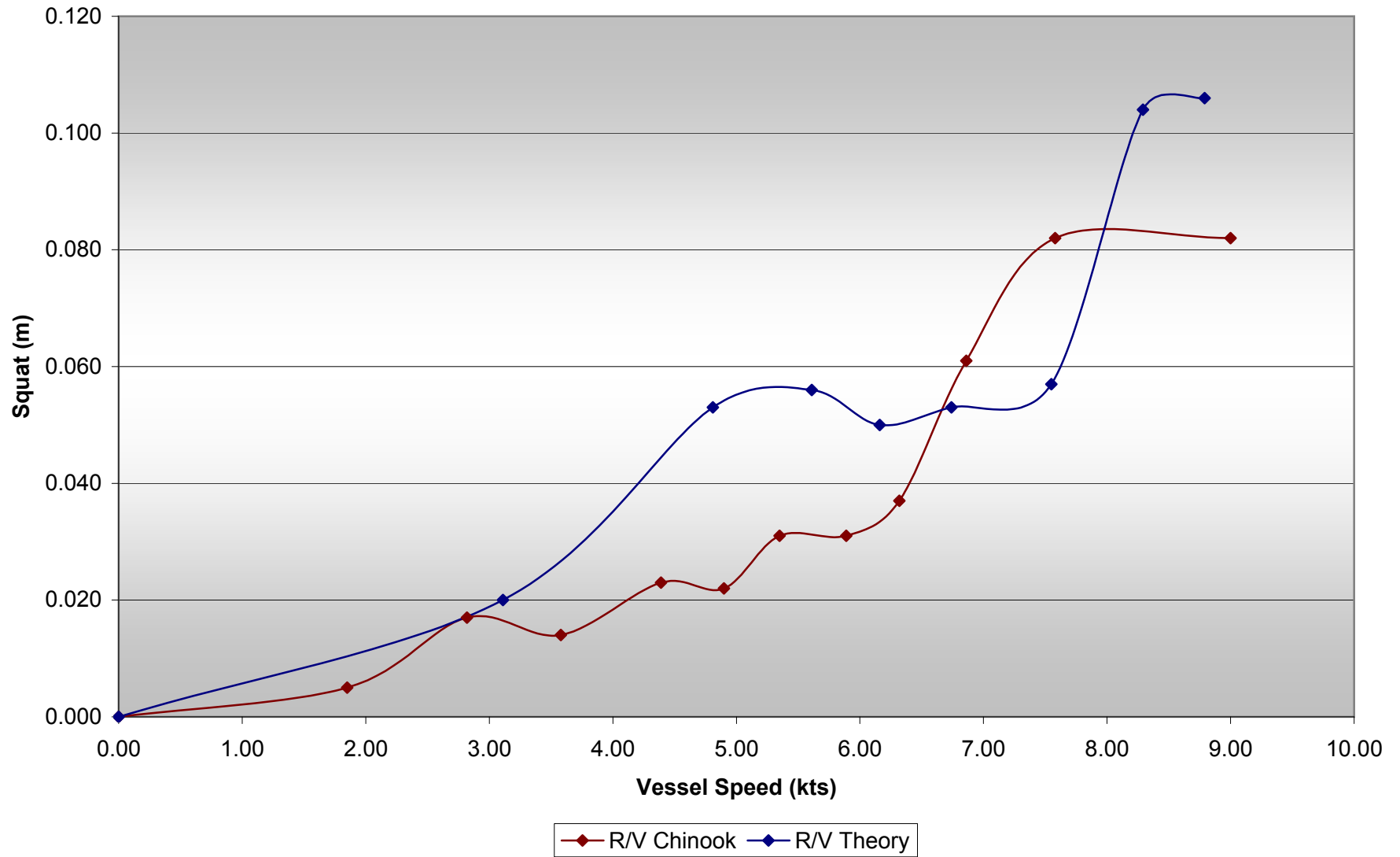
2 cm



OPR-E349-KR-09 Settlement and Squat Results

<i>R/V Chinook</i>		<i>R/V Theory</i>	
Speed (kts)	Squat (m)	Speed (kts)	Squat (m)
0.00	0.000	0.00	0.000
1.85	0.005	3.11	0.020
2.82	0.017	4.81	0.053
3.58	0.014	5.61	0.056
4.39	0.023	6.16	0.050
4.90	0.022	6.74	0.053
5.35	0.031	7.55	0.057
5.89	0.031	8.29	0.104
6.32	0.037	8.79	0.106
6.86	0.061		
7.58	0.082		
9.00	0.082		

Vessel Settlement and Squat Results



AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	H12040
PROJECT No.	OPR-E349_KR-09
FIELD UNIT	DAVID EVANS AND ASSOCIATES, INC,
DATE OF SURVEY	20090621-20091207
LARGEST SCALE CHART	<i>12228_1, edition 32, 20080301, 1:40,000</i> <i>12233_1, edition 37, 20070101, 1:40,000</i> <i>12235_1, edition 32, 20090501, 1:40,000</i>
ADDITIONAL CHARTS	<i>12225_1, edition 59, 20091201, 1:80,000</i> <i>12230_1, edition 64, 20090301, 1:80,000</i> <i>12285_1, edition 40, 20100401, 1:80,000</i> <i>12285_2, edition 40, 20100401, 1:40,000</i>
SOUNDING UNITS	FT
COMPILER	John Kidd

Source Grids	File Name
	H:\Compilation\H12040_E349-DEA\AHB_H12040\COMPILE\Final_Hobs
	H12040_1of6_2m_Final.bag H12040_2of6_2m_Final.bag H12040_3of6_2m_Final.bag H12040_4of6_2m_Final.bag H12040_4of6_4m_Final.bag H12040_5of6_2m_Final.bag H12040_5of6_4m_Final.bag H12040_6of6_2m_Final.bag H12040_6of6_4m_Final.bag H12040_All_Finalized_Inestigations_1m.bag H12040_All_Finalized_Investigation_2m.bag
Surfaces	File Name
	H:\Compilation\H12040_E349_DEA\AHB_H12040\COMPILE\Working
<i>Combined</i>	H12040_4m_Combined.csar
<i>Interpolated TIN</i>	\Interpolated TIN\H12040_8m_InterpTIN.csar
<i>Shifted Interpolated TIN</i>	\Shifted Surface\H12040_8m_InterpTIN_Shifted.csar
Final HOBs	File Name
	H:\Compilation\H12040_E349-DEA\AHB_H12040\COMPILE\Final_Hobs
<i>Survey Scale Soundings</i>	H12040_SS_Soundings.hob
<i>Chart Scale Soundings</i>	H12040_CS_Soundings.hob
<i>Contour Layer</i>	H12040_Contours.hob
<i>Feature Layer</i>	H12040_Features.hob
<i>Meta-Objects Layer</i>	H12040_MetaObjects.hob
<i>Blue Notes</i>	H12040_BlueNotes.hob
<i>ENC Retain Soundings</i>	N/A

Meta-Objects Attribution	
Acronym	Value
M_COVR	
CATCOV	1 – coverage available
SORDAT	20091207

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SORIND	US,US_graph,H12040
M_QUAL	
CATZOC	6 – zone of confidence U (data not assessed)
INFORM	R/V Theory
POSACC	10.0 m
SORDAT	20091207
SORIND	US,US_graph,H12040
SUREND	20091207
SURSTA	20090621
DEPARE	
DRVALV 1	3.00 ft
DRVALV2	182.00 ft
SORDAT	20091207
SORIND	US,US_graph,H12040
M_CSCL	
CSCALE	N/A
SORDAT	N/A
SORIND	N/A

SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. Number of ESAR Final Grids: 11
 - b. Resolution of Combined (m): 4 m

- 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: N/A
 - ii. And/Or use radius table file: H12040_SS_SSR_40k.txt

0	3.6576	0.9
3.65761	5.4864	1
5.48641	9.114	1.1
9.114	10.973	.9
10.9731	18.288	1.2
18.2881	27.432	1.3
27.4321	36.576	1.4
36.5761	48.768	1.5
 - d. Queried Depth of All Soundings
 - i. Minimum: 1.283 m
 - ii. Maximum: 47.631 m

- III. INTERPOLATED TIN SURFACE:
 - a. Resolution (m): 8 m
 - b. Interpolation method: Natural Neighbor
 - c. Shift value: -0.75 ft

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

IV. CONTOURS:

- a. Attribute Name: Depth
- b. Use a Depth List: H12040_depth_curves_list_FEET.txt
- c. Output Options: Create contour lines
 - i. Line Object: DEPCNT
 - ii. Value Attribute: VALDCO

V. FEATURES:

- a. Number of Chart Features: 47
- b. Number of Non-Chart Features: 4

VI. CHART SURVEY SOUNDINGS (CS):

- a. Number of ENC CS Soundings: 375
- b. Attribute Name: Depth
- c. Selection criteria: Radius, Shoal bias
- d. Radius value is: Distance on the ground (m)
 - i. Use single-defined radius: N/A
 - ii. And/Or use radius table file: H12040_CS_SSR_40k.txt

0	3.6576	280
3.6576	1 5.4864	300
5.4864	1 9.1441	380
9.1441	1 10.973	450
10.973	1 18.288	580
18.288	1 54.864	610

- iii. Enable Filter: Interpolated !=1
- e. Number Survey CS Soundings: 324

VII. NOTES:

ENC Information:

Name: US4VA40M

Edition: 7

Update Application Date: 2010/04/07

Chart: 12225

Name: US5VA16M

Edition: 20

Update Application Date: 3/15/2010

Chart: 12228

Name: US5VA27M

Edition: 12

Update Application Date: 10/27/2009

Chart: 12233

Name: US5VA41M

Edition: 24

Update Application Date: 8/17/2010

Chart: 12235

**ATLANTIC HYDROGRAPHIC BRANCH
H-CELL REPORT to ACCOMPANY
SURVEY H12040 (2009)**

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. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.2 QUALITY CONTROL

The AHB source depth grids for the survey's nautical chart update were 1m, 2m, and 4m resolution BASE surfaces (*.CSAR), which were combined at 4m resolution. The survey scale soundings were created from the combined surface by using a sounding spacing range (SSR) file. A TIN was created from the survey scale soundings, from which an interpolated surface of 8m resolution was generated. The chart scale soundings were selected from the filtered interpolated surface using a sounding spacing range (SSR) file. 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 portray the bathymetry within the common area.

The interpolated TIN surface of 8m resolution was shifted by the NOAA sounding rounding value of -0.75 feet. The shifted interpolated TIN was used to generate depth contours in feet which included the 12, 18, 30, 36, and 60 foot contours. 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 compilation products (Final *.HOB files) for this survey are detailed in the H12040 AHB Compilation Log contained within this document. The Final HOB files include depth areas (DEPARE), depth contours (DEPCNT), soundings (SOUNDG), meta-objects (M_COVR, and M_QUAL), cartographic Blue Notes (\$CSYMB), and features (FSHFAC, OBSTRN, PILPNT, SBDARE, WRECKS).

As dictated by Hydrographic Technical Directive 2008-8, the Final HOB files were combined into two separate H-Cell files in S-57 format. Both S-57 files were exported from CARIS Bathy DataBASE in meters, and then converted from metric units into feet using CARIS HOM ENC 3.3. Quality assurance and topology checks were conducted using CARIS S-57 Composer 2.2 validation tests and DKART Inspector 5.1 validation tests.

The final H-Cell products are two S-57 files, in Lat/Long NAD-83. The contents of these two H-Cell deliverables are listed in the table below:

TABLE 1 - Contents of H-Cell Files			
H12040_CS.000		Scale 1:40,000	
Object Class Types	Geographic	Cartographic	Meta
S-57 Object Acronyms	DEPARE	\$CSYMB	M_COVR
	OBSTRN		M_QUAL
	SBDARE		
	FSHFAC		
	PILPNT		
	WRECKS		
	SOUNDG		
H12040_SS.000		Scale 1:40,000	
Object Class Types	Geographic		
S-57 Object Acronyms	DEPCNT		
	SOUNDG		

B.2.4 Junctions and Prior Surveys

Survey H12040 (2009) junctions with survey H12041 (2010) to the east, H12042 (2010) to the southwest, and H12043 (2010) to the southeast. Most present survey depths compare within 2 feet of junctioning survey depths to the east, within 2 feet of junctioning survey depths to the southeast, and within 1 foot of junctioning survey depths to the southwest. Most present survey depths compare within 5 feet of the charted hydrography to the north and west.

B.4 DATA PROCESSING

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

CARIS Bathy DataBASE version 2.3/HF16
 CARIS Bathy DataBASE version 3.0/HF8
 CARIS HIPS and SIPS version 7.0/SP2/HF3
 CARIS S-57 Composer version 2.2
 CARIS HOM ENC version 3.3/SP3/HF8
 DKART Inspector version 5.1

C. HORIZONTAL AND VERTICAL CONTROL

The hydrographer makes adequate mention of horizontal and vertical control used for this survey in section C of the DR and the OPR-E349-KR-09 HVCR. The sounding datum for this survey is Mean Lower Low Water (MLLW), and the vertical datum is Mean High Water (MHW). Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 19 North.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

12228 1 (32st Edition, MAR/08)

Chesapeake Bay Pocomoke and Tangier Sounds
Corrected through NM 10/02/2010
Corrected through LNM 09/28/2010
Scale 1:40,000

12233 1 (37th Edition, JAN/07)

Potomac River- Chesapeake Bay to Piney Point
Corrected through NM 10/02/2010
Corrected through LNM 9/28/2010
Scale 1:40,000

12235 1 (32th Edition, MAY/08)

Rappahannock River Entrance Piankatank- Great
Wicomico Rivers
Corrected through NM 10/02/2010
Corrected through LNM 9/28/2010
Scale 1:40,000

ENC COMPARISON

US4VA40M

Edition 8
Application Date 2010/11/01
Issue Date 2010/11/1
Chart 12225

US5VA16M

Edition 20
Application Date 2010/03/15
Issue Date 2010/09/29
Chart 12228

US5VA27M

Edition 12
Application Date 2010/10/27
Issue Date 2010/07/14
Chart 12233

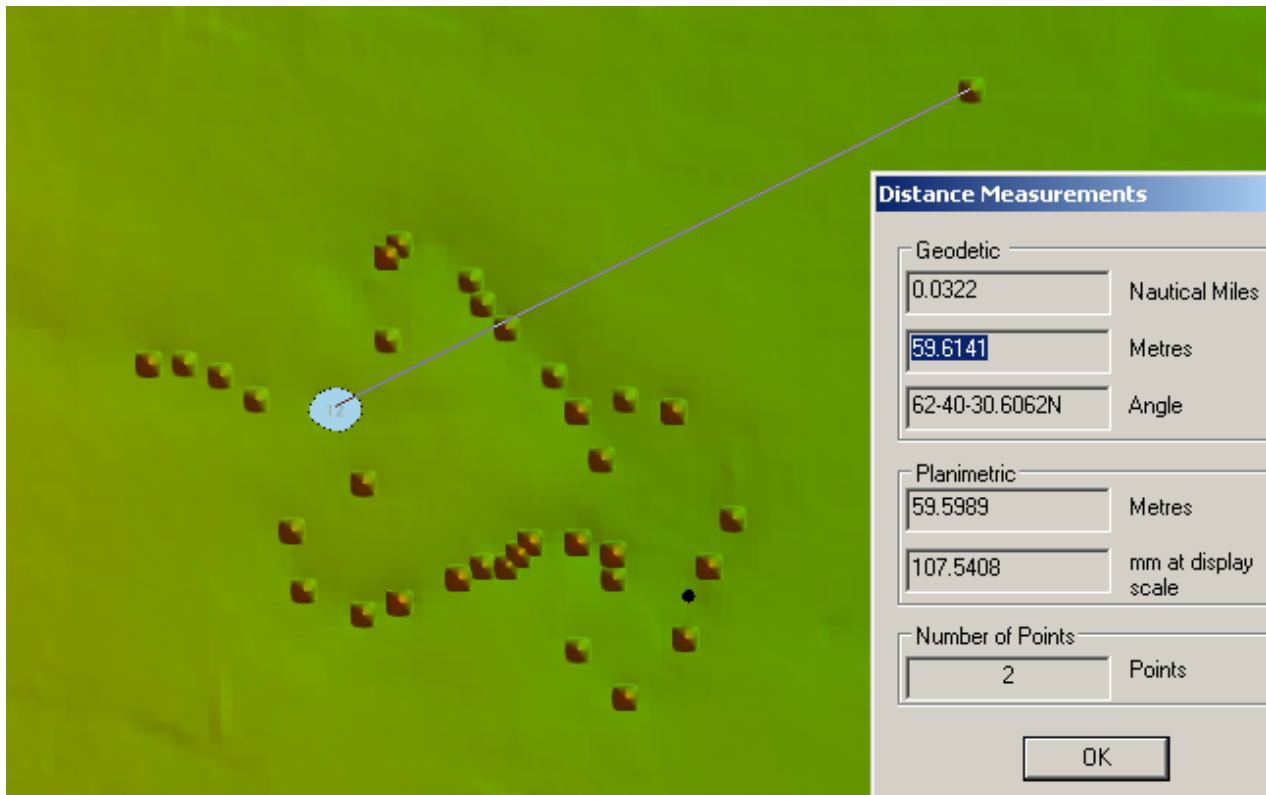
US5VA41M

Edition 24
Application Date 2010/08/17
Issue Date 2010/10/19
Chart 12235

D.2 ADDITIONAL RESULTS

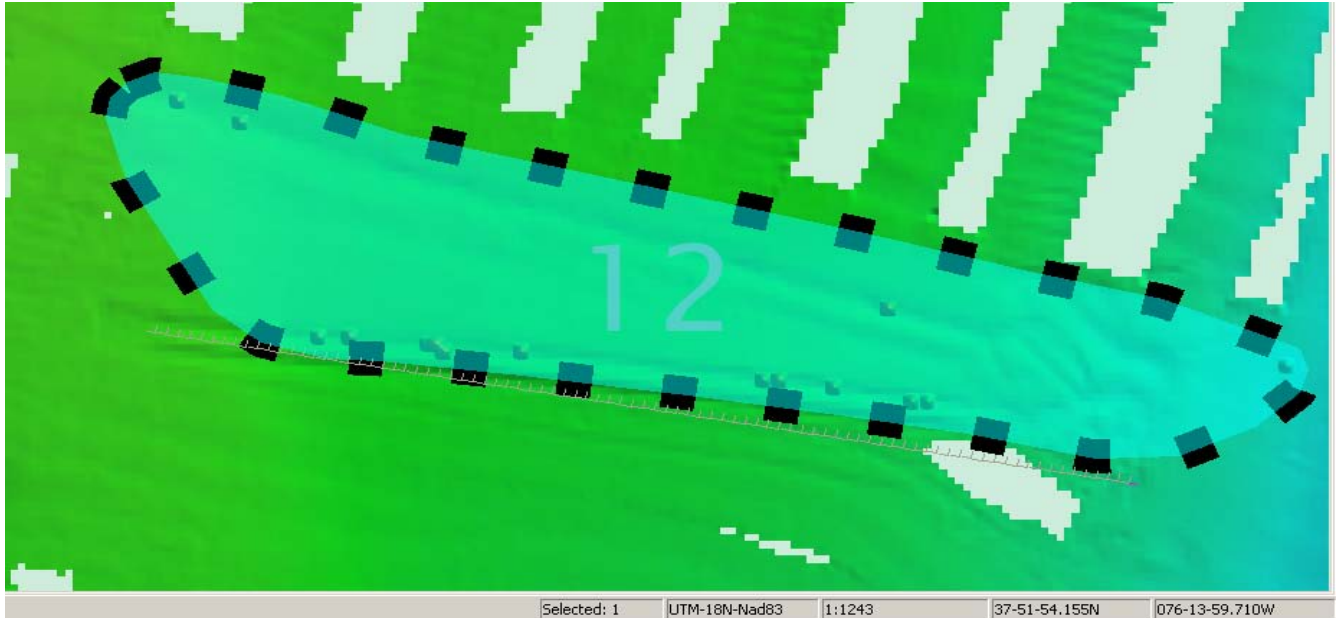
The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D and Appendix I and II of the DR. The hydrographer recommends that any charted features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted. The following exceptions are noted:

- 1) Several submerged piles from pound fish net ruins were found in the source grids and were not included in submitted field feature file (H:\Compilation\H12040_E349-DEA\KR_SUBMITTED\Supporting_Data\S_57_Feature_File).
 - a) One (1) point obstruction located at 37-51-10.426 N, 76-14-17.698 W and least depth of 11.8865 ft was created for an area that had many submerged piles and that could be covered by an obstruction symbol at chart scale ($\approx 75\text{m}$ radius).

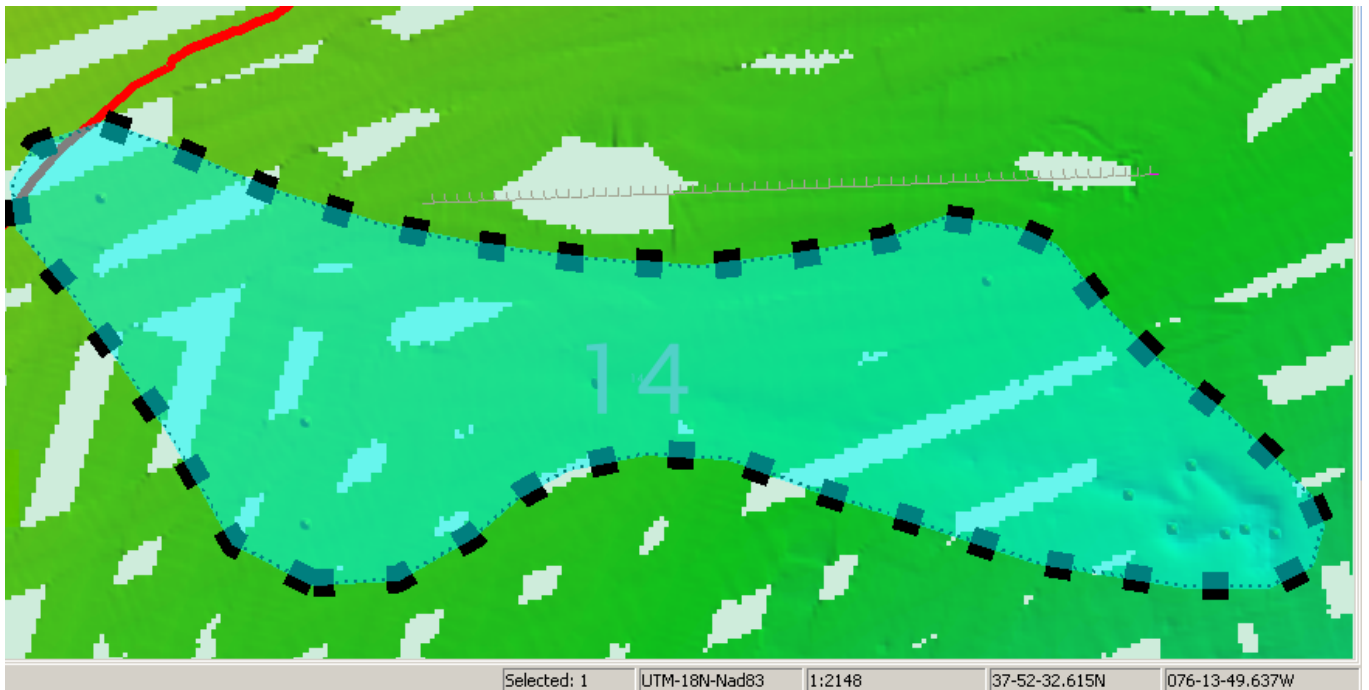


- b) Four (4) area obstructions were created for submerged piles that could not be covered by an obstruction symbol at chart scale ($\approx 75\text{m}$ radius). In the case of the first two areas listed below, functional fish pound nets were found to be in close proximity to obstruction areas. The FSHFAC features represent baring stakes and the obstruction areas represent submerged piles.

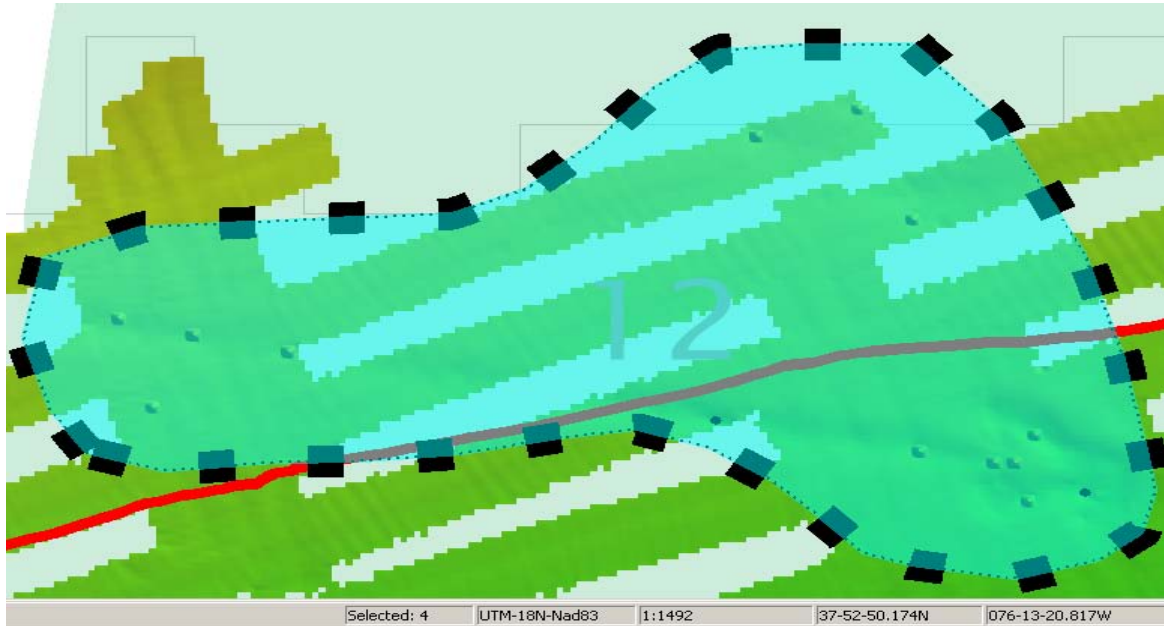
i) Location: 37-51-46.959 N, 76-13-51.722 W. VALSOU: 12.6673 ft



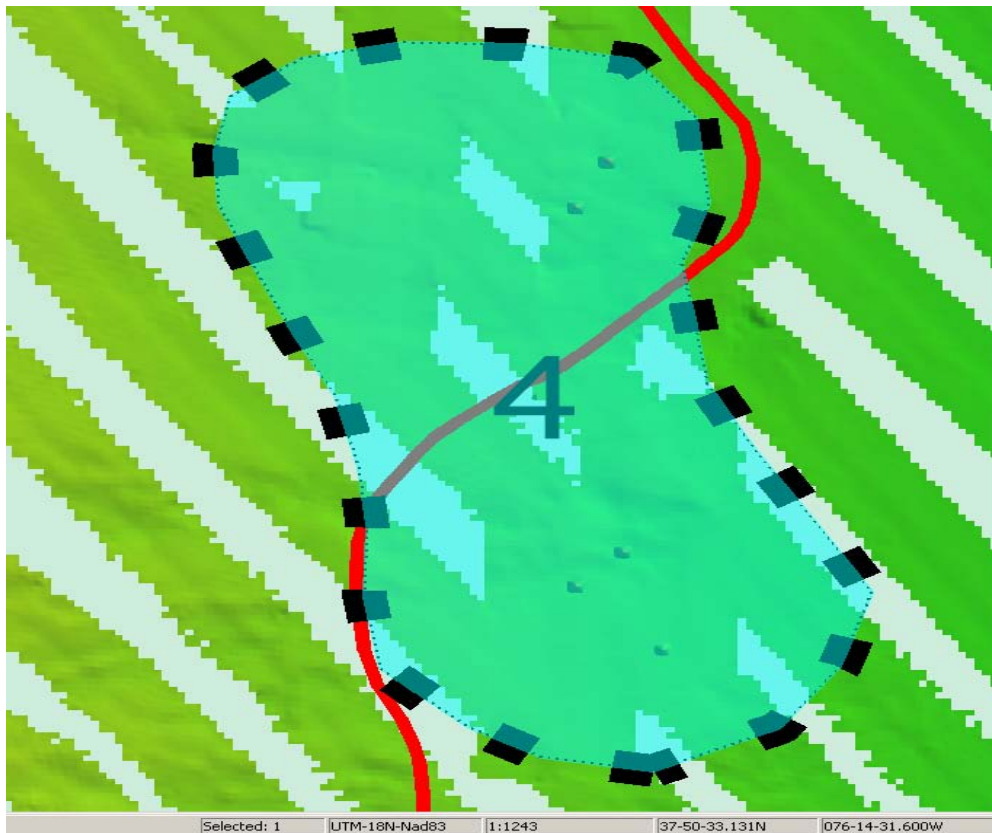
ii) Location: 37-52-27.086 N, 76-13-36.182 W. VALSOU: 13.8714 ft



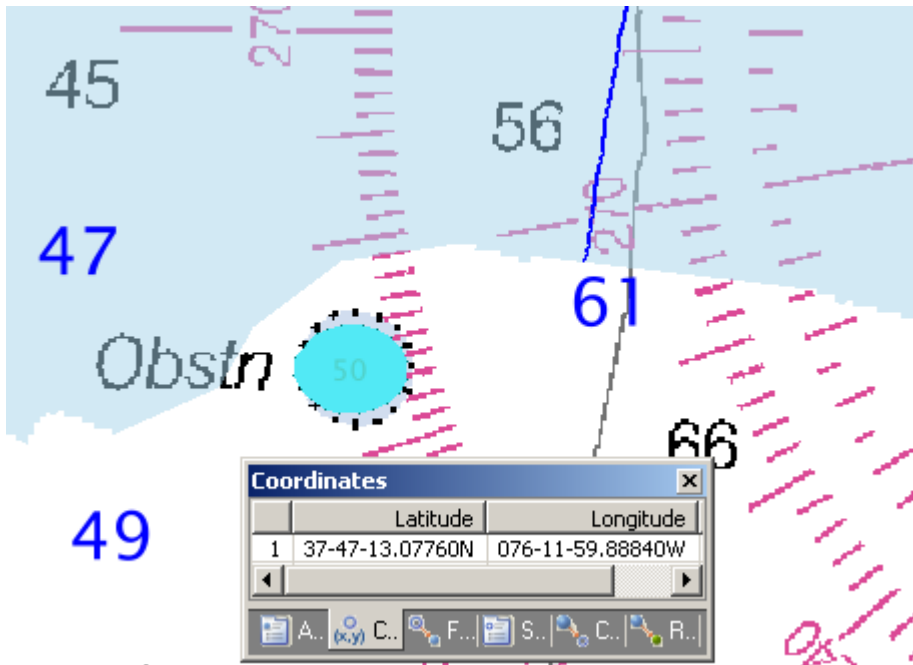
iii) Location: 37-52-42.632 N, 76-13-08.087 W. VALSOU: 12.5919 ft



iv) Location: 37-50-31.794 N, 76-14-25.523 W. VALSOU: 4.651 ft



- 2) DToN# 15.1 was surveyed in H12040 and junctioning survey H12043 to the southeast. DEPART for H12040 does not cover DToN# 15.1. This feature is addressed in survey H12043.



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 section D and Appendix I and II of the DR for further recommendations by the hydrographer.

APPROVAL SHEET
H12040 (2009)

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 disapproval 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 H-Cell 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.

John Kidd
Hydrographic Intern
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: _____
CDR Richard T. Brennan, NOAA
Chief, Atlantic Hydrographic Branch