H12151

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: **Basic Navigable Area**

Registry Number: **H12151**

LOCALITY

State: **Pennsylvania, Delaware, and New Jersey**

General Locality: **Delaware River**

Sub-locality: **Bellevue Range to Deepwater Point Range**

2010

CHIEF OF PARTY
Bert Ho, NOAA

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DATE

NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H12151

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

State:	**Pennsylvania, Delaware, and New Jersey**		
General Locality:	**Delaware River**		
Sub-Locality:	**Bellevue Range to Deepwater Point Range**		
Scale:	**1:10,000**	Date of Survey:	**10/13/09 to 12/09/09**
Instructions Dated:	**10/02/09**	Project Number:	**S-D903-NRT5-09**
Change No.1 Dated:	**N/A**		
Change No.2 Dated:	**N/A**		
Vessel:	**NOAA NRT-5, S3002**		
Chief of Party:	**Bert Ho, NOAA**		
Surveyed by:	**NOAA Navigation Response Team 5 Personnel**		
Soundings by:	**Kongsberg Simrad EM 3002 multibeam echosounder**		
	Odom Echotrac CV/200 verticalbeam echosounder		
Graphic record checked by:	**N/A**		
Protracted by:	**N/A**	Automated Plot:	**N/A**
Verification by:	**Atlantic Hydrographic Branch Personnel**		
Soundings in:	**Meters at MLLW**		

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

Red, bold, italic notes in the Descriptive Report were made during office processing.

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DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SURVEY H12151

Scale of Survey: 1:10,000
Year of Survey: 2009
NOAA Navigation Response Team 5
Bert Ho, Team Lead

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project S-D903-NRT5-09, H12151, Delaware River, Pennsylvania, New Jersey, and Delaware. The original instructions are dated October 2, 2009.

This Descriptive Report pertains to an area of approximately 4.85 SNM, of Delaware River from Bellevue Range to Deepwater Point Range. The assigned registry number for this sheet is H12151, as prescribed in the Letter Instructions.

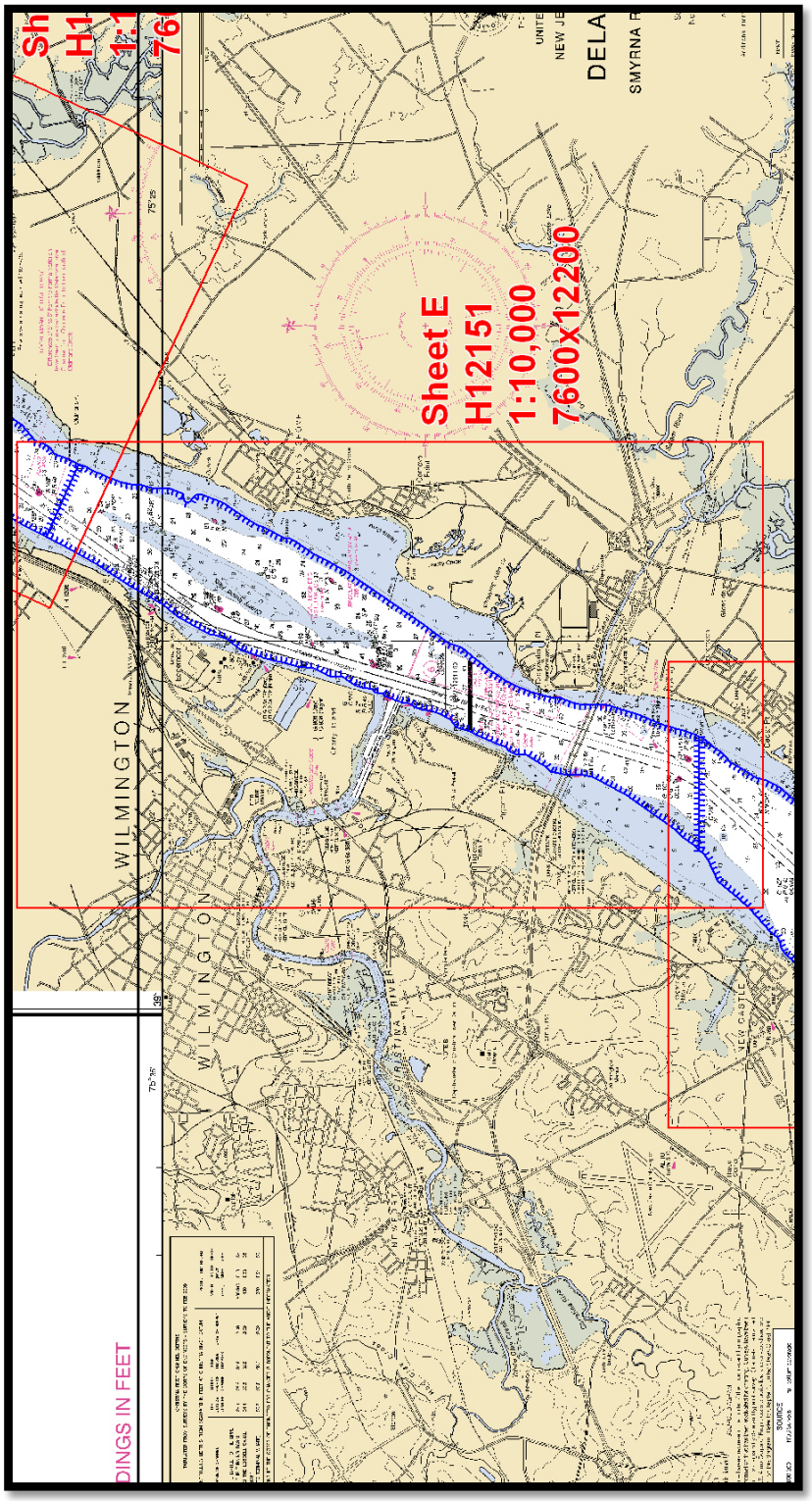
The purpose of the CY 2009-2010 operations in this area were to provide contemporary surveys to update National Ocean Service (NOS) nautical charts as the numerous ports on the Delaware River have been designated critical survey areas.

For complete survey limits, see figure A-1 on the following page.

Linear nautical miles of single beam only sounding lines - mainscheme only	155.669
Linear nautical miles of side scan sonar only lines - mainscheme only	136.6
Linear nautical miles of any combination of the above techniques	136.6
Linear nautical miles of crosslines from single beam and multibeam combined	12.12
Linear nautical miles of developments other than mainscheme lines	2.19
Linear nautical miles of shoreline/nearshore investigation	N/A
Number of bottom samples collected	0
Number of items investigated that required additional time/effort in the field beyond the above survey operations	NA
Total square nautical miles	4.85

Dates of acquisition: October 13, 2009 to December 9, 2009

Figure A-1: Outline of survey area



B. DATA ACQUISITION AND PROCESSING

B.1 EQUIPMENT

Data were acquired by NOAA NRT-5 S3002. NOAA Survey Vessel S3002 is an approximately 9m aluminum SeaArk outboard driven vessel with an average multibeam transducer draft of 0.5 meters.

NOAA S3002 acquired both bathymetry and imagery data in the project area. Side scan sonar data were acquired with a towed Klein 3000 sonar system (SSS). Bathymetry data were acquired with both an Odom Echotrac C/V 200 verticalbeam echosounder (VBES), and a Kongsberg Simrad EM 3002 multibeam echosounder (MBES). Positioning and attitude were determined with a TSS POS/MV 320 (version 4) GPS aided inertial navigation system

B.2 QUALITY CONTROL

B.2.1 Side Scan Sonar Quality Control

Daily confidence checks were made by observing the outer ranges of the side scan sonar image trace. A good check consisted of distinguishing linear contacts across the entire range of the side scan trace. Navigation data were reviewed, fliers were rejected with interpolation. Significant sand waves were noted throughout bends in the Delaware River and were used for confidence checks.

In accordance with the project instructions, 200% SSS bottom coverage was collected for this survey at 75m range scale. A SSS image mosaic was created at 1m resolution for submission (Table B-2). ***Concur.***

B.2.2 Multibeam Echosounder Quality Control

Multibeam echosounder data were acquired at 100% coverage for SSS contact development, and areas deemed navigationally significant by the hydrographer. In order to successfully operate the EM3002 with the SIS software, sound speed casts were completed at the start of the survey day (and every 4 hours afterwards) and manually entered into the SIS program as an ASVP file, which is a Simrad format created by Velocwin. Surface sound velocity was provided by a 2nd Odom Digibar and it was fed directly into the SIS program in real time. There were no faults with the MBES system which adversely effected data integrity. Navigation data were reviewed; any fliers were rejected with interpolation. A small variable Navigation Timing error was noted after review of the data in post-processing within Caris' subset editor. The Navigation error did not exceed the allowable horizontal error budget, but it should be noted that certain vertical features may appear to have multiple peaks. Least depths were taken from the shallowest

sounding. For detailed discussion of MBES system calibrations, data acquisition, and data processing refer to this project's DAPR*.
**** Submitted with H-Cell Deliverable***

B.2.3 Total Propagated Error

Total Propagated Error (TPE) parameters for sound speed and tide data for H12151 are shown in table B-1. The estimated tidal error contribution to the total survey error budget in the vicinity of Delaware River is included in the TCARI gird. Sound speed TPE values were used in accordance with HSTP guidelines regarding frequency of surface and water column sound speed measurements. ***Concur.***

Table B-1. Total Propagated Error parameters as applied in Caris.

Total Propagated Error Values			
Tide Values		Sound Speed Values	
Measured	Zoning	Measured	Surface
0.0	0.07	4.0	0.2

B.2.4 Fieldsheets and Navigation Surfaces

Caris HIPS combined uncertainty weighted CUBE surfaces were created for this project. For MBES data surfaces were created and submitted at 0.50m resolution. A combined uncertainty weighted CUBE surface was created for VBES data at 4.00m resolution. The MBES CUBE surface finalized weighted grid is included in the PSS. Both surfaces used the corresponding CUBE parameters for the appropriate resolution of the grid. ***Concur.***

B.2.5 Single Beam Quality Control

Navigation data were reviewed, fliers were rejected with interpolation. There were no unusual events associated with the collection of SBES data for this project. Additional single beam data was acquired at the request of the Delaware River Pilots via the Navigation Manager (See special correspondence emails*). The areas where additional data were acquired included an area just east of Carneys Point and the charted New Castle Flats. ***Concur.***

Refer to this project's DAPR** for detailed discussion of VBES system calibrations, data acquisition, and data processing.

Table B-2: H12151 Bathymetry surfaces and Side Scan mosaic resolutions.

H12151 Bathymetry Surfaces and SSS Mosaic			
Fieldsheet	Surface/Mosaic Name	Grid Type	Resolution
H12151	H12151_MBES_CUBE_50cm	Cube, Order 1	0.50m
H12151	H12151_MBES_CUBE_50cm_Final	Cube, Order 1	0.50m
H12151	H12151_VBES_CUBE_4m	Cube, Order 1	4.00m
H12151	H12151_VBES_CUBE_4m_Final	Cube, Order 1	4.00m
H12151	H12151_SSS_1m	SSS Mosaic	1.00m

Special correspondence email appended to this report.
***** Submitted with H-Cell Deliverable***

B.2.6 Crosslines

For this survey 12.12 linear NM of VBES crosslines were acquired. This is approximately 7.8% of the mainscheme VBES bathymetry linear NM. A visual examination of approximately 10% of crossline-mainscheme common areas showed agreement between crosslines and mainscheme lines to within 1-2 feet. For a list of all crosslines acquired for this project, tabulated by DN and line file name, please refer to the processing logs located in the separates section of the DR submission package. ***Concur.***

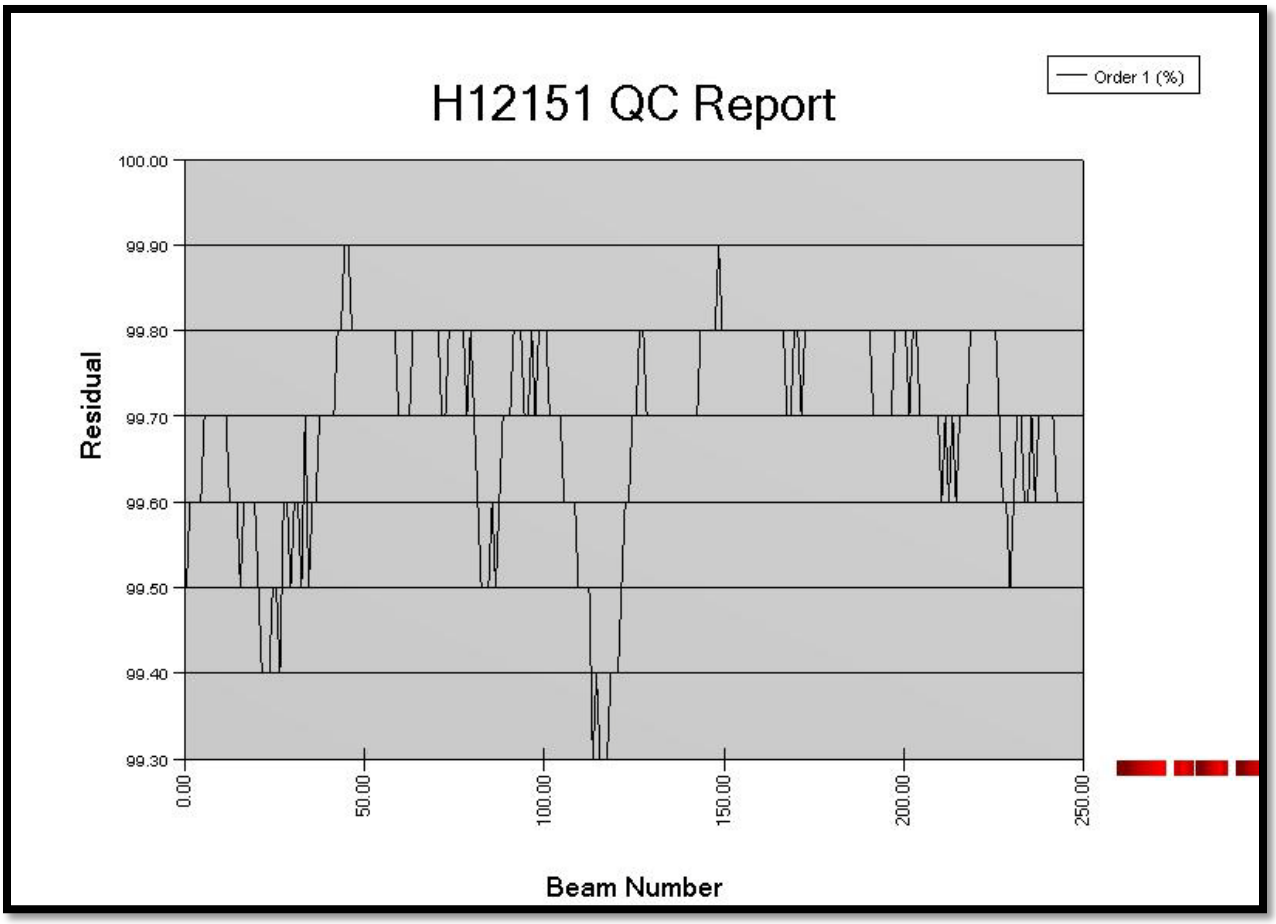
B.2.7 Junctions

Survey H12151 junctions with contemporary surveys H12150 and H12152. Visual examination of all junction areas showed agreement between bathymetry data to within 1 foot. ***Concur.***

B.3 CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR*. All sound velocity casts are included in the PSS. SV Casts were not used in post processing for MB data in Caris due to the acquisition software's (SiS) requirement to use an ASVP in real time. Post processing with an svp applied in Caris was found to create a double corrections of the data. See email correspondence with HSTP regarding data acceptance**.

Figure B-1: Caris QC report, IHO order 1% vs Beam Number.



**** Submitted with H-Cell Deliverable***
***** Special correspondence email appended to this report.***

C. VERTICAL AND HORIZONTAL CONTROL

C.1 VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) stations at Reedy Point, DE (8551910) and Philadelphia, PA (8545240) served as datum control for the survey area including determination at each subordinate station. The operating stations at Marcus Hook, PA (8540433), Tacony-Palmyra (8538886), Reedy Point, DE (8551910), and Philadelphia, PA (8545240) provided residuals for this project. A Request for Approved Tides was sent to N/OPS1 on October 29, 2009 (Appendix III). Verified tides from the N/OPS1 CO-OPS website were downloaded and applied to all sounding data via TCARI in Pydro. ***Concur.***

C.2 HORIZONTAL CONTROL

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 18. ***Concur.***

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The DGPS beacon used for this survey was Reedy Point, DE. No horizontal control stations were established for this survey. ***Concur.***

Horizontal dilution of precision (HDOP) was monitored during acquisition, and did not exceeded 4.00. Adequate satellite coverage was maintained throughout the survey period. ***Concur.***

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

The charts affected by this survey are:

Chart Number	*Edition*	*Edition Date*	*Scale*
12311	45th	Dec. 2008	1:40,000
12312	55th	August 2009	1:40000

ENC Cell Name
US5PA11M
US5PA12M
US5PA13M

D.1.1 General Agreement with Charted soundings and RSD investigations

Sounding data generally agreed with charted depths to within 1-2 feet, navigationally significant differences from charted depths are addressed in Appendix II of this report. There were no RSD investigations in Sheet H12151. ***Concur.***

Additional SB data were acquired at the request of the Delaware River Pilots via the Philadelphia Navigation Manager. See email regarding Additional_Anch_areas***. Areas of survey included an area adjacent to Carneys Point and an area charted as New Castle Flats.
**** Special correspondence email appended to this report.***

D.1.2 AWOIS Items and Significant Contacts

There were ~~10~~ ***6*** full investigation AWOIS items assigned within the survey limits of H12151. The search area was covered with 200% SSS and 100% MBES when able to be confirmed. The updates to the AWOIS database were made in Pydro in the remarks and recommendations were added to the feature reports. See appendix II. ***Concur with clarification. There were six AWOIS items addressed in the Pydro Feature Report.***

D.1.3 Dangers to Navigation

There were no DToNs submitted for survey H12151. ***Concur.***

D.1.4 Charted Features

Hydrographer recommended changes to charted items are listed in Appendix II of this report as well as in the PSS. All charted items not specifically addressed in Appendix II are recommended to be retained as charted by the hydrographer. ***Concur.***

D.1.5 Charting Recommendations

Hydrographer recommendations for discreet items are included in Appendix II of this report as well as in the PSS. Survey H12151 is complete and adequate to supersede charted soundings in their common areas. ***Concur.***

D.2 ADDITIONAL RESULTS

D.2.1 Aids to Navigation

The hydrographer recommends no modifications to any aids to navigation to note. All were verified as accurate.

D.2.2 Bridges and Overhead Cables

There is one bridge and no overhead cables in the survey area. Verified as accurately charted. ***Concur, recommend retain as charted.***

D.2.3 Submarine Cables and Pipelines

There is one charted cable area and one pipeline area within the survey area. ***Concur, recommend retain as charted.***

E. APPROVAL SHEET

S-D903
Delaware River
Pennsylvania, New Jersey, Delaware

Delaware River
Survey Registry No. H12151

Field operations for this survey were conducted under my daily supervision with frequent checks of progress and adequacy. All fieldsheets, bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

Submitted in association with this descriptive report has been a series of reports and data:

2009 Data Acquisition and Processing Report (submitted with this report)
2009 HSRR Memo (submitted with this report)

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Respectfully,

N/A, PST/NOAA
NRT-5

Bert Ho, NOAA
Team Lead NRT-5

APPENDIX I

DANGERS TO NAVIGATION REPORT

There were no DToN's submitted for survey H12151.

APPENDIX II

SURVEY FEATURES REPORT

H12151_Feature Report FINAL

Registry Number: H12151
State: Delaware
Locality: Wilmington
Sub-locality: Delaware River
Project Number: S-D903-NRT5-09
Survey Date: 11/03/2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12312	55th	08/01/2009	1:40,000 (12312_1)	USCG LNM: 2/22/2011 (3/1/2011) NGA NTM: 1/24/1998 (3/12/2011)
12311	45th	12/01/2008	1:40,000 (12311_1)	USCG LNM: 2/22/2011 (3/1/2011) NGA NTM: 7/18/2009 (3/12/2011)
13003	49th	04/01/2007	1:1,200,000 (13003_1)	[L]NTM: ?
14500	27th	10/01/2002	1:1,500,000 (14500_1)	[L]NTM: ?

* Correction(s) - *source: last correction applied (last correction reviewed--"cleared date")*

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	4.43 m	39° 40' 46.2" N	075° 31' 02.5" W	14671
1.2	AWOIS	[no data]	[no data]	[no data]	---
2.1	Obstruction	3.14 m	39° 45' 05.2" N	075° 28' 15.7" W	---
2.2	Obstruction	5.58 m	39° 44' 21.0" N	075° 29' 34.6" W	---
2.3	Wreck	2.68 m	39° 44' 04.1" N	075° 29' 41.5" W	---
2.4	Obstruction	10.05 m	39° 40' 43.9" N	075° 31' 09.7" W	---

1 - Charted Features

1.1) 14ft Obstruction AWOIS #14671

Primary Feature for AWOIS Item #14671

Search Position: 39° 40' 46.0" N, 075° 31' 01.7" W

Historical Depth: 1.83 m

Search Radius: 100

Search Technique: S2,MB,ES

Technique Notes: [None]

History Notes:

*** unknown source added after 2000, 6ft. obstruction. (Entered 8/11/09 KAK)

Survey Summary

Survey Position: 39° 40' 46.2" N, 075° 31' 02.5" W

Least Depth: 4.43 m (= 14.53 ft = 2.421 fm = 2 fm 2.53 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.968 m ; **TVU (TPEv)** ±0.220 m

Timestamp: 2009-307.14:57:05.431 (11/03/2009)

Survey Line: h12151_sheete / nrt5_s3002_em3002_mbes / 2009-307 / 042_1456

Profile/Beam: 275/254

Charts Affected: 12311_1, 13003_1

Remarks:

Area was covered with 200% SSS and 100% MBES. TCARI tides have been applied and merged. Charted Obstruction.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12151_sheete/nrt5_s3002_em3002_mbes/2009-307/042_1456	275/254	0.00	000.0	Primary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020143900	0003	14.78	331.2	Secondary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020165900	0001	15.76	313.1	Secondary
S-D903-NRT5-09awois	AWOIS # 14671	18.03	286.7	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends updating the LD to what was found in data. -bsh

Cartographically-Rounded Depth (Affected Charts):

14ft (12311_1)

2 ¼fm (13003_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20091103
	SORIND - US,US,graph,H12151
	TECSOU - 1,2:found by echo-sounder,found by side scan sonar
	VALSOU - 4.428 m
	WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Feature is AWOIS Item #14671. Delete charted dangerous obstruction, least depth 6 feet. Chart dangerous obstruction, least depth 14 feet at the present survey position.

Feature Images

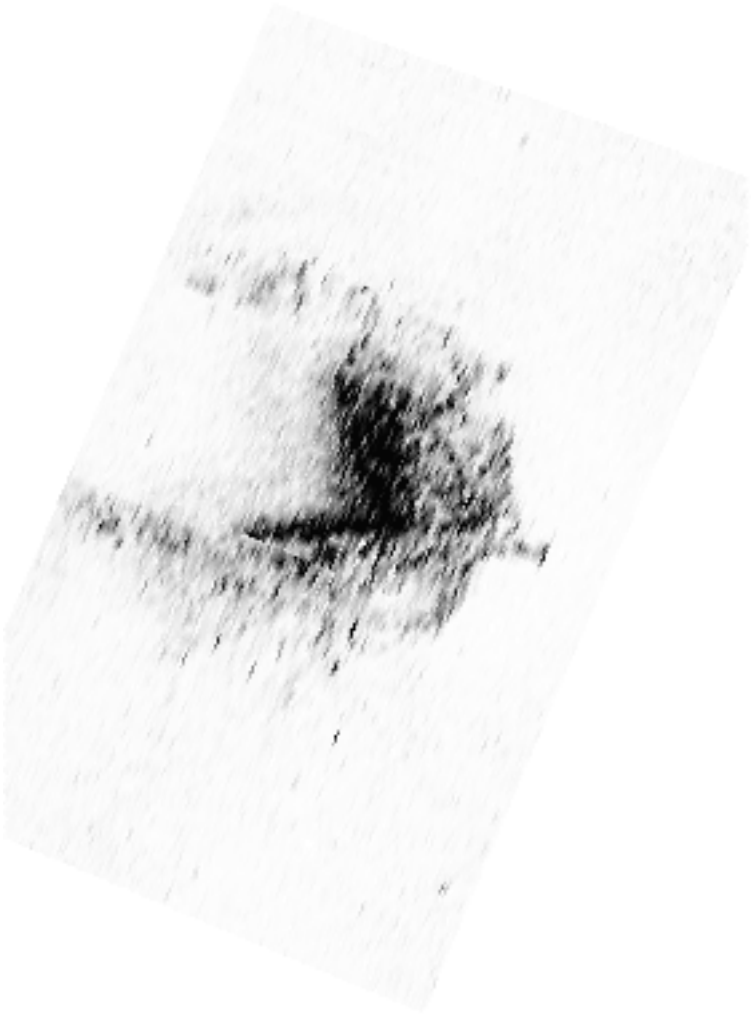


Figure 1.1.1

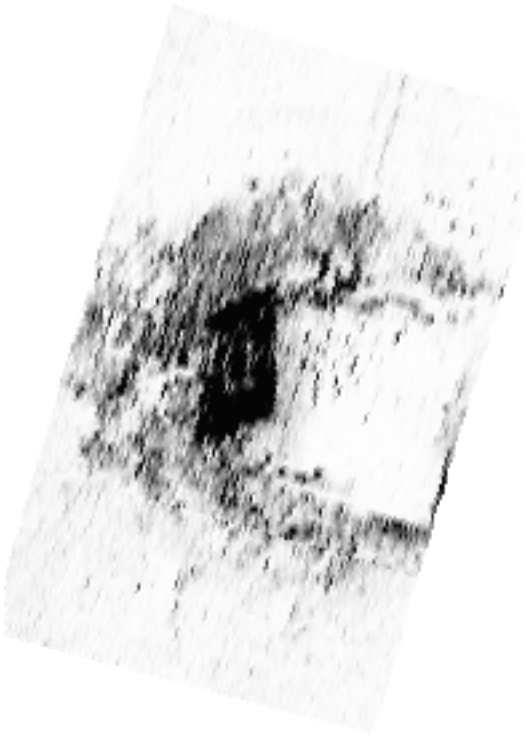


Figure 1.1.2

1.2) AWOIS #13859 - AWOIS 13859 OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position: 39° 45' 22.3" N, 075° 29' 09.4" W

Historical Depth: 12.83 m

Search Radius: 50

Search Technique: S2,MB,ES

Technique Notes: [None]

History Notes:

S00004/02 -- S-D602-RU-02 (HLS);

Survey Position: 039° 45' 22.262" N, 75° 29' 09.395" W

Least Depth: 12.83 m

Timestamp: 2002-169.16:26:53.298 (06/18/2002)

Hydrographer Recommendations: chart DToN....PS Lund

200% Side Scan Sonar coverage and SWMB was acquired over the item. The Hydrographer recommends charting the sounding on the obstruction with a least depth of 42 ft. The Hydrographer further recommends this obstruction be submitted as a Danger To Navigation (DToN).

Office Notes: Do not concur. Deeper than 40 Ft Project Channel depth. No changes in charting recommended. UPDATED 9/27/2006 JCM

Survey Summary

Charts Affected: 12312_1, 13003_1, 14500_1

Remarks:

Area was covered with 200%SSS and no feature was seen in imagery data.

Feature Correlation

Address	Feature	Range	Azimuth	Status
S-D903-NRT5-09awois	AWOIS # 13859	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends removal. -bsh

S-57 Data

[None]

Office Notes

Concur. AWOIS Item #13859 is not on charts 12311, 2312 and smaller scale charts. The location of the obstruction falls within the channel whih has a tabulated depth of 40 feet. Do not chart 42 ft obstruction.

2 - New Features

2.1) 10 ft obstruction

Survey Summary

Survey Position: 39° 45' 05.2" N, 075° 28' 15.7" W

Least Depth: 3.14 m (= 10.30 ft = 1.717 fm = 1 fm 4.30 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.965 m ; **TVU (TPEv)** ±0.205 m

Timestamp: 2009-307.13:08:40.023 (11/03/2009)

Survey Line: h12151_sheete / nrt5_s3002_em3002_mbes / 2009-307 / 007_1308

Profile/Beam: 311/19

Charts Affected: 12312_1, 13003_1, 14500_1

Remarks:

Area was covered with 200% SSS and 100% MBES. TCARI tides have been applied and merged. Large obstruction, possibly correllates with the charted text "Subm ruins".

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12151_sheete/nrt5_s3002_em3002_mbes/2009-307/007_1308	311/19	0.00	000.0	Primary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-295/sonar_data091022134400	0001	20.78	166.1	Secondary

Hydrographer Recommendations

Hydrographer recommends charting this obstruction with the LD from data at the position of LD. -bsh

Cartographically-Rounded Depth (Affected Charts):

10ft (12312_1)

1 ¾fm (13003_1, 14500_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 6:least depth known

SORDAT - 20091103

SORIND - US,US,graph,H12151

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

VALSOU - 3.140 m

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart dangerous obstruction, least depth 10 feet at the present survey position.

Feature Images

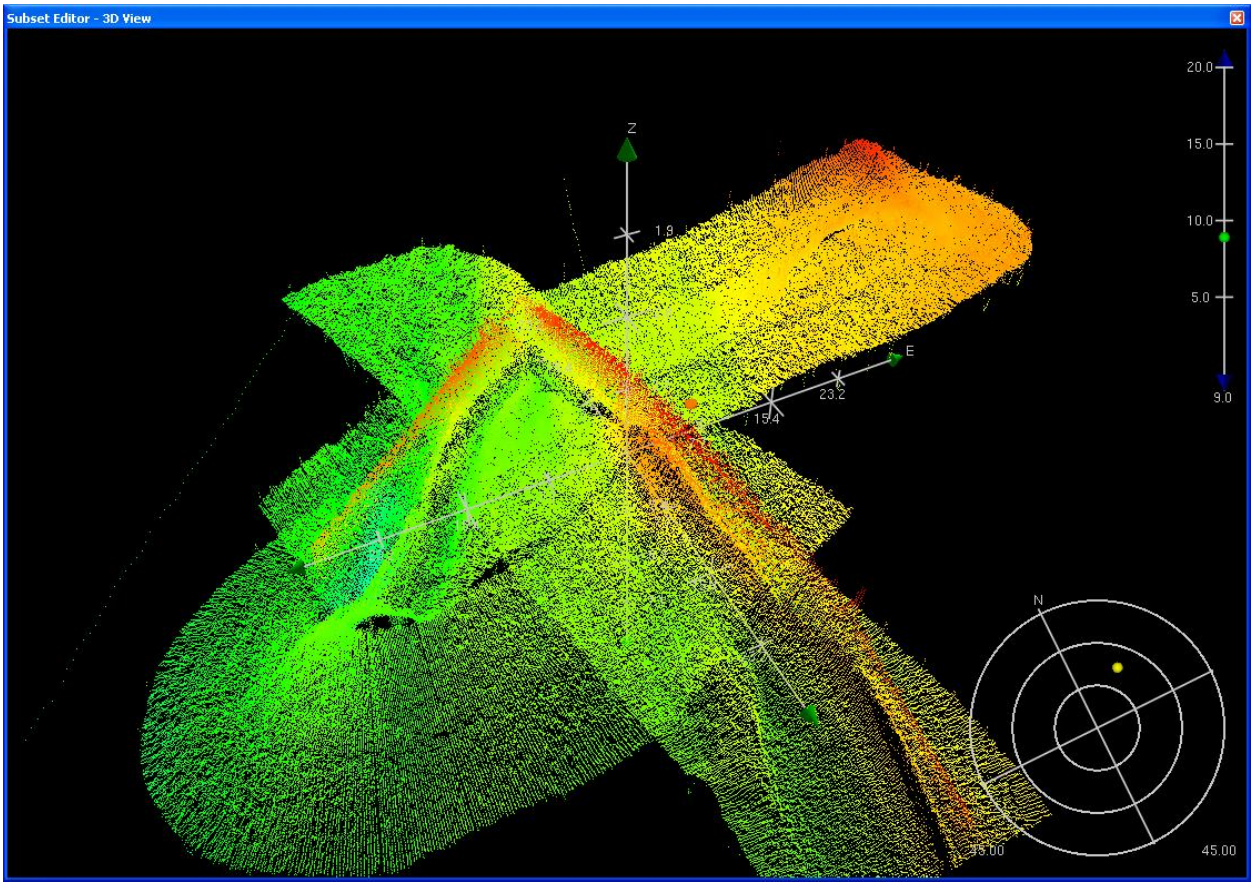


Figure 2.1.1

Figure 2.1.2

2.2) 18 ft Obstruction

Survey Summary

Survey Position: 39° 44' 21.0" N, 075° 29' 34.6" W

Least Depth: 5.58 m (= 18.29 ft = 3.049 fm = 3 fm 0.29 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.968 m ; **TVU (TPEv)** ±0.223 m

Timestamp: 2009-307.13:44:39.799 (11/03/2009)

Survey Line: h12151_sheete / nrt5_s3002_em3002_mbes / 2009-307 / 019_1344

Profile/Beam: 184/247

Charts Affected: 12311_1, 12312_1, 13003_1, 14500_1

Remarks:

Area was covered with 200% SSS and 100% MBES. TCARI tides have been applied and merged. Obstruction, linear in shape. Possibly dredge scour.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12151_sheete/nrt5_s3002_em3002_mbes/2009-307/019_1344	184/247	0.00	000.0	Primary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020140900	0001	0.91	237.0	Secondary

Hydrographer Recommendations

Hydrographer recommends not charting this obstruction. -bsh

Cartographically-Rounded Depth (Affected Charts):

18ft (12311_1, 12312_1)

3fm (13003_1, 14500_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 6:least depth known

SORDAT - 20091103

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

VALSOU - 5.576 m

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart dangerous obstruction, least depth 18 feet at the present survey position.

2.3) 9 ft wreck

Survey Summary

Survey Position: 39° 44' 04.1" N, 075° 29' 41.5" W

Least Depth: 2.68 m (= 8.80 ft = 1.467 fm = 1 fm 2.80 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.963 m ; **TVU (TPEv)** ±0.218 m

Timestamp: 2009-307.13:49:21.448 (11/03/2009)

Survey Line: h12151_sheete / nrt5_s3002_em3002_mbes / 2009-307 / 021_1349

Profile/Beam: 224/128

Charts Affected: 12311_1, 12312_1, 13003_1, 14500_1

Remarks:

Area was covered with 200% SSS and 100% MBES. TCARI tides have been applied and merged. Possible wrecked barge.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12151_sheete/nrt5_s3002_em3002_mbes/2009-307/021_1349	224/128	0.00	000.0	Primary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020160100	0001	13.19	021.2	Secondary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020172900	0001	23.82	087.6	Secondary

Hydrographer Recommendations

Hydrographer recommends charting as a non-dangerous submerged wreck with the LD from data at position of LD. -bsh

Cartographically-Rounded Depth (Affected Charts):

9ft (12311_1, 12312_1)

1 ½fm (13003_1, 14500_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

QUASOU - 6:least depth known

SORDAT - 20091103

SORIND - US,US,graph,H12151

STATUS - 1:permanent

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

VALSOU - 2.682 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous wreck, least depth 9 feet at the present survey position.

Feature Images

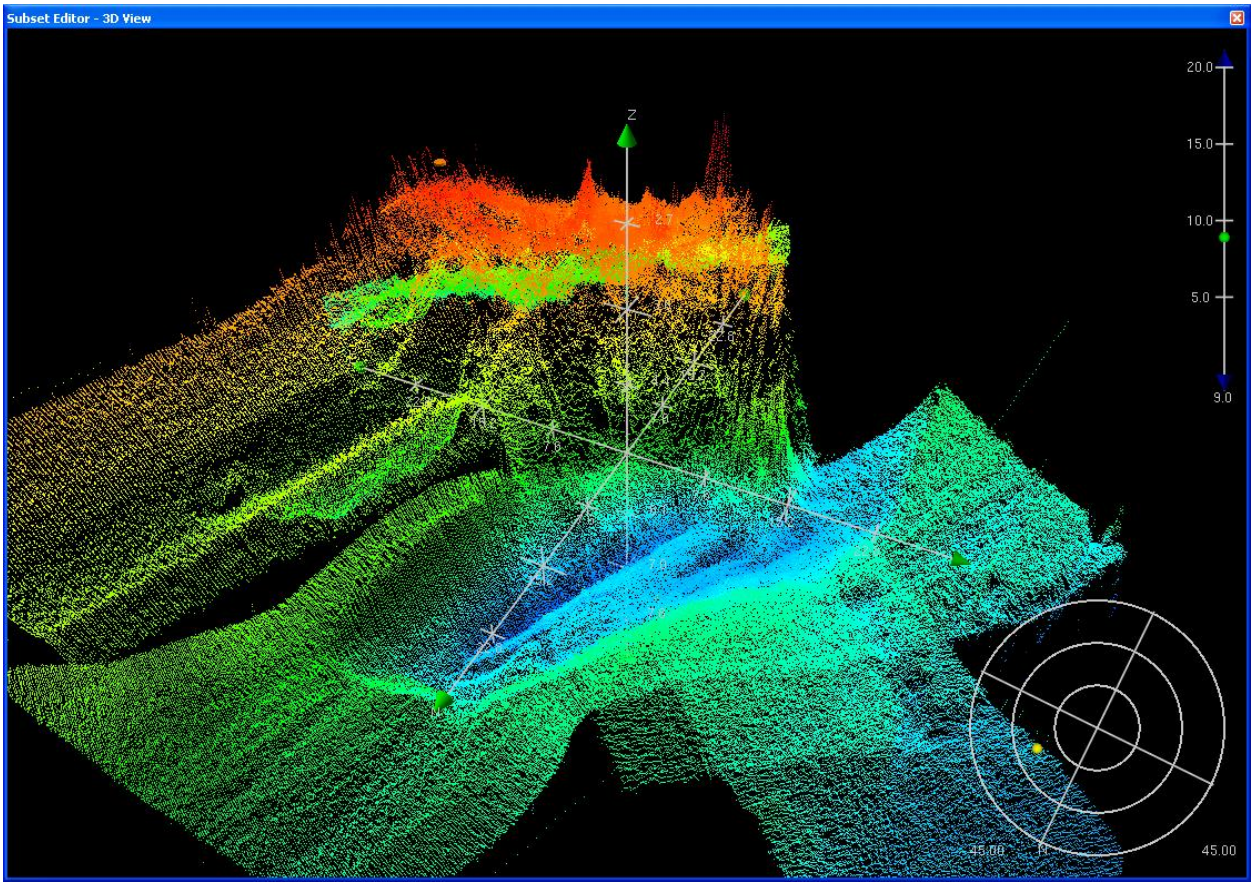


Figure 2.3.1

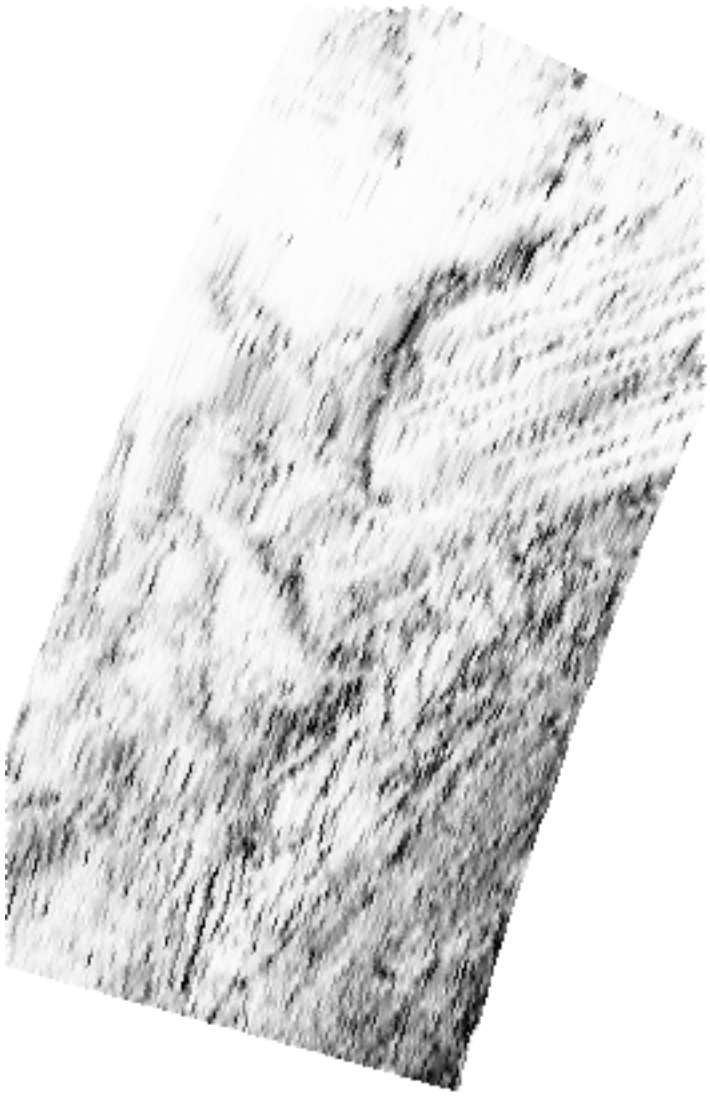


Figure 2.3.2

2.4) 33 ft obstruction

Survey Summary

Survey Position: 39° 40' 43.9" N, 075° 31' 09.7" W

Least Depth: 10.05 m (= 32.97 ft = 5.495 fm = 5 fm 2.97 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.974 m ; **TVU (TPEv)** ±0.259 m

Timestamp: 2009-307.15:02:06.648 (11/03/2009)

Survey Line: h12151_sheete / nrt5_s3002_em3002_mbes / 2009-307 / 047_1501

Profile/Beam: 187/18

Charts Affected: 12311_1, 13003_1

Remarks:

Area was covered with 200% SSS and 100% MBES. TCARI tides have been applied and merged. Obstruction of significant height.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12151_sheete/nrt5_s3002_em3002_mbes/2009-307/047_1501	187/18	0.00	000.0	Primary
h12151_sheete/nrt5_s3002_klein3000_sss/2009-293/sonar_data091020131000	0001	17.09	053.5	Secondary

Hydrographer Recommendations

Hydrographer recommends charting this obstruction with the LD from data at the location of LD. -bsh

Cartographically-Rounded Depth (Affected Charts):

33ft (12311_1)

5 ½fm (13003_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 6:least depth known

SORDAT - 20091103

SORIND - US,US,graph,H12151

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

VALSOU - 10.050 m

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart dangerous obstruction, least depth 33 feet at the present survey position.

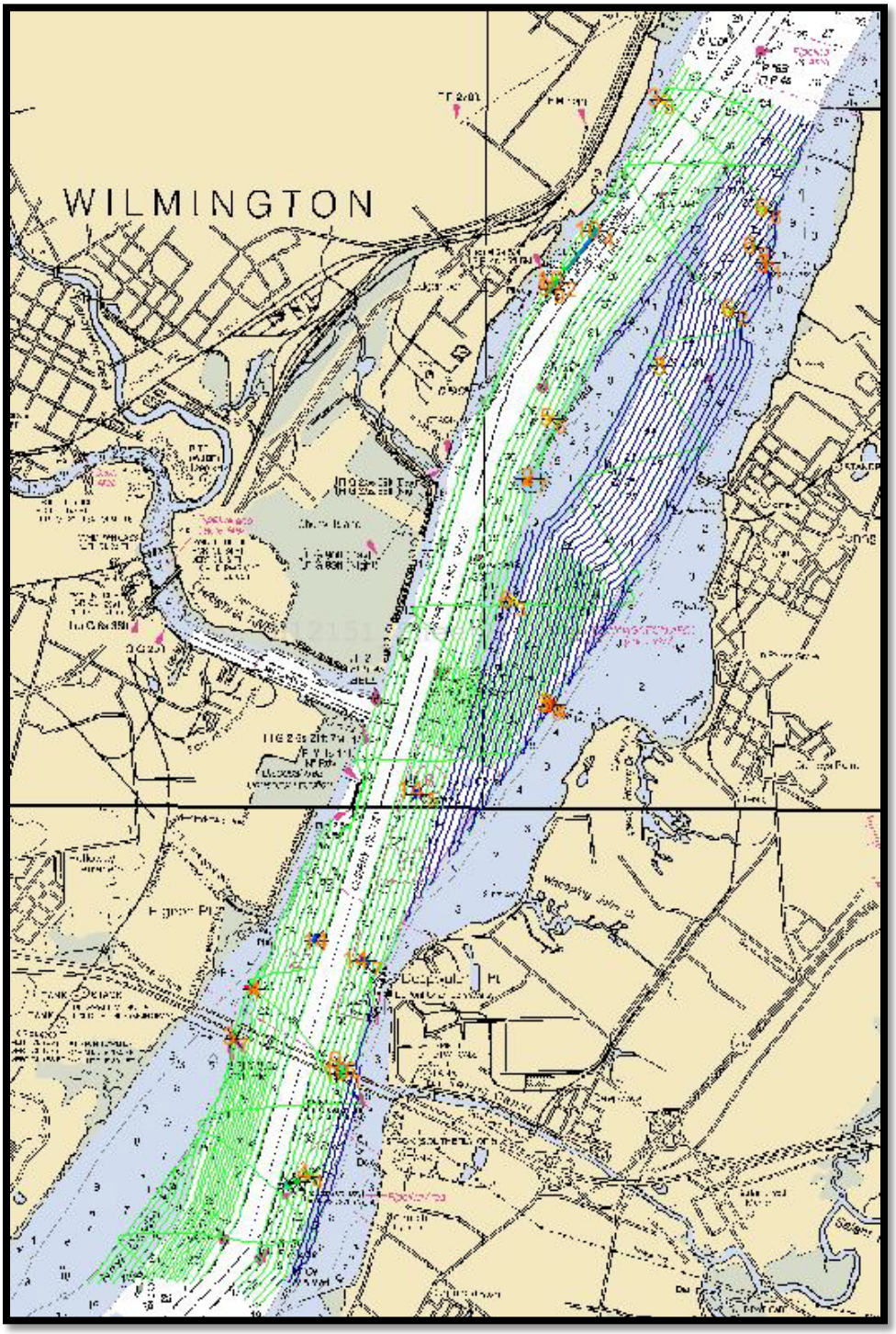
Feature Images

Figure 2.4.1

Figure 2.4.2

APPENDIX III

PROGRESS SKETCH



APPENDIX IV

TIDES AND WATER LEVELS

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : December 29, 2009

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: S-D903-NRT5-2009
HYDROGRAPHIC SHEET: H12151

LOCALITY: Delaware River, Wilmington, DE
TIME PERIOD: October 13 - December 9, 2009

TIDE STATION USED: Tacony-Palmyra Bridge, NJ 853-8886
Lat. 40° 0.7′ N Long. 75° 2.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.028 meters

TIDE STATION USED: Marcus Hook, PA 854-0433
Lat. 39° 48.7' N Long. 75° 24.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.720 meters

TIDE STATION USED: Philadelphia, PA 854-5240
Lat. 39° 56.0' Long. 75° 8.5'
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.887 meters

TIDE STATION USED: Reedy Point, DE 855-1910
Lat. 39° 33.5' Long. 75° 34.4'
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.683 meters

REMARKS: RECOMMENDED Grid

Please use the TCARI grid "D903NRT52009Final" as the final grid for project S-D903-NRT5-2009, H12151, during the time period between October 13 - December 9, 2010.

Refer to attachments for grid information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Note 2:

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=Oceanographic Division, ou=NOAA/NOS/CO-OPS, email=peter.stone@noaa.gov, c=US
Date: 2009.12.29 11:17:08 -05'00'

CHIEF, OCEANOGRAPHIC DIVISION


Final TCARI Grid for S-D903-NRT5-2009, H12151
Delaware River, Wilmington, DE
8538886
TACONY-PALMYRA BRIDGE
PHILADELPHIA
8545240
PHILADELPHIA
8540433
MARCUS HOOK
Wilmington
Delaware River
8551910
REEDY POINT, C&D CANAL
Ches & Del Canal
PENNSY
N E W

APPENDIX V
SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES

V.1. COAST PILOT REPORT, NOAA FORM 77-6

No corrections or additions required.

V.2. BOTTOM SAMPLE, NOAA FORM 75-44

No bottom samples were taken.

V.3. AIDS TO NAVIGATION, NOAA FORM 76-40

The hydrographer recommends no modifications to any aids to navigation to note. All were verified as accurate.

Subject:
[Fwd: D903NRT52009 Error Correction]
From:
"christopher.hare" <Christopher.Hare@noaa.gov>
Date:
Mon, 16 Nov 2009 10:28:25 -0500
To:
Bert.Ho@noaa.gov

What do you think?

Subject:
D903NRT52009 Error Correction
From:
David Wolcott <David.Wolcott@noaa.gov>
Date:
Fri, 13 Nov 2009 15:40:57 -0500
To:
Christopher Hare <Christopher.Hare@noaa.gov>
CC:
Gerald Hovis <Gerald.Hovis@noaa.gov>

Hi Chris,

I have a question for you.
There is an issue with the D903 project and it might mean that the final tides will be a few days late. When I created the error model for the Project Instructions TCARI grid, the units used for the datum error were feet instead of meters. Unless it would cause a processing headache, a modified grid with the corrected datum error values can be created and we could send it with the smooth tides by the end of next week. Would you have an issue with making the correction and sending it with the final tides or have you already started processing the data?
Let me know what you think.

Thanks,
David

--

David Wolcott
Hydrographic Planning Team
NOS/CO-OPS
p: (310) 713-2890 x 153

Chris Hare <christopher.hare@noaa.gov>
Physical Scientist
Navigation Services Division
Office Of Coast Survey
D903NRT52009 Error Correction.eml

Content-Type:
message/rfc822
Content-Encoding:
7bit

Subject: Anch areas
From: Howard Danley <Howard.Danley@noaa.gov>
Date: Tue, 10 Nov 2009 14:58:14 -0500
To: Bert Ho <Bert.Ho@noaa.gov>

See the graphics below

-------- Original Message --------
Date: Mon, 08 Jun 2009 10:12:59 -0400
From: Stephen Roberts <s.a.roberts@comcast.net>
To: Howard.Danley@noaa.gov

Howard,

It was good to see you the other day at the Mariner's Advisory Committee meeting in Philadelphia. We really appreciate NOAA's and your support for our area. With the resignation of Tom Sharp as Chairman, I was appointed to the position by Capt. Jim Roche. It should be announced sometime this week.

Thank you for your offer of tasking some out of channel surveying in our area. I have attached some images of charts with areas outlined in blue that we are interested in for the creation of new anchorages. We are also interested in a couple of areas to create emergency turning basins off of Tioga Marine Terminal and below the Tacony-Palmyra Bridge.

I look forward to a long and fruitful relationship with all of our friends at NOAA. Please feel free to contact me with any questions or if there is anything we can do for you.

Best regards,

Steve Roberts

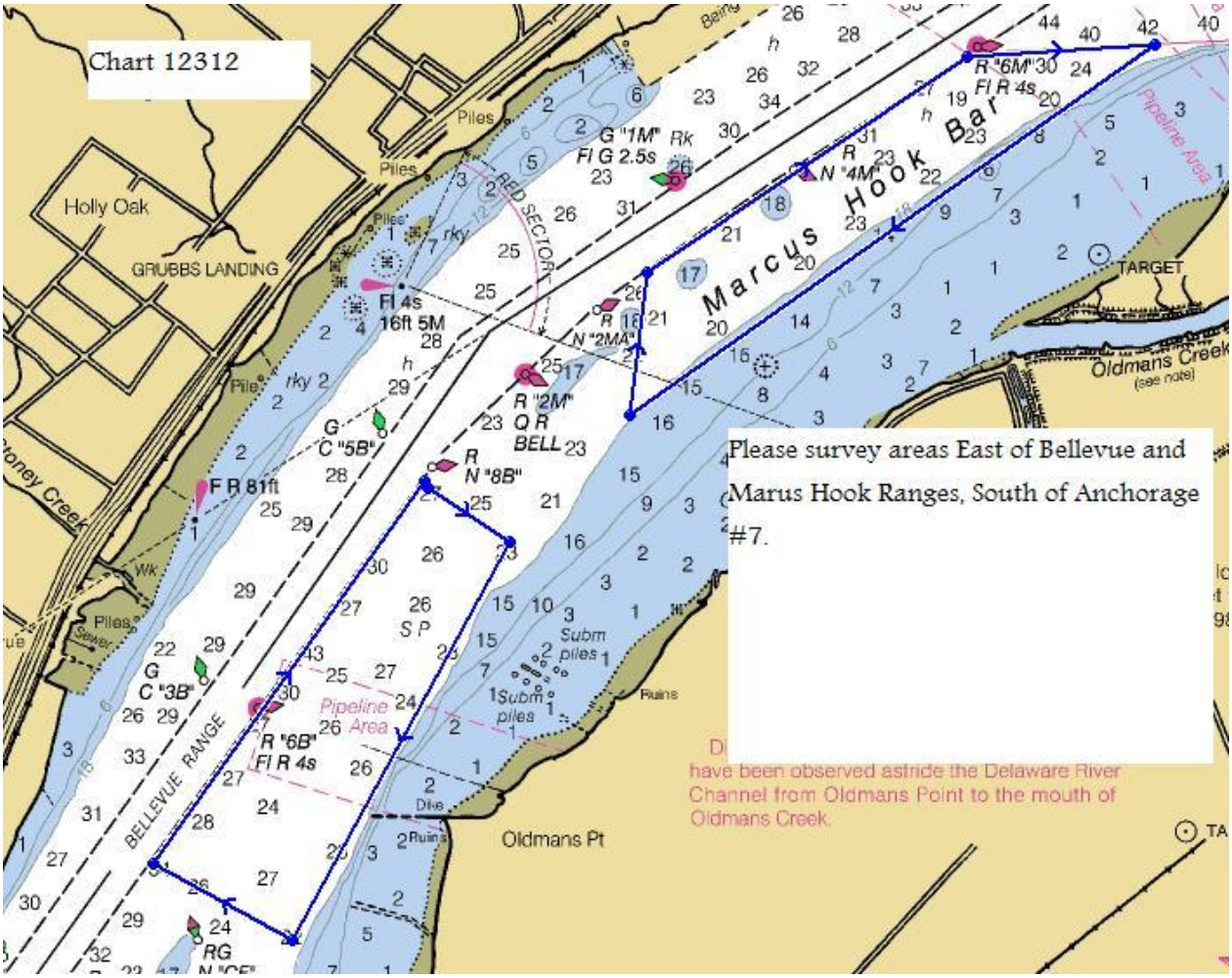


Chart 12312
Please survey areas East of Bellevue and Marus Hook Ranges, South of Anchorage #7.
have been observed astride the Delaware River Channel from Oldmans Point to the mouth of Oldmans Creek.
Holly Oak
GRUBBS LANDING
Marcus Hook Bar
BELLEVUE RANGE
RED SECTOR
Pipeline Area
Oldmans Pt
Oldmans Creek
TARGET
Piles
Ruins
Subm piles
Fl 4s 16ft 5M
R "6M" Fl R 4s
G "1M" Fl G 2.5s
R "2M" Q R BELL
G "5B"
R "8B"
G "3B"
R "6B" Fl R 4s
F R 81ft
R N "4M"
R N "2MA"
RG

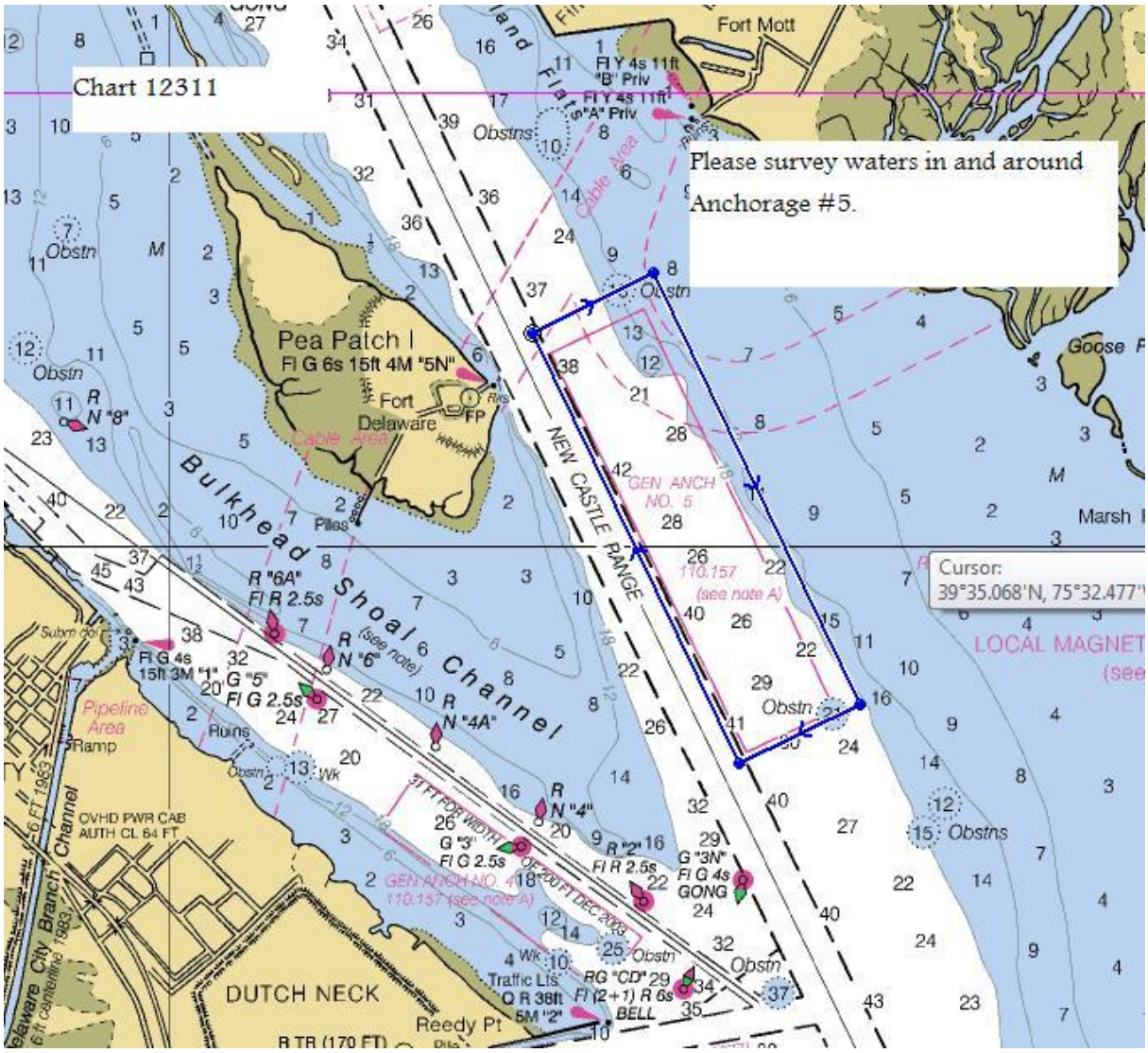


Chart 12311
Please survey waters in and around
Anchorage #5.
Fort Mott
Fl Y 4s 11ft "B" Priv
Fl Y 4s 11ft "A" Priv
Obstns
Cable Area
Pea Patch I
Fl G 6s 15ft 4M "5N"
Fort Delaware
Cable Area
Obstn
R N "8"
Bulkhead Shoal Channel
NEW CASTLE RANGE
GEN ANCH NO. 5
110.157 (see note A)
Cursor:
39°35.068'N, 75°32.477'
R "6A" Fl R 2.5s
(see note)
R N "6"
Fl G 4s 15ft 3M "1"
G "5" Fl G 2.5s
R N "4A"
Pipeline Area
Ramp
Ruins
Wk
OVHD PWR CAB AUTH CL 64 FT
Delaware City Branch Channel
31 FT FOR WIDTH
G "3" Fl G 2.5s
R N "4"
R "2" Fl R 2.5s
G "3N" Fl G 4s GONG
Obstn
Traffic Lts
Q R 38ft 5M "2"
RG "CD" 29 Fl (2+1) R 6s BELL
DUTCH NECK
Reedy Pt
Marsh
LOCAL MAGNET
Obstns

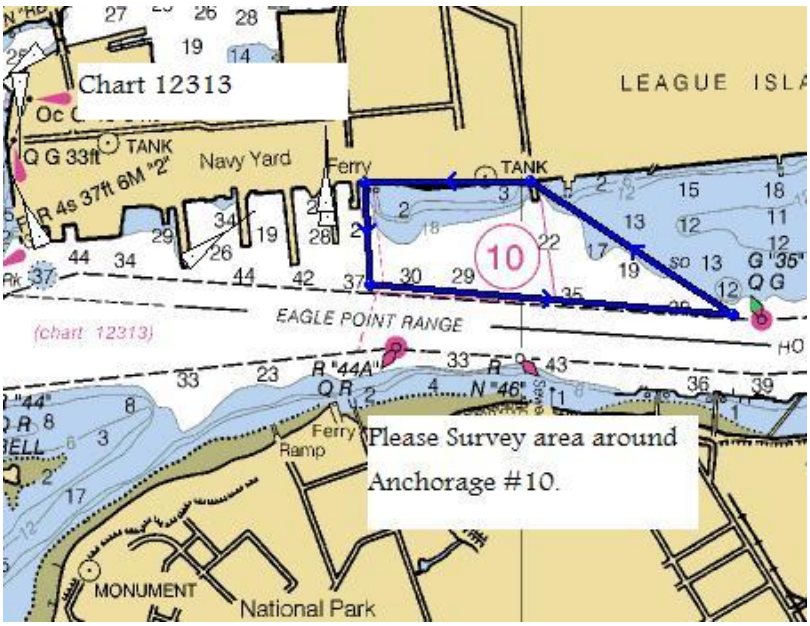


Chart 12313
LEAGUE ISLA
Q G 33ft TANK
Navy Yard
Ferry
TANK
R 4s 37ft 6M "2"
10
EAGLE POINT RANGE
(chart 12313)
R "44A"
N "46"
Please Survey area around
Anchorage #10.
Ferry Ramp
MONUMENT
National Park

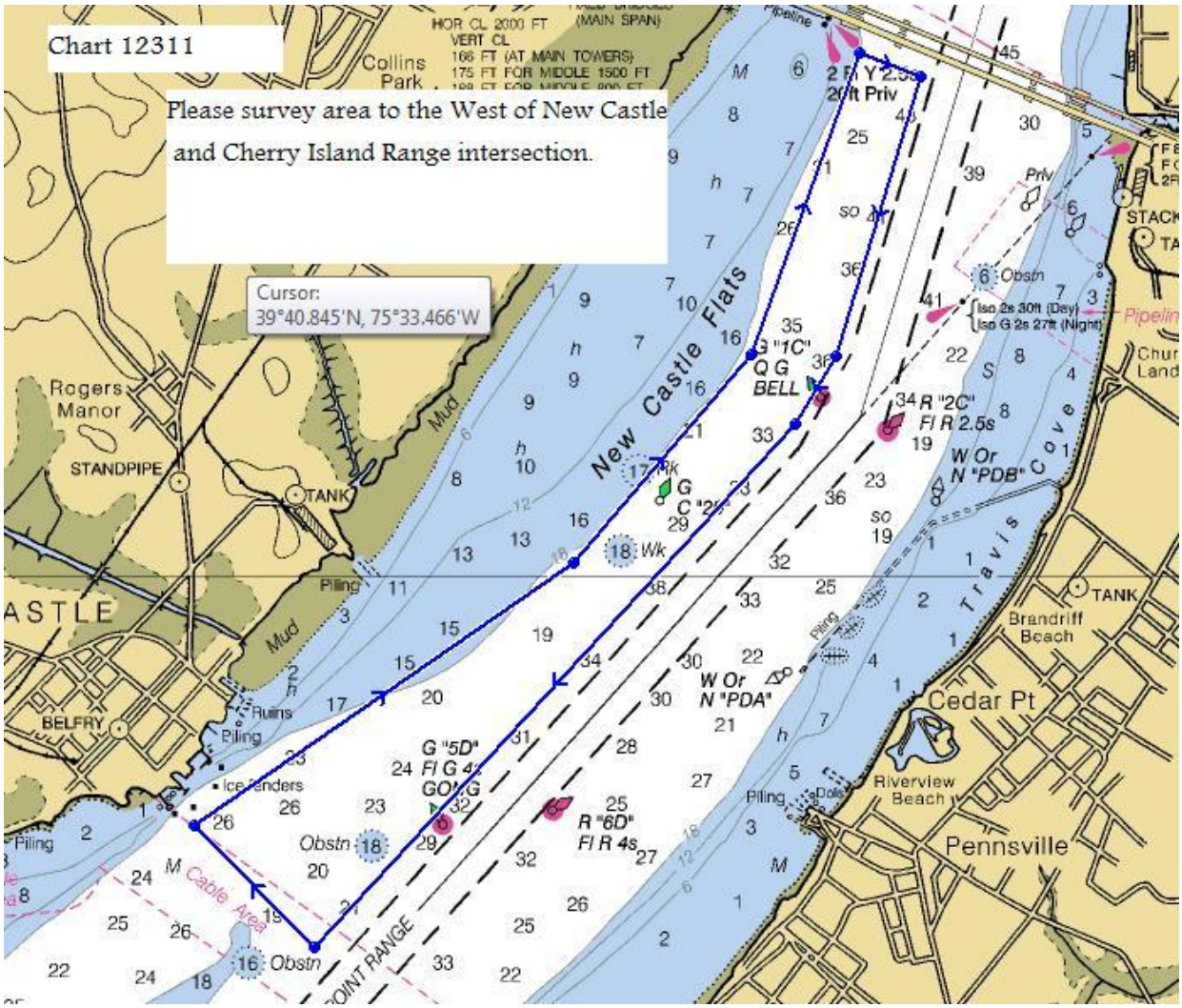


Chart 12311
Please survey area to the West of New Castle and Cherry Island Range intersection.
Cursor:
39°40.845'N, 75°33.466'W
New Castle Flats
Travis Cove
Rogers Manor
STANDPIPE
TANK
BELFRY
Ruins
Piling
Mud
Ice fenders
Obstn
M Cable Area
POINT RANGE
Brandriff Beach
Cedar Pt
Riverview Beach
Pennsville
Collins Park
Pipeline
Priv
Wk
G "1C"
Q G
BELL
R "2C"
Fl R 2.5s
W Or
N "PDB"
W Or
N "PDA"
G "5D"
Fl G 4s
GONG
R "6D"
Fl R 4s

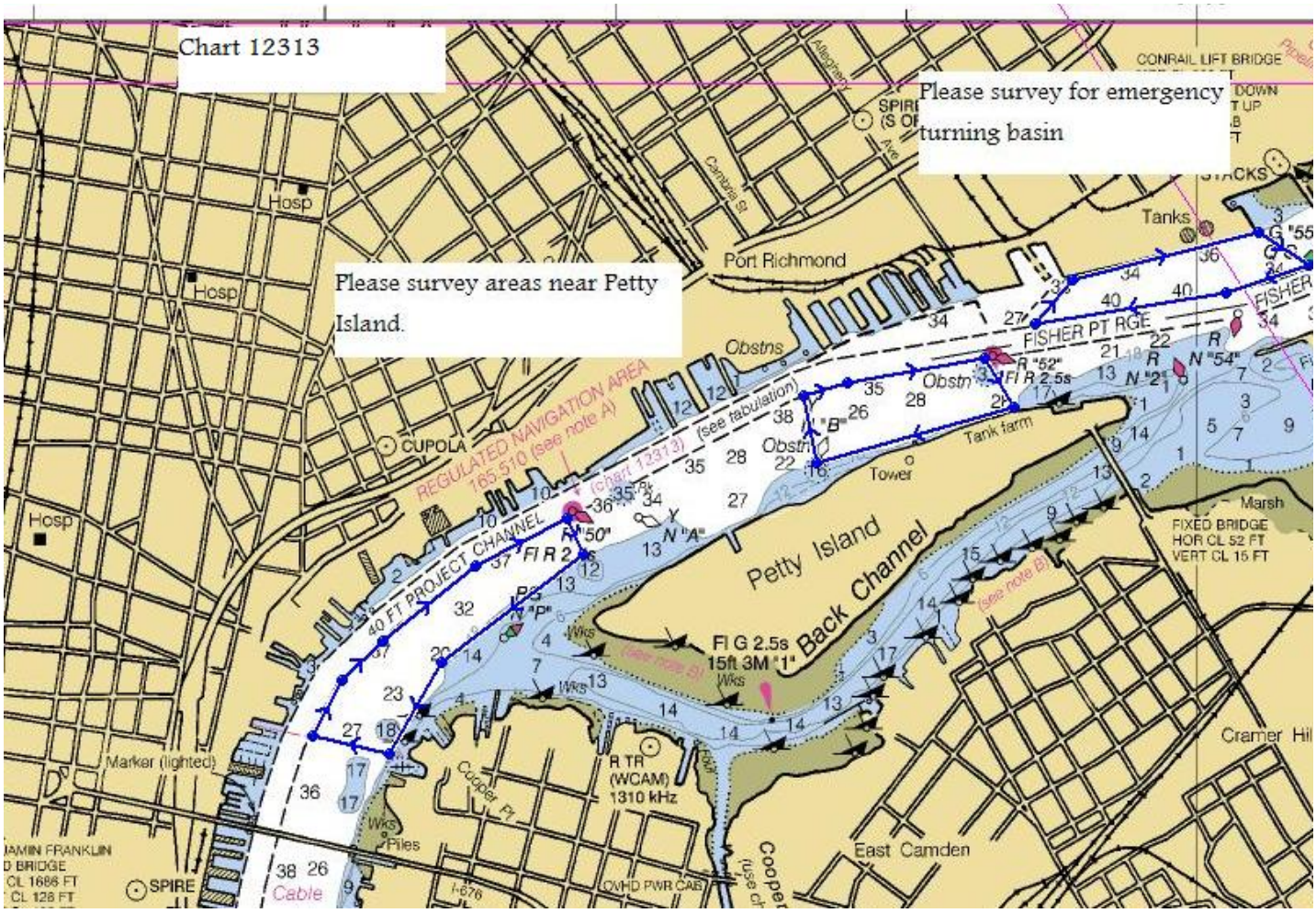


Chart 12313
Please survey for emergency turning basin
Please survey areas near Petty Island.
CONRAIL LIFT BRIDGE
Port Richmond
Tanks
FISHER PT RGE
Obstns
CUPOLA
REGULATED NAVIGATION AREA 165.510 (see note A)
(see tabulation)
Tank farm
Tower
Petty Island
Back Channel
Marsh
FIXED BRIDGE
HOR CL 52 FT
VERT CL 15 FT
40 FT PROJECT CHANNEL
Fl G 2.5s
15ft 3M "1"
R TR
(WCAM)
1310 kHz
Marker (lighted)
Cooper Pt
East Camden
Cramer Hil
SPIRE
Cable
OVHD PWR CAB
Hosp

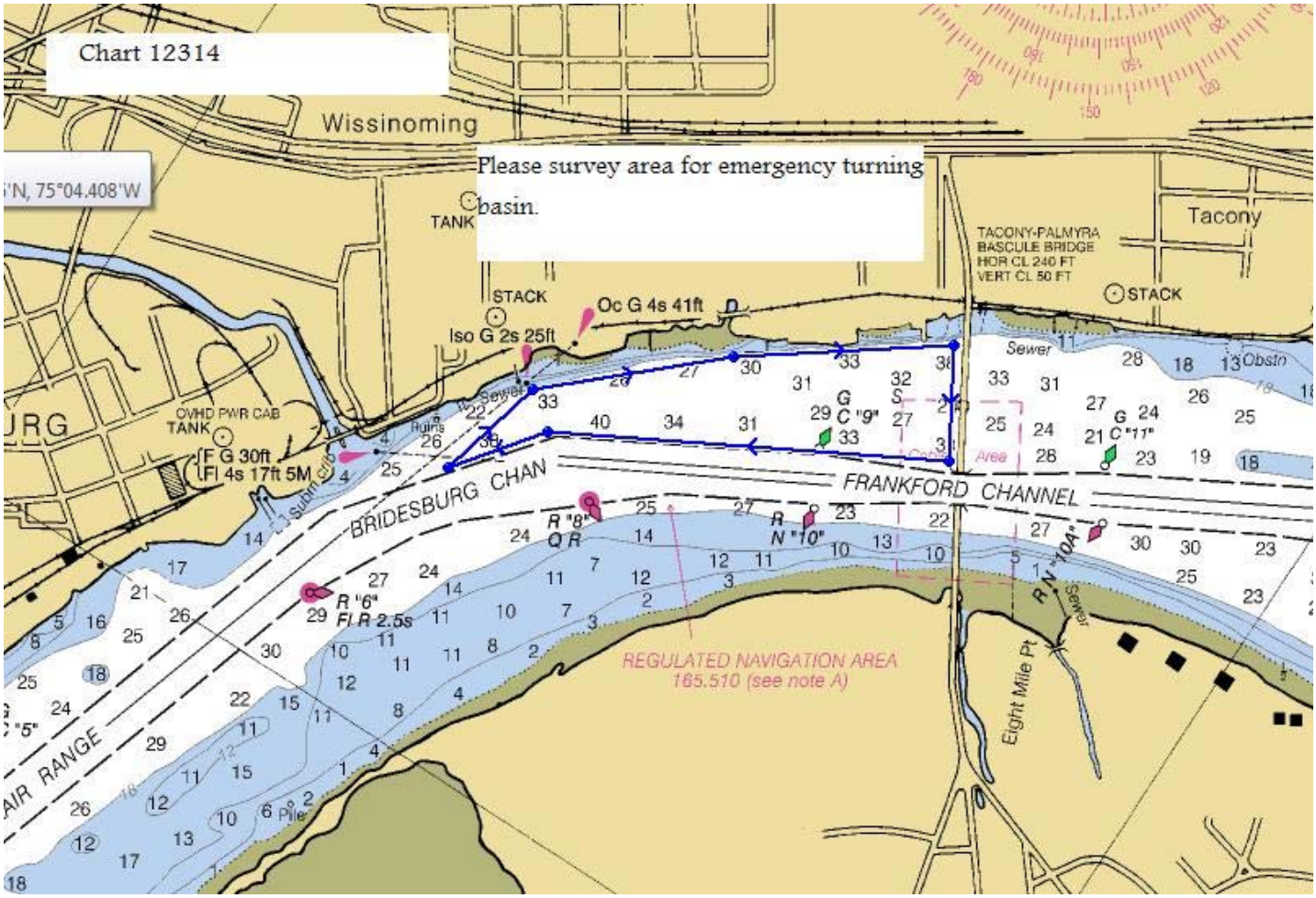


Chart 12314
Please survey area for emergency turning basin.
Wissinoming
Tacony
TACONY-PALMYRA BASCULE BRIDGE HOR CL 240 FT VERT CL 50 FT
STACK
TANK
Oc G 4s 41ft
Iso G 2s 25ft
OVHD PWR CAB
F G 30ft
Fl 4s 17ft 5M
BRIDESBURG CHAN
FRANKFORD CHANNEL
R "8" Q R
R "6" Fl R 2.5s
R N "10"
R N "10A"
REGULATED NAVIGATION AREA 165.510 (see note A)
Eight Mile Pt
Sewer
Obstn
Subm crib
Piles
AIR RANGE

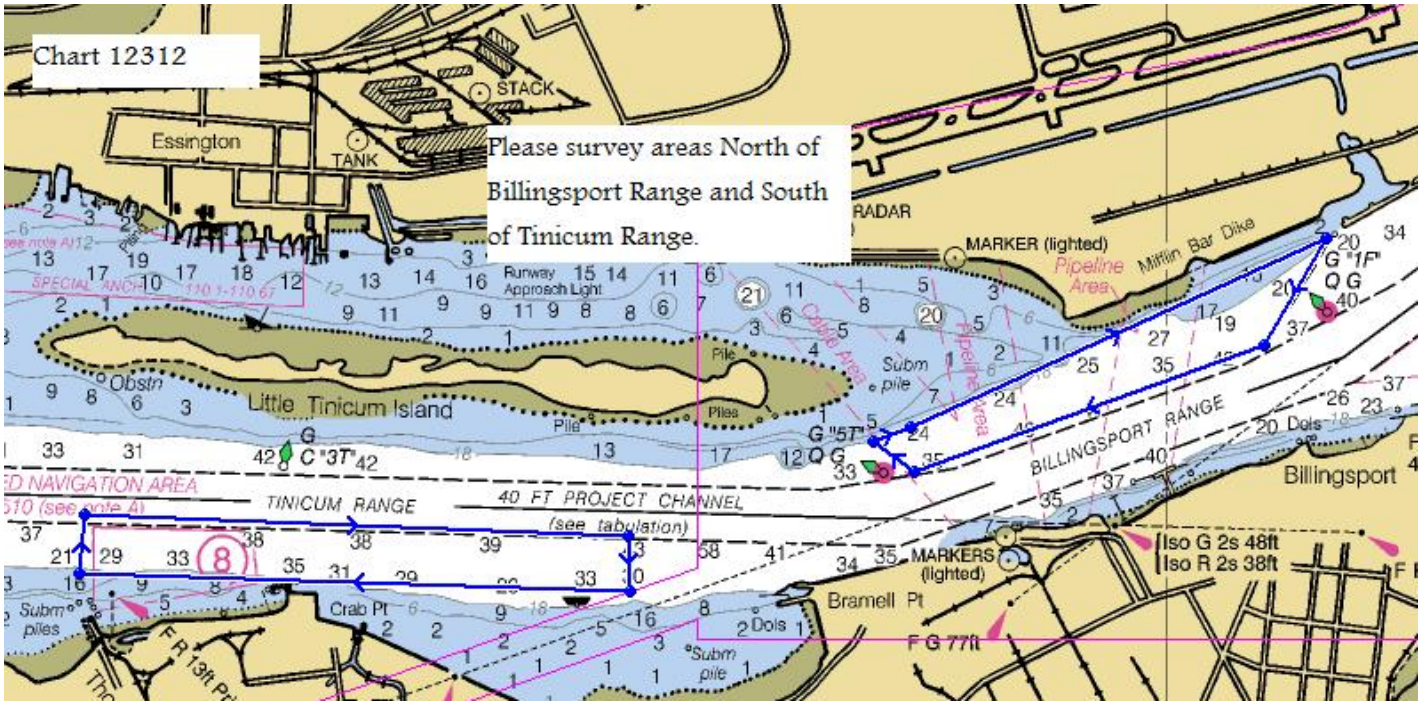
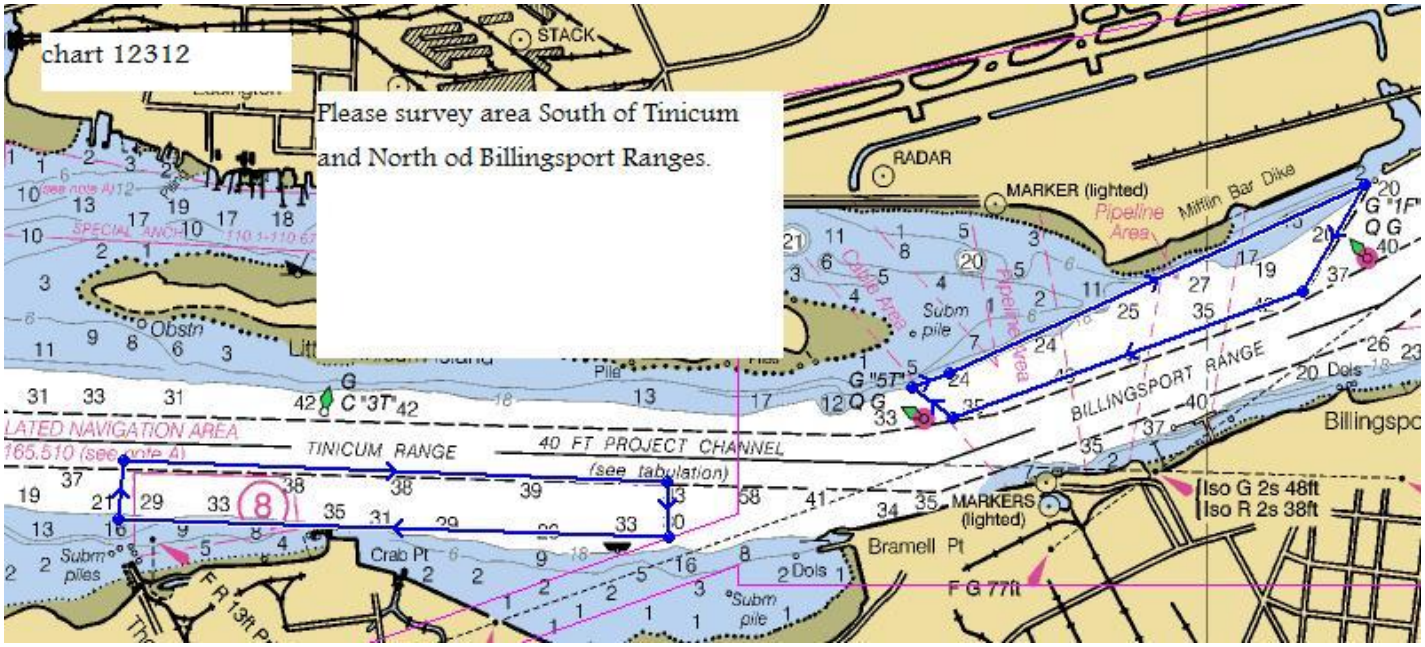
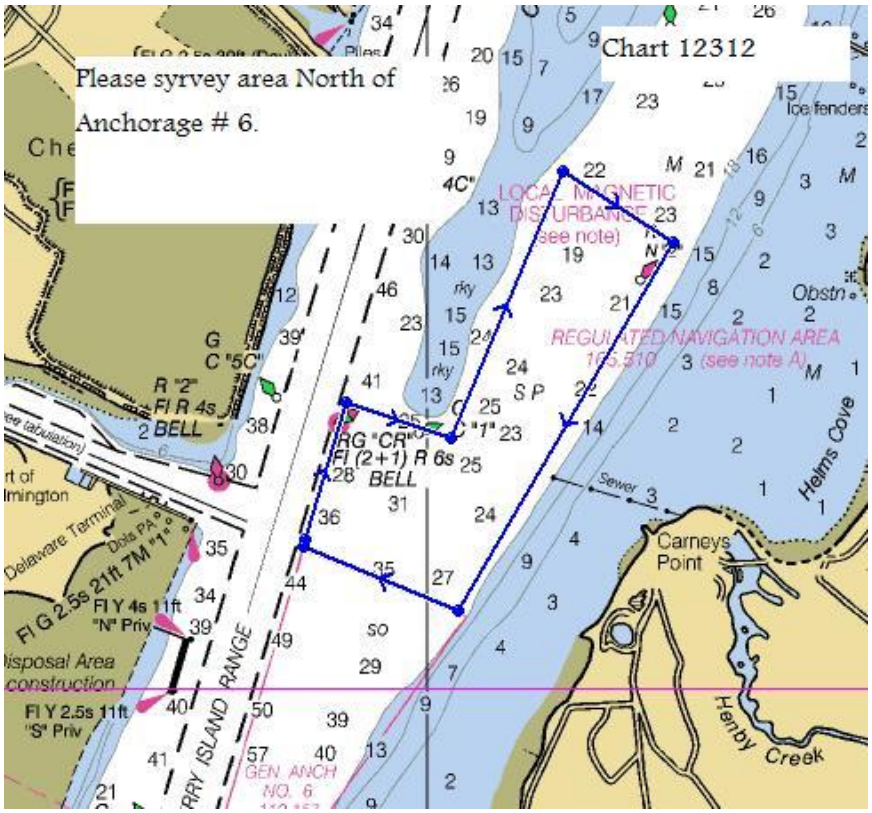


Chart 12312
Please survey areas North of Billingsport Range and South of Tinicum Range.
Essington
STACK
TANK
RADAR
MARKER (lighted)
Pipeline Area
Mifflin Bar Dike
Runway Approach Light
Little Tinicum Island
Obstn
Pile
Piles
Subm pile
G "5T"
G "1F" Q G
TINICUM RANGE
40 FT PROJECT CHANNEL
(see tabulation)
BILLINGSPORT RANGE
Billingsport
MARKERS (lighted)
Iso G 2s 48ft
Iso R 2s 38ft
Bramell Pt
F G 77ft
Crab Pt
Dols
Subm piles





Bellevue Marcuss Hook.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

General Anchorage #5.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Navy Yard Anchorage.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

New Castle Cherry Island.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Petty Island 2.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Tacony.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Tinicum 2.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Tinnicum Billingsport.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

wilmington anchorage.jpg	**Content-Type:** image/jpeg **Content-Encoding:** base64

Subject:
EM 3002 and SVP cast application
From:
Olivia.Hauser@noaa.gov
Date:
Thu, 05 Nov 2009 10:13:45 -0500
To:
Richard.T.Brennan@noaa.gov, CO.Thomas.Jefferson@noaa.gov, Edward.J.Vandenameele@noaa.gov, Michael.J.Annis@noaa.gov, Bert Ho <Bert.Ho@noaa.gov>
CC:
Jack.Riley@noaa.gov, Caryn.Arnold@noaa.gov, Eric.M.Moore@noaa.gov, Kathryn.Simmons@noaa.gov, Stephen.Kuzirian@noaa.gov

Hello all,

I had a conversation with LCDR Brennan about the below question. Normally, NOAA has only accepted data where SV casts can be applied post acquisition. The current configuration of the EM3002 requires you to apply the SV cast prior to acquisition, and with the way the data is currently recorded, you are unable to post apply the SV cast. If you do post apply the cast, the data takes on a chevron shape. Basically it does not apply correctly. The question is, is it OK for the NRTs to submit data that does not have SV data applied in post processing. LCDR Brennan states that this puts us in a bind, because if there is ever an SVP issue, you cannot back the data out. You need to re-acquire it. The question becomes whether you can record the correct information from Simrad that when Caris ingests it, it can have an SV cast applied to it. What sort of information is being recorded from the Simrad? Is it two way travel time and arrival angle, or something else? Can we work with Simrad and Hypack to change what information is being saved so SVP can be applied to the data once in Caris?

Mike and Jack, any ideas?

Thanks.
Olivia

----- Original Message -----
From: Bert Ho <Bert.Ho@noaa.gov>
Date: Wednesday, November 4, 2009 10:07 am
Subject: Re: NRT5's mbes data
To: "Olivia.Hauser@noaa.gov" <Olivia.Hauser@noaa.gov>

> > Thanks, keep in mind that this will affect any NRT that has an EM3002
> > >
> > > running SiS.
> > >
> > >
> > > Sent from my mobile device.
> > >
> > > On Nov 4, 2009, at 9:27 AM, Olivia.Hauser@noaa.gov wrote:
> > >
> > > > Bert,
> > > > Sorry it has taken so long to get back to you. Things got crazy and
> > >
> > > > I dropped a couple of emails. I need to get up with Rick Brennan
> > > > about this one. I think we were OK last time we talked about it
> > > with
> > > > Shep and EJ, but I will confirm for you. Thanks.
> > > >
> > > > Olivia
> > > >
> > > > ----- Original Message -----
> > > > From: Bert <Bert.Ho@noaa.gov>
> > > > Date: Wednesday, October 28, 2009 5:51 pm
> > > > Subject: NRT5's mbes data
> > > > To: Olivia Hauser <Olivia.Hauser@noaa.gov>
> > > > Cc: Matthew Jaskoski <Matthew.Jaskoski@noaa.gov>, Lawrence T Krepp
> > <Lawrence.T.Krepp@noaa.gov
> > > > >, Pig Pen <John.Dooboa@noaa.gov>
> > > >
> > > >
> > > > Hi Olivia,
> > > >
> > > > I think we talked to you about this some time earlier this year...but
> > > > is
> > > > there any reason why our MB data would not be accepted without SVP's
> > > >
> > > > applied during post-processing? Right now, the SiS system requires
> > an
> > > > ASVP to be applied during acquisition. I've post-processed data both
> > > >
> > > > with and without an SVP and it appears that applying an SVP during
> > > > post-processing doubles the SVP and creates a "Chevron" shape in the
> > > >
> > > > base surface. The data looks better without the SVP added in
> > > > post-processing.
> > > >
> > > > Please let me know if AHB or HSTP has any issue with accepting data
> > > > without SVP's added in post-processing...in reality, its not data
> > > > without SVP, its just data with SVP corrections in real-time, and
> > not
> > > > corrected in post-processing. I will be adding this correspondence
> > > > and
> > > > your reply into all DR's for 2009-2010.
> > > >
> > > > Thanks for your time and help.
> > > >
> > > > -Bert
> > > > NRT5

AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	H12151
PROJECT No.	S-D903-NRT5-09
FIELD UNIT	NOAA NAVIGATION RESPONSE TEAM 5 PERSONNEL
DATE OF SURVEY	20091013 - 20091209
LARGEST SCALE CHART	***12311_1, edition 45, 20081201, 1:40,000,*** ***12312_1, edition 55, 20110312 ,1:40,000***
ADDITIONAL CHARTS	***13003_1, edition 50, 20100501, 1:1,200,000***
SOUNDING UNITS	FEET
COMPILER	Dinah O. Morris

Source Grids	**File Name** H:\Compilation\H12151_D903_NRT5\AHB_H12151\SAR Final Products\GRIDS
	H12151_MBES_50cm_MLLW_2of2.csar **H12151_VBES_Unc_ShoalExt_4m_1of2.csar**
Surfaces	**File Name** H:\Compilation\H12151_D903_NRT5\AHB_H12151\COMPILE\Working
Combined	**H12151_4m_Combined.csar**
Interpolated TIN	\Interpolated TIN**H112151_12m_InterpTIN.csar**
Shifted Interpolated TIN	\Shifted Surface**H112151_12m_InterpTIN_Shifted.csar**
Final HOBs	**File Name** H:\Compilation\H12151_D903_NRT5\AHB_H12151\COMPILE\Final_Hobs
Survey Scale Soundings	**H112151_SS_Soundings.hob**
Chart Scale Soundings	**H112151_CS_Soundings.hob**
Contour Layer	**H112151_Contours.hob**
Feature Layer	**H112151_Features.hob**
Meta-Objects Layer	**H112151_MetaObjects.hob**
Blue Notes	**H112151_BlueNotes.hob**
ENC Retain Soundings	**H112151_ENC_Retain_Soundings.hob**

Meta-Objects Attribution	
Acronym	**Value**
M_COVR	
CATCOV	1 – coverage available
SORDAT	20091209
SORIND	US,US,graph,H12151
M_QUAL	
CATZOC	6 – zone of confidence U (data not assessed)
INFORM	NOAA NRT-5 S3002
POSACC	10.0 m
SORDAT	20091209
SORIND	US,US,graph,H12151
SUREND	20091209
SURSTA	20091013
DEPARE	
DRVALV 1	5.734ft
DRVALV2	61.364 ft
SORDAT	20091209

SORIND	US,US,graph,H12151
M_CSCL	
CSCALE	
SORDAT	
SORIND	

SPECIFICATIONS:

I. COMBINED SURFACE:
- a. Number of SAR Final Grids: 2
- b. Resolution of Combined (m): 4 m

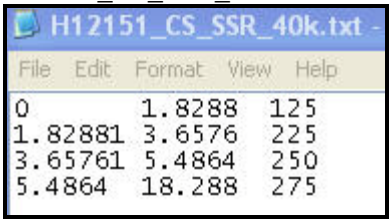
II. SURVEY SCALE SOUNDINGS (SS):
- a. Attribute Name: Depth
- b. Selection criteria: Radius, Shoal bias
- c. Radius value is: mm at map scale (1:30,000)
  - i. Use single-defined radius: 1.00
  - ii. And/Or use radius table file: N/A
- d. Queried Depth of All Soundings
  - i. Minimum: 5.735ft
  - ii. Maximum: 61.365 ft

III. INTERPOLATED TIN SURFACE:
- a. Resolution (m): 12 m
- b. Interpolation method: Natural Neighbor
- c. Shift value: -0.75 ft

IV. CONTOURS:
- a. Attribute Name: Depth
- b. Use a Depth List: H112151_depth_contours.txt
- c. Output Options: Create contour lines
  - i. Line Object: DEPCNT
  - ii. Value Attribute: VALDCO

V. FEATURES:
- a. Number of Chart Features: 10
- b. Number of Non-Chart Features: 0

VI. CHART SURVEY SOUNDINGS (CS):
- a. Number of ENC CS Soundings: 166
- 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: H12151_CS_SSR_40k.txt



iii. Enable Filter: Interpolated !=1

e. Number Survey CS Soundings: 165

VII. NOTES: N/A

ATLANTIC HYDROGRAPHIC BRANCH
H-CELL REPORT to ACCOMPANY
SURVEY H12151 (2010)

This H-Cell Report has been written to supplement and/or clarify the original Descriptive Report (DR) and pass critical compilation information to the cartographers in the Marine Chart Division. 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 grid for the survey's nautical chart update product were 50cm and 4m resolution BASE surface (*.CSAR), which were combined at 4m resolution. A TIN was created from the survey scale soundings, from which an interpolated surface of 12m resolution was generated. The chart scale soundings were derived from only the non-interpolated nodes of this surface to preserve absolute continuity between the chart scale soundings, the survey scale soundings, and the original source grid. This also ensures that the chart scale soundings are a subset of the survey scale soundings. The chart scale soundings were selected using a sounding spacing range (SSR) file. 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 12m 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 (6, 12 and 18ft). 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 H12151AHB Compilation Log contained within this document. The Final HOB files include depth areas (DEPARE), depth contours (DEPCNT), soundings (SOUNDG), meta-objects (M_COVR, M_QUAL), cartographic Blue Notes ($CSYMB), and features (OBSTRN, 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 2.1 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			
H12151_CS.000			**Scale 1:40,000**
Object Class Types	**Geographic**	**Cartographic**	**Meta**
S-57 Object Acronyms	DEPARE	$CSYMB	M_COVR
	OBSTRN		M_QUAL
	SBDARE		
	SOUNDG		
	WRECKS		
	PIPSOL		
	SBDARE		
H12151_SS.000			**Scale 1:10,000**
Object Class Types	**Geographic**		
S-57 Object Acronyms	DEPCNT		
	SOUNDG		

B.2.4 Junctions and Prior Surveys

Survey H12151 (2010) junctions with survey H12150 (2009) to the north and H12152 (2010) to the south. Most present survey depths compare within 1 to 2 feet of junctioning survey depths to the north, and within 1 to 2 feet of junctioning survey depths to the south.

B.4 DATA PROCESSING

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

CARIS BathyDataBASE version 2.3/HF16
CARIS Bathy DataBASE version 3.0/HF10
CARIS HIPS/SIPS version 7.0/SP2/HF6
CARIS S-57 Composer version 2.1/HF5
CARIS HOM ENC version 3.3/SP3/HF8
DKART Inspector version 5.1
HSTP Pydro version 10.11 (r3191)

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. 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 18 North.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

12311_1 (45th Edition, DEC/08)
Delaware River Smyrna River to Wilmington
Corrected through NM 03/12/2011
Corrected through LNM 02/22/2011
Scale 1:40,000

12312_1 (55th Edition, MAR/11)
Delaware River Smyrna River to Wilmington
Corrected through NM 03/12/2011
Corrected through LNM 02/22/2011
Scale 1:40,000

ENC COMPARISON

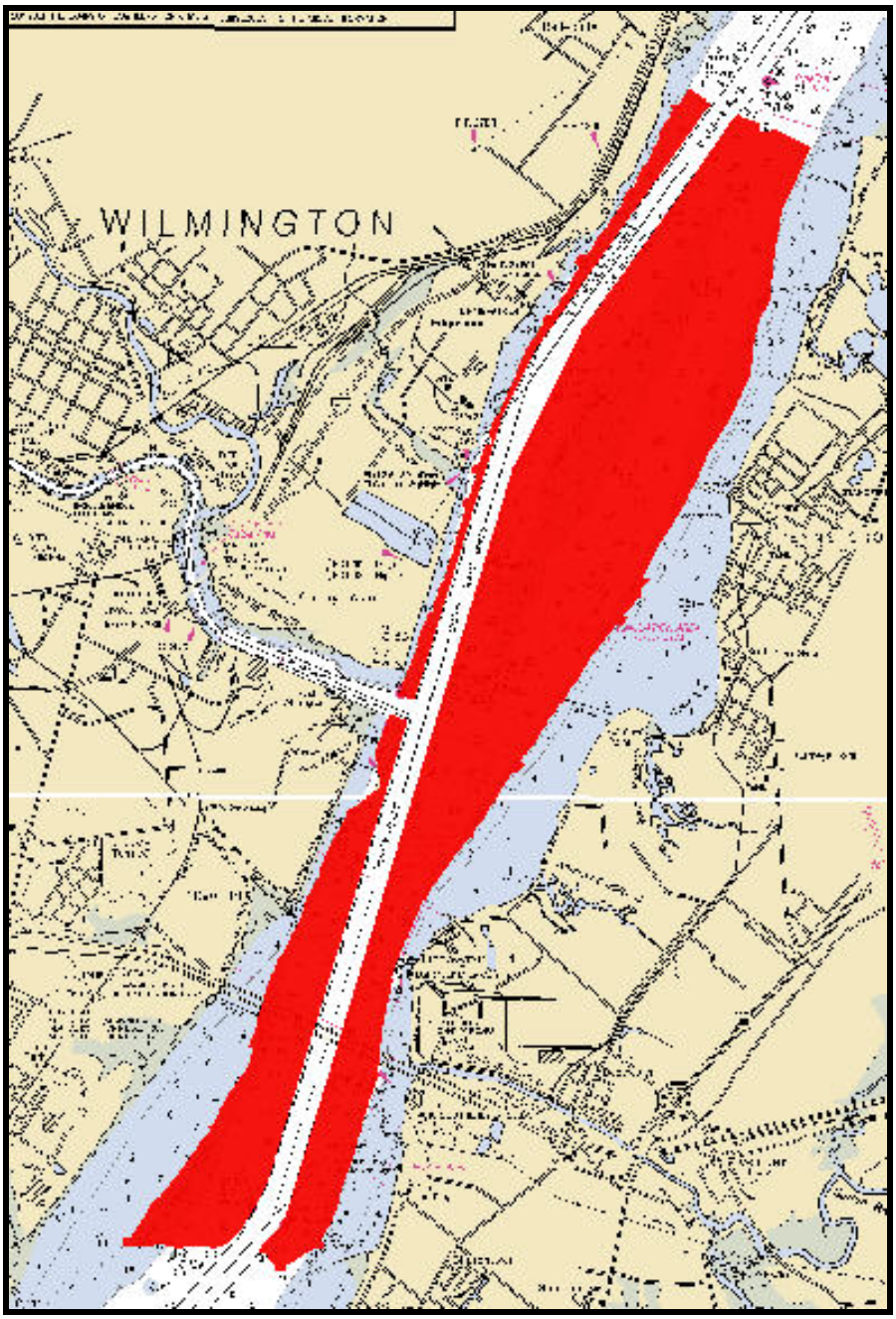
US5DE13M
Edition 16
Application Date 2011/02/03
Issue Date 2011/02/03
Chart 12311

US5PA11M
Edition 18
Application Date 2010/03/12
Issue Date 2010/03/12
Chart 12312

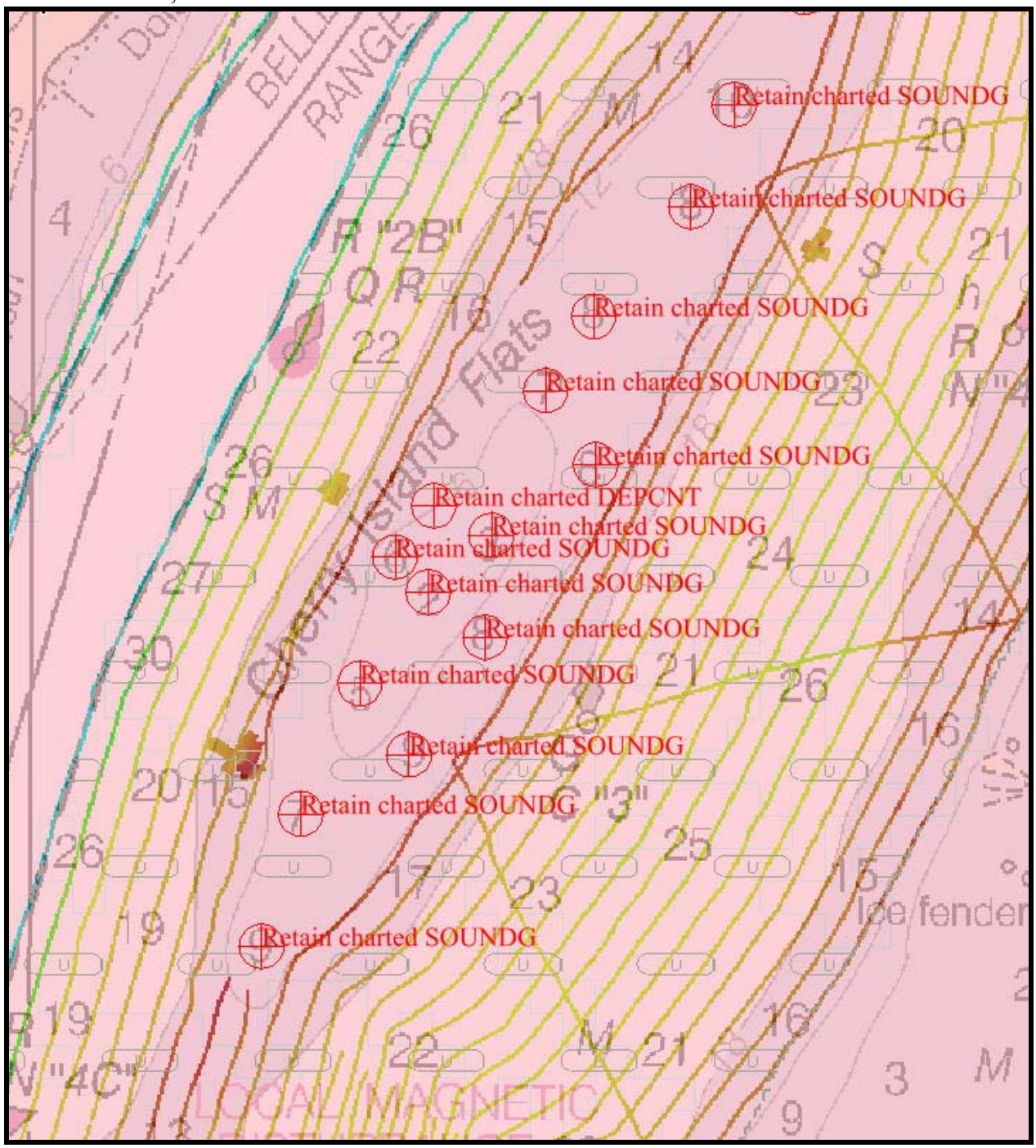
D.2 ADDITIONAL RESULTS

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:

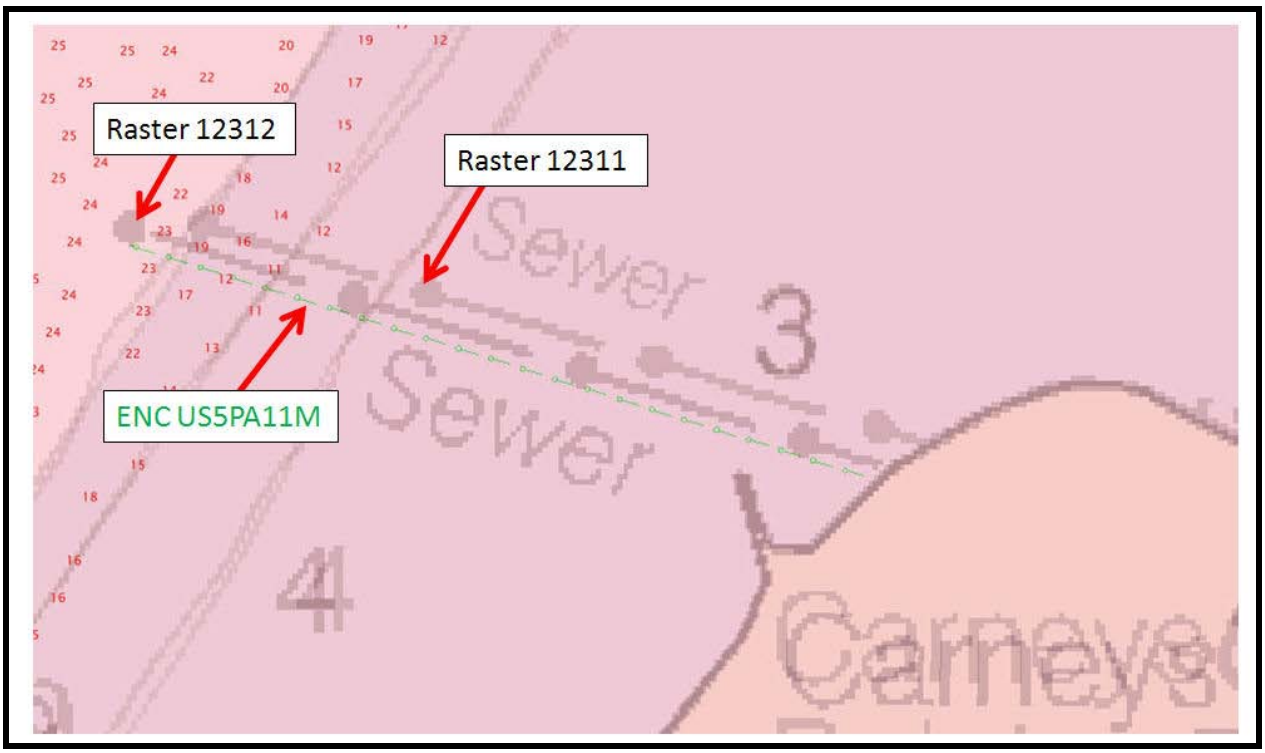
a. There is a 40-ft channel located in the center of the river survey. The channel is 6.2 nm (11,462 m) within the limits of this survey and extends to the north into survey H12150 and to the south to H12152.



b. The area surrounding “Cherry Island Flats” was not covered by this survey and has been removed from the coverage limits of this survey. All soundings within this area, unless otherwise noted, should be retained as charted.



c. This survey found the charted sewer seen in position latitude 39°-42'-57.812"N and longitude 075°-29'-29.784"W as described in ENC number US5PA11M and US5DE13M. However the positions shown on raster charts 12311 and 12312 are offset to the north. Recommend deleting the presently charted pipeline on raster charts 12311 and 12312 and add a new pipeline at the position described by the ENC.



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
H12151

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 disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the 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

Digitally signed by Dinah O. Morris
DN: cn=Dinah O. Morris, o=NOAA, ou=NOAA AHB, email=dinah.morris@noaa.gov, c=US
Date: 2011.04.18 11:25:05 -04'00'

Dinah O. Morris
Hydrographic Survey 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.

Digitally signed by Edward Owens
DN: cn=Edward Owens, o=NOAA, ou=AHB, email=Edward.Owens@noaa.gov, c=US
Date: 2011.06.01 10:59:51 -04'00'

Approved: _____
For: **CDR Richard T. Brennan, NOAA**
Chief, Atlantic Hydrographic Branch