

H12603

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12603

LOCALITY

State(s): New York

General Locality: Vicinity of Southern Long Island

Sub-locality: Vicinity South of Jones Beach

2013

CHIEF OF PARTY
Ransom C. White III

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12603

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(s): **New York**

General Locality: **Vicinity of Southern Long Island**

Sub-Locality: **Vicinity South of Jones Beach**

Scale: **20000**

Dates of Survey: **09/30/2013 to 06/23/2014**

Instructions Dated: **06/27/2013**

Project Number: **OPR-C331-KR-13**

Field Unit: **Williamson & Associates, Inc.**

Chief of Party: **Ransom C. White III**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Side Scan Sonar**

Verification by: **Pacific Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold, red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.

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Descriptive Report to Accompany Survey H12603

Project: OPR-C331-KR-13

Locality: Vicinity of Southern Long Island

Sublocality: Vicinity South of Jones Beach

Scale: 1:20000

September 2013 - June 2014

Williamson & Associates, Inc.

Chief of Party: Ransom C. White III

A. Area Surveyed

Williamson & Associates, Inc. conducted a hydrographic survey in the southern waters off of Long Island, NY. The sub-locality of this survey is described as Vicinity South of Jones Beach, NY.

The survey encompassed an area of approximately 31 square nautical miles and was assigned registry number H12603. Project instructions required object detection coverage in 2-4 meters of water with 100% SSS and concurrent set line spacing SBES or MBES and backscatter. Object detection coverage was required as well in 4-20 meters of water with 200% SSS and concurrent MBES and backscatter. Complete MBES and backscatter were the only requirements in water depths greater than 20 meters.

It should be noted that the appendices and separates for this report were created using the XML Schema format from XMLDR v13.1 released in June 2013 and will not follow the layout described in HSSD 2012. This was approved through email correspondence with our COTR on 4/10/2013, see correspondence in Appendix II.

A.1 Survey Limits

Data were acquired within the following survey limits:

| Northwest Limit | Southeast Limit |
|-------------------------------------|--------------------------------------|
| 40° 38' 3.01" N 73° 14' 53.77" W | 40° 33' 19.32" N 73° 28' 37.42" W |

Table 1: Survey Limits

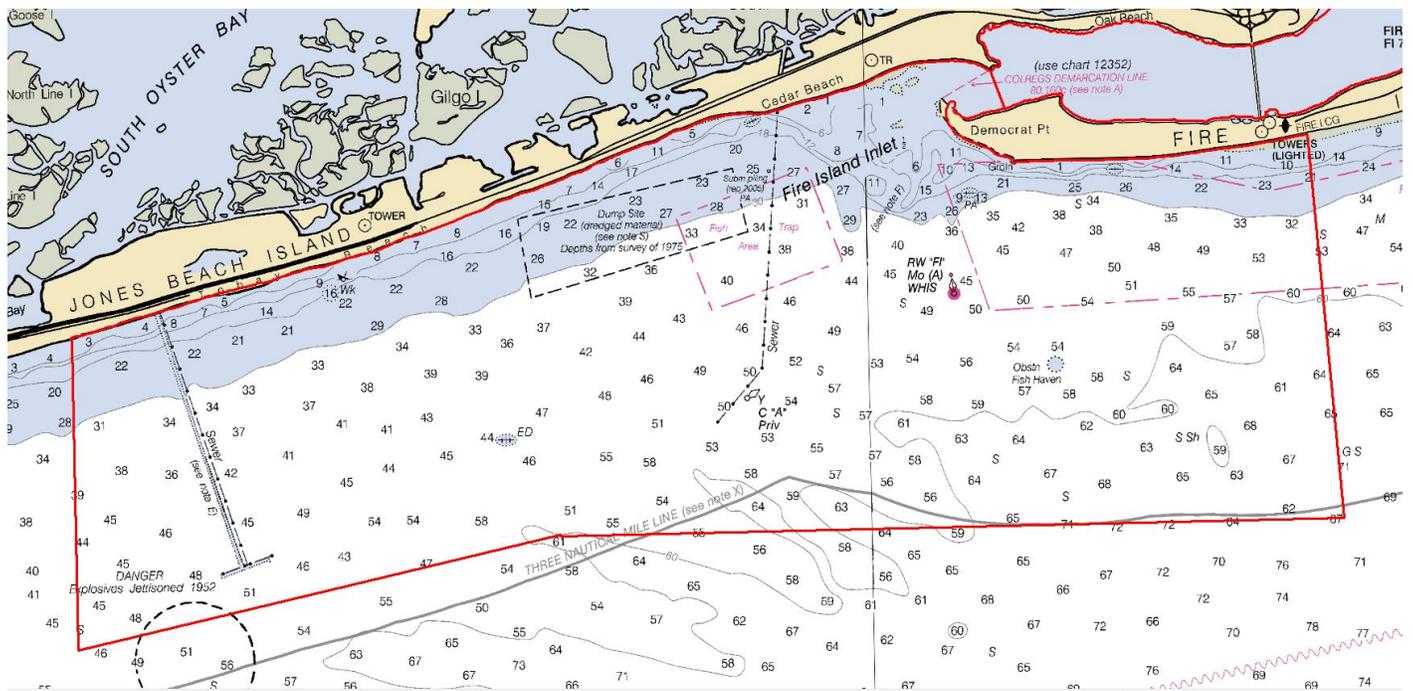


Figure 1: H12603 Sheet Boundaries Overlaid on Chart 12326

As per the field crews email confirmation (review correspondence folder) with the COTR on Oct 28th, sheet H12603 was surveyed to the 2m contour inshore of the inlet, and to the 4m contour offshore of the inlet within the bounds of vessel safety. The 2m navigable area limit line (NALL) was frequently unachievable due to shoal waters, breaking seas and inshore man made obstructions. Vessel and crew safety was a priority concern.

A.2 Survey Purpose

As per the project instructions: The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. This project is in response to different user group needs following Hurricane Sandy landfall. Specifically these data will adjoin updated shoreline, address the need for updated bathymetry for inundation modeling, and help identify marine debris for potential removal.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Survey quality was reviewed mainly by utilizing daily checks for data matchup, swath density, and motion/refraction artifacts. Sounding density was found to meet or exceed the object detection and single line spacing requirements out to roughly 40-45 degrees from nadir. Given our requirements called for skunk stripe MBES as a gap filler for 100% and 200% SSS. A full MBES coverage plan would include at least 20% swath overlap which is not possible with a set line spacing. Motion artifacts, when found, were due to excessive weather conditions. Latency values were checked and the motion artifacts were measured. The

majority of motion artifacts found fell under our IHO Order 1a error budget and were located well offshore in easily navigable waters. Considering the consistently poor working conditions during the winter months, motion artifacts became somewhat frequent, however they posed little threat to the usefulness of the data as expected vessel traffic in the area consists of no vessels that draw more than 2-3 meters.

In-depth crossline comparisons were also performed. The results of the crossline comparison can be found in section B.2.1 of this report. The crossline comparison consisted of analyzing each individual crossline with the finalized CUBE surface using the CARIS surface report tool. Once a CARIS surface report was generated, the results were inserted into a spreadsheet for total calculations of the survey area. The surface report informs the user of the percentage of soundings across the swath in increments set by the user that fall within the desired IHO specifications, in our case 10 degree increments, within IHO Order 1a. Areas that did not pass the IHO Order 1a specification were due to shifting bathy near the inlet and can be reviewed in section B.2.6 of this report.

Survey quality is acceptable to supersede previous bathymetric, shoreline, overhead and submerged feature data within the project bounds.

The hydrographer indicates that some motion artifacts exceed NOAA complete coverage error budgets (referred to in text as IHO Order 1a error budgets). While various artifacts can be found in the data, all have been reviewed for compliance with specification and none have been found to exceed NOAA complete coverage error budgets. The data is adequate for charting.

A.4 Survey Coverage

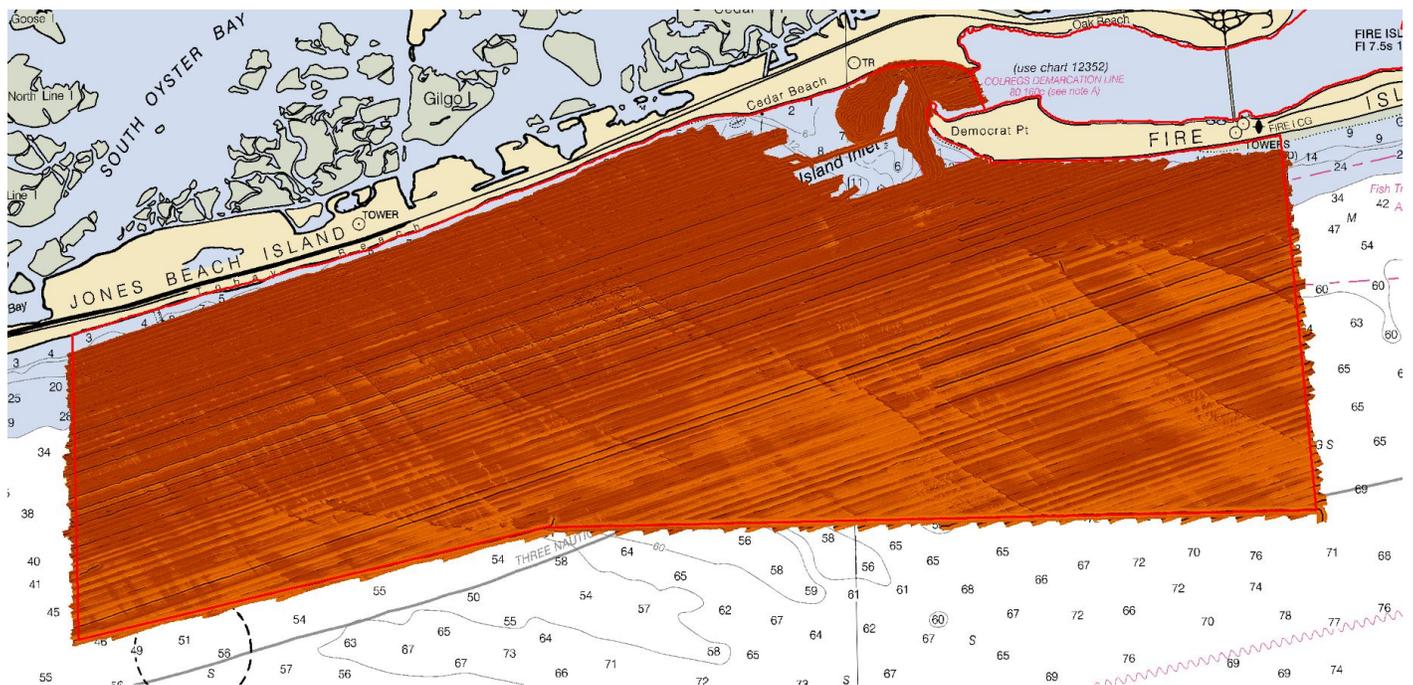


Figure 2: H12603 SSS Mosaic of all Data Acquired Overlaid on Chart 12326

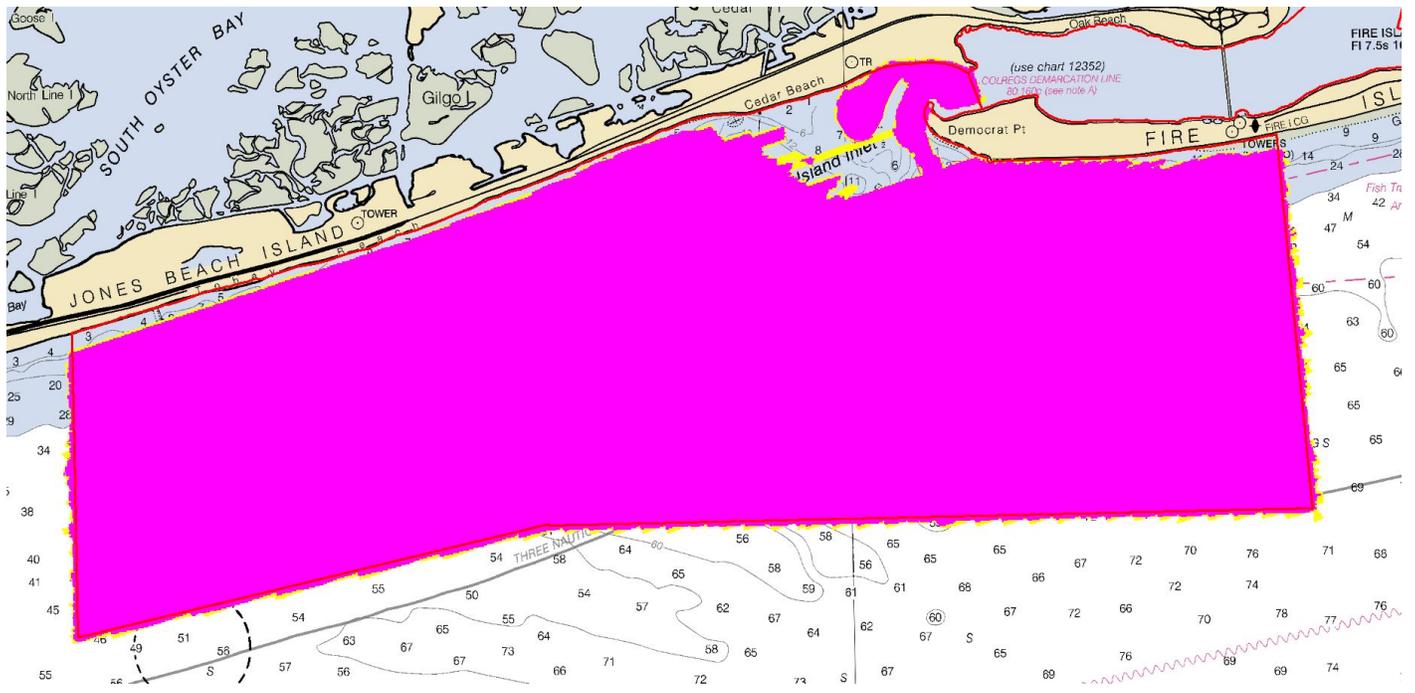


Figure 3: H12603 SSS Coverage Depicting percent of coverage: Yellow = 100%, Purple = 200%

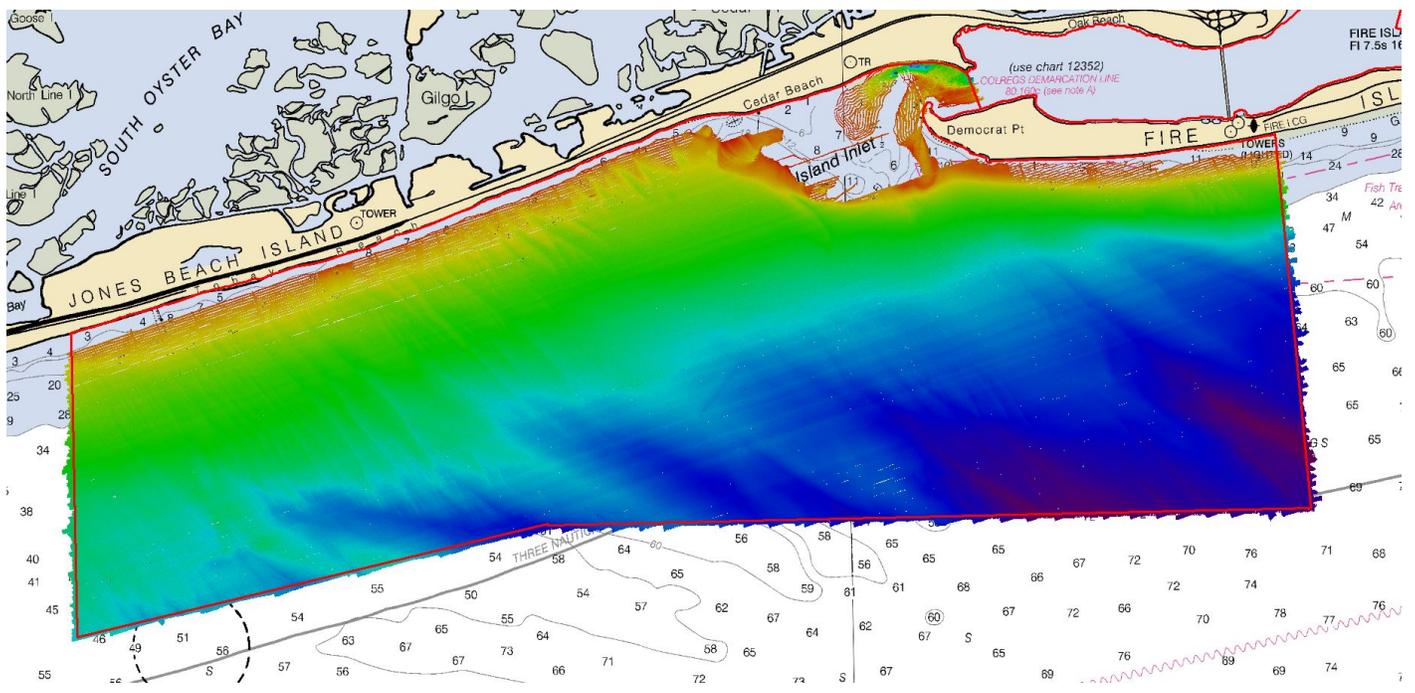


Figure 4: H12603 MBES Coverage Overlaid on Chart 12326

Due to changing morphology and a combination of shoal and swell conditions, coverage gaps are present in SSS data. Vessel and crew safety was a priority concern and was always taken into consideration. There are four coverage gaps located in this sheet. A gap in survey coverage can be found immediately south of Jones Beach Island due to shallow water and shoal conditions. Several coverage gaps are located west of the Fire Island Inlet near Democrat Point, all caused from shoal conditions.

Certain sections of the NALL were not fully covered due to the extent of changes in seabed. Please refer to section D.2.1 "Shoreline" for NALL information.

A.5 Survey Statistics

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

| | HULL ID | <i>HEW46077J70</i> | Total |
|---|---------------------------------|--------------------|--------------|
| LNM | SBES Mainscheme | 0 | 0 |
| | MBES Mainscheme | 0 | 0 |
| | Lidar Mainscheme | 0 | 0 |
| | SSS Mainscheme | 0 | 0 |
| | SBES/SSS Mainscheme | 0 | 0 |
| | MBES/SSS Mainscheme | 1331.15 | 1331.15 |
| | SBES/MBES Crosslines | 57.28 | 57.28 |
| | Lidar Crosslines | 0 | 0 |
| Number of Bottom Samples | | | 21 |
| Number of AWOIS Items Investigated | | | 0 |
| Number Maritime Boundary Points Investigated | | | 0 |
| Number of DPs | | | 0 |
| Number of Items Investigated by Dive Ops | | | 0 |
| Total SNM | | | 31.14 |

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

| Survey Dates | Day of the Year |
|---------------------|------------------------|
| 09/30/2013 | 273 |
| 10/01/2013 | 274 |
| 10/03/2013 | 276 |
| 10/04/2013 | 277 |
| 10/05/2013 | 278 |
| 10/06/2013 | 279 |
| 10/19/2013 | 292 |
| 10/21/2013 | 294 |
| 11/25/2013 | 329 |
| 11/26/2013 | 330 |
| 05/07/2014 | 127 |
| 05/08/2014 | 128 |
| 05/09/2014 | 129 |
| 05/11/2014 | 131 |
| 05/12/2014 | 132 |
| 05/18/2014 | 138 |
| 05/19/2014 | 139 |
| 05/20/2014 | 140 |
| 05/21/2014 | 141 |
| 05/22/2014 | 142 |
| 05/23/2014 | 143 |
| 05/24/2014 | 144 |
| 05/25/2014 | 145 |
| 05/29/2014 | 149 |
| 05/30/2014 | 150 |
| 05/31/2014 | 151 |
| 06/01/2014 | 152 |
| 06/03/2014 | 154 |
| 06/04/2014 | 155 |
| 06/06/2014 | 157 |
| 06/07/2014 | 158 |
| 06/08/2014 | 159 |
| 06/10/2014 | 161 |
| 06/14/2014 | 165 |
| 06/15/2014 | 166 |

In addition to the dates listed in the table, the field also surveyed on 11/04/2013 (2013-308)

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

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

| | |
|----------------|---------------------|
| Hull ID | HEW46077J708 |
| LOA | 7.32 meters |
| Draft | 1.2 meters |

Table 4: Vessels Used



Figure 5: M/V Nooit Volmaakt from the port side. The pole mount on the bow for the Edge Tech SSS can be seen.



Figure 6: M/V Nooit Volmaakt from the starboard bow. The pole mount on the bow for the Edge Tech SSS can be seen.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

| Manufacturer | Model | Type |
|--------------|------------|--|
| R2Sonic | 2024 | MBES |
| Reson | 7125 | MBES |
| EdgeTech | 4600 | SSS |
| Applanix | POS MV 320 | Positioning and Attitude System |
| 6 | MiniSVS | Sound Speed System |
| Reson | SVP70 | Sound Speed System |
| SeaBird | SBE19 | Conductivity, Temperature and Depth Sensor |
| SeaBird | SBE19+ | Conductivity, Temperature and Depth Sensor |

Table 5: Major Systems Used

The M/V Nooit Volmaakt acquired all multibeam data between 9/30/2013 and 6/23/2014 with a pole mounted R2Sonic 2024 operating at 400 kHz. All data acquired between 5/7/2014 and 06/23/2014 was done so with a pole mounted Reson 7125 operating at 400 kHz. Side scan sonar imagery was acquired with a pole mounted EdgeTech 4600 operating at 540 kHz. The vessel used a POSMV for position, orientation and motion corrections. For more detailed information on equipment and vessel please refer to OPR-C331-KR-13 DAPR submitted under a different cover.

Table 5 lists the MiniSVS as having the manufacturer "6." This is a typo and should instead read "Valeport."

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 4% of mainscheme acquisition.

Quality control crosslines were planned so that most main scheme lines would intersect with at least one crossline, they were well distributed geographically, and that total crossline nautical miles ran would total more than 4 % of the main scheme nautical miles (a specification set forth by the HSSD 2012).

Total crossline length surveyed for task order OPR-C331-KR-13 sheet H12603 was 57.33 nautical miles or 4.65% of the total main scheme distance (1231.70 nautical miles). All crosslines were compared to the main scheme line BASE, using the CARIS HIPS QC Report process for individual lines. The swath was split by swath angle in 10 degree increments for the crossline analysis. The seabed near the inlet was so dynamic, being current driven, that it changed significantly from day to day. One crossline obtained in the inlet failed to meet the standards set forth by the HSSD and only passed the 92.8% confidence level. The “outlier” line only accounts for 0.1% of the main scheme nautical line mileage however with the outlier crossline included the overall average still passed the 99.68% confidence level. Without including this outlier line the vast majority of beams passed within the IHO Order 1a specifications at a 95% confidence level or better with an overall confidence level average of 99.79% and a standard deviation of 0.1%. (See Separate IV). Lines that covered both the 50cm (0-20m water depth) and the 2m (18-40m water depth) surfaces were analyzed independently for each surface.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

| Measured | Zoning |
|-----------------|---------------|
| 0 meters | 0.29 meters |

Table 6: Survey Specific Tide TPU Values

| Hull ID | Measured - CTD | Measured - MVP | Surface |
|----------------|-----------------------|-----------------------|-------------------|
| HEW46077J708 | 2.5 meters/second | | 0.2 meters/second |

Table 7: Survey Specific Sound Speed TPU Values

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of the uncertainty values used for processing sheet H12603.

According to the Max MNR values reported by JOA surveys, our tidal uncertainty value at the 95% confidence level was 0.29m, and includes the estimated gauge measurement error, tidal datum computation error, and tidal zoning error. The reported error value was then divided by 1.96 since CARIS assumes TPU values to be 1 sigma (Field Procedures Manual April 2013) resulting in a value of 0.148m. The tidal uncertainty field labeled in CARIS as “measured” was left at zero as the reported error value of 0.29m included the estimated gauge measurement error and the tidal datum computation error as well as the tidal zoning error. Any max uncertainty measurements exceeding IHO Order 1a specifications are due to shifting sand bars and seabed morphology and are explained in section B.2.6 (Factor Affecting Soundings). A Measured CTD TPU value of 2.5 was used as the survey area showed more variability in the sound velocity during the summer months. Sheet H12603 also showed more SV variation than the other sheets in general.

B.2.3 Junctions

There are no contemporary surveys that junction with this survey.

There are no contemporary surveys that junction with this survey.

This survey area overlaps with contemporary survey H12600 of the same project. A difference surface between H12603 and H12600 was made and analyzed for the junction analysis. The average difference was 0.55m, with a 0.89m std_dev, and min/max values of -3.22m/5.3m, respectively. Given that the crosslines show reasonably decent agreement - SSP errors notwithstanding - the reviewer would attribute all the depth differences between the survey areas to sediment transport in the highly changeable area between Democrat Point and Oak Beach. Given the sediment transport in the area, these junction results should not be used to evaluate systematic agreement between survey areas.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

Motion Correction System

B.2.5.2 POS MV 320. The POS MV 320 functioned adequately throughout the survey considering the frequent higher sea state. The average sea state offshore during the high majority of survey days was a 1m swell. Depending on the direction of the swell, some attitude artifacting resulted, mostly in deeper areas of the survey. These lines were not rejected as no latency was found to exist and QC showed the lines to still be within spec using crossline analysis. This was concluded to be the result of a small survey vessel in large enough seas to challenge the accuracy of the IMU.

The data is adequate for charting despite the sea state pushing the limits of the IMU.

B.2.6 Factors Affecting Soundings

Shifting Sand Waves / Bars / Features

Sand features in waters shallower than 10 meters are constantly shifting, as much as 25cm per day in some areas. Areas concentrated around the inlet are subject to the strongest and most rapid tidal current. As a result these areas experience the most morphological shifting, resulting in poor data alignment, especially if

overlapping acquisition was separated by as much as 5-10 days. Due to this effect on the data overlapping, the timing of acquisition was strongly considered in planning. A dredge also worked the inlet during the course of the survey. Efforts were made to minimize data matchup issues by waiting for the dredge to finish before surveying the dredged area.

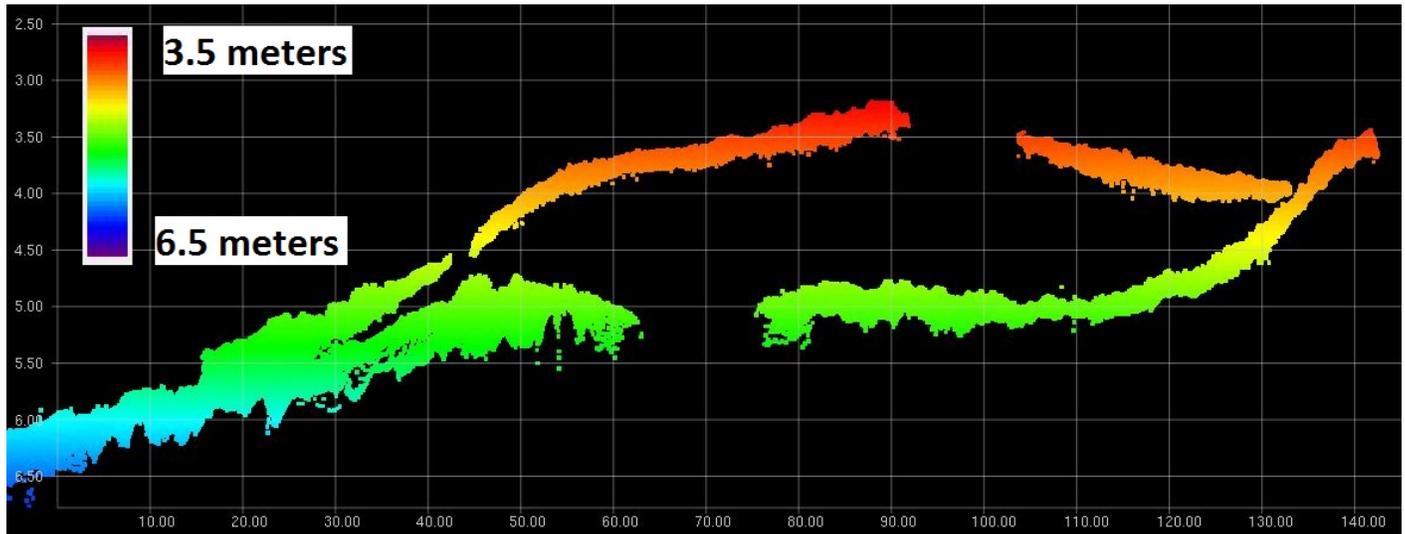


Figure 7: MBES soundings showing depths for 5 lines, three acquired on JD 330, 2013 and two on JD 170, 2014. You can see the separation in seabed morphologies well here as the sand has shifted due to currents and other environmental factors.

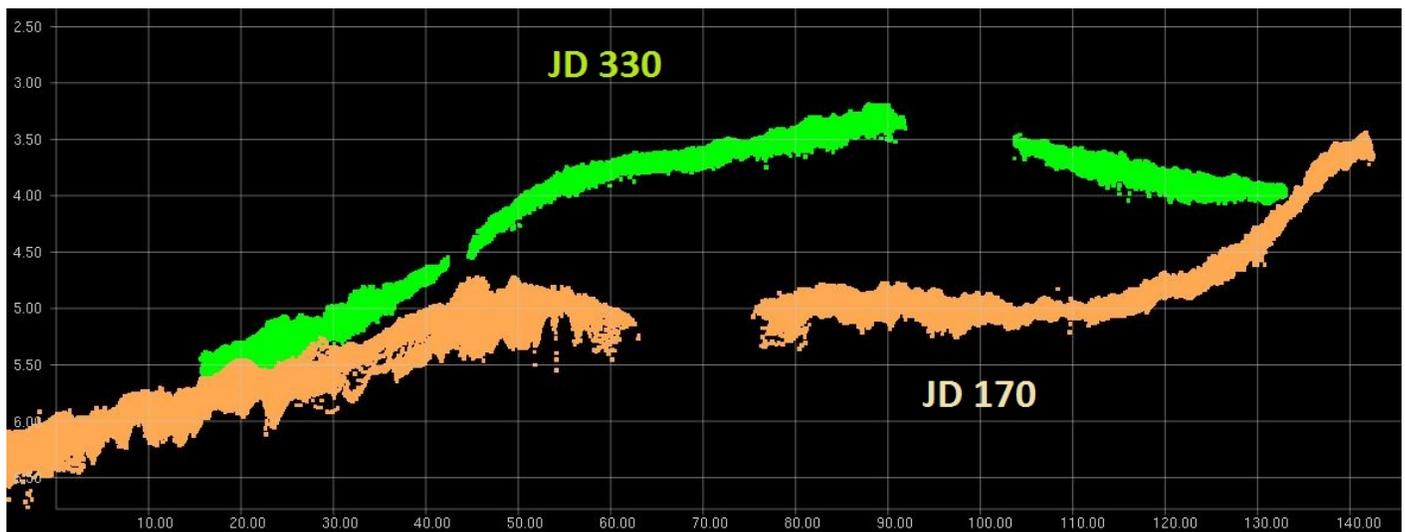


Figure 8: Image to be associated with the previous figure. The colors signify days of acquisition. Light green for JD 330, 2013 and custard for JD 170, 2014.

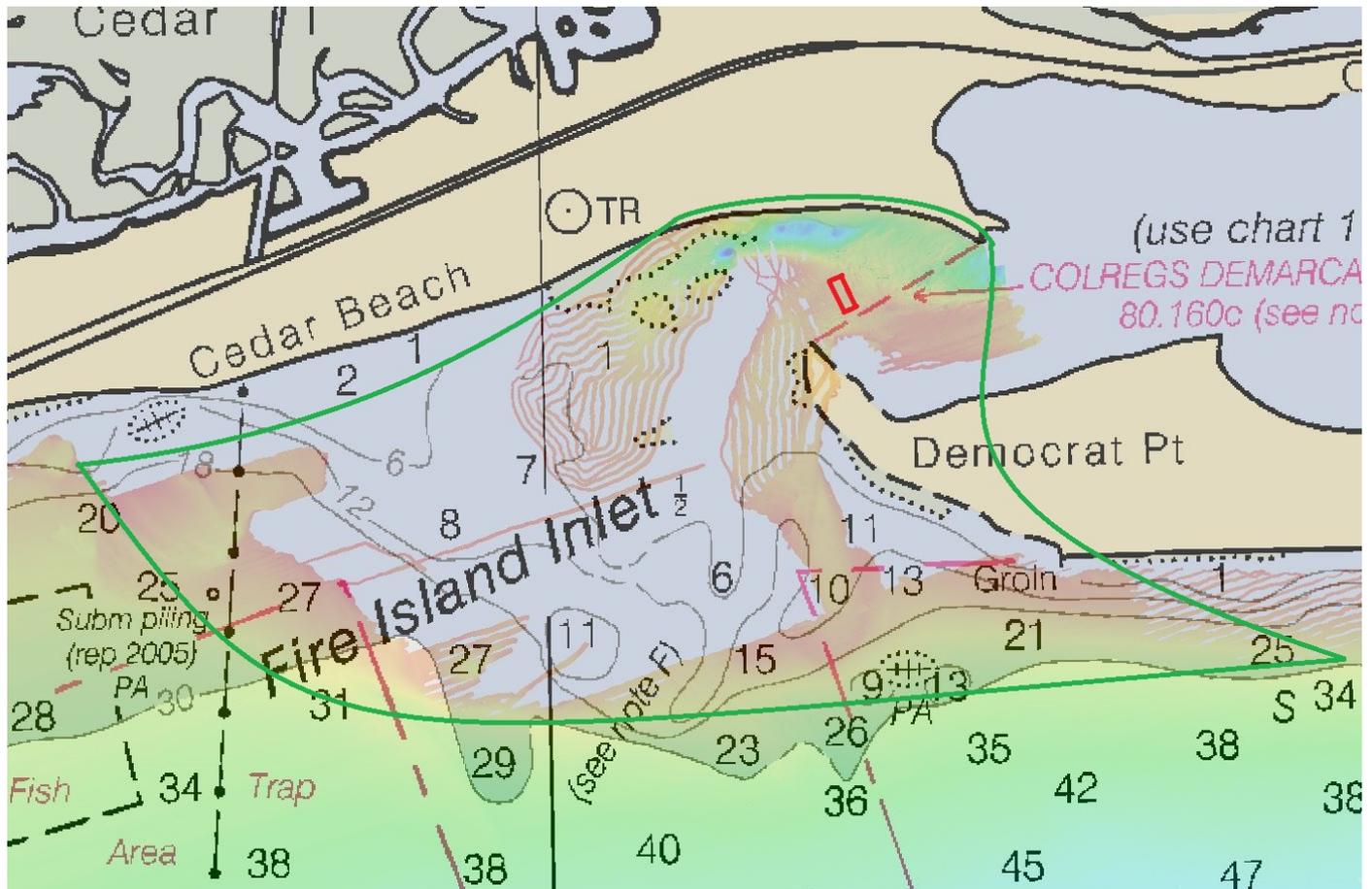


Figure 9: Chart 12326 overlain with bathy and a red box highlighting the area of shifting seabed shown in the previous two figures. The area enclosed in the green shape encompasses the inlet area where the shifts in sand features will be most evident in the data.

The area in the vicinity of Fire Island Inlet is known to be dynamic and is addressed with a chart note. The data acquired during this survey is adequate for charting as it is an accurate snapshot of the seafloor at the time of survey.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: 4 hours

A Sea-Bird CTD was used every 2-4 hours depending on variation in the surface sound velocity. As per the HSSD casts were taken if the surface sound velocity changed by more than 2 m/s. Two Sea-Bird CTDs were used aboard the survey vessel, an SBE 19 and SBE 19+.

Sound Velocity was more dynamic during the summer months resulting in more frequent casts and a slightly higher SVP uncertainty.

B.2.8 Coverage Equipment and Methods

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

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

The following calibrations were conducted after the initial system calibration discussed in the DAPR:

| Calibration Type | Date | Reason |
|------------------|------------|---|
| MBES | 2013-10-02 | Vessel ran sensor aground on Sand Bar. |
| MBES | 2013-10-06 | Vessel ran sensor aground on Sand Bar. |
| MBES | 2013-10-15 | Vessel ran sensor aground on Sand Bar. |
| MBES | 2013-10-18 | Vessel ran sensor aground on Sand Bar. |
| MBES | 2013-11-05 | Vessel ran sensor aground on Sand Bar. |
| MBES | 2013-11-11 | Vessel ran sensor hard aground on Sand Bar. |
| MBES | 2014-01-04 | Vessel ran sensor aground on Sand Bar. |

Table 8: Calibrations not discussed in the DAPR.

Multiple calibration patch tests were conducted for the MBES system after the initial calibration. These were conducted to account for small shifts in the mounting flange. No resulting issues were found to adversely affect the data.

B.4 Backscatter

Backscatter was converted to HDCS file format and is included with the data submitted to the Branch.

The hydrographer has not submitted backscatter files for processing into a mosaic. The R2Sonic unit used for the survey area is not supported by the software platform used to mosaic backscatter data.

B.5 Data Processing

B.5.1 Software Updates

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

The following Feature Object Catalog was used: 5.2

No software updates were implemented since the DAPR.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

| Surface Name | Surface Type | Resolution | Depth Range | Surface Parameter | Purpose |
|-----------------------|--------------|------------|----------------------|-------------------|------------------|
| H12603_A_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_B_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_C_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_D_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_E_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_F_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_G_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_H_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_I_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |

| Surface Name | Surface Type | Resolution | Depth Range | Surface Parameter | Purpose |
|-----------------------|--------------|------------|----------------------|-------------------|------------------|
| H12603_J_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_K_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_L_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_M_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_N_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_O_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_P_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_Q_MB_50cm_MLLW | CUBE | 0.5 meters | 0 meters - 23 meters | NOAA_0.5m | Object Detection |
| H12603_SSS_1m_100%_A | SSS Mosaic | 1 meters | 0 meters - 23 meters | N/A | 100% SSS |
| H12603_SSS_1m_100%_B | SSS Mosaic | 1 meters | 0 meters - 23 meters | N/A | 100% SSS |

Table 9: Submitted Surfaces

As per the project instructions a 1m SSS mosaic resolution was used. The 200% SSS coverage was split into 100% coverage mosaics. The MBES data was gridded at 0.5 meters in water depths less than 20 meters. There were minimal water depths between 18-40m so no 2m grids were created. Multiple 50cm surfaces were created in lieu of one large surface to reduce the file size and allow for quicker localized surface loading.

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR and in Appendix IV of this report.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

| Station Name | Station ID |
|--------------|------------|
| Sandy Hook | 8531680 |
| Newport | 8452660 |

Table 10: NWLON Tide Stations

| File Name | Status |
|-------------|-------------------|
| 8531680.tid | Verified Observed |
| 8452660.tid | Verified Observed |

Table 11: Water Level Files (.tid)

| File Name | Status |
|---------------------------|--------|
| C331KR2013CORP_Edited.zdf | Final |

Table 12: Tide Correctors (.zdf or .tc)

The Zoning files delivered for use by NOS were in need of slight adjustments in areas where the survey area extended past the zones supplied. These adjustments were discussed with the COR and were only on the magnitude of tens of meters. All adjusted areas were QC'd for tidal discrepancies and no adverse effects were found.

See attached Validation of Zoning Note dated July 16, 2014

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83) . Data were acquired in WGS84, as shown in the HVF, but were converted to NAD83 for processing and delivery. See DAPR A.3 and B.1 .

The projection used for this project is NAD83 .

The following DGPS Stations were used for horizontal control:

| DGPS Stations |
|----------------------------------|
| Moriches, Broadcast Site ID: 803 |

Table 13: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

During office review, it was noted that the field chart comparison did not adequately address the largest scale RNCs affected by the survey. The following is a summary of a comparison conducted by an office reviewer:

Survey H12603 was compared to Chart 12352_5, Edition 34, ND 05/02/2015. Within the limits of H12603, surveyed depths generally agree within 2 feet of charted depths. Depth curves generated based on the survey data show a slightly shoaler trend when compared with charted curves. Also of note, a charted pipeline was not seen in either the multibeam or sidescan data and a charted obstruction that looks like pier ruins with a least depth of 4 feet no longer exists. All that was identified in the multibeam and sidescan data was a line of ruined piles near the sewer outfall.

Survey H12603 was compared to Chart 12352_3, Edition 34, ND 05/02/2015. With the exception of Fire Island Inlet, surveyed depths from H12603 generally agree within 2 feet of charted depths. Depth curves generated based on the survey data show a slightly shoaler trend when compared with charted curves. As covered by a chart note, Fire Island Inlet is an extremely dynamic area, therefore the surveyed depths and curves within this area showed very little agreement with charted depths and curves as expected. Also of note, a charted wreck ED, a charted submerged pile PA and a charted pipeline were not seen in either the multibeam or sidescan data.

Survey H12603 was compared to Chart 12326, Edition 52, ND 05/02/2015. Within the limits of H12603, surveyed depths generally agree within 3 feet of charted depths. Depth curves generated based on the survey data also show good agreement with charted curves.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

| Chart | Scale | Edition | Edition Date | LNM Date | NM Date |
|-------|---------|---------|--------------|------------|------------|
| 12352 | 1:40000 | 34 | 09/2012 | 07/16/2014 | 07/16/2014 |
| 12326 | 1:80000 | 51 | 04/2009 | 07/16/2014 | 07/16/2014 |

Table 14: Largest Scale Raster Charts

12352

Refer to the discussion for chart 12326.

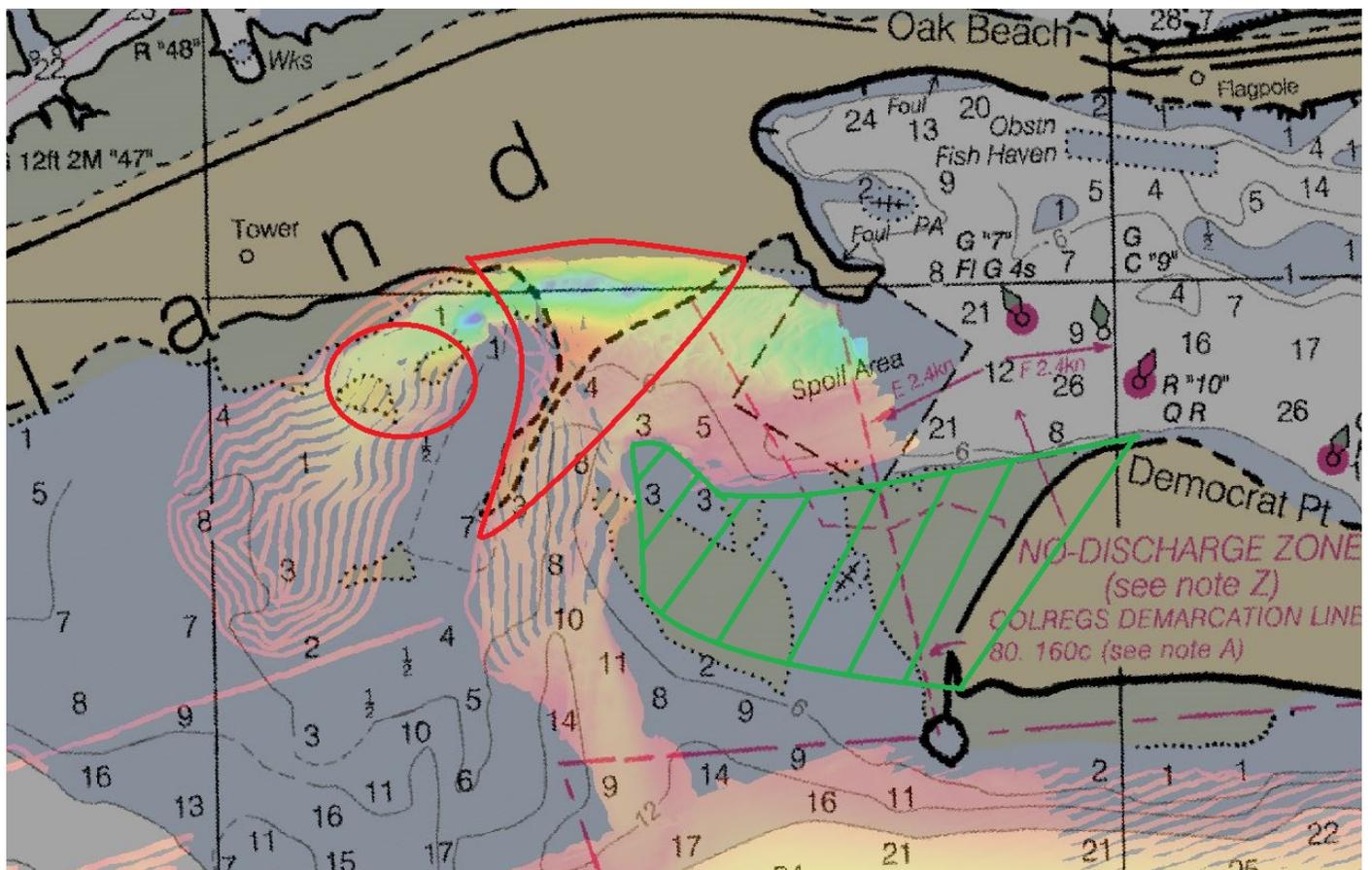


Figure 10: MBES data overlaid on Chart 12352. Areas in Red highlight shore/foul areas that are no longer present. Areas in Green portray current land mass.

12326

H12603 survey data was compared to Raster Chart 12352 and 12326. In general, the chart and survey depths match well. The areas that have shoaled or are constantly shifting are discussed in the section labeled Shoal and Hazardous Features. An Army Corps of Engineers dredge worked the inlet during the fall and winter months of 2013-2014. A new inlet channel was dredged and marked with uncharted buoys, refer to section D.1.8 for more information on the new Fire Island inlet channel. Refer to section D.2.3 for additional information on the uncharted ATONs. There were drastic shifts in the shoreline west of the inlet if compared to chart 12352 however the shoreline is accurately represented in chart 12326. A few foul areas charted in the inlet on RNC 12326 now have surveyed depths up to 20m.

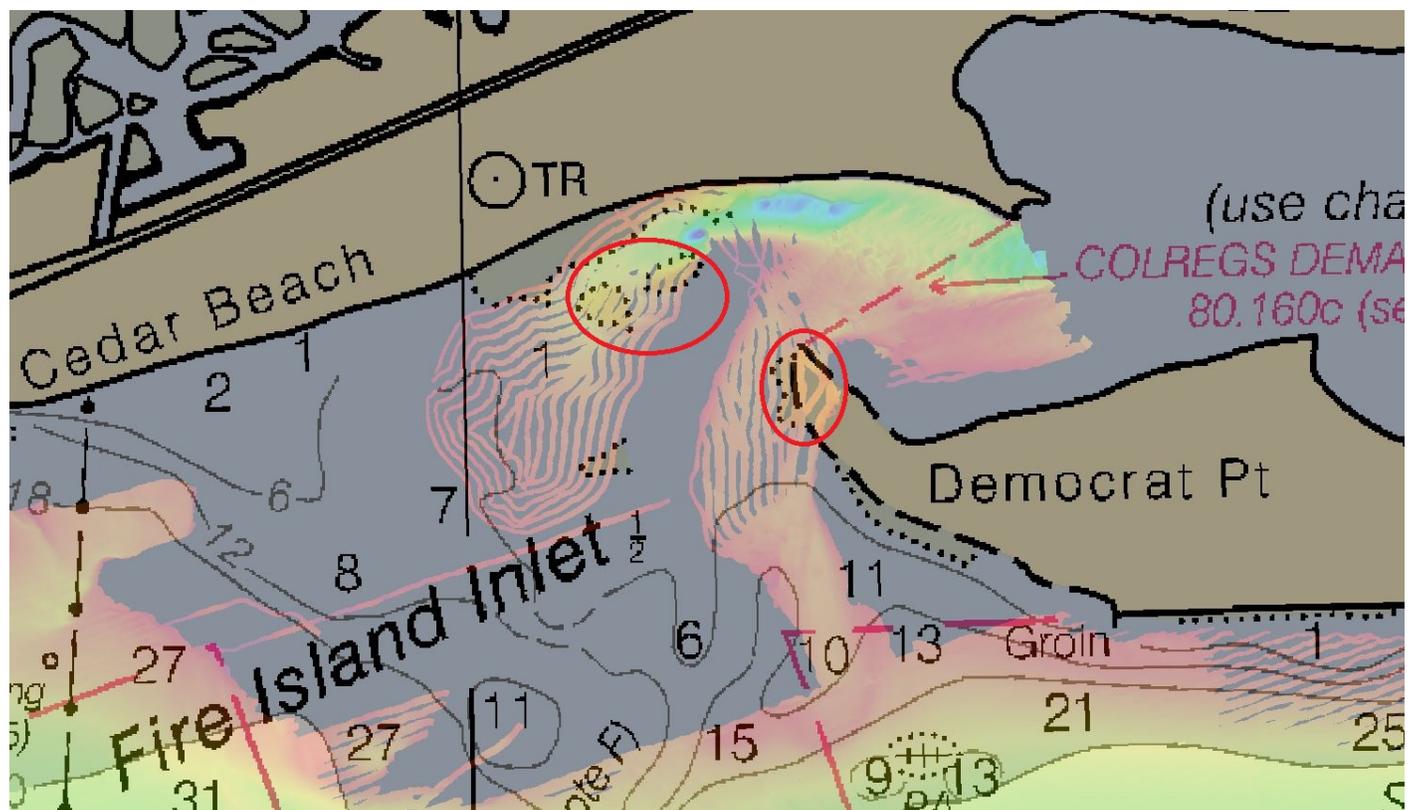


Figure 11: MBES data overlaid on Chart 12326. Areas in Red highlight shore/foul areas that are no longer present.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

| ENC | Scale | Edition | Update Application Date | Issue Date | Preliminary? |
|----------|---------|---------|-------------------------|------------|--------------|
| US5NY53M | 1:20000 | 10 | 12/05/2012 | 03/27/2013 | NO |
| US5NY52M | 1:40000 | 10 | 12/27/2012 | 03/12/2013 | NO |
| US4NY1BM | 1:80000 | 2 | 12/04/2012 | 01/24/2013 | NO |

Table 15: Largest Scale ENC's

US5NY53M

H12603 survey data was compared to Electronic Chart US5NY53M. Results were very similar to the above comparisons with Raster Chart 12352. See discussion for chart 12352 for chart comparison similar to chart US5NY53M.

US5NY52M

H12603 survey data was compared to Electronic Chart US5NY52M. Results were very similar to the above comparisons with Raster Chart 12352. See discussion for chart 12352 for chart comparison similar to chart US5NY52M.

US4NY1BM

H12603 survey data was compared to Electronic Chart US4NY1BM. Results were very similar to the above comparisons with Raster Chart 12326. See discussion for chart 12326 for chart comparison similar to chart US4NY1BM.

D.1.3 AWOIS Items

Four AWOIS items were investigated: 1660, 10448, 15115 and 15116.

A portion of AWOIS item 15113's search radius was included in the H12603 survey sheet. This area was fully investigated as well. The search radius for item 1660 contained a large wreck as described in the information received from NOS. The search radius for item 10448 contained no significant features, however there was one contact found within the search radius that was only seen in the SSS data and was possibly noise from the water column or cabling. The search radius for item 15115 contained two significant features and 3 insignificant features. One of these significant features was a sunken channel buoy, the other may be debris from a wreck. The search radius for item 15116 contained no significant features however four features were found within the search radius. Three of these features appeared linear and could

potentially have been a vertical pile at one time. The search radius for item 15113 contained 8 insignificant features and one significant feature in sheet H12603. The significant feature appears to be hull wreckage as was delivered on 10/08/2013 as a DTON and accepted.

See attached Feature Report for the disposition of each AWOIS item.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

Five charted features were investigated that were not assigned as AWOIS. An offshore fish haven was not found to exist. Two wrecks were found to exist as near to the charted location. One sewer outfall was found to exist as charted. One wreck near the shoreline of Jones Beach and within the search radius of AWOIS item 15116 was not found to exist. The areas surrounding this wreck was unsurveyable due to shoal depths and breaking seas however a visual inspection of the area showed no signs of wreckage.

The fish haven was not adequately addressed by the survey and has been recommended to be retained as charted.

D.1.6 Uncharted Features

H12603 did not contain a large number of uncharted features. Only seven significant features were found that were not associated with either an AWOIS radius, charted feature or a fish haven. One feature appeared to be the hull of a sailboat and was submitted as a DTON. Two obstructions appeared to be portions of a crane boom and were also submitted as DTONS. Two wrecks were located near to shore and not far from AWOIS item 1685 however were not a danger to navigation. The remaining 2 features appeared to be debris and posed no navigational threat either.

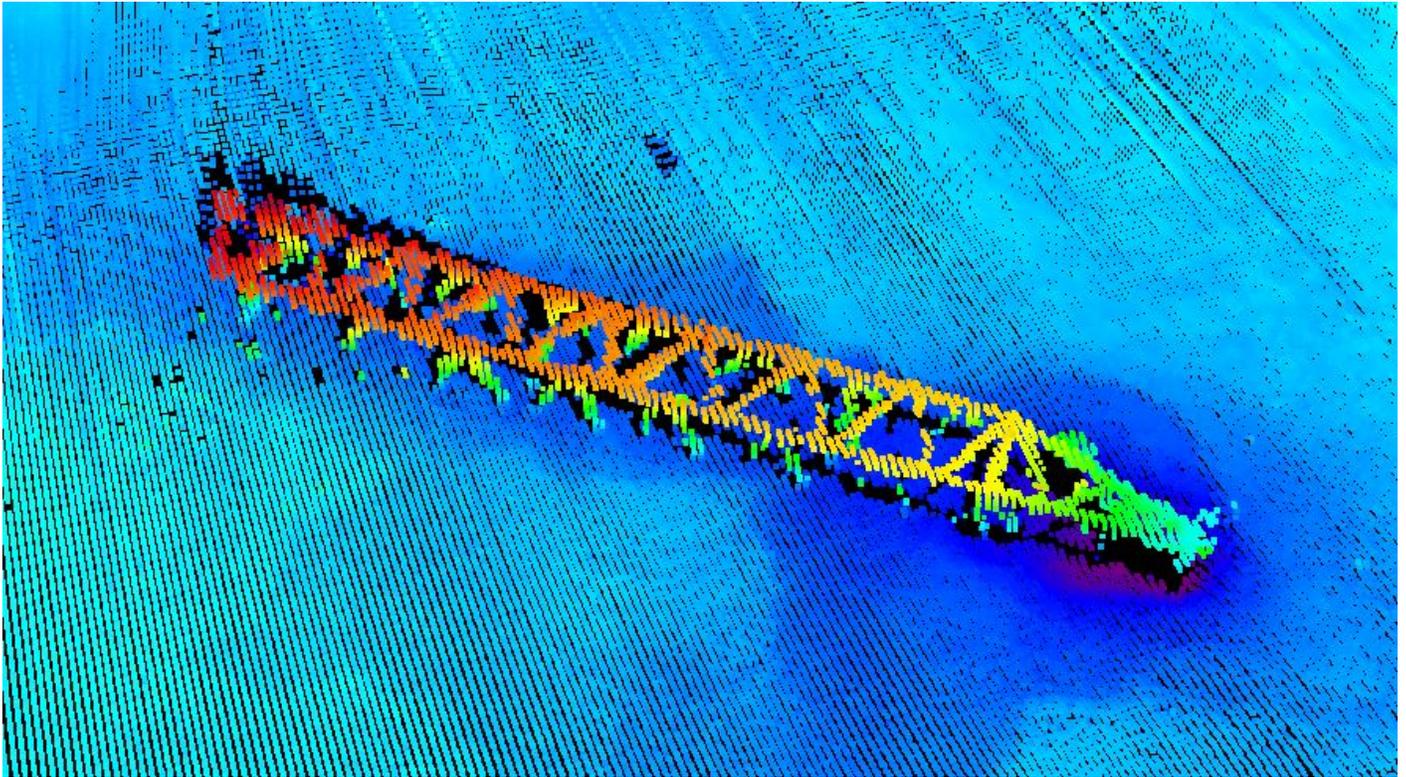


Figure 12: MBES image showing the obstructions that appeared to be portions of a crane boom.

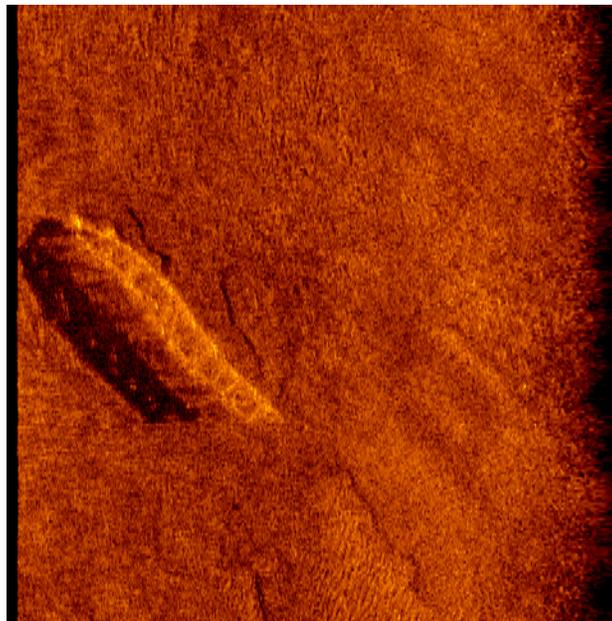


Figure 13: SSS image showing the obstructions that appeared to be portions of a crane boom.
The discussion refers to AWOIS 1685, which does not exist within the limits of this survey.

D.1.7 Dangers to Navigation

Danger to Navigation Reports are included in Appendix I of this report. Three DTONs were submitted from within the H12603 sheet bounds. One of the DTONs submitted was submitted on 10/8/2013 with sheet H12600 as it was originally thought to be within that sheet's boundaries (refer to section A.4 Survey Coverage of this report). The other two DTONs were both submitted on 6/17/14. All feature were accepted as DTONs.

All submitted DTONs have been applied to the latest charts. See attached DTON report.

D.1.8 Shoal and Hazardous Features

In order to investigate shoaling areas and compare to charted depths a grid was overlaid on raster charts 12352 and 12326. This allowed the area to be compared visually and easily obtain depth value differences with a high level of accuracy. Since chart 12352 differed vastly in the shoreline/inlet area (refer to D.1 Chart Comparison) this discussion will be using RNC 12326. The area surrounding the inlet contains shifting sand bars where breaking seas and shoal depths cause navigational hazards. Much of this area was unsurveyable due to these hazards.

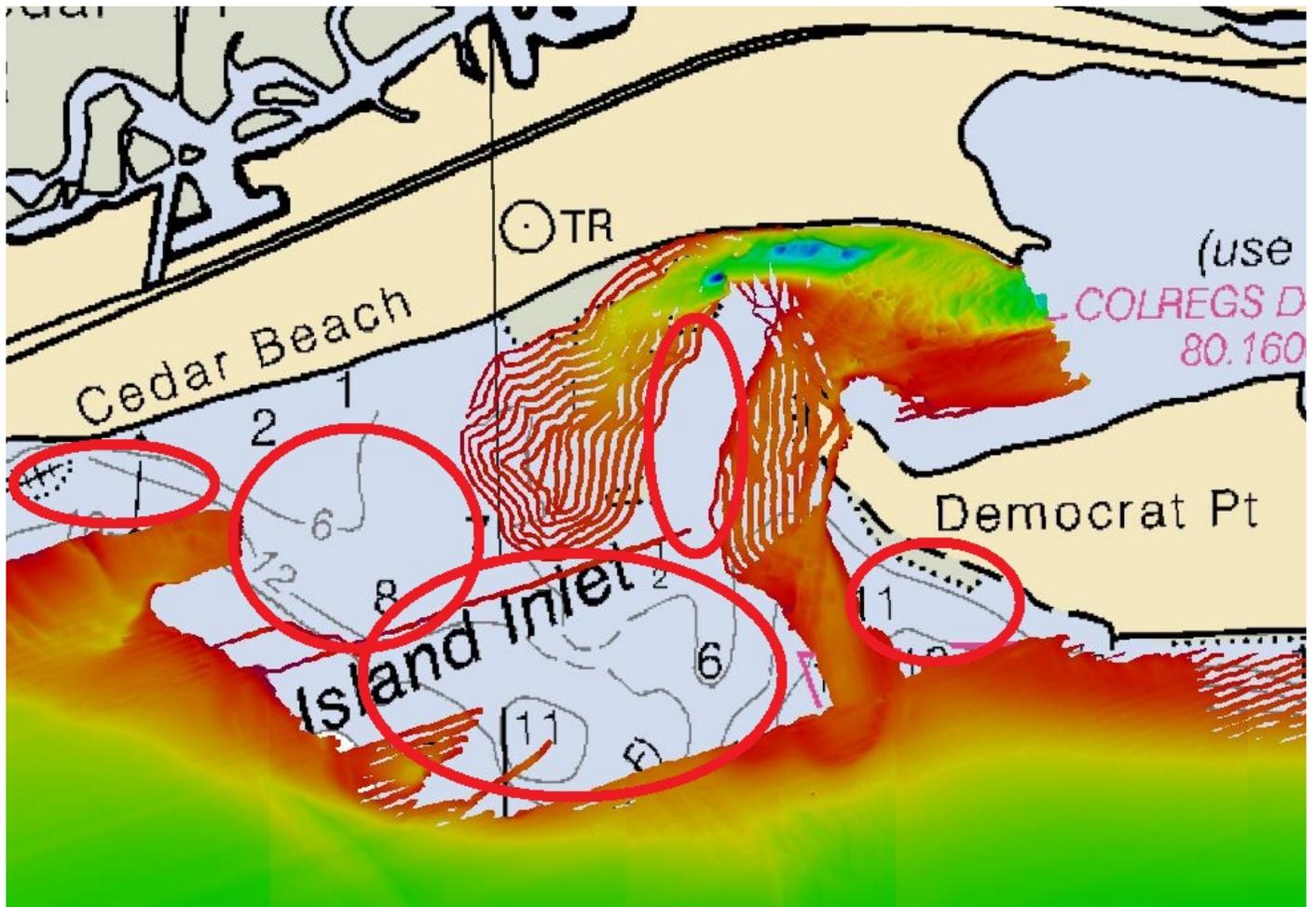


Figure 14: Overhead image of the Fire Island Inlet in sheet H12603. The areas circled in red highlights the locations of dangerous shoals and breaking seas offshore of the inlet.

D.1.9 Channels

There are no prominent channels in sheet H12603 besides the channel into the inlet. The inlet is not currently charted correctly having just been dredged. The new channel leading through the Fire Island inlet has a least depth of approximately 3 meters mid channel and is roughly 2.4 km long.

D.1.10 Bottom Samples

There were 21 required bottom samples in this sheet. We successfully collected grab samples at each location.

One bottom sample location yielded 3 unsuccessful attempts.

D.2 Additional Results

D.2.1 Shoreline

A limited shoreline investigation was completed as per the project instructions. The majority of the shoreline associated with the survey sheet remained as charted with the exception of the area surrounding the inlet. The western shore of the inlet is vastly different than charted on RNC 12352 and ENC US5NY52M. Refer to section D.1 Chart Comparison of this report.

Sheet H12603 contains areas where the NALL requirements were not achieved. All areas that were not satisfied were due to safety concerns with swell or sand bar impacts on the vessel. The sonar was grounded several times, so the crew became more cautious of shallow water as the survey continued. In some areas, however, survey coverage exceeded NALL because water depths were deeper than previously charted due to Sandy.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

All charted ATONs were found in place and serving their intended purpose. Uncharted ATONs were positioned marking a newly dredged channel through the Fire Island Inlet and are included in the final feature file included in the digital deliverables.

According to a chart note, buoys in Fire Island Inlet are not charted because they are frequently repositioned due to the extremely dynamic nature of the area. At the time of this survey, the buoys were found to be in agreement with the USCG Light List. The final feature file is not included with this report.

D.2.4 Overhead Features

Overhead features do not exist for this survey.

D.2.5 Submarine Features

Sheet H12603 contained two charted sewer outfalls. These are represented in the final feature file included in the digital deliverables.

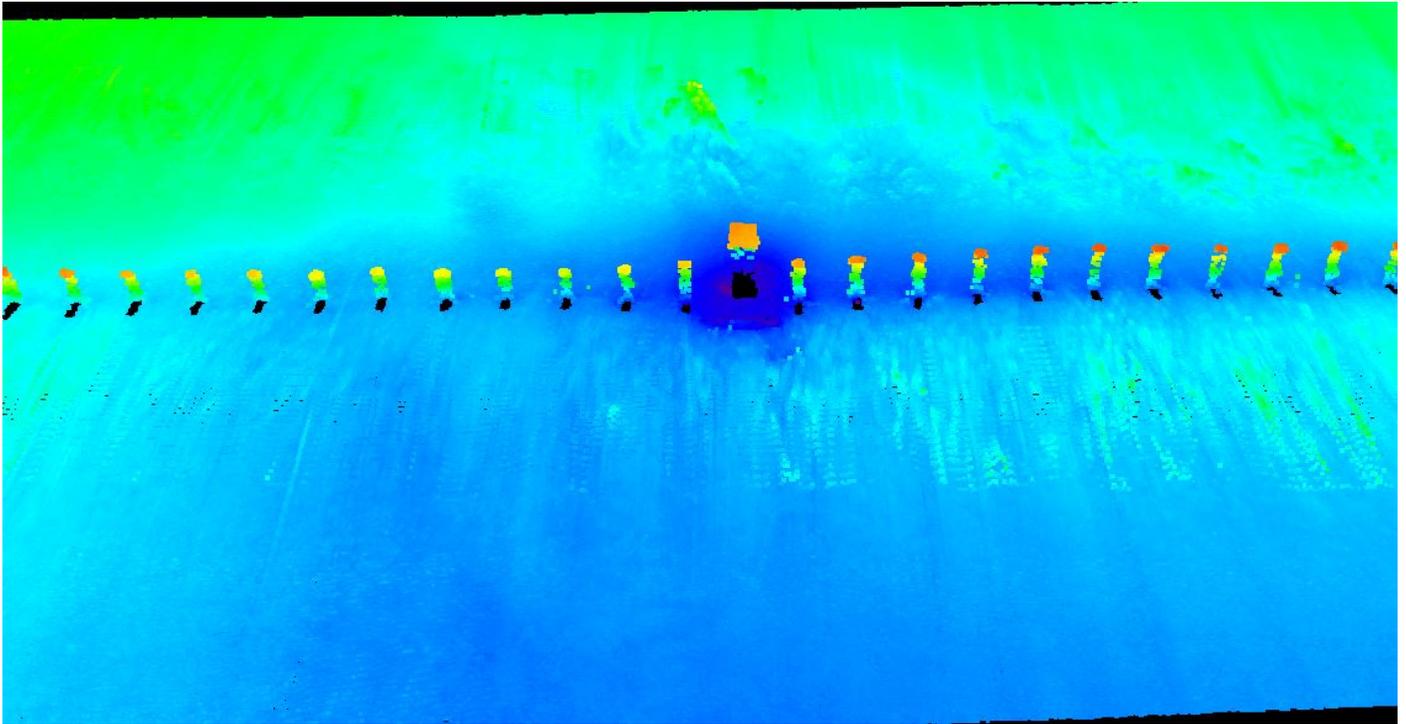


Figure 15: MBES Image showing the southern end of the western most charted outfall.

Only remnants at the southern end of the westernmost sewer outfall were identified in the survey. The other pipelines were not seen in the multibeam or sidescan data. The final feature file is not included with this report.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

Features that we identified as significant and not pre-existing were developed and the LEAST depth sounding was used as the designated sounding. Additionally, see previous sections D.1.4 "Charted Features" and D.1.5 "Uncharted Features."

D.2.9 Construction and Dredging

Extensive Dredging took place in the Fire Island Inlet during survey operations. The channel immediately south of the Inlet was re-surveyed once survey operations resumed in the summer months of 2014 after the dredge had vacated the area.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

| Approver Name | Approver Title | Approval Date | Signature |
|---------------------|-----------------|---------------|--|
| Ransom C. White III | Chief of Party | 11/20/2014 |  |
| Curtis Clement | Project Manager | 11/20/2014 |  |

F. Table of Acronyms

| Acronym | Definition |
|----------------|---|
| AHB | Atlantic Hydrographic Branch |
| AST | Assistant Survey Technician |
| ATON | Aid to Navigation |
| AWOIS | Automated Wreck and Obstruction Information System |
| BAG | Bathymetric Attributed Grid |
| BASE | Bathymetry Associated with Statistical Error |
| CO | Commanding Officer |
| CO-OPS | Center for Operational Products and Services |
| CORS | Continually Operating Reference Station |
| CTD | Conductivity Temperature Depth |
| CEF | Chart Evaluation File |
| CSF | Composite Source File |
| CST | Chief Survey Technician |
| CUBE | Combined Uncertainty and Bathymetry Estimator |
| DAPR | Data Acquisition and Processing Report |
| DGPS | Differential Global Positioning System |
| DP | Detached Position |
| DR | Descriptive Report |
| DTON | Danger to Navigation |
| ENC | Electronic Navigational Chart |
| ERS | Ellipsoidal Referenced Survey |
| ERZT | Ellipsoidally Referenced Zoned Tides |
| FFF | Final Feature File |
| FOO | Field Operations Officer |
| FPM | Field Procedures Manual |
| GAMS | GPS Azimuth Measurement Subsystem |
| GC | Geographic Cell |
| GPS | Global Positioning System |
| HIPS | Hydrographic Information Processing System |
| HSD | Hydrographic Surveys Division |
| HSSD | Hydrographic Survey Specifications and Deliverables |

| Acronym | Definition |
|----------------|--|
| HSTP | Hydrographic Systems Technology Programs |
| HSX | Hypack Hysweep File Format |
| HTD | Hydrographic Surveys Technical Directive |
| HVCR | Horizontal and Vertical Control Report |
| HVF | HIPS Vessel File |
| IHO | International Hydrographic Organization |
| IMU | Inertial Motion Unit |
| ITRF | International Terrestrial Reference Frame |
| LNM | Local Notice to Mariners |
| LNM | Linear Nautical Miles |
| MCD | Marine Chart Division |
| MHW | Mean High Water |
| MLLW | Mean Lower Low Water |
| NAD 83 | North American Datum of 1983 |
| NAIP | National Agriculture and Imagery Program |
| NALL | Navigable Area Limit Line |
| NM | Notice to Mariners |
| NMEA | National Marine Electronics Association |
| NOAA | National Oceanic and Atmospheric Administration |
| NOS | National Ocean Service |
| NRT | Navigation Response Team |
| NSD | Navigation Services Division |
| OCS | Office of Coast Survey |
| OMAO | Office of Marine and Aviation Operations (NOAA) |
| OPS | Operations Branch |
| MBES | Multibeam Echosounder |
| NWLON | National Water Level Observation Network |
| PDBS | Phase Differencing Bathymetric Sonar |
| PHB | Pacific Hydrographic Branch |
| POS/MV | Position and Orientation System for Marine Vessels |
| PPK | Post Processed Kinematic |
| PPP | Precise Point Positioning |
| PPS | Pulse per second |

| Acronym | Definition |
|----------------|--|
| PRF | Project Reference File |
| PS | Physical Scientist |
| PST | Physical Science Technician |
| RNC | Raster Navigational Chart |
| RTK | Real Time Kinematic |
| SBES | Singlebeam Echosounder |
| SBET | Smooth Best Estimate and Trajectory |
| SNM | Square Nautical Miles |
| SSS | Side Scan Sonar |
| ST | Survey Technician |
| SVP | Sound Velocity Profiler |
| TCARI | Tidal Constituent And Residual Interpolation |
| TPE | Total Propagated Error |
| TPU | Topside Processing Unit |
| USACE | United States Army Corps of Engineers |
| USCG | United States Coast Guard |
| UTM | Universal Transverse Mercator |
| XO | Executive Officer |
| ZDA | Global Positioning System timing message |
| ZDF | Zone Definition File |



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Center for Operational Oceanographic Products and Services
Silver Spring, MD 20910

Date: July 16, 2014

TO: LCDR Michael Gonsalves
Chief, Operations Branch
Hydrographic Services Division
Office of Coast Survey

FROM: Gerald Hovis
Chief, Products and Services Branch
Oceanographic Division
CO-OPS

HOVIS.GERALD.THOMAS.1365860250
LD.THOMAS.
1365860250

Digitally signed by
HOVIS.GERALD.THOMAS.1365860250
0
DN: c=US, o=U.S. Government,
ou=DoD, ou=PKI, ou=OTHER,
cn=HOVIS.GERALD.THOMAS.1365860250
Date: 2014.07.17 10:03:37 -04'00'

RE: Validation of Zoning supplied in support of OPR-C331-KR-2013, Vicinity of Southern Long Island, NY

John Oswald & Associates (JOA) submitted discrete tidal zoning for validation by CO-OPS based on subordinate water level data collected at Fire Island (851-5186), Moriches Inlet (851-3398), Moriches Coast Guard Station (851-3388), Shinnecock Inlet (851-2354), and Ponquogue Point (851-2451). CO-OPS finds the water level data as well as discrete zoning submitted in support of OPR-C331-KR-2013 to be valid and meet the requirements under NOS Specifications and Deliverables.

CO-OPS bases its validation of the contractor supplied zoning on the following reasons:

1. JOA's method to develop final zoning geometry and tide correctors is reasonable
2. The estimate of total propagated error within the survey area using JOA's final tidal zoning and provided zoning station water level data (BMPGs and Seaview Ferry (851-4779)) is within 0.26 meters.

CC:
Jeff Ferguson
Patrick Burke
Michael Brown
Matthew Jaskoski
Castle "Gene" Parker
LCDR Ben Evans
Laura Rear McLaughlin
Corey Allen
Cristina Urizar
Grant Froelich
Colleen Fanelli



H12603 Feature Report

Registry Number: H12603
State: New York
Locality: Vicinity of Southern Long Island
Sub-locality: Vicinity South of Jones Beach
Project Number: OPR-C331-KR-13
Survey Dates: 09/30/2013 - 06/23/2014

Charts Affected

| Number | Edition | Date | Scale (RNC) | RNC Correction(s)* |
|--------|---------|------------|-----------------------|--------------------|
| 12352 | 32nd | 12/01/2007 | 1:40,000 (12352_3) | [L]NTM: ? |
| 12326 | 50th | 05/01/2006 | 1:80,000 (12326_1) | [L]NTM: ? |
| 12300 | 47th | 05/01/2008 | 1:400,000 (12300_1) | [L]NTM: ? |
| 13006 | 34th | 05/01/2007 | 1:675,000 (13006_1) | [L]NTM: ? |
| 5161 | 13th | 10/01/2003 | 1:1,058,400 (5161_1) | [L]NTM: ? |
| 13003 | 49th | 04/01/2007 | 1:1,200,000 (13003_1) | [L]NTM: ? |

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

Features

| No. | Feature Type | Survey Depth | Survey Latitude | Survey Longitude |
|-----|--------------|--------------|-----------------|------------------|
| 1.1 | Wreck | [None] | 40° 34' 59.8" N | 073° 23' 57.6" W |
| 1.2 | Wreck | [None] | 40° 37' 35.6" N | 073° 21' 13.6" W |
| 1.3 | Obstruction | [None] | 40° 37' 10.0" N | 073° 21' 02.7" W |
| 1.4 | Wreck | [None] | 40° 36' 58.4" N | 073° 18' 51.6" W |
| 2.1 | Wreck | 0.94 m | 40° 36' 21.6" N | 073° 25' 38.0" W |
| 2.2 | Wreck | 1.58 m | 40° 37' 07.1" N | 073° 17' 17.4" W |
| 3.1 | Obstruction | 7.47 m | 40° 35' 41.5" N | 073° 26' 28.4" W |
| 3.2 | Obstruction | 7.52 m | 40° 35' 40.2" N | 073° 26' 23.0" W |
| 3.3 | Obstruction | 9.20 m | 40° 37' 51.3" N | 073° 18' 36.5" W |

1 - Charted Features

1.1) US 0000312534 00001

Survey Summary

Survey Position: 40° 34' 59.8" N, 073° 23' 57.6" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2006-060.00:00:00.000 (03/01/2006)
Dataset: H12603_Feature_Report.000
FOID: US 0000312534 00001(02260004C4D60001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: SAR: There is no evidence of a WRECKS object at this location or in the vicinity

Hydrographer Recommendations

SAR: Delete this WRECK object

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
EXPSOU - 1:within the range of depth of the surrounding depth area
QUASOU - 2:depth unknown
SORDAT - 20060300
SORIND - US,US,graph,Chart 12352
STATUS - 18:existence doubtful
WATLEV - 3:always under water/submerged

Office Notes

Concur. AWOIS 1048.

1.2) US 0000312537 00001

Survey Summary

Survey Position: 40° 37' 35.6" N, 073° 21' 13.6" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2006-060.00:00:00.000 (03/01/2006)
Dataset: H12603_Feature_Report.000
FOID: US 0000312537 00001(02260004C4D90001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: SAR: This assigned object was not addressed by the hydrographer

Hydrographer Recommendations

SAR: Recommend retaining this WRECK, the hydrographer has not supplied any evidence to the contrary.

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
EXPSOU - 1:within the range of depth of the surrounding depth area
QUASOU - 2:depth unknown
SORDAT - 20060300
SORIND - US,US,graph,Chart 12352
WATLEV - 3:always under water/submerged

Office Notes

Concur.

1.3) US 0000312531 00001

Survey Summary

Survey Position: 40° 37' 10.0" N, 073° 21' 02.7" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 1981-001.01:01:01.001 (01/01/1981)
Dataset: H12603_Feature_Report.000
FOID: US 0000312531 00001(02260004C4D30001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

OBSTRN/remrks: SAR: No evidence of this reported piling can be seen at this location or its vicinity.

Hydrographer Recommendations

SAR: Delete charted OBSTRN

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 1:snag / stump
EXPSOU - 1:within the range of depth of the surrounding depth area
INFORM - Subm Piling Reported
QUASOU - 2:depth unknown
SORDAT - 20050000
SORIND - US,US,graph,Chart 12352
WATLEV - 3:always under water/submerged

Office Notes

Concur. AWOIS 15116.

1.4) US 0000312532 00001

Survey Summary

Survey Position: 40° 36' 58.4" N, 073° 18' 51.6" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312532 00001(02260004C4D40001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: SAR: There is no evidence of this WRECKS feature at this location or its vicinity.

Hydrographer Recommendations

SAR: Delete charted WRECKS object

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
EXPSOU - 1:within the range of depth of the surrounding depth area
QUASOU - 2:depth unknown
SORDAT - 20140623
SORIND - US,US,graph,Chart 12352
TECSOU - 3:found by multi-beam
WATLEV - 3:always under water/submerged

Office Notes

Concur. AWOIS 15115.

2 - New Features

2.1) US 0000312533 00001

Survey Summary

Survey Position: 40° 36' 21.6" N, 073° 25' 38.0" W
Least Depth: 0.94 m (= 3.10 ft = 0.517 fm = 0 fm 3.10 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312533 00001(02260004C4D50001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: SAR: Most reliable, least depth sounding at this position. Not able to confirm this is the least possible depth for the wreck, it is still possible the least depth has not been fully ensonified.

Hydrographer Recommendations

SAR: Update wreck to this location

Cartographically-Rounded Depth (Affected Charts):

3ft (12352_3, 12326_1)

0 ½fm (12300_1, 13006_1, 13003_1)

0.9m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
 EXPSOU - 2:shoaler than range of depth of the surrounding depth area
 INFORM - Significant Featured, AWOIS item# 1660. Large Wreck Near Shore, Concrete Pile sticking up above waterline mid wreck, 91 x 16m, 4.35m off bottom
 QUASOU - 2:depth unknown
 SORDAT - 20140623
 SORIND - US,US,graph,H12603
 TECSOU - 3:found by multi-beam
 VALSOU - 0.945 m
 WATLEV - 4:covers and uncovers

Office Notes

Concur with clarification. Chart wreck as visible, depth unknown. AWOIS 1660.

Feature Images

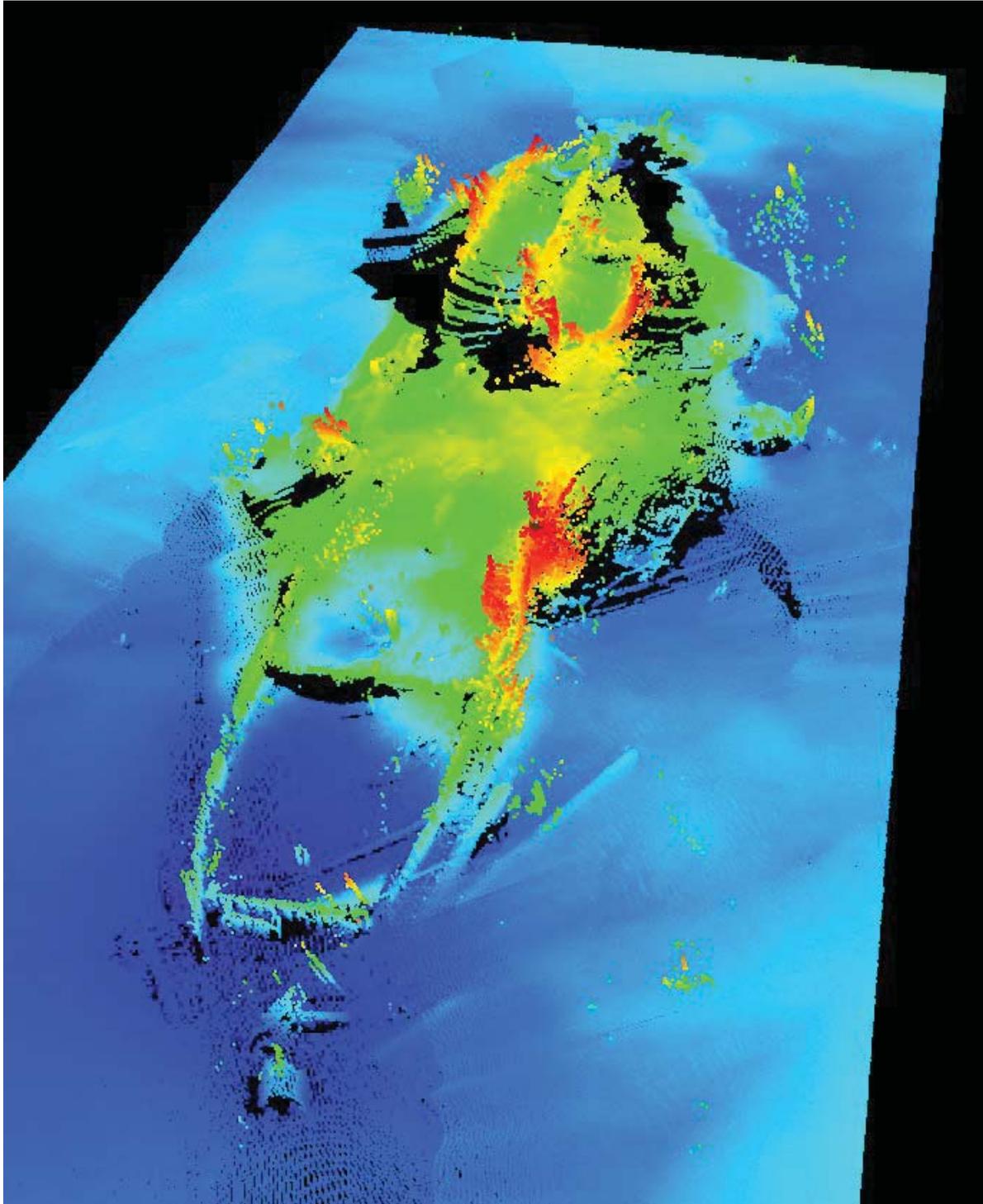


Figure 2.1.1

2.2) US 0000312536 00001

Survey Summary

Survey Position: 40° 37' 07.1" N, 073° 17' 17.4" W
Least Depth: 1.58 m (= 5.18 ft = 0.863 fm = 0 fm 5.18 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312536 00001(02260004C4D80001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: SAR: Navigationally significant feature, has the appearance of a portion of riuned vessel

Hydrographer Recommendations

SAR: Chart new WRECK

Cartographically-Rounded Depth (Affected Charts):

5ft (12352_3, 12326_1)

0 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)

1.6m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
 EXPSOU - 1:within the range of depth of the surrounding depth area
 INFORM - Significant Feature, Wreckage near charted wreck, portion of a hull with a significant vertical protrusion, 5.9 x 7.4m, 2.13m off bottom
 OBJNAM - H12603_128_014
 QUASOU - 2:depth unknown
 SORDAT - 20140623
 SORIND - US,US,graph,H12603
 TECSOU - 2:found by side scan sonar
 VALSOU - 1.579 m

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart as least depth known.

Feature Images

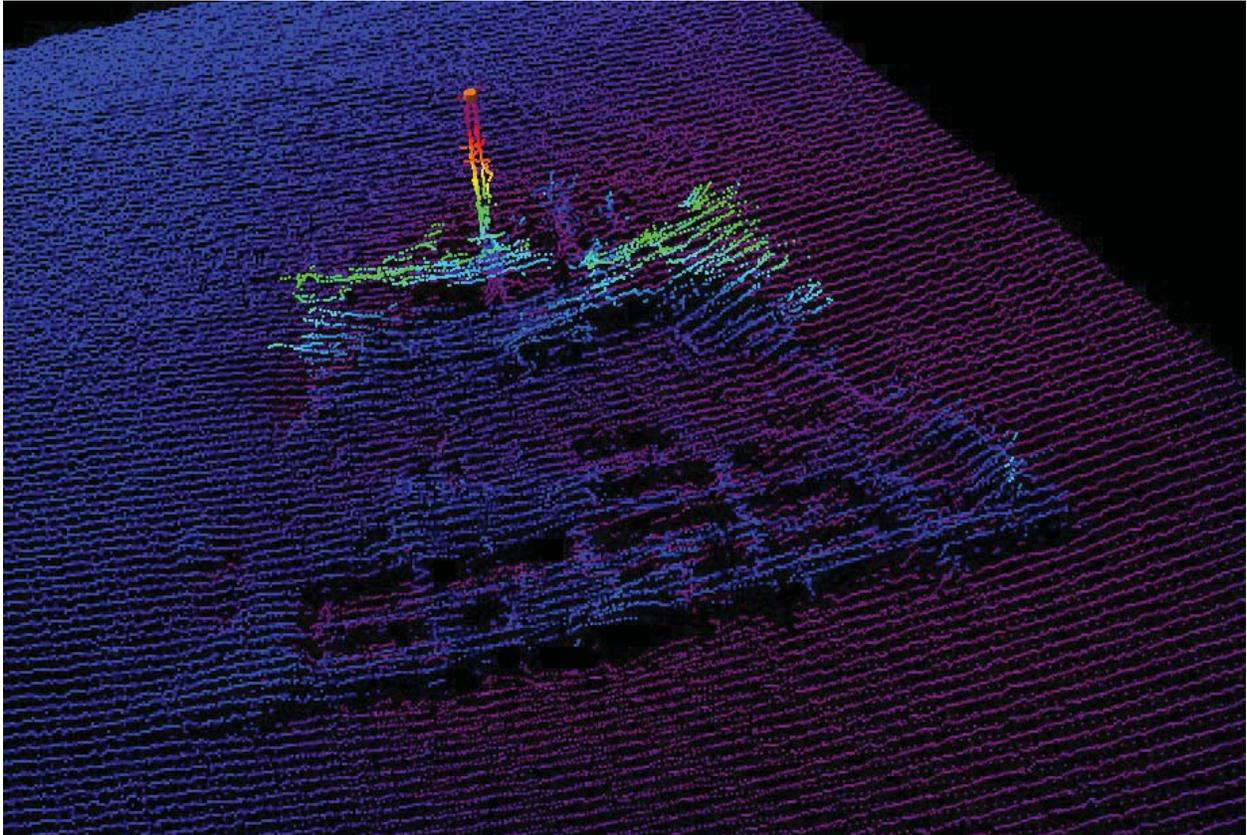


Figure 2.2.1

3 - Dangers To Navigation

3.1) US 0000312542 00001

DANGER TO NAVIGATION

Survey Summary

Survey Position: 40° 35' 41.5" N, 073° 26' 28.4" W
Least Depth: 7.47 m (= 24.52 ft = 4.087 fm = 4 fm 0.52 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312542 00001(02260004C4DE0001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

OBSTRN/remrks: SAR: This is a tower structure of some kind

Hydrographer Recommendations

SAR: Chart new OBSTRN in place of charted WRECK

Cartographically-Rounded Depth (Affected Charts):

24ft (12352_3, 12326_1)
 4fm (12300_1, 13006_1, 13003_1)
 7.4m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20140623
 SORIND - US,US,graph,H12603
 TECSOU - 3:found by multi-beam
 VALSOU - 7.474 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Combine with adjacent DTON into an obstruction area.

Feature Images



Figure 3.1.1

3.2) US 0000312544 00001

DANGER TO NAVIGATION

Survey Summary

Survey Position: 40° 35' 40.2" N, 073° 26' 23.0" W
Least Depth: 7.52 m (= 24.68 ft = 4.114 fm = 4 fm 0.68 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312544 00001(02260004C4E00001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

OBSTRN/remrks: SAR: This is a tower structure of some kind

Hydrographer Recommendations

SAR: Chart new OBSTRN in place of charted WRECK

Cartographically-Rounded Depth (Affected Charts):

24ft (12352_3, 12326_1)
 4fm (12300_1, 13006_1, 13003_1)
 7.5m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20140623
 SORIND - US,US,graph,H12603
 TECSOU - 3:found by multi-beam
 VALSOU - 7.523 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Combine with adjacent DTON into an obstruction area.

Feature Images

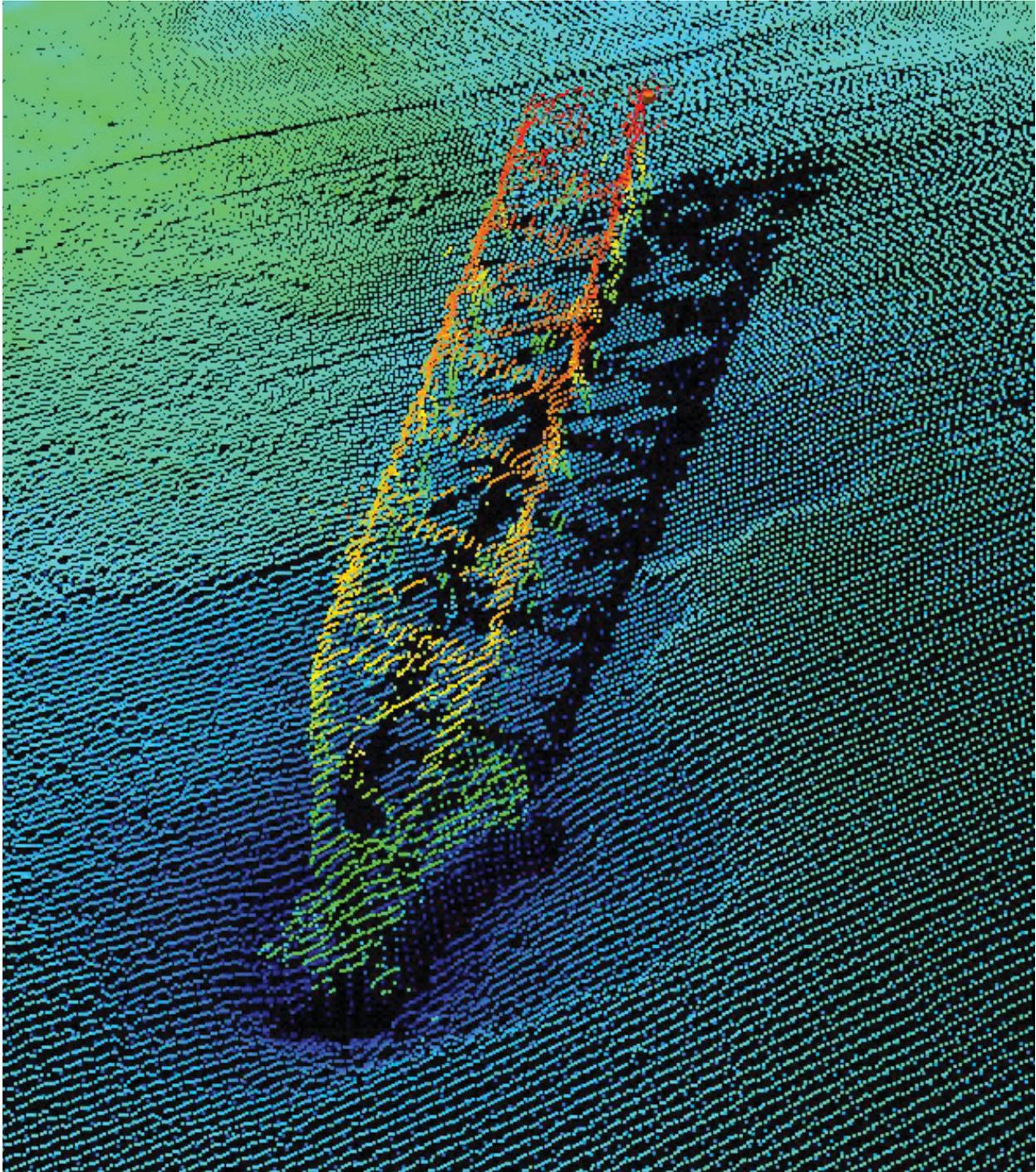


Figure 3.2.1

3.3) US 0000312543 00001

DANGER TO NAVIGATION

Survey Summary

Survey Position: 40° 37' 51.3" N, 073° 18' 36.5" W
Least Depth: 9.20 m (= 30.18 ft = 5.030 fm = 5 fm 0.18 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-174.00:00:00.000 (06/23/2014)
Dataset: H12603_Feature_Report.000
FOID: US 0000312543 00001(02260004C4DF0001)
Charts Affected: 12352_3, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

OBSTRN/remrks: SAR: The charted WRECK has been confirmed at this location, update depth. Probably not a wreck, given its shape.

Hydrographer Recommendations

SAR: Recommend update as OBSTRN, include least depth

Cartographically-Rounded Depth (Affected Charts):

30ft (12352_3, 12326_1)
 5fm (12300_1, 13006_1, 13003_1)
 9.2m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Significant Feature, Wreck, possible sailboat, 7 x 2.1m, 2m off bottom
 QUASOU - 6:least depth known
 SORDAT - 20140623
 SORIND - US,US,graph,H12603
 TECSOU - 3:found by multi-beam
 VALSOU - 9.198 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Located within search radius for AWOIS 15113.

Feature Images

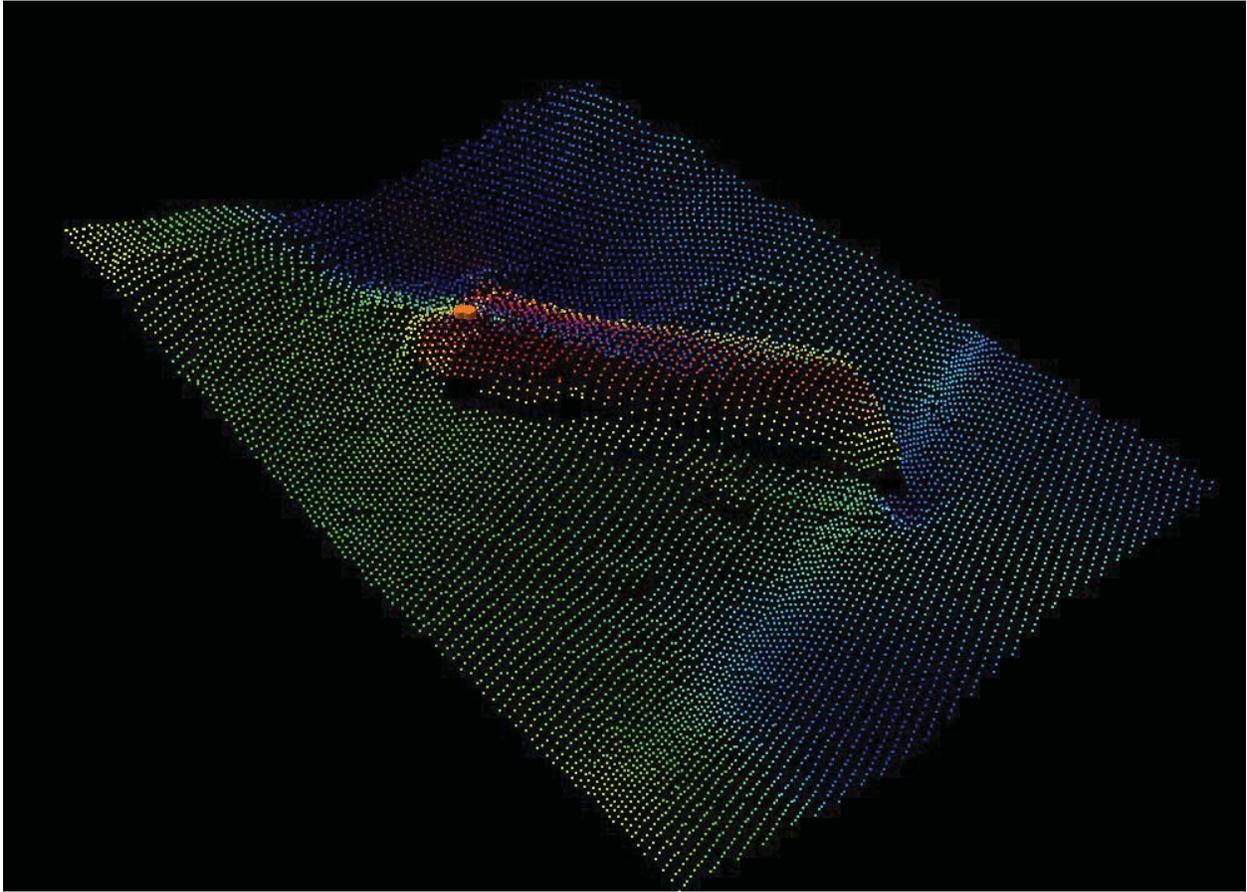


Figure 3.3.1

APPROVAL PAGE

H12603

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- H12603_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12603_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Approved: _____

Peter Holmberg

Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

CDR Benjamin K. Evans, NOAA

Chief, Pacific Hydrographic Branch