

H12510

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12510

LOCALITY

State(s): Connecticut

General Locality: North Shore of Long Island Sound

Sub-locality: Duck Island to Madison Reef

2014

CHIEF OF PARTY
LTJG Andrew Clos

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12510

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): **Connecticut**

General Locality: **North Shore of Long Island Sound**

Sub-Locality: **Duck Island to Madison Reef**

Scale: **10000**

Dates of Survey: **09/04/2014 to 11/06/2014**

Instructions Dated: **04/24/2014**

Project Number: **OPR-B370-NRT5-14**

Field Unit: **Navigation Response Team 5**

Chief of Party: **LTJG Andrew Clos**

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. Notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, 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 H12510

Project: OPR-B370-NRT5-14

Locality: North Shore of Long Island Sound

Sublocality: Duck Island to Madison Reef

Scale: 1:10000

September 2014 - November 2014

Navigation Response Team 5

Chief of Party: LTJG Andrew Clos

A. Area Surveyed

The survey area extends East/West along the coastline from Webster Point to Duck Island, and North/South extends from the coastline approximately 3 nautical miles into Long Island Sound.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
41° 16' 2.65" N 72° 34' 27.23" W	41° 12' 45" N 72° 28' 46.35" W

Table 1: Survey Limits

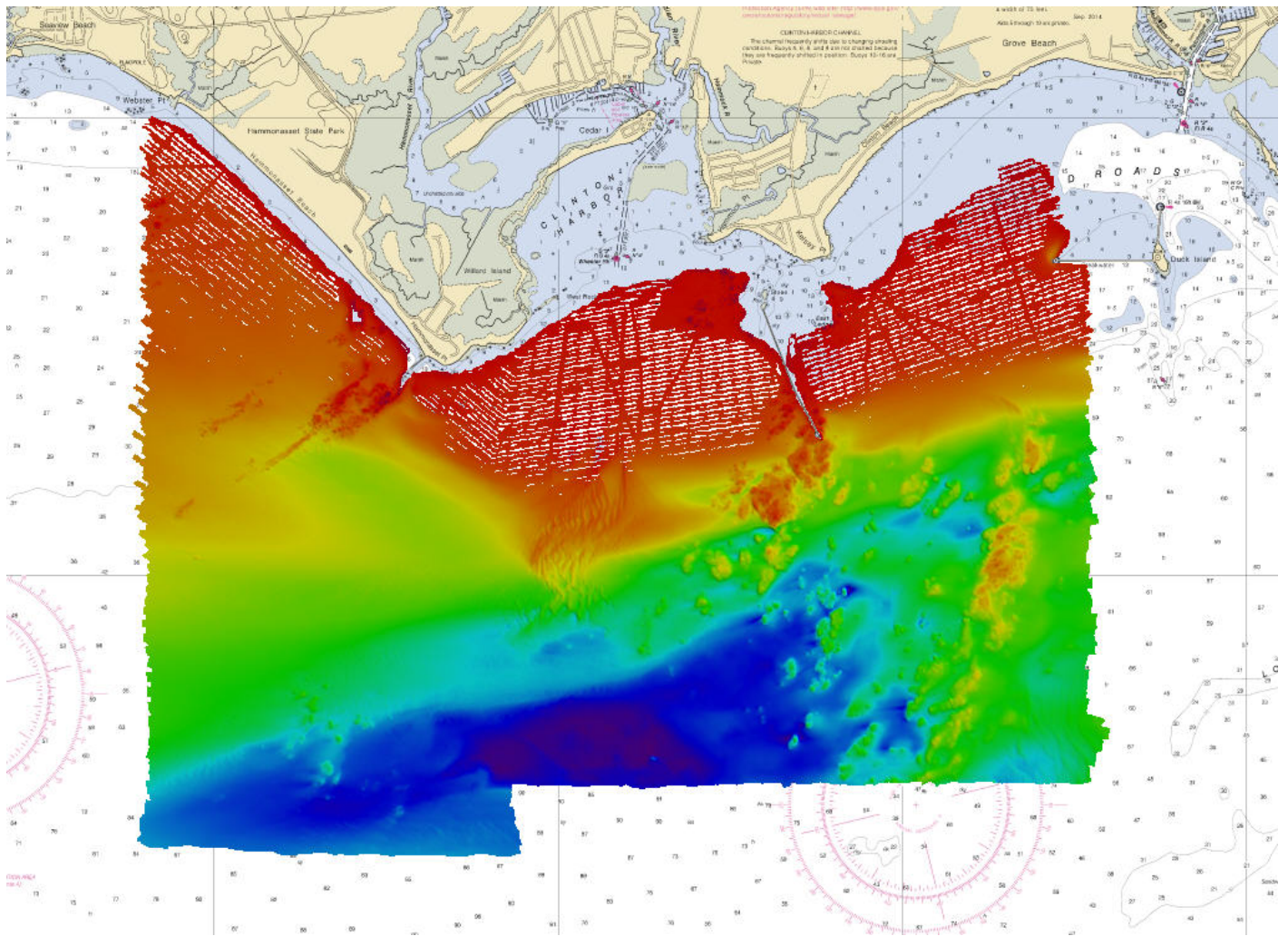


Figure 1: H12510 Survey Limits

Survey limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

Sheet limits for H12510 were revised. The correspondence is attached.

A.2 Survey Purpose

This project is being conducted in support of NOAA's Office of Coast Survey to provide contemporary hydrographic data in order to update the nautical charting products and reduce the survey backlog within the area. In addition, data from this project will support the Long Island Sound Seafloor Mapping Initiative in New York and Connecticut.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Coverage requirements were met for H12510 using a hybrid of 200% SSS with concurrent MBES, Object Detection MBES, and Complete MBES Coverage. MBES Backscatter was always logged concurrently with MBES Bathymetry.

As per the project instructions, in depths less than 20 meters coverage was achieved with either 200% SSS with concurrent MBES, or Object Detection MBES. In the shallower portions of the survey area, 200% SSS with concurrent MBES was acquired because of the increase in efficiency, while Object Detection MBES was acquired in the deeper areas, and in some near shore areas where it was unsafe to tow the SSS.

In depths greater than 20 meters, coverage was achieved with Complete MBES Coverage.

The band of Object Detection MBES coverage which spans the gap between the 200% SSS coverage and the transition to Complete MBES Coverage fails to meet the HSSD density requirement that at least 95% of all nodes be populated with at least 5 soundings. However, due to the age of the existing charted data, the hydrographer recommends that the new data supersede the charted data.

A.4 Survey Coverage

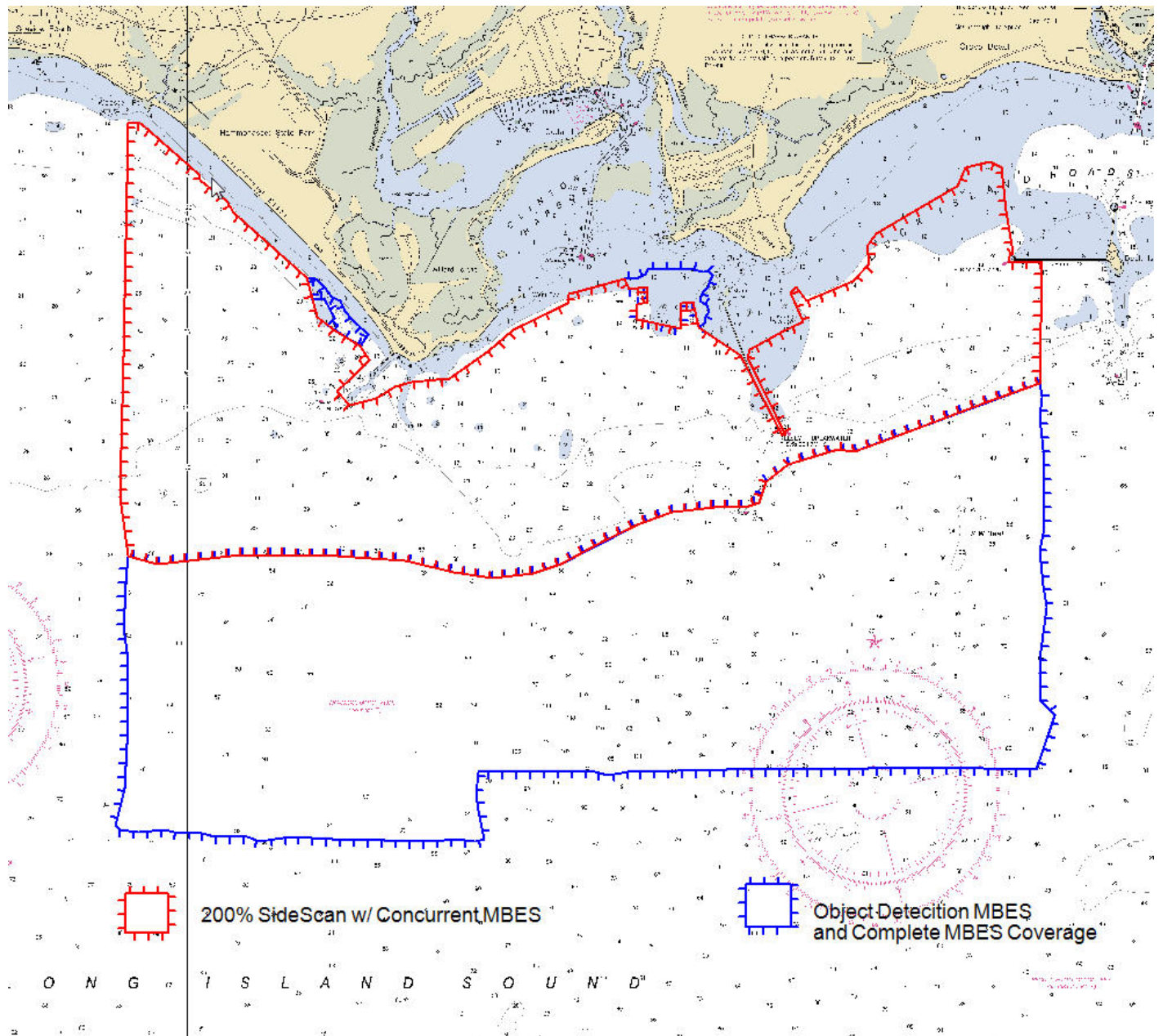


Figure 2: H12510 Coverage Graphic

The four meter curve was developed to fullest extent possible, however, there are some areas where it was not attained due to safety concerns.

The area of Object Detection MBES coverage between the 200% SSS coverage, and the transition to Complete MBES coverage, has a significant number of density holidays. During data acquisition, improper

Cube parameters(Caris Default "Shallow") were used when gridding the data for QC. Using the Shallow Cube parameters, >95% of grid nodes had a sounding density greater than 5. The problem was discovered after data acquisition had ended, and when the data was gridded using the correct NOAA .5 meter Cube parameters, only 90% of grid nodes had a sounding density greater than 5, which fails to meet HSSD requirements. The Pacific Hydrographic Branch (PHB) was consulted about this issue, and it was agreed that getting the existing data to the chart in a timely manner was preferable to delaying in order to acquire additional MBES data bring the density up to HSSD requirements. The correspondence is included in the Appendices.

A few small SSS holidays exist in the 100% and 200% coverage; they were caused by wandering off the planned line, or starting/stopping logging too late/early. Every holiday, except for one, is either covered by the "other 100%" coverage, or by MBES. The one exception is near Kelsey Pt Breakwater at 41/15/2.59N, 72/30/37.75W, and is well inside the 4 meter contour. The holidays are digitized as CSYMB features in the file H12510_SSS_Holidays.000, located in the S-57_Features folder.

The correspondence with PHB is attached. Density statistics were re-calculated at the Pacific Hydrographic Branch; 93.6% of nodes contain five or more soundings for the 50cm finalized grid. The data was reviewed in areas not meeting the specifications and determined to be adequate to supersede charted depths.

A.5 Survey Statistics

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

	HULL ID	<i>S3002</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	244	244
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	223	223
	SBES/MBES Crosslines	54	54
	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			9.27

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
09/04/2014	247
09/10/2014	253
09/11/2014	254
09/15/2014	258
09/16/2014	259
09/17/2014	260
09/18/2014	261
09/29/2014	272
10/06/2014	279
10/14/2014	287
10/15/2014	288
10/21/2014	294
10/28/2014	301
10/29/2014	302
11/04/2014	308
11/06/2014	310

Table 3: Dates of Hydrography

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	<i>S3002</i>
LOA	30 feet
Draft	1 meters

Table 4: Vessels Used



Figure 3: S3002

B.1.2 Equipment

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

Manufacturer	Model	Type
Applanix	Pos MV v5	Positioning and Attitude System
Trimble	SPS361	Positioning System
Kongsberg	EM3002	MBES
Edgetech	4125	SSS
AML	Micro X	Sound Speed System
Seabird	19 Plus	Conductivity, Temperature, and Depth Sensor

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 12% of mainscheme acquisition.

244 nautical miles of MBES Object Detection Mainscheme were acquired for H12510. 29 nautical miles of crosslines were acquired over the MBES mainscheme, equaling ~12% of mainscheme miles.

223 Nautical miles of SSS with concurrent MBES mainscheme were acquired for H12510. 26 nautical miles of crosslines were acquired over the SSS/MBES mainscheme, equaling ~12% of mainscheme miles.

The mainscheme/crossline agreement was evaluated in multiple ways:

For the first method, a 1 meter reference surface was created using only Mainscheme lines. The Caris QC Report tool was then used to compute beam-by-beam statistics comparing the crosslines to the mainscheme reference surface. The beam-by-beam mean values acquired using the Caris QC Report indicates that the mean differences vary from close to zero for the port most beam, to approximately 4 centimeters for the Starboard most beam. The sloping trend of the data suggests a small residual roll bias, and the fact that the values are not equally distributed above and below zero, indicates a small vertical bias. The magnitude of the biases is minimal, and no attempt was made to correct them. The beam-by-beam standard deviation values display the expected curve, with an increase from around 8 centimeters at nadir, to approximately 11 cm in the outer beams. The fact that all standard deviation values are well below 25 centimeters is strong evidence that the MBES vertical uncertainty falls well within IHO Order 1a TVU requirements.

For the second method, a 1 meter reference surface was created using only crosslines. A difference surface was generated between the mainscheme-only surface, and the crossline-only surface. The Caris Surface Statistics tool was then used to compute statistics on the difference surface. The Surface Statistics Report generated by Caris for the Crossline/Mainscheme Difference surface reports a mean difference of $-.04$ meters, and a standard deviation of $.08$ meters, which agrees well with the results of the first method.

For the third method, a visual comparison was performed in Caris Subset Editor. The crossline agreement was good in general, however, a noticeable offset can be seen in some near shore areas, especially in the vicinity of Kelsey Pt Breakwater. Most of the observed crossline offsets have an order of magnitude of around 10-15 cm. Farther offshore, the crossline agreement is generally very good, with little or no detectable offset. The offsets are most likely due dynamic effects from Kelsey Point Breakwater.

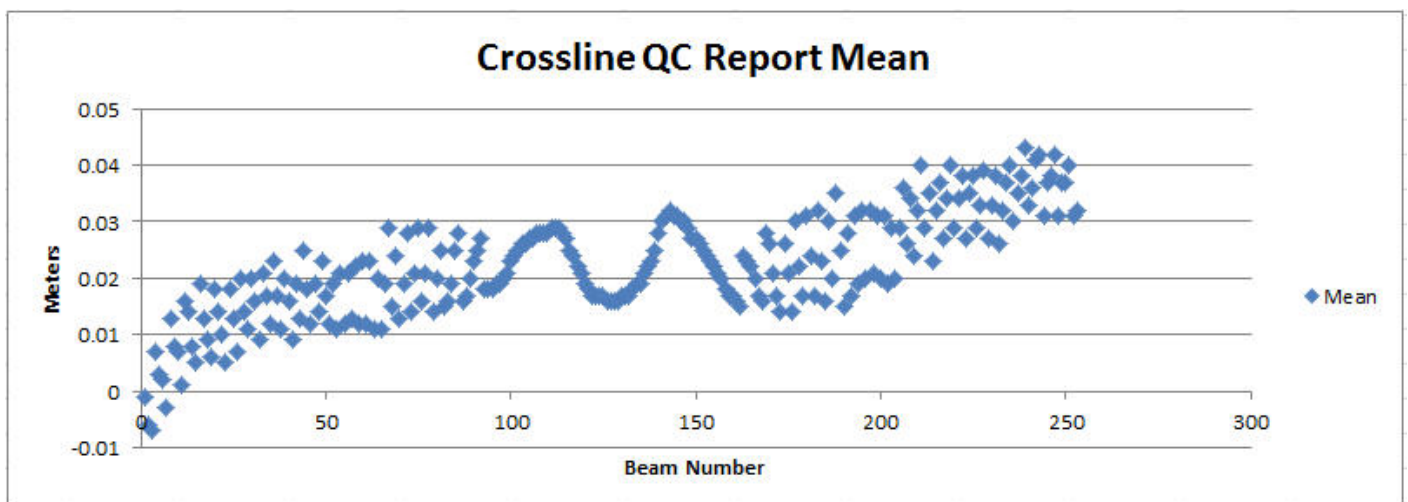


Figure 4: H12510 Beam-by-beam crossline comparison Mean

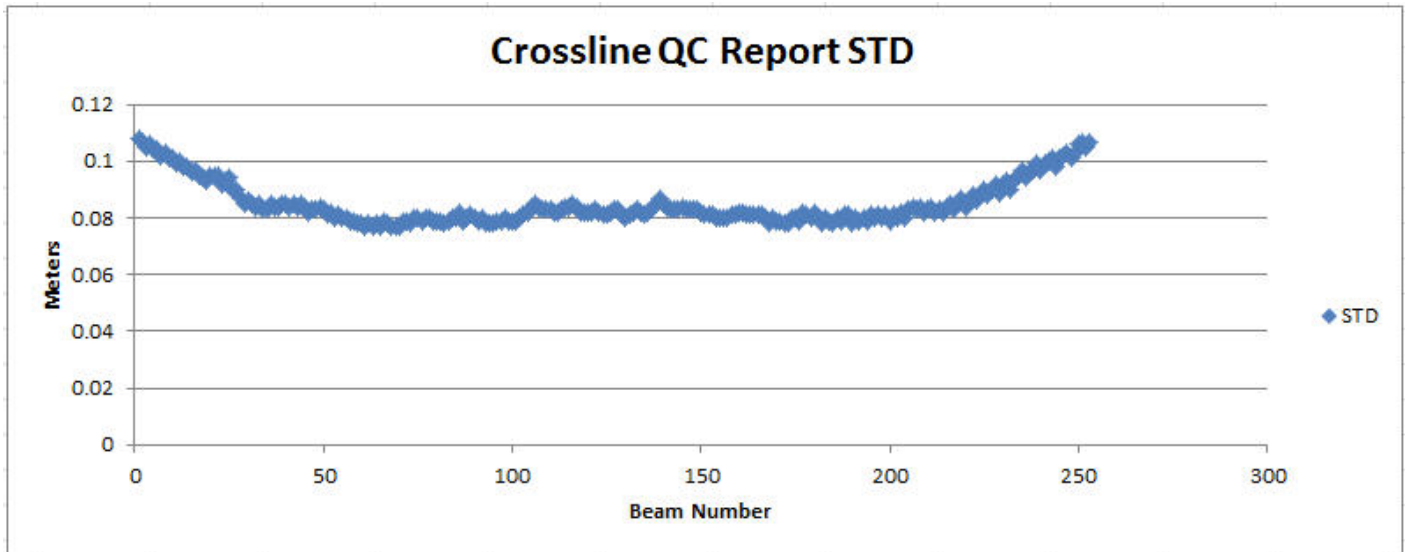


Figure 5: H12510 Beam-by-beam crossline comparison Standard Deviation

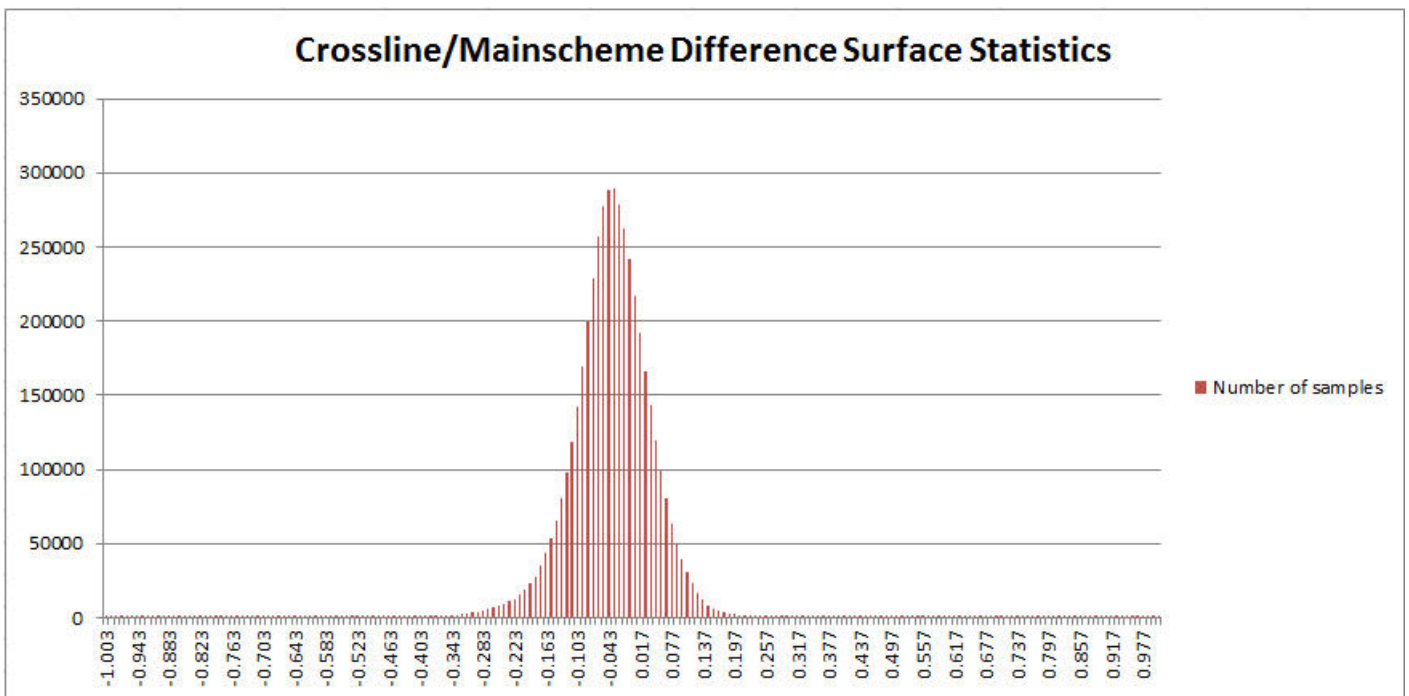


Figure 6: H12510 Crossline/Mainscheme Difference Surface Statistics

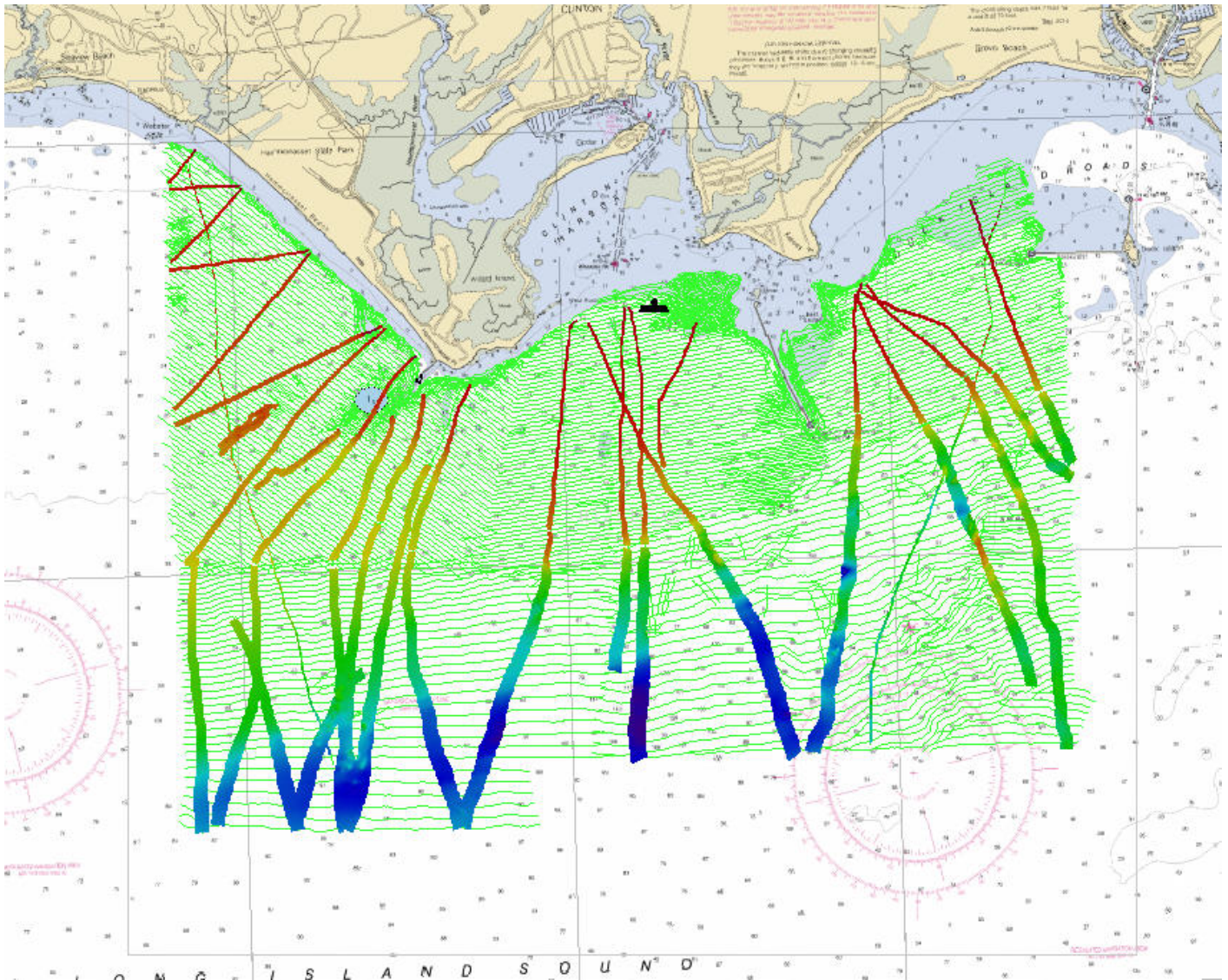


Figure 7: H12510 Crossline Surface

B.2.2 Uncertainty

Hull ID	Measured - CTD	Measured - MVP	Surface
S3002	2 meters/second		.5 meters/second

Table 6: Survey Specific Sound Speed TPU Values

IHO layers were created for the finalized surfaces, and surface statistics were computed. For H12510_MB_50cm_MLLW_Final, 99.84% of all nodes meet or exceed IHO Order 1a TVU requirements. For H12510_MB_1m_MLLW_Final, 99.83% of all nodes meet or exceed IHO Order 1a TVU requirements. The majority of the nodes failing TVU requirements were in rocky areas.

Surface statistics were computed for the density layers of both finalized surfaces. For H12510_MB_50cm_MLLW_Final, 90.27% of all nodes contain 5 or more soundings. For H12510_MB_1m_MLLW_Final, 95.80% of all nodes contain 5 or more soundings. The 50cm surface does not meet the HSSD requirement that at least 95% of all nodes are populated with at least 5 soundings. The inadequate sounding density was due to exceeding the maximum speed/depth limit where the EM3002 can produce sufficient sounding density to support Object Detection requirements. Because the EM3002 only generates 254 beams, speed must be carefully controlled in depths greater than approximately 15 meters to achieve Object Detection sounding density. At this depth, speed over ground greater than 5 knots can produce inadequate density. The actual speeds were between 6 and 8 knots.

Density statistics were re-calculated at the Pacific Hydrographic Branch; 93.6% of nodes contain 5 or more soundings for the 50cm finalized grid.

B.2.3 Junctions

The only contemporary surveys junctioning with H12510 are H11252 and H11361. Both Surveys are dated 2004. BAGs for the junctioning surveys were downloaded from NGDC, and difference surfaces were generated with H12510.

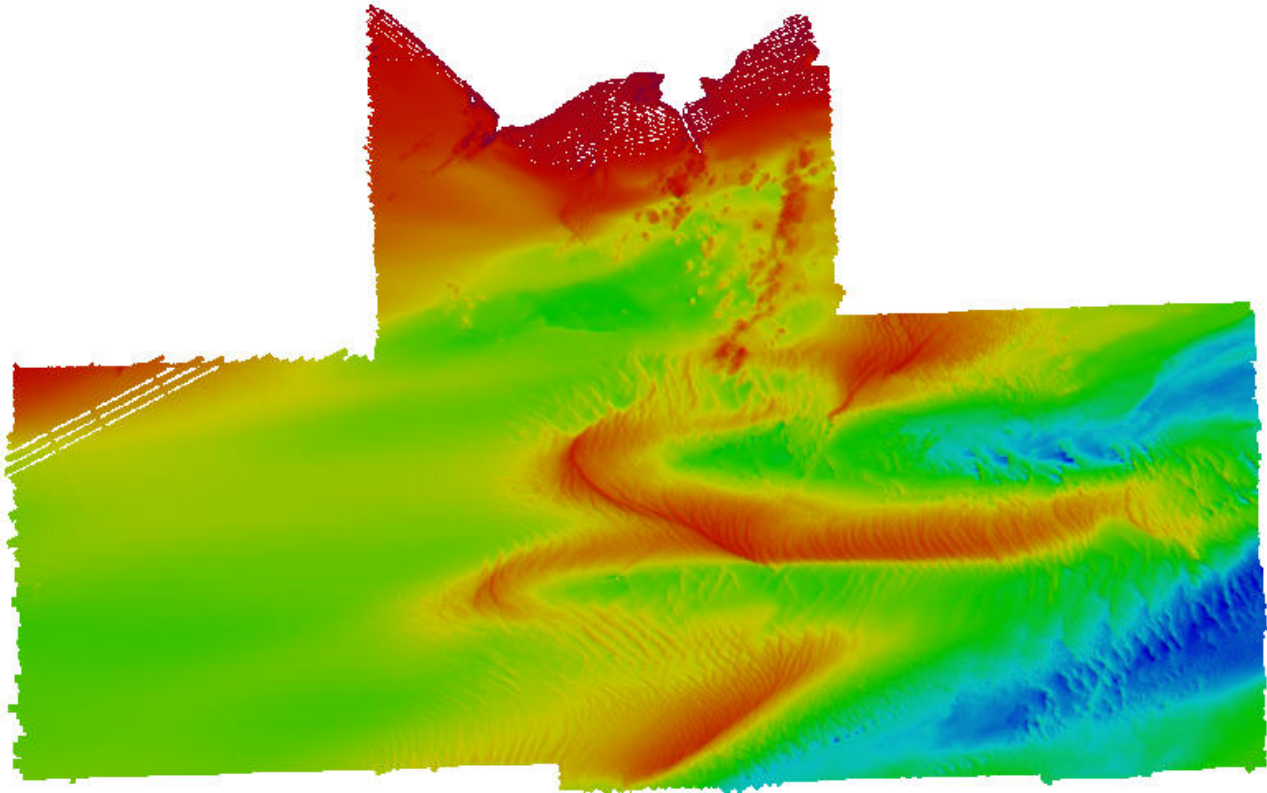


Figure 8: H12510 Junction BAGs

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H11252	1:10000	2004	NOAA Ship THOMAS JEFFERSON	SW
H11361	1:10000	2004	NOAA Ship THOMAS JEFFERSON	SE

Table 7: Junctioning Surveys

H11252

H11252 junctions H12510 on the southwest. A difference surface was computed between H12510 and H11252, and surface statistics were computed. The results of the surface statistics show a mean difference of -39 cm, and a standard deviation of 21 cm. The 39 cm difference in mean values is enough to be a concern, however, H11361 has a much better agreement. It appears that the significant difference is likely due to the migration of sandwaves. Viewing the MBES data from H12510 in subset with the surface from H11252, it is apparent that the general depths have not changes, but the shifted sandwaves cause widespread differences with a magnitude equal to the height of the sandwaves.

A difference surface was created between the two junctioning surveys, H11252 and H11361, and showed a similar level of disagreement: The mean difference was 36 cm, and the standard deviation was 23 cm.

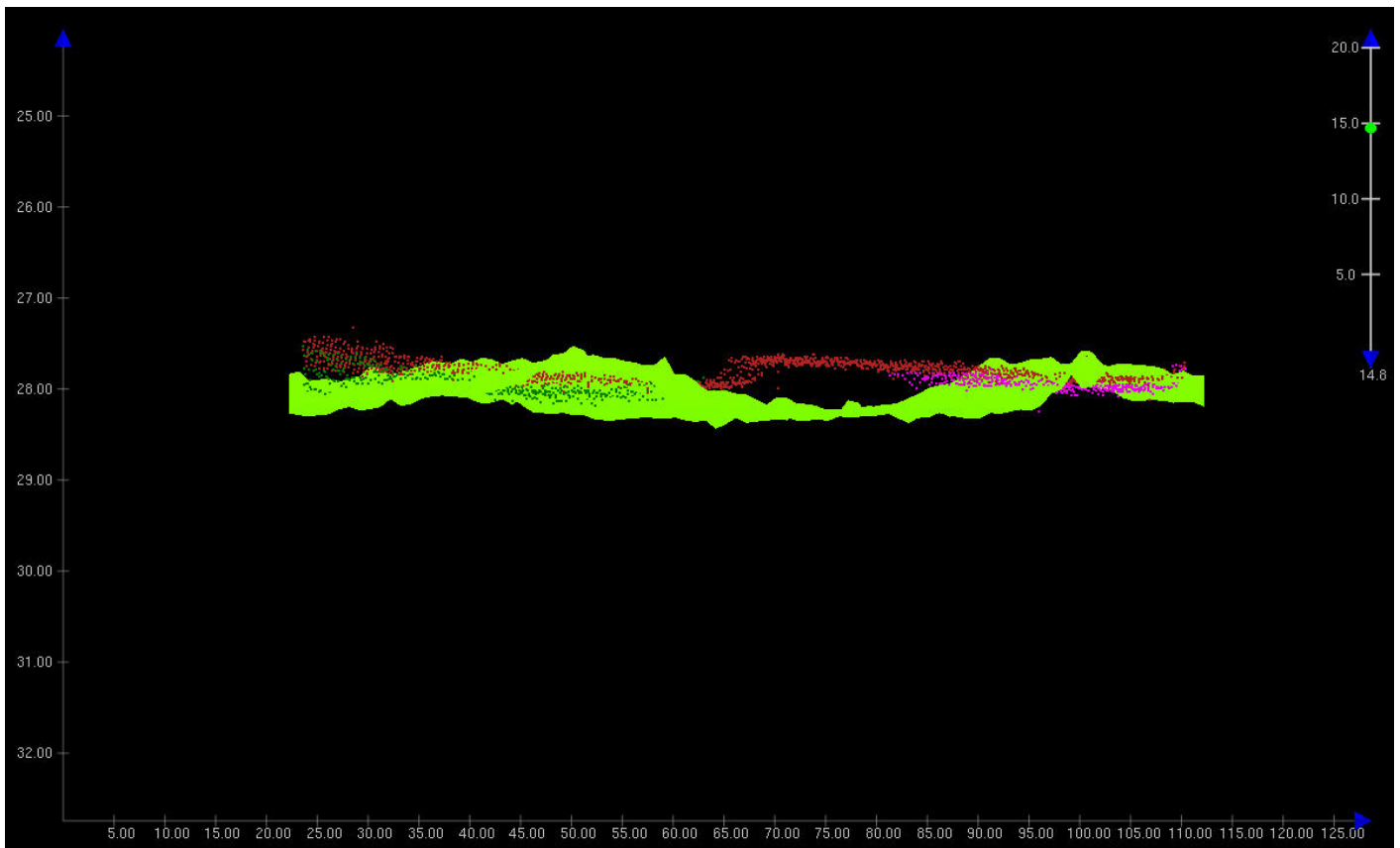


Figure 9: Comparison of H12510 MBES data and H11252 BAG

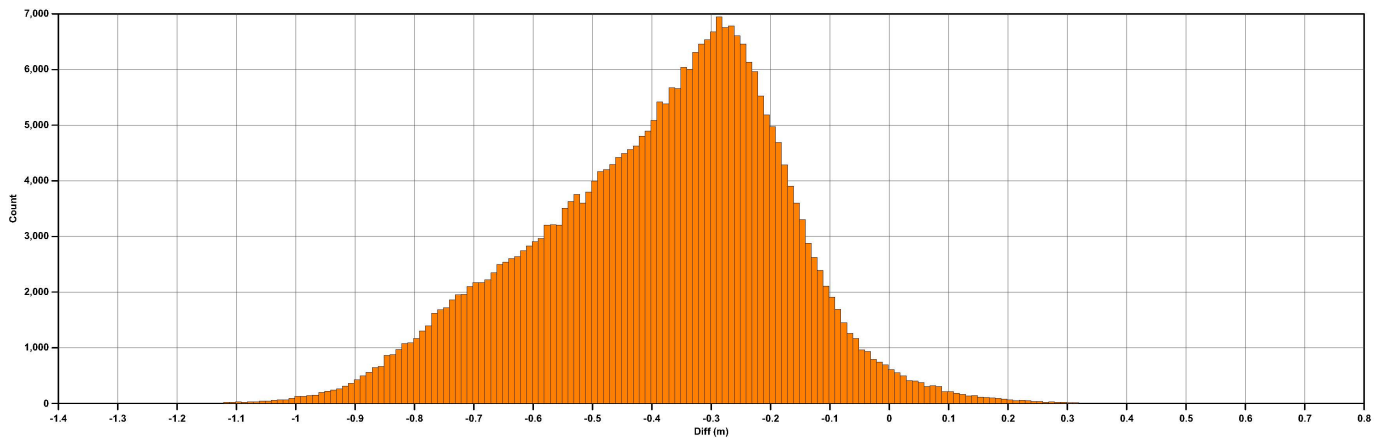


Figure 10: Surface Statistics histogram of H12510/H11252 Difference Surface.

H11361

H11361 junctions H12510 on the southeast. A difference surface was computed between H12510 and H11361, and surface statics were computed. The results of the surface statistics show a mean difference of -7 cm, and a standard deviation of 25 cm. The agreement for this junction survey is much better than for H11252, and is likely because the junction occurs over a rocky area, and areas with less pronounced sandwave formation. The H11361 surface was loaded in subset editor as a reference surface, and agreement over the rocky portions of the junction is excellent.

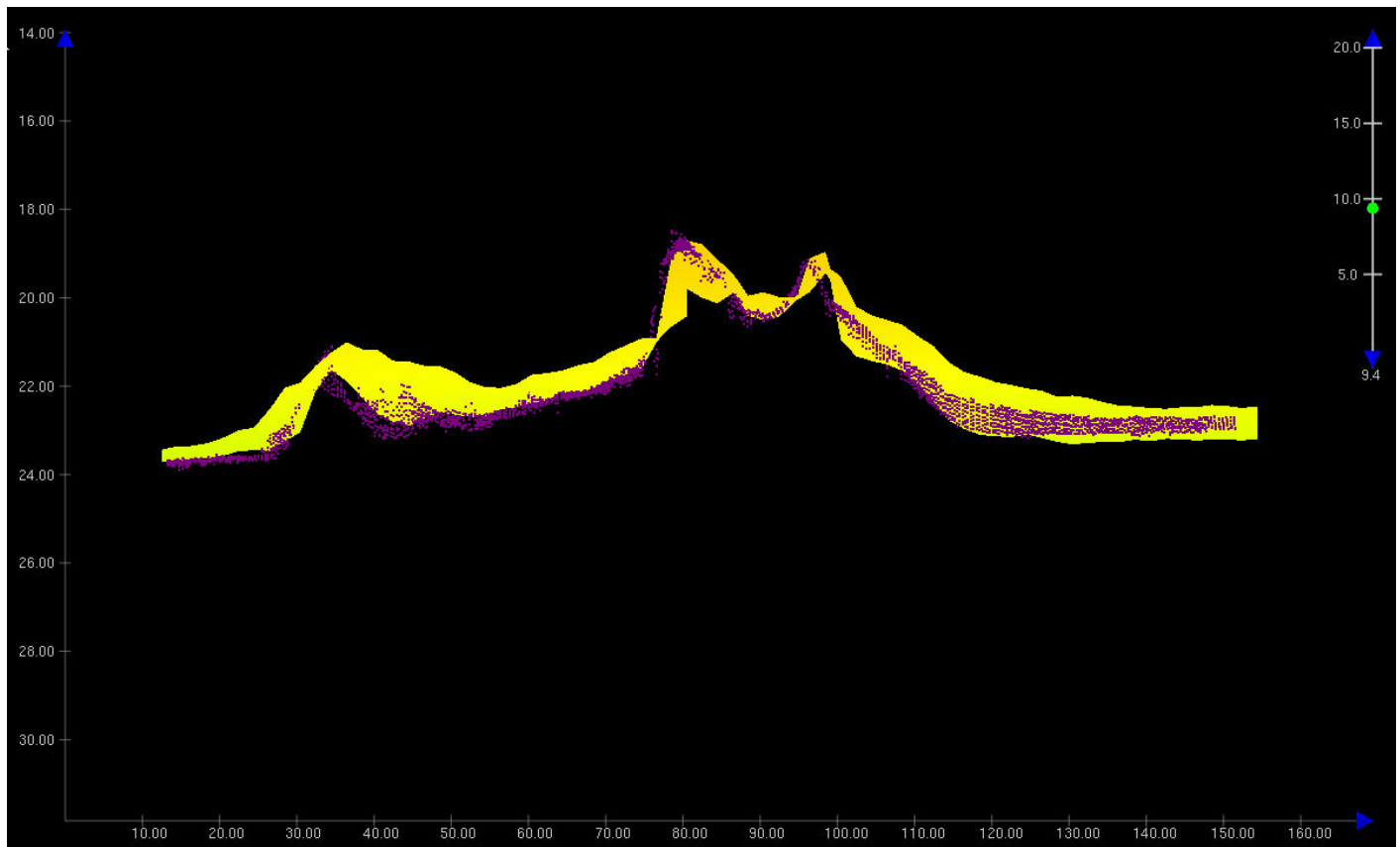


Figure 11: Comparison of H12510 MBES data and H11361 BAG. Good agreement over rocky shoal.

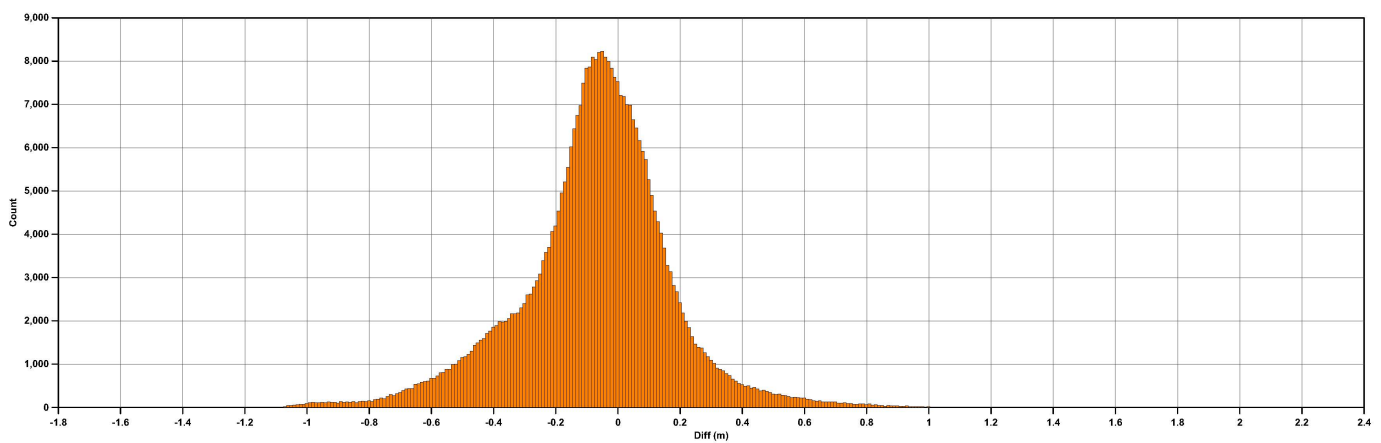


Figure 12: Surface Statistics histogram of H12510/H11361 Difference Surface.

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

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

Tide offsets

Although, in general, data agreement is good across the survey area, there are some localized areas where a noticeable vertical offset is present. The areas with the largest offsets are near shore, especially near Kelsey Pt Breakwater. Most of the noticeable offsets are on the order of magnitude of 10-15cm, however, along the east side of Kelsey Pt Breakwater there are vertical offsets approaching 25 cm.

One crossline which was examined displayed a 15 cm offset with near shore mainscheme, but had no visible offset with offshore mainscheme lines.

Mainscheme lines acquired on the same day on the East side of Kelsey Pt Breakwater had a 25 cm offset with each other.

The vertical offsets are most likely tide artifacts caused by unmodeled effects from near shore topography, as well as wind setup along Kelsey point breakwater. A strong rip current was also frequently experienced along Kelsey point breakwater, which could have created a dynamic draft error.

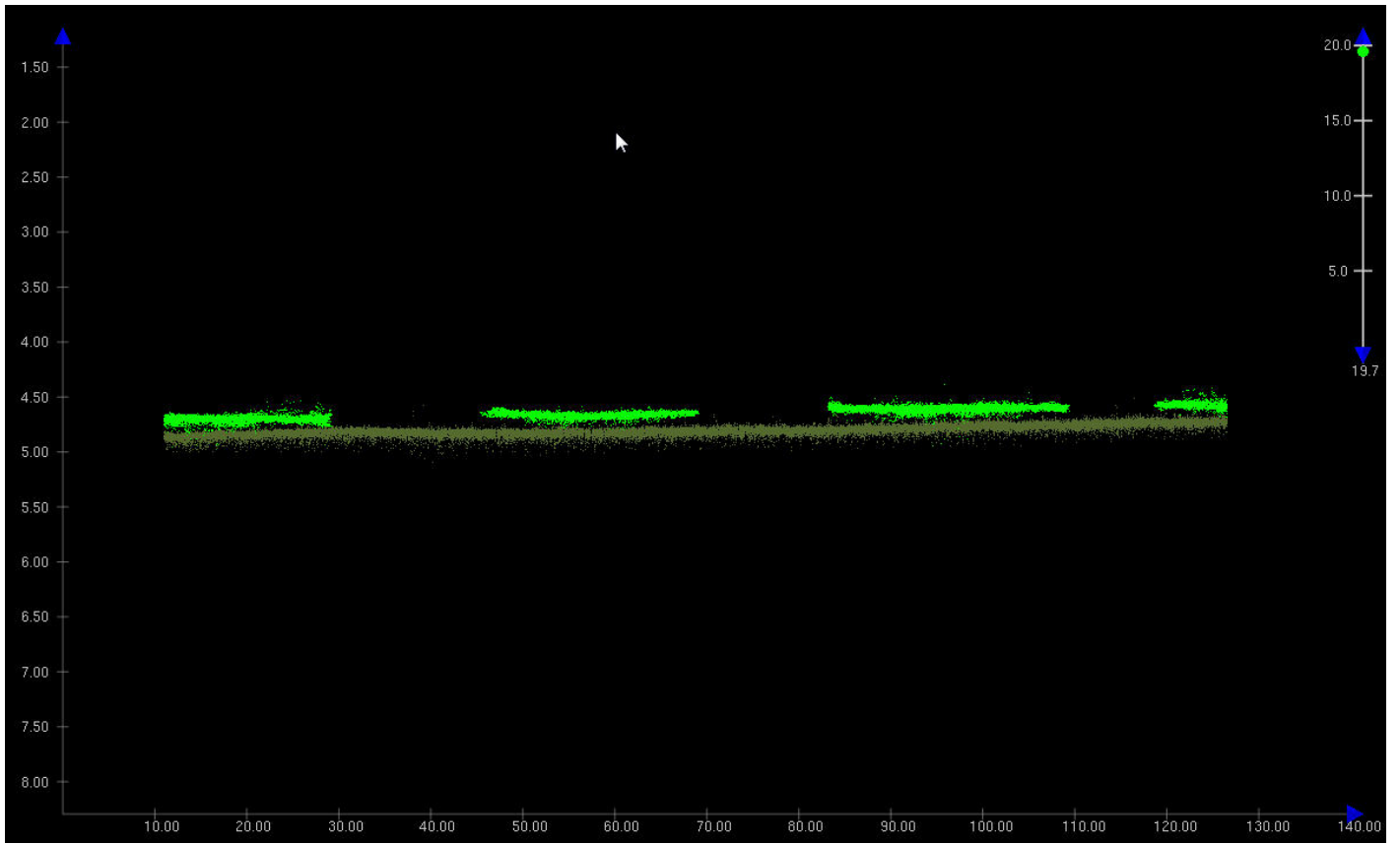


Figure 13: Crossline vertical offset near shore

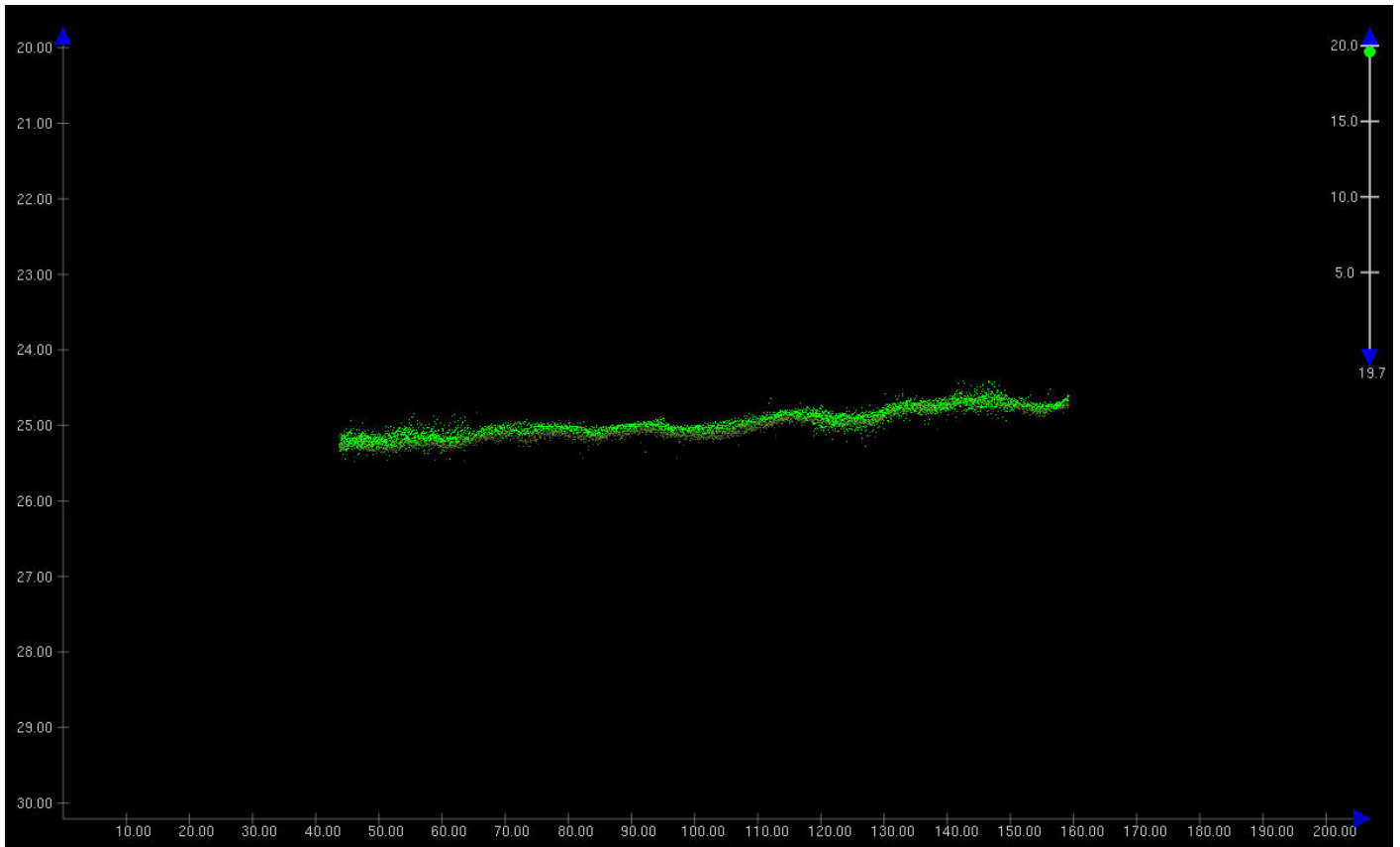


Figure 14: Crossline agreement offshore

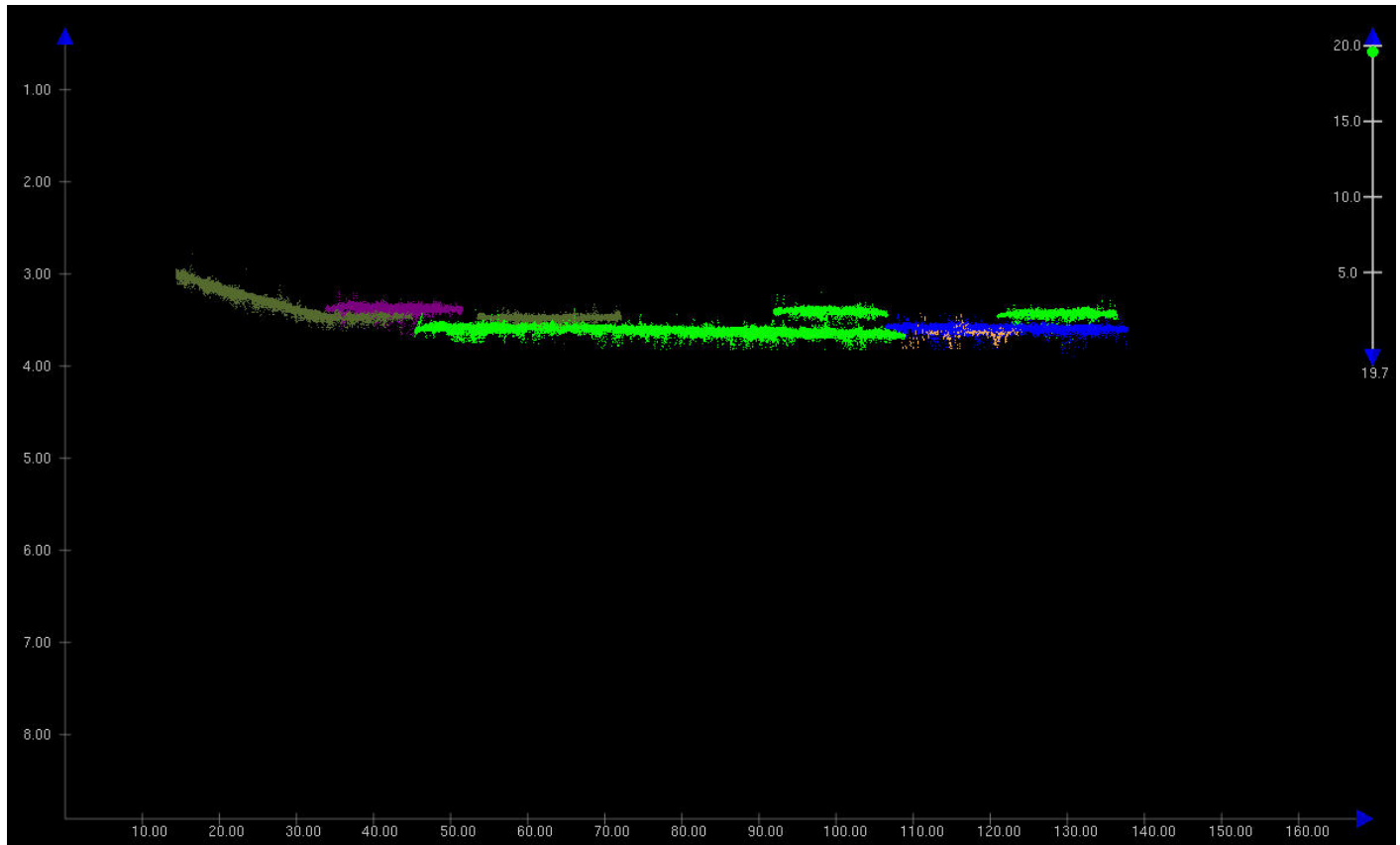


Figure 15: Tide artifacts

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Sound Speed Cast Frequency: SVP casts were typically taken every three to four hours in the deepest area being surveyed at the time, unless unusual sound speed variability was suspected, in which case they were taken more frequently. The SVP casts were applied to the MBES lines in Caris using Nearest-within -distance-within-time (4 hours).

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

True Heave could not be applied to four MBES lines acquired on Julian Day Number 310. This resulted due to a failure to begin logging True Heave before beginning MBES acquisition. Real Time Heave was applied

instead. The lack of Delayed Heave does not appear to have negatively affected the data. The affected lines are listed below:

1767_20141106_130239_S3002.all
 1765_20141106_125737_S3002.all
 1766_20141106_125901_S3002.all
 1768_20141106_130703_S3002.all

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw Backscatter was logged in the .all file. Backscatter was not processed by the field unit.

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: NOAA Profile V_5_3

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
H12510_MB_1m_MLLW	CUBE	1 meters	1.23 meters - 35.81 meters	NOAA_1m	Object Detection
H12510_MB_1m_MLLW_Final	CUBE	1 meters	18 meters - 35.8 meters	NOAA_1m	Object Detection
H12510_MB_50cm_MLLW	CUBE	0.5 meters	1.16 meters - 35.84 meters	NOAA_0.5m	Object Detection
H12510_MB_50cm_MLLW_Final	CUBE	0.5 meters	1.16 meters - 20 meters	NOAA_0.5m	Object Detection

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12510_SSS_Mosaic_100	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	100% SSS
H12510_SSS_Mosaic_200	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	200% SSS

Table 8: Submitted Surfaces

Coverage requirements for H12510 were met through a combination of 200% SSS with concurrent MBES, and Object detection MBES. All MBES acquired for H12510 was combined, and gridded in accordance with Object Detection requirements.

B.5.3 Caris Course Made Good Spikes

There is a known issue with the Edgetech Discover II software, used to collect SSS for H12510. Although the software is fed a 1 Hz inertially aided position from the pos MV system, the software interpolates a unique position for every SSS ping. The algorithm used to interpolate the positions seems to be flawed, and creates small lateral jumps in the vessel track. These jumps are small, on the order of 10 cm, however they create very large spikes in the Course Made Good (CMG) calculated by Caris. Edgetech was contacted about this problem, and unfortunately, there is no way to prevent the software from performing the interpolation. Because Ship Gyro is converted during JSF import into Caris, however, CMG is not used in any way during data processing, so the CMG was not edited to remove the spikes.

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

C.1 Vertical Control

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

Standard Vertical Control Methods Used:

TCARI

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

Station Name	Station ID
New London	8461490
New Haven	8465705

Table 9: NWLON Tide Stations

There was no Water Level file associated with this survey.

File Name	Status
B370NRT52014.tc	Final

Table 10: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 11/14/2014. The final tide note was received on 11/25/2014.

The Tide Note is attached.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is Universal Transverse Mercator(UTM) - Zone 18.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Moriches, NY 293 kHz

Table 11: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

The chart comparisons were performed using multiple methods. For each charted contour, the base surface generated by the survey was filtered to only show areas shallower than that contour. Doing so highlights areas where contours have shifted significantly, and isolated shoals. Shoal biased selected sounding layers were also created, and carefully compared to charted soundings to identify areas with depths that would be unexpected by the mariner based on charted depths.

D.1.1 Raster Charts

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

Chart	Scale	Edition	Edition Date	LNМ Date	NM Date
12374	1:20000	15	12/2014	02/28/2015	02/28/2015
12372	1:10000	36	08/2013	03/17/2015	03/14/2015

Table 12: Largest Scale Raster Charts

12374

When data acquisition began for H12510, it was observed that significant and widespread shoaling had occurred to the east and west of Kelsey Pt Breakwater. A large area Dton was submitted, which extended from Duck Island to the approach to Clinton Harbor. Because of the Dton submission, the most recent chart update agrees perfectly with the survey data over a large portion of the survey area. Two additional Dton reports were later submitted. At the time of this comparison, the third and final Dton Report features had not been applied to the raster, but had been applied to the ENC. Uncharted Dton features are not discussed in this comparison, as it is expected they will be applied to the chart by the time this survey reaches the hydrographic branch.

There are some notable chart discrepancies in areas that were not covered by the area Dton. Near Hammonasset Point, the 18 ft contour has moved shoreward by approximately 180 meters. In the same area the charted 12 ft contour protrudes out from shore in a long narrow curve. This shoal has disappeared, and the 12 ft contour has receded very close to the shoreline.

Just west of Hammonasset Pt, uncharted shoals were discovered between the red nun buoy N "10" and a 12 ft shoal charted to the northeast. A least depth of 10 ft was discovered where the chart indicates depths of around 20 ft. This was submitted as a Dton, and should be charted by the time of the survey review.

Numerous and significant uncharted shoals were found throughout the survey area. The shoals deemed dangerous to navigation have been submitted as Dtons, and are included in the Final Features File.

The following discrepancies are significant:

At 41/14/4.44N, 72/30/24.43W, a least depth of 58 ft was found where the chart indicates depths greater than 65 ft.

A least depth of 24 ft was found over SW Reef, which has a charted least depth of 28 ft.

At 41/14/38.32N, 72/33/23.22W, a depth of 30 ft was measured where there is a charted depth of 37 ft.

At 41/14/43.62N, 72/33/3.22W, a depth of 6 ft was measured on the 18 ft contour.

At 41/14/57.08N, 72/32/52.73W, a least depth of 10 ft was found near a charted sounding of 16 ft.

Near the shoal at 41/15/38.10N, 72/34/18.12W, there are measured depths of 12 and 15 ft seaward of the 18 ft contour.

A least depth of 28 ft was measured on a charted 30 ft shoal at 41/14/19.94N, 72/34/9.23W.

12372

Charts 12372_11, 12372_12, and 12372_13 were compared with Raster 12374. No discrepancies were found.

All comments made for Raster 12374 also apply to 12372_11, 12372_12, and 12372_13.

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?
US5CN16M	1:20000	11	03/30/2015	03/30/2015	NO

Table 13: Largest Scale ENC's

US5CN16M

US5CN16M was compared with Raster chart 12374. All Dtons submitted for H12410 have been applied to US5CN16M, but many have not been applied to 12374. Besides the discrepancies with applied Dtons, the charts appear to match perfectly.

All comments made for Raster 12374 also apply to US5CN16M.

D.1.3 AWOIS Items

No AWOIS items were assigned for this survey.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

No charted features or soundings containing the label PA, ED, PD, or Rep exist for this survey.

D.1.6 Uncharted Features

Two uncharted wrecks, and twelve uncharted obstructions were found in the survey area.

There is what appears to be a small uncharted wreck approximately 75 meters southeast of the tip of Kelsey Pt Breakwater. The wreck is approximately 7 meters long, and has a least depth of 31 ft.

There is what appears to be a small uncharted wreck at 41/14/9.53N, 72/32/9.22W. The wreck is approximately 7 meters long, and has a least depth of 32 ft.

There is a linear obstruction near 41/14/43.18N, 72/32/48.45W. It has a least depth of 23 ft.

There is an obstruction near 41/14/4.6N, 72/34/6.32W. It is approximately 30 meters long, and 10 meters wide, and has a least depth of 36 ft. The feature has a nondescript shape in the MBES data, however, linear features appear in the SSS imagery, which suggests it is a man-made obstruction. It is possibly the wreck of a barge. Other debris surrounds the feature.

There is an obstruction near 41/14/6.12N, 72/34/7.32W. It has a least depth of 40 ft. It lies 50 meters to the northwest of a much larger obstruction.

There is an obstruction near 41/15/20.93N, 72/33/23.59W. It is a linear feature, is approximately 10 meters long, and has a least depth of 13 ft. It appears to be a piling or pipe.

There is an obstruction near 41/15/5.17N, 72/31/40.79W. It is a small feature with a least depth of 12 ft near another charted 12 ft obstruction.

There is an obstruction near 41/15/18.34N, 72/29/11.16W. It is a block-like obstruction, approximately 3.5 meters square, with a least depth of 14 ft,

There is an obstruction near 41/15/12.7N, 72/29/32.97W. It is approximately 6 meters long, with a least depth of 12 ft.

There is an obstruction near 41/15/11.00N, 72.29/13.86W. It is wedge shaped, approximately 6 meters long, with a least depth of 13 ft. It is possibly a wreck.

There is an obstruction near 41/15/23.09N, 72/29/9.08W. It is linear, approximately 20 meters long, with a least depth of 24 ft. It appears to be a piling or pipe.

There is a small obstruction near 41/15/31.90N, 72/29/44.99W. It has a least depth of 11 ft.

There is an obstruction near 41/15/14.19N, 72/31/20.23W. It is rectangular approximately 2 meters wide, and 5 meters long, with a least depth of 10 ft.

There is an obstruction near 41/14/6.02N, 72/34/6.53W. It has a least depth of 40 ft. It lies 50 meters north of a much larger obstruction.

One Dton and thirty-one point Dtons were also submitted for charting. See section D.1.7 for additional information.

Note:

Per the HSSD FFF requirements, only features which cannot be portrayed in a simple depth grid are required to be included in the FFF. This survey area contains numerous uncharted rocks and rocky shoals that meet the HSSD criteria for significant features, however, no natural features, including significant rocks and rocky shoals, were included in the Final Features File, as they are adequately represented in the depth

grids. Any uncharted feature considered to be dangerous to surface navigation was submitted as a Dton. Every significant feature was carefully reviewed to ensure that it was adequately developed, and that its least depth was accurately represented in the BASE surface. However, only features appearing to be man-made obstructions, or those which were determined to be Dtons, were recommended for charting, and included in the Final Features File.

The obstruction at position 41/15/18.34N, 72/29/11.16W was found to have a least depth of 15 ft. during office processing.

D.1.7 Dangers to Navigation

The following DTON reports were submitted to the processing branch:

DTON Report Name	Date Submitted
H12510_Dton_1	2014-09-26
H12510_Dton_2	2014-11-26
H12510_Dton_3	2015-03-25

Table 14: DTON Reports

Three separate Dton reports were submitted for this survey.

The first Dton report was a large area Dton due to significant and wide spread shoaling.

The second Dton report contained 8 point features, which were uncharted rocks and shoals.

The third Dton report contained 23 point features, which were uncharted rocks and shoals.

The DTON Reports are attached.

D.1.8 Shoal and Hazardous Features

S W Reef lies at approximately 41/14/8.31N, 72/29/23.96W. It has a charted least depth of 28 ft, however, the least depth measured was 24 ft.

There is a small reef at 41/14/45.03N, 72/33/13.51W, marked by red nun buoy "10". There is a charted 5 ft rock inside the shoal. A 5 ft rock was not found at the charted location, however, the least depth of the shoal was measured to 6 ft, and located 125 meters southwest of the charted 5 ft rock. The 6 ft least depth was submitted as a Dton; it has been applied to the ENC, but not to the Raster.

Several other significant discrepancies were found during the course of the survey. They were submitted as Dtons, and are currently charted on the ENC, however some have not appeared on the raster chart at the time of this comparison.

D.1.9 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.10 Bottom Samples

21 bottom samples were collected for H12510. The samples were taken with a clamshell style bottom sampler. The bottom type samples were classified, photographed, and then discarded back into the water. The positions of the samples were captured with Hypack targets.

D.2 Additional Results

D.2.1 Shoreline

One assigned shoreline feature exists within the survey area; an obstruction area containing a submerged rock and islet near the end of a groin at Hammonasset Point. However, it could not be safely approached. MBES was acquired as far inshore as was considered safe. Many rocks were visible in this area, and it is recommended that the features be retained as charted.

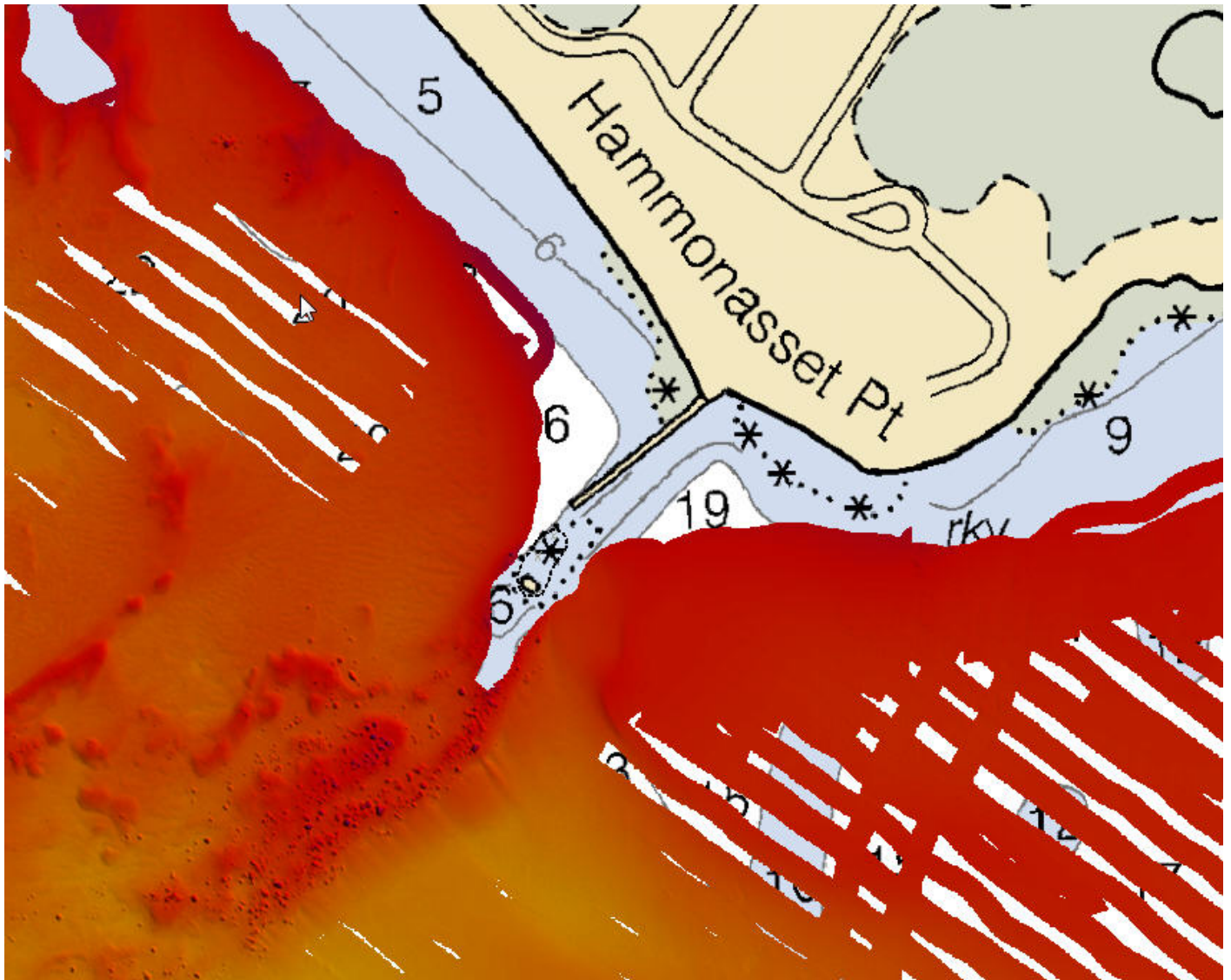


Figure 16: Shoreline Feature

D.2.2 Prior Surveys

Prior survey comparisons exist for this survey, but were not investigated. The prior surveys for this area are pre-1939, and pre-1900s; a comparison would not be useful.

D.2.3 Aids to Navigation

All aids to navigation were observed to be on station, and serving their intended purpose.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

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

Widespread and significant shoaling has occurred on both sides of Kelsey pt Breakwater. It was one of three breakwaters constructed in 1914 as part of a harbor of refuge project at Duck Island. It is likely that the presence of these breakwaters has encouraged sediment deposition in the area.

There is an area of large sandwaves centered around 41/14/9.12N, 72/31/55.05W.

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendation

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

D.2.11 Recommendation for priority processing

Although the most dangerous and navigationally significant features have been submitted as Dtons, many more uncharted shoals and chart discrepancies exist within the survey area. The hydrographer recommends that this survey be given priority in the processing queue to hasten the new survey data reaching the chart.

D.2.12 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, 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
LTJG Andrew Clos	Chief of Party	05/04/2015	

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
National Ocean Service
Silver Spring, Maryland 20910

PROVISIONAL TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : November 17, 2014

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-B370-NRT5-2014

HYDROGRAPHIC SHEET: H12510

LOCALITY: Duck Island to Madison Reef, Eastern Long Island Sound

TIME PERIOD: September 4 - November 6, 2014

TIDE STATION USED: 846-1490 New London, CT

Lat. 41° 21.3'N Long. 72° 05.2' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.839 meters

TIDE STATION USED: 846-5705 New Haven, CT

Lat. 41° 16.9'N Long. 72° 54.5' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.946 meters

REMARKS: RECOMMENDED GRID Please use the TCARI grid "B370NRT52014.tc" as the final grid for project OPR-B370-NRT5-2014, H12510, during the period between September 4 - November 6, 2014.

Refer to attachments for zoning information.

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

Note 2: Annual leveling for New London, CT(8461490) was not completed in FY14. A review of the verified leveling records from 2003 - 2013 shows the tide station benchmark network to be stable within an allowable 0.009 m tolerance. This Tide Note may be used as final stability verification for survey OPR-B370-NRT5-2014, H12510. CO-OPS will immediately provide a revised Tide Note should subsequent leveling records indicate any benchmark network stability movement beyond the allowable 0.009 m tolerance.

Note 3:

BURKE.PATRIC
K.B.1365830335

Digitally signed by BURKE.PATRICK.B.1365830335
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=OTHER, cn=BURKE.PATRICK.B.1365830335
Date: 2014.11.21 15:50:00 -05'00'

ACTING CHIEF, OCEANOGRAPHIC DIVISION



Preliminary as Final TCARI Grid for
OPR-B370-NRT5-2014, H12510
Duck Island to Madison Reef, Eastern Long Island Sound

8465705 NEW HAVEN

8461490 NEW LONDON



0 10



nautical miles



Kurt Mueller - NOAA Federal <kurt.mueller@noaa.gov>

Fwd: OPR-B370-NRT5-14

Andrew Clos - NOAA Federal <andrew.clos@noaa.gov>

Fri, Sep 4, 2015 at 11:25 AM

To: Kurt Mueller - NOAA Federal <kurt.mueller@noaa.gov>

Here's the correspondence about the change to the sheet limits for H12509 and H12510.

-Andrew

----- Forwarded message -----

From: **Christopher Hare - NOAA Federal** <christopher.hare@noaa.gov>

Date: Wed, Jul 30, 2014 at 2:51 PM

Subject: Re: OPR-B370-NRT5-14

To: Matt Andring - NOAA Federal <matt.andring@noaa.gov>

Cc: Andrew Clos - NOAA Federal <andrew.clos@noaa.gov>, Philip Sparr - NOAA Federal <philip.sparr@noaa.gov>

Matt,

Yes we can do that. Just send me file with what you would like the limits to be and I can revise it for you.

Chris

On Wed, Jul 30, 2014 at 2:36 PM, Matt Andring - NOAA Federal <matt.andring@noaa.gov> wrote:

Hey Chris, I was looking over project instructions and was wondering if we could get a minor amendment to our Long Island Sound project. What we'd like to do is straighten out the boundary between sheet H12509 and H12510 so that the bounding line is north-south for it's entire length.

It's not a huge deal, mostly we just wanted to make sure it wasn't going to screw something else up if we just did it without asking.

Thanks,

--

Matt Andring

Navigation Response Team 5

matt.andring@noaa.gov
423-366-2761

439 W York St. NRT5
Norfolk, VA 23510

--

Chris Hare
Physical Scientist
Navigation Response Branch
Navigation Services Division
NOAA's Office of Coast Survey
[301-713-2729 x172](tel:301-713-2729)

—

LTjg Andrew Clos
NRT 5 Team Lead
Work Cell: [718-702-8973](tel:718-702-8973)
Personal Cell: [360-909-7767](tel:360-909-7767)

H12510 Feature Report

Registry Number: H12510
State: Connecticut
Locality: North Shore of Long Island Sound
Sub-locality: Duck Island to Madison Reef
Project Number: OPR-B370-NRT5-14
Survey Date: 11/06/2014

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12372	36th	08/01/2013	1:20,000 (12372_13)	USCG LNM: 5/5/2015 (8/4/2015) CHS NTM: None (7/31/2015) NGA NTM: None (8/8/2015)
12374	15th	12/01/2014	1:20,000 (12374_1)	USCG LNM: 6/30/2015 (7/14/2015) CHS NTM: None (6/26/2015) NGA NTM: None (8/1/2015)
12372	36th	08/01/2013	1:40,000 (12372_11)	USCG LNM: 3/17/2015 (8/4/2015) CHS NTM: None (7/31/2015) NGA NTM: 4/24/1999 (8/8/2015)
12354	42nd	12/01/2006	1:80,000 (12354_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	9.87 m	41° 14' 09.5" N	072° 32' 09.2" W
1.2	Wreck	9.44 m	41° 14' 35.4" N	072° 30' 26.1" W
2.1	Rock	2.60 m	41° 15' 32.3" N	072° 34' 19.8" W
2.2	Rock	5.30 m	41° 15' 16.7" N	072° 34' 19.5" W
2.3	Rock	3.20 m	41° 15' 38.2" N	072° 34' 18.4" W

2.4	Rock	7.11 m	41° 14' 35.8" N	072° 33' 29.0" W
2.5	Rock	17.95 m	41° 13' 28.8" N	072° 33' 28.9" W
2.6	Rock	5.48 m	41° 14' 40.7" N	072° 33' 23.5" W
2.7	Rock	5.78 m	41° 14' 37.9" N	072° 33' 18.1" W
2.8	Rock	4.72 m	41° 15' 01.9" N	072° 33' 16.3" W
2.9	Rock	1.74 m	41° 14' 45.4" N	072° 33' 15.6" W
2.10	Rock	5.72 m	41° 14' 38.8" N	072° 33' 13.3" W
2.11	Rock	3.08 m	41° 14' 50.1" N	072° 33' 10.7" W
2.12	Rock	3.79 m	41° 14' 51.9" N	072° 33' 08.5" W
2.13	Rock	3.06 m	41° 14' 43.4" N	072° 33' 07.3" W
2.14	Rock	2.14 m	41° 15' 05.1" N	072° 33' 04.4" W
2.15	Rock	1.06 m	41° 14' 45.4" N	072° 33' 00.6" W
2.16	Rock	1.02 m	41° 14' 47.9" N	072° 32' 59.5" W
2.17	Rock	1.55 m	41° 14' 47.5" N	072° 32' 55.6" W
2.18	Shoal	3.50 m	41° 14' 32.1" N	072° 31' 55.7" W
2.19	Shoal	3.20 m	41° 14' 30.6" N	072° 31' 46.5" W
2.20	Shoal	2.90 m	41° 14' 33.2" N	072° 31' 45.9" W
2.21	Shoal	3.40 m	41° 14' 35.7" N	072° 31' 45.3" W
2.22	Rock	14.90 m	41° 13' 53.0" N	072° 31' 09.6" W
2.23	Rock	1.43 m	41° 15' 19.7" N	072° 31' 03.2" W
2.24	Rock	1.25 m	41° 15' 04.9" N	072° 30' 27.6" W
2.25	Rock	17.51 m	41° 14' 01.7" N	072° 30' 20.3" W
2.26	Rock	17.12 m	41° 14' 12.3" N	072° 30' 12.7" W
2.27	Rock	16.52 m	41° 14' 05.0" N	072° 30' 12.3" W
2.28	Rock	14.69 m	41° 14' 16.7" N	072° 29' 48.7" W
2.29	Rock	14.40 m	41° 14' 23.1" N	072° 29' 40.9" W
2.30	Rock	9.12 m	41° 14' 32.8" N	072° 29' 16.1" W
2.31	Rock	9.35 m	41° 14' 27.9" N	072° 29' 15.2" W

1 - New Features

Office Note: The depth shown in the feature titles have not been NOAA rounded. In several cases the charted depth is 1 ft. deeper than the depth shown in the title.

1.1) 32 ft Wreck

Survey Summary

Survey Position: 41° 14' 09.5" N, 072° 32' 09.2" W
Least Depth: 9.87 m (= 32.39 ft = 5.398 fm = 5 fm 2.39 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536468 00001(FFFE00082F940001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: Feature appears to be a small wreck. Approximately 8 meters long.

Hydrographer Recommendations

Chart wreck.

Cartographically-Rounded Depth (Affected Charts):

32ft (12374_1, 12372_11, 12354_1)
 5 ¼fm (12300_1, 13006_1, 13003_1)
 9.8m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
 SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 9.872 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart as surveyed. Wreck measures approximately 8 meters in length, 2.5 meters width.

Feature Images

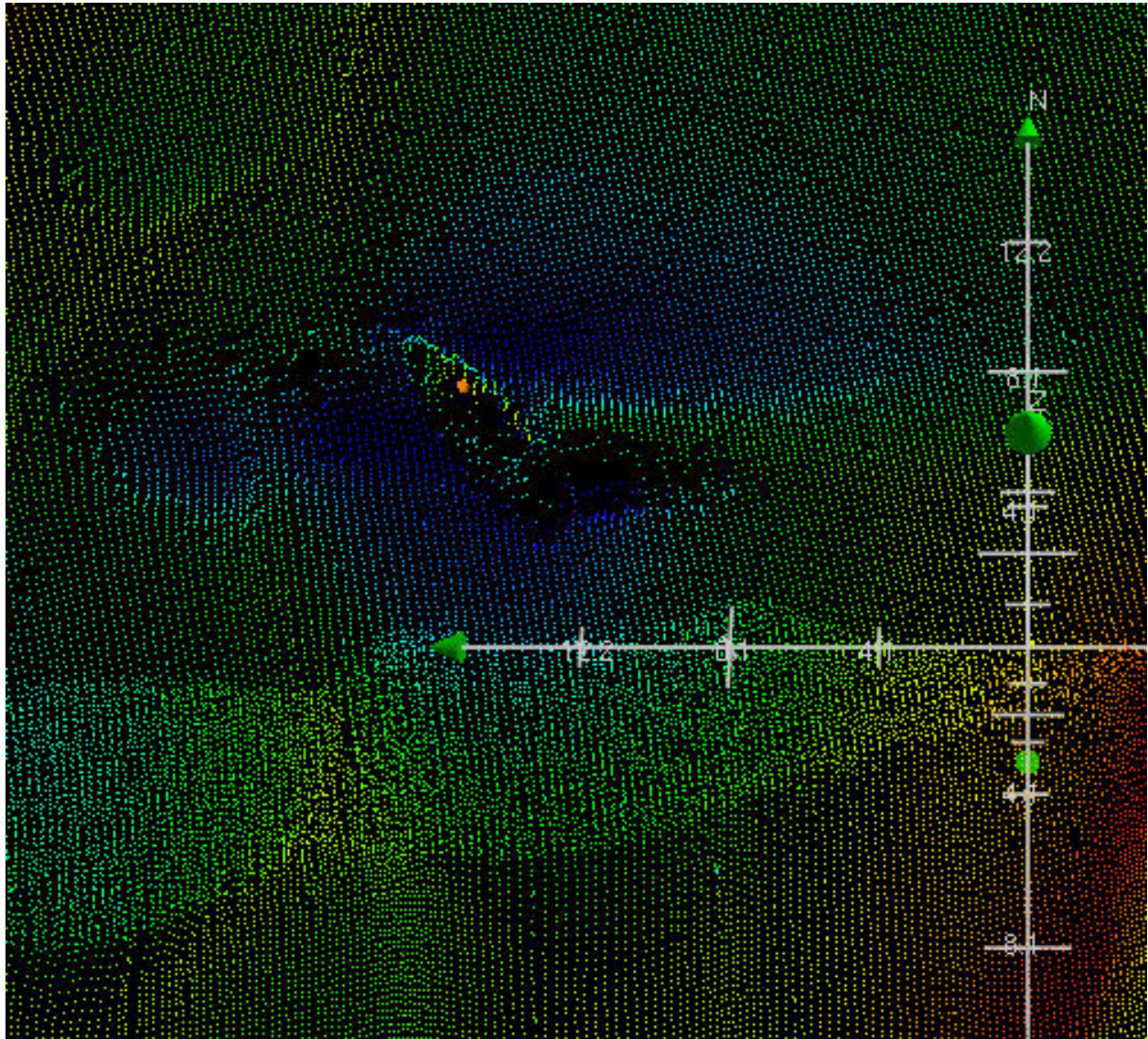


Figure 1.1.1

1.2) 30 ft Wreck

Survey Summary

Survey Position: 41° 14' 35.4" N, 072° 30' 26.1" W
Least Depth: 9.44 m (= 30.97 ft = 5.162 fm = 5 fm 0.97 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536464 00001(FFFE00082F900001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: Submerged feature. Appears to be a wreck.

Hydrographer Recommendations

Chart wreck.

Cartographically-Rounded Depth (Affected Charts):

31ft (12372_13, 12374_1, 12372_11, 12354_1)

5fm (12300_1, 13006_1, 13003_1)

9.4m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
SORDAT - 20141106
SORIND - US,US,graph,H12510
TECSOU - 3:found by multi-beam
VALSOU - 9.441 m
WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart as surveyed. Wreck measures approximately 7.5 meters in length, 2 meters width.

Feature Images

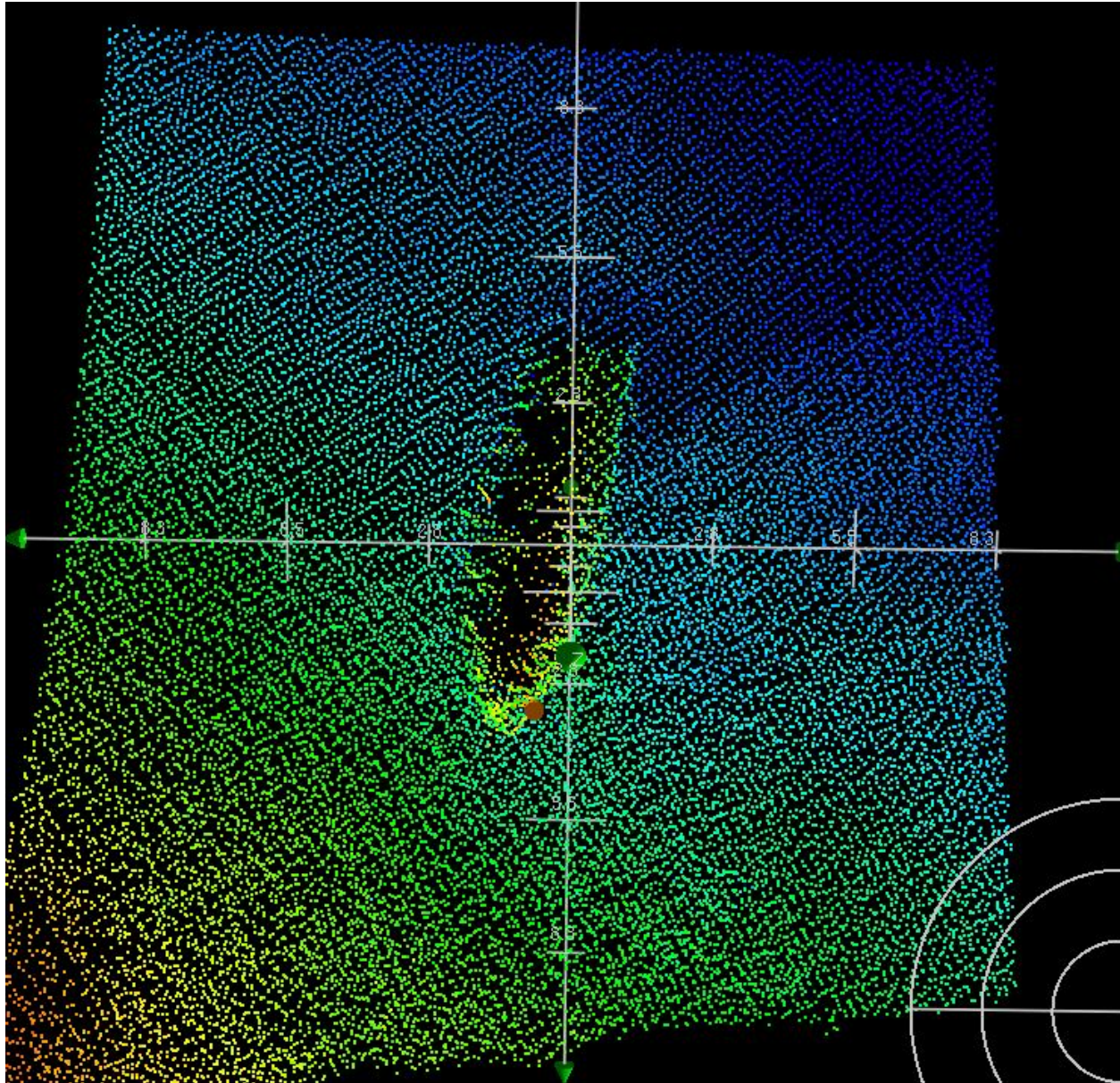


Figure 1.2.1

2 - Dangers To Navigation

2.1) 8 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 32.3" N, 072° 34' 19.8" W
Least Depth: 2.60 m (= 8.53 ft = 1.421 fm = 1 fm 2.53 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536458 00001(FFFE00082F8A0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted rocky shoal with a least depth of 8 ft in an area with charted depths of 19-22 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

8ft (12374_1, 12372_11, 12354_1)
 1 ¼fm (12300_1, 13006_1, 13003_1)
 2.6m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 2.599 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart has been updated as per hydrographer recommendation.

2.2) 17 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 16.7" N, 072° 34' 19.5" W
Least Depth: 5.30 m (= 17.38 ft = 2.896 fm = 2 fm 5.38 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536457 00001(FFFE00082F890001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted submerged rocky shoal. Least depth of 17 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

17ft (12374_1, 12372_11, 12354_1)
 2 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
 5.3m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 5.297 m
 WATLEV - 3:always under water/submerged

Office Notes

The rock was included as a sounding in the chart update product.

2.3) 10 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 38.2" N, 072° 34' 18.4" W
Least Depth: 3.20 m (= 10.51 ft = 1.751 fm = 1 fm 4.51 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536447 00001(FFFE00082F7F0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Least depth of 10 ft found on shoal with charted least depth of 16 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Update least depth of shoal.

Cartographically-Rounded Depth (Affected Charts):

10ft (12374_1, 12372_11, 12354_1)
1 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
3.2m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
SORIND - US,US,graph,H12510
TECSOU - 3:found by multi-beam
VALSOU - 3.203 m
WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.4) 23 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 35.8" N, 072° 33' 29.0" W
Least Depth: 7.11 m (= 23.32 ft = 3.886 fm = 3 fm 5.32 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536448 00001(FFFE00082F800001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted rocky shoal with least depth of 23 ft in area with charted depths of 34-37 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

23ft (12374_1, 12372_11, 12354_1)
 3 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
 7.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 7.107 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.5) 58 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 13' 28.8" N, 072° 33' 28.9" W
Least Depth: 17.95 m (= 58.89 ft = 9.816 fm = 9 fm 4.89 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536485 00001(FFFE00082FA50001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 59 ft near charted 69 ft sounding. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

59ft (12374_1, 12372_11, 12354_1)
 9 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
 17.9m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 17.951 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.6) 17 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 40.7" N, 072° 33' 23.5" W
Least Depth: 5.48 m (= 17.97 ft = 2.995 fm = 2 fm 5.97 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536446 00001(FFFE00082F7E0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted Rocky Shoal. 18 ft sounding on the 30 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rock.

Cartographically-Rounded Depth (Affected Charts):

18ft (12374_1, 12372_11, 12354_1)
 3fm (12300_1, 13006_1, 13003_1)
 5.5m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 5.477 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.7) 18 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 37.9" N, 072° 33' 18.1" W
Least Depth: 5.78 m (= 18.95 ft = 3.158 fm = 3 fm 0.95 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536445 00001(FFFE00082F7D0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted Rocky Shoal. 19 ft sounding seaward of the 30 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rock.

Cartographically-Rounded Depth (Affected Charts):

19ft (12374_1, 12372_11, 12354_1)
 3fm (12300_1, 13006_1, 13003_1)
 5.8m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 5.776 m
 WATLEV - 3:always under water/submerged

Office Notes

Office Notes: Concur; chart has been updated as per hydrographer recommendation.

2.8) 15 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 01.9" N, 072° 33' 16.3" W
Least Depth: 4.72 m (= 15.50 ft = 2.583 fm = 2 fm 3.50 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536470 00001(FFFE00082F960001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted rocky shoal. Least depth of 15 ft 75 meters seaward of charted 18 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rock.

Cartographically-Rounded Depth (Affected Charts):

15ft (12374_1, 12372_11, 12354_1)
 2 ½fm (12300_1, 13006_1, 13003_1)
 4.7m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 4.723 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.9) 5 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 45.4" N, 072° 33' 15.6" W
Least Depth: 1.74 m (= 5.72 ft = 0.954 fm = 0 fm 5.72 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536472 00001(FFFE00082F980001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Least depth of 5 ft where chart indicates depths between 13 and 17 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

5ft (12374_1, 12372_11, 12354_1)
 1fm (12300_1, 13006_1, 13003_1)
 1.7m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.744 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.10) 18 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 38.8" N, 072° 33' 13.3" W
Least Depth: 5.72 m (= 18.77 ft = 3.129 fm = 3 fm 0.77 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536474 00001(FFFE00082F9A0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 19 ft on charted 30 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

19ft (12374_1, 12372_11, 12354_1)
 3fm (12300_1, 13006_1, 13003_1)
 5.7m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 5.722 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.11) 10 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 50.1" N, 072° 33' 10.7" W
Least Depth: 3.08 m (= 10.10 ft = 1.684 fm = 1 fm 4.10 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536475 00001(FFFE00082F9B0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 10 ft 50 meters seaward of charted 18 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

10ft (12374_1, 12372_11, 12354_1)
 1 ½fm (12300_1, 13006_1, 13003_1)
 3.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 3.079 m
 WATLEV - 3:always under water/submerged

Office Notes

The rock was included as a sounding in the chart update product.

2.12) 12 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 51.9" N, 072° 33' 08.5" W
Least Depth: 3.79 m (= 12.44 ft = 2.073 fm = 2 fm 0.44 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536476 00001(FFFE00082F9C0001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 12 ft 80 meters seaward of charted 18 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged Rock.

Cartographically-Rounded Depth (Affected Charts):

12ft (12374_1, 12372_11, 12354_1)
 2fm (12300_1, 13006_1, 13003_1)
 3.8m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 3.791 m
 WATLEV - 3:always under water/submerged

Office Notes

The rock was included as a sounding in the chart update product..

2.13) 10 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 43.4" N, 072° 33' 07.3" W
Least Depth: 3.06 m (= 10.05 ft = 1.675 fm = 1 fm 4.05 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536473 00001(FFFE00082F990001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 10 ft 50 meters seaward of charted 18 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

10ft (12374_1, 12372_11, 12354_1)
 1 ½fm (12300_1, 13006_1, 13003_1)
 3.0m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 3.064 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.14) 7 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 05.1" N, 072° 33' 04.4" W
Least Depth: 2.14 m (= 7.02 ft = 1.170 fm = 1 fm 1.02 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536471 00001(FFFE00082F970001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted submerged rock with least depth of 7 feet 50 meters seaward of charted 12 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

7ft (12374_1, 12372_11, 12354_1)
 1fm (12300_1, 13006_1, 13003_1)
 2.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 2.139 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.15) 3 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 45.4" N, 072° 33' 00.6" W
Least Depth: 1.06 m (= 3.48 ft = 0.580 fm = 0 fm 3.48 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536479 00001(FFFE00082F9F0001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 3 ft on Charted 12 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

3ft (12372_13, 12374_1, 12372_11, 12354_1)

0 ½fm (12300_1, 13006_1, 13003_1)

1.0m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.060 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.16) 3 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 47.9" N, 072° 32' 59.5" W
Least Depth: 1.02 m (= 3.33 ft = 0.556 fm = 0 fm 3.33 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536477 00001(FFFE00082F9D0001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 3 ft on Charted 7 ft sounding. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart Submerged rock.

Cartographically-Rounded Depth (Affected Charts):

3ft (12372_13, 12374_1, 12372_11, 12354_1)

0 ½fm (12300_1, 13006_1, 13003_1)

1.0m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.016 m
 WATLEV - 3:always under water/submerged

Office Notes

The rock was included as a sounding in the chart update product..

2.17) 5 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 47.5" N, 072° 32' 55.6" W
Least Depth: 1.55 m (= 5.08 ft = 0.847 fm = 0 fm 5.08 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536478 00001(FFFE00082F9E0001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Submerged rock with least depth of 5 ft on Charted 12 ft contour. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

5ft (12372_13, 12374_1, 12372_11, 12354_1)

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

1.5m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.549 m
 WATLEV - 3:always under water/submerged

Office Notes

The rock was included as a sounding in the chart update product.

2.18) 11 ft Sounding

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 32.1" N, 072° 31' 55.7" W
Least Depth: 3.50 m (= 11.48 ft = 1.914 fm = 1 fm 5.48 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536451 00001(FFFE00082F830001/1)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

SOUNDG/remrks: Uncharted sandbar with least depth of 11 ft in area with charted depths of 16-17 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Update charted depths.

Cartographically-Rounded Depth (Affected Charts):

11ft (12374_1, 12372_11, 12354_1)
 1 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
 3.5m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.19) 10 ft Sounding

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 30.6" N, 072° 31' 46.5" W
Least Depth: 3.20 m (= 10.50 ft = 1.750 fm = 1 fm 4.50 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536453 00001(FFFE00082F850001/1)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

SOUNDG/remrks: 10 ft sounding on uncharted sand bar in area with charted depths of 16-17 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Chart sounding.

Cartographically-Rounded Depth (Affected Charts):

10ft (12374_1, 12372_11, 12354_1)
1 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
3.2m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: SORDAT - 20141106
SORIND - US,US,graph,H12510
TECSOU - 3:found by multi-beam

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.20) 9 ft Sounding

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 33.2" N, 072° 31' 45.9" W
Least Depth: 2.90 m (= 9.51 ft = 1.586 fm = 1 fm 3.51 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536450 00001(FFFE00082F820001/1)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

SOUNDG/remrks: Uncharted sandbar with least depth of 10 ft in area with charted depths of 16-17 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Update charted depths.

Cartographically-Rounded Depth (Affected Charts):

9ft (12374_1, 12372_11, 12354_1)
 1 ½fm (12300_1, 13006_1, 13003_1)
 2.9m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam

Office Notes

Concur with clarification; the entire sand bar and shoal soundings have been compiled. The exact 10 ft. sounding reported was not selected for charting.

2.21) 11 ft Sounding

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 35.7" N, 072° 31' 45.3" W
Least Depth: 3.40 m (= 11.15 ft = 1.859 fm = 1 fm 5.15 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536449 00001(FFFE00082F810001/1)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

SOUNDG/remrks: 11 ft sounding on uncharted sand bar in area with charted depths of 16-17 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Chart sounding.

Cartographically-Rounded Depth (Affected Charts):

11ft (12372_13, 12374_1, 12372_11, 12354_1)

1 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)

3.4m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: SORDAT - 20141106
SORIND - US,US,graph,H12510
TECSOU - 3:found by multi-beam

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.22) 48 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 13' 53.0" N, 072° 31' 09.6" W
Least Depth: 14.90 m (= 48.87 ft = 8.145 fm = 8 fm 0.87 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536483 00001(FFFE00082FA30001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 49 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

49ft (12374_1, 12372_11, 12354_1)

8fm (12300_1, 13006_1, 13003_1)

14.9m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 14.896 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.23) 4 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 19.7" N, 072° 31' 03.2" W
Least Depth: 1.43 m (= 4.69 ft = 0.782 fm = 0 fm 4.69 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536462 00001(FFFE00082F8E0001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted rock with least depth of 4 ft in area with charted depth of 12 ft. Final TCARI Tides have been applied.

Hydrographer Recommendations

Chart submerged rock.

Cartographically-Rounded Depth (Affected Charts):

4ft (12372_13, 12374_1, 12372_11, 12354_1)

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

1.4m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.431 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.24) 4 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 15' 04.9" N, 072° 30' 27.6" W
Least Depth: 1.25 m (= 4.11 ft = 0.686 fm = 0 fm 4.11 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536486 00001(FFFE00082FA60001)
Charts Affected: 12372_13, 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Mischarted rocky shoal. Least depth of 4 ft near charted 12 ft sounding. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

4ft (12372_13, 12374_1, 12372_11, 12354_1)

0 ½fm (12300_1, 13006_1, 13003_1)

1.2m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 1.254 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.25) 57 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 01.7" N, 072° 30' 20.3" W
Least Depth: 17.51 m (= 57.44 ft = 9.574 fm = 9 fm 3.44 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536482 00001(FFFE00082FA20001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 57 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

57ft (12374_1, 12372_11, 12354_1)

9 ½fm (12300_1, 13006_1, 13003_1)

17.5m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 17.509 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.26) 56 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 12.3" N, 072° 30' 12.7" W
Least Depth: 17.12 m (= 56.17 ft = 9.362 fm = 9 fm 2.17 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_0000536481 00001(FFFE00082FA10001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 56 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

56ft (12374_1, 12372_11, 12354_1)
 9 ¼fm (12300_1, 13006_1, 13003_1)
 17.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 17.122 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.27) 54 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 05.0" N, 072° 30' 12.3" W
Least Depth: 16.52 m (= 54.20 ft = 9.033 fm = 9 fm 0.20 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536489 00001(FFFE00082FA90001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 54 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

54ft (12374_1, 12372_11, 12354_1)

9fm (12300_1, 13006_1, 13003_1)

16.5m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 16.520 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.28) 48 ft Rock**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 41° 14' 16.7" N, 072° 29' 48.7" W
Least Depth: 14.69 m (= 48.20 ft = 8.034 fm = 8 fm 0.20 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536487 00001(FFFE00082FA70001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Depth of 48 ft near charted 80 ft sounding. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

48ft (12374_1, 12372_11, 12354_1)
 8fm (12300_1, 13006_1, 13003_1)
 14.7m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 14.692 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.29) 47 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 23.1" N, 072° 29' 40.9" W
Least Depth: 14.40 m (= 47.24 ft = 7.873 fm = 7 fm 5.24 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536480 00001(FFFE00082FA00001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 47 ft near charted 67 ft sounding. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart submerged rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

47ft (12374_1, 12372_11, 12354_1)
 7 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)
 14.4m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 14.399 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.30) 29 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 32.8" N, 072° 29' 16.1" W
Least Depth: 9.12 m (= 29.90 ft = 4.984 fm = 4 fm 5.90 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536484 00001(FFFE00082FA40001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 30 ft where chart indicates depths of 40 to 44 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

30ft (12374_1, 12372_11, 12354_1)
 5fm (12300_1, 13006_1, 13003_1)
 9.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 9.115 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

2.31) 30 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 14' 27.9" N, 072° 29' 15.2" W
Least Depth: 9.35 m (= 30.68 ft = 5.113 fm = 5 fm 0.68 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2014-310.00:00:00.000 (11/06/2014)
Dataset: H12510_Feature_Report.000
FOID: 0_ 0000536488 00001(FFFE00082FA80001)
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Uncharted Rocky Shoal. Least depth of 30 ft where chart indicates depths of 40 to 44 ft. Final TCARI tides have been applied.

Hydrographer Recommendations

Chart rocky shoal.

Cartographically-Rounded Depth (Affected Charts):

30ft (12374_1, 12372_11, 12354_1)
 5fm (12300_1, 13006_1, 13003_1)
 9.3m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20141106
 SORIND - US,US,graph,H12510
 TECSOU - 3:found by multi-beam
 VALSOU - 9.350 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur; chart has been updated as per hydrographer recommendation.

APPROVAL PAGE

H12510

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

- H12510_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12510_GeoImage.pdf

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

Approved: _____

Pete 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