

**H12010**

NOAA FORM 76-35A

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

**DESCRIPTIVE REPORT**

Type of Survey: Navigable Area

Registry Number: H12010

**LOCALITY**

State: Rhode Island

General Locality: Block Island Sound

Sub-locality: East Shore of Block Island:  
'1BI' buoy to Old Harbor Point

**2009**

CHIEF OF PARTY  
CDR Shepard M. Smith  
NOAA

LIBRARY & ARCHIVES

DATE

**HYDROGRAPHIC TITLE SHEET**

**H12010**

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: **Rhode Island**

General Locality: **Block Island Sound**

Sub-Locality: **East Shore Block Island, '1BI'buoy to Old Harbor Point**

Scale: **1:7,500** Date of Survey: **23 July to 19 August, 2009**

Instructions Dated: **26 February 2009** Project Number: **OPR-B363-TJ-09**

Vessel: **NOAA Ship *Thomas Jefferson***

Chief of Party: **CDR Shepard M. Smith**

Surveyed by: ***Thomas Jefferson Personnel***

Soundings by: **Reson 8125 and 7125 multibeam echosounders.**

Graphic record scaled by: **N/A**

Graphic record checked by: **N/A**

Protracted by: **N/A** Automated Plot: **N/A**

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

Soundings in: **Meters at MLLW**

Remarks:

- 1) All Times are in UTC.***
  - 2) This is a Navigable Area Hydrographic Survey.***
  - 3) Projection is NAD83, UTM Zone 19.***
- Notes in red, bold, italic were made during office processing.***

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**Descriptive Report to Accompany Hydrographic Survey  
H12010**

Project OPR-B363-TJ-09  
 Block Island Sound, RI  
 East Shore Block Island, '1BI' buoy to Old Harbor Point  
 Scale 1:7,500  
 23 July – 19 August, 2009  
**NOAA Ship *Thomas Jefferson***

**A. AREA SURVEYED**

This hydrographic survey was completed as specified by *Hydrographic Survey Project Instructions OPR-B363-TJ-09*, dated 26 February 2009.

Northeast corner	Southeast corner	Northwest corner	Southwest corner
41°15'42" N 071°31'00"W	41°10'21" N 071°31'00"W	41°15'42" N 071°35'00"W	41°09'52" N 071°33'48" W

Data acquisition was conducted from 23 July to 19 August, 2009, see table 2.

The purpose of this project is to update the nautical charts in the area. Most of the bathymetry is from surveys completed before 1940. This project responds, in part, to a request from the president of the Northeast Marine Pilots for new hydrographic survey to support deep draft (60') vessels carrying oil along the route that proceeds northwest from the precautionary area south of the Narragansett Bay and Buzzards Bay traffic lanes. **Concur.**

	Linear Nautical Miles
Single beam mainscheme only	N/A
Multibeam mainscheme only	641 lnm
Side Scan Sonar mainscheme only	45 lnm
Developments	NA
Crosslines	26 lnm
Shoreline/nearshore investigations	NA
Number of Bottom Samples	17
Number of AWOIS items investigated	6

**Table 1: Hydrographic Survey Statistics**

Survey limits of H12013 **H12010** (Figure 1) are shown on the following page. **Concur.**

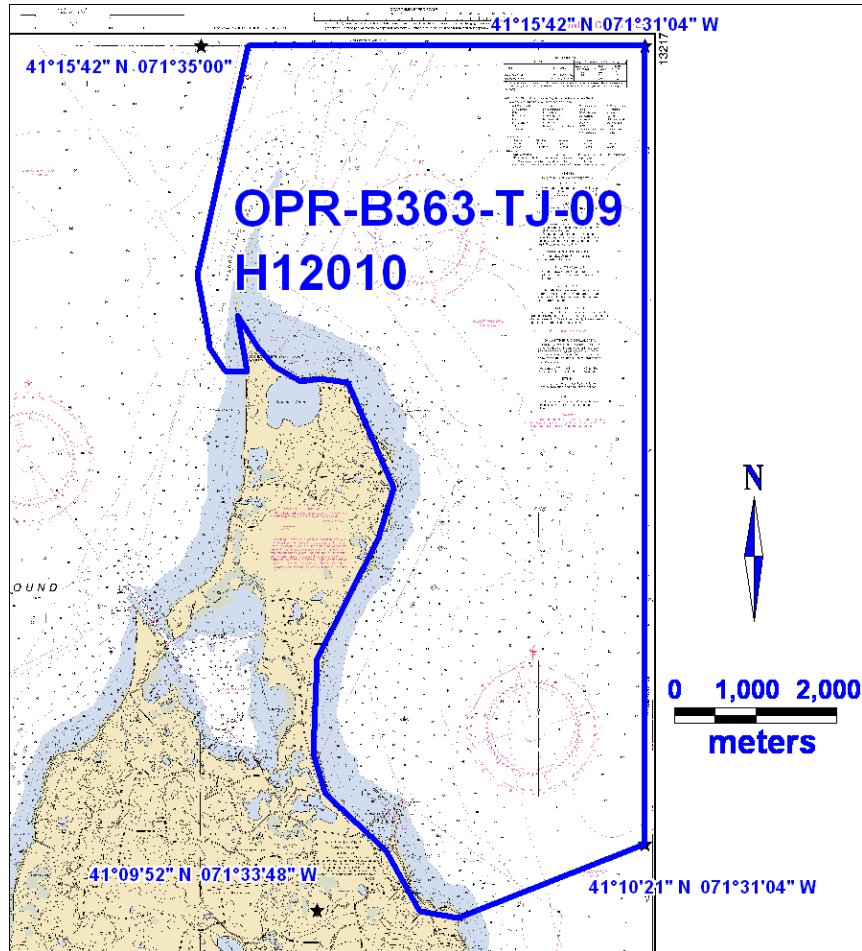


Figure 1: Survey Limits

Calendar Date	Julian Day
23 July	204
24 July	205
25 July	206
26 July	207
27 July	208
28 July	209
29 July	210
30 July	211
4 August	216
5 August	217
6 August	218
11 August	223
18 August	230
19 August	231

Table 2: Dates of Multibeam Data Acquisition in Calendar and Julian Days

## **B DATA ACQUISITION AND PROCESSING** *See also the H-Cell Report.*

Refer to *OPR-B363-TJ-09 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 included in this descriptive report. **Concur**

### **B 1. EQUIPMENT AND VESSELS**

Data were acquired by NOAA Ship *Thomas Jefferson*, Hydrographic Survey Launches *3101* and *3102*. NOAA Ship *Thomas Jefferson* acquired Reson 7215 multibeam echosounder soundings and sound velocity profiles. Launch *3101* acquired Reson 8125 multibeam echosounder soundings, Klein 5000 side scan sonar (SSS), and sound velocity profiles. Launch *3102* acquired Reson 7125 multibeam echosounder soundings, Klein 5000 SSS, bottom samples, and sound velocity profiles. **Concur.**

### **B 2. QUALITY CONTROL**

#### **B 2.1 System Certification and Calibration**

Refer to NOAA Ship *Thomas Jefferson* DAPR\* and *Hydrographic Systems Readiness Report (HSRR)\*\** for a complete description of system integration and initial calibration results for equipment and sensors used for this survey. **Concur.**

#### **B.2.2 Sounding Coverage**

As per the Letter Instructions, this survey was conducted using object detection multibeam in depths, which were less than 20 meters. Complete multibeam was acquired in depths greater than 20 meters. Side scan sonar (SSS) data were acquired near the shore inside of the 6 meter isobaths in order to look for hazardous obstructions before covering them with MBES. 200% SSS was also acquired over the navigable AWOIS areas as assigned. **Concur.**

#### **B.2.3 Systematic Errors**

On 10 Aug (DN220), a timing problem was discovered on HLS 3102's Reson 7125 multibeam echo sounder (MBES). The timing data packets were being dropped randomly along track the swath. The Reson CPU was sent back to Reson for repair on 12 Aug. A Reson loaner 7125 CPU unit (s/n# 4408009) was borrowed and installed on 15 Aug (DN227) on 3102 and it was used for the remainder days of acquisition for this survey. The erroneous timing MB data covered an area (fig 2) that required object detection multibeam (OD MB), a requirement for depths less than 20 meters. Data was rejected and cleaned for the timing errors, which left little coverage holidays less than a 1 meter. Rather than re-acquire OD MB for the coverage holidays, it was decided to acquire 100% SSS for verification. SSS data was check scanned for significant contacts. SSS contacts were re-examined against the existing OD MB coverage for accuracy and least depth. Any contact ambiguities would have been investigated with OD MB, but in this case none were found. **Concur.**

**\*Included with survey deliverables.**

**\*\*Included with original field unit submission.**

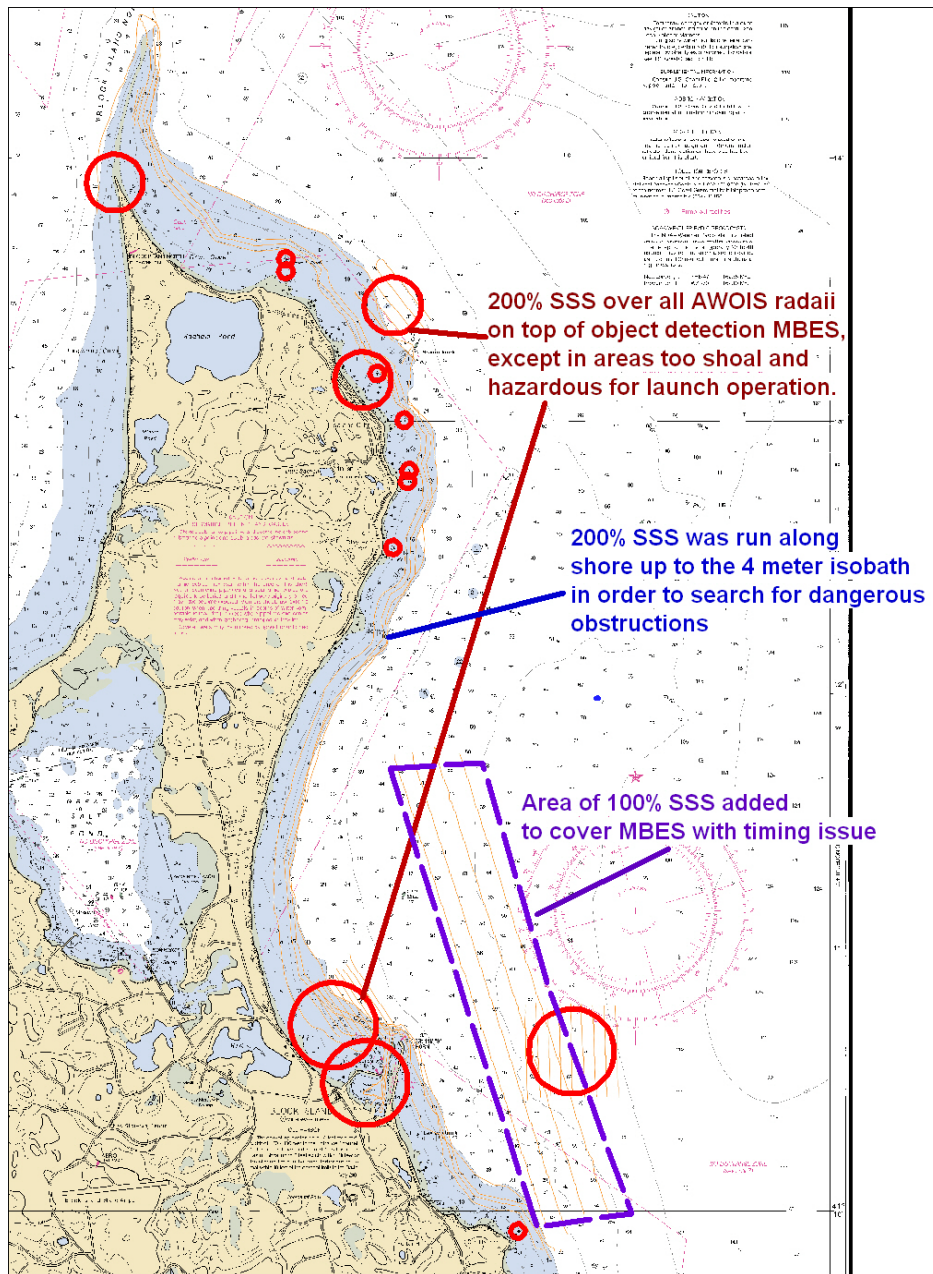


Figure 2: Side Scan Sonar coverage.

The erroneous timing MB data also covered another area east of Isaiah’s Cliff. These depths were greater than 20 meters (figure 3) and required just MB coverage as per project instruction. It was determined there was adequate MB coverage despite this issue. No SSS was acquired over this area. *Concur.*

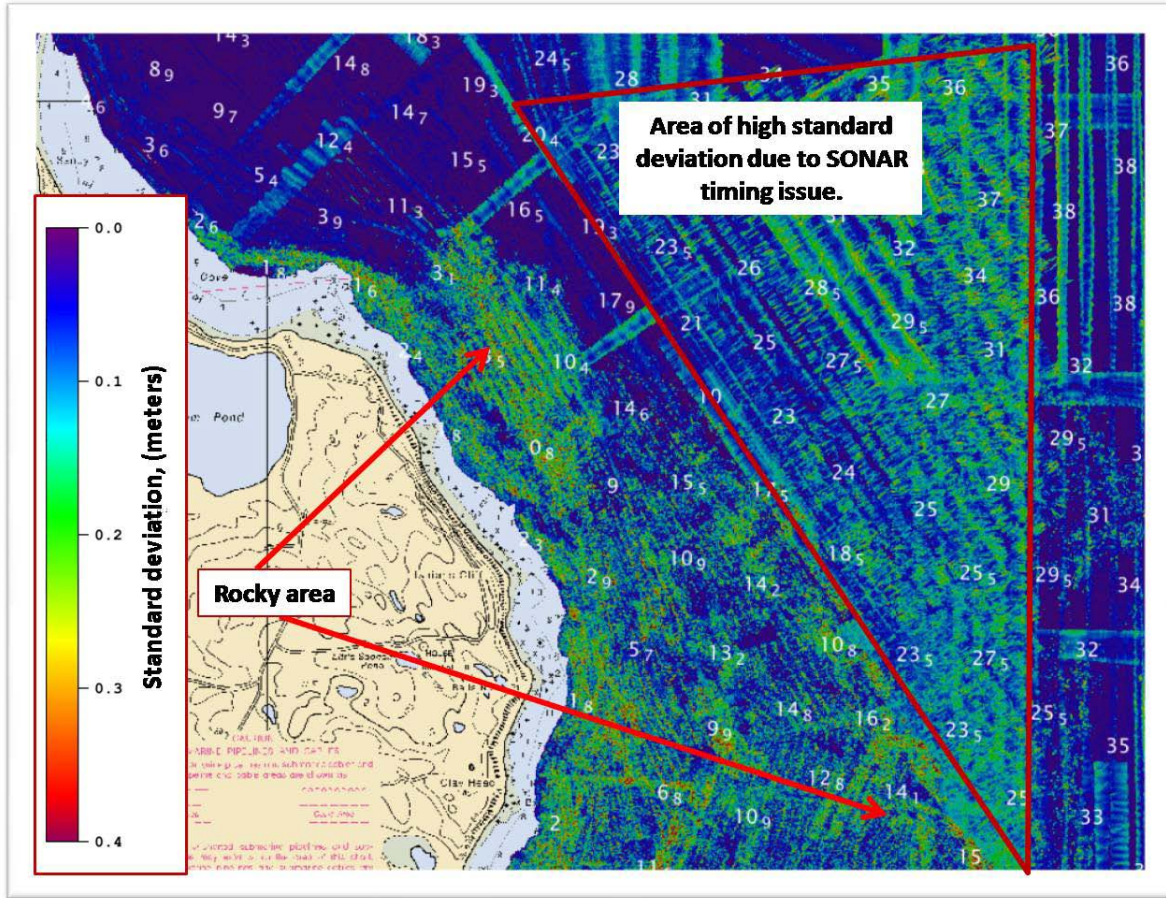


Figure 3: Triangular area showing relatively high standard deviation due to timing issue in Reson 7125 SONAR. Soundings are in meters.

TJ’s acquisitions practices for this survey did not always account for meeting Object Detection Multi-Beam (ODMB) coverage as a function of sounding density. Generally, a density of 5 soundings per node meets all coverage requirements. Density requirements were met throughout the depth ranges for the survey except in areas between 14-20 meters, where data density was as low as 2 soundings per node (fig 4). This problem was a combination of the MBES pinging rate too low for the depth of water and speed of the vessel while surveying. This issue has been addressed in concurrent surveys by increasing the MB pinging rate, and/or slowing the down the vessel in these depth areas. *Concur.*



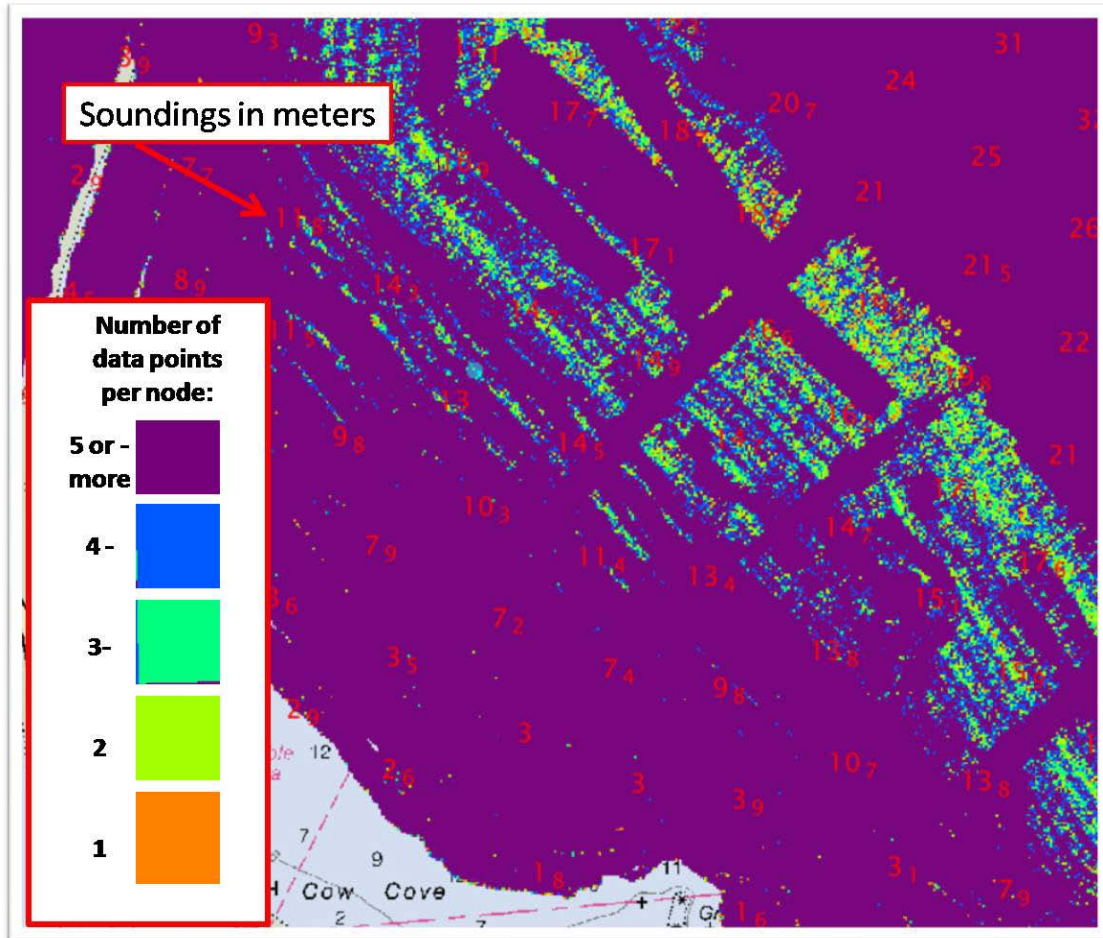


Figure 4: Areas of rarified SONAR data density between the 14 to 20 meter isobaths lines. Coverage should have been 5 or more pings per  $\frac{1}{2}$  meter node in this area.

## B 2.4 Crosslines

MB cross-lines totaling 26 lineal nautical miles, comprising 4 percent of hydrography were acquired during the course of the survey. As per email dated 10 Sept 2009 from AHB, (see appendix V) the quality control check was done using the standard deviation layer of the survey's CUBE surface. Areas of unusually high standard deviation were investigated and resolved in processing, except where caused by areas of high bathymetric relief or features or as described in Section 2.3 Systematic Errors. There was an observable difference between the ship data and that from the launches. Data from the ship show the water depth to be from 20 to 30cm deeper. This discrepancy has not been resolved but appears to be within the IHO standard. Figure 5 shows an example of the standard deviation between ship and launch 3101 data.

*Concur.*

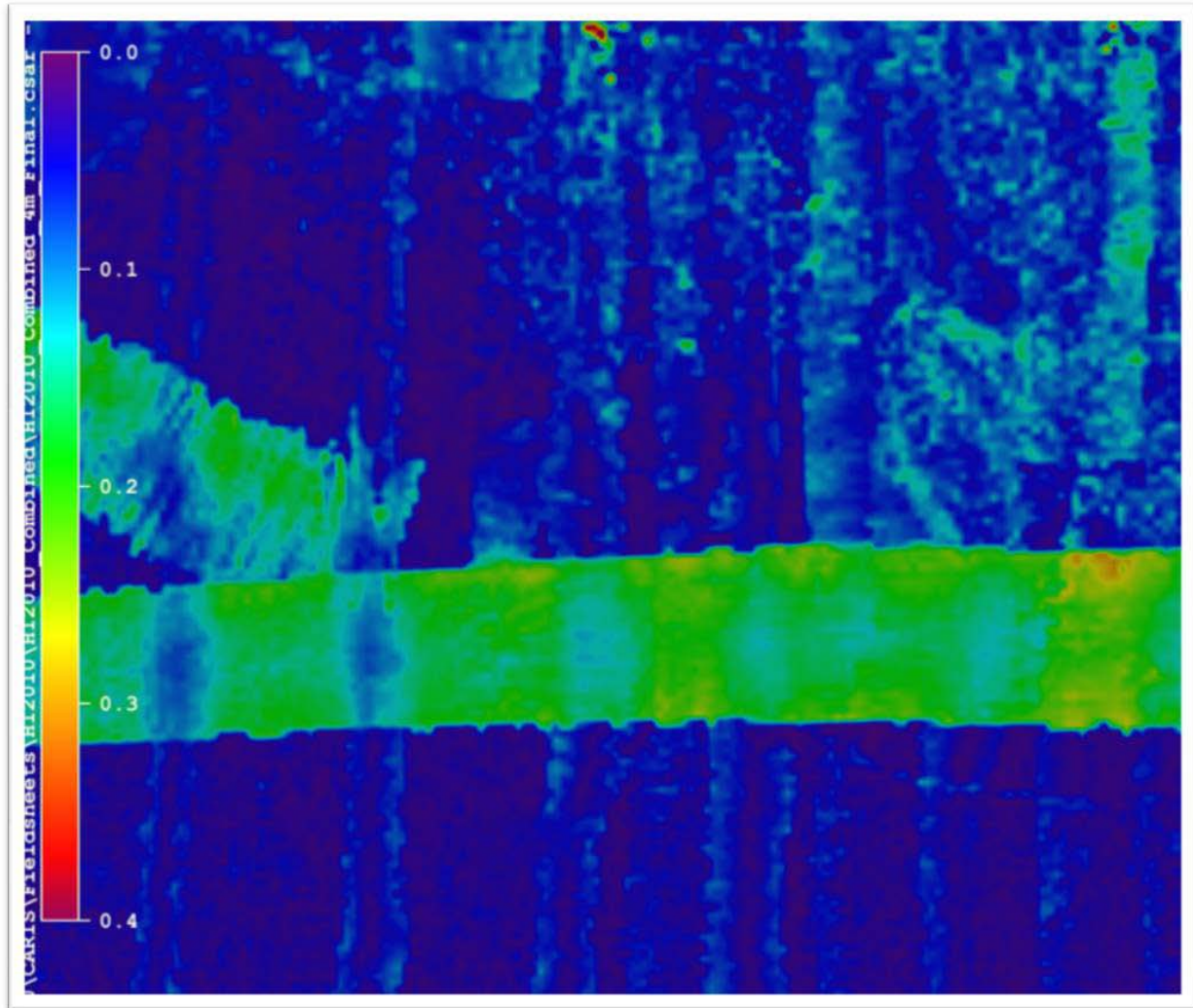


Figure 5: standard deviation between ship and launch data; horizontal track line is ship data.

**B 2.4 Junctions and Prior Surveys** *See also the H-Cell Report.*

The following contemporary surveys junction with H12010, see figure 6.

<u>Registry #</u>	<u>Scale</u>	<u>Year</u>	<u>Field Party</u>	<u>Junction side</u>
H12009	1:20,000	2009	<i>Thomas Jefferson</i>	east
H12033	1:7,500	2009	<i>Thomas Jefferson</i>	northwest
H12011	1:7,500	2009	<i>Thomas Jefferson</i>	north

Each of these junction surveys were acquired concurrently with H12010 and the same year with the same equipment as H12010. They were compared using CARIS BASE Editor by creating a ‘difference surface’. The surfaces lined up within less than 0.3 meters everywhere except where there were steep sand waves. In these locations the bathymetry may have shifted between survey times. *Concur.*

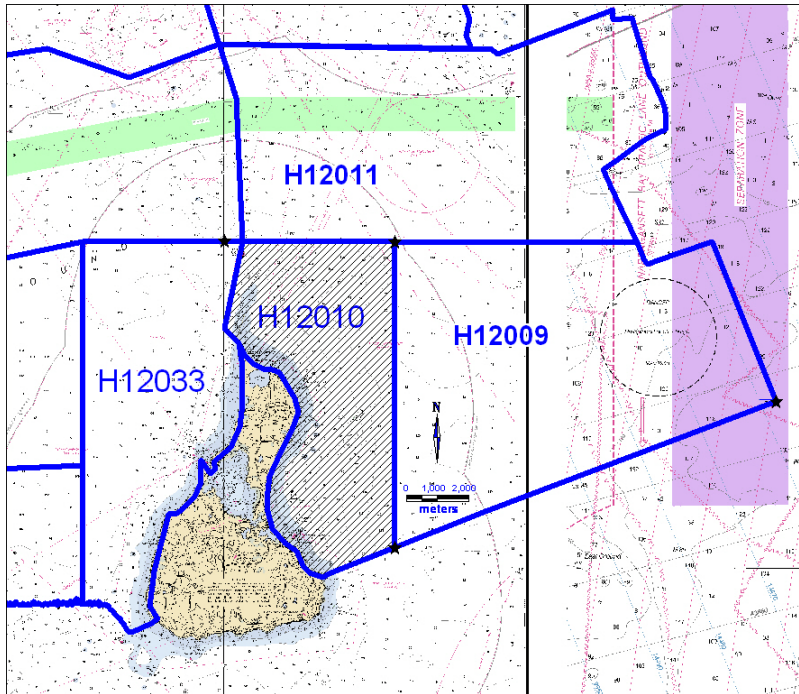


Figure 6: H12010 Junction Surveys

### B 3. CORRECTIONS TO ECHO SOUNDING

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified water levels from New London, CT (8461490), Newport, RI (8452660), and Montauk, NY (8510560) adjusted for tidal constituents and residuals provided by CO-OPS as specified in the Letter Instructions and illustrated in Figure 7. *Concur.*

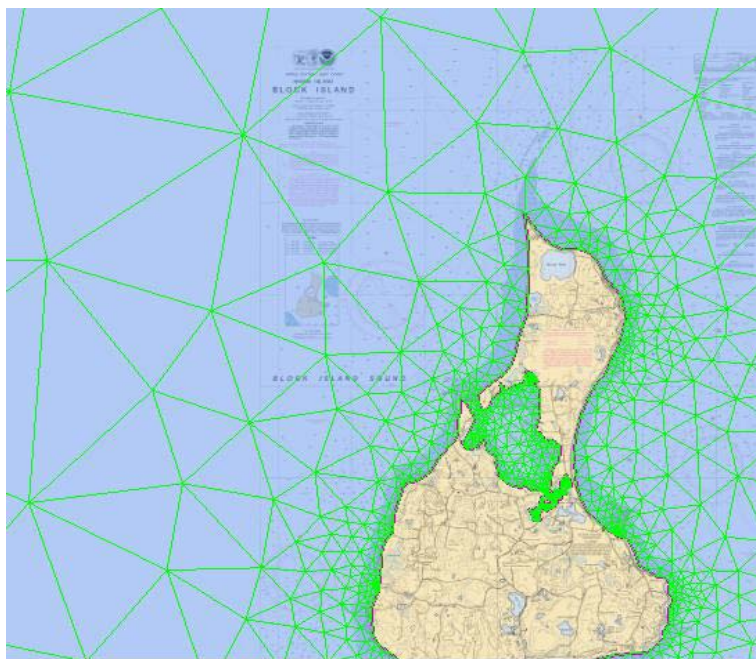


Figure 7: Final Tide Zoning

All other datum reduction procedures conform to those outlined in the *DAPR\**.

All methods and instruments used for sound velocity correction were as described in the *DAPR\**. A table detailing all sound velocity casts is located in Separate II\*\* of this Descriptive Report.

*Concur.*

## B 4. DATA PROCESSING

### B 4.1 Total Propagated Error

For the 2009 field season, Total Propagated Error (TPE) parameters for sound speed and tides are calculated separately for each project. The project-specific parameters for H12010 are shown in table 3. These values were applied to all MBES data following the CARIS Merge. *Concur.*

Vessel	Tide Values		Sound Speed Values	
	Measured	Zoning	Measured	Surface
S222 (MVP)	TCARI	TCARI	1	0.2
3101	TCARI	TCARI	4	0.2
3102	TCARI	TCARI	4	0.2

Table 3: TPE Parameters

### B 4.2 BASE Surfaces and Mosaics

Table 4 lists all BASE Surfaces and Mosaics submitted as part of Survey H12010. *Concur.*

Name of Surfaces and/or Mosaics	Resolution	Type	Purpose
H12010_FS1_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS2_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS3_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS4_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS5_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS6_CUBE_2m_Final	2.0 meter	CUBE	Sounding Coverage
H12010_FS1_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
H12010_FS2_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
H12010_FS3_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
H12010_FS4_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
H12010_FS5_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
H12010_FS6_CUBE_50cm_Final	0.5 meter	CUBE	Sounding Coverage
NE_Wreck	0.5 meter	CUBE	Sounding Coverage
Wreck_BI_North	0.25 meter	CUBE	Sounding Coverage
H12010_1m_Mosaic	1.0 meter		Side Scan Coverage

Table 4: submitted fieldsheets

*\*Included with survey deliverables.*

*\*\*Included with original field unit submission.*

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to NOAA\_0.5m for the 0.5 meter coverage surfaces and NOAA\_2m for the 2 meter coverage surfaces. The Finalized surfaces were depth threshold using 0 to 20.0 meters for the 0.5 meter grids and 18.0 to 99 meters for the 2 meter grids. Refer to the 2009 DAPR, 2007 FPM, and CARIS HIPS/SIPS 6.1 manual for further discussion.

*Concur.*

#### **B 4.3 Data cleaning**

The survey data were cleaned using the swath and subset editor tools in CARIS. All areas of the BASE surface that indicated a high standard deviation were examined and cleaned with CARIS subset editor as required such that no residual errors exist in the surface that exceed the IHO order 1 depth accuracy requirements. *Concur.*

#### **C. HORIZONTAL AND VERTICAL CONTROL *See also the H-Cell Report.***

As per FPM section 5.2.3.2.3 a HVCR report was not filed as no horizontal or vertical control stations were established by the field party for this survey. A summary of horizontal and vertical control for this survey follows. *Concur.*

##### **C 1.1 Horizontal Control**

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Moriches, NY (293 kHz), and Sandy Hook, NJ (286 kHz), were used during this survey. *Concur.*

No horizontal control stations were established by the field party for this survey. *Concur.*

##### **C 1.2 Vertical Control**

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) stations at New London, CT (8461490), Newport, RI (8452660), and Montauk, NY (8510560) served as datum control for H12010. Verified tides with final TCARI constituents and residuals were applied to all sounding data. *Concur.*

A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 27 August 2009 in accordance with the FPM and project letter instructions. Final smooth tide letter received 4 September 2009, use TCARI grid B363TJ2009-TCARI-Revised as final.

*Concur. Approved tides and zoning were applied during field processing.*

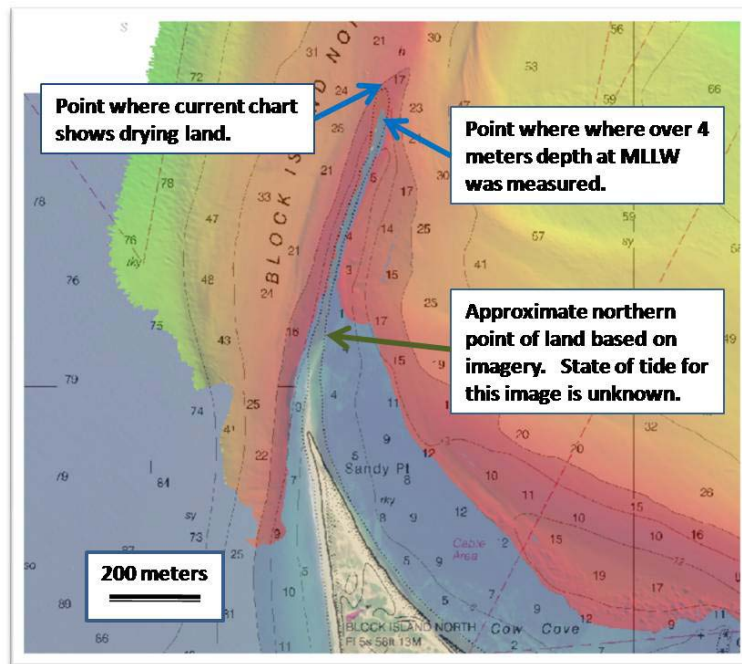
#### **D RESULTS AND RECOMMENDATIONS *See also the H-Cell Report.***

##### **D.1 Chart Comparison**

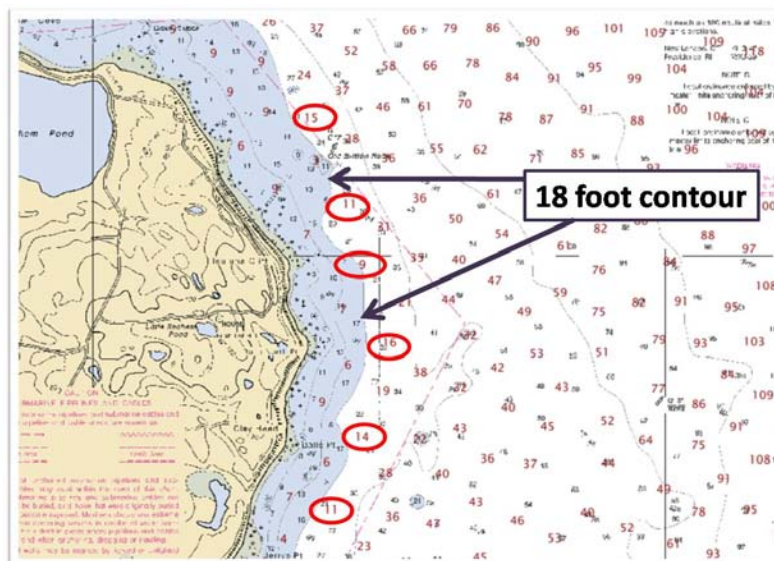
Survey H12010 affects charts 13215 (18<sup>th</sup> Ed.; August 2004, 1:40,000), chart 13217 (15<sup>th</sup> Ed.; November 2006, 1:15,000), chart 13218 (40<sup>th</sup> Ed.; February 2008, 1:80,000), chart 13003 (49<sup>th</sup> Ed.; April 2007, 1:1,200,000), chart 13006 (35<sup>th</sup> Ed.; April 2009, 1:1,675,000), chart 5161 (13<sup>th</sup>

Ed.; October 2003, 1:1,058,400) and ENC's US4CN21M, USMA23M, US3NY01M, and US2EC03M. Data from this survey were compared to the highest resolution of these charts (13217). **Concur.**

There are many places where the current survey varies from the latest published chart. Block Island North Reef is several feet shoal of the charted soundings along most of its length. The spit of land which projects north of Block Island North Light does not appear to extend as far north as charted and should perhaps be adjusted using aerial photos as a reference, see figure 8. From Grove Point Rock south to Jerry's Point the 12 and 18 foot contour should be extended farther off shore to accommodate many shoal rocks and obstructions, see figure 9. **Concur.**



**Figure 8: chart, aerial imagery and current DTM showing northern extent of Block Island.**



**Figure 9: north eastern side of island where soundings are significantly shoal of published chart.** South of Old Harbor there are numerous shoals and rocks which are shallower than the soundings reported on the chart. Some of these have already been reported as DTONs, the rest are adequately reflected in the BASE surfaces. *Concur with clarification - Additional DTONs were submitted during office processing. See Appendix I for charting recommendation.*

Off shore of the 60 foot contour the chart accurately reflects the bathymetry measured in this survey. *Concur.*

**D.2 Additional Results**

**D.2.1 Automated Wreck and Obstruction Information Service (AWOIS) Items**

A total of 14 assigned AWOIS items were located within the limits of H12010. 6 of these were investigated during this survey. AWOIS items were investigated with complete multibeam and 200% side scan sonar over the search radius where navigable. An exception to this rule is AWOIS item 1838, *Princess Augusta*. This item was developed using OD MB. The investigated AWOIS items are described in detail in Appendix II of this report. The 8 maritime boundary point AWOIS items were not investigated as they were too shoal for safe navigation with our current vessel assets. *Concur – See Appendix II for final charting recommendations of the AWOIS item.*

**D.2.2 Shoreline**

Shoreline was not investigated due to numerous large rocks near the shoreline. *Concur*

**D.2.3 Charted Features**

Table 5 shows a feature which is located as charted and its representation on the chart is adequate. The hydrographer recommends retaining the following features as charted:

Description of Feature	Charted Latitude	Charted Longitude	Least Depth
Old Britton Rock	41.2208° N	071.5536° W	3 feet

*Concur with clarification – It is recommended that the 3 Old Britton Rock be charted in present survey location.*

**Table 5: Charted Features**

All other charted features and item investigations are described in detail in Appendix II of this report. *Concur.*

**D.2.4 Charted Pipelines and Cables**

There are no charted pipelines that through this survey area. *Concur.*

Two charted cable areas are located in the survey area at the north end of the island and near Old Harbor. The cables are not and visible in the multibeam data. The Hydrographer has no recommendations regarding these cables. *Concur with clarification – Retain as charted.*

### D.2.5 Bridges, Ferry Routes, and Overhead Cables

Traditional hulled automotive and high speed twin hulled passenger ferries operate from New London, CT, Point Judith and Newport, RI. As many as fifteen round trips a day transit the survey area and into Old Harbor. These ferries are critical to the island’s economy as they are the primary source of goods and fuel deliveries. For information on vessels and schedules see [www.blockislandferry.com](http://www.blockislandferry.com) or [www.longislandferry.com](http://www.longislandferry.com). **Concur.**

There are no bridges or overhead cables within this survey area. **Concur.**

### D.3 Dangers to Navigation and Shoals

#### D 3.1 Dangers to Navigation

14 dangers to navigation, see table 6, were found and reported to the NOAA’s Office of Coast Survey, Marine Chart Division (MCD) for verification and final submission. A copy of each Danger to Navigation Report is included in Appendix I, and a copy of each DTON email to MCD is located in Appendix V of this Descriptive Report. **Concur with clarification. Additional DTONs were sent during office processing.**

No:	Feature Type	Depth	Latitude				Longitude			
1.1	Rock	6.99 m	41°	12'	13.7"	N	071°	33'	03.0"	W*
1.2	Rock	3.51 m	41°	12'	<del>13.7"</del> 19.6	N	071°	33'	10.0"	W*
1.3	Rock	2.91 m	41°	12'	<del>13.7"</del> 58.5	N	071°	33'	03.3"	W*
1.4	Rock	3.18 m	41°	<del>12'10</del>	<del>13.7"</del> 09.9	N	071°	32'	48.9"	W*
1.5	Rock	4.68 m	41°	<del>12'10</del>	<del>13.7"</del> 06.6	N	071°	32'	34.4"	W*
1.6	Rock	1.27 m	41°	12'	<del>13.7"</del> 14.8	N	071°	33'	19.9"	W*
1.7	Rock	3.37 m	41°	<del>12'13</del>	<del>13.7"</del> 08.2	N	071°	33'	06.1"	W*
1.8	Rock	4.4 m	41°	12'	13.70"	N	071°	33'	03.3"	W*
1.9	Rock	1.13 m	41°	12'	<del>13.7"</del> 55.9	N	071°	33'	08.8"	W*
1.1	Rock	1.16 m	41°	12'	<del>13.7"</del> 44.9	N	071°	33'	06.6"	W*
1.11	Rock	3.83 m	41°	<del>12'13</del>	<del>13.7"</del> 36.5	N	071°	33'	24.2"	W*
1.12	Rock	2.35 m	41°	<del>12'13</del>	<del>13.7"</del> 19.2	N	071°	33'	17.9"	W*
1.13	Rock	1.75 m	41°	<del>12'13</del>	<del>13.7"</del> 32.2	N	071°	33'	58.7"	W*
1.14	Rock	3.88 m	41°	<del>12'10</del>	<del>13.7"</del> 47.8	N	071°	33'	28.1"	W*

Table 6: Dangers to Navigation

**See Appendix I for charting recommendations.**



#### **D.4 Aids to Navigation**

There are eight charted Aids to Navigation (ATONs) within the limits of H12010. *Concur.*

All Aids to Navigation were found to be on station and serving their intended purpose. The Hydrographer has no recommendations regarding these ATONs. *Concur.*

#### **D.5 Coast Pilot Information**

The Hydrographer has no recommendations for changes or addenda to the Coast Pilot. *Concur.*

#### **D.6 Miscellaneous**

##### **Bottom Samples**

A total of 17 seabed samples were collected throughout the survey area. A list of bottom samples is contained in Appendix V. *Concur.*

#### **D.8 Adequacy of Survey**

This survey is considered complete and adequate to supersede charted depths within the common area as per requirements specified in the Project Letter Instructions. *Concur.*

**E APPROVAL**

As Lead Hydrographer, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Office of Coast Survey Hydrographic Surveys Division's *Field Procedures Manual*, and NOS *Hydrographic Surveys Specifications and Deliverables*. Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to N/CS33, Atlantic Hydrographic Branch.

The Data Acquisition and Processing Report for OPR-B363-TJ-09 is submitted separately and contains additional information relevant to this survey.

Approved and Forwarded:

---

LT Jasper D. Schaer, NOAA  
Field Operations Officer

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CDR Shepard M. Smith  
Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Managers:

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Douglas Wood, NOAA  
Senior Survey Technician

**Appendix I**  
**Dangers to Navigation**

**-14**

# H12010\_DTONS

**Registry Number:** H12010  
**State:** Rhode Island  
**Locality:** Block Island Sound  
**Sub-locality:** Block Island North Reef to Old Harbor Pt  
**Project Number:** OPR-B363-TJ-09  
**Survey Dates:** 07/23/2009 - 08/11/2009

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13217	15th	11/01/2006	1:15,000 (13217_1)	USCG LNM: 12/30/2008 (03/10/2009) CHS NTM: None (02/27/2009) NGA NTM: None (03/21/2009)
13215	19th	12/01/2009	1:40,000 (13215_1)	USCG LNM: 12/08/2009 (05/11/2010) CHS NTM: None (04/30/2010) NGA NTM: None (05/22/2010)
13205	38th	02/01/2007	1:80,000 (13205_1)	[L]NTM: ?
13218	40th	02/01/2008	1:80,000 (13218_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.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	23 ft depth	Shoal	6.99 m	41° 12' 13.7" N	071° 33' 03.0" W	---
1.2	16 ft depth	Shoal	5.03 m	41° 12' 08.7" N	071° 33' 12.5" W	---
1.3	11 ft depth	Shoal	3.51 m	41° 12' 19.6" N	071° 33' 10.0" W	---
1.4	9 ft depth	Shoal	2.91 m	41° 12' 58.5" N	071° 33' 03.3" W	---
1.5	10 ft depth	Shoal	3.18 m	41° 10' 09.9" N	071° 32' 48.9" W	---
1.6	15 ft depth	Shoal	4.68 m	41° 10' 06.6" N	071° 32' 34.4" W	---
1.7	4 ft depth	Shoal	1.27 m	41° 12' 14.8" N	071° 33' 19.9" W	---

1.8	16 ft depth	Shoal	5.09 m	41° 12' 56.9" N	071° 32' 59.0" W	---
1.9	11 Rk	Rock	3.37 m	41° 13' 08.2" N	071° 33' 06.1" W	---
1.10	9 ft depth	Shoal	2.71 m	41° 12' 42.7" N	071° 33' 02.9" W	---
1.11	14 ft depth	Shoal	4.40 m	41° 12' 31.0" N	071° 33' 03.3" W	---
1.12	3 Rk	Rock	1.13 m	41° 12' 55.9" N	071° 33' 08.8" W	---
1.13	4 ft depth	Shoal	1.16 m	41° 12' 44.9" N	071° 33' 06.6" W	---
1.14	12 ft depth	Shoal	3.83 m	41° 13' 36.5" N	071° 33' 24.2" W	---
1.15	7 ft depth	Shoal	2.35 m	41° 13' 19.2" N	071° 33' 17.9" W	---
1.16	6 ft depth	Shoal	1.75 m	41° 13' 38.2" N	071° 33' 58.7" W	---
1.17	11 ft depth	Shoal	3.30 m	41° 14' 49.7" N	071° 34' 19.9" W	---
1.18	12 ft depth	Shoal	3.88 m	41° 10' 47.8" N	071° 33' 28.1" W	---

**1 - DR\_DToN**

**1.1) 23 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 13.7" N, 071° 33' 03.0" W  
**Least Depth:** 6.99 m (= 22.92 ft = 3.819 fm = 3 fm 4.92 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.111$  m  
**Timestamp:** 2009-206.16:40:58.665 (07/25/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-206 / 001\_1639  
**Profile/Beam:** 639/131  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-206/001_1639	639/131	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

23ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

7.0m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## Office Notes

Rock determined insignificant during office processing. Delete 23 Rk. Add 23 ft depth.

## Feature Images



### Feature Images

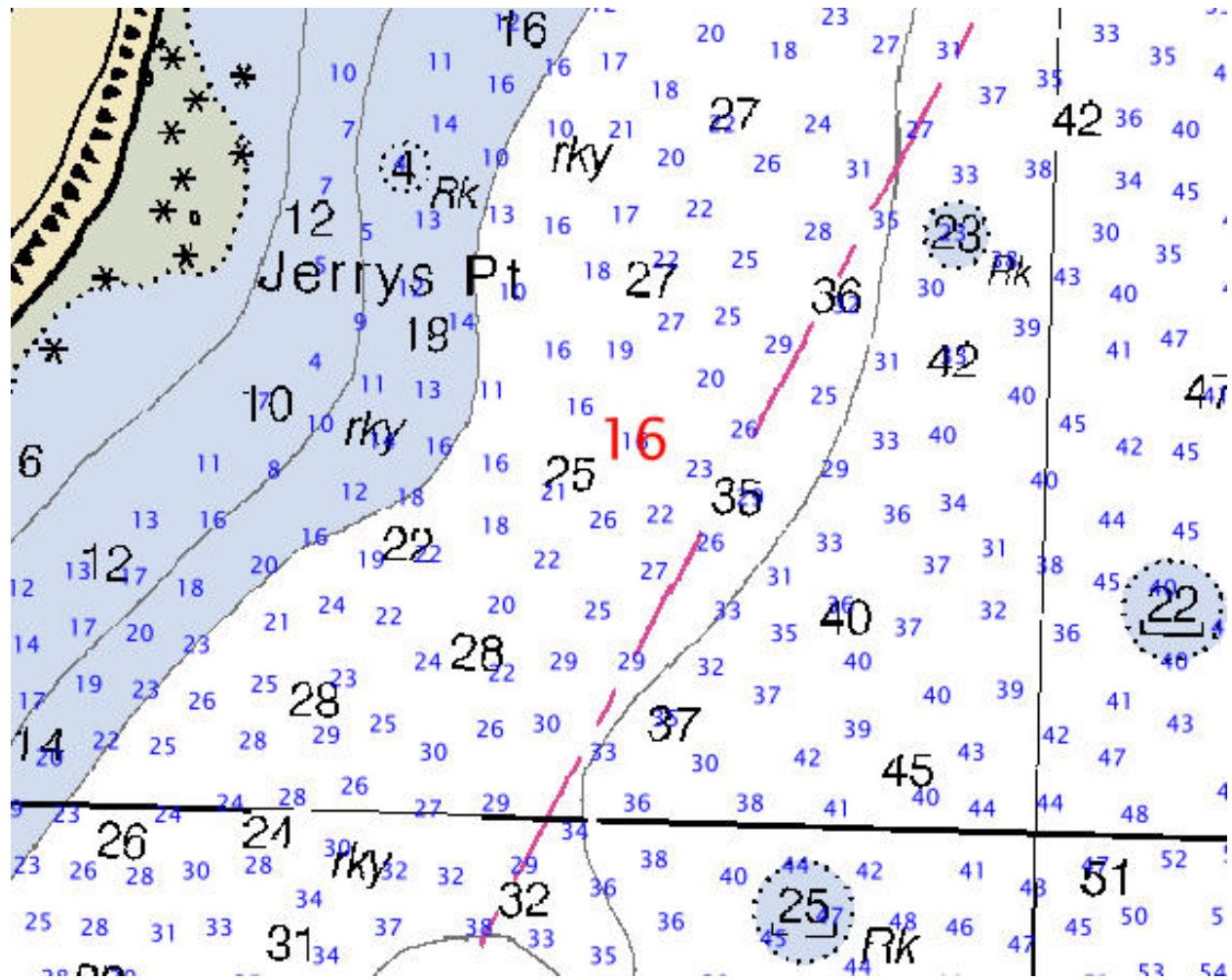
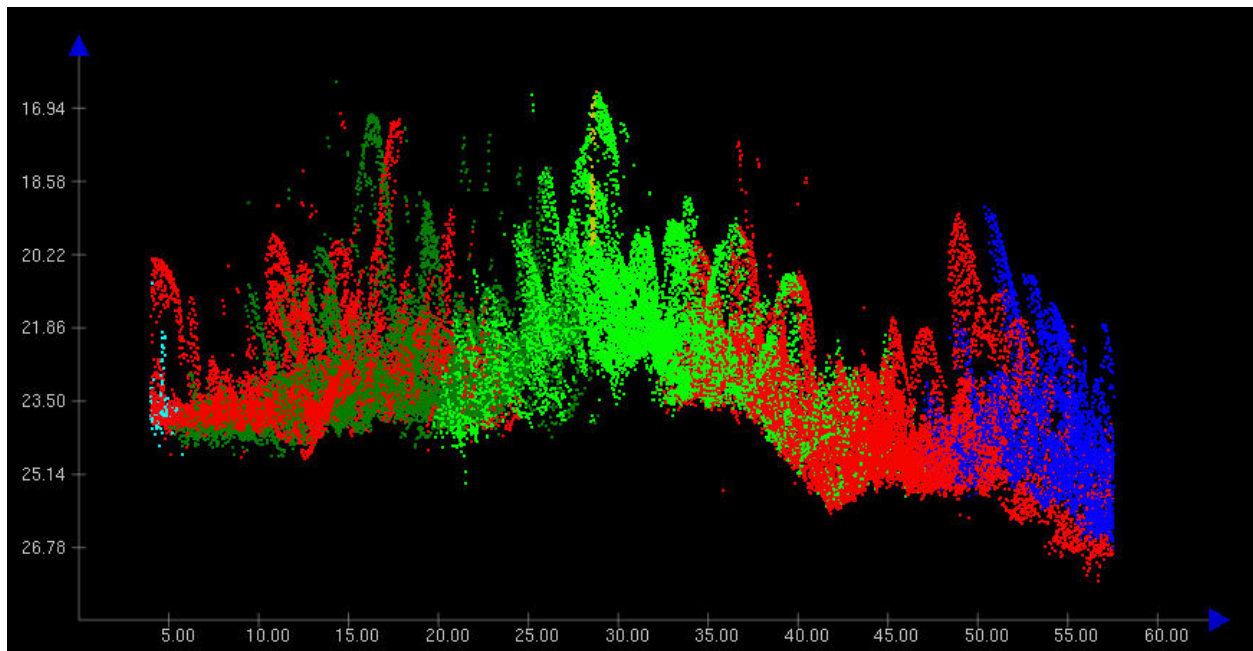


Figure 1.2.1



*Figure 1.2.2*

**1.2) 11 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 19.6" N, 071° 33' 10.0" W  
**Least Depth:** 3.51 m (= 11.52 ft = 1.920 fm = 1 fm 5.52 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.110$  m  
**Timestamp:** 2009-207.12:49:52.306 (07/26/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-207 / 001\_1249  
**Profile/Beam:** 104/23  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-207/001_1249	104/23	0.00	000.0	Primary
h12010/tj_3101_reson8125_mb/2009-207/001_1544	254/213	26.41	297.3	Secondary
h12010/tj_3102_reson7125_mb/2009-207/004_2001	6664/137	43.10	195.2	Secondary (grouped)
h12010/tj_3101_reson8125_mb/2009-207/001_1352	377/39	92.59	073.6	Secondary (grouped)
h12010/tj_3101_reson8125_mb/2009-207/001_1333	605/1	101.93	026.9	Secondary (grouped)
h12010/tj_3101_reson8125_mb/2009-207/001_1342	7057/42	164.47	045.3	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-206/106_1745	1156/100	324.67	303.3	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

11ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ¾fm (12300\_1, 13006\_1, 13003\_1)

3.5m (5161\_1)

## S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 16:Mean high water

## Office Notes

Rock determined insignificant during office processing. Delete 11 Rk. Add 11 ft depth.

## Feature Images

### 1.3) 9 ft depth

## DANGER TO NAVIGATION

### Survey Summary

**Survey Position:** 41° 12' 58.5" N, 071° 33' 03.3" W  
**Least Depth:** 2.91 m (= 9.54 ft = 1.590 fm = 1 fm 3.54 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.106$  m  
**Timestamp:** 2009-223.17:02:41.418 (08/11/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-223 / 961\_1702  
**Profile/Beam:** 343/69  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted depth.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-223/961_1702	343/69	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-204/204_090723201700	0006	3.48	301.8	Secondary (grouped)

### Hydrographer Recommendations

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ½fm (12300\_1, 13006\_1, 13003\_1)

2.9m (5161\_1)

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

---

## Office Notes

Rock determined insignificant during office processing. Delete 9 Rk. Add 9 ft depth.

## Feature Images

**1.4) 10 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 10' 09.9" N, 071° 32' 48.9" W  
**Least Depth:** 3.18 m (= 10.44 ft = 1.740 fm = 1 fm 4.44 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-204.18:44:30.867 (07/23/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-204 / 001\_1839  
**Profile/Beam:** 3294/272  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-204/001_1839	3294/272	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

10ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

3.2m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## Office Notes

Rocc determined insignificant during office processing. Delete 10 Rk. Add 10 ft depth.

## Feature Images



**1.5) 15 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 10' 06.6" N, 071° 32' 34.4" W  
**Least Depth:** 4.68 m (= 15.34 ft = 2.557 fm = 2 fm 3.34 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.004$  m ; **TVU (TPEv)**  $\pm 0.289$  m  
**Timestamp:** 2009-204.17:31:08.225 (07/23/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-204 / 002\_1725  
**Profile/Beam:** 3894/512  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-204/002_1725	3894/512	0.00	000.0	Primary
h12010/tj_3101_klein5000_sss100/2009-218/103_090806205500	0002	20.13	356.6	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-204/001_1733	1477/475	20.72	350.5	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

15ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

2 ½fm (12300\_1, 13006\_1, 13003\_1)

4.7m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## Office Notes

Rock determined insignificant during office processing. Delete 15 Rk. Add 15 ft depth.

## Feature Images

**1.6) 4 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 14.8" N, 071° 33' 19.9" W  
**Least Depth:** 1.27 m (= 4.18 ft = 0.697 fm = 0 fm 4.18 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.002$  m ; **TVU (TPEv)**  $\pm 0.285$  m  
**Timestamp:** 2009-206.14:11:14.055 (07/25/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-206 / 104\_1411  
**Profile/Beam:** 64/1  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted depth.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-206/104_1411	64/1	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-206/104_090725140800	0004	3.16	225.7	Secondary
h12010/tj_3101_reson8125_mb/2009-207/001_1459	1634/87	51.96	024.6	Secondary (grouped)
h12010/tj_3101_reson8125_mb/2009-207/001_1507	1318/240	64.81	041.8	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

4ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

1.3m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## Office Notes

Rock determined insignificant during office processing. Delete 4 Rk. Add 4 ft depth.

## Feature Images

### Feature Images

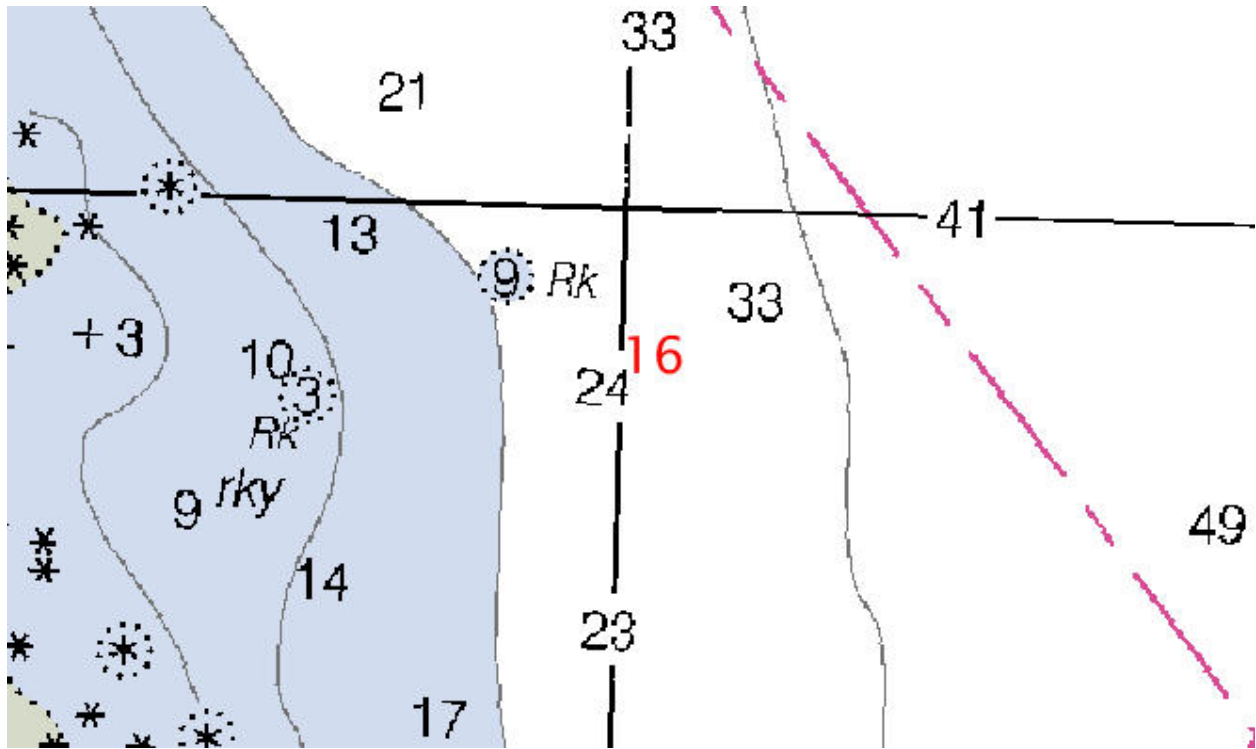


Figure 1.8.1

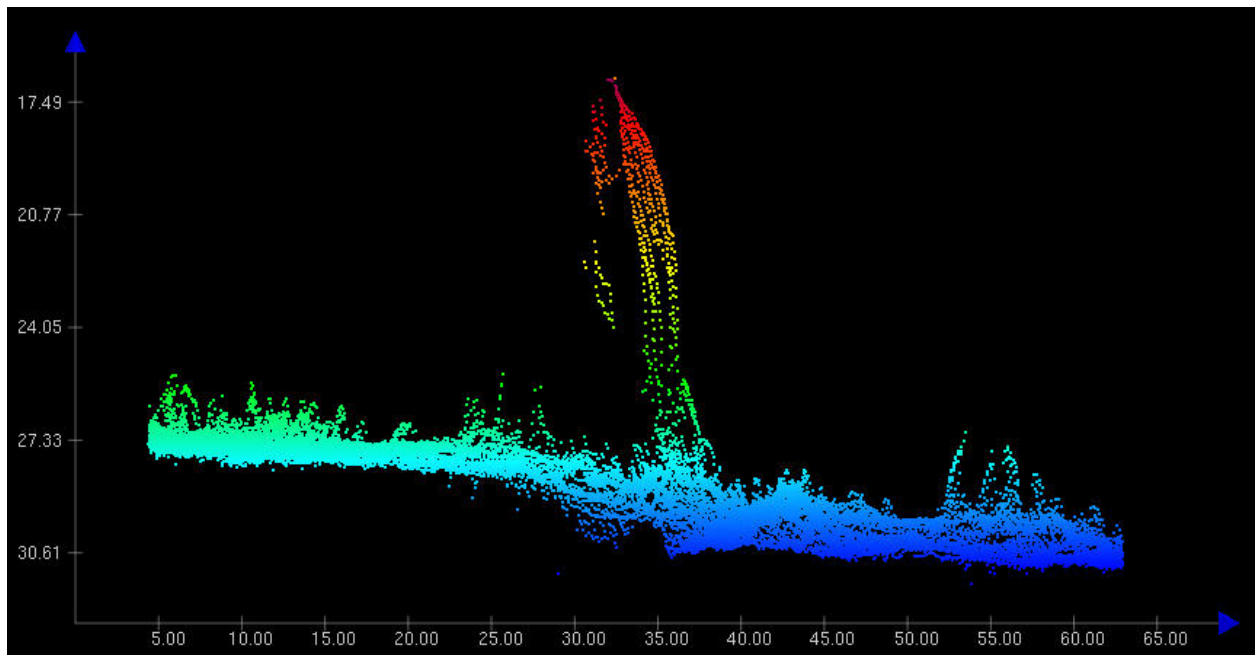


Figure 1.8.2

**1.7) 11 Rk****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 13' 08.2" N, 071° 33' 06.1" W  
**Least Depth:** 3.37 m (= 11.06 ft = 1.843 fm = 1 fm 5.06 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.002$  m ; **TVU (TPEv)**  $\pm 0.286$  m  
**Timestamp:** 2009-207.19:28:51.776 (07/26/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-207 / 004\_1927  
**Profile/Beam:** 1194/9  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted soundings.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-207/004_1927	1194/9	0.00	000.0	Primary
h12010/tj_3102_reson7125_mb/2009-207/004_1927	1194/24	1.05	277.3	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-207/004_1927	815/5	117.07	014.4	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

11ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

3.4m (5161\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819

TECSOU - 3:found by multi-beam

VALSOU - 3.370 m

VERDAT - 16:Mean high water

WATLEV - 3:always under water/submerged

### **Office Notes**

Chart rock with a depth of 11 feet in present survey location. Delete 11 Rk. Add 11 Rk and danger curve.

### **Feature Images**

### Feature Images

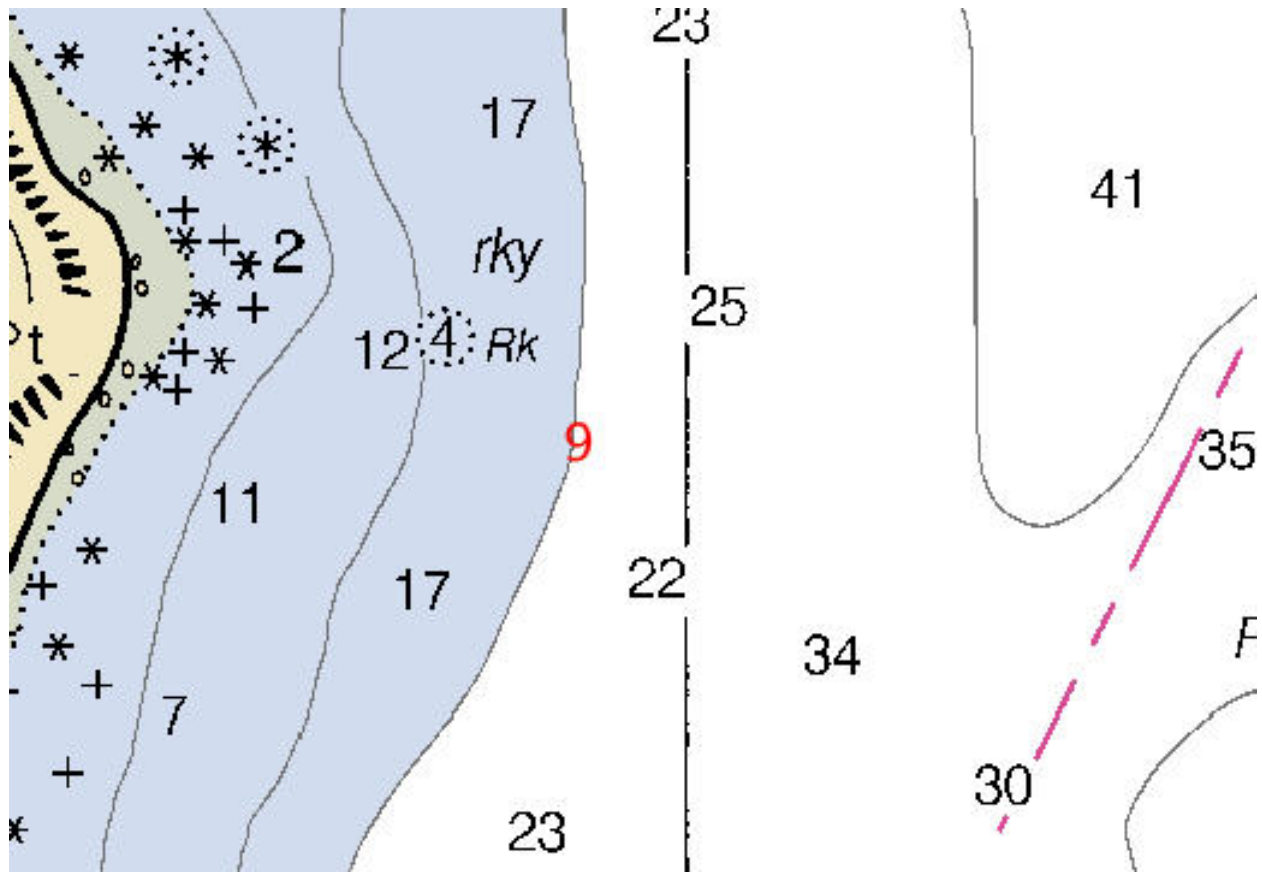


Figure 1.10.1

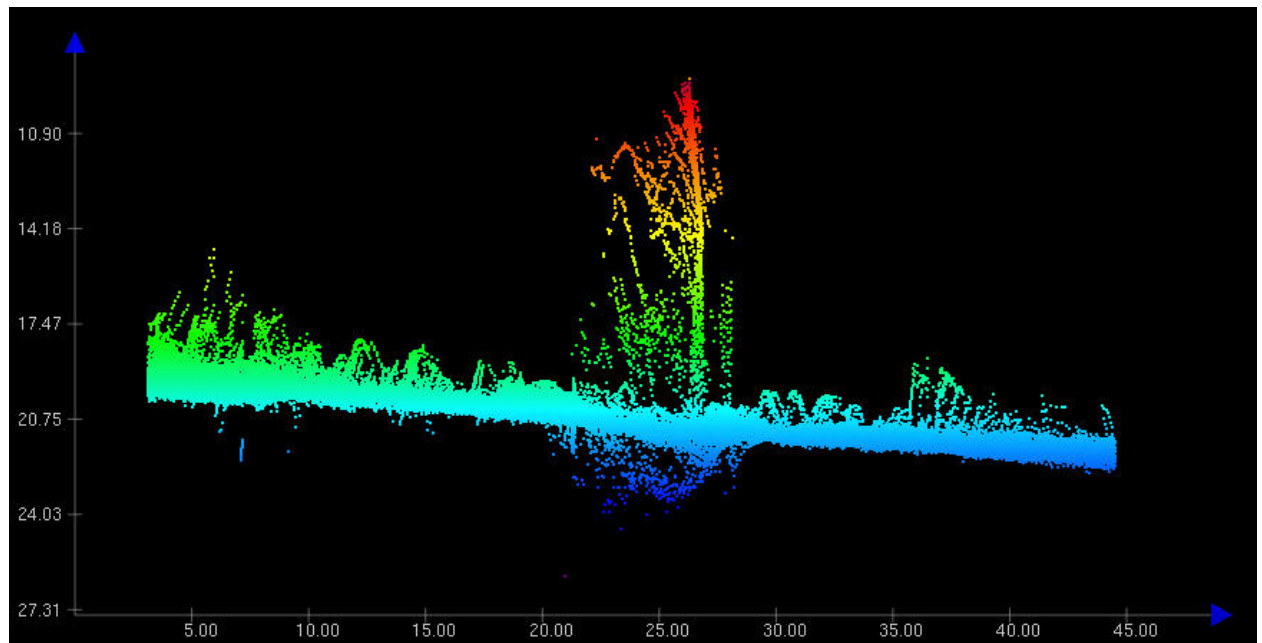
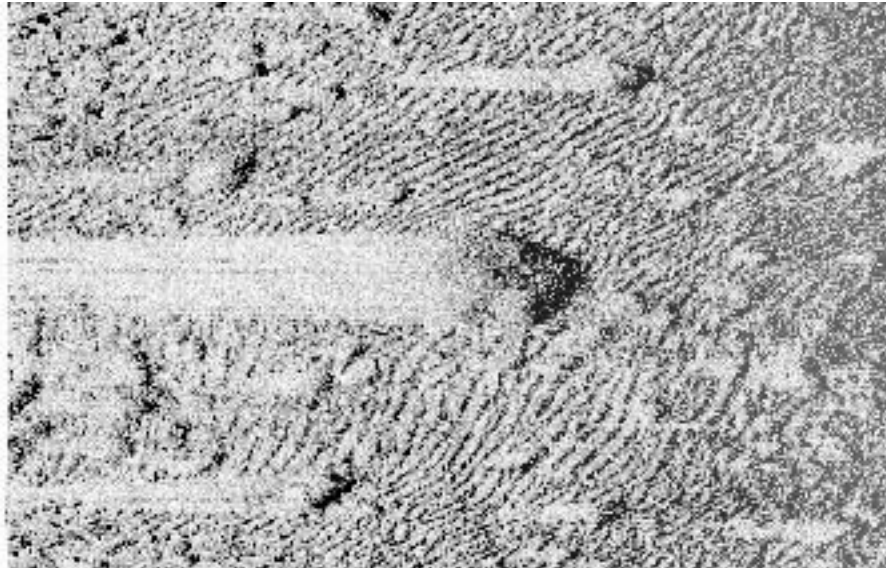


Figure 1.10.2





*Figure 1.10.3*

**1.8) 14 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 31.0" N, 071° 33' 03.3" W  
**Least Depth:** 4.40 m (= 14.42 ft = 2.404 fm = 2 fm 2.42 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.285$  m  
**Timestamp:** 2009-208.18:37:11.694 (07/27/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-208 / 003\_1836  
**Profile/Beam:** 492/152  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-208/003_1836	492/152	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

14ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

2 ¼fm (12300\_1, 13006\_1, 13003\_1)

4.4m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

## Office Notes

Rock determined insignificant during office processing. Delete 14 Rk. Add 14 ft depth.

## Feature Images

**1.9) 3 Rk****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 55.9" N, 071° 33' 08.8" W  
**Least Depth:** 1.13 m (= 3.69 ft = 0.616 fm = 0 fm 3.69 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-208.17:25:45.074 (07/27/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-208 / 007\_1722  
**Profile/Beam:** 1714/238  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-208/007_1722	1714/238	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

3ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

0 ½fm (12300\_1, 13006\_1, 13003\_1)

1.1m (5161\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 TECSOU - 3:found by multi-beam  
 VALSOU - 1.126 m

VERDAT - 16:Mean high water

WATLEV - 3:always under water/submerged

### **Office Notes**

Chart rock with a depth of 3 feet in present survey location. Delete 3 Rk. Add 3 Rk and danger curve.

### **Feature Images**

**1.10) 4 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 44.9" N, 071° 33' 06.6" W  
**Least Depth:** 1.16 m (= 3.79 ft = 0.632 fm = 0 fm 3.79 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.002$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-208.17:38:30.010 (07/27/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-208 / 008\_1734  
**Profile/Beam:** 2360/108  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted depth.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-208/008_1734	2360/108	0.00	000.0	Primary
h12010/tj_3102_reson7125_mb/2009-208/008_1734	2458/97	39.83	172.4	Secondary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

4ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

0 ½fm (12300\_1, 13006\_1, 13003\_1)

1.2m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VERDAT - 16:Mean high water

---

## **Office Notes**

Rock determined insignificant during office processing. Delete 4 Rk. Add 4 ft depth.

## **Feature Images**

**1.11) 12 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 13' 36.5" N, 071° 33' 24.2" W  
**Least Depth:** 3.83 m (= 12.58 ft = 2.096 fm = 2 fm 0.58 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.285$  m  
**Timestamp:** 2009-210.14:37:18.090 (07/29/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-210 / 416\_1433  
**Profile/Beam:** 4627/25  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Large rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-210/416_1433	4627/25	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_200/2009-223/222_090811201000	0002	58.34	320.9	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-210/438_1548	3192/141	163.08	002.0	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

12ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

2fm (12300\_1, 13006\_1, 13003\_1)

3.8m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)



---

## Office Notes

Rock determined insignificant during office processing. Delete 12 Rk. Add 12 ft depth.

## Feature Images

**1.12) 7 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 13' 19.2" N, 071° 33' 17.9" W  
**Least Depth:** 2.35 m (= 7.71 ft = 1.285 fm = 1 fm 1.71 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.285$  m  
**Timestamp:** 2009-210.15:55:29.027 (07/29/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-210 / 438\_1548  
**Profile/Beam:** 4424/3  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-210/438_1548	4424/3	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-223/120_090811194000	0003	1.35	343.3	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-223/121_090811193800	0004	34.25	211.4	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-204/001_1956	22241/510	35.53	213.4	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

7ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ¼fm (12300\_1, 13006\_1, 13003\_1)

2.4m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## **Office Notes**

Rock determined insignificant during office processing. Delete 7 Rk. Add 7 ft depth.

## **Feature Images**

**1.13) 6 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 13' 38.2" N, 071° 33' 58.7" W  
**Least Depth:** 1.75 m (= 5.74 ft = 0.957 fm = 0 fm 5.74 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-210.17:22:59.727 (07/29/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-210 / 453\_1721  
**Profile/Beam:** 1165/83  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted sounding.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-210/453_1721	1165/83	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

5ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1fm (12300\_1, 13006\_1, 13003\_1)

1.8m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

---

## **Office Notes**

Rock determined insignificant during office processing. Delete 5 Rk. Add 6 ft depth.

## **Feature Images**

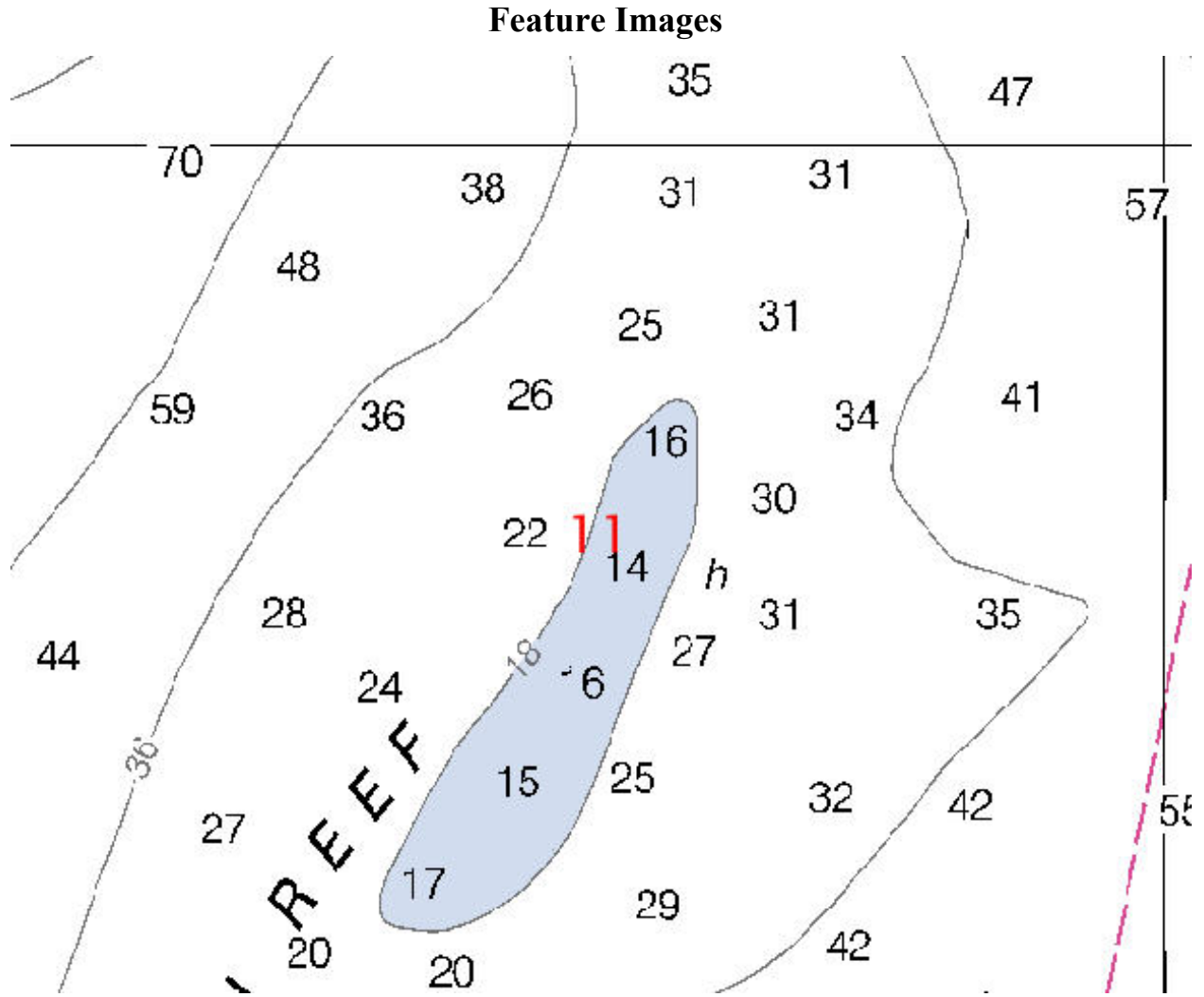


Figure 1.17.1

**1.14) 12 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 10' 47.8" N, 071° 33' 28.1" W  
**Least Depth:** 3.88 m (= 12.74 ft = 2.123 fm = 2 fm 0.74 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.108$  m  
**Timestamp:** 2009-209.21:15:58.191 (07/28/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-209 / 001a2115  
**Profile/Beam:** 73/31  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, shoal of charted soundings near approach to Old Harbor.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-209/001a2115	73/31	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-204/204_090723195700	0001	2.03	212.6	Secondary (grouped)
h12010/tj_3102_klein5000_hull_200/2009-231/207_090819190200	0001	3.04	212.8	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-231/107_090819183900	0001	3.76	048.7	Secondary (grouped)

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

12ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

2fm (12300\_1, 13006\_1, 13003\_1)

3.9m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

## **Office Notes**

Rock determined insignificant during office processing. Delete 12 Rk. Add 12 ft depth.

## **Feature Images**



# H12010 DtoN Report #2

**Registry Number:** H12010  
**State:** Rhode Island  
**Locality:** Block Island Sound  
**Sub-locality:** Block Island North Reef to Old Harbor Pt  
**Project Number:** OPR-B363-TJ-09  
**Survey Dates:** 07/25/2009 - 08/05/2009

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13217	15th	11/01/2006	1:15,000 (13217_1)	USCG LNM: 12/30/2008 (03/10/2009) CHS NTM: None (02/27/2009) NGA NTM: None (03/21/2009)
13215	18th	08/01/2004	1:40,000 (13215_1)	[L]NTM: ?
13205	38th	02/01/2007	1:80,000 (13205_1)	[L]NTM: ?
13218	40th	02/01/2008	1:80,000 (13218_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.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	16ft Rock	Rock	5.03 m	41° 12' 08.7" N	071° 33' 12.5" W	---
1.2	16ft Rock	Rock	5.09 m	41° 12' 56.9" N	071° 32' 59.0" W	---
1.3	9ft Rock	Rock	2.71 m	41° 12' 42.7" N	071° 33' 02.9" W	---
1.4	11ft Sounding	Shoal	3.30 m	41° 14' 49.7" N	071° 34' 19.9" W	---

# **1 - Danger To Navigation**

**1.1) 16 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 08.7" N, 071° 33' 12.5" W  
**Least Depth:** 5.03 m (= 16.50 ft = 2.750 fm = 2 fm 4.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.110$  m  
**Timestamp:** 2009-206.18:41:56.046 (07/25/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-206 / 001a1841  
**Profile/Beam:** 97/38  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

Rock, significantly shoal of charted soundings.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-206/001a1841	97/38	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

16ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

5.0m (5161\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 3:found by multi-beam

VALSOU - 5.030 m

WATLEV - 3:always under water/submerged

### **Office Notes**

Rock determined insignificant during office processing. Delete 16 Rk. Add 16 ft depth.

### Feature Images

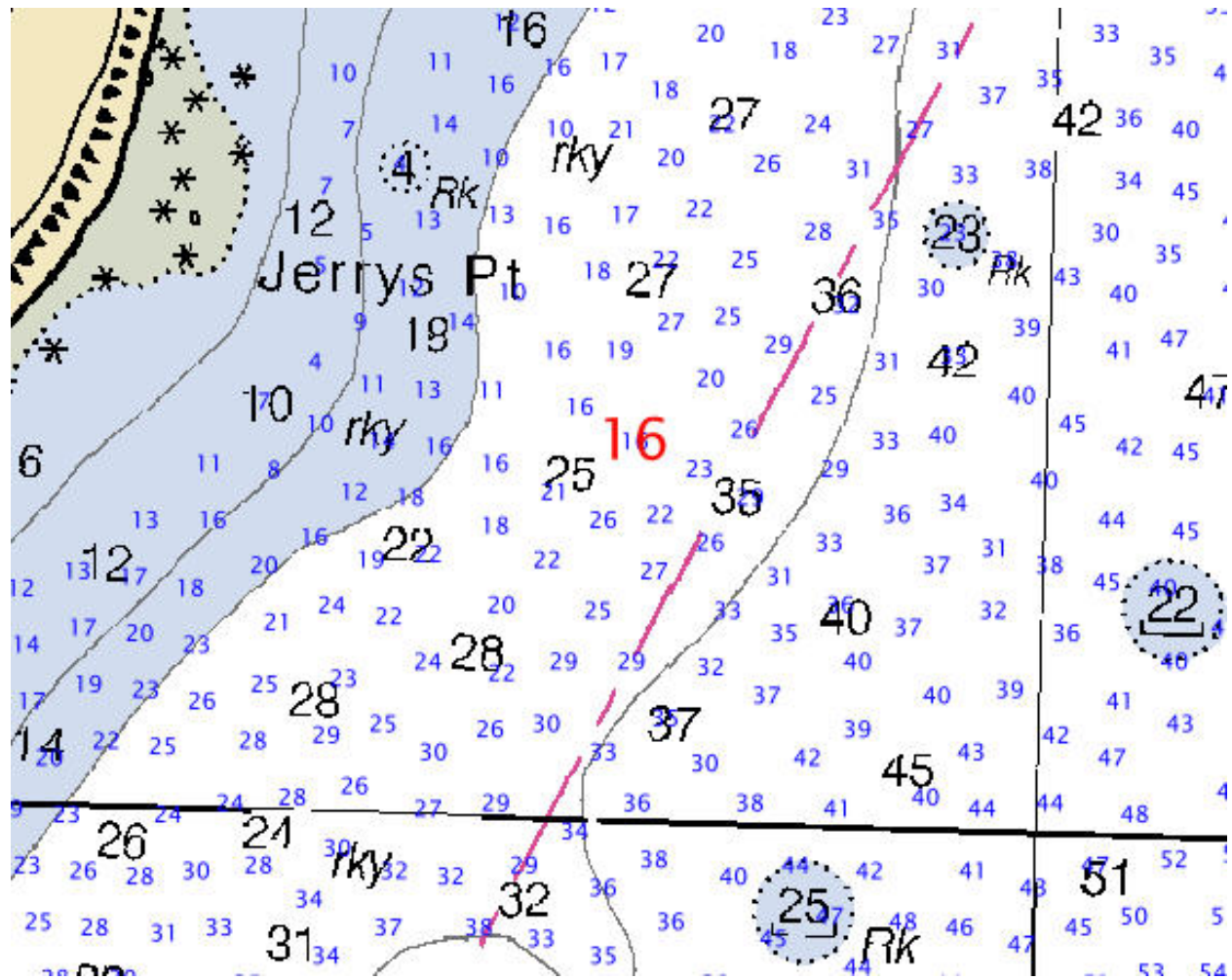


Figure 1.1.1

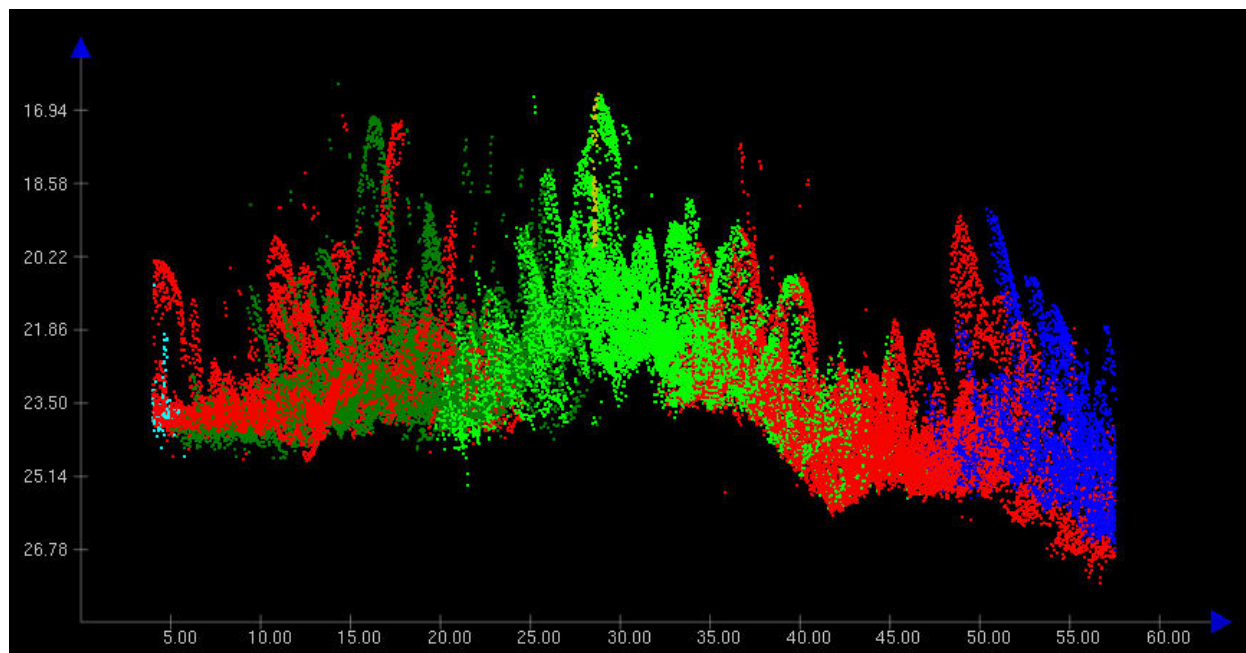


Figure 1.1.2

**1.2) 16 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 12' 56.9" N, 071° 32' 59.0" W  
**Least Depth:** 5.09 m (= 16.69 ft = 2.782 fm = 2 fm 4.69 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.004$  m ; **TVU (TPEv)**  $\pm 0.290$  m  
**Timestamp:** 2009-207.19:00:17.711 (07/26/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-207 / 004\_1857  
**Profile/Beam:** 1561/253  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-207/004_1857	1561/253	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

16ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

5.1m (5161\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 3:found by multi-beam

VALSOU - 5.088 m

WATLEV - 3:always under water/submerged

### **Office Notes**

Rock determined insignificant during office processing. Delete 16 Rk. Add 16 ft depth.



### Feature Images

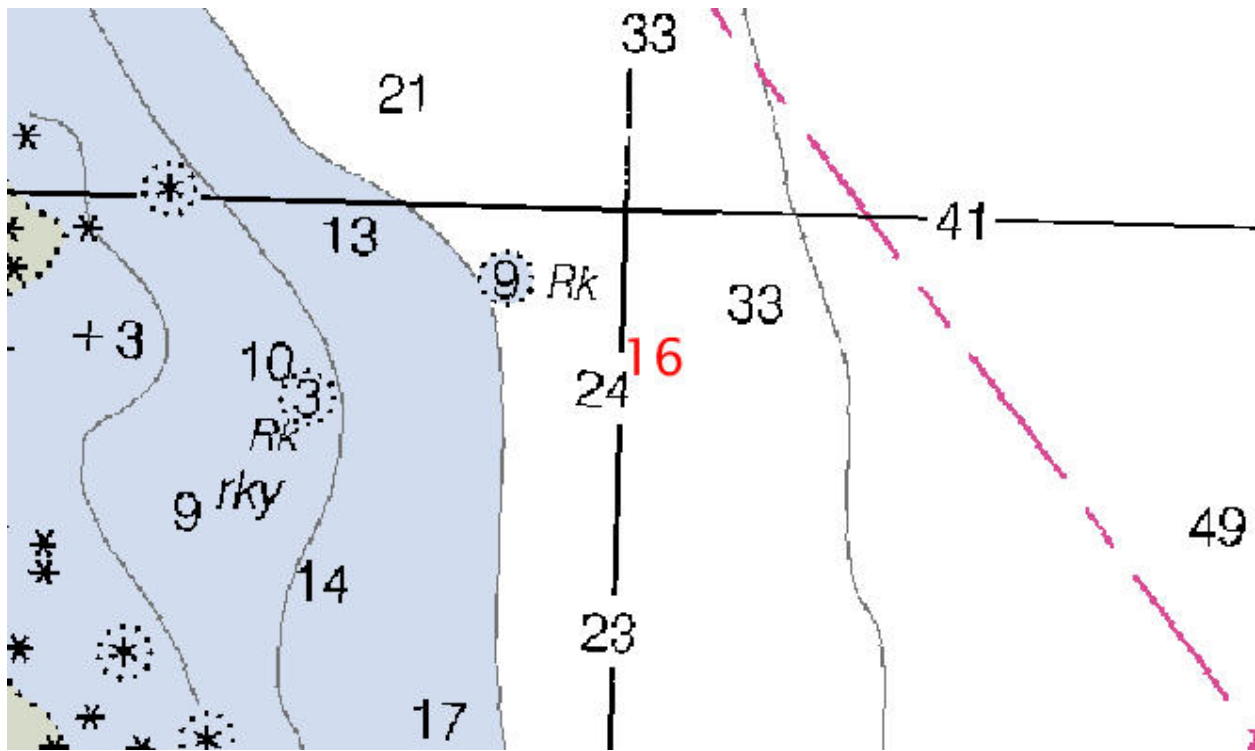


Figure 1.2.1

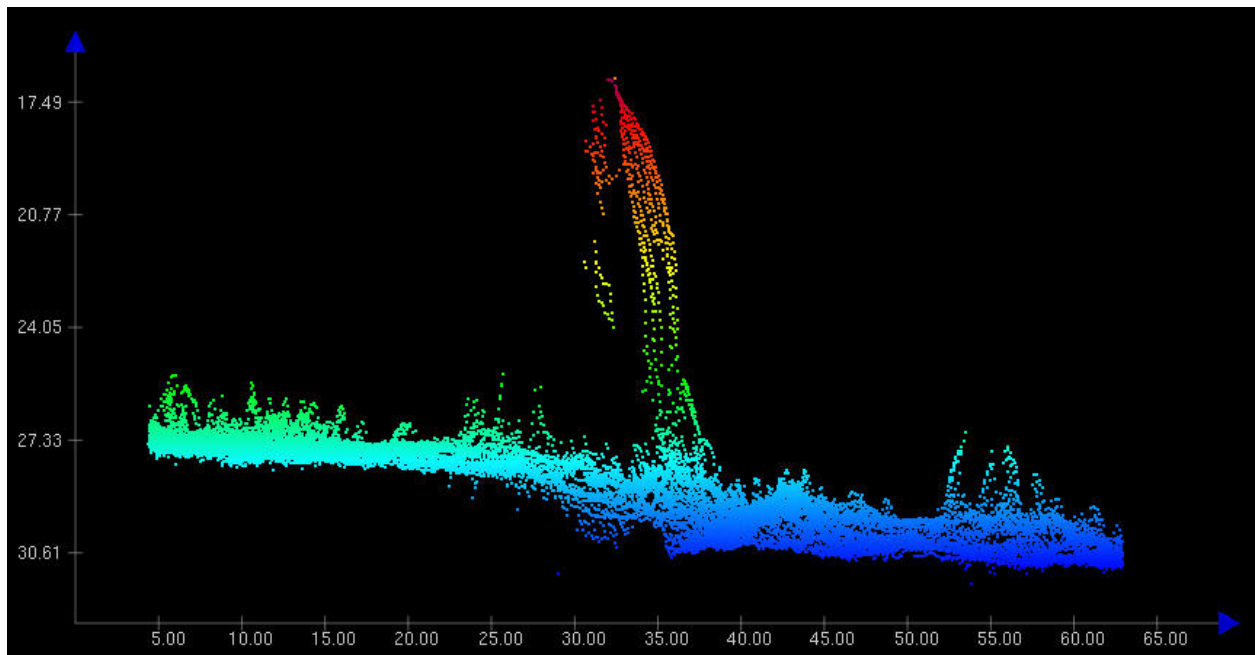


Figure 1.2.2

### 1.3) 9 ft depth

## DANGER TO NAVIGATION

### Survey Summary

**Survey Position:** 41° 12' 42.7" N, 071° 33' 02.9" W  
**Least Depth:** 2.71 m (= 8.90 ft = 1.483 fm = 1 fm 2.90 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.002$  m ; **TVU (TPEv)**  $\pm 0.285$  m  
**Timestamp:** 2009-207.20:07:59.057 (07/26/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-207 / 004\_2001  
**Profile/Beam:** 4290/256  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-207/004_2001	4290/256	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ½fm (12300\_1, 13006\_1, 13003\_1)

2.7m (5161\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 2.712 m

WATLEV - 3:always under water/submerged

### **Office Notes**

Rock determined insignificant during office processing. Delete 9 Rk. Add 9 ft depth.

### Feature Images

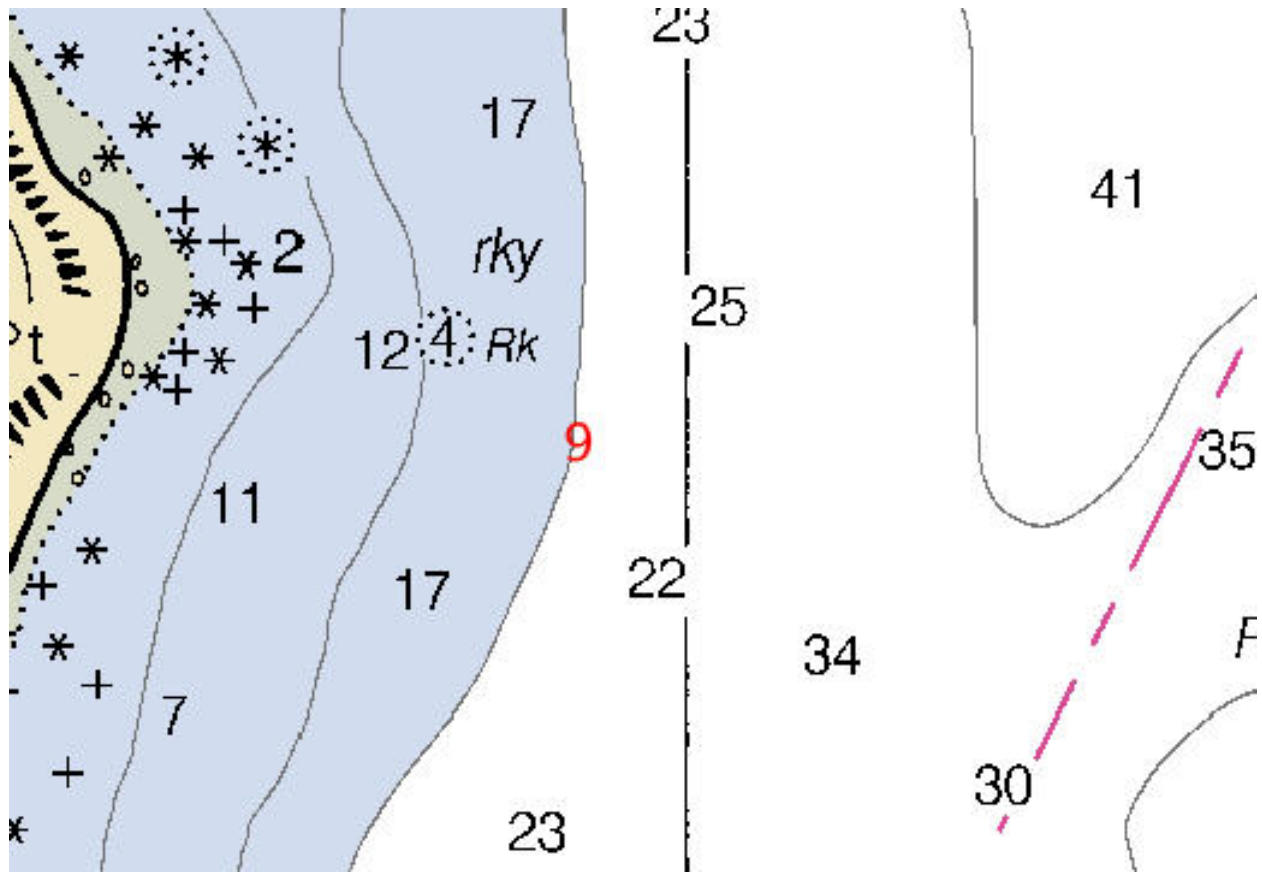


Figure 1.3.1

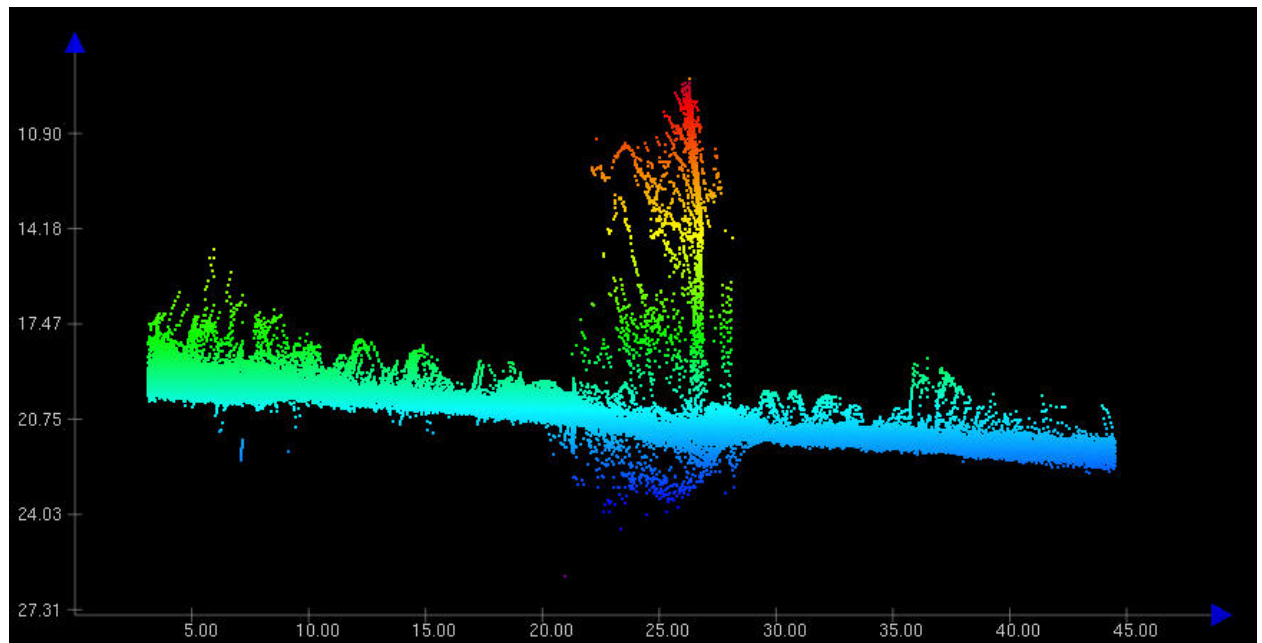
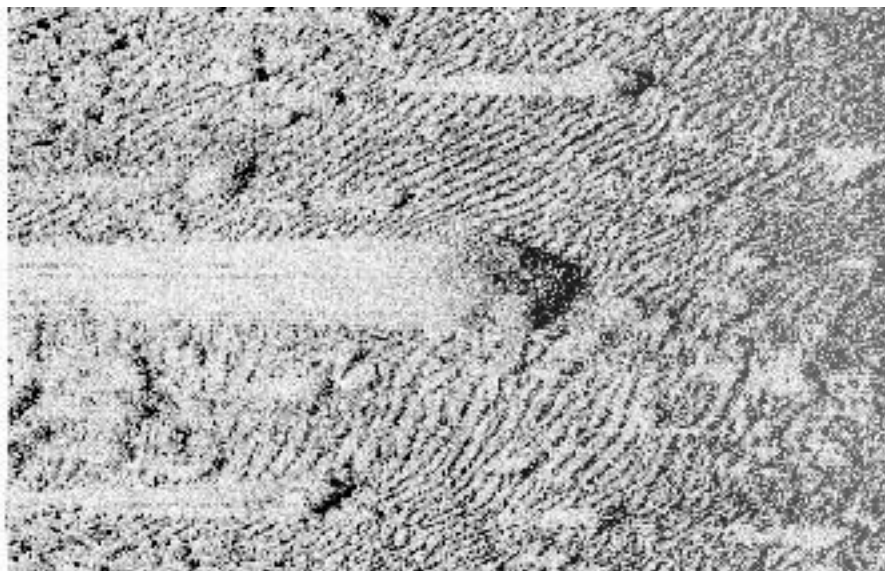


Figure 1.3.2



*Figure 1.3.3*

**1.4) 11 ft depth****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 41° 14' 49.7" N, 071° 34' 19.9" W  
**Least Depth:** 3.30 m (= 10.81 ft = 1.802 fm = 1 fm 4.81 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.004$  m ; **TVU (TPEv)**  $\pm 0.287$  m  
**Timestamp:** 2009-217.13:33:27.117 (08/05/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-217 / 467\_1328  
**Profile/Beam:** 2449/467  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-217/467_1328	2449/467	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

11ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

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

3.3m (5161\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 3:found by multi-beam

## Office Notes

Chart 11 ft depth.

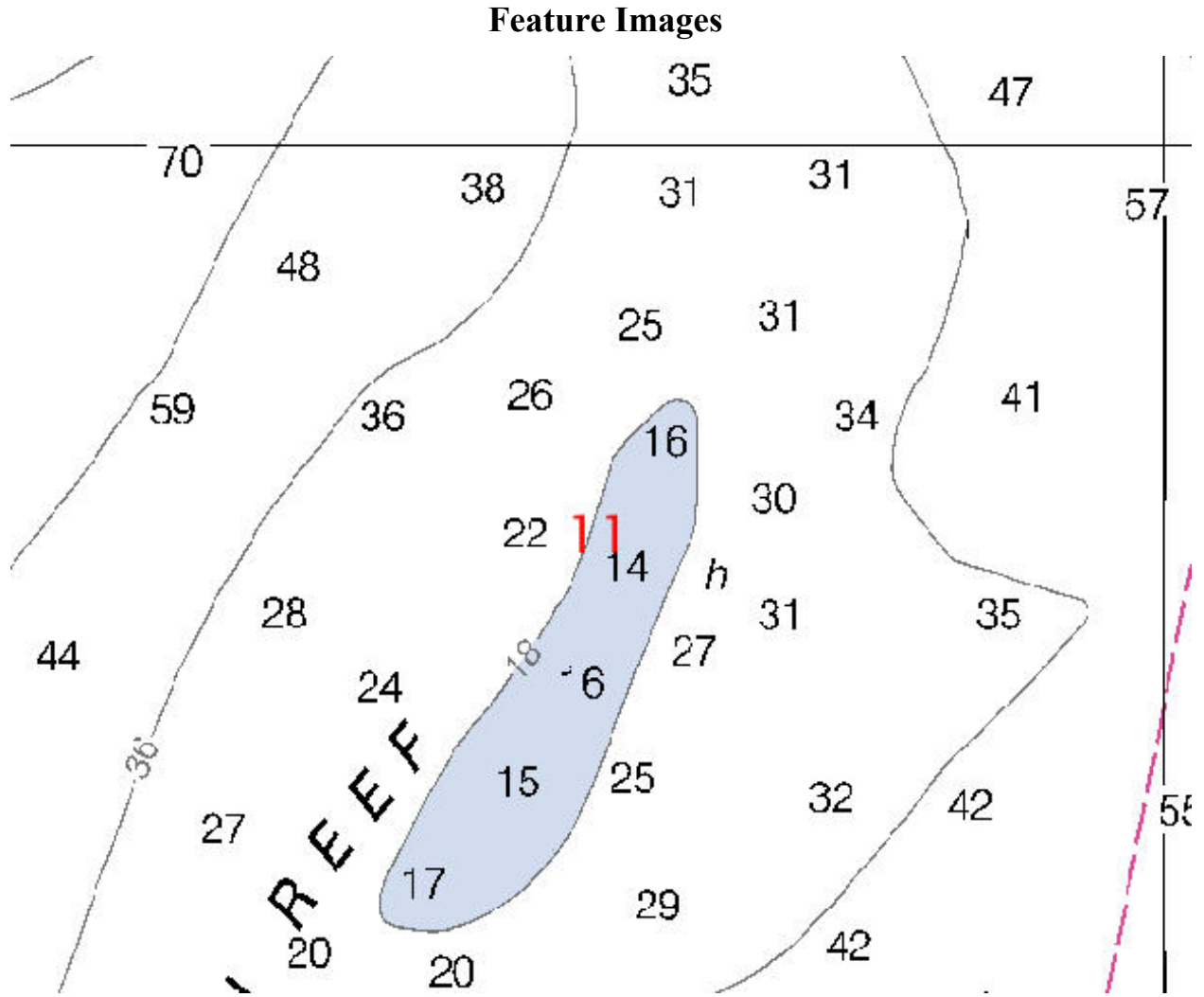


Figure 1.4.1



## **Appendix II**

### **Survey Features Report**

#### **1. AWOIS Items**

**-4**

#### **2. Charted Features**

**-1**

#### **3. Uncharted Features**

**-6**

# H12010\_CHARTED

**Registry Number:** H12010  
**State:** Rhode Island  
**Locality:** Block Island Sound  
**Sub-locality:** Block Island North Reef to Old Harbor Pt  
**Project Number:** OPR-B363-TJ-09  
**Survey Dates:** 07/23/2009 - 04/23/2010

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13217	15th	11/01/2006	1:15,000 (13217_1)	USCG LNM: 12/30/2008 (03/10/2009) CHS NTM: None (02/27/2009) NGA NTM: None (03/21/2009)
13215	19th	12/01/2009	1:40,000 (13215_1)	USCG LNM: 12/08/2009 (05/11/2010) CHS NTM: None (04/30/2010) NGA NTM: None (05/22/2010)
13205	38th	02/01/2007	1:80,000 (13205_1)	[L]NTM: ?
13218	40th	02/01/2008	1:80,000 (13218_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.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS #1836 - disproved	Wreck	5.45 m	41° 13' 26.7" N	071° 33' 18.3" W	---
1.2	21Rk	Rock	6.41 m	41° 12' 30.9" N	071° 32' 51.2" W	---
1.3	32 Rk	Rock	9.76 m	41° 12' 47.3" N	071° 32' 40.8" W	---
1.4	32 Rk	Rock	9.90 m	41° 12' 39.0" N	071° 32' 42.8" W	---
1.5	Delete 21 wire drag Rk	GP	[None]	41° 12' 20.6" N	071° 32' 52.0" W	---
1.6	Delete 22 wire drag Rk	GP	[None]	41° 12' 05.0" N	071° 32' 55.9" W	---
1.7	Delete 25 wire drag Rk	GP	[None]	41° 11' 57.8" N	071° 33' 07.0" W	---

1.8	Delete 46 Rk	GP	[None]	41° 12' 16.4" N	071° 32' 40.0" W	---
1.9	Delete 58 & 60 Rks	GP	[None]	41° 12' 19.5" N	071° 31' 57.7" W	---
1.10	Delete 90 Rk	GP	[None]	41° 12' 35.8" N	071° 31' 48.2" W	---
1.11	Delete 95 Rk	GP	[None]	41° 12' 58.8" N	071° 31' 43.6" W	---
1.12	84 ft depth	Shoal	[None]	41° 12' 58.7" N	071° 31' 58.7" W	---
1.13	Delete 29 Rk	GP	[None]	41° 10' 06.8" N	071° 32' 30.2" W	---
1.14	51ft depth	Shoal	15.67 m	41° 12' 10.1" N	071° 32' 28.6" W	---
1.15	40 ft depth	Shoal	12.23 m	41° 12' 19.0" N	071° 32' 16.1" W	---
1.16	69 ft depth	Shoal	21.05 m	41° 11' 57.1" N	071° 31' 53.2" W	---

**1 - DR\_Charted**

## 1.1) AWOIS #1836 - disproved

### Survey Summary

**Survey Position:** 41° 13' 26.7" N, 071° 33' 18.3" W  
**Least Depth:** 5.45 m (= 17.87 ft = 2.979 fm = 2 fm 5.87 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.984$  m ; **TVU (TPEv)**  $\pm 0.117$  m  
**Timestamp:** 2009-223.17:28:14.071 (08/11/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-223 / 1052  
**Profile/Beam:** 1185/12  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Dangerous sunken wreck

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-223/1052	1185/12	0.00	000.0	Primary

### Hydrographer Recommendations

Disproved by side scan sonar and multibeam.

### S-57 Data

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** VALSOU - 5.448 m

### Office Notes

Delete dangerous sunken wreck.

## 1.2) 21Rk

### Survey Summary

**Survey Position:** 41° 12' 30.9" N, 071° 32' 51.2" W  
**Least Depth:** 6.41 m (= 21.03 ft = 3.504 fm = 3 fm 3.03 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.006$  m ; **TVU (TPEv)**  $\pm 0.297$  m  
**Timestamp:** 2009-207.20:22:02.651 (07/26/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-207 / 004\_2019  
**Profile/Beam:** 1585/256  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

17Rk wire drag clearance disporved by multibeam and sisde scan sonar.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-207/004_2019	1585/256	0.00	000.0	Primary

### Hydrographer Recommendations

Delete 17 Rk wire drag clearance

**Cartographically-Rounded Depth (Affected Charts):**

21ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

3 ½fm (12300\_1, 13006\_1, 13003\_1)

6.4m (5161\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 VALSOU - 6.409 m  
 WATLEV - 3:always under water/submerged

## Office Notes

Concur - Chart a rock with a depth of 21 feet in present survey location. Delete 17 Rk wire drag clearance. Add 21 Rk and danger curve.

### Feature Images

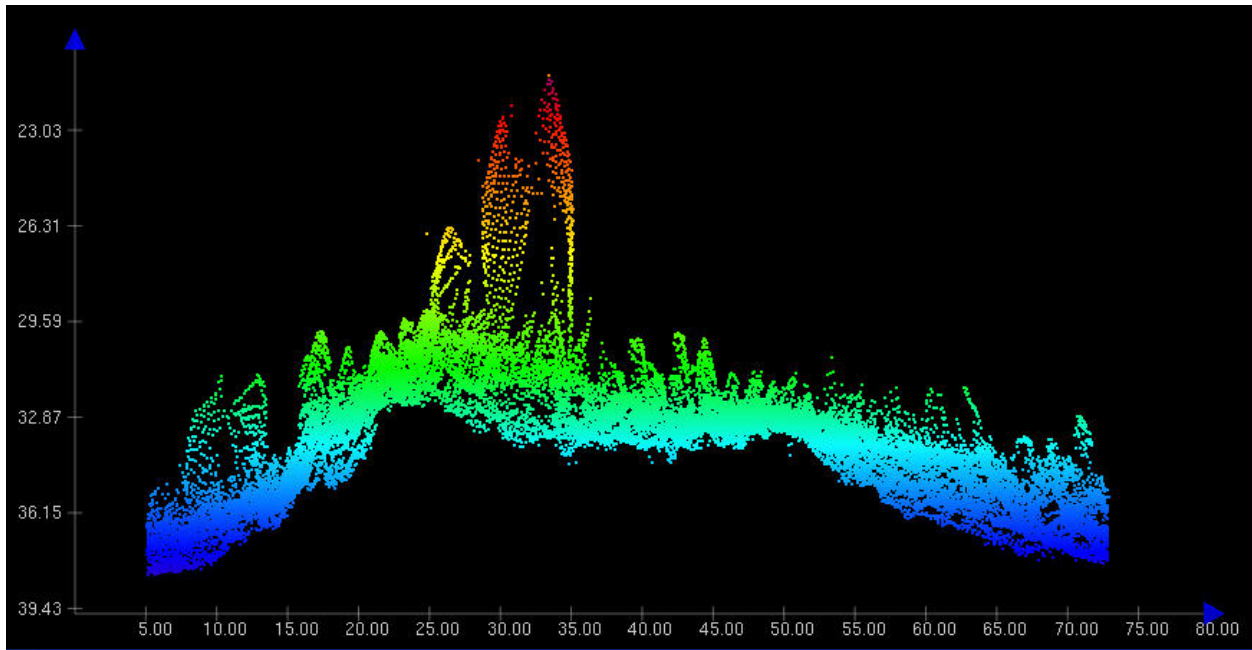


Figure 1.2.1



**1.3) 32 Rk****Survey Summary**

**Survey Position:** 41° 12' 47.3" N, 071° 32' 40.8" W  
**Least Depth:** 9.76 m (= 32.01 ft = 5.336 fm = 5 fm 2.01 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.984$  m ; **TVU (TPEv)**  $\pm 0.115$  m  
**Timestamp:** 2009-223.19:21:23.044 (08/11/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-223 / 977\_1920  
**Profile/Beam:** 192/122  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-223/977_1920	192/122	0.00	000.0	Primary
h12010/tj_3101_reson8125_mb/2009-208/001_1648	683/168	2.56	319.7	Secondary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

32ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

5 ¼fm (12300\_1, 13006\_1, 13003\_1)

9.8m (5161\_1)

**S-57 Data**

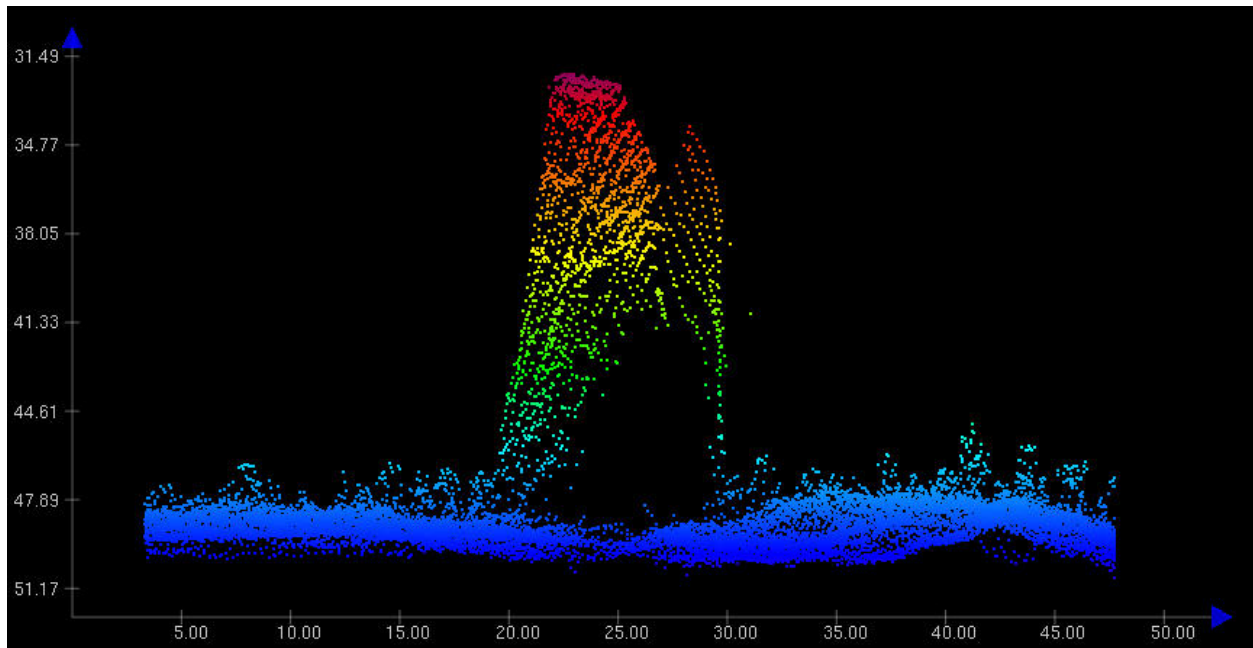
**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam  
 VALSOU - 9.758 m

WATLEV - 3:always under water/submerged

## **Office Notes**

Chart a rock with a depth of 32 feet. Delete charted 33 Rk. Add 32 Rk and danger curve.

## Feature Images



*Figure 1.3.1*

**1.4) 32 Rk****Survey Summary**

**Survey Position:** 41° 12' 39.0" N, 071° 32' 42.8" W  
**Least Depth:** 9.90 m (= 32.48 ft = 5.414 fm = 5 fm 2.48 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.004$  m ; **TVU (TPEv)**  $\pm 0.290$  m  
**Timestamp:** 2009-206.17:27:29.850 (07/25/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-206 / 100\_1727  
**Profile/Beam:** 91/187  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-206/100_1727	91/187	0.00	000.0	Primary
h12010/tj_3102_reson7125_mb/2009-207/004_2038	3447/219	1.20	030.4	Secondary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

32ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

5 ¼fm (12300\_1, 13006\_1, 13003\_1)

9.9m (5161\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam  
 VALSOU - 9.901 m

WATLEV - 3:always under water/submerged

## **Office Notes**

Chart a rock with a depth of 32 feet. Delete charted 31 Rk. Add 32 Rk and danger curve.

### Feature Images

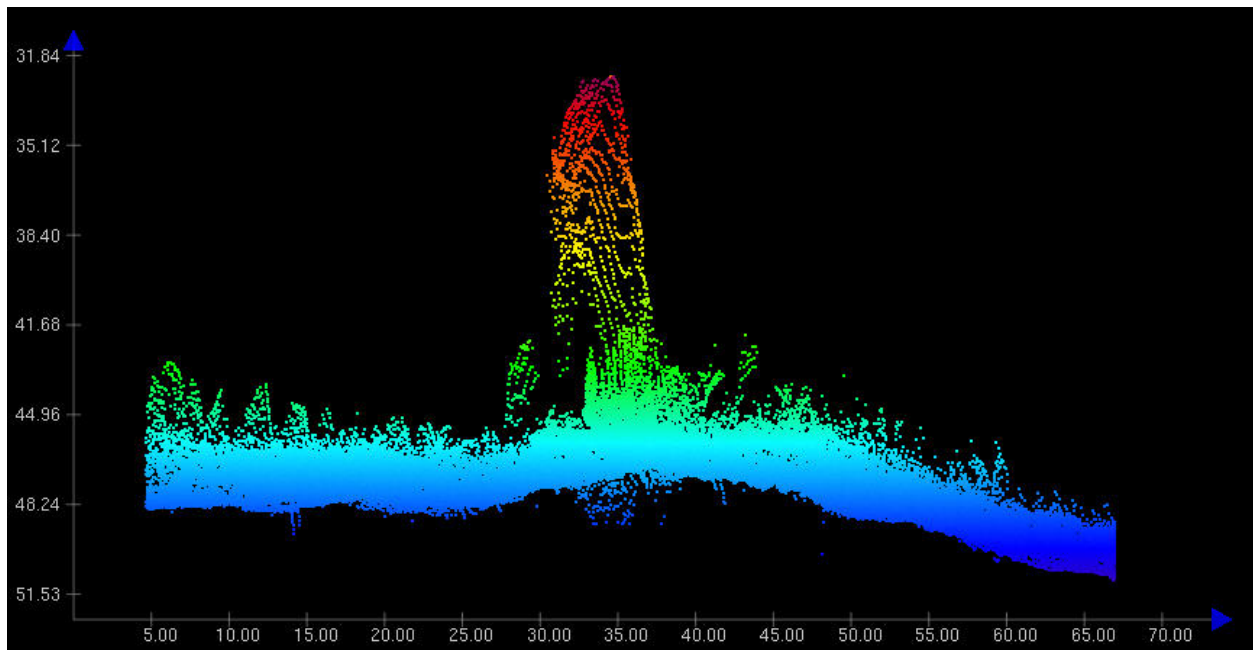


Figure 1.4.1

## 1.5) Delete 21 wire drag Rk

### Survey Summary

**Survey Position:** 41° 12' 20.6" N, 071° 32' 52.0" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.12:38:06 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 1  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Rock with a wire drag depth of 21 feet was disporved by side scsn sonar and mulitbean investigation.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

Delete rock with a 21 ft wire drag depth. Add present survey depth.

## 1.6) Delete 22 wire drag Rk

### Survey Summary

**Survey Position:** 41° 12' 05.0" N, 071° 32' 55.9" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.12:49:01 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 4  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Rock with a wire drag depth of 22 feet was disporved by side scsn sonar and mulitbean investigation.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	4	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

Delete rock with a 22 ft wire drag depth. Add present survey depth.



## 1.7) Delete 25 wire drag Rk

### Survey Summary

**Survey Position:** 41° 11' 57.8" N, 071° 33' 07.0" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:03:31 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 5  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Rock with a wire drag depth of 22 feet was disporved by side scsn sonar and multibeam investigation.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	5	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

Delete rock with a 25 ft wire drag depth. Add present survey depth.

## 1.8) Delete 46 Rk

### Survey Summary

**Survey Position:** 41° 12' 16.4" N, 071° 32' 40.0" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:04:52 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 6  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	6	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

46 Rk determined insignificant during office processing. Delet 46 Rk.

## 1.9) Delete 58 60 Rks

### Survey Summary

**Survey Position:** 41° 12' 19.5" N, 071° 31' 57.7" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:15:12 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 7  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	7	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rocks from chart.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

Charted 58 and 60 ft rocks were determined insignificant during office processing. Shoaler depths in the vicinity. Delete 58 and 60 Rks.

## 1.10) Delete 90 Rk

### Survey Summary

**Survey Position:** 41° 12' 35.8" N, 071° 31' 48.2" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:25:10 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 8  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	8	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,survey,H12010

### Office Notes

Rock with a depth of 90 feet was determined insignificant during office processing. Shoaler depths in the vicinity. Delete 90 Rk.

## 1.11) Delete 95 Rk

### Survey Summary

**Survey Position:** 41° 12' 58.8" N, 071° 31' 43.6" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:29:38 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 9  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	9	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H21010

### Office Notes

Rock with a depth of 95 feet was disporved by multibeam. Delete 95 Rk.

## 1.12) 84 ft depth

### Survey Summary

**Survey Position:** 41° 12' 58.7" N, 071° 31' 58.7" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-112.14:30:53 (04/22/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 10  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	10	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

### Office Notes

Determined insignificant during office processing. Delete 85 ft Rk. Add 84 ft depth.

## 1.13) Delete 29 Rk

### Survey Summary

**Survey Position:** 41° 10' 06.8" N, 071° 32' 30.2" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2010-113.08:34:08 (04/23/2010)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 11  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	11	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - Delete rock.  
 SORDAT - 20090819  
 SORIND - US,US,nsurf,H12010

### Office Notes

Charted rock with a depth of 29 feet was determined insignificant during office processing. Shoaler depth in the vicinity. Delete 29 Rk.

## 1.14) 51ft depth

### Survey Summary

**Survey Position:** 41° 12' 10.1" N, 071° 32' 28.6" W  
**Least Depth:** 15.67 m (= 51.40 ft = 8.567 fm = 8 fm 3.40 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.988$  m ; **TVU (TPEv)**  $\pm 0.135$  m  
**Timestamp:** 2009-216.18:20:08.870 (08/04/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-216 / 001\_1819a  
**Profile/Beam:** 344/66  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-216/001_1819a	344/66	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

51ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

8 ½fm (12300\_1, 13006\_1, 13003\_1)

15.7m (5161\_1)

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

### Office Notes

Rock determined insignificant during office processing. Deleted charted 51 Rk. Add 51 ft depth.



## 1.15) 40 ft depth

### Survey Summary

**Survey Position:** 41° 12' 19.0" N, 071° 32' 16.1" W  
**Least Depth:** 12.23 m (= 40.11 ft = 6.685 fm = 6 fm 4.11 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.985$  m ; **TVU (TPEv)**  $\pm 0.121$  m  
**Timestamp:** 2009-216.17:12:11.366 (08/04/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-216 / 001\_1710  
**Profile/Beam:** 1033/143  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-216/001_1710	1033/143	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

40ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

6 ½fm (12300\_1, 13006\_1, 13003\_1)

12.2m (5161\_1)

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

### Office Notes

Rock determined insignificant during office processing. Deleted charted 41 Rk. Add 40 ft depth.

**1.16) 69 ft depth****Survey Summary**

**Survey Position:** 41° 11' 57.1" N, 071° 31' 53.2" W  
**Least Depth:** 21.05 m (= 69.05 ft = 11.509 fm = 11 fm 3.05 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.994$  m ; **TVU (TPEv)**  $\pm 0.160$  m  
**Timestamp:** 2009-204.20:52:35.418 (07/23/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-205 / 001\_2047  
**Profile/Beam:** 1453/178  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-205/001_2047	1453/178	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

69ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

11fm (12300\_1, 13006\_1, 13003\_1)

21m (5161\_1)

**S-57 Data****Geo object 1:** Sounding (SOUNDG)**Office Notes**

Rock determined insignificant during office processing. Deleted charted 70 Rk. Add 69 ft depth.

# H12010\_UNCHARTED

**Registry Number:** H12010  
**State:** Rhode Island  
**Locality:** Block Island Sound  
**Sub-locality:** Block Island North Reef to Old Harbor Pt  
**Project Number:** OPR-B363-TJ-09  
**Survey Dates:** 07/23/2009 - 08/19/2009

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13217	15th	11/01/2006	1:15,000 (13217_1)	USCG LNM: 12/30/2008 (03/10/2009) CHS NTM: None (02/27/2009) NGA NTM: None (03/21/2009)
13215	19th	12/01/2009	1:40,000 (13215_1)	USCG LNM: 12/08/2009 (05/11/2010) CHS NTM: None (04/30/2010) NGA NTM: None (05/22/2010)
13205	38th	02/01/2007	1:80,000 (13205_1)	[L]NTM: ?
13218	40th	02/01/2008	1:80,000 (13218_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.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	7 ft depth	Shoal	2.23 m	41° 10' 23.6" N	071° 33' 04.7" W	---
1.2	7ft depth	Shoal	2.33 m	41° 13' 15.3" N	071° 33' 22.8" W	---
1.3	6 ft depth	Shoal	2.00 m	41° 10' 48.3" N	071° 33' 41.4" W	---
1.4	36 ft depth	Shoal	11.01 m	41° 12' 27.2" N	071° 32' 29.1" W	---

## **1 - DR\_UnCharted**

## 1.1) 7 ft depth

### Survey Summary

**Survey Position:** 41° 10' 23.6" N, 071° 33' 04.7" W  
**Least Depth:** 2.23 m (= 7.30 ft = 1.217 fm = 1 fm 1.30 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-204.19:58:26.274 (07/23/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-204 / 001\_1956  
**Profile/Beam:** 982/260  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Multibeam imagery looks inconclusive however SSS shadow height confirms this rock is 8-9 feet off the bottom. Chart 7 foot rock.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-204/001_1956	982/260	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-206/104_090725134800	0002	1.93	231.9	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-204/002_1900	163/63	55.26	255.5	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-206/104_090725134800	0003	55.33	252.0	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-204/001_1956	779/390	56.48	316.8	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-204/204_090723195700	0003	56.70	317.4	Secondary (grouped)
h12010/tj_3102_reson7125_mb/2009-204/001_1827	1345/208	82.00	216.5	Secondary (grouped)

### Hydrographer Recommendations

Chart 7 Rk

#### Cartographically-Rounded Depth (Affected Charts):

7ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ¼fm (12300\_1, 13006\_1, 13003\_1)

2.2m (5161\_1)

## **S-57 Data**

**Geo object 1:**    Sounding (SOUNDG)

## **Office Notes**

Determined insignificant during office processing. Add 7 depth.

### Feature Images

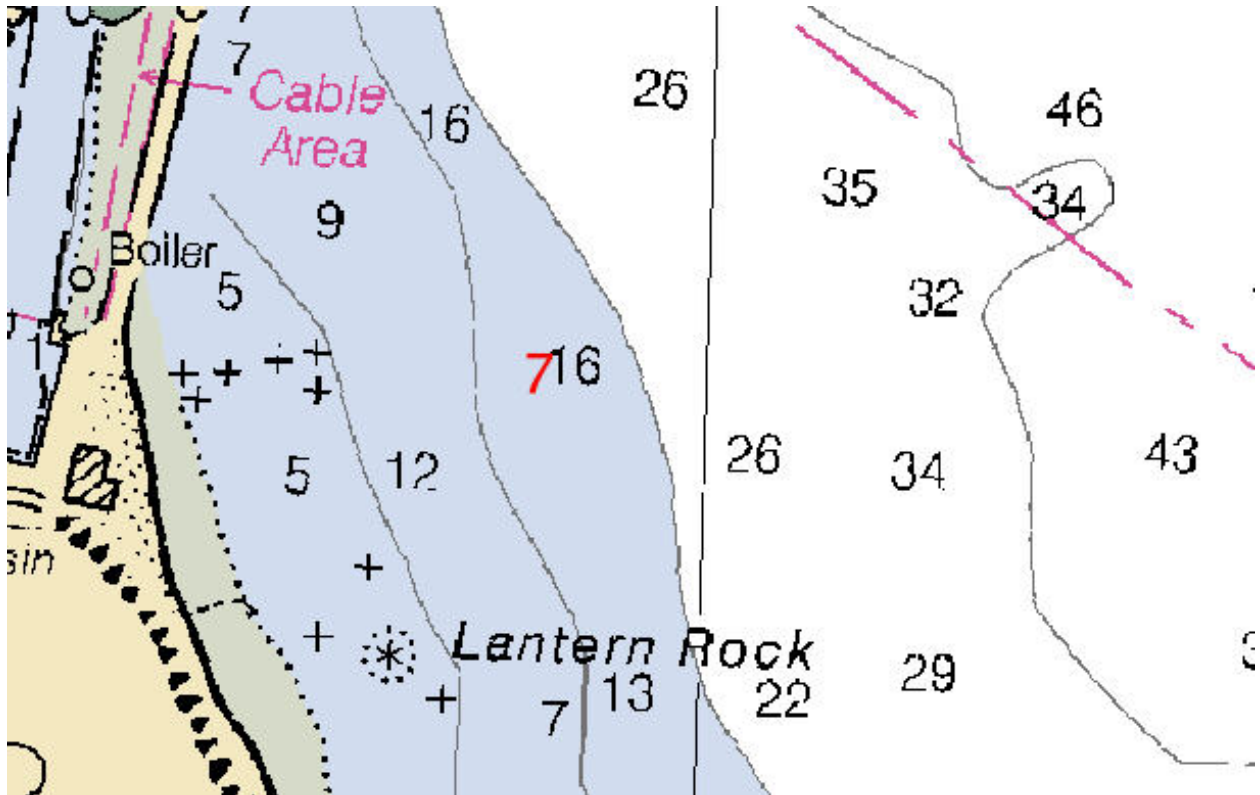


Figure 1.1.1

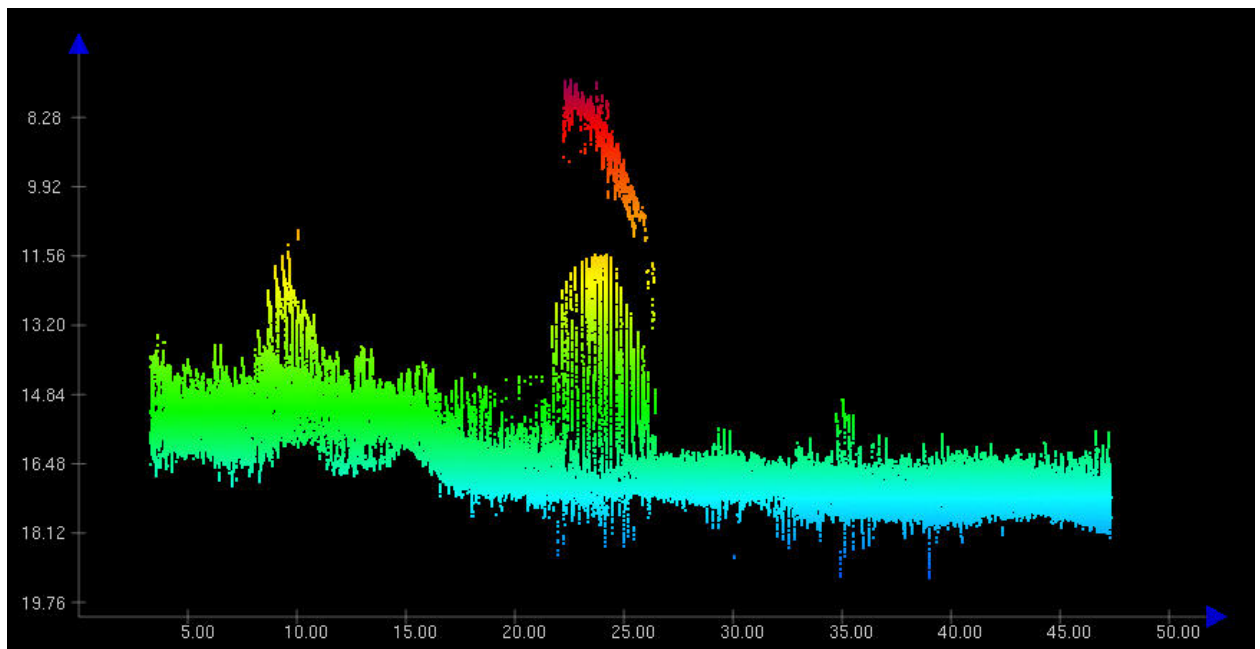
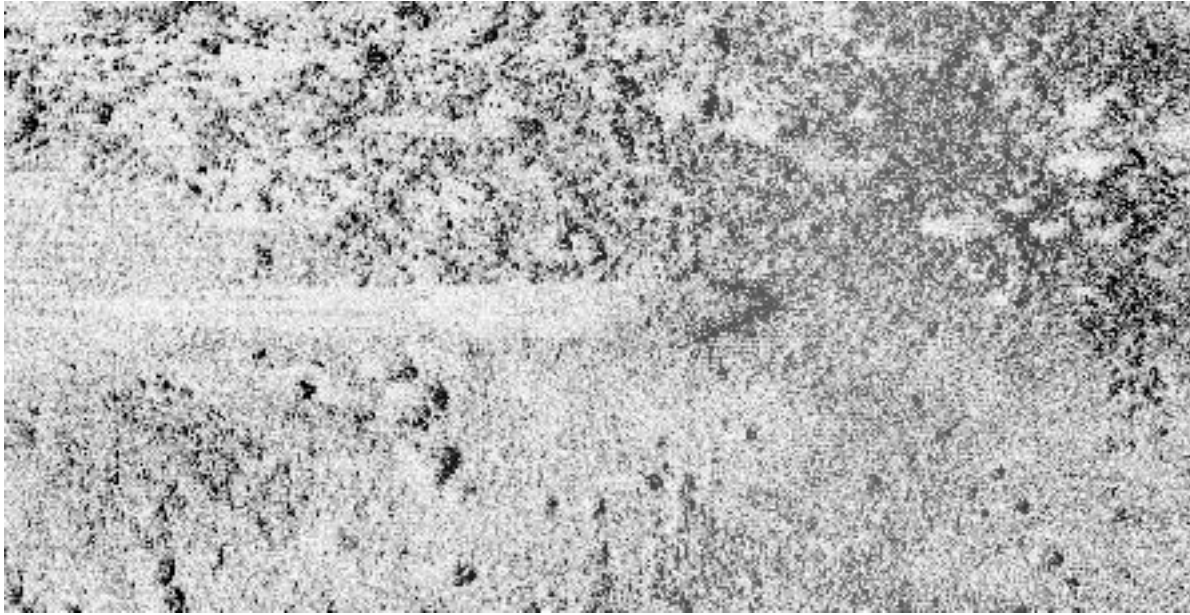


Figure 1.1.2



*Figure 1.1.3*



## 1.2) 7ft depth

### Survey Summary

**Survey Position:** 41° 13' 15.3" N, 071° 33' 22.8" W  
**Least Depth:** 2.33 m (= 7.63 ft = 1.271 fm = 1 fm 1.63 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.001$  m ; **TVU (TPEv)**  $\pm 0.284$  m  
**Timestamp:** 2009-231.13:03:54.428 (08/19/2009)  
**Survey Line:** h12010 / tj\_3102\_reson7125\_mb / 2009-231 / 947\_1303  
**Profile/Beam:** 489/365  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

Rocks, shoal of charted sounding at this location. DTON already submitted near this location.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3102_reson7125_mb/2009-231/947_1303	489/365	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_200/2009-223/223_090811203900	0001	1.49	090.0	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-223/126_090811205400	0001	2.92	093.5	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-206/104_090725141800	0001	3.14	231.3	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-206/105_090725130600	0004	3.21	221.7	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-223/127_090811203500	0001	4.71	226.6	Secondary (grouped)
h12010/tj_3102_klein5000_hull_100/2009-206/104_090725144300	0002	61.99	043.7	Secondary (grouped)

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

7ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1 ¼fm (12300\_1, 13006\_1, 13003\_1)

2.3m (5161\_1)

## **S-57 Data**

**Geo object 1:**    Sounding (SOUNDG)

## **Office Notes**

Determined insignificant during office processing. Add 7 ft depth.

### Feature Images

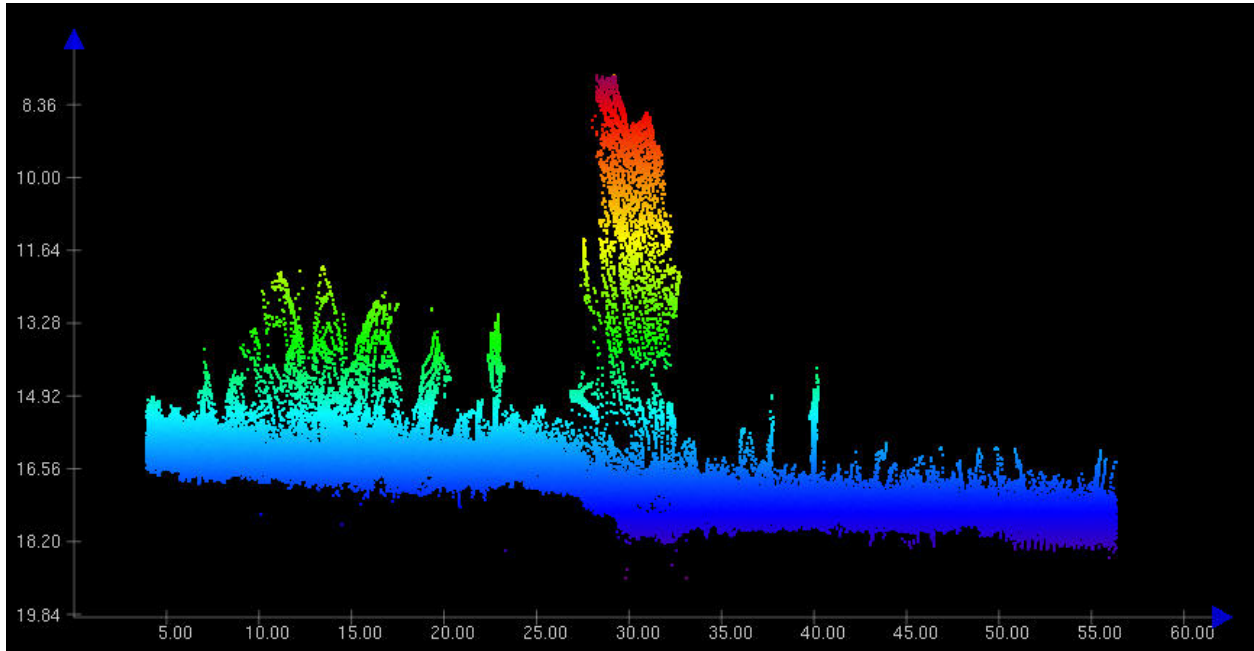


Figure 1.2.1

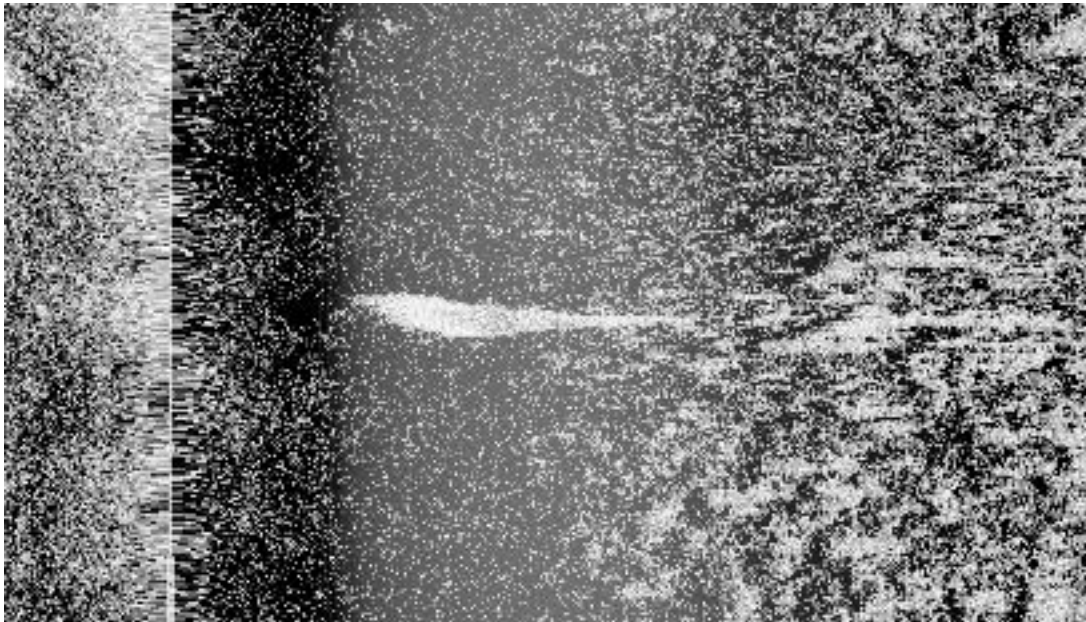


Figure 1.2.2

### 1.3) 6 ft depth

#### Survey Summary

**Survey Position:** 41° 10' 48.3" N, 071° 33' 41.4" W  
**Least Depth:** 2.00 m (= 6.55 ft = 1.091 fm = 1 fm 0.55 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.106$  m  
**Timestamp:** 2009-223.15:51:58.864 (08/11/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-223 / 1020  
**Profile/Beam:** 1540/22  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-223/1020	1540/22	0.00	000.0	Primary
h12010/tj_3102_klein5000_hull_100/2009-231/104_090819184900	0001	3.67	202.8	Secondary
h12010/tj_3102_klein5000_hull_200/2009-231/204_090819185400	0001	68.29	277.6	Secondary (grouped)

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

6ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

1fm (12300\_1, 13006\_1, 13003\_1)

2.0m (5161\_1)

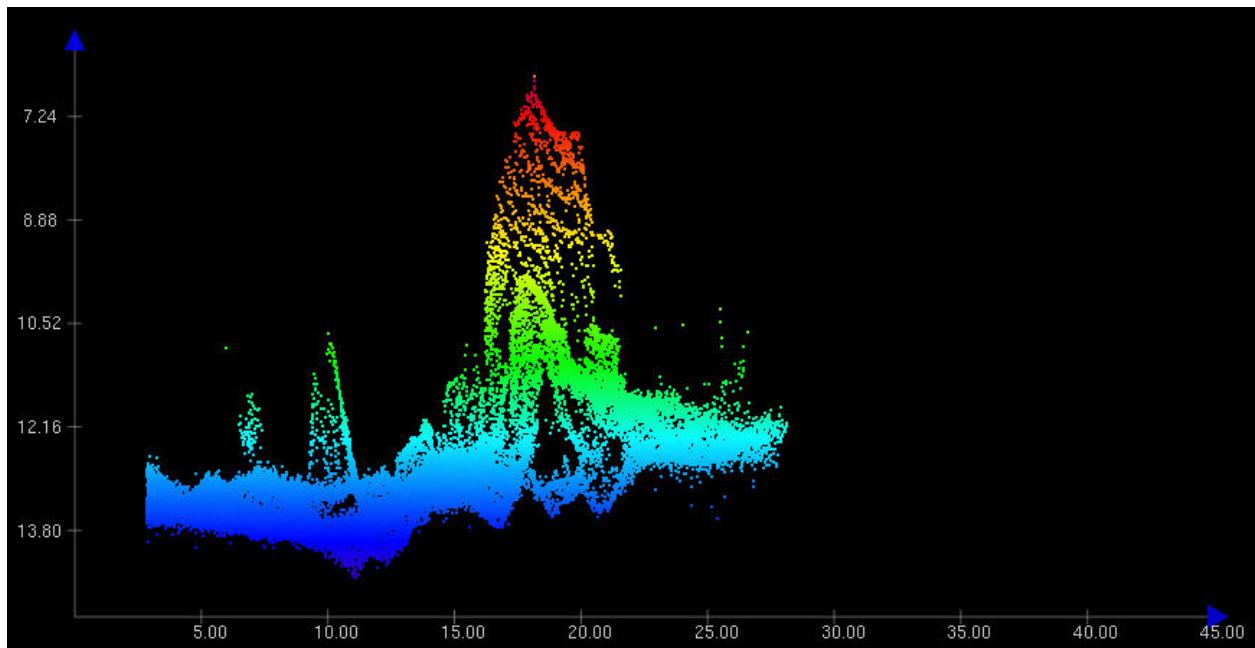
#### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

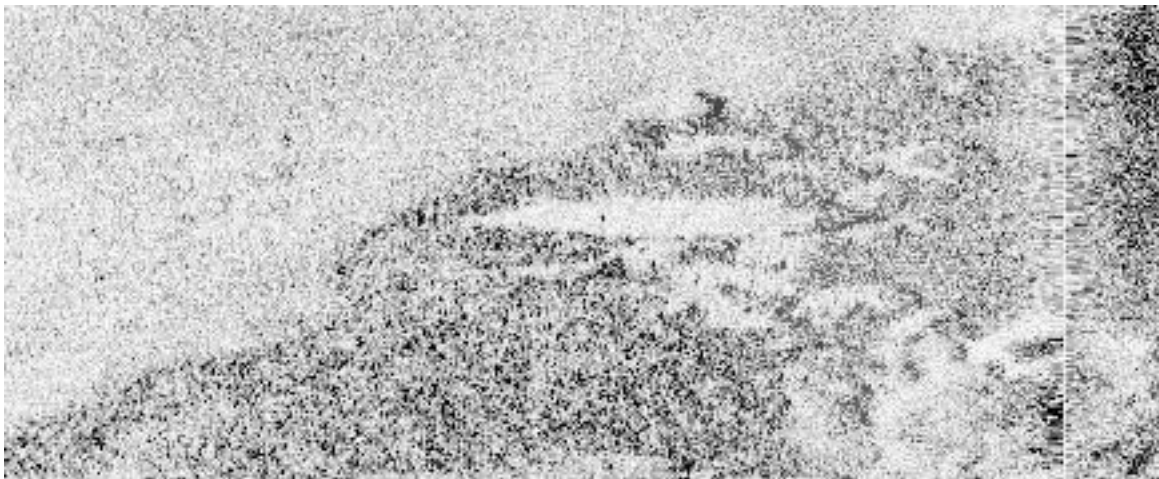
## Office Notes

Determined insignificant during office processing. Add 6 ft depth.

### Feature Images



*Figure 1.3.1*



*Figure 1.3.2*

## 1.4) 36 ft depth

### Survey Summary

**Survey Position:** 41° 12' 27.2" N, 071° 32' 29.1" W  
**Least Depth:** 11.01 m (= 36.14 ft = 6.023 fm = 6 fm 0.14 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.986$  m ; **TVU (TPEv)**  $\pm 0.130$  m  
**Timestamp:** 2009-216.15:24:55.166 (08/04/2009)  
**Survey Line:** h12010 / tj\_3101\_reson8125\_mb / 2009-216 / 001\_1523  
**Profile/Beam:** 756/38  
**Charts Affected:** 13217\_1, 13215\_1, 13205\_1, 13218\_1, 12300\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h12010/tj_3101_reson8125_mb/2009-216/001_1523	756/38	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

36ft (13217\_1, 13215\_1, 13205\_1, 13218\_1)

6fm (12300\_1, 13006\_1, 13003\_1)

11.0m (5161\_1)

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** EXPSOU - 2:shoaler than range of depth of the surrounding depth area  
 QUASOU - 1:depth known  
 SORDAT - 20090819  
 SORIND - US,US,graph,H12010  
 TECSOU - 3:found by multi-beam  
 VERDAT - 16:Mean high water

## Office Notes

36 foot sounding significantly shoal of charted soundings. Chart 36 ft depth.



### Feature Images

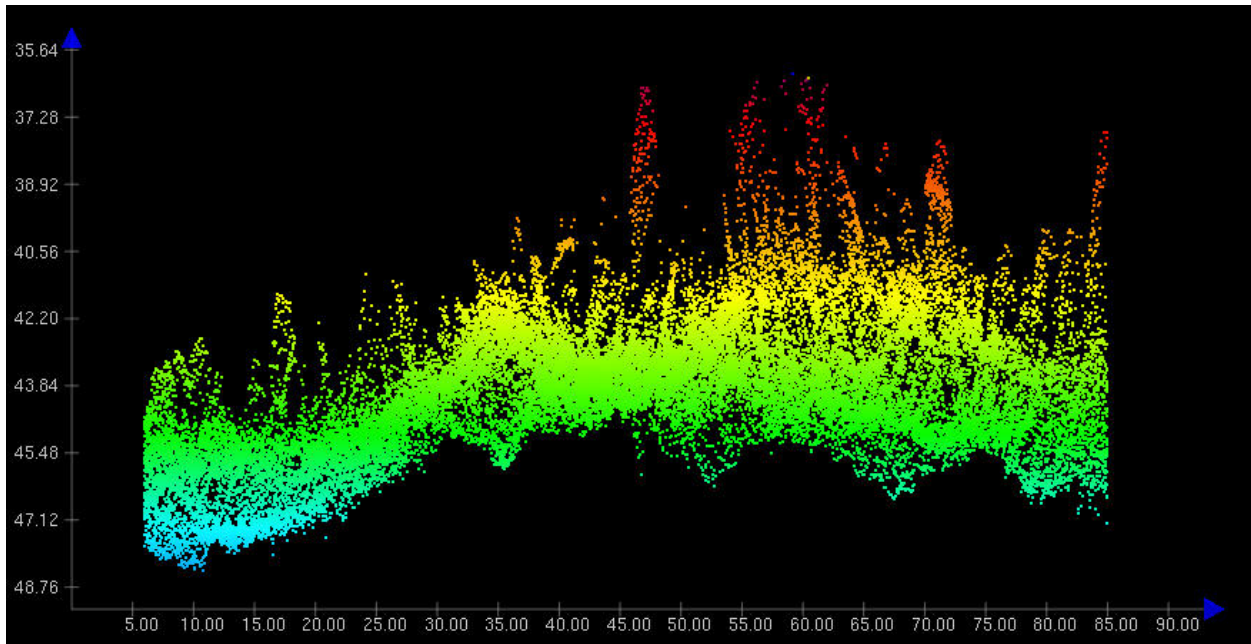


Figure 1.4.1

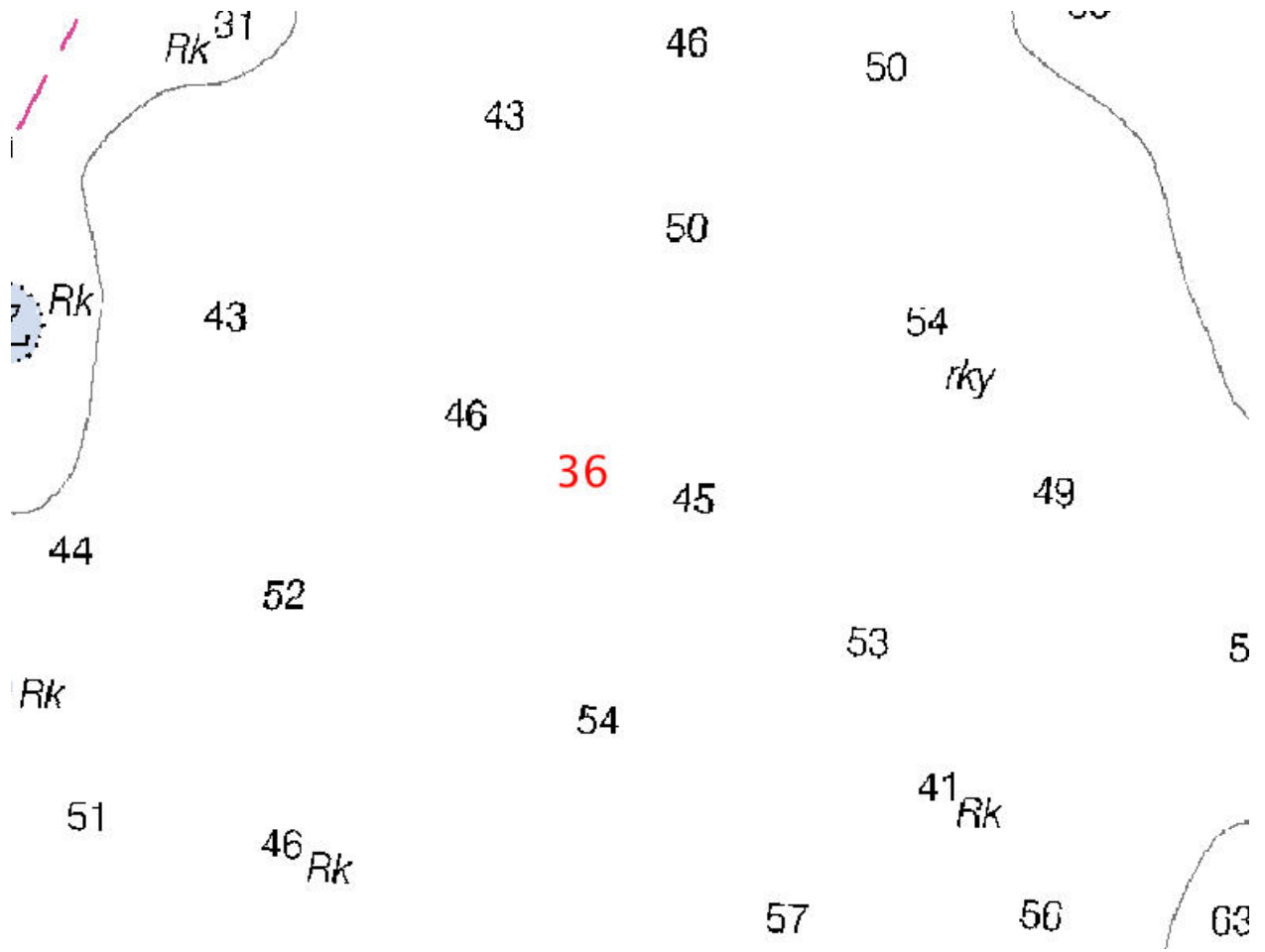
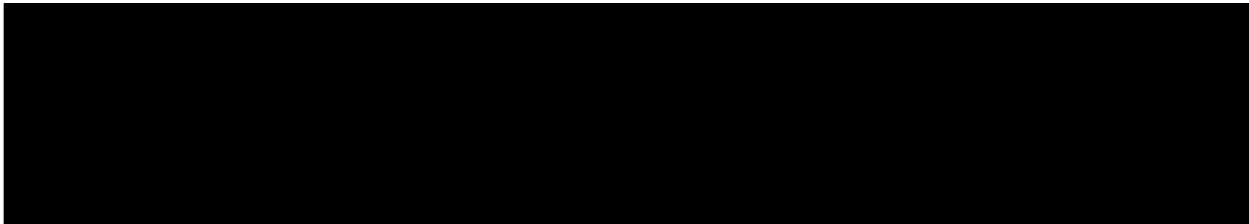
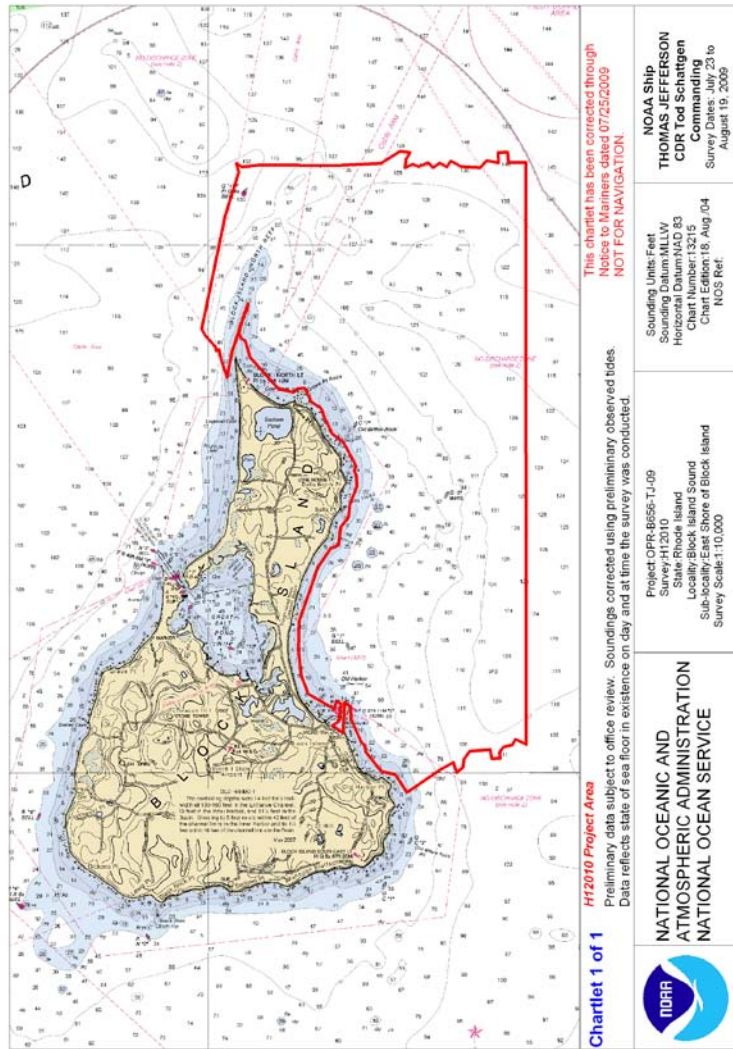


Figure 1.4.2

# Appendix III Progress Sketch



## **Appendix IV**

### **Tides and Water Levels**

- 1. Tide Notes**
- 2. Request for Approved Tides**
- 3. Final Tide Notes**



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



# Final TCARI Grid for OPR-B363-TJ-2009, H12010 Block Island Sound, RI

8452660 NEWPORT

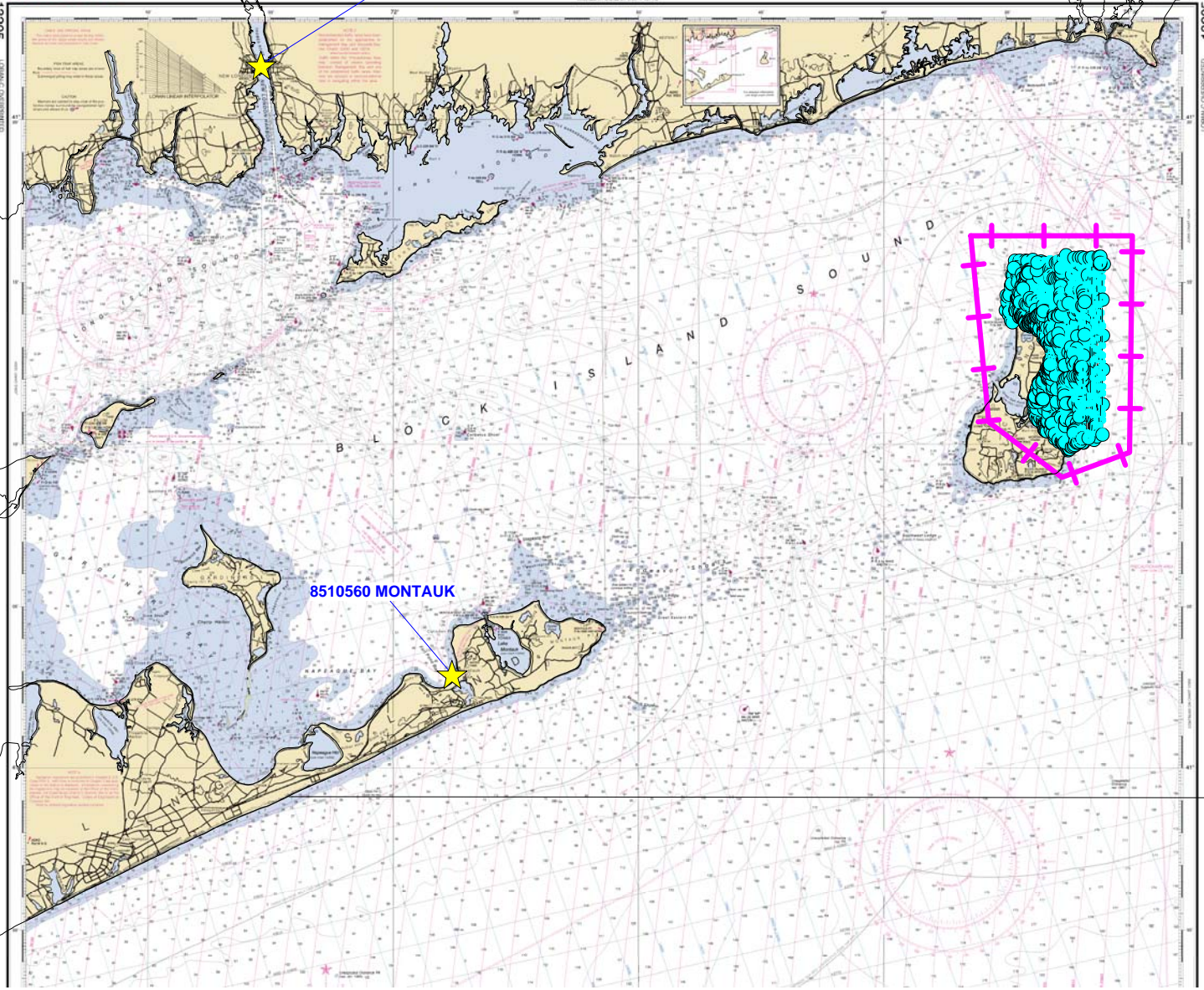
8461490 NEW LONDON

8510560 MONTAUK

NAME	DEPTH	CHARACTER
1	1.0	1.0
2	2.0	2.0
3	3.0	3.0
4	4.0	4.0
5	5.0	5.0
6	6.0	6.0
7	7.0	7.0
8	8.0	8.0
9	9.0	9.0
10	10.0	10.0
11	11.0	11.0
12	12.0	12.0
13	13.0	13.0
14	14.0	14.0
15	15.0	15.0
16	16.0	16.0
17	17.0	17.0
18	18.0	18.0
19	19.0	19.0
20	20.0	20.0
21	21.0	21.0
22	22.0	22.0
23	23.0	23.0
24	24.0	24.0
25	25.0	25.0
26	26.0	26.0
27	27.0	27.0
28	28.0	28.0
29	29.0	29.0
30	30.0	30.0
31	31.0	31.0
32	32.0	32.0
33	33.0	33.0
34	34.0	34.0
35	35.0	35.0
36	36.0	36.0
37	37.0	37.0
38	38.0	38.0
39	39.0	39.0
40	40.0	40.0
41	41.0	41.0
42	42.0	42.0
43	43.0	43.0
44	44.0	44.0
45	45.0	45.0
46	46.0	46.0
47	47.0	47.0
48	48.0	48.0
49	49.0	49.0
50	50.0	50.0
51	51.0	51.0
52	52.0	52.0
53	53.0	53.0
54	54.0	54.0
55	55.0	55.0
56	56.0	56.0
57	57.0	57.0
58	58.0	58.0
59	59.0	59.0
60	60.0	60.0
61	61.0	61.0
62	62.0	62.0
63	63.0	63.0
64	64.0	64.0
65	65.0	65.0
66	66.0	66.0
67	67.0	67.0
68	68.0	68.0
69	69.0	69.0
70	70.0	70.0
71	71.0	71.0
72	72.0	72.0
73	73.0	73.0
74	74.0	74.0
75	75.0	75.0
76	76.0	76.0
77	77.0	77.0
78	78.0	78.0
79	79.0	79.0
80	80.0	80.0
81	81.0	81.0
82	82.0	82.0
83	83.0	83.0
84	84.0	84.0
85	85.0	85.0
86	86.0	86.0
87	87.0	87.0
88	88.0	88.0
89	89.0	89.0
90	90.0	90.0
91	91.0	91.0
92	92.0	92.0
93	93.0	93.0
94	94.0	94.0
95	95.0	95.0
96	96.0	96.0
97	97.0	97.0
98	98.0	98.0
99	99.0	99.0
100	100.0	100.0

SOUNDINGS IN FEET

SOUNDINGS IN FEET  
AT MEAN LOWER LOW WATER



13205

13205

## **Appendix V**

### **Supplemental Survey Records & Correspondence**

GPT	BS 3101 20 Sand	284744.74	4567950	0	41.23431393	-71.56847255	20:51:31	8/19/2009	0	0	99	33	0	Sand
GPT	BS 3101 22 Sand/Broken Shell	284764.03	4568908.99	0	41.24294882	-71.56858066	21:10:18	8/19/2009	0	0	0	33	0	Sand/Broken Shell
GPT	BS 3101 23 Gravel	284239.45	4568848.46	0	41.24226435	-71.57481345	21:17:07	8/19/2009	0	0	0	33	0	Gravel
GPT	3101 BS 24 Hard Bottom	284573.83	4569422.21	0	41.24751653	-71.57102942	21:23:59	8/19/2009	0	0	0	33	0	Hard bottom
GPT	BS-3102-1, Mud	283603.03	4567505	0	41.23000492	-71.58192481	15:15:05	8/19/2009	0	0	99	796	0	mud
GPT	BS-3102-3, Silt, Weeds	283460.84	4568905.83	0	41.24257252	-71.58411643	15:15:32	8/19/2009	0	0	99	796	0	Silt, Weeds
GPT	BS-3102-2, Silt	283474.69	4568227.52	0	41.23647233	-71.58371075	15:15:45	8/19/2009	0	0	99	796	0	Silt
GPT	BS-3102-6, Silt, weeds	283676.59	4569556.76	0	41.24848777	-71.58177494	15:24:41	8/19/2009	0	0	99	796	0	
GPT	BS-3102-5, Sand	284255.55	4568830.35	0	41.24210568	-71.5746151	16:00:24	8/19/2009	0	0	99	796	0	
GPT	BS-3102-6, Sand, Gravel, Weeds	284553.82	4569828.51	0	41.2511674	-71.57141145	16:00:27	8/19/2009	0	0	99	796	0	
GPT	BS-3102-4, shell	284617.16	4570418.66	0	41.25649488	-71.57086453	16:00:49	8/19/2009	0	0	99	796	0	Broken shells
GPT	BS_3 Mud	288514.35	4563584.78	0	41.19602494	-71.52202461	16:16:32	8/11/2009	0	0	99	521	0	
GPT	BS_4 Coarse Sand & Gravel	288029.59	4565863.9	0	41.21640831	-71.52859014	16:23:52	8/11/2009	0	0	99	532	0	
GPT	BS_1 Coarse Sand	287063.93	4561637.4	0	41.17812031	-71.53862764	16:36:28	8/11/2009	0	0	99	533	0	
GPT	BS_2 Mud	288489.54	4562015.01	0	41.18189178	-71.52177778	16:50:04	8/11/2009	0	0	99	534	0	
GPT	BS_5 Silt	287566.95	4568496.14	0	41.23997469	-71.53501909	17:55:03	8/11/2009	0	0	99	537	0	
GPT	BS_6 Silt	286018.86	4569946.37	0	41.25261708	-71.55398378	18:13:58	8/11/2009	0	0	99	538	0	



	0
	0
QUA 0 75104.953 7 8.17 1.83 8.00 4.00 0.00 0.00 0.00	0
QUA 0 76232.450 7 8.20 1.80 8.00 4.00 0.00 0.00 0.00	0
QUA 0 76641.097 7 7.81 2.19 7.00 4.00 0.00 0.00 0.00	0
QUA 0 77052.843 7 7.85 2.15 7.00 4.00 0.00 0.00 0.00	0
QUA 0 54910.280 7 8.07 1.93 8.00 4.00 0.00 0.00 0.00	0
QUA 0 54936.879 7 8.07 1.93 8.00 4.00 0.00 0.00 0.00	0
QUA 0 54950.099 7 8.06 1.94 8.00 4.00 0.00 0.00 0.00	0
	0
	0
	0
	0
QUA 0 57654.053 7 8.45 1.55 10.00 4.00 0.00 0.00 0.00	0
QUA 0 58601.158 7 8.44 1.56 9.00 4.00 0.00 0.00 0.00	0
QUA 0 59041.287 7 8.39 1.61 9.00 4.00 0.00 0.00 0.00	0
QUA 0 59797.681 7 8.44 1.56 10.00 4.00 0.00 0.00 0.00	0
QUA 0 60613.937 7 8.45 1.55 10.00 4.00 0.00 0.00 0.00	0
QUA 0 64513.113 7 8.32 1.68 10.00 4.00 0.00 0.00 0.00	0
QUA 0 65647.914 7 8.27 1.73 10.00 4.00 0.00 0.00 0.00	0

**Subject:** Re: Crossline comparison

**From:** Chris van Westendorp <Christiaan.VanWestendorp@noaa.gov>

**Date:** Thu, 10 Sep 2009 13:00:35 -0400

**To:** "mark.blankenship" <Mark.Blankenship@noaa.gov>

**CC:** LCDR Rick Brennan <Richard.T.Brennan@noaa.gov>, Castle Parker <Castle.E.Parker@noaa.gov>, Edward Owens <Edward.Owens@noaa.gov>, LT Jasper Schaer <jasper.schaer@noaa.gov>, CDR Shep Smith <Shep.Smith@noaa.gov>, Daniel Wright <Daniel.Wright@noaa.gov>

Mark,

Per 5.1.4.3 of the HSSD, AHB authorizes TJ to use the Standard Deviation layer to conduct surface difference comparison and analysis on future survey submissions of multibeam data. This meets the crossline comparison requirement laid out in HSSD.

Please let me know if you have any questions or need for further clarification.

R/

LCDR Chris van Westendorp, NOAA

mark.blankenship wrote:

Chris,

You mentioned in the meeting today that AHB was not going to require the multiple CUBE surface comparison, instead allowing us to use a single surface standard deviation layer to do our checks with. Is there any memo coming out for that?

Mark

LCDR Chris van Westendorp <[christiaan.vanwestendorp@noaa.gov](mailto:christiaan.vanwestendorp@noaa.gov)>

Atlantic Hydrographic Branch

NOAA OCS

**Subject:** [Fwd: Revised Coverage Requirements]  
**From:** "co.thomas.jefferson" <co.thomas.jefferson@noaa.gov>  
**Date:** Mon, 14 Sep 2009 17:17:28 -0400  
**To:** foo.thomas.jefferson@noaa.gov, daniel wright <daniel.wright@noaa.gov>

Please include in DR correspondence as appropriate.

CO

----- Original Message -----

**Subject:** Revised Coverage Requirements  
**Date:** Mon, 14 Sep 2009 17:05:00 -0400  
**From:** james.m.crocker <[James.M.Crocker@noaa.gov](mailto:James.M.Crocker@noaa.gov)>  
**To:** \_NMAO MOA CO Thomas Jefferson <[CO.Thomas.Jefferson@noaa.gov](mailto:CO.Thomas.Jefferson@noaa.gov)>, \_NMAO MOA FOO Thomas Jefferson <[FOO.Thomas.Jefferson@noaa.gov](mailto:FOO.Thomas.Jefferson@noaa.gov)>  
**CC:** Jeffrey Ferguson <[Jeffrey.Ferguson@noaa.gov](mailto:Jeffrey.Ferguson@noaa.gov)>, Jeremy McHugh <[Jeremy.McHugh@noaa.gov](mailto:Jeremy.McHugh@noaa.gov)>, Richard T Brennan <[Richard.T.Brennan@noaa.gov](mailto:Richard.T.Brennan@noaa.gov)>, Kyle Ward <[Kyle.Ward@noaa.gov](mailto:Kyle.Ward@noaa.gov)>, Benjamin K Evans <[Benjamin.K.Evans@noaa.gov](mailto:Benjamin.K.Evans@noaa.gov)>

CDR Smith,

This email is to detail the agreement to relax the multibeam resolution requirements for a survey when collecting multibeam bathymetry concurrent with side scan sonar data, where complete coverage for object detection for the survey is being met by 200% side scan sonar coverage. This agreement supersedes, where applicable, the requirements outlined in the 2009 HSSD and HTD 2009-2 for grid resolution and density.

For all projects assigned in 2009, where the complete coverage requirement for assigned surveys is being met by 200% side scan sonar data acquisition, the following requirements shall be met at a minimum:

- 1 - Grid resolutions shall be 2m for water depths less than 20m, and 4 m for water depths of 20m to 40m.
- 2 - Sounding density requirements are set at a minimum of 2 sounding per node.
- 3 - Grid resolution and density for feature developments used to determine least depth shall meet object detection requirements as defined in 2009 HSSD and HTD 2009-2 and soundings shall be designated where appropriate.

Regards,  
Jim

--  
CDR Shepard Smith, NOAA  
Commanding Officer  
NOAA Ship Thomas Jefferson  
439 West York St  
Norfolk, VA 23510  
757-647-0187

# H12010 COMPILATION LOG

General Survey Information	
REGISTRY No.	<i>H12010</i>
PROJECT No.	<i>OPR-B363-TJ-09</i>
FIELD UNIT	<i>NOAA SHIP THOMAS JEFFERSON</i>
DATE OF SURVEY	<i>July 23 to August 19, 2009</i>
LARGEST SCALE CHART	<i>13217, 15<sup>th</sup> Ed., 20061101</i>
SOUNDING UNITS	<i>Feet</i>
COMPILER	<i>Norris Wike</i>

Source Grids	File Name
	<i>H12010_25cm_final.hns</i>
	<i>H12010_FS1_CUBE_50cm_Final.hns</i>
	<i>H12010_FS1_CUBE_2m_Final.hns</i>
	<i>H12010_FS2_CUBE_50cm_Final.hns</i>
	<i>H12010_FS2_CUBE_2m_Final.hns</i>
	<i>H12010_FS3_CUBE_50cm_Final.hns</i>
	<i>H12010_FS3_CUBE_2m_Final.hns</i>
	<i>H12010_FS4_CUBE_50m_Final.hns</i>
	<i>H12010_FS4_CUBE_2m_Final.hns</i>
	<i>H12010_FS5_CUBE_50m_Final.hns</i>
	<i>H12010_FS5_CUBE_2m_Final.hns</i>
	<i>H12010_FS6_CUBE_50m_Final.hns</i>
	<i>H12010_FS6_CUBE_2m_Final.hns</i>
	<i>H12010_NE_Wreck_50cm_final.hns</i>

Surfaces	File Name
<i>Combined</i>	<i>H12010_Combined_4m.hns</i>
<i>Interpolated TIN</i>	<i>H12010_InterpTIN.hns</i>
<i>Shifted Interpolated TIN</i>	<i>H12010_InterpTIN_shifted.hns</i>
<i>Product Surface</i>	<i>N/A</i>

Final HOBs	File Name
<i>Survey Scale Soundings</i>	<i>H12010_SS.hob,</i>
<i>Chart Scale Soundings</i>	<i>H12010_CS.hob</i>
<i>Contour Layer</i>	<i>H12010_Contours.hob</i>
<i>Feature Layer</i>	<i>H12010_Features.hob</i>
<i>Meta-Objects Layer</i>	<i>H12010_MetaLayers.hob</i>
<i>Blue Notes</i>	<i>H12010_BlueNotes.hob</i>

Meta-Objects Attribution	
Acronym	Value
<b>M_COVR</b>	
CATCOV	<i>1</i>
SORDAT	<i>20090819</i>
SORIND	<i>US,US,graph,H12010</i>

<b>M_QUAL</b>	
CATZOC	<b>6</b>
INFORM	<b>NOAA Ship Thomas Jefferson</b>
POSACC	<b>10</b>
SORDAT	<b>20090819</b>
SORIND	<b>US,US,graph,H12010</b>
SUREND	<b>20090819</b>
SURSTA	<b>20090723</b>
<b>DEPARE</b>	
DRVALV 1	<b>2.0 ft</b>
DRVALV2	<b>167.0 ft</b>
SORDAT	<b>20090819</b>
SORIND	<b>US,US,graph,H12010</b>

**SPECIFICATIONS:**

- I. COMBINED SURFACE:
  - a. Number of ESAR Final Grids: **14**
  - b. Resolution of Combined (m): **4M**
  
- II. SURVEY SCALE SOUNDINGS (SS):
  - a. Radius
  - b. Shoal biased
  - c. Use Radius Table File: **H12010\_SoundgsSpacingRange**
  - d. Queried Depth of All Soundings
    - i. Minimum: **2.851M**
    - ii. Maximum: **165.587M**
  
- III. INTERPOLATED TIN SURFACE:
  - a. Resolution (m): **4M**
  - b. Linear
  - c. Shifted value: [-0.229m (feet), ( $\leq$  10 fathoms)]  
[-1.372m (fathoms), ( $>$  10 fathoms)]
  
- IV. CONTOURS:
  - a. Use a Depth List: **H12010\_depth\_curves\_list.txt**
  - b. Line Object: DEPCNT
  - c. Value Attribute: VALDCO
  
- V. FEATURES:
  - a. Total Number of Features: **34**
  - b. Number of Insignificant Features:
  
- VI. CHART SURVEY SOUNDINGS (CS):
  - a. Number of ENC CS Soundings: **799**
  - b. Radius
  - c. Shoal biased
  - d. Use Single-Defined Radius: m on the ground
    - i. Radius Value (m):
    - ii. Or use a Sounding Space Range Table (if applicable):**H12010\_CS\_SoundingSpacingRange.txt**
  - e. Filter: Interpolated != 1
  - f. Number Survey CS Soundings: **967**
  
- VII. Notes:

**ATLANTIC HYDROGRAPHIC BRANCH  
H-CELL REPORT to ACCOMPANY  
SURVEY H12010 (2009)**

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

**B. DATA ACQUISITION AND PROCESSING**

**B.2. QUALITY CONTROL**

**H-Cell**

The AHB source depth grid for the survey's nautical chart update product entailed the field's original 50cm and 2m. These grids were combined at 4 meter resolution. The survey scale soundings were created from the combined surface using the H12010\_SoundingsSpacingRange file. Use the Compilation Log above for exact values used for this process. A TIN was created from the survey scale soundings from which an interpolated surface was generated. The chart scale soundings were selected from the filtered interpolated surface using a single defined radius at the 15,000 chart scale. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth contours were created from a shifted interpolated TIN surface of 4m resolution and the contours were then derived from the interpolated and non-interpolated nodes. Therefore, using this method the contour are in harmony with the SS and CS soundings while maintaining the chart equivalent contour values as whole integers. The depth contours are being forwarded to MCD for reference only. The contours were utilized during chart scale sounding selection and quality assurance efforts at AHB. The depth contours are incorporated into the SS H-Cell product as per 2009 H-Cell Specifications.

The compilation components (Stand Alone HOB files (SAHOB)) are detailed in the Compile Log attached to the Descriptive Report. The SAHOB files included depth areas (DEPARE), depth contours (DEPCNT), sounding selections (SOUNDG), features (SBDARE, UWTROC), Meta objects (M\_COVR, M\_QUAL), and cartographic Blue Notes (\$CSYMB).

All of the components with the exception of the survey scale sounding selection and depth contours were inserted into one feature layer (including the Bluenotes, as dictated by Hydrographic Technical Directive 2008-8), and this layer was exported into S-57 format in order to create the H-Cell deliverable. Similarly, the survey scale sounding selection and depth contours were exported into S-57 format separately, and then both S-57 files were processed in CARIS HOM to convert the metric units to feet. The final products are two S-57 files, in Lat/Lon NAD-83, one that contains the Chart soundings, all the Features, Meta objects, and Bluenotes (H12010\_CS.000), and one that contains the survey scale sounding selection and depth contours (H12010\_SS.000). Finally, quality assurance checks were made utilizing CARIS S-57 Composer version 2.1 validation checks and DKART INSPECTOR version 5.

H12010 CARIS H-Cell final deliverables include the following products:

H12010_CS.000	1:15,000 Scale	H12010 H-Cell with Chart Scale Selected Soundings
H12010_SS.000	1:7,500 Scale	H12010 Selected Soundings (Survey Scale)

### **Junctions**

Survey H12010 has a junction with surveys H12009 to the east, H12011 to the north and H12033 to the northwest. Present survey soundings compare within 1 foot with H12009, H12011, and H12033.

### **B.4 DATA PROCESSING**

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

CARIS HIPS/SIPS version 6.1 SP2, HF 1-8  
CARIS Bathy DataBASE version 2.1 SP1, HF 1-10  
CARIS S-57 Composer version 2.1 HF 4  
DKART INSPECTOR, version 5.0 Build 732 SP1  
CARIS HOM ENC 3.3 SP3 HF 8

### **C. HORIZONTAL AND VERTICAL CONTROL**

The Hydrographer makes adequate mention of all water level and vertical datum adjustments in the Descriptive Report and Horizontal and Vertical Control Report submitted with this project.

The horizontal control used for this survey's data acquisition and H-Cell compilation is based upon the North American Datum of 1983 (NAD83), UTM projection zone 19.

### **D. RESULTS AND RECOMMENDATIONS**

#### **D.1 CHART COMPARISON 13217 (15th Edition, Nov. /06)**

Corrected through NM 11/04/2006  
Corrected through LNM 10/24/2006  
Scale 1:15,000

#### **ENC Comparison US5RI11M**

Block Island  
Edition 24  
Application Date 2010-05-05  
Issue Date 2010-05-05  
Chart 13217

### **D.1.1 Hydrography**

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section "D" and Appendix 1 & 2 of the Descriptive Report. The following exceptions are noted:

A charted **rock (covers and uncovers)** in Latitude 41°13'11"N, Longitude 071°33'21"W was disproved by present survey multibeam and side scan sonar. It is recommended that the charted **rock (covers and uncovers)** be deleted. Chart present survey depths.

A portion of the charted **intertidal area** in the vicinity of Latitude 41°14'26.0"N, Longitude 071°34'31.5"W was disproved by present survey multibeam and side scan sonar. It is recommended that the charted **intertidal area** be revised as shown on present survey.

Three rky seabed areas in the following locations were created from the grids of the present survey:

<b><u>LATITUDE N</u></b>	<b><u>LONGITUDE W</u></b>
41°10'20.00"	071°32'47.60"
41°13'04.50"	071°31'40.70"
41°12'41.80"	071°32'45.80"

All charted bottom characteristic with notations rky or hard were deleted from within the rky seabed areas. It is recommended that the areas be charted as shown on present survey.

### **MISCELLANEOUS**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

### **ADEQUACY OF SURVEY**

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.



**APPROVAL SHEET**  
**H12010**

**Initial Approvals:**

The completed survey has been inspected with regard to survey coverage, delineation of depth contours, disposition of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

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**Norris A. Wike**  
Cartographer  
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: \_\_\_\_\_

**Richard T. Brennan**  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch