

H11695

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: **H11695**

LOCALITY

State: Massachusetts

General Locality: Cape Cod Bay

Sub-locality: NE Approaches to Cape Cod Canal

2007

CHIEF OF PARTY
CDR P. Tod Schattgen
NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11695

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: **Massachusetts**

General Locality: **Cape Cod Bay**

Sub-Locality: **NE Approaches to Cape Cod Canal**

Scale: **1:20,000** Date of Survey: **09/07/2007 to 11/06/2007**

Instructions Dated: **05/09/2007** Project Number: **M-A902-TJ/GM-07**

Vessel: **NOAA Ship THOMAS JEFFERSON**

Chief of Party: **CDR P. Tod Schattgen**

Surveyed by: **THOMAS JEFFERSON Personnel**

Soundings by: **Reson 7125, 8101 and 8125 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 Personnel**

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 19N.**
- Bold, Red, Italic notes in the DR were made during office processing.***

Descriptive Report to Accompany Hydrographic Survey

Project M-A902-TJ/GM-07
 NE Approaches to Cape Cod Canal
 Cape Cod Bay Right Whale Route
 Scale 1:20,000
 September 7th – November 6th 2007
NOAA Ship THOMAS JEFFERSON

A. AREA SURVEYED

This hydrographic survey was completed as specified by *Hydrographic Survey Letter Instructions M-A902-TJ/GM-07, dated May 9th, 2007. The survey area includes the NE approaches to the Cape Cod Canal confined within the limits outlined below. * *Filed with original field records.*

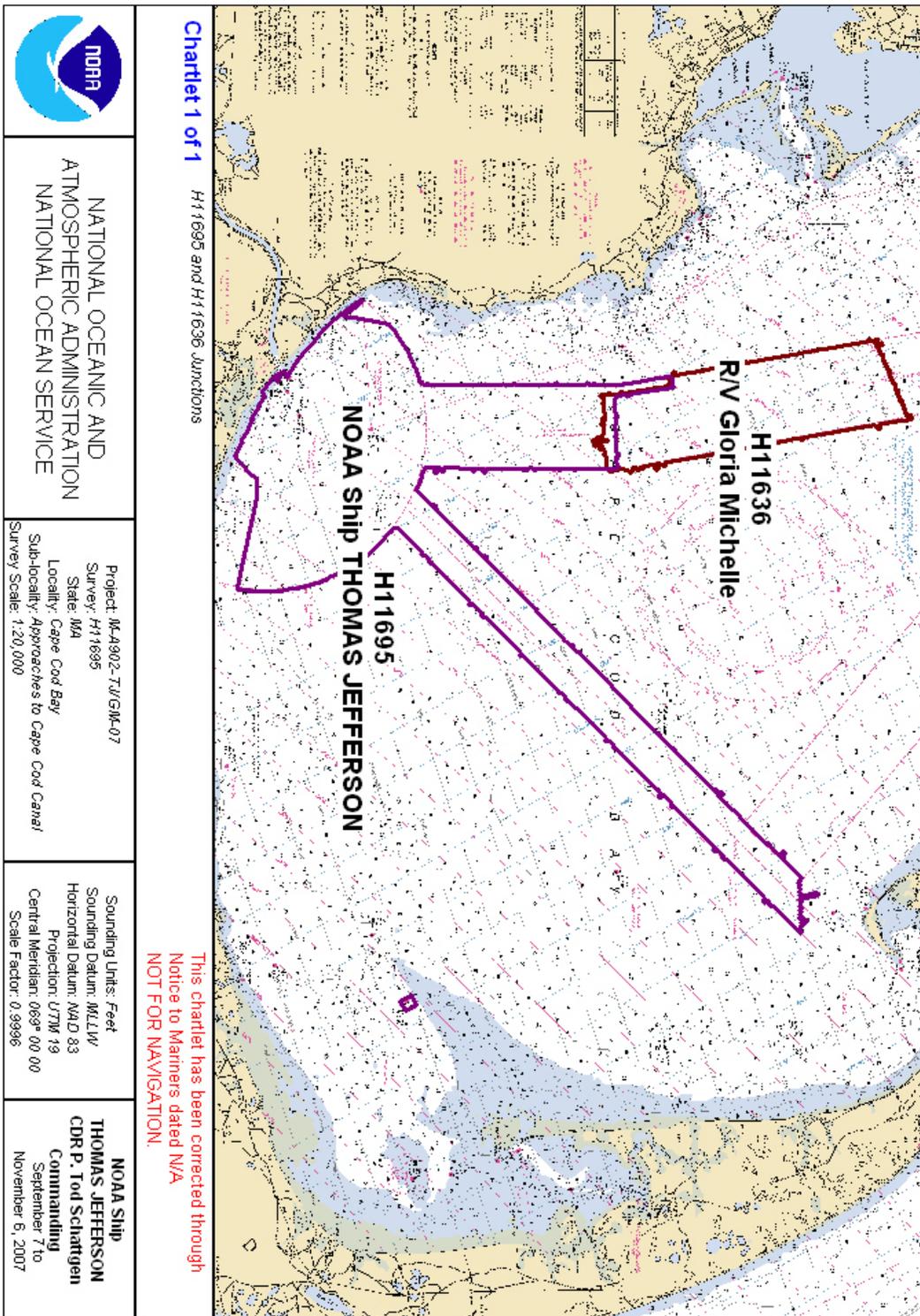
Northern Limit	Southern Limit	Western Limit	Eastern Limit
42° 00' 19.6"N	41° 45' 31.7"N	41° 48' 38.0"N	42° 00' 15.1"N
070° 10' 32.2"W	070° 26' 40.1"W	070° 31' 58.8"W	070° 09' 37.7"W

Data acquisition was conducted from 7 SEP 2007 until 6 NOV 2007.

This project was conducted as part of the NOAA Integrated Ocean and Coastal Mapping (IOCM) initiative to provide multibeam data in support of the National Marine Fisheries Service (NMFS) benthic habitat mapping requirements and National Ocean Service (NOS) nautical charts. NMFS requested that the Office of Coast Survey chart two-way shipping routes and two-way recommended shipping tracks within the mandatory North Atlantic Right Whale reporting areas of Cape Cod Bay, MA. This effort is intended to reduce the number of ship strikes on North Atlantic Right Whales.

Survey limits of H11695 are shown on the following page.

Lineal Nautical Miles	
Single Beam Only	None
Multibeam Only	1428.1
Side Scan Sonar Only	2.6
Side Scan/Multi Beam	215.1
Crosslines	100.8
Multibeam Developments	143.6
Side Scan Developments	None
Shoreline Investigation	None
Data acquired from 7 SEP- 6 NOV 2007	
No. bottom samples collected	11
No. AWOIS items investigated	7



B. DATA ACQUISITION AND PROCESSING See also the **Evaluation Report**

Refer to the *Fall 2007 THOMAS JEFFERSON 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. * *Filed with original field records.*

B 1. EQUIPMENT AND VESSELS

Data were acquired by NOAA Ship THOMAS JEFFERSON (S222) and Launches 3101 and 3102. S222 acquired multibeam echosounder soundings, sound velocity profiles, and bottom samples. 3101 acquired multibeam echosounder soundings and sound velocity profiles. 3102 acquired side-scan imagery, multibeam echosounder soundings and sound velocity profiles. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the *DAPR. * *Filed with original field records.*

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. * *Filed with original field records.*

B.2.2 Sounding Coverage

As per the * Letter Instructions, this survey included complete multibeam coverage, object detection multibeam coverage, and 200% side-scan sonar. Bathymetry coverage was monitored by creating CUBE BASE surfaces with resolutions ranging from 0.7m to 3m depending on the coverage type and depth as prescribed by the *2007 Hydrographic Systems Specifications and Deliverables (HSSD). Side-scan sonar coverage was monitored by the creation of 100% and 200% coverage mosaics, each with 1m resolution. * *Filed with original field records.*

The survey limits for H11695 were modified due to allotted time restrictions by removing the northeast section of the sheet within the vicinity of Provincetown Harbor.

B 2.3 Crosslines

Multibeam echosounder cross-lines totaling 100.8 lineal nautical miles (LNM), comprising 7.1% of all multibeam echosounder data, were acquired during the course of the survey. Crosslines were acquired with all three vessels, so that a good comparison of same-vessel soundings for each of the three vessels could be achieved. Specific breakdown of crosslines are as follows:

- Multibeam echosounder crosslines totaling 79.6 LNM, comprising 5.9% in complete multibeam areas.
- Multibeam echosounder crosslines totaling 5.4 LNM, comprising 6.9% in object detection areas.

- Multibeam echosounder crosslines totaling 15.8 LNM, comprising 7.4% in combined SSS and MBES areas.

A CARIS QC report was performed on all multibeam data and determined that all beams fell within IHO Order I specifications. The CARIS QC report is contained in *Separate V. *Filed with original field records.*

B 2.4 Junctions and Prior Surveys

The following contemporary surveys junction with H11695:

Registry #	Scale	Date	Field Party	Junction side
H11636	1:20,000	Spring '07	R/V Gloria Michelle	North

A comparison was performed on the junction between H11636 and H11695. Soundings between the two surveys agreed within 2 feet in depth ranges of 90-113 feet, representing an overall difference of approximately 2%. Throughout the majority of the junction, soundings from H11636 are deeper. *Concur.*

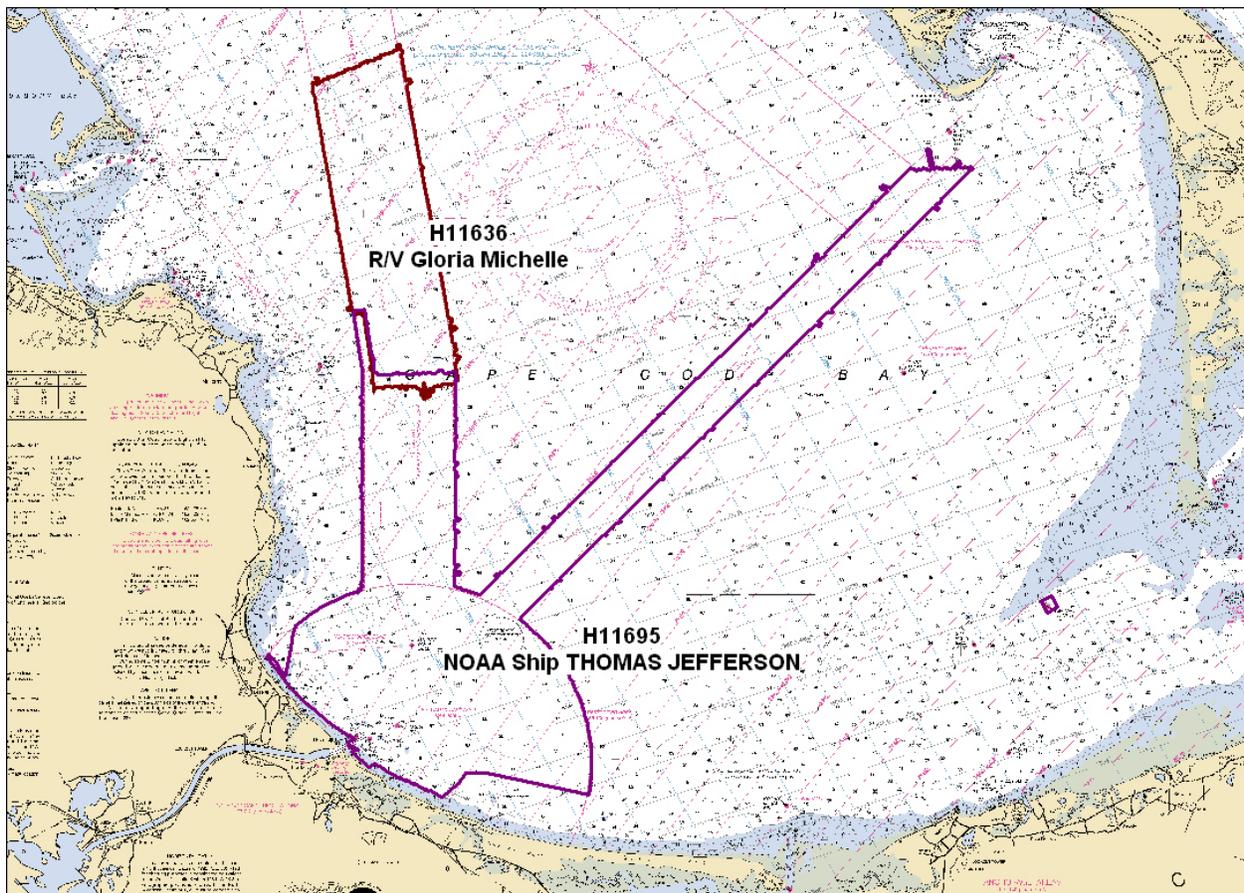


Figure 2. H11695 Junction Surveys.

B 2.5 Systematic Errors

During acquisition, bathymetry was acquired with three different echosounder systems: RESON 8125, RESON 8101, and RESON 7125. The observed depth difference between these three systems is believed to be related to differences in operating frequency, inherent properties of the sonar systems, and correlating platforms including possible differences in static and/or dynamic draft. This difference in water bottom data is visible in the completed BASE surface, particularly where a crossline acquired by one system crosses orthogonally to a mainscheme survey line acquired by another system. The difference between the three systems is generally less than 0.2m and within IHO Order 1 Specifications. **Concur.**

B 3. CORRECTIONS TO ECHO SOUNDING

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified (approved) tides from the primary station at Boston, MA (844-3970) adjusted for tidal constituents and residuals provided by CO-OPS as specified in the Letter Instructions and illustrated in Figure 4. There was no secondary station. **Concur.**

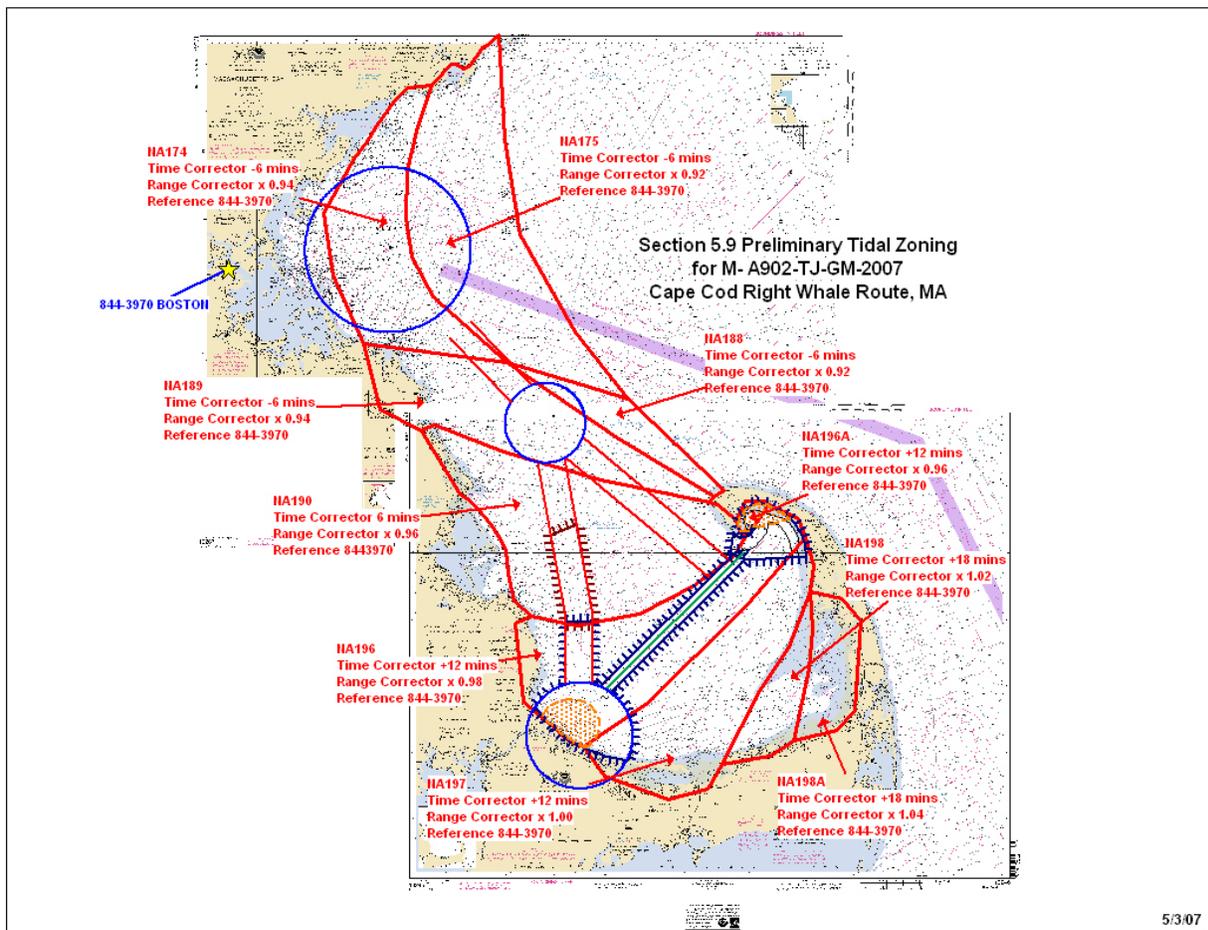


Figure 4: Final Tide Zoning

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.
**Filed with original field records.*

B 4. DATA PROCESSING

B 4.1 Total Propagated Error

For the 2007 field season, Total Propagated Error (TPE) parameters for sound speed and tides are calculated separately for each project. The project-specific parameters for M-A902-TJ/GM-07, Survey H11695 are as follows:

Table 2: TPE Parameters

Vessel	Tide Values		Sound Speed Values	
	Measured	Zoning	Measured	Surface
S222 ^a	0	0.22	4	0.2
S222 ^b	0	0.22	1	0.2
3101	0	0.22	4	0.2
3102	0	0.22	4	0

^aValues used when using the CTD to collect a SVP measurement once every 4 hours.

^bValues used when using the MVP to collect a SVP measurement once every 30 minutes.

These values were calculated for all MBES data immediately following CARIS Merge.

B 4.2 BASE Surfaces and Mosaics

The following table describes all BASE Surfaces and Mosaics submitted as part of survey H11695:

<i>Name of Fieldsheet</i>	<i>Resolution</i>	<i>Type</i>	<i>Purpose</i>
H11695_SSS	1 meter	SSS Mosaic	Side Scan Coverage
H11695_1	3 meter	CUBE	Complete Multibeam coverage
H11695_2	3 meter	CUBE	Complete Multibeam coverage
H11695_3	3 meter	CUBE	Complete Multibeam coverage
H11695_4	3 meter	CUBE	Complete Multibeam coverage
H11695_5	3 meter	CUBE	Complete Multibeam coverage
H11695_6	3 meter	CUBE	Complete Multibeam coverage
H11695_7	3 meter	CUBE	Complete Multibeam coverage
H11695_8	3 meter	CUBE	Complete Multibeam coverage
H11695_9	3 meter	CUBE	Complete Multibeam coverage
H11695_10	3 meter	CUBE	Complete Multibeam coverage
H11695_11	3 meter	CUBE	Complete Multibeam coverage
H11695_12	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_13	2 meter	CUBE	Complete Multibeam coverage
H11695_14	2 meter	CUBE	Complete Multibeam coverage
H11695_15	1 meter	CUBE	Complete Multibeam coverage
H11695_16	1 meter	CUBE	Complete Multibeam coverage
H11695_17	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_18	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_19	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_20	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_21	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_22	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_23	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_24	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_25	70 centimeter	CUBE	SSS Multibeam and Object Detection coverage
H11695_Combined	0.70, 1, 2, 3, 10 meter	CUBE	All Multibeam

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to “Deep” for all complete multibeam coverage and “Shallow” for all object detection coverage. Refer to the DAPR, 2007 Field Procedures Manual, and CARIS HIPS/SIPS 6.1 manual for further discussion of CUBE processing.

C. VERTICAL AND HORIZONTAL CONTROL *See also the Evaluation Report*

A complete description of vertical and horizontal control for survey H11695 can be found in the M-A902-TJ/GM-07 *Horizontal and Vertical Control Report, submitted as an appendix to the DAPR. A summary of horizontal and vertical control for this survey follows. * *Filed with original field records.*

C 1.1 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83), UTM Zone 19N. Differential GPS (DGPS) was the sole method of positioning. Differential corrections from the U.S. Coast Guard beacon at Acushnet, MA (306 kHz) were used during this survey.

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

The THOMAS JEFFERSON experienced several system crashes between the days of 9 SEPT and 12 SEPT that have been identified as originating from the POS/MV, specifically loss of GPS data. Each time, the error was caught and the affected areas were resurveyed to ensure quality data.

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) station at Boston, MA (844-3970) will serve as datum control for H11695.

A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 November 8, 2007 in accordance with the FPM and project letter instructions. Approved (verified) water levels were downloaded from CO-OPS on November 14, 2007 and applied with final tide zoning to all sounding data. **Approved tides and zoning were applied during field processing.*

D. RESULTS AND RECOMMENDATIONS *See also the Evaluation Report*

D.1 Chart Comparison

Survey H11695 was compared with chart 13246 (38th Ed.; December 2006, 1:80,000), chart 13249 (13th Ed.; April 2007, 1:20,000), and ENC US4MA14M updated through June 14th, 2007. Chart comparisons were performed in CARIS, in Pydro using survey-scale excessed soundings, and in MapInfo using survey-scale and chart-scale excessed soundings exported from Pydro. **Concur.** *See Evaluation Report for a complete listing of affected charts.*

D.1.1 Chart 13246 Comparison

The area contained within the outline of H11695 was previously surveyed between 1940 and 1969 using partial bottom coverage. Differences in depths between chart 13246 and the current survey exist throughout the entire survey area. Generally, H11695 is 2-3 ft shoaler than charted depths; however, there are several areas with significant geological features that are shoaler by more than 3 ft. None of these areas represent a danger to navigation. Examples of these features include, but are not limited to:

Approximately 700m south of the G"1" entrance buoy to the Cape Cod Canal there is a 30-ft shoal in charted depths of 34 to 41 ft. **Concur.** *Update chart with present survey data.*

In position 41°53'23"N, 070°29'02"W, there is a 64-ft ~~obstruction~~ **submerged rock** in depths ranging from 75 to 84 ft.

There are also several areas that are significantly deeper than charted. Examples of these areas include, but are not limited to:

In position 41°41'48"23"N, 070°29'27"W a charted 35-ft sounding is cleared to 53 ft. **Concur**

In position 41°47'09"N, 070°29'01"W a 31-ft wreck is cleared to 42 ft. **Concur**

There are two AWOIS items that are charted incorrectly. A charted **sunken wreck PA (31 ft rep)** in position 41°46'48"N, 070°28'32"W is currently 290m to the southwest of the charted position. A **charted sunken wreck symbol** in position 41°46'31"N, 070°27'46"W is currently 490m to the south of the charted position. Neither represents a danger to navigation. **Concur.**

D.1.2 Chart 13249

Depths from chart 13249 are generally 2-3 ft deeper than current survey soundings. **Concur**

D.1.3 ENC US4MA14M

This ENC was compiled from paper chart 13246; no differences between ENC US4MA14M and the charts were observed. Generally, current survey soundings were 2-3 ft shoaler than charted

depths, with the exceptions noted in D.1.1 and features reported in *Appendix II. **Data appended to this report. Concur.*

D.2 Additional Results

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

A total of 7 **6** assigned AWOIS items were located within the modified limits of H11695 and investigated during this survey. AWOIS items were investigated with 200% side-scan sonar and object detection multibeam over the search radius. All AWOIS items are described in detail in *Appendix II of this report. **Data appended to this report.*

D.2.4 Shoreline

There is no shoreline within the sheet limits of survey H11695. *Concur.*

D.2.5 Charted Features

All charted features and item investigations are described in detail in *Appendix II of this report. **Data appended to this report.*

D.2.6 Charted Pipelines and Cables

There are no charted pipelines or cables in the survey area. *Concur.*

D.2.7 Bridges, Ferry Routes, and Overhead Cables

There are no ferry routes, bridges, or overhead cable crossings in the survey area. *Concur.*

D.3 Dangers to Navigation and Shoals

D 3.1 Dangers to Navigation

There were no Dangers to Navigation found during survey H11695. *Do not concur. One DToN was found during the present survey. See Descriptive Report Appendix I.*

D 3.2 Shoals

There was no significant shoaling found during survey H11695. *Concur.*

D.4 Aids to Navigation

There are 6 charted Aids to Navigation (ATON) within the revised limits of H11695. *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

Recommendations for changes to the Coast Pilot can be found in *Appendix V. **Data appended to this report.*

D.6 Miscellaneous

Bottom Samples

The number of bottom samples collected for this survey did not meet the minimum requirements of NOAA Hydrographic Survey Specifications and Deliverables (HSSD) due to time constraints. However, those samples that were collected were done so in accordance with HSSD. Complete descriptions of all bottom samples acquired during Survey H11695 are contained in the Pydro PSS and the bottom sample list contained in *Appendix V. **Data appended to this report. 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.*

Summary and Recommendations for Additional Work

Per section D.8 (above), the hydrographer has no further recommendations for work in this area. *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 2007 *Field Procedures Manual*, and NOS 2007 *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.

Survey H11695 is adequate to supersede charted soundings in their common areas.

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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Fall 2007 Data Acquisition and Processing Report	Nov. 30, 2007	N/CS33
2007 Hydrographic Systems Readiness Report	April 6, 2007	N/CS31
Horizontal and Vertical Control Report for M-A902-TJ/GM-07	Nov. 30, 2007	N/CS33
Tides and Water Levels Package for M-A902-TJ/GM-07	Nov. 8, 2007	N/OPS1
Coast Pilot Report for M-A902-TJ/GM-07	N/A	N/CS26

Approved and Forwarded:

LCDR Christiaan H. van Westendorp, NOAA
Field Operations Officer

CDR P. Tod Schattgen, NOAA
Commanding Officer

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

Survey Manager:


 LTJG William G. Winner, NOAA
 Junior Officer

APPENDIX I

DANGERS TO NAVIGATION REPORT

H11695 DTON

Registry Number: H11695
State: Massachusetts
Locality: Cape Cod Bay
Sub-locality: Cape Cod Canal to Provincetown Harbor
Project Number: M-A902-TJ/GM-07
Survey Date: 10/27/2007

Contains the features correlating to 75 uncharted features that were found during survey H11695.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13236	30th	03/01/2006	1:20,000 (13236_2)	[L]NTM: ?
13229	29th	12/01/2004	1:40,000 (13229_13)	[L]NTM: ?
13246	38th	12/01/2006	1:80,000 (13246_1)	USCG LNM: 05/27/2008 (11/04/2008) CHS NTM: None (08/29/2008) NGA NTM: 07/01/2006 (11/15/2008)
13200	34th	12/01/2005	1:400,000 (13200_1)	[L]NTM: ?
13009	32nd	07/01/2006	1:500,000 (13009_1)	[L]NTM: ?
13006	33rd	04/01/2006	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	48th	10/01/2004	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	DTON 1- 4 ft Rock	Rock	1.33 m	41° 46' 28.9" N	070° 29' 15.0" W	---

1 - DR_DToN

1.1) DTON 1- 4 ft Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 46' 28.9" N, 070° 29' 15.0" W
Least Depth: 1.33 m (= 4.37 ft = 0.729 fm = 0 fm 4.37 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.18:28:50.296 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 921_1828
Profile/Beam: 711/56
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (3.0m in 4.3m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/921_1828	711/56	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0002	3.19	056.4	Secondary
h11695/tj_3101_reson8125/2007-300/919_1819	698/3	64.54	097.6	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

4ft (13236_2, 13229_13, 13246_1)

0 $\frac{3}{4}$ fm (13200_1, 13009_1, 13006_1, 13003_1)

1.3m (5161_1)

S-57 Data

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

Attributes: INFORM - Concur. Target rock was submitted as DToN#1 to MCD.

QUASOU - 1:depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 1.333 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Target rock was submitted as DToN#1 to MCD. Chart a dangerous submerged rock with a least depth of 4 feet in the present survey location.

Feature Images

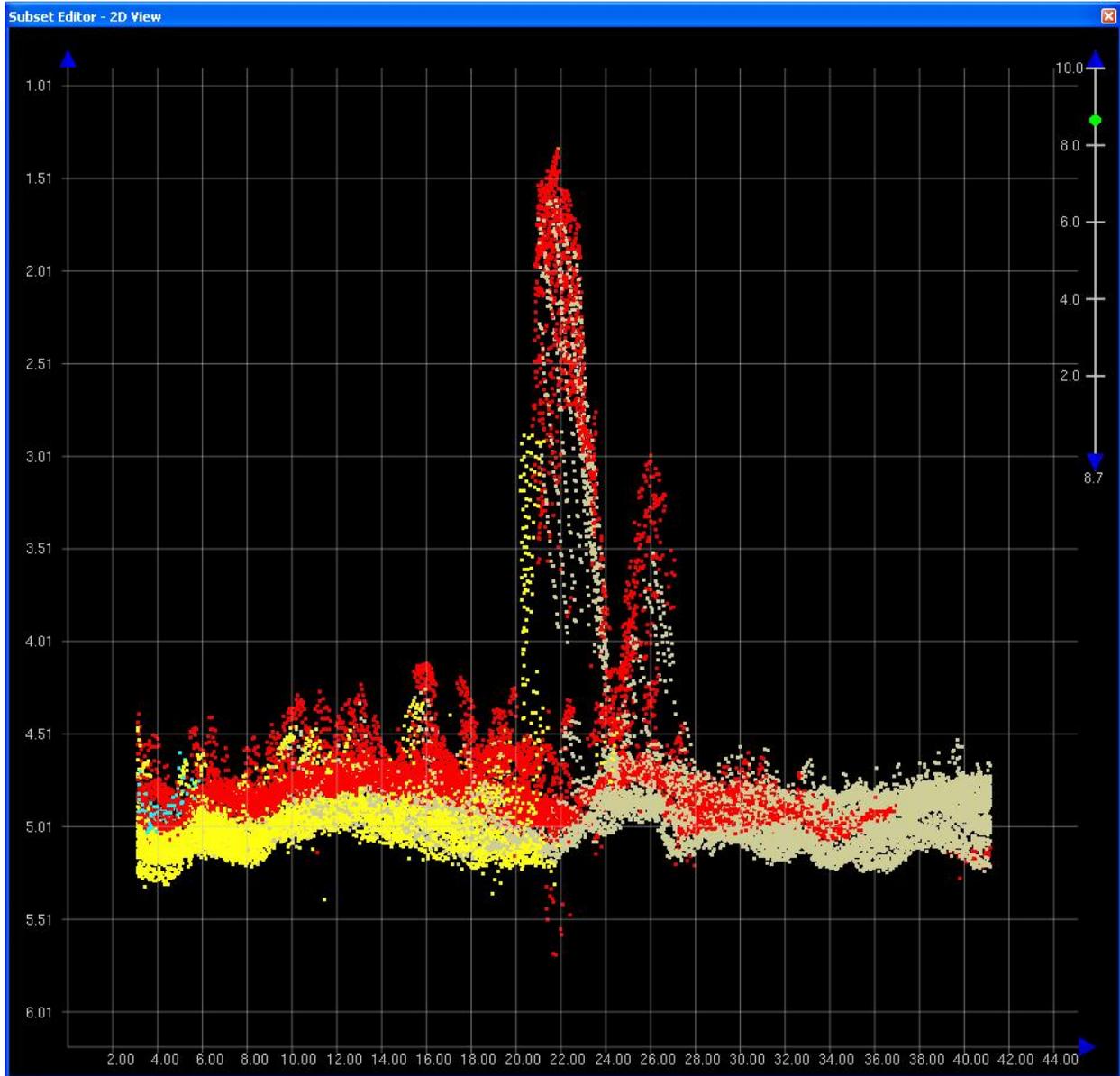


Figure 1.1.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540002_m.tif does not exist.]



Figure 1.1.2

APPENDIX II
SURVEY FEATURES REPORT

H11695 PYDRO_AWOIS Items

Registry Number: H11695
State: Massachusetts
Locality: Cape Cod Bay
Sub-locality: Cape Cod Canal to Provincetown Harbor
Project Number: M-A902-TJ/GM-07
Survey Dates: 10/24/2007 - 11/02/2007

Contains the features correlating to 75 uncharted features that were found during survey H11695.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13236	30th	03/01/2006	1:20,000 (13236_2)	[L]NTM: ?
13250	8th	10/13/2001	1:40,000 (13250_1)	[L]NTM: ?
13229	29th	12/01/2004	1:40,000 (13229_13)	[L]NTM: ?
13246	38th	12/01/2006	1:80,000 (13246_1)	USCG LNM: 05/27/2008 (11/04/2008) CHS NTM: None (08/29/2008) NGA NTM: 07/01/2006 (11/15/2008)
13200	34th	12/01/2005	1:400,000 (13200_1)	[L]NTM: ?
13009	32nd	07/01/2006	1:500,000 (13009_1)	[L]NTM: ?
13006	33rd	04/01/2006	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	48th	10/01/2004	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 13869 WRECK	AWOIS	[no data]	[no data]	[no data]	---
1.2	AWOIS 1964 charted 31 ft dangerous wreck	Wreck	12.77 m	41° 47' 09.0" N	070° 29' 00.9" W	1964
1.3	AWOIS 13626 Charted 31 ft rep dangeruos sunken wreck.	Wreck	11.53 m	41° 46' 41.5" N	070° 28' 42.0" W	13626
1.4	AWOIS 14109 charted dangerous sunken wreck PA	Wreck	10.04 m	41° 49' 48.6" N	070° 08' 32.5" W	14109
1.5	AWOIS 13628 - charted dang subm buoy	Obstruction	14.70 m	41° 48' 49.7" N	070° 28' 03.9" W	13628
1.6	AWOIS 13627 charted dangerous subm buoy	Obstruction	13.11 m	41° 47' 01.9" N	070° 28' 01.9" W	13627

1.7	AWOIS 1963 charted dangerous sunken wreck	Wreck	10.12 m	41° 46' 15.2" N	070° 27' 47.8" W	1963
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1 - DR_AWOIS

1.1) AWOIS #13869 - AWOIS 13869 WRECK

No Primary Survey Feature for this AWOIS Item

Search Position: 41° 47' 23.6" N, 070° 30' 50.5" W
Historical Depth: 1.22 m
Search Radius: 200
Search Technique: SWMB, SSS, SB
Technique Notes: [None]

History Notes:

UNKNOWN SOURCE -- VISIBLE WRECK, FIRST APPEARS ON CHART 1208, 9TH EDITION 1942. CURRENTLY CHARTED IN POSITION: 41°47'23.58" N 070°30'50.52" W (NAD 83). UPDATED 12/29/2006 PTT

Survey Summary

Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

AWOIS item was not fully investigated. There was possible evidence of the wreck within the sidescan, however it is inconclusive.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-M-A902-TJ-07	AWOIS # 13869	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-287/095_1731	0003	98.71	195.2	Secondary
h11695/tj_3102_klein5000_sss100/2007-287/095_1731	0001	169.69	143.6	Secondary

Hydrographer Recommendations

[None]

S-57 Data

[None]

Office Notes

Concur. Retain as charted. No charting action necessary.

Feature Images

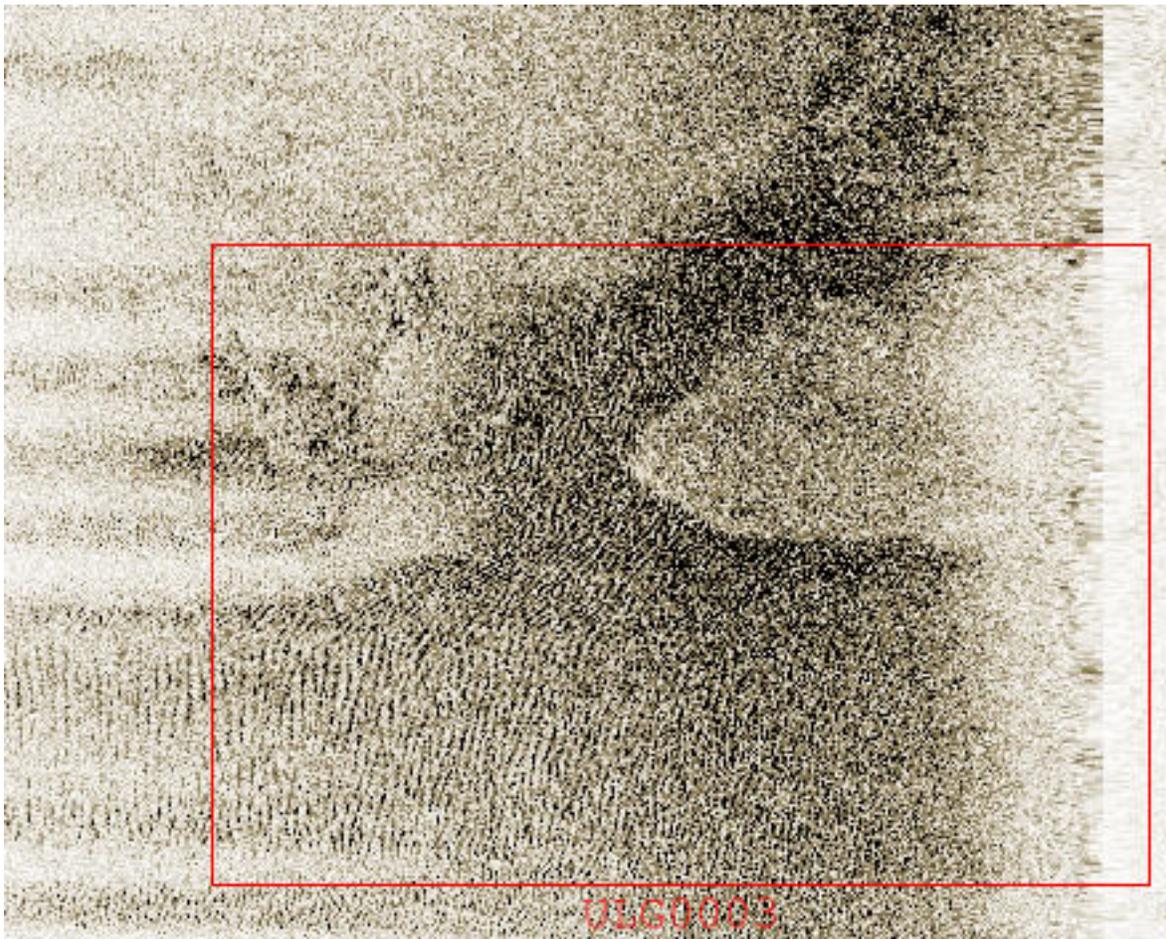


Figure 1.1.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/awois#13869_wreck_googlemap.jpg does not exist.]

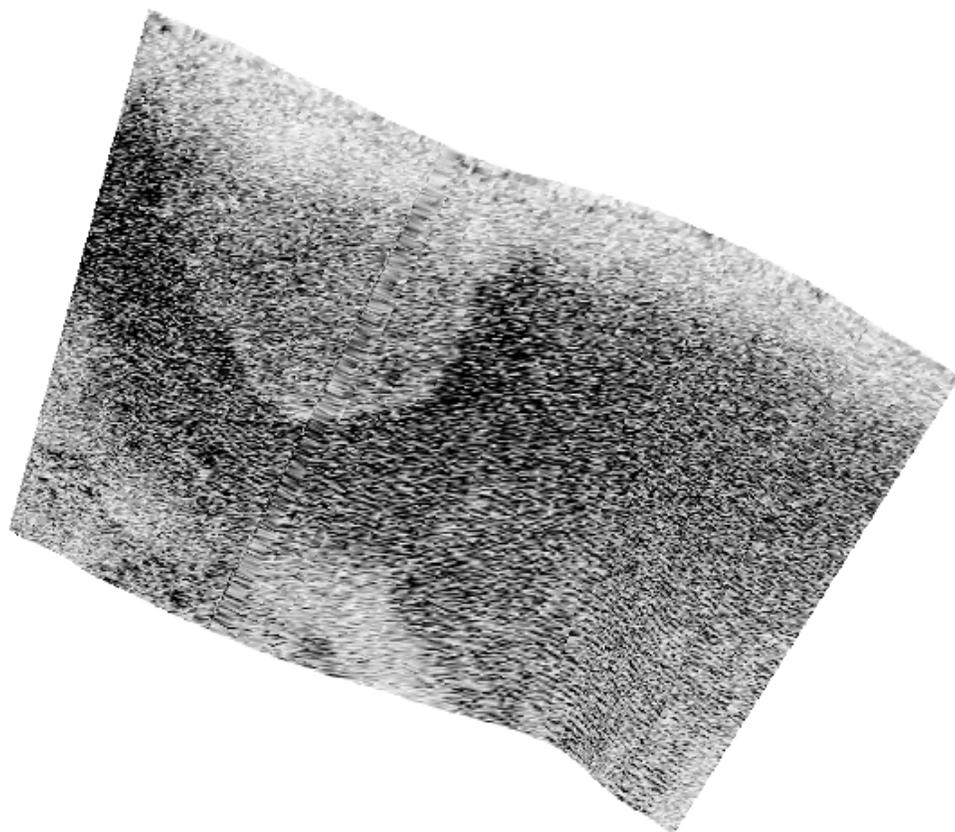


Figure 1.1.2

1.2) AWOIS 1964 charted 31 ft dangerous wreck

Primary Feature for AWOIS Item #1964

Search Position: 41° 47' 06.4" N, 070° 29' 04.1" W
Historical Depth: [None]
Search Radius: 1000
Search Technique: SWMB
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

HISTORY ■ NM DATED 1/3/45 ■ DESCRIPTION ■ 24 NO.549; CARGO, 4985 GT, SUNK 4/20/42 BY MARINE CASUALTY, POSITION ■ ACCURACY WITHIN 1 MILE; POS. LAT.41-47-18N, 70-28-42W.

Survey Summary

Survey Position: 41° 47' 09.0" N, 070° 29' 00.9" W
Least Depth: 12.77 m (= 41.89 ft = 6.982 fm = 6 fm 5.89 ft)
TPU (±1.96σ): THU (TPEh) ±0.983 m ; TVU (TPEv) ±0.214 m
Timestamp: 2007-304.20:10:34.838 (10/31/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-304 / 577_2009
Profile/Beam: 407/192
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted wreck (AWOIS 1964) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-304/577_2009	407/192	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-286/101_1812	0001	14.99	212.4	Secondary
h11695/tj_3102_klein5000_sss200/2007-286/202_1830	0001	17.65	194.4	Secondary
h11695/tj_3102_klein5000_sss100/2007-286/102_1848	0002	19.67	007.1	Secondary
OPR-M-A902-TJ-07	AWOIS # 1964	109.67	042.4	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

42ft (13236_2, 13229_13, 13246_1)

7fm (13200_1, 13009_1, 13006_1, 13003_1)

12.8m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

INFORM - Charted wreck (AWOIS 1964) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 12.768 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Delete the charted dangerous 31 foot wreck and chart a 42 foot dangerous sunken wreck in the present survey location. AWOIS 1964.

Feature Images

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/exminster.tif does not exist.]

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/101_18120001_m.tif does not exist.]

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/202_18300001_m.tif does not exist.]

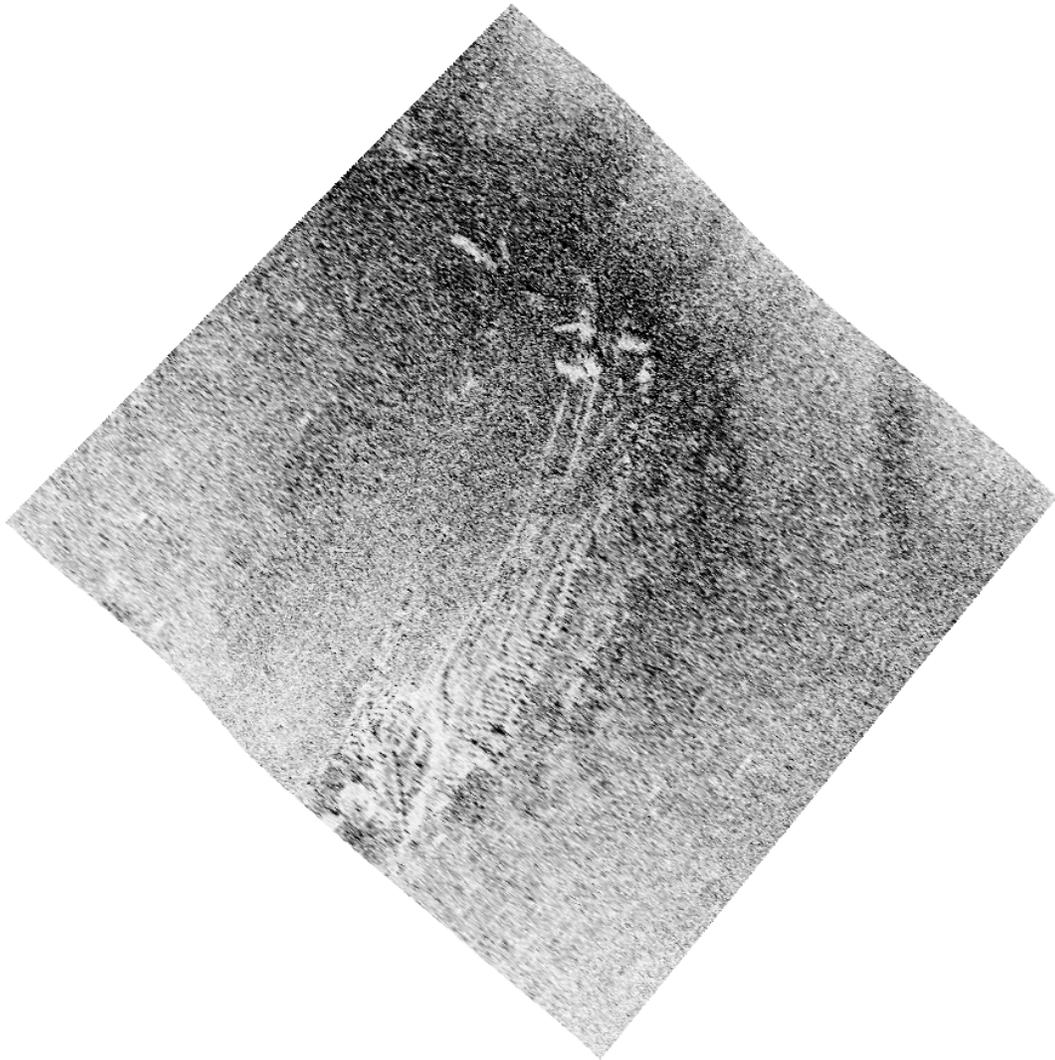


Figure 1.2.1

1.3) AWOIS 13626 Charted 31 ft rep dangeruos sunken wreck.

Primary Feature for AWOIS Item #13626

Search Position: 41° 46' 47.7" N, 070° 28' 32.2" W
Historical Depth: 9.45 m
Search Radius: 800
Search Technique: MB, S2, DI, SD
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

UNKNOWN SOURCE -- SUBMERGED WRECK PA (31 FT REP) NOW CHARTED IN POSITION:
 41°46'47.73" N 070°28'32.25" W (NAD 83). UPDATED 5/1/2006 JCM

Survey Summary

Survey Position: 41° 46' 41.5" N, 070° 28' 42.0" W
Least Depth: 11.53 m (= 37.82 ft = 6.304 fm = 6 fm 1.82 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.986 m ; **TVU (TPEv)** ± 0.222 m
Timestamp: 2007-304.18:48:06.111 (10/31/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-304 / 609_1847
Profile/Beam: 384/229
Charts Affected: 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted wreck (AWOIS 13626) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Wreck is approximately 300m SW of the charted position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-304/609_1847	384/229	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-287/108_1302	0002	1.18	315.5	Secondary
h11695/tj_3102_klein5000_sss100/2007-287/108_1302	0001	3.06	263.3	Secondary
h11695/tj_3102_klein5000_sss200/2007-290/209_2042	0005	9.20	316.8	Secondary
ChartGPs - ENC US4MA14M	Danger 217	265.51	224.1	Secondary (grouped)
OPR-M-A902-TJ-07	AWOIS # 13626	295.14	229.4	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

38ft (13229_13, 13246_1)

6 ¼fm (13200_1, 13009_1, 13006_1, 13003_1)

11.5m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

INFORM - Concur. Recommend relocating wreck from PA position to surveyed position.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 11.528 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Delete the charted dangerous 31 ft rep wreck PA and chart a dangerous sunken wreck with a least depth of 38 ft in the present survey location.

Feature Images

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/awois_13626.tif does not exist.]

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/108_13020002_m.tif does not exist.]

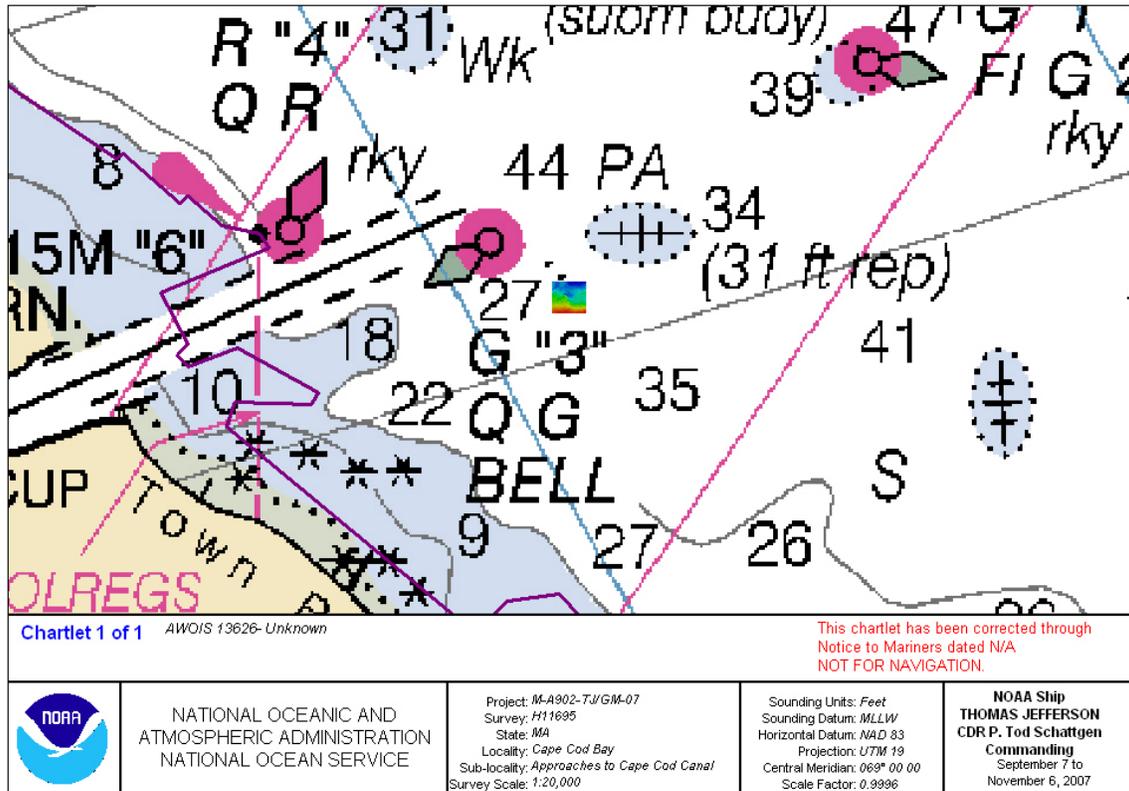


Figure 1.3.1

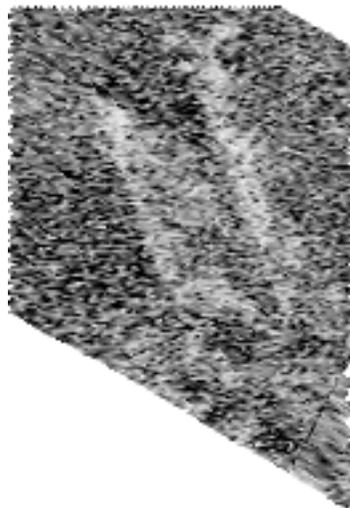


Figure 1.3.2

1.4) AWOIS 14109 charted dangerous sunken wreck PA

Primary Feature for AWOIS Item #14109

Search Position: 41° 49' 47.9" N, 070° 08' 34.9" W
Historical Depth: [None]
Search Radius: 250
Search Technique: SSS, MB
Technique Notes: 200% SSS is adequate for disproval. If object is found obtain least depth with SWMB.

History Notes:

LNM 29/95 (CGD 1), 1995; Reports the F/V Jan, a 65' western rig ocean clam dredger, has been confirmed in location Lat. 41/49/47.9, Lon. 070/08/34.9 (Nad83) Cape Cod Wreck Lighted Buoy WR1 has been positioned about 100 yards south of the wreck. Mariners are advised to use extreme caution when transiting the area.

Survey Summary

Survey Position: 41° 49' 48.6" N, 070° 08' 32.5" W
Least Depth: 10.04 m (= 32.95 ft = 5.491 fm = 5 fm 2.95 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) ± 0.983 m ; TVU (TPEv) ± 0.461 m
Timestamp: 2007-306.16:18:09.854 (11/02/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-306 / 906_1616
Profile/Beam: 757/224
Charts Affected: 13250_1, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted wreck found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Wreck is approximately 65-ft long, matching the description of the F/V Jan. AWOIS 14109 found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-306/906_1616	757/224	0.00	000.0	Primary
h11695/tj_3101_klein5000_sss200/2007-306/306_1529	0001	3.19	264.0	Secondary
h11695/tj_3101_klein5000_sss200/2007-306/304_1519	0001	5.92	342.6	Secondary
h11695/tj_3101_reson8125/2007-306/906_1616	729/237	14.68	052.8	Secondary (grouped)
h11695/tj_3101_klein5000_sss200/2007-306/305_1524	0001	21.99	063.0	Secondary
FVJan	AWOIS # 14109	59.35	067.7	Secondary

ChartGPs - ENC US4MA14M	Danger 243	67.12	081.5	Secondary (grouped)
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Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

33ft (13250_1, 13246_1)

5 ½fm (13200_1, 13009_1, 13006_1, 13003_1)

10.0m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

INFORM - Charted wreck found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Wreck is approximately 65-ft long, matching the description of the F/V Jan. AWOIS 14109 found. Chart a 33ft wreck at location shown on the present survey.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 10.042 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Wreck is approximately 65-ft long, matching the description of the F/V Jan. AWOIS 14109 found. Delete the charted wreck PA symbol and chart a dangerous sunken wreck with a least depth of 33 ft in the present survey location

Feature Images

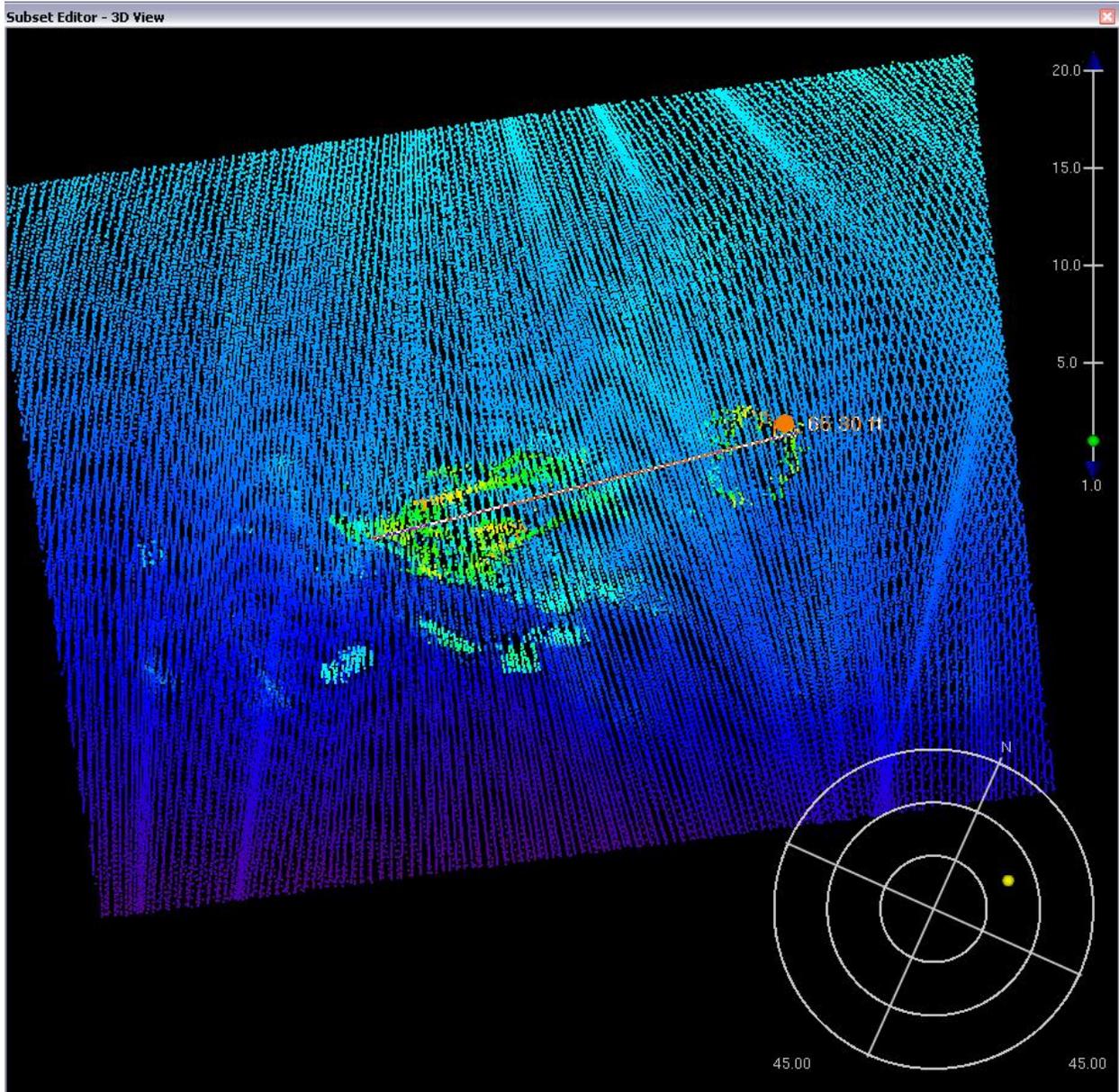


Figure 1.4.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/304_15190001_m.tif does not exist.]

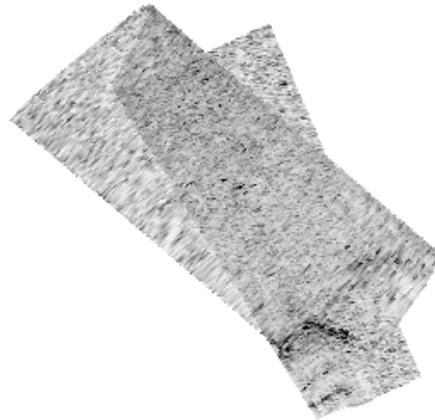


Figure 1.4.2

1.5) AWOIS 13628 - charted dang subm buoy

Primary Feature for AWOIS Item #13628

Search Position: 41° 48' 51.6" N, 070° 27' 56.3" W
Historical Depth: [None]
Search Radius: 500
Search Technique: MB, S2, DI, SD
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

UNKNOWN SOURCE -- SUBM BUOY NOW CHARTED IN POSTION: 41°48'51.58" N 070°27'56.33" W (NAD 83) . UPDATED 5/1/2006 JCM

Survey Summary

Survey Position: 41° 48' 49.7" N, 070° 28' 03.9" W
Least Depth: 14.70 m (= 48.22 ft = 8.037 fm = 8 fm 0.22 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.982 m ; **TVU (TPEv)** ± 0.463 m
Timestamp: 2007-297.13:43:23.440 (10/24/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-297 / 503_1342
Profile/Beam: 246/82
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted submerged buoy (AWOIS 13628) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Buoy is located approximately 190m WSW of charted position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-297/503_1342	246/82	0.00	000.0	Primary
h11695/tj_3101_reson8125/2007-297/502_1346	128/131	0.41	278.2	Secondary
h11695/tj_3102_klein5000_sss100/2007-275/135_1545	0001	2.00	127.0	Secondary
h11695/tj_3102_klein5000_sss200/2007-275/232_1556	0001	6.07	323.2	Secondary
ChartGPs - ENC US4MA14M	Danger 2	146.30	245.5	Secondary (grouped)
OPR-M-A902-TJ-07	AWOIS # 13628	184.71	251.2	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

48ft (13246_1)

8fm (13200_1, 13009_1, 13006_1, 13003_1)

14.7m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: INFORM - Charted submerged buoy (AWOIS 13628) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Buoy is located approximately 190m WSW of charted position. Concur. Chart buoy at as shown on the present survey.

NATCON - 7:metal

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 14.698 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Delete charted obstn symbol and notation and chart a dangerous obstn (subm buoy) with a least depth of 48 ft in the present survey location.

Feature Images

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/135_15450001_m.tif does not exist.]

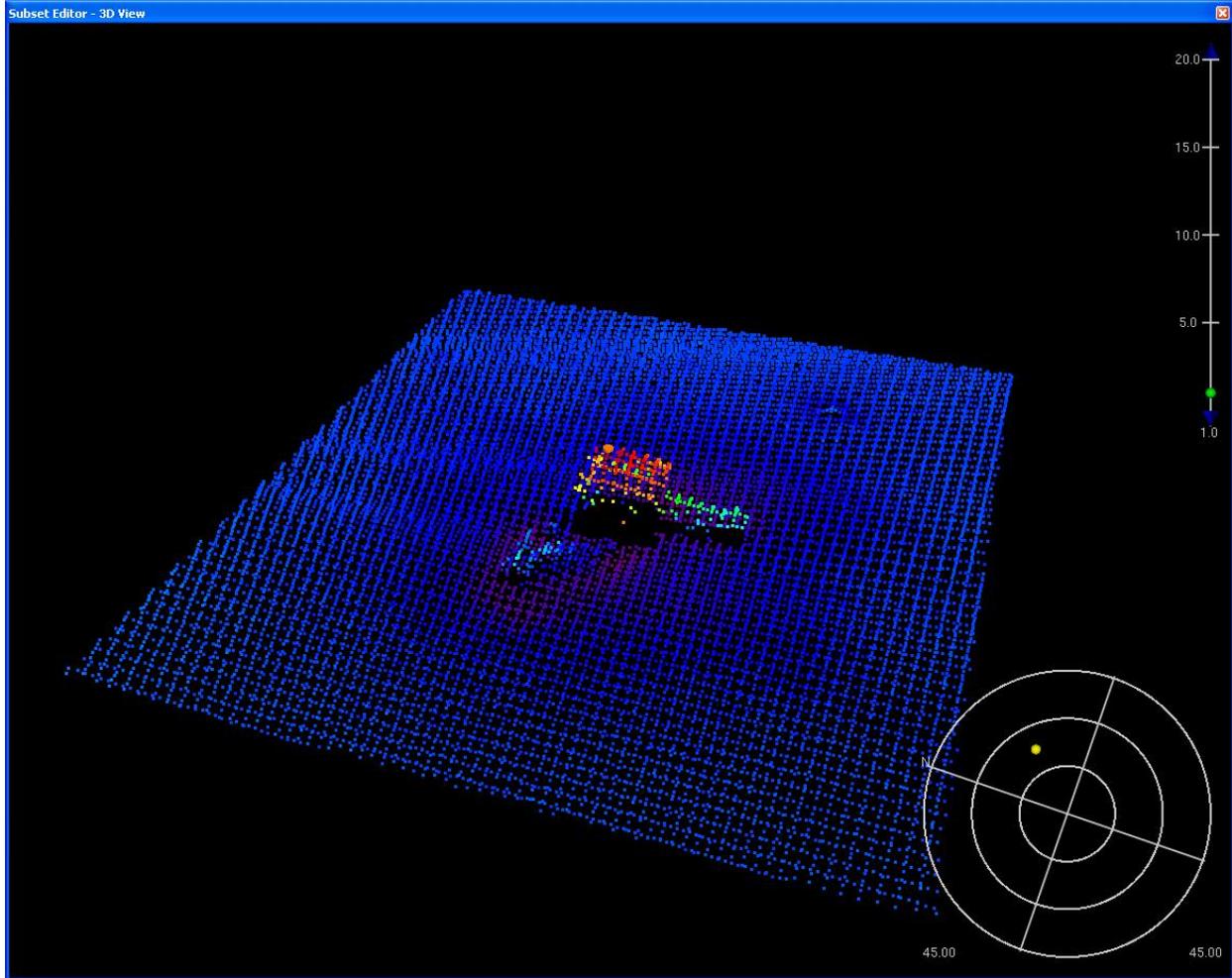


Figure 1.5.1

1.6) AWOIS 13627 charted dangerous subm buoy

Primary Feature for AWOIS Item #13627

Search Position: 41° 47' 03.3" N, 070° 28' 06.2" W
Historical Depth: [None]
Search Radius: 300
Search Technique: MB, S2, DI, SD
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

LNM 28/05 (1ST CGD) -- OBSTN (SUBM BUOY) NOW CHARTED IN POSTION: 41°47'03.27" N 070°28'06.23" W (NAD 83) . UPDATED 5/1/2006 JMC

Survey Summary

Survey Position: 41° 47' 01.9" N, 070° 28' 01.9" W
Least Depth: 13.11 m (= 43.01 ft = 7.169 fm = 7 fm 1.01 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.981 m ; **TVU (TPEv)** ± 0.462 m
Timestamp: 2007-303.20:06:43.918 (10/30/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-303 / 656_2001
Profile/Beam: 3046/77
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted submerged buoy (AWOIS 13627) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-303/656_2001	3046/77	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-285/152_1743	0008	3.09	177.6	Secondary
OPR-M-A902-TJ-07	AWOIS # 13627	109.13	113.0	Secondary
ChartGPs - ENC US4MA14M	Danger 1	121.73	106.0	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

43ft (13246_1)

7fm (13200_1, 13009_1, 13006_1, 13003_1)

13.1m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: NATCON - 7:metal
QUASOU - 6:least depth known
SORDAT - 20071106
SORIND - US,US,nsurf,H11695
STATUS - 1:permanent
TECSOU - 2,3:found by side scan sonar,found by multi-beam
VALSOU - 13.110 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

Office Notes

Delete charted obstn (subm buoy) and chart a dangerous obstn (subm buoy) with a least depth of 43 ft in the present survey location.

Feature Images

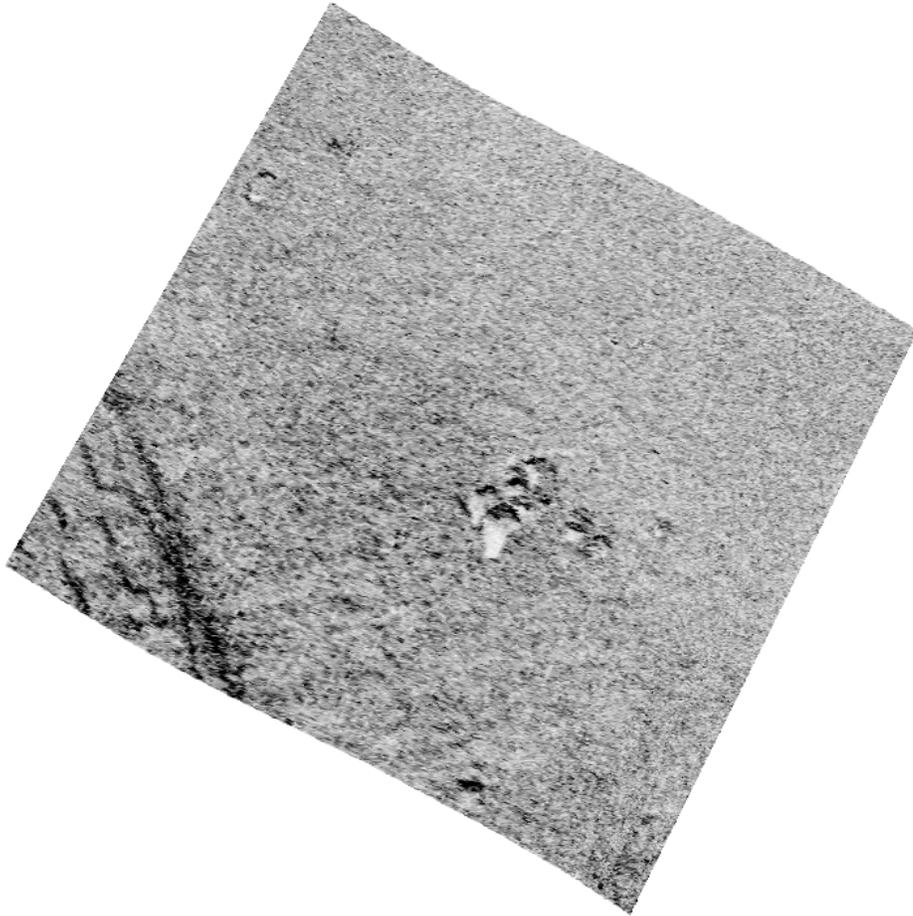


Figure 1.6.1

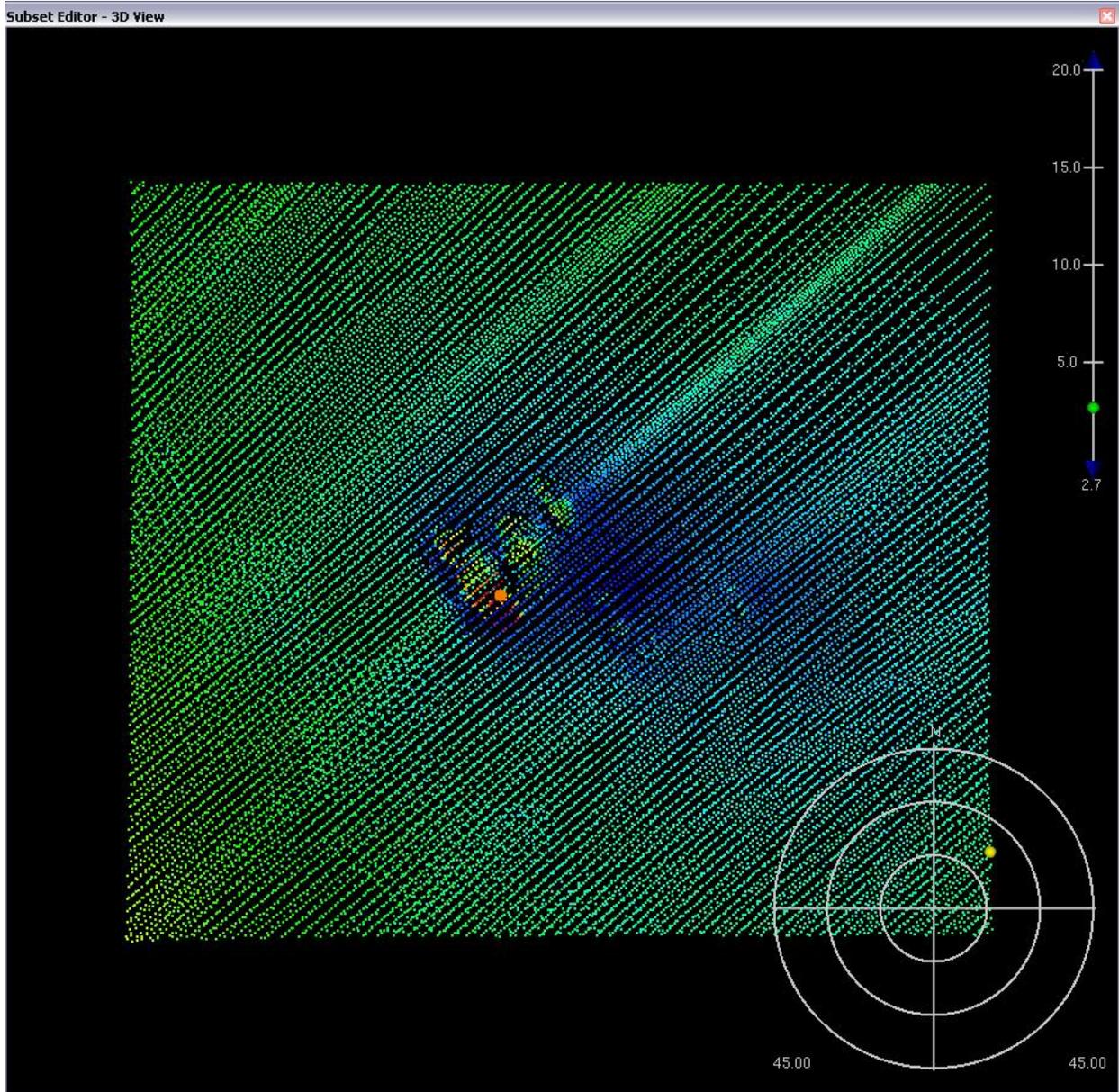


Figure 1.6.2

1.7) AWOIS 1963 charted dangerous sunken wreck

Primary Feature for AWOIS Item #1963

Search Position: 41° 46' 30.4" N, 070° 27' 46.1" W
Historical Depth: 9.45 m
Search Radius: 500
Search Technique: SWMB
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

DESCRIPTION ■ ■ 24 NO.291; BARGE, 972 GT; SUNK 11/20/44 BY MARINE CASUALTY; POS.
 ACCURACY WITHIN 1 MILE; REPORTED COMPLETELY SUBMERGED BY CGS 5/6/43(?); POSITION
 41-46-30N, 70-27-45W. ■ 27 NO.631; WRECK REPORTED COMPLETELY SUBMERGED.

Survey Summary

Survey Position: 41° 46' 15.2" N, 070° 27' 47.8" W
Least Depth: 10.12 m (= 33.19 ft = 5.531 fm = 5 fm 3.19 ft)
TPU (±1.96σ): THU (TPEh) ±0.981 m ; TVU (TPEv) ±0.459 m
Timestamp: 2007-303.15:38:49.757 (10/30/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-303 / 722_1538
Profile/Beam: 381/194
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted wreck (AWOIS 1963) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. The wreck is approximately 500m south of its charted position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-303/722_1538	381/194	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-287/109_1350	0006	6.00	357.2	Secondary
h11695/tj_3102_klein5000_sss100/2007-287/109_1350	0007	10.36	306.7	Secondary
h11695/tj_3102_klein5000_sss200/2007-287/210_1327	0009	17.63	186.3	Secondary
h11695/tj_3102_klein5000_sss100/2007-287/108_1301	0006	36.48	194.4	Secondary
OPR-M-A902-TJ-07	AWOIS # 1963	471.19	184.8	Secondary
OPR-M-A902-TJ-07	AWOIS # 7471	481.91	193.0	Secondary

ChartGPs - ENC US4MA14M	Danger 218	491.62	181.3	Secondary (grouped)
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Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

33ft (13246_1)

5 ½fm (13200_1, 13009_1, 13006_1, 13003_1)

10.1m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 1:non-dangerous wreck

INFORM - Charted wreck (AWOIS 1963) found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. The wreck is approximately 500m south of its charted position. Concur. Recommend charting wreck in surveyed position.

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 10.115 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Delete charted dangerous sunken wreck symbol. Add dangerous sunken wreck with a least depth of 33 feet in the present survey location.

Feature Images

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/pottstown.tif does not exist.]

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/108_13010006_m.tif does not exist.]

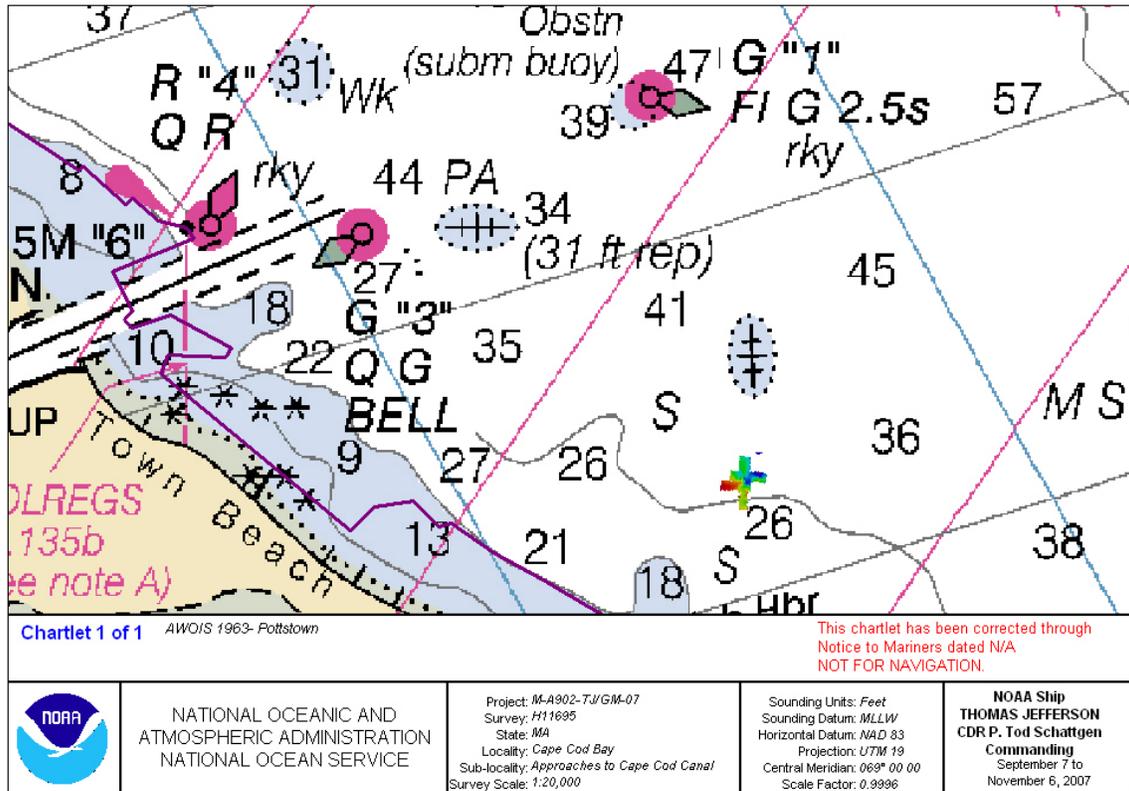


Figure 1.7.1

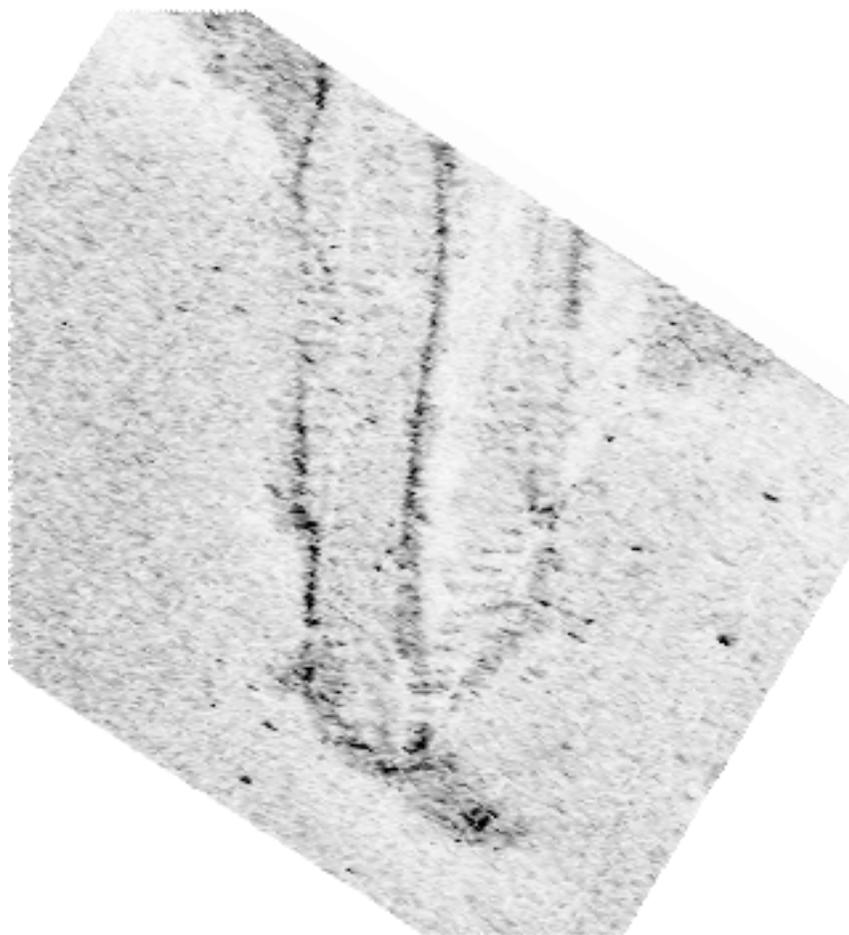


Figure 1.7.2

H11695 Charted Features

Registry Number: H11695
State: Massachusetts
Locality: Cape Cod Bay
Sub-locality: Cape Cod Canal to Provincetown Harbor
Project Number: M-A902-TJ/GM-07
Survey Dates: 10/15/2007 - 10/27/2007

Contains the features correlating to 75 uncharted features that were found during survey H11695.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13236	30th	03/01/2006	1:20,000 (13236_2)	[L]NTM: ?
13229	29th	12/01/2004	1:40,000 (13229_13)	[L]NTM: ?
13246	38th	12/01/2006	1:80,000 (13246_1)	USCG LNM: 05/27/2008 (11/04/2008) CHS NTM: None (08/29/2008) NGA NTM: 07/01/2006 (11/15/2008)
13200	34th	12/01/2005	1:400,000 (13200_1)	[L]NTM: ?
13009	32nd	07/01/2006	1:500,000 (13009_1)	[L]NTM: ?
13006	33rd	04/01/2006	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	48th	10/01/2004	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	CHARTED ROCK AWASH	Rock	0.22 m	41° 46' 24.5" N	070° 29' 03.8" W	---
1.2	CHARTED ROCK AWASH	Rock	0.26 m	41° 46' 24.7" N	070° 29' 09.4" W	---
1.3	CHARTED ROCK AWASH	Rock	0.42 m	41° 46' 25.6" N	070° 29' 14.0" W	---
1.4	CHARTED BREAKWATER	Stationary structure, floating or fixed	1.09 m	41° 45' 57.2" N	070° 28' 28.6" W	---

1 - DR_Charted

1.1) CHARTED ROCK AWASH

Survey Summary

Survey Position: 41° 46' 24.5" N, 070° 29' 03.8" W
Least Depth: 0.22 m (= 0.73 ft = 0.121 fm = 0 fm 0.73 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.16:10:24.127 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 825_1608
Profile/Beam: 1148/182
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (1.8m in 2.0m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/825_1608	1148/182	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0028	22.63	198.9	Secondary (grouped)
ChartGPs - Digitized	5	23.21	217.2	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/922_1832	2520/158	45.37	023.6	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/826_1613	1847/111	52.33	111.2	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0009	53.37	113.0	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/387_1856	711/233	67.09	176.5	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0011	71.55	256.5	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1752	0005	71.78	172.6	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/387_1856	1122/43	73.02	259.3	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/386_1915	709/11	78.31	226.0	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0010	80.24	223.2	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0012	80.81	257.9	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/928_1853	1928/30	81.98	288.7	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0ft (13236_2, 13229_13, 13246_1)

0fm (13200_1, 13009_1, 13006_1, 13003_1)

.2m (5161_1)

S-57 Data

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

Attributes: INFORM - Concur. Recommend chart sounding rather than individual rock as it is located in a rocky area.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 0.222 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Delete charted rock awash symbol and chart area as foul with rocks.

Feature Images

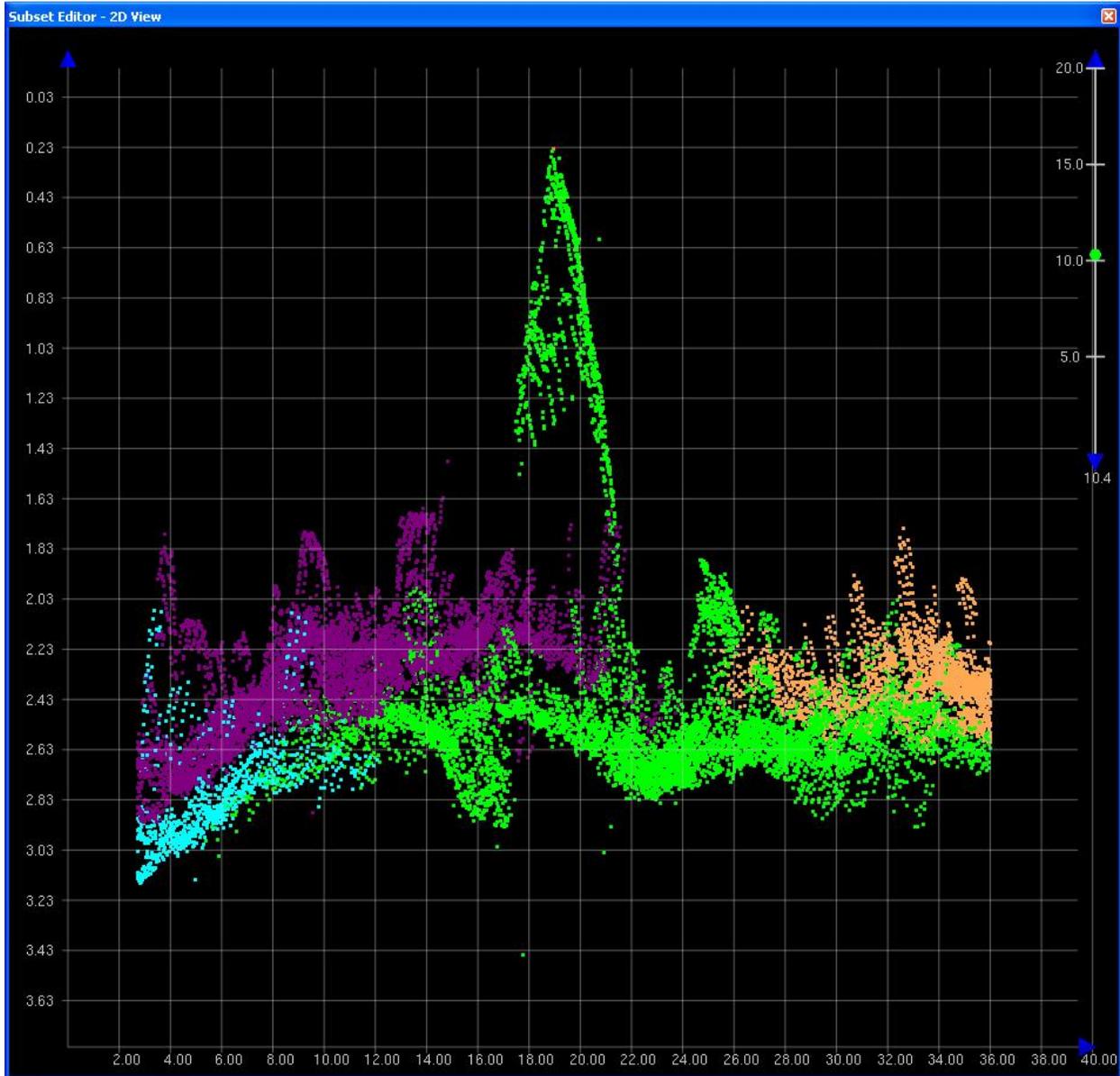


Figure 1.1.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540028_m.tif does not exist.]

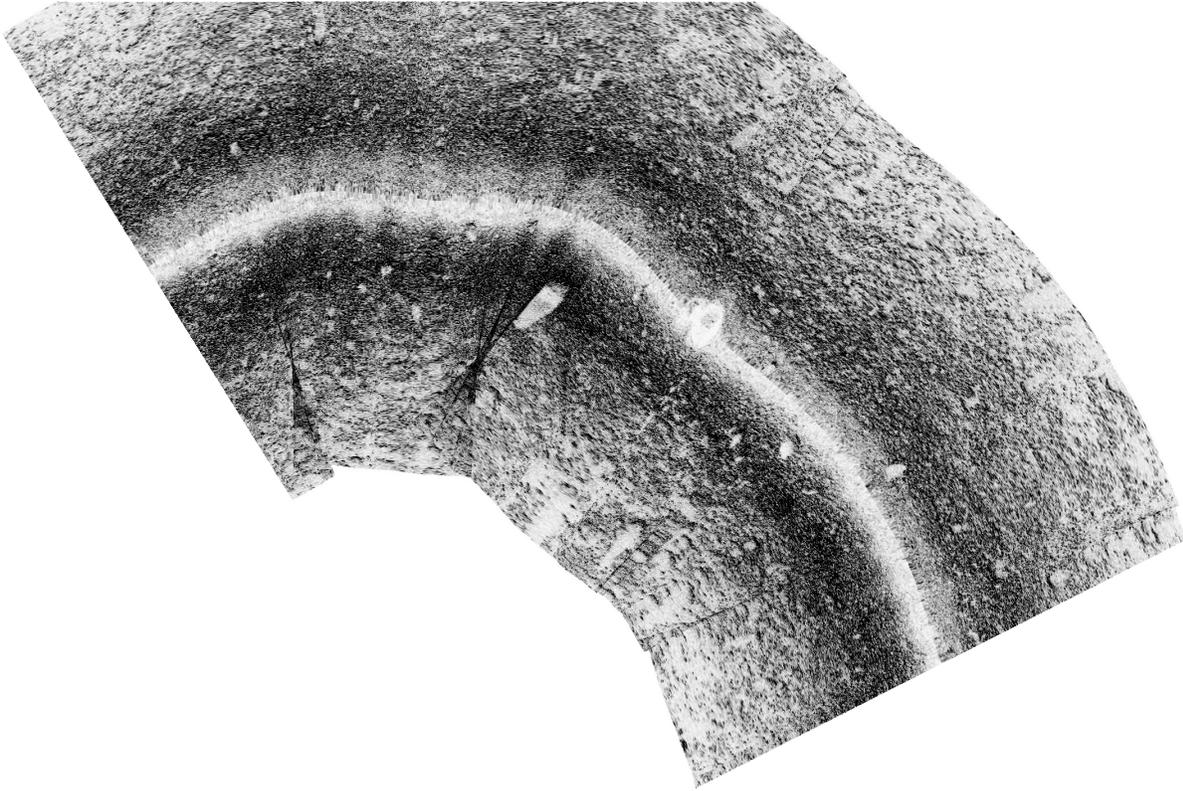


Figure 1.1.2

1.2) CHARTED ROCK AWASH

Survey Summary

Survey Position: 41° 46' 24.7" N, 070° 29' 09.4" W
Least Depth: 0.26 m (= 0.86 ft = 0.144 fm = 0 fm 0.86 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.16:27:15.243 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 829_1625
Profile/Beam: 1356/222
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (0.9m in 1.2m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/829_1625	1356/222	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0007	5.86	057.6	Secondary (grouped)
ChartGPs - Digitized	3	14.27	221.1	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0027	17.70	232.7	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0008	25.10	125.3	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/829_1625	1238/226	26.27	132.3	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/922_1832	3363/1	54.37	162.7	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/827_1617	771/214	59.81	178.5	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

1ft (13236_2, 13229_13, 13246_1)

0fm (13200_1, 13009_1, 13006_1, 13003_1)

.3m (5161_1)

S-57 Data

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

Attributes: INFORM - Recommend chart sounding rather than individual rock as it is located in a rocky area near the shore.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 0.263 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Retain rock awash as charted

Feature Images

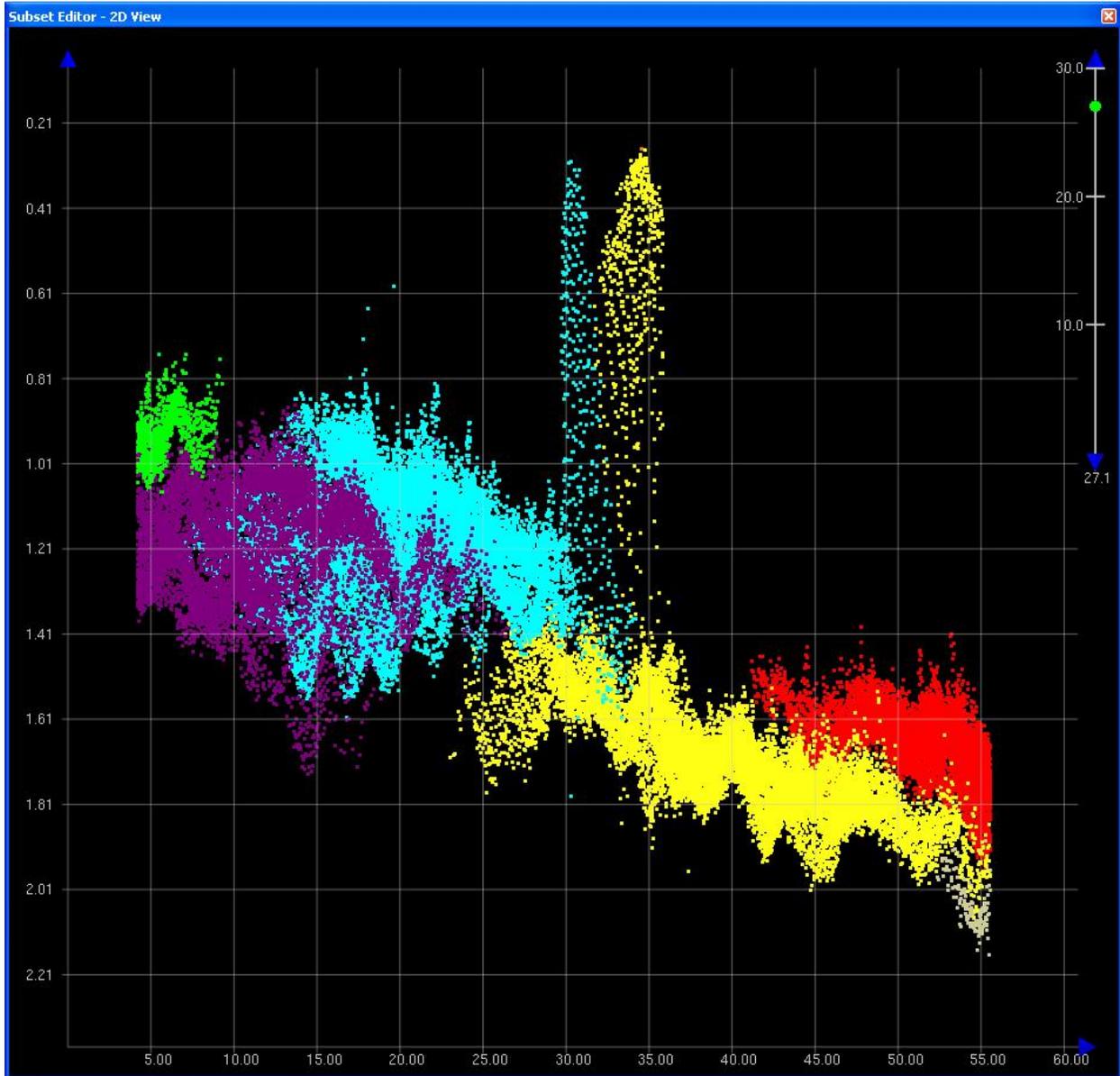


Figure 1.2.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540007_m.tif does not exist.]

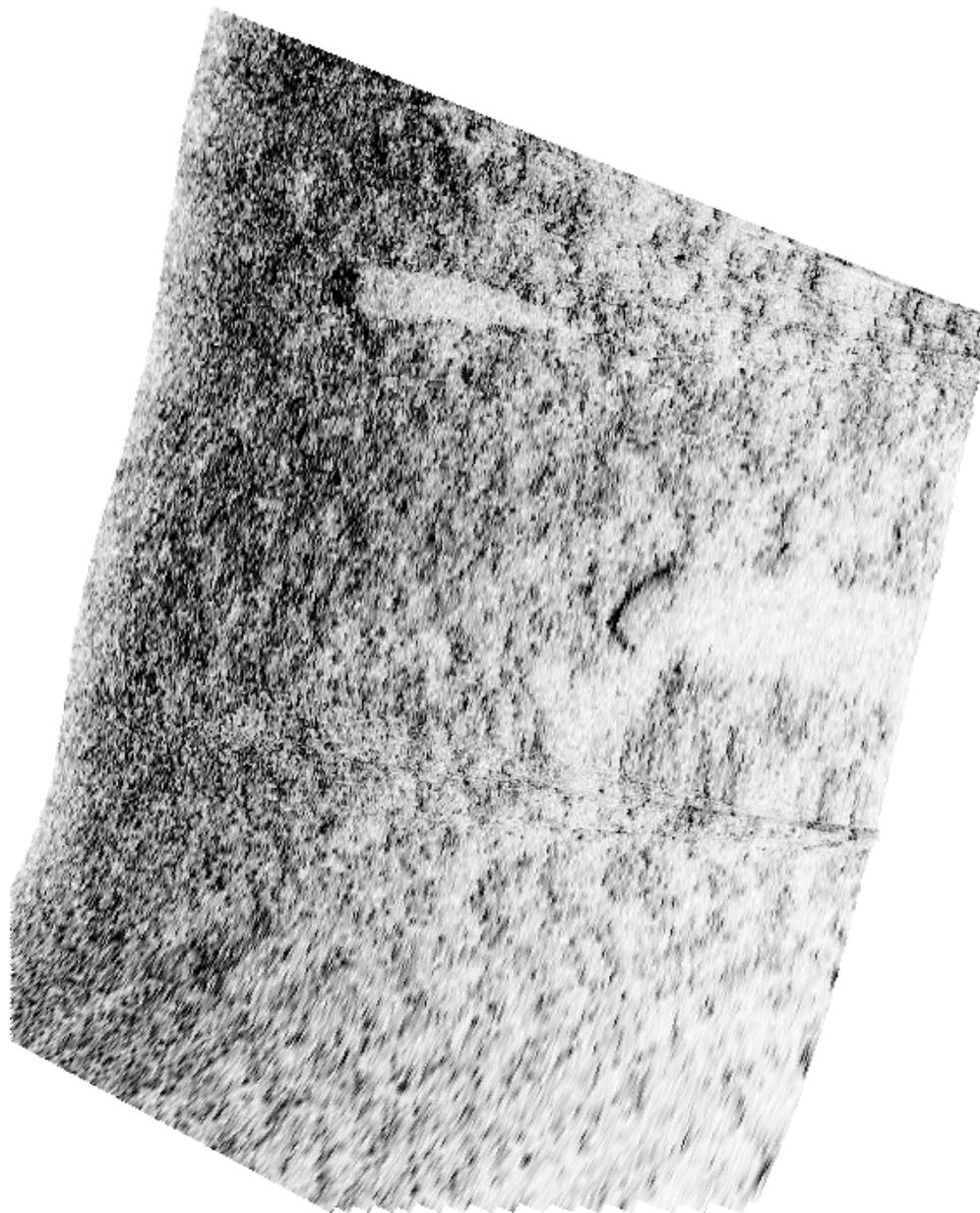


Figure 1.2.2

1.3) CHARTED ROCK AWASH

Survey Summary

Survey Position: 41° 46' 25.6" N, 070° 29' 14.0" W
Least Depth: 0.42 m (= 1.37 ft = 0.229 fm = 0 fm 1.37 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.18:17:51.094 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 918_1815
Profile/Beam: 3658/229
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (1.0m in 1.4m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/918_1815	3658/229	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0025	24.74	117.6	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0026	25.98	118.9	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/919_1819	1390/140	31.46	164.6	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0005	33.32	003.6	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0004	33.69	245.5	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/920_1824	3499/9	35.56	243.8	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0003	38.23	171.9	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/914_1751	3283/226	38.34	031.4	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/831_1634	1301/166	39.84	297.3	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0006	41.17	301.5	Secondary (grouped)
ChartGPs - Digitized	6	47.62	137.0	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/914_1751	3630/76	78.98	097.9	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

1ft (13236_2, 13229_13, 13246_1)

0 ¼fm (13200_1, 13009_1, 13006_1, 13003_1)

.4m (5161_1)

S-57 Data

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

Attributes: INFORM - Recommend chart sounding rather than individual rock as it is located in a rocky area close to shore.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 0.418 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Delete rock awash charted in Lat41-46-26.76N, Lon 70-29-14.0W. Add a dangerous rock awash in the present survey location.

Feature Images

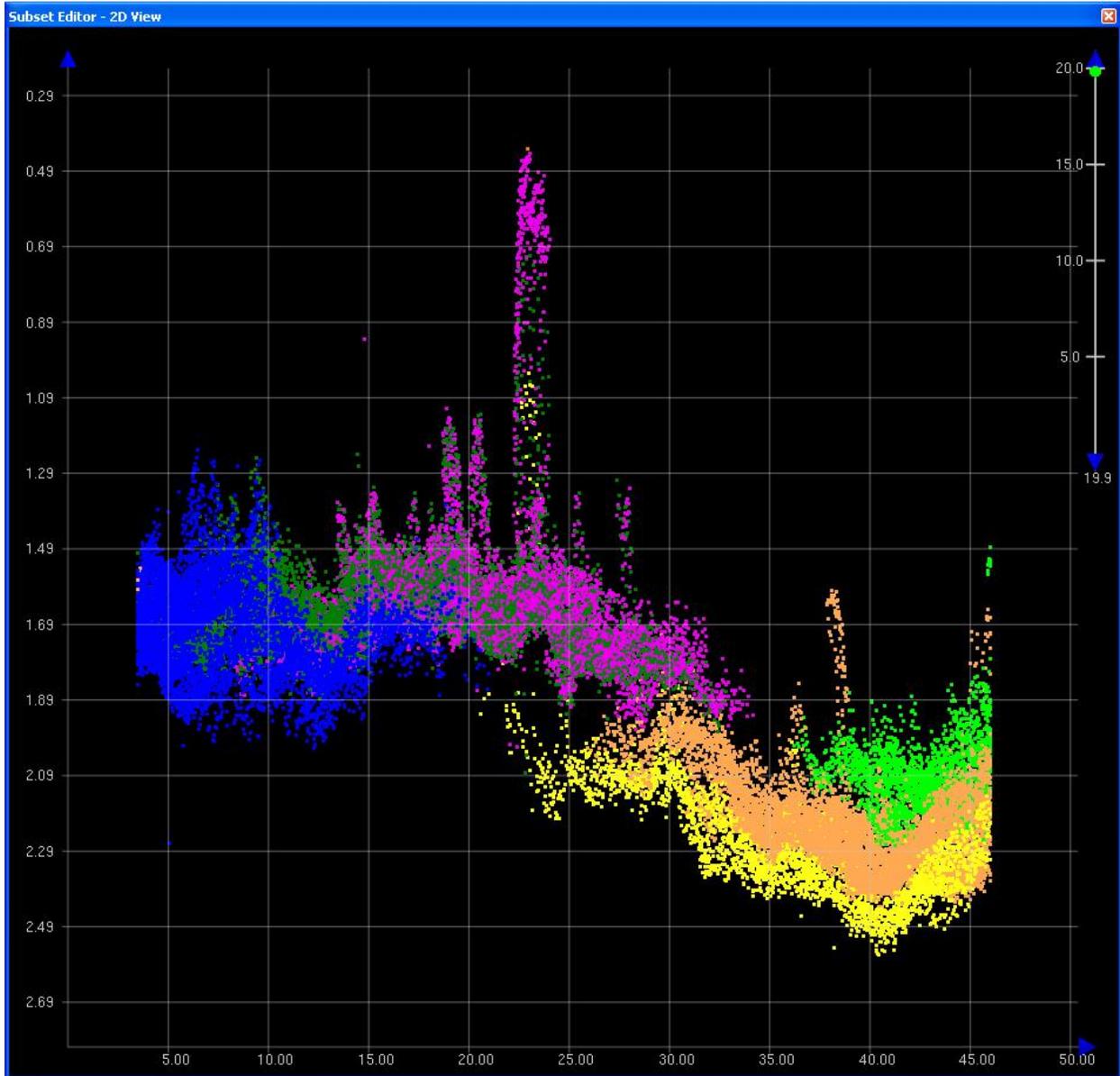


Figure 1.3.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540025_m.tif does not exist.]

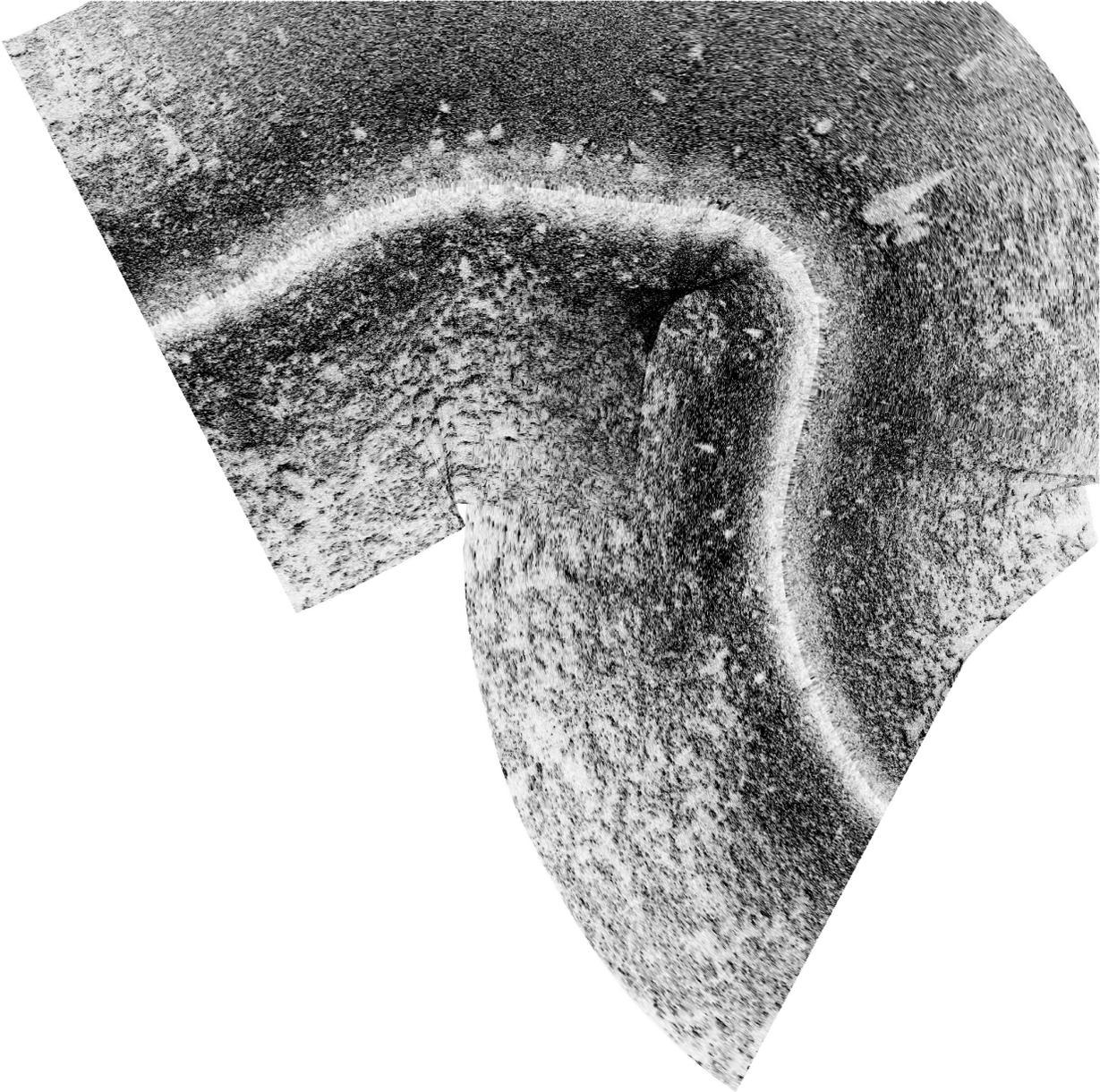


Figure 1.3.2

1.4) CHARTED BREAKWATER

Survey Summary

Survey Position: 41° 45' 57.2" N, 070° 28' 28.6" W
Least Depth: 1.09 m (= 3.56 ft = 0.594 fm = 0 fm 3.56 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.413 m
Timestamp: 2007-288.17:09:57.213 (10/15/2007)
Survey Line: h11695 / tj_3102_reson8101 / 2007-288 / 220_1654
Profile/Beam: 12524/67
Charts Affected: 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Charted breakwater found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3102_reson8101/2007-288/220_1654	12524/67	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0020	3.27	065.7	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0019	14.99	351.5	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

3ft (13229_13, 13246_1)

0 ½fm (13200_1, 13009_1, 13006_1, 13003_1)

1.1m (5161_1)

S-57 Data

Geo object 1: Shoreline Construction (SLCONS)
Attributes: CATSLC - 1:breakwater
 SORDAT - 20071106
 SORIND - US,US,nsurf,H11695

Office Notes

The point found by the present survey is on the northern breakwater at the entrance to Sandwich harbor. After analyzing the Ortho photo from USGS the surveyed location is correct, the breakwater is charted incorrectly. Raster Chart 13246, edition 38, 200612 is the largest scale chart over the area and it inaccurately depicts two breakwaters, the one positioned by this survey to the north and the one which is charted in the entrance to the harbor. It is recommended that MCD chart the entrance to the harbor and associated breakwaters as per the latest ortho photography.

Feature Images

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540020_m.tif does not exist.]



Figure 1.4.1

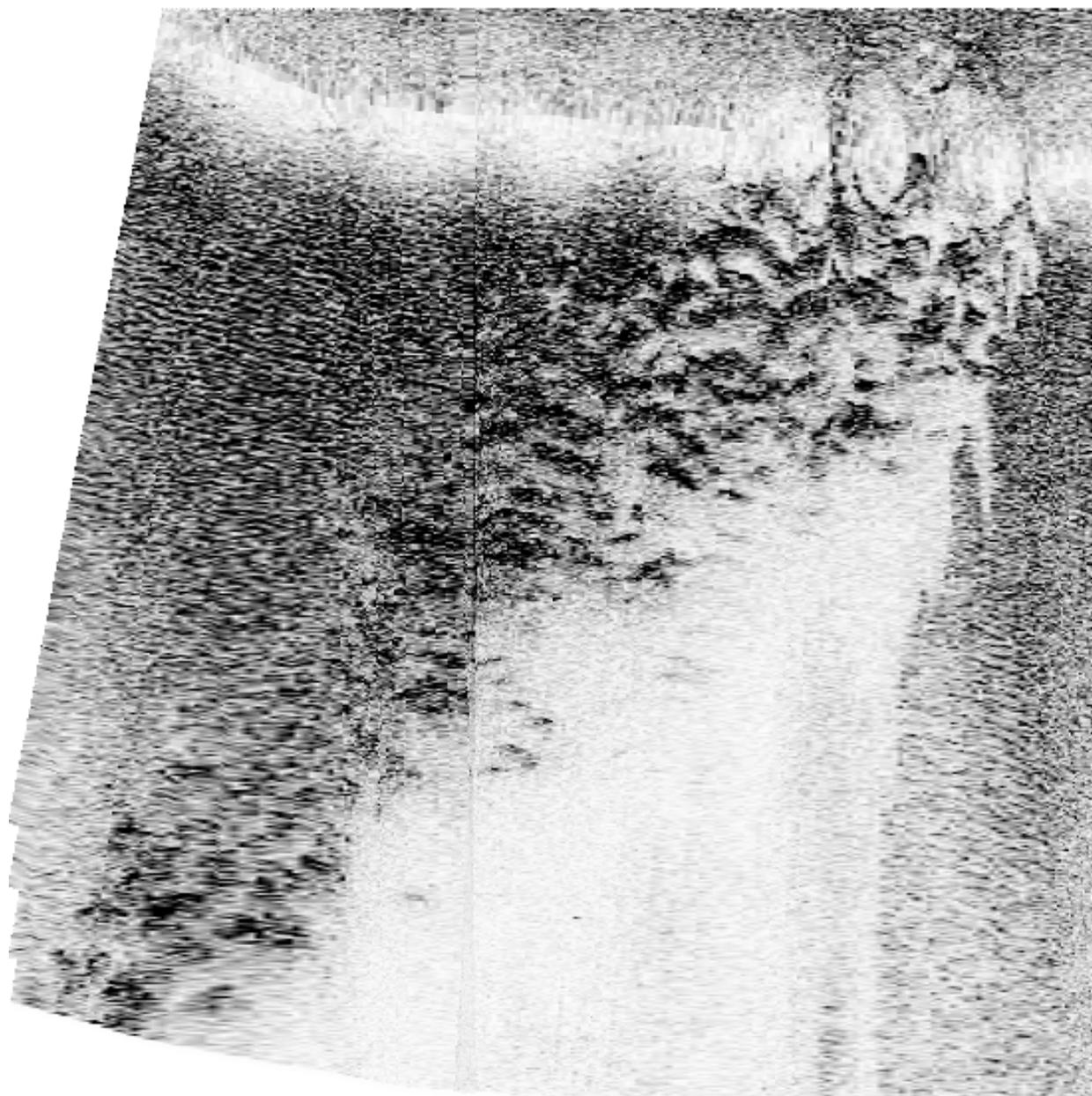


Figure 1.4.2

H11695 PYDRO_Uncharted Features

Registry Number: H11695
State: Massachusetts
Locality: Cape Cod Bay
Sub-locality: Cape Cod Canal to Provincetown Harbor
Project Number: M-A902-TJ/GM-07
Survey Dates: 09/08/2007 - 10/27/2007

Contains the features correlating to 75 uncharted features that were found during survey H11695.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
13236	30th	03/01/2006	1:20,000 (13236_2)	[L]NTM: ?
13229	29th	12/01/2004	1:40,000 (13229_13)	[L]NTM: ?
13246	38th	12/01/2006	1:80,000 (13246_1)	USCG LNM: 05/27/2008 (11/04/2008) CHS NTM: None (08/29/2008) NGA NTM: 07/01/2006 (11/15/2008)
13200	34th	12/01/2005	1:400,000 (13200_1)	[L]NTM: ?
13009	32nd	07/01/2006	1:500,000 (13009_1)	[L]NTM: ?
13006	33rd	04/01/2006	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	48th	10/01/2004	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	64 foot dangerous underwater rock	Rock	19.64 m	41° 53' 22.7" N	070° 29' 01.6" W	---
1.2	Rock Awash	Rock	0.08 m	41° 46' 20.3" N	070° 29' 06.5" W	---
1.3	Rock Awash	Rock	-0.55 m	41° 46' 19.1" N	070° 29' 08.6" W	---
1.4	Dangerous 6 foot rock	Rock	2.02 m	41° 46' 26.4" N	070° 28' 57.6" W	---
1.5	Dangerous 2 foot rock	Rock	0.81 m	41° 46' 14.8" N	070° 29' 00.9" W	---
1.6	Dangerous 5 foot rock	Rock	1.49 m	41° 46' 16.5" N	070° 28' 57.8" W	---

1 - DR_UnCharted

1.1) 64 foot dangerous underwater rock

Survey Summary

Survey Position: 41° 53' 22.7" N, 070° 29' 01.6" W
Least Depth: 19.64 m (= 64.44 ft = 10.740 fm = 10 fm 4.44 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.020 m ; **TVU (TPEv)** ± 0.532 m
Timestamp: 2007-251.19:14:21.365 (09/08/2007)
Survey Line: h11695 / tj_s222_reson7125_mb / 2007-251 / 338_1850
Profile/Beam: 2828/506
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted obstruction found with complete Reson 7125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Obstruction is significant based upon height (4.5m in 24.1m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_s222_reson7125_mb/2007-251/338_1850	2828/506	0.00	000.0	Primary

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

64ft (13246_1)
 10 $\frac{3}{4}$ fm (13200_1, 13009_1, 13006_1, 13003_1)
 19.6m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20071106
 SORIND - US,US,nsurf,H11695
 TECSOU - 2,3:found by side scan sonar,found by multi-beam
 VALSOU - 19.642 m
 VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Chart a dangerous rock with a least depth of 64 feet in the present survey location.

Feature Images

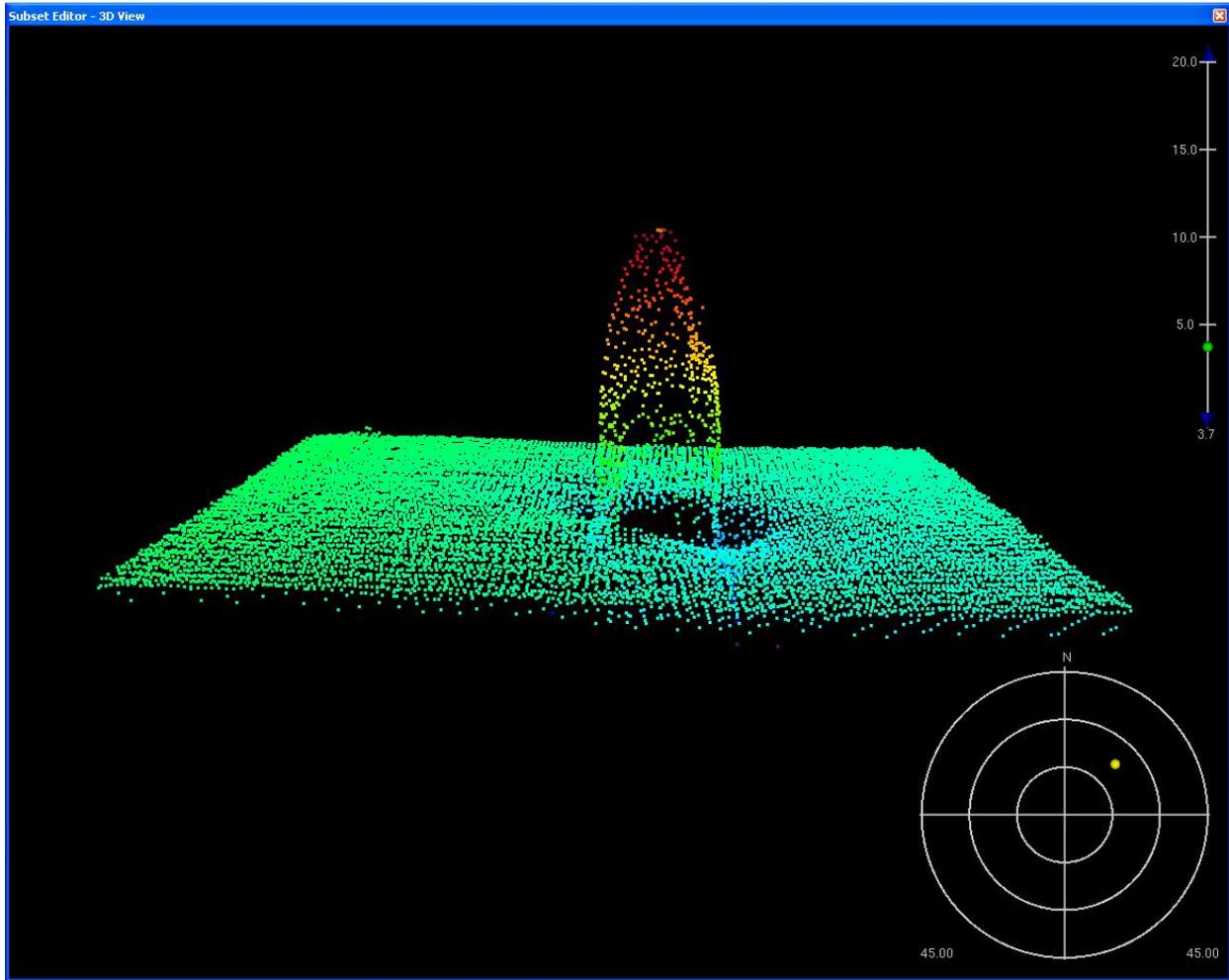


Figure 1.1.1

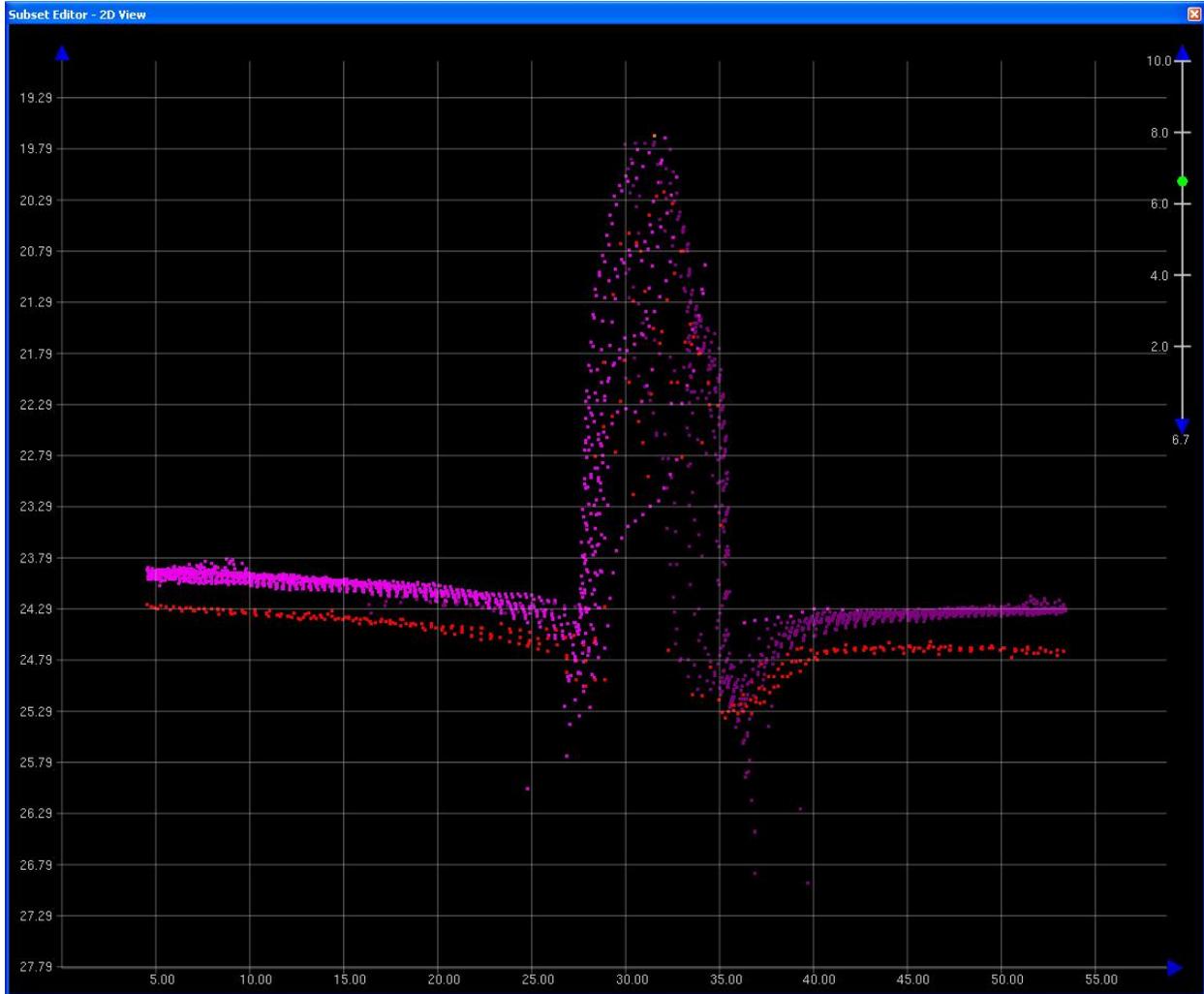


Figure 1.1.2

1.2) Rock Awash

Survey Summary

Survey Position: 41° 46' 20.3" N, 070° 29' 06.5" W
Least Depth: 0.08 m (= 0.27 ft = 0.045 fm = 0 fm 0.27 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.16:41:03.974 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 832_1639
Profile/Beam: 1699/61
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (0.9m in 0.9m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/832_1639	1699/61	0.00	000.0	Primary
h11695/tj_3101_reson8125/2007-300/833_1643	3214/54	39.36	334.0	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/914_1751	1916/39	59.90	337.8	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0ft (13236_2, 13229_13, 13246_1)

0fm (13200_1, 13009_1, 13006_1, 13003_1)

.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - Concur with clarification.Rock Awash
 QUASOU - 6:least depth known
 SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 0.083 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Chart a rock awash symbol in the present survey location.

Feature Images

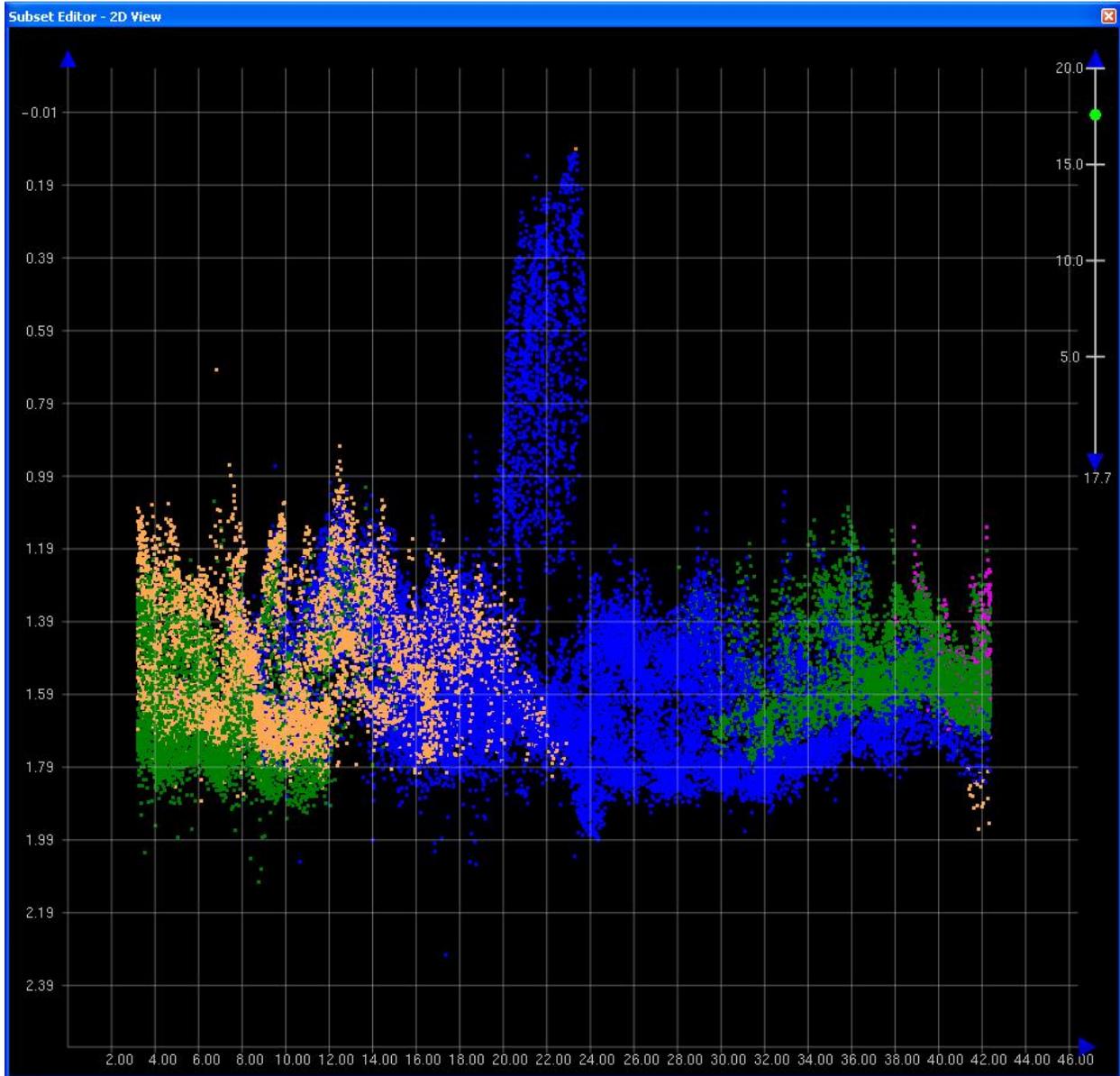


Figure 1.2.1

1.3) Rock Awash

Survey Summary

Survey Position: 41° 46' 19.1" N, 070° 29' 08.6" W
Least Depth: -0.55 m (= -1.81 ft = -0.302 fm = 0 fm 4.19 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.455 m
Timestamp: 2007-300.16:54:50.536 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 835_1652
Profile/Beam: 3013/239
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (0.9m in 0.3m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/835_1652	3013/239	0.00	000.0	Primary
h11695/tj_3101_reson8125/2007-300/834_1648	2360/53	29.41	175.0	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/835_1652	3183/112	29.94	302.2	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/914_1751	2343/140	42.16	186.0	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-2ft (13236_2, 13229_13, 13246_1)

0 ¼fm (13200_1, 13009_1, 13006_1, 13003_1)

-.6m (5161_1)

S-57 Data

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

Attributes: INFORM - Concur with clarification. Recommend chart sounding rather than individual rock.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - -0.553 m

VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

Office Notes

Chart a rock awash symbol in the present survey location.

Feature Images

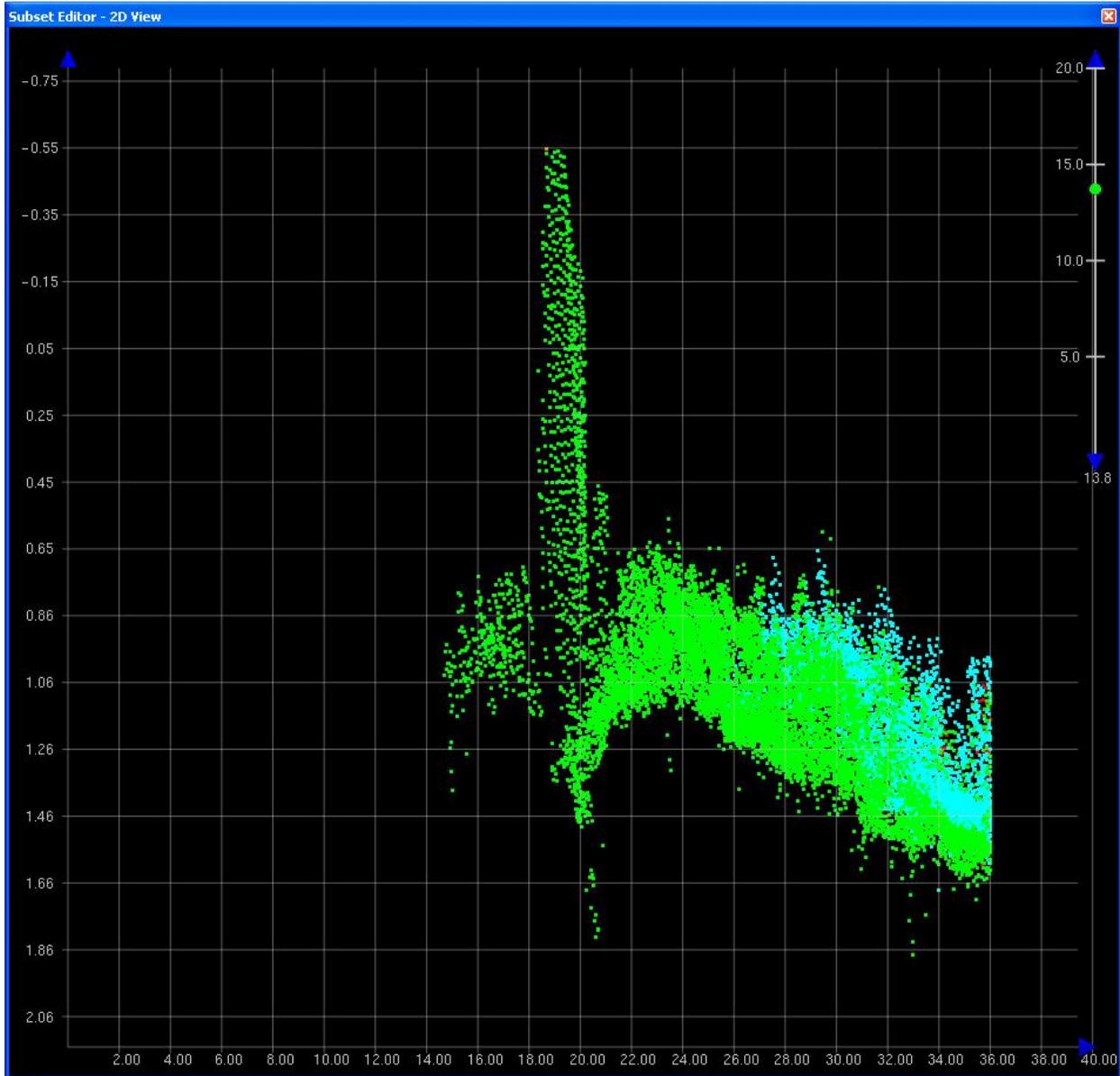


Figure 1.3.1

1.4) Dangerous 6 foot rock

Survey Summary

Survey Position: 41° 46' 26.4" N, 070° 28' 57.6" W
Least Depth: 2.02 m (= 6.63 ft = 1.105 fm = 1 fm 0.63 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.456 m
Timestamp: 2007-300.19:22:03.187 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 851_1919
Profile/Beam: 1764/1
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (1.7m in 3.7m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/851_1919	1764/1	0.00	000.0	Primary
h11695/tj_3102_klein5000_sss100/2007-288/119_1733	0006	3.69	247.2	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1752	0006	6.57	110.4	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1752	0021	34.04	170.1	Secondary
h11695/tj_3102_klein5000_sss100/2007-288/119_1733	0007	37.83	135.4	Secondary
h11695/tj_3102_klein5000_sss100/2007-288/119_1733	0005	39.56	285.8	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1752	0009	45.03	037.9	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/821_1550	1121/25	46.56	035.0	Secondary (grouped)
h11695/tj_3101_reson8125/2007-300/821_1550	1069/165	55.36	052.8	Secondary (grouped)
h11695/tj_3102_klein5000_sss200/2007-288/220_1752	0008	56.41	061.0	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

6ft (13236_2, 13229_13, 13246_1)

1fm (13200_1, 13009_1, 13006_1, 13003_1)

2.0m (5161_1)

S-57 Data

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

Attributes: INFORM - Recommend chart sounding rather than individual rock in a very rocky area.
QUASOU - 6:least depth known
SORDAT - 20071106
SORIND - US,US,nsurf,H11695
TECSOU - 2,3:found by side scan sonar,found by multi-beam
VALSOU - 2.021 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

Office Notes

Chart a dangerous underwater rock with a least depth of 6 feet.

Feature Images

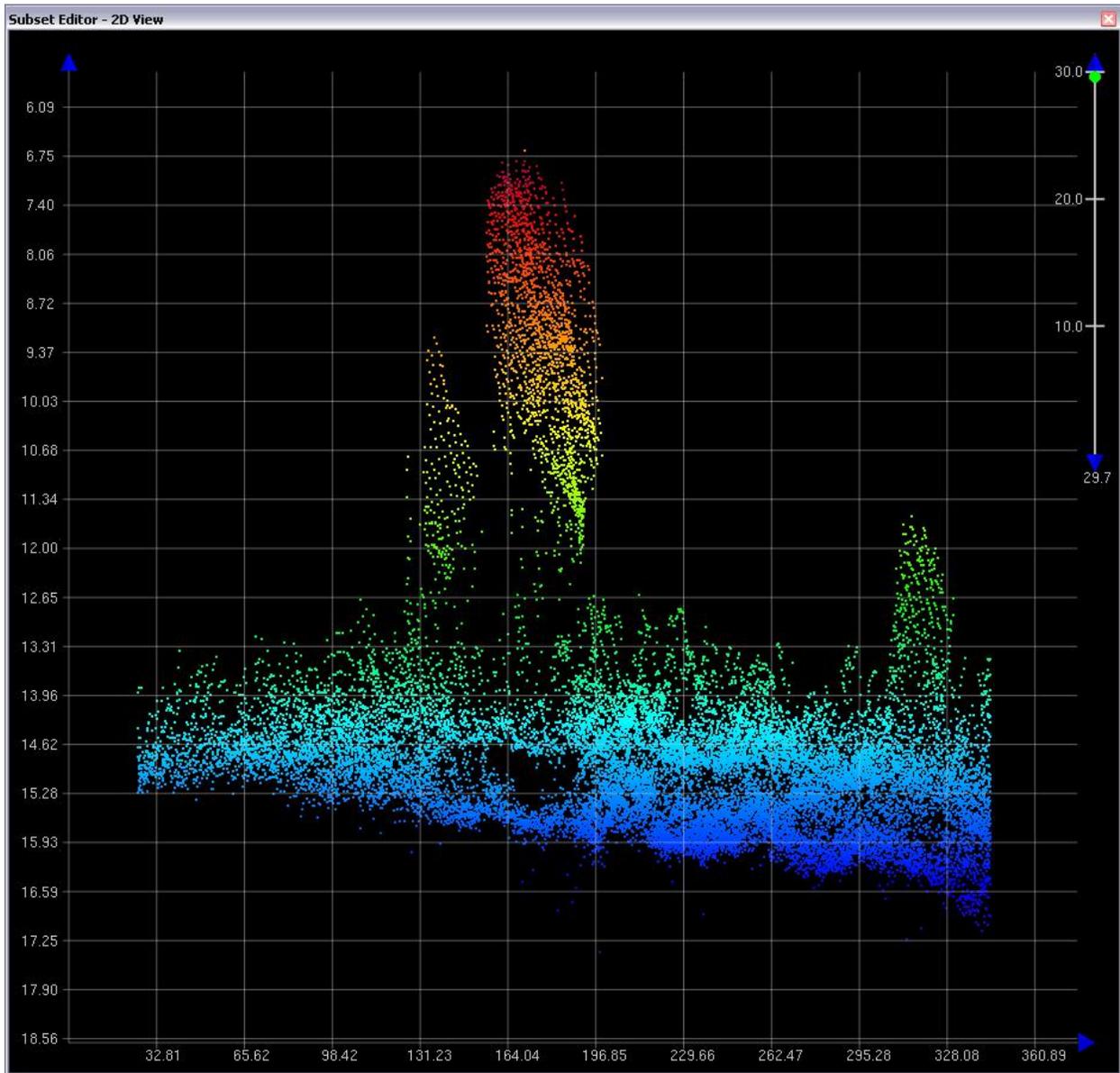


Figure 1.4.1

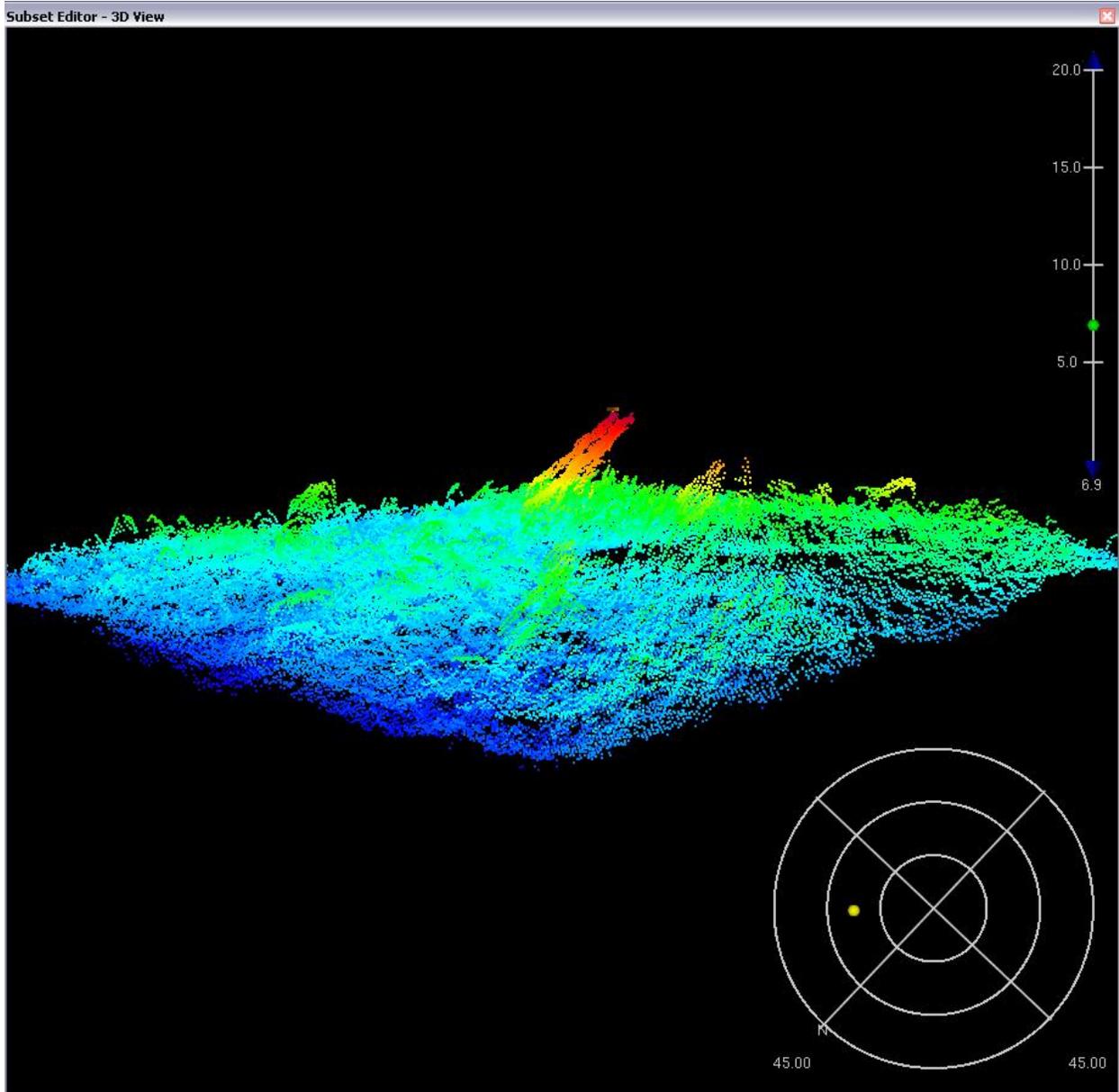


Figure 1.4.2

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/119_17330006_m.tif does not exist.]

1.5) Dangerous 2 foot rock

Survey Summary

Survey Position: 41° 46' 14.8" N, 070° 29' 00.9" W
Least Depth: 0.81 m (= 2.64 ft = 0.440 fm = 0 fm 2.64 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.456 m
Timestamp: 2007-300.17:49:44.927 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 912_1746
Profile/Beam: 4198/233
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (0.7m in 1.5m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/912_1746	4198/233	0.00	000.0	Primary
h11695/tj_3101_reson8125/2007-300/911_1733	4213/20	20.89	126.4	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

2ft (13236_2, 13229_13, 13246_1)

0 ½fm (13200_1, 13009_1, 13006_1, 13003_1)

.8m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - Concur with clarification. Recommend chart sounding rather than individual rock.
 QUASOU - 6:least depth known
 SORDAT - 20071106
 SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 0.805 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Chart a 2 foot dangerous underwater rock

Feature Images

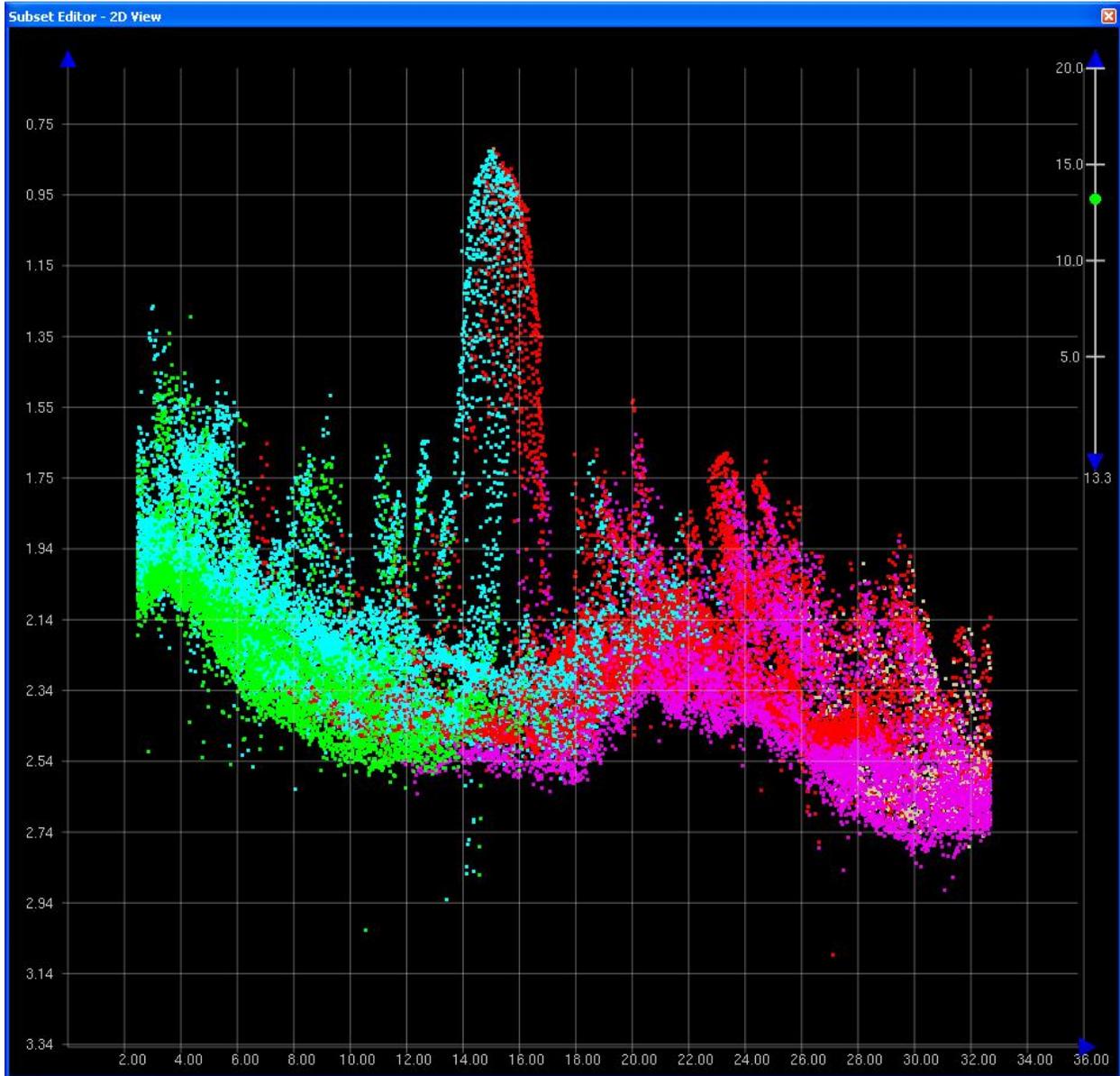


Figure 1.5.1

1.6) Dangerous 5 foot rock

Survey Summary

Survey Position: 41° 46' 16.5" N, 070° 28' 57.8" W
Least Depth: 1.49 m (= 4.87 ft = 0.812 fm = 0 fm 4.87 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.980 m ; **TVU (TPEv)** ± 0.456 m
Timestamp: 2007-300.18:22:50.415 (10/27/2007)
Survey Line: h11695 / tj_3101_reson8125 / 2007-300 / 919_1819
Profile/Beam: 4367/3
Charts Affected: 13236_2, 13229_13, 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Uncharted rock found with 200% Klein 5000 SSS and Reson 8125 MBES. Soundings are corrected to MLLW using verified tides and final tidal zoning. Rock is significant based upon height (1.0m in 2.5m).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11695/tj_3101_reson8125/2007-300/919_1819	4367/3	0.00	000.0	Primary
h11695/tj_3101_reson8125/2007-300/920_1824	1144/9	8.51	240.4	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0017	10.85	231.3	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0018	11.69	125.6	Secondary
h11695/tj_3102_klein5000_sss200/2007-288/220_1654	0030	55.80	169.0	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

5ft (13236_2, 13229_13, 13246_1)

0 $\frac{3}{4}$ fm (13200_1, 13009_1, 13006_1, 13003_1)

1.5m (5161_1)

S-57 Data

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

Attributes: INFORM - Recommend chart sounding rather than individual rock as it is located in a rocky area.

QUASOU - 6:least depth known

SORDAT - 20071106

SORIND - US,US,nsurf,H11695

STATUS - 1:permanent

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

VALSOU - 1.485 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Chart a 5 foot dangerous underwater rock

Feature Images

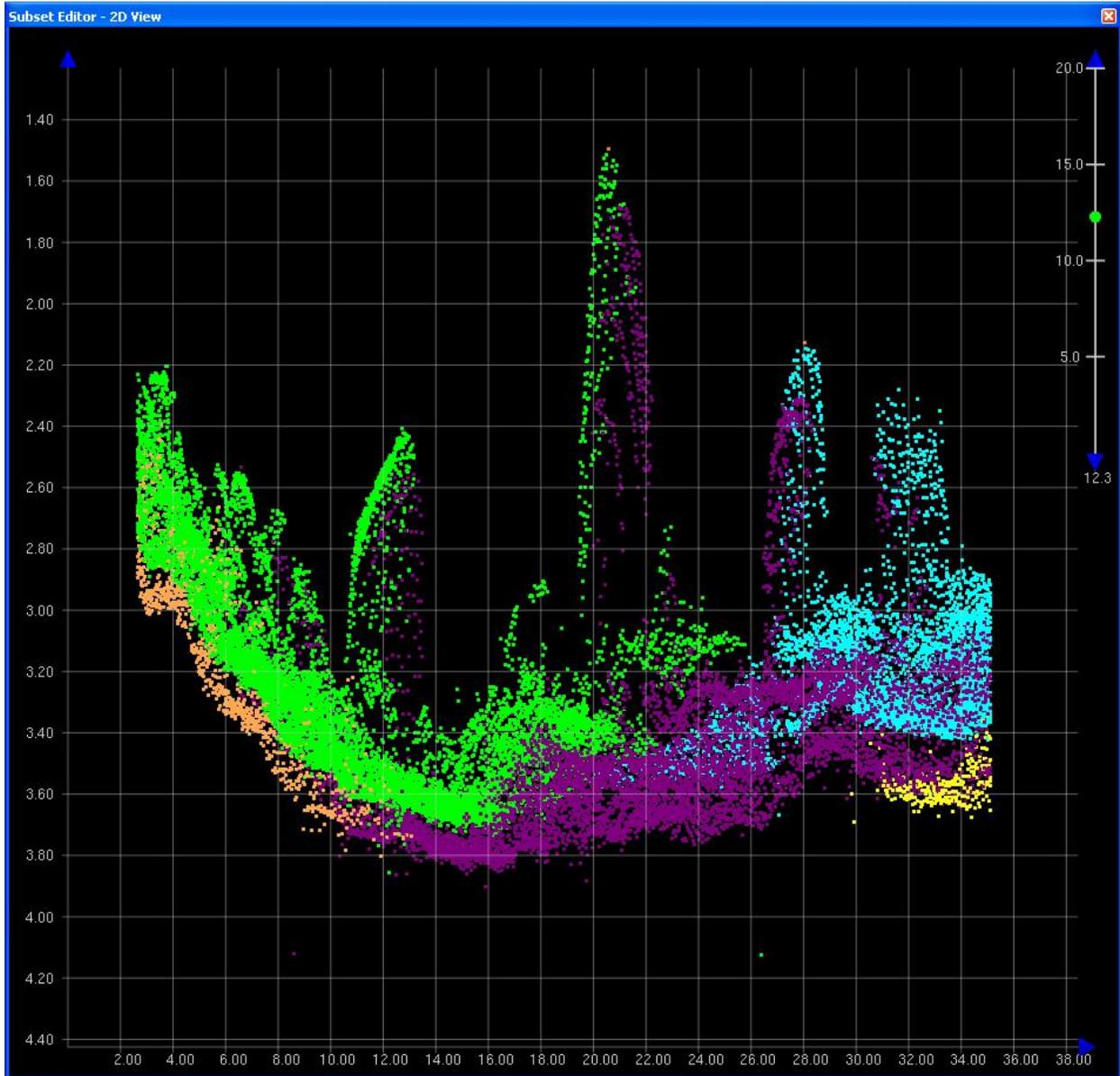
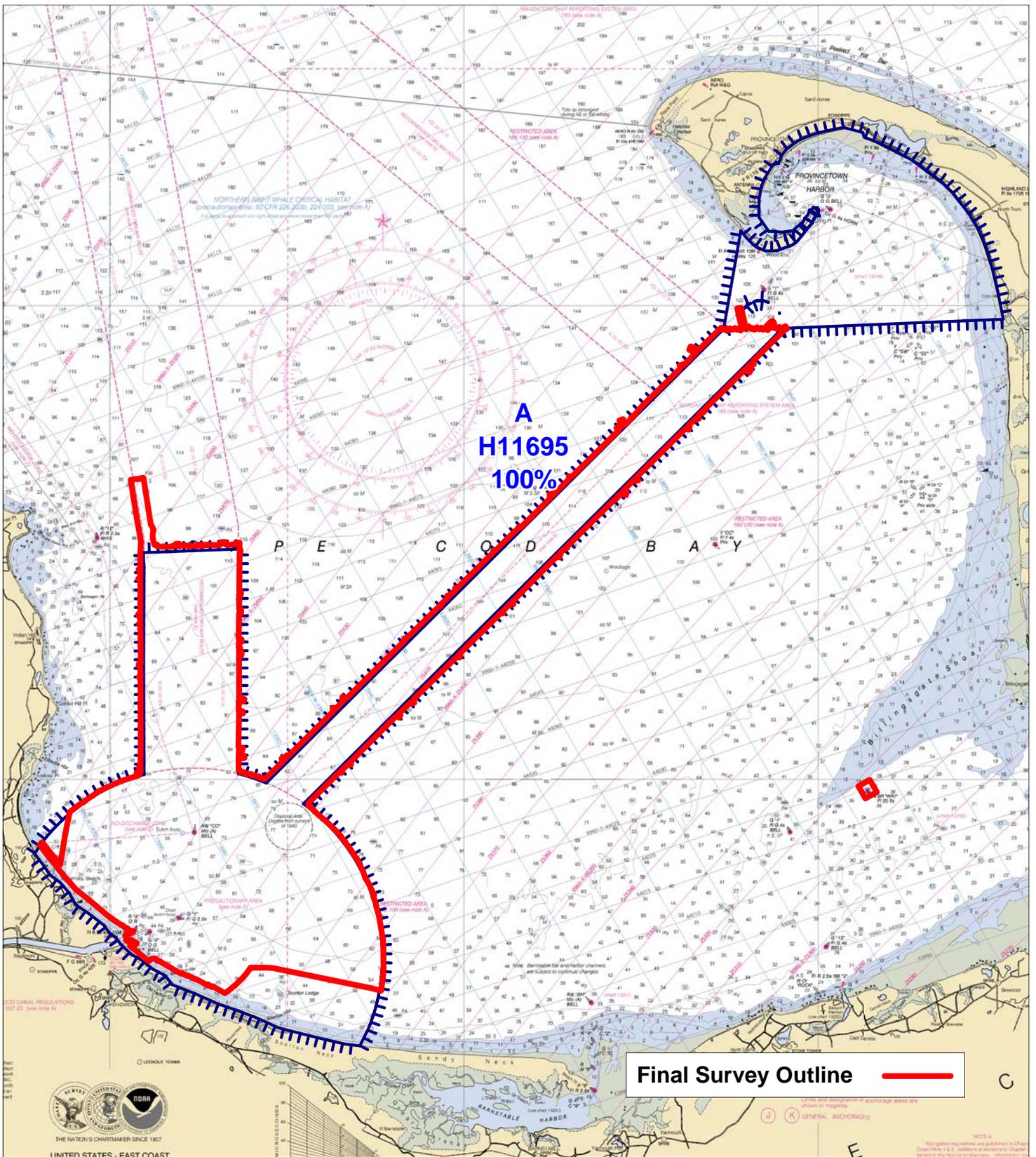


Figure 1.6.1

[Image file h:/compilation/h11695_a902-tj/ahb_h11695/pss/images_ahb/220_16540017_m.tif does not exist.]

APPENDIX III
FINAL PROGRESS SKETCH AND SURVEY



Project	Sheet Letter	H_num	HQ_Est_SNM	CumIPercCompPrev	CumIPercCompCur	SNM_CompCurN	CumSNMcor	Cum_Perc_Proc
M-A902-TJ-07	A	H11695	62	75	100	5.6	47.6	70

Progress Sketch M-A902-TJ-07
November, 2007

APPENDIX IV
TIDES AND WATER LEVELS

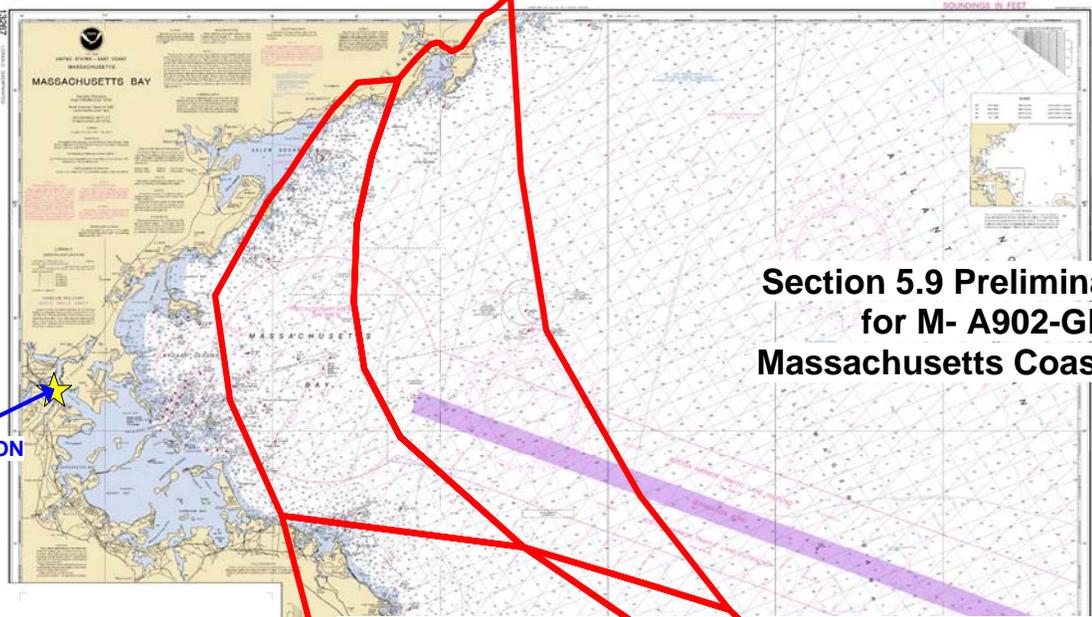


UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910



**Section 5.9 Preliminary as Final Tidal Zoning
for M- A902-GM/TJ-2007, H11695
Massachusetts Coast Right Whale Route, MA**

844-3970 BOSTON



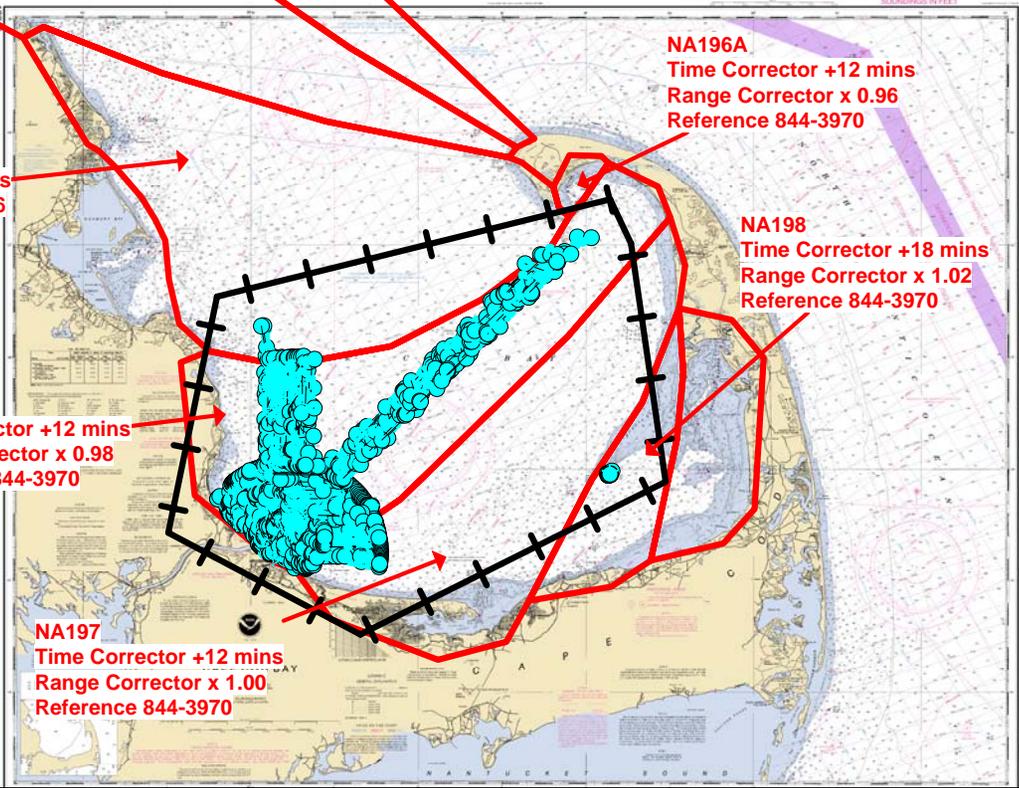
NA190
Time Corrector +6 mins
Range Corrector x 0.96
Reference 8443970

NA196A
Time Corrector +12 mins
Range Corrector x 0.96
Reference 844-3970

NA198
Time Corrector +18 mins
Range Corrector x 1.02
Reference 844-3970

NA196
Time Corrector +12 mins
Range Corrector x 0.98
Reference 844-3970

NA197
Time Corrector +12 mins
Range Corrector x 1.00
Reference 844-3970



APPENDIX V
SUPPLEMENTAL SURVEY AND
CORRESPONDENCE

Subject: Lobstermen issues in Cape Cod Bay

From: Matt Wingate <matt.wingate@noaa.gov>

Date: Tue, 02 Oct 2007 18:53:56 -0400

To: CO TJ <CO.Thomas.Jefferson@noaa.gov>, XO.Thomas.Jefferson@noaa.gov, Christiaan VanWestendorp <Christiaan.VanWestendorp@noaa.gov>, Doug Baird <Doug.Baird@noaa.gov>, Gerd Glang <Gerd.Glang@noaa.gov>, Emily.B.Christman@noaa.gov, Phil.Gruccio@noaa.gov, Kevin.Collins@noaa.gov, Joel.G.Macdonald@noaa.gov, Nathan.Keith@noaa.gov

CC: Ed Martin <Ed.Martin@noaa.gov>, Howard Danley <Howard.Danley@noaa.gov>

Good Afternoon--

In regards to issues with Cape Cod Bay lobstermen and the THOMAS JEFFERSON, I believe there can be a compromise. After a phone conversation today with the President of the Massachusetts Lobstermen Association (MLA), Bill Adler, I mentioned the following possibilities:

- Survey launches work in areas of high gear concentration. The lobstermen would prefer all the surveying be accomplished with the smaller boats--less apt to damage gear.
- The ship surveys in the agreed to area (according to the mtg with them on Fri.). The lobstermen's biggest issue is the TJ surveying in and amongst heavy concentrations of gear. This is why they like the smaller boats.
- Have lookouts on the launches to help spot gear...and avoid it.
- Provide a process for the lobstermen to follow in the event they have experienced a loss of gear. I had previously discussed this with Nathan Keith at Woods Hole to be the POC for incoming phone calls/e-mails re damaged gear.

Mr. Adler could not say if this would be acceptable to the lobstermen but did comment that it seemed to be a reasonable compromise. I have a good working relationship with Mr. Adler. Several of the lobstermen appear to understand NOAA's efforts in the Bay. As I get further into the particulars, there are just one or two lobstermen that are extremely volatile. The others seem more reasonable. Also at issue is the timing of this survey--it is during the height of their lobstering season.

One area of concern I expressed to Mr. Adler is the following scenario:

The TJ is following the protocol agreed to above and a launch inadvertently damages a lobsterman's buoy (let's say the volatile ones buoy mentioned above). He then gets angry, calls the Mass. Environmental Police and files a formal complaint against the TJ for destroying his gear. Apparently, Mass. law (Chapter 130) has language which states the officer can then board the vessel and ultimately, bring the Master into custody. This seems dubious given TJ is a commissioned vessel of the United States. Since this is not outside the realm of possibility, perhaps NOAA General Counsel can resolve with the state of Massachusetts.

Mr. Adler thought that this would not happen.

One last issue, at a meeting last night of the Executive Council of the MLA, the members voted to contact Congressman W. Delahunt's office to convey their concerns. Mr. Adler called me today to pass this on. He said he was going to give Congressman Delahunt's aide, Mr. Mark Forest, a call to discuss the situation in the Bay. Mr. Adler said he would pass my name to Mr. Forest. I will contact NOAA Legislative Affairs for guidance.

My personal estimation--based upon meeting several lobstermen and all my phone calls with them--is that this compromise will work and TJ can continue surveying after their Boston in port. Obviously, there are no guarantees but with continued comms. with the lobstermen through Mr. Bill Adler, TJ should be able to continue surveying (keeping an eye on the protocol above). As far as the MLA contacting their representative, I believe they just want to know what's going on in the Bay--which I'll continue to provide--and that NOAA will not reasonable impede their efforts to catch lobster.

I will be away from the office tomorrow but checking my voice mail often. If anyone needs to reach me, pls call my cell phone (603) 512-2758.

V/r,
LT Wingate

--

Matthew J. Wingate, LT, NOAA
Office of Coast Survey
c/o National Marine Fisheries Service Narragansett Laboratory 28 Tarzwell Drive
Narragansett, Rhode Island 02882 phone (401) 782-3252 fax (401) 782-3292

Matthew Wingate, LT, NOAA <matt.wingate@noaa.gov>

Navigation Manager, Northeast Region

Office of Coast Survey

NMFS Narragansett Laboratory

(Error Rate= 0.2%)

ZCZC NA37

CCGDEIGHT BNM 0404-07

GULF OF MX.

1. THE US AIR FORCE IS TRANSITIONING TO A NEW OPERATING SYSTEM FOR

THE GPS CONSTELLATION. THE PHASED OPERATIONAL TRANSITION WILL MIGRATE EACH SATELLITE, GROUND ANTENNA, MONITOR STA AND OTHER GPS DATA FEEDS FROM THE MASTER CONTROL STA TO THE ARCHITECTURE EVOLUTION PLAN NEW MASTER CONTROL STA IN AN INCREMENTAL MANNER.

2. USERS THAT EXPERIENCE PROBLEMS, ANOMOLIES OR OUTAGES WITH GPS ARE REQUESTED TO PROVIDE ONLINE FEEDBACK VIA THE USCG NAVCENS *GPS OUTAGE WORKSHEET* AT:
[HTTP://WWW.NAVCEN.USCG.GOV/GPS/GPS-USERINPUT.HTM](http://www.navcen.uscg.gov/gps/gps-userinput.htm).

3. MARINERS ARE ENCOURAGED TO REPORT ALL GPS, DGPS, LORAN OR AIS PROBLEMS, ANOMOLIES OR OUTAGES TO THE USCG NAVIGATION CENTER AT:

703.313.5900, EMAIL: NISWS(AT)NAVCEN.USCG.GOV.

4. CANCEL AT TIME//271623Z SEP 07//
NNNN

Subject: Cape Cod Wreck AWOIS Investigation

From: "Kyle.Ward" <Kyle.Ward@noaa.gov>

Date: Fri, 26 Oct 2007 15:40:02 -0400

To: _NMAO MOA CO Thomas Jefferson <CO.Thomas.Jefferson@noaa.gov>, _NMAO MOA FOO Thomas Jefferson <FOO.Thomas.Jefferson@noaa.gov>, Doug Baird <Doug.Baird@noaa.gov>, Jeffrey Ferguson <Jeffrey.Ferguson@noaa.gov>, Matt Wingate <matt.wingate@noaa.gov>, Steve Soherr <Steve.Soherr@noaa.gov>

FOO,

I have attached the AWOIS requirements for the buoy marked wreck in Cape Cod. HSD would like you to make every attempt to address this item. However, we should be contacted if it will affect completion of your assigned projects. Doug will be out for the next two weeks so please address any questions you have to Jeff or myself.

Thanks,
Kyle

FVJan.mdb	Content-Type: application/msaccess Content-Encoding: base64
------------------	--

Subject: Re: [Fwd: [Fwd: AWOIS discrepancies for A902]]

From: "Rachel.Soraruf" <Rachel.Soraruf@noaa.gov>

Date: Mon, 23 Jul 2007 10:27:53 -0400

To: Christiaan VanWestendorp <Christiaan.VanWestendorp@noaa.gov>

CC: Jeremy McHugh <Jeremy.McHugh@noaa.gov>, Paul Turner <Paul.Turner@noaa.gov>, Doug Baird <Doug.Baird@noaa.gov>, "Michael.Riddle" <Michael.Riddle@noaa.gov>

Chris,

Attached is the updated AWOIS file for OPR-M-A902-TJ-07. There are coordinate changes to records 13844, 13848, 13843, and 13845. These are updated in the .mdb and map info files. AWOIS items 7471 and 1963 share similar GPs, however, one record describes a completely submerged barge, while the other indicates a partially submerged vessel. These records will both remain until either or both are disproved. As to AWOIS record 13852, the buoy was relocated by USB after the project instructions were sent to the THOMAS JEFFERSON (on 09 May 2007), this is why there was a discrepancy between the charted buoy and the AWOIS position. This discrepancy has now been resolved and the GP of both items agree. Also note that there is an additional informational AWOIS item added. It is viewed in the enclosed .png file as a blue cross on the AWOIS layout (this is record number 2014).

Please let me know if there are any further questions on these AWOIS items for project OPR-M-A902-TJ-07.

Thank you,

Rachel

Christiaan VanWestendorp wrote:

Hi, Rachel,

As we will not be getting to the Cape Cod project until probably September, there is no urgent rush. However, I would like to see something by the middle to end of August, if you can support that. I addressed CDR Glang's concerns in an e-mail I just sent to him.

Thanks,
Chris

Rachel.Soraruf wrote:

Hi Chris,

Just wanted to let you know that I'm working on your AWOIS questions on sheet H11695 (M-A902-TJ-07), hopefully I'll be finished up soon. Just out of curiosity what is the time frame needed this information? ASAP? Next Week? Anyway let me know.

Also about project S-F910-TJ-07, the Virginia Capes Archaeological project. I just wanted to bring your attention to Priority Sheets C2 and C3. The depths range from about 50 to 200 ft in some areas. Gerd expressed a little concern about the drastic changes in bathymetric relief in these sections. He's worried about how the steepness will affect the K5000 SS. Any concerns on your part or have you already developed a strategy? I suspect that Rod Mather already knows where he wants to survey, so perhaps these regions are more specific than already designated on the project instructions and won't provide any difficulty in terms of changes in relief?

Anyway let me know about any concerns you might have. Meanwhile I'll keep working on getting answers for your AWOIS questions.

Thanks
Rachel

Jeremy McHugh wrote:

Hi Rachel, Chris's questions are below...If you can help him out, that would be great. Thanks!
Jeremy

----- Original Message -----
Subject: [Fwd: AWOIS discrepancies for A902]
Date: Tue, 10 Jul 2007 15:05:26 -0400
From: Jeremy McHugh <jeremy.mchugh@noaa.gov>
To: Paul Turner <Paul.Turner@noaa.gov>
CC: Christiaan VanWestendorp <Christiaan.VanWestendorp@noaa.gov>

Hi Paul,
I think this was your project. Can you help Chris out with these Cape Cod AWOIS questions?
Jeremy

--
Jeremy McHugh
Geodesy Program liaison to the Commerce and Transportation Goal Team
[rotational assignment through DEC 14 2007]
NOAA's National Geodetic Survey
301-713-9879 x205

----- Original Message -----
Subject: AWOIS discrepancies for A902
Date: Tue, 10 Jul 2007 14:54:11 -0400
From: Christiaan VanWestendorp <Christiaan.VanWestendorp@noaa.gov>
To: Jeremy McHugh <Jeremy.McHugh@noaa.gov>

Hi, Jeremy,

We have identified some issues with the AWOIS database for the Cape Cod Right Whale project (M-A902-TJ-07, sheet H11695). Please advise me on what to do with them:

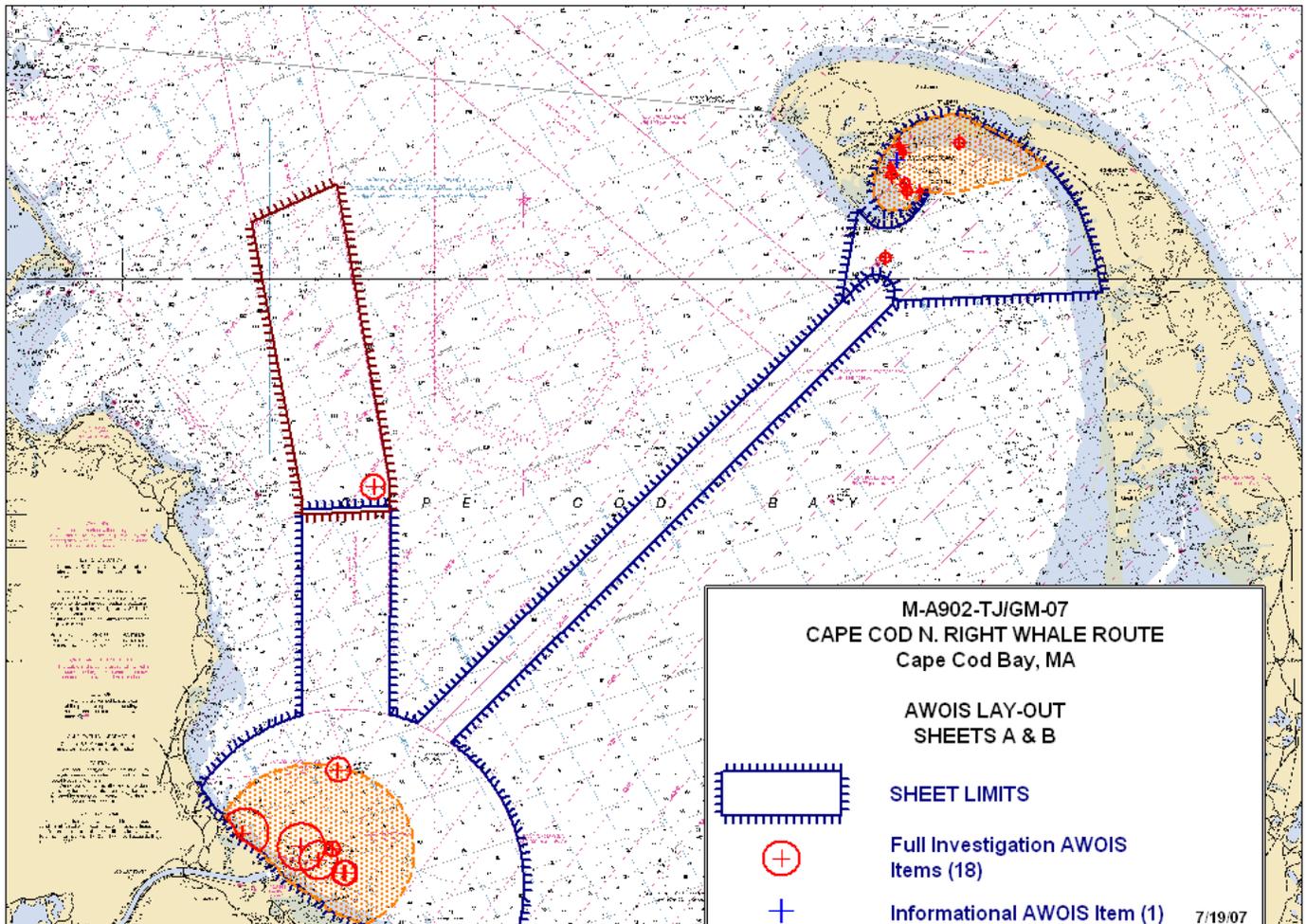
1. Record 13844, the wreck Millicent Ann is charted incorrectly in the database. The LONG83 is listed as 070/10.3 which is the correct position based upon the chart. However, the LONDEC which is the field used for import in Pydro is listed as 70.1675 W. This computes to 070/10.05 or 070/10/03. This item displays correctly within MapInfo, but incorrectly within Pydro.

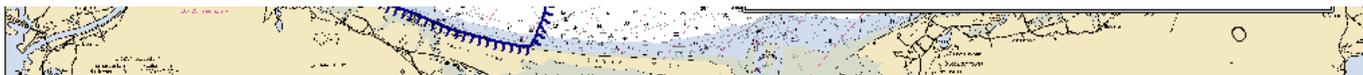
2. Record 13848, is described as a wreck which lies along side and on the land-ward side of the breakwater. There is a charted wreck PA on the chart in location 42/02/53 N, 070/10/45.6 W. assumed to be the wreck in question as it matches the written description. This item is charted incorrectly within MapInfo and Pydro.
3. Records 7471 and 1963 are charted over the same wreck. Item 7471 is described as a barge which shows 2 ft above high water. submerged covered to 31 feet. Item 7471's description says that a barge was located completely submerged. To me, this looks like the same item and one of the records should not exist, or record 7471 should have been recorded as disproven and removed from the database.
4. Record 13843, the F/V Arlene is charted incorrectly within Pydro. The item is listed as having a LAT83 of 42/00.5 and LONG83 of 070/11.4. This is the correct position based upon the chart. However, it is listed as having a LATDEC of 42.00138888889 and a LONGDEC of 70.184444445. This converts to 42/00/05 N, 070/11/04 W.
5. Record 13845, the vessel Carol Ann is charted incorrectly within Pydro. This item is listed as having a LAT83 of 42/03.1 and a LONG83 of 070/09.1. To this precision, this is the charted position (greater position would be advised to ensure the search radius is correct). However, this record has a LATDEC of 42.050277778 and a LONDEC of 70.150277778. This converts to 42/03/01 N, 070/09/01 W.
6. There is a discrepancy between the database and the most recent chart with regards to record 13852. The most recent chart, which we pulled from our electronic chart database, shows the buoy in a different location than the edition of the chart included with the project instructions. Is this something that is automatically updated within the AWOIS database on shore? Do we need to go through the Notice to Mariners and find the notice that moved the buoy?
7. Finally, there is a record in the database without a record number. It is a Mooring Buoy, listed on the chart as "E". It will not import into Pydro without a record number.

The record lists the LONG83 as 070/10/56. The charted

Item 1963 is described as as barge completely

Thanks,
Chris





Update AWOIS M-A902-TJ-07.zip	Content-Type: application/x-zip-compressed Content-Encoding: base64
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Updated_M-A902-TJ-GM-07-AWOIS.png	Content-Type: image/png Content-Encoding: base64
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**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey H11695 (2007)**

This Evaluation 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.1 DATA PROCESSING

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

HSTP PYDRO version 8.5 r23563
CARIS HIPS/SIPS version 6.1 SP1 HF 1-6
CARIS Bathy DataBASE Manager version 2.1 SP 1 -7
CARIS S57 Composer version 2.0
CARIS HOM version 3.3 SP 3

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product entailed combining the field submitted surfaces at a 3 meter resolution. From this a 6 meter resolution product surface was created. All survey scale soundings were extracted from this surface. Computer generated contours were then developed using the survey scale sounding selections. The chart scale soundings were selected from the survey scale selections with the aid of the contours and using AHB best practices. The selected sounding set is approximately 10 times the number of charted depths. 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.

The SAHOB files included depth areas (DEPARE), depth contours (DEPCNT), sounding selections (SOUNDG), features (OBSTRN, UWTROC, SBDARE, WRECKS, SLCONS), US5MA27M_ENC Features (SBDARE, WRECKS), US4MA14M_ENC Features (SBDARE, WRECKS), Meta objects (M_COVR, M_QUAL, M_CSCL), and cartographic Blue Notes.

All of the components with the exception of the 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 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, one that contains the chart soundings, all the features, Meta objects, and Bluenotes (H11695_CS.000), and one that contains the sounding selection and depth

contours (H11695_SS.000). Finally, quality assurance checks were made utilizing CARIS S-57 Composer version 2.0 validation checks.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

H11695 CARIS H-Cell final deliverables include the following products:

H11695_CS.000	1:20,000 Scale	H11695 H-Cell with Chart Scale Selected Soundings
H11695_SS.000	1:20,000 Scale	H11695 Selected Soundings (Survey Scale)

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. The field unit applied final verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H11695. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW)

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 19. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

13236 (30th Edition, MAR/06)
Corrected through NM 01/17/2009
Corrected through LNM 12/23/2008
Scale 1:20,000

13249 (13th Edition, APR/07)
Corrected through NM 10/04/2008
Corrected through LNM 09/23/2008
Scale 1:20,000

13251 (15th Edition, SEP/04)
Corrected through NM 02/21/2009
Corrected through LNM 02/17/2009
Scale 1:20,000

13250 (8th Edition, OCT/01)
Corrected through NM 02/14/2009
Corrected through LNM 02/03/2009
Scale 1:40,000

13246 (38th Edition, DEC/06)
Corrected through NM 11/29/2008
Corrected through LNM 11/18/2008
Scale 1:80,000

ENC Comparison

US5MA27M

Cape Cod Canal and Approaches
Edition 10
Update Application Date 2008-05-27
Issue Date 2009-01-21
References: Chart 13236

US4MA14M

Cape Cod Bay
Edition 10
Update Application Date 2007-06-14
Issue Date 2009-01-05
References: Chart 13246

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 and II of the Descriptive Report. Present survey depths are generally agree well with the charted depths. The following should be noted:

1. There were no conflicts between published controlling depths in the Canal Land Cut Channel and the present survey.
2. AWOIS Items 1964, 13626, 14109, 13628, 13627, and 1963 were investigated and found by the present survey. See Appendix II for discussion and final recommendations.
3. AWOIS Items 2006, 2014, 13847, 13843, 13844, 13845, 13846, 13848, 13849, 13850, 13851, and 13852 were not investigated during survey H11695. No changes in charting are recommended.
4. AWOIS Item 13869 was partially investigated by the present survey. No changes to charting are recommended. See Appendix II for discussion and final recommendations.
5. An area of concentrated rock outcrops centered in Latitude 41°46'22.90"N, Longitude 70°29'04.43"W was found during the present survey. It is recommended that the area be charted as **foul with rocks** as shown on the present survey.
6. An area of concentrated rock outcrops centered in Latitude 41°53'41.90"N, Longitude 70°28'28.20"W was found during the present survey. It is recommended that the area be charted as **rky** as shown on the present survey.

D.3.1. Dangers to Navigation

One Danger to Navigation was submitted by the office. See Appendix I. of the Descriptive Report for a thorough discussion of the item.

D.2. 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.

D.3. 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 File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

AHB PRE-COMPILATION PROCESS

REGISTRY No.	H11695
PROJECT No.	M-A902-TJ/GM-07
FIELD UNIT	THOMAS JEFFERSON
PRE-COMPILER	MARK OPDYKE
LARGEST SCALE CHART	13251, edition 15, 200409 13236_2, edition 30, 20060301 13249, edition 13, 200704 13250, edition 8, 20011013 13246, edition 38, 200612
CHART SCALE	1:20000 1:20000 1:20000 1: 40000 1:80000
SURVEY SCALE	1: 20000
DATE OF SURVEY	09/07/2007 to 11/06/2007
CONTENT REVIEW DATE	December 12, 2008

Components	File Names
<i>Product Surface Creation</i>	PS_H11695_10k_100mrad_6mres.hns
<i>Shifted Surface</i>	PS_H11695_10k_200mrad_10mres_Shifted.hns
<i>Contour Layer</i>	H11695_Contours.hob
<i>Survey Scale Soundings</i>	H11695_SS_Soundings_Charts_11246_113249.hob H11695_SS_Soundings_Charts_13236_13250_13251.hob
<i>Chart Scale Soundings</i>	H11695_CS_Soundings.hob
<i>Feature Layer</i>	H11695_Features.hob
<i>Meta-Objects Layer</i>	H11695_MetaObjects.hob
<i>Blue Notes</i>	H11695_BlueNotes.hob

SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. File name: H11695_AHB_3m_Combined.hns
 - b. Resolution: 3m
 - c. Fieldsheet Location: H:\Compilation\H11695_A902-TJAHB_H11695\COMPILE\GRIDS
- II. PRODUCT SURFACE (SOUNDINGS):
 - a. Scale: 1:10000_
 - b. Radius: 100m
 - c. Resolution: 6m
 - d. Depth
 - i. Minimum: -3.051m
 - ii. Maximum: 121.260m

PRODUCT SURFACE (CONTOURS):

- a. Scale: 1:10000

- b. Radius: 200m
- c. Resolution: 10m
- III. SHIFTED SURFACE:
 - a. Single Shift Value: *-0.229m (feet) / -1.372m (fathoms)*
- IV. CONTOUR LAYER:
 - a. Use a Depth List: XXXXXX_NOAA_depth_curves_list.txt
 - b. Output Options:
 - i. Create contour lines:
 1. Line Object: DEPCNT
 2. Value Attribute: VALDCO
- V. SOUNDING SELECTION:
 - a. Selection Criteria:
 - i. Radius
 - ii. Shoal biased
 - iii. Use Single-Defined Radius: distance on ground (m)
 - iv. Filter: Generalized !=1
- VI. FEATURES:
 - a. Brought in from Survey
Total No. 29
 - b. Brought in from ENC
ENC: 29
Total No. 58
- VII. META-OBJECTS:
 - a. M_COVR attributes

Acronym	Value
CATCOV	Coverage available
SORDAT	20071106
SORIND	US,US,survey,H11695

b. M_QUAL attributes

Acronym	Value
CATZOC	Not Assessed
INFORM	M-A902-TJ/GM-07
POSACC	10
SORIND	US,US,survey,H11695
SORDAT	20071106
SUREND	20071106
SURSTA	20070907

c. DEPARE attributes

Acronym	Value
DRVALV 1	-3.051 38.74
DRVALV2	121.260 50.836
SORDAT	20071106 20071106
SORIND	US,US,survey,H11695 US,US,survey,H11695

d. M_CSCL attributes

Acronym	Value
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Version 1.0

CSCALE	1:80,000
	1:40,000
SORDAT	20071106
	20071106
SORIND	US,US,survey,H11695
	US,US,survey,H11695

VIII. NOTES:

Rocky area determined from the digital terrain model and other field observations from the SSS. Recommend MCD chart rocky area appropriately. Area at the Northern end of survey.

Two breakwaters near Sandwich harbor were digitized in bluenotes as area features. They were made using the Ortho Photo as a guideline. The reason I developed these features was because the western one was discussed by the field in Pydro and given a point. It is recommended that MCD chart the entrance to the harbor based on the most recent Ortho Photography.



APPROVAL SHEET
H11695

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproof 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 review per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Mark Opdyke
Hydrographic Intern
Atlantic Hydrographic Branch

Deborah A. Bland
Cartographer
Atlantic Hydrographic Branch

I have reviewed the Base 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: _____
Shepard Smith
Commander, NOAA
Chief, Atlantic Hydrographic Branch