

H10995

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 No.	H10995
LOCALITY	
State	Massachusetts
General Locality	Approaches to Boston, MA
Sub-locality	4 Miles East of Nahant
2003	
CHIEF OF PARTY LCDR Donald W. Haines, NOAA	
DATE	LIBRARY & ARCHIVES

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

REGISTRY NUMBER:

**H10995**

## HYDROGRAPHIC TITLE SHEET

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: **Approaches to Boston, Massachusetts**

Sub-Locality: **4 Miles East of Nahant**

Scale: **1:10,000** Date of Survey: **08/20-21, 9/6-29, 10/03, 2003**

Instructions Dated: **07/17/03** Project Number: **OPR-A397-TJ-03**

Vessel: **NOAA SHIP THOMAS JEFFERSON, S-222**

Chief of Party: **LCDR Donald W. Haines, NOAA**

Surveyed by: **THOMAS JEFFERSON Personnel**

Soundings by: **Odom Echotrac DF3200 MK II Echosounder**  
**Kongdberg Simrad EM1002 Multibeam Echosounder**  
**Reson Seabat 8101 Multibeam Echosounder**  
**Reson Seabat 8125 Multibeam Echosounder**

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

Graphic record checked by: **N/A** *Hewlett Packard Design Jet 2500 CP (office)*

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

Verification by: **Atlantic Hydrographic Branch *Personnel***

Soundings in: **~~Meters~~ *Feet* at MLLW**

Remarks: ***Bold, Red Italic notes in Descriptive Report were made during office processing.***

***1) All Times are UTC.***

***2) This is a navigable area Hydrographic Survey.***

***3) Projection is UTM Zone 19.***

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# **DESCRIPTIVE REPORT**

to accompany

HYDROGRAPHIC SURVEY H10995

Scale of Survey: 1:10,000

Year of Survey: 2003

NOAA SHIP THOMAS JEFFERSON

LCDR Donald W. Haines, Commanding

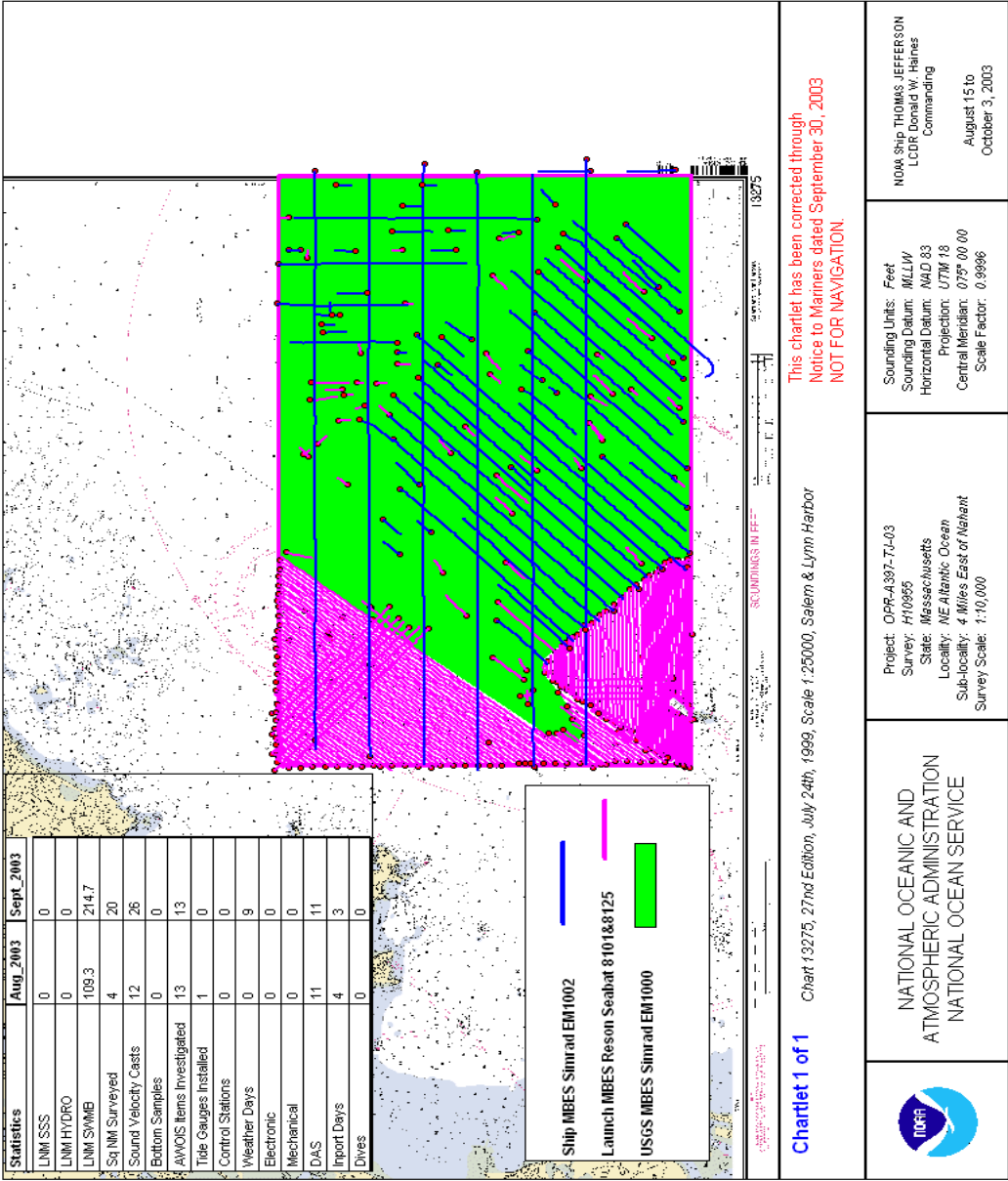
## **A. AREA SURVEYED**

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions (dated July 17, 2003) for project OPR-A397-TJ-03, Approaches to Boston, Massachusetts, sub-locality: 4 Miles East of Nahant, registry number: H10995 (Sheet F).

This project responds to requests by the Massachusetts Port Authority (MASSPORT), Boston Pilots, the First U.S. Coast Guard District, Massachusetts Coastal Zone Management (Boston, MA), the U.S. Geological Survey (Woods Hole), and to assist the National Ocean Service (NOS) nautical charting program. This project is conducted in accordance NOS requirements for multi-beam data acquisition and processing.

For complete survey limits, see the chartlet on the following page (Figure 1). An additional chartlet comprising of data types collected in the form of a progress sketch is included in Appendix III.

Fig1.



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

### **EQUIPMENT**

This survey took advantage of a vast data set acquired by U.S. Geological Survey (USGS). The USGS and their partnership with the Canadian Hydrographic Survey, acquired multibeam bathymetric data from the years of 1994 to 1998. The data were assembled and converted to Caris HIPS format at University of New Hampshire's Joint Hydrographic Center as part of the preparation for the project. This Outside Source Data (OSD) was integrated into our quality control pipeline (see Quality Control section). The majority of this OSD was located in waters greater than 20 meters and not located in high priority navigation areas as depicted in the national survey plan. *See also the Evaluation Report.*

Data were acquired by NOAA Ship THOMAS JEFFERSON and NOAA Launch 1014 & 1005. THOMAS JEFFERSON is a 63.4 meter vessel with an average transducer draft of 4.6 meters. The launches are NOAA's standard 8.5-meter aluminum Jensen vessel with a typical 0.5-meter transducer draft.

NOAA Ship THOMAS JEFFERSON acquired multibeam echosounder (MBES) data with a SIMRAD 1002. Launch 1005 acquired MBES data with a RESON 8101 and launch 1014 acquired MBES with RESON 8125. All platforms also acquired single beam echo sounder data with an Odom Echotrac DF3200 MK II echosounder, although these data were not processed.

Sound velocity data were acquired by both platforms. All velocity casts were conducted with Sea-Bird SBE 19 SEACAT Profiler instrument.

No unusual vessel configurations or problems were encountered. Refer to the Data Acquisition and Processing Report (DAPR)\* for detailed equipment and vessel configuration information. \* *Data filled at the Atlantic Hydrographic Branch (AHB).*

### **QUALITY CONTROL**

#### **Side Scan Sonar Quality Control**

No side scan sonar data were acquired on this survey.

#### **Shallow Water Multibeam Quality Control**

All outside source data were analyzed using Caris HIPS and SIPS 5.4 beta, taking advantage of the new statistical analysis and error tracking capabilities. The data were used in the creation of **HIPS** BASE (Bathymetry Associated with Statistical Error) surfaces and analyzed using the standard deviation, density, and uncertainty layers. No systematic problems with the outside source data were found.

Faults with the MBES system that affected data integrity occurred on the vessel 1014 on day number (DN) 249. The DIGIBAR- PRO unit quit outputting surface sound velocity data to the Reson Seabat 8125. These lines were identified and corrected in post processing by rejecting the outer beams. The Digibar was repaired and no further errors of this type were observed.

Post processing MBES data revealed bathymetric discrepancies in areas where USGS data and Launch data coincided. Portions of the USGS data were rejected only where there was 100% overlap of launch data. These lines then were reprocessed and then reinserted into the Pydro Smooth Sheet. This problem was isolated to a small subset of data and overall agreement of this survey was satisfactory.

All other MBES data for this project had no faults affecting data integrity. Such problems related to MBES integrity from svp, tide, currents, and bottom topography (kelp) did not exist for this survey. Refer to THOMAS JEFFERSON (August-November) 2003 Field Season DAPR for detailed discussion of MBES system calibrations, data acquisition, and data processing.

### **Crosslines**

Over 58.4 linear nautical miles (lnm) of MBES crossline data were acquired, an equivalent to 8.4 % of all MBES data. Although crosslines were run for this survey, new quality control procedures have been incorporated into the depth and uncertainty models produced by CARIS 5.4 beta (See DAPR).

### **Junctions *See also the Evaluation Report.***

This survey is a accumulation of other contemporary surveys. Data was overlaid for junction comparisons and the overall data agreement was satisfactory.

From H10992: Survey H10992, Sheet C, completed during the 2001 field season, was available for junction comparisons. Survey H10995 adjoins H10992 at the southwestern edge, extending into the Graves. Examination of soundings from both surveys indicated that the soundings agreed well. Generally the difference was not more than one to two feet and could be attributed to the rocky terrain that characterizes most of the Massachusetts Bay area.

From H10993: Survey H10993, Sheet D, completed during the 2003 field season, was available for junction comparisons. Survey H10995 adjoins H10993 at the southern edge. Examination of soundings from both surveys indicated that the soundings agreed well. Generally the difference was not more than one to two feet and could be attributed to the rocky terrain that characterizes most of the Massachusetts Bay area.

From H10994: Survey H10994, Sheet E, completed during the 2001 field season, was available for junction comparisons. Survey H10995 adjoins H10994 at the western edge. Examination of soundings from both surveys indicated that the soundings agreed well. Generally the difference was not more than one to two feet and could be attributed to the rocky terrain that characterizes most of the Massachusetts Bay area.

From W00039: Survey W00039, Sheet I, shares the same OSD source. The data set junctions in the eastern edge of H10995. Examination of soundings from both surveys indicated that the soundings agreed well.

From W00044: Survey W00044, Sheet N, shares the same OSD source. The data set junctions in the north eastern corner of H10995. Examination of soundings from both surveys indicated that the soundings agreed well.

## **CORRECTIONS TO ECHO SOUNDING**

All survey methods or instruments were implemented as described in the project DAPR. A table detailing all sound velocity casts is located in Separate III.

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

### **VERTICAL CONTROL**

The tidal datum for this project is Mean Lower Low Water (MLLW). The primary operating tide station at Boston, MA (844-3970) and secondary station Portland, ME (841-8150) served as control for datum determination. Final tidal zoning for this survey are consistent with the Letter Instructions. The final tide zones and correctors used for this survey are as follows:

<b>ZONE NAME</b>	<b>CORRECTOR (min)</b>	<b>RATIO</b>	<b>REFERENCE</b>
NA171	-6	x0.95	841-3970
NA173	0	x0.96	844-3970
NA174	-6	x0.94	844-3970
NA175	-6	x0.92	844-3970

*Approved tides and zones were reapplied to the present survey in Caris during office processing.*

A Request for Approved Tides letter was sent to N/OPS1 on October 16, 2003 (Appendix IV). *Filed with the original field data.*



**HORIZONTAL CONTROL** *See also the Evaluation Report.*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 19.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary DGPS beacon used for this survey was Portsmouth, New Hampshire (288kHz) and the secondary DGPS beacon used was Chatham, Massachusetts (325kHz). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily on both launches and ship. That value did not exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

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

There are ten charts affected by this survey:

**13270**, 60<sup>th</sup> edition, September 1, 2003, scale 1:25,000

**13275**, 28<sup>th</sup> edition, September 1, 2003, scale 1:25,000

**13274**, 25<sup>th</sup> edition, September 1, 2003, scale 1:40,000

**13267**, 31<sup>st</sup> edition, October 1, 2003, scale 1:80,000

**13260**, 39<sup>th</sup> edition, July 1, 2003, scale 1:378,838

**13200**, 33<sup>rd</sup> edition, January 19, 2002, scale 1:400,000

**13009**, 30<sup>th</sup> edition, August 1, 2002, scale 1:500,000

**13006**, 30<sup>th</sup> edition, July 1, 2001, scale 1:675,000

**5161**, 13<sup>th</sup> edition, October 1, 2003, scale 1:1,058,400

**13003**, 47<sup>th</sup> edition, June 1, 2003, scale 1:1,200,000

**General Agreement with Charted soundings**

Most sounding data acquired during this survey were 1 to 4% shoaler than charted depths. The charted depths are from partial bottom NOS surveys before 1970. The MBES data acquired for this survey are adequate to supercede the charted soundings. This sheet is in offshore waters in depths of approximately 60 meters or greater. As such, the shoaler soundings do not represent a hazard to marine traffic in the area. *All charted soundings should be superceded by this present survey.*

### Prior Surveys:

**F00206**, 1966, scale 1:25,000  
**H06564**, 1940, scale 1:20,000  
**H07140**, 1947, scale 1:40,000  
**H08938**, 1968, scale 1:40,000  
**H08940**, 1967, scale 1:10,000  
**H08941**, 1967, scale 1:10,000  
**H09011**, 1968, scale 1:40,000  
**H09013**, 1968, scale 1:40,000  
**H09051**, 1970, scale 1:20,000  
**H09063**, 1969, scale 1:20,000  
**H09064**, 1969, scale 1:20,000

Much of these prior survey area has been surveyed with only lead lines and single beam echosounder data without the aid of differential GPS. This survey is adequate to supersede charted depths in common areas. *Concur. See also the Evaluation Report.*

### Dangers to Navigation

There were no Dangers to Navigation (DTon) identified for this survey (Appendix I)\*.  
*Concur.*

### AWOIS Items *See also the Evaluation Report.*

There were two assigned Automated Wreck and Observed Information System (AWOIS) items within the survey limits, they were found and resolved. The remaining eleven AWOIS items were labeled information only (ten wrecks & one obstruction). Out of the eleven, two were found and the remaining nine were not. These items are addressed in the Appendix I\*.

### Significant Uncharted Features. *See also the Evaluation Report.*

There are no Significant Uncharted Features identified for this survey (Appendix I)\*.  
*Do Not Concur.*

### Non-AWOIS Charted Features & Notes *See also the Evaluation Report.*

There are twelve Non-AWOIS Charted Features identified for this survey. Seven features belong to a new pipeline, four features belong to rocky shoals, and the last feature is a man made item (Appendix I)\*.

*\* Appended to this Report.*

## **Charting Recommendations**

Sounding data agreed well with charted depths. There are Charting Recommendations identified for this survey related to the assigned AWOIS items (See Appendix I).\*

There is small section of the survey area (57sq Kilometers), that was not 100% ensonfied by MBES. At the time, weather prohibited the survey launch from getting any closer to the dangerous shoal area. However, there is overlap with bathymetric data from a prior survey (H10992) that junctions with this survey in The Graves. The hydrographer recommends using data from H10992 where data is absent by The Graves in this survey. This data set is adequate to supersede charted soundings. *Concur.*

## **ADDITIONAL RESULTS**

### **Aids to Navigation and Other Detached Positions**

All of the aids to navigation for this survey are maintained by the USCG and are in the Light List. Detached positions were not acquired, however they appeared to be on station.

*Concur.*

### **Bridges and Overhead Cables**

There are no bridges or overhead cables within the survey limits. *Concur.*

### **Ferry Routes**

There were no Ferry Routes that passed within the survey limits. *Concur.*

### **Submarine Cables and Pipelines *See also the Evaluation Report.***

Two pipelines transect through the survey area. One was identified as a diffuser pipeline entering at the SW corner of the survey. Overall, this diffuser pipeline agrees with as per digital charted.

Second pipeline enters the survey at the SW corner, trends NE until it exists the survey area. This is a new pipeline that was being dredged at the time when THOMAS JEFFERSON was surveying (See Appendix I).\* The hydrographer recommends obtaining "as built" drawings from the local U.S. Army Corp of Engineer district or construction firm.

*\* Appended to this report.*

**E. APPROVAL SHEET**

**OPR-A397-TJ-03  
North Atlantic Ocean  
Approaches to Boston, Massachusetts  
4 NM East of Nahant  
Survey Registry No. H10995**

**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.**


**Reports and Data not included with Descriptive Report:**

**Data Acquisition and Processing Report (August-November 2003), submitted April 11, 2004**


**Horizontal and Vertical Control Report dated January 20, 2004, submitted March 4, 2004**


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

**Respectfully Submitted:**

  
ENS. Jasper D. Schaer, NOAA  
Hydrographer and Junior Officer

**Approved and Forwarded:**

  
LT/NOAA  
LT Shepard M. Smith, NOAA  
Field Operations Officer

  
LCDR/NOAA  
LCDR Donald W. Haines, NOAA  
Commanding Officer

## **APPENDIX I**

### **ITEM INVESTIGATIONS AND CHARTED FEATURES**

Following are item investigation reports detailing four groups of features:

- 1) Dangers to Navigation (Dton's) (None)
- 2) AWOIS Items
- 3) Significant Uncharted Features (None)
- 4) Non-AWOIS Charted Features & Notes

# H10995

**Registry Number:** H10995  
**State:** MASSACHUSETTS  
**Locality:** APPROACHES TO BOSTON  
**Sub-locality:** 4-MILES-EAST-OF-NAHANT  
**Project Number:** OPR-A397-TJ-03  
**Survey Dates:** 09/06/2003 - 10/03/2003

## Charts Affected

Number	Version	Date	Scale
13270	60th Ed.	09/01/03	1:25000
13275	28th Ed.	09/01/03	1:25000
13274	25th Ed.	09/01/03	1:40000
13267	31th Ed.	10/01/03	1:80000
13260	39th Ed.	04/27/02	1:378838
13200	33rd Ed.	01/19/02	1:400000
13009	30th Ed.	08/01/02	1:500000
13006	30th Ed.	07/01/02	1:675000
5161	13th Ed.	10/01/03	1:1058400
13003	47th Ed.	01/01/03	1:1200000

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck	18.04 m	42.39519060° N	70.86379172° W	2117
1.2	Wreck	31.74 m	42.36991222° N	70.76592257° W	7561
1.3	Sounding	4.86 m	42.37267428° N	70.86016054° W	2094
1.4	Sounding	29.69 m	42.41638740° N	70.85903703° W	2124
1.5	AWOIS	[no data]	42.37343056° N	70.75365278° W	2097
1.6	AWOIS	[no data]	42.37398611° N	70.85921111° W	2100
1.7	AWOIS	[no data]	42.38343056° N	70.83282222° W	2104
1.8	AWOIS	[no data]	42.38481944° N	70.7508750° W	2108

1.9	AWOIS	[no data]	[no data]	[no data]	---
1.10	AWOIS	[no data]	[no data]	[no data]	---
1.11	AWOIS	[no data]	[no data]	[no data]	---
1.12	AWOIS	[no data]	[no data]	[no data]	---
1.13	AWOIS	[no data]	[no data]	[no data]	---
1.14	Sounding	23.36 m	42.37326941° N	70.88043128° W	---
1.15	Sounding	34.89 m	42.43562400° N	70.83914250° W	---
1.16	Sounding	15.27 m	42.37729701° N	70.85278904° W	---
1.17	Sounding	29.25 m	42.40918807° N	70.87340028° W	---
1.18	Sounding	33.04 m	42.42008098° N	70.86142329° W	---
1.19	Sounding	29.30 m	42.41254446° N	70.87067610° W	---
1.20	Sounding	23.35 m	42.37800038° N	70.87847915° W	---
1.21	Sounding	25.95 m	42.38476042° N	70.87577829° W	---
1.22	Sounding	19.85 m	42.36848647° N	70.87843807° W	---
1.23	Sounding	15.79 m	42.38911232° N	70.85893344° W	---

**1 - Dangers to Navigation (none)**



## **2 - AWOIS Items**

## 1.1) AWOIS item #2117 SE portion

### Primary Feature for AWOIS Item #2117

**Search Position:** 42.39537500, -70.86226667

**Historical Depth:** 16.46 m

**Search Radius:** 500

**Search Technique:** SD, S2, SWMB, DI

**Technique Notes:** [None]

#### History Notes:

HISTORY NM24/37--41 FT. REPORTED OVER WK. DESCRIPTION 24 NO.213; PASSENGER-CARGO, 1240 GT; SUNK 9/9/36; POS. ACCURACY WITHIN 1 MILE; LEAST DEPTH 41 FT. (SOURCE UNK); POS. 42-23-43N, 70-51-46W 27 NO.147; PASS. SUNK, 9/9/36 195 LORAN-C RATES HAVE BEEN PROVIDED BY MR. RICHARD TARACKA, GREENWICH, CT. POLICE DEPT., TEL. NO. 203-622-8007; 9960-W 13969.4, 9960-X 25817.8, 9960-Y 44290.6 (ENTERED MSM 6/89)

### Survey Summary

**Survey Position:** 42.39519060° N, 70.86379172° W

**Least Depth:** 18.04 m

**Timestamp:** 2003-250.20:16:07.891 (09/07/2003)

**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-250 / 070\_2015

**Profile/Beam:** 380/47

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

#### Remarks:

This wreck is broken up into four parts with shoal soundings on either end. The leasts depths are from the outer most SE and NW portion of the wreck.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-250/070_2015	380/47	0.00	000.0	Primary
A397_03_TJ	AWOIS # 2117	127.82	260.8	Secondary

## Hydrographer Recommendations

Chart as per digital data. *Concur. See also the Evaluation Report.*

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

59ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

9  $\frac{3}{4}$ fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

## Feature Images

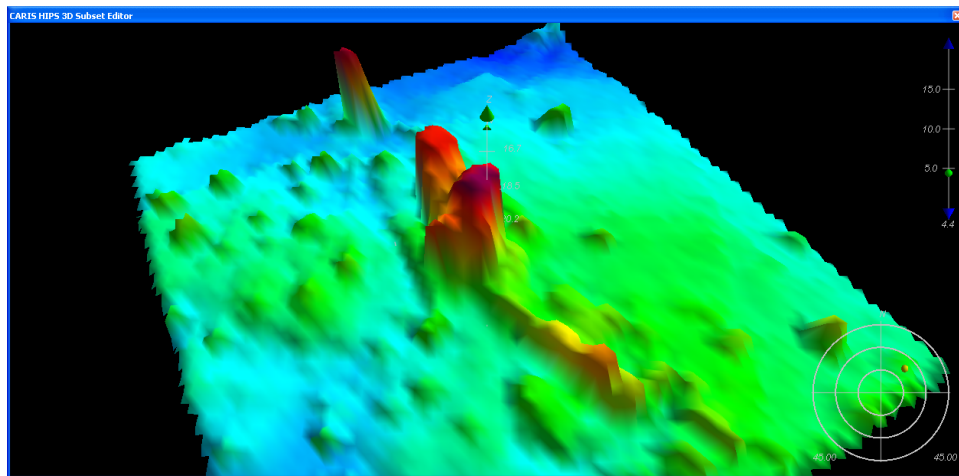


Figure 1.1.1

## 1.2) re position AWOIS 7561

### Primary Feature for AWOIS Item #7561

**Search Position:** 42.37343056, -70.78448611

**Historical Depth:** [None]

**Search Radius:** 1000

**Search Technique:** SD, S2, SWMB, DI

**Technique Notes:** [None]

**History Notes:**

HISTORY LNM23/70--THE F/V ANNA ROSA HAS BEEN REPORTED SUNK IN APPROX. POS.  
LAT.42-22.4N, LONG.70-47.1W. (ENTERED 3/90 MCR)

### Survey Summary

**Survey Position:** 42.36991222° N, 70.76592257° W

**Least Depth:** 31.74 m

**Timestamp:** 2003-259.14:00:35.564 (09/16/2003)

**Survey Line:** a397\_03\_h10993d / 1014\_mb / 2003-259 / 062\_1359

**Profile/Beam:** 145/18

**Charts Affected:** 13270\_1, 13275\_1, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1

**Remarks:**

AWOIS item#7561 (Ana Rosa) found by MBES(1014) 100% coverage at the location listed above.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10993d/1014_mb/2003-259/062_1359	145/18	0.00	000.0	Primary
A397_03_TJ	AWOIS # 7561	1584.87	104.3	Secondary (grouped)

## Hydrographer Recommendations

Delete charted Wreck PA. Chart as per digital data. *Concur. See also the Evaluation Report.*

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

104ft (13270\_1, 13275\_1, 13267\_1)

17fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1)

## Feature Images

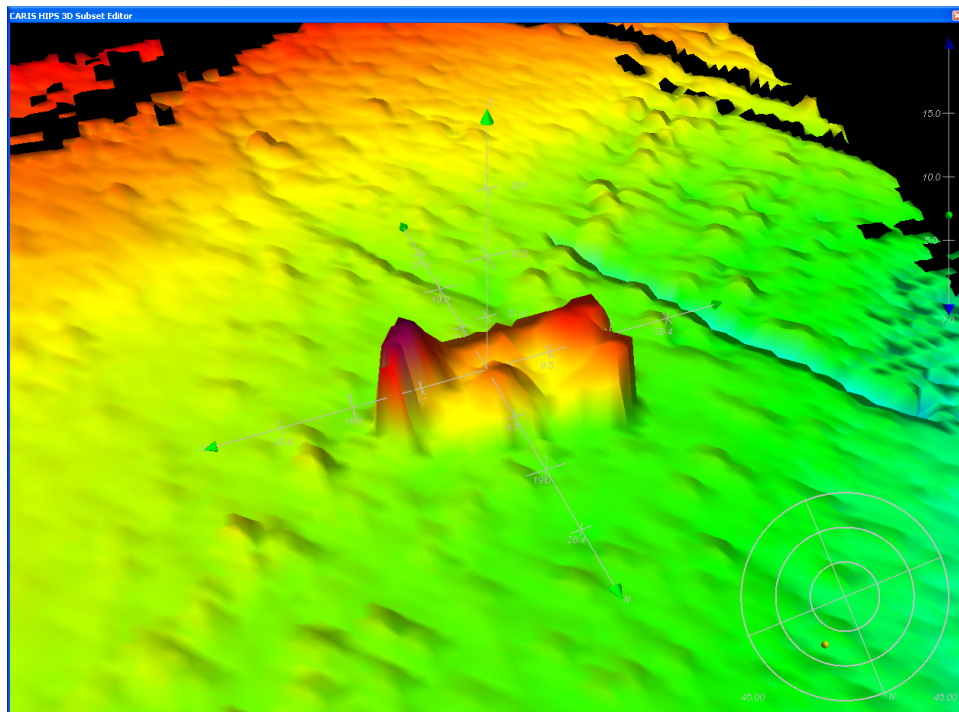


Figure 1.2.1

### 1.3) new charted sounding

#### Primary Feature for AWOIS Item #2094

**Search Position:** 42.37293056, -70.85998889

**Historical Depth:** [None]

**Search Radius:** 250

**Search Technique:** SD, S2, SWMB, DI

**Technique Notes:** [None]

**History Notes:**

HISTORY NM DATED 3/10/45 H6690/40--HT-246, 13.5 FT LL LD AT POS.42-22-22.2N, 70-51-37.8W, HYDROGRAPHER STATES DIVER WORKING ON WK CLAIMS IT HAD SLID INTO DEEPER WATER. SURVEY POSITION LOCATES LEDGE NOT WRECK. (NOTE: MAY HAVE BEEN ADDRESSED BY WHITING). (UP 6/30/03,SJV) DESCRIPTION 24 NO.217; CARGO, 397 GT,SUNK 1938; POSITION ACCURACY WITHIN 1 MILE

#### Survey Summary

**Survey Position:** 42.37267428° N, 70.86016054° W

**Least Depth:** 4.86 m

**Timestamp:** 2003-276.14:53:24.864 (10/03/2003)

**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-276 / 914\_1452

**Profile/Beam:** 163/28

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

A least depth sounding found on a rocky shoal using MBES. A wreck was not visible in bathymetry or backscatter.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-276/914_1452	163/28	0.00	000.0	Primary
A397_03_TJ	AWOIS # 2094	31.87	206.5	Secondary

## Hydrographer Recommendations

Chart as per digital data. *Concur. See also the Evaluation Report.*

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

16ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

2 ½fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

## 1.4) herbert new location

### Primary Feature for AWOIS Item #2124

**Search Position:** 42.41815278, -70.85643333

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

**History Notes:**

DESCRIPTION 24 NO.225; BARGE; SUNK 8/7/24; POSITION ACCURACY WITHIN 1 MILE; REPORTED 1ST NAVAL DISTRICT HEADQUARTERS-WRECK LIST 9/20/42 27 NO.549; SUNK 8/7/24

### Survey Summary

**Survey Position:** 42.41638740° N, 70.85903703° W

**Least Depth:** 29.69 m

**Timestamp:** 2003-255.13:42:22.758 (09/12/2003)

**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-255 / 542\_1328

**Profile/Beam:** 6136/68

**Charts Affected:** 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

AWOIS item#2124 (herbert) found by MBES 100% coverage. At different location than AWOIS was charted.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-255/542_1328	6136/68	0.00	000.0	Primary
A397_03_TJ	AWOIS # 2124	291.57	227.6	Secondary (grouped)



## Hydrographer Recommendations

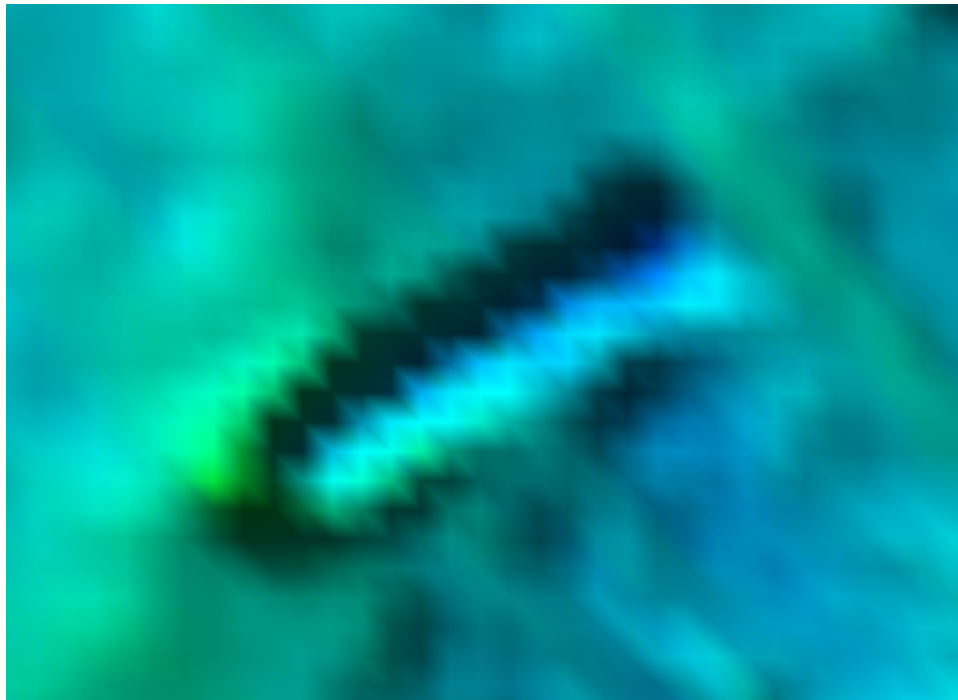
Hydrographer recommends charting as per digital data. *Concur in part. See also the Evaluation Report.*

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

97ft (13275\_1, 13274\_5, 13267\_1)

16fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

## Feature Images



*Figure 1.4.1*

## 1.5) AWOIS 2097 from database A397\_03\_TJ

**Search Position:** 42.37343056, -70.75365278

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

DESCRIPTION 24 NO.231; BARGE; SUNK 3/1/25; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH 1ST NAVAL DISTRICT WRECK LIST 9/20/42. 27 NO.555; BARGE SUNK 3/1/25. (NOT PRESENTLY CHARTED).

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #2097 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2097	0.00	000.0	Primary

## Hydrographer Recommendations

## 1.6) AWOIS 2100 from database A397\_03\_TJ

**Search Position:** 42.37398611, -70.85921111

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

DESCRIPTION 27 NO.151; SUNK BEFORE THE WAR; REPORTED THROUGH EASTERN SEA FRONTIER (NOT PRESENTLY CHARTED; SEE AWOIS #2094).

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #2100 and no evidence of the wreck was found.

*Concur. Refer to AWOIS #2094. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2100	0.00	000.0	Primary

## Hydrographer Recommendations

## 1.7) AWOIS 2104 from database A397\_03\_TJ

**Search Position:** 42.38343056, -70.83282222

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

HISTORY CL363/19--BOSTON FIELD OFFICE; NEWSPAPER ACCOUNT OF LEHIGH BARGE NO.3 SUNK IN COLLISION W/STMR. CAMDEN, 11/11/19; ANTHRACITE COAL CARGO, 1500 TONS. CARTOGRAPHIC DECISION--PD ADDED TO SYMBOL, 1941 H6609/40WD--NOT FOUND H6644/40--PROJECT NO.HT-246; NOT FOUND ON MAINSCHEME, LEADLINE SOUNDINGS; DANGER CURVE AND PD REMOVED FROM SYMBOL ON CHART. CARTOGRAPHIC DECISION--WRECK REMOVED FROM CHART, 1952. H8413//58-59--PROJECT NO.14010; NOT FOUND ON MAINSCHEME, ECHO SOUNDER (NOT VERIFIED OR REVIEWED) DESCRIPTION 179 UNKNOWN VESSEL 24 NO.242; UNKNOWN WRECK AT LAT.42-23N, LONG.70-50-50W; ACCURACY WITHIN 1 MILE.

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #2104 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2104	0.00	000.0	Primary

## Hydrographer Recommendations

## 1.8) AWOIS 2108 from database A397\_03\_TJ

**Search Position:** 42.38481944, -70.75087500

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

DESCRIPTION 24 NO.247; TUG; SUNK 7/8/33; POSITION ACCURACY WITHIN 1 MILE; REPORTED BY COE BOSTON. 27 NO.651; TUG; SUNK 7/8/33 (NOT PRESENTLY CHARTED).

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #2108 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2108	0.00	000.0	Primary

## Hydrographer Recommendations

## 1.9) AWOIS 2109 from database A397\_03\_TJ

**Search Position:** 42.38787500, -70.86310000

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

HISTORY H8413/58-59--PROJECT 14010; NOT INVESTIGATED. H9063--OPR-473; SOUNDING INVESTIGATION IN GENERAL AREA NEGATIVE H6644--HT-246; MAINSCHEME AND SHOAL DEVELOPEMENT IN AREA NEGATIVE. DESCRIPTION 24 NO.228; POSITION ACCURACY WITHIN 1 MILE; REPORTED SALVAGED; 60-TON MASS OF STEEL REMAINS IN THIS POSITION; SALVAGE DIVISION NAVY DEPARTMENT 179 GOTON STEEL 27 NO.552; SALVAGE OPERATIONS COMPLETE.

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #2109 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2109	0.00	000.0	Primary

## Hydrographer Recommendations

### 1.10) AWOIS 2118 from database A397\_03\_TJ

**Search Position:** 42.40009722, -70.83282222

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

**History Notes:**

DESCRIPTION 24 NO.226; BARGE, SUNK 11/11/19, POSITION ACCURACY 1-3 MILES, REPORTED THRU 1ST ND HQ-WRECK LIST 9/20/42 27 NO.550; BARGE, NAME LEIGH NO.3.

### Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

The digital data was reviewed for AWOIS #2118 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

### Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2118	0.00	000.0	Primary

### Hydrographer Recommendations

### 1.11) AWOIS 2123 from database A397\_03\_TJ

**Search Position:** 42.41676389, -70.76615278

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

**History Notes:**

HISTORY NM DATED 3/21/55 DESCRIPTION 24 NO.1628; SUNK 1955; POSITION ACCURACY WITHIN 1 MILE; REPORTED AS UNEXPLODED ORDNANCE

### Survey Summary

**Charts Affected:** 13275\_1, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

The digital data was reviewed for AWOIS #2123 and no evidence of the unexploded ordnance was found.

*See also the Evaluation Report.*

### Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2123	0.00	000.0	Primary

### Hydrographer Recommendations

Hydrographer recommends charting as per digital data.



## 1.12) AWOIS 7563 from database A397\_03\_TJ

**Search Position:** 42.38343056, -70.84671111

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

### History Notes:

DESCRIPTION 27 NO.580;SUNK BEFORE WWII, POSITION ACCURACY WITHIN 1 MILE (NOT PRESENTLY CHARTED).

## Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

### Remarks:

The digital data was reviewed for AWOIS #7563 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

## Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 7563	0.00	000.0	Primary

## Hydrographer Recommendations

### 1.13) AWOIS 7854 from database A397\_03\_TJ

**Search Position:** 42.37576389, -70.87386667

**Historical Depth:** [None]

**Search Radius:** 0

**Search Technique:** [None]

**Technique Notes:** [None]

**History Notes:**

DESCRIPTION 210 47 FT. FISHING BOAT, SWEET SUE, SANK IN 70 FT. OF WATER OFF GRAVES LIGHT ON JANUARY 24, 1980; LORAN C RATES: 9960-W 13979.2, 9960-X 25815.0; LAT 42-22-32.4N, LONG 70-52-27.76W (COMPUTED FROM LORAN RATES). (ENTERED MSD 9/90) NOTE: NOT PRESENTLY CHARTED.

### Survey Summary

**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

The digital data was reviewed for AWOIS #7854 and no evidence of the wreck was found.

*Concur. See also the Evaluation Report.*

### Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 7854	0.00	000.0	Primary

### Hydrographer Recommendations

### **3 - Significant Uncharted Features (none)**

**See Also the Evaluation Report**

## **4 - Non- AWOIS Charted Features & Notes**

**See also the Evaluation Report**

## 1.16) 50ft\_sounding

### Survey Summary

**Survey Position:** 42.37729701° N, 70.85278904° W *42/22/38.2N, 70/51/10.0W*  
**Least Depth:** 15.27 m  
**Timestamp:** 2003-255.18:14:19.007 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-255 / 509\_1806  
**Profile/Beam:** 2310/117  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

#### Remarks:

Sounding found by 100% MBES over a rocky bottom. This feature correlates with a charted 48ft sounding bearing 280°, 162 meters away.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-255/509_1806	2310/117	0.00	000.0	Primary

### Hydrographer Recommendations

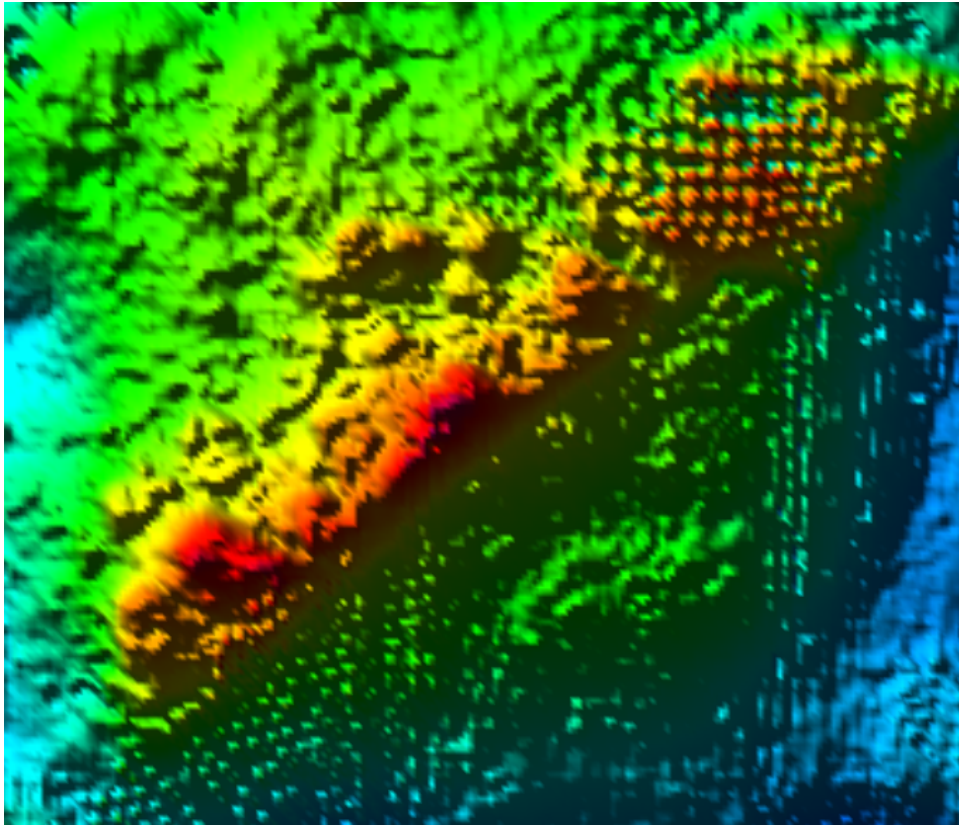
Chart as per digital data. *Concur.*

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

50ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

8 ¼fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images



*Figure 1.16.1*

## 1.15) pipeline NE

### Survey Summary

**Survey Position:** 42.43562400° N, 70.83914250° W *42/26/08.25N, 70/50/20.90W*  
**Least Depth:** 34.89 m  
**Timestamp:** 2003-255.13:55:15.697 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-255 / 542\_1328  
**Profile/Beam:** 11531/49  
**Charts Affected:** 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-255/542_1328	11531/49	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

114ft (13275\_1, 13274\_5, 13267\_1)

19fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

---

## 1.14) pipeline SW

### Survey Summary

**Survey Position:** 42.37326941° N, 70.88043128° W *42/22/23.7N, 70/52/49.5W*  
**Least Depth:** 23.36 m  
**Timestamp:** 2003-249.13:40:57.282 (09/06/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-249 / 603\_1330  
**Profile/Beam:** 2918/54  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-249/603_1330	2918/54	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

76ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

13fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)



## 1.17) pipeline

### Survey Summary

**Survey Position:** 42.40918807° N, 70.87340028° W *42/24/33.0N, 70/52/24.2W*  
**Least Depth:** 29.25 m  
**Timestamp:** 2003-255.14:29:49.894 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-255 / 548\_1424  
**Profile/Beam:** 2254/29  
**Charts Affected:** 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-255/548_1424	2254/29	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

96ft (13275\_1, 13274\_5, 13267\_1)

16fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

## 1.18) pipeline

### Survey Summary

**Survey Position:** 42.42008098° N, 70.86142329° W *42/25/12.2N, 70/51/41.1W*  
**Least Depth:** 33.04 m  
**Timestamp:** 2003-255.14:37:07.835 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-255 / 548\_1424  
**Profile/Beam:** 5426/75  
**Charts Affected:** 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-255/548_1424	5426/75	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

108ft (13275\_1, 13274\_5, 13267\_1)

18fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

## 1.19) pipeline

### Survey Summary

**Survey Position:** 42.41254446° N, 70.87067610° W *42/24/45.1N, 70/52/14.4W*  
**Least Depth:** 29.30 m  
**Timestamp:** 2003-255.14:15:35.381 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-255 / 549\_1401  
**Profile/Beam:** 6325/43  
**Charts Affected:** 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-255/549_1401	6325/43	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

96ft (13275\_1, 13274\_5, 13267\_1)

16fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

## 1.20) pipeline

### Survey Summary

**Survey Position:** 42.37800038° N, 70.87847915° W *42/22/40.8N, 70/52/42.5W*  
**Least Depth:** 23.35 m  
**Timestamp:** 2003-249.14:01:33.969 (09/06/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-249 / 606\_1400  
**Profile/Beam:** 317/197  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-249/606_1400	317/197	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

76ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

13fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

## 1.21) pipeline

### Survey Summary

**Survey Position:** 42.38476042° N, 70.87577829° W *42/23/05.1N, 70/52/32.8W*  
**Least Depth:** 25.95 m  
**Timestamp:** 2003-249.14:51:03.066 (09/06/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-249 / 664\_1448  
**Profile/Beam:** 809/214  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Pipeline observed in digital data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-249/664_1448	809/214	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *No change in charting is recommended.*

In addition, the NOAA NE Regional Navigation Manager should contact owner to get source material in order to review that the draft submittals of this new pipeline match what was actually observed.

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

85ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

14fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images



## 1.22) Profile/Beam - 1356/60 from a397\_03\_h10995f / 1005\_mb / 2003-259 / 087\_2136

### Survey Summary

**Survey Position:** 42.36848647° N, 70.87843807° W *42/22/06.5N, 70/52/42.3W*  
**Least Depth:** 19.85 m  
**Timestamp:** 2003-259.21:39:48.673 (09/16/2003)  
**Survey Line:** a397\_03\_h10995f / 1005\_mb / 2003-259 / 087\_2136  
**Profile/Beam:** 1356/60  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

**Remarks:**

Feature discovered with 100% MEBES coverage.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1005_mb/2003-259/087_2136	1356/60	0.00	000.0	Primary

### Hydrographer Recommendations

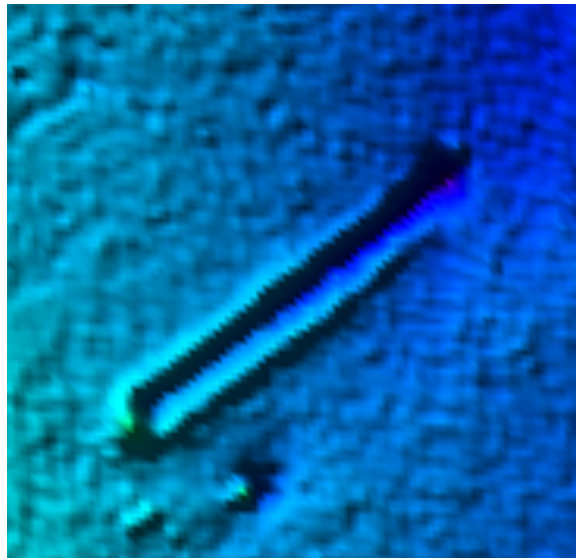
Chart as per digital chart. *Do not concur. The feature is considered insignificant. Chart present survey soundings.*

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

65ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

10 <sup>3</sup>/<sub>4</sub>fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images



*Figure 1.22.1*



## 1.23) Profile/Beam - 848/75 from a397\_03\_h10995f / 1014\_mb / 2003-255 / 528\_1420

### Survey Summary

**Survey Position:** 42.38911232° N, 70.85893344° W *42/23/20.8N, 70/51/32.1W*  
**Least Depth:** 15.79 m  
**Timestamp:** 2003-255.14:23:19.137 (09/12/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-255 / 528\_1420  
**Profile/Beam:** 848/75  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

#### Remarks:

100% MBES coverage over a rocky bottom, North of The Graves. In this particular area, the soundings are deeper than charted. The charted soundings are 42ft, 46ft, 48ft, 53ft, but the shoalest sounding discovered during this survey was 51ft.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-255/528_1420	848/75	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *After application of tides during office processing the least depth is 52 ft.*

*Chart present survey soundings.*

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

52ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

8 ½fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

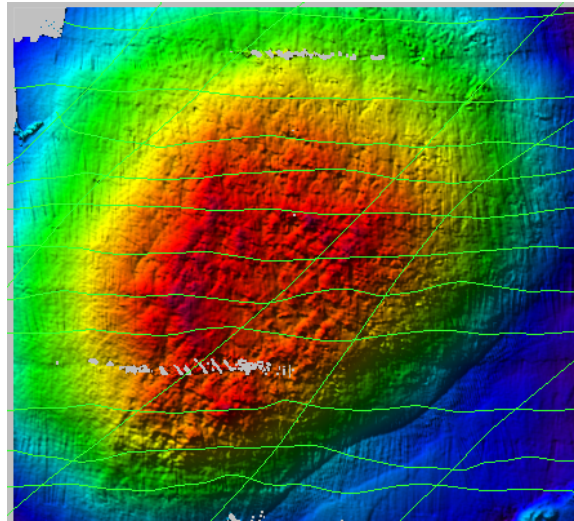


Figure 1.23.1

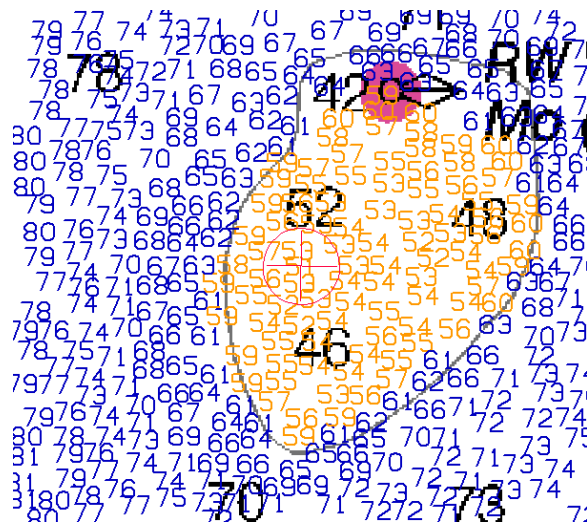


Figure 1.23.2

## 1.24) Profile/Beam - 2792/227 from a397\_03\_h10995f / 1014\_mb / 2003-259 / 559\_2044

### Survey Summary

**Survey Position:** 42.36830777° N, 70.85608412° W *42/22/05.9N, 70/51/21.9W*  
**Least Depth:** 12.70 m  
**Timestamp:** 2003-259.20:53:53.224 (09/16/2003)  
**Survey Line:** a397\_03\_h10995f / 1014\_mb / 2003-259 / 559\_2044  
**Profile/Beam:** 2792/227  
**Charts Affected:** 13270\_1, 13275\_1, 13274\_5, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1

#### Remarks:

100% MBES coverage over a rocky bottom, West of The Graves. In this particular area, the soundings are deeper than charted. The charted soundings are: 38ft, 40ft, 54ft, 66ft, but shoalest sounding discovered during this survey is 41ft.

This survey junctions with H10992, sheet C. This survey should be reviewed with the junction data.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_h10995f/1014_mb/2003-259/559_2044	2792/227	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as per digital data. *Concur. Chart present survey soundings.*

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

41ft (13270\_1, 13275\_1, 13274\_5, 13267\_1)

7fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 13003\_1)

### Feature Images

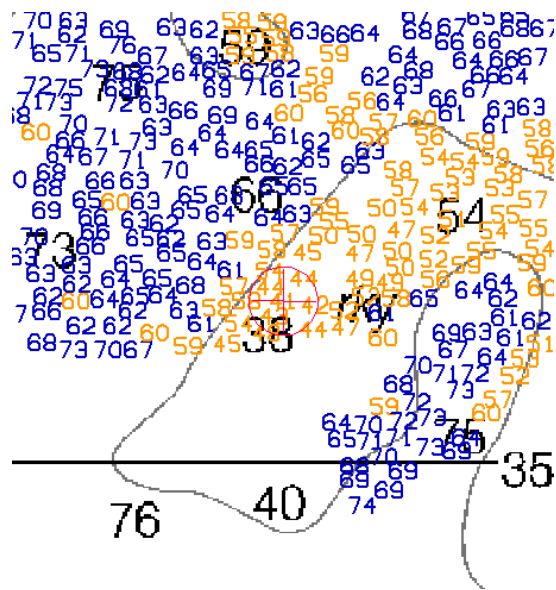


Figure 1.24.1

## 1.25) Profile/Beam - 1272/54 from stellwagen / creed / 1994\_315 / sewer\_315\_0026

### Survey Summary

**Survey Position:** 42.37726756° N, 70.81913161° W *42/22/38.1N, 70/49/08.9W*  
**Least Depth:** 20.90 m  
**Timestamp:** 1994-315.19:37:14.540 (11/11/1994)  
**Survey Line:** stellwagen / creed / 1994\_315 / sewer\_315\_0026  
**Profile/Beam:** 1272/54  
**Charts Affected:** 13270\_1, 13275\_1, 13267\_1, 13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1

#### Remarks:

100% MBES coverage over a rocky bottom. In this particular area, the soundings are deeper than charted. The charted sounding is 60ft, but the shoalest sounding discovered during this survey was 68ft.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1994_315/sewer_315_0026	1272/54	0.00	000.0	Primary

### Hydrographer Recommendations

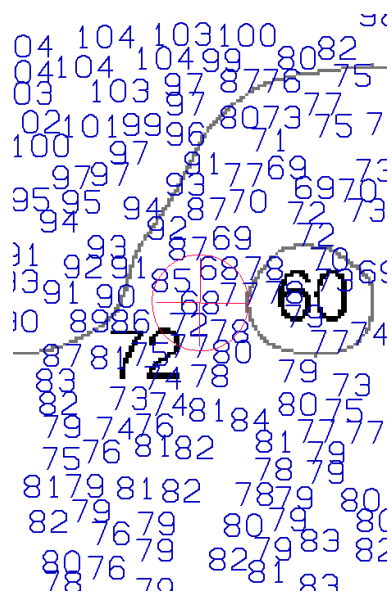
Chart as per digital data. Concur. *Chart present survey soundings.*

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

68ft (13270\_1, 13275\_1, 13267\_1)

11fm (13260\_1, 13200\_1, 13009\_1, 13006\_1, 5161\_1, 13003\_1)

### Feature Images

*Figure 1.25.1*



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 6, 2004

HYDROGRAPHIC BRANCH: Atlantic  
HYDROGRAPHIC PROJECT: OPR-A397-TJ-2003  
HYDROGRAPHIC SHEET: H10995

LOCALITY: Approaches to Boston, MA  
TIME PERIOD: August 20 - October 3, 2003

TIDE STATION USED: 844-4162 Boston Light, MA  
Lat. 42° 19.7'N Lon. 70° 53.5'W  
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.858 meters

REMARKS: RECOMMENDED ZONING  
Use zone(s) identified as: NA171, NA173, NA174, NA175

Refer to attachments for zoning information.

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

*Thomas N. Mero 1/9/04*  
-----  
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Printed on Recycled Paper



**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H10995 (2003)**

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**

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

Hydrographic Processing System  
MicroStation J, version 07.01.04.16  
I/RAS B, version 07.01.000.18  
MapInfo, version 6.5  
CARIS HIPS/SIPS 5.3  
PYDRO, versions 3.7.1 through 4.7.2

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

Survey H10995 (2003) used a massive amount of Outside Source Data (OSD), for the completion of the field sheet. Appended to this report is a memorandum from LT Shep Smith, describing the methodology of using this data for charting purposes, as well as a tide note for this data.

**JUNCTIONS**

H10992 (2001) to the southwest  
H10993 (2003) to the south  
H10994 (2001) to the west

A standard junction could not be effected between the present survey and survey H10993 (2003). The junctional survey has not been completed, and is in the preliminary stages of office processing. In this case, the note *ADJOINS* has been shown on the present survey smooth sheet. Any adjustments to the depth curve will have to be made on the chart during compilation.

The smooth sheets for surveys H10992(2001) and H10994(2001) are archived at National Ocean Service (NOS) headquarters, Silver Spring, Maryland. In this case, the note *ADJOINS* has been shown on the present survey smooth sheet. Any adjustments to the depth curve will have to be made on the chart during compilation.



Present survey depths are in harmony with the charted hydrography to the east and to the west.

### C. VERTICAL AND HORIZONTAL CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM Zone 19N. Office processing of this survey is based on these values.

### D. RESULTS AND RECOMMENDATIONS

<b>CHART COMPARISON</b>	<b>13270</b> (60 <sup>th</sup> Edition, Sept 01/03)
	<b>13275</b> (29 <sup>th</sup> Edition, Oct 04)
	<b>13274</b> (25 <sup>th</sup> Edition, Sept 01/03)
	<b>13267</b> (31 <sup>st</sup> Edition, Oct 01/03)
	<b>13260</b> (39 <sup>th</sup> Edition, Jul 01/03)
	<b>13200</b> (33 <sup>rd</sup> Edition, Jan 19/02)
	<b>13009</b> (30 <sup>th</sup> Edition, Aug 01/02)
	<b>13006</b> (30 <sup>th</sup> Edition, Jul 01/01)
	<b>5161</b> (13 <sup>th</sup> Edition, Oct 01/03)
	<b>13003</b> (47 <sup>th</sup> Edition, Jun 01/03)

The charted hydrography originates with prior surveys and needs no further consideration. The hydrographer makes an adequate comparison in section D. of the Descriptive Report. The following should be noted:

1. A charted dangerous rock with a least depth of 50-ft (50 Rk) in Latitude 42°22'07.57"N, Longitude 070°51'51.91"W originates with junction survey H10992 (2001). The shoal depth found on the rock by the present survey is 52 feet. It is recommended that the dangerous rock with a depth of 50-ft be retained as charted.

2. A charted 66-ft depth in Latitude 42°24'28.89"N, Longitude 070°50'34.32"W, was developed by the field. The present survey soundings are 30 feet deeper in the area. There is no indication of a shoal in the area. It is recommended that the charted 66-ft depth be superseded by the present survey.

### Prior Surveys

A comparison with prior surveys was not done during office processing in accordance with section 4 of the memorandum titled, "Changes to Hydrographic Survey Processing", dated May

24, 1995.

### **AWOIS Items**

**1.1)** Automated Wreck and Obstruction Information System (AWOIS) item #2117 is a charted dangerous sunken wreck cleared to 54-ft. in Latitude 42°23'43.35"N, Longitude 070°51'44.16"W.

The charted geographic position for the AWOIS item is Latitude 42°23'41.73"N, Longitude 070°51'50.00"W. A wreck with a depth of 59-ft was located by the hydrographer in Latitude 42°23'42.69"N, Longitude 070°51'49.65"W. It is recommended that the charted dangerous sunken wreck cleared to 54-ft be deleted and a dangerous wreck with a depth of 59-ft (59 Wk) be charted as shown on the present survey.

**1.2)** AWOIS item #7561 is a charted sunken wreck PA in Latitude 42°22'24.35"N, Longitude 070°47'04.15"W. The area was investigated by the hydrographer with no indication of the wreck in the vicinity. It is recommended that the sunken wreck, PA be deleted.

**1.3)** AWOIS item #2094 is a charted dangerous sunken wreck cleared to 13-ft. in Latitude 42°22'22.55"N, Longitude 070°51'35.16"W. The area was investigated by the hydrographer with no indication of the wreck in the vicinity. The shoalest depth over the area is 16 feet. This wreck is considered disproved by the present survey. It is recommended that the charted dangerous sunken wreck cleared to 13-ft be deleted. Chart soundings as shown on the present survey.

**1.4)** AWOIS item #2124, is a charted wreck depth unknown, in Latitude 42°25'05.35"N, Longitude 070°51'23.16"W, and was investigated by the hydrographer. This wreck is shown only on chart 13267. A wreck with a depth of 97-ft was located in Latitude 42°24'58.99"N, Longitude 070°51'32.53"W. It is recommended that the charted wreck depth unknown be deleted from the chart. It is also recommended that a dangerous wreck with a depth of 97-ft (97 Wk) be charted as shown on the present survey.

A dangerous wreck with a depth of 79-ft was found during office processing in Latitude 42°24'54.43"N Longitude 070°51'28.35"W. This wreck is possibly the same as a charted dangerous wreck depth unknown PA (also AWOIS #2124?) in Latitude 42°24'59.80"N Longitude 070°51'24.69"W. It is recommended that the charted dangerous sunken wreck depth unknown, PA, be deleted and a dangerous wreck with a depth of 79-ft (79 Wk) be charted at the surveyed location.

1.5) AWOIS item #2097 is a charted non-dangerous sunken wreck in Latitude 42°22'24.35"N, Longitude 070°45'13.15"W. The item was investigated by the hydrographer with no evidence of the wreck found. The charted wreck is considered disproved by the present survey. This wreck is shown only on chart 13267. It is recommended that the non-dangerous sunken wreck be deleted from the chart.

1.6) AWOIS item #2100 is an uncharted sunken wreck in Latitude 42°22'26.35"N, Longitude 070°51'33.16"W. This item is the same as AWOIS item #2094. See paragraph 1.3) of this report.

1.7) AWOIS item #2104 is an uncharted sunken wreck PD in Latitude 42°23'00.35"N, Longitude 070°49'58.16"W that had been removed from the charts in 1952. No indication of the wreck was found by the present survey and is still considered disproved. It is recommended that the sunken wreck PD continue to be retained as not charted. It is also recommended that AWOIS item #2124 be deleted from the file. This is an information only recommendation.

1.8) AWOIS item #2108 is a charted non-dangerous sunken wreck, depth unknown in Latitude 42°23'05.35"N, Longitude 070°45'03.15"W. No indication of the wreck was found by the present survey and is considered disproved. This wreck is currently shown only on chart 13267. It is recommended that the non-dangerous sunken wreck, depth unknown be deleted from the chart.

1.9) AWOIS item #2109 is a charted non-dangerous sunken wreck, depth unknown in Latitude 42°23'16.35"N, Longitude 070°51'47.16"W. No indication of the wreck was found by the present survey and is considered disproved. This wreck is currently shown only on chart 13267. It is recommended that the non-dangerous wreck, depth unknown be deleted from the chart.

1.10) AWOIS item #2118 is a charted non-dangerous sunken wreck, depth unknown in Latitude 42°24'00.35"N, Longitude 070°49'58.16"W. No indication of the wreck was found by the present survey and is considered disproved. This wreck is currently shown only on chart 13267. It is recommended that the non-dangerous sunken wreck, depth unknown, be deleted from the chart.

1.11) AWOIS item #2123 is a charted explosive dumping ground, exploded ordnance Feb 1955, in Latitude 42°25'00.35"N, Longitude 070°45'58.16"W. No evidence of the ordnance was found, however, the area is not considered disproved. No change in charting is recommended.

1.12) AWOIS item #7563 is a charted non-dangerous sunken wreck, depth unknown in Latitude 42°23'00.35"N, Longitude 070°50'48.16"W. No indication of the wreck was found by the present survey and is considered disproved. This wreck is currently shown only on chart 13267. It is recommended that the non-dangerous sunken wreck, depth unknown be deleted from the chart.

1.13) AWOIS item #7854 is an uncharted sunken wreck in Latitude 42°22'32.75"N, Longitude 070°52'25.92"W. No indication of the wreck was found by the present survey and is considered disproved. No change in charting is recommended.

### **Significant Uncharted Features**

1. An uncharted dangerous wreck with a depth of 98ft was found during office processing in Latitude 42°24'44.77"N, Longitude 070°48'45.64"W. It is recommended that a dangerous wreck with a depth of 98 ft (98 Wk) be charted at the present survey location.

2. An uncharted wreck with a depth of 104-ft was found during office processing in Latitude 42°22'11.68"N, Longitude 070°45'57.32"W. It is recommended that a wreck with a depth of 104-ft (104 Wk) be charted as shown on the present survey.

3. An uncharted dangerous wreck with a depth of 90ft was found during office processing in Latitude 42°26'09.40"N Longitude 070°50'33.06"W. It is recommended that a dangerous wreck with a depth of 90 ft (90 Wk) be charted at the surveyed location.

### **Non-AWOIS Charted Features & Notes**

In addition to the twelve charted features discussed by the hydrographer in the Descriptive Report, the following should be noted:

1. A charted sunken wreck in Latitude 42°22'58.80"N, Longitude 070°47'56.25"W, was not addressed by the hydrographer. During office processing, the charted wreck was reviewed, and is considered disproved. It is recommended that

the charted sunken wreck be deleted.

2. A charted sunken wreck PA, Latitude 42°23'30.50"N Longitude 070°44'28.19"W was not discussed by the hydrographer. During office processing a wreck with a depth of 141 feet was found in Latitude 42°23'28.45"N Longitude 070°44'18.82"W. It is recommended that the charted sunken wreck PA be deleted, and a wreck with a depth of 141 feet (141 Wk) be charted in the present surveyed location.

3. A charted 72 Rk in Latitude 42°23'08.67"N, Longitude 070°52'38.33"W, was not addressed by the hydrographer. During office processing, a least depth of 75ft was found at the charted location. It is recommended that the charted 72 Rk, be revised to a 75 Rk as shown on the present survey. It should be noted that the 72 Rk is not shown on charts 13273 and 13267.

4. A charted sunken wreck PA in Latitude 42°26'00.51"N, Longitude 070°46'57.96"W, was not discussed by the hydrographer. During office processing, the charted wreck was reviewed and is considered disproved. It is recommended that the charted sunken wreck PA be deleted from the chart.

5. The following items in the vicinity of Northeast Grave are not considered disproved by the present survey:

<u>Feature</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
5 Rk	42°22'11.22	070°51'55.99
Rock that		
Uncovers 3ft	42°22'08.80	070°51'58.62
3 visible rks	42°22'04.56	070°52'04.33

It is recommended that these features be retained as charted.

## **ADDITIONAL RESULTS**

### **Submarine Cables and Pipelines**

The charted magenta pipeline on charts 13270, 13274 and 13275, that heads north from Black Rock Channel, Latitude 42°20'02.12"N, Longitude 070°54'49.89"W, to Salem Sound, Latitude 42°32'17.75"N, Longitude 070°49'56.34"W, is not currently represented on chart 13267. It is recommended that MCD update this chart to properly display the location of this

pipeline.

The present survey is adequate to supersede the charted hydrography within the common area

#### **ADEQUACY OF SURVEY**

This is an adequate Multibeam survey and should supersede the charted data within the common area with the exception of those items noted in this report.

#### **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. The following NOS charts were used for compilation of the present survey: 13275 (29<sup>th</sup> Edition, Oct. /04)

Corrected through NM Oct. 16/04

Corrected through LNM Oct. 5/04

13274 (25<sup>th</sup> Edition, Sep. /03)

Corrected through NM Aug. 9/03

Corrected through LNM Jul. 29/03

13270 (61<sup>st</sup> Edition, Nov. /04)

Corrected through NM Nov. 6/04

Corrected through LNM Oct. 26/04

13267 (31<sup>st</sup> Edition, Oct 01/03)

Corrected through NM Sep. 6/03

Corrected through LNM Aug. 26/03

Deborah A. Blum for

Chris Wedler

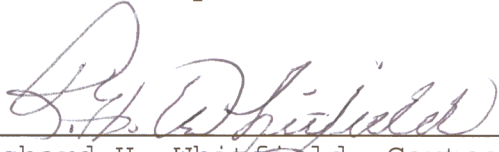
Physical Scientist

Verification of Field Data

Evaluation and Analysis


APPROVAL SHEET  
H10995 (2003)

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

  
Richard H. Whitfield, Cartographer,  
Atlantic Hydrographic Branch

Date: 4/18/05

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved:   
P. Tod Schattgen  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch

Date: 7/27/05





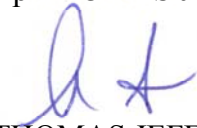
**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration  
NOAA Marine and Aviation Operations  
NOAA Ship Thomas Jefferson S-222  
439 W. York Street  
Norfolk, VA 23510-1114

October 5, 2004

MEMORANDUM FOR: LCDR Tod Schattgen, NOAA  
Chief, Atlantic Hydrographic Branch

THROUGH: CDR Emily B. Christman, NOAA  
Commanding Officer, NOAA Ship THOMAS JEFFERSON

FROM: LT Shepard M. Smith, NOAA   
Executive Officer, NOAA Ship THOMAS JEFFERSON

SUBJECT: USGS Stellwagen Bank Data

This memorandum serves to document the background, approach, and processing steps employed to incorporate the USGS Stellwagen Bank and Massachusetts Bay multibeam data into the NOAA charting system.

**Background**

During the planning of OPR A397, I became aware that the survey areas assigned to WHITING, then LITTLEHALES, then THOMAS JEFFERSON overlapped significantly with the multibeam data acquired by USGS during the mid 1990s. This project was funded by USGS, with technical assistance from the Ocean Mapping Group at the University of New Brunswick and surveyed using the Canadian Hydrographic Service vessel *Frederick Creed*. It was also a cooperative project with NOAA, and several NOAA Corps hydrographers sailed aboard for portions of the project.

The data was collected under the guidance of some of the worldwide experts in multibeam surveying at the time. While it was NOAA's intention at the time to chart this data, we did not have the capability to process this large a dataset, and the data that NOAA did get languished in a collection of shoeboxes in Silver Spring.

In March 2003, after discussing the possibility with LT Jon Swallow at HSD operations, I contacted USGS in Woods Hole through Dr. Larry Mayer to inquire about the status of the data. I told them that we would be surveying the area on the NOAA Ship THOMAS JEFFERSON, and that we wanted to reduce duplication of effort. Dr. Bill Danforth replied enthusiastically that they would make the data available to us in whatever form we needed.

In addition, UNH's Center for Coastal and Ocean Mapping (CCOM) had contracted with SAIC to conduct a multibeam survey of Jeffrey's Ledge, an area just to the north of the



USGS Stellwagen Bank data set. During a break in their hydrographic survey work for NOAA, the SAIC team went up to Jeffreys Ledge and conducted the survey in the winter of 2002-2003. The data was sent to UNH in lightly edited form and turned over to graduate student Mashkoor Malik to work on. The CCOM leadership team offered the data to NOAA for charting. Because of the plans to incorporate the USGS data into NOAA's pipeline aboard the THOMAS JEFFERSON, I offered to add this SAIC data to the USGS data and work with it all together.

I then contacted HSD operations again to plan our approach to the project.

## **The Approach**

This was an unusual opportunity to incorporate a large amount of Outside Source Data into the charting process. The most unusual aspect was that we had a ship available to junction and check the data. We came up with the following premises:

- 1) We would convert the data to a form where it could be manipulated as if it were our own data. This necessitated a new convertor to get the data into Caris HIPS format.
- 2) The tides applied to the data were inconsistent. We would plan to reapply all tides using historic NOAA station data and modern zoning.
- 3) We would use a Navigation Surface approach to process the data for charting. We would estimate the sensor errors for the Creed data and compute TPE as appropriate.
- 4) The data was edited to some extent by the Creed in the one case and CCOM in the other. We would further clean data only as necessary to produce a clean Navigation Surface.
- 5) The grids provided by the USGS were at a coarse resolution of 10m. For parts of the survey area, this is insufficient to capture all the seafloor detail in the data.
- 6) Various techniques were used by the CHS and USGS hydrographers to correct for sound velocity. The Simrad 1000 multibeam sonar system was corrected for sound velocity at the head and in the water column in real time. In order to compensate for head velocity errors and the difference between the last cast and the water column at their location, the hydrographers made extensive use of head velocity offsets and the interactive refraction editor. We would not second-guess the hydrographer's judgement on this, but merely reapply the values as they intended.
- 7) In general, we would compare *their results* to *our results*. We would not compare their *processes* to our *processes*. Because of the difference in the purpose of the survey and the changes in technology, it would not be useful to spend a lot of time worrying about processing techniques.
- 8) We would run crosslines with the TJ or her launches to check the accuracy of the data. We could also fill holidays or develop shoals at our discretion.
- 9) The TJ data would be combined with the OSD data to create a single survey with a "W" designation. TJ would write DRs and submit the surveys to AHB in a form

similar to that used for our own surveys. This should ease its inclusion in our workflow.

This approach was discussed with LT Jon Swallow Mike Riddle and Steve Verry, HSD Operations, and CDR Emily B. Christman at AHB, and is consistent with the project instructions issued for the project.

### **Preliminary Processing**

Because I would be going out to the THOMAS JEFFERSON as Operations Officer and would oversee the project, I volunteered to be the focal point for data conversion and preliminary troubleshooting.

The data from USGS had all arrived by May 2003, and I was able to restore it all from CDs. The Swathed files were converted using a Swathed→Caris HIPS convertor written by Caris for this purpose. The first draft of the convertor assumed that the data had been fully merged with all refraction editing applied. This was not the case and a second version of the convertor was written which converted Swathed's three-parameter refraction editor files and converted them to a new HIPS format. In addition, the merge function in HIPS was modified to be able to perform a head velocity change in addition to changes at depth, to be consistent with the Swathed technology. After those changes, the data looked pretty good.

I contacted Cary Wong through HSD Operations and explained the project. Cary was able to find tide files going back to 1994. However, the files for 1994 were archived on a type of media that is no longer readable, so that year is only hourly data, which was interpolated by HIPS.

### **The Survey**

THOMAS JEFFERSON arrived on scene in Massachusetts Bay in August 2003. In making up the cross line files for the survey, we estimated the total level of effort we wanted to spend on the project, then determined the number of crosslines that would be possible to run in that time frame. It came out to about three lines per sheet, run lengthwise east-west. In addition, in some areas, we ran some holiday lines and a few item investigations. On sheets D and F, we junctioned NOAA launch and ship data with the USGS data to form a complete survey.

### **Comparison of Data**

In general, we found that the USGS data was consistently shoaler than the TJ ship multibeam data by 0.5m to 0.8m. In order to try to determine which was right, we tested several hypotheses.

- 1) Tidal Epoch-the tidal epoch changed in April 2003. The change is in the "right" direction to explain the difference, but the maximum magnitude in the survey area is 0.05m, not enough to explain the difference on its own.

- 2) Changing seafloor-The difference is too consistent
- 3) USGS use of the refraction editor-This could explain some differences in the outer beams, but the difference is consistent across the swath.
- 4) TJ draft error-We sought to test this hypothesis by doublechecking our draft and by conducting a leadline check. We conducted numerous tests and checked as many static measurements as possible. In addition, we installed a tube in the sonar void to be able to measure the waterline-reference mark directly. We were able to correct the difference by about 15 cm after adjusting our draft based on the new measurements. However, even after all the checking, we were unable to make the leadline test close with the Simrad processed soundings. The difference was about 0.4m, and the leadline measurements would be in general agreement with the USGS data.
- 5) The launches data was also compared to the USGS data and the TJ ship data. In general, the launch data was also shoaler than the ship data by 0.2-0.3m, placing it between the ship data and the USGS data.
- 6) Creed draft/loading error-*Creed* is a SWATH vessel with active stabilization and controllable draft to optimize seakeeping abilities. It is possible that the draft was poorly measured or controlled. If it were poorly controlled, however, we would expect that there would be considerable inconsistency within the USGS data set. A draft measurement error would be consistent with a constant offset.

## Conclusions

- 1) We were not able to find a single cause for the difference between the USGS data and TJ data, but believe it to be a combination of TJ draft measurement, Creed draft measurement, and tidal epoch change.
- 2) The data collected for these surveys by USGS and TJ were collected under circumstances other than an NOS-specified hydrographic survey for charting, and need to be treated differently than other surveys.
  - a. The current version of NOS Specifications and Deliverables is inapplicable to these surveys.
  - b. The results of the surveys should be examined, with far less emphasis on the processes employed during acquisition and processing.
  - c. These surveys were not intended to find and characterize small features such as rocks, wrecks, and obstructions. In the few cases where these features were in fact visible in the data, they will be noted in the DR. In other cases, the items should remain as charted.
  - d. Most of the survey area was in deep water (>30m) and there was continuous coverage in these areas. In shoaler areas, the line spacing was frequently too wide to achieve continuous coverage. As a result, there are a few shoals on some sheets that TJ has recommended be retained as charted because the least depth was not determined by these surveys. It was beyond the scope of this project to investigate every shoal and fill every holiday.

- 3) This procedure of running a few crosslines over OSD data was very successful and has resulted in a set of surveys that NOAA can stand behind for charting purposes. However, I do not think it should generally be necessary for ship's personnel take the lead on the project. I recommend that future similar efforts should be encouraged, with shoreside processing personnel taking the lead on the project from start to finish. This includes:
- a. Discussing the form of data transfer from the supplying organization to NOAA in manner conducive to continued cooperation and collaboration.
  - b. Ensuring that the data is rigorously converted to our processing software (HIPS), paying special attention to the application of ancillary data such as tides, sound velocity, and draft. Conversion should also be made in such a way as to preserve any edits that the original hydrographers made to the data.
  - c. Well before any planned field work, the data should be analyzed for holidays, searched for rocks, wrecks, obstructions and compared to the chart. With this information, the hydrographers can develop a survey plan that optimizes the use of the ship.
  - d. Survey work should include regularly spaced crosslines sufficient to check most of the OSD survey lines. It should include holiday lines and item investigation lines as necessary to minimize unresolved items and unaddressed charted features.
  - e. Preliminary processing can occur on the ship, but a shoreside team should write up the DR and do the final analysis and processing.

**Subject:** status of stellwagen data

**From:** "Kim Sampadian" <kim.sampadian.atsea@noaa.gov>

**Date:** Wed, 10 Sep 2003 17:41:25 GMT

**To:** shep.smith@noaa.gov

**CC:** matthew.ringel@noaa.gov,peter.lewit@noaa.gov

Status of applying zoned verified tides to the Stellwagen Data as of 9/10/03

Contents of Tide file (8443970.tid)-

1994 verified tide is hourly with coverage from 10/01/1994 to 2/31/1994;  
Dates of acquisition are 11/11/1994 to 12/04/1994

1995 verified tide is hourly with coverage from 3/01/1995 to 5/31/1995;  
Dates of acquisition are 3/29/1995 to 4/26/1995

1996 verified tide is six-minute with coverage from 3/01/1996 to 5/31/1996 and 11/01/1996 to 12/31/1996; Dates of acquisition are 4/2/1996 to 4/26/1996 and 12/4/1996 to 12/13/1996

1997 verified tide is six-minute with coverage from 11/01/1997 to 12/31/1997; Dates of acquisition are 11/20/1997 to 12/01/1997

1998 verified tide is six-minute with coverage from 01/01/1998 to 01/31/1998 (not needed for the data but left them in anyway) and hourly from 11/10/1998 to 11/30/1998; Dates of acquisition are 11/22/1998 to 11/23/1998

All data has preliminary zoned verified tides applied off the primary Boston gauge(H:\tide\2003\Boston\844-3970\AppBostonCORP.zdf) with the exception of the following lines that only have the verified tide applied directly(H:\tide\2003\Boston\844-3970\8443970.tid-- 7 out of 1748 lines isn't bad):

1996\_116  
stell\_116\_0732 (cross zones from NA156 to NA176 and back to NA156)

1996\_342  
stell\_342\_0892 (cross zones from NA169 to NA156 and back to NA169)

1996\_344  
stell\_344\_0919 (cross zones from NA156 to NA176 and back to NA156)

stell\_344\_0943 (cross zones from NA169 to NA156 and back to NA169)  
stell\_344\_0950 " "  
stell\_344\_0962 " "

1996\_345  
stell\_345\_1034 (cross zones from NA156 to NA176 back to NA156 and then back to NA176)

These lines crash Caris when trying to apply zoned tides but work fine when applying the tide file directly. I verified that there isn't any gaps or overlaps in these zones and tried rejecting the parts of the lines that cross between zones (reaccepted the data once I tested this theory). I also tried deleting the ProcessedDepths.lsf file for a couple of the lines and then trying to reapply and still no luck. Hopefully the Caris Hotfix will take care of these remaining lines. I've created a session "stellwagen\_tide.hsf" for these lines.

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10995

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED