

W00039

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: **W00039**

LOCALITY

State: Massachusetts

General Locality: Massachusetts Bay

Sub-locality: 7 NM NE of Cohasset Harbor

2003

CHIEF OF PARTY
Donald W. Haines, LCDR, NOAA

LIBRARY & ARCHIVES

DATE

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

REGISTRY NUMBER:

W00039

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: **Massachusetts Bay**

Sub-Locality: **7 NM NE of Cohasset Harbor**

Scale: **1:20,000** Date of Survey: **11/12/94 to 1/1/98**
8/28/03 to 9/13/03

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: **Kongsberg Simrad EM1002 multibeam echosounder**

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: ***Bold, Italic, Red notes in Descriptive Report were made during office processing. Charted depths in feet at MLLW.***

- 1) All Times are UTC.***
- 2) This is a Navigable Area Hydrographic Survey.***
- 3) Projection is UTM Zone 19.***

TABLE OF CONTENTS

A. AREA SURVEYED1

B. DATA ACQUISITION AND PROCESSING3

 EQUIPMENT3

 QUALITY CONTROL.....3

 CORRECTIONS TO ECHO SOUNDING.....4

C. VERTICAL AND HORIZONTAL CONTROL.....5

 VERTICAL CONTROL.....5

 HORIZONTAL CONTROL.....6

D. RESULTS AND RECOMMENDATIONS7

 CHART COMPARISON.....7

 ADDITIONAL RESULTS8

E. APPROVAL SHEET.....9

DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SURVEY W00039

Scale of Survey: 1:20,000

Year of Survey: 2003

NOAA Ship THOMAS JEFFERSON
LCDR Donald W. Haines, Commanding

A. AREA SURVEYED

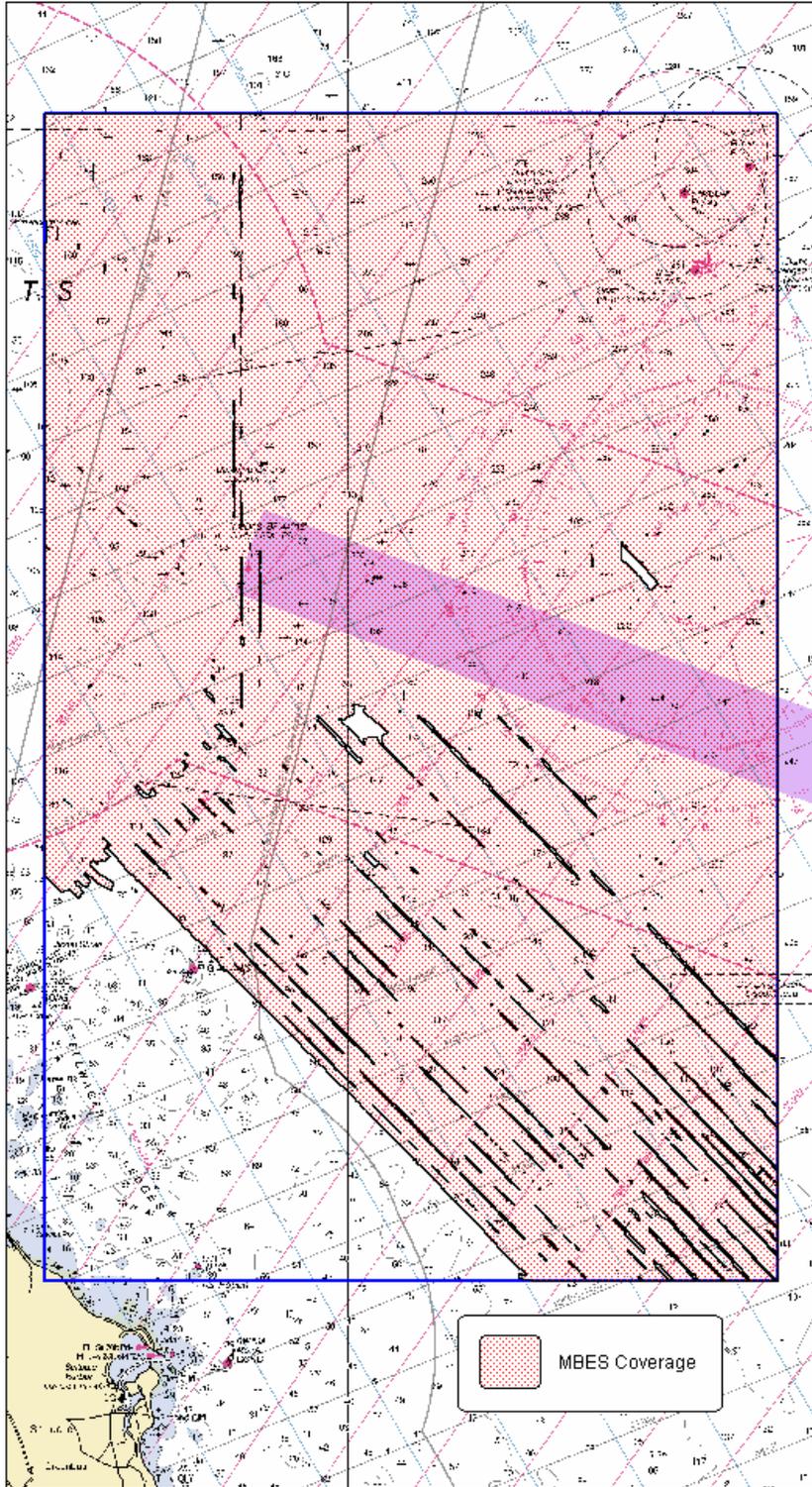
This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions* for project OPR-A397-TJ03, ~~Approaches to Boston~~ *Massachusetts Bay*, Massachusetts. The original instructions* are dated July 17, 2003.

**Data filed with original field records.*

This Descriptive Report pertains to sheet "Q" of project OPR-A397-TJ-03. The assigned registry number for this sheet is W00039, as prescribed in the Letter Instructions*.

This project is being conducted to provide contemporary hydrography with full bottom multibeam coverage in the approaches to Boston Harbor. This project responds to requests from the Massachusetts Port Authority (MASSPORT), Boston Pilots, the First U.S. Coast Guard District, Massachusetts Coastal Zone Management (Boston, MA), and the U.S. Geological Survey (Woods Hole, MA).

This project will also contribute valuable bathymetric data to the Stellwagen Bank Marine Sanctuary program in conjunction with the U.S. Geological Survey (USGS), Woods Hole Oceanographic Institution (WHOI), and the Canadian Hydrographic Service (CHS). Multibeam tracklines will be run in order to validate Outside Source Data (OSD) from the USGS and the University of New Hampshire (UNH). For complete survey limits, see the chartlet on the following page.



Chartlet 1 of 1 Chart 13267, 31st Edition, October, 2003, Scale 1:80000, Massachusetts Bay

This chartlet has been corrected through Notice to Mariners dated August 28, 2004 NOT FOR NAVIGATION.

	<p>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE</p>	<p>Project: OPR-A397-TJ-03 Survey: W00039 State: Massachusetts Locality: Approaches to Boston Sub-locality: 7 NM NE of Cohasset Harbor Survey Scale: 1:20,000</p>	<p>NOAA Ship THOMAS JEFFERSON LCDR Donald W. Haines Commanding August 28 to September 13, 2003</p> <p>Sounding Units: Feet Sounding Datum: MLLW Horizontal Datum: NAD 83 Projection: UTM 19 Central Meridian: 069° 00 00 Scale Factor: 0.9996</p>
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B. DATA ACQUISITION AND PROCESSING *See Also 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 over a time span of ten years. The data for this sheet were acquired from November 12, 1994 to January 1, 1998. Data were delivered to NOAA in UNB swathed format. 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.

Data were also acquired by NOAA Ship THOMAS JEFFERSON on August 28, 2003 through September 13, 2003 to help verify the OSD. NOAA Ship THOMAS JEFFERSON acquired multibeam echosounder (MBES) data using a Simrad 1002 multibeam system. All positioning and attitude were determined with a TSS POS/MV 320 (version 3) GPS-aided inertial navigation system. Sound velocity casts were conducted with a Sea Bird 19 profiler.

Due to a roll calibration error affecting outer beams at more than 50° off nadir, all data acquired by NOAA Ship THOMAS JEFFERSON were filtered to 45° from nadir on each side. Refer to this projects associated DAPR for detailed discussion of equipment and vessel configuration information, MBES system calibrations, data acquisition, and data processing.

NOAA Ship THOMAS JEFFERSON also acquired side scan sonar (SSS) data using a towed Klein System 5500 side scan sonar system.

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 filed with original field records.*

QUALITY CONTROL

Multibeam Quality Control

Mainscheme MBES data is defined to be the Outside Source Data (OSD). There were no known faults with the MBES system which affected data integrity. *Concur.*

All outside source data were analyzed using Caris HIPS and SIPS 5.4, 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.

The OSD were acquired prior to the formulation of NOAA standards for MBES coverage. As such, the data do not generally meet the sounding density and coverage requirements. The data are, however, sufficient to supercede the prior VBES surveys. *Concur.*

Crosslines

Crossline data were acquired by NOAA Ship THOMAS JEFFERSON. Due to a roll calibration error affecting outer beams at more than 50° off nadir, all data were filtered to 45° from nadir on each side. Refer to this projects associated DAPR* for detailed discussion of MBES system calibrations, data acquisition, and data processing.

On DN 240 and 241, data from six MBES crosslines were acquired by NOAA Ship THOMAS JEFFERSON. Mainscheme and crossline data were analyzed in a **HIPS** BASE surface (see project DAPR) in addition to being analyzed in a **HIPS** Quality Control Report. On average, the crosslines were 0.6 meters deeper than the mainscheme data. Several potential causes of this discrepancy were tested (See USGS Stellwagen Bank Data Memorandum in Appendix V). There was no single cause that could adequately explain the difference, but it is likely due to a combination of draft measurement errors on both CREED and THOMAS JEFFERSON, and tidal epoch change. The OSD shows excellent agreement with charted soundings and is valid for superceding the chart in those places where there is disagreement. *Concur. See also Evaluation Report.*

Junctions

Hydrographic survey W00037, Sheet G, adjoins the southeastern edge of W00039. Survey W00040, Sheet J, adjoins the eastern edge of W00039. Survey W00044, Sheet N, adjoins the northern edge of W00039. All three surveys are part of project OPR-A397-TJ-03, and are validations of the same outside source data. As such, the data used for the survey overlaps were identical. *Concur. See Also Evaluation Report.*

CORRECTIONS TO ECHO SOUNDING

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

**Data filed with original field records.*

C. VERTICAL AND HORIZONTAL CONTROL

VERTICAL CONTROL

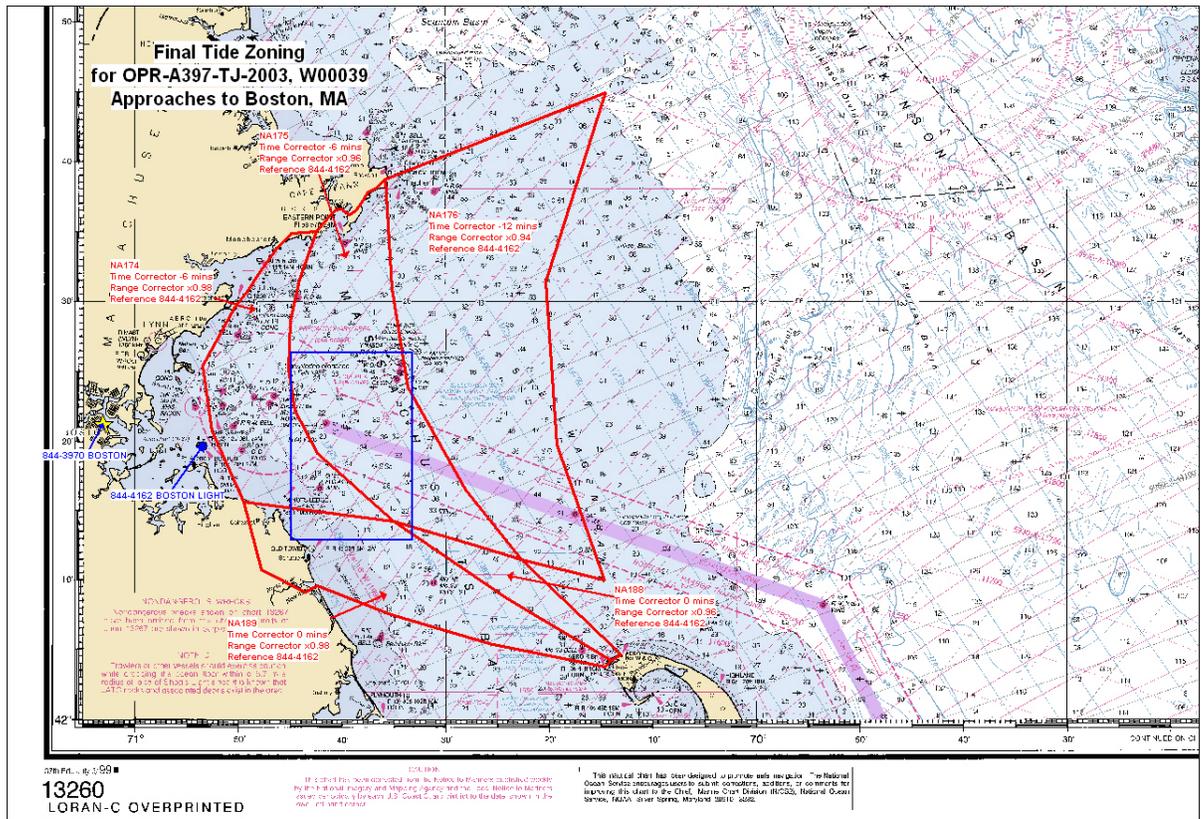
The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide stations at Boston, MA (844-3970) and Portland, ME (841-8150) served as control for datum determination. Tertiary gauges at Boston Light (844-4162) and Fort Point, NH (842-3898) provided ancillary tide data. *Concur.*

Tidal zoning for this survey is consistent with the Letter Instructions*. The zones used for this survey are as follows:

ZONE NAME	CORRECTOR (min)	RATIO	REFERENCE
NA 174	-6	x0.98	844-4162
NA 175	-6	x0.96	844-4162
NA 176	-12	x0.94	844-4162
NA 188	0	x0.96	844-4162
NA 189	0	x0.98	844-4162

** Filed with original field records.*

A Request for Approved Tides letter was sent to N/OPS1 on October 15, 2003 (Appendix IV). Verified tides from the N/OPS1 CO-OPS website were applied to THOMAS JEFFERSON data on February 20, 2004. Preliminary zoning and verified water levels downloaded from the CO-OPS web site were used for the OSD within the limits of this sheet. *Concur. There were no differences in the preliminary and final zoning for this survey sheet.*



HORIZONTAL CONTROL *See also 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 and only DGPS beacon used for this survey was Portsmouth, New Hampshire (Beacon #771). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored during data acquisition. That value did not exceed 2.50, and the survey was conducted during times of adequate satellite coverage.

** Data filed with original field records.*

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

CHART COMPARISON

There are nine charts affected by this survey:

13270, 60th edition, September, 2003, scale 1:25000
13275, 28th edition, September, 2003, scale 1:25000
13267, 31st edition, October, 2003, scale 1:80,000
13260, 39th edition, June, 2003, scale 1:378838
13200, 33rd edition, January 19, 2002, scale 1:400000
13009, 30th edition, August 1, 2002, scale 1:500000
13006, 31st edition, June, 2003, scale 1:675000
5161, 13th edition, October, 2003, scale 1:1058400
13003, 47th edition, June, 2003, scale 1:1200000

General Agreement with Charted soundings

The sounding data acquired during this survey agree well with the charted depths. The charted depths are from partial bottom NOS surveys conducted before 1970. The MBES data acquired for this survey are adequate to supercede the charted depths. *Concur. See also Evaluation Report.*

AWOIS Items and Significant Contacts

There are thirty-~~four~~ *two* AWOIS information items within the survey limits. These are addressed in the Item Investigation section found in Appendix I. *Concur.*

Dangers to Navigation

There were no Dangers to Navigation (Dton) reported by the Hydrographer for this project. *Concur.*

Charted Features

There are ~~eight~~ *six* charted features within the survey limits which are addressed in the Item Investigation section found in Appendix I. *Concur. See also Evaluation Report, Chart Comparison, Additional Results, Charted AWOIS Item*

Uncharted Features

There are ~~seven~~ *four* uncharted features within the survey limits which are addressed in the Item Investigation section found in Appendix I. *Concur.*

Charting Recommendations

Display survey soundings and redraw contour lines to represent the soundings acquired.

Concur.

BASE SURFACE PRODUCTS

The data for this project are submitted as one finalized BASE surface having a resolution of 8 meters. *Concur. See also Evaluation Report.*

ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

No Aids to Navigation were positioned during this survey. The hydrographer recommends that all Aids to Navigation remain as charted. *Concur.*

Bridges and Overhead Cables

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

Ferry Routes

It is unknown if Boston ferry routes cross this sheet. The hydrographer recommends that Atlantic Hydrographic Branch or Marine Charting Division work with the Northeast Navigation Manager to ensure that they are properly charted. *Concur with clarification. Defer final charting disposition to Marine Chart Division's Nautical Data Branch.*

Submarine Cables and Pipelines

There are no charted submarine cables or pipelines within the survey limits, nor were any found during the survey. *Concur.*

E. APPROVAL SHEET**OPR-A397-TJ
Massachusetts
Approaches to Boston Harbor****7 NM NE of Cohasset Harbor
Survey Registry No. W00039**

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.

I have ensured that standard field surveying and processing procedures were adhered to during this project in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for March, 2003. This survey was conducted as outlined in the Data Acquisition and Processing Report (August - November, 2003) submitted March 30, 2004 as well as the DAPR Change No. 1 submitted April 11, 2004. Refer to the Horizontal and Vertical Control Report (January 20, 2004) submitted March 4, 2004 for further information not included with this Descriptive Report.

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

Respectfully Submitted:

ENS Matthew Ringel, NOAA
Junior Officer

Approved and Forwarded:


LT Shepard Smith, NOAA
Field Operations Officer


LCDR Donald W. Haines, NOAA
Commanding Officer

APPENDIX I

ITEM INVESTIGATIONS AND CHARTED FEATURES

Registry Number: W00039
State: Massachusetts
Locality: Approaches to Boston
Sub-locality: 7 NM NE of Cohasset Harbor
Project Number: OPR-A397-TJ-03
Survey Dates: 03/29/1995 - 09/04/2003

Charts Affected

Number	Version	Date	Scale
13270	60th Ed.	09/01/2003	1:25000
13275	28th Ed.	09/01/2003	1:25000
13267	31st Ed.	10/01/2003	1:80000
13260	39th Ed.	06/01/2003	1:378838
13200	33rd Ed.	01/19/2002	1:400000
13009	30th Ed.	08/01/2002	1:500000
13006	31st Ed.	06/01/2003	1:675000
5161	13th Ed.	10/01/2003	1:1058400
13003	47th Ed.	06/01/2003	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Charted PA wreck	Sounding	71.78 m	042° 25' 45.888" N	70° 38' 05.283" W	---
1.2	Charted PA wreck	Sounding	61.88 m	042° 21' 04.340" N	70° 39' 47.793" W	---
1.3	Charted PA wreck	Sounding	61.89 m	042° 20' 58.615" N	70° 39' 32.696" W	---
1.4	Charted wreck	Sounding	47.95 m	042° 21' 50.999" N	70° 42' 13.864" W	---
1.5	Charted Dump Sites	Sounding	88.97 m	042° 24' 24.807" N	70° 33' 19.886" W	---
1.6	Charted wreck	Sounding	79.97 m	042° 23' 58.103" N	70° 36' 47.134" W	---
2.1	Uncharted wreck	Sounding	47.29 m	042° 20' 52.812" N	70° 40' 59.331" W	---
2.2	Uncharted obstruction	Sounding	80.34 m	042° 26' 17.722" N	70° 36' 21.217" W	---
2.3	Uncharted obstruction.	Sounding	76.95 m	042° 26' 11.838" N	70° 36' 27.621" W	---
2.4	Uncharted Wreck	Sounding	82.03 m	042° 25' 59.442" N	70° 34' 43.454" W	---
3.1	(SOUTHLAND)	AWOIS	[no data]	[no data]	[no data]	---

3.2	(LIEUT S. MENGE)	AWOIS	[no data]	[no data]	[no data]	---
3.3	(SAN MENGEL)	AWOIS	[no data]	[no data]	[no data]	---
3.4	(C.H.SPRAGUE)	AWOIS	[no data]	[no data]	[no data]	---
3.5	(ROXANA)	AWOIS	[no data]	[no data]	[no data]	---
3.6	(BLUEJAY)	AWOIS	[no data]	[no data]	[no data]	---
3.7	(EVANS)	AWOIS	[no data]	[no data]	[no data]	---
3.8	(UNKNOWN)	AWOIS	[no data]	[no data]	[no data]	---
3.9	(MCGOWEN)	AWOIS	[no data]	[no data]	[no data]	---
3.10	(RELIANCE)	AWOIS	[no data]	[no data]	[no data]	---
3.11	(BEATRICE)	AWOIS	[no data]	[no data]	[no data]	---
3.12	(UNKNOWN)	AWOIS	[no data]	[no data]	[no data]	---
3.13	(ANNIE CONANT)	AWOIS	[no data]	[no data]	[no data]	---
3.14	(JOEL COOK)	AWOIS	[no data]	[no data]	[no data]	---
3.15	(VESTA)	AWOIS	[no data]	[no data]	[no data]	---
3.16	(W.A.MARSHALL)	AWOIS	[no data]	[no data]	[no data]	---
3.17	(KING PHILLIP)	AWOIS	[no data]	[no data]	[no data]	---
3.18	(JOSEPH ROSS)	AWOIS	[no data]	[no data]	[no data]	---
3.19	(JAMES M. HUDSON)	AWOIS	[no data]	[no data]	[no data]	---
3.20	(USS EAGLE BOAT NO. 42)	AWOIS	[no data]	[no data]	[no data]	---
3.21	(WAVE)	AWOIS	[no data]	[no data]	[no data]	---
3.22	(ETHEL N.)	AWOIS	[no data]	[no data]	[no data]	---
3.23	(CORNELIA)	AWOIS	[no data]	[no data]	[no data]	---
3.24	(OCEAN)	AWOIS	[no data]	[no data]	[no data]	---
3.25	(MARY A WHITE)	AWOIS	[no data]	[no data]	[no data]	---
3.26	(YF 415)	AWOIS	[no data]	[no data]	[no data]	---
3.27	(MASSACOIT)	AWOIS	[no data]	[no data]	[no data]	---
3.28	(CONFIDENCE)	AWOIS	[no data]	[no data]	[no data]	---
3.29	(GALE)	AWOIS	[no data]	[no data]	[no data]	---
3.30	(JEAN AND PATRICIA)	AWOIS	[no data]	[no data]	[no data]	---
3.31	(UNKNOWN)	AWOIS	[no data]	[no data]	[no data]	---
3.32	(UNKNOWN)	AWOIS	[no data]	[no data]	[no data]	---
3.33	(OBSTRUCTION)	Sounding	80.22 m	042° 24' 41.885" N	70° 35' 36.611" W	7565

1.1) Charted PA wreck

Survey Summary

Survey Position: 042° 25' 45.888" N, 70° 38' 05.283" W
Least Depth: 71.78 m
Timestamp: 1996-346.20:18:13.490 (12/11/1996)
Survey Line: stellwagen / creed / 1996_346 / massbay_0013
Profile/Beam: 711/27
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted PA wreck. This wreck is not in the AWOIS database. This wreck was not found. Based on the sounding density and resolution of the EM 1000 MBES used for this survey, detection of most wrecks would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1996_346/massbay_0013	711/27	0.00	000.0	Primary
ChartGPs - Digitized	1	4.04	076.3	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

1.2) Charted PA wreck

Survey Summary

Survey Position: 042° 21' 04.340" N, 70° 39' 47.793" W
Least Depth: 61.88 m
Timestamp: 1996-347.15:16:43.840 (12/12/1996)
Survey Line: stellwagen / creed / 1996_347 / massbay_0029
Profile/Beam: 3244/59
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted PA wreck. This wreck is not in the AWOIS database. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used, detection of all but the largest wrecks would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1996_347/massbay_0029	3244/59	0.00	000.0	Primary
ChartGPs - Digitized	3	4.32	351.3	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

1.3) Charted PA wreck

Survey Summary

Survey Position: 042° 20' 58.615" N, 70° 39' 32.696" W
Least Depth: 61.89 m
Timestamp: 1996-347.15:17:14.590 (12/12/1996)
Survey Line: stellwagen / creed / 1996_347 / massbay_0029
Profile/Beam: 3300/4
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted PA wreck. This wreck is not in the AWOIS database. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used, detection of all but the largest wrecks would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1996_347/massbay_0029	3300/4	0.00	000.0	Primary
ChartGPs - Digitized	4	8.74	028.0	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

1.4) Charted wreck

Survey Summary

Survey Position: 042° 21' 50.999" N, 70° 42' 13.864" W
Least Depth: 47.95 m
Timestamp: 1997-324.13:41:46.900 (11/20/1997)
Survey Line: stellwagen / creed / 1997_324 / massbay_0059
Profile/Beam: 1305/6
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck. This wreck is not in the AWOIS database. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1997_324/massbay_0059	1305/6	0.00	000.0	Primary
ChartGPs - Digitized	5	5.73	057.2	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

1.5) Charted Dump Sites

Survey Summary

Survey Position: 042° 24' 24.807" N, 70° 33' 19.886" W
Least Depth: 88.97 m
Timestamp: 1995-099.14:42:48.200 (04/09/1995)
Survey Line: stellwagen / creed / 1995_099 / stell_099_0147
Profile/Beam: 2101/33
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the four charted overlapping Dump Sites (two dredged material, one Explosives, and one industrial wastes). There is evidence in the EM 1000 MBES bathymetry of numerous dumpings, all within the charted limits of the dump sites. The coverage is complete over the dump sites and least depths were adequately obtained.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1995_099/stell_099_0147	2101/33	0.00	000.0	Primary
ChartGPs - Digitized	7	9.56	225.7	Secondary (grouped)

Hydrographer Recommendations

Retain dump sites as charted. Chart depths per digital data and update notes to "depths from survey of 1995".

Cartographically-Rounded Depth (Affected Charts):

292ft (13267_1)
 48fm (13260_1, 13200_1, 13009_1, 13006_1, 13003_1)
 89m (5161_1)

S-57 Data

[None]

Office Notes

Concur with qualification. Not a designated feature object in H-CELL.

1.6) Charted wreck

Survey Summary

Survey Position: 042° 23' 58.103" N, 70° 36' 47.134" W
Least Depth: 79.97 m
Timestamp: 1995-088.20:20:51.950 (03/29/1995)
Survey Line: stellwagen / creed / 1995_088 / stell_088_0018
Profile/Beam: 4855/5
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck. This wreck is not in the AWOIS database. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection of any but the largest wrecks would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1995_088/stell_088_0018	4855/5	0.00	000.0	Primary
ChartGPs - Digitized	10	12.95	191.1	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

2.1) Uncharted wreck

Survey Summary

Survey Position: 042° 20' 52.812" N, 70° 40' 59.331" W
Least Depth: 47.29 m
Timestamp: 1996-347.19:39:53.390 (12/12/1996)
Survey Line: stellwagen / creed / 1996_347 / massbay_0036
Profile/Beam: 1139/15
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the least depth over an apparently man-made object located with the EM 1000 MBES used for this survey. This object is approximately 50 meters long.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1996_347/massbay_0036	1139/15	0.00	000.0	Primary

Hydrographer Recommendations

Chart non-dangerous wreck in feature position.

Cartographically-Rounded Depth (Affected Charts):

155ft (13267_1)
 26fm (13260_1, 13200_1, 13009_1, 13006_1, 13003_1)
 47m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 HEIGHT - 5 m
 INFORM - Feature is the least depth over an apparently man-made object located with the EM 1000 MBES used for this survey. This object is approximately 50 meters long.
 TECSOU - 3:found by multi-beam
 VALSOU - 47.293 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur.

2.2) Uncharted obstruction

Survey Summary

Survey Position: 042° 26' 17.722" N, 70° 36' 21.217" W
Least Depth: 80.34 m
Timestamp: 1995-114.12:50:34.910 (04/24/1995)
Survey Line: stellwagen / creed / 1995_114 / stell_114_0360
Profile/Beam: 583/15
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the least depth over an apparently man-made object found with an EM 1000 MBES. Object can not be positively identified as a wreck. No sidescan or MBES developments were done on this feature.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1995_114/stell_114_0360	583/15	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

263ft (13267_1)
 44fm (13260_1, 13200_1, 13009_1, 13006_1, 13003_1)
 80m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Feature is the least depth over an apparently man-made object found with an EM 1000 MBES. Object can not be positively identified as a wreck. No sidescan or MBES developments were done on this feature.
 QUASOU - 6:least depth known
 TECSOU - 3:found by multi-beam
 VALSOU - 80.336 m

Office Notes

Concur. Chart non-dangerous obstruction, least depth 263 feet at the present survey position in Latitude 42°26'17.722"N, Longitude 070°36'21.217"W.

2.3) Uncharted obstruction.

Survey Summary

Survey Position: 042° 26' 11.838" N, 70° 36' 27.621" W
Least Depth: 76.95 m
Timestamp: 1995-099.14:10:44.860 (04/09/1995)
Survey Line: stellwagen / creed / 1995_099 / stell_099_0146
Profile/Beam: 2191/26
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the least depth over an apparently man-made object found with an EM 1000 MBES. Object can not be positively identified as a wreck. No sidescan or MBES developments were done on this feature.

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1995_099/stell_099_0146	2191/26	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - Feature is the least depth over an apparently man-made object found with an EM 1000 MBES. Object can not be positively identified as a wreck. No sidescan or MBES developments were done on this feature.
 QUASOU - 6:least depth known
 TECSOU - 3:found by multi-beam
 VALSOU - 76.951 m

Office Notes

Concur. Chart non-dangerous obstruction, least depth 252 feet at the present survey position in Latitude 42°26'11.838"N, Longitude 070°36'27.621"W.

2.4) Uncharted Wreck

Survey Summary

Survey Position: 042° 25' 59.442" N, 70° 34' 43.454" W
Least Depth: 82.03 m
Timestamp: 1995-099.16:37:48.030 (04/09/1995)
Survey Line: stellwagen / creed / 1995_099 / stell_099_0149
Profile/Beam: 1208/34
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
stellwagen/creed/1995_099/stell_099_0149	1208/34	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

269ft (13267_1)
 45fm (13260_1, 13200_1, 13009_1, 13006_1, 13003_1)
 82m (5161_1)

S-57 Data

[None]

Office Notes

A Non-Dangerous wreck in Latitude 42° 25' 59.92" N, Longitude 70° 34' 42.65" W, was found by AHB personal. Approximate dimensions are length 50m, beam 15m and height 5m. It is not correlated to any AWOIS item. A Non-Dangerous wreck feature has been added to the H-Cell.

3.1) AWOIS #2043 - (SOUTHLAND)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 16' 18.360" N, 70° 36' 22.130" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.241; CARGO; SUNK 12/2/30; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH FIRST NAVAL DISTRICT HEADQUARTERS WRECK LIST 9/20/42; POSITION 42-16-35N, 70-36-26W. 27 NO.566; CARGO, SUNK 12/2/30

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2043. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection of any but the largest wrecks would be unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2043	0.00	000.0	Primary
ChartGPs - Digitized	6	481.82	170.2	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.2) AWOIS #2053 - (LIEUT S. MENGE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 19' 36.350" N, 70° 40' 10.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 01 1936 24 NO.8402; BARGE, 907 GT; SUNK 10/16/35 BY MARINE CASUALTY; POSITION ACCURACY WITHIN 1 MILE.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2053. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection of this wreck would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2053	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0032	145/55	9.79	324.0	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.3) AWOIS #2062 - (SAN MENGEL)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 20' 18.350" N, 70° 40' 58.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.253; BARGE; SUNK 10/16/35; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH U.S. ENGINEERS, BOSTON, MASS; POS.42-20-16N, 70-41W

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2062 and 2063. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection of this wreck would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2062	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0036	779/23	12.59	027.6	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.4) AWOIS #2064 - (C.H.SPAGUE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 20' 24.350" N, 70° 40' 45.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.223; TUG; SUNK 10/5/31; POSITION ACCURACY WITHIN 1 MILE; REPORTED THRU ESF 27 NO.547; TUG; SUNK 10/5/31

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the wreck corresponding to AWOIS 2064. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection of this wreck would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2064	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0035	3731/15	8.96	296.3	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.5) AWOIS #2066 - (ROXANA)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 20' 39.350" N, 70° 40' 41.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.222; YACHT; SUNK 9/10/35; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH EASTERN SEA FRONTIER 27 NO.156; YCT, SUNK 9/10/35

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2066 and 2067. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2066	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0035	3581/4	31.02	171.4	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.6) AWOIS #2069 - (BLUEJAY)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 20' 56.350" N, 70° 41' 03.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.221; TUG; SUNK 10/10/31; POSITION ACCURACY WITHIN 1 MILE. 27 NO.155; TUG; SUNK 10/10/31; REPORTED THROUGH EASTERN SEA FRONTIER

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

eature is the charted wreck corresponding to AWOIS 2069. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2069	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0036	1175/4	10.96	179.3	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.7) AWOIS #2070 - (EVANS)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 00.350" N, 70° 42' 48.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.240; BARGE; SUNK 6/28/35; POSITION ACCURACY WITHIN 1 MILE, REPORTED THROUGH 1ST ND HQ 9/20/42 27 NO.565; SUNK 6/28/35

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding AWOIS 2070. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2070	0.00	000.0	Primary
stellwagen/creed/1997_324/massbay_0065	1656/54	10.30	307.0	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.8) AWOIS #2072 - (UNKNOWN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 06.350" N, 70° 42' 13.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.252; BARGE; SUNK 7/26/30; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH U.S. ENGINEERS, BOSTON, MASS. 27 NO.656; SUNK 7/26/30; CONCRETE SCOW.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2072. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2072	0.00	000.0	Primary
stellwagen/creed/1997_324/massbay_0059	879/6	8.66	045.8	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.9) AWOIS #2073 - (MCGOWEN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 10.350" N, 70° 42' 58.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.239; BARGE; SUNK 8/8/30; POS. ACCURACY WITHIN 1 MILE; REPORTED THROUGH 1ST ND WRECK LIST 9/20/42. 27 NO.564; SUNK 8/8/30

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2073. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2073	0.00	000.0	Primary
stellwagen/creed/1997_324/massbay_0065	1506/41	11.38	302.6	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.10) AWOIS #2074 - (RELIANCE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 25.350" N, 70° 41' 58.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.238; BARGE; SUNK 8/3/33; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH FIRST NAVAL DISTRICT HEADQUARTERS-WRECK LIST 9/20/42. 27 NO.562; SUNK 8/3/33.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2074. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection of this wreck would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2074	0.00	000.0	Primary
stellwagen/creed/1996_348/massbay_0050	2573/46	6.21	084.1	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.11) AWOIS #2075 - (BEATRICE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 25.350" N, 70° 42' 13.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.237; TUG; SUNK 4/27/35; POSITION ACCURACY WITHIN 1 MILE; REPORTED THRU 1ST ND 9/20/42. 27 NO.561; TUG; SUNK 4/27/25, REPORTED THROUGH 1ST NAVAL DISTRICT, WRECK LIST OF 9/20/42

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2075. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used, detection of all but the largest wrecks would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2075	0.00	000.0	Primary
stellwagen/creed/1997_324/massbay_0058	3615/4	6.23	058.9	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.12) AWOIS #2076 - (UNKNOWN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 35.350" N, 70° 39' 33.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO. 236; BARGE; SUNK 5/26/32; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH FIRST NAVAL DISTRICT HEADQUARTERS-WRECK LIST 9/20/42. 27 NO.560; SUNK 5/26/32.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2076. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2076	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0029	2994/5	11.90	052.9	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.13) AWOIS #2077 - (ANNIE CONANT)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 45.350" N, 70° 39' 03.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.235; BARGE; SUNK 4/1/36; POSITION ACCURACY WITHIN 1 MILE. 27 NO.559; LIGHTER; SUNK 4/1/36; REPORTED THROUGH 1ST NAVAL DISTRICT. WRECK LIST OF 9/20/42

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2077. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2077	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0026	1440/39	2.90	029.2	Secondary

Hydrographer Recommendations

Retain as charted

S-57 Data

[None]

Office Notes

Concur.

3.14) AWOIS #2078 - (JOEL COOK)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 45.350" N, 70° 40' 23.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.234; BARGE SUNK 8/18/38; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH 1ST ND HQ WRECK-LIST 9/20/42 27 NO.558; SUNK 8/18/38

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2078. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2078	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0033	3178/27	7.36	121.7	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.15) AWOIS #2079 - (VESTA)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 21' 50.350" N, 70° 39' 46.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.249; TUG; SUNK 4/26/38; POSITION ACCURACY WITHIN 1 MILE; REPORTED THRU COE BOSTON. 27 NO.653; TUG, SUNK 4/26/38

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2079 and 2080. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2079	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0030	1358/53	11.90	137.5	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.16) AWOIS #2083 - (W.A.MARSHALL)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 00.350" N, 70° 44' 18.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.232; BARGE SUNK 1/8/22; POSITION ACCURACY WITHIN 1 MILE. 27 NO.556; BARGE; SUNK 1/8/22; REPORTED THROUGH 1ST NAVAL DISTRICT, WRECK LIST OF 9/20/42

Survey Summary

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

Remarks:

Feature is the charted wreck corresponding to AWOIS 2083. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2083	0.00	000.0	Primary
stellwagen/creed/1997_324/massbay_0069	300/5	8.54	299.2	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Feature appear on Raster chart 13267_1 only. Not in current ENC's due to position at junction of USMA13M and US5MA12M. Feature applied to W00039_CU.000.

3.17) AWOIS #2088 - (KING PHILLIP)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 06.350" N, 70° 37' 10.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.220; PASSENGER; SUNK 4/7/35; POSITION ACCURACY WITHIN 1 MILE REPORTED THRU ESF, POS.42-22-03N, 70-37-11W. 27 NO.154; SMALL PASS.; SUNK 4/7/35; POS. LAT.42-22-03N, LONG.70-37-11W.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2088. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2088	0.00	000.0	Primary
stellwagen/creed/1996_346/massbay_0009	2251/6	8.92	259.5	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.18) AWOIS #2095 - (JOSEPH ROSS)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 24.350" N, 70° 38' 52.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

HISTORY LNM DATED 10/19/50 DESCRIPTION 24 NO.992; TUG; SUNK 5/4/44; POSITION ACCURACY WITHIN 1 MILE.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2095. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2095	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0025	2301/22	7.86	163.3	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.19) AWOIS #2097 - (JAMES M. HUDSON)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 24.350" N, 70° 45' 13.150" W
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:

Feature is the charted wreck corresponding to AWOIS 2097. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely. This AWOIS item is discussed in the descriptive report for H10995.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2097	0.00	000.0	Primary
stellwagen/creed/1994_316/sewer_316_0056	800/24	6.75	056.6	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.20) AWOIS #2099 - (USS EAGLE BOAT NO. 42)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 26.350" N, 70° 43' 21.150" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.218; PATROL; SUNK 6/15/31; POSITION ACCURACY WITHIN 1 MILE; REPORTED THRU ESF. 27 NO.152; SUNK 6/15/31; REPORTED THROUGH EASTERN SEA FRONTIER

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2096 and 2099. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2099	0.00	000.0	Primary
stellwagen/creed/1997_325/massbay_0110	3331/55	35.80	325.6	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.21) AWOIS #2102 - (WAVE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 45.350" N, 70° 39' 23.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.230; TRAWLER; SUNK 9/21/36; POSITION ACCURACY WITHIN 1 MILE. 27 NO.554; TRAWLER; SUNK 9/21/36; REPORTED THROUGH 1ST NAVAL DISTRICT WRECK LIST 9/20/42

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2102. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2102	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0027	2220/57	9.09	196.4	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.22) AWOIS #2103 - (ETHEL N.)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 22' 48.350" N, 70° 39' 28.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.229; SCHOONER; SUNK 12/31/30; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH NAVAL DISTRICT HEADQUARTERS 9/20/42; POSITION LAT 42-22-45N, LONG 70-31-30W. 27 NO.553; SCH; REPORTED THRU 1ST ND HQ. SURVEY REQUIREMENTS NOT DETERMINED

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2103. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2103	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0028	1934/28	15.97	149.6	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.23) AWOIS #2108 - (CORNELIA)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 23' 05.350" N, 70° 45' 03.150" W
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:

Feature is the charted wreck corresponding to AWOIS 2108. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely. This AWOIS item is discussed in the DR for H10995.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2108	0.00	000.0	Primary
stellwagen/creed/1994_316/sewer_316_0051	2799/44	6.67	046.2	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.24) AWOIS #2111 - (OCEAN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 23' 19.350" N, 70° 35' 31.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.215; TRAWLER, SUNK 4/26/38; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH EASTERN SEA FRONTIER 27 NO.149; TRW, SUNK 4/26/38

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2111. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2111	0.00	000.0	Primary
stellwagen/creed/1995_088/stell_088_0019	1107/33	9.18	054.2	Secondary (grouped)
stellwagen/creed/1995_088/stell_088_0018	4388/34	267.80	040.3	Secondary (grouped)

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur with clarification. Retain AWOIS Item #2111 as charted. Office processing determined a possibly man-made feature extending approximately 10 meters from the seafloor, with a least depth of 83.7 meters in Latitude 42° 23' 12.680" N, Longitude 70° 35' 38.680" W exists approximately 280 meters SSW of AWOIS Item #2111. Further investigation is recommended to identify the possibly man-made feature as AWOIS Item # 2111.

3.25) AWOIS #2114 - (MARY A WHITE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 23' 30.350" N, 70° 40' 23.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.227; SCHOONER, 90 GT; SUNK 6/30/40; POSITION ACCURACY WITHIN 1 MILE. REPORTED THROUGH 1ST NAVAL DISTRICT HQ WRECK LIST 9/20/42 27 NO.551; SUNK 7/1/40.

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2114. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2114	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0033	2219/20	11.52	139.5	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.26) AWOIS #2119 - (YF 415)**No Primary Survey Feature for this AWOIS Item**

Search Position: 042° 24' 00.350" N, 70° 35' 58.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.1124; PATROL; 315 GT; SUNK 5/11/44 BY MARINE CASUALTY; POSITION ACCURACY 1-3 MILES 62

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2119. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2119	0.00	000.0	Primary
stellwagen/creed/1995_097/stell_097_0132	778/51	5.21	351.1	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.27) AWOIS #2121 - (MASSACOIT)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 24' 26.350" N, 70° 38' 58.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.212; CARGO; SUNK 1/22/31; POS. ACCURACY WITHIN 1 MILE; REPORTED THROUGH EASTERN SEA FRONTIER. 27 NO.146; CARGO, SUNK 1/22/31

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2121. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2121	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0026	2819/56	7.99	263.1	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.28) AWOIS #2122 - (CONFIDENCE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 24' 30.350" N, 70° 39' 03.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.248; TUG; SUNK 11/05/40; POS. ACCURACY WITHIN 1 MILE; REPORTED THRU COE BOSTON. 27 NO.652; SAME AS DOC.24

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2122. This wreck was not found. Based on the sounding density and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2122	0.00	000.0	Primary
stellwagen/creed/1996_347/massbay_0026	2854/39	9.43	074.4	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.29) AWOIS #2125 - (GALE)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 26' 04.350" N, 70° 37' 31.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

DESCRIPTION 24 NO.211; TRAWLER; SUNK 4/27/37; POSITION ACCURACY WITHIN 1 MILE; REPORTED THROUGH ESF. 27 NO.145; TRW; SUNK 4/27/37

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 2125. This wreck was not found. Based on the sounding density and resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 2125	0.00	000.0	Primary
stellwagen/creed/1995_097/stell_097_0135	5816/9	10.00	121.7	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.30) AWOIS #7564 - (JEAN AND PATRICIA)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 23' 00.350" N, 70° 33' 58.130" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

HISTORY CL669/69--DEPT. OF INTERIOR, BUREAU OF COMMERCIAL FISHERIES; LIST OF SUNKEN COMMERCIAL FISHING VESSELS INCLUDED THE JEAN AND PATRICIA LOCATED IN APPROX. POS. LAT.42-23-00N, LONG.70-34-00W (LORAN A: 1H3-3488, 1H5-1434). (ENTERED 2/90 MCR) NOTE: THIS ITEM DUPLICATED AS AWOIS ITEM 7995. (UP 7/1/03, SJV)

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted PA wreck corresponding to AWOIS 7564 and 7975 (Note that there is an error in the AWOIS History referencing 7995, it should reference 7975). This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 7564	0.00	000.0	Primary
stellwagen/creed/1995_090/stell_090_0036	2060/9	2.92	243.0	Secondary

Hydrographer Recommendations

Retain as charted, update the AWOIS history to reflect correct AWOIS numbers.

S-57 Data

[None]

Office Notes

Concur.

3.31) AWOIS #7566 - (UNKNOWN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 25' 00.350" N, 70° 34' 28.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

HISTORY CL1111/81--USCG; ON 8/24/81 A 43 FT STEEL HULLED COAST GUARD VESSEL WAS TOWED TO POS. LAT.42-25-00N, LONG.70-34-30W AND BLOWN UP WITH PLASTIC EXPLOSIVES. THE VESSEL SANK WITHIN MINUTES IN NUMEROUS PIECES IN THIS POSITION. (ENTERED 2/90 MCR)

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 7566. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 7566	0.00	000.0	Primary
stellwagen/creed/1995_099/stell_099_0143	4283/11	6.25	145.8	Secondary

Hydrographer Recommendations

Reatian as charted.

S-57 Data

[None]

Office Notes

Concur.

3.32) AWOIS #7567 - (UNKNOWN)

No Primary Survey Feature for this AWOIS Item

Search Position: 042° 25' 42.350" N, 70° 33' 28.140" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [None]
Technique Notes: [None]

History Notes:

HISTORY LNM4/81--A 55 FT FISHING VESSEL HAS BEEN REPORTED SUNK IN 170 FT OF WATER IN POS. LAT. 42-25.7N, LONG.70-33.5W. (ENTERED 2/90 MCR)

Survey Summary

Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the charted wreck corresponding to AWOIS 7567. This wreck was not found. Based on the incomplete coverage, the sounding density, and the resolution of the EM 1000 MBES used for this survey, detection would have been unlikely.

Feature Correlation

Address	Feature	Range	Azimuth	Status
A397_03_TJ	AWOIS # 7567	0.00	000.0	Primary
stellwagen/creed/1995_099/stell_099_0152	3832/37	9.67	016.1	Secondary

Hydrographer Recommendations

Retain as charted.

S-57 Data

[None]

Office Notes

Concur.

3.33) (OBSTRUCTION)

Primary Feature for AWOIS Item #7565

Search Position: 042° 24' 07.350" N, 70° 35' 04.140" W
Historical Depth: [None]
Search Radius: 2000
Search Technique: SD, S2, SWMB
Technique Notes: [None]

History Notes:

HISTORY CL767/82--LETTER FROM DEPT. OF THE NAVY TO NOS DATED JUNE 7, 1982; FORMER DRY DOCK CAISSON NO. 2 WAS DISPOSED OF ON MAY 26, 1982. RELEASED FROM TUG IN LAT. 42-24-08N, LONG. 70-34-08W. CAISSON WAS COMPLETELY SUBMERGED APPROX. 1 HOUR LATER IN LAT. 42-24-07N, LONG. 70-35-06W. THE CAISSON IS 98 FT LONG, 10 FT WIDE, 22 FT DEEP (SIC) AND WEIGHS 350 TONS. NOTE: DISTANCE BETWEEN THE TWO POSITIONS IS APPROX. 1320 METERS. POC PORTSMOUTH NAVAL SHIPYARD ENSIGN J.R. RHODES 207-439-1000 EXT. 1218. REF. EPA LTR. OF APRIL 21, 1982. REQUEST FROM CAPT. JOSEPH F. YURSO FOR AN OCEAN DUMPING PERMIT TO DISPOSE A DRYDOCK CAISSON LOCATED AT PORTSMOUTH NAVAL SHIPYARD.(ENTERED 2/90 MCR) NM35/82-- ADD DANGER CIRCLE "OBSTR (CAISSON)" IN LAT. 42-24-07N, LONG. 70-35-06W. REFERS TO CL767/82 (UP 7/1/03, SJV)

Survey Summary

Survey Position: 042° 24' 41.885" N, 70° 35' 36.611" W
Least Depth: 80.22 m
Timestamp: 2003-247.20:39:01.526 (09/04/2003)
Survey Line: a397_03_w00039i / s222_mb / 2003-247 / 0126_20030904_203645_raw
Profile/Beam: 180/40
Charts Affected: 13267_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature is the least depth over an obstruction found with a EM 1002 MBES. The obstruction is the drydock caisson charted in the position given by AWOIS 7565. The actual position of the caisson is approximately 1300 meters northwest of the charted position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
a397_03_w00039i/s222_mb/2003-247/0126_20030904_203645_raw	180/40	0.00	000.0	Primary
a397_03_w00039i/s222_100/2003-247/126_1825	0001	60.36	351.4	Secondary (grouped)

A397_03_TJ	AWOIS # 7565	1302.76	325.1	Secondary
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Hydrographer Recommendations

Delete Obstn (drydock caisson) from chart. Chart obstruction in feature position.

Cartographically-Rounded Depth (Affected Charts):

263ft (13267_1)

44fm (13260_1, 13200_1, 13009_1, 13006_1, 13003_1)

80m (5161_1)

S-57 Data

[None]

Office Notes

Concur. Delete AWOIS Item #7565 obstruction, least depth unknown, and text "Obstn (drydock caisson)" at Latitude 42° 24' 07.350" N, Longitude 070° 35' 04.140" W. Chart AWOIS Item #7565 obstruction, least depth known 263 feet, and text "Obstn (drydock caisson)" at the present survey position in Latitude 042° 24' 41.885" N, Longitude 070° 35' 36.611" W.

Feature Images

[Image file c:/w-surveys/w00039i/ahb_w00039i/reports/dr/descriptive report/appendices/i-item investigations/126_18250001_m.tif does not exist.]

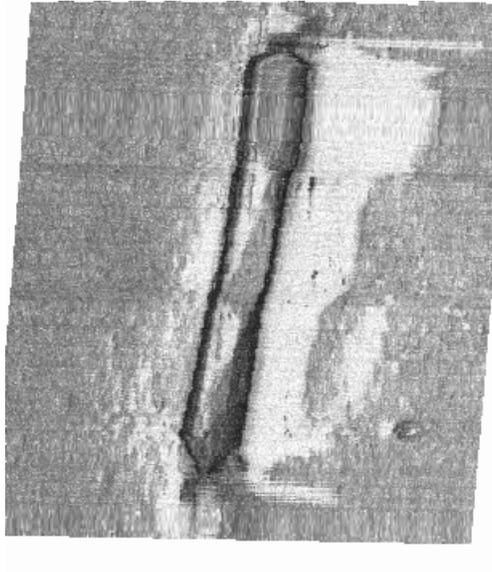


Figure 3.33.1

APPENDIX V

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES

The hydrographer reviewed the Coast Pilot report for the survey limits. There was no new additional information to be added to the Coast Pilot.



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: [Fwd: status of stellwagen data]

Date: Mon, 10 Apr 2006 15:17:54 -0400

From: Shepard Smith <Shep.Smith@noaa.gov>

To: Daniel Wright <Daniel.Wright@noaa.gov>

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

Subject: status of stellwagen data

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

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

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.



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 7, 2004

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-A397-TJ-2003
HYDROGRAPHIC SHEET: W00039

LOCALITY: Approaches to Boston, MA
TIME PERIOD: April 7 - 24, 1995, December 1, 1997, and
August 28 - September 5, 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

TIDE STATION USED: 844-3970 Boston MA
Lat. 42° 21.3'N Lon. 71° 03.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.997 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: NA174, NA175, NA176, NA188, NA189

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 V. Mew 1/9/04

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR W00039 (1995,2003)**

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

B.1 EQUIPMENT

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

MapInfo, version 6.5, Release Build 19
PYDRO, version 6.2.9-HF4
CARIS HIPS/SIPS version 6.0 SP2
CARIS BASE Editor 2.0
CARIS HOM ENC Version 3.3 SP3
dKART INSPECTOR, version 5.0 (Service Pack 1)

B.2 PROCESSING

H-CELL

H-Cell W00039_01.des was created in HOM to produce the Base Cell final product W00039_CU.000 at 1:25,000 scale as per Chart 13270 and Chart 13275. H-Cell W00039_02.des was created in HOM to produce the Base Cell final product W00039_SS.000 at 1:20,000 survey Scale.

H-cell layers in CARIS HOM are organized as follows:

Layer 20 Soundings from navigation surface
Layer 400 Skin of the Earth (SOTE)
Layer 500 Line & Meta data
Layer 801 Wrecks & Obstructions
Layer 803 Soundings from ENC
Layer 804 Seabed Areas from ENC

Office processing entailed the use of CARIS BASE Editor to generate a Bathymetry Associated with Statistical Error (BASE) navigation surface model. The BASE Surface model serves as the bathymetric and feature presentation source for all cartographic components incorporated within the submitted Electronic Navigational Chart Base Cell file.

Finalized BASE surfaces were used as the source data for the nautical chart update products. The field unit submitted a single surface model at 8m resolution. During office processing, it was determined to exclude the Thomas Jefferson crossline data due to an undetermined inconsistency between the two data sources. Creed data was selected as the source for BASE surfaces and nautical chart products. New finalized surfaces were generated at 5m and 10m resolution with depth thresholds of 0m-30m and 29m-200m respectively. These surfaces were merged using the BASE editor Combine surfaces tool at a 10m resolution.

BASE Editor processing included the generation of a product surfaces at 10m and 100m resolution, creation of a single depth area, and extraction of a sounding data set at survey scale. Survey scale (1:20,000) soundings were extracted from the 10m resolution Product Surface.

Chart scale soundings were extracted from the 1:20,000 survey scale sounding set with the HOM sounding suppression utility, using the table method with a single set of variables, (0,1000,5) which best represents the sounding density shown on chart 13270 and 13275. Additional soundings were selected from ENC's US4MA13M and US5MA12M in areas with incomplete coverage.

Soundings were selected during HOM processing with the CARIS GIS Environmental Variable set to a metric scale (-1,-1,t) in order to accommodate millimeter precision of the sounding value (CARIS default rounding regime with truncation) during H-Cell processing and export of Base Cell file. This environmental variable was reset to NOAA standard values (0,0,N) when converting the metric exchange file to chart depth units after the Base Cell File export.

BASE CELL TESTING

The base cell file W00039_CU.000 was examined using dKart Inspector. Warnings received were all inconsequential. The DSPM.HUNI and DSPM.DUNI were reported to have illegal values, but these errors were expected as originating during ENC conversion to NOAA chart values, so they also can be ignored.

CROSS LINES

Office processing determined the field unit acquired less than the required 5% (approximately 4.94%) of cross line data for quality assurances and system assessment as specified in the *NOS Hydrographic Surveys Specifications and Deliverables (NOS HHSSD)*, 2003 Edition. The cross line analyses conducted at AHB were consistent with the field analysis. W00039 has been deemed as acceptable for charting purposes.

The vertical depth variance at crossline junctions were on the average 0.8m. This discrepancy falls between the IHO Order 1 depth accuracy vertical error budget which ranges between 0.56m to 1.30m for the survey's depth range. This method does not technically meet the conventional standards set forth in the *NOS HHSSD*. However, Hydrographic Surveys Technical Directive 2004-03, dated 01/08/05, has given approval that NOAA field units may vary from the established procedures and documentation with respect to CARIS HIPS BASE Surface processing methods.

C. HORIZONTAL CONTROL

Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. During CARIS HOM processing the horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84). The S-57 ENC format serves as the exchange file submitted to Marine Chart Division.

D.1	<u>CHART COMPARISON</u>	<u>13270 (61st Edition, November, 2004)</u> Corrected through NM Nov 6/04 Corrected through LNM Oct 26/04
		<u>13275 (29th Edition, October, 2004)</u> Corrected through NM Oct 16/04 Corrected through LNM Oct 5/04
		<u>13267 (32nd Edition, December, 2004)</u> Corrected through NM Dec 25/04 Corrected through LNM Dec 7/04
		<u>13260 (39th Edition, June, 2003)</u> Corrected through NM Jun 7/03 Corrected through LNM May 20/03
		<u>13200 (34th Edition, December, 2005)</u> Corrected through NM Dec 3/05 Corrected through LNM Nov 22/05
		<u>13009 (31st Edition, October, 2004)</u> Corrected through NM May 26/07 Corrected through LNM May 15/07
		<u>13006 (32nd Edition, February, 2005)</u> Corrected through NM Feb 5/05 Corrected through LNM Jan 25/05
		<u>5161 (13th Edition, October, 2003)</u> Corrected through NM Sep 20/03 Corrected through LNM Sep 2/03
		<u>13003 (48th Edition, October, 2004)</u> Corrected through NM Oct 9/04 Corrected through LNM Sep 21/04
	<u>ENC Comparison</u>	<u>US4MA13M (Edition 7 2007-06-19)</u> <u>US5MA12M (Edition 6 2007-06-19)</u>

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in the Descriptive Report. The MBES data acquired for this survey are adequate to supersede the charted hydrography.

Attention is drawn to the following features:

1) A Non-Dangerous wreck shown on raster chart 13267_1 in Latitude 42° 23' 05.571" N, Longitude 70° 45' 00.931" W, was located within the survey area and is correlated to AWOIS item 2108. The feature was not found and the hydrographer recommends this feature be retained as charted. However, the feature is not represented on NOAA Chart 13270_1 nor ENC

US5MA12M.

2) A Non-Dangerous wreck shown on raster chart 13267_1 in Latitude 42° 22' 00.215" N, Longitude 70° 44' 17.825" W, was located within the survey area and is correlated to AWOIS item 2083. The feature was not found and the hydrographer recommends this feature be retained as charted. However, the feature is not represented on NOAA Chart 13270_1, ENC US5MA12M nor ENC US4MA13M.

3) The following six Non-Dangerous wrecks are shown on charts 13267/13270 and were located within the survey area. These features were not listed nor correlated to AWOIS items in Appendix I of the DR. All feature attributes were extracted from ENC US4MA13M and have been retained as charted.

S-57 FOID	Lat	Lon	Chart
(US 0000972214 00001);	42-21-22.147N	70-39-28.962W	13267;
(US 0000972216 00001);	42-21-49.897N	70-39-56.376W	13267;
(US 0000972228 00001);	42-21-46.599N	70-41-18.452W	13267;
(US 0000972248 00001);	42-23-36.481N	70-39-15.853W	13267;
(US 0000976141 00001);	42-23-30.590N	70-44-28.200W	13270;
(US 0000976096 00001);	42-26-23.941N	70-40-14.584W	13267;

4) A Non-Dangerous wreck in Latitude 42° 25' 59.92" N, Longitude 70° 34' 42.65" W, was found by AHB personal. Approximate dimensions are length 50m, beam 15m and height 5m. It is not correlated to any AWOIS item. A Non-Dangerous wreck feature in this position has been added to the H-Cell.

ADDITIONAL RESULTS

General Agreement with Charted soundings

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.

Charted Bottom Characteristics

The field unit did not acquire bottom samples during survey operations. Sea bed features were extracted from the ENC's and used to populate the final H-cell product.

COMPARISON WITH 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.

ADEQUACY OF SURVEY

The OSD were acquired prior to the formulation of NOAA standards for MBES coverage. As such, the data do not generally meet the sounding density and coverage requirements. The data are, however, sufficient to supercede the charted hydrography where survey depths are shoaler than charted depths. Full seafloor coverage was not achieved and uncharted features hazardous to surface navigation are not expected but may exist.

MISCELLANEOUS

ENC products were created by Atlantic Hydrographic Branch personnel, Norfolk, Virginia, using CARIS HOM v3.3. ENC products and electronic data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

For charted features the field unit used positions sourced from the raster chart. These positions appear in the item investigation forms and vary slightly from the positions of corresponding features in the H-Cell. The positions of the charted features in the H-Cell are from the last version of the ENC at the time of processing.

A handwritten signature in blue ink, appearing to read "Daniel B. Wright", written over a horizontal line.

Daniel B. Wright
Physical Scientist
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
W00039

The completed surveys have been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for these surveys. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Daniel Wright
Physical Scientist,
Atlantic Hydrographic Branch

Date: _____

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted in the Evaluation Report.

Edward Owens,
Physical Scientist,
Atlantic Hydrographic Branch

Date: _____

I have reviewed the Base Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved: _____
Commander Shepard Smith NOAA
Chief, Atlantic Hydrographic Branch

Date: _____