

H11636

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Hydrographic**

Registry No. **H11636**

LOCALITY

State **Massachusetts**

General Locality **Cape Cod Bay**

Sub-locality **Four NM northeast
of Manomet Point**

2007

CHIEF OF PARTY
LT Marc S. Moser
R/V Gloria Michelle

LIBRARY & ARCHIVES

DATE

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.

FIELD No.

State _____

General Locality _____

Sub-Locality _____

Scale _____ **Date of Survey** _____

Instructions dated _____ **Project No.** _____

Vessel _____

Chief of party _____

Surveyed by _____

Soundings by echo sounder, hand lead, pole _____

Graphic record scaled by _____

Graphic record checked by _____ **Automated Plot** _____

Verification by _____

Soundings in fathoms feet at MLW MLLW _____

REMARKS: _____

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DESCRIPTIVE REPORT

To accompany
HYDROGRAPHIC SURVEY H11636

Scale of Survey: 1:20,000

Year of Survey: 2007

R/V Gloria Michelle

LT Marc S. Moser

A. AREA SURVEYED

This survey was conducted following Hydrographic Letter Instructions dated May 9, 2007.* This project was conducted as part of the NOAA Integrated Ocean and Coastal Mapping (IOCM) initiative to provide multibeam data in support of the National Marine Fisheries (NMFS) benthic habitat mapping requirements and National Ocean Service (NOS) nautical charts. NMFS has requested that the Office of Coast Survey chart two-way shipping routes and two-way recommended shipping tracks within the mandatory North Atlantic Right Whale reporting areas of Cape Cod Bay, MA. This project will be completed by THOMAS JEFFERSON later in 2007. * *Filed with original field records.*

The area surveyed is a portion of the north approaches to the Cape Cod Canal in Cape Cod Bay, four nautical miles northeast of Manomet Point, MA. See Figure 1 on page 2 for the survey area.

Statistics (R/V Gloria Michelle)

- Lineal nautical miles of single beam only sounding lines (mainscheme only) - 0
- Lineal nautical miles of multibeam only sounding lines (mainscheme only) – **384.6**
- Lineal nautical miles of lidar sounding lines (mainsheme only) - 0
- Lineal nautical miles of side scan sonar only lines (mainscheme only) - 0
- Lineal nautical miles of any combination of the above techniques (specify methods used) - 0
- Lineal nautical miles of crosslines from single beam an multibeam combined - **25.5**
- Lineal nautical miles of lidar crosslines - 0
- Lineal nautical miles of developments – **0.5**
- Lineal nautical miles of developments other than mainscheme lines – **6.5**
- Lineal nautical miles of shoreline/nearshore investigation (total length of the inshore buffer line) – **0**
- Number of bottom samples collected – **1**
- Number of items investigated that required additional time/effort in the field beyond the above survey operations – **0**
- Total number of square nautical miles – **14.80**
- Specific dates of acquisition – **June 25-July 3, 8, 11-13, 2007**

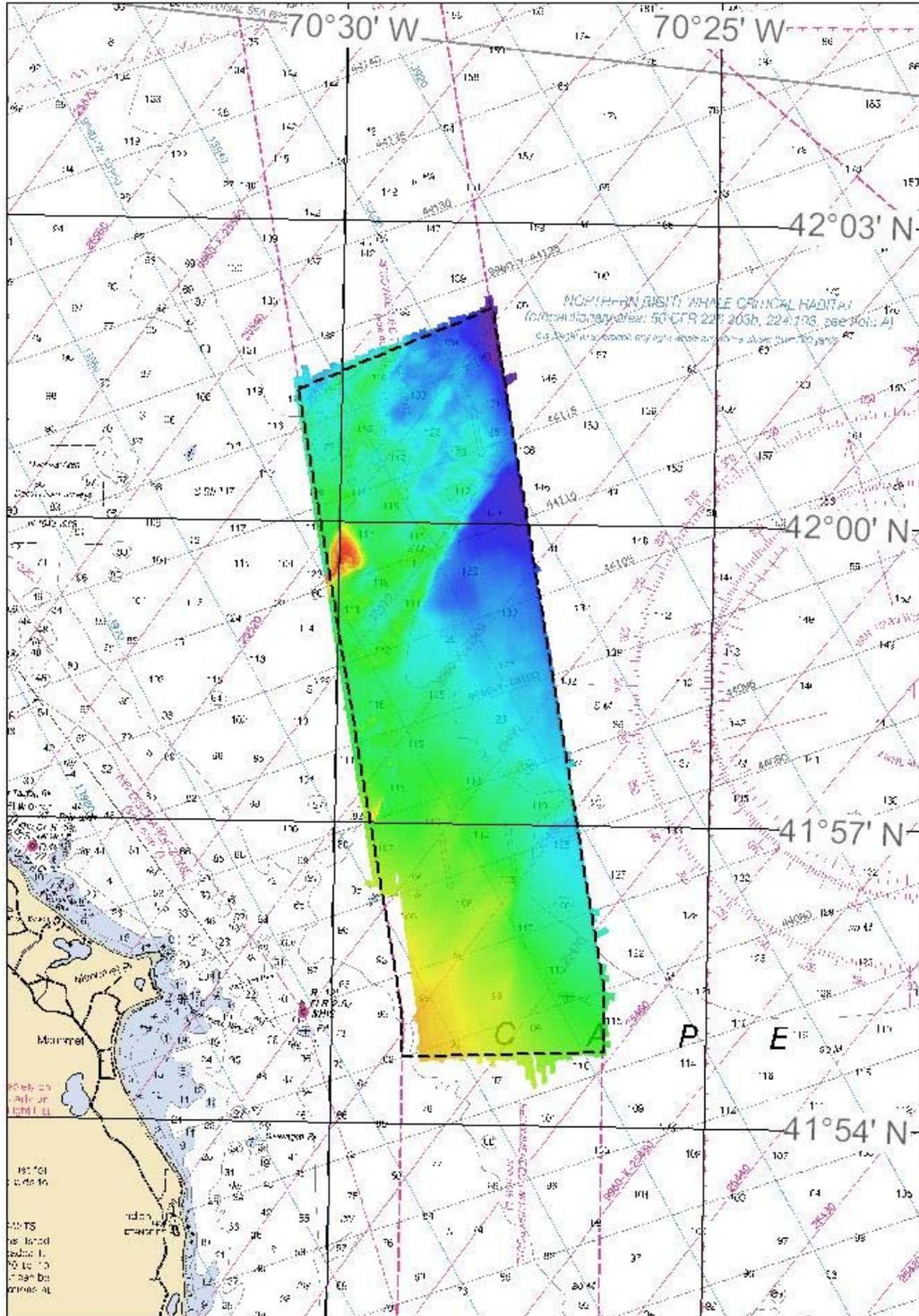


Figure 1: H11636 survey area over chart 13246.

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

B.1 EQUIPMENT

Data were acquired by the R/V Gloria Michelle (F7201), a 22 meter long former private vessel built in 1974 by the Diesel Shipbuilding Company in Jacksonville, FL. The vessel was seized by the United States Coast Guard in 1978 and transferred to NOAA in 1980 and designated a Fisheries Research Stern Trawler. The vessel was refitted by NOAA and has been used for fisheries research since. A single head Kongsberg Em3002 was installed in 2005 with supporting equipment. This system is a 'time share' purchase between NOAA Office of Coast Survey, NOAA Marine Fisheries Service and the Massachusetts Division of Marine Fisheries. The Em3002 multibeam, Seapath MRU, and AML sound speed sensor are all mounted in an assembly on a removable bow mounted pole. *Concur.*

R/V Gloria Michelle acquired MBES data using a single head Kongsberg Em3002 system. Positioning and attitude were determined with an Seapath 200 GPS-aided internal navigation system. A Furuno GP-35 GPS provided differential correctors to the Seapath 200. Sound speed correctors at the transducer were determined using an Applied Systems Limited (AML) SV plus mounted near the Em3002 transducer. Sound speed profiles were acquired using an Odom Digibar Pro which was hand deployed over the side of R/V Gloria Michelle. A simple sounding pole was built for depth comparisons alongside. Bottom samples were acquired using an Wilco Petite Ponaro Bottom Sampler. *Concur.*

The Em3002 MBES, AML SV Plus, and Odom Digibar Pro are part of a removable package. This system is used by the Massachusetts Department of Marine Fisheries (DMF) on other vessels. The Seapath 200 processor and GPS antennae are permanent and not regularly removed. The bow mount was deployed and recovered every day to limit potential damage when coming alongside the pier.

For more detailed information on equipment and settings used see Appendix V. *Filed with original field records.*

B.2 QUALITY CONTROL

Five problems were encountered during data acquisition:

- 1) Seapath 200 GPS antenna failure
- 2) Seapath 200 MRU cable failure
- 3) Rough seas on June 29, 2007
- 4) AML SV Plus data outages
- 5) Sound speed variation

On July 8, 2007 the primary GPS antenna for the Seapath 200 failed. A GPS cable was loaned to R/V Gloria Michelle from Hydrographic Systems and Technology (HSTP) for the remainder of the survey. This failure did not affect data quality since no data were

acquired after the cable failed and before the replacement cable was installed. To replace the GPS cable, the GPS antenna bar was disturbed. Although a new antenna calibration procedure was not performed, no data artifacts were observed as a result. ***No positioning artifacts were observed during office review.***

On July 3, 2007 the Seapath 200 MRU cable failed. No data were acquired after the MRU cable failed. For a portion of July 3, 2007 preceding the MRU cable failure there were large heave artifacts apparent in lines 128-133. The heave artifact exceeded the tolerances for this survey and was deleted. These lines were re-acquired on later days. It was found that the repaired cable was missing the pin required for the 1 PPS input from the Seapath 200 processor to reach the MRU. Although the lack of 1PPS into the MRU could cause latency problems, no significant artifacts were observed in the data as a result. ***Refer to H11636 Survey Acceptance Report for discussion regarding this artifact.***

On June 29, 2007 sea conditions were relatively rough. Although R/V Gloria Michelle can handle rough seas, the bow mount was susceptible to aeration as the bow pitched into the seas. Blow-outs were rejected from the data and those areas were re-acquired as holidays. Some minor heave artifacts are visible in the data as a result of inappropriate heave settings in the Seapath 200. Although these artifacts are apparent in the data, their magnitude was within the tolerances for this survey. ***Refer to H11636 Survey Acceptance Report for discussion regarding this artifact.***

On all days the AML Smart SV sensor experienced data outages. These outages lasted anywhere from a few seconds to minutes. During outages the AML Smart SV would output zeros or obviously erroneous values. Obviously erroneous values were not used by SIS during acquisition. Even during outages, the AML Smart SV sensor would output enough values to be utilized by SIS during acquisition. These outages did not significantly affect data quality. ***No significant sound speed artifacts were observed during office review.***

During all days of acquisition significant sound speed profile variations were observed between the northern and southern ends of the survey area. Sound speed profiles were acquired at the northern and southern ends of the survey area and post-processed in Caris. ***Concur.***

2007 Hydrographic Systems Readiness Report

Specific deficiencies listed in the 2007 HSRR dated May 7, 2007 are addressed below:

CATEGORY 1

1. Staffing. Two NOAA Office of Coast Survey hydrographers were aboard for this survey.

~~CATEGORY~~ CATEGORY 2

1. Dynamic Draft. No dynamic draft artifacts were observed in the data. Due to time limitations additional data in support of a new dynamic draft table were not acquired for this survey. ***Concur with clarification. No data artifacts resembling a dynamic draft bust were observed in the final grid deliverable or echosounder data.***

2. Static Draft. Static draft measurements were taken every day and entered into the Caris HVF. The offset report, 2006 HSRR, and sounding pole comparison were considered to achieve a correct Caris static draft value and tie in water line observations with the vessel coordinate system. See Appendix V* for more information. ***Concur. *Filed with original field records.***

3. Sounding System Comparison. Processed depths were compared to sounding pole measurements while alongside. See Appendix V* for more information. ****Filed with original field records***

4. Sound Speed Measurement Devices. Neither the Odom Digibar Pro or the AML SV Plus were calibrated prior to this survey. Values from both sensors were compared to each other periodically during the survey, and were within 0.5 m/s. ***Concur.***

5. Offset Report Documentation. The original IMTEC survey was provided before the survey and was used to assist in determining offsets, creating the Caris HVF, and determining water line values. ***Concur.***

6. Patch Testing. A patch test was conducted at the beginning of the survey. Although the pole mount was re-deployed on a daily basis, it was not feasible to re-calibrate the sensor every day. ***Concur.***

CATEGORY 3

1. Survey Navigation System. A combination of Hypack and Nobletech was used for line steering during the survey.

2. Pole Deployment. The pole was re-deployed on a daily basis and did reduce survey operation time. The pole was recovered every evening before coming alongside to minimize possible damage to the pole from the pier.

3. APC Power. There were no observed problems with the APC power source during the survey.

4. Data Correctors. Most correctors were applied in post-processing in Caris. See Appendix V* for more information on processing methods.

****Filed with original field records***

Crosslines

A total of 25.5 linear nautical miles (LNM) of crosslines were acquired, equivalent to 6.6% of the 384.6 LNM of mainscheme data. Surfaces of crossline only data were compared with surfaces of mainscheme only data were compared in Pydro and Fledermaus. Thirty one cross check points were compared in Pydro. See below for the combined Pydro crossline comparison results:

Cumulative mean difference: 0.07 m
 Cumulative StDev Difference: 0.07 m
 Number of Comparison Points: 26692
 IHO Special Order: 100.0%
 IHO Order 1: 0.0%
 IHO Order 2: 0.0%

H11636_A_1m		H11636_B_1m		H11636_C_1m		Average
Average	-0.029	Average	-0.047	Average	-0.006	-0.027
Median	-0.026	Median	-0.043	Median	-0.006	-0.025
Std Dev	0.090	Std Dev	0.080	Std Dev	0.087	0.086
Range	-1.693401 to 1.926893	Range	-4.882911 to 1.063315	Range	-5.880562 to 4.275647	

Table 1: Fledermaus main scheme and crossline surface comparison results

Results were favorable for both crossline analysis methods. See Appendix V for more information on crossline analysis methods and Separates* for the detailed Pydro crossline report. **Concur.**

****Filed with original field records.***

Junctions

No contemporary surveys were available for junction comparisons. THOMAS JEFFERSON will acquire data for this project later in 2007 for survey H11695. **Concur with conditions. Survey H11695 (2007) junctions with the present survey to the south and southwest. Comparison between the two surveys was good with depth agreement being between 0 and 2 feet with the present survey depths generally being deeper than those on survey H11695.**

B3. CORRECTIONS TO ECHO SOUNDINGS

Patch test

Patch test data were acquired on June 25, 2007 near the R '12' buoy approximately two nautical miles east of Manomet point. Numerous rocks, boulders and slopes were appropriate for bias determination. Patch test results were determined individually by LT Marc S. Moser, Nicholas Forfinski, and Paul Turner. Individual results were compared with each other, with final values being agreed on by all personnel. See Appendix V* for patch test results and methods. **Concur.**

****Filed with original field records.***

Seapath 200

Offsets from center of gravity to transducer were entered into the Seapath 200, navigation and attitude data were output referenced to the Em3002 transducer. The 'Heave mean level is roll/pitch dependant' check box was selected. This meant that a constant pitch would precipitate a constant heave value. **Concur.**

SIS

Sound speed profiles were applied in SIS in real time to assist with beam-forming. No offsets were entered into SIS including the static draft value. Patch test values from other system users under Attitude 1, Com2 of 1.7 for roll and -0.5 for pitch were retained in SIS. **Concur.**

Caris

The following correctors were applied in post-processing in Caris:

- 1) Water levels
- 2) Static draft
- 3) Sound speed profiles

All sound speed profiles except data from July 13, 2007 were applied using 'nearest in distance within time – 8 hrs'. Data from July 13, 2007 were applied using 'previous in time'.

- 4) Calculate TPE

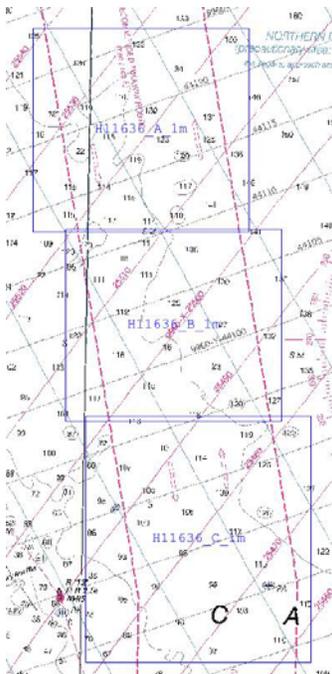
The 'default' advanced setting was used for all data for calculating TPE. The following values were used for TPE calculation:

Sound speed measured – 1 m/s Sound speed profile – 0.5 m/s
Tide zone – 0.05 Tide measured – 0.02

See Appendix V* for more information on the patch test methods, results, and processing methods used. **Concur.**

***Filed with original field records.**

B4. DATA PROCESSING



This survey was divided into three separate fieldsheets to facilitate data processing. One fieldsheet for the entire survey area was created by combining the individual fieldsheets (A, B, and C) at a 2 meter resolution.

Individual surfaces were created for each fieldsheet at 1 meter resolution for coverage determination and crossline comparisons. **Concur.**

Figure 2: Outline of fieldsheets used for product creation

Fieldsheet	Surface Name	Resolution	Fieldsheet	Surface Name	Resolution
H11636_A_1m	H11636_A_1m	1	AWOIS_Coverage	AWOIS_100_1m	1
	H11636_A_MS	1		AWOIS_200_1m	1
	H11636_A_XL	1	H11636_C_1m	H11636_C_1m	1
H11636_B_1m	H11636_B_1m	1		H11636_C_MS	1
	H11636_B_MS	1		H11636_C_XL	1
	H11636_B_XL	1			

Table 2: List of surfaces used for final product creation and proof of coverage

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

VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Boston, MA (8443970) was used for datum determination and all water level correctors. There was a data outage for preliminary water levels from June 28 – July 2, 2007. The outage was determined to be a telemetry problem and verified water level data for the entire project was made available on the CO-OPS web site. Zoning was provided by CO-OPS for this survey. *Concur.*

Tidal zoning for this survey (A902NMFS2007CORP.zdf) is consistent with the zoning provided by CO-OPS via the Project Instructions. The zones used for this survey are:

STATION	CORRECTOR (min)	RATIO	REFERENCE
NA190	+6	X0.96	844-3970

Table 3: Tide zone region used for this survey

A Request for Approved Tides letter was sent on July 14, 2007. Verified water levels and preliminary zoning were applied to all data. *Concur. Refer to H11636 Survey Acceptance Report for information regarding final tide zoning.*

HORIZONTAL CONTROL

The horizontal datum used for this survey was NAD83 projected using UTM zone 19 North. Sounding positional control was determined using the Global Positioning System (GPS) corrected by differential corrections sent to the Seapath from a Furuno GP-35 GPS. Since the Furuno GP-35 GPS was being utilized for vessel navigation, the station selection mode was set to ‘automatic’. The actual station used was monitored throughout the survey and was Acushnet, MA.

Horizontal dilution of precision (HDOP) was monitored daily in SIS. That value exceeded 2.5 in the SIS software a number of times during acquisition. If the outage lasted longer than one second, acquisition was arrested for troubleshooting of the Seapath. See section B2 Quality Control for more information on problems with the attitude and positioning system. *Concur.*

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON *See also the Evaluation Report*

There is one raster chart affected by this survey:

13246_1, 38th edition. December, 23, 2006, scale 1:80,000

There is one electronic navigational chart (ENC) affected by this survey:

US4MA14M, 9th edition, update application date, January, 9, 2007

General Agreement with Charted Soundings

In general surveyed soundings agreed with charted depths. The greatest variation from surveyed soundings and charted depths were over features. **Concur.**

AWOIS Items and Significant Contacts *See also the Evaluation Report*

One assigned AWOIS item was within the limits of this survey. AWOIS 2006, the MARY HOWARD was investigated with 200% multibeam coverage. One object that could be the wreck was found within the investigation radius. The feature had approximate dimensions of 30 x 14 meters with a relief of approximately one meter. **Concur. It is recommended that the charted dangerous sunken wreck PA symbol in Lat. 41°55'19.5"N, Lon. 70°26'51.5"W be deleted and a non-dangerous sunken wreck with a least depth of 107 feet be charted in Lat. 41°55'03.714"N, Lon.70°26'42.634"W.**

One uncharted wreck was found less than one nautical mile from the charted position of the unassigned AWOIS item 1994, the tug MARS. The data matches both the AWOIS description and the Massachusetts Office of Coastal Zone Management description at <http://www.mass.gov/czm/buar/shipwrecks/ua-mars.htm>. See Appendix II* for detailed reports on these features. **Concur. It is recommended that the charted dangerous sunken wreck symbol in Lat. 41°56'14.9"N, Lon. 70°29'27.66"W be retained as charted until it can be fully investigated. It is further recommended that a non-dangerous sunken wreck with a least depth of 89 feet be charted in Lat. 41°56'47.060"N, Lon.70°29'20.964"W.**

***Filed with original field records.**

Charted Features

Specific charted features are addressed in Appendix II. **Filed with original field records.**

Charting Recommendations

The hydrographer recommends charting a 'Rky' over the shoalest area of the survey, on the western side near the charted 70 foot sounding **in the vicinity of Lat. 41°59'34.73"N,**

Lon.70°30'00.56"W due the large number of rocks and boulders in that area. See Appendix II* for specific charting recommendations for features. ***Concur. *Filed with original field records.***

No danger to navigation reports were submitted for this survey. ***Concur.***

D.2 ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

No Aides to Navigation were within the limits of this survey. Buoy R '12' was observed in the charted position to the west of the survey area. Detached positions were acquired during bottom sample acquisition. See Appendix II* for information on the single successfully recovered bottom sample. ****Filed with original field records.***

Bridges and Overhead Cables

There were no bridges or overhead cables in the survey area. ***Concur.***

Ferry Routes

There were no ferry routes within the limits of the survey. ***Concur.***

Submarine Cables and Pipelines

There were no charted submarine cables or pipelines in the survey area. No submarine cables or pipelines were observed in the data. ***Concur.***

Bottom Features

There were numerous rocks and boulders in the survey area with the majority of those features on the western side of the survey area. One bottom sample was acquired for this survey. Numerous scours were visible in the backscatter data. These scours could either be from bottom fishing gear or glacial scouring. See Appendix II* for specific charting recommendations. ***Concur.***

****Filed with original field records.***

E. APPROVAL SHEET

**M-A902-GM-07
Cape Cod Bay
Massachusetts**

**Four NM Northeast of Manomet Point
Survey Registry No. H11636**

Field operations for this navigable area 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.

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

This survey was conducted following the following procedures and manuals:

- 1) NOAA Field Procedures Manual dated March, 2007
- 2) NOAA Specifications and Deliverables dated April, 2007

Respectfully,

Submitted:

 LT NOAA 7/28/2007
LT Marc S. Moser, NOAA

APPENDACIES
For Hydrographic Survey H11636
M-A902-GM-07

Massachusetts
Cape Cod Bay
Four NM Northeast of Manomet Point

- I. DANGERS TO NAVIGATION (none submitted for this survey)
- II. SURVEY FEATURE REPORT
- III. FINAL PROGRESS SKETCH AND SURVEY OUTLINE
- IV. TIDES AND WATER LEVELS
- V. DATA ACQUISITION AND PROCESSING REPORT
- VI. HORIZONTAL AND VERTICAL CONTROL (not submitted for this survey)
- VII. SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDANCE

II. SURVEY FEATURE REPORT

H11636 Features

Registry Number: H11636
State: Massachusetts
Locality: Cape Cod Bay
Sub-locality: Four NM Northeast of Manomet Point
Project Number: M-A902-GM-07
Survey Dates: 6/25/2007 - 7/13/2007

Charts Affected

Number	Version	Date	Scale
13246	37th Ed.	06/01/2003	1:80000
13260	39th Ed.	06/01/2003	1:378838
13200	34th Ed.	12/01/2005	1:400000
13009	32nd Ed.	07/01/2006	1:500000
13006	33rd Ed.	04/01/2006	1:675000
5161	13th Ed.	10/01/2003	1:1058400
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS 2006 11850/146	Sounding	33.14 m	41° 55' 03.701" N	070° 26' 42.608" W	2006
1.2	AWOIS 1994 1814/4	Sounding	27.11 m	41° 56' 47.060" N	070° 29' 20.964" W	---
1.3	Rock 493/1	Sounding	30.13 m	41° 54' 47.756" N	070° 26' 51.824" W	---
1.4	Rock 5422/2	Sounding	31.26 m	42° 00' 53.915" N	070° 29' 37.700" W	---
1.5	Rock 12991/1	Sounding	32.41 m	41° 58' 15.845" N	070° 29' 20.162" W	---
1.6	Rock 1147/160	Sounding	24.91 m	41° 59' 35.642" N	070° 29' 43.537" W	---
1.7	Rock 6594/143	Sounding	22.64 m	41° 59' 46.366" N	070° 29' 51.886" W	---
1.8	Rock 6909/149	Sounding	22.17 m	41° 59' 42.726" N	070° 29' 51.084" W	---
1.9	Rock 6949/118	Sounding	21.88 m	41° 59' 42.345" N	070° 29' 50.346" W	---
1.10	Rock 6960/11	Sounding	22.40 m	41° 59' 42.458" N	070° 29' 48.740" W	---
1.11	Rock 12605/121	Sounding	24.40 m	41° 59' 36.361" N	070° 29' 51.842" W	---
1.12	Rock 12999/160	Sounding	20.80 m	41° 59' 40.976" N	070° 29' 52.015" W	---

1.13	Rock 7327/89	Sounding	25.82 m	41° 59' 34.010" N	070° 29' 55.123" W	---
1.14	Boulder 614/5	Sounding	21.54 m	41° 59' 37.512" N	070° 29' 44.949" W	---
1.15	Rock 1893/88	Sounding	23.95 m	41° 59' 35.733" N	070° 29' 50.212" W	---
1.16	Boulder 4375/60	Sounding	31.68 m	41° 58' 54.719" N	070° 29' 53.764" W	---
1.17	Brown Muddy Sand (MS)	GP	[None]	41° 57' 09.000" N	070° 27' 03.000" W	---

1 - Report

1.1) AWOIS 2006 11850/146

Primary Feature for AWOIS Item #2006

Search Position: 42° 00' 00.370" N, 070° 29' 58.100" W
Historical Depth: [None]
Search Radius: 500
Search Technique: SSS, SB, SWMB, DI
Technique Notes: AWOIS search only required within Project Sheet Limits.

History Notes:

02006 DESCRIPTION 24 NO.880; TRAWLER, 642 GT; SUNK 7/6/42 BY MARINE CASUALTY; POSITION ACCUR. 1-3 MILES. 61 DATED 7/6/42

Survey Summary

Survey Position: 41° 55' 03.701" N, 070° 26' 42.608" W
Least Depth: 33.14 m
Timestamp: 2007-177.21:25:29.541 (06/26/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-177 / 0048_20070626_210037_gloria_michelle
Profile/Beam: 11850/146
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Only contact in AWOIS investigation radius that could be AWOIS item. Feature is a 14 x 30 meter pile of debris approximately 1 meter off the bottom with significant scouring around the perimeter of feature. This pile of debris is smaller than the 500 GT vessel described in the AWOIS description.

Hydrographer Recommendations

Delete Wreck PA and chart obstruction per digital data. *Concur with conditions. Chart a non-dangerous sunken wreck with a least depth of 107 feet in the present survey location. Delete AWOIS 2006 the charted Dangerous sunken wreck PA.*

Cartographically-Rounded Depth (Affected Charts):

108ft (13246_1)
 18fm (13200_1, 13009_1, 13006_1, 13003_1)
 33m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 1:depth known
STATUS - 1:permanent
TECSOU - 3:found by multi-beam
VALSOU - 33.140 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

1.2) AWOIS 1994 1814/4

Survey Summary

Survey Position: 41° 56' 47.060" N, 070° 29' 20.964" W
Least Depth: 27.11 m
Timestamp: 2007-193.13:16:04.301 (07/12/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-193 /
 0198_20070712_131237_gloria_michelle
Profile/Beam: 1814/4
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Wreck identified in multibeam data. Wreck matches AWOIS description of unassigned AWOIS 1994, tug MARS. THOMAS JEFFERSON may be assigned to cover the remaining investigation radius for this AWOIS item.

Side scan image of the tug MARS courtesy of Victor Mastone of the Massachusetts Office of Coastal Zone Management. <http://www.mass.gov/czm/buar/shipwrecks/ua-mars.htm>

Hydrographer Recommendations

Delete charted wreck at AWOIS 1994 position and chart wreck at surveyed location. ***Do not concur. Retain wreck as charted. Chart a non-dangerous sunken wreck, least depth 27.11m (89 feet) in the present survey position.***

Cartographically-Rounded Depth (Affected Charts):

89ft (13246_1)

15fm (13200_1, 13009_1, 13006_1, 13003_1)

27m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 CONVIS - 2:not visual conspicuous
 STATUS - 1:permanent
 TECSOU - 3:found by multi-beam
 VALSOU - 27.115 m
 VERDAT - 12:Mean lower low water
 WATLEV - 3:always under water/submerged

Feature Images

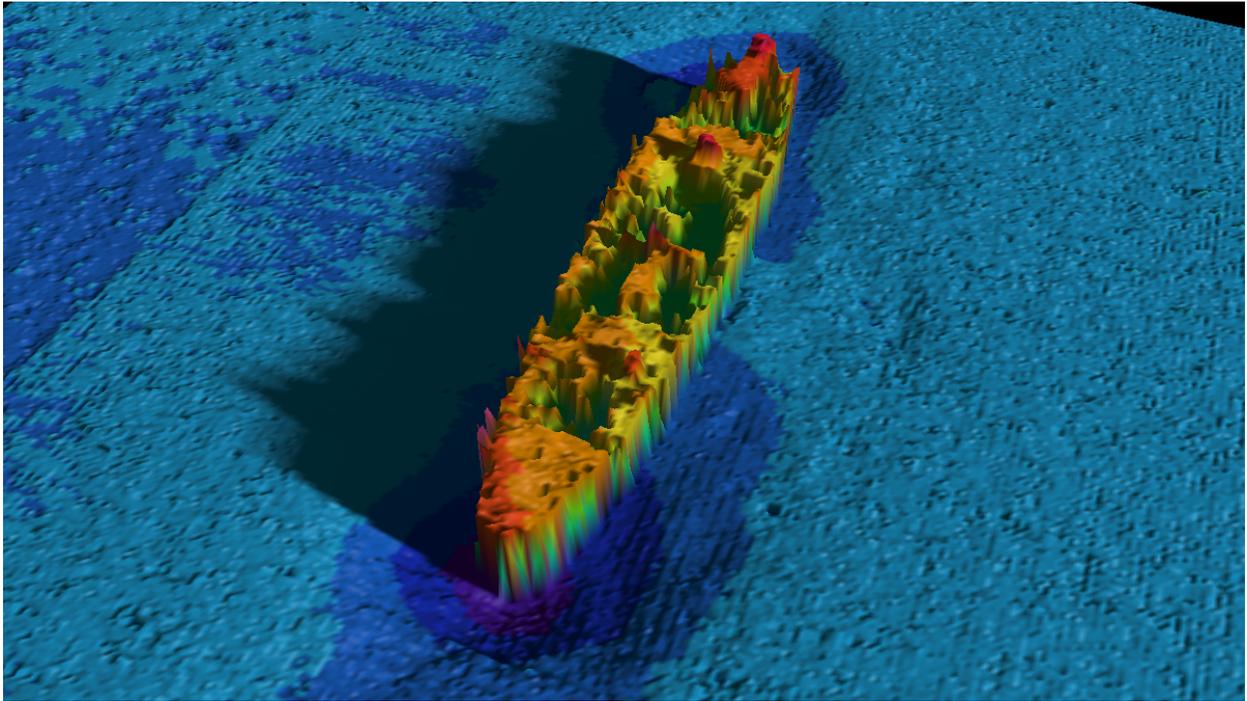


Figure 1.2.1



Figure 1.2.2

1.3) Rock 493/1

Survey Summary

Survey Position: 41° 54' 47.756" N, 070° 26' 51.824" W
Least Depth: 30.13 m
Timestamp: 2007-178.13:54:05.934 (06/27/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-178 / 0053_20070627_135308_gloria_michelle
Profile/Beam: 493/1
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock, height off of bottom significant.

Hydrographer Recommendations

Chart rock per digital data. *Do not concur. Update area with present survey depths.*

Cartographically-Rounded Depth (Affected Charts):

99ft (13246_1)

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

30m (5161_1)

S-57 Data

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

Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 30.126 m
VERDAT - 12:Mean lower low water

1.4) Rock 5422/2

Survey Summary

Survey Position: 42° 00' 53.915" N, 070° 29' 37.700" W
Least Depth: 31.26 m
Timestamp: 2007-183.15:07:02.522 (07/02/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-183 / 0108_20070702_145539_gloria_michelle
Profile/Beam: 5422/2
Charts Affected: 13246_1, 13260_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Large rock or boulder approximately 3.5 meters off bottom. Significant in surveyed depths.

Hydrographer Recommendations

Chart sounding on rock. *Do not concur. Update area with present survey depths.*

Cartographically-Rounded Depth (Affected Charts):

102ft (13246_1)

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

31m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 31.263 m
VERDAT - 12:Mean lower low water

1.5) Rock 12991/1

Survey Summary

Survey Position: 41° 58' 15.845" N, 070° 29' 20.162" W
Least Depth: 32.41 m
Timestamp: 2007-183.20:15:25.584 (07/02/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-183 / 0121_20070702_194841_gloria_michelle
Profile/Beam: 12991/1
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Large rock or boulder more than 3.5 meters above bottom. Significant in surveyed depths

Hydrographer Recommendations

Chart rock per digital data. *Do not concur. Update area with present survey depths.*

Cartographically-Rounded Depth (Affected Charts):

106ft (13246_1)
17fm (13200_1, 13009_1, 13006_1, 13003_1)
32m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 32.415 m
VERDAT - 12:Mean lower low water

1.6) Rock 1147/160

Survey Summary

Survey Position: 41° 59' 35.642" N, 070° 29' 43.537" W
Least Depth: 24.91 m
Timestamp: 2007-184.12:14:41.556 (07/03/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-184 / 0125_20070703_121232_gloria_michelle
Profile/Beam: 1147/160
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2 meters off bottom at edge of shoal covered in rocks and boulders. Significant in surveyed depths.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 24.914 m
VERDAT - 12:Mean lower low water

1.7) Rock 6594/143

Survey Summary

Survey Position: 41° 59' 46.366" N, 070° 29' 51.886" W
Least Depth: 22.64 m
Timestamp: 2007-184.12:47:41.137 (07/03/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-184 / 0126_20070703_123436_gloria_michelle
Profile/Beam: 6594/143
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock greater than 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 22.642 m
VERDAT - 12:Mean lower low water

1.8) Rock 6909/149

Survey Summary

Survey Position: 41° 59' 42.726" N, 070° 29' 51.084" W
Least Depth: 22.17 m
Timestamp: 2007-184.12:48:09.164 (07/03/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-184 / 0126_20070703_123436_gloria_michelle
Profile/Beam: 6909/149
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2.5 meters off bottom

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 22.166 m
VERDAT - 12:Mean lower low water

1.9) Rock 6949/118

Survey Summary

Survey Position: 41° 59' 42.345" N, 070° 29' 50.346" W
Least Depth: 21.88 m
Timestamp: 2007-184.12:48:12.676 (07/03/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-184 / 0126_20070703_123436_gloria_michelle
Profile/Beam: 6949/118
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
STATUS - 1:permanent
TECSOU - 3:found by multi-beam
VALSOU - 21.879 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

1.10) Rock 6960/11

Survey Summary

Survey Position: 41° 59' 42.458" N, 070° 29' 48.740" W
Least Depth: 22.40 m
Timestamp: 2007-184.12:48:13.646 (07/03/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-184 / 0126_20070703_123436_gloria_michelle
Profile/Beam: 6960/11
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 22.400 m
VERDAT - 12:Mean lower low water

1.11) Rock 12605/121

Survey Summary

Survey Position: 41° 59' 36.361" N, 070° 29' 51.842" W
Least Depth: 24.40 m
Timestamp: 2007-189.15:20:14.329 (07/08/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-189 / 0146_20070708_145556_gloria_michelle
Profile/Beam: 12605/121
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock less than 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
STATUS - 1:permanent
TECSOU - 3:found by multi-beam
VALSOU - 24.403 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

1.12) Rock 12999/160

Survey Summary

Survey Position: 41° 59' 40.976" N, 070° 29' 52.015" W
Least Depth: 20.80 m
Timestamp: 2007-189.15:20:49.262 (07/08/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-189 / 0146_20070708_145556_gloria_michelle
Profile/Beam: 12999/160
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Shoalest rock in rock and boulder field approximately 3 meters off bottom.

Hydrographer Recommendations

Chart rock per digital data. *Do not concur. Chart area as rky.*

Cartographically-Rounded Depth (Affected Charts):

68ft (13246_1)
 11fm (13200_1, 13009_1, 13006_1, 13003_1)
 20.8m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
 TECSOU - 3:found by multi-beam
 VALSOU - 20.799 m
 VERDAT - 12:Mean lower low water
 WATLEV - 3:always under water/submerged

1.13) Rock 7327/89

Survey Summary

Survey Position: 41° 59' 34.010" N, 070° 29' 55.123" W
Least Depth: 25.82 m
Timestamp: 2007-189.15:54:01.000 (07/08/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-189 / 0148_20070708_153955_gloria_michelle
Profile/Beam: 7327/89
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 25.822 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

1.14) Boulder 614/5

Survey Summary

Survey Position: 41° 59' 37.512" N, 070° 29' 44.949" W
Least Depth: 21.54 m
Timestamp: 2007-192.18:57:12.438 (07/11/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-192 / 0185_20070711_185606_gloria_michelle
Profile/Beam: 614/5
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Boulder 4.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 21.537 m
VERDAT - 12:Mean lower low water

1.15) Rock 1893/88

Survey Summary

Survey Position: 41° 59' 35.733" N, 070° 29' 50.212" W
Least Depth: 23.95 m
Timestamp: 2007-193.12:14:28.761 (07/12/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-193 / 0193_20070712_121044_gloria_michelle
Profile/Beam: 1893/88
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock 2.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Do not concur. Chart area as rky.*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
STATUS - 1:permanent
TECSOU - 3:found by multi-beam
VALSOU - 23.954 m
VERDAT - 12:Mean lower low water
WATLEV - 3:always under water/submerged

1.16) Boulder 4375/60

Survey Summary

Survey Position: 41° 58' 54.719" N, 070° 29' 53.764" W
Least Depth: 31.68 m
Timestamp: 2007-193.12:52:37.597 (07/12/2007)
Survey Line: h11636 / gloria_michelle_em3002_2007_allauto / 2007-193 / 0196_20070712_124356_gloria_michelle
Profile/Beam: 4375/60
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Boulder 3.5 meters off bottom.

Hydrographer Recommendations

Chart soundings per digital data. *Concur*

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VALSOU - 31.675 m
VERDAT - 12:Mean lower low water

1.17) Brown Muddy Sand (MS)

Survey Summary

Survey Position: 41° 57' 09.000" N, 070° 27' 03.000" W
Least Depth: [None]
Timestamp: 2007-194.14:59:00.000 (07/13/2007)
GP Dataset: H11636_BSLocations.svp
GP No.: 1
Charts Affected: 13246_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Single bottom sample acquired for this survey. Bottom was observed to be brown muddy sand.

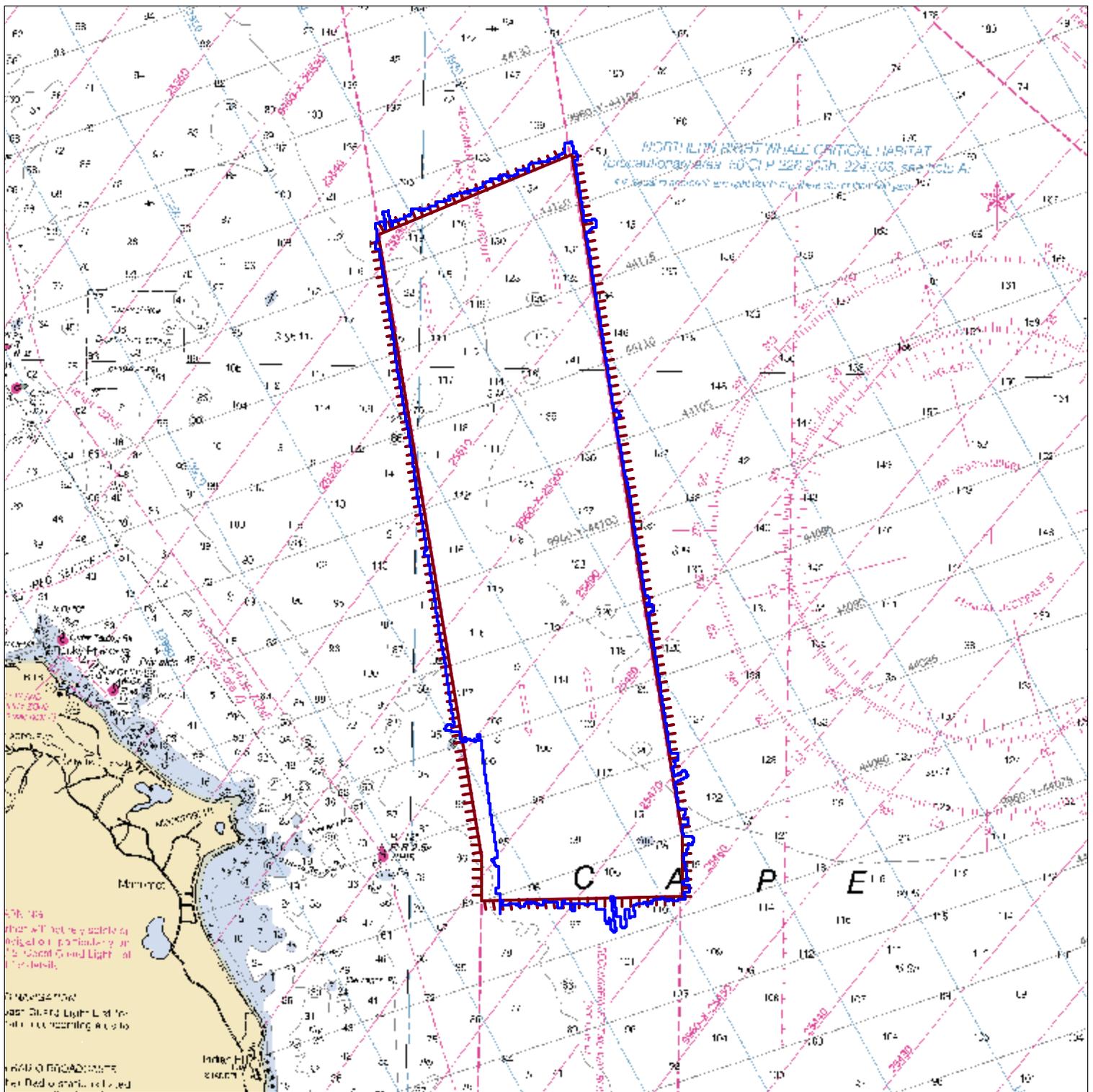
Hydrographer Recommendations

Chart MS on chart. *Concur*

S-57 Data

Geo object 1: Seabed area (SBDARE)
Attributes: COLOUR - 8,8:brown,brown
NATQUA - 5,3:sticky,coarse
NATSUR - 1,4:mud,sand
WATLEV - 3:always under water/submerged

III. FINAL PROGRESS SKETCH



Project	Sheet Letter	H_num	HQ_Est_SNM	CumIPercCompPrevM	CumIPercCompCur	SNM_CompCurMon	CumSNMcomp
M-A902-GM-	B	H11636	15	45	100	5	15

Project	Month	LNM_VBE	LNM_MB	LNM_SSS	SV_Casts	Bottom_Samp	AWOIS_Items	Tide_Guage_Inst	DAS	DTime equip_H	DTime_Weather_F	D_Time_other_H
M-A902-G	June	0.00	230.00	0.00	14.00	0.00	0.00	0.00	5.00	1.00	0.00	0.00
M-A902-G	July	0.00	181.55	0.00	13.00	1.00	1.00	0.00	6.00	56.50	6.00	0.00

Progress Sketch M-A902-GM-07 July, 2007

IV. TIDES AND WATER LEVELS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Hydrographic Surveys Division (N/CS3)
1315 East-West Hwy Rm 6838
Silver Spring, MD 20910

July 14, 2007

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: <Unknown 'Field Unit' and/or 'Lead Hydrographer' (Pydro: Config...PSS Metadata)>

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

UNH/CCOM/JHC
Chase Engr Lab
24 Colovos Road
Durham, NH 03824
ATTN: LT Marc Moser

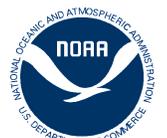
These data are required for the processing of the following hydrographic survey:

Project No.: M-A902-GM-07
Registry No.: H11636
State: Massachusetts
Locality: Cape Cod Bay
Sublocality: NE Approaches to Cape Cod Canal

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro

cc: N/CS33



Year_DOY	Min Time	Max Time
2007_176	18:10:58	20:29:19
2007_177	12:07:36	21:28:08
2007_178	11:44:25	20:47:57
2007_179	12:02:54	20:26:46
2007_180	12:24:23	18:58:04
2007_183	14:25:40	20:44:34
2007_184	11:42:33	13:14:10
2007_185	16:54:24	17:45:26
2007_189	14:55:57	16:11:24
2007_192	15:49:44	20:36:47
2007_193	11:50:15	20:50:47
2007_194	10:40:10	17:54:16

V. UWRNGO GPVCN'UWTXG| 'TGEQTFUCPF'EQTTGURQPF CPEG

RE: Uncharted wreck NOAA survey H11636

Subject: RE: Uncharted wreck NOAA survey H11636
From: "Mastone, Victor (EEA)" <Victor.Mastone@state.ma.us>
Date: Wed, 18 Jul 2007 08:02:35 -0400
To: Marc.S.Moser@noaa.gov
CC: Paul.Turner@noaa.gov, Andy.Armstrong@noaa.gov

Marc,

Is it possible that this unknown wreck might actually be the Tugboat MARS? I got the following response from one of my sources: "Regarding the coordinates of 41 56 47.48N 070 29 20.99. These appear to be the Tug Mars that may be the wreck symbol plotted somewhat SW of that position. The MARS sank around. Mass DMF has had a temperature recording gauge about the bow for 20 years." I've attached an old side scan image of the MARS from our files. Here is link to our description of the site: <http://www.mass.gov/czm/buar/shipwrecks/ua-mars.htm>. I guess we'll have to update our webpage and location file. Can we use the image in our webpage?

Any other wrecks? Unknowns or otherwise?

Vic

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

From: Marc.S.Moser@noaa.gov [<mailto:Marc.S.Moser@noaa.gov>]
Sent: Saturday, July 14, 2007 11:52 AM
To: Mastone, Victor (EEA)
Cc: Paul.Turner@noaa.gov; Andy.Armstrong@noaa.gov
Subject: Uncharted wreck NOAA survey H11636

Good morning,

This is to inform you that during data acquisition for NOAA survey H11636 a uncharted wreck within Cape Cod Bay was identified. This wreck was not investigated with side scan or divers and the age of the wreck is unknown.

The wreck is located at 41°56'47.48" N 070°29'20.99" W with an approximate least depth (corrected with preliminary water levels) of 27.660 meters (91 feet). The rough dimensions of this wreck is 33 meters long and 8 meters wide.



Tug boat Mars Side Scan.jpg	Content-Description: Tug boat Mars Side Scan.jpg
	Content-Type: image/jpeg
	Content-Encoding: base64

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey H1636 (2007)**

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

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

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

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

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product entailed combining the multi beam surfaces at a 2 meter resolution and from this a product surface was generated with a 10m resolution. The sounding selection was generated from this product surface with a 100m radius. This surface was then shifted by a factor of -0.229, to account for NOAA's rounding practices when creating contours. Finally, the contours were generated from this shifted, interpolated surface. The chart soundings were then selected from the sounding selection with the aid of the contours, and using AHB best practices. The selected sounding set is approximately 10 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

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

All of the components with the exception of the sounding selection were inserted into one feature layer (including the Bluenotes, as dictated by Hydrographic Technical Directive 2008-8), and this layer was exported into S-57 format in order to create the H-Cell deliverable. Similarly, the sounding selection was exported into S-57 format separately, and then both S-57 files were processed in CARIS HOM to convert the metric units to feet. The final products are two S-57 files, one that contains the chart soundings, all the features, Meta objects, and Bluenotes (H11636_CS.000), and one that contains the sounding selection (H11636_SS.000). Finally, quality assurance checks were made utilizing CARIS S-57 Composer version 2.0 validation checks.

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

H11636 CARIS H-Cell final deliverables include the following products:

US411636_CS.000	1:80,000 Scale	H11636 H-Cell with Chart Scale Selected Soundings
US411636_SS.000	1:20,000 Scale	H11636 Selected Soundings (Survey Scale)

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. The field unit applied final verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H11636. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW)

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

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

13246 (38th Edition, DEC/06)
 Corrected through NM 12/23/2006
 Corrected through LNM 12/12/2006
 Scale 1:80,000

ENC Comparison

US4MA14M
 Cape Cod Bay
 Edition 10
 Update Application Date 2007-06-14
 Issue Date 2008-12-01
 References: Chart 13246

D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section “D” and Appendix 1 of the Descriptive Report. Present survey depths are generally agreed well with the charted depths.

D. DANGERS TO NAVIGATION

No Dangers to Navigation were submitted by the field.

D.2. MISCELLANEOUS

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

D.3. ADEQUACY OF SURVEY

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

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

AHB PRE-COMPILATION PROCESS

REGISTRY No.	M-A902 GM 07
PROJECT No.	H11636
FIELD UNIT	GLORIA MICHELLE
PRE-COMPILER	MARK OPDYKE
LARGEST SCALE CHART	13246, edition 38, 200612
CHART SCALE	1: 80,000
SURVEY SCALE	1: 20,000
DATE OF SURVEY	25 June to 13 July 2007
CONTENT REVIEW DATE	

Components	File Names
<i>Product Surface</i>	PS_H11636_10k_100mrad_10mres.hns
<i>Shifted Surface</i>	PS_H11636_10k_100mrad_10mres_Shifted.hns
<i>Contour Layer</i>	H11636_Contours.hob
<i>Survey Scale Soundings</i>	H11636_SS_Soundings.hob
<i>Chart Scale Soundings</i>	H11636_CS_Soundings.hob
<i>ENC Retain Soundings</i>	NA
<i>Feature Layer</i>	H11636_Features.hob
<i>Meta-Objects Layer</i>	H11636_MetaObjects.hob
<i>Blue Notes</i>	H11636_BlueNotes.hob

SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. File name: H11646_AHB_2m_Combined.hns
 - b. Resolution: 2m
 - c. Final Grid Location: H11636_A902-GM\AHB\COMPILE\GRIDS
 - d. PRODUCT SURFACE (SOUNDINGS): SS Soundings made at 130m single-defined radius
 - e. Scale: 1:10000
 - f. Radius:100m
 - g. Resolution: 10m
 - h. Depth
 - i. Minimum: m
 - ii. Maximum: m

PRODUCT SURFACE (CONTOURS):

 - a. Scale: 1:1000
 - b. Radius: 100 m
 - c. Resolution: 10m
- II. SHIFTED SURFACE:

Single Shift Value: -0.229 [-0.229m (feet), (\leq 10 fathoms)]
[-1.372m (fathoms), ($>$ 10 fathoms)]
- III. CONTOUR LAYER:
 - a. Use a Depth List: XXXXXX_NOAA_depth_curves_list.txt

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

Depth List:

- b. Output Options:
 - i. Create contour lines:
 - 1. Line Object: DEPCNT
 - 2. Value Attribute: VALDCO

IV. SOUNDING SELECTION:

- a. Selection Criteria:
 - i. Radius
 - ii. Shoal biased
 - iii. Use Single-Defined Radius: distance on ground (m)
 - iv. Filter: Generalized !=1

V. FEATURES:

- a. Brought in from Survey
Total No. 2
- b. Brought in from ENC
ENC: # 0
Total No. 2

VI. META-OBJECTS:

- a. M_COVR attributes

Acronym	Value
SORDAT	20070713
CATCOV	Coverage Available
SORIND	US,US,survey,H11636

- b. M_QUAL attributes

Acronym	Value
CATZOC	Not Assessed
INFORM	M-A902_GM_07,H11636,Gloria Michelle
POSACC	10
SORDAT	20070713
SORIND	US,US,survey,H11636
SUREND	20070713
SURSTA	20070625

- c. DEPARE attributes

Acronym	Value
DRVALV 1	67.64 ft
DRVALV2	149.22 ft
SORDAT	20070713
SORIND	US,US,survey,H11636

VII. NOTES:

APPROVAL SHEET
H11636

Initial Approvals:

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

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

Mark Opdyke
Hydrographic Intern
Atlantic Hydrographic Branch

Deborah A. Bland
Cartographer
Atlantic Hydrographic Branch

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

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