H10994

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Basic Hydrographic**

(Navigable Area Concept)

Registry No. **H10994**

LOCALITY

State Massachusetts

General Locality Massachusetts Bay

Sub-locality Broad Sound

2001

CHIEF OF PARTY
Commander Steven R. Barnum, NOAA

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DATE

NOAA FORM 77-28 U.S. DEPARTMENT OF COMMERCE (11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION **HYDROGRAPHIC TITLE SHEET**	REGISTRY NUMBER: **H10994**
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 NUMBER: N/A

State:	**Massachusetts**		
General Locality:	**Massachusetts Bay**		
Sub-Locality:	**Broad Sound**		
Scale:	**1:10,000**	Date of Survey:	**09/19/00 to *10/11/01***
Instructions Dated:	**08/30/00**	Project Number:	**OPR-A397-WH**
Vessel:	**NOAA Ship WHITING, S-329**		
Chief of Party:	**Commander Steven R. Barnum, NOAA**		
Surveyed by:	**WHITING Personnel**		
Soundings by:	**Odom Echotrac DF3200 MK II Echosounder**		
	Reson SeaBat 8101 multibeam sonar		
Graphic record scaled by:	**WHITING Personnel**		
Graphic record checked by:	**WHITING Personnel**		
	Hewlett Packard Design Jet 2500CP (office)		
Protracted by:	**N/A**	Automated Plot:	**HP-750C** ***(field)***
Verification by:	**Atlantic Hydrographic Branch** ***Personnel***		
Soundings in:	**Meters at MLLW**		

Remarks: ***Bold, italic, red notes in descriptive report were made during office processing***

1) All Times are UTC.

2) This is a basic Hydrographic Survey under the Navigable Area Concept.

3) Projection is UTM Zone 19.

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DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SURVEY H10994

Scale of Survey: 1:10,000
Year of Survey: 2000-2001
NOAA Ship WHITING
CDR Steven R. Barnum, Commanding

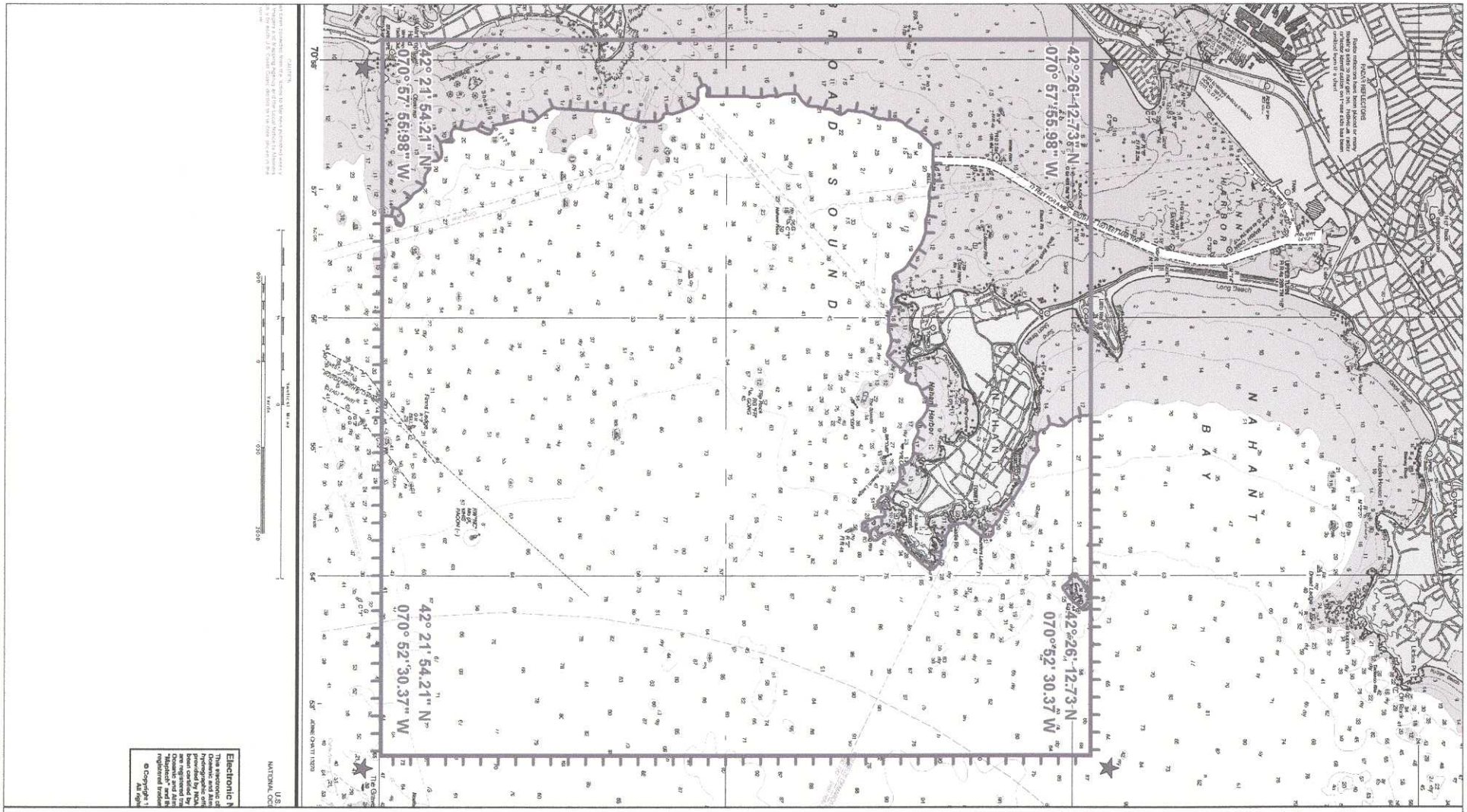
A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project OPR-A397-WH, Massachusetts Bay, Massachusetts. The original instructions are dated August 30, 2000. One change has been made to the original letter instructions. This project could not be completed during WHITING's 2000 field season. The time frame of the project has been extended into the 2001 field season. Change Number One, dated June 28, 2001, updates the tidal requirements for this project for the 2001 field season.

This Descriptive Report pertains to survey H10994, Broad Sound. Survey H10994 is referenced in the letter instructions as Sheet "E" of project OPR-A397-WH.

Survey limits are displayed graphically in the chartlet on the following page (Figure 1). A second chartlet, differentiating areas of side scan sonar (SSS), shallow water multibeam (SWMB), and vertical beam echosounder (VBES) data acquisition in the survey area, is included as Appendix III* - Progress Sketch. Additionally, VBES data were acquired in conjunction with both SSS and SWMB operations.

**** Data filed with original field records***



Chartlet 1 of 1 *Chart 13275, 27th Edition, July 24th, 1999, Scale 1:25,000, Salem and Lynn Harbors*

This chart has been updated through Notice to Mariners 30/01, July 28, 2001. NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: *OPR-A397-WH*
Survey: *H10994*
State: *Massachusetts*
Locality: *Massachusetts Bay*
Sub-locality: *Broad Sound*
Survey Scale: *1:10,000*

Sounding Units: *Feet*
Sounding Datum: *MLLW*
Horizontal Datum: *NAD 83*
Projection: *UTM 19*
Central Meridian: *069° 00 00*
Scale Factor: *0.9996*

NOAA Ship WHITING
CDR Steven R. Barnum
Commanding

September 19, 2000 to
October 11, 2001

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

B.1. EQUIPMENT

Data were acquired by NOAA Ship WHITING (S-329) and survey Launches 1005 and1014. WHITING is a 49.7 meter vessel with average transducer draft of 3.2 meters. Both launches are NOAA's standard 8.5-meter aluminum Jensen vessel with a typical 0.5-meter transducer draft. All vessels were configured as described in the Data Acquisition and Processing Report (DAPR)** for this project. Major data acquisition systems are summarized below.

NOAA Ship WHITING acquired High Speed/High Resolution side scan sonar (HSHRSSS) data, VBES data and bottom samples. HSHRSSS data were acquired with the Klein T-5500 side scan sonar towfish. VBES data were acquired with an Odom Echotrac DF3200 MKII echosounder. WHITING's positioning system is a Trimble DSM212L integrated differential GPS receiver. Attitude data were determined using a TSS DMS-05 Dynamic Motion Sensor.

Launch 1005 acquired shallow water multibeam (SWMB), side scan sonar (SSS), and VBES[1], data. An Odom Echotrac DF3200 MK II echosounder was used for VBES hydrography. SWMB data were acquired with a Reson SeaBat 8101 shallow water multibeam system. SSS data were acquired with an Edgetech model 272-T towed side scan sonar. Launch 1005 utilizes a TSS POS/MV 320 (version 2) GPS-aided inertial motion sensor to determine both positioning and attitude.

Launch 1014 acquired VBES and SSS data. Launch 1014 was also used to acquire detached positions (DP) and bottom samples, and to support dive investigations. An Odom Echotrac DF3200 MK II echosounder was used for VBES hydrography. Side scan sonar data were acquired with an Edgetech model 272-T towed side scan sonar. Positioning was determined with a Trimble DSM212L integrated differential GPS receiver. Attitude data were determined using a TSS DMS-05 attitude sensor. Diver least depth determinations were acquired using a NOAA MOD III Diver Least Depth Gauge.

Sound velocity data were acquired by all three survey platforms. All velocity casts were conducted with Sea-Bird SBE 19 SEACAT Profiler instruments.

No unusual vessel configurations were employed on this project. Refer to the project DAPR** for detailed vessel configuration information.

**** Data filed with original field records***

***** Data filed at the Atlantic Hydrographic Branch (AHB)***

[1]Launch 1005 VBES data were not processed when SWMB data were acquired.

B.2. QUALITY CONTROL

No unusual conditions which would downgrade or compromise equipment effectiveness were encountered during survey operations.

Side Scan Sonar Quality Control

Daily confidence checks were made with each system by observing the outer ranges of the sonar images. A satisfactory check was determined by the ability to distinguish contacts or known features across the entire range of the side scan trace.

When operating in relatively shoal waters (i.e. less than 30 meters deep), a short tow was required for the Edgetech SSS systems. When cable-out was reduced to 10 meters or less, minor degradation of the side scan imagery and ODOM echosounder traces were noted due to cross-talk between the two systems. The ability to identify contacts in the side scan data was not significantly compromised by this cross-talk.

Shallow Water Multibeam Quality Control

Daily confidence checks were made with the SWMB system by correlating sounding data to the VBES sonar data during simultaneous acquisition. A bathymetry confidence check, performed in Isis, provided real-time comparison of the VBES data to nadir soundings from the SWMB system. This comparison was monitored for significant discrepancies during data acquisition.

At the conclusion of survey operations, a CARIS HIPS Quality Control Report was compiled. This process compares the soundings in a checkline file with a Digital Terrain Model (DTM). The report generates statistics relating to the deviation of beams from a reference surface. Since VBES crossline data were acquired for this survey, this report was generated using a SWMB development area. A copy of the Quality Control Report has been included in Separate V* - Crossline Comparisons.

There were no faults with the SWMB system which affected final data integrity. Refer to this project's DAPR** for detailed discussion of SWMB system calibrations, data acquisition, and standard data processing.

**** Data filed with original field records***
***** Data filed at AHB***

Preliminary Smooth Sheet Histogram

The preliminary smooth sheet histogram is shown in Figure 2. The histogram shows a relatively even distribution of soundings between 19 and 89 feet, with slight peaks in the range of 21, 43 and 80 feet. This even sounding distribution is evident in the gradual overall slope of the sea floor from inshore areas (along the 18 foot contour) out to the east-northeastern portion of the survey area (near the charted Precautionary Zone at the approach to Boston Harbor). It is noted that this is an overall trend, only, with isolated rocky shoals found throughout the survey area. The small percentage of soundings less than 18 feet are attributable to large rocks found along the near shore portions of the survey area and steep, rocky slopes surrounding Nahant.

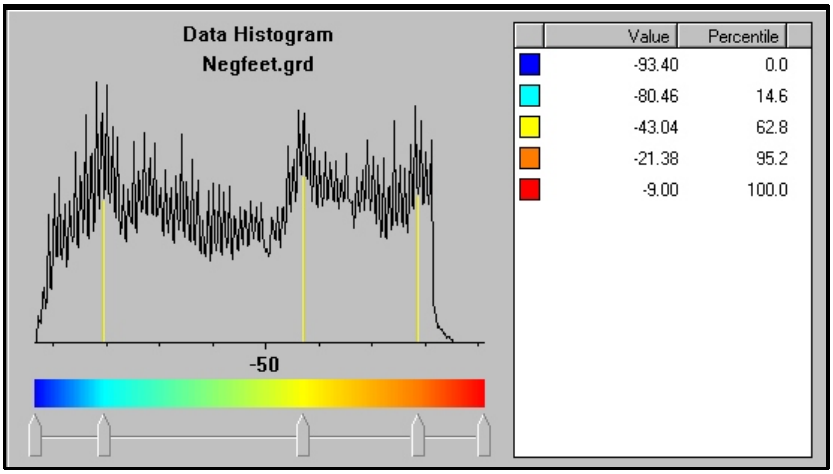


Figure 2 - Preliminary smooth sheet histogram - soundings in feet.

Crosslines

Over 45 linear nautical miles (lnm) of VBES crosslines were run, equivalent to 12% of all lnm of SSS mainscheme data acquired for this survey. Mainscheme data were defined for this survey to be both the 100% and 200% coverages. Crossline to mainscheme comparisons were made in MapInfo 5.0. Overall, agreement was good. A minimal number of discrepancies greater than 5 percent of the shoalest depth were observed in rocky areas. Due to the varying relief in these areas, the DTM was utilized during comparison to verify discrepancies between mainscheme and crossline soundings..

Junctions *See also the evaluation report*

The survey area junctions along the southern border with survey H10991, completed by WHITING during the 2000 field season. In general, soundings at the survey junction agreed within 1 to 2 feet. Given the rocky nature of the seabed, this agreement is satisfactory for the area. ***Concur***

B.3. CORRECTIONS TO ECHO SOUNDING

All survey methods and instruments were implemented as described in the Correction to Echo Soundings section of the DAPR**for this project.

A table detailing all sound velocity casts is contained in Separates III* - Sound Velocity Profile Data. Sound velocity data has been submitted on CD-ROM with the digital data package. Cast data is structured as follows: vessel / day of cast / cast data.

**** Data filed with original field records***
***** Data filed at AHB***

C. VERTICAL AND HORIZONTAL CONTROL

Vertical Control

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) tide station at Boston, MA (844-3970) served as control for datum determination. Two tertiary, 30-day gauges were installed to provide ancillary tidal data for this project. One gauge was installed at Boston Light, MA (844-4162), and one gauge was installed at Nut Island, MA (844-4525). Installation of subordinate stations was performed by CO-OPS/FOD personnel. WHITING personnel performed initial and closing levels at each subordinate station.

Tidal zoning for this survey is consistent with the Letter Instructions. The survey area for H10994 is contained within four tidal zones. The zoning data applicable for this survey is as follows:

ZONE NAME	TIME CORRECTOR (MIN)	RANGE RATIO	REFERENCE STATION
ATL201	-6	x0.93	844-3970
ATL203	0	x0.94	844-3970
ATL204	0	x0.95	844-3970
ATL205	0	x0.96	844-3970

A Request for Approved Tides was submitted to N/OPS1 on October 12, 2001 (See Appendix IV*). Verified tides from the N/OPS1 CO-OPS website were downloaded by WHITING personnel. Verified tidal data for this survey were applied to all sounding data. ***Approved tides and zones were reapplied to survey in Caris during office processing.***

Horizontal Control *See also the evaluation report*

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

Sounding positional control was established using Global Positioning System (GPS) corrected by the nearest U.S. Coast Guard differential GPS reference station. The primary differential beacon used for this survey was Chatham, Massachusetts (325 kHz). Portsmouth, New Hampshire (288 kHz) was utilized as a secondary differential beacon in the event that Chatham was inoperable. No horizontal control stations were established for this survey.

**** Data filed with original field records***

The horizontal dilution of precision (HDOP) was monitored during acquisition on all survey platforms. HDOP values did not exceed 4.00, and adequate satellite coverage was maintained throughout survey operations. All positioning equipment was operated in a manner consistent with the manufacturers requirements and as described in the DAPR**. Detailed information regarding vertical and horizontal control is included in the Vertical and Horizontal Control Report. See Appendix IV* - Tides and Water Levels.

**** Data filed with original field records***
***** Data filed at AHB***

D. RESULTS AND RECOMMENDATIONS *See also the evaluation report*

D.1. CHART COMPARISON

Five NOS charts are affected by this survey:

13275, 27th edition, July 24, 1999, 1:25,000
13270, ~~58~~ ***59***th edition, ~~October 9, 1999~~ ***July 14, 2001***, 1:25,000
13267, 29th edition, February 28, 1998, 1:80,000
13260, 37th edition, July 3, 1999, 1:378,838
13009, 29th edition, July 14, 2001, 1:500,000

Chart comparisons were completed using MapInfo 5.0. Digital raster images for charts 13275 and 13267 had been corrected through Notice to Mariners 30/01, July 28, 2001. The raster for chart 13270 had been corrected through Notice to Mariners 28/01, July 14, 2001.

The survey area was initially investigated with 200% SSS. In addition to specific point features, numerous SSS contacts, identified as rocks, were flagged as "significant" in an effort to define general rocky areas for further development. Discreet contacts were developed with 100% SWMB.

In rocky areas, an iterative development process was utilized. Initially, 100% SWMB data was acquired in any region of clustered "rock" SSS contacts. From this data, a digital terrain model (DTM) was generated. In the DTM, a pattern of large, oval-shaped rocky regions surrounded by flat bottom was evident. A process of daily SWMB acquisition, followed by review of the DTM to determine if additional coverage was required, was used to insure complete coverage of these regions.

Finally, SSS data was reviewed for charted features and soundings not resolved by the aforementioned developments. Any features or shoal charted depths in question were verified with 100% SWMB and/or dive investigations.

General Agreement with Charted soundings

In general, sounding data agreed well with charted depths. Discrepancies noted with charted depths are point features, most likely due to improvements in survey equipment and technology (i.e. VBES vs. SWMB) since the previous surveys. Contours matched closely with current charting, but have been more accurately defined by the density of SWMB data acquired during this survey. Individual features and significant discrepancies with specific charted depths are addressed in the Dangers to Navigation and Charted Features sections.

Channel Depths

The survey area includes the northern end of Boston North Channel, and junctions with survey H10991, completed by WHITING in 2000, in this area. Present survey soundings were compared with both charted depths and soundings acquired during survey H10991.

It is noted that Boston North Channel is a natural, undredged channel, and varied relief is evident in the DTM for this area. At the survey junction area, soundings from survey H10991 agreed well with present survey soundings. Slight discrepancies are validated by comparison with the relief of the DTM.

In general, present survey soundings agreed well with charted depths in the channel area. Two areas shoaler than the project depth of 40 feet are noted in the survey data. The most significant discrepancy is a shoal with least depth of 39 feet, identified at position 42˚ 22' 05.08" N, 070˚ 55' 04.78" W. This position is centrally located within the channel, and has a current charted depth of 45 feet. The second area, also a 39 foot shoal, is located on the east side of the channel at position 42˚ 22' 04.55" N, 070˚ 54' 59.57" W. This shoal falls within the survey junction, and is verified in sounding data from H10991. The current charted depth at this location is 41 feet. ***Concur - 39 foot shoal is shown on the 28th edition of chart 13275 and on the 60th edition of chart 13270. See also page 24 of this report for additional charting recommendations.***

The United States Army Corps of Engineers (USACE) was notified of these 39 foot soundings acquired within the channel. Correspondence with the USACE indicates that these discrepancies were detected during a USACE survey conducted March 16, 2001. A copy of email correspondence with the USACE is included in Appendix V* - Supplemental Survey Records and Correspondences.

AWOIS Items and Item Investigations

Ten AWOIS items were assigned within the survey limits. In addition, one unassigned AWOIS item (#2115) was identified during survey operations. These AWOIS items and all additional item investigations are summarized in the following pages.

**** Data filed with original field records***

AWOIS: 2089

Item Description: Charted 33 ft obstruction. YMS 14 mine layer, 207 GT sunk 1/11/45. Item merged with AWOIS items 2087 and 2090 during update of records 5/1999.

Source: Source document unavailable. Item previously surveyed (CL419/1945, BP39905/1945, H7059WD/1945, H6863/1945).

Item Position: 42˚ 22' 05.35" N, 070˚ 54' 50.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500 m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Not found.

Date(s): DN 278 & 318 (2000)
DN 205, 207, 208, 209, 261, 227 (2001)

Least Depth Position Number: N/A

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: N/A

Position Determined By: Differential GPS

Investigation Summary: This AWOIS radius is located at the junction of this survey and H10991, completed by WHITING in 2000. Approximately 27% of the radius falls solely within the bounds of H10991, and was investigated during the 2000 field season. A review of this prior data was included as a part of this AWOIS investigation. During the course of these two consecutive surveys, 200% SSS was completed over the entire 500 meter search radius. All but one SSS contact within the radius were determined to be rocks. The one exception is a barge wreck, identified as AWOIS 10646. All significant contacts within the radius were further investigated with 100% SWMB. This wreck was not identified within the AWOIS radius in either SSS or SWMB. AWOIS 2089 has been disproved.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the obstruction with least depth of 33 feet at position 42˚ 22' 05.27" N, 070˚ 54' 49.29" W and charting present survey soundings in this area.
AWOIS#2089 is not shown on the latest editions of all affected charts.

AWOIS: 2112

Item Description: Charted wreck with wire drag clearance of 45 feet. Wreck of barge "Arco No. 8", sunk 11/16/50, cleared to 45 feet.

Source: Reported in LNM121, 122/50 (November 17, 1950). Previously surveyed CL330/51.

Item Position: 42˚ 23' 24.35" N, 070˚ 55' 08.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: 318 / 297_1957 / 0001

Date(s): DN 278 & 318 (2000)
DN 212 (2001)

mb_01/05mb/2001-212/641_1308_384/48

Least Depth Position Number: Time 13:09:21.597, Ping 384, Beam 48

Investigation Used: 200% SSS, 100% SWMB

Least Depth Position: 42˚ 23' 22.53" N, 070˚ 55' 06.65" W

Position Determined By: Differential GPS

Investigation Summary: This AWOIS item was identified with 200% SSS at the currently charted position. The contact was further developed with 100% SWMB. The least depth of this wreck, as determined by SWMB, is 53 feet.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the wreck symbol with wire drag clearance of 45 feet at position 42˚ 23' 21.66" N, 070˚ 55' 05.81" W and charting a wreck with least depth of 53 feet at the surveyed position.

Concur - Chart 53 Wk with danger curve.

AWOIS: 2113
(*Same item as AWOIS 2112*)

Item Description: Charted wreck with wire drag clearance of 45 feet. Wreck of barge "Arco No. 8", sunk 11/16/50, cleared to 45 feet.

Source: Reported in LNM121, 122/50 (November 17, 1950). Previously surveyed CL330/51.

Item Position: 42˚ 23' 24.35" N, 070˚ 55' 08.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: 318 / 297_1957 / 0001

Date(s): DN 278 & 318 (2000)
DN 212 (2001)

Least Depth Position Number: Time 13:09:21.597, Ping 384, Beam 48

Investigation Used: 200% SSS, 100% SWMB

Least Depth Position: 42˚ 23' 22.53" N, 070˚ 55' 06.65" W

Position Determined By: Differential GPS

Investigation Summary: This AWOIS item was identified with 200% SSS at the currently charted position. The contact was further developed with 100% SWMB. The least depth of this wreck, as determined by SWMB, is 53 feet.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the wreck symbol with wire drag clearance of 45 feet at position 42˚ 23' 21.66" N, 070˚ 55' 05.81" W and charting a wreck with least depth of 53 feet at the surveyed position.
Concur - Reference AWOIS #2112 - See page 12 of this report.

42 **AWOIS: 7562**

Item Description: Charted wreck (PA). Boston Fuel Transport Co. barge sunk in 1972. Wreck reportedly in 38 feet of water and marked with lighted red and black buoy.

Source: Reported in LNM16/1972 (April 12, 1972).

Item Position: 42˚ 22' 27.35" N, 070˚ 56' 10.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Not found.

Date(s): DN 263, 266, 269, 271, 272, 275 & 318 (2000)
DN 210, 211, 227, 261 & 263 (2001)

Least Depth Position Number: N/A

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: N/A

Position Determined By: N/A

Investigation Summary: 200% SSS was completed over the entire 500 meter search radius. One SSS contact, located 30 m outside of the radius, exhibited a vague rectangular characteristic, possibly that of a silted over barge. This item was investigated by divers, and determined to be old lobster pots, fishing net and debris (see item investigation for contact 269 / 273_1620 / 0002). All significant contacts within the radius were further investigated with 100% SWMB. This wreck was not identified within the AWOIS radius in either SSS or SWMB. AWOIS 7562 has been disproved.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the charted dangerous wreck (PA) at position 42˚ 22' 27.35" N, 070˚ 56' 10.17" W, and charting present survey soundings in this area.
Concur - Delete dangerous Wk, depth unknown, PA.

AWOIS: 10375

Item Description: Charted “obstruction rep 1975". Reported by USCG Aux as “Assumed to be a rock”.

Source: Reported by USCG Aux in 1975 (CL215/1976).

Item Position: 42˚ 22' 10.20" N, 070˚ 57' 46.90" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Area too shoal to investigate with survey launches.

Date(s): N/A

Least Depth Position Number: N/A

Investigation Used: N/A

Surveyed Position: N/A

Position Determined By: N/A

Investigation Summary: This AWOIS item was too shoal to investigate with survey launches.

CHARTING RECOMMENDATION

The hydrographer recommends retaining the obstruction as charted at position 42˚ 22' 10.20" N, 070˚ 57' 46.90" W. ***Concur - Retain Obstn rep 1975.***

AWOIS: 10376

Item Description: Charted “shoaling rep 1975”. Shoaling reported by USCG Aux in 1975.

Source: Reported by USCG Aux in 1975 (CL215/1976)

Item Position: 42˚ 22' 38.5" N, 070˚ 57' 33.5" W

Required Investigation: ES Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: N/A

Date(s): DN 206, 261 & 263 (2001)

Least Depth Position Number: N/A

Investigation Used: SWMB

Surveyed Position: N/A

Position Determined By: N/A

Investigation Summary: All significant SSS contacts within this AWOIS radius were investigated with 100% SWMB. Fifty meter SWMB line spacing was used to investigate the remainder of the 500 meter AWOIS radius as far inshore as the 6 foot contour. A total of 89% of the radius was investigated using this method. A comparison of current charting with present survey soundings identified no shoaling in the area investigated. The hydrographer considers this investigation adequate to disprove the reported shoaling.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the note “shoaling rep 1975” at position 42˚ 22' 37.68" N, 070˚ 57' 32.41" W, and charting present survey soundings in this area.
Concur - Delete notation “Shoaling rep 1975"

AWOIS: 10377

Item Description: Charted dangerous wreck (PA).

Source: Reported by 1st CGD in LNM35/1991 (August 28, 1991).

Item Position: 42˚ 22' 11.00" N, 070˚ 54' 42.00" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Not found.

Date(s): DN 263, 265 & 269 (2000)
DN 208, 209, 227 & 261 (2001)

Least Depth Position Number: N/A

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: N/A

Position Determined By: Differential GPS

Investigation Summary: This AWOIS radius is located at the junction of this survey and H10991, completed by WHITING in 2000. Approximately 10% of the radius falls solely within the bounds of H10991, and was investigated during the 2000 field season. A review of this prior data was included as a part of this AWOIS investigation. During the course of these two consecutive surveys, 200% SSS was completed over the entire 500 meter search radius. All but one SSS contact within the radius were determined to be rocks. The one exception is a barge wreck, identified as AWOIS 10646. All significant contacts within the radius were further investigated with 100% SWMB. This wreck was not identified within the AWOIS radius in either SSS or SWMB. AWOIS 10377 has been disproved.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the charted dangerous wreck (PA) at position 42˚ 22' 11.00" N, 070˚ 54' 42.00" W, and charting present survey soundings in this area. ***Concur - Delete dangerous Wk, depth unknown, PA***

AWOIS: 10378

Item Description: Charted dangerous wreck. Cabin cruiser (43 ft) sunk in 53 ft of water, 1975.

Source: Reported by 1st CGD in LNM31/1975 (July 30, 1975).

Item Position: 42˚ 22' 45.35" N, 070˚ 54' 43.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Not found.

Date(s): DN 278 & 318 (2000)
DN 205, 207, 211 & 227 (2001)

Least Depth Position Number: N/A

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: N/A

Position Determined By: N/A

Investigation Summary: 200% SSS was completed over the entire 500 meter search radius. All SSS contacts within the radius were determined to be rocks. All significant contacts within the radius were further investigated with 100% SWMB. This wreck was not identified within the AWOIS radius in either SSS or SWMB. AWOIS 10378 has been disproved.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the charted dangerous wreck at position 42˚ 22' 45.35" N, 070˚ 54' 43.17" W, and charting present survey soundings in this area. ***Concur - Delete dangerous Wk, depth unknown***

AWOIS: 10379

Item Description: Charted dangerous wreck (PA). Barbara Ann III (42 ft lobster boat) sunk in 70 ft of water.

Source: Reported by 1st CGD in LNM35/1984 (August 28, 1984).

Item Position: 42˚ 23' 54.35" N, 070˚ 53' 22.17" W

Required Investigation: SD, S2, SWMB, DI Radius: 500m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: Not found.

Date(s): DN 277 & 278 (2000), DN 204, 205, 207, 212, 213 & 226 (2001)

Least Depth Position Number: N/A

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: N/A

Position Determined By: Differential GPS

Investigation Summary: 200% SSS was completed over the entire 500 meter search radius. All SSS contacts within the radius were determined to be rocks. All significant contacts within the radius were further investigated with 100% SWMB. This wreck was not identified within the AWOIS radius in either SSS or SWMB. AWOIS 10379 has been disproved.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the charted dangerous wreck (PA) at position 42˚ 23' 54.35" N, 070˚ 53' 22.17" W, and charting present survey soundings in this area. ***Concur - Delete dangerous Wk, depth unknown, PA***

AWOIS: 10646

Item Description: Charted wreck with least depth of 35 feet. Obstruction reported by ASACE during survey of Boston North Channel, May 2000.

Source: Obstruction reported by ASACE to CGD1 during survey of Boston North Channel Reported in LNM12/00 (August 28, 1991).

Item Position: 42˚ 22' 02.10" N, 070˚ 55' 01.90" W

Required Investigation: SD, S2, SWMB, DI Radius: 250m

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: 263 / 098_1748 / 0001

Date(s): 263 & 269 (2000), 208 (2001)
mb_01/05mb/2001-208/752_2058_213/18
Least Depth Position Number: Time 20:58:31.365, Ping 213, Beam 18

Investigation Used: 200% SSS, 100% SWMB

Least Depth Position: 42˚ 22' 02.17" N, 070˚ 55' 02.18" W

Position Determined By: Differential GPS

Investigation Summary: This AWOIS item was identified with 200% SSS at the currently charted position. The contact was further developed with 100% SWMB. The least depth of this wreck, as determined by SWMB, is 34 feet. It is noted that this AWOIS item was previously addressed in survey H10991, completed by WHITING in 2000. The least depth determined during survey operations (including a dive investigation) in the 2000 field season was 33 feet.

CHARTING RECOMMENDATION

The hydrographer recommends retaining the charted wreck symbol, deleting the least depth of 35 feet, and charting a least depth of 33 feet as determined during survey H10991, in 2000.
Concur - Reference NOS survey H10991 (2000)

AWOIS: 2115
(*Not assigned*)

Item Description: Reported scattered barge wreckage. Not presently charted on 13275 or 13270. Item is charted on 13267 as a non-dangerous wreck.

Source: NM 1/24/45

Item Position: 42˚ 23' 30.35" N, 070˚ 53' 13.16" W

Required Investigation: Not assigned, Information Only. Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Contact No: 277 / 028_1819 / 0001

Date(s): DN 277 (2000)
DN 204, 213 & 242
mb_01/05mb/2001-204/716_1758_213/59
Least Depth Position Number: Time 17:58:54.154, Ping 213, Beam 59

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 23' 29.27" N, 070˚ 53' 17.93" W

Position Determined By: Differential GPS

Investigation Summary: AWOIS 2115 was not assigned for this survey. Contact number 277 / 028_1819 / 0001 was identified during SSS operations. During post-processing, it was noted that this item corresponds with AWOIS 2115, in both position and item description. A dive was performed, identifying large timbers, possibly wooden barge wreckage, with no vertical structure. A least depth of 82 feet was determined by SWMB at position 42˚ 23' 29.27" N, 070˚ 53' 17.93" W.

CHARTING RECOMMENDATION

This item is currently charted on 13267 as a non-dangerous wreck. It is NOT presently charted on either 13270 or 13275. The hydrographer recommends deleting the non-dangerous wreck at position 42˚ 23' 29.63" N, 070˚ 53' 13.55" W on chart 13267, and charting a wreck with least depth of 82 feet at position 42˚ 23' 29.27" N, 070˚ 53' 17.93" W on all three affected charts. ***Concur - Chart 82 Wk***

Dive Investigation Report
Dive No. 242.2

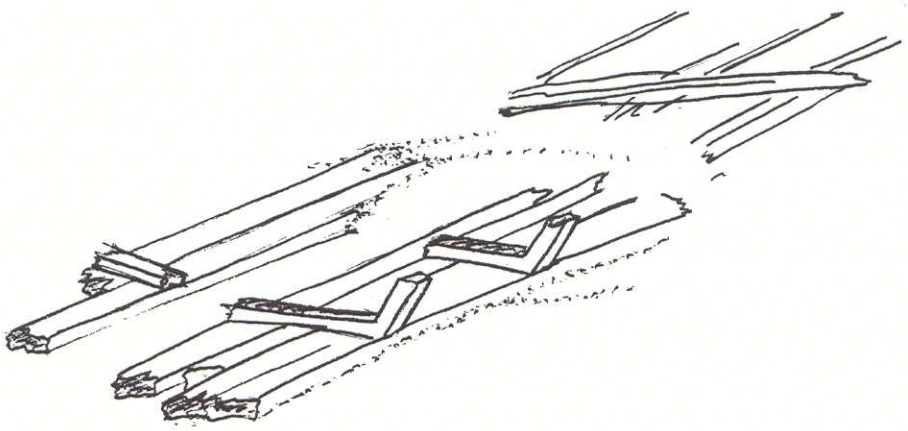
Survey Information			
AWOIS Item: 2115	Description: Barge debris		Date: August 30, 2001
Latitude - Longitude		SSS Contacts	
42° 23' 29.27" N	070° 53' 17.93" W	277 / 028_1819 / 0001	
SWMB day/line/time/ping/beam		VBES Positions	
204 / 716_1758 / 17:58:54.154 / 213 / 59		N/A	
SWMB Depth		VBES Depth	
25.19 m (82 ft)		N/A	

Dive Information	
Dive Master: LT Brennan	Time In: 1434 UTC
Dive Tender: LTJG Seifert	Time Out: 1454 UTC
Diver #1: LT Brennan	Max Depth: 96 ft
Diver #2: LTJG DeHart	Visibility/Current: 7 ft / 0 kt

Diver's Least Depth Gauge Information			
Gauge Number:	N/A	CTD Location:	42° 22' 12" N, 070° 55' 36" W
Pre-Dive Surface Pressure:	N/A	CTD Time:	1922 UTC
Least Depth Pressure:	N/A	**DLDG Depth:**	N/A
Post-Dive Deck Pressure:	N/A	**Tide Corrector:**	N/A
Time of Least Depth:	N/A	**Item Least Depth:**	LD FROM SWMB

Narrative Report:

Item was identified as a wreck by SSS. The SSS contact is located 200 meters northeast of the position for AWOIS 2115. This AWOIS item was NOT assigned for the survey area, however it is described as reported scattered barge wreckage. Divers identified large timbers, possibly barge remains, with no vertical structure. Due to limited bottom time associated with this depth of water, no least depth gauge pressure was obtained by divers. Timber debris, as well as a square "barge-like" shape is evident in the SSS image. The hydrographer considers the location and nature of debris identified, in conjunction with SSS imagery, adequate for confirmation of barge remains and AWOIS 2115. The item least depth was determined by SWMB.



Contact: 205 / 292_1359 / 0001 (DTON #5)

Item Description: Uncharted wreck.

Source: H10994 SSS data.

Item Position: 42˚ 23' 18.93 N, 070˚ 54' 35.10 W

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating contacts: 278 / 039_1710 / 0001, 278 / 039_1711 / 0002

Date(s): DN 278 (2000)
DN 205 & 212
mb_01/05mb/2001-212/827_1849_262/77
Least Depth Position Number: Time 18:49:38.782, Ping 262, Beam 77

Investigation Used: 200% SSS, 100% SWMB

Least Depth Position: 42˚ 23' 18.93 N, 070˚ 54' 35.10 W

Position Determined By: Differential GPS

Investigation Summary: Contact 205 / 292_1359 / 0001, was identified as a barge wreck on SSS. A least depth of 16.86 m (55 ft), corrected with verified tides, was determined at position 42˚ 23' 18.93 N, 070˚ 54' 35.10 W with SWMB. This item was submitted as DTON #5. ***See also page 34 of this report***

CHARTING RECOMMENDATION

The hydrographer recommends charting a wreck with least depth of 55 ft at position 42˚ 23' 18.93 N, 070˚ 54' 35.10 W. ***Concur - Retain 55 Wk as charted***

Contact: Rock in Boston North Channel (DTON #16)
(No SSS contact. Item identified in SWMB data.)

Item Description: Rock

Source: H10994 SWMB data.

Item Position: 42˚ 22' 05.08" N, 070˚ 55' 04.78" W

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating contacts: None

Date(s): DN 209 & 284

Least Depth Position Number: Time 17:09:20.963, Ping 711, Beam 86

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 22' 05.08" N, 070˚ 55' 04.78" W

Position Determined By: Differential GPS

Investigation Summary: Item was identified in SWMB data as a 39 foot sounding currently charted as a 45 foot depth in Boston North Channel. Dive operations at this site identified a large, discreet rock. A least depth of 11.888 m (39 ft), corrected with verified tides, was determined at position 42˚ 22' 05.08" N, 070˚ 55' 04.78" W with SWMB. A corresponding least depth of 12.04 m (39 ft) was obtained by DLDG. WHITING has both submitted this feature as a DTON, and notified the USACE of this rock. A copy of email correspondence with the USACE is included in Appendix V* - Supplemental Records.

CHARTING RECOMMENDATION

The hydrographer recommends charting a rock with least depth of 39 ft at position 42˚ 22' 05.08" N, 070˚ 55' 04.78" W. ***Concur - Chart dangerous 39 Rk - See also page 34 of this report***

**** Data filed with original field records***

NOAA Ship WHITING
Dive Investigation Report
Dive No. 284.1

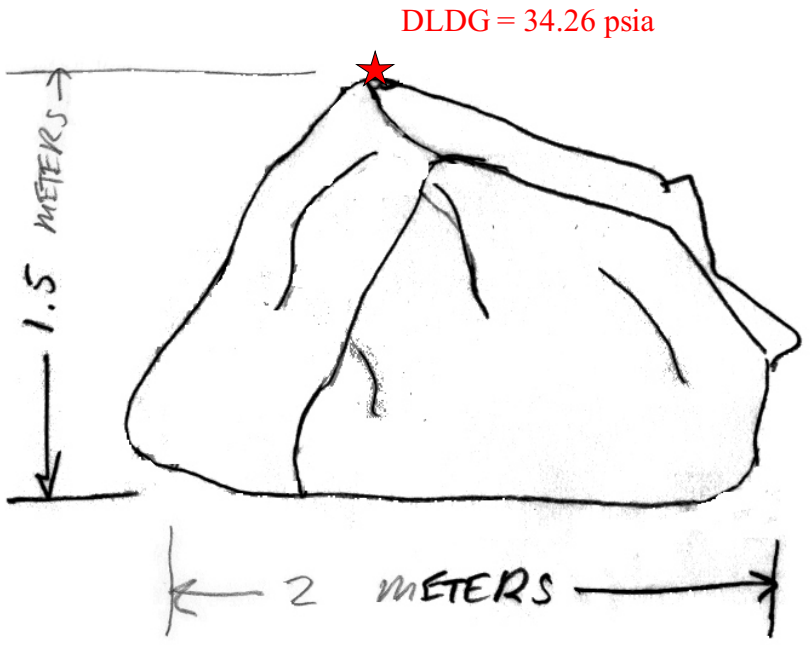
Survey Information			
AWOIS Item: N/A	Description: Rock in North Channel		Date: October 11, 2001
Latitude - Longitude		SSS Contacts	
42° 22' 05.08" N	070° 55' 04.78" W	None - item identified in SWMB	
SWMB day/line/time/ping/beam		VBES Positions	
209 / 767_1708 / 17:09:20.963 / 711 / 86		N/A	
SWMB Depth		VBES Depth	
11.888 m (39 ft)		N/A	

Dive Information	
Dive Master: LT Brennan	Time In: 1504 LMT
Dive Tender: LT Brennan	Time Out: 1513 LMT
Diver #1: SS Elwell	Max Depth: 50 ft
Diver #2: LTJG DeHart	Visibility/Current: 15 ft / 0.25 kt

Diver's Least Depth Gauge Information			
Gauge Number:	68332	CTD Location:	42° 22' 17 N, 070° 55' 53" W
Pre-Dive Deck Pressure:	14.70 psia	CTD Time:	2012 UTC
Least Depth Pressure:	34.26 psia	**DLDG Depth:**	13.48 m
Post-Dive Deck Pressure:	14.52 psia	**Tide Corrector:**	-1.44 m
Time of Least Depth:	1510 LMT (1910 UTC)	**Item Least Depth:**	12.04 m (39 ft)

Narrative Report:

Item is a discreet rock located in the center of Boston North Channel. Position presently charted with 45 ft depth.



Contact: 207 / 279_1323 / 0005

Item Description: Uncharted wreck.

Source: H10994 SSS data.

Item Position: 42˚ 23' 42.00 N, 070˚ 53' 06.00 W

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating contacts: 277 / 026_1643 / 0004

Date(s): DN 277 (2000)
DN 204, 207, 213 & 242
mb_01/05mb/2001_213/975_1435 1632/66
Least Depth Position Number: Time 14:38:58.991, Ping 1632, Beam 66

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 23' ~~42.00~~ ***41.97*** N, 070˚ 53' ~~06.00~~ ***04.26*** W

Position Determined By: Differential GPS

Investigation Summary: Contact 207 / 279_1323 / 0005, was identified as a wreck on SSS. Dive operations at this site identified timber and steel debris in this vicinity. Due to limited bottom time and reduced visibility, the actual wreck was not located by divers. A least depth of 26.411 m (86 ft), corrected with verified tides, was determined at position 42˚ 23' ~~42.00~~ ***41.97*** N, 070˚ 53' ~~06.00~~ ***04.26*** W with SWMB.

CHARTING RECOMMENDATION

Based on the nature of debris identified and SSS imagery, the hydrographer recommends charting a wreck with least depth of 86 ft at position 42˚ 23' ~~42.00~~ ***41.97*** N, 070˚ 53' ~~06.00~~ ***04.26*** W. ***Concur - Chart 86 Wk***

NOAA Ship WHITING
Dive Investigation Report
Dive No. 242.1

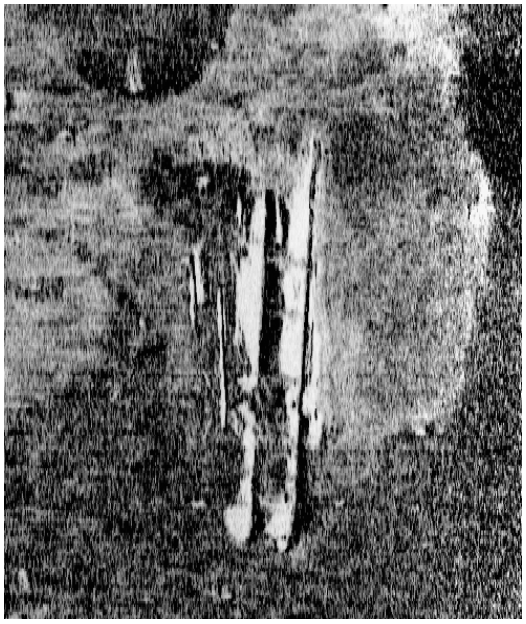
Survey Information			
AWOIS Item: N/A	Description: Uncharted wreck		Date: August 30, 2001
Latitude - Longitude		SSS Contacts	
42° 23' 42.00 N	070° 53' 06.00 W	207 / 279_1323 / 0005	
SWMB day/line/time/ping/beam		VBES Positions	
213 / 975_1435 / 14:38:58.991 / 1632 / 66		N/A	
SWMB Depth		VBES Depth	
26.411 m (86 ft)		N/A	

Dive Information	
Dive Master: LT Brennan	Time In: 1324 UTC
Dive Tender: LTJG DeHart	Time Out: 1339 UTC
Diver #1: LTJG Seifert	Max Depth: 100 ft
Diver #2: SS Elwell	Visibility/Current: 10 ft / 0 kt

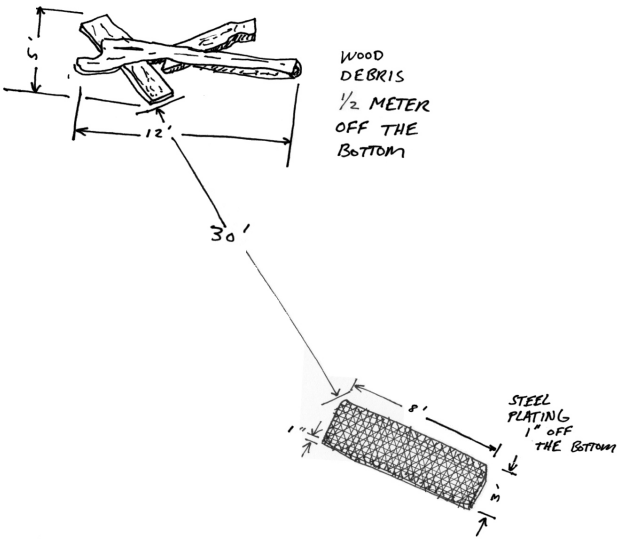
Diver's Least Depth Gauge Information			
Gauge Number:	N/A	CTD Location:	42° 22' 12" N, 070° 55' 36" W
Pre-Dive Deck Pressure:	N/A	CTD Time:	1922 UTC
Least Depth Pressure:	N/A	**DLDG Depth:**	N/A
Post-Dive Deck Pressure:	N/A	**Tide Corrector:**	N/A
Time of Least Depth:	N/A	**Item Least Depth:**	DETERMINED BY SWMB

Narrative Report:

Item was identified as a wreck by SSS. Wreck is scaled from SSS as approximately 110 ft long. Divers identified timber and steel debris. Due to the reduced visibility and limited bottom time associated with this depth of water, the actual wreck was not identified visually by divers. Timber debris is evident in the SSS image, west of the body of the wreck. The hydrographer considers the location and nature of debris identified, in conjunction with SSS imagery (see below), adequate for confirmation of a wreck. The item least depth was determined by SWMB.



SSS image of contact 207 / 279_1323 / 0005



Debris identified by divers in vicinity of contact.

Contact: 275 / 244_1448 / 0001

Item Description: Wire and steel debris

Source: H10994 SSS data *(primary) dp 14dive/2001-242/dn242_dives; dn242_Dive_3[#] (Secondary) mb_01/05mb/2001_205/146_2147 189/97*

Item Position: 42˚ 23' 02.25~~4~~" N, 070˚ 56' 10.42" W *Dive LD 41ft*

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating Contacts: None

Date(s): 275 (2000)
205 & 242 (2001)

Least Depth Position Number: Time 17:30:00, DLDG

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 23' 02.25~~4~~" N, 070˚ 56' 10.42" W

Position Determined By: Differential GPS

Investigation Summary: Contact 275 / 244_1448 / 0001 was identified as debris during SSS operations. A dive was performed on this contact, confirming a variety of wire and steel debris, with no apparent source in the vicinity. Items appear to have been discarded from a vessel. A least depth of 12.63 m (41 ft), corrected with verified tides, was determined in position 42˚ 23' 02.25~~4~~" N, 070˚ 56' 10.42" W by DLDG. A correlating least depth of 12.81 m (42 ft) was acquired by SWMB.

CHARTING RECOMMENDATION

The hydrographer recommends charting an obstruction with note “debris” and least depth of 41 ft at position 42˚ 23' 02.25~~4~~" N, 070˚ 56' 10.42" W. *Concur with clarification - Chart 41 Obstn*

NOAA Ship WHITING
Dive Investigation Report
Dive No. 242.3

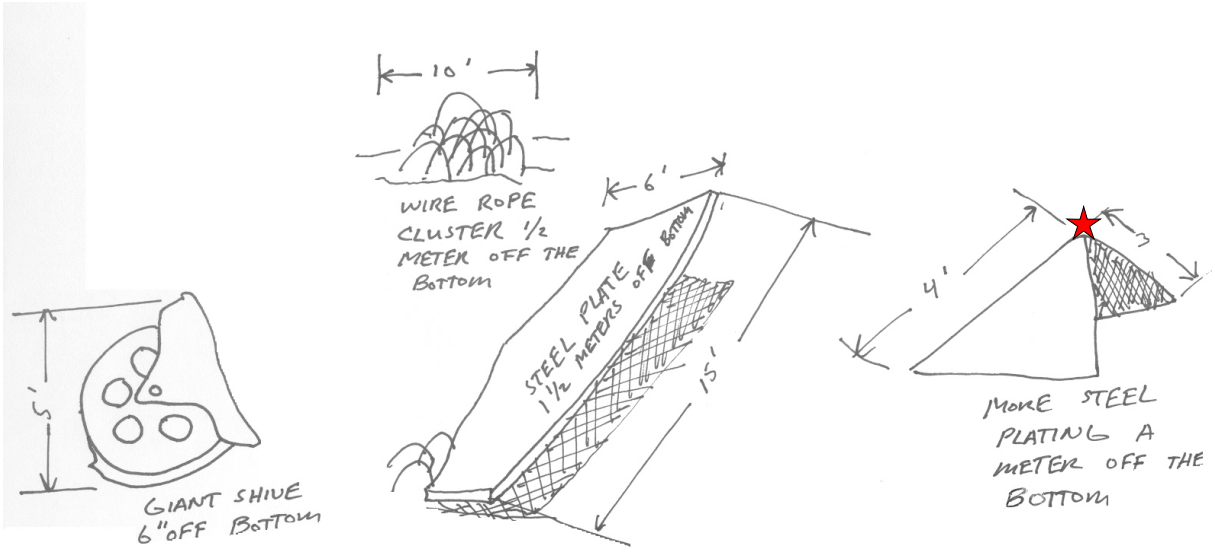
Survey Information			
AWOIS Item: N/A	Description: Wire and steel debris		Date: August 30, 2001
Latitude - Longitude		SSS Contacts	
42° 23' 02.25" N	070° 56' 10.42" W	275 / 244_1448 / 0001	
SWMB day/line/time/ping/beam		VBES Positions	
205 / 146_2147 / 21:47:57.978 / 189 / 97		N/A	
SWMB Depth		VBES Depth	
12.81 m (42 ft)		N/A	

Dive Information	
Dive Master: LT Brennan	Time In: 1719 UTC
Dive Tender: LTJG DeHart	Time Out: 1736 UTC
Diver #1: LTJG Seifert	Max Depth: 52 ft
Diver #2: SS Elwell	Visibility/Current: 7 ft / 0 kt

Diver's Least Depth Gauge Information			
Gauge Number:	68332	CTD Location:	42° 22' 12" N, 070° 55' 36" W
Pre-Dive Surface Pressure:	14.81	CTD Time:	1922 UTC
Least Depth Pressure:	34.90	**DLDG Depth:**	13.85 m
Post-Dive Deck Pressure:		**Tide Corrector:**	-1.22 m
Time of Least Depth:	1730 UTC	**Item Least Depth:**	12.63 m (41 ft)

Narrative Report:

Divers identified random wire and steel debris with no determinable source in the area. Items appear to have been dumped. Least depth was acquired on the peak of a triangular shaped piece of steel, as noted below.



Contact: 274 / 235_1951 / 0002

Item Description: Boulder, currently charted as a 20 ft wire drag clearance.

Source: H10994 SSS data

Item Position: 42˚ 23' 48.64" N, 070˚ 56' 20.50" W

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating Contacts: None

Date(s): 274 (2000)
205 & 242 (2001)
mb_01/05mb/2001_205/137_1650_106/78
Least Depth Position Number: Time 16:50:09.622, Ping 106, Beam 78

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 23' 48.64" N, 070˚ 56' 20.50" W

Position Determined By: Differential GPS

Investigation Summary: Contact 2000-274 / 235_1951 / 0002 was identified in SSS data, and correlated with a charted 20 ft wire drag clearance during post-processing. A dive performed on this contact identified a boulder approximately 13 ft high, entirely covered with starfish and crabs. A least depth of 6.41 m (21 ft), corrected with verified tides, was determined in position 42˚ 23' 48.64" N, 070˚ 56' 20.50" W by SWMB. A depth of 6.47 m (21 ft) was confirmed by DLDG.

CHARTING RECOMMENDATION

The hydrographer recommends deleting the 20 ft wire drag clearance at position 42˚ 23' 47.37" N, 070˚ 56' 20.12" W , and charting a rock with least depth of 21 ft at position 42˚ 23' 48.64" N, 070˚ 56' 20.50" W. ***Concur with clairification - Chart soundings from present survey - Add "rky" notations as required***

NOAA Ship WHITING
Dive Investigation Report
Dive No. 242.4

Survey Information			
AWOIS Item: N/A	Description: Boulder cleared to 20 ft by wire drag		Date: August 30, 2001
Latitude - Longitude		SSS Contacts	
42° 23' 48.64" N	070° 56' 20.50 W	274 / 235_1951 / 0002	
SWMB day/line/time/ping/beam		VBES Positions	
205 / 137_1650 / 16:50:09.622 / 106 / 78		N/A	
SWMB Depth		VBES Depth	
6.41 m (21 ft)		N/A	

Dive Information	
Dive Master: LT Brennan Dive Tender: LTJG Seifert Diver #1: LT Brennan Diver #2: LTJG DeHart	Time In: 1829 UTC Time Out: 1845 UTC Max Depth: 36 ft Visibility/Current: 7 ft / 0 kt

Diver's Least Depth Gauge Information			
Gauge Number:	68332	CTD Location:	42° 22' 12" N, 070° 55' 36" W
Pre-Dive Surface Pressure:	14.65	CTD Time:	1922 UTC
Least Depth Pressure:	24.90	**DLDG Depth:**	7.10 m
Post-Dive Deck Pressure:		**Tide Corrector:**	-0.633 m
Time of Least Depth:	1840 UTC	**Item Least Depth:**	6.47 m (21 ft)

Narrative Report:

Item is currently charted as a 20 ft wire drag clearance. Divers identified a boulder approximately 13 ft tall, entirely covered with starfish and crabs. Smaller rocks and numerous starfish are scattered along the sea floor in the area.

Contact: 269 / 273_1620 / 0002

Item Description: Old lobster pots, fishing net and debris.

Source: H10994 SSS data

Item Position: 42˚ 22' 16.43" N, 070˚ 55' 53.60" W

Required Investigation: N/A Radius: N/A

Charts Affected: 13275, 13270, 13267

INVESTIGATION

Correlating Contacts: None

Date(s): 269 (2000)
261 & 284 (2001)
mb_01/05mb/2001_261/292_2125 537/87
Least Depth Position Number: Time 21:27:03.203, Ping 537, Beam 87

Investigation Used: 200% SSS, 100% SWMB, Dive

Least Depth Position: 42˚ 22' 16.43" N, 070˚ 55' 53.60" W

Position Determined By: Differential GPS

Investigation Summary: Contact 269 / 273_1620 / 0002 was identified in SSS data, and flagged as an unknown object. Since the contact had a slight rectangular shape to it and was located 30 m outside AWOIS 7562 (a barge wreck), the item was investigated by divers. Divers identified a stretch of debris consisting of old lobster pots and fishing nets. The debris pile had little vertical extent and the least depth was obtained on the top of a lobster pot. The least depth of 13.121 m (43 ft), corrected with verified tides, was determined in position 42˚ 22' 16.43" N, 070˚ 55' 53.60" W by SWMB. A depth of 13.57 m (44 ft) was confirmed by DLDG.

CHARTING RECOMMENDATION

The hydrographer recommends charting an obstruction with least depth of 43 ft and note "debris" at position 42˚ 22' 16.43" N, 070˚ 55' 53.60" W. ***Do not concur - Shallower depths are in the area - This item is considered insignificant to navigation***

NOAA Ship WHITING
Dive Investigation Report
Dive No. 284.2

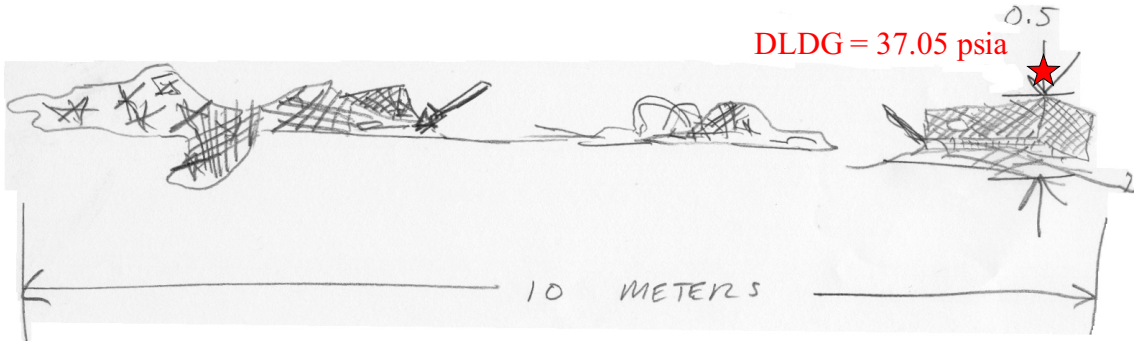
Survey Information			
AWOIS Item: N/A	Description: Debris, suspected as AWOIS 7562.		Date: October 11, 2001
Latitude - Longitude		SSS Contacts	
42˚ 22' 16.43" N	070˚ 55' 53.60" W	269 / 273_1620 / 0002	
SWMB day/line/time/ping/beam		VBES Positions	
261 / 292_2125 / 21:27:03.203 / 537 / 87		N/A	
SWMB Depth		VBES Depth	
13.121 m (43 ft)		N/A	

Dive Information	
Dive Master: LT Brennan	Time In: 1546 LMT
Dive Tender: LT Brennan	Time Out: 1602 LMT
Diver #1: SS Elwell	Max Depth: 52 ft
Diver #2: LTJG DeHart	Visibility/Current: 10 ft / 0.25 kt

Diver's Least Depth Gauge Information			
Gauge Number:	68332	CTD Location:	42˚ 22' 17 N, 070˚ 55' 53" W
Pre-Dive Deck Pressure:	14.68 psia	CTD Time:	2012 UTC
Least Depth Pressure:	37.05 psia	**DLDG Depth:**	15.41 m
Post-Dive Deck Pressure:	14.52 psia	**Tide Corrector:**	-1.84 m
Time of Least Depth:	1555 LMT (1955 UTC)	**Item Least Depth:**	13.57 m (44 ft)

Narrative Report:

Item consists of old lobster pots, fishing net and debris spread along a distance of approximately 10 meters. Very little vertical extent to item.



Dangers to Navigation

Sixteen items associated with this survey were submitted to N/CS33 as Dangers to Navigation (DTON). It is noted that the deeper waters of Broad Sound, west of the Precautionary Zone, are intended to be used as an anchorage for large petroleum tankers and vessels transporting liquid natural gas. The size of these vessels and hazardous nature of their cargo was carefully considered during the selection of DTONs. These items are summarized in the following table. All least depths are corrected with verified tides. A copy of the DTON report submitted by WHITING has been included as Appendix I.

DANGERS TO NAVIGATION AFFECTING NOAA CHARTS 13275, 13270 & 13267				
DTON #	LEAST DEPTH (FEET)	LEAST DEPTH LATITUDE	LEAST DEPTH LONGITUDE	DESCRIPTION
1	19	42˚ 24' 51.56" N	070˚ 57' 17.36" W	19 ft sounding on rocks*
2	~~32~~ *33*	42˚ 23' 37.78" N	070˚ 55' 58.82" W	~~32~~ *33* ft sounding on rocks*
3	58	42˚ 23' 45.16" N	070˚ 55' 18.18" W	58 ft sounding on rocks**
4	~~36~~ *37*	42˚ 23' 11.96" N	070˚ 55' 01.19" W	~~36~~ *37* ft sounding on rocks**
5	55	42˚ 23' 18.93" N	070˚ 54' 35.10" W	55 ft least depth on uncharted wreck *Retain as currently charted*
6	~~48~~ *49*	42˚ 22' 51.00" N	070˚ 54' 49.78" W	~~48~~ *49* ft sounding on rocks*
7	28	42˚ 22' 27.81" N	070˚ 55' 54.58" W	28 ft sounding on rocks**
8	40	42˚ 23' 39.18" N	070˚ 53' 21.57" W	40 ft sounding on rocks**
9	55	42˚ 23' 35.11" N	070˚ 53' 06.73" W	55 ft sounding rocks**
10	~~60~~ *61*	42˚ 23' 38.83" N	070˚ 52' 39.77" W	~~60~~ *61* ft sounding rocks***
11	72	42˚ 23' 08.67" N	070˚ 52' 38.33" W	72 ft sounding on rocks*
12	62	42˚ 22' 40.6~~1~~*0*" N	070˚ 53' 23.12" W	62 ft sounding on rocks**
13	~~61~~ *60*	42˚ 22' 36.51" N	070˚ 53' 11.46" W	~~61~~ *60* ft sounding on rocks**
14	69	42˚ 22' 41.4~~6~~*5*" N	070˚ 52' 55.88" W	69 ft sounding on rocks**
15	53	42˚ 22' 23.73" N	070˚ 53' 42.51" W	53 ft sounding on rocks**
16	39	42˚ 22' 05.08" N	070˚ 55' 04.78" W	39 ft least depth on rock*

**** Concur - Chart as dangerous rocks***
***** Concur with clarification - Chart as soundings - Add "rky" notations as required.***
****** Shallower soundings in vicintiy - Not charted***

Charted Features

The following is a list of significant charted features within the survey limits which have not been previously addressed in this report.

ITEM	CHARTED POSITION	SURVEYED LD POSITION	REMARKS/RECOMMENDATIONS
Charted 12 foot shoal "Flip Rock"	42˚ 24' 11.18" N 070˚ 55' 30.09" W	42˚ 24' 11.60" N 070˚55'30.~~30~~*29*"W	Shoal was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 13 feet. Chart present survey soundings. ***Concur***
Charted rock submerged 5 feet at MLLW "Joe Beach Ledge"	42˚ 24' 57.69" N 070˚ 54' 49.45" W	42˚ 24' 57.15" N 070˚ 54' 49.49" W	Rock was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 3 feet. Retain rock symbol as charted. Chart least depth of 3 feet from present survey soundings. ***Concur***
Charted 8 foot shoal	42˚ 25' 44.95" N 070˚ 54' 23.05" W	42˚ 25' 45.2~~7~~*6*" N 070˚54'23.~~20~~*19*"W	Shoal was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 9 feet. Chart present survey soundings. ***Concur***
Charted 15 foot shoal	42˚ 25' 43.16" N 070˚ 54' 24.53" W	42˚ 25' 43.76" N 070˚ 54' 25.48" W	Shoal was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 12 feet. Chart present survey soundings. ***Concur***
Charted danger circle with 11 foot wire drag clearance	42˚ 22' 00.46" N 070˚ 56' 49.74" W	42˚ 22' 02.13" N 070˚ 56' 50.05" W	Area is outside of the survey limits, and was investigated with 100% SWMB, only. No obstruction was identified. Least depth in the area, determined by SWMB, is 15 feet. Delete danger circle with 11 foot wire drag clearance and chart present survey soundings in the area. ***Concur***
Charted danger circle with 16 foot wire drag clearance	42˚ 22' 11.28" N 070˚ 56' 31.33" W	42˚ 22' 10.57" N 070˚ 56' 32.15" W .	Danger circle area was investigated with 200% SSS and 100% SWMB. Item was identified on SSS as a rock. Least depth determined by SWMB is 18 feet. Delete danger circle with 16 foot wire drag clearance and chart present survey soundings in the area. ***Concur***

ITEM	CHARTED POSITION	SURVEYED LD POSITION	REMARKS/RECOMMENDATIONS
Charted rock submerged 11 feet at MLLW	42˚ 23' 06.30" N 070˚ 57' 13.70" W	42˚ 23' 06.09" N 070˚ 57' 14.10" W ***Chart 10 Rk***	Rock was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 10 feet. Retain rock symbol and note "Rk" as charted. Chart least depth of 10 feet from present survey soundings. ***Concur***
Charted shoal with 20 foot wire drag clearance	42˚ 23' 02.70" N 070˚ 57' 05.83" W	~~42˚ 23' 023.91" N~~ ~~070˚ 57' 07.80" W~~ ***42˚ 23' 03.24" N*** ***070˚ 57' 09.50" W***	Area is generally rocky. No specific item identified. Shoalest sounding in the immediate area is ~~20~~ ***19*** ft, as determined by SWMB. Delete charted shoal with 20 foot wire drag clearance and chart present survey soundings. ***Concur***
Charted shoal with 22 foot wire drag clearance	42˚ 23' 03.81" N 070˚ 56' 53.21" W	No item identified.	Charted feature area was investigated with 200% SSS and developed with 100% SWMB. No contacts or shoals were identified. Delete charted shoal with 22 foot wire drag clearance and chart present survey soundings. ***Concur***
Charted rock submerged 10 feet at MLLW	42˚ 23' 39.34" N 070˚ 57' 17.64" W	42˚ 23' 39.08" N 070˚ 57' 16.30" W ***Chart 9 Rk***	Rock was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 9 feet. Retain rock symbol and note "Rk" as charted. Chart least depth of 9 feet from present survey soundings. ***Concur***
Charted 18 foot shoal "Nahant Rock"	42˚ 24' 20.71" N 070˚ 56' 49.97" W	42˚ 24' 20.62" N 070˚ 56' 50.71" W	Shoal was verified at charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 19 feet. Chart present survey soundings. ***Concur***
Charted 16 foot shoal	42˚ 24' 49.74" N 070˚ 55' 40.64" W	42˚ 24' 49.73" N 070˚ 55' 42.50" W	Shoal was identified 40 m west of charted position with 200% SSS and 100% SWMB. Least depth determined by SWMB is 14 feet. Chart present survey soundings. ***Concur***

D.2. ADDITIONAL RESULTS

Aids to Navigation (ATON's)

Detached positions were acquired for all aids to navigation within the survey limits of H10994. Surveyed positions and observed characteristics were compared to both current charting and the most recent edition of the Light List.

Charted and referenced ATON characteristics are incorrect for Boston North Channel Red Bell Buoy "2"*. This aid is both charted and identified in the Light List as a lighted buoy. The buoy was observed during survey operations and is not equipped with a light. A photo of this buoy, acquired during survey operations, is shown to the right.

Boston North Channel Red Bell Buoy "2" - Sept. 2001

All but two ATONs were on station within 40 meters of their respective charted positions. These two exceptions are summarized in the following table.*

ATON	LIGHT LIST #	LATITUDE LONGITUDE (SURVEYED POSITION)	RANGE (R) & BEARING (B) FROM CHARTED POSITION
Flip Rock Gong Buoy FR*	10555	42° 24' 08.12' N 070° 55' 28.85" W	R= 49.5 m B = 251.5° T
Red Bell Buoy 2* *(Not lighted)*	10685	42° 22' 11.34" N 070° 55' 09.07" W	R = 44.2 m B = 358.0° T

**** Defer to MCD Update Services Branch for charting recommendations for Aids to Navigation.***

All federally maintained ATONs within the survey limits are contained within the 2001 Edition of the Light List. One privately maintained mooring buoy, positioned during survey operations, does not appear in the Light List.

This mooring buoy is currently charted with the name "Pilot". The name "Pilot" does not actually appear on the buoy, but usage was observed to be as a temporary mooring for the Boston Pilots' boats. The buoy is a white mooring nun with a blue band and lettering "CG". The hydrographer recommends this buoy's charted name be changed to "CG" with notation "(priv)", and the appropriate information, as summarized in the following table, be included in the Light List.* A photo of this buoy is shown in the photo to the right.

Private mooring buoy utilized by Boston Pilots.

ATON DESCRIPTION	SURVEYED POSITION
Private white, nun mooring buoy w/ blue band and lettering "CG"	42° 25' 00.20" N, 070° 55' 00.52" W

It is noted that, although present in the Light List, no position data is given for four buoys within the survey limits. These buoys, and their respective surveyed positions, are listed in the following table. The hydrographer recommends that the current buoy positions be incorporated into the Light List.*

ATON	LIGHT LIST NUMBER	LATITUDE / LONGITUDE (SURVEYED POSITION)
Bass Rock Isolated Danger Buoy "DBR"	10550	42° 24' 43.26" N, 070° 55' 23.00" W
Flip Rock Gong Buoy "FR"	10555	42° 24' 08.12" N, 070° 55' 28.85" W
Nahant Rock Buoy "1"	10560	42° 24' 21.77" N, 070° 56' 47.19" W
Red Bell Buoy "2" *(Not lighted as noted in LL)*	10685	42° 22' 11.34' N, 070° 55' 09.07" W

Defer to MCD Update Services Branch for charting recommendations for Aids to Navigation.

Charted, surveyed, and Light List positions are inconsistent for two buoys within the survey limits. The following table lists each of these aids to navigation and positions from each data source. The hydrographer recommends that the chart and/or Light List be updated, as necessary, with the current surveyed position for each ATON. ***Defer to MCD Update Services Branch for charting recommendations for Aids to navigation.***

ATON & Light List #	Surveyed Position	Charted Position	Light List Position
Shag Rocks Lighted Buoy 2 LL# 10540	42˚ 24' 42.64" N 070˚ 54' 22.98" W	42˚ 24' 43.30" N 070˚ 54' 21.21" W	42˚ 24' 42" N 070˚ 54' 24" W
Boston North Channel Entrance Lighted Whistle Buoy "NC" LL# 10680	42˚ 22' 32.28" N 070˚ 54' 16.71" W	42˚ 22' 31.58" N 070˚ 54' 17.67" W	42˚ 22' 30" N 070˚ 54' 18" W

Bottom Samples

Bottom samples were collected to verify charted bottom types. Samples were collected at each of the currently charted bottom type locations within the survey limits, as well as two additional locations in an area identified by the Boston Pilots as a potential anchorage area. Of the 71 samples collected, 30% were in obvious disagreement with the charted bottom. An additional 16% were non-specific in current charting (e.g. "so", "h"), and can be clarified from samples acquired during this survey. The hydrographer recommends making the following charting changes based on current bottom sample data. ***Concur***

Charted Position		Delete Charted Bottom Type	Chart Bottom Type
Latitude	Longitude		
42˚ 24' 01" N	070˚ 55' 09" W	*No bottom type charted.*	M
42˚ 23' 44" N	070˚ 54' 44" W	*No bottom type charted.*	S
42˚ 25' 13.48" N	070˚ 52' 45.16" W	h	S
42˚ 26' 06.76" N	070˚ 53' 15.27" W	sy	hrd
42˚ 25' 25.97" N	070˚ 53' 21.77" W	rky	S, Sh
42˚ 24' 28.35" N	070˚ 54' 08.94' W	h	S, M
42˚ 24' 34.69" N	070˚ 54' 29.58" W	sy	P, S, Sh
42˚ 23' 42.53" N	070˚ 54' 11.27" W	h	M

CHARTED POSITION		DELETE CHARTED BOTTOM TYPE	CHART BOTTOM TYPE
LATITUDE	LONGITUDE		
42° 23' 28.91" N	070° 53' 39.39" W	h	M
42° 23' 21.31" N	070° 54' 30.87" W	h	S
42° 23' 23.75" N	070° 55' 01.86" W	h	S, M
42° 23' 43.88" N	070° 55' 40.49" W	rky	S
42° 25' 05.47" N	070° 57' 16.48" W	M	S
42° 24' 33.00" N	070° 56' 25.14" W	h	S
42° 22' 15.07" N	070° 55' 52.74" W	rky	S
42° 24' 18.07' N	070° 55' 18.12" W	h	S, Sh
42° 25' 01.91" N	070° 55' 06.39" W	rky	S
42° 24' 50.47" N	070° 55' 07.26" W	h	S, Sh
42° 24' 47.59" N	070° 54' 56.16" W	h	S
42° 24' 43.79" N	070° 54' 18.04" W	rky	S, Sh
42° 25' 54.93" N	070° 55' 00.28" W	h	S
42° 25' 47.31" N	070° 54' 28.53" W	rky	S
42° 24' 22.05" N	070° 57' 10.84" W	rky	~~h~~, Silt
42° 24' 43.04" N	070° 52' 41.69" W	so	M, S
42° 24' 50.28" N	070° 53' 14.64" W	so	M, S, Sh
42° 24' 35.62" N	070° 53' 48.08" W	sy	S, M
42° 24' 02.62" N	070° 55' 53.84" W	h	P, St, S
42° 22' 40.45" N	070° 55' 05.72" W	so	S
42° 24' 33.28" N	070° 57' 23.05" W	so	Silt
42° 24' 45.28" N	070° 56' 15.40" W	f S	Sh, f S
42° 24' 09.66" N	070° 56' 52.29" W	h	St, Silt
42° 24' 06.00" N	070° 55' 27.54" W	h	***P, Sh***
42° 25' 13.53" N	070° 53' 50.10" W	h	P
42° 26' 05.58" N	070° 54' 14.15" W	sy	M

It is noted that several sampling events in areas charted as rocky (rky) did not produce rocks, but a substance, such as weeds or pebbles, indicative of a this bottom type. In such cases, the DTM was utilized to aid in determination of a rocky bottom. The position and characteristics of each sample acquired (i.e. Log M sheets) can be reviewed in Appendix V* - Supplemental Survey Records and Correspondence. **** Data filed with original field records.***

Shoreline Verification and Other Detached Positions

No shoreline is included within the survey limits for H10994.

Prior Survey Comparisons

No prior survey comparisons were conducted by WHITING personnel.

Bridges, Overhead Cables and Overhead Pipelines

No bridges, overhead cables or overhead pipelines are located within the survey limits.

Ferry Routes

No ferry routes or ferry terminals are active within the survey limits.

Submarine Cables and Pipelines

Portions of two Submarine Cable Areas, one Pipeline Area, and two discreet sewer pipes (one noted as under construction) are charted within the survey limits. Locations of each of these features is listed in the following table.

CHARTED FEATURE	CHARTED POSITION
Cable Area	42° 22' 28.44" N, 070° 56' 47.14" W
Cable Area	42° 24' 09.02" N, 070° 57' 09.31" W
Pipeline Area	42° 25' 03.42" N, 070° 56' 58.07" W
Sewer Pipe	42° 24' 54.67" N, 070° 55' 57.10" W
Sewer Under Construction	42° 22' 07.41" N, 070° 53' 02.27" W

None of the charted cable areas, pipeline area or discreet pipelines were identifiable within either the SSS or SWMB data.

Dr. Michael Mickelson, of the Massachusetts Water Resources Administration (MWRA), was contacted regarding the "Under Construction" status of the above noted sewer line. Dr. Mickelson reported that the "Under Construction" note is obsolete. He also noted that, with the exception of the diffusers, this sewer line is located approximately 250 feet beneath the seafloor. The sewer line construction and a typical diffuser head is shown in Figures 3 and 4, respectively. The location of diffuser heads, as identified by MWRA, are charted as a rectangular-shaped area in position 42˚ 23' 16.57" N, 070˚ 47' 31.12" W.

The hydrographer recommends deleting the entire charted sewer line under construction, between positions 42˚ 21' 15.63" N, 070˚ 57' 23.34" W and 42˚ 23' 23.56" N, 070˚ 46' 46.50" W, and retaining the charted diffuser area as charted.** Correspondence regarding this sewer line and exact locations of the diffuser heads are included in Appendix V* - Supplemental Survey Records and Correspondence. The original Excel spreadsheet, showing diffuser locations as provided by MWRA, is included in the digital data package under H10994 / Descriptive Report / Appendices / V-supplemental records / geo_risers.xls.

**** Data filed with original field records.***

***** Defer to MCD for charting recommendations.***

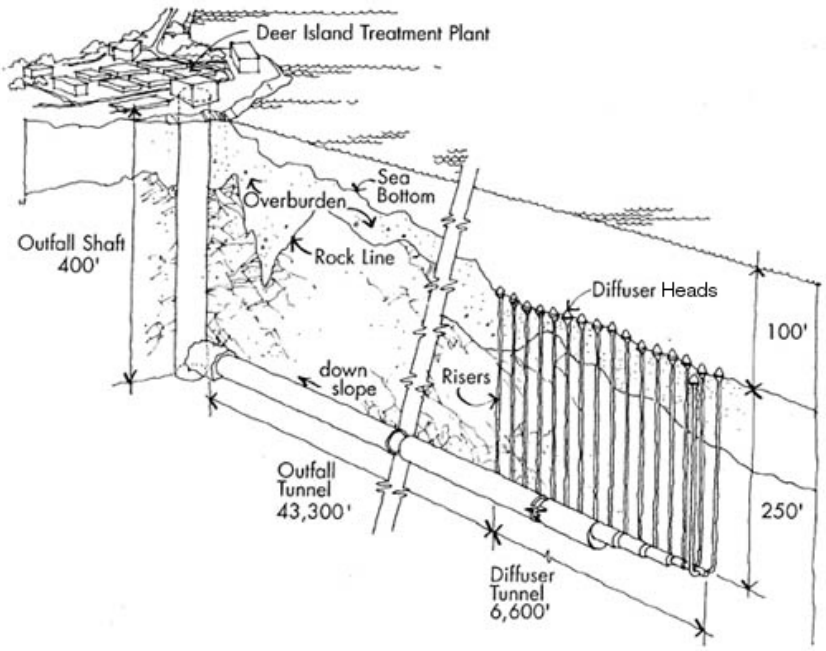


Figure 3 - Schematic of sewer line construction.

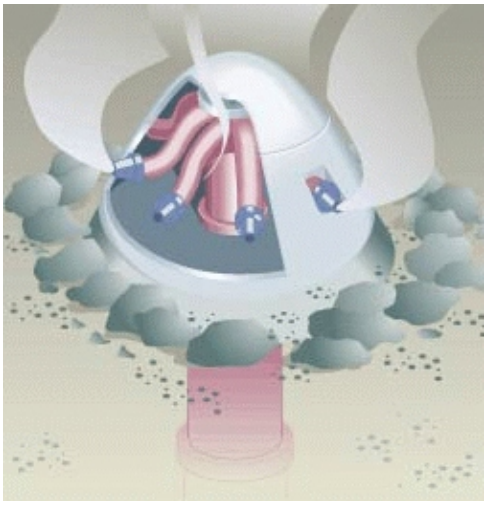


Figure 4 - Typical sewer line diffuser.

Drilling Structures, Platforms and Well Heads

No drilling structures, platforms or well heads were neither charted, nor observed within the survey area. ***Concur***

E. APPROVAL SHEET

OPR-A397-WH
Massachusetts
Massachusetts Bay

Broad Sound
Survey Registry No. H10994

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.

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

Submitted: _____
LTJG Holly A. DeHart, NOAA
Junior Officer

_____
LT Richard T. Brennan, NOAA
Field Operations Officer

Approved and Forwarded: _____
CDR Steven R. Barnum, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: May 13, 2002

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-A397-WH-2001
HYDROGRAPHIC SHEET: H10994

LOCALITY: Broad Sound, MA
TIME PERIOD: September 19-November 13, 2000
July 23 - October 11, 2001

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: 2.866 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: NA171, NA172, NA173, NA174

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.

Thomas N. Moore 5/20/02

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Printed on Recycled Paper

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
N/CS33-24-04

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check)

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- [ ] AIR MAIL
- [ ] REGISTERED MAIL
- [X] EXPRESS
- [ ] GBL (Give number)_____

DATE FORWARDED
08/30/2004

NUMBER OF PACKAGES
1

TO:

CHIEF, DATA ACQUISITION & CONTROL BRANCH
NOAA / NOS/OCS/HSD
1315 EAST-WEST HIGHWAY, STA:6704
SILVER SPRING, MARYLAND 20910-3282

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H10994

Massachusetts, Massachusetts Bay, Broad Sound

ONE TUBE CONTAINING THE FOLLOWING:

1 (AHB) SMOOTH SHEET FOR SURVEY H10994
1 RECORD OF APPLICATION TO CHARTS FORM (NOAA FORM #75-96)
1 H-DRAWING ON MYLAR FOR NOS CHART 13275 - Kapp:2072
1 DESCRIPTIVE REPORT FOR H10994

FROM: (Signature)
Richard Bluvas

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

NOAA FORM 61-29 SUPERCEDES FORM C AND GS 413 WHICH MAY BE USED.

U.S. GOVERNMENT PRINTING OFFICE: 1988 - 554-006-61309

APPENDIX I

DANGERS TO NAVIGATION REPORT

A copy of the Dangers to Navigation Report, dated October 12, 2001, is included following this page.

October 12, 2001

REPORT OF DANGERS TO NAVIGATION

Survey Registry Number: **H10994**

State: Massachusetts
Locality: Massachusetts Bay
Sub-Locality: Broad Sound

Project Number: OPR-A397-WH
Survey Date(s): September 19, 2000 - September 20, 2001

Soundings are reduced to Mean Lower Low Water (MLLW) using Verified Water Levels. Horizontal datum is NAD 83.

Chart(s) Affected: **13275**, 27th edition, July 24, 1999, 1:25,000
13270, 58th edition, October 9, 1999, 1:25,000
13267, 29th edition, February 28, 1998, 1:80,000

DANGERS TO NAVIGATION

Sixteen Dangers to Navigation (DTONs) were identified during operations for hydrographic survey H10994, Broad Sound, Massachusetts Bay, Massachusetts. It is noted that the deeper waters of Broad Sound, west of the Precautionary Zone, are intended to be used as an anchorage for large petroleum tankers and vessels transporting liquid natural gas. The size of these vessels and hazardous nature of their cargo was carefully considered during the selection of DTONs. Dangers to Navigation are summarized in the table on the following page.

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

DANGERS TO NAVIGATION AFFECTING NOAA CHARTS 13275, 13270 & 13267				
DTON #	LEAST DEPTH (FEET)	LEAST DEPTH LATITUDE	LEAST DEPTH LONGITUDE	DESCRIPTION
1	19	42˚ 24' 51.56" N	070˚ 57' 17.36" W	19 ft sounding on rocks
2	~~32~~ *33*	42˚ 23' 37.78" N	070˚ 55' 58.82" W	~~32~~ *33* ft sounding on rocks
3	58	42˚ 23' 45.16" N	070˚ 55' 18.18" W	58 ft sounding on rocks
4	~~36~~ *37*	42˚ 23' 11.96" N	070˚ 55' 58.82" W	~~36~~ *37* ft sounding on rocks
5	55	42˚ 23' 18.93" N	070˚ 54' 35.10" W	55 ft least depth on uncharted wreck
6	~~48~~ *49*	42˚ 22' 51.00" N	070˚ 54' 49.78" W	~~48~~ *49* ft sounding on rocks
7	28	42˚ 22' 27.81" N	070˚ 55' 54.58" W	28 ft sounding on rocks
8	40	42˚ 23' 39.18" N	070˚ 53' 21.57" W	40 ft sounding on rocks
9	55	42˚ 23' 35.11" N	070˚ 53' 06.73" W	55 ft sounding rocks
10	~~60~~ *61*	42˚ 23' 38.83" N	070˚ 52' 39.77" W	~~60~~ *61* ft sounding rocks
11	72	42˚ 23' 08.67" N	070˚ 52' 38.33" W	72 ft sounding on rocks
12	62	42˚ 22' 40.6~~1~~*0*" N	070˚ 53' 23.12" W	62 ft sounding on rocks
13	~~61~~ *60*	42˚ 22' 36.51" N	070˚ 53' 11.46" W	~~61~~ *60* ft sounding on rocks
14	69	42˚ 22' 41.4~~6~~*5*" N	070˚ 52' 55.88" W	69 ft sounding on rocks
15	53	42˚ 22' 23.73" N	070˚ 53' 42.51" W	53 ft sounding on rocks
16	39	42˚ 22' 05.08" N	070˚ 55' 04.78" W	39 ft least depth on rock

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10994 (2001)

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

B. DATA ACQUISITION AND PROCESSING

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

CARIS Hips and Sips 5.2
Pydro 2.9.4
MicroStation J, version 07.01.01.57
SiteWorks, version 2.01
NADCON, version 2.10
I/RAS B, version 7.01.000.18

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

C. VERTICAL AND HORIZONTAL CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values.

JUNCTIONS

H10991 (2000) to the south southwest
H10992 (2000-2001) to the south southeast

Standard junctions were effected between H10991 (2000), H10992 (2000-2001) and the present survey. There are no contemporary surveys to the north, east, or to the west. Present depths are in harmony with the charted hydrography to the north, east, and to the west.

D. RESULTS AND RECOMMENDATIONS

D.1. CHART COMPARISON

13267 (31th Edition, Oct. 01/03)
Corrected through NM Sep. 6/03
Corrected through LNM Aug. 26.03

13270 (60th Edition, Sep. 01/03)
Corrected through NM Sep. 27/03
Corrected through LNM Sep. 09/03

13275 (28th Edition, Sep. 01/03)
Corrected through NM Aug. 30/03
Corrected through LNM Aug. 12/03

The charted hydrography originates with prior surveys and requires not further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report. Attention is directed to the following:

1) During office processing, an uncharted rock with a least depth of 49 feet was located in Latitude 42˚22'51.00"N, Longitude 070˚54'49.78"W. It is recommended that this rock be charted as shown on the present survey.

2) A charted rock that uncovers at MLLW in Latitude 42˚24'57.69"N, 070˚54'49.43"W was disproved during office processing. Survey soundings in the area of this charted rock ranged from 3-6 feet. It is recommended that this charted rock be removed and that soundings from the present survey be charted.

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

Dangers to Navigation

One Danger to Navigation Report was submitted by the hydrographer to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of this report is appended to the Descriptive Report.

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

This is an adequate hydrographic/ side scan/ multibeam survey. No additional field work is recommended.

MISCELLANEOUS

Chart compilation using the present survey data was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compiled data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The following NOS chart was used for compilation of the present survey:

13275 (28th Ed., Sep./03
Corrected through NM Aug. 30/03
Corrected through LNM Aug. 12/03

H10994

Reginald L. Keene Sr.
Cartographer
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10994

The completed survey has 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 smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Richard W. Blevins Date: 4/22/04

Richard W. Blevins
Cartographer,
Atlantic Hydrographic Branch

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

Approved: P. Schattgen Date: 8/25/04

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

AWOIS/SURFV 9/2/04 SJV

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10994

INSTRUCTIONS

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

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

CHART	DATE	CARTOGRAPHER	REMARKS
13275	5/4/04	Richard Blume	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.