H10496

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC/ SIDE SCAN SONAR

Field No. RU-10-2-93

Registry No. H-10496

LOCALITY

State MASSACHUSETTS

General Locality BUZZARDS BAY

Sublocality WILKES LEDGE TO COXENS LEDGE

19 93

CHIEF OF PARTY
LCDR D. R. HERLIHY, NOAA

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NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: H-10496

FIELD NO.: RU-10-2-93

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: Massachusetts

General locality: Buzzards Bay

Locality: Wilkes Ledge to Coxens Ledge

Scale: 1:10,000 Date of survey: August 18 to October 8, 1993

Instructions dated: 3 May 1993 Project No.: B616-RU-93

Vessel: NOAA Ship RUDE (9040)

Chief of party: LCDR Daniel R. Herlihy, NOAA

Surveyed by: D. R. Herlihy, T. A. Niichel, R. T. Brennan, T. A. Haupt

Soundings taken by echo sounder, ~~hand lead, pole~~: Pneumatic Depth Gauge

Graphic record scaled by: TAN, RTB, TAH

Graphic record checked by: TAN, RTB, TAH

Protracted by: N/A Automated plot by: N/A

Verification by: N/A

Soundings in ~~fathoms feet at MLW~~ MLLW: meters at MLLW

REMARKS: All times recorded in UTC

NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING.

AWOIS and SURF ✓ RWD 2/96

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. G.P.O. 1972-769-565/519 REG.#6

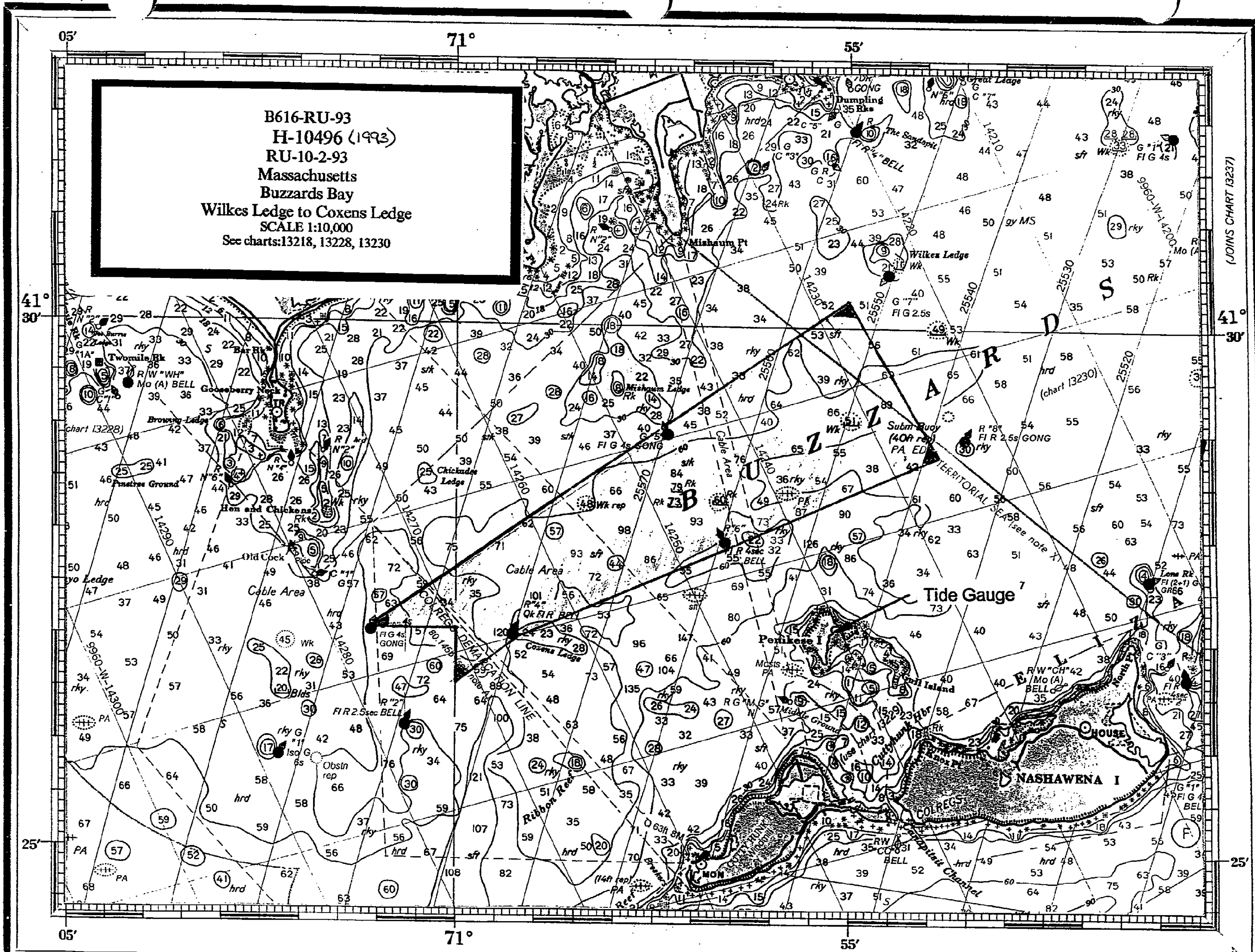

B616-RU-93
H-10496 (1993)
RU-10-2-93
Massachusetts
Buzzards Bay
Wilkes Ledge to Coxens Ledge
SCALE 1:10,000
See charts:13218, 13228, 13230
(JOINS CHART 13237)
BUZZARDS BAY
Tide Gauge
NASHAWENA I
Penikese I
Wilkes Ledge
Mishaum Pt
Mishaum Ledge
Dumpling
The Sandspit
Gooseberry Neck
Twomile Rk
Hen and Chickens
Old Cock
Chickadee Ledge
Coxens Ledge
Ribbon Reef
Cable Area
TERRITORIAL SEA (see note X)
COLREGS DEMARCATION LINE
Subm Buoy
Cuttyhunk Hbr
Canapitsit Channel
41° 30′
41° 30′
71°
71°
55′
55′
05′
05′
25′
25′

TABLE OF CONTENTS

A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B616-RU, Buzzards Bay, Nantucket and Vineyard Sounds, Massachusetts.

A.2 The original date of the instructions is May 3, 1993.

A.3 There have been two changes to these instructions:

- Change No. 1 dated July 30, 1993
- Change No. 2 dated October 20, 1993

A.4 This Descriptive Report covers the navigable area survey conducted on sheet "D" of project B616-RU-93 in the Buzzards Bay navigation corridor as specified by the project instructions.

A.5 Project OPR-B616-RU responds to requests from the U.S. Coast Guard and the Coast and Geodetic Survey's Mapping and Charting Branch to investigate certain reported submerged wrecks and obstructions in Buzzards Bay and to complete surveys of the four general anchorages in Buzzards Bay.

B. AREA SURVEYED

This survey encompasses an area in Buzzards Bay ranging from Coxens Ledge in the southwest to Wilkes Ledge in the northeast and represents the first of four sheets proceeding north from the entrance of the bay. The exact boundaries of the Navigable Area Survey (NAS) lie between the following coordinates starting in the northernmost corner and proceeding clockwise:

41°30'15"N	70°55'06"W
41°28'42"N	70°53'48"W
41°27'07.09"N	70°58'41.97"W
41°26'49.08"N	70°59'23.94"W
41°26'29"N	71°00'00"W
41°27'03"N	71°00'00"W
41°27'03"N	71°01'06"W

The data collection for this survey began on August 18, 1993 (DN 230) and concluded on October 8,1993 (DN 281).

C. SURVEY VESSELS

C.1 The following vessels were used during this project:

Vessel	EDP Number	Primary Function
NOAA Ship RUDE (S590)	9040	Hydrography / Side Scan Operations
RUDE Launch (RU3)	1290	Diving Operations

C.2 No unusual vessel configurations or problems were encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

D.1 Survey data acquisition and processing were accomplished using the HDAPS system with the following software versions:

Program	Version	Dates Used
DAS_SURV	6.38	230 - 281
POSTSUR	6.01	230 - 281

D.2 Other software includes **VELOCITY 2.0**, dated December 18, 1992, used to generate sound velocity corrector tables.

D.3 No non-standard automated acquisition or processing methods were used.

E. SONAR EQUIPMENT

E.1 Side scan sonar operations were conducted using an EG&G Model 260 image corrected side scan sonar recorder and a Model 272-T single frequency towfish. All side scan operations were conducted from the RUDE (vessel # 9040). The following list shows equipment serial numbers and corresponding dates used:

Equipment Type	Serial Number	Dates Used
Recorder	10884	230 - 281
Towfish	11901	230 - 281

E.2 The side scan sonar towfish was configured with a 20° beam depression, which is the normal setting and yields the best beam correction.

E.3 The 100 kHz frequency was used throughout this survey.

E.4 **a)** The 100-meter range scale was generally used for this survey. Given the average depth of water in the search area, this range scale was used to provide optimum contact resolution. There were isolated areas where the sea floor rose up sharply, causing the coverage to narrow. These areas of reduced coverage were easily recognized because the on line swath plot would "neck down" leaving "holidays", or areas with no over-lap. To compensate for this lack of coverage, holiday coverage was run to close these gaps. All side scan coverage was ultimately checked with a smooth plot to ensure proper overlap between consecutive lines.

Depths in the Coxens Ledge area of this survey proved to be too shallow for good coverage at the 100 meter range scale, therefore to compensate and provide adequate coverage, this area was surveyed using the 50-meter range scale on September 9, 1993 (DN 252).

The current Field Procedures Manual (FPM) specification was used to determine maximum line spacing with Differential GPS positioning:

$$LS_{max} = 2RS - 2EPE_{max}$$

where: RS = range scale (50 or 100 meters)

EPE = expected position error

For a 1:10,000-scale survey, a maximum EPE of 15 meters is permitted. Using this value in the above equation, a maximum line spacing of 170 meters for RS = 100 meters and 70 meters for RS = 50 meters is authorized. Data collected with an EPE of 15 or greater was either rejected or smoothed in the post processing phase of the survey, so the maximum line spacing was never exceeded. In addition, the actual line spacing for the side scan sonar coverage of this survey was either 160 meters (RS = 100) or 60 meters (RS = 50). These line spacings were chosen to 1) give an added margin on coverage, and 2) to allow an even number of hydro lines to be run in between each mainscheme line (i.e. an even 7 lines can be run at 20 meter spacing between two mainscheme lines with RS = 100 meters).

Expected Position Error (EPE) values in excess of the 15 meters may be seen in the raw data printout, most typically ranging between 408.2 and 409.2. These values were not considered in the line spacing calculations shown above due to their acceptable corresponding Horizontal Dilution of Precision (HDOP) values. These excessive values were investigated in the HDAPS Graphic Sounding Edit program. The excessive EPE values were consistently found to be erroneous when accompanied by an acceptable HDOP value. The high EPE values appear to be caused by an HDAPS software deficiency.

b) Confidence checks were obtained by noting recognizable bottom characteristics at the edges of the sonar range scale in use. Features such as sand waves, buoy anchors and trawl door scours were commonly used for this purpose.

c) Two hundred percent side scan sonar coverage was completed for this survey.

d) Large areas of the bottom on this sheet consisted of soft silt and sand. Due to the inherent characteristics of this bottom composition and the lack of contacts found there, there are segments of data with large gaps between confidence checks. It is the opinion of the hydrographer that this data is acceptable due to confidence checks seen before and after these barren areas.

Except as noted above, all side scan sonar records acquired during this survey were clear with excellent returns. There were several occasions upon which the side scan sonar towfish became entangled in lobster trap buoy lines, temporarily whiting out the sonargram. On these occasions, the tow fish was brought on board, inspected and serviced as necessary, with all affected data subsequently being rejected.

e) The towfish was deployed exclusively from the stern during this survey.

E.5 Due to the numerous contacts found within this survey, NOAA Ship RUDE proposed a modified approach to their investigation and development. As authorized by Change No. 2 to the project instructions, a 400-meter grid was developed to overlay this survey. The most significant contacts within each of these 400-meter "cells" were investigated by intensive echo sounder investigation. Tight line spacing, at times as close as five meters, was used to conduct these investigations. Some contacts investigated by echo sounder justified a diver investigation. Six diver investigations were conducted during this survey. The reports for these dives are found in Separate VII. DATA APPENDED TO THIS REPORT.

E.6 Overlap was checked on line using the real-time swath plot, with the edited swath plot used to identify holidays.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon 6000N Digital Survey Fathometer (DSF). Equipment serial numbers and corresponding dates used are as follows:

Equipment Type	Serial Number	Date Used
DSF-6000N	A107	230 - 281

F.2 When diver investigations were conducted, least depths were measured with a 3-D Instruments, Inc. precision direct drive depth gauge:

0 - 70 fsw (feet salt water) S/N 201637 12

This gauge was checked each day it was used by comparing it with a leadline. Depths recorded by the leadline varied with that recorded from the pneumatic depth gauge at times by more than the allowed 0.5 feet. This disparity can be attributed to large wire angles in the leadline (approximately 10°), choppy sea states and significant currents on the day dive operations were conducted. Calibration and check documentation for this equipment is found in Separate IV. DATA FILED WITH FIELD RECORDS.

F.3 There were no faults in sounding equipment which affected the accuracy or quality of the data.

F.4 Both the high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were plotted.

G. CORRECTIONS TO SOUNDINGS

G.1 a) The velocity of sound through water was determined using an Odom Digibar Sound Velocity Probe (S/N 169). A Data Quality Assurance Test was conducted before each velocity cast to ensure the meter was operating within tolerance. Generally, velocity casts were conducted weekly with few exceptions.

All data were processed using Velocity 2.00 software. The computed velocity correctors were entered into the HDAPS sound velocity table and applied on line to both high and low frequency soundings. The sound velocity correctors applied to this survey are based on the casts recorded on the following dates:

Cast Number	Date	Latitude	Longitude	HDAPS Table #	Applied to Days
31	232	41°27.9'N	070°58.0'W	31	230
33	246	41°27.1'N	070°59.5'W	33	236-246
35	252	41°26.9'N	070°59.5'W	35	251-263
36	263	41°28.2'N	070°57.0'W	36	264-267
37	272	41°27.9'N	070°58.1'W	37	272-274
38	278	41°28.0'N	070°57.8'W	38	278-281

G.1 b) There was no variation in the DSF-6000N instrument initial.

c) No instrument correctors to the DSF-6000N were required.

d) A dual leadline comparison with the DSF-6000N was made in the project area:

DN 076 at 41°27.0'N and 70°54.0'W (38 ft depths)

The greatest variation between leadline and DSF soundings was 0.1 meters. Considering the ship's motion and the wire angle in the leadline from current (approximately 5°), this is excellent agreement and provides an adequate check that the echo sounder was functioning properly. **Data from these comparisons are on file at the Atlantic Hydrographic Section in Norfolk, Virginia.** DATA FILED WITH FIELD RECORDS.

Both of the leadlines used in the leadline to DSF-6000N comparison were calibrated by steel tape prior to the above comparison. An average leadline correction of -0.45 feet was applied in comparisons between the DSF-6000N and the ship's leadlines.

e) All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams.

f) During the winter 1988 dry dock period, an exact vertical measurement was taken from the DSF transducer to a fixed point on the bridge wing. After the ship was re-floated, the height above the waterline was determined for this point. The ship's static draft was thereby calculated to be exactly 2.26 meters (7.4 feet). This draft value was applied to the sounding data via the HDAPS offset table.

g) Settlement and squat correctors for the RUDE were determined on the Elizabeth River, Norfolk, Virginia on March 3, 1993. An observer, stationed with a level on a pier, measured changes in relative height by sighting to a staff held at the longitudinal position of the ship's transducer. The ship steamed directly toward and then away from the observer. The toward and away runs were averaged and applied to soundings through the HDAPS offset table.

h) Heave data were acquired by a Datawell heave, roll and pitch sensor (S/N 19128-C), and were applied to soundings in real time. Only the heave corrections were applied to the plotted soundings.

See Separate IV for data records.*

G.2 There were no unusual or unique methods or instruments used for correcting echo soundings.

G.3 Generally, sound velocity correctors resulting from weekly velocity casts were re-applied to the data acquired that entire week. Section G.1 a) gives the periods during which each velocity cast correctors were used.

G.4 The ship's two pneumatic depth gauges were calibrated by Instruments East, Inc., Norfolk, VA on February 11, 1993. On April 22, 1993, gauge #20163712 was adjusted and re-calibrated due to a bent indicator needle. Corrector data from the calibration was not applied to measured depths because it was less than 0.1 meters.

A system check was performed each day the pneumatic depth gauge was employed, as a means of ensuring the validity of the gauge's measurements. These system checks are included in Separate IV.* Hydrographic Survey Guideline No. 55 mandates that agreement between the leadline and observed gauge values must not exceed 0.5 feet. However, there were occasions when observed readings did exceed this limit. On these occasions, the observed wire angle of the leadline and pneumatic depth gauge hose was unavoidably excessive and, therefore, the comparison values were viewed with suspicion. As a result, no correctors were applied to measured pneumatic depth gauge values.

* DATA FILED WITH FIELD RECORDS.

G.5 Generally, sea conditions greater than one meter affected the sounding record, creating a trace of constant peaks and deeps. Application of heave correctors to raw echo soundings appeared to accurately represent true depths.

G.6 a) The tidal datum for this project is Mean Lower Low Water. The operating tide station at Newport, Rhode Island (845-2660) served as direct control for datum determination. This station also served as the reference station for predicted tides. Data for predicted tides were provided on floppy disk before the start of the project.

b) Tidal data used during data acquisition were obtained from Table 2 of the East Coast of North and South America Tide Predictions, and applied to the digital tide data using the HDAPS software. The subordinate station for predicted tides was:

NO.	PLACE	POSITION	TIME		HEIGHT	
			High Water	Low Water	High Water	Low Water
1105	Penikese Island	41°27'N 70°55'W	+0 17	+0 16	*0.97	*0.97

Tidal correctors were applied on line using HDAPS predicted tide tables numbers 8, 9, and 10. Tide table 8 was used for the month of August, 9 for September and 10 for October.

c) Zoning for this project is consistent with the project instructions.

A request for smooth tides was mailed on October 20, 1993.
APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.

H. CONTROL STATIONS SEE ALSO SECTION H. OF THE EVALUATION REPORT

H.1 The horizontal datum for this project is the North American Datum of 1983 (NAD 83).

H.2 This survey was conducted exclusively using Differential GPS, which precluded the need for any shore based horizontal control stations.

H.3 No horizontal control stations were used or established for this survey.

H.4 No horizontal control stations were used or established for this survey.

H.5 Verification of horizontal control was not necessary since no land-based horizontal control stations were used.

H.6 There are no photogrammetric problems, positioning problems or unconventional survey methods pertinent to this survey.

I. HYDROGRAPHIC POSITION CONTROL

SEE ALSO SECTION H. OF THE EVALUATION REPORT.

I.1 This survey was conducted exclusively using Differential GPS positioning.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM). The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the FPM were monitored during on line data collection. When these values exceeded the allowable limits (HDOP = 3.35, EPE = 15), survey operations were suspended until the Differential GPS improved. If the positioning degraded beyond the acceptable limits while on line, the data were either smoothed or rejected depending upon the extent of the affected data.

I.3 Control Equipment:

DGPS

Unit A:
Ashtech GPS Sensor
S/N 700417B1083
Firmware Version: 1E06D-P
Magnavox MX50R DGPS Receiver S/N 078

Unit B:
Ashtech GPS Sensor
S/N 700417B1012
Firmware Version: 1E06D-P
Magnavox MX50R DGPS Receiver S/N 160

Correctors were received from both the Montauk, New York and the Portsmouth, New Hampshire radio beacons for the entire survey.

I.4 The Differential GPS system requires no calibrations to its equipment from outside sources. However, to check the position accuracy of the DGPS system, a daily performance check was conducted. The Shipboard Data Integrity Monitor (version 1.2), or "SHIPDIM", program was utilized to conduct these performance checks.

For a DGPS performance check, section 3.4.5 of the FPM states that a DGPS performance check may be conducted using "SHIPDIM" when "two independent reference beacons are receivable, and two remote receivers are available on the ship. Each remote receives correctors from a different reference, then the computed positions are compared." The computed inverse between the check receiver and the reference receiver must not exceed delta P_{max}, where:

delta P_{max} = SQRT [$(EPE)^2 + (ECR)^2$]

delta P_{max} = Maximum allowable inverse distance between the DGPS and check position

EPE = Expected Position Error of the DGPS position

ECR = Error Circle Radius of the check position

"SHIPDIM" compares four sample positions from both the check and reference receivers and compares them. Three of the four checks must be less than the delta P_{max} for a successful performance check.

I.5 No calibration data were required to be applied to the raw positioning data because DGPS was the primary positioning system.

I.6 a) There were no unusual methods used to calibrate or operate the electronic positioning equipment.

b) No shipboard DGPS malfunctions were experienced during the times of hydrography for this survey.

c) During times of heavy rains and/or thunderstorms, the ship would experience periods of intermittent service from either the Montauk, New York or the Portsmouth, New Hampshire radio beacons, or both, depending on the location of the degraded weather at the time. During such instances, control would be switched to the reference beacon sending the strongest, most interference-free signal. If both the Montauk and Portsmouth beacons were experiencing periods of degraded weather, the survey operations were suspended until such time as service from one or both beacons had resumed.

d) During the periods when local weather affected the DGPS radio beacons as described in section I.6.c, the on-line positioning would unexpectedly "drop out". These instantaneous outages were associated only with weather related beacon interference. During times of poor satellite coverage or geometry, there would be a steady deterioration of the HDOP which could be continuously monitored. Such weather-related outages could occur often, sometimes every few minutes, making it nearly impossible to begin or complete a survey line. The duration of these outages ranged from half an hour to several hours.

e) No systematic errors were detected which required adjustments.

f) Antenna positions were corrected for offset and layback, and referenced to the position of the DSF-6000N transducer. These correctors were located in the HDAPS offset table, and applied on line to the positioning algorithm. Refer to Separate III for a copy of offset table #1.*

g) Offset and layback distances for the A-frame (tow point) were located in the HDAPS offset table and applied on line. These offsets, along with the cable length, towfish height, and depth of water, were used by the HDAPS system to compute the position of the towfish. Refer to Separate III for a copy of offset table #1.*

J. SHORELINE

No shoreline is contained within the boundaries of this survey.

K. CROSSLINES

A total of 10.77 nautical miles of crosslines were obtained for this survey, which represents 9.7% of the first 100% side scan mainscheme coverage.

An un-excessed plot of mainscheme soundings with crosslines superimposed was used to conduct mainscheme to crossline comparisons. Soundings at intersections were compared to all other soundings within a 5 mm (50 meter) radius. Based on this procedure, agreement between mainscheme and crossline soundings was found to be excellent, especially in areas of flat or slightly sloping relief.

* DATA FILED WITH FIELD RECORDS.

The differences observed between soundings was generally less than three feet. There are however, several instances in the southwest portion of the survey where there are differences of up to eight feet. The hydrographer feels that these differences can be attributed to the steep topography in the affected areas.

L. JUNCTIONS

L.1 This survey junctions with contemporary survey H-10461, sheet "C", along the northeast and survey H-10434 along the southwest. Survey H-10461, scale 1:10,000, was completed by the RUDE earlier this field season. Survey H-10434, a 1-20,000-scale basic survey, was completed by the RUDE during the 1992 field season.

L.2 Agreement at the junction of the two surveys completed this field season is excellent. Likewise, agreement with the survey H-10434 is also excellent. With very few exceptions, agreement between soundings is within one foot when compared to other soundings within a 30 to 40 meter radius. As for the exceptions, they should be anticipated in an area where significant narrow point features are commonly found. Such features were often noted on a particular sounding line and then not seen on a parallel sounding line only 10 meters away.

L.3 There are no significant discrepancies at junctions to be reconciled.

L.4 No recommendations for adjustments to soundings, features or depth curves are appropriate.

M. COMPARISON WITH PRIOR SURVEYS

SEE SECTION M. OF THE EVALUATION REPORT.

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N. ITEM INVESTIGATION REPORTS

N.1.1 Area of Investigation

AWOIS 1917
Buzzards Bay
Reported Position:
41°28'17.38"N
070°58'24.13"W
Datum: NAD83
Reported depths: item sank in 65-70 feet of water; however, echo sounder least depth of 55 feet reported during survey FE-207WD/1966
Feature: wreck

N.2.1 Description and Source of Item

According to local authorities John P. Fish and H. Arnold Carr, owners of American Underwater Search and Survey LTD and authors of numerous books on shipwrecks, AWOIS 1917 is most likely the wreck of the U.S. Army Transportation Corps vessel COLONEL WILLIAM COWIN. There is considerable confusion and little historical data regarding the vessel, and the circumstances surrounding it's sinking. However, Mr. Fish was able to confirm that the wrecks known as the "COWEN", "CORBIN" and "CORVIN", referred to in AWOIS 1917 and 1915, are all the same vessel -- a railroad steamer of approximately 60 meters in length, which sank just prior to, or during World War II.

N.3.1 Survey Requirements

This item required four hundred percent side scan sonar coverage over a 500-meter search radius, echo sounder development and a diver investigation. Salvage documentation would be considered adequate for disproval.

N.4.1 Method of Investigation

Two hundred percent side scan coverage was achieved over the entire AWOIS 1917 search radius. This item was immediately recognizable, so a diver investigation was planned (see dive 274.4 in Separate VI* for information on the dive investigation). In addition, an echo sounder development employing line spacing as close as five meters was conducted over the contact area. DATA APPENDED TO THIS REPORT.

N.5.1 Results of Investigation

AWOIS 1917 was observed on both 100% passes of side scan sonar coverage, with the contact position, 719.135P in development 26, chosen from the second 100%. The least depth obtained by echo sounder investigation was 17.2 meters (56.4 feet corrected with ~~predicted~~ APPROVED tides) in position 41°28'15.483"N and 070°58'20.007"W. The least depth obtained by diver investigation was 16.~~8~~7 meters (55.1 feet corrected with ~~predicted~~ tides) in position 41°28"15.480"N and 070°58'2~~1~~Φ.166"W.

N.6.1 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.1 Comparison with Chart and Charting Recommendations

Largest scale chart of this portion of the survey area:

Chart 13228
"Westport River and Approaches"
9th ed. June 13, 1992
Scale: 1:20,000

AWOIS 1917, a wreck charted in position 41°28'17.38"N and 070°58'24.13"W, with a depth of 48 feet, was located with a least depth of 55 feet in position 41°28'15.480"N and 070°58'21.166"W.

It is the opinion of the hydrographer that the wreck symbol be retained and charted in position 41°28'15.480"N and 070°58'2~~1~~Φ.166"W, and that the charted depth of 48 feet be replaced with a 55-foot depth (16.7m) CONCUR

N.1.2 Area of Investigation

AWOIS 7252
Buzzards Bay
Reported Position:
41°29'00.38"N
070°54'58.12"W
Datum: NAD83
Reported depths: in the area 38-95 feet; wire drag cleared to 51 feet during survey FE-194WD/1963
Feature: wreck of the tug NEPONSET

N.2.2 Description and Source of Item

Notice to Mariners 52/27 reported the wreck of the tug NEPONSET in approximate position 41°29'N and 070°55'W, and suggested that it be charted as a non-dangerous wreck. During survey FE-194WD/1963, two groundings occurred in the vicinity of the wreck, but both were believed to be on charted shoals. The hydrographer recommended charting a wreck cleared to 51 feet in this position.

N.3.2 Survey Requirements

This item required two hundred percent side scan coverage over a 2000-meter search radius, echo sounder development and a diver investigation. Salvage documentation would be considered adequate for disproval.

N.4.2 Method of Investigation

Two hundred percent side scan coverage was achieved over that portion of the search radius which fell within the confines of this survey. All significant contacts in the search area were investigated by echo sounder developments with line spacing as close as 5 meters. An additional development with a 100-meter radius and 20-meter line spacing was conducted at the charted position.

N.5.2 Results of Investigation

Review of both the first and second 100% side scan coverages revealed no contact which gave the indication of being a wreck. All significant contacts within the search radius were investigated using tight echo sounder development and still there was no indication that any of these contacts was a wreck.

N.6.2 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.2 Comparison with Chart and Charting Recommendations

Largest scale chart of the survey area:

Chart 13230
"Buzzards Bay"
39th ed. March 27, 1993
Scale: 1:40,000

AWOIS 7252, a wreck cleared to 51 feet, has been disproven within the confines of this survey. A thorough review of the side scan sonar records and echo sounder trace failed to reveal conclusive evidence of a wreck existing within this search radius. All of the contacts within this search area presented the signature of naturally occurring rocks, or smaller manmade objects such as anchor chain or dredge pipe.

It is the opinion of the hydrographer that the danger circle with a wire drag depth of 51 feet and the associated wreck symbol charted at 41°29'00.38"N and 070°54'58.12"W be deleted and replaced by soundings acquired during this survey. CONCUR

N.1.3 Area of Investigation

AWOIS 7957
Buzzards Bay
Reported Position:
41°28'17.38"N
070°57'10.13"W
Datum: NAD83
Reported depths: in the area 90-100 feet; obstruction hung at 79 feet, cleared to 73 feet during survey FE-207WD/1966.
Feature: obstruction, rock

N.2.3 Description and Source of Item

While investigating a 79-foot hang during survey FE-207WD/1966, divers reported a rock rising four feet off the surrounding bottom. The object was cleared to 73 feet and charted as a 73-foot wire drag depth. A rock of this size rising from the surroundng 90 to 100-foot depths is inconsistent with the reported 79-foot hang.

N.3.3 Survey Requirements

This item required two hundred percent side scan sonar coverage over a 100-meter search radius, echo sounder development and a diver investigation.

N.4.3 Method of Investigation

Two hundred percent side scan coverage was achieved over the search radius for AWOIS 7957. All significant contacts in the search area were investigated by echo sounder developments, with line spacing as close as 5 meters.

N.5.3 Results of Investigation

All contacts within the search radius were investigated using tight echo sounder developments, and although one was found rising nearly six feet off of the 100-foot deep surrounding bottom, none approached the 73-foot charted depth.

N.6.3 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.3 Comparison with Chart and Charting Recommendations

Largest scale chart of this portion of the survey area:

Chart 13228
"Westport River and Approaches"
9th ed. June 13, 1992
Scale: 1:20,000

AWOIS 7957, a rock obstruction cleared by wire drag to a depth of 73 feet and charted in position 41°28'17.38"N and 070°57'10.13"W, has been disproven. CONCUR

It is the opinion of the hydrographer that the 73 foot wire drag depth and associated rock symbol be deleted and replaced by soundings obtained during this survey. CONCUR

N.1.4 Area of Investigation

AWOIS 7958
Buzzards Bay
Reported Position:
41°28'18.38"N
070°56'39.13"W
Datum: NAD83
Reported depths: in the area 65-95 feet; obstruction hung at 74 feet, cleared to 60 feet during survey FE-207WD/1966
Feature: obstruction, rock

N.2.4 Description and Source of Item

A wire hang at 74 feet was encountered on an unidentified obstruction in position 41°28'18"N and 070°56'41"W during survey FE-207WD/1966. No diver investigation was initiated and the object was cleared to 60 feet.

N.3.4 Survey Requirements

This item required two hundred percent side scan sonar coverage over a 150-meter search radius, echo sounder development and a diver investigation.

N.4.4 Method of Investigation

Two hundred percent side scan coverage was achieved over the search radius for AWOIS 7958. All contacts in the search area were investigated by echo sounder developments, with line spacing as close as 5 meters.

N.5.4 Results of Investigation

All contacts within the search radius were investigated using tight echo sounder developments. A least depth of ~~21.7~~ 18.8 meters (~~71.2~~ 61.9 feet corrected with ~~predicted~~ APPROVED tides) was obtained in position 41°28'~~18.895~~ 5.152"N and 070°56'~~39.962~~ 25.661"W.

N.6.4 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.4 Comparison with Chart and Charting Recommendations

Largest scale chart of the survey area:

Chart 13230
"Buzzards Bay"
39th ed. March 27, 1993
Scale: 1:40,000

AWOIS 7958, a rock obstruction wire drag cleared to 60 feet and charted in position 41°28'18.38"N and 070°56'39.13"W, has been disproved within the given search radius. However, shoaler depths to the southeast without danger circles, just beyond this item's search radius, should have taken precedence over the depth represented here.

It is the opinion of the hydrographer that the danger circle and wire drag depth of 60 feet in position 41°28'18.38"N and 070°56'39.13"W be deleted and replaced by soundings found during this survey. CONCUR

N.1.5 Area of Investigation

AWOIS 7959
Buzzards Bay
Reported Position:
41°28'28.33"N
070°57'13.13"W
Datum: NAD83
Reported depths: in the area 85-95 feet; obstruction hung at 81 feet, cleared to 79 feet during survey FE-207WD/1966
Feature: unknown obstruction

N.2.5 Description and Source of Item

Notice to Mariners 7/51 reported that a 110-foot scow sank in 84 feet of water in position 41°28'30"N and 070°57'12"W. Survey FE-207WD/1966 reported a hang on a rock at 81 feet and cleared to 79 feet in position 41°28'28"N and 070°57'15"W.

N.3.5 Survey Requirements

This item required two hundred percent side scan sonar coverage over a 250-meter search radius, echo sounder development and a diver investigation. Salvage documentation would be considered adequate for disproval.

N.4.5 Method of Investigation

Two hundred percent side scan coverage was achieved over the search radius for AWOIS 7959. All contacts in the search area were investigated by echo sounder developments, with line spacing as close as 5 meters. Once the scow was located, side scan sonar lines were run perpendicular to the mainscheme lines to provide better resolution of the item (see side scan fixes 3099-3103).

N.5.5 Results of Investigation

Side scan sonar records provided conclusive evidence of the wreck of a scow. Intensive echo sounder development of the scow revealed a least depth of ~~27.3~~ 28.2 meters (~~86~~ 92 feet corrected with ~~predicted~~ APPROVED tides) in position 41°28'~~23.204~~ 25.794"N and 070°57'~~10.953~~ 14.635"W. A wreck at this depth does not pose a hazard to navigation in this area, therefore, further investigation by divers was deemed unnecessary.

N.6.5 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.5 Comparison with Chart and Charting Recommendations

Largest scale chart of this portion of the survey area:

Chart 13228
"Westport River and Approaches"
9th ed. June 13, 1992
Scale: 1:20,000

AWOIS 7959, an unknown obstruction wire drag cleared to 79 feet, has been proven to be wreck of a scow with a least depth of ~~86~~ 92 feet (28.2m) in position 41°28'~~23.204~~ 25.794"N and 070°57'~~10.953~~ 14.635"W.

It is the opinion of the hydrographer that the rock symbol with an accompanying wire drag depth of 79 feet in position 41°28'28"N and 070°57'15"W be deleted and replaced by a non-dangerous wreck symbol in position 41°28'~~23.204~~ 25.794"N and 070°57'~~10.953~~ 14.635"W, WITH A KNOWN DEPTH OF 28.2m (92FT). CONCUR NOT SHOWN ON CHART 13218 DUE TO CHART CONGESTION.

N.1.6 Area of Investigation

AWOIS 7960
Buzzards Bay
Reported Position:
41°27'24.00"N
070°56'57.00"W
Datum: NAD83
Reported depths: in the area 85-95 feet
Feature: wreck of M/V Triton

N.2.6 Description and Source of Item

This item pertains to the wreck of the Triton, a 52-foot converted World War II steel-hulled landing craft, which sank on June 3, 1988. There is confusion regarding the position of the wreck -- the position radioed to the Coast Guard from the sinking vessel was 41°26'54.00"N and 070°59'42.00"W, while the helicopter on scene put the position at 41°27'24.00"N and 070°56'57.00"W.

N.3.6 Survey Requirements

This item required two hundred percent side scan sonar coverage over a 1500-meter search radius, echo sounder development and a diver investigation.

N.4.6 Method of Investigation

Two hundred percent side scan sonar coverage was obtained over that portion of the search radius which fell within the confines of this survey. All significant contacts were investigated by echo sounder developments, with line spacing as close as 5 meters. An unnatural item was identified as a probable wreck, so a diver investigation was conducted (see dive 274.3 in Separate VI for specific information on the dive investigation)* In addition, an echo sounder development using line spacing as close as 5 meters was conducted over the contact area. * DATA APPENDED TO THIS REPORT.

N.5.6 Results of Investigation

The investigation by divers revealed that this was indeed the remains of a wreck, however, it is not thought to be the wreck of the Triton. The wreck found was badly deteriorated, which is inconsistent with the recent sinking of the Triton. Divers obtained a least depth of ~~17.4~~ 16.7 meters (~~57~~ 54 feet corrected with ~~predicted~~ APPROVED tides) on a cylindrical tank found within the wreck in position 41°27'41.925"N and 070°57'13.325"W.

N.6.6 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.6 Comparison with Chart and Charting Recommendations

Largest scale chart of the survey area:

Chart 13230
"Buzzards Bay"
39th ed. March 27, 1993
Scale: 1:40,000

AWOIS 7960, the wreck of the 52-foot Triton, was not found within the confines of this survey.

It is the opinion of the hydrographer that the wreck symbol charted at 41°27'24.00"N and 070°56'57.00"W be retained as a position approximate until a more definitive answer as to the location of the Triton can be ascertained. CONCUR With respect to the remains of the wreck located by divers, it is the hydrographer's opinion that it does not pose a significant hazard to navigation, and that a wreck symbol in position 41°27'41.925"N and 070°57'13.325"W though not inappropriate, is probably not necessary given the advanced deterioration of this wreck. DO NOT CONCUR
IT IS RECOMMENDED THAT A DANGEROUS SUNKEN WRECK WITH A KNOWN DEPTH OF 16.7m (54FT), AND A DANGER CURVE BE CHARTED IN LAT 41°27'41.925"N, LONG 70°57'13.325"W.

N.1.7 Area of Investigation

AWOIS 8304
Buzzards Bay
Reported Position:
41°28'24.00"N
070°55'48.00"W
Datum: NAD83
Reported depths: in the area 46-60 feet
Feature: wreck

N.2.7 Description and Source of Item

Local Notice to Mariners 25/91 reported an unknown fishing vessel sunk in position 41°28'24.00"N and 070°55'48.00"W. The wreck was marked with a white strobe light and two orange fenders.

N.3.7 Survey Requirements

This item required two hundred percent side scan sonar coverage over a 700-meter search radius, echo sounder development and a diver investigation. Salvage documentation would be considered adequate for disproval.

N.4.7 Method of Investigation

Two hundred percent side scan coverage was achieved over the search radius for AWOIS 8304. All significant contacts were investigated by echo sounder developments, with line spacing as close as 5 meters.

N.5.7 Results of Investigation

Review of the data failed to indicate a wreck located within the assigned search radius, however, indications of a wreck were observed approximately 200 meters to the southwest. This contact was investigated by echo sounder development and was the subject of a diver investigation (see dive 274.2 in Separate VI)* This wreck was found to be in an advanced state of deterioration, so a positive identification as a fishing vessel was not possible. Divers obtained a least depth of 12.5/4 meters (41 feet corrected with ~~predicted~~ APPROVED tides) in position 41°28'01.261"N and 070°56'13.054"W.

* DATA APPENDED TO THIS REPORT.

N.6.7 Comparison with Prior Surveys

A comparison with prior surveys will be performed by the Atlantic Hydrographic Section as part of the office verification process.

N.7.7 Comparison with Chart and Charting Recommendations

Largest scale chart of the survey area:

Chart 13230 - "Buzzards Bay"
39th ed. March 27, 1993
Scale: 1:40,000

AWOIS 8304, the wreck of an unknown fishing vessel, was disproved within the assigned search radius. It is the opinion of the hydrographer that the position approximate wreck symbol with danger circle charted in position 41°28'24.00"N and 070°55'48.00"W be deleted** and replaced by soundings from this survey. It is further recommended that a wreck symbol be charted in position 41°28'01.261"N and 070°56'13.054"W, WITH A KNOWN DEPTH OF 12.4 m (40FT) AND A DANGER CURVE, NOT SHOWN ON CHART 13218 DUE TO CHART CONGESTION.

** CONCUR

Development Abstract

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
1	1.58S	1768-1781	17.8	1768.3	41°27'05.756"N 71°00'59.555"W	
2	785.145P	1782-1787	~~16.9~~ 17	785.4	41°27'10.601"N 71°00'58.074"W	LEAST DEPTH FOUND IN MAINSCHEME DATA NOT DEVELOPMENT
3	708.455S	1788-1795	~~14.1~~ 14Φ	1790.2	41°27'30.~~826~~930"N 70°59'~~51.028~~ 50.688"W	
4	808.333S	1796-1801	~~21.7~~ 20.6	1800.2	41°27'32.~~687~~726"N 70°59'31.~~608~~ 592"W	
5	228.18P	1802-1811	~~22.2~~ 22Φ	1810.2	41°27'27.052"N 70°59'21.305"W	
6	641.48P	1812-1819	~~24.4~~ 24.2	1818.2	41°27'24.181"N 70°59'22.448"W	
7	887.30S	1820-1825	~~14.3~~ 14.2	1822.3	41°27'22.536"N 70°59'33.380"W	
8	1109.32S 364.00P 950.28S	1828-1841 1889-1896	15.9 8	1889.1	41°27'02.608"N 70°59'48.949"W	
9	299.515S 375.19P 439.58S	1842-1847 1927-1944	~~11.8~~ 12.4	1931.3	41°27'06.159"N 70°59'13.017"W	
10	291.47S	1850-1855	~~19.0~~ 18.8	1854.5	41°27'07.857"N 70°59'50.716"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
11	369.13P	1856-1863	~~17.1~~ 16.9	1860.4	41°26'51.414"N 70°59'47.517"W	
12	1117.11S	1864-1871	~~18.0~~ 17.9	1868.3	41°26'49.035"N 70°59'40.350"W	
13	513.08P	1872-1877	19.~~2~~ 0	1874.6	41°26'33.~~269~~ 096"N 70°59'40.~~087~~ 704"W	
75	1339.39S	1878-1888	18.~~9~~ 8	1882.3	41°26'29.222"N 70°59'57.597"W	
14	511.52S	1897-1902	21.1	1902.0	41°26'44.568"N 70°59'22.190"W	
74	452.14P	1903-1908	18.~~5~~ 6	1906.0	41°26'~~52.158~~ 1.250"N 70°59'~~18.317~~"W	
78	1433.27S	1909-1926	8.~~4~~ 2	1921.2	41°26'59.034"N 70°58'58.179"W	20.758
77	1008.44S	1945-1954	8.~~6~~ 5	1945.2	41°27'09.312"N 70°58'48.466"W	
76	1104.27S 378.38S 454.43P	1955-1985	~~8.3~~ 11.2	1971.5	41°27'05.485"N 70°59'07.492"W	
15	1046.02S 1045.26S	1986-2003	17.~~3~~ 4	1994.2	41°27'13.728"N 70°59'10.329"W	
16	940.44S	2004-2011	28.8	2006.0	41°27'36.924"N 70°58'53.031"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
17	940.14S	2012-2017	21.~~6~~2	2012.3	41°27'37.766"N 70°58'48.121"W	EXCESSED BY 19.9 MAINSCHEME SOUNDING
18	892.28P	2018-2029	23.7	202~~6~~8.4	41°27'~~46.649~~7.133"N 70°58'44.710"W	
19	1447.26S	2032-2033 2036-2051	22.1	2044.1	41°27'54.330~~"~~.657N 70°58'48.416"W	
20	212.41P	2052-2059	26.6	2054.1	41°27'52.581"N 70°58'28.771"W	
21	938.30P	2060-2065	24.4	2062.3	41°27'46.308"N 70°58'24.146"W	RK
22	652.43P	2066-2073	20.~~9~~8	2068.2	41°27'34.808"N 70°58'20.704"W	
23	433.24P	2074-2081	17.0	2078.2	41°27'29.605"N 70°58'02.256"W	
24	937.535S	2082-2091	25.8	2090.2	41°27'51.734"N 70°58'19.125"W	
25	235.15S	2092-2101	27.~~3~~2	2094.2	41°27'57.068"N 70°58'06~~.678~~"W	
26	719.135P	2312-2321	~~17.2~~ 16.8	2318.2	41°28'15.48~~3~~8"N 70°58'~~20.007~~21.166"W	
27	1351.07S	2322-2333	~~17.7~~ 16.7	2326.2	41°27'41.9~~42~~26"N 70°57'1~~2.722~~3.385"W	
28	273.21S	2334-2347	27.~~1~~3	2346.2	41°28'16.651"N 70°57'12.915"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
29	240.38S	2348-2357	23.~~2~~ 3	23~~52.2~~ 53.0	41°28'21.925"N 70°57'09.994"W	RK ✓
30	1454.17S	2358-2365	24.~~5~~9	2360.3	41°28'30.~~271~~ 394"N 70°56'44.~~822~~ 762"W	RK ✓
31	1086.48P	2366-2375	24.~~3~~3	2370.5	41°28'20.114"N 70°56'33.357"W	
32	1465.24S	2376-2387	~~19.9~~ 24.0	2376.2	41°28'16.240"N 70°56'33.933"W	
33	1368.49P	2388-2401	~~13.9~~ 14.0	2390.3	41°27'57.188"N 70°56'28.510"W	
34	687.30S	2402-2415	10.~~7~~6	2406.~~5~~ 6	41°28'00.446"N 70°56'14.048"W	
35	491.43P 1284.49S 534.025S	2416-2441	10.~~7~~6		41°28'06.419"N 70°55'52.687"W	RK ✓
36	1281.39S 676.51S	2442-2463	17.~~7~~8	2458.2	41°28'09.2~~55~~ 94"N 70°56'07.8~~95~~ 58"W	
37	422.41S 668.38S	2466-2479	15.~~3~~2	2476.~~3~~4	41°28'23.766"N 70°56'01.807"W	
39	467.53P	2480-2487	11.8	2480.4	41°28'24.054"N 70°55'51.774"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
41	1387.03P 573.49S 573.33S	2488-2505	10.5	2496.~~2~~ 3	41°27'56.002"N 70°55'51.869"W	RK —
42	596.11P	2506-2513	25.~~1~~ 2	2512.4	41°27'56.949"N 70°55'35.956"W	
43	553.14P	2514-2527	22.6	2522.3	41°28'11.994"N 70°55'26.048"W	RK —
44	399.17S	2528-2539	13.7	2532.3	41°28'32.549"N 70°55'48.584"W	
45	343.38S	2540-2551	14.3	2546.2	41°28'37.559"N 70°56'04.897"W	
46	244.45S	2552-2559	16.3	2552.1	41°28'37.065"N 70°56'24.395"W	
47	760.265P	2560-2575	16.~~8~~ 9	2562.3	41°28'~~53.017~~ 52.793"N 70°57'00.~~728~~ 788"W	RK —
48	1490.58S	2576-2583	13.4	2578.3	41°28'59.768"N 70°56'38.748"W	
49	830.47S	2584-2591	18.3	2590.1	41°28'56.866"N 70°56'29.109"W	
50	831.35S	2592-2599	17.~~1~~ 2	2594.0	41°29'00.872"N 70°56'23.279"W	
51	907.23S	2600-2609	~~19.9~~ 20.0	2605.3	41°28'53.~~976~~ 40"N 70°56'03.~~207~~ 78"W	RK —

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
52	923.51S	2610-2619	25.0	2610.0	41°28'53.096"N 70°55'49.503"W	
53	908.53S	2620-2625 2628-2629	24.5	2622.3	41°29'01.758"N 70°55'44.067"W	RK –
54	199.32S	2630-2641	20.5	2638.5	41°29'06.385"N 70°55'47.315"W	
55	838.58S	2642-2649	12.0	2646.4	41°29'07.006"N 70°56'07.042"W	RK –
56	754.055S	2650-2659	16.2	2658.3	41°29'18.761"N 70°56'08.767"W	
57	1227.37S	2660-2669	15.98	2666.3	41°29'14.982"N 70°56'33.501"W	
58	1411.48S	2670-2679	15.32	2676.3	41°29'26.241"N 70°56'38.206"W	
59	96.345S 110.315S	2680-2699	13.6	2684.2	41°29'27.574"N 70°56'20.344"W	
60	95.53P	2700-2705	11.86	2700.3	41°29'31.445"N 70°56'05.563"W	RK –
61	1498.34S	2706-2713	13.6	2708.3	41°29'30.725"N 70°55'58.453"W	RK –
62	27.34P	2714-2723	17.9	2722.1	41°29'25.766"N 70°55'46.926"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
63	26.59S	2724-2733	16.~~4~~5	2730.3	41°29'20.856"N 70°55'49.497"W	
64	840.45S	2734-2741	20.7	2734.2	41°29'14.089"N 70°55'43.542"W	
65	196.59P	2742-2749	21.~~4~~5	2744.2	41°29'15.171"N 70°55'15.803"W	
66	264.29S	2750-2757	~~14.9~~ 20.0	2750.2	41°29'04.872"N 70°55'21.837"W	RK ✓
67	338.48S	2758-2763	19.6	2758.2	41°28'57.960"N 70°55'10.021"W	RK ✓
68	325.01S	2764-2779	17.8	1064.2	41°28'54.758"N 70°55'22.078"W	LEAST DEPTH FOUND IN MAINSCHEME - NOT DEVELOPMENT RK ✓
69	1063.11S	2780-2789	15.6	2780.3	41°28'48.447"N 70°55'35.142"W	
70	1271.36S	2790-2805	13.9	472.3	41°28'45.193"N 70°54'55.724"W	LEAST DEPTH FOUND IN MAINSCHEME - NOT DEVELOPMENT
71	88.155S	2806-2811	14.~~8~~7	2808.3	41°29'46.229"N 70°55'18.462"W	RK ✓
72	1428.20S	2812-2826	16.~~5~~4	2812.0	41°30'05.283"N 70°55'22.330"W	
73	123.37P	2827-2836	13.2	2829.0	41°29'45.543"N 70°56'00.471"W	

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
38	AWOIS 7958	2837-2846	21.7	2841.3	41°28'18.895"N 70°56'39.962"W	
40	AWOIS 7959 206.53P	2847-2852	28.~~5~~2	2849.2	41°28'25.809"N 70°57'14.889"W	
79	37' SOUNDING	2853-2893	12.~~0~~2	2875.3	41°27'22.994"N 70°59'49.099"W	
80	28' & 24' SOUNDING NEAR COXENS LEDGE	2894-2902 2905-2590	8.4	2911.2	41°27'00.623"N 70°59'05.326"W	
81	51' CHARTED DEPTH	2970-2987 3061-3062	22.~~2~~3	2974.2	41°29'08.938"N 70°54'58.302"W	
82	33' CHARTED DEPTH	2988-3013	11.~~7~~9	2994.3	41°29'10.984"N 70°56'24.101"W	
83	38' CHARTED DEPTH	3014-3032	10.6	81.4	41°29'06.815"N 70°56'51.705"W	LEAST DEPTH FOUND IN MAINSCHEME - NOT DEVELOPMENT
84	47' CHARTED DEPTH	3033-3042	14.~~3~~4	467.6	41°28'22.601"N 70°55'48.461"W	LEAST DEPTH FOUND IN MAINSCHEME - NOT DEVELOPMENT
85	63' CHARTED DEPTH	3043-3060	18.9	3049.2	41°28'25.211"N 70°54'58.345"W	
86	AWOIS #7958 346.48S	3063-3074	21.7	2841.3	41°28'18.895"N 70°56'39.962"W	LEAST DEPTH FOUND IN DEV. #38
87	AWOIS #7957 273.21S	3075-3084	27.~~2~~3	2346.2	41°28'16.651"N 70°57'12.915"W	LEAST DEPTH FOUND IN DEV #28

DEV	Side Scan Contact Number(s)	Hydro Dev Positions	Least Depth (m)	LD Pos	Geographic Position	Remarks
88	AWOIS #7959 206.53P	3085-3103	27.~~3~~2	3101.3	41°28'23.204"N 70°57'10.953"W	
89	38' SOUNDING SOUTHEAST	3119-3127	12.~~4~~5	1313.8	41°28'37.334"N 70°54'25.500"W	SPIKE WAS FISH LEAST DEPTH FROM MAINSCHEME
90/ 92	38' SOUNDING NORTHEAST	3128-3135	11.~~4~~5	3157	41°29'31.458"N 70°56'05.658"W	DIVER LEAST DEPTH
91	30' SOUNDING	3136-3145	9.~~4~~5	3142.0	41°29'07.445"N 70°57'18.691"W	
93	36' SOUNDING	3161-3182	11.~~2~~3	650.5	41°27'43.228"N 70°58'00.120"W	LEAST DEPTH FROM MAINSCHEME
94	20' SOUNDING	3183-3190	7.~~6~~7	3138.2	41°27'03.340"N 70°58'49.409"W	
95	30' SOUNDING	3191-3200	~~10.9~~ 11.0	164.2	41°27'23.050"N 70°59'55.072"W	LEAST DEPTH FROM MAINSCHEME

O. COMPARISON WITH THE CHART

O.1 Charts affected by this survey are:

Chart 13228
"Westport River and Approaches"
9th ed. June 13, 1992
Scale: 1:20,000

Chart 13230
"Buzzards Bay"
39th ed. March 27, 1993
Scale: 1:40,000

Chart 13218
"Block Island to Martha's Vineyard"
31st ed. January 11, 1992
Scale: 1:80,000

O.2 On October 26, 1993, a Danger to Navigation Report was sent to the Commander, First Coast Guard District outlining charting discrepancies found during this survey. The details of this report are outlined below. See Appendix I for a complete copy of this report.

REPORT OF DANGER TO NAVIGATION

* THESE UPDATED DEPTHS AFFECT THE FOLLOWING CHARTS:

Chart 13218 (31st ed. January 11, 1992)
Chart Scale 1:80,000

Chart 13228 (9th ed. June 13, 1992)
Chart Scale 1:40,000

** DEPTH (MLLW)	LATITUDE	LONGITUDE
~~36~~ 37	41°27'43.228"N	070°58'00.120"W

* THESE UPDATED DEPTHS AFFECT THE FOLLOWING CHARTS:

Chart 13218 (31st ed. January 11, 1992)
Chart Scale 1:80,000

Chart 13230 (39th ed. March 27, 1992)
Chart Scale 1:40,000

** DEPTH (MLLW)	LATITUDE	LONGITUDE
~~37~~ 41	41°28'39.620"N	070°54'13.848"W
37	41°29'31.4~~58~~"N	070°56'05.~~658~~"W

45 563

*** Updated depths should be viewed as preliminary information, subject to office review.**
**** Depths reduced to MLLW using ~~predicted~~ tides.**

APPROVED

O.3 The overall correlation between charted depths and survey soundings is excellent, with average differences of approximately one foot in flat and slightly sloping areas and two to three feet in areas of irregular bottom topography.

Three charted depths, shown in the tables below, were found to be significantly shoaler, up to 10 feet, than the soundings obtained during this survey. In all cases the differing depths were located in known shoal areas with steep, irregular bottoms. Also, in all cases, soundings with similar depths could be found within 300 meters of the charted depth.

* LOCATION OF CHARTED DEPTH

Chart 13228 (9th ed. June 13, 1992) Chart Scale: 1:20,000		
DEPTH	LATITUDE	LONGITUDE
24	41°27'01.2"N	070°59'07.2"W
28	41°26'58.2"N	070°59'13.2"W

* These two charted depths are located on Coxens Ledge near buoy "R 4"

* LOCATION OF CHARTED DEPTH

Chart 13230 (39th ed. March 27, 1992) Chart Scale: 1:40,000		
DEPTH	LATITUDE	LONGITUDE
38	41°29'11"N	070°56'51"W

* This charted depth is located near Mishaum Ledge buoy "G 5"

O.4 The correlation between charted shoal areas and corresponding soundings from this survey is excellent. See sections O.2 and O.3 for discrepancies and additions to the chart.

O.5 Chart 13230, 39th ed. March 27, 1992 and Chart 13228, 9th ed. June 13, 1992 are the main operating charts used by fishermen in this area. Since the primary navigation system in the bay is still LORAN-C, it would be beneficial to have the LORN-C time delay grid overlaid on these charts. In addition, the latitude and longitude scales in their present format are cumbersome to use, since they are only broken down into whole minutes, rather than tenths of minutes.

P. ADEQUACY OF SURVEY

SEE ALSO SECTION P. OF THE EVALUATION REPORT.

P.1 All items investigated during this survey have been addressed.

P.2 This survey is complete and contains no substandard data. AWOIS investigations were limited to the confines of this survey.

Q. AIDS TO NAVIGATION

Q.1 The RUDE conducted no correspondence with the U.S. Coast Guard regarding floating aids to navigation.

Q.2 There are four floating aids to navigation within the survey area. In U.S. Coast Guard Light List Volume 1, Atlantic Coast, they are identified as the following:

Light No.	Name	Position
16010	Hen and Chickens Lighted Gong Buoy 3	41°27.0'N 71°01.1'W
16025	Coxens Ledge Lighted Bell Buoy 4 West side of Shoal	41°27.0'N 70°59.3'W
16030	Penikese Lighted Bell Buoy 6	41°27.9'N 70°56.7'W
16035	Mishaum Ledge Lighted Gong Buoy 5 Off southeast side of ledge	41°29.0'N 70°57.4'W

The observed characteristics of these buoys agreed with their published characteristics. Detached positions were obtained for all buoys to verify their exact locations. This was accomplished by maneuvering RUDE as close as possible to a buoy and then taking several detached positions, while at the same time estimating the distance and bearing of the ship's bow to the buoy. This distance was corrected for the position of the transducer and applied to the detached position to compute the "true" position. These positions follow and agree well with their published positions:

Buoy "G 3"	41°27'~~.04~~ 03.205"N	071°01'~~.06~~ 03.439"W	DP 3216~~9~~
Buoy "R 4"	41°27'~~.04~~ 02.974"N	070°59'~~.21~~ 11.902W	DP 3221
Buoy "R 6"	41°27'~~.95~~ 57.235"N	070°56'~~.62~~ 36.836"W	DP 3223
Buoy "G 5"	41°28'~~.97~~ 58.740"N	070°57'~~.35~~ 24.670"W	DP 3219

Q.3 There were no aids to navigaton other than those listed in the Light List found within the boundaries of this survey.

Q.4 No bridges, overhead cables or overhead pipelines are located within the survey area.

Q.5 No pipelines or designated ferry routes are located within the survey area. A "Cable Area" crosses the survey area in a nearly north/south line from position 41°29'18"N and 070°56'42"W on the north, to position 41°27'54"N and 070°56'02"W on the south.

No specific submarine cable is charted, only the above notation. This notation may refer to cables that connect the mainland with the inhabited Elizabeth Islands.

From time to time the New Bedford to Cuttyhunk Island Ferry, Alert II, will transit the eastern edge of the survey area, passing to the west of Penikese Island, on it's way to or from Cuttyhunk Island.

Q.6 No ferry terminals are located within the survey area.

R. STATISTICS

R.1 a)	Number of positions	3246
b)	Lineal nautical miles of sounding lines	
	- nautical miles of survey with the use of the side scan sonar	209.47
	- nautical miles of survey without the use of the side scan sonar	115.98
R.2 a)	Square nautical miles of hydrography	
	- per 100% of coverage	10.18
b)	Days of production	24
c)	Detached positions	40
	- 5 for diver investigations	
	- 4 for floating aids to navigation	
	- 31 for bottom samples	
d)	Bottom samples	31
e)	Tide stations	1
f)	Current stations	0
g)	Velocity casts	6
h)	Magnetic stations	0
i)	XBT drops	0

S. MISCELLANEOUS SEE ALSO SECTION S. OF THE EVALUATION REPORT

S.1 a) No evidence of silting was found during this survey.

b) No evidence of unusual submarine features was found during this survey.

c) No evidence of anomalous tidal conditions was found during this survey.

d) No observations of unusual currents were recorded during this survey.

e) No evidence of magnetic anomalies was found during this survey.

S.2 Thirty-one bottom samples were obtained during this survey. As directed in the project instructions, they were inspected, recorded and not submitted to the Smithsonian Institution.

T. RECOMMENDATIONS

T.1 See section 0.2 for dangers to navigation noted during this survey.

T.2 The RUDE is aware of no construction or dredging that will affect results of this survey.

T.3 No further investigation of the survey area is recommended, except those items noted in section 0.2.

U. REFERRAL TO REPORTS

No reports have been published which are not contained within this Descriptive Report.

H-10496
BUOY CHAIN SSS # 1081.37P
DIVE INVESTIGATION REPORT
DIVE 274.1

DATE: OCTOBER 1, 1993 DN: 274

PERSONNEL:

DIVEMASTER\TENDER - LTJG BRENNAN DIVERS - LCDR HERLIHY

COXSWAIN\TENDER - SS BRAWLEY - ENS HAUPT

VISIBILITY: 15 FEET CURRENT: 0.5 KNOT

MAXIMUM DEPTH: 21.3 METERS BOTTOM TIME: 11 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 97001 18

EASTING: 51928.1 NORTHING: 52932.5

LATITUDE: 41°28'35.713"N LONGITUDE: 070°55'47.908"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: NONE TAKEN

CORRECTED LEAST DEPTH BY ECHO SOUNDER: 21.5 METERS

TIME OF READING: 1720 UTC

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

~~PREDICTED~~ APPROVED TIDAL ZONE CORRECTOR: -1.2 METERS

LEAST DEPTH DETERMINED @MLLW 21.5/3 METERS

NARRATIVE REPORT: The purpose of this dive was to investigate a side scan sonar contact (#1081.37P) which appeared to be a possible buoy chain.

The dive buoy was deployed in HDAPS position E = 51930.9 and N = 52921.2. The buoy anchor settled near the item in question, which turned out to be a long steel dredge pipe, not a buoy chain as previously thought. The pipe was approximately 50 feet in length and 2 feet in diameter, and was lying in an east-west direction with a 90 degree bend near the east end. The buoy anchor was moved to this bend, where a detached position was later obtained. A diver least depth was not taken since the pipe rose no more than 2 feet off of the bottom at any point. The bottom in this area consisted of mud and sand with pebbles, with an average surrounding depth of 70 feet by diver's depth gauge. NO CHANGE IN CHARTING RECOMMENDED.

H-10496
AWOIS ITEM 8304
DIVE INVESTIGATION REPORT
DIVE 274.2

DATE: OCTOBER 1, 1993 DN: 274

PERSONNEL:

DIVEMASTER\TENDER - LTJG BRENNAN DIVERS - LCDR HERLIHY

COXSWAIN\TENDER - SS BRAWLEY - ENS HAUPT

VISIBILITY: 15 FEET CURRENT: 0.5 KNOT

MAXIMUM DEPTH: 16.8 METERS BOTTOM TIME: 19 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 97002 24

EASTING: 51343.4 NORTHING: 51870.3

LATITUDE: 41°28'01.261"N LONGITUDE: 070°56'13.054"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 13.5 METERS

TIME OF READING: 1405 UTC

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

~~PREDICTED~~ APPROVED TIDAL ZONE CORRECTOR: -1.~~0~~ 1 METERS

LEAST DEPTH DETERMINED @MLLW 12.~~5~~ 4 METERS

NARRATIVE REPORT: The purpose of this dive was to investigate AWOIS item #8304, described as a sunken fishing vessel in approximately 50 feet of water.

The dive location coordinates were taken from side scan contact numbers 527.43P, 532.38P and 1370.13S, with the dive buoy being dropped in position E = 51350.9 and N = 51866.5. The buoy anchor landed on the remains of a wooden vessel approximately 25 meters in length and lying in a north-south direction. The ribs of the hull were exposed and decayed. Several rectangular steel containers appeared to be its cargo, with the highest point determined to be one of these containers. Since this container was also located near amidships, both the detached position and the least depth by pneumatic depth gauge (~~13.5~~ 13.4 meters corrected with ~~predicted~~ APPROVED tides) were taken here. The bottom in this area consisted of hard sand and cobbles, with an average surrounding depth of 55 feet by diver's depth gauge. SEE SECTION N, PAGE 24 OF THIS REPORT FOR CHARTING RECOMMENDATION.

H-10496
AWOIS ITEM 7960
DIVE INVESTIGATION REPORT
DIVE 274.3

DATE: OCTOBER 1, 1993 DN: 274

PERSONNEL:

DIVEMASTER\TENDER - LTJG BRENNAN DIVERS - LCDR HERLIHY

COXSWAIN\TENDER - SS BRAWLEY - ENS HAUPT

VISIBILITY: 10 FEET CURRENT: 1.0 KNOT

MAXIMUM DEPTH: 20.7 METERS BOTTOM TIME: 15 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 97~~003~~ 26

EASTING: 49944.0 NORTHING: 51275.6

LATITUDE: 41°27'41.925"N LONGITUDE: 070°57'13.325"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: ~~18.0~~ 17.4 METERS

TIME OF READING: 1517 UTC

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

~~PREDICTED~~ APPROVED TIDAL ZONE CORRECTOR: -0.~~6~~ 7 METERS

LEAST DEPTH DETERMINED @MLLW ~~17.4~~ 16.7 METERS

NARRATIVE REPORT: The purpose of this dive was to investigate AWOIS item #7960, described as the wreck of the 52-foot WWII converted steel hull landing craft **TRITON**, which sank in approximately 85 feet of water

The dive location coordinates were taken from side scan sonar contact # 1351.07S. The dive buoy was dropped in position E = 49952.0 and N = 51270.6. The buoy anchor landed on the remains of a wood and steel vessel approximately 13 meters in length. The remains consisted mostly of rubble and debris and a hull was not discernable. A steel cylindrical "tank", possibly the ship's boiler, was the highest point off the bottom. The top of the tank was at a depth of 57 feet by diver's depth gauge. The detached position and least depth by pneumatic depth gauge (~~18.0~~ 16.7 meters corrected with ~~predicted~~ APPROVED tides) was taken on this tank. The bottom in this area consisted of hard sand, with an average surrounding depth of 68 feet by diver's depth gauge. SEE SECTION N. PAGES 22-23 OF THIS REPORT FOR DISCUSSION AND CHARTING RECOMMENDATIONS ✗

H-10496
AWOIS ITEM 1917
DIVE INVESTIGATION REPORT
DIVE 274.4

DATE: OCTOBER 1, 1993 DN: 274

PERSONNEL:

DIVEMASTER\TENDER - ENS HAUPT DIVERS - LT NIICHEL

COXSWAIN\TENDER - SS BRAWLEY - LTJG BRENNAN

VISIBILITY: 5 FEET CURRENT: 1.5 KNOT

MAXIMUM DEPTH: 21.9 METERS BOTTOM TIME: 40 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 97064 32

EASTING: 48394.5 NORTHING: 52313.1

LATITUDE: 41°28'15.480"N LONGITUDE: 070°58'21 20.166"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 16.9 METERS

TIME OF READING: 1733 UTC

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

~~PREDICTED~~ APPROVED TIDAL ZONE CORRECTOR: -0.1 2 METERS

LEAST DEPTH DETERMINED @ MLLW 16.8 7 METERS

NARRATIVE REPORT: The object of this dive was AWOIS 1917, the wreck of the Navy ferry **COWEN**. This item was seen on side scan sonar contact # 719.135P, with its HDAPS position (E = 48409.6 and N = 52312.3) used as the buoy drop site.

After deploying the dive buoy, the divers descended onto the wreck to begin their investigation. The dive buoy had come to rest on what appeared to be the bow of the vessel. This part of the ship was very broken, thus hard to discern exactly what part it actually was. From hear the divers swam north towards the stern of the ship. Most of the ships decks had collapsed, leaving large holes into the hold of the ship. These areas were cluttered with fallen beams, nets and cables, and thus were not explored. Approximately two-thirds of the way aft on the ship two boilers were encountered. These structures were the largest and also the shoalest features encountered on this wreck. There were no indications of a deck house remaining on the wreck which would have enclosed the boilers. SEE SECTION D. X

PAGES 14-15 OF THIS REPORT FOR DISCUSSION AND CHART RECOMMENDATION.

H-10496
AWOIS ITEM 1917
DIVE INVESTIGATION REPORT
DIVE 274.4 (cont'd)

The divers returned to the boilers and signaled for the pneumo hose. A pneumatic least depth of 16.8 meters (corrected with ~~predicted~~ APPROVED tides) was obtained on this wreck. Upon completing the least depth measurement, the divers returned to the surface, and a detached position was obtained by the ship.

H-10496
38-FOOT SOUNDING
DIVE INVESTIGATION REPORT
DIVE 279.1

DATE: OCTOBER 6, 1993 DN: 279

PERSONNEL:

DIVEMASTER\TENDER - ENS HAUPT DIVERS - LCDR HERLIHY

COXSWAIN\TENDER - SS BRAWLEY - LTJG BRENNAN

VISIBILITY: 10 FEET CURRENT: 1.0 KNOT

MAXIMUM DEPTH: 16.8 METERS BOTTOM TIME: 15 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 97005

EASTING: 51518.3 NORTHING: 54652.7

LATITUDE: 41°29'31.458"N LONGITUDE: 070°56'05.658"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 12.2 METERS

TIME OF READING: 1335 UTC

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

~~PREDICTED~~ APPROVED TIDAL ZONE CORRECTOR: -0.~~8~~ 1 METERS

LEAST DEPTH DETERMINED @ MLLW 11.~~4~~ 5 METERS

NARRATIVE REPORT: The object of this dive was fathogram insert 2700.3, a 3-meter spike found during hydro developments 90 and 92.

Following a dive buoy drop in HDAPS position 2700.3 (E = 51520.5 and N = 54652.3), divers descended the line and found the buoy anchor resting about 3 meters northeast of a large boulder, which was approximately 3.5 meters tall and 10 meters in diameter. The boulder had a well-defined peak, with a vertical face on the south side and a sloping face on the north side. The surrounding bottom consisted of fine sand and silt, with an occasional small rock. A pneumatic least depth of 11.~~4~~ 5 meters (corrected with ~~predicted~~ APPROVED tides) was obtained on this boulder. Once the divers were out of the water, a detached position was obtained by the ship. IT IS RECOMMENDED THAT A ROCK WITH A KNOWN DEPTH OF 11.6m (37 FT) AND A DANGER CURVE BE CHARTED IN PRESENT SURVEY LOCATION.

H-10496
36-FOOT SOUNDING
DIVE INVESTIGATION REPORT
DIVE 279.2

DATE: OCTOBER 6, 1993 DN: 279

PERSONNEL:

DIVEMASTER\TENDER - ENS HAUPT DIVERS - LCDR HERLIHY

COXSWAIN\TENDER - SS BRAWLEY - LTJG BRENNAN

VISIBILITY: 10 FEET CURRENT: 1.0 KNOT

MAXIMUM DEPTH: 15.2 METERS BOTTOM TIME: 12 MIN.

METHOD OF POSITION DETERMINATION: ON LINE POSITIONING

HDAPS POSITION: 650.5

EASTING: 48858.1 NORTHING: 51317.4

LATITUDE: 41°27'43.228"N LONGITUDE: 070°58'00.120"W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: NONE TAKEN

TIME OF READING: N/A

PNEUMATIC DEPTH GAUGE CORRECTOR: N/A

PREDICTED TIDAL ZONE CORRECTOR: N/A

LEAST DEPTH DETERMINED @MLLW N/A

NARRATIVE REPORT: The object of this dive was fathogram insert number 650.5, a 36-foot depth found during mainscheme hydrography.

A dive buoy was dropped in HDAPS position 650.5 (E=48858.1 and N=51317.4), the divers descended the line and completed 10 and 20-meter circle searches, but failed to find any significant pinnacle. The divers returned to the ship and the area was thoroughly developed using tight echo sounder line spacing (see development 93). NO CHANGE IN CHARTING RECOMMENDED.

APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

No horizontal control stations were needed for this survey as Differential GPS was employed exclusively for all positioning control. The following are the geographic positions for the Differential GPS radio beacons used during this survey:

Portsmouth, N. H.	41°04'02.047"N	071°51'38.274"W
Montauk, N. Y.	41°04'15.064"N	070°42'36.805"W

APPENDIX I

DANGER TO NAVIGATION REPORTS

See attached Danger to Navigation Report.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
NOAA Ship RUDE S-590
439 W. York Street
Norfolk, VA 23510-1114

23 October 1993

Commander
First Coast Guard District
Aids To Navigation Office
408 Atlantic Avenue
Boston, Massachusetts 02110-3350

Dear Sir:

During the preliminary stages of NOAA Ship RUDE's hydrographic survey of the entrance corridor to Buzzards Bay, Coxens Ledge to Wilkes Ledge, several discrepancies were found in the depths on charts 13218 (31st ed. 11 Jan. 92), 13230 (39th ed. 27 March 92) and 13228 (9th ed. 13 June 92) . Soundings acquired during this survey have been found to be as much as 10 feet shoaler than the charted depths in these areas. It is requested that information concerning these discrepancies be published in the Local Notice to Mariners.

Updated depths are outlined in the tables found in this report. These depths should be viewed as preliminary information subject to office review. In addition, there is a chartlet enclosed with the boundaries of the survey outlined and with the new depths to be added highlighted.

The survey soundings were determined during preliminary hydro investigation using a Raytheon DSF-6000N survey fathometer. The depths have been reduced to Mean Lower Low Water (MLLW) by applying ~~predicted~~ tide corrections. The horizontal datum is NAD 83. APPROVED

This investigation was performed in support of the following hydrographic survey.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number...H-10496
State.....Massachusetts
General Locality.....Entrance to Buzzards Bay
Locality.....Coxen's Ledge to Wilke's Ledge
Project Number.....OPR-B616
Surveyed by.....NOAA Ship RUDE

DEPTHS TO BE DELETED			
CHART	DEPTH	LATITUDE	LONGITUDE
13230, 13218	44	41°27'43.20"N	070°58'00.00"W
13228	41	41°27'43.80"N	071°58'01.80"W
13230, 13218	42	41°28'40.00"N	070°54'15.00"W

DEPTHS TO BE ADDED			
CHART	DEPTH	LATITUDE	LONGITUDE
13230, 13218, 13228	~~36~~ 37	41°27'43.23"N	070°58'00.12"W
13230, 13218	~~37~~42	41°28'39.62"N	070°54'13.85"W
13230, 13218	37	41°29'31.4~~6~~4"N	070°56'05.~~66~~56"W

Contact either of the following personnel for further information.

Commanding Officer
NOAA Ship RUDE
16 Sconticut Nk. Rd
#244
Fairhaven MA, 02719
508-979-0600

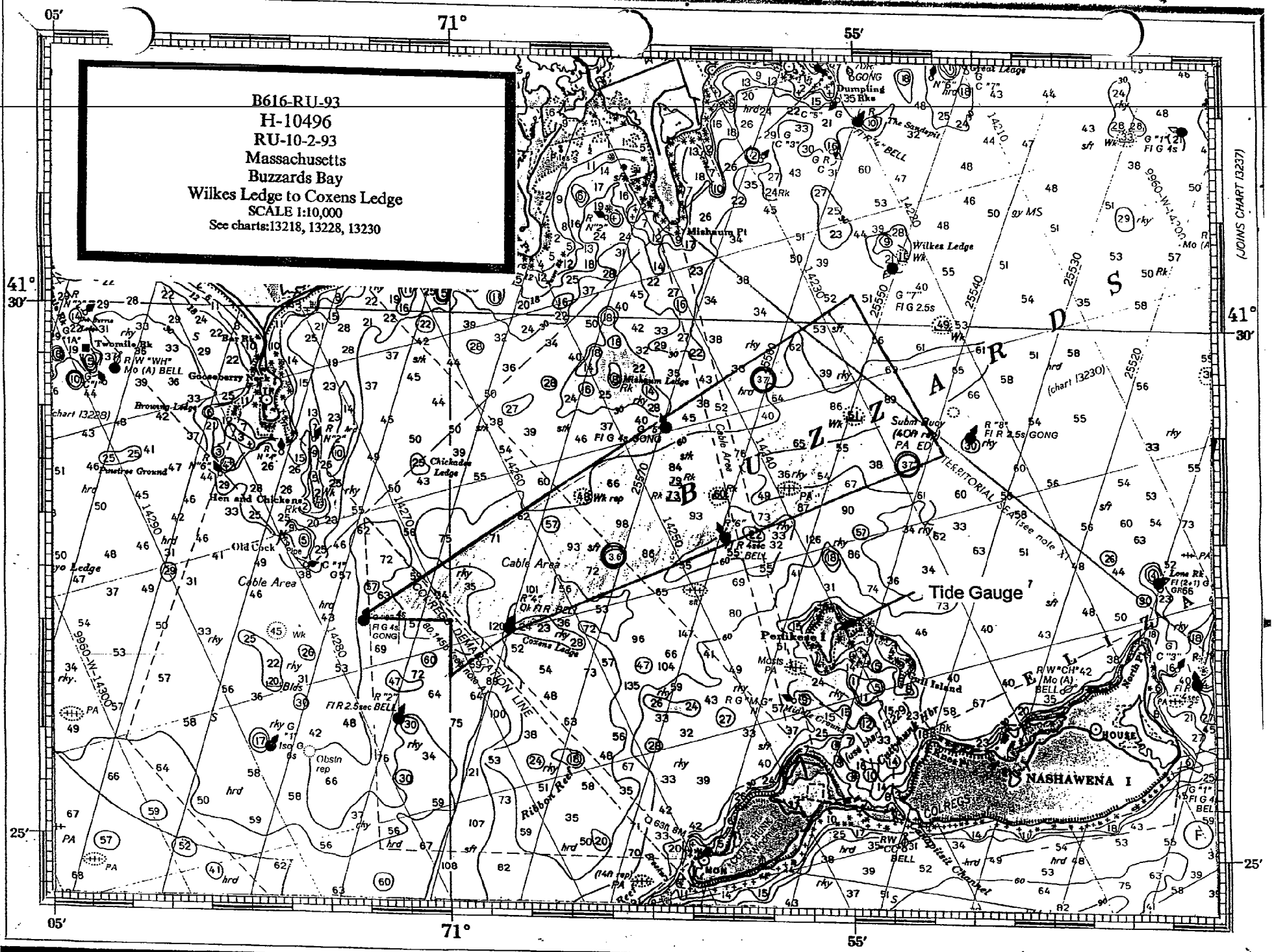
Chief, Atlantic Hydrographic Section
Atlantic Marine Center
439 W. York St
Norfolk Va. 23510
804-441-6746

Sincerely

Daniel R. Herlihy

Daniel R. Herlihy
Lieutenant Commander, NOAA
Commanding Officer, NOAA Ship RUDE

Enclosure


B616-RU-93
H-10496
RU-10-2-93
Massachusetts
Buzzards Bay
Wilkes Ledge to Coxens Ledge
SCALE 1:10,000
See charts:13218, 13228, 13230
05'
71°
55'
41° 30'
25'
Tide Gauge
Dumpling
Wilkes Ledge
Mishaum Pt
Mishaum Ledge
Chickadee Ledge
Hen and Chickens
Old Cock
Cable Area
Coxens Ledge
Ribbon Reef
Penikese I
Gull Island
NASHAWENA I
COLREGS
DEMARCATION LINE
TERRITORIAL SEA (see note X)
(JOINS CHART 13237)
(chart 13230)
(chart 13228)

APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H-10496

This report and the accompanying field sheets are respectfully submitted.

Thomas A. Niichel, LT, NOAA
Executive Officer
NOAA Ship RUDE

Richard T. Brennan, LT(jg), NOAA
Field Operations Officer
NOAA Ship RUDE

Field operations contributing to the accomplishment of this survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for nautical charting.

Daniel R. Herlihy, LCDR, NOAA
Commanding Officer
NOAA Ship RUDE

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 18, 1994

MARINE CENTER: Atlantic

HYDROGRAPHIC PROJECT: OPR-B616

HYDROGRAPHIC SHEET: H-10496

LOCALITY: Massachusetts, Buzzards Bay Wilkes Ledge to Coxens Ledge

TIME PERIOD: August 18 - October 8, 1993

TIDE STATION USED: 844-8248 Penikese Island, Ma.
Lat. 41° 27.0'N Lon. 70° 55.3'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.65 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.6 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Penikese Island, Ma. (844-8248).

Note: Times are tabulated in Eastern Standard Time.

William M. Stevenson

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10496

Name on Survey	A ON CHART NO. 13230	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BUZZARDS BAY	X									1
COXENS LEDGE	X									2
MASSACHUSETTS (title)	X									3
WILKES LEDGE (title)	X									4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
				Approved:						16
										17
				Charles G. Harrington						18
				Chief Geographer - N/CG2x5						19
				OCT - 5 1994						20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

07/18/95

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10496

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	3246
NUMBER OF SOUNDINGS	14286

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	189	07/11/94
VERIFICATION OF FIELD DATA	238	09/23/94
QUALITY CONTROL CHECKS	63	
EVALUATION AND ANALYSIS	43	
FINAL INSPECTION	2	09/29/94
COMPILATION	49	06/10/95
TOTAL TIME	584	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 09/30/94

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10496 (1993)

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.

H. 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. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.382 seconds (11.80 meters or 1.18 mm at the scale of the survey) north in latitude, and 1.868 seconds (43.34 meters or 4.33 mm at the scale of the survey) east in longitude.

M. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-6445 (1939) 1:40,000
H-9615 (1976) 1:20,000
H-9645 (1976) 1:10,000

The three (3) prior surveys listed above cover the present survey area in its entirety.

1) Prior survey depths from H-6445 (1939) compare favorably and show a general trend of being 0^6 to 0^9 m (2 to 3 ft) deeper than present survey depths.

2) Prior survey depths from H-9615 (1976) compare well with present survey depths and show no change in bottom. There are some scattered depths on the prior survey H-9615 (1976) that have brought forward from prior surveys to supplement H-9615 (1976). These depths are considered verified or disproved by the present survey.

3) Prior survey depths from H-9645 (1976) are in agreement with present survey depths. There are some scattered depths; however, shown on prior survey that are 0^3 to 0^6 m (1 to 2 ft) deeper than the present survey depths.

The difference between the present and prior surveys can be attributed to improved hydrographic surveying methods and equipment.

The present survey is adequate to supersede the prior surveys within the common area.

b. Wire Drag

H-3556WD	(1914)	1:20,000
H-3668WD	(1914)	1:20,000
FE-46WD	(1944)	1:20,000
FE-194WD	(1963)	1:40,000
FE-207WD	(1967)	1:40,000

1) Comparison between the present survey and prior survey H-3556WD (1914) reveals no hangs or groundings within the common area.

2) Comparison between the present survey and prior survey H-3668WD (1914) reveals no hangs or groundings within the common area.

3) Comparison between the present survey and prior survey FE-46WD (1944) reveals no hangs are groundings within the common area.

4) Comparison between the present survey and prior survey FE-194WD (1963) revealed two groundings within the common area.

a) A grounding at 55 ft (16^{7} m), with a subsequent wire drag clearance depth of 51 ft (15^{5} m), in Latitude 41°29'27"N, Longitude 70°55'01"W, originates with the prior survey. The grounding was investigated by the field unit using side scan sonar. No contacts were located in the vicinity of the grounding. Shoaling to 54 ft (16^{4} m), in Latitude 41°29'28.69"N, Longitude 70°54'59.79"W, was found. The grounding is considered disproved. It is recommended that the area be charted as shown on present survey.

b) A grounding at 44 ft (13^{4} m), with no wire drag clearance depth, in Latitude 41°28'35"N, Longitude 70°54'47"W, originates with the prior survey. The grounding was investigated by the field unit using side scan sonar. No contacts were located in the vicinity of the grounding. Shoaling to 39 ft (12^{1} m), in Latitude 41°28'40.26"N, Longitude 70°54'46.90"W, was found. The grounding is considered disproved. It is recommended that the area be charted as shown on present survey.

5) Comparison between the present survey and prior survey FE-207WD (1967) revealed three hangs within the common

area. These hangs were assigned AWOIS item numbers #7957, #7958, and #7959. Each item was investigated by the field unit. See sections N.1.3, N.1.4, and N.1.5 of the Descriptive Report for discussion and charting recommendations.

There are no conflicts between the prior survey effective clearance depths and the present survey depths.

O. COMPARISON WITH CHARTS 13218 (31st Edition, Jan 11/92)
13228 (9th Edition, Jun 13/92)
13230 (39th Edition, Mar 27/93)

The charted hydrography originates with the previously discussed prior surveys and requires no further consideration. The hydrographer's chart comparisons in sections N. and O. of the Descriptive Report are adequate.

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

P. ADEQUACY OF SURVEY

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

S. MISCELLANEOUS

S.3. Chart compilation has been done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compiled data will be forwarded to Marine Chart Division upon completion of survey.

WHITING Processing Team

Franklin L. Saunders
Cartographic Technician

Norris A. Wike
Cartographer

APPROVAL SHEET
H-10496

Initial Approvals:

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. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. A final sounding printout of the survey has been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Peterson Date: June 6, 1995

Leroy G. Cram
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.

Nicholas E. Perugini Date: July 6, 1995

Nicholas E. Perugini, CDR, NOAA
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Andrew A. Armstrong, III Date: 7/19/95

Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys
Division

NOAA FORM 75-95
(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. H-10496

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
13228	6/9/95	[signature]	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SNDGS FROM SS
13230	6/9/95	[signature]	Full Part Before After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SNDGS FROM SS
13229	6/10/95	[signature]	Full Part Before After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SNDGS FROM SS
13218	6/16/95	[signature]	Full Part Before After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SNDGS FROM SS THRU 13229
13228	7/24/95	L. Akeman PS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. # 20
13229(E)	7/25/95	L. Akeman PS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. # 26
13230	7/31/95	L. Akeman PS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. #51 (THRU 13229E)
13218	8/9/95	L. Akeman PS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. THRU 13229 E
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.