

H10648

NOAA FORM 78-35A	
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-10-7-95
Registry No.	H-10648
LOCALITY	
State	Rhode Island
General Locality	Rhode Island Sound
Sublocality	5.0 NM. SE. of Brenton Point
19 95	
CHIEF OF PARTY	
CDR. S.P. DeBow	
LIBRARY & ARCHIVES	
DATE	JUN 2 1997

DIAGRAM 1210-5



NOAA FORM 77-28
(11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-10648

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

FIELD NO.

RU-10-7-95

State Rhode Island

General locality Rhode Island Sound

Locality 5.0 nm Southeast of Brenton Point

Scale 1:10,000

Date of survey September 18-October 31, 1995

Instructions dated February 16, 1995

Project No. OPR-B302-RU-95

Vessel NOAA Ship RUDE S590 (VESNO 9040)

Chief of party CDR S.P. De Bow

Surveyed by CDR S.P. De Bow, LT C.L. Thacker, LTJG T.A. Haupt, ENS J.J. Walker, ST M.T. Lathrop

Soundings taken by: (echo sounder, hand lead, pole) Raytheon DSF-6000N Echosounder, RESON SEABAT 9001

Graphic record scaled by SPD, CLT, TAH, JJW, & MTL

Graphic record checked by SPD, CLT, TAH, JJW, & MTL

Protracted by _____ Automated plot by ENCAD NOVAJET III

Verification by ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL (AHB)

Soundings in (fathoms, feet, or meters at MLW or MLLW) FEET
Meters at MLLW

REMARKS: All times recorded in UTC.

The DSF-6000N was used as the primary sounding instrument; however, as warranted, the SEABAT 9001 shallow-water multibeam sonar system was employed for distinct item investigations and is documented as such.

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

SurA/Auois, 5/19/97, mcr

SA 6-3-97

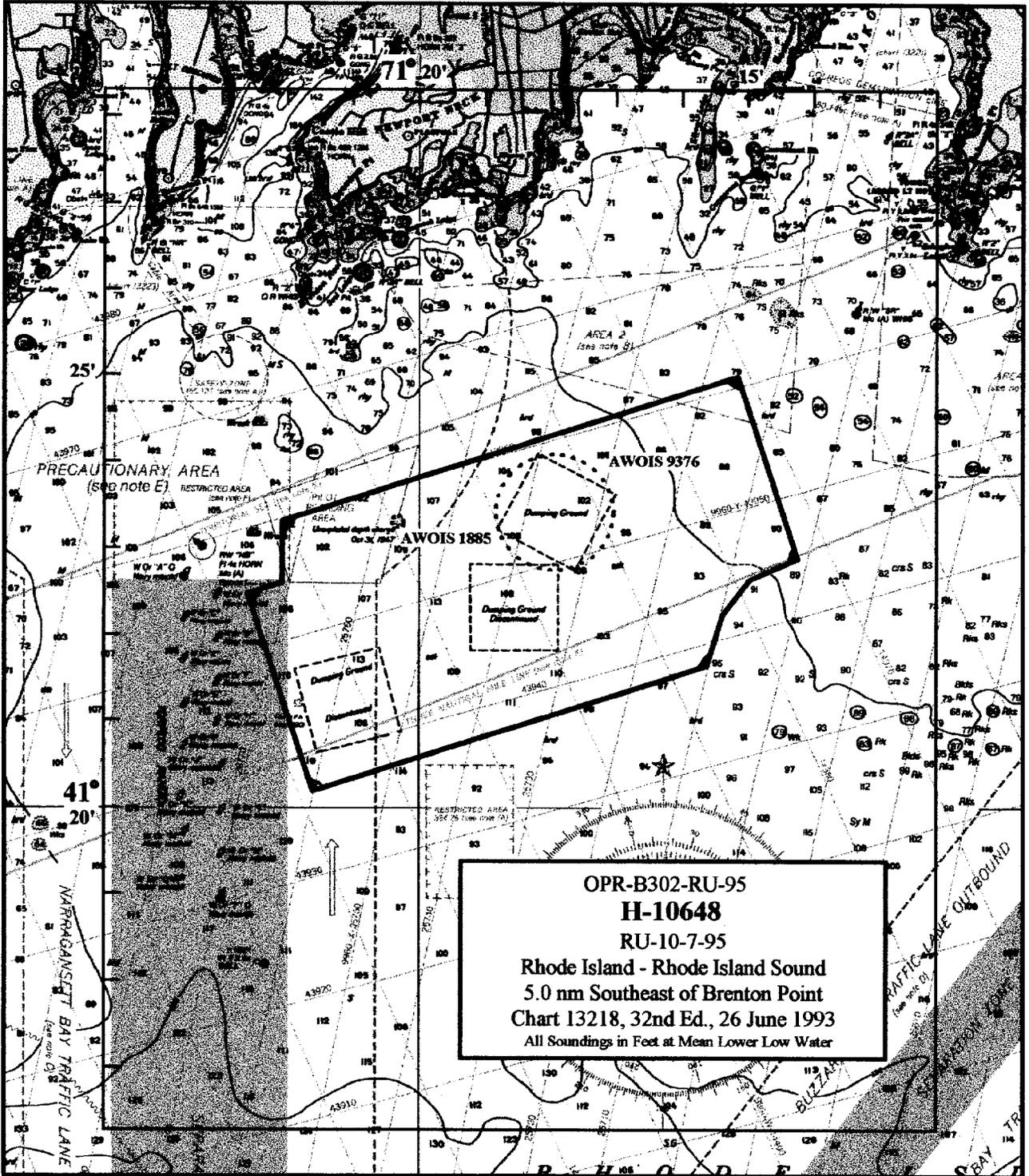
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* SEPARATES

* DATA FILED WITH ORIGINAL FIELD RECORDS.



A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B302-RU, Rhode Island Sound Corridor, Rhode Island and Massachusetts.

A.2 The original instructions are dated February 16, 1995.

A.3 There have been two changes to the original instructions, neither of which affects this survey: Change No. 1, dated ~~May 10~~, 1995, and Change No. 2, dated ~~July 13~~, 1995. *APRIL 27*
JUNE 26

A.4 This Descriptive Report covers the navigable area survey conducted on sheet "C" of project OPR-B302-RU in Rhode Island Sound, as specified in the Project Instructions.

A.5 This portion of OPR-B302-RU responds to requests from the Northeast Marine Pilots to survey the Rhode Island Sound shipping corridor, which is heavily used by a variety of deep-draft vessels, such as tankers, freighters, and barges. The average draft of the vessels is between 32 and 38 feet, with maximum drafts of up to 40 feet. The area was last surveyed by the Coast and Geodetic Survey between 1939 and the mid-1950's.

B. AREA SURVEYED

B.1 This survey covers an off-shore area in Rhode Island Sound, approximately 5.0 nm southeast of Brenton Point, RI.

B.2 The survey comprises one sheet with the following approximate boundaries:

NE Corner - 41°25'00"N, 071°15'12"W
NW Corner - 41°23'10"N, 071°22'48"W
SW Corner - 41°20'12"N, 071°22'00"W
SE Corner - 41°22'30"N, 071°14'12"W

B.3 Data collection for this survey began on September 18, 1995 (DN 261) and ended on October 31, 1995 (DN 304).

C. SURVEY VESSELS

C.1 The following vessel was used during this survey:

Vessel	EDP Number	Primary Function
NOAA Ship RUDE (S590)	9040	Hydrography, Side Scan Operations and SEABAT Investigations

C.2 During the RUDE's January 1994 dry-dock period, the ship was outfitted with a pivoting armature to carry the transducers for the Reson SEABAT 9001 shallow-water multibeam sonar system. This armature was mounted on the port side, approximately amidships. Since the transducers were not designed for permanent deployment, the arm was rotated into the down, or operating, position only during times of data acquisition.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

*SEE ALSO THE
EVALUATION REPORT*

D.1 The following HDAPS software versions were used for data acquisition and processing on this survey:

Program	Version	Program	Version
BACKUP	2.00	LSTAWOIS	3.10
BLKEDIT	2.02	MAINMENU	1.20
CARTO	2.17	MAN_DATA	3.03
CLASSIFY	2.12	NEWPOST	6.13
CONTACT	2.48	PLOTALL	2.32
CONVERT	3.65	PREDICT	2.01
DAS_SURV	6.80	PRESURV	7.11
DP	2.18	QUICK	2.07
EXCESS	4.32	RAMSAVER	1.02
FILESYS	3.31	REAPPLY	2.12
GRAFEDIT	1.06	ZOOMEDIT	2.33
INVERSE	2.02		

D.2 The SEABIRD SBE-19 sound velocity profile unit was utilized with **SEASOFT 3.3M** and **SEACAT 2.0** software. The program **VELOCITY** (Version 2.11, September 21, 1994) was used to process the collected data and calculate velocity corrections. **VELOCITY's REFRACT** subroutine was used to correct SEABAT multiple slant-range depths for sound velocity, and position of soundings (cross track distance) for refraction.

D.3 SEABAT multibeam data were acquired exclusively on the SEABAT 9001 data acquisition 486 personal computer using the Coastal Oceanographics **HYPACK** software package (Version 1.0, March 1, 1994). Gyro and predicted tide input were received from HDAPS, heave/roll/pitch data were received directly from the Datawell HRP sensor, and positioning input was received from the Ashtech GPS receivers. SEABAT data were processed on one of two personal computers equipped with the NOAA **LSTRUD** (Version 3.0, 1995) post-processing software. A single least depth was generated for each SEABAT investigation and later entered into HDAPS via the **MANUAL DATA ENTRY** program. Graphic plots of the SEABAT imagery were created using **SURFER for Windows** (Version 5.03), a commercial off-the-shelf graphics package.

E. SONAR EQUIPMENT

E.1 The RUDE conducted all side scan sonar operations using an EG&G Model 260 image-corrected side scan sonar recorder and a 100 kHz Model 272-T towfish.

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

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

E.4 a. Given the average depth of water in the survey area, the 150-meter range scale was used at a line spacing of 260 meters to obtain complete area coverage and provide optimal contact resolution. Although the spacing was 10 meters less than the value specified in section 7.3.2.1 of the Field Procedures Manual (FPM), it was chosen to allow an even number

of lines to be run during hydro splits. Data collected with an EPE of 15 or greater were either rejected or smoothed during post-processing, so the maximum line spacing was never exceeded.

b. Confidence checks were obtained whenever features such as lobster pots or sand waves were encountered. These features were routinely annotated on the sonar grams.

c. Two hundred percent side scan coverage was completed for this survey. Areas of reduced coverage occasionally occurred when the ship was forced to maneuver around lobster pots. These areas were easily recognized because the swath plot clearly showed the lack of overlap between adjoining swaths. Holiday coverage was run to fill in these gaps, and all side scan coverage was ultimately checked with smooth plots to ensure proper overlap between adjoining lines.

d. There were no degraded data returns collected during this survey.

e. The towfish was deployed exclusively from the stern.

E.5 Significant side scan sonar contacts were investigated using conventional hydrographic "splits" routinely run at 2-meter line spacing to ensure 100% vertical echo sounder coverage. Most of the contacts were boulders which required a number of development lines to be fully ensonified. During the developments the SEABAT system operated in passive mode. This enabled the operator to "see" the bottom contours of the swath ensonified by the SEABAT, without actively collecting data. This capability was used to determine efficiently which way to turn when a contact was not directly below the single-beam echo sounder. Contacts warranting more precise depth determination were investigated using the SEABAT multibeam sonar system in acquisition mode. Since the system acquires data at an enormous rate it was brought on-line approximately 50 meters before the contact and turned off immediately after the contact had passed. The data for these investigations are summarized in the SEABAT Development Addendum in Section N of this report.

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

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon Model 6000N Digital Survey Echosounder (DSF-6000N). As authorized by the Project Instructions, the Reson SEABAT 9001 shallow-water multibeam sonar system was used to obtain precise least depths over significant contacts discovered during routine side scan sonar operations. (Refer to the Descriptive Report for H-10605, section F.5, for a detailed description of the SEABAT system.) A summary of all SEABAT investigations conducted for this survey is contained in the SEABAT 9001 Development Addendum in Section N. Copies of all 15 least depth listings and the associated 3-D graphic images are included in Separate V.*

** DATA FILED WITH ORIGINAL FIELD RECORDS.*

F.2 No other sounding equipment was used.

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

F.4 Both 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. Sound Velocity Correctors

The velocity of sound through water was measured using a Sea-Bird SBE 19 Seacat Profiler (s/n 1448). Velocity casts were conducted weekly without exception. Seacat Data Quality Assurance Tests were conducted after each respective velocity cast to ensure that the unit was operating within tolerance.

All sound velocity data were processed using program **VELOCITY**. Computed velocity correctors were entered into the HDAPS sound

velocity table and re-applied during post-processing to both high and low frequency soundings. SEABAT sound velocity and refraction correctors were generated through the **REFRACT** subroutine and applied during post-processing.

The following velocity casts supplied correctors for this survey:

Cast Number	DN	HDAPS Table	Applied to Days
37	261	37	261-262, 264-265
39	270	39	270-271
41	275	41	275-278
43	284	43	284-286
45	292	45	291-293
46	296	46	296-300
47	304	47	304

b. Leadline Comparison

A dual leadline comparison with the DSF-6000N was conducted during special project S-B900-RU-95 on:

DN 082 at 41°21.53'N and 070°46.91'W (41 ft depths)

The greatest variation between leadline and DSF soundings was 0.16 meters. Considering the ship's motion and the wire angle (approximately 5°) in the leadline from the current, this was an excellent value agreement and provided an adequate check that the echo sounder was functioning properly. Data from these comparisons can be found in Separate IV.*

** DATA FILED WITH ORIGINAL FIELD RECORDS.*

Two types of leadline were used during the leadline-to-DSF-6000N comparison. The starboard leadline was a steel surveyor's tape graduated in feet with a fixed 5 lb weight at its end. A leadline corrector of 0.0 meters was assumed for

this leadline. The port leadline was a traditional leadline made of cotton tiller with a stainless steel cable core. This leadline had a corrector of 0.25 feet up to the 45 foot mark and 0.26 feet for depths greater than 45 feet. Refer to Separate IV* for data records.

c. Static Draft

During the ship's winter 1994 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 point's height above the waterline was measured. The ship's static draft was calculated to be exactly 2.12 meters (7.0 feet). Refer to Separate IV* for data records. This draft corrector was applied to all sounding data through the HDAPS offset table.

d. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat correctors for the RUDE were determined on the Elizabeth River, Norfolk, VA on January 25, 1995. 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 values obtained from the toward and away runs were averaged and applied to soundings through the HDAPS Offset Table #1*. Refer to Separate IV* for data records.

e. Heave, Roll, and Pitch Correctors

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

Heave, roll and pitch correctors were collected on-line and applied to all SEABAT soundings during post-processing. Refer to Separate IV* for data records.

** DATA FILED WITH ORIGINAL FIELD RECORDS.*

f. Tide Correctors

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Newport, RI (845-2660) served as both direct control for datum determination and as the reference station for predicted tides. Data for predicted tides were provided on floppy disk before the start of the project. These data were obtained from Table 2 of the East Coast of North and South America Tide Predictions and applied to the digital tide data using HDAPS software. Tidal correctors were applied on-line using HDAPS predicted tide tables numbers.

Two sets of time and height correctors were supplied for this sheet. East of 71°20.0'W, times were to be direct and a x0.85 range ratio was to be applied to the predicted tides at Newport. West of 71°20.0'W, a +15 minute time correction and a x0.84 range ratio were to be applied. Instead of splitting the survey into two sheets to accomodate the difference in correctors, the values were averaged, and a +7 minute time correction and a x0.84 range ratio were applied to the predicted tides at Newport during data acquisition.

The subordinate stations for predicted tides were:

Number	Place	Position	Time Corrector	Height Ratio
845-0768	Sakonnet Point, RI	41°27.9'N 71°11.6'W	direct	x0.85
845-5083	Pt. Judith, RI	41°21.8'N 71°29.4'W	+15 min	x0.84

A request for smooth tides was mailed on November 13, 1995.

APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING.
The RUDE employed no unusual or unique methods or instruments to correct echo soundings.

All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams. Zoning for this project is consistent with the Project Instructions.

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

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). No horizontal control stations were used or established for this survey.

I. HYDROGRAPHIC POSITION CONTROL

I.1 This survey was conducted exclusively using the Global Positioning System (GPS) corrected by the U.S. Coast Guard Differential GPS reference station network. Differential correctors were supplied from USCG radiobeacon transmitters, precluding the need for shore-based horizontal control stations.

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. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected, depending on the extent of the affected data.

I.3 Differential GPS Equipment:

<u>Unit A</u>	<u>Unit B</u>
Ashtech GPS Sensor	Ashtech GPS Sensor
s/n 700417B1083	s/n 700417B1003
Firmware Version 1E89D-P	Firmware Version 1E89D-P
Magnavox MX50R	Magnavox MX50R
DGPS Receiver s/n 078	DGPS Receiver s/n 160

I.4 Correctors were received from the Montauk, NY, and Chatham, MA radiobeacons for the entire survey.

⁵
I.4 Daily performance checks were conducted using the Shipboard Data Integrity Monitor program ("SHIPDIM", Version 2.1), according to section 3.4.5 of the FPM. See SHIPDIM PERFORMANCE CHECKS in Separate III* for daily system checks.

* DATA FILED WITH ORIGINAL FIELD RECORDS.

6

I.5 The application of calibration data to the raw positioning data was not required, since DGPS was the primary positioning system.

7

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

b. There were no equipment malfunctions.

c. On DN 265, 271, 275, and 276, the ship experienced periods of intermittent DGPS reception from the Montauk, NY and Chatham, MA beacons. The on-line positioning would unexpectedly "drop out" for minutes at a time, making it nearly impossible to begin or complete a survey line.

d. No systematic errors were detected which required adjustments.

e. The maximum allowed HDOP value of 3.57 was never exceeded.

f. Antenna positions were corrected for offset and layback, and referenced to the position of the DSF-6000N echo sounder transducer. These correctors are located in HDAPS Offset Table #1, and were applied on-line to the positioning algorithm. A copy of Offset Table #1 is contained in Separate III.*

* DATA FILED WITH ORIGINAL FIELD RECORDS.

g. Offset and layback distances for the A-frame (tow point) are located in HDAPS Offset Table #1 and were 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.

J. SHORELINE

No shoreline is contained within the boundaries of this survey.

K. CROSSLINES

K.1

A combined total of 15.08 nautical miles of crosslines was acquired for this survey, representing 9.9% of the 152.06 nautical miles of the first 100% side scan mainscheme coverage.

K.2

An excessed plot of mainscheme soundings, superimposed with crosslines, 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. The majority of compared soundings fell within one foot of each other, with only an occasional difference of two feet noted.

L. JUNCTIONS - *SEE ALSO SECTION L. OF THE EVALUATION REPORT.*

L.1 H-10648 junctions with four contemporary surveys. H-10605, a 1:10,000 scale survey completed by the Rude in 1995, abuts the eastern edge; H-10422, a 1:20,000 survey completed in 1992, junctions at the southeastern corner; and two item investigations which make up FE-367SS, completed during the Rude's 1990 field season, are contained within the survey limits. The item investigations were fully resurveyed during the current survey.

L.2 The overall agreement of all junctions was excellent: the average difference in soundings was less than 0.5 meter. However, there were two discrepancies noted in the western portion of survey FE-367SS. Side scan contacts 1520.30S and 1521.42P, the objects of developments #11 and #12, were absent on the excessed depth plot of FE-367SS. Since the objects appear to be manmade, it is surmised that they appeared after the completion of the surveys in 1990. See the Item Investigation reports in Section N for a complete discussion of these contacts.

M. COMPARISON WITH PRIOR SURVEYS - SEE ALSO SECTION M. OF THE
EVALUATION REPORT.

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

N. ITEM INVESTIGATION REPORTS

N.1.1 Area of Investigation

AWOIS 1885

Rhode Island Sound

Reported Position:

41°23'18.37"N

071°20'16.18"W

Datum: NAD 83

Feature: Obstruction

N.2.1 Description and Source of Item

AWOIS 1885 marks the site of two armed depth charges which failed to explode after being dropped. The location is marked on the chart with a danger circle and the annotation "Unexploded depth charge Oct. 31, 1947". See the Automated Wreck and Obstruction Information System (AWOIS) listing of project OPR-B302-RU for a detailed description.

N.3.1 Survey Requirements

An investigation was only required if an indication of the item was found during routine hydro operations.

N.4.1 Results of Investigation

The area of the AWOIS item was covered with 200% side scan sonar, and further developed with mainscheme hydrography splits at a line spacing of 65 meters. No evidence of the item was

detected in the immediate area. The closest logged contact was 151.58P, located approximately 170 meters away. This contact was investigated as development #13 and was revealed to be a side scan "ghost"; no item was found in that position.

N.5.1 Comparison with Chart and Charting Recommendations

The command recommends that due to the age of the item and its absence from mainscheme side scan records, the object should be deemed to be non-existent and should be removed from the chart.

*DO NOT CONCUR
RETAIN AS CHARTED
see page 2, sect N
of Evaluation Report*

N.1.2 Area of Investigation

AWOIS 9376

Rhode Island Sound

Reported Position:

41°23'25.37"N

071°17'56.17"W

Datum: NAD 83

Feature: Obstruction

N.2.2 Description and Source of Item

AWOIS 9376 is one nautical mile square in area, centered at 41°23'25.37"N, 071°17'56.17"W. It was declared a dumping ground by the Rhode Island Department of Natural Resources, and after Dec. 1, 1967, all material dredged within Narragansett Bay or its vicinity could be disposed at that location. See the Automated Wreck and Obstruction Information System (AWOIS) listing of project OPR-B302-RU for a detailed description.

N.3.2 Method of Investigation

AWOIS 9376 was investigated using 200% side scan sonar at a line spacing of 130 meters, and hydro splits at a line spacing of 30 meters.

N.4.2 Results of Investigation

No significant contacts were logged within the AWOIS search radius. However, as a result of dredged material dumped in the area, there is a gradual rise along the western edge of the dumping grounds, culminating in a least depth significantly shoaler than the closest charted soundings. The least depth is:

Method	Depth (m)	Depth (ft)	Fix #	Latitude (N)	Longitude (W)
Echo Sounder	25.7	84.3	304.6	41°23'18.551"	071°18'29.171"

N.5.2 Comparison with Chart and Charting Recommendations

No charted sounding adequately depicts the least depth in the area. It is the recommendation of the hydrographer that a predicted tide corrected depth of 84 feet should be charted in position 41°23'18.551"N and 071°18'29.171"W. *CONCUR*

N.1.3 Area of Investigation

Contact: 1520.30S
Development: #11

N.2.3 Description of Item

The item is an obstruction of unknown type and origin. Its least depth is from what appears to be a tall, narrow object located in the middle of a deep scour area.

N.3.3 Method of Investigation

Side scan sonar, echo sounder, and the Seabat system were used to investigate this item. The object was initially discovered as contact 1520.30S during mainscheme side scan sonar lines. As the target of development #11, it was then extensively developed with echo sounder lines run at a 2-meter line spacing. On DN 304, Seabat data were collected over the item.

N.4.3 Results of Investigation

On both the echo sounder and Seabat developments the object appears as a narrow, single-point feature surrounded by a deep scour. It is unclear what the object is, though its isolated, "spike" appearance suggests it is artificial in nature. Due to the water depth, the object was not investigated by divers.

Method	Depth (m)	Depth (ft)	Fix #	Latitude (N)	Longitude (W)
Echo Sounder	32.4	106.3	4652.2	41°21'29.745"	071°21'20.096"
SEABAT	32.46	106.36	13003	41°21'29.716"	071°21'19.954"

N.5.3 Comparison with Chart and Charting Recommendations

The object does not appear on chart 13218. It is the recommendation of the hydrographer that the object be charted as an obstruction in position 41°21'29.716"N, 071°21'19.954"W, with a least depth of 106 feet.

45 20.096
DO NOT CONCUR
DO NOT CHART 106 SNAAG OBSTR

N.1.4 Area of Investigation

Contact: 1521.42P
Development: #12

N.2.4 Description of Item

The item appears to be a wreck of unknown origin. Seabat imagery of the contact shows the characteristics of a ship lying on its keel, surrounded by a small scour area.

N.3.4 Method of Investigation

Side scan sonar, echo sounder, and the Seabat system were used to investigate this item. The object was initially discovered as contact 1521.42P during mainscheme side scan sonar lines. As the target of development #12, it was then extensively developed with echo sounder lines run at a 2-meter line spacing. On DN 304, Seabat data were collected over the item.

N.4.4 Results of Investigation

The echo sounder registered a large contact rising 3.5 meters off the ocean floor, surrounded by a small scour area. The surrounding area was completely flat and devoid of other contacts. The Seabat imagery shows the distinctive outline of a ship, lying on its keel. The least depth from the Seabat development comes from a tall spike located forward in the wreck, approximately where the superstructure would be. Although the water depth precluded visual confirmation by a dive team, the data overwhelmingly depict a wreck of some kind.

Method	Depth (m)	Depth (ft)	Fix #	Latitude (N)	Longitude (W)
Echo Sounder	31.2	102.3	4648.3	41°21'34.117"	071°21'07.190"
SEABAT	30.8 31.8	101.0 103.7	13004	41°21'34.259"	071°21'06.622"

N.5.4 Comparison with Chart and Charting Recommendations

The object does not appear on chart 13218. It is the recommendation of the hydrographer that the object be charted as a wreck in position 41°21'34.259"N, 071°21'06.622"W, with a least depth of 101 feet and the annotation "Wk". *CONCUR*

Information pertaining to the Seabat 9001 multibeam sonar system investigations is contained in the following Seabat Development Addendum.

SEABAT 3001 DEVELOPMENT ADDENDUM

FIX #	Contact	DEV	FILE .LST	VELCAST	DN	GMT	RAW DEPTH (m)	TIDE CORR (m)	LEAST DEPTH (m)	LATITUDE (N)	LONGITUDE (W)
13001	82.38P	#5	30045378	95296131	300	123632	29.3	-0.9	*28.4	41-23-21.038	071-21-51.917
13002	83.27S	#1	30047778	95296131	300	131700	29.4	-1.0	*28.4	41-23-17.755	071-22-02.138
13003	1520.30S	#11	30448744	95304125	304	133240	32.6	-0.20	*32.40	41-21-29.716	071-21-19.954
13004	1521.42P	#12	30449917	95304125	304	135224	31.0	-0.20	*30.8	41-21-34.259	071-21-06.622

*31.0

* WITH APPROVED TIDES

O. COMPARISON WITH THE CHART - SEE ALSO SECTION O. OF THE
EVALUATION REPORT.

O.1 One chart is affected by this survey:

Chart 13218
"Block Island to Martha's Vineyard"
32nd Ed. 26 June 1993
Scale: 1:80,000

O.2 No Danger to Navigation reports were submitted for this survey.

O.3 a. The overall correlation between charted soundings and survey depths is excellent, with average differences of approximately one foot in flat and slightly sloping areas and no more than two to three feet in areas with irregular bottoms.

b. No shoaling or deepening trends were found in the survey area.

P. ADEQUACY OF SURVEY

This survey is complete and fully adequate to supersede prior survey data in common areas.

Q. AIDS TO NAVIGATION

No floating or non-floating aids to navigation exist within the limits of this survey.

R. STATISTICS

R.1 a. Number of Positions. 4760
b. Lineal Nautical Miles of Sounding Lines:
Nautical Miles of Survey With the Use
of Side Scan Sonar 298.67

	Nautical Miles of Survey Without the Use of Side Scan Sonar	339.79
R.2	a. Square Nautical Miles of Hydrography per 100% of Coverage	17.6
	b. Days of Production	21
	c. Detached Positions0
	d. Bottom Samples	60
	e. Tide Stations	2
	g. Velocity Casts.	7
	j. SEABAT Item Investigations4

S. MISCELLANEOUS

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

b. No evidence of anomalous tides or tidal current conditions was found during this survey.

S.2 Sixty (60) bottom samples were obtained during this survey. As directed by the Project Instructions, all bottom samples were inspected and recorded, but none were submitted to the Smithsonian Institution.

T. RECOMMENDATIONS

T.1 No additional field work is required.

T.2 The hydrographer 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.

U. REFERRAL TO REPORTS

Reference is made in section F to the Descriptive Report for H-10605 for an explanation of the SEABAT System.

Reference is made in Appendix V to the Descriptive Reports for H-10575 and H-10605 for the complete chronology of the Sakonnet Point tide gauge.

APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

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

Montauk Point, NY

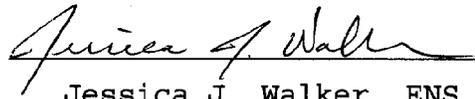
.814
41°04'02.046"N *
071°51'38.268"W MPRB
.459

Chatham, MA

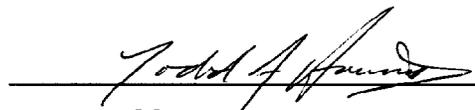
41°40'16.297"N REFSTA
069°57'00.162"W ANT
LOCATION (A)

* STATUS AS OF 12/21/95

This report and the accompanying field sheets are respectfully submitted.



Jessica J. Walker, ENS, NOAA



Todd A. Haupt, LTJG, NOAA
Field Operations Officer
NOAA Ship RUDE

APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H-10648

Field operations contributing to the accomplishment of this Navigable Area survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey was completed with 200% side scan sonar coverage and is more than adequate to supersede ALL prior surveys in common areas. The survey is considered complete and adequate for nautical charting.



Samuel P. De Bow, CDR, 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: March 21, 1996

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-B302

HYDROGRAPHIC SHEET: H-10648

LOCALITY: Rhode Island, Rhode Island Sound, 5.0 Nautical Miles
Southeast of Brenton Point

TIME PERIOD: September 18 - October 31, 1995

TIDE STATION USED: 845-0768 Sakonnet Yacht Club, R.I.
Lat. $41^{\circ} 27.9'N$ Lon. $71^{\circ} 11.6'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.62 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.3 ft.

TIDE STATION USED: 845-2660 Newport, R.I.
Lat. $41^{\circ} 30.3'N$ Lon. $71^{\circ} 19.6'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 1.67 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.7 ft.

TIDE STATION USED: 845-5083 Point Judith, R.I.
Lat. $41^{\circ} 21.8'N$ Lon. $71^{\circ} 29.4'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -0.03 ft.

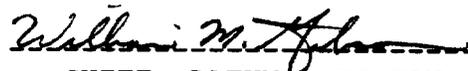
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.2 ft.



REMARKS: RECOMMENDED ZONING

1. In the entrance to Sachuest Bay and Sakonnet River north of a line between points $41^{\circ} 23.8'N$, $71^{\circ} 27.7'W$ (Black Point) and $41^{\circ} 27.2'N$, $71^{\circ} 11.8'W$ (Sakonnet Point), and east of $71^{\circ} 18.7'W$, times and heights are direct on Sakonnet Yacht Club, R.I. (845-0768).
2. In the entrance to Narragansett Bay south of $41^{\circ} 28.5'N$, and north of $41^{\circ} 27.0'N$, times are direct, and apply a X0.97 range ratio to heights using Newport, R.I. (845-2660).
3. In the Entrance to Narragansett Bay south of $41^{\circ} 27.0'N$, north of a line between points $41^{\circ} 23.8'N$, $71^{\circ} 27.7'W$ (Black Point), and $41^{\circ} 27.2'N$, $71^{\circ} 11.8'W$ (Sakonnet Point), and west of $71^{\circ} 18.7'W$, apply a -6 minute time correction, and a X1.05 range ratio to heights using Point Judith, R.I. (845-5083). Where data are not available for Point Judith, R.I., times are direct, and apply a X0.92 range ratio to heights using Newport, R.I. (845-2660).
4. East of $71^{\circ} 25.0'W$, west of $71^{\circ} 11.8'W$, and south of a line between points $41^{\circ} 23.8'N$, $71^{\circ} 27.7'W$ (Black Point) and $41^{\circ} 27.2'N$, $71^{\circ} 11.8'W$ (Sakonnet Point) apply a -6 minute time correction, and a X0.94 range ratio to heights using Sakonnet Point, R.I. (845-0768)).

- Notes:
1. Times are tabulated in Greenwich Mean Time.
 2. Data for Sakonnet Yacht Club, R.I. (845-0768), Newport, R.I. (845-2660), and Point Judith, R.I. (845-5083) are temporarily stored in files #645-0768, #645-2660, and #645-5083 respectively.


CHIEF, DATUMS SECTION

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 13218 B ON PREVIOUS SURVEY NO. 13221 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									
	A	B	C	D	E	F	G	H	K	
BRENTON POINT (title)	X		X							1
RHODE ISLAND (title)	X		X							2
RHODE ISLAND SOUND										3
										4
										5
										6
										7
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										25

Approved

Christa C. Long

Chief Geographer

AUG 9 1996

N/CS33-24-97

LETTER TRANSMITTING DATA

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

ORDINARY MAIL AIR MAIL

REGISTERED MAIL EXPRESS

GBL (Give number) _____

TO:

Chief, Data Control Group, N/CS3x1
NOAA/National Ocean Service
Station 6813, SSMC3
1315 East-West Highway
Silver Spring, Maryland

DATE FORWARDED

17 April 1997

NUMBER OF PACKAGES

ONE TUBE

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.

Hydrographic Survey H-10648
Rhode Island Sound, Rhode Island

- 1 Original Descriptive Report
- 2 Drawing History forms 76-71 for NOS Charts 13218, 13221

- 1 Mylar Smooth sheet
- 2 Mylar H-Drawings for NOS Charts 13218, 13221
- 2 Paper Composite Drawings for NOS Chart 13218
- 2 Paper Composite Drawings for NOS Chart 13221

FROM: (Signature)

Maxine Fetterly

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch
N/CS331
439 West York Street
Norfolk, VA 23510-1114

04/17/97

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10648

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		4670
NUMBER OF SOUNDINGS		25147
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	37	07/01/96
VERIFICATION OF FIELD DATA	152	09/26/96
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	28.50	
FINAL INSPECTION	18	09/12/96
COMPILATION	177.50	04/16/97
TOTAL TIME	413	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		09/16/96

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10648 (1995)**

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.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

Hydrographic Processing System
AutoCAD, Release 12
NADCON, version 2.10
QUICKSURF, version 5.1
MicroStation, version 5.0
I/RAS B, version 5.01

The smooth sheet was plotted using an ENCAD NovaJet III plotter.

H. CONTROL STATIONS

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). The smooth sheet has been annotated with ticks showing the computed mean shift between the North American Datum of 1983 (NAD 83) and the North American Datum of 1927 (NAD 27).

To place the survey on the NAD 27 datum, move the projection lines 0.374 seconds (11.535 meters or 1.15 mm at the scale of the survey) north in latitude and 1.825 seconds (42.410 meters or 4.24 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H-10422 (1992)	1:20,000 to the southeast
H-10605 (1995)	<u>1:10,000 to the east</u>

A standard junction could not be effected between the present survey and H-10422 (1992) and H-10605 (1995). These junctional surveys are archived at National Ocean Services (NOS) headquarters, Silver Spring, Maryland. In this case, the note "ADJOINS" is shown on the present survey. Depth are in excellent agreement. Any adjustments to the depth curves will have to be made during chart compilation.

There are no contemporary surveys to the north and west. Present survey depths are in harmony with the charted hydrography in this area.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not performed. This is in accordance with section 4. of the memorandum titled, "Changes to Hydrographic Survey Processing", dated May 24, 1995.

N. ITEM INVESTIGATION REPORTS

N.1.1. AWOIS item #1885, a danger circle with the annotation (Unexploded depth charge Oct. 31, 1947), in Latitude 41°23'18.37"N, Longitude 071°20'16.18"W, originates with CL760/47--CGS. No indication of this AWOIS item was found during 200% side scan sonar coverage and 65 meter mainscheme hydrography splits in this area. There is a possibility that the unexploded depth charge may have settled below the mud and sand floor. In addition, due to its small size, this feature may be difficult to detect with the instrumentation used during this survey. Because of these uncertainties, it is recommended that this item remain charted.

**O. COMPARISON WITH CHARTS 13218 (33th Edition, Mar 23/96)
13221 (50th Edition, April 15/95)**

The charted hydrography originates with prior surveys and miscellaneous sources. An adequate comparison is made in section 0., page 19, of the Descriptive Report and needs no further discussion.

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

Chart compilation using the present survey data was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compiled data will be forwarded to Hydrographic Survey Division, Silver Springs, Maryland upon completion of the project.

RUDE Processing Team

Richard W. Blevins

Richard W. Blevins
Cartographer
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H-10648

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 disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert R Hill Date: 9-12-96
Robert R. Hill Jr.
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: 9-19-96
Nicholas E. Perugini,
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Final Approval:

Approved: Andrew A. Armstrong, III Dated: June 2, 1997
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

