FE364

SIDE SCAN

Diagram No. 1211-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ..... Side Scan Sonar

Field No. RU-10-5-91

Registry No. FE-364SS

LOCALITY

State ..... Rhode Island

General Locality ..... Rhode Island Sound

Sublocality ..... One to Seven NM SE of Block Island

1991

CHIEF OF PARTY
LCDR N.E. Perugini

LIBRARY & ARCHIVES

DATE ..... August 11, 1993

☆U.S. GOV. PRINTING OFFICE: 1987—756-980

FE364

A/G
PRODS
13215
13205
13218
12300
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SIGI=NC

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.
FE-364SS

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-10-5-91

State Rhode Island

General locality Rhode Island Sound

Locality One to Seven Nautical Miles Southeast of Block Island

Scale 1:10,000 Date of survey Aug 8 to Sep 18, 1991

Instructions dated March 11, 1991 Project No. OPR-B660

Vessel NOAA Ship RUDE (9040)

Chief of party LCDR Nicholas E. Perugini

Surveyed by N.E. Perugini, P.L. Schattgen, M.J. Oberlies, J.A. Illg, D.E. Williams

Soundings taken by echo sounder, and pneumatic depth gage

Graphic record scaled by NEP, PLS, MJO, JAI, DEW

Graphic record checked by NEP, PLS, MJO, JAI, DEW

Protracted by NA Automated plot by XYNETICS 1201 Plotter (AHS) NA

Verification by Atlantic Hydrographic Survey Personnel NA

Soundings in meters at MLLW

REMARKS: All times recorded in UTC

Notes in red were made during office processing.

SURF & AWOLS 9/2/93 MCR

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

☆ U.S. G.P.O. 1972-769-565/519 REG.#6

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A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU-91, Southern New England Coast, Connecticut and New York.

A.2 The original date of the instructions is March 11, 1991.

A.3 The following changes to the original instructions are relevant to this survey:

Change # 1	August 8, 1991
Change # 2	September 3, 1991

Supplemental instructions were received through telephone conversations with the Chief, Hydrographic Processing Unit, Atlantic Hydrographic Section. These instructions concerned the addition of AWOIS 7666, the vessel APPLETREE. Also, the wreck IDEANE, although not designated an AWOIS item, investigated during this survey. Information concerning this wreck was provided by Mr. Tim Coleman, a writer for a local sportfishing publication; Fisherman Magazine.

A.4 A sheet letter was not specified in the project instructions.

A.5 Project OPR-B660-RU-91 responds to requests from the Northeast Marine Pilots, Inc., of Newport, Rhode Island to disprove or verify and provide least depths for certain wrecks and obstructions in Long Island, Block Island, and Rhode Island Sounds. Also, the U.S. Navy, as well as state and local governments have requested updated bathymetric and hydrographic survey data of this area for use in proposed studies and in the construction of new charts.

B. AREA SURVEYED

B.1 This survey is located one to seven nautical miles Southeast of Block Island. Existing depths in this survey area are between 29 and 150 feet (9 to 46 meters). Several dangerous wreck symbols are also located in the survey area. The survey consists of seven AWOIS items and the vessel IDEANE covered on seven field sheets, numbers 16 through 22. Within AWOIS 1784 six significant contacts were developed from over 70 contacts found.

The primary traffic in the area is tug-and-barge transports, transiting between Long Island Sound and points to the East (Narragansett Bay and Boston). Small pleasure craft are also abundant in the area.

B.2 The items are identified on the pre-survey review chart, extending from latitude 41° 01.0' to 41° 09.0' North and from longitude 071° 28.0' to 071° 34.0' West.

B.3 Data acquisition began on August 8, 1991 (DOY 220) and concluded on September 18, 1991 (DOY 261).

C. SURVEY VESSELS

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

VESSELS	ELECTRONIC DATA PROCESSING NUMBER	PRIMARY FUNCTION
NOAA Ship RUDE (S590)	9040	Hydrography/ Side Scan Operations
RUDE Launch (RU3)	1290	Diving Operations
RUDE Skiff (RU1)	N/A	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
SURVEY	6.03	Jul 5 - Sep 18
DAS_SURV*	6.04	Jul 5 - Sep 18
POSTSUR	5.14	Jul 5 - Sep 18

D.2 Other software includes VELOCITY 1.11 dated March 9, 1990 used to generate sound velocity corrector tables, and MTEN (dated between 1985 and 1986) for horizontal control verification and establishment.

D.3 Noteworthy items in electronic data acquisition and processing are as follows:

On DOY 235 the HDAPS computer was accidentally turned off during data acquisition. Electronic data for fixes 768-810 AWOIS 1784 were lost. An attempt was made to manually reenter the selected soundings and associated information from the raw data printout. This procedure was abandoned because it was too time consuming. The data were considered unsalvageable and the survey lines rerun on a subsequent day.

E. SONAR EQUIPMENT

E.1 Side scan sonar operations were conducted using an EG&G Model 260 slant range corrected side scan sonar recorder and either a Model 272-T (single frequency) or 272-TD (dual 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	0012105	Entire Survey
Towfish	0011908 (Single Freq)	Entire Survey

E.2 The side scan sonar towfish was configured with a 20° beam depression, which is the normal setting and which 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 used for all main scheme side scan coverage. The 50 meter range scale was used for contact development, as it yields a higher resolution trace.

The depth of water encountered throughout the survey area usually exceeded 20 meters, allowing excellent imagery on the 100 meter range scale.

b) Daily confidence checks were obtained by either towing the fish past a previously located feature, or by noting recognizable bottom characteristics at the edges of the sonar range scale in use.

c) Refer to section "N", the individual AWOIS descriptions, for side scan sonar coverage.

d) None.

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

E.5 Significant contacts that were suspected of being the object of the AWOIS investigation were diver investigated. Exceptions to this were contacts in waters exceeding 100 feet deep where diving was unsafe. In these cases, multiple side scan sonar passes and intensive hydrographic development was used to examine the contact. These methods were used also for the six most significant contacts of AWOIS 1784 chosen from over 70 contacts within that survey area.

E.6 Overlap was checked on-line using the real-time plot and the

edited swath plot for holidays. All holidays were reconciled by running additional side scan sonar lines.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon 6000N digital survey fathometer (DSF). One DSF 6000N was used during the entire survey: S/N A106N.

F.2 All diver-determined least depths were measured with a pneumatic depth gauge. RUDE is equipped with two 3-D Instruments, Inc. Precision Direct Drive Depth Gauges:

1) 0- 70 fsw (feet salt water)	S/N 142697
2) 0-140 fsw	S/N 8606822

The 0-70 fsw gauge was used in water depths less than 20 meters (approx. 70 feet), and the 1-140 fsw gauge was used when the water depth exceeded 20 meters.

F.3 Refer to section "G.4" for a discussion on the pneumatic depth gauges.

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

G. CORRECTIONS TO SOUNDINGS

G.1 a) The velocity of sound through water was determined using a Digibar Sound Velocity Probe (S/N 169), made by Odom. A Data Quality Assurance Test was conducted before each velocity cast to ensure the meter was within tolerance.

All data were processed using Velocity 1.11 software. The computed velocity correctors were entered into the HDAPS sound velocity tables and applied on-line to both high and low frequency soundings. Sound velocity correctors applied to this survey were obtained on the following dates:

Cast Number	Date	Latitude	Longitude	HDAPS Table #	Applied to Days
11	8-06-91	41° 16.3' N	71° 16.7 W	11	220
12	8-09-91	41°20.5' N	71°31.2 W	12	220-228*
13	8-29-91	41°01.7' N	71°32.9 W	13	234-246*
14	9-24-91	41°10.2 N	71°18.3 W	14	261

* No survey activities during these gaps.

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

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

d) Two dual lead line comparisons with the DSF-6000N were made:

April 25, 1991 at 41° 35.6'N 71° 21.3'W (25 ft depths)
July 22, 1991 at 41° 20.9'N 71° 29.1'W (35 ft depths)

The greatest variation between leadline and DSF soundings was less than 0.2 meters for both comparisons. Considering the ship's motion and the scope in the leadline from current, this is excellent agreement and provides an adequate check that the echosounder was functioning properly. Also, comparisons between diver determined least depth by pneumatic depth gauge and DSF soundings over particular items (with prominent features) were normally within 0.5 meters after being reduced for correctors. Data from these comparisons are found in SEPARATE IV. FILED WITH THE ORIGINAL FIELD RECORDS

e) All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) 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 13, 1991. 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 The HDAPS program "Reapply" was used for the first time this season to reapply corrector tables to soundings. An evaluation of the most appropriate tables for each day's data was made, and compared to the tables actually used. New tables were then applied to those days which differed.

G.3 As stated in paragraph G.2, corrector tables were reapplied to soundings during processing, so that the most relevant correctors were applied to plotted soundings. Offset table number 3 was used for the entire survey, so these correctors were not reapplied. Special correctors were not applied to any soundings.

G.4 The ship's shallow water (0-70 fsw) and deep water (0-140 fsw) pneumatic depth gauges were calibrated by Instruments East, Inc. of Norfolk, VA on January 31, 1991. Corrector data from the calibrations were plotted graphically, but were not applied to pneumatic depths because they were less than 0.1 meters (see plots in SEPARATE IV)*

Periodic system checks were performed on the gauges as illustrated HSG 55. Rarely did the gauges check when substantial currents were present. Since the currents in the survey area were fairly strong and seemingly constant, it became practice to perform system checks on the gauges during times of ideal conditions. Therefore, days of use do not correspond to days on which the checks were performed.

In October, the ship's 0-70 fsw gauge (S/N 142697) was damaged. Both gauges were sent back to Instruments East Inc. in Norfolk; the 0-70 fsw for repairs and the 0-140 fsw for a critical system check. The shallow water gauge was found to be beyond repair, and was not used during the remainder of this survey. The deep water gauge (S/N 8606822) tested within 0.25 of one percent of the full-face reading (0.35 feet), meeting the accuracy requirement prescribed in HSG 55. This gauge was recalibrated after it was tested.

* FILED WITH THE ORIGINAL FIELD RECORDS

Overall agreement between the pneumatic depth gauges, diver console depth gauge, and echosounder least depths was excellent, generally less than 0.3 meters. Considering this agreement and the closing critical check on the 0-140 fsw gauge, the RUDE is confident that all least depths determined by pneumatic depth gauge are correct.

G.5 Generally, sea conditions greater than one meter affected the fathogram, creating a trace of constant peaks and deeps. But the 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 Newport tides were provided on floppy magnetic disk before the start of the project. APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING

b) The height and time correctors listed below were taken 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:

NO.	PLACE	TIME		HEIGHT	
		High water	Low water	High water	Low water
1195	Block Island (Old Harbor)	-17 min	+12 min	* 0.83	* 0.86

Tidal correctors were applied on-line using the HDAPS predicted tide tables.

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

NOTE: After all dive investigations where a least depth was determined using a pneumatic depth gauge, a detached position (DP) was taken by the ship after the divers had surfaced and cleared the buoy site. So the DP was taken between 15 and 45 minutes <u>after</u> the pneumatic depth was observed, and in many cases the tide corrector had changed in that time. Using the "Edit DP's" function (HDAPS Post Survey), the raw sounding was replaced with the pneumatic depth gauge reading, and all correctors other than tide (draft, sound velocity, heave) were set to zero. Thus the DP has the correct raw depth and position, but the time does not correspond to the dive time. The following is a list of all dives made during this survey for which the time of the detached position must be edited to reflect the time the pneumatic depth reading was taken:

DOY	DP Fix No	Time of DP (UTC)	Time of Pneumo Reading (UTC)
239	975	144025	142000
240	1057	144912	141700
*261	1284/7	203417	201400

* Tide correctors of time of DP and time of pneumofathometer reading are the same; -0.9 meters.

A request for smooth tides was mailed on October 2, 1991.

H. **CONTROL STATIONS** *See also Section 2, a, of the Evaluation Report*

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

H.2 The list of Horizontal Control Stations is located in Appendix III.

H.3 Newly established horizontal control stations were surveyed using standard NGS approved surveying techniques; primarily the Geodetic Direct and Resection procedures. These data were then entered into the NGS software "MTEN", which produced the Latitude and Longitude of the new station using the NAD 83 ellipsoid.

Existing stations were verified by comparing observed horizontal angles and distances (to known stations) with angles and distances provided by inverse computations using "MTEN".

All horizontal control stations used during this survey are Third-order, Class I.

H.4 These surveying methods were used throughout the survey area as defined in section "B.2". All are referenced to the NAD 83 Horizontal Datum.

H.5 Refer to the Horizontal Control Report (submitted to N/CG 233 under separate cover) for specific procedures and sites surveyed by the RUDE.

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

I. HYDROGRAPHIC POSITION CONTROL

SEE ALSO SECTION 2.a. OF THE EVALUATION REPORT

I.1 Two different systems were used for vessel positioning during the survey; Falcon Mini-Ranger and GPS. A detailed discussion of GPS navigation is contained in Section "I.4". Very rarely was a single positioning system used exclusively on a given day. Often times it was necessary to switch between the two systems because one or the other would be unacceptable due to some reason, be it weather which obscured the Mini-Ranger signal or electrical/mechanical problems which incapacitated GPS. The flexibility to switch between the established Falcon network and GPS often made continuing surveying operations possible where it otherwise would not have been.

I.2 At no time during this survey did the maximum residual consistently exceed 5 meters (0.5 mm at the survey scale) nor did the 95% confidence error circle radius consistently exceed 15 meters (1.5 mm at the survey scale).

I.3 Control Equipment:

Sextants:
Two "Tamaya & Co." Marine Surveying Sextants were used, S/N's T2966 and T3000.

Mini-Ranger:
Falcon 484 by Motorola Inc.
Serial Numbers:

RPU	F-0246	
R/T	F-3409	
R/S:	E-2969	F-3244
	F-3241	F-3297
	E-2907	F-3242
	E-2926	F-3217

GPS:
Both by Magnovox: MX 4200D Differential GPS Receiver S/N 199
MX 50R DGPS Receiver (correctors) S/N 036

I.4 Calibration descriptions for each of the two positioning systems follow:

Falcon:

As stated in section 3.1.3.3 of the Field Procedures Manual for Hydrographic Surveying, a continuous critical system check is obtained "when data are acquired with three or more LOP's and ECR and maximum residual criteria are being met as required in section 3.1.3.1" (of the same manual). RUDE routinely conducted survey operations using at least three LOP's, and all other positioning criteria were met as required (see section I.2).

A pre-project baseline calibration of the Mini-Ranger system was conducted at the Atlantic Marine Center on March 6, 1991. Two more baseline calibrations were conducted in Bristol, RI on June 2 and July 14, 1991. See the Electronic Control Report submitted under separate cover for the data records of the calibrations.

GPS

As stated in section 6.2 of the Project Instructions (change No. 2 dated 3 September 1991), "Differential GPS ... can be used for this project as the primary positioning system" with the following 1:10,000 scale accuracy requirements:

1. As a DGPS system check, at least one Falcon range is to be recorded twice daily in a static mode, and must agree within 5 meters of the DGPS position.
2. During data acquisition, at least one Falcon range must be recorded and the computed residual must be less than 10 meters.
3. Survey operations may not be conducted when the HDOP exceeds 3.0.
4. Four satellites must be used for the DGPS position computation.

Prior to this, verbal authorization was received permitting the use of DGPS under the above guidelines. This source of position control was first used on DOY 220, August 8, 1991, and then used sporadically throughout the survey as needed. Since this is the first survey conducted using DGPS as the primary positioning system, extreme care was taken by the RUDE to insure the above requirements were met. The following are some points on the acquisition procedures and actual performance of the DGPS system:

1. The HDOP, and the number of satellites visible and tracked was manually recorded at the top of the raw data printout at the start of every survey line. The printout and daily abstract was also annotated to make it clear that GPS was the primary means of position control.

2. Generally, three Falcon ranges were recorded simultaneously with all data acquired when DGPS was the primary positioning system. There were times when only one or two Falcon ranges were recorded for a selected sounding. However, these periods were of a very short duration. The maximum residual of these ranges was recorded on the raw data printout (as well as electronically), and scanned off-line for residuals greater than 10 meters. Normally, the maximum residual was below 5 meters and never consistently exceeded 10 meters, so the 5-meter static agreement check was accomplished during data acquisition.

3. Survey operations were suspended when the HDOP value exceeded 3.0. Generally, whenever this value exceeded 2.5 the position would begin to deteriorate. High HDOP value

was not a significant problem, as the duration was relatively short (several seconds) and the condition would correct itself.

4. Whenever less than four satellites were being tracked by the DGPS unit, the HDOP would normally rise above 3.0, the residuals would climb, and the position would generally degrade. Normally, 5 to 6 satellites were visible and the same number were used in the position solution. Too few satellites never caused a substantial problem.

5. Overall, it was obvious when the DGPS position was in error, because any (usually several) of the following conditions would occur: the position would jump, the HDOP would climb, the residuals would climb, the number of satellites would drop below four, or the DGPS system would switch from "NAV" (navigating) to "TRK" (tracking). However, these conditions were not common, and rarely did a positioning problem with this system cause substantial "downtime". Whenever poor DGPS positioning was persistent, the Falcon system was selected as primary or operations were suspended until the DGPS system was operational.

Also, never did the DGPS system fail and not independently warn the operator that the position was in error or the system was not functioning. The residuals between the Falcon ranges and the DGPS position would rise as well when the DGPS position was bad, but these residuals were not usually the "flag" that DGPS was down.

See SEPARATE III for all positioning calibration data. FILED WITH THE ORIGINAL SURVEY RECORDS

I.5 Only the Falcon system required calibration data to be applied to raw ranges. The range corrector and minimum acceptable signal strength (MASS) for each Mini-Ranger Reference Station was entered into the HDAPS system using the Pre-Survey C-O Table. These tables provided the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOP's with signal strengths below MASS.

Overall, calibration data applied to the raw Mini-Ranger ranges was adequate and effective.

I.6 a. See section I.4 for DGPS operating procedures and adequacy standards.

b. There were no occurrences of equipment malfunctions or substandard operation.

c. There were no occurrences of unusual atmospheric conditions that may have affected data quality.

d. There were no occurrences of weak signals or poor

geometric configurations of a duration to significantly compromise data quality.

e. No systematic errors were detected that 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 3, which was the only table used during this survey.

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 offset table 3. FILED WITH THE ORIGINAL FIELD RECORDS.

J. **SHORELINE** See also section 2.b. of the Evaluation Report

Not Applicable. No field sheets encompassed any shoreline.

K. **CROSSLINES** See also section 3.a. of the Evaluation Report

K.1 All AWOIS items within this survey mandated 200% side scan sonar coverage. Unless the item was found during the first 100% of coverage, the second 100% was run perpendicular to the first 100%. Therefore, 200% side scan sonar coverage would consist of equal proportions of crosslines and main scheme lines. All coverage was run with 170 meter spacing between individual lines.

K.2 A general evaluation of crossline/mainscheme agreement was completed. Those sheets which underwent 200% side scan sonar coverage and therefore exhibited depth plots with abundant opportunities for comparisons were used. Specifically, this includes sheets 19 and AWOIS item 7666 on sheet 18; both disprovals. Each crossline sounding was compared to mainscheme soundings within a 1 cm radius on a 1:10,000 scale smoothed depth plot. All crossline soundings agreed with the majority of surrounding mainscheme soundings within 0.5 meters in depth. Allowing for differences in the positions between soundings, the results of these comparisons demonstrate an acceptable level of crossline/mainscheme agreement.

K.3 No significant differences in crossings were noted.

K.4 The same sounding equipment was used to run both the mainscheme and crosslines.

L. **JUNCTIONS** See also section 5. of the Evaluation Report.

L.1 This survey does not junction with any current surveys.

M. COMPARISON WITH PRIOR SURVEYS SEE SECTION 6. OF THE EVALUATION REPORT.

M.1 Applicable prior surveys are:

Hydrographic Survey No. 6330
Block Island to Montauk Point
New York - Rhode Island
August - September 1938
Scale 1:40,000

Hydrographic Survey No. 6444
East of Block Island
Approaches to Narragansett Bay
May - September 1939
Scale 1:40,000

M.2 AWOIS item investigations are discussed in Section "N".

M.3 The prior surveys were compared with Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990. This was done by comparing selected depths chosen from within the AWOIS areas of this survey to soundings from the above two prior surveys. These comparisons resulted in excellent agreement between the depths presently charted and the soundings from the prior surveys. Therefore, past surveys are considered to be adequately represented by the current chart for the survey area, and as such, all comparisons between soundings of this survey were made with that chart. Past surveys were not considered directly, but rather indirectly through the current chart.

To facilitate comparisons between the soundings of this survey and the depths presently charted, two mylar overlay master sheets, scale 1:80,000 and 8-1/2" by 11" in size, were drawn up containing all AWOIS items within the survey area. Representative survey soundings were plotted on these sheets in the same vicinity as representative charted depths. These master sheets with soundings were overlaid on chart 13218 so that soundings could be compared to corresponding depths. Both of these overlays are included at the end of this section.

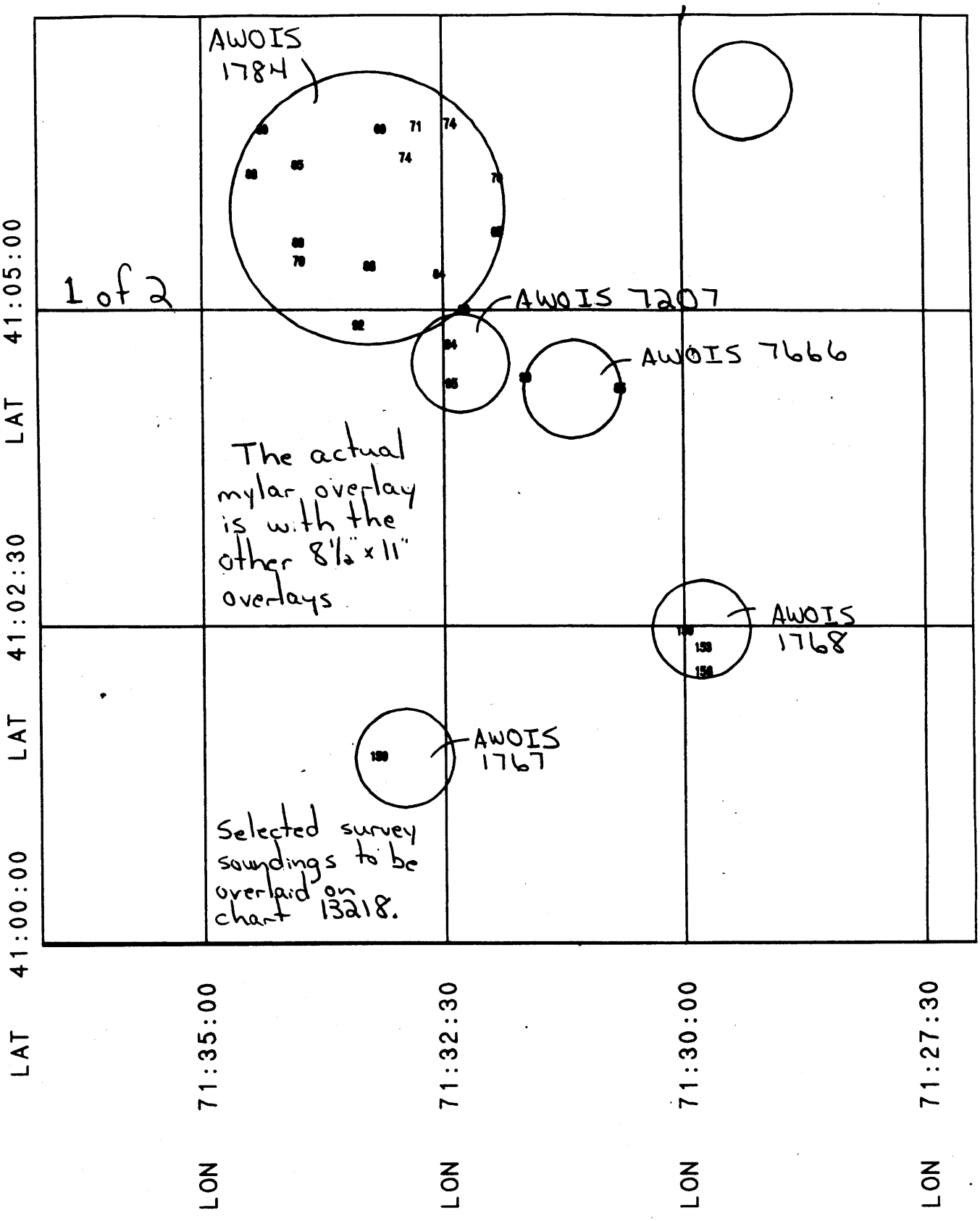
The quality of agreement between the soundings from this survey and the depths of chart 13218 was excellent. No significant differences between the soundings and depths were noted. A significant difference for the purpose of this section is considered to be three feet.

M.4 No evidence of shoaling, deepening or other topographical bottom trends was noted during this survey. The bottom profile appears to be little changed from what is currently charted. Appendix VI, Supplemental Correspondence, includes a letter concerning bottom changes resulting from the passage of Hurricane Bob. FILED WITH THE ORIGINAL SURVEY RECORDS

M.5 This is addressed in Section "M" since beyond the six developments within AWOIS 17744 there are no bottom features worthy of further attention,[8] excluding the AWOIS items themselves.

M.6 Other than the AWOIS items and six developments discussed in Section "N", there are no features or significant depths from prior surveys that have been disproved and are subsequently recommended for removal from the chart.

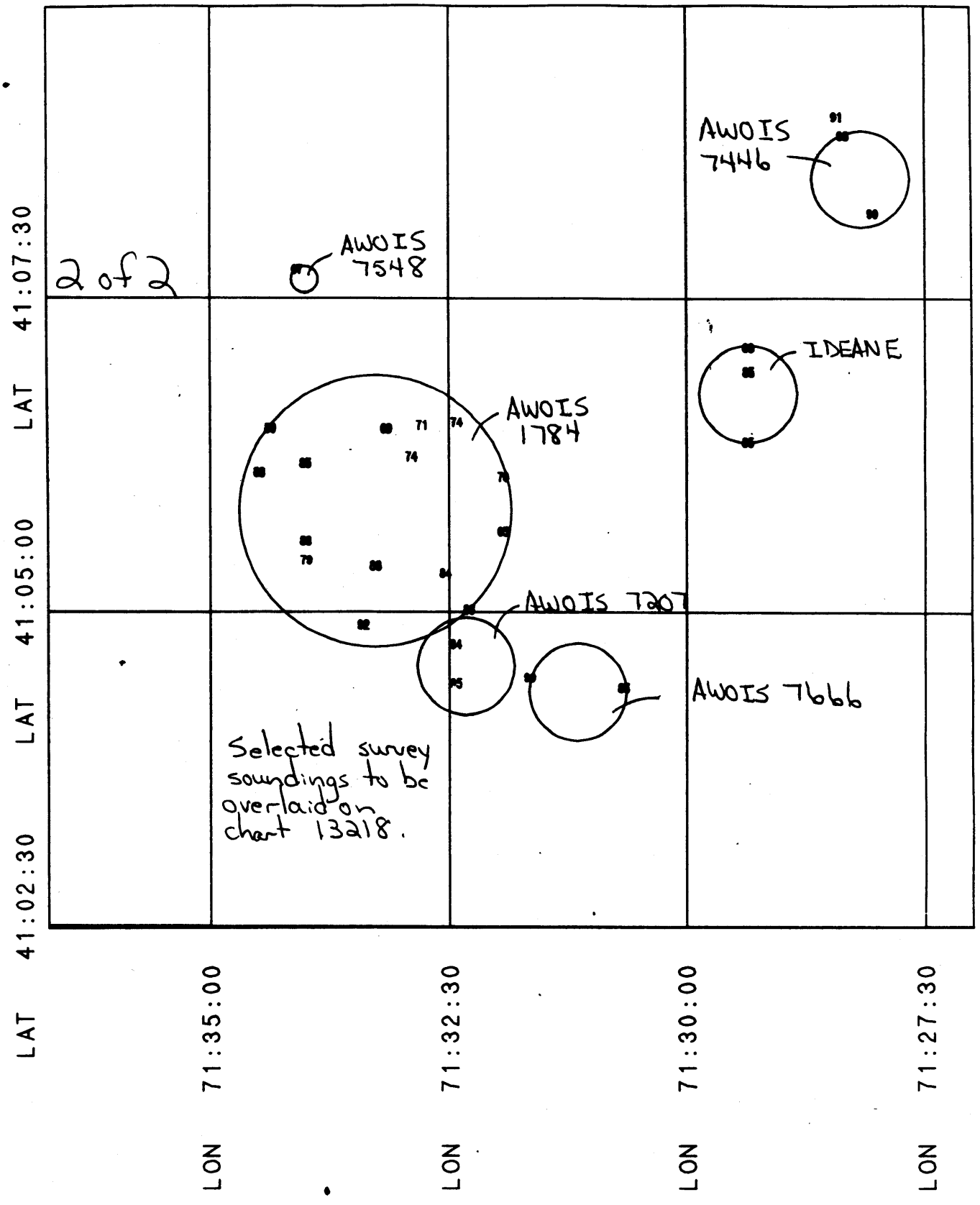
M.7 No contemporary, authoritative non-NOS surveys are known to be available for comparison.



NORTH

OPR-B660-RU-91
FE364SS
SCALE: 1:80000
CHART COMP. OVER LAY

19-A



NORTH

OPR-B660-RU-91
FE364SS
SCALE: 1:80000
CHART COMP. OVER LAY

19-B

13215
13205

N. COMPARISON WITH THE CHART SEE ALSO SECTION 7. OF THE EVALUATION REPORT.

Each AWOIS item and development is addressed separately.

AWOIS 1767 (SHEET 1 OF 8) Sheet 16

N.1 Item Description

The object of this investigation was the submarine USS BASS. It is a 341 foot vessel intentionally sunk in 1945. According to local sport divers familiar with the wreck, either antennas or a periscope extends from the sail above the submarine. This item is listed in the publication SCUBA NORTHWEST, VOLUME II by Robert G. Bachand.

N.2 Item Location

Geographic position provided was: 41° 01' 09.37" N
71° 32' 46.18" W

N.3 Source of Item

Notice to Mariners 13/45

N.4 Largest Scale Chart Affected

CHART 13205, SCALE 1:80,000, EDITION 30 DATED MAY 18, 1991.
Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. This search area was centered around Loran rates provided by a local sport diver. The object was found during the second line run on the first 100% of coverage. Intensive hydrographic development with an echosounder on that first day and successive days provided many good looks at the object. Techniques for this hydrographic development consisted of ten meter splits run in both along and cross schemes. At the edges of the wreck five meter splits were run to define the extreme boundaries of the vessel. Due to the depth of the water, approximately 150 feet, a diver investigation was not possible.

N.6 Investigation Results

This item is already fairly well documented in local sport diving publications. As mentioned above, it is a 341 foot submarine lying upright on the sea floor in a general Northwest to Southeast direction. Side scan sonar images do seem to support the statements of local divers that some upright structure, it varies according to who is asked, extends above the sail of the vessel.

Least depth information for the item is as follows:

FIX NUMBER-	90.1
LATITUDE-	41° 01' 26.18" N
LONGITUDE-	71° 33' 04.86" W
LEAST DEPTH (MLLW)-	30.5 meters (100.1 feet)

N.7 Explanation for Position Difference

The position difference may be explained by a possible unreliable position being originally reported for the wreck and/or the greater accuracy of positioning systems now in use. Also, the wreck extends 341 feet (approximately 104 meters). The original position may not correspond to the present survey's least depth point.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the dangerous wreck (depth unknown) symbol and add a wreck (least depth known by sounding only) ~~symbol~~ with a depth of 100 feet based on the above survey data. CONCUR CHART AS 30.5 WK AND LIMITS SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

AWOIS 1768 (SHEET 2 OF 8) 13215 13205 **Sheet 17**

N.1 Item Description

The object of this investigation was a charted barge that was known to be carrying a cargo of sulfuric acid when it sunk. Hence it's known locally as the 'acid barge'. It is 240 feet (73 M) long. Little more than this is known of its history. This item is listed in the publication SCUBA NORTHWEST, VOLUME II by Robert G. Bachand.

N.2 Item Location

Geographic position provided was: 41° 02' 30.38" N
71° 29' 43.18" W
9

N.3 Source of Item

Local Notice to Mariners 54/61

N.4 Largest Scale Chart Affected 13215

CHART 13205, SCALE 1:80,000 EDITION 30 DATED MAY 18, 1991.
Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. This search area was centered around Loran rates provided by a local sport diver. The object was found during the second line run on the first 100% of coverage. Intensive hydrographic development with an echosounder on that first day and successive days provided many good looks at the object. Techniques for this hydrographic development consisted of ten meter splits run in both along and cross schemes. Due to the depth of the water, approximately 150 feet, a diver investigation was not possible.

N.6 Investigation Results

This item is already fairly well documented in local sport diving publications. As mentioned above, it is 240 foot acid barge. It rises approximately five to six meters above the sea floor.

Least depth information for the item is as follows:

FIX-	141.4
LATITUDE-	41° 02' 29.78 (80)" N
LONGITUDE-	71° 29' 54.57" W
LEAST DEPTH (MLLW)-	39.0 meters (128.0 feet)

N.7 Explanation for Position Difference

The position difference is insignificant.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the dangerous wreck (depth unknown) symbol and add a wreck (least depth known by sounding only) ~~symbol~~ with a depth of 128 (39M) feet based on the above survey data. CONCUR. CHART AS A 39 WK (BARGE) AND LIMITS SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

AWOIS 7207 (SHEET 4 OF 8) 13215 13205 **Sheet 18**

N.1 Item Description

The object of this investigation was the freighter GRECIAN which was involved in a collision and consequently sunk in 1932. According to the AWOIS description the wreck is severely deteriorated and lies scattered on the sea floor. This item is listed in the publication SCUBA NORTHWEST, VOLUME II by Robert G. Bachand.

N.2 Item Location

Geographic position provided was: 41° 04' 02.37" N
71° ~~31' 57.18"~~ 32' 10.19" W

N.3 Source of Item

Notice to Mariners 23/32

N.4 Largest Scale Chart Affected 13215

Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. A diver investigation was also required, if appropriate. This search area was centered around Loran rates provided by a local sport diver. Echosounder development was used as the primary means of finding this item and for delineating the extent of it. It was found on the first line. Fifty and 25 meter splits were run in a North-South direction and 10 meters splits were run in a East-West direction. Finally, after a very good position had been computed for the item, three 100 meter range scale lines were run by it to get a look at the wreck. This provided some indication of the distribution of the wreckage on the bottom. A diver investigation and least depth determination was also conducted.

N.6 Investigation Results

This item is already fairly well documented in local sport diving publications. Diver investigation facilitated a thorough investigation of the wreck. See the daily data for the Diver Determined Least Depth form and ~~Separate VI~~ Item Investigation Data for the Dive Investigation Report. APPENDED TO THIS REPORT.

Least depth information for the item is as follows:

DETACHED POSITION-	975
LATITUDE-	41° 04' 27.52" N
LONGITUDE-	71° 32' 18.66" W
LEAST DEPTH (MLLW)-	24.2 meters * ✓ (79.4 feet)

* As determined by divers with predicted tidal corrector for time of dive applied. Concur

N.7 Explanation for Position Difference

Difference may be explained by a possible unreliable position being originally reported for the wreck and/or the greater accuracy of positioning systems now in use.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation See also section 7.a.2) of the Evaluation Report.

Chart a wreck (least depth known by sounding only) ~~symbol~~ and 79 (24.2 M) foot depth based on the above survey information. This should supersede the currently charted 55 foot wreck. Concur. Chart a 24² WK "Grecian" and limits should the scale of the chart allow.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

AWOIS 7666 (SHEET 3 OF 8) **Sheet 18**

N.1 Item Description

The object of this investigation was the vessel APPLETREE. Beyond this, nothing more is known of the history of this item. This item is listed in the publication SCUBA NORTHWEST, VOLUME II by Robert G. Bachand.

N.2 Item Location

Geographic position provided was: 41° 04' 21.77" N
71° 31' 06.28" W

N.3 Source of Item

Mr. Richard Taracka, a local sport diver, reported this item.

N.4 Largest Scale Chart Affected 13215

CHART 13205, SCALE 1:80,000, EDITION 30 DATED MAY 18, 1991
Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. A diver investigation was also required, if appropriate. The search area was centered around the Loran rates provided by Mr. Taracka. Two hundred percent side scan sonar coverage was completed on this item. There was no echosounder development since the item was not found with side scan sonar.

N.6 Investigation Results

This item is a disproval. Nothing resembling a wreck either in profile or in size was found on either the first 100% or second 100% of side scan sonar coverage. There were contacts that clearly resembled rocks and boulders as judged from past experience. The vast majority of these contacts were insignificant as they did not exceed 10% of the depth of water.

N.7 Explanation for Position Difference

Not applicable.

N.8 Least Depth Information

Not applicable.

N.9 Charting Recommendation

Take no action since there is nothing presently charted for this item. See section 7.a.3) of the EVALUATION Report.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

N.1 Item Description

The object of this investigation was a trawler that sunk in 1949. It is charted as a dangerous wreck (depth unknown), position approximate. Beyond this, nothing more is known of its history. Within the search area there is also another dangerous wreck (depth unknown) symbol charted.

N.2 Item Location

Geographic position provided was: 41° 05' 48.37" N
71° 33' 16.19" W

A second wreck is located in the survey area. It's position is:
See section 7.a.2) of the Evaluation Report.

41° 05' 48.37" N
71° 33' 16.19" W

N.3 Source of Item

Notice to Mariners 9/49.

N.4 Largest Scale Chart Affected 13215

Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.
CHART 13205, SCALE 1:80,000, EDITION 30 DATED MAY 18, 1991.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 2000 meter radius search area. A diver investigation was also required, if appropriate. This search area was centered around the geographic position. Two hundred percent side scan sonar coverage was completed for this item along with hydrographic development of the six most significant contacts from over 70 observed. These contacts were often what appeared to be, judging from past experience, lone boulders. Occasionally, in what appears to be rubble fields there would be one of these boulders.

N.6 Investigation Results

This item is a disproval. The second dangerous wreck within the survey area is also a disproval. This is based on completing 200% side scan sonar coverage. While many contacts, some significant, were found, none fit the profile of a wreck. The wreck symbol at the center of the search area is recommended for removal from the chart since the criteria for a disproval was met. The other wreck symbol, which was located within the boundaries of the search area, is also recommended for removal from the chart. This is despite the fact that the item technically was not searched for within a designated radius search area. Since the item was not charted as position

approximate, an indication that the charted position is reasonably accurate, the arguement is made that if the charted position of the wreck was subjected to 200% side scan coverage with negative results, the criteria has been met for disproval and subsequent removal from the chart. Concur. See also section 7.a.2) of the Evaluation Report.

While no sign of the wreck(s) was found, this investigation developed six significant contacts within the search area. The criteria for choosing these six from the many contacts found was to look for contacts that were seen more than once, entered into the HDAPS system and whose multiple positions plotted in very close proximity to each other. Contacts that met this criteria were then further narrowed down to those whose size was considered significant, generally over two meters, which is 10% of the surrounding water depth at the shoalest. Of the six contacts chosen for development, all seem to resemble large boulders based on past experience. This past experience is from Survey H-10378 where 36 contacts were developed. In that survey, many of those were suspected to be boulders and subsequent dive investigations proved this to be a correct assumption. Each development is treated separately for sections "N.7" through "N.12". See also section 7.a.4) of the Evaluation Report.

Rationale for section "N.9", Charting Recommendation was that regardless of the height above the bottom of a boulder, none of these bottom features would be charted as symbols. Instead, the least depth of a boulder would be charted as a depth if it disagreed significantly with a presently charted depth on the largest scale chart of the area (chart 13218). **A significant difference was considered to be 3 feet.** A mylar overlay, scale 1:80,000, with these development least depths plotted on it facilitated these comparisons. This overlay is attached to the end of this section. Filed with the original field data

DEVELOPMENT #1 AWOIS 1784 -(SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1163
LATITUDE-	41° 06' 50.10" N
LONGITUDE-	71° 33' 29.42" W
LEAST DEPTH (MLLW)-	20.4 meters (66.9 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depths. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

DEVELOPMENT #2 AWOIS 1784 (SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1179
LATITUDE-	41° 06' 37.39" N
LONGITUDE-	71° 33' 44.94" W
LEAST DEPTH (MLLW)-	22.0 meters (72.2 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depts. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

DEVELOPMENT #3 AWOIS 1784 (SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1192 → 85
LATITUDE-	41° 06' 30.48" → 50 N
LONGITUDE-	71° 34' 01.43" → 24 W
LEAST DEPTH (MLLW)-	23.2 meters (76.1 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depths. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

DEVELOPMENT #4 AWOIS 1784 (SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1197
LATITUDE-	41° 06' 30.25" N
LONGITUDE-	71° 33' 38.40" W
LEAST DEPTH (MLLW)-	19.8 meters (64.9 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depths. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

DEVELOPMENT #5 AWOIS 1784 (SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1207
LATITUDE-	41° 06' ~~20.22~~ 18.72" N
LONGITUDE-	71° 33' ~~06.27~~ 08.60" W
LEAST DEPTH (MLLW)-	20.4 meters (~~67.2~~ 66.9 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depths. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

DEVELOPMENT #6 AWOIS 1784 (SHEET 5 OF 8)

N.7 Explanation for Position Difference

Not Applicable.

N.8 Least Depth Information

FIX NUMBER-	1251
LATITUDE-	41° 05' 58.43" N
LONGITUDE-	71° 33' 00.89" W
LEAST DEPTH (MLLW)-	23.6 meters (77.4 feet)

N.9 Charting Recommendation

Take no action since the least depth of this development does not vary significantly from surrounding depths. DO NOT CONCUR. CHART AS SHOWN ON THE PRESENT SURVEY SHOULD THE SCALE OF THE CHART ALLOW

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

AWOIS 7548 (SHEET 6 OF 8) **Sheet 20**

N.1 Item Description

The object of this investigation was an obstruction known to local sport divers as the 'Pinnacle'. It is actually the terminal moraine of a glacier consisting of many very large boulders and one boulder significantly higher than the others; the pinnacle. In fact, the sight is so well known there is a floating beer keg secured to these boulders to aid sport divers in finding the sight. This item was originally subject to a wire drag investigation and was hung at 34 feet, thus the charted depth. This item is listed in the publication SCUBA NORTHWEST, VOLUME II by Robert G. Bachand.

N.2 Item Location

Geographic position provided was: 41° 07' 39.37" N
71° 33' 58.19" W

N.3 Source of Item

Wire drag survey H-4041, date unknown.

N.4 Largest Scale Chart Affected

Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.
CHART 13205 SCALE 1:80,000 EDITION 30 DATED MAY 18, 1991

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 200 meter radius search area. A diver investigation was also required, if appropriate. This search area was centered around Loran rates provided by a local sport diver. Echosounder development was used exclusively for finding this item and for delineating the extent of it. Five, 10 and 20 meter splits were run in a North-South direction and three East-West lines were run to better position the item. A diver investigation and least depth determination was also conducted.

N.6 Investigation Results

This item is already fairly well documented in local sport diving publications. Diver investigation facilitated a thorough investigation of the obstruction. See the daily data for the Diver Determined Least Depth form and ~~Separate VI~~ Item Investigation Data for the Dive Investigation Report. APPENDED TO THIS REPORT

Least depth information for the item is as follows:

FIX NUMBER-	1027.5	
LATITUDE-	41° 07' 39.25" N	
LONGITUDE-	71° 34' 04.70" W	
LEAST DEPTH (MLLW)- (By echosounder)	~~8.8~~ 9.3 meters* (~~28.9~~ 30.5 feet)	HIPPY CORRECTOR WAS APPLIED INCORRECTLY

* The edited depth plot for this item shows a least depth of ~~8.7~~ 9.3 meters. The discrepancy between these depths is due to the differences in rounding numbers between the edit and plot programs.

Fix 1057, the diver determined least depth for this item is 9.0 meters (29.5 feet), with predicted tidal corrector applied. ~~The above echosounder least depth was found to be slightly shoaler than the diver least depth.~~ C

N.7 Explanation for Position Difference

Position difference is insignificant given the size of this obstruction. It's possible that the original position corresponds to a boulder other than the pinnacle which is the present location for the least depth determination.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the 34 foot depth charted at position: CONCUR.
Latitude- 41° 07' 36.0" N
Longitude-71° 34' 03.0" W

Add a 29 foot depth charted at position:
Latitude- 41° 07' 39.~~8~~7" N
Longitude-71° 34' 04.~~4~~39" W

CHART A DIVER LEAST DEPTH OF 9M (29FT) ON A ROCK AS SHOWN ON THE PRESENT SURVEY

N.10 Danger to Navigation Report

This item was reported as a danger to navigation. ~~See Appendix I for the report.~~ SEE SECTION 7.6. OF THE EVALUATION REPORT

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

Not an AWOIS item. (SHEET 7 OF 8) **Sheet 21**

N.1 Item Description

The object of this investigation was the trawler IDEANE. It is an approximately 120 foot long fishing vessel scuttled in the Spring of 1991. It was reported to NOAA C&GS through Mr. Tim Coleman who writes for a local sport fishing publication. He provided Loran rates for the location of the wreck.

N.2 Item Location

Geographic position provided was: 41° 06' 45.3" N
71° 29' 24.5" W

N.3 Source of Item

Mr. Tim Coleman brought this item to the attention of NOAA C&GS.

N.4 Largest Scale Chart Affected 13215

Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.
CHART 13205, SCALE 1:80,000, EDITION 30 DATED MAY 18, 1991

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. A diver investigation was also required, if appropriate. This search area was centered around Loran rates provided by Mr. Coleman. This item was found on the first pass with the side scan sonar on the 150 meter range scale. Subsequent passes on the 75 meter range scale provided a number of good looks at the wreck. Limited echosounder development completed the electronic reconnaissance of this item. A diver investigation and least depth determination was then conducted.

N.6 Investigation Results

Divers facilitated a thorough investigation of the wreck. See the daily data for the Diver Determined Least Depth form and ~~Separate VI~~ Item Investigation Data for the Dive Investigation Report. APPENDED TO THIS REPORT

Least depth information for the item is as follows:

DETACHED POSITION-	1284 7
LATITUDE-	41° 06' 45.~~16~~ 20" N
LONGITUDE-	71° 29' 24.1~~2~~ 3" W
LEAST DEPTH (MLLW)-	17.~~5~~ 6 meters *
	(57.~~4~~ 7 feet)

* As determined by divers with predicted tidal corrector for time of dive applied. ✓

N.7 Explanation for Position Difference

Position difference is insignificant.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Chart a wreck (least depth known by ~~sounding~~ DIVER only) symbol and 57 (17.6M) foot depth based on the above survey information at the following position:

Latitude- 41° 06' 45.2" N
Longitude-71° 29' 24.1" W

CONCUR. CHART AS A WRECK WITH A DEPTH OF 17.6 METERS (57FT, 9.5FM) AS SHOWN ON THE PRESENT SURVEY.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

N.1 Item Description

The object of this investigation was some wreckage from an unknown vessel, possibly a wooden barge. At present there is nothing charted at the position of this wreck provided by Mr. Garry Kozak. According to this source, the wreckage is severely deteriorated and rises no more than five feet above the bottom.

N.2 Item Location

Geographic position provided was: 41° 08' 24.37" N
71° 28' 10.78" W

N.3 Source of Item

Mr. Gary Kozak of Derry, New Hampshire.

N.4 Largest Scale Chart Affected

Chart 13218, scale 1:80,000, edition 30 dated July 7, 1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. A diver investigation was also required, if appropriate. This search area was centered around Loran rates provided by Mr. Kozak. This item was found on the third line run with the side scan sonar at the 100 meter range scale. A couple of more passes were made on it at the 50 meter range scale to give some indication of the distribution of wreckage on the bottom. Then, with the use of the echosounder only, a series of ten meter splits were run over the item to delineate the extent of it.

N.6 Investigation Results

Echosounder records show this item to rise no more than 1.5 meters above the bottom. This supports the claim of Mr. Kozak, who in his report to NOAA C&GS, said the wreckage rose no more than five feet above the bottom. Quite a bit of wreckage is scattered on the seafloor according to side scan sonar records, again lending support to the information provided by Mr. Kozak. Overall, the debris is insignificant given the depth of water; over 90 feet.

Least depth information for the item is as follows:

FIX NUMBER-	2035.3
LATITUDE-	41° 08' 44.~~61~~ 53" N
LONGITUDE-	71° 28' 20.~~99~~ 01" W
LEAST DEPTH (MLLW)-	27.~~2~~ 0 meters * (~~89.2~~ 88.9 feet)

N.7 Explanation for Position Difference

Difference may be explained by a possible unreliable position being originally reported for the wreck and/or the greater accuracy of positioning systems now in use.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Chart a wreck (least depth known by sounding only) ~~symbol~~ and 89 (27M) foot depth based on the above survey information. CORCOR. CHART A 27 ~~Obstr (Wreck)~~ AS SHOWN ON THE PRESENT SURVEY.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

N.11 See section "M" for discussion on comparisons between depths of this survey and prior surveys.

N.12 A comparison of this survey with prior surveys and a discussion of crossline agreement is addressed in sections "M" and "K" respectively.

O. ADEQUACY OF SURVEY

O.1 All items have been resolved as described in section "N".

O.2 There are no parts of the survey that are considered incomplete or substandard.

P. AIDS TO NAVIGATION *SEE ALSO SECTION 7.C OF THE EVALUATION REPORT*

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

P.2 No aids to navigation, either floating or fixed, were located within the boundaries of this survey.

P.3 No other aids were located during the survey.

P.4 No bridges, overhead cables or overhead pipelines not presently charted were located during this survey.

P.5 No submarine cables, pipelines or ferry routes are located within the survey area.

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

Q. STATISTICS

Q.1	a. number of positions	1142
	b. lineal nautical miles of sounding lines	
	-nautical miles of survey with the use of the side scan sonar	113.6
	-nautical miles of survey without the use of the side scan sonar	22.0
Q.2	a. square nautical miles of hydrography	N/A
	b. days of production	16
	c. detached positions	
	-attributed to diving activities	3
	-attributed to bottom feature developments	6
	-attributed to AWOIS items	5
	d. bottom samples	0
	e. tide stations	1
	f. current stations	0
	g. velocity casts	3
	h. magnetic stations	0
	i. XBT drops	0

R. MISCELLANEOUS

R.1 A letter was submitted to the Director, Atlantic Marine Center concerning some distinct sand waves recorded by side scan sonar off the coast of Block Island, RI. This letter is included in Appendix VI., Supplemental Correspondence. FILED WITH THE ORIGINAL SURVEY DATA

R.2 Bottom samples were not required for this project.

S. RECOMMENDATIONS

S.1 No survey inadequacies have been noted.

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

S.3 Although many features were not developed during this survey, no further investigation of this area is recommended. See SECTIONS 7. & 3) AND 4) OF THE EVALUATION REPORT

T. REFERRAL TO REPORTS

RUDE Electronic Control Report - 1991 Field Season
(submitted to N/CG244 concurrent with this survey)

Horizonal Control Report - 1991 Field Season
(submitted by N/CG23322)

APPENDIX VII. APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. FE-364-SS

Field operations contributing to the accomplishment of this survey were conducted under my 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 charting.

Nicholas E. Perugini, LCDR NOAA

Nicholas E. Perugini, LCDR NOAA
Commanding Officer
NOAA Ship RUDE

CONTROL STATIONS as of 30 Dec 1991

Antenna Elevation (meters)

#.	Type	Latitude	Longitude	# Corr	Freq	Del Code	MM/DD/YY	Station Name
~~[illegible]~~	~~F~~	~~041:20:40.219~~	~~071:33:01.010~~	~~0~~	~~250~~	~~1040.7~~	~~2 06/26/91~~	~~BLOCK IS. SE LIGHTHOUSE OFFSET~~
~~[illegible]~~	~~F~~	~~041:07:48.506~~	~~071:10:02.144~~	~~0~~	~~250~~	~~1040.7~~	~~1 06/26/91~~	~~HARBOR OFFSET, (AT HARBOR PT)~~
~~114~~	~~F~~	~~041:21:45.070~~	~~071:39:36.176~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~	~~0 07/15/91 MAIN INSHTR STR LT 2 - 1948~~
~~[illegible]~~	~~F~~	~~041:21:39.568~~	~~071:39:34.215~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~	~~06/26/91 PT JUDITH EAST BKWTR LT - NEW~~
113	F	041:21:39.821	071:39:53.034	20	250	0.0	0.0	3 07/15/91 PT JUDITH LIGHT OFFSET 2
~~114~~	~~F~~	~~041:13:39.514~~	~~071:34:39.636~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~	~~5 07/15/91 BLOCK ISLAND N LIGHT OFFSET~~
116	F	041:21:54.865	071:35:42.107	8	250	0.0	0.0	4 07/15/91 GREEN HILL BEACH
117	F	041:18:14.045	071:51:30.689	18	250	0.0	0.0	3 07/16/91 WATCH HILL LIGHT OFFSET #2
118	F	041:09:09.918	071:33:06.592	61	250	0.0	0.0	5 08/08/91 BLOCK ISLAND SE LIGHT OFFSET 2
119	F	041:04:15.469	071:51:25.373	9	250	0.0	0.0	2 08/12/91 MONTAUK POINT LIGHT OFFSET

1991 Field Positions

RU5-91 AWOIS ITEM 7207
DIVE INVESTIGATION REPORT

DATE: 27 AUG 1991 DOY: 239 TIME: 1420Z

PERSONNEL:

DIVEMASTER\TENDER- LTJG OBERLIES DIVERS- LT SCHATTGEN

COXSWAIN\TENDER- P. KEANE - ENS ILLG

VISIBILITY: 15 FEET CURRENT: 1/2 KNOT SE

MAXIMUM DEPTH: [illegible] METERS BOTTOM TIME: 25 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 975

EASTING: 132756.7 NORTHING: 230337.2

LATITUDE: 41-04-27.51 N LONGITUDE: 71-32-18.66 W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 25.1 METERS

TIME OF READING: 1420Z

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

PREDICTED TIDAL ZONE CORRECTOR: -1.1

LEAST DEPTH DETERMINED @MLLW 24.0 METERS

NARRATIVE REPORT: The object of this dive investigation was the steamer GRECIAN. This well known wreck was marked by a buoy, probably belonging to a local sport diving club, which was tied to the wreck itself. Although there appears to be debris widely dispersed the largest objects by far are located in a relatively small area. These objects appear to be the remnants of very large boilers. It was at the top of one of these that a least depth was determined, three times, by pneumofathometer. This depth was 25.1 meters at the time of the survey. Diver's depth gauges found the depth of this point to be 83 feet (25.3 meters) and the base of the wreck to be 92 feet (28.0 meters).

RU5-91 AWOIS ITEM 7548
DIVE INVESTIGATION REPORT

DATE: 28 AUG 1991 DOY: 240 TIME: 1417Z

PERSONNEL:

DIVEMASTER\TENDER- LT SCHATTGEN DIVERS- LTJG OBERLIES

COXSWAIN\TENDER- P. KEANE - ENS ILLG

VISIBILITY: 10 FEET CURRENT: 1 KNOT SE

MAXIMUM DEPTH: 19.8 METERS BOTTOM TIME: 23 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 1057

EASTING: 130303.6 NORTHING: 236266.2

LATITUDE: 41-07-39.50 N LONGITUDE: 71-34-04.42 W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 10.0 METERS

TIME OF READING: 1417Z

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

PREDICTED TIDAL ZONE CORRECTOR: -1.0

LEAST DEPTH DETERMINED @MLLW 9.0 METERS

NARRATIVE REPORT: The object of this dive investigation was a group of very large boulders collectively known to local divers as the "Pinnacle". These boulders appear to be somewhat clustered, rising steeply off the bottom towards one boulder that is distinctly higher than the others; the pinnacle. However, visibility was quite limited and we can;t say without doubt that we had visually a true understanding of the distribution of the boulders on the bottom. A least depth was determined by use of a pneumofathometer with readings taken three times at the shoalest point of the 'pinnacle'. This depth was 10 meters at the time of the survey. Diver's depth gauges found the depth of this same point to be 33 feet (10.0 meters) and the depth at the base of the boulders to be 65 feet (19.8 meters).

RU5-91 AWOIS ITEM XXXX
DIVE INVESTIGATION REPORT

DATE: 18 SEP 1991 DOY: 261 TIME: 2014Z

PERSONNEL:

DIVEMASTER\TENDER- ENS ILLG DIVERS- LT SCHATTGEN

COXSWAIN\TENDER- P. KEANE - LTJG OBERLIES

VISIBILITY: 20 FEET CURRENT: 1/2 KNOT SE

MAXIMUM DEPTH: 27.7 METERS BOTTOM TIME: 18 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 1284

EASTING: 136838.7 NORTHING: 234575.7

LATITUDE: 41-06-45.18 N LONGITUDE: 71-29-24.12 W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 18.4 METERS

TIME OF READING: 2014Z

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

PREDICTED TIDAL ZONE CORRECTOR: -0.9

LEAST DEPTH DETERMINED @MLLW 17.5 METERS

NARRATIVE REPORT: The object of this investigation was the F/V IDEANE scuttled in the Spring of 1991. Although this vessel is not an AWOIS item it was assigned for side scan sonar investigation. It is a drag boat approximately 120 feet long sitting upright and in very good condition on the sea floor. There is a pilot house that sits somewhat aft of amidships and except for this the main deck is clear. There are several lesser masts and rigging, but the least depth was determined on the main mast which clearly extends over the top of the wreck. A least depth was determined here by three consecutive readings with a pneumofathometer. This depth was 18.4 meters at the time of the survey. Diver's depth gauges found this same point to be 60 feet (18.2 meters) and the base of the wreck to be at 91 feet (27.7 meters).

20

DIVER DETERMINED LEAST DEPTH

AWOIS NUMBER 7548 CONTACT NUMBER Pinnacle

TAKEN BY PNEUMOFATHOMETER ON 28 Aug '91 (DOY: 240)

(S/N: 142697) REMARKS

1) TIME: 1017 (LOCAL) 1417 (GMT) PNEUMO DEPTH READING (m): 10.0

2) TIME: " (LOCAL) " (GMT) PNEUMO DEPTH READING (m): "

3) TIME: " (LOCAL) " (GMT) PNEUMO DEPTH READING (m): "

AVERAGE PNEUMO DEPTH (m): 10.0

AVERAGE PNEUMO DEPTH (m): 10.0

PNEUMO GAUGE CORRECTOR (m): 0.0

PREDICTED TIDAL ZONE CORRECTOR (m): -1.0

ACTUAL LEAST DEPTH (m): 9.0 m

DETACHED POSITION AND FIX NUMBERS

1) FIX NUMBER: ~~1055~~ E: 130307.4 N: ~~236265.3~~

* 2) FIX NUMBER: 1057 E: 130303.6 N: 236266.2

3) FIX NUMBER: ~~1064~~ E: 130306.0 N: ~~236270.8~~

AVERAGE DP: E: ~~130305.6~~ N: ~~236267.4~~

LEAST DEPTH E/N POSITION -> LAT/LONG CONVERSION:

LAT: 41 ° 07 ' 39.50 N " LONG: 071 ° 34 ' 04.42 W "

NAD 83

LORAN COORDINATES

LORAN-C CHAIN TD'S

9960 W- 14547.6 X- 25844.9 Y- 43865.0 Z- 60172.5

SNR: 684 940 658 385

MASTER: 781

D:\WP51\DIVE.TXT

DIVER DETERMINED LEAST DEPTH

AWOIS NUMBER Ideane CONTACT NUMBER _____

TAKEN BY PNEUMOFATHOMETER ON 18 September 1991 (DOY: 261)

(S/N: _____) REMARKS _____

1) TIME: 1614 (LOCAL) 2014 (GMT) PNEUMO DEPTH READING (m): 18.4

2) TIME: " (LOCAL) " (GMT) PNEUMO DEPTH READING (m): 18.4

3) TIME: " (LOCAL) " (GMT) PNEUMO DEPTH READING (m): 18.4

AVERAGE PNEUMO DEPTH (m): 18.4

AVERAGE PNEUMO DEPTH (m): 18.4

PNEUMO GAUGE CORRECTOR (m): 0.0

PREDICTED TIDAL ZONE CORRECTOR (m): -0.98

ACTUAL LEAST DEPTH (m): 17.56

DETACHED POSITION AND FIX NUMBERS

1) FIX NUMBER: ~~1283~~ E: ~~136840.1~~ N: ~~234573.8~~

* 2) FIX NUMBER: 1284 7 E: 136838.7 N: 234575.7

3) FIX NUMBER: ~~1285~~ E: ~~136826.1~~ N: ~~234570.2~~

AVERAGE DP: E: ~~136835.0~~ N: ~~234573.2~~

LEAST DEPTH E/N POSITION -> LAT/LONG CONVERSION:

* LAT: 41 ° 06 ' 45.18 20 N " LONG: 071 ° 29 ' 24.12 13 W "

LORAN COORDINATES

LORAN-C CHAIN TD'S

_____ W- _____ X- _____ Y- _____ Z- _____

SNR: _____ _____ _____ _____

MASTER: _____

D:\WP51\DIVE.TXT

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 11, 1992

MARINE CENTER: Atlantic

OPR: B660-RU-91

HYDROGRAPHIC SHEET: FE-364SS

LOCALITY: Rhode Island, Atlantic Ocean, One to Seven Nautical Miles Southeast of Block Island

TIME PERIOD: August 8 - September 18, 1991

TIDE STATION USED: 845-5083 Point Judith, Rhode Island
Lat. 41° 21.8'N Lon. 71° 29.4'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 6.34 ft.

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

REMARKS: RECOMMENDED ZONING

Apply a -20 minute time correction and a x0.94 height ratio to Point Judith, Rhode Island (845-5083).

Note: Times are tabulated in Eastern Standard Time.

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-364 SS

Name on Survey	A ON CHART NO.	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	
BLOCK ISLAND (title)										1
RHODE ISLAND (title)										2
RHODE ISLAND SOUND (title)										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
				Approved:						16
										17
				Charles E. Barrington						18
				Chief Geographer-W CG2x5						19
				APR 22 1993						20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

07/30/93

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-364SS

NUMBER OF CONTROL STATIONS	7
NUMBER OF POSITIONS	1159
NUMBER OF SOUNDINGS	5171

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	141	10/13/92
VERIFICATION OF FIELD DATA	256	10/06/92
ELECTRONIC DATA PROCESSING	55	
QUALITY CONTROL CHECKS	44	
EVALUATION AND ANALYSIS	136	05/01/93
FINAL INSPECTION	44	07/28/93
TOTAL TIME	676	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 07/30/93

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
N/CG244-90-93

LETTER TRANSMITTING DATA

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

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL ☒ EXPRESS

☐ GBL *(Give number)* _____

TO:

NOAA/National Ocean Service
Chief, Data Control Branch
N/CG243, Station 6815, SSMC3
1315 East-West Highway
Silver Spring, MD 20910

DATE FORWARDED
5 August 1993

NUMBER OF PACKAGES
1 Tube; 1 Box

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.

FE-364SS

Rhode Island, Rhode Island Sound, One to Seven NM SE of Block Island

1 Tube containing:
13 Smooth Field Sheets

1 Box containing:
1 Original Descriptive Report for FE-364SS
1 Envelope containing Smooth Position and excess sounding overlays
1 Cahier with Position Printout, Control File Listing, Sounding Printout and Line File Listing
1 Envelope containing Separates removed from the original Descriptive Report
1 Envelope containing Appendices removed from the original Descriptive Report
1 Envelope containing 8½ x 11 mylar field sheets
1 Envelope containing miscellaneous data removed from the printouts
2 Accordion files with fathograms, field printouts and side scan sonargrams

FROM: *(Signature)* R. H. Whitfield
Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

D. S. Clark
8/11/93

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-364SS **FIELD NO.:** RU-10-5-91

Rhode Island, Rhode Island Sound, One to Seven Nautical Miles Southeast of Block Island

SURVEYED: 8 August through 18 September 1991

SCALE: 1:10,000 **PROJECT NO.:** OPR-B660-RU-91

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, EG&G Model 260 Side Scan Sonar, and Pneumatic Depth Gauge,

CONTROL: MAGNAVOX MX 4200D Differential Global Positioning System (GPS) Receiver/MAGNAVOX MX 50R GPS Receiver and MOTOROLA FALCON 484 Mini-Ranger (Range-Range)

Chief of Party.....N. E. Perugini

Surveyed by.....P. L. Schattgen
.....M. J. Oberlies
.....J. A. Illg
.....D. E. Williams

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A RAYTHEON DSF-6000N fathometer was operated concurrently with the side scan sonar. Fathometer developments were conducted to search for several features noted on the sonargrams. Positional data acquired during feature development and a pneumatic depth gauge were used to determine the least depth on features. In cases where the side scan sonar was used to determine the estimated depth of a feature, the item is shown on the present survey with the upper case letter 'A' in parenthesis. This note is shown on the page size plots (sheets 3 and 5 of 8) in proximity to the title block. See also memorandum titled "Showing Estimated Side Scan Sonar Depths on Smooth Sheets", dated 23 February 1989, for an explanation of the note shown on the survey smooth sheet. Depths on these obstructions were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computing offsets from the vessel's track.

b. Three 1:5000, three 1:10,000 and two 1:20,000 scale page size plots were generated during office processing and are attached to this report. These plots are considered the smooth plots for this survey. The accompanying position overlays and excess sounding overlays are filed with the

original field records.

c. No unusual problems were encountered during office processing.

d. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H. and I. of the Descriptive Report.

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 survey datum and the North American Datum of 1927 (NAD 27).

To place the 1:5,000 scale plots 1, 2, and 6 of 8 on the NAD 27 move the projection lines 0.378 seconds (11.654 meters or 2.33 mm at the scale of the survey) north in latitude, and 1.811 seconds (42.278 meters or 8.46 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale plots 4, 7, and 8 of 8 on the NAD 27 move the projection lines 0.378 seconds (11.654 meters or 1.16 mm at the scale of the survey) north in latitude, and 1.811 seconds (42.278 meters or 4.23 mm at the scale of the survey) east in longitude.

To place the 1:20,000 scale plots 3 and 5 of 8 on the NAD 27 move the projection lines 0.373 seconds (11.654 meters or 0.58 mm at the scale of the survey) north in latitude, and 1.811 seconds (42.278 meters or 2.11 mm at the scale of the survey) east in longitude.

b. There is no shoreline within the limits of the smooth plots for this survey.

3. HYDROGRAPHY

a. Where applicable, soundings at crossings are in adequate agreement.

b. The standard depth curves were drawn in their entirety on the smooth sheets. Dashed curves have been added to better show bottom relief.

c. The development of bottom configuration, investigation of features, and the determination of least depths is considered adequate with the exception of 37 side scan sonar contacts noted during office processing (see section 7.a.3) and 4) of this report).

4. CONDITION OF SURVEY

The smooth plots and accompanying overlays, hydrographic records and reports conform to the requirements of the HYDROGRAPHIC MANUAL, SIDE SCAN SONAR MANUAL, FIELD PROCEDURES MANUAL.

5. JUNCTIONS

There are no junctional requirements for this survey.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-6330 (1938) 1:40,000
H-6443 (1939) 1:40,000

1) Prior survey H-6330 (1938) is common to sheets 1 through 7 of 8. Present survey hydrography is in good agreement with the prior hydrography with present soundings generally 0 to 0^6 meter (0 to 2 ft) deeper than the prior soundings. The prior hydrography on sheet 5 of 8 is in good agreement with present hydrography generally 0 to 1 meter (0 to 3 ft) deeper and showing areas of irregular bottom which show significant differences. These differences are rocks found by the present survey and not shown on the prior survey.

2) One line of hydrography from prior survey H-6443 (1939) is common to the western part of sheet 8 of 8. The present hydrography is in good agreement with the prior hydrography with present soundings 0^3 meter (1 ft) deeper than prior soundings.

The present survey is adequate to supersede the above prior surveys in the common areas.

b. Wire Drag

H-4041WD (1918-1919) 1:20,000

Prior survey H-4041WD (1918-1919) is common to sheet 6

of 8 and the northern portion of sheet 5 of 8. One grounding originates with the prior survey and is adequately discussed in section N., pages 34 and 35 of the Descriptive Report.

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

7. COMPARISON WITH CHART 12300 (34th Ed., 20 July 1991) 13205 (30th Ed., 18 May 1991) 13218 (31st Ed., 11 Jan 1992)

a. Hydrography

The charted hydrography within the common area originates with the previously addressed prior surveys and requires no further discussion in this report. The following should be noted:

1) Automated Wreck and Obstruction Information System (AWOIS) items #1767, #1768, #1784, #7446, #7666, and the investigation of the wreck "IDEANE" are adequately discussed in Section N. of the Hydrographer's Report.

2) AWOIS item #7207 is adequately discussed in section N., pages 24 and 25, of the Descriptive Report; however, another position listed in the history for AWOIS item #7207, Latitude 41°06'00"N, Longitude 71°33'00"W (NAD 27), originates with old Coast Guard records. The item is charted as a dangerous sunken wreck and falls within the search radius for AWOIS item #1784. The item was searched for during the investigation of AWOIS item #1784 and is discussed and considered disproved by the hydrographer in section N., pages 28 and 29, of the Descriptive Report. It is recommended that the dangerous submerged wreck be deleted from the chart.

3) Eight significant side scan sonar contacts were noted during office processing. The positions and heights were scaled from the side scan sonargrams and are listed below:

Contact (M/FT)	Latitude (N)	Longitude (W)
20 2Rk(A)/66/11	41°04'46.79"	71°31'17.38"
21 2Rk(A)/69/11	41°04'26.68"	71°31'02.10"
21 7Rk(A)/71/12	41°04'33.75"	71°31'19.25"
20 4Rk(A)/67/11	41°04'39.26"	71°31'35.95"
19 4Rk(A)/63/10	41°04'45.19"	71°31'07.32"
24 2Rk(A)/79/13	41°04'15.76"	71°31'05.62"

Contact (M/FT)	Latitude (N)	Longitude (W)
23^{3}Rk(A)/76/12	41°04'15.87"	71°30'38.93"
23^{0}Rk(A)/75/12	41°04'11.17"	71°31'02.16"

It is recommended that these rocks with estimated depths be charted in accordance with Cartographic Order 004/89, dated July 3, 1989 provided the chart scale will permit. It is also recommended that these estimated depths be resolved at an opportune time. See sheet 3 of 8.

4) Twenty-nine significant side scan sonar contacts were noted during office processing. The positions and heights were scaled from the side scan sonargrams and are listed below:

Contact (M/FT)	Latitude (N)	Longitude (W)
18^{5}Rk(A)/60/10	41°06'26.75"	71°33'08.14"
23^{6}Rk(A)/77/13	41°06'01.37"	71°33'02.06"
17^{0}Rk(A)/55/9	41°06'43.82"	71°33'01.96"
19^{0}Rk(A)/62/10	41°05'56.68"	71°32'47.27"
23^{0}Rk(A)/75	41°05'28.26"	71°32'31.23"
17^{1}Rk(A)/56/9	41°05'56.31"	71°32'18.50"
21^{4}Rk(A)/70/11	41°06'39.62"	71°34'06.94"
24^{7}Rk(A)/81/13	41°06'03.72"	71°33'24.64"
17^{1}Rk(A)/56/9	41°05'47.24"	71°32'10.64"
18^{0}Rk(A)/59/9	41°05'35.99"	71°32'04.20"
18^{2}Rk(A)/59/9	41°05'25.10"	71°32'02.79"
18^{9}Rk(A)/62/10	41°05'22.46"	71°31'56.62"
17^{7}Rk(A)/58/9	41°05'49.90"	71°31'56.14"
21^{1}Rk(A)/69/11	41°05'28.39"	71°32'48.21"
20^{8}Rk(A)/68/11	41°06'46.18"	71°33'45.93"
17^{4}Rk(A)/57/9	41°06'41.55"	71°33'16.69"
20^{1}Rk(A)/66/11	41°06'42.96"	71°33'34.89"
17^{5}Rk(A)/57/9	41°06'26.56"	71°33'26.10"
18^{3}Rk(A)/60/10	41°06'18.60"	71°32'50.04"
23^{4}Rk(A)/76/12	41°06'19.38"	71°33'40.19"
18^{4}Rk(A)/60/10	41°06'13.62"	71°32'33.21"
19^{7}Rk(A)/64/10	41°06'12.76"	71°32'59.95"
23^{8}Rk(A)/78/13	41°05'53.86"	71°33'20.32"
19^{3}Rk(A)/63/10	41°05'51.55"	71°31'49.23"
18^{2}Rk(A)/59/9	41°06'03.54"	71°32'16.62"
21^{4}Rk(A)/70/11	41°05'35.67"	71°32'14.73"
18^{9}Rk(A)/62/10	41°05'29.90"	71°31'52.92"
21^{8}Rk(A)/71/12	41°06'04.14"	71°33'00.23"
23^{7}Rk(A)/77/13	41°05'19.10"	71°32'38.83"

It is recommended that these rocks with estimated depths be charted in accordance with Cartographic Order

004/89, dated July 3, 1989 provided the chart scale will permit. It is also recommended that these estimated depths be resolved at an opportune time. See sheet 5 of 8.

The present survey is adequate to supersede the charted hydrography within the common areas unless otherwise noted in this report.

b. Dangers to Navigation

One danger to navigation was submitted by the hydrographer. During office processing, a revised Dangers to Navigation report was submitted to the Commander (oan), First Coast Guard District, Boston, Massachusetts. A copy of the letter was forwarded to Chart Information Section, N/CG222, Rockville, Maryland. A second revised Danger to Navigation was also submitted to the Commander (oan), First Coast Guard District, Boston, Massachusetts. A copy of the letter was forwarded to Chart Information Section, N/CG222, Silver Spring, Maryland. Copies of the notice submitted by the hydrographer and the revised notices are appended to this Report.

c. Aids to Navigation

There are no fixed or floating aids to navigation within the limits of this survey.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate side scan sonar item investigation survey except as noted in Sections 7.a.3) and 7.a.4) of this report.

for- **Douglas V. Mason**
Cartographic Technician
Verification of Field Data

Deborah A. Bland
Senior Cartographic
Technician
Evaluation and Analysis

Leroy G. Cram
Senior Cartographic Technician
Verification Check

APPROVAL SHEET
FE-364SS

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. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

R. H. Whitfield Date: 30 July 1993
Richard H. Whitfield
Cartographer, Atlantic Hydrographic Section

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 30, 1993
Nicholas E. Perugini, LCDR, NOAA
Chief, Atlantic Hydrographic Section

****

Final Approval:

Approved: J. Austin Yeager Date: 5/18/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

4 September 1991

MEMORANDUM FOR: Commander Christopher Lawrence, NOAA
Chief, Atlantic Hydrographic Section

FROM: Lieutenant Commander Nicholas E. Perugini, NOAA
Commanding Officer, NOAA Ship RUDE

SUBJECT: Danger To Navigation Report

Attached find a hardcopy of the report given on 4 September via cellular phone, concerning an existing danger to navigation discovered during OPR-B660-RU-91. This report was sent to the First Coast Guard District Commander in Boston, MA, and a copy was sent to the Director of the Defense Mapping Agency's Hydrographic/Topographic Center in Washington, DC.

In addition to the report sent to the Coast Guard, also attached are supplementary survey data for your information; chart overlays and photocopied fathograms of the item. Copies of all information were sent to the Nautical Data Section, N/CG221 in Rockville, MD.

Attachments

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

4 September 1991

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

Dear Sir:

The NOAA Ship RUDE has discovered a potential danger to navigation while conducting hydrographic surveys in the area of Block Island Sound. The Atlantic Hydrographic Section in Norfolk Virginia, has already furnished you with preliminary data concerning this feature. This letter should serve to confirm the preliminary report.

A submerged rock pinnacle, approximately 1.2 nautical miles south of Block Island, was found to have a shallower depth than currently charted. Information concerning the submerged rock follows.

Currently charted depth:	34 feet on large scale charts 5 3/4 fathoms on small scale charts
Latest survey depth:	29 feet on large scale charts 5.0 fathoms on small scale charts
Survey Position: (NAD83)	Latitude 41° 07' 39.50" N Longitude 071° 34' 04.42" W ✓ position originally reported incorrectly. NEP
Charting Recommendation:	Delete the currently charted 34 foot and 5 3/4 fathom depth. Add the 29 foot and 5.0 fathom depth at the above position.

The survey depth was determined by diver investigation. The depth has been reduced to Mean Lower Low Water (MLLW) by applying predicted tide corrections.

3

The affected Nautical Charts include:

CHART NUMBER	EDITION NO.	EDITION DATE	NEW SURVEY DEPTH	GEOGRAPHIC POSITION LATITUDE	GEOGRAPHIC POSITION LONGITUDE
13215	12	6-23-90	29 FT	41° 07' 39.50"N	071° 34' 04.42"W
13205	29	8-05-89	29 FT	41° 07' 39.50"N	071° 34' 04.42"W
13218	30	7-07-90	29 FT	41° 07' 39.50"N	071° 34' 04.42"W
12300	33	1-27-90	5 FM	41° 07' 39.50"N	071° 34' 04.42"W
13006	26	8-25-90	5 FM	41° 07' 39.50"N	071° 34' 04.42"W

NOTE: Horizontal Datum for all above Charts is NAD 83

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

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number...FE-364SS
State.....Rhode Island
General Locality.....Atlantic Ocean
Locality.....One to Seven Nautical Miles Southeast of Block Island
Project Number.....OPR-B660
Surveyed by.....NOAA Ship RUDE

Contact either of the following personnel for further information.

Commanding Officer
NOAA Ship RUDE
PO Box 295
Newport RI, 02840
401-848-0181

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

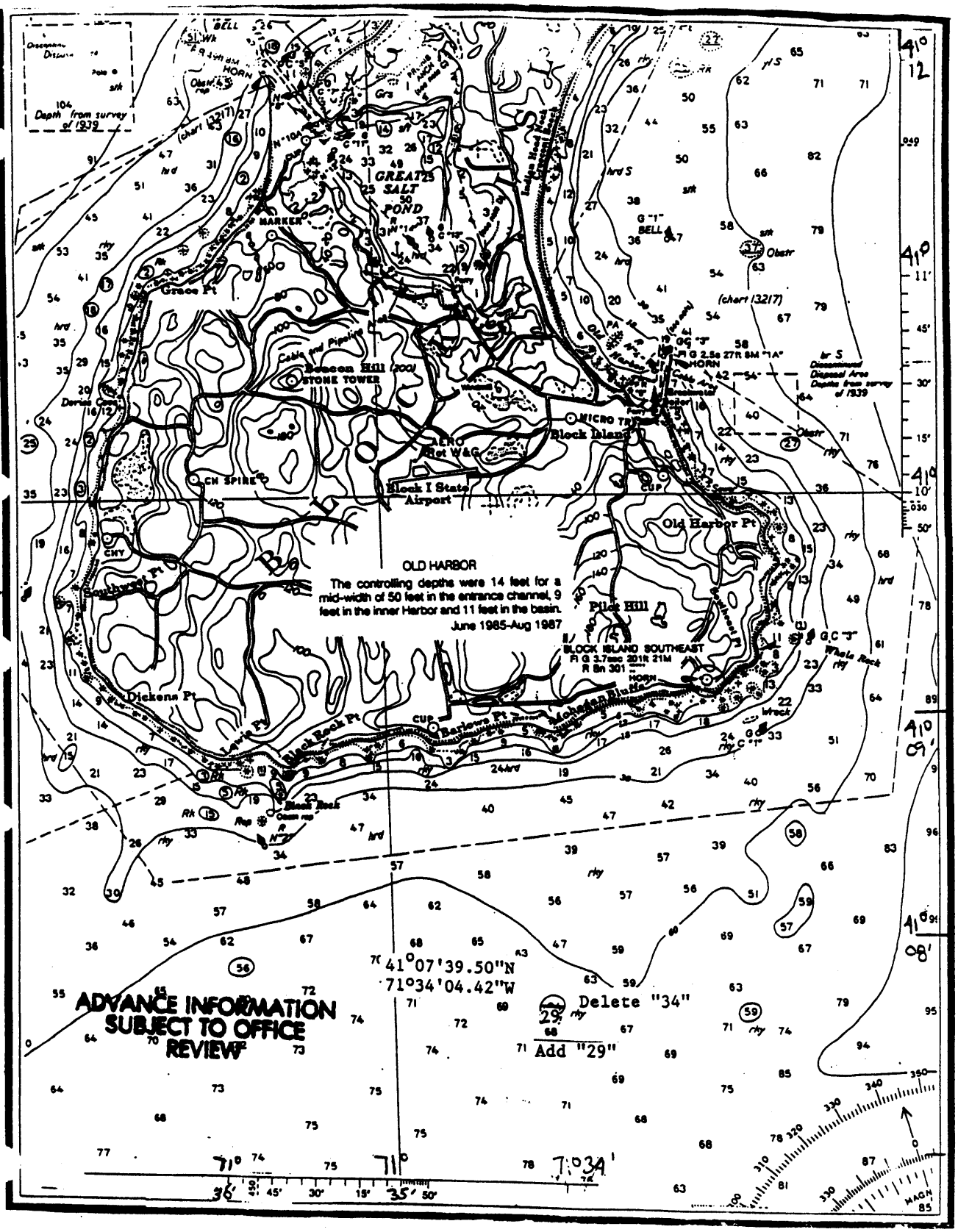
Sincerely

Nicholas E. Perugini, LCDR, NOAA

Nicholas E. Perugini
Lieutenant Commander, NOAA
Commanding Officer, NOAA Ship RUDE

Enclosure

13215



(Block Island Sound Pt. Judith to Montauk Pt)

SOUNDINGS IN FEET · SCALE 1:40 000

13215

1st ed., June 2[illegible]90 ■ 5

National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Norfolk, Virginia 23510-1114

April 29, 1993

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

Dear Sir,

This report supersedes the previous danger to navigation report dated September 4, 1991 (See attached copy).

After application of approved tides during office processing the depth and position on the rock discussed in the previous danger to navigation report should be revised.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number....FE-3665S
State.....Rhode Island
General Locality.....Atlantic Ocean
Locality.....One to Seven Nautical Miles Southeast of Block Island
Project Number.....OPR-B660
Surveyed by.....NOAA Ship RUDE

Objects Addressed:

The reported 29-ft (5 fm, 8.8 meters) least depth (corrected to MLLW) dangerous rock in Latitude 41°07'39.50"N, Longitude 71°34'04.42"W (NAD83) has been corrected during office processing to a 28-ft (4 3/4 fm, 8.5 meters) least depth (corrected to MLLW) dangerous rock in Latitude 41°07'39.27"N, Longitude 71°34'04.70"W (NAD83).

Affected Nautical Charts:

CHART	EDITION NO.	DATE	HORIZ. DATUM
12300	33rd	Jan 27/90	NAD83
13006	26th	Aug 25/90	NAD83
13205	29th	Aug 5/89	NAD83
13215	12th	Jun 23/90	NAD83
13218	31st	Jan 11/92	NAD83

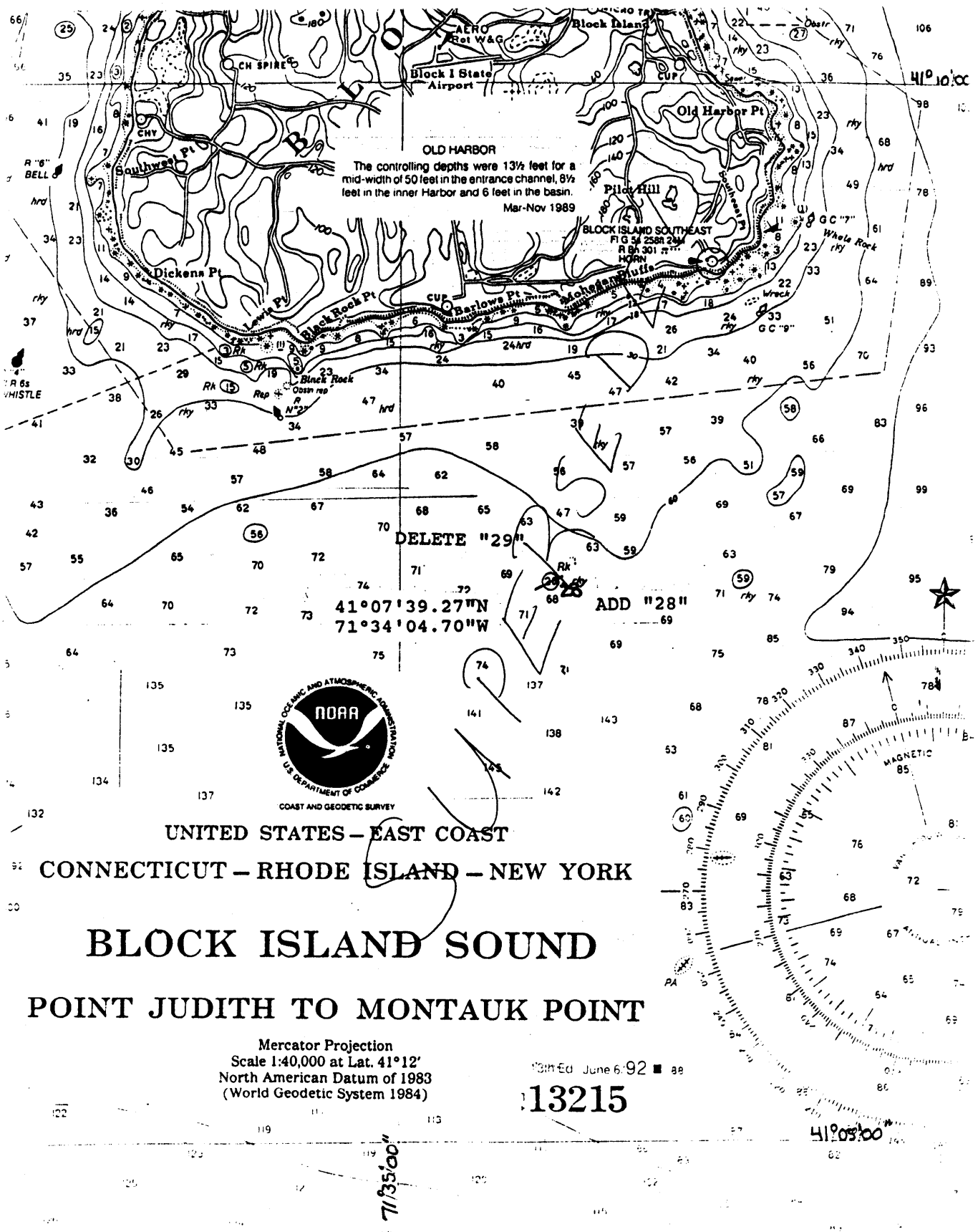
Questions concerning this report should be directed to the Office of Charting and Geodetic Services, Atlantic Hydrographic Section, by calling 804 441-6746.

Sincerely,

Christopher B. Lawrence

Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Attachments



UNITED STATES – EAST COAST

CONNECTICUT – RHODE ISLAND – NEW YORK

BLOCK ISLAND SOUND

POINT JUDITH TO MONTAUK POINT

Mercator Projection
Scale 1:40,000 at Lat. 41°12'
North American Datum of 1983
(World Geodetic System 1984)

13th Ed June 6/92 ■ 88

13215

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Norfolk, Virginia 23510-1114

July 28, 1993

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

Dear Sir,

This report supersedes the previous danger to navigation report dated April 29, 1993 (See attached copy).

After application of correctors during office processing, the depth and position on the rock discussed in the previous danger to navigation report should be revised.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number....FE-364SS
State.....Rhode Island
General Locality.....Atlantic Ocean
Locality.....One to Seven Nautical Miles Southeast of Block Island
Project Number.....OPR-B660
Surveyed by.....NOAA Ship RUDE

Object Addressed:

1. The reported 28-ft (4 3/4 fm, 8^5 meters) least depth (corrected to MLLW) dangerous rock in Latitude 41°07'39.27"N, Longitude 71°34'04.70"W (NAD 83) has been corrected during office processing to a 29-ft (5 fm, 9 meters) least depth (corrected to MLLW) dangerous rock in Latitude 41°07'39.41"N, Longitude 71°34'04.39"W (NAD 83).

Affected Nautical Charts:

CHART	EDITION NO.	DATE	HORIZ. DATUM
13205	29th	Aug 5/89	NAD 83
13215	13th	Jun 6/92	NAD 83

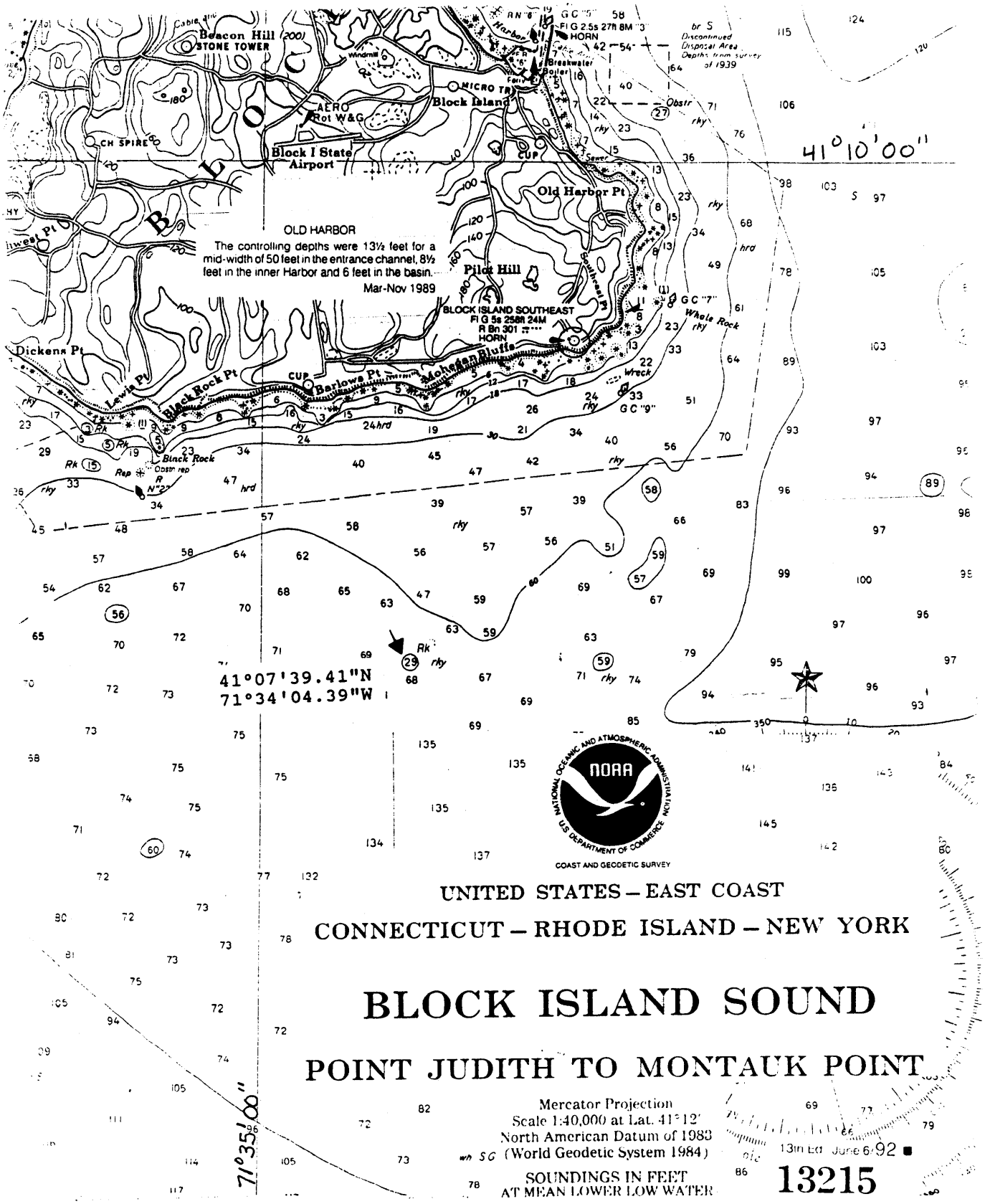
Questions concerning this report should be directed to the Office of Charting and Geodetic Services, Atlantic Hydrographic Section, by calling 804 441-6746 or FTS 827-6746.

Sincerely,

Nicholas E. Perugini

Nicholas E. Perugini, LCDR, NOAA
Chief, Atlantic Hydrographic Section

Attachment



OLD HARBOR

The controlling depths were 13½ feet for a mid-width of 50 feet in the entrance channel, 8½ feet in the inner Harbor and 6 feet in the basin.

Mar-Nov 1989

NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

UNITED STATES – EAST COAST

CONNECTICUT – RHODE ISLAND – NEW YORK

BLOCK ISLAND SOUND

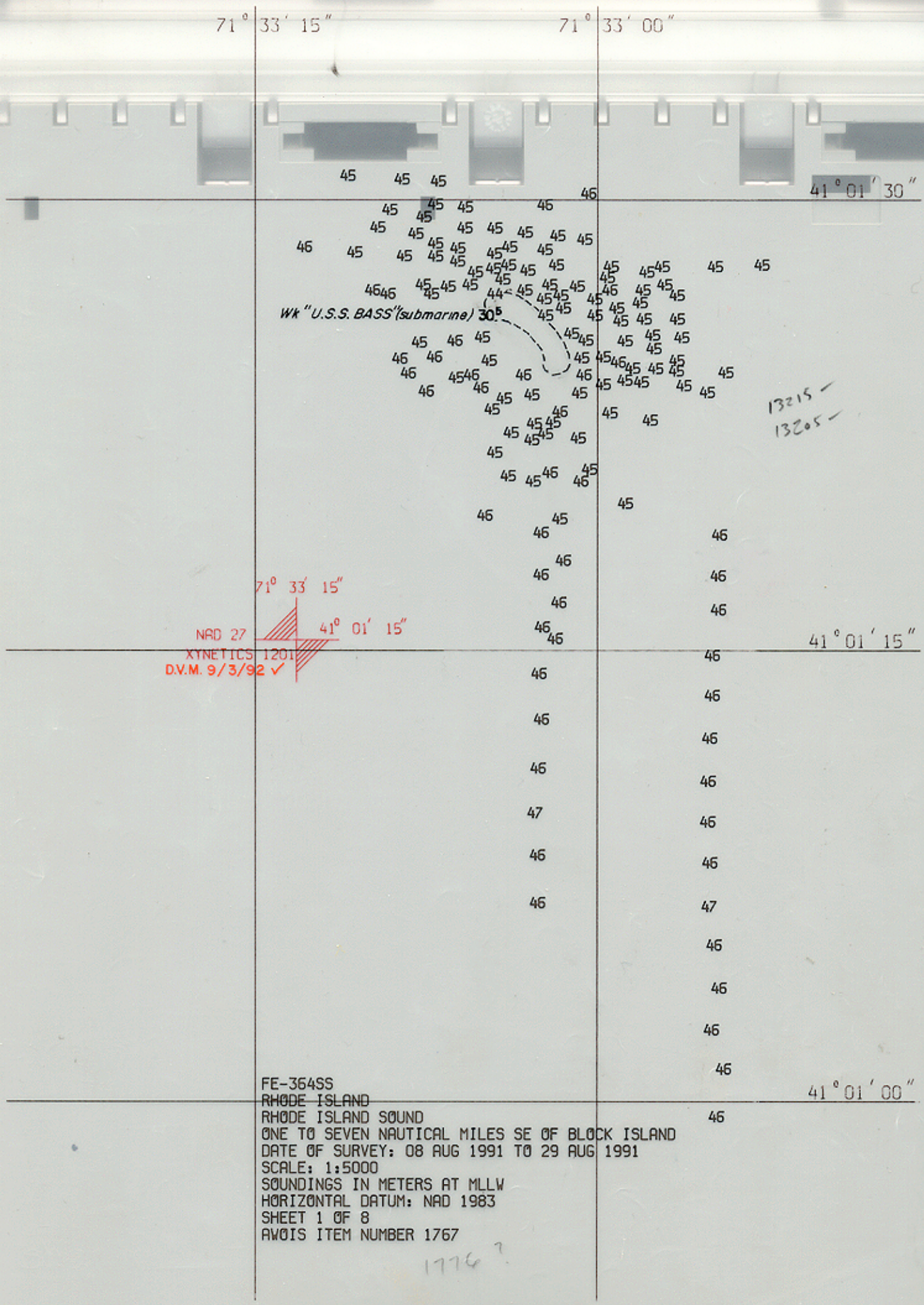
POINT JUDITH TO MONTAUK POINT

Mercator Projection
Scale 1:40,000 at Lat. 41°12'
North American Datum of 1983
wh SG (World Geodetic System 1984)

SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER

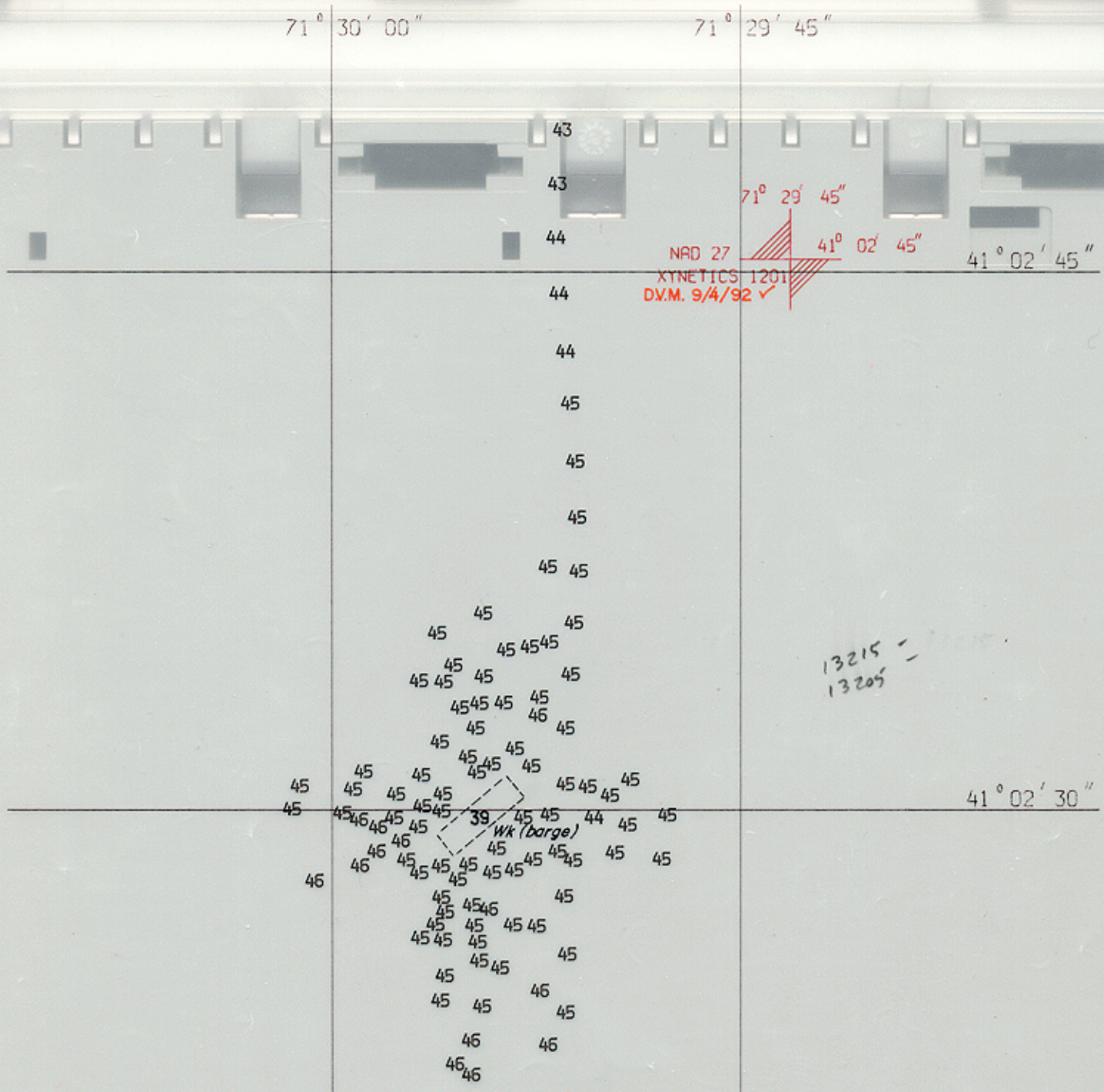
13th Ed. June 6/92 ■

13215

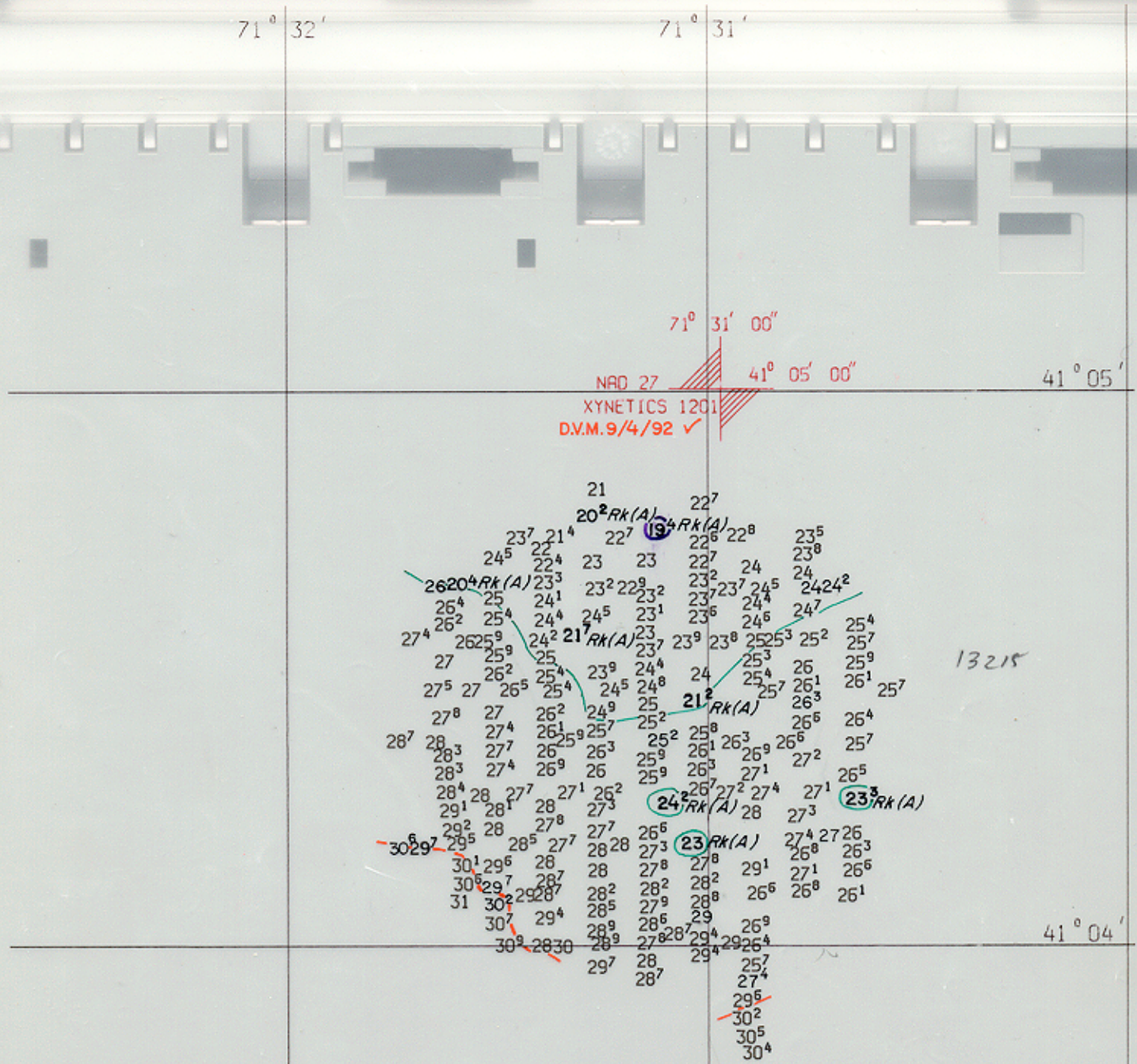


FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 08 AUG 1991 TO 29 AUG 1991
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 1 OF 8
AWOIS ITEM NUMBER 1767

1776 ?



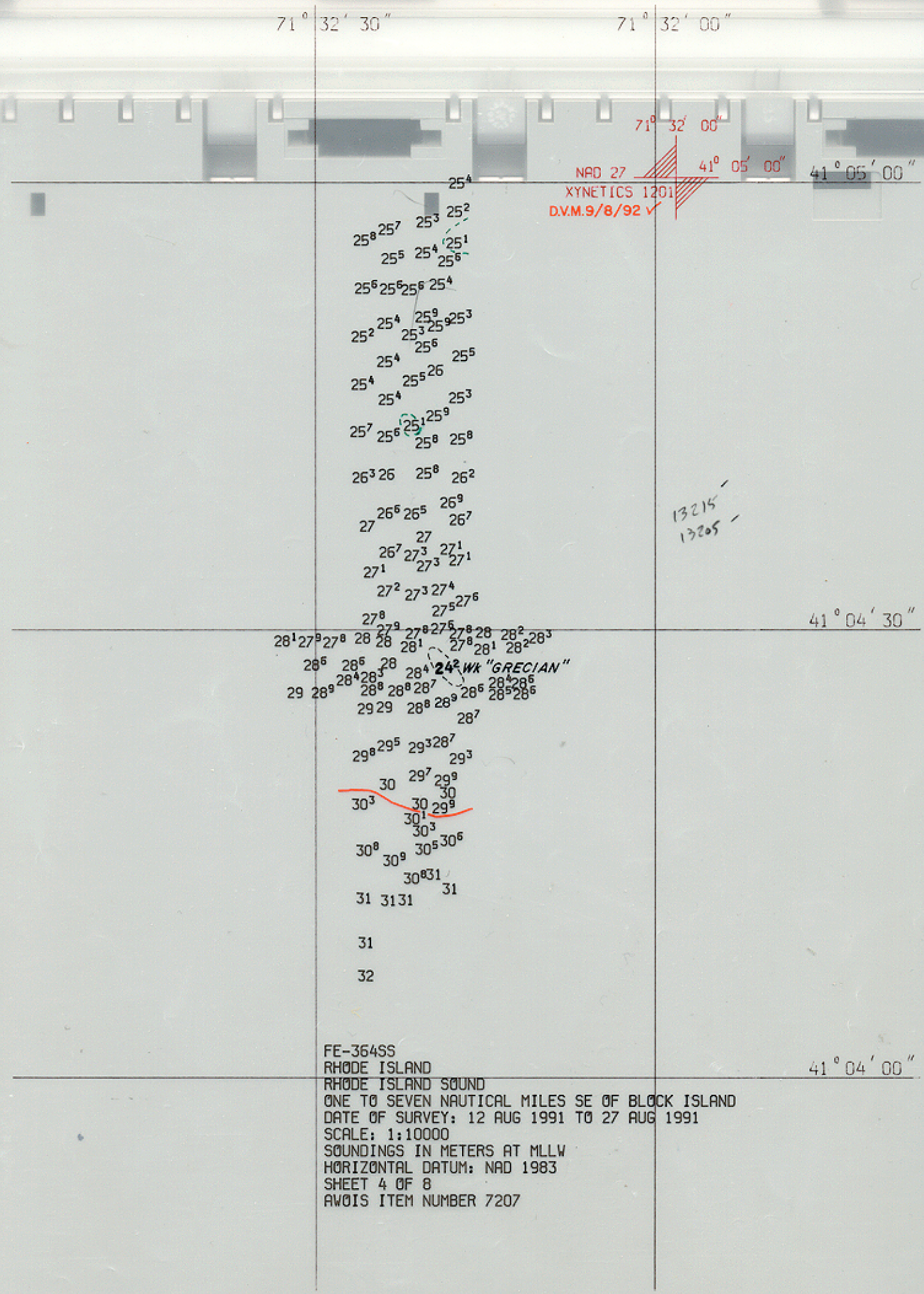
FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 09 AUG 1991 AND 12 AUG 1991
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 2 OF 8
AWOIS ITEM NUMBER 1768



13215

FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 13 AUG 1991 TO 14 AUG 1991
SCALE: 1:20000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 3 OF 8
AWOIS ITEM NUMBER 7666

(A) Depths on these obstructions were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computing offsets from the vessel's track.



FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 12 AUG 1991 TO 27 AUG 1991
SCALE: 1:10000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 4 OF 8
AWOIS ITEM NUMBER 7207

71° 36′ 71° 35′ 71° 34′ 71° 33′ 71° 32′

71° 32′ 00″

41° 07′ 00″ NAD 27

41° 07′

XYNETICS 1201
D.V.M. 9/9/92 ✓

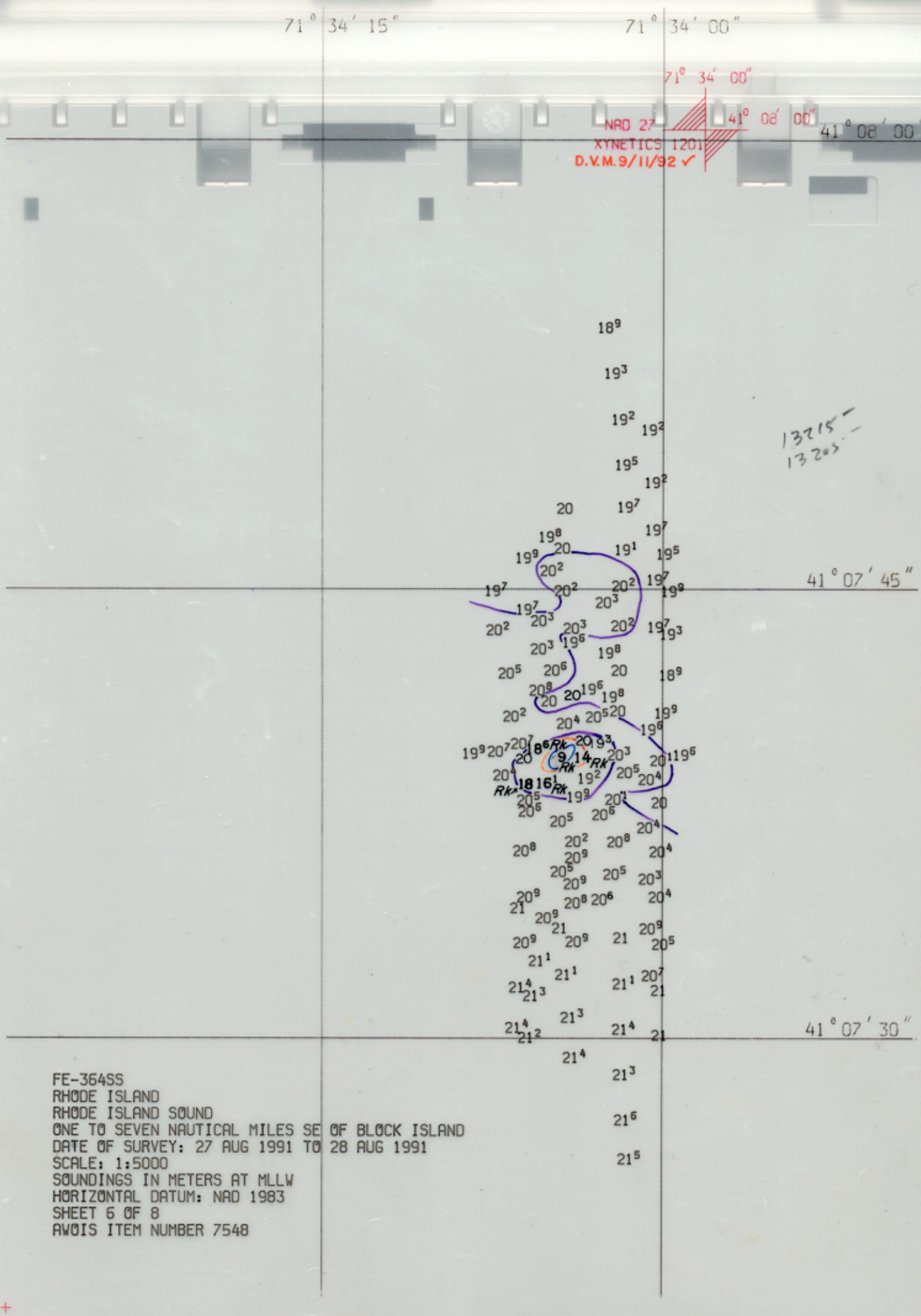
1321

41° 06′

41° 05′

FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 14 AUG 1991 TO 29 AUG 1991
SCALE: 1:20000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 5 OF 8
AWOIS ITEM NUMBER 1784

(A) Depths on these obstructions were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computing offsets from the vessel's track.



FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 27 AUG 1991 TO 28 AUG 1991
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 6 OF 8
AWOIS ITEM NUMBER 7548

71° 29′ 30″

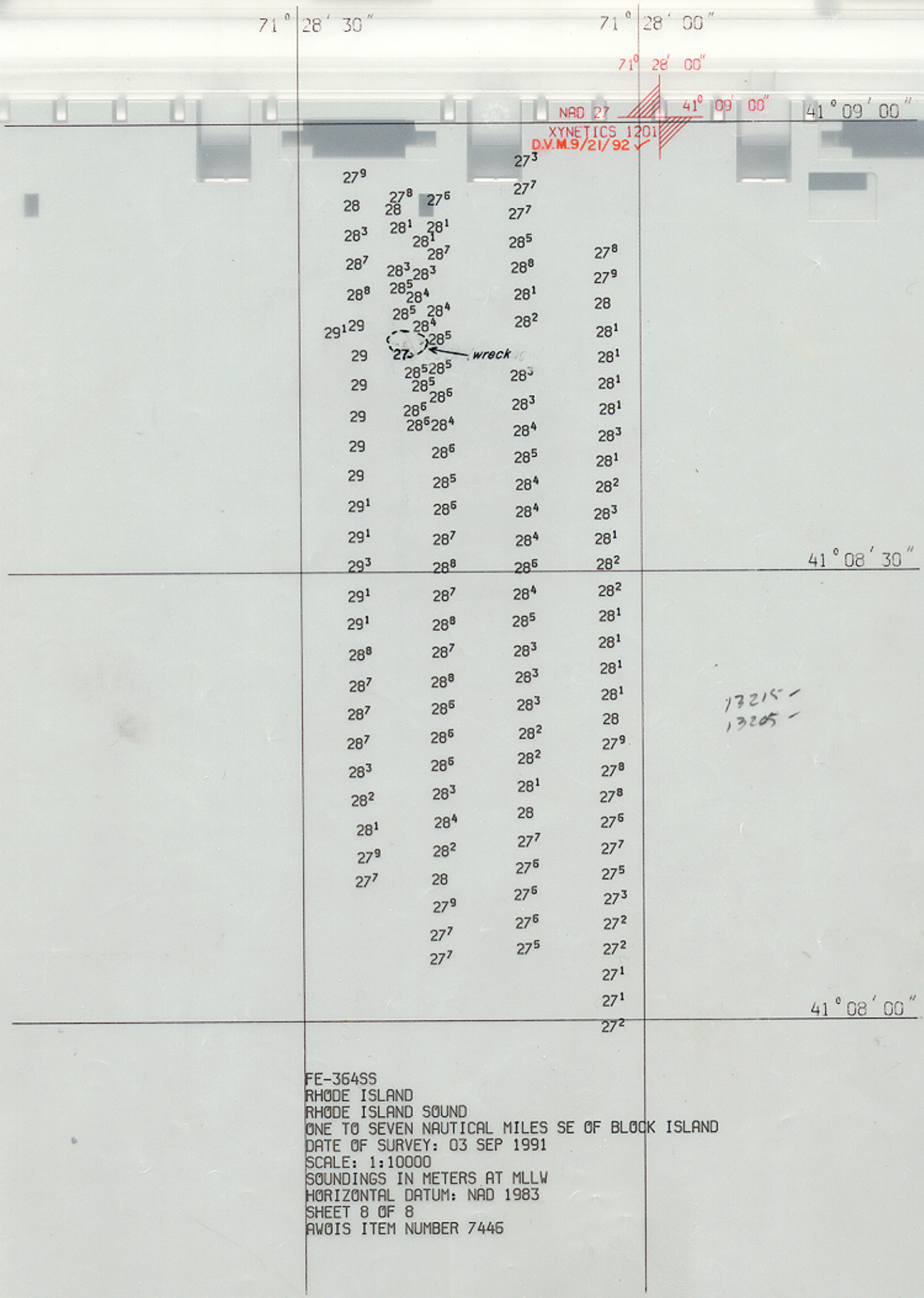
71° 29′ 00″

26⁸
26⁷
27
71° 29′ 00″
NAD 27 41° 07′ 00″ 41° 07′ 00″
XYNETICS 1201
D.V.M. 9/21/92 ✓
26⁸
26⁶
26⁴
26
25⁷
27¹
26⁹ 26² 25⁹
26⁷
26⁷ 26³ 26
27¹ 26⁸ 26⁵ 26³ 26¹ 25⁹
26⁶
26⁵ 17⁶ Wk "IDEANE" (trawler)
26² 26³ 26 26
26³
26¹
25⁹
26³
26²
26¹
25⁸
41° 06′ 30″
25⁶
25⁶
25⁷
26
26
26
26³
26¹
26

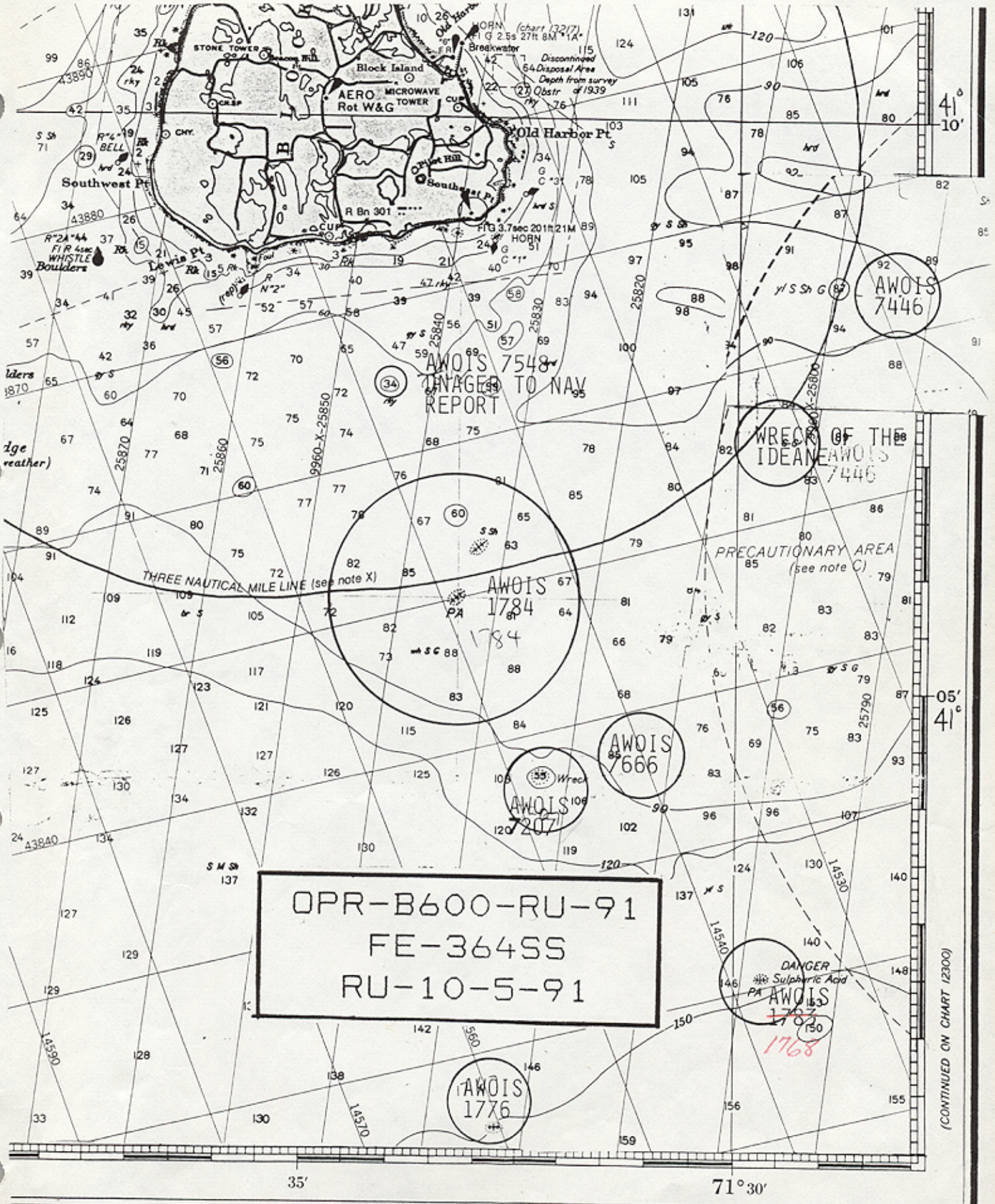
13215
13205

FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 30 AUG 1991 AND 18 SEP 1991
SCALE: 1:10000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 7 OF 8
WRECK "IDEANE"

41° 06′ 00″



FE-364SS
RHODE ISLAND
RHODE ISLAND SOUND
ONE TO SEVEN NAUTICAL MILES SE OF BLOCK ISLAND
DATE OF SURVEY: 03 SEP 1991
SCALE: 1:10000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 8 OF 8
AWOIS ITEM NUMBER 7446



N FEET

(Block Island Sound)

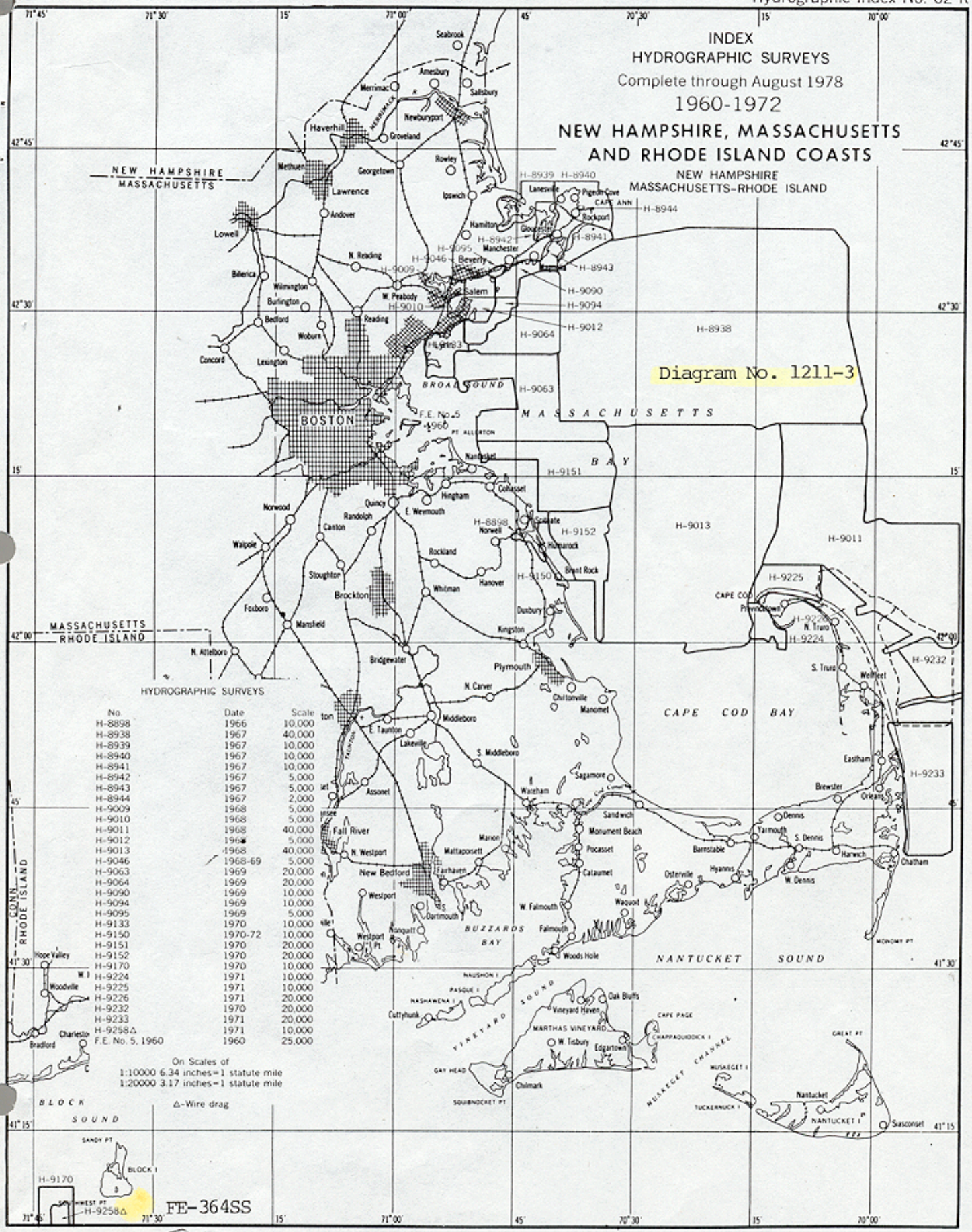
SOUNDINGS IN FEET - SCALE 1:80,000

13205

LORAN-C OVERPRINTED

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 62 R



NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-364SS

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
13215	12/9/93	Dan Hlavka	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 14 CRITICAL APPLICATION.
13205	12/10/93	Dan Hlavka	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 55 THRU 13215, CRIT. APPLIC.
13218	12/10/93	Dan Hlavka	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 70 CRIT. APPLIC.
12300	12/13/93	Dan Hlavka	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 57 CRIT. APPLIC. THRU 13205
13006	12/13/93	Dan Hlavka	~~Full~~ Part ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 49 CRIT. APPLIC. THRU 12300
13003	6/30/95	Glen Bain	(Full) Part Before After Marine Center Approval Signed Via
			Drawing No. 64
13215			
~~13215~~	8-17-95	D. Stanard PS	Full ~~Part Before After~~ Marine Center Approval Signed Via
			Drawing No. 15 Revised Sdgs & Curves
13205	8-17-95	D. Stanard PS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 55 Revised thru CHT 13215 #15
13218	8-29-95	Paul J. Pierce	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 70 - APPLIED THRU CHART 13205 DRG. # 55
12300	8-29-95	Paul J. Pierce	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. ~~70 - APPLIED THRU CHART 13205 DRG. # 55~~ → 70 - APPLIED THRU CHART 13205 DRG # 55

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED