

# FE270

## WIRE DRAG

Diagram No. 1211-3

NOAA FORM 76-35A

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

### DESCRIPTIVE REPORT

Type of Survey ... Wire Drag .....  
Field No. .... R/H-20-18-84 .....  
Office No. .... FE-270WD .....

#### LOCALITY

State ..... Rhode Island .....  
General Locality ... Block Island Sound .....  
Locality ..... Northwest of Block Island .....

19 84

CHIEF OF PARTY

LCDR R.K. Norris

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DATE ..... February 4, 1986 .....

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FE270  
WIRE DRAG

1 L-92(86)  
HTS:  
13215 } to sign off see  
13205 }  
1328 } Record of Application  
13300 }



HYDROGRAPHIC TITLE SHEET

FE-270WD

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.

R/H 20-18-84 ✓

State RHODE ISLAND ✓

General locality ~~SOUTHERN NEW ENGLAND COAST~~ BLOCK ISLAND SOUND ✓

Locality ~~NORTHVILLE CORRIDOR 71-30' to 71-42'W~~ NORTHWEST OF BLOCK ISLAND ✓

Scale 1:20,000 ✓ Date of survey 08 Aug. 84 - <sup>2</sup>17 Sept. 84 ✓

Instructions dated 12 April 84 ✓ Project No. OPR-B660-Ru/He-84 ✓

Vessel NOAA SHIPS RUDE(9040) & HECK(9140) ✓

Chief of party LCDR ROBERT K. NORRIS COMDG. ✓

Surveyed by R.K. NORRIS, N.G. MILLETT, E.M. CLARK, T.G. CALLAHAN, J.W. BAILEY ✓

Soundings taken by echo sounder, ~~hand lead, pole~~ <sup>Pneumatic Depth Gauge</sup> SONAR S/N's 088, 249 FATHO S/N's A116N, B051N ✓

Graphic record scaled by T.G.C., E.M.C, W.J.A. ✓

Graphic record checked by R.K.N., N.G.M., T.G.C., E.M.C. ✓

Protracted by N/A ✓ Automated plot by N/A ✓

Verification by Hydrographic Surveys Branch, Evaluation and Analysis Group, Atlantic Marine Center ✓

Soundings in fathoms feet at MLW MLLW Smooth ~~PREDICTED~~ TIDES ✓

REMARKS: All times recorded in UTC. For additional information, see the Horizontal Control Report, Coast Pilot Reports, and Loran-C Comparison Data for Project OPR-B660-RU/HE-84. ✓

STANDARDS CK'D 2-6-86

C. LOY

AWOIS/SURF MAY 12/88

~~REDACTED~~ AUG 1 1997



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*\* = Data removed from the Descriptive Report and filed with the field records.*



DESCRIPTIVE REPORT TO ACCOMPANY  
~~WIRE DRAG HYDROGRAPHIC SURVEY~~ FE-270 WD  
\* (FIELD NO. R/H 20-18-84)  
SCALE 1:20,000  
1984  
NOAA SHIPS RUDE AND HECK  
LCDR. ROBERT K. NORRIS COMDG.

A. Project Authority

This project was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU/HE-84, Southern New England Coast, dated April 12, 1984. There were two ammendments to the project instructions, change No. 1, dated 21 May, 1984 and change No. 2, dated 30 November, 1984. The purpose of this project, in order of priority, was to provide side scan sonar and wire-drag clearance of the Northville Industries Corporation oil tanker route, to provide clearance depths over selected wreck sites and to verify or disprove certain submerged wrecks along the south coast of New England. *Survey completed prior to issuance of this change.*

B. Characteristics and Limits of Survey

This report contains that area of the <sup>FE-269 WD (1984)</sup> one mile wide tanker route that junctions with R/H 20-19-84 to the east at longitude 071°-30'-00" W and R/H 20-17-84 at 071°-42'-00" W on the <sup>FE-266 55 (1984)</sup> west. The survey consisted of 100% side scan sonar coverage from latitude 071°-30'-00" W to 071°-36'-00" W. West of latitude 071°-36'-00" W to 071°-42'-00" W the survey required 200% side scan sonar coverage of the corridor. The 200% coverage is to verify that the two charted nondangerous wrecks (chart 12300; Automated Wreck and Obstruction Information System numbers 1849 and 1856) were in fact not a danger to the oil tankers. The report also includes wire drag Area 2. The wire drag operation area centered about a 75-foot charted sounding at position latitude 41°-16'-50" N and longitude 071°-36'-10" W, which originated with survey H-4005WD (1917-19). The wire drag operation required an investigation of 1/2 mile about this position. The project instructions also required the wire drag investigation of Area 2 to include the nearby 65 foot charted depth, approximately 500 yards to the southeast, which lies outside the approach corridor.

C. Survey Vessels

All operations on this survey were conducted by the NOAA Ships RUDE, Vesno 9040, and HECK, Vesno 9140.

D. Hydrographic Sheets

The hydrographic sheets used in this survey were made of mylar and were constructed with the Digital PDP 11/34 computer and the Houston Instruments roll-bed plotter aboard the Ship RUDE.



The field sheets R/H 20-18-84<sup>← FE-270 WD</sup> were plotted at a scale of 1:20,000 and were used to hand plot the towing vessel's position while on line for ship drag and side scan sonar operations. A smooth sheet was also plotted aboard the RUDE using the same equipment as described above. This smooth sheet was used to machine plot the towing vessel's position during the side scan sonar operations. The positions of the side scan sonar contacts were hand plotted on the smooth sheet. ~~The positions of the two wrecks and a wire drag obstruction are charted~~<sup>plotted</sup> on the smooth sheet. Least depths acquired by diver pneumatic soundings, which are corrected for predicted tides, accompany the appropriately ~~charted~~<sup>plotted</sup> symbols. ✓

The drag strips for JDs 237, 240, 250, 254, 255 and 261 of 1984 are plotted at a scale of 1:20,000. The drag strips were overlaid and hand plotted to produce the Area and Depth (A & D) sheets for R/H 20-18-84<sup>← FE-270 WD</sup>, which represent the opposing wire drags from east to west and west to east. The R/H 20-18-84<sup>← FE-270 WD</sup> A & D sheets were plotted at a scale of 1:20,000 and contain all the ship drag clearances of Area 2 for 1984, and the detached position of the hung boulder. ✓

## E. Equipment and Techniques

### (1) Survey Operations

The ship drag work was performed using standard wire drag equipment and techniques. The drags were tested often from the ships' Sisu launches. ✓

All side scan sonar coverage was accomplished with the Klein side scan sonar systems. Two Klein systems were provided for this survey by the Atlantic Marine Center. Each system consisted of a Model 521 recorder, serial number (S/N) 088 issued to the RUDE, and S/N 249 on the HECK, a 100 KHz towfish, a K-Wing depressor and a towcable. ✓

The two recorders have initial and maximum gain controls with numerical settings. This allowed for annotation of the sonargrams with a value for the initial and maximum gain settings at the start of the day and annotation of any changes in the settings that occurred during the day. ✓

One hundred per cent (100%) side scan sonar coverage was required for this section of the corridor from longitude 071°-36'-00"W east to longitude 071°-30'-00"W. The recorders were operated on the 200 meter scale for 150 meter track spacing, to accomplish this requirement. West of longitude 071°-36'-00"W to 071°-42'-00"W 200% side scan sonar coverage was required to verify the AWOIS wrecks 1849 and 1856 as nondangerous wrecks for oil tanker navigation in this portion of the corridor. The recorders were also operated on a 200 meter scale, but the track spacing was reduced to 100 meters, to develop maximum scanning overlap between tracks. ✓

Del Norte rates obtained on fixes were recorded with the Eaton Model 7000+ serial printers during this survey. These printers worked fairly well considering the fact that they were not designed to be operated in a marine environment. The printers would often print out a line of meaningless characters or rates ✓



from the previous fix before the current fix was recorded. The printer records were annotated such that these meaningless characters and extraneous rates were lined out leaving the correct fix rates clearly displayed.

Two Raytheon model DSF 6000N echo sounders, S/N B051N onboard the Ship RUDE and S/N A116N installed on the Ship HECK, were operated and annotated during all wire drag and side scan sonar operations in 1984. The low frequencies gain control settings were set on "MANUAL" during side scan sonar operations. This procedure eliminated any rebounding of the high frequency from small objects and fish in the water column. It is recommended that the gain controls of this echo sounding system be manually tuned and operated at a paper speed of 30mm/min, during operations in water shoaler than 100 feet, for optimum results.

Although it is not anticipated that these sounding records will be used for charting purposes, the settlement and squat data for the RUDE and HECK, obtained in Norfolk Harbor on 25 January, 1983, is included in this report. No velocity corrections or settlement and squat determinations were actually conducted within or during this project. The draft of the transducers on both vessels is 7.0 feet.

## (2) Diving Operations

A total of eight dives were conducted during this survey, on JDs 234, 254, 255 and 271. Three of the dives were associated with wire drag operations in Area 2. The remaining five dives took place on the two uncharted wrecks located during the survey.

The first three dives were performed on JD 234 on a side scan sonar contact in the tanker corridor. The pre-dive review of the sonargrams indicated that the bottom was in excess of 130 fsw (feet of seawater). The contact was very substantial and appeared to be a barge with a mast. The mast was indicated by a hyperbolic shadow, on the deck of the barge. However, what appeared to be, the shadow of the barge was so substantial it clearly was not a true indication of the height of the contact. Lieutenants Millett and Clark visited the Newport Historical Society library and discovered that a tar barge, the ONE-OH-ONE was reported sunk on February 10, 1955 at position latitude 41°-18'-00"N and longitude 071°-38'-30"W. This wreck was not currently listed in the Automated Wreck and Obstruction Information System, (AWOIS).

After taking into consideration, that the diving operations would be conducted between 100 to 130 fsw, LTJG Jonathan Bailey's assistance was requested as a fourth diver from the NMFS lab at the University of Rhode Island.

The RUDE deployed a weighted marker float on JD 234, after observing the contact on the DSF 6000N echo sounder. The launch ran an additional search with a Raytheon 719B echo sounder and deployed a second marker float. The first team of divers descended to a depth of 125 fsw and conducted a circle search. This procedure was followed on the initial two dives without locating the wreck. On the third dive the deck of the barge was located at a depth of 128 fsw. The weight on the float line was cut and the line was secured to the base of the barge mast and



again at the top of the mast. A wrist depth gage reading of 115 fsw was observed at the top of the mast. The divers also noted the barge bow windlass 15 feet forward of the mast. The visibility on the dive was excellent with approximately 30 feet horizontally and 30-40 feet vertically when looking up. The second dive team ascended to the launch after nine minutes on the bottom having depleted their bottom time.

The launch was then positioned directly over the wreck by the polypropylene float line. The pneumofathometer hose and a weight belt containing a total of twenty-four pounds of lead were secured to a large shackle. The shackle was then placed around the marker line and lowered to the top of the wreck's mast, and three least depth soundings were taken with the pneumofathometer. The minimum least depth recorded was 113.5 which had a pneumo corrector of +0.5 feet and a tide corrector of -2.5<sup>2</sup> feet applied to yield a least depth, corrected for ~~predicted~~ tides, of 111<sup>2</sup> feet MLLW.

The RUDE acquired a detached position on the marker float at position latitude 41°-17'-04.95" N and longitude 071°-37'-03.29" W.

The marker float deployed by the RUDE was recovered and the weight was totally covered with tar. This confirming, that the shadow initially thought to be the height of the wreck was in fact the absorption of the side scan signal by the tar surrounding the bottom.

On the 10th of September, JD 254, an obstruction was hung by wire drag operation. The hang occurred between buoys 1 and 2. The divers descended the upright on buoy 1 and located the obstruction, which was a rock, 55 feet from the upright. A marker float was secured to the rock and the divers returned to the launch. Three least and maximum depth readings were recorded on the second dive by the divers with the pneumofathometer. A minimum least depth reading of 62.5 feet was recorded and a +0.4 foot pneumo corrector along with a 0.0 foot tide corrector were applied to the initial reading to yield a least depth, corrected for ~~predicted~~ tides, of 61<sup>2</sup> feet MLLW. The position established at the marker buoy position was latitude 41°-16'-28.93" N and longitude 071°-35'-37.20" W. Excellent visibility was encountered during these dives and the bottom was observed to be extremely rocky in this portion of Area 2.

An additional hang occurred between buoys 5 and 6 on JD 255 in close proximity to the contact of the previous day. The divers went down the upright on buoy 5. The upright was directly over the rock, which was hung on the previous day. The divers observed a wrist depth gage reading on this rock of 65 feet. They then proceeded along the ground wire, a distance of 75 feet, to the obstruction. An additional wrist gage reading of 73 feet was taken on the obstruction, a relatively smaller rock than the prior hang. The horizontal and vertical visibility was excellent, and the divers were able to see the surface and the prior hang. It was apparent that the hang of JD 254 was the most significant feature in this area, which has a high concentration of tabular rocks of various sizes from 1 to 5 feet high.

It was noted by the divers that no toggle float was secured to the ground cable at 50 feet nicropress fitting, it has been a common practice to omit this toggle when the upright



lengths are greater than 45 feet. The ground wire does have a tendency to develop sag in this section, as a result of this omission. The divers observed at least 3 feet of sag in this section on JD 255.

The divers transmitted their observations after they returned to the launch. It was decided by the Command that no position or sounding would be required due to the nature of this hang.

The last two dives were conducted on JD 271, to identify a side scan sonar contact north of the corridor. The side scan sonar development of this contact was the result of information received from Gary Dow, the master of the R/V Dolphin of Dowling College.

The contact was located with the DSF 6000N echo sounder and a marker float deployed in the same manner as during operations on the ONE-OH-ONE. The divers conducted a circle search of the bottom and found the contact to be a steel hulled a fishing trawler, which was covered with fishing nets. The hull had a LOA of 60 feet and close examination revealed that the wooden decks were badly decomposed as was the hull. The highest point on the wreck was the port side of the A frame, and it was here that the divers secured the float line. The least and maximum depths were recorded on the second dive. A minimum least depth pneumatic sounding of 58.5 feet was observed at the top of the A frame. A pneumo corrector of +0.1 feet and a tide corrector of -2.0 feet adjusted the initial sounding to yield a least depth, corrected for predicted tides, of 57 feet MLW. The wreck's detached position was acquired by the RUDE at latitude 41°-15'-21.6" N and longitude 071°-34'-37.19" W.

Detailed drawings, item investigation sheets, and dive logs for these obstructions are included in Appendix F.

#### F. Control Stations

Two electronic control stations were used during this portion of the survey. The stations were:

Station Name	Position	Elev.
WATCH HILL LIGHTHOUSE (1873)	41°-18'-13.647" N 071°-51'-32.552" W	18.60 m
POINT JUDITH LIGHTHOUSE (1839)	41°-21'-39.323" N 071°-28'-54.826" W	19.81 m

All stations were located by NGS and the adjusted positions for these stations were obtained from published NGS horizontal control data. All stations are of Third-order, Class I control accuracy or better. The station positions are based on the North American Datum of 1927.

#### G. Calibration and Position Control

Vessel positioning for all work was accomplished with the Del Norte 520 series electronic positioning equipment operated at

a frequency of 9400 MHz in the range-range mode. A listing of DMU and master units used by the vessels during this survey are listed by Julian day in Appendix A. Remote unit, serial number 2897 was installed at WATCH HILL LIGHTHOUSE, (1873), station 01 and was coded 72 for JDs 221 thru 234. Remote unit, serial number 3003 was then installed at station 01 on JD 235 and was coded 84 until the completion of the survey on JD 271. Code 76, serial number 3004, was installed at POINT JUDITH LIGHTHOUSE, (1839), station 02 from JDs 221 thru 235, when the remote code was changed to code 86 for the remainder of the survey. ✓

The change in coding for these remote units was due to other users operating Del Norte 520 equipment with similar coding concurrently during this survey. ✓

A total of three (3) baseline calibrations were performed during this survey. Baseline calibration distances were determined by the HP 3800A electronic distance measuring instrument, serial number 0987A00157. The following is a list of the baseline calibrations, as measured by the HP 3800A: ✓

21 July, 1984 JD 203	Newport Naval Pier 2 to Gould Island, S.E. Pier	1933.2 m
31 August, 1984 JD 244	Newport Naval Pier 2 to Gould Island, S.E. Pier	1933.2 m
28 September, 1984 JD 272	Newport Naval Pier 2 to Gould Island, S.E. Pier	1933.2 m

 ✓

Daily visual calibrations were conducted west of Point Judith Harbor of Refuge and south of Matunnuck Point, or off the entrance to the Great Salt Pond on Block Island. The calibration procedures used were either three point sextant fixes or range sextant cuts. The calibration corrector data was computed using a HP 9815A computer, S/N 1825A02388, and the Hydro Cal Package-800730 and Geodetic Package-800610. ✓

The visual control used for three point sextant fix and range sextant cut calibrations are include in Appendix D. Signal list. ✓

The HECK experienced attenuation of the R1 rate and was unable to close calibrate on JD 227. This was attributed to extreme sea conditions. The RUDE conducted a systems check calibration on JD 228 without a closing calibration. The Del Norte rates were changed from 70 to 80 series on JD 235 and prevented the HECK from acquiring a closing calibration on this day. Operational time constaints on JD 240 prohibited both the RUDE and HECK from conducting a close calibration. The wire drag data on JD 241 was not adequate for smooth plotting. Consequently no closing calibrations were required. Reduced visibility and fog were responsible for signal attenuation of the R1 rate preventing the HECK form conducting an opening calibration on JDs 243 and 255. On JD 271, the HECK experienced an R2 correction greater than 10 meters during the opening calibration, although the closing calibration was within limits, the daily average was also greater than 10 meters. ✓



With the exception of the previously mentioned calibrations, all daily calibration correctors were within accuracy tolerances for a survey of this scale. Therefore, only the baseline calibration data should be applied to the raw position data during final processing. See Appendix A. for baseline calibration data.

The pneumofathometer was calibrated on 18 June, 1984, JD 170, off MT. Misery Shoal and north of the Port Jefferson East Jetty prior to commencing diving operations on this survey. An additional calibration was performed on 30 August, 1984, JD 243, 2.5 NM northwest of Block Island. All depths determined by this survey have been corrected for instrument error determined in Appendix E.

#### H. Dates of Survey

The survey began on August 18, 1984 (JD 221) and was completed on September 27, 1984 (JD 271).

#### I. Reduction and Processing of Data

Data collected during ship drag operations was manually entered in the wire drag volumes while on line. The position data was also entered in the Digital PDP 11/34 computer while on line. The programs used were the R/H Double Precision Wire Drag programs. The drag strips were then smooth plotted with the Houston Instruments roll-bed plotter. Effective depths from the reduced data were then drawn on the drag strips in colored pencil, each strip being done in the same color. Each day's strips were applied to the A&D sheet of the area in that day's color.

Test data was applied to the drags in a manner which differs slightly from the Wire-Drag Manual. This method has been used aboard the drag boats for the past several years and is a more conservative method. If the amount of lift increased during a drag when uprights remained unchanged, this decreased drag depth was applied back to a time halfway between the time of the earlier test with less lift and time of the later test with the greater lift. *- All lifts were recomputed and applied in accordance with the WIRE DRAG MANUAL during processing.*

Predicted tide correctors were then applied to the drag depths obtained. These predicted tide correctors were generated onboard with the ship's Digital PDP 11/34 computer and predicted tide tapes for 1984. These tide tapes were supplied to the ships by MOA 231. Hardcopy printouts of the predicted tide correctors used during this survey are included in the data file. *- Smooth tides have been applied to all data during processing.*

The changes in effective depth that occurred during a drag were applied at the exact time of change. Fix interval for the drag work was five minutes, therefore some changes in effective depth occurred between fixes. When this occurred the time was interpolated and drawn in appropriately. *- Changes in effective depth were done in accordance with the WIRE DRAG MANUAL during processing.*

All side scan sonar data was initially recorded in NOAA Form 77-44, Sounding Volumes. All header data, position numbers, time, and position control data were recorded in the appropriate columns in the volumes. The remarks column was used to record all line information, vessel rpms, length of towcable (measured from

the waterline to the towfish), vessel heading, and any other unusual or noteworthy remarks. The towfish layback was computed by adding the length of towcable out the stern plus the stern to antenna distance.

The computation of the towfish layback is not an exact determination of the layback but is an adequate method of plotting contacts. It is realized that there are two minor errors in using the length of towcable out the stern as a measurement. First the towfish is not directly astern of the towing vessel. Secondly, the actual horizontal component is less than the entire length of towcable deployed due to the depressing effect of the K-Wing on the towfish. This amount of error is insignificant when plotted at a scale of 1:20,000. There was good agreement between the plots of the same contact as observed on adjacent lines run in opposite directions.

Position data from the side scan sonar was entered in the Digital PDP 11/34 computer with a modified version of the R/H Double Precision Wire-Drag program. Rates for just one vessel were entered in this program and a single vessel position plot was generated with the Houston Instruments roll-bed plotter.

Side scan sonar coverage was computed and listed on the Side Scan Sonar Coverage Abstract. The required 100% side scan sonar coverage was obtained throughout the corridor from longitude 071°-36'-00" W east to longitude 071°-30'-00" W. 200% side scan coverage was completed west of longitude 071°-36'-00" W to longitude 071°-42'-00" W. Some sections of the designated 200% coverage area were influenced by acoustic and thermal interference. In this area of interference, greater than 100% but less than 200% coverage was completed. However, this area was subsequently wire dragged and cleared to effective depths of 70 feet or greater. It was in this area of side scan sonar coverage (less than 200% coverage) that the uncharted and unlisted wreck of the tar barge, ONE-OH-ONE, was located by the HECK.

The sonargrams from the side scan sonar work were examined while on line and then again at the end of the day. All notable contacts were flagged during each examination. These flagged contacts were then logged in the Side Scan Sonar Target Abstract for the field sheet. The Target Abstract was then completed and the contacts were plotted on the smooth field sheet containing the vessel position plots. The towfish layback was computed by adding the length of towcable deployed plus the stern to antenna distance (17.7m). The layback and range to target values from this abstract were the distances used to plot the contact positions. All values of towcable length on the sonargrams and in the sounding volumes refer only to the amount of cable from the waterline to the towfish. The Side Scan Sonar Target Lists were then compiled from the Target Abstracts and from the contact plots. The Del Norte rates of the contact positions were determined using a grid and arc overlay. These rates were then used to determine the latitude and longitude of the contact with the HP 9815 computer and the Geodetic Package program.



*See section 5. of the Evaluation Report.*

## J. Junctions and Splits

Field sheet R/H 20-18-84<sup>9</sup> junctions with field sheet R/H 20-18-84 to the east, at longitude 071°-30'-00" W. The west boundary of field sheet R/H 20-18-84 junctions with R/H 20-17-84 at longitude 071°-42'-00" W. There is adequate overlap with these contemporary surveys. *FE-270 WD* *FE-269 WD* *FE-26655*

Side scan sonar coverage was computed and listed on the Side Scan Sonar Coverage Abstract Form (see Appendix L). A thermocline was observed in the eastern portions of Block Island Sound during this survey. The thermocline reduced the effective scanning range below the 200 meter range scale in the vicinity of wire drag Area 2.

A moderate acoustical interference was encountered by the HECK on JD 236. This interference increased in frequency of occurrence and intensity on JDs 242 and 269, but only on the outer portion of the sonargram. The HECK attempted to locate the source of the interference. Shipboard equipment including the generators and main engines were secured when the interference was encountered without any significant reduction in the frequency or intensity of the interference.

The actual effective scanning range was determined by comparing two separate sonar coverage abstract computations. The first abstract was computed assuming no thermocline or acoustic interference. The second abstract was then computed for the most significant influence, either thermal or acoustic. Five splits, fixes 375-413 on JD 242, were conducted to complete the 200% coverage requirement. The completion of the 100% coverage also required five splits, fixes 414-438, which were run on JD 243. A portion of the area of 200% coverage centered about latitude 41°-17'-10" N and longitude 071°-37'-32" W only received 100% side scan sonar coverage. However, the majority of this section was located within the area of wire drag operations and was cleared to an effective depth of 70 feet or greater. It should also be noted that an unlisted wreck, determined to be the barge ONE-OH-ONE, was located with only 100% coverage.

## K. Comparison with Prior Survey - *See section 6. of the Evaluation Report.*

The side scan sonar and wire drag operations for field sheet R/H 20-18-84 were compared with prior survey H-6443 (1939), which was plotted at a scale of 1:40,000. The prior survey was used to determine the reduced depths over the side scan sonar contacts and are documented in the Side Scan Sonar Target List. The height of the target was subtracted from the prior survey depth at the target location to determine the least depth over the target. *FE-270 WD*

Six percent (6%) of side scan sonar contacts observed in the tanker corridor had heights of 10% or greater than the recorded prior depths. The shoalest reduced depth was 75.8 feet for contact 40, located at the position latitude 41°-16'-49.42" N, longitude 071°-36'-16.60" W. This contact was subsequently cleared by wire drag in opposing directions to an effective depth of 70.0 feet on JDs 255 and 256.

*by 72', west to east* *by 70', east to west*

9

*Contacts 61 & 62 (same contact) in Latitude 41° 17' 04.7" N, Longitude 71° 36' 04.7" W has the shoalest computed depth of 74.5 feet. This contact was cleared by wire drag in opposing directions to an effective depth of 72' (west to east) and 70' (east to west).*



The comparison of wire drag survey for Area 2 to the prior survey only indicates a discrepancy at the hang position on JD 254. The obstruction located at latitude  $41^{\circ}16'26.93''$  N, longitude  $071^{\circ}35'37.23''$  W (Loran-C rates X-25876.2, Y-43931.2, Z-60138.7, W-14528.4) has a least depth of  $63.2$  feet at MLW, corrected for ~~predicted~~ <sup>smooth</sup> tides, where the shoalest adjacent prior recorded depth was 66 feet. NC

The two unlisted wrecks were not charted on the prior survey. The steel hulled tar barge located by the RUDE on JD 234 at position latitude  $41^{\circ}17'04.95''$  N and longitude  $071^{\circ}37'03.29''$  W (Loran-C rates X-25890.9, Y-43938.2) has a least depth of  $11.2$  feet. The second wreck was located on JD 271 at position latitude  $41^{\circ}18'21.78''$  N and longitude  $071^{\circ}36'12.68''$  W (Loran-C rates W-14525.8, X-25886.2, Y-43946.0) with a least depth of  $57$  feet. This wreck was a fishing trawler with a steel hull of 60 feet LOA. 2917  
2923 ✓

L. Comparison with the Charts — *See sections 7a. & 7b. of the Evaluation Report.*

A comparison was made with NOS chart 13218, 26th Ed., Jan. 8/83, 1:80,000 scale, which is the largest scale chart of the survey area. The soundings that appear on the chart within the survey area are from prior survey H-6443 (1939). A comparison was made with this prior survey in the previous section of the report. *The largest scale chart covering the entire survey area is Chart 13215, scale 1:40,000* ✓

There was good agreement between the charted depths and the depths observed during the side scan sonar and wire drag operations. ✓

A symbol for a "Sunken wreck, <sup>over which depth is known</sup> not dangerous to surface navigation", number 15 of section O. DANGERS, on page 13 of CHART NO. 1, NAUTICAL CHART SYMBOLS AND ABBREVIATIONS EIGHTH EDITION, NOVEMBER 1984, should be charted at latitude  $41^{\circ}17'04.95''$  N and longitude  $071^{\circ}37'03.29''$  W (Loran-C rates X-25890.9, Y-43938.2), with a least depth, corrected for ~~predicted~~ <sup>smooth</sup> tides of  $11.2$  feet MLW. ~~Concur~~ The second wreck, a steel hulled fishing trawler 60 feet LOA, was located by the RUDE on JD 271 at latitude  $41^{\circ}18'21.78''$  N and longitude  $071^{\circ}36'12.68''$  W (Loran-C rates W-14525.8, X-25886.2, Y-43946.0). A symbol for a "Wreck over which depth is known" number 15 from section O. DANGERS of CHART NO. 1, should be charted at this position with a least depth of  $57$  feet MLW corrected for ~~predicted~~ <sup>smooth</sup> tides. ~~Concur~~ The obstruction hung during wire drag operations on JD 254, at latitude  $41^{\circ}16'26.93''$  N and longitude  $071^{\circ}35'37.23''$  W (Loran-C rates X-25876.2, Y-43931.2, Z-60138.7, W-14528.4) should be charted with symbol number 5, "Shoal sounding on isolated rock", from page 12 of section O. DANGERS, of CHART NO. 1. A least depth of  $63.2$  feet MLW, corrected for ~~predicted~~ <sup>smooth</sup> tides should accompany this symbol. ~~Concur~~ 2917  
2923 ✓  
NC

Regarding non-sounding features, one floating aid to navigation was contained within the limits of this field sheet, light list number 800, BLOCK ISLAND NORTH REEF LIGHTED BELL BUOY 1BI. The buoy was positioned by Del Norte on JD 271 by the HECK at latitude  $41^{\circ}15'29.64''$  N, longitude  $071^{\circ}34'37.19''$  W., which agrees with the charted position. ✓

*approximately 40 meters west of the charted position*



There is no shoreline within the limits of the survey for the corridor or wire drag Area 2. All presently charted landmarks in the vicinity of this section of the corridor were visually verified from offshore and are suitable as charted, with the exception of two landmarks. The two landmarks are CHARLESTOWN USN AIR STA W TANK, 1968, and CHARLESTOWN USN FIELD CONT TWR, 1943. The tank was located at position, latitude  $41^{\circ}22'23.72''$  N and longitude  $071^{\circ}39'44.06''$  W, and was the higher of two tanks, both of which have been destroyed. The tower was positioned at latitude  $41^{\circ}22'05.58''$  N and longitude  $071^{\circ}39'51.74''$  W, and has also been destroyed. No additional landmarks or aids to navigation were noted in the area as suitable for charting. ✓

#### M. Adequacy of Survey

The portion of the corridor west of longitude  $071^{\circ}36'00''$  W to longitude  $071^{\circ}42'00''$  W required 200% side scan sonar coverage. This requirement was to verify that the two charted nondangerous wrecks (charted 12300; Automated Wreck and Obstruction Information System numbers 1849 and 1856) are in fact not a danger to the oil tankers. <sup>Concur</sup> The corridor in the vicinity of these charted wreck positions received 200% side scan sonar coverage. A portion of the corridor which overlapped with the wire drag Area 2 was scanned to 100% coverage because of reduction in effective scanning range due to thermal and acoustic interference. This section was subsequently wire dragged and cleared to effective depths of 70 feet or deeper. It should also be noted that the wreck of the tar barge was located within this portion of 100% side scan sonar coverage. A section of the corridor designated for 200% side scan sonar coverage about latitude  $41^{\circ}17'09''$  N and longitude  $071^{\circ}38'18''$  W was not covered by wire drag and received coverage greater than 100% but less than 200%. ✓

As required in the Project Instructions, Area 2 was to be cleared in opposing directions by ship wire drag. The section of Area 2 contained within the limits of the corridor was cleared from east to west to a minimum effective depth of ~~65~~<sup>63</sup> feet. This area of the corridor is clear of obstructions that would be a concern for deep draft tanker traffic. The subsequent wire drags from west to east obtained a minimum effective depth of 70 feet in the corridor. A rotary current, effecting the northern extreme of the corridor in Area 2, caused a southerly deviation, which resulted in a small section of Area 2 only being dragged in an east to west direction. The section was positioned about latitude  $41^{\circ}17'19''$  N and longitude  $071^{\circ}36'10''$  W. However, the side scan coverage of this section indicates no significant contacts within this portion. <sup>Concur</sup> ✓

The southern section of Area 2 adjacent to the tanker corridor was completely wire dragged in opposing directions. The wire drag operations from west to east hung an obstruction on JD 254 which had a least depth of ~~63~~<sup>62</sup> feet ~~M.L.W.~~<sup>M.L.W.</sup>, corrected for ~~predicted~~<sup>strength</sup> tides. The subsequent drags from east to west cleared the southerly section to a minimum effective depth of 59 feet. This section of Area 2, south of the corridor, contains numerous rocks and this should be avoided by deep draft tanker traffic. <sup>Concur</sup> ✓

#### N. Incomplete Items

The command feels that sufficient development of the survey area was achieved by side scan sonar, wire drag or by the combination of these operations. The survey has satisfied the intent of the project instructions and, in this respect, has no incomplete items. *Concur*

#### O. Hangs and Groundings

Two hangs occurred during wire drag operations on JDs 254 and 255. The hangs were investigated by divers. The obstruction, located on JD 254, was marked with a buoyed line for positioning and least depths readings were acquired. The underwater visibility was excellent on all dives and the divers were able to identify the hung obstructions, on JD 254, as a significant topographical feature.

On JD 255 an obstruction was hung 75 feet away from the previous days position. This obstruction was observed to be 8 feet deeper than the hang on JD 254. Since the obstruction on JD 254 was clearly the dominant feature in this location, no position or depth was recorded for this hang.

Complete descriptions of these hangs are contained in subsection (2) Diving Operations, of section E., Equipment and Techniques, and Appendix F.

#### P. Currents and Winds

Tidal currents were closely monitored during the course of this survey, since ship drag operations had to be run with the predominate current flow to result in satisfactory lift data. Also diving operations were conducted during periods of minimum current. Comparisons were made with the Tidal Current Tables 1984, Atlantic Coast of North America for stations 2221, 2226, 2281 and The Race. In general, the times and strengths of maximum flood and ebb and times of slack water at the surface agreed with the predicted times and strengths under normal conditions. The currents north of Sandy Point on Block Island in the vicinity of station 2221 were observed to be rotary in nature.

#### Q. Personnel

The officers participating in this survey were LCDR Robert K. Norris, LT Neal G. Millett, LT Edward M. Clark, LTJG Thomas G. Callahan, and LTJG Jonathan Bailey.

#### R. General Notes

Considerable assistance was rendered by Gary Dow, Master of the R/V Dolphin of Dowling College located at Oakdale, N.Y. Mr. Dow contacted the HECK and provided the position and information on the two wrecks in this survey. Based on this preliminary information additional research was done at the Newport Historical Society Library, in Newport R.I.



The majority of charting recommendations have been made in the discussion of section L. Comparison with the Charts, and are as follows:

(1) Chart the symbol number 16<sup>5</sup>, "Sunken wreck<sup>over which depth is known</sup>, not dangerous to surface navigation", for the tar barge located at latitude 41°-17'-04.95" W and longitude 071°-37'-03.29" W with a least depth, corrected for ~~predicted~~<sup>smooth</sup> tides, of 111<sup>2</sup> feet M.L.W. - Concur

(2) Chart the symbol number 15, "Wreck over which depth is known", for the trawler located at latitude 41°-18'-21.78" N and longitude 071°-36'-12.68" W, with a least depth, corrected for ~~predicted~~<sup>smooth</sup> tides, of 57 feet M.L.W. - Concur

(3) Chart the symbol number 5, "Shoal sounding on isolated rock", for the rock obstruction hung by wire drag at latitude 41°-16'-26.93" N and longitude 071°-35'-37.21" W, with a least depth, corrected for ~~predicted~~<sup>smooth</sup> tides of 63<sup>2</sup> feet M.L.W. - Concur

(4) Chart abbreviation PD, "Position doubtful" for the wrecks presently ~~located~~<sup>charted</sup> at latitude 41°-17'-00" N, longitude 071°-38'-00" W and latitude 41°-16'-30" N, longitude 071°-40'-00" W, Chart 12300, AWOIS numbers 1849 and 1856, <sup>respectively</sup> - Concur

The format of this report is a composite of the Descriptive Report formats contained in the Wire Drag and Hydrographic Manuals. This format is the optimum composite of the pertinent sections of the two reports and is more applicable to the surveys currently being conducted by the RUDE and HECK. - Concur

Respectfully submitted

*Edward M. Clark Jr.*

Edward M. Clark Jr, LT. NOAA

#### S. Approval Sheet

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.

*Robert K. Norris*

Robert K. Norris, LCDR, NOAA

Commanding Officer  
NOAA Ships RUDE and HECK

### C. HORIZONTAL CONTROL

No new stations were established for this survey. See Appendix D., Signal List for a complete listing of all stations used on this survey. ✓



**D. SIGNAL LIST**

OPR-2660-RU/HE-84

~~BLOCK IS. CONT'D  
WATCH HILL LIGHTHOUSE (1873)~~

~~ID NBR 12  
LAT 41°18'13.64"X7"  
LON 71°51'32.55"X0"  
ELEV N 18.69 M  
FILE 12~~

~~GREEN HILL LIGHT TOWER  
FLAG TOWER (1939)~~

~~ID NBR 16  
LAT 41°21'55.260  
LON 71°35'44.218  
FILE 16~~

~~WHITE CHURCH TOWER  
(1939)~~

~~ID NBR 20  
LAT 41°24'02.220"  
LON 71°34'20.230"  
FILE 20~~

~~CHARLESTOWN USN AIR STA  
W TANK (1968)~~

~~ID NBR 13  
LAT 41°22'23.722  
LON 71°39'44.059  
ELEV N 38.10 M  
FILE 13~~

~~MAIN BREAKWATER CENTER  
LIGHT 2 (1948)~~

~~ID NBR 17  
LAT 41°21'14.900"  
LON 71°38'27.964"  
FILE 17~~

~~CHARLESTOWN USN AIR STA  
E. TANK (1968)~~

~~ID NBR 14  
LAT 41°22'24.531  
LON 71°39'43.685  
FILE 14~~

~~PNT JUDITH HARBOR OF ARMS  
MAIN BREAKWATER WEST LIGHT  
(1948)~~

~~ID NBR 18  
LAT 41°21'40.595  
LON 71°38'49.388  
FILE 18~~

~~CHARLESTOWN, U.S. NAVY AIRFIELD  
AIR FIELD CONTROL TOWER  
(1943)~~

~~ID NBR 15  
LAT 41°22'05.584  
LON 71°39'51.740  
FILE 15~~

~~PNT JUDITH HARBOR OF ARMS  
WEST BREAKWATER LIGHT  
(1948)~~

~~ID NBR 19  
LAT 41°21'55.710"  
LON 71°38'54.886"  
FILE 19~~

OPR-3660-RU/HE-84

SIGNALS/STATIONS

~~Block Island North  
Lighthouse (1874)~~ ✓

~~ID NBR 1  
LAT 41°13'39.081" ✓  
LON 71°34'34.864" ✓  
ELEV'N 17.68' ✓~~

~~FILE 1~~

~~Beacon Hill Tower  
(1928)~~

~~ID NBR 5  
LAT 41°19'31.400  
LON 71°35'30.895~~

~~FILE 5~~

~~Lone House (1939)~~

~~ID NBR 9  
LAT 41°12'49.560  
LON 71°33'35.700~~

~~FILE 9~~

~~Outer Red Light (1912)~~

~~ID NBR 2  
LAT 41°10'30.500  
LON 71°33'22.000~~

~~FILE 2~~

~~Gt. Salt Pond Bkwr  
Outer End Lt. (1941)~~ ✓

~~ID NBR 6  
LAT 41°11'57.115" ✓  
LON 71°35'37.231" ✓~~

~~FILE 6~~

~~Springhouse  
Capota (1911)~~

~~ID NBR 10  
LAT 41°10'04.360  
LON 71°33'19.320~~

~~FILE 10~~

~~Block Is lbrs. Saving  
Sta. Chim. (1911)~~

~~ID NBR 3  
LAT 41°05'48.840  
LON 71°36'30.270~~

~~FILE 3~~

~~Gt. Salt Pond Bkwr  
Inner End Lt. (1941)~~ ✓

~~ID NBR 7  
LAT 41°11'44.874" ✓  
LON 71°35'25.578" ✓~~

~~FILE 7~~

~~Point Judith  
Lighthouse (1839)~~ ✓

~~ID NBR 11  
LAT 41°21'39.320" ✓  
LON 71°28'54.826" ✓  
ELEV'N 19.81' ✓~~

~~FILE 11~~

~~Baptist Church  
Steeple (1911)~~

~~ID NBR 4  
LAT 41°10'04.806  
LON 71°36'06.309~~

~~FILE 4~~

~~Block Is. S.E.  
Lighthouse (1874)~~

~~ID NBR 8  
LAT 41°09'09.564  
LON 71°33'09.585~~

~~FILE 8~~



**E. PNEUMO DEPTH GAUGE REPORT**

PNEUNOFATHOMETER CALIBRATION  
S/N 784996

30 AUG 1984, JD 243

Pneumo: ENS Callahan  
Recorder: JST Anoushian  
Leadline: OS Lewis

Location: 2.5 NM north of  
Block Island, RI

Wx: Hazy, Winds: SS 10 kts,  
Seas: 1 ft, Swell: none  
Vis: 4 NM

Lead- line	Pneumo.		Corr.		Lead- line	Pneumo.		Corr.		Lead- line	Pneumo.		Corr.	
	Down	Up	Down	Up		Down	Up	Down	Up		Down	Up	Down	Up
2ft	1.5	2.0	+0.5	0.0	52ft	51.8	52.0	+0.2	0.0	102ft	101.5	102.0	+0.5	0.0
4	3.5	4.4	+0.5	-0.4	54	53.5	54.0	+0.5	0.0	104	103.5	102.8	+0.5	+1.2
6	6.0	6.5	0.0	-0.5	56	55.5	56.3	+0.5	-0.3	106	105.0	105.0	+1.0	+1.0
8	8.0	8.4	0.0	-0.4	58	57.9	58.0	+0.1	0.0	108	106.9	107.5	+1.1	+0.5
10	9.5	10.0	+0.5	0.0	60	59.2	59.8	+0.8	+0.2	110	108.5	109.2	+1.5	+0.8
12	11.8	12.2	+0.2	-0.2	62	61.5	61.8	+0.5	+0.2	112	110.9	111.5	+1.1	+0.5
14	13.8	14.0	+0.2	0.0	64	63.8	64.4	+0.2	-0.4	114	113.5	113.5	+0.5	+0.5
16	16.0	16.2	0.0	-0.2	66	65.8	65.5	+0.2	+0.5	116	115.5	115.6	+0.5	+0.4
18	17.8	18.0	+0.2	0.0	68	67.7	68.0	+0.3	0.0	118	117.6	117.5	+0.4	+0.5
20	20.2	20.8	-0.2	-0.8	70	69.0	70.4	+1.0	-0.4	120	119.5	118.8	+0.5	+1.2
22	22.0	22.3	0.0	-0.3	72	71.5	72.0	+0.5	0.0	122	121.3	121.3	+0.7	+0.7
24	24.0	24.0	0.0	0.0	74	74.0	73.8	0.0	+0.2	124	123.0	123.0	+1.0	+1.0
26	25.9	26.2	+0.1	-0.2	76	75.5	75.5	+0.5	+0.5	126	125.0	124.9	+1.0	+1.1
28	27.9	28.0	+0.1	0.0	78	77.0	77.0	+1.0	+1.0	128	126.7	127.3	+1.3	+0.7
30	30.5	30.2	-0.5	-0.2	80	80.0	79.5	0.0	+0.5	130	128.8	128.8	+0.2	+0.2
32	31.9	32.0	-0.1	0.0	82	81.6	82.0	+0.4	0.0					
34	33.8	34.2	+0.2	-0.2	84	83.0	84.0	+1.0	0.0					
36	36.0	36.4	0.0	-0.4	86	85.6	85.8	+0.4	+0.2					
38	38.0	38.0	0.0	0.0	88	87.9	88.0	+0.1	0.0					
40	39.8	40.2	+0.2	-0.2	90	89.2	90.0	+0.8	0.0					
42	41.5	41.8	+0.5	+0.2	92	91.5	92.0	+0.5	0.0					
44	43.8	44.5	+0.2	-0.5	94	94.0	93.5	0.0	+0.5					
46	45.9	45.9	+0.1	+0.1	96	95.5	96.0	+0.5	0.0					
48	47.8	48.4	+0.2	-0.4	98	97.0	97.5	+1.0	+0.5					
50	50.0	50.5	0.0	-0.5	100	99.5	99.3	+0.5	+0.7					

PNEUMOFATHOMETER CALIBRATION

LOCATION: PORT JEFFERSON, N.Y. EAST OF MT. MISERY SHOAL

PERSONNEL:

PNEUMO: LT CLARK

LAEDLINE: MIKE JONES

DATE: JD 170  
18 June 84

WX: Cloudy

WIND: E, 5kts.

SEAS: Calm

SWELLS: 1'

LEADLINE (ft.)	PNEUMO. (ft.)		CORRECTOR (ft.)		LEADLINE (ft.)	PNEUMO. (ft.)		CORRECTOR (ft.)	
	DOWN	UP	DOWN	UP		DOWN	UP	DOWN	UP
2.0	<u>2.0</u>	<u>2.0</u>	<u>0.0</u>	<u>0.0</u>	52.0	<u>51.0</u>	<u>51.2</u>	<u>+1.0</u>	<u>+0.8</u>
4.0	<u>4.0</u>	<u>4.0</u>	<u>0.0</u>	<u>0.0</u>	54.0	<u>53.0</u>	<u>53.2</u>	<u>+1.0</u>	<u>+0.8</u>
6.0	<u>6.0</u>	<u>6.0</u>	<u>0.0</u>	<u>0.0</u>	56.0	<u>55.0</u>	<u>55.0</u>	<u>+1.0</u>	<u>+1.0</u>
8.0	<u>8.0</u>	<u>8.0</u>	<u>0.0</u>	<u>0.0</u>	58.0	<u>57.0</u>	<u>56.8</u>	<u>+1.0</u>	<u>+1.2</u>
10.0	<u>10.0</u>	<u>10.0</u>	<u>0.0</u>	<u>0.0</u>	60.0	<u>59.0</u>	<u>58.2</u>	<u>+1.0</u>	<u>+1.2</u>
12.0	<u>11.8</u>	<u>12.0</u>	<u>+0.2</u>	<u>0.0</u>	62.0	<u>60.8</u>	<u>60.8</u>	<u>+1.2</u>	<u>+1.2</u>
14.0	<u>14.0</u>	<u>14.0</u>	<u>0.0</u>	<u>0.0</u>	64.0	<u>62.8</u>	<u>62.6</u>	<u>+1.2</u>	<u>+1.4</u>
16.0	<u>16.0</u>	<u>16.0</u>	<u>0.0</u>	<u>0.0</u>	66.0	<u>65.0</u>	<u>64.5</u>	<u>+1.0</u>	<u>+1.5</u>
18.0	<u>18.0</u>	<u>18.0</u>	<u>0.0</u>	<u>0.0</u>	68.0	<u>67.0</u>	<u>66.5</u>	<u>+1.0</u>	<u>+1.5</u>
20.0	<u>20.0</u>	<u>20.0</u>	<u>0.0</u>	<u>0.0</u>	70.0	<u>68.5</u>	<u>68.5</u>	<u>+1.5</u>	<u>+1.5</u>
22.0	<u>22.0</u>	<u>21.8</u>	<u>0.0</u>	<u>+0.2</u>	72.0	<u>70.5</u>	<u>70.5</u>	<u>+1.5</u>	<u>+1.5</u>
24.0	<u>24.0</u>	<u>24.0</u>	<u>0.0</u>	<u>0.0</u>	74.0	<u>72.5</u>	<u>72.5</u>	<u>+1.5</u>	<u>+1.5</u>
26.0	<u>26.0</u>	<u>26.0</u>	<u>0.0</u>	<u>0.0</u>	76.0	<u>74.5</u>	<u>74.5</u>	<u>+1.5</u>	<u>+1.5</u>
28.0	<u>28.0</u>	<u>27.5</u>	<u>0.0</u>	<u>+0.5</u>	78.0	<u>76.5</u>	<u>76.5</u>	<u>+1.5</u>	<u>+1.5</u>
30.0	<u>30.0</u>	<u>29.5</u>	<u>0.0</u>	<u>+0.5</u>	80.0	<u>77.8</u>	<u>78.5</u>	<u>+2.2</u>	<u>+1.5</u>
32.0	<u>31.5</u>	<u>31.5</u>	<u>+0.5</u>	<u>+0.5</u>	82.0	<u>80.5</u>	<u>80.5</u>	<u>+1.5</u>	<u>+1.5</u>
34.0	<u>33.5</u>	<u>33.5</u>	<u>+0.5</u>	<u>+0.5</u>	84.0	<u>82.5</u>	<u>82.5</u>	<u>+1.5</u>	<u>+1.5</u>
36.0	<u>35.5</u>	<u>35.5</u>	<u>+0.5</u>	<u>+0.5</u>	86.0	<u>84.5</u>	<u>84.0</u>	<u>+1.5</u>	<u>+2.0</u>
38.0	<u>37.8</u>	<u>37.8</u>	<u>+0.2</u>	<u>+0.2</u>	88.0	<u>86.0</u>	<u>86.0</u>	<u>+2.0</u>	<u>+2.0</u>
40.0	<u>39.5</u>	<u>39.8</u>	<u>+0.5</u>	<u>+0.2</u>	90.0	<u>88.0</u>	<u>88.0</u>	<u>+2.0</u>	<u>+2.0</u>
42.0	<u>41.5</u>	<u>41.5</u>	<u>+0.5</u>	<u>+0.5</u>	92.0	---	---	---	---
44.0	<u>43.5</u>	<u>43.5</u>	<u>+0.5</u>	<u>+0.5</u>	94.0	---	---	---	---
46.0	<u>45.4</u>	<u>45.5</u>	<u>+0.6</u>	<u>+0.5</u>	96.0	---	---	---	---
48.0	<u>47.0</u>	<u>47.2</u>	<u>+1.0</u>	<u>+0.8</u>	98.0	---	---	---	---
50.0	<u>49.0</u>	<u>49.2</u>	<u>+1.0</u>	<u>+0.8</u>	100.0	---	---	---	---



**F. DIVING REPORT**

ITEM INVESTIGATION

DATE: 21 August, 1984 JD 234

SHIP/LAUNCH: Rude & Heck / Launch 25

LOCATION: 4.5 NM to the NW of Block Island on field sheet R/H 20-18-84.

DIVE MASTER LT Clark / RET Smith

TIMES (UTC)

DIVERS: LT Clark

IN WATER

LTJG Bailey

UNDER WATER

ENS Callahan

ON SURFACE

RET Smith

IN BOAT

MAXIMUM DEPTH Not to exceed 130 fsw

DIVE DURATION Not to exceed 10 minutes.

PNEUMOFATHOMETER NO. # 784996

ITEM ONE-OH-ONE

ITEM

ITEM

POSITION Lat. 41°-17'-04.95"N  
Long. 71°-37'-03.29"W

POSITION

POSITION

LEAST DEPTH

LEAST DEPTH

LEAST DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

1. 1801 / 113.5' Pneumo Depth: 113.5' ✓  
2. 1801 / 113.5' Pneumo Corr: +0.5' ✓  
3. 1802 / 114.0' 114.0' ✓

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

BOTTOM

Tide Corr @

BOTTOM

TIME(UTC) DEPTH

UTC 1801

TIME(UTC) DEPTH

1. N/A  
2. \_\_\_\_\_  
3. \_\_\_\_\_

Least Depth -2.52  
111.5'

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

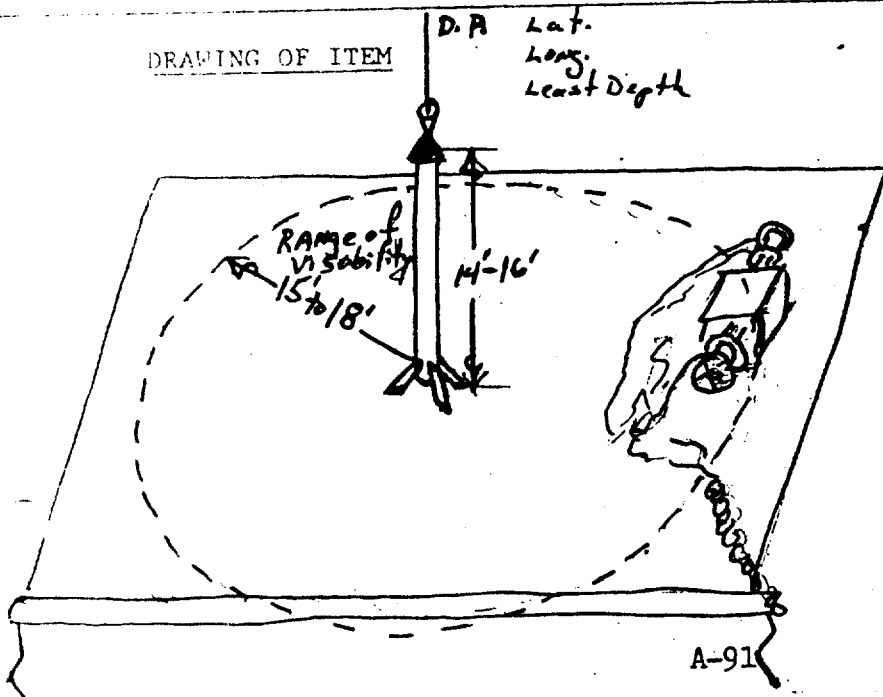
TIME(UTC) DEPTH

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

*plotted depth 112'*

DRAWING OF ITEM

DESCRIPTION OF ITEM



The One-Oh-One is a steel tar barge with a beam of approx. 30'. The DP for least depth was taken on a 3" steel mast, that was located by repeated fatho scans from the launch. The max depth and LOA could not be acquired due to the short duration of the dive. Visibility was excellent for the depth and no point was observed shoaler than the DP. The standard procedure with the pneumo was modified, the hose was secured to a large shackle with 18lbs and then slid down the line



DIVING OPERATIONS

Date: 21 August, 1984 JD 234 Unit: RUDE & HECK / Launch 25

Divemaster: LT Clark, RET Smith Lead diver: RET Smith, LT Clark

Purpose of Dive: Locate, identify and determine the least depth of the contact at latitude 41-17-05.0" N, longitude 71-37-03.3" W. The survey sonargrams and fathograms indicate that the bottom depth is in excess of 130 fsw prohibiting divers from taking a max depth reading using standard pneumofathometer procedures.

Equipment: Standard open circuit scuba with wet suits and accessory equipment as prescribed by NOAA Diving Regulations

Planned Depth: Not to exceed 130 fsw Planned Duration: Not to exceed 10 minutes

Divers	IN Pressure	Out Pressure	Pressure	In Time (UTC)	Out Time	Time	Depth	Comments
Smith	2900	1600	1400	1533	1538	05	125	5/ 130'
Callahan	3100	1850	1350	1533	1538	05	125	5/ 130'
Smith	2950	1550	1400	1622	1627	05	125	5/ 130'
Callahan	3100	1700	1400	1622	1627	05	125	5/ 130'
Clark	3050	1450	1600	1731	1741	10	128	10/130'
Bailey	3000	1200	1800	1731	1741	10	125	10/130'

Post dive comments: The first two dives did not locate the contact, however, the third dive found it to be a steel barge with a beam of approximately 30'. A mast of 3" steel was found to be on the centerline of the barge and was 14-16' in height. The marker float was secured about a foot from the top of the mast. The divers had all approached the no decompression limits and additional dives could not be completed without making decompression stops. The standard pneumofathometer procedures were modified by taking all the slack out of the float line and sliding the pneumo hose, secured to a large shackle with 18 lbs., down the line where three least depth soundings were acquired.

LT Ed Clark / George E. Smith RET  
Divemaster Signature

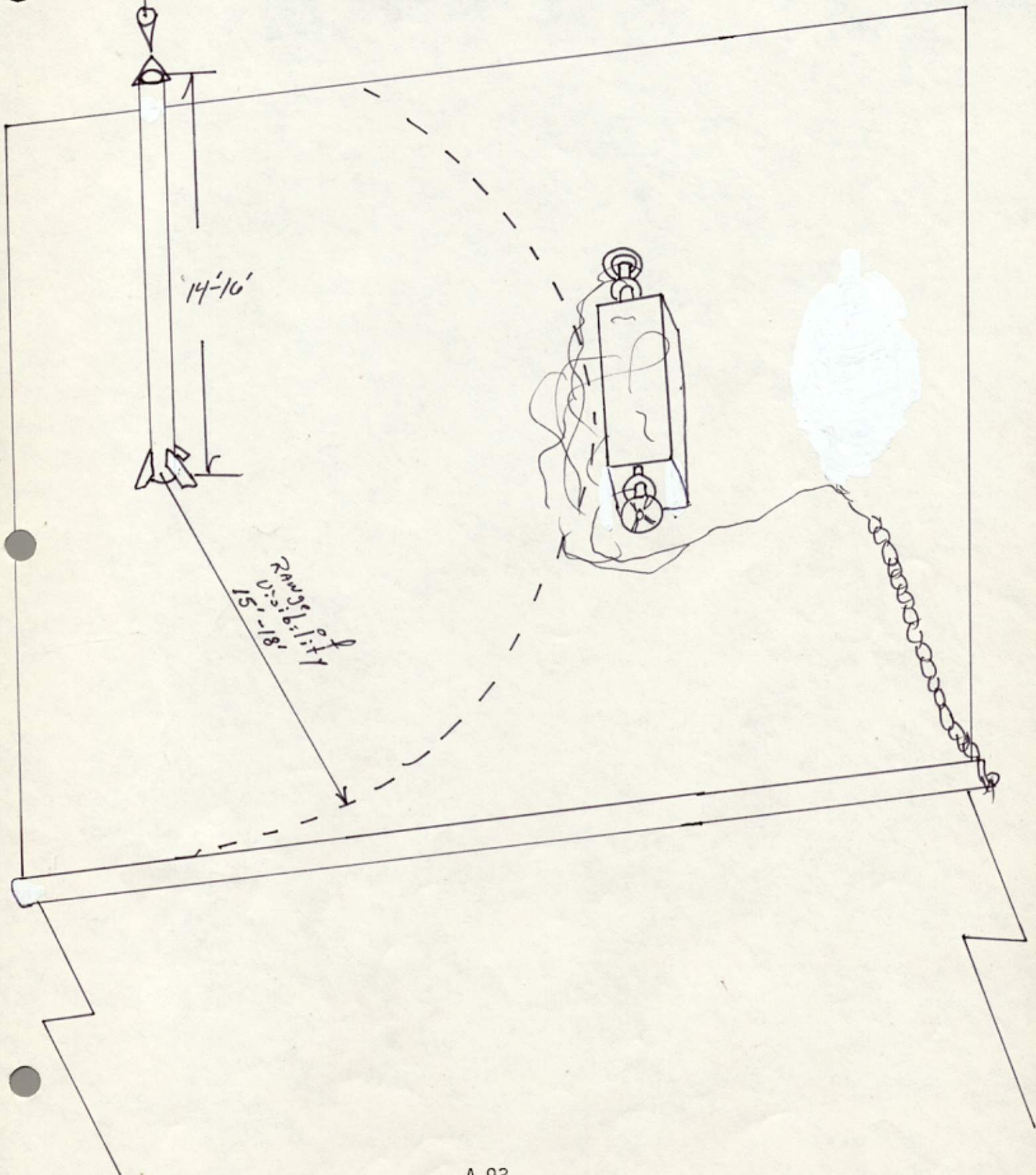
LT Ed Clark / George E. Smith RET  
Lead Diver Signature



Least Depth 11X<sup>2</sup> fsw (MILW)

Lat. 41° 17' - 04.95" N

Long. 071° 37' - 03.29" W



*The Vanishing Fleet  
Massachusetts - Rhode Island  
Shipwrecks*

*B. W. Luttrell Jr.  
1945*

- #298 RITA HOWARD Bge. (616)  
11/3/1931  
(Unknown)  
Stranded, Watch Hill
- #299 DELAWARE Bge. (301)  
1/10/1907  
(Coal)  
Napatree Point, Watch Hill
- #300 GUARD Sch. (797)  
10/18/1884  
(Coal)  
Watch Hill Race
- #301 ONONDAGA Frt. (2,696) 41-17-40  
6/28/1918 275.9 x 40.1 x 19.5 71-53-00  
(General) (Steel)  
1/10 mile West of Sugar Reef, Watch Hill
- #302 JENNIE A. CHENEY Sch. (301)  
8/4/1887  
(Cement)  
East Spindle Reef (Sugar Reef?), Watch Hill
- #303 HARRY KNOWLTON Sch. (317) 41-11-33  
2/11/1907 128.7 x 33.5 x 11.1 71-33-30  
(Coal) (Wood)  
Approximately 3 miles Southeast of Watch Hill
- #304 LARCHMONT St.s (1,605) (side paddle) 41-27  
2/11/1907 252.2 x 37.0 x 14.8 71-33-00  
(General) (Wood)  
Approximately 3 miles Southeast of Watch Hill
- #305 JOHN S. BENNETT Bark (301) 41-15-50  
11/8/1909 (British) 71-33-05  
(Unknown)  
5½ miles SW½S of Point Judith whistle buoy
- #306 ANNAPOLIS Bge. (1,371)  
2/17/1945 228.7 x 40.0 x 16.0  
(Unknown) (Wood)  
Collision, Block Island Sound
- #307 CAPITAL CITY Bge. (440)  
2/23/1917  
(Unknown)  
Foundered, Block Island Sound

NEWPORT HISTORICAL SOCIETY

- #72A Unidentified 41-26-42  
71-14-30  
(1108)  
West of Sakonnet Point, Northwest of buoy BW "SR"
  
- #72B Unidentified "MASTS" 41-37-58  
71-12-52  
(1210)  
4/19/1961 Yacht  
36'  
(Wood)  
North of Stone Bridge, Tiverton (Believed in the removal stage)
  
- #72C Unidentified 41-25-45  
71-23-08  
(1108)  
Less than  $\frac{1}{4}$  mile North of Brenton Reef Tower
  
- #73A BEAVER TAIL 41-35-35  
71-22-42  
(353)  
9/21/1938 St.s (301)  
110.0 x 26.0 x 11.0  
(Wood) side paddle  
(Ferry)  
 $1\frac{1}{4}$  mile North of Conanicut Island
  
- #73B Unidentified 41-36-47  
71-20-27  
(353)  
1/22/1964  
West side, Prudence Island
  
- #73C PONTOON BARGE 41-36-47  
71-20-25  
(353)  
5/31/1961  
U.S.N.  
West side, Prudence Island, alongside above wreck
  
- #79A Unidentified, "30 Boulders" 41-20-15  
71-28-45  
(1108)  
South of Point Judith,  $\frac{1}{4}$  mile Northwest of buoy R "2"
  
- #79B Unidentified 41-19-45  
71-33-06  
(1108)  
Southwest of Point Judith
  
- #79C ANNAPOLIS 41-17-00  
71-38-00  
(1108)  
*Built 1918  
Wilmington, Del  
Reg # 216084*  
2/17/1945 Bge. (1,371)  
L 228.7 x 40.0 x D 16.0  
(Wood)  
(Unknown)  
Collision, Northwest of Sandy Point, Block Island
  
- #79L MELIA M. PEREIRA 41-16-30  
71-40-00  
(1108)  
*1879*  
Prior WW II Ol.s (106) Diesel Engine  
88.3 x 21.4 x 10.5  
(Wood)  
(Fish)  
4  $\frac{3}{4}$  miles, 119° true from Sandy Point Light, Block Island

over



ONE-OH-ONE 2/10/1955

Bge. (801) STEEL

41-18-00 N  
71-38-30 W

Cargo Tar  
3 1/2 miles South of Charlestown Inlet

ITEM INVESTIGATION

DATE: 10 Sept, 1984 (254)

SHIP/LAUNCH: RUDE & HECK / Launch 25

LOCATION: Wire drag operations in Area 2.

DIVE MASTER LT Clark

TIMES (UTC)

DIVERS: ENS Callahan

IN WATER 1805 1836

RET Smith

UNDER WATER 1805 1806

ON SURFACE 1814 1855

IN BOAT 1817 1900

MAXIMUM DEPTH Not to exceed 80 Feet

DIVE DURATION Not to exceed 40 min.

PNEUMOFATHOMETER NO. # 784996

ITEM Hang #1

ITEM \_\_\_\_\_

ITEM \_\_\_\_\_

POSITION Lat 41°-16'-26.95" N  
Long 071°-35'-37.28" W

POSITION \_\_\_\_\_

POSITION \_\_\_\_\_

LEAST DEPTH

LEAST DEPTH

LEAST DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

1. 1843 / 63.0 Pneumo Depth 62.5'

1. \_\_\_\_\_

1. \_\_\_\_\_

2. 1843 / 62.5 Pneumo Corr +0.4'

2. \_\_\_\_\_

2. \_\_\_\_\_

3. 1843 / 62.5 Tide Corr 0.0'

3. \_\_\_\_\_

3. \_\_\_\_\_

BOTTOM

Least depth 63.0 Feet  
2.6 MLW

BOTTOM

BOTTOM

TIME(UTC) DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

1. 1844 / 69.0

1. \_\_\_\_\_

1. \_\_\_\_\_

2. 1844 / 69.0

2. \_\_\_\_\_

2. \_\_\_\_\_

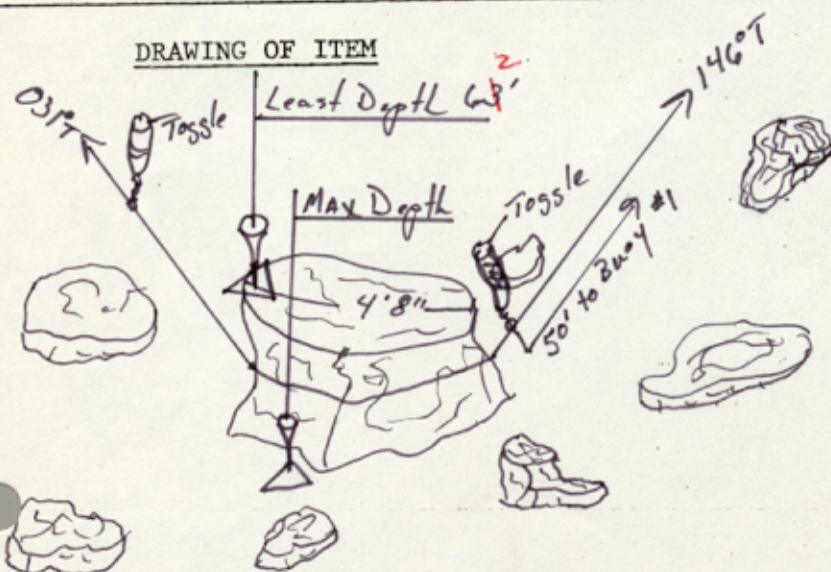
3. 1844 / 69.0

3. \_\_\_\_\_

3. \_\_\_\_\_

*plotted depth 62'*

DRAWING OF ITEM



DESCRIPTION OF ITEM

The obstruction was a rock approx. 7-8 feet high and 4'8" wide. The rock was hung between buoy 1 and 2, and was 55 feet from buoy 1. This rock was observed to be the largest rock in the area, which was predominantly made up of tabular rocks.



DIVING OPERATIONS

Date: 10 September, 1984 JD 254 Unit: LAUNCH 25

Divemaster: LT, Edward M. Clark Jr. Lead diver: RET George Smith

Purpose of Dive: Investigate the hang during wire drag operations, identify the obstruction and acquire a least depth on the obstruction.

Equipment: Standard scuba with wet suits and accessory equipment as prescribed by NOAA Diving Regulations.

Planned Depth: Not to exceed 80 feet Planned Duration: Not to exceed 40 min.

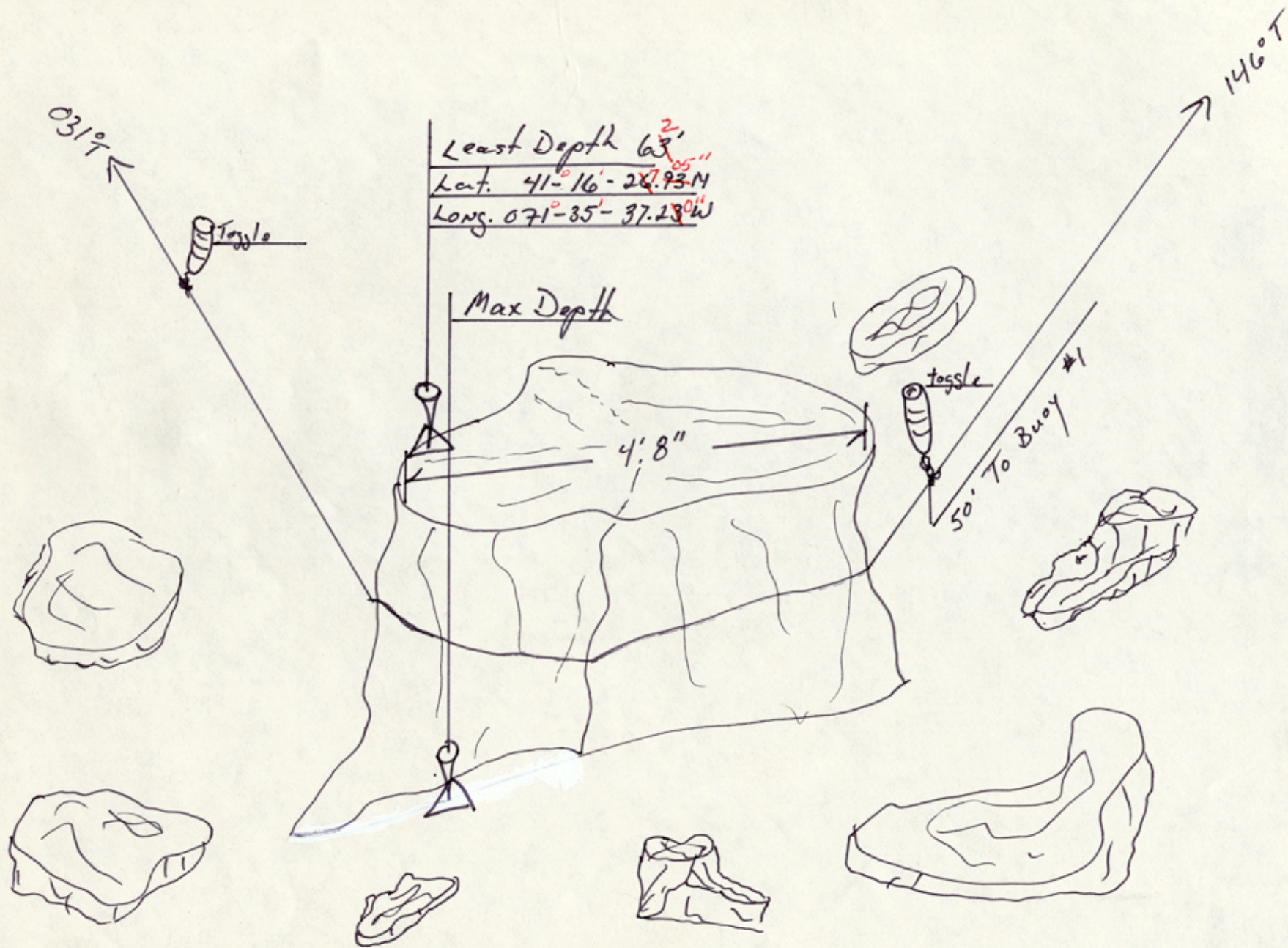
Divers	IN Pressure	Out Pressure	Pressure	In Time (UTC)	Out Time	Time	Depth	Comments
Callahan Smith	3150	1700	1450	1805	1814	09	70	10 min/70'
	3000	1700	1300	1805	1814	09	70	10 min/70'
Callahan Smith	3200	500	2700	1836	1855	19	70	20 min/70'
	3000	500	2500	1836	1855	19	70	20 min/70'

Post dive comments: The obstruction was hung between buoys #1 and #2 at a distance of approx. 55 feet. The obstruction was the largest rock in the area, which is predominantly made up of tabular rocks. The visibility was excellent with more than adequate ambient light available at depth.

LT Ed Clark  
Divemaster Signature

George E. Smith RET  
Lead Diver Signature

A-99





ITEM INVESTIGATION

DATE: 11 Sept, 1984 JD 255

SHIP/LAUNCH: RUDE & HECK / Launch 25

LOCATION: Wire drag Area 2

DIVE MASTER RET Smith

TIMES (UTC)

DIVERS: LT Clark

IN WATER 1633

ENS Callahan

UNDER WATER 1635

ON SURFACE 1646

IN BOAT 1650

MAXIMUM DEPTH Not to exceed 80 feet

DIVE DURATION Not to exceed 40 min.

PNEUMOFATHOMETER NO. # 784996

ITEM Hang #2  
POSITION None taken

ITEM \_\_\_\_\_  
POSITION \_\_\_\_\_

ITEM \_\_\_\_\_  
POSITION \_\_\_\_\_

LEAST DEPTH  
TIME(UTC) DEPTH  
1. None taken  
2. \_\_\_\_\_  
3. \_\_\_\_\_

LEAST DEPTH  
TIME(UTC) DEPTH  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

LEAST DEPTH  
TIME(UTC) DEPTH  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

BOTTOM  
TIME(UTC) DEPTH  
1. None taken  
2. \_\_\_\_\_  
3. \_\_\_\_\_

BOTTOM  
TIME(UTC) DEPTH  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

BOTTOM  
TIME(UTC) DEPTH  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

DRAWING OF ITEM

DESCRIPTION OF ITEM

SEE Page 102

SEE page 101

DIVING OPERATIONS

Date: 11 September, 1984 JD 255 Unit: NOAA Ships RUDE & HECK / Launch 25

Dive master: RET George Smith Lead diver: LT Edward M. Clark Jr.

Purpose of Dive: Identify a hang on the wire drag for JD 255.

Equipment: Standard scuba with wet suits and accessory equipment as prescribed by NOAA

Diving Regulations. \_\_\_\_\_

Planned Depth: Not to exceed 80 feet Planned Duration: Not to exceed 40 min.

Divers	IN Pressure	Out Pressure	Pressure	In Time (UTC)	Out Time	Time	Depth	Comments
Clark	3000	1800	1200	1635	1646	11	70	
Callahan	3200	1900	1300	1635	1646	11	70	

Post dive comments: The hang occurred between buoy #5 and #6 at a distance of approx. 75 feet from buoy upright #5. Ens Callahan identified a rock directly under the upright weight as the position of the previous days hang. The actual hang on this day was significantly deeper and of lesser topographical relief than the rock of JD 254, and didn't constitute additional development. The rock was found to be only 2.5 feet off the bottom, which is the same as on JD 254, or slightly deeper.

George E. Smith RET  
Dive master Signature

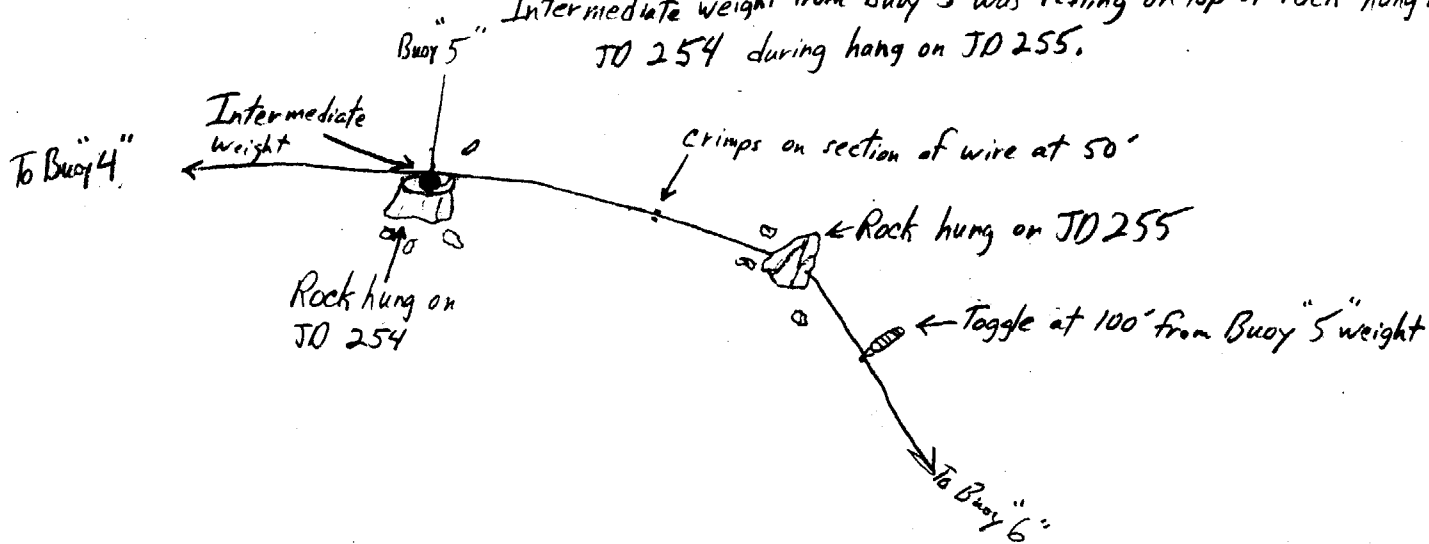
Edward M. Clark  
Lead Diver Signature

JD 255

Diver wrist gage on hang read 73', reading on rock hung on JD 254, which was 75' away, read 65'.

Hang on JD 255 deeper and in close proximity to rock hung and positioned on JD 254.

Intermediate weight from Buoy 5 was resting on top of rock hung on JD 254 during hang on JD 255.





ITEM INVESTIGATION

DATE: 27 September, 1984 JD 271

SHIP/LAUNCH: NOAA Ship RUDE and launch 25

LOCATION: \_\_\_\_\_

DIVE MASTER LT Edward M. Clark Jr.

TIMES (UTC)

DIVERS: ENS Thomas G. Callahan

IN WATER \_\_\_\_\_

UNDER WATER \_\_\_\_\_

ON SURFACE \_\_\_\_\_

IN BOAT \_\_\_\_\_

MAXIMUM DEPTH 71 feet

DIVE DURATION 22 mins.

PNEUMOFATHOMETER NO. #784996

ITEM Trawler  
Lat 41°-18'-21.78N  
POSITION Long 071°-36'-12.68W

ITEM \_\_\_\_\_  
POSITION \_\_\_\_\_

ITEM \_\_\_\_\_  
POSITION \_\_\_\_\_

LEAST DEPTH

LEAST DEPTH

LEAST DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

1. 1719 / 58.5 least depth 58.5 ✓  
2. 1719 / 58.5 pneumo corr. +0.1 ✓  
3. 1719 / 58.6 58.6 ✓  
tide corr. -2.0 -1.8

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

BOTTOM corr. least depth 56.68

BOTTOM

BOTTOM

TIME(UTC) DEPTH

TIME(UTC) DEPTH

TIME(UTC) DEPTH

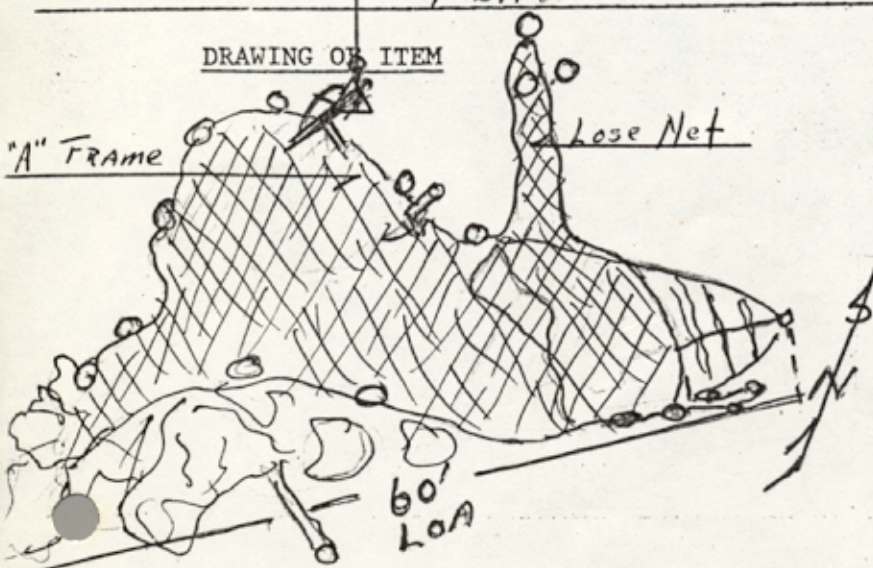
1. 1732 / 70.3'  
2. 1732 / 70.5'  
3. 1732 / 70.5'  
*plotted depth 57'*

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

DRAWING OF ITEM

DESCRIPTION OF ITEM



The contact is the wreckage of a steel hulled trawler. The wreck is on the stbd side and buried 8 to 10 feet in the bottom and is almost totally covered by small mesh netting. On the second dive a least depth was taken on the A-frame. A DP was later established by the Rude.



DIVING OPERATIONS

Date: 27 September, 1984 JD 271 Unit: NOAA Ship RUDE and Launch 25

Divemaster: Lt. Edward M. Clark Lead diver: Lt. Edward M. Clark

Purpose of Dive: The location and identification of a side scan sonar contact in the area of field sheet R/H 20-18-84.

Equipment: Standard scuba with wet suits and accessory equipment as prescribed by the NOAA Diving Regulations.

Planned Depth: Not to exceed 80 feet. Planned Duration: Not to exceed 40 min.

Divers	IN Pressure	Out Pressure	Pressure	In Time (UTC)	Out Time	Time	Depth	Comments
Clark	3000	1200	1800	1641	1656	15	71	
Callahan	3000	1100	1900	1641	1656	15	71	
Clark	3000	2200	800	1730	1737	07	71	
Callahan	2900	2100	800	1730	1737	07	71	

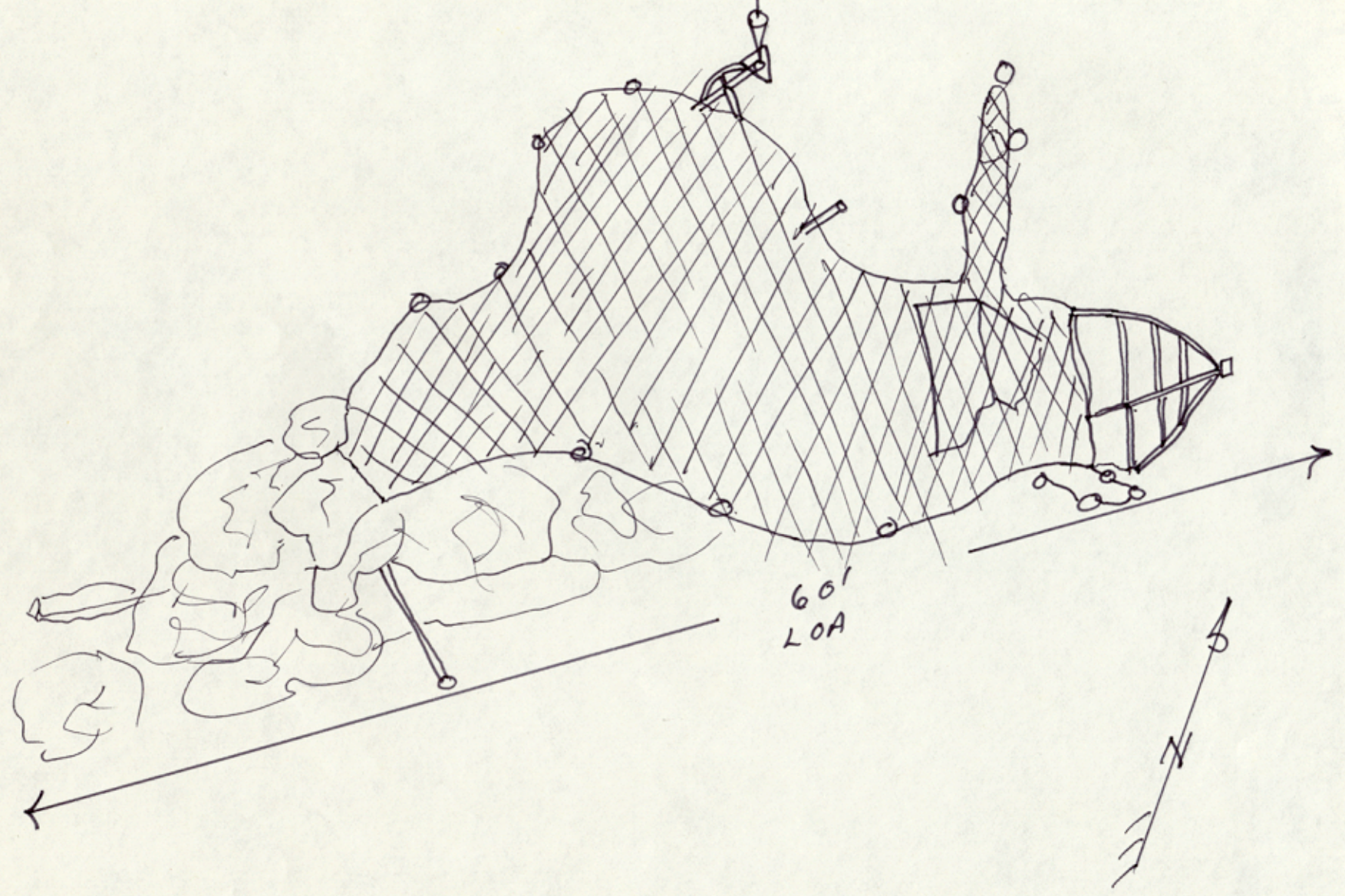
Post dive comments: The divers located a steel hull, which was badly damaged and decomposed, about 60 feet from a marker float deployed by the Rude. The hull is on the stbd. side and has about 8 to 10 feet buried in the bottom. The wreck is a fishing trawler and is almost totally covered by small mesh trawl net. On the second dive a least depth was taken on the A-frame (Highest point of wreck) with standard pneumofathometer procedures. The pneumo used was #784996. A marker float was attached to this least depth position and the Rude later established a DP.

LT Ed Clark  
Divemaster Signature

LT Ed Clark  
Lead Diver Signature

Least Depth 570' MLLW  
LAT 41° 18' 21.38" N  
Long 071° 34' 12.60" W

A-105





**H. LOCAL NOTICE TO MARINERS REPORT**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE  
NOAA SHIPS RUDE & HECK  
439 West York St.  
Norfolk, VA 23510

October 4, 1984

To: Commander, First Coast Guard District  
150 Causeway Street  
Boston, MA 02114

From: LCDR Robert K. Norris  
Commanding Officer

Subj: Notice to Mariners

Survey operations by the NOAA Ships RUDE and HECK in Block Island Sound, 4.5 NM Northwest of Sandy Point on Block Island, has identified, using NOAA divers, a wreck at position latitude  $41^{\circ}18'21.78''N$  and longitude  $71^{\circ}36'12.58''W$ . The wreck is a trawler of steel construction. A least depth, determined by NOAA divers, over the wreck was 56.8 feet at M.L.W, reduced for ~~predicted~~ <sup>smooth</sup> tides. This wreck is not presently charted.

Reference: Fix #838 of JD 271, 1984

*21-1381843-2*



**J. DANGERS TO NAVIGATION REPORT**

SEE APPENDIX H. NOTICE TO MARINERS



L. SIDE SCAN SONAR COVERAGE ABSTRACT -  
TARGET ABSTRACT - TARGET LIST

Sonar Coverage Abstract

OPR-B660-Ru/He-84

Item No.

R/H 20-18-84 200%  
71°36' - 71°42'W

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
24-43	200	22	Fix 24-30 135m Thermo	44-63	200	22	Fix 60-63 135m Thermo	105 Elsewhere 100m TH	200%
44-63		22	Fix 60-63 135m Thermo	01-23		20	Fix 1-6 90m Thermo	160m 160 TH	100% Split
01-23		Fix 1-6 20	90m Thermo	153-162, 64-77		25, 20	Fix 64-66 93m Thermo	201m 90 TH	100% Split
153-162, 64-77		25, 20	Fix 64-66 93m Thermo	78-95		19	Fix 79-82 105m Thermo	175m 170 TH	100% Split
78-95		19	Fix 79-82 105m Thermo	96-117		20	Fix 116-117 70m Thermo	190m 220 TH	<100% No Split, Covered by Wire Drag
96-117		20	Fix 116-117 90m Thermo	118-135		16	Fix 118-119 120m Thermo	165m 85 TH	200%
118-135		16	Fix 118-119 120m Thermo	136-152		20	Fix 136-139 111m Thermo	140m 180 TH	100% No Split, Covered by Wire Drag
136-152	↓	20	Fix 136-139 111m Thermo	173-190	↓	19	Fix 173-174 120m Thermo	177m 90 TH	200%
173-190	200	19	Fix 173-174 120m Thermo	191-216	200	19	Fix 214-215 120m Thermo	175m 160 TH	100% No Split, To be wire dragged - Area

Minor helix gaps on records  
Significant contacts would have  
been still detected.

A-122

Sonar Coverage Abstract

OPR-B660-Ru/Hc-84

Item NO.

R/H 20-18-84  
100% Coverage

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
518-522, 500-517	200	15	<del>90m 518-522 TH</del> <del>75m 505-517</del>	558-577	200	18	<del>90m 558-562</del> <del>75m 564-577</del>	252	100% Split Holiday
558-577		18	90 558-562 75 564-577	578-606		17	<del>78m 578-582</del> <del>75m 585-587</del>	250	Split
578-606		17	<del>78 578-582</del> <del>75 585-587</del> <del>78 601-603</del>	607-631		11	69, 620-631	255	Split
607-631		11	69, 620-631	632-646		10	60, 632-644	140	Partial Strip 100%
763-787		21	75, 776-779 60, 763-767	739-762		20	60, 760-762	255	100%
739-762		20	60, 760-762	721-738		20	90, 721-726	250	100%
721-738		20	90, 721-726	692-720		19	90, 702-705 105, 715-720	240	100%
692-720	↓	19	90, 702-705 105, 715-720	689-673	↓	25	105m, 683-689	265	Split
673-689	200	25	105, 683-689	647-672	200	23	90m, 647-654	190	
607-619	200	28	200	473-483	200	30	200	200	100%
473-483		30	200	824-837		31	200	220	100%
646-632			10m, 632-644 32m, 644-646	812-824			16m 812-816 24m 817-824 200	215	100%
812-837	↓		16m, 812-816 24m, 816-824	788-811	↓		16m 788-790 20m 790-811 198	85 210	100%
788-811	200		16m, 788-790 20m, 790-811	764-787	200	21	60m 764-767 75m 767-787	200 250	100%

A-123



Sonar Coverage Abstract

OPR-B660-Ru/He-84

Item NO.

R/H 20-18-84 200%  
71°36' - 71°42' W

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
191-216	200m	19	Fix 214-215 120m Thermo	217-236	200m	17	Fix 217-221 90m Thermo	<del>155 Elsewhere</del> <del>150m Thermo</del>	200% Except Wire Drag Area 2
217-236		17	Fix 217-221 90m Thermo	237-257		18	Fix 254-257 135m Thermo	155m <del>95 Thermo</del>	200% " " " " "
237-257		18	Fix 254-257 135m Thermo	258-276		16	Fix 258-260 135m Thermo	<del>140m</del> <del>100m Thermo</del>	200% " " " " "
258-275		16	Fix 258-260 135m Thermo	276-298		16	Fix 276-280 120m Thermo	150m <del>110m Thermo</del>	200% " " " " "
276-298		16	Fix 276-280 120m Thermo	299-317		17	Fix 312-317 120m Thermo	165m <del>160m Thermo</del>	200% " " " " "
299-317		17	Fix 312-317 120m Thermo	318-343		17	Fix 318-321 102m Thermo	148m <del>140m Thermo</del>	200% " " " " "
318-343	↓	17	Fix 318-321 102m Thermo	344-361	↓	17	168m	190m <del>180m Thermo</del>	200%
344-361	200m	17	168m	362-374	200m	15	Fix 367-365 60m Thermo	145m <del>120m Thermo</del>	100% ?
SPLITS 200%									
58-63	200m	22	<del>200m</del> <del>135m Thermo</del>	377-381	200	22	<del>200m</del> <del>135m Thermo</del>	100m <del>135m Thermo</del>	200%
376-382	200m	22	<del>200m</del> <del>150m Thermo</del>	1-8	200	20	<del>198m</del> <del>90m Thermo</del>	90m <del>90m Thermo</del>	200%
10-17	200m	25	<del>200m</del> <del>150m Thermo</del>	383-389	200	27	<del>200m</del> <del>No Thermo</del>	135m <del>150 Thermo</del>	200%
383-388	200m	27	<del>200m</del> <del>No Thermo</del>	71-77	200	25	<del>200m</del> <del>No Thermo</del>	115 <del>No Thermo</del>	200%

Splits continued on page 4

A-124

Sonar Coverage Abstract

OPR-8660-Ru/He-84

Item No.

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
344-353	200 m	17 m	168 m	390-399	200 m	26 m	200 m	113 m	200% Split
390-396	200 m	26 m	200 m	529-536	200 m	26 m	200 m	142 m	200% Split
395-399	200 m	26 m	200 m	401-405	200 m	25 m	200 m	150 m	200% Split
2-9	200 m	20 m	<del>198 m 90m Thermo</del>	406-413	200 m	20 m	<del>198 m 90m Thermo</del>	150 m	100% Coverage
406-413	200 m	20 m	<del>198 m 90m Thermo</del>	79-84	200 m	19 m	<del>198 m 120 m Thermo</del>	115 m	100% Coverage
100% SPLITS									
683-689	200 m	25 m	<del>200 m 105m Thermo</del>	414-421	200 m	25 m	<del>200 m No Thermo</del>	190 m	100% Split Coverage
414-421	200 m	25 m	<del>200 m No Thermo</del>	709-720	200 m	19 m	<del>188 m 105 Thermo</del>	150 m	100% Split Coverage
624-629	200 m	15 m	<del>148 m 90 Thermo</del>	422-426	200 m	22 m	<del>200 m 150m Thermo</del>	200 m	100% Split Coverage
422-426	200 m	22 m	<del>200 m 150m Thermo</del>	582-588	200 m	17 m	<del>168 m 75m Thermo</del>	190 m	100% Split Coverage
574-575	200 m	18 m	<del>178 m 75m Thermo</del>	427-428	200 m	18 m	<del>178 m 150m Thermo</del>	60 m	100% Split Coverage
427-428	200 m	18 m	<del>178 m 150m Thermo</del>	520-521	200 m	15 m	<del>148 m 90m Thermo</del>	200 m	100% Split Coverage

100% Solits Continued on page 5

Sonar Coverage Abstract OPR-B660-Rw/He-84 Item No. RH 20-18-84

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
100% Splits Continued									
585-588	200m	17m	168m / 75 Thermo	430-433	200m	27m	200m / 135 Thermo	105	100% Split Coverage
430-433	200m	27m	200m / 135 Thermo	571-573	200m	18m	178m / 75 Thermo	150	100% Split Coverage
571-573	200m	18m	178m / 75 Thermo	434-436	200m	29m	200m / 150 Thermo	110	100% Split Coverage
434-436	200m	29m	200m / 150 Thermo	517-514	200m	15m	148m / 75 Thermo	110	100% Split Coverage
518-521	200m	15m	148m / 90 Thermo	436-438	200m	17m	168m / 120 Thermo	150	100% Split Coverage
MAINS-SCHEME									
790-796	200m	20m	200m / No Thermo	439-444	200m	18m	178m / 120 Thermo	150	100% Split Coverage
439-444	200m	18m	178m / 120 Thermo	634-642	200m	16m	158m / 105 Thermo	210	100% Split Coverage
795-811	200m	20m	200m / No INT.	445-460	200m	22m	200m / 105m Acoustic INT.	155	100% Coverage
445-460	200m	22m	200m / 105m Acoustic INT.	819-836	200m	31m	200m / No INT	90	100% Coverage
824-837	200m	31m	200m / No INT	461-472	200m	29m	200m / 90m Acoustic INT	160	100% Coverage
461-472	200m	29m	200m / 90m Acoustic INT	473-483	200m	30m	200m / No INT.	95	100% Coverage
473-482	200m	30m	200m / No INT	609-619	200m	33m	200m / No Int	200m	100% Coverage

A-126



## SIDE SCAN TARGET ABSTRACT

DATE \_\_\_\_\_

OPR-B660-Ru/Hc-84

ITEM # \_\_\_\_\_

J.D. \_\_\_\_\_

SHIP \_\_\_\_\_

Prior  
Survey

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	REDUCED DEPTH (FT)	<del>STARTED</del> DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/FT)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
1	221	03-04	R <sub>1</sub> 21165 R <sub>2</sub> 13050	220	15.2	107.8	116	23.0	33.0	33.5	37.0	2.18 m	25.6 m	.6 m	32.9 m
2	221	03-04	R <sub>1</sub> 21125 R <sub>2</sub> 13050	220	15.2	112.2	116	24.0	38.0	39.0	41.0	1.17	30.4	1.2	32.9
3	221	03-04	R <sub>1</sub> 21005 R <sub>2</sub> 13200	220	15.2	113.8	119	24.0	41.0	42.0	45.0	1.60	34.3	1.2	32.9
4	221 170720	501-502	R <sub>1</sub> 30015 R <sub>2</sub> 9745	240	15.2	132.5	141	33.0	79.0	94.0	102.0	2.59	72.9	16.0	32.9
5	223 162535	60-61	R <sub>1</sub> 20775 R <sub>2</sub> 13347	240	15.2	118.7	122	29.0	69.0	70.0	72.0	0.81	63.0	1.1	32.9
6	223 162824	61-62	R <sub>1</sub> 21200 R <sub>2</sub> 12947	240	15.2	110.4	116	26.0	41.0	42.0	45.0	1.73	33.0	1.2	32.9
7	223 163706	65-66	R <sub>1</sub> 21200 R <sub>2</sub> 13010	230	15.2	111.1	116	24.0	44.0	45.0	48.0	1.50	37.8	1.2	32.9
8	223 164126	66-67	R <sub>1</sub> 20775 R <sub>2</sub> 13347	230	15.2	118.7	122	29.0	82.0	83.0	86.0	1.01	77.1	1.1	32.9
9	223	520-521	R <sub>1</sub> 22505 R <sub>2</sub> 13115	240	15.2	80.6	86	17.0	32.0	32.5	36.0	1.65	28.1	0.6	32.9
10	223	521-522	R <sub>1</sub> 22380 R <sub>2</sub> 13110	240	15.2	82.6	91	30.0	103.0	107.0	117.0	2.56	99.3	4.1	32.9
11	223	522-523	R <sub>1</sub> 21845 R <sub>2</sub> 13595	240	15.2	94.0	101	14.0	42.0	44.0	47.0	.89	39.9	2.1	32.9
12	223	524-525	R <sub>1</sub> 20400 R <sub>2</sub> 14925	240	15.2	90.2	98	21.0	29.0	31.0	35.0	2.40	22.2	2.6	32.9
13	226 145111	80-81	R <sub>1</sub> 21300 R <sub>2</sub> 13000	230	15.2	104.2	111	23.0	39.0	48.0	44.0	2.09	32.9	1.2	32.9
14	226 145355	80-81	R <sub>1</sub> 20810 R <sub>2</sub> 13501	230	15.2	124.2	131	29.0	51.0	52.0	56.0	2.07	43.3	1.2	32.9
15	226 151036	96-97	R <sub>1</sub> 13500 R <sub>2</sub> 20980	240	15.2	116.1	121	26.0	32.0	49.0	52.0	1.50	20.6	21.9	32.9

A-127

SEE #49

SIDE SCAN TARGET ABSTRACT

DATE \_\_\_\_\_

OPR- B660-Ru/HK-84

ITEM # \_\_\_\_\_

J.D. \_\_\_\_\_

SHIP \_\_\_\_\_

Prior Survey

SEE #27, 15

SEE #4

A-128

SEE #3+48

SAME

SEE #5+18

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	REDUCED DEPTH (FT)	<del>STARTED</del> DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/FT)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
16	226	115-116	R <sub>1</sub> 21005 R <sub>2</sub> 13400	240	15.2	102.6	107	23.0	47.0	48.0	51.0	1.35M	41.72m	1.12m	32.9
17	226	115-116	R <sub>1</sub> 21195 R <sub>2</sub> 13275	240	15.2	103.2	107	21.0	50.0	51.0	54.0	1.17	45.90	1.09	32.9
18	226 1735 H	134-135	R <sub>1</sub> 13498 R <sub>2</sub> 21005	230	15.2	116.1	121	25.0	25.0	27.0	28.0	.89	6.62	5.54	32.9
19	226 1500 13	561-562	R <sub>1</sub> 30015 R <sub>2</sub> 9745	240	15.2	132.5	141	33.0	34.0	45.0	47.0	1.40	12.56	19.48	32.9
20	226	575-576	R <sub>1</sub> 22040 R <sub>2</sub> 13380	240	15.2	86.5	91	18.0	34.5	36.0	39.0	1.38	30.24	1.70	32.9
21	226	575-576	R <sub>1</sub> 21885 R <sub>2</sub> 13925	240	15.2	78.8	91	16.5	30.0	31.0	40.0	3.71	27.14	1.10	32.9
22	226	579-580	R <sub>1</sub> 21505 R <sub>2</sub> 13725	240	15.2	94.9	101	20.0	33.0	34.0	37.5	1.87	27.57	1.19	32.9
23	226	580-581	R <sub>1</sub> 25025 R <sub>2</sub> 13300	240	15.2	84.3	95	17.0	19.0	21.0	26.0	3.27	13.13	2.76	32.9
24	226	604-605	R <sub>1</sub> 31170 R <sub>2</sub> 9960	240	15.2	127	136	31.0	45.0	48.0	51.0	1.82	34.26	3.85	32.9
25	226	607-608	R <sub>1</sub> 31170 R <sub>2</sub> 9960	240	15.2	127	136	30.0	62.0	64.0	70.5	2.77	55.70	2.22	32.9
26	227	137-138	R <sub>1</sub> 21325 R <sub>2</sub> 13330	230	9.1	85.8	95	22.0	75.0	78.0	90.0	2.93	72.54	3.10	26.8
27	227	151-152	R <sub>1</sub> 13498 R <sub>2</sub> 21005	220	15.2	116.1	121	26.0	144.0	145.0	147.0	.35	141.70	4.02	32.9
28	227	630-631	R <sub>1</sub> 21500 R <sub>2</sub> 13000	180	18.3	79.8	84	13.5	27.5	29.0	32.0	1.27	24.63	1.66	36.0
29	277	630-631	R <sub>1</sub> 21395 R <sub>2</sub> 13580	180	18.3	79.6	84	13.0	33.0	34.0	38.0	1.37	30.88	1.07	36.0
30	227	IT 632	R <sub>1</sub> 21255 R <sub>2</sub> 13710	180	18.3	78.8	84	13.0	28.0	29.0	33.0	1.58	25.56	1.09	36.0

SIDE SCAN TARGET ABSTRACT

DATE \_\_\_\_\_

OPR-B660-Ru/He-84

ITEM # \_\_\_\_\_

J.D. \_\_\_\_\_

SHIP \_\_\_\_\_

Prior  
Survey

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	REDUCED DEPTH (FT)	CHARTED DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/FT)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
31	227	632- 633	R <sub>1</sub> 21415 R <sub>2</sub> 13550	180	18.3	78.8	84	11.0	28.5	30.0	35.0	1.57m	26.90m	1.58m	36.0m
32	230	174- 175	R <sub>1</sub> 21350 R <sub>2</sub> 13300	230	9.1	85.8	95	21.0	36.0	39.0	45.0	2.80	31.06	3.43	26.8
33	230 171820	213- 214	R <sub>1</sub> 21350 R <sub>2</sub> 13300	230	9.1	85.8	95	21.0	60.0	61.5	71.0	2.81	57.18	1.57	26.8
34	233	255- 256	R <sub>1</sub> 21420 R <sub>2</sub> 13440	240	9.1	89.4	96	19.5	42.0	43.0	48.0	2.03	38.19	1.10	26.8
35	233	259- 260	R <sub>1</sub> 21545 R <sub>2</sub> 13460	235	9.1	80.0	84	16.0	29.5	30.5	33.0	1.21	25.53	1.15	26.8
36	233	261- 262	R <sub>1</sub> 20645 R <sub>2</sub> 14550	235	15.2	115.6	122	27.0	63.0	64.0	69.0	1.96	57.81	1.09	32.9
37	234 144147	279- 280	R <sub>1</sub> 21445 R <sub>2</sub> 13625	230	9.1	79.0	84	17.0	40.0	41.0	45.0	1.51	36.88	1.08	26.8
38	234 145008	282- 283	R <sub>1</sub> 20365 R <sub>2</sub> 14580	230	15.2	116.8	122	24.0	54.0	56.0	60.0	1.60	49.13	2.19	32.9
39	234 165619	313- 314	R <sub>1</sub> 20450 R <sub>2</sub> 14585	230	9.1	107.4	112	21.5	57.0	58.0	62.0	1.39	53.33	1.07	26.8
40	234 170246	315- 316	R <sub>1</sub> 21470 R <sub>2</sub> 13622	230	9.1	75.8	84	18.0	24.0	25.0	29.0	2.48	18.31	1.29	26.8
41	236 143835	674- 695	R <sub>1</sub> 30358 R <sub>2</sub> 8155	220	15.2	100.6	109	28.0	77.0	80.0	88.0	2.55	72.67	3.17	32.9
42	236 153245	712- 713	R <sub>1</sub> 23910 R <sub>2</sub> 10648	220	15.2	124.2	126	26.0	46.0	48.0	49.0	.53	38.31	2.38	32.9
43	236 144755	320- 321	R <sub>1</sub> 21885 R <sub>2</sub> 13925	240	9.1	85.0	91	17.0	53.0	58.0	65.0	1.83	50.78	5.20	26.8
44	236 145242	322- 323	R <sub>1</sub> 21250 R <sub>2</sub> 13950	240	9.1	95.4	98	21.0	50.0	51.0	53.0	.79	45.73	1.09	26.8
45	236 145344	322- 323	R <sub>1</sub> 21330 R <sub>2</sub> 14097	240	9.1	98.8	101	22.0	62.0	63.0	65.0	.68	58.22	1.06	26.8

SEE  
32+26

A-129

SEE  
21+48



SIDE SCAN TARGET ABSTRACT

4

DATE \_\_\_\_\_

OPR-B660-Ru/Hc-84

ITEM # \_\_\_\_\_

J.D. \_\_\_\_\_

SHIP \_\_\_\_\_

Prior Survey

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	REDUCED DEPTH (FT)	<del>CHARTED</del> DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/FT)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
46	236 145950	324- 325	R <sub>1</sub> 20400 R <sub>2</sub> 14775	240	9.1	92.6	98.0	21.0	44.0	48.0	52.0	1.62m	39.50m	4.41m	26.8m
47	236 164106	358- 359	R <sub>1</sub> 20450 R <sub>2</sub> 14752	220	9.1	92.8	98.0	19.0	51.0	55.0	60.0	1.58	47.93	4.24	26.8
48	236 164955	360- 361	R <sub>1</sub> 21885 R <sub>2</sub> 13925	220	9.1	88.8	91.0	17.0	47.0	49.0	51.0	.67	44.07	2.13	26.8
49	236 165452	362- 363	R <sub>1</sub> 21845 R <sub>2</sub> 13595	240	9.1	94.0	101.0	15.0	33.0	36.0	42.0	2.14	30.39	3.23	26.8
50	236 170556	366- 367	R <sub>1</sub> 20507 R <sub>2</sub> 14830	240	9.1	93.6	98.0	18.0	36.0	38.0	41.0	1.32	31.90	2.24	26.8
51	236 170640	366- 367	R <sub>1</sub> 20415 R <sub>2</sub> 14980	240	9.1	87.4	98.0	20.0	110.0	119.0	142.0	3.24	108.72	9.10	26.8
52	242 143508	740- 741	R <sub>1</sub> 30820 R <sub>2</sub> 8522	220	15.2	116.2	123.0	27.0	35.0	36.0	39.0	2.08	24.57	1.40	32.9
53	242 143523	740- 741	R <sub>1</sub> 30770 R <sub>2</sub> 8585	220	15.2	121.3	123.0	28.0	51.0	54.0	55.0	.51	42.96	3.52	32.9
54	242 154648	763- 764	R <sub>1</sub> 21395 R <sub>2</sub> 13200	220	15.2	97.2	100.0	21.0	46.0	48.0	50.0	.84	41.35	2.21	32.9
55	242 144310	378- 379	R <sub>1</sub> 20900 R <sub>2</sub> 13260	240	15.2	115.5	119.0	25.0	44.0	45.0	47.0	1.06	36.92	1.19	32.9
56	242 170144	410- 411	R <sub>1</sub> 20920 R <sub>2</sub> 13355	240	15.2	114.1	119.0	26.0	65.0	66.0	70.0	1.49	60.20	1.08	32.9
57	243 154055	426- 427	R <sub>1</sub> 22477 R <sub>2</sub> 12980	240	15.2	88.7	91.0	19.0	78.0	79.0	82.0	.70	75.82	1.03	32.9
58	256 175038	450- 451	R <sub>1</sub> 26020 R <sub>2</sub> 10075	220	18.3	139.2	143.0	31.0	51.0	53.0	55.0	1.13	41.34	2.44	36.0
59	256 174252	467- 468	R <sub>1</sub> 27600 R <sub>2</sub> 9750	220	18.3	138.4	141.0	30.0	109.0	111.0	114.0	.79	105.01	2.07	36.0
60	256 185610	471- 472	R <sub>1</sub> 26000 R <sub>2</sub> 10200	220	18.3	140.5	143.0	30.0	77.0	78.0	80.0	.75	71.23	1.08	36.0

SEE 21+43  
SEE 11

A-130



OPR- B660-Ru/He -84

SHEET R/H 20-18-84

## SIDE SCAN SONAR TARGET LIST

TARGET NUMBER	CHARTED DEPTH (FT)	REDUCED DEPTH (FT)	HEIGHT OF TARGET (FT)	WIDTH OF TARGET (FT)	POSITION	FURTHER INVESTIGATION			REMARKS
						TYPE	DATE	RESULTS	
1	116	113	3.0 ft.	2.0 ft.	L 41-17-26.76 λ 71-36-24.98				
2	116	112.2	3.8	3.9	L 41-17-28.37 λ 71-36-26.57				
3	119	113.8	5.2	3.9	L 41-17-25.72 λ 71-36-31.98				
4,19	141	132.5	8.5	52.6	L 41-16-28.28 λ 71-30-09.14	✓			05/13/18 NC HR
6	116	110.4	5.6	3.9	L 41-17-30.50 λ 71-36-23.14				
7	116	111.1	4.9	3.9	L 41-17-27.36 λ 71-36-23.42				
8,5	122	118.7	3.3	3.6	L 41-17-27.70 λ 71-36-41.70				
9	86	80.6	5.4	2.0	L 41-16-38.74 λ 71-35-33.58				
10	91	82.6	8.4	13.4	L 41-16-42.59 λ 71-35-38.34				
12	98	90.2	7.8	8.5	L 41-16-28.83 λ 71-37-06.93				
13	111	104.2	6.8	3.9	L 41-17-23.92 λ 71-36-19.44				
14	131	124.2	6.8	3.9	L 41-17-18.62 λ 71-36-41.12				
15,18,21	121	116.1	4.9	71.8	L 41-16-21.02 λ 71-42-11.93				
16	107	102.6	4.4	3.6	L 41-17-15.94 λ 71-36-33.00				
17	107	103.2	3.8	3.6	L 41-17-14.71 λ 71-36-21.95				
20	91	86.5	4.5	5.6	L 41-16-41.66 λ 71-35-53.22				
21,43,48	91	78.8	12.2	3.6	L 41-16-24.08 λ 71-36-03.32				



OPR- B660-Ru/He-84  
SHEET R/H 20-18-84

## SIDE SCAN SONAR TARGET LIST

TARGET NUMBER	CHARTED DEPTH (FT)	REDUCED DEPTH (FT)	HEIGHT OF TARGET (FT)	WIDTH OF TARGET (FT)	POSITION	FURTHER INVESTIGATION			REMARKS
						TYPE	DATE	RESULTS	
22	101	94.9	6.1	3.9	L 41-16-43.87 λ 71-36-16.02				
23	95	84.3	10.7	9.0	L 41-15-33.92 λ 71-33-58.26	✓			dit 13218 N/C HR
25,24	136	127	9.0	7.2	L 41-16-17.12 λ 71-29-21.98	✓			" " " "
28	84	79.8	4.2	5.4	L 41-17-16.35 λ 71-36-11.61				
29	84	79.6	4.4	3.5	L 41-16-53.74 λ 71-36-19.16				
30	84	78.8	5.2	3.6	L 41-16-52.74 λ 71-36-25.38				
31	84	78.8	5.2	5.2	L 41-16-54.58 λ 71-36-18.20				
32,33,26	95	85.8	9.2	11.3	L 41-17-07.86 λ 71-36-19.10				
34	96	89.4	6.6	3.6	L 41-16-59.08 λ 71-36-17.28				
35	84	80.0	4.0	3.8	L 41-16-53.98 λ 71-36-12.64				
36	122	115.6	6.4	3.6	L 41-16-36.71 λ 71-36-54.66				
37	84	79.0	5.0	3.5	L 41-16-50.11 λ 71-36-17.58				
38	122	116.8	5.2	7.2	L 41-16-44.96 λ 71-37-05.25				
39	112	107.4	4.6	3.5	L 41-16-41.78 λ 71-37-02.15				
40	84	75.8	8.1	4.2	L 41-16-49.42 λ 71-36-16.60				
41	109	100.6	8.4	10.4	L 41-17-18.24 λ 71-29-49.83	✓			dit 13218 N/C HR
42	126	124.2	1.7	7.8	L 41-17-40.80 λ 71-34-25.77				



P. NONFLOATING AIDS OR LANDMARKS FOR CHARTS





RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	R. K. Norris, LCDR., NOAA	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

**INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'**

*(Consult Photogrammetric Instructions No. 64.)*

**OFFICE**

**I. OFFICE IDENTIFIED AND LOCATED OBJECTS**

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042  
8-12-75

**FIELD**

**I. NEW POSITION DETERMINED OR VERIFIED**

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions\* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L  
8-12-75

\*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

**FIELD (Cont'd)**

B. Photogrammetric field positions\*\* require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.  
EXAMPLE: P-8-V  
8-12-75  
74L(C)2982

**II. TRIANGULATION STATION RECOVERED**

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.  
8-12-75

**III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH**

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.  
8-12-75

\*\*PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

DATE: 12/19/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: B660

Hydrographic Sheet: R/H 20-18-84

Locality: Block Island Sound

Time Period: August 21-September 27, 1984

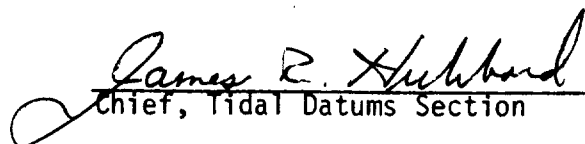
Tide Station Used: 845-2660 Newport, R.I.

Plane of Reference (Mean ~~Lower~~ Low Water): 1.81 ft

Height of Mean High Water Above Plane of Reference: 3.5 ft

Remarks: Recommended Zoning:

- 1) For items located at latitude  $41^{\circ} 17.5'$  longitude  $71^{\circ} 37.3'$ , latitude  $41^{\circ} 18.3'$  longitude  $71^{\circ} 36.2'$ , and area 2 (boulder field) apply +30 minute time correction and x 0.82 range ratio to all heights.

  
Chief, Tidal Datums Section



GEOGRAPHIC NAMES

FE 270 WD

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
BLOCK ISLAND (title)											1
BLOCK ISLAND SOUND (title)											2
RHODE ISLAND (title)											3
											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
											14
											15
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											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/C 2x5

DEC 9 1985

HYDROGRAPHIC SURVEY STATISTICS  
 REGISTRY NO.: FE-270 WD

Number of positions	<u>1149</u>
Number of soundings	<u>3</u>
Number of control stations	<u>8</u>

	<u>TIME-HOURS</u>	<u>DATE COMPLETED</u>
Preprocessing Examination	<u>16</u>	<u>Jul. 10, 1985</u>
Verification of Field Data	<u>135</u>	<u>Nov. 15, 1985</u>
Quality Control Checks	<u>          </u>	
Evaluation and Analysis	<u>72</u>	<u>Dec. 20, 1985</u>
Final Inspection	<u>7</u>	<u>Dec. 17, 1985</u>
TOTAL TIME	<u>230</u>	
Marine Center Approval		<u>Dec. 20, 1985</u>

Transmittal letter of survey and survey records will be included in the Descriptive Report to identify the records accompanying the survey.

ATLANTIC MARINE CENTER  
EVALUATION REPORT

SURVEY NO.: FE-270 WD

FIELD NO.: R/H-20-18-84

Rhode Island, Block Island Sound, Northwest of Block Island

SURVEYED: August 8 through September 27, 1984

SCALE: 1:20,000

PROJECT NO.: OPR-B660-RU/HE-84

SOUNDINGS: Raytheon DSF-6000N  
Fathometer, Pneumatic  
Depth Gauge, Klein  
Side-Scan Sonar, Wire  
Drag

CONTROL: Del Norte 520  
(Range-Range)

Chief of Party.....R. K. Norris

Surveyed by.....N. G. Millett

.....E. M. Clark

.....T. G. Callahan

.....J. W. Bailey

1. INTRODUCTION

a. The purpose of this survey is to provide 100% side-scan sonar coverage over a portion of the Northville Industries Corporation oil tanker route and 200% side-scan sonar coverage over the oil tanker route between Longitude 71°36'W and 71°42'W because of AWOIS Items 1849 and 1856. Additionally, wire drag clearance was required over an area specified as Area 2 in section 7.11. of the Project Instructions.

b. This survey is a side-scan sonar and wire drag survey. Raytheon DSF-6000N fathometers were operated concurrently with side-scan sonar and wire drag, but the soundings are of reconnaissance value only as all necessary sounding correctors were not determined. No hydrography beyond reconnaissance hydrography was required. No field plots or any data tapes were made for this hydrography.

c. A standard smooth sheet (A&D) was generated for the wire drag portion of this survey and is attached to this report. An accompanying wire drag position overlay was not generated to expedite processing and was not considered necessary. A smooth sheet containing two soundings (least depths on two wrecks) was generated and is attached to this report. No smooth plot was generated for the side-scan sonar portion of this survey since the final field sheet adequately displays the lines run and the contacts found. A chart section depicting the area insonified, the area covered by wire drag, and the corridor limits of the oil tanker route is attached to this report.



d. Corrections and notes made by the Evaluator to the Descriptive Report are denoted in red ink.

## 2. CONTROL AND SHORELINE

a. The source of control is adequately discussed in section F. and Appendix D. of the Descriptive Report.

b. No shoreline exists within the limits of this survey.

## 3. HYDROGRAPHY

The echo sounding hydrography collected on this survey are of reconnaissance value only. The two least depths portrayed on the smooth sheet and the one least depth portrayed on the smooth sheet (A&D) are soundings taken by pneumatic depth gauge and have been corrected for gauge error and smooth tides.

The side-scan sonar coverage in conjunction with the wire drag coverage is considered adequate and meets the requirements specified except as noted in section M. of the Descriptive Report and section 4. e. of this report.

## 4. CONDITION OF SURVEY

The final field sheet, survey records, and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL and WIRE DRAG MANUAL with the following exceptions:

a. In general, the Descriptive Report is well written.

b. The research by the field leading to the discovery and resolution of two uncharted wrecks is commendable.

c. Prior surveys common to the survey area which were identified in the Project Instructions were used for comparisons by the hydrographer. The Project Instructions were deficient in that they did not list or require comparisons with prior surveys H-4005 WD (1917-19), H-4041 WD (1918-19), and H-4042 WD (1918-19).

d. Lift computations and lift and tide applications to field data were not in accordance with the WIRE DRAG MANUAL. Lifts were recomputed during verification. Lifts and smooth tides were applied to the verified data in accordance with the WIRE DRAG MANUAL during verification.

e. The oil tanker route corridor limits drawn on the field sheets from corridor point 2 to 3 (see section 1.8 of the Project Instructions) are slightly in error due to no large scale chart covering the common area between these two points. This error caused a minor lack of side-scan sonar coverage east of corridor point 3 but it is not considered significant.

f. Section 7.12.3.1. of the Project Instruction state an intent in the Project Instruction that the field generate a sounding plot

(reconnaissance value only) of sounding data gathered concurrent to side-scan sonar operations. The field did not generate a sounding plot or any sounding data tapes. Therefore, some significant information of this area not shown on the prior hydrographic survey common to this area is not apparent. See section 6.a. of this report for further discussion.

g. The Side-Scan Target Abstract contained all numbered contacts. However, the Side-Scan Sonar Target List omitted numbered contacts 11, 44, 45, 46, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, and 62. No remarks, recommendations, or explanations are given by the hydrographer pertaining to these omitted contacts.

h. The geographic position of one control station listed in section F. and Appendix D. of the Descriptive Report contained a slight discrepancy and was corrected during verification.

i. The DSF-6000N fathometer on vessel 9040 (RUDE) displays a frequent problem of the fathogram paper "sticking" which resulted in the loss of sounding data.

j. No reference was made in the Descriptive Report of a User Evaluation Report which is required by section 8.6. of the Project Instructions.

## 5. JUNCTIONS

Adequate junctions exist with survey FE-266 SS (1984) to the west and survey FE-269 WD (1984) to the east. No contemporary surveys exist or are presently planned to the north or south of the present survey.

Adequate side-scan sonar coverage overlap exists between the present survey and survey FE-266 SS (1984). Present survey contacts 15, 18, and 27 are the only contacts common to this junctional survey. These contacts are the same contact as located and plotted on survey FE-266 SS as unidentified nondangerous sunken wreckage with a computed (from side-scan sonar analysis) least depth of 111 feet in Latitude 41°16'19.96"N, Longitude 71°42'12.32"W. The present survey gives a computed (from side-scan sonar analysis) least depth of 116 feet on this wreckage. This unidentified nondangerous sunken wreckage should be charted in accordance with the results and recommendations of survey FE-266 SS (1984). ✓

Adequate side-scan sonar coverage overlap exists between the present survey and survey FE-269 WD (1984). Present survey contacts 4, 19, 24, 25, 41, 52, and 53 are common to this junctional survey. Junctional survey contacts 3, 4, 5, 6, 7, 32, 36, 37, 38, and 51 are common to the present survey. This common junctional area is a rocky area and each survey designated representative contacts and in only one case (contact 53 on the present survey and contact 5 on survey FE-269 WD) the same contact was denoted on both surveys. All contacts on both surveys within the junctional area have computed (from side-scan sonar analysis) least depths greater than 100 feet. Additionally, contacts 41, 52, and 53 on the present survey, and all contacts on junctional survey FE-269

WD are cleared to a field effective depth of 70 feet by wire drag accomplished on survey FE-269 WD. The wire drag accomplished by the present survey and the junctional survey FE-269 WD are not within the same areas, therefore, no junction of wire drag exists.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic Survey H-6443 (1939) 1:40,000

This prior survey is common to the entire present survey. Meaningful comparisons between prior hydrography and the present survey cannot be made since this is a side-scan sonar and wire drag survey. The sounding data gathered by the present survey is of reconnaissance value only and no plots or data tapes were generated by the field. The hydrographer used the prior survey for determining reduced depths over side-scan sonar contacts and no meaningful comparisons were made by the hydrographer.

Normal line spacing on this prior survey averages approximately 800 meters which exceeds the line spacing necessary to adequately define the bottom topography in this area. Although no meaningful comparisons between prior hydrography and present reconnaissance sounding data could be made, the fathograms inspected during office processing and some features seen on these fathograms indicate that the prior hydrography does not adequately define the area.

A shoal ridge in the vicinity of Latitude  $41^{\circ}16.5'N$ , Longitude  $71^{\circ}37.1'W$ , and approximately 400 meters in width exists between prior sounding lines and therefore was not detected on the prior survey. The shoalest depth on this ridge within the corridor, is estimated at 88-feet where the prior depths are from 98 to 137 feet. The shoal area covered by present wire drag and specified as Area 2 in section 7.11.1. of the Project Instructions is indicated as possibly slightly shoaler by the present fathograms than found by the prior survey. Other less pronounced differences were found during processing which indicate the need for a basic hydrographic survey in this area, however, nothing was found which would affect the proposed use of this area with the project depth of 70 feet.

The side-scan sonar contacts found by the present survey within the corridor all have computed reduced depths greater than the project depth and therefore do not warrant charting. However, the notation "bls" should be charted in the vicinity of Latitude  $41^{\circ}17.0'N$ , Longitude  $71^{\circ}36.2'W$ .

No conflicts exist between present wire drag effective depths and prior hydrography with the exception of the rock hung in Latitude  $41^{\circ}16'27.05''N$ , Longitude  $71^{\circ}35'37.20''W$ , which is adequately address in the comparison with prior survey H-4041 WD (1918-19).

Supersession of prior hydrography is neither the intent nor the purpose of this survey.

b. Wire Drag Surveys

H-4005 WD (1917-1919) 1:50,000  
H-4041 WD (1918-1919) 1:20,000  
H-4042 WD (1918-1919) 1:50,000

Prior survey H-4005 WD is common to approximately 45-50% of the present survey. Prior effective depths within the common area range from 58 to 100 feet. This prior survey is common to all but 12 of the present survey numbered side-scan sonar contacts. One contact (61 & 62-same contact) has a side-scan sonar computed least depth of 74.5 feet and is in an area cleared by 75 feet on this prior survey. This minor conflict is not considered significant especially considering the year (1917-1919) of this prior survey. All other side-scan sonar contacts common to this prior survey are not in conflict with the prior effective depths. The charted 75-foot sounding in Latitude 41°16'52"N, Longitude 71°36'10"W originating with this prior survey was neither verified nor disproved by the present survey and is therefore recommended to remain as presently charted. Side-scan sonar contacts 28, 35, 37, and 40 are in the vicinity of this charted 75-foot sounding and contact 40 has the least computed depth of the four of 75.8 feet. The two wrecks and the one rock located with least depths obtained by the present survey are common to the area of this prior survey and the present data is not in conflict with the prior effective depths. No conflicts exist between present and prior wire drag effective depths within the common area. Generally, greater effective depths were gained within the common area by the prior survey. No hangs or groundings on the prior survey fall within the area of the present survey.

Prior survey H-4041 WD is common to approximately 25-30% of the present survey with effective depths ranging from 61 to 98 feet within the common area. The 65-foot charted sounding in Latitude 41°16'28"N, Longitude 71°35'35"W originates with this prior survey. The area of this sounding is cleared in one direction on the prior survey by 62 feet, but noted on the A&D sheet in this area as "Drag aground No pos given". The hang and subsequent 62-foot least depth on the rock found by the present survey is approximately 60 meters southwest of the prior 65-foot sounding. It is recommended that the charted 65-foot sounding be removed from the chart and the 62 Rk sounding be charted in accordance with the results of the present survey. An uncleared hang at 97 feet with a sounding of 92 feet in Latitude 41°16'58.5"N, Longitude 71°35'36.2"W is common to the present survey and was cleared by the present survey by an effective depth of 72 feet. The present survey indicates by fathometer soundings and side-scan sonar that this prior hang is a hang on the bottom as the bottom rises to depths of approximately 90 feet (no correctors applied) in this area. In this area, the bottom is unremarkable other than the rise as it nears the shoaler rocky (boulders and rocks) area to the west of this prior hang. The majority of the side-scan sonar contacts found by the present survey are not common to the area covered by this prior survey. Ten of the present survey contacts are common to the area covered by the prior survey. No conflicts exist between the computed least depths of side-scan sonar contacts and prior effective depths. No conflicts exist between present and prior wire drag effective depths.



Prior survey H-4042 WD is common to approximately 35% of the present survey. Prior effective depths range from 85 to 95 feet within the common area. Only side-scan sonar contacts 15, 18, and 27, on the present survey are common to this prior survey and the computed (by side-scan sonar analysis) least depths on these contacts are not in conflict with prior effective depths. No conflicts exist between prior and present wire drag effective depths within the common area.

7. COMPARISON WITH CHART 13215, 10th Edition, March 12, 1983

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys. The previously discussed prior surveys require no further consideration. Attention is directed to the following:

1) AWOIS Items 1849 (sunken wreck AMELIA M. PERIERA located in Latitude 41°16'00"N, Longitude 71°40'00"W) and 1856 (sunken wreck ANNAPOLIS located in Latitude 41°17'00"N, Longitude 71°38'00"W) were neither verified nor disproved by the present survey, however, no indications of these wrecks were evident in the vicinity of their listed locations. Neither of these wrecks are charted on charts 13215 or 13205, however, both wrecks are charted on chart 12300 as nondangerous sunken wrecks. It is recommended that these two wrecks remain as charted but accompanied by the "PD" notation. ✓

2) The uncharted wreck "ONE-OH-ONE", in Latitude 41°17'4.95"N, Longitude 71°37'3.29"W, located by the present survey is recommended to be charted as a wreck with the least depth of 112 feet determined by the present survey. ✓ 2917

3) The uncharted wreck of a steel hulled trawler, in Latitude 41°18'21.68"N, Longitude 71°36'12.50"W, located by the present survey is recommended to be charted as a wreck with a danger curve with the least depth of 57 feet determined by the present survey. ✓ 2923

It is not the intent or purpose of this <sup>62</sup>survey to supersede charted hydrography, however, the charted <sup>63</sup>65-foot sounding in Latitude 41°16'28"N, Longitude 71°35'35"W is recommended to be superseded as discussed in the comparison with prior survey H-4041 WD (1918-1919). ✓

b. Aids to Navigation

Seven fixed aids to navigation were used in horizontal control of this survey. The position of these aids are adequately listed in the control files. The hydrographer did not address these aids and it is assumed that they do serve their intended purpose. One floating aid to navigation was located by the present survey and is adequately addressed in section L. of the Descriptive Report. It is recommended that this aid be charted in accordance with the most recent information. ✓

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions except as noted in the Descriptive Report and this report.

9. ADDITIONAL FIELD WORK

This is a good side-scan sonar and wire drag survey which serves its intended purpose. No additional side-scan sonar or wire drag field work is recommended. Additional field work in the form of a basic hydrographic survey is recommended for this area at an opportune time since the prior survey H-6443 (1939) poorly defines this area.

10. MISCELLANEOUS

No splits or areas of insufficient overlap exist in the area cleared by wire drag.


*Maurice B. Hickson, III*  
Maurice B. Hickson, III  
Cartographer  
Verification of Field Data  
Evaluation and Analysis


INSPECTION REPORT  
FE-270 WD

The completed survey has been inspected with regards to survey coverage, investigation of hangs and clearance depths, cartographic symbolization, and the verification or disproval of charted data. The side scan sonar data have been inspected to gain insight into its overall completeness regarding survey coverage, presentation of survey results, and the verification or disproval of charted data.

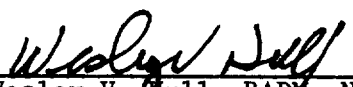
The survey, except as noted in the Evaluation Report, is considered completed and adequate to meet National Ocean Service standards. The survey records comply with NOS requirements except as noted in the Evaluation Report. Processing is considered complete.

Inspected

  
\_\_\_\_\_  
R. D. Sanocki  
Chief, Hydrographic Surveys  
Processing Section  
Hydrographic Surveys Branch

  
\_\_\_\_\_  
David B. MacFarland, Jr., LCDR, NOAA  
Chief, Hydrographic Surveys Branch

Approved December 20, 1985

  
\_\_\_\_\_  
Wesley V. Gull, RADM, NOAA  
Director, Atlantic Marine Center

MOA 23-160-85

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

CHIEF, DATA CONTROL SECTION  
 HYDROGRAPHIC SURVEYS BRANCH, N/CG243  
 NATIONAL OCEAN SERVICE, NOAA  
 ROCKVILLE, MD 20852

DATE FORWARDED

31 DEC 85

NUMBER OF PACKAGES

(3) 1 TUBE, 2 BOXES

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-270 WD (B660-RU/AE-84, R/H 20-18-84)  
 BLOCK ISLAND SOUND, RHODE ISLAND

PKG #1 (TUBE)

1 DESCRIPTIVE REPORT CONTAINING Smooth SHEETS

18 FINAL FIELD SHEETS

18 PRELIMINARY FIELD SHEETS

PKG #2 (BOX)

2 ENVELOPES CONTAINING SIDE SCAN SONARGRAMS

PKG #3 (BOX)

2 SOUNDING VOLUMES

2 WIRE DRAG VOLUMES

1 ENVELOPE CONTAINING TIDAL DATA

FROM: (Signature) *Doug A Wake*

FOR CDR, DAVID B. MACFARLAND, NOAA

Return receipted copy to:

ATLANTIC MARINE CENTER  
 HYDROGRAPHIC SURVEYS BRANCH (N/MOA23)  
 439 W. YORK STREET  
 NORFOLK, VIRGINIA 23510

RECEIVED THE ABOVE  
(Name, Division, Date)

*D S Clark*  
 February 3, 1986  
 N/CG243



NOA23-160-85

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

CHIEF, DATA CONTROL SECTION  
 HYDROGRAPHIC SURVEYS BRANCH, N/CG243  
 NATIONAL OCEAN SERVICE, NOAA  
 ROCKVILLE, MD 20852

DATE FORWARDED

31 DEC 85

NUMBER OF PACKAGES

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FE 270WD cont;

PKG #3 (BOX) cont;

- + ACCORDIAN FILE CONTAINING ECHOGRAMS AND FIELD DATA PRINTOUTS FOR FOLLOWING S.D.'S:  
221, 223, 226, 227, 230, 233-234, 236-237,  
240-243, 250, 254, 255, 256, 261, 269, 271
- + ENVELOPE CONTAINING DATA REMOVED FROM DESCRIPTIVE REPORT
- + ENVELOPE CONTAINING MISCELLANEOUS DATA FROM PRINTOUTS
- + ENVELOPE CONTAINING STRIPS OF TAPES WITH GEODETIC POSITION DATA
- + CARTER CONTAINING, FINAL CONTROL PRINTOUT, FINAL POSITION PRINTOUT, FINAL SOUNDING PRINTOUT

FROM: (Signature)

*Norm A. Lipe*

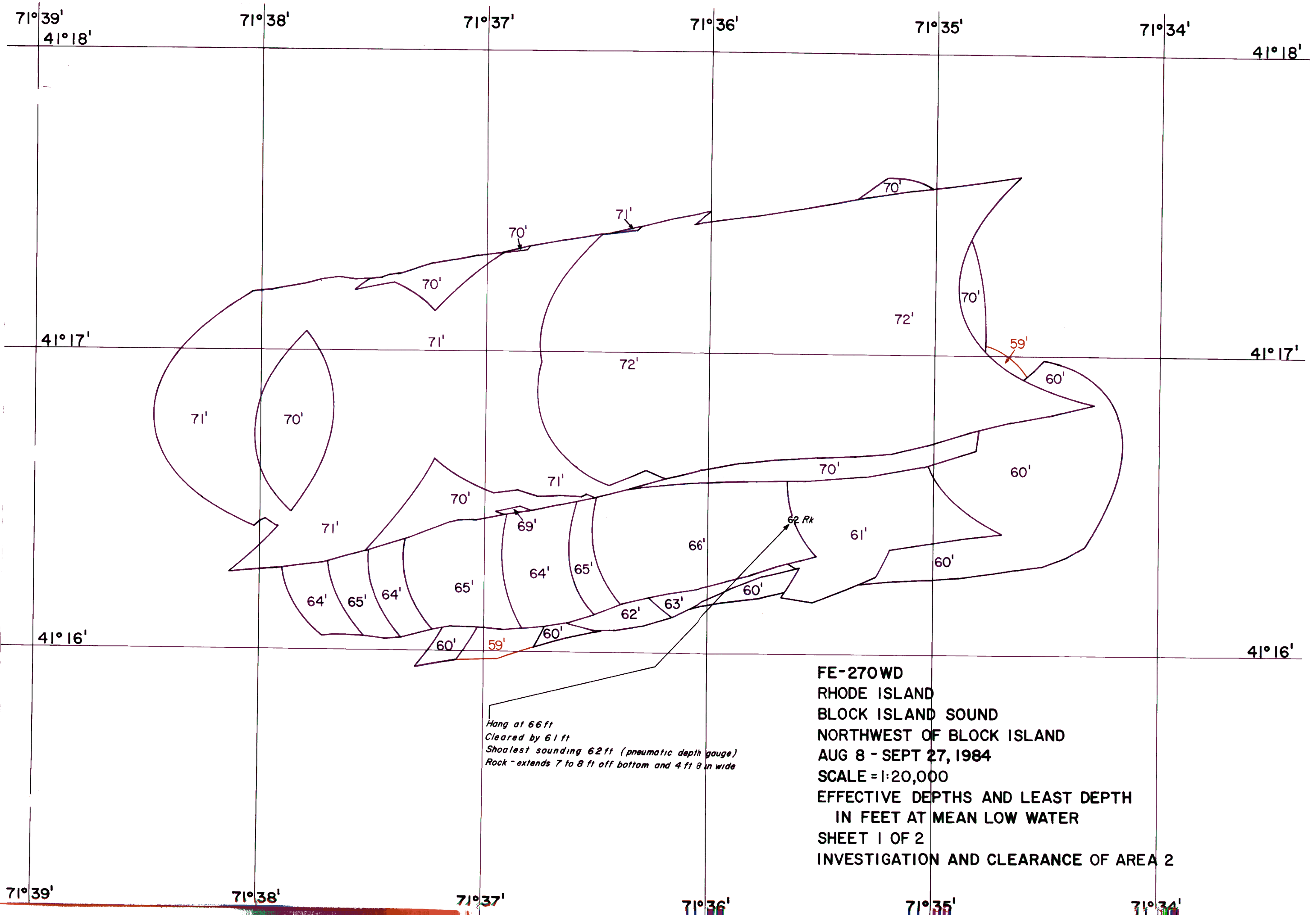
FOR CDR, DAVID B. MACFARLAND, NOAA

RECEIVED THE ABOVE  
(Name, Division, Date)

Return receipted copy to:

ATLANTIC MARINE CENTER  
 HYDROGRAPHIC SURVEYS BRANCH (N/MOA23)  
 439 W. YORK STREET  
 NORFOLK, VIRGINIA 23510





Hang at 66 ft  
 Cleared by 61 ft  
 Shoalest sounding 62 ft (pneumatic depth gauge)  
 Rock - extends 7 to 8 ft off bottom and 4 ft 8 in wide

**FE-270WD**  
**RHODE ISLAND**  
**BLOCK ISLAND SOUND**  
**NORTHWEST OF BLOCK ISLAND**  
**AUG 8 - SEPT 27, 1984**  
**SCALE = 1:20,000**  
**EFFECTIVE DEPTHS AND LEAST DEPTH**  
**IN FEET AT MEAN LOW WATER**  
**SHEET 1 OF 2**  
**INVESTIGATION AND CLEARANCE OF AREA 2**



71° 37'

71° 36'

71° 35'

57 Wk

Wreck - steel hulled trawler approximately 60 ft long and extending approximately 12 ft off bottom  
Shoalest sounding 57 ft (pneumatic depth gauge)

41° 18'

41° 18'

Wreck "ONE-OH-ONE" - steel tar barge approximately 30 ft beam and undetermined length  
Shoalest sounding 112 ft (pneumatic depth gauge)

112 Wk

41° 17'

41° 17'

FE-270WD  
RHODE ISLAND  
BLOCK ISLAND SOUND  
NORTHWEST OF BLOCK ISLAND  
AUG 8 - SEPT 27, 1984  
SCALE = 1:20,000  
SOUNDINGS IN FEET AT MEAN LOW WATER  
SHEET 2 OF 2  
POSITION AND LEAST DEPTH ON TWO WRECKS

41° 16'

41° 16'

71° 37'

71° 36'

71° 35'

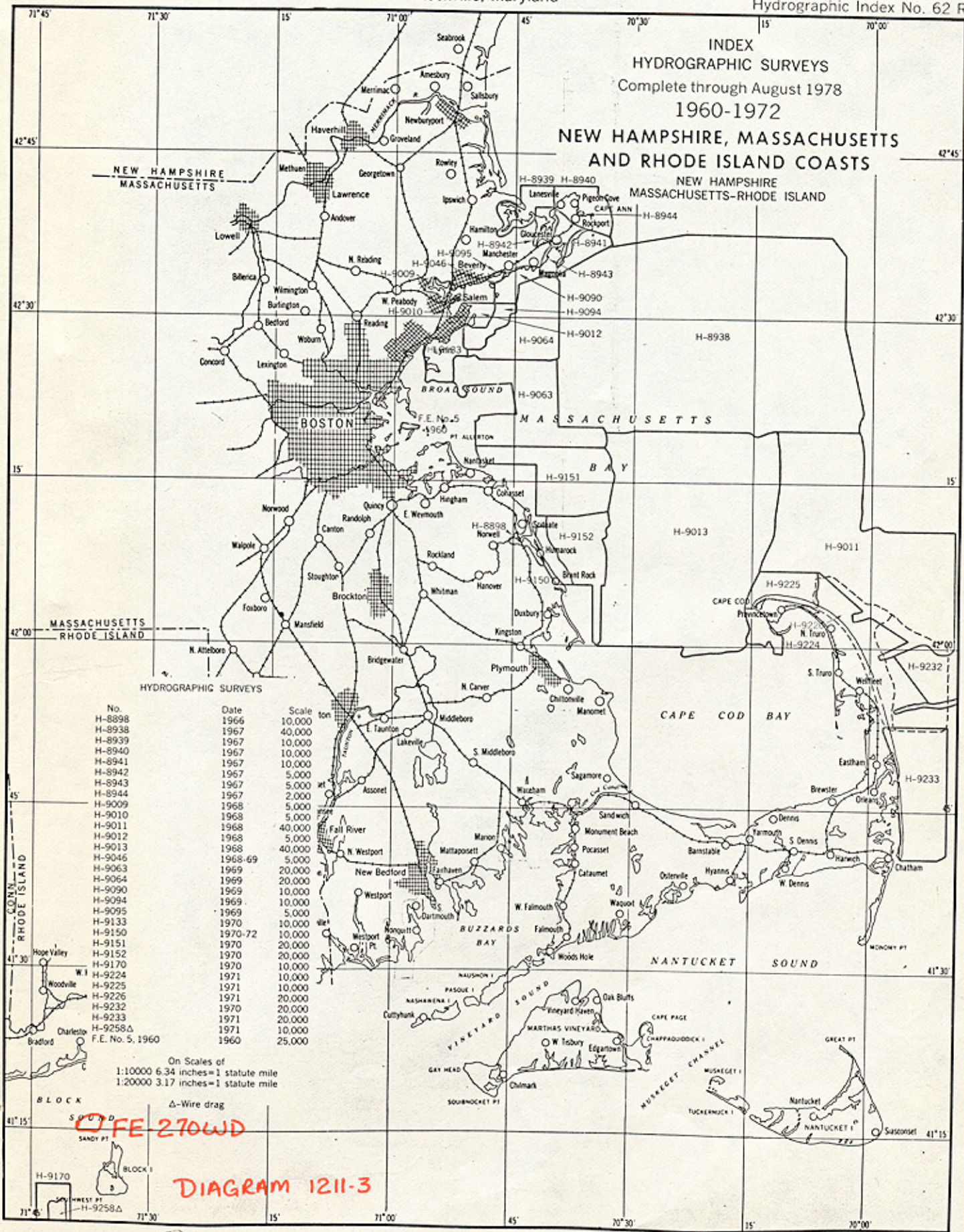






DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Survey  
Rockville, Maryland

Hydrographic Index No. 62 R



INDEX  
HYDROGRAPHIC SURVEYS  
Complete through August 1978  
1960-1972

NEW HAMPSHIRE, MASSACHUSETTS  
AND RHODE ISLAND COASTS  
NEW HAMPSHIRE  
MASSACHUSETTS-RHODE ISLAND

NEW HAMPSHIRE  
MASSACHUSETTS

MASSACHUSETTS  
RHODE ISLAND

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8898	1966	10,000
H-8938	1967	40,000
H-8939	1967	10,000
H-8940	1967	10,000
H-8941	1967	10,000
H-8942	1967	5,000
H-8943	1967	5,000
H-8944	1967	5,000
H-9009	1968	5,000
H-9010	1968	5,000
H-9011	1968	40,000
H-9012	1968	5,000
H-9013	1968	40,000
H-9046	1968-69	5,000
H-9063	1969	20,000
H-9064	1969	20,000
H-9090	1969	10,000
H-9094	1969	10,000
H-9095	1969	5,000
H-9133	1970	10,000
H-9150	1970-72	10,000
H-9151	1970	20,000
H-9152	1970	20,000
H-9170	1970	10,000
H-9224	1971	10,000
H-9225	1971	10,000
H-9226	1971	20,000
H-9232	1970	20,000
H-9233	1971	20,000
H-9258Δ	1971	10,000
F.E. No. 5, 1960	1960	25,000

On Scales of  
1:10000 6.34 inches = 1 statute mile  
1:20000 3.17 inches = 1 statute mile

Δ-Wire drag



DIAGRAM 1211-3



