

# 10350

Diagram No. 1211-3

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey ..... Hydrographic  
Field No. .... HE-10-5-90  
Registry No. .... H-10350

### LOCALITY

State ..... Rhode Island—New York  
General Locality ..... Block Island Sound  
Sublocality ..... Southwest Ledge to  
..... Endeavor Shoals

1990

CHIEF OF PARTY  
LCDR S.R. Iwamoto

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DATE ..... January 23, 1992

# 10350

CHTS

13215

13205

12300

13006

13003



HYDROGRAPHIC TITLE SHEET

H-10350

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.

HE-10-5-90

State RHODE ISLAND--NEW YORK

General locality BLOCK ISLAND SOUND

Locality Southwest Ledge to Endeavor Shoals

Scale 1:10,000

Date of survey June 12 - August 14, 1990

Instructions dated February 22, 1990\*

Project No. OPR-B660-HE

Vessel NOAA Ship HECK (EDPN 9140)

Chief of party LCDR Stanley R. Iwamoto, NOAA, Commanding Officer, HECK

Surveyed by LCDR <sup>S.R.</sup> Iwamoto, LT <sup>D.W.</sup> Moeller, LT <sup>B.S.</sup> Wilkes, LTJG <sup>L.D.</sup> Weiner, ST <sup>W.R.</sup> Morris

Soundings taken by echo sounder, ~~hand lead, pole~~

Graphic record scaled by LT <sup>D.W.</sup> Moeller, LT <sup>B.S.</sup> Wilkes, LTJG <sup>L.D.</sup> Weiner, ST <sup>W.R.</sup> Morris

Graphic record checked by LT Moeller

Protracted by \_\_\_\_\_

Automated plot by HDAPS <sup>SYNTHETICS 1201 Plotter (AHS)</sup>

Verification by Atlantic Hydrographic Personnel

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

REMARKS: All times UTC

200% Side Scan Sonar coverage throughout the survey area.

Data are submitted to Atlantic Hydrographic Section, N/CG244

\* Change No. 1 dated March 15, 1990

AWOL & Surf CHECK  
3/4/92 MCR

Change No. 2 dated June 14, 1990

Notes in red were made during office processing.

501-3097

XWV 3/9/92



DESCRIPTIVE REPORT APPENDICES

- I. DANGER TO NAVIGATION REPORTS
- II. NON-FLOATING AIDS AND LANDMARKS FOR CHARTS - *none submitted*
- III. LIST OF HORIZONTAL CONTROL STATIONS
- IV. GEOGRAPHIC NAMES
- V. TIDES AND WATER LEVELS - *Approved Tide Note*
- VI. SUPPLEMENTAL CORRESPONDENCE
- VII. APPROVAL SHEET

SEPARATES TO BE INCLUDED WITH SURVEY DATA

- \* I. HYDROGRAPHIC SHEETS AND PARAMETERS
- \* II. BOTTOM SAMPLES
- \* III. HORIZONTAL POSITION CONTROL AND CORRECTIONS TO POSITION DATA
- \* IV. SOUNDING EQUIPMENT CALIBRATIONS AND CORRECTIONS
- \* V. SIDE SCAN SONAR DATA
- VI. ITEM INVESTIGATION DATA

*\* Filed with the original field records*



DESCRIPTIVE REPORT TO ACCOMPANY  
SURVEY H-10350  
FIELD NUMBER HE-10-5-90  
RHODE ISLAND--NEW YORK  
BLOCK ISLAND SOUND  
SOUTHWEST LEDGE TO ENDEAVOR SHOALS  
Scale 1:10000  
NOAA SHIP HECK S-591  
LCDR Stanley R. Iwamoto, CMDG

**A. PROJECT**

This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-HE, Southern New England Coast, dated February 22, 1990, change #1 dated March 15, 1990, change #2 dated June 14, 1990.

The purpose of this project is to investigate and provide accurate information about reported wrecks and obstructions as requested by the Northeast Marine Pilots, Inc. and to provide updated bathymetric and hydrographic data to the U.S. Navy and state and local governments for proposed studies and the construction of new charts.

**B. AREA SURVEYED**

The survey area lies between the eastern end of Long Island, NY and Block Island, RI in the southern approach to Block Island Sound from the Atlantic Ocean. The actual area surveyed is an irregular polygon that may be formed by connecting, in order, the following points:

41°04'40"N 071°44'15"W, 41°05'20"N 071°47'20"W, 41°08'52"N  
071°46'52"W, 41°08'20"N 071°43'00"W, 41°07'36"N 071°42'48"W,  
41°07'36"N 071°40'12"W, 41°06'42"N 071°40'36"W, 41°06'06"N  
071°40'06"W, & 41°04'40"N 071°44'15"W.

Survey operations began on June 12, 1990 (DOY 163), and were completed on August 14, 1990 (DOY 226).

**C. SURVEY VESSELS**

All hydrographic data were collected by the NOAA Ship HECK (EDP 9140). No unusual vessel configurations were used.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

Survey data acquisition and processing were accomplished utilizing the HDAPS system hardware and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24.



The versions and dates of the system software surveyed with were:

<u>Name</u>	<u>Date</u>	<u>Function</u>
SYSTEM-BA5	01 JUN 1990	BASIC Operating System
SURVEY 4.33	01 JUN 1990	Pre Survey & Survey Files
POSTSUR 4.14	01 JUN 1990	Post Survey Processing
FILESYS 1.56	01 JUN 1990	File Management
CONPLOT 1.70	01 JUN 1990	Off-line Plot

#### E. SONAR EQUIPMENT

HECK is equipped with an EG&G model 260 slant range corrected Side Scan Sonar (SSS) recorder and model 272 dual frequency towfish. Serial numbers and dates of usage are as follows:

Towfish	S/N 10823	DOY 163 - 164
	11901	164 - 226
Recorder	S/N 0011443	DOY 163 - 170, 198 - 226
	0012104	178 - 198

The beam width and down angle are not adjustable on this unit. All SSS data was collected using the 100 Khz frequency.

Ranges of 100, 150 and 200 meters were used during this survey. Scales of 150 and 200 meters were used primarily, as per Project Instructions section 6.13., in depths greater than 25 meters. The large number of lobster pots within the survey area at times prevented the deploying of more than 20-25 meters of cable without increasing the risk of snagging and possibly damaging the towfish. This resulted in the occasional use of range scales greater than 100 meters in areas with depths less than 25 meters in depth.

Confidence Checks were obtained, and annotated on the sonargrams, whenever the towfish would pass a linear bottom feature, primarily sand waves and texture changes. Twice daily confidence checks were not obtained on all days as required, however a sufficient number were obtained through out the survey to adequately demonstrate the performance of the units.

The failure of towfish S/N 10823 on DOY 164 fortunately occurred in the area of the survey where the presence of sandwaves made the rapid decay of sonargram quality immediately visible. The towfish was swapped out and all data with questionable sonargrams was rejected and rerun.

Required proof of sonar coverage is demonstrated through the included sonar coverage plots. The hydrographer chose this method in lieu of the sonar coverage abstract. The choice of method is left to the hydrographer per Side Scan Sonar Manual section 3.1.3.



Line spacing on this survey began at 190 meters and was later reduced to 180 meters in order to achieve 2mm of overlap between adjacent swaths. Areas where 190 meter line spacing was used had the majority of the second 100% SSS coverage run at 190 meter spacing in order to preserve hydrographic line spacing. All 180 meter lines had the second 100% of SSS coverage run with 180 meter line spacing.

Irregular bottom, primarily in the area of sand waves west of buoy "BIS", resulted in "pinching" of SSS coverage over the peaks. The majority of these peaks were developed at reduced line spacing using the DSF-6000N, therefore, it is the hydrographers opinion that these small areas were 200% SSS coverage was not accomplished do not adversely affect the quality of the survey.

The sonar contact list (Side Scan Sonar Manual 3.1.1.1.) is provided through the automated HDAPS printout that is produced during the computation and logging of contacts. These printouts are located with the sonargrams on which they were identified. The contact listings contain an error in the printed water depth. HDAPS assumes water depth is still recorded in feet instead of meters, therefore, the water depth on the printouts is in meters not feet and the converted value shown as meters is erroneous.

Where several significant contacts were "clustered" only the most significant, per Project Instruction section 6.13.1., was investigated. Contact clusters are noted on the Target Abstracts in the remarks column.

Where numerous contacts were "scattered" only the most significant contacts, per Project Instruction section 6.13.1., were placed on the contact list and investigated.

Five contact tables were used during this survey. Table 1 contains the contacts associated with sheet A, table 2 contacts on sheet B, tables 3 and 4 the contacts on sheet C, and table 10 the bottom samples and buoy positions associated with the entire survey. The results of contact examinations are noted on the Target Abstracts along with the fixes associated with their development.

#### **F. SOUNDING EQUIPMENT**

Raytheon DSF-6000N echosounder (S/N A107) was the only echosounder used during this survey. No problems were encountered with this unit. Both low and high frequency depths were digitized, but only high frequency depths were plotted.



## G. CORRECTIONS TO ECHOSOUNDINGS

### G1. Velocity Correctors

The following table shows dates and locations of velocity casts conducted using the ODOM Digibar sound velocimeter (S/N 168):

<u>VELOCITY TABLE</u>	<u>DATE</u>	<u>LOCATION</u>
6	06/06/90 (DOY 157)	41° 11' 00"N 071° 54' 42"W
7	06/20/90 (DOY 171)	41° 08' 30"N 071° 42' 42"W
8	07/13/90 (DOY 194)	41° 04' 30"N 071° 43' 00"W

The velocity cast data were reduced and velocity corrections calculated using program VELOCITY. The computed velocity correctors were then applied on line to echosounder depths (both high and low frequency) by entering the correction data into the HDAPS sound velocity table.

### G2. Instrument Corrector

On DOY 071, instrument correctors were determined by conducting a dual leadline comparison of echosounder and leadline depths. Comparison resulted in a mean difference of 0.020 meter or a corrector of 0.0 meter.

### G3. Vessel Draft Corrector

A static draft of 2.10 meters was applied on line to all echosoundings via the HDAPS offset table.

### G4. Settlement and Squat Correctors

Settlement and squat correctors for the HECK were determined on March 10, 1989 (DOY 69), at Craney Island fuel pier in Norfolk, Virginia using the level rod method. No alterations have been made to HECK that would change these values.

Settlement and squat values were applied on line to hydrographic soundings via the HDAPS offset table.

### G5. Heave, Roll, Pitch Sensor and Correctors

Heave is measured by a Datawell B.V. (S/N 19110-C) heave, roll, and pitch sensor (HIPPY) located midships near the transducer. The sensor gathers on line data which is applied to the soundings in near real time. All data acquired in the echosounder mode have been corrected by applying HIPPY correctors.

Post processing of the data revealed an error in the application of the recorded heave values to the data both when depicted on screen during the edit mode and when the data was plotted applying heave correction. The errors are isolated to the third recorded sounding of the five recorded each logging interval. The system would show correct heave in the first two soundings, a



heave of "####" for the third sounding, and heave of 0.0 for the last two soundings. This problem was not initially noticed due to the heave values being recorded and initially displayed correctly. The corruption of the applied heave did not occur until after the data was initially edited and saved for the first time. This initial saving of the data would corrupt the file. Printouts of the data sets in question showed that the correct heave values are in the file and it is only the screen and field plot that are affected. All field data has been re-edited to deselect these corrupt soundings. This problem should not affect the quality of this survey as verification will be able to plot their smooth sheets applying the correct heave values as recorded by the system through the Harris system. The HDAPS office has been contacted and has corrected this problem. *This problem was resolved during office processing.*

#### G6. Tide Corrections

The tidal datum for this survey was mean lower low water (MLLW). The tide station at New London was the reference station for this survey. No tide stations were established by the HECK in support of this survey.

All hydrographic depths have been corrected for predicted tides using the zone II correctors specified in the project instructions. Tidal correctors were applied on line via the HDAPS predicted tide table. Data was gathered on DOY's 184, 185, & 191 using the incorrect, zone III, tide table. This data was plotted on the final field sheet using the correct tidal zone correctors. *Approved tides were applied during office processing.*

During periods of strong winds associated with storm systems Coast Guard and NWS broadcasts would advise of unusually high sea levels. With the exception of one group of data, see section K, no effects of these anomalous tides were noted in the data.

#### H. CONTROL STATIONS - *See also section 2.2. of the Evaluation Report.*

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). All stations used were existing control recovered by HECK personnel. All coordinates were taken from NGS Geodetic Control Data. No new stations were established, however, three eccentrics (Watch Hill Lighthouse ECC, Montauk Lighthouse ECC, & Block Island South East Lighthouse ECC) were computed using approved methods. A list of the horizontal control stations and the control work associated with calculating the eccentrics\* can be found in Appendix III, LIST OF HORIZONTAL CONTROL STATIONS submitted with this survey and surveys FE-343SS & FE-345SS. One station, Race Rock Lighthouse, lies seaward of the high water line. All stations used were navigational lights set into rock foundations.

*\* Calculations are filed with the original survey records*



## I. HYDROGRAPHIC POSITION CONTROL

Position control was multiple LOP, utilizing Motorola Mini-Ranger shore stations. Control station positions were entered into the HDAPS Control Station Tables. (~~See APPENDIX III, LIST OF HORIZONTAL CONTROL STATIONS~~)\* The appropriate Mini-Ranger codes were attached to the station number on this table. Each time the survey navigation configuration was altered, the control station and C-0 tables were modified to reflected the correct Mini-Ranger code placement/Baseline Corrector values. \* *Append to this report.*

Baseline calibrations were performed on February 21, 1990 (DOY 052) & July 25, 1990 (DOY 206). The data from the DOY 052 baseline has been previously submitted as an Electronic Control Report to N/CG244. Baseline data\* for DOY 206 are included in the separates binder of this report. \* *Filed with original field records.*

Equipment serial numbers appear as part of the header information on each days data print out.

Periods of reduced visibility would also attenuate the Mini-Ranger signal strength to below the acceptable MASS. This would result in periods of downtime during the survey.

System checks were conducted in accordance with the Field Procedures Manual and appear as HDAPS screen dumps on the data printouts.

All survey offsets were applied on-line using the HDAPS Offset Table.

At no time during this project did the maximum residual consistently exceed 0.5 mm at the survey scale (5 meters) nor did the 95% confidence ECR consistently exceeded 1.5 mm at the survey scale (15 meters). Data not meeting these requirements were examined and high residuals either accepted or smoothed and high ECR's smoothed or rejected.

## J. SHORELINE *see section 2, b. of the Evaluation Report.*

Not applicable as per project instructions.

## K. CROSSLINES *see section 3, a. of the Evaluation Report.*

Sixteen miles of crosslines were run on this survey and they represent 4 % of all hydrography. Comparison to mainscheme soundings showed good agreement, except fixes 811 - 856, with random differences of  $\pm 2$  feet. Fixes 811 - 856 did not agree well with crossline soundings on the southern part of the survey. Differences of three to four feet were noted. Examination of the records revealed no data error that would cause the differences. Anomalous tidal conditions were warned of by US Coast Guard and



NOAA Weather broadcasts on several occasions due to storm activity. It is hoped that the differences noted may be tidal in nature and remedied by the application of smooth tidal correctors.

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

Not applicable as per project instructions.

**M. COMPARISON WITH PRIOR SURVEYS** *See section 6. of the Evaluation Report.*

Comparisons were made between the following prior surveys and survey soundings:

H-6330	1938	<i>1:49,000</i>
H-6443	1939	<i>1:40,000</i>
H-9170	1970	<i>1:10,000</i>
H-9258WD	1971	<i>1:10,000</i>

Comparisons to H-6330 showed fair agreement in the area between Southwest Ledge and the deep area south of the BIS buoy known as "The Slot". Random difference of  $\pm 5$  feet were noted. No trends in shoaling were noted. A charted sounding of 46 feet ( $41^{\circ}06'14''N$   $071^{\circ}04'34''W$ ) is shown on this survey as being brought forward from H-1397(1878), ~~by verification.~~ Survey depths in this area are all greater than 60 feet. The nearest shoal area is a *Present survey* sounding of  $51^3$  feet at  $41^{\circ}06'10''N$   $071^{\circ}04'20''W$ . This area was also wire dragged to a depth of 50FT during survey H-9258WD (1971). It is unlikely that this shoal or obstruction remains. *Do not concur.* It is recommended that this charted sounding be deleted. *See also section 6. a. 1) of the Evaluation Report.*

Comparisons to H-6443 showed poor agreement with surveyed soundings in the area between Endeavor Shoals and buoy BIS. The echograms show this to be a very irregular bottom and sonargrams and bottom samples showed the bottom to be made of primarily medium grained sand which the strong tidal currents distribute into large (4-5 meters in height) sand waves that run in a WSW to ENE direction. The shifting nature of such a bottom results in the poor agreement between these surveys. *Concur*

Comparisons to H-9170 were very good in the areas south and east of buoy BIS with random differences of one to three feet. The area west and north of buoy BIS had differences of 0 - 15 feet due to the presence of sand waves in this area.

Comparison to H-9258WD was very good with all surveyed depths greater than the cleared depths of the area.

AWOIS # 1796, a 36FT hang, 35FT cleared, originates with this *Prior* survey. A SSS target was located at this position and *(109m)* echosounder developed. A corrected least depth of 36FT was determined for it. This agrees well with the findings of this



survey. It is recommended that the charted symbol be revised to a submerged rock with a least depth of 36FT, located at the surveyed position. *Concord. (10.7m) (11m) see section 6.6.2) of the Evaluation Report.*

No shoals or obstructions were found in the vicinity of the two 51FT hangs near 41°07.1'N 071°40.8'W which are apparently the source of AWOIS # 1791, a 40FT hang, 40FT cleared sounding located at 41°07'00"N 071°40'48"W which the AWOIS listing references to this survey. The surveyed depths in this area are greater than 55 feet and the nearest shoal survey sounding is 53FT. *(16.9)* It is recommended that the charted symbol be deleted and surveyed soundings be charted. *See section 6.6.1) of the Evaluation Report.* } *only one hang is the source*

The 51FT hang *shown on prior survey H-9258WD* at 41°06'50"N 071°40'50"W is in close proximity to a surveyed sounding of 51FT. *(10.6m)* Recommend the charted symbol be deleted and surveyed sounding be charted. *Concord see also section 6.6.3) b) of the Evaluation Report.*

**N. COMPARISON WITH THE CHART** *See section 7. of the Evaluation Report.*

Comparison of surveyed soundings were made to NOS chart 13215, 12th edition, June 23, 1990.

Charted soundings, with the exception of the 46FT sounding from H-1397(1878) and a 72FT *(21.9m)* sounding at 41°07'14"N 071°42'16"W, compare well with survey soundings in the areas east and south of the BIS buoy. Comparisons were poor in the areas north and west of buoy BIS where changes (see Recommendations) in the sand wave bottom caused large discrepancies.

Two dangers to navigation were submitted as a result of this survey. Both items were survey soundings, a 38FT *(11.6m)* at 41°07'20.0"N 071°44'40.5"W and a 35FT *(10.7m)* at 41°08'00.0"N 071°44'16.0"W, that were significantly shoaler than the charted soundings for the area.

Eight AWOIS items were investigated with results as follows:

AWOIS 1781, the VERMILLION, LHNM39/20. This wreck is not presently charted and has not been located since 1921. No evidence of the wreck was observed during this survey and it appears to either lie outside the survey area or to have been buried by the shifting of the bottom. It is recommended that it remain uncharted. *Concord.*

AWOIS 1788, the SNUG HARBOR, LHNM39/20. This wreck is not presently charted and has not been located since 1921. HECK did locate a wreck near the reported position of this item (contact 6, table 1). A least depth of 41FT *(12.5m)* was determined by echosounder. A diver investigation was conducted and the heavily decayed remains of a steel hulled vessel was found. The majority of the wreck had collapsed with the highest point being the top of the ships boiler (see appended dive report). The wreck appears to be approximately the correct size and age, ~~however, it was not possible to determine~~ therefore, it is reasonable to conclude that



~~conclusively~~ if it was the AWOIS item. It is recommended that a sunken wreck with a least depth of 41FT<sup>12.6M</sup> be charted at the surveyed position. *Concur. CHART a 12' H WK "SWUG HARBOR" IN LAT. 41°05'50.80"N, Long. 71°46'27.59"W.*

AWOIS 1792, a 31FT sounding from H-3380WD(1912), was verified by survey soundings in this area. A shoal with a least depth of 31FT<sup>(10.2) 9.4M</sup> was located near its charted position. It is recommended that this item be deleted and that the shoal soundings from this survey be charted. *Concur See also section 6.6.2) of the Evaluation Report.*

AWOIS 1793, a 40FT sounding from H-3380WD(1912), was verified by survey soundings. This sounding lies on the eastern end of the 31FT<sup>(10.2) 9.4M</sup> shoal mentioned previously and agrees well with the surveyed depths. It is recommended that this item be retained as charted. *Do not concur. see also section 6.6.2) b) of the Evaluation Report.*

AWOIS 7293, a reported shoal charted as a 33FT sounding. No evidence of either a shoal or obstruction was noted at the charted position. The shoalest sounding in the vicinity of this reported item is a survey sounding of 43<sup>(13.1) (14.0)</sup> feet located at approximately 41°04'57"N 071°44'07"W. It is recommended that this reported sounding be deleted and surveyed depths be charted in its place. *Concur. Chart present survey soundings, Delete 33-Ft Rep (AWOIS 7293) from the Chart.*

AWOIS 7294, a sunken barge, LHNM39/20. This wreck is not presently charted and has not been located since 1920. No evidence of the wreck was observed during this survey and it appears to either lie outside the survey area or to have been buried by the shifting of the bottom. It is recommended that it remain uncharted. *Concur.*

AWOIS 7541, a reported shoal charted as a 35FT sounding. No evidence of either a shoal or obstruction was noted at the charted position. The shoalest sounding in the vicinity of this reported item is a survey sounding of 39 feet located at approximately 41°06'05"N 071°44'33"W. It is recommended that this reported sounding be deleted and surveyed depths be charted in its place. *Concur. Delete the 35-Ft Rep (1987) PA from the chart, and the present survey supersede the chart in the common area.*

#### O. ADEQUACY OF SURVEY

This survey is adequate to supersede all prior surveys for the purposes of charting the depths and hazards to navigation within the survey area.

#### P. AIDS TO NAVIGATION *See section 7.0. of the Evaluation Report.*

Two floating aids to navigation are located within the survey area; a lighted green structure buoy "3" which is fitted with a horn and a red/green lighted structure buoy "BIS" which is fitted with a gong. Both buoys were located during this survey by marking a fix when they were passed close abeam on a survey line.



These positions were logged on contact table 10 and plotted on the contact plots. They were also transferred by hand to the smooth depth plot. They are accurately charted. It is recommended that buoy "BIS" be relocated approximately 400 meters further east in order to exclude the shoal area immediately northeast of its present position from the deep draft channel between buoys "2" and "BIS".

#### Q. STATISTICS

ITEM	for... NOAA Ship HECK	AMOUNT
1. Total No. of Positions		2267 Fixes
2. Lineal NM of Soundings		407 NMI
3. Square NM Hydrography		14 NMI <sup>2</sup>
4. Days of Production		25 Days
5. Bottom Samples		19
6. Tide Stations Established		None
7. Current Stations Established		None
8. Velocity Casts Performed		3 Casts
9. Magnetic Stations Established		None
10. Detached Positions		2

#### R. MISCELLANEOUS

No anomalies in either tide or current were noted, however, the published predictions in the NOS Tidal Currents Tables are at best approximate. The HECK noted during diving operations that the predicted and observed times of slack water would vary by up to 45 minutes.

Nineteen bottom samples were taken, Log Sheet M\* appended, submission to the Smithsonian Institution was not requested in the project instructions. Bottom samples were collected using Loran-C control which was converted to easting and northing via the HDAPS utilities. These positions were then logged along with bottom characteristics in contact table 10. *\* Filed with the original field records.*

#### S. RECOMMENDATIONS

The great deal of difference between this survey and the prior and charted soundings in the area of sand waves makes it highly probable that the depth in this area vary over time. It is recommended that a note of "Area Subject to Change" be placed on the charts in the area between buoys "BIS" and "3" to warn mariners of the shifting nature of this area. *Concord. See also section 7.2.3) of the Evaluation Report.*

The completeness of this survey which combines the side scan coverage of a disproval and the development of a hydrographic survey provides such a complete survey of this area that all



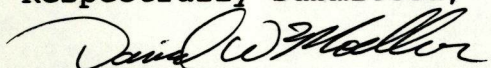
charted soundings should be superseded by the soundings of this survey.

Recommendations concerning specific AWOIS items and depths are located in sections M and N of this report.

**T. REFERRAL TO REPORTS**

- |   |           |
|---|-----------|
| 1. Coast Pilot for New York, Long Island<br>north shore from Montauk Point to Sands<br>Point. Sent to N/CG244 | 16 JUN 89 |
| 3. Electronic Control Data Report<br>Sent to N/CG244  | 16 MAR 90 |

Respectfully Submitted,



David W. Moeller, LT, NOAA  
Executive Officer  
NOAA Ship HECK



## LIST OF HORIZONTAL CONTROL STATIONS

<u>NUMBER</u>	<u>NAME</u>	<u>POSITION</u>
279	RACE ROCK LIGHT ECC	41° 14' 36.509"N 072° 02' 49.680"W
287	WATCH HILL LIGHTHOUSE ECC	41° 18' 14.006"N 071° 51' 30.799"W
288	MONTAUK POINT LIGHTHOUSE ECC	41° 04' 15.490"N 071° 51' 25.379"W
289	BLOCK ISLAND NORTH LIGHTHOUSE	41° 13' 39.454"N 071° 34' 33.066"W
292	BLOCK IS. SE. LIGHTHOUSE ECC	41° 09' 09.900"N 071° 33' 06.777"W
299	FRONT	41° 04' 34.044"N 071° 54' 06.468"W





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

August 15, 1991

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

Dear Sir,

This report supersedes the previous danger to navigation report dated August 30, 1990 (See attached copy).

After application of approved tides during office processing the shoals discussed in the previous danger to navigation are no longer considered hazards to navigation.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number....H-10350  
 State.....Rhode Island - New York  
 General Locality.....Block Island Sound  
 Locality.....Southwest Ledge to Endeavor Shoals  
 Project Number.....OPR-B660  
 Surveyed by.....NOAA Ship HECK

Objects Addressed:

1. A shoal with a depth of 42 feet (12.7 meters) at MLLW was found in Latitude 41°08'00.34"N, Longitude 71°44'16.14"W (NAD83). The presently charted depths in this area are 42 to 55 feet.
2. A shoal with a depth of 42 feet (12.7 meters) at MLLW was found in Latitude 41°07'20.46"N, Longitude 71°44'39.37"W (NAD83). The presently charted depths in this area are 52 to 46 feet.

Affected Nautical Charts:

CHART	EDITION NO.	DATE	HORIZ. DATUM
13205	29th	Aug 5/89	NAD83
13215	12th	Jun 23/90	NAD83

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

Sincerely,

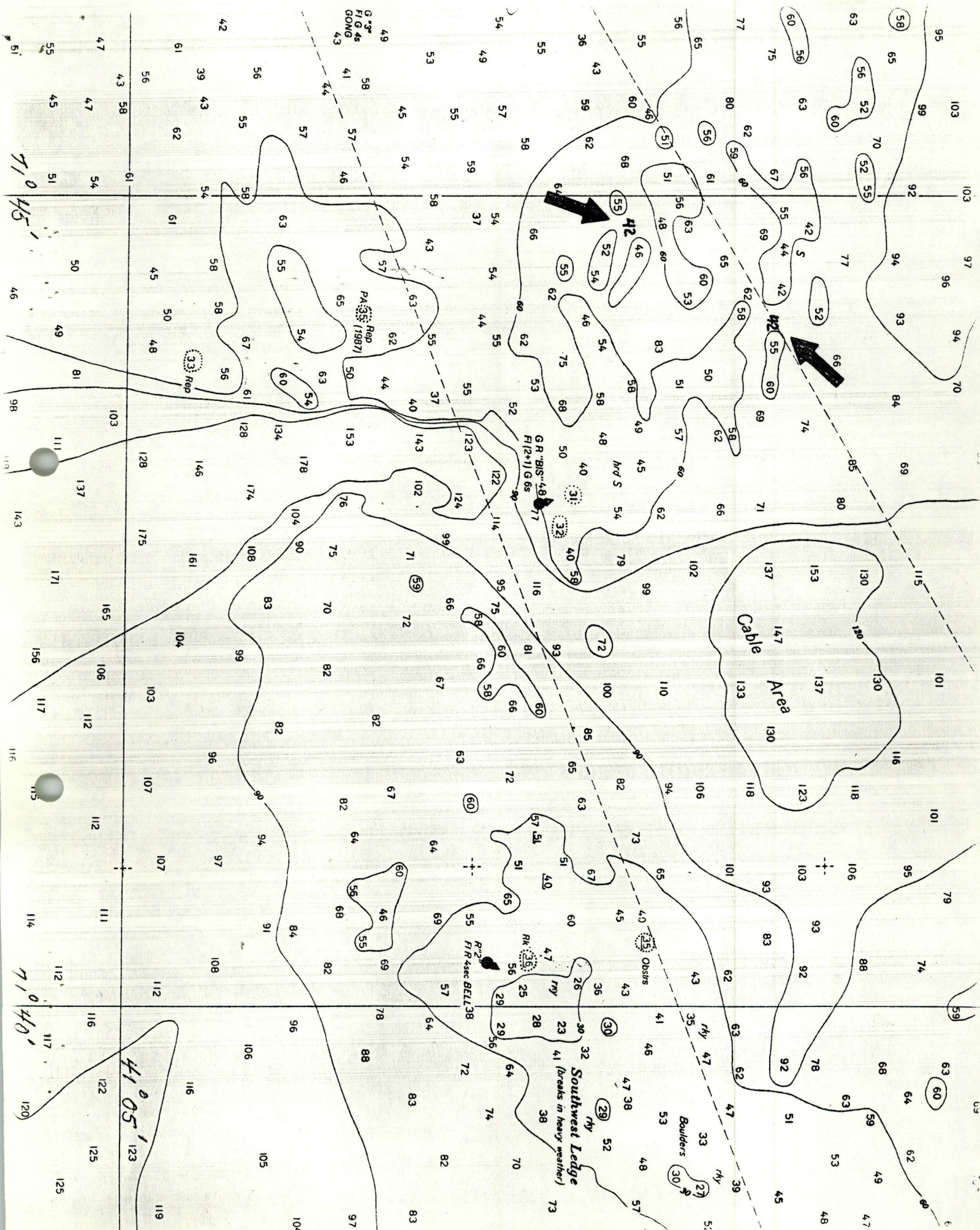
*Christopher B. Lawrence*

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

Attachment



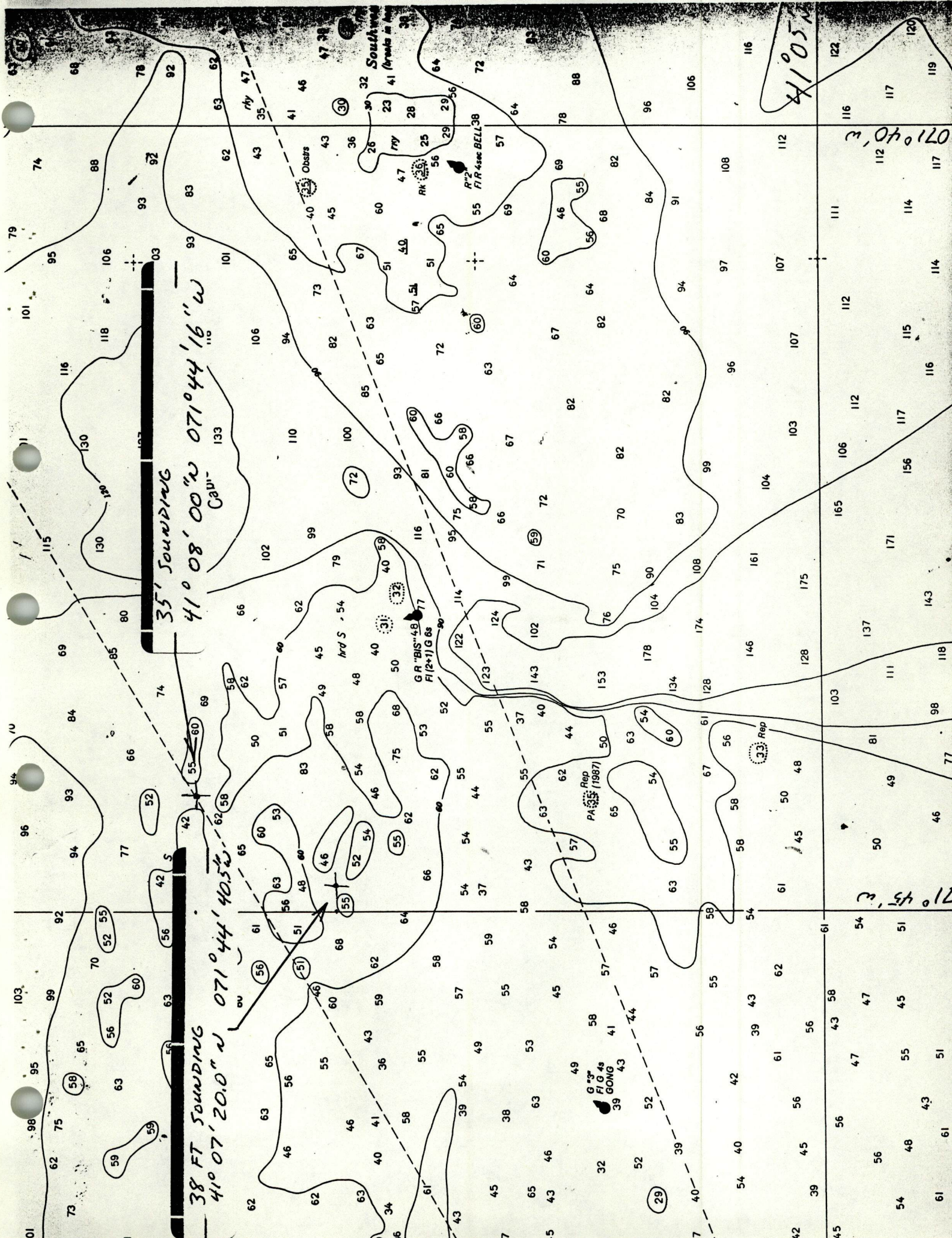














DIVING OPERATIONS  
OPR-B660-HE-90

DATE: 8-14 1990

UNIT: NOAA SHIP HECK S591  
AWOIS ITEM # 1788  
CONTACT # \_\_\_\_\_

LOCATION: SOUTHERN NEW ENGLAND COAST

DIVE MASTER: ~~DAVE MOELLER~~ DAVE MOELLER  
TENDERS: SS LEWIS

DIVERS: LT MOELLER ✓  
LT. WILKES ✓  
~~ENS WEINER~~

DIVE PLAN: CIRCLE SEARCH AND ITEM INVESTIGATION. MAX DEPTH: \_\_\_\_\_ FT  
MAX TIME: \_\_\_\_\_ MIN  
AVERAGE LEAST DEPTH: \_\_\_\_\_ FT  
LEAST DEPTH TIME: \_\_\_\_\_ : \_\_\_\_\_  
DEPTH: (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

EQUIPMENT USED: OPEN CIRCUIT SCUBA.

PNEUMOFATHOMETER:

S/N 8607004N (SHALLOW) GAGE  
S/N 8704986 (DEEP) GAGE

CONDITIONS:

WIND: DIR 30 KTS 10 KT  
SEAS: DIR 190 FT 3-5 SW 2 ft  
CURRENT: KTS 1-2

VISIBILITY: 10  
AIR TEMP: 80  
WATER TEMP: 65

ALL TIMES GMT

DIVERS NAME	SI	GROUP	RNT	TANK PRESSURE	PRES. CHANGE	DIVE TIMES DOWN/UP	BOTTOM TIME	DEPTH	GROUP
# <u>10</u> MOELLER				IN <u>3000 / 3000</u>		GMT D <u>1527</u>	<u>34</u>	<u>70'</u>	
<u>1</u> WEINER				OUT <u>200 / 200</u>		U <u>1600</u>	<u>34</u>	<u>70'</u>	
<u>1</u> WILKES									

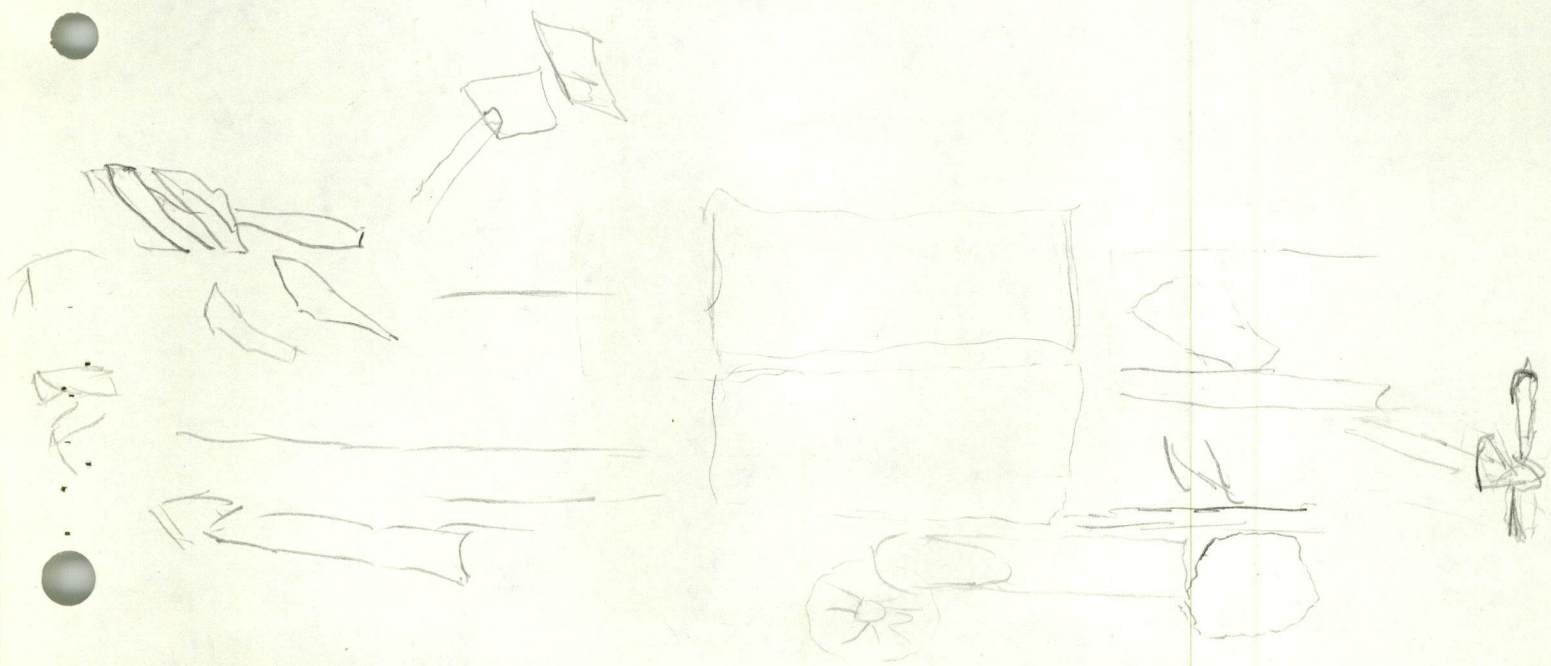
MOELLER				IN _____ / _____		D _____			
WEINER				OUT _____ / _____		U _____			
WILKES									

POST DIVE COMMENTS DIVERS SWAM DOWN THE BOMBY LINE AND LANDED ON TOP OF THE WRECK. TWO (2) LARGE BOILERS WERE SITTING UPRIGHT NEXT TO EACH OTHER. THE WRECK WAS FLAT AND SCATTERED IN THE SHAPE OF A SHIP. A LARGE PROPELLER WAS STANDING UPRIGHT APPROX 10 FT OFF BOTTOM. VISIBILITY WAS GOOD (25') AND CURRENTS WERE MIN.

DIVE MASTER SIGNATURE \_\_\_\_\_



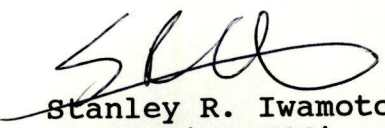
BOILERS





VII. LETTER OF APPROVAL

Field operations contributing to the accomplishment of this survey were conducted under my direct supervision with frequent personal checks of progress and data quality. This report, fieldsheets, and data records have been closely reviewed and are complete and adequate for charting.

  
Stanley R. Iwamoto, LCDR, NOAA  
Commanding Officer  
NOAA Ship HECK



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 10, 1990

MARINE CENTER: Atlantic

OPR: B660-HE-90

HYDROGRAPHIC SHEET: H-10350

LOCALITY: Block Island Sound Southwest Ledge to Endeavor Shoals

TIME PERIOD: June 12 - August 14, 1990

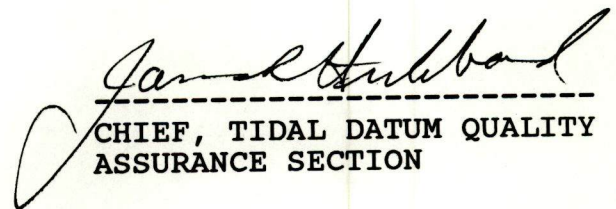
TIDE STATION USED: 846-1490 New London, CT.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 3.34 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 2.8 ft.

REMARKS: RECOMMENDED ZONING

Items 1781, 1788, 1791, 1792, 1793, 1796, 7293, 7294, and 7541  
-apply a -02 hr 00 min time correction and a X1.01 range ratio  
to all heights.

  
-----  
CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION



GEOGRAPHIC NAMES

H-10350

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	RAND McNALLY ATLAS	U.S. LIGHT LIST				
BLOCK ISLAND SOUND												1
ENDEAVOR SHOALS (title)												2
NEW YORK (title)												3
RHODE ISLAND (title)												4
SOUTHWEST LEDGE												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/CG2x5

JAN 27 1992



01/22/92

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H-10350

NUMBER OF CONTROL STATIONS		6
NUMBER OF POSITIONS		2329
NUMBER OF SOUNDINGS		14835
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	92	06/04/91
VERIFICATION OF FIELD DATA	305	04/26/91
ELECTRONIC DATA PROCESSING	141	
QUALITY CONTROL CHECKS	117	
EVALUATION AND ANALYSIS	150	12/13/91
FINAL INSPECTION	20	11/07/91
TOTAL TIME	825	
ATLANTIC HYROGRAPHIC SECTION APPROVAL		01/06/92



N/CG244-5-92

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, N/CG243  
 NOAA/National Ocean Service  
 Room 151, WSC-1  
 Rockville, MD 20852

DATE FORWARDED

21 January 1992

NUMBER OF PACKAGES

2 boxes, 1 tube

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

H-10350

Rhode Island--New York, Block Island Sound, Southwest Ledge to Endeavor Shoals

1 Tube containing:

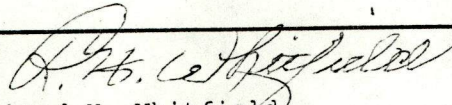
- 1 Original Descriptive Report
- 1 Smooth Sheet for H-10350
- 1 Smooth Position Overlay
- 2 Smooth Excess Overlays
- 3 Field Smooth Swath Plots-1st 100%
- 3 Field Smooth Swath Plots-2nd 100%
- 3 Field Smooth Depth Plots
- 3 Field Smooth Sounding Overlays
- 2 Field Smooth Bottom Sample Overlays

1 Box containing:

- 1 Envelope containing Velocity Tables
- 1 Envelope containing Misc. Data removed from the original Descriptive Report
- 1 Envelope containing separates removed from the original Descriptive Report
- 1 Envelope containing supplemental data removed from printouts
- 1 Cahier containing Position Listing and Control File Listing
- 1 Cahier containing Sounding Listing and Line File Listing
- 2 Accordion folders containing fathograms and daily printouts:  
 VESNO 9140 JD's: 163, 164, 165, 178, 179, 180, 184, 185, 191, 192, 193,  
 197, 198, 199, 200, 211, 212, 213, 214, 219, 220, 221, 222,  
 and 226

page 1 of 2

FROM: (Signature)



Richard H. Whitfield

RECEIVED THE ABOVE  
(Name, Division, Date)

Return receipted copy to:

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

*D. S. Clark*  
 1/23/92



N/CG244-5-92

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, N/CG243  
 NOAA/National Ocean Service  
 Room 151, WSC-1  
 Rockville, MD 20852

DATE FORWARDED

21 January 1992

NUMBER OF PACKAGES

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**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.

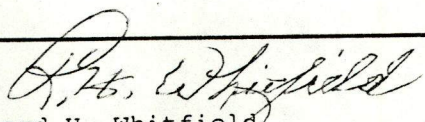
H-10350

1 Box containing:

~~22~~ Envelopes containing sonograms for JD,s: 163, 164, 165, 178, 179, 180, 184,  
 185, 191, 192, 193, 197, 198, 199, 200, 211, 212, 213, 214, 219, 220, 221,  
 222, and 226

page 2 of 2.

FROM: (Signature)



Richard H. Whitfield

RECEIVED THE ABOVE  
(Name, Division, Date)

Return receipted copy to:

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



COAST AND GEODETIC SURVEY  
ATLANTIC MARINE CENTER  
EVALUATION REPORT

SURVEY NO.: H-10350

FIELD NO.: HE-10-5-90

Rhode Island--New York, Block Island Sound, Southwest Ledge to Endeavor Shoals

SURVEYED: 12 June through August 14, 1990

SCALE: 1:10,000

PROJECT NO.: OPR-B660-HE-90

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

CONTROL: MOTOROLA Falcon 484 Mini-Ranger (Range/Range)

Chief of Party.....S. R. Iwamoto

Surveyed by.....D. W. Moeller  
.....D. S. Wilkes  
.....L. D. Weiner  
.....W. R. Morris

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

1. INTRODUCTION

a. This is a combined basic hydrographic/side scan sonar survey. Side scan sonar was operated simultaneously with the fathometer during survey operations. Numerous side scan sonar contacts located by the field unit during hydrographic operations were resolved by fathometer development for shoal depth determination. In cases where the side scan sonar was used to determine the estimated depth of an item or object, the item is shown on the present survey with the upper case letter 'A' in parenthesis. Depths on these items were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computing offsets from the vessel's track. This note is shown on the present survey smooth sheet in proximity to the title block. See also the memorandum titled: "Showing Estimated Side Scan Sonar Depths on Smooth Sheets", dated 23 February 1989, for an explanation of the note shown on the survey smooth sheet.

b. No unusual problems were encountered during office processing.



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

## 2. CONTROL AND SHORELINE

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

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83). Office processing of this survey is based on these values: The smooth sheet has been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD27). To place this survey on the NAD27 datum, move the projection lines 0.370 seconds (11.41 m or 1.14 mm at the scale of the survey) north in latitude, and 1.784 seconds (41.63 m or 4.16 mm at the scale of the survey) east in longitude.

All geographic positions listed in this report are on the NAD83 datum unless otherwise specified.

b. There is no shoreline within the area surveyed.

## 3. HYDROGRAPHY

a. Soundings at crossings agree within the criteria stated in sections 6.5. and 6.6 of the Project Instructions.

b. The standard 10, 15, 20, 25, 30, 40, 50, and 60 meter curves could be drawn in their entirety. Brown and dashed curves were added to better show bottom topography.

c. Development of bottom configuration and determination of least depths is considered adequate.

## 4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL and the SIDE SCAN SONAR MANUAL. The following should be noted:

a. AWOIS item #1788 was adequately developed by the hydrographer; however, a diver least depth was not obtained by divers during diving operations as required in section 6.14.2. of the Project Instructions, dated February 22, 1990.

b. The Descriptive Report and the hydrographer's final field sheets were plotted in feet, not meters, as required by



Hydrographic Survey Guideline #69 and section 6.5.1. of the Project Instructions, dated February 22, 1991.

## 5. JUNCTIONS

There are no contemporary junctional surveys. There are no junctional requirements in the Project Instructions. The charted depths and present survey depths are in harmony in the junctional areas.

## 6. COMPARISON WITH PRIOR SURVEYS

### a. Hydrographic

H-6330 (1938) 1:40,000  
 H-6443 (1939) 1:40,000  
H-9170 (1970) 1:10,000

1) Prior survey H-6330 (1938) covers the south eastern area of the present survey. Soundings compare well with depths ranging plus or minus (+/-) 0<sup>6</sup> m (2 feet). Prior survey soundings to the southwest are 0<sup>6</sup> to 1<sup>5</sup> m (2 to 5 feet) shoaler with scattered soundings in this area ranging from 5<sup>5</sup> m (18 feet) shoaler to 6<sup>1</sup> m (20 feet) deeper than present survey soundings. The present survey shows a slight migration of the bottom to the south. The following should be noted:

An uncharted rock with an estimated depth of 14<sup>2</sup> meters (46 ft), in Latitude 41°06'10.62"N, Longitude 71°40'41.15"W, is shown on the present survey. The rock is 217 meters southwest of a charted 46-ft (14<sup>0</sup> m) sounding in Latitude 41°06'14.0"N, Longitude 71°40'33.0"W (NAD27) that originates with prior survey H-1397 (1878) and was brought forward to prior survey H-6330 (1938). Present survey depths in the vicinity of the charted 46-ft (14<sup>0</sup> m) sounding are 20<sup>4</sup> to 20<sup>7</sup> meters (67 to 68 feet). It is recommended that the 46-ft sounding be deleted from the chart, and a rock with an estimated depth of 14<sup>2</sup> meters (14<sup>2</sup> Rk (A)) be charted as shown on the present survey.

2) Prior survey H-6443 (1939) covers the remainder of the present survey. West of the area known as "The Slot", the bottom consists of large sand waves and boulder fields. The bottom topography of shoals and deeps is in general agreement with the present survey. Soundings in the shoaler areas agree to within plus or minus (±) 1 m (3 ft). In the deeper areas, soundings range from plus or minus (±) 2<sup>1</sup> to 3 meters (7 to 10 ft). Depths in "The Slot" are in good agreement with the present survey. Present soundings in a



boulder field shown on the present survey to the northeast, agree well with prior soundings. The following should be noted:

a) AWOIS item #1792 is a charted 31-ft ( $9^4$  m) sounding, in Latitude  $41^{\circ}07'02.36''$ N, Longitude  $71^{\circ}43'07.21''$ W, originating with prior wire drag survey H-3880WD (1912) and brought forward to H-6443 (1939). Present survey soundings in the immediate vicinity of the charted 31-ft ( $9^4$  m) sounding are  $16^3$  meters (53 ft) shoaling to  $13^1$  meters (43 ft). A depth of 10 meters (33 ft) was located by the present survey 164 meters to the southeast in Latitude  $41^{\circ}07'00.71''$ N, Longitude  $71^{\circ}43'00.51''$ W. This area is a shoal marked by buoy "BIS". Apparently the charted 31-ft ( $9^4$  m) sounding is located where the shoal was at one time. The shoal has now shifted to the south. It is recommended that the charted 31-ft ( $9^4$  m) sounding be deleted, the area charted as shown on present survey, and a depth of 10 meters (33-ft) be charted as shown on the present survey.

b) AWOIS item #1793 is a charted 40-ft ( $12^2$  m) sounding, in Latitude  $41^{\circ}07'03.36''$ N, Longitude  $71^{\circ}42'47.21''$ W, originating with prior wire drag survey H-3880WD (1912) and brought forward to H-6443 (1939). Present soundings in the immediate vicinity of the charted 40-ft ( $12^2$  m) sounding range from  $14^4$  meters (47 ft) to  $17^7$  meters (58 ft). Apparently the charted 40-ft ( $12^2$  m) sounding, presently marked by buoy "BIS", is where the shoal was at one time. The shoal has now shifted to the south. It is recommended that the charted 40-ft sounding be deleted from the chart, and the area charted as shown on the present survey.

3) Prior Survey H-9170 (1970) covers the northeast portion of the present survey. This survey has only been processed through the verification stage. Soundings are in good agreement with the present survey. Soundings in the area with sand waves, northwest of buoy BIS show a difference of plus or minus (+/-)  $0^6$  meter (2 ft).

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

b. Wire Drag

H-9258WD (1971) 1:10,000

Two hangs in the area common to the present survey originate with prior wire drag survey H-9258 (1971).



1) AWOIS item #1791 is a wire drag hang at 40 feet and charted as a 40-ft wire drag clearance (12<sup>2</sup> m) in Latitude 41°07'00.37"N, Longitude 71°40'46.21"W. The item apparently originates with unreviewed wire drag survey data. The present survey, when compared with the reviewed version of the prior wire drag survey, shows a hang at 51 feet cleared by 51 feet in one direction and 40 feet in another direction. Present survey depths in the area range from 16<sup>3</sup> to 16<sup>8</sup> meters (53 to 55 ft). There are no side scan sonar contacts in the area; therefore, it is recommended that the 40-ft wire drag clearance be deleted from the chart, and the present survey supersede the chart in the common area.

2) AWOIS item #1796 is charted dangerous submerged obstructions with a wire drag clearance depth of 35-ft (10<sup>7</sup> m) in Latitude 41°07'27.37"N, Longitude 71°40'23.21"W that originates with the prior wire drag survey from two hangs; a 36 foot (11 m) hang and a 37 foot (11<sup>2</sup> m) hang. The present survey found numerous rocks in the area of the AWOIS item; the shoalest being a rock with a fathometer depth of 10<sup>9</sup> meters (36 ft) in Latitude 41°07'27.49"N, Longitude 71°40'22.70"W. It is recommended that the dangerous submerged obstructions with a wire drag clearance of 35-ft be deleted from the chart, and a dangerous submerged rock with a depth of 10<sup>9</sup> meters (10<sup>9</sup> Rk) be charted as shown on the present survey.

3) In the following areas the wire drag effective depths on the prior wire drag survey and the present survey are in conflict:

a) An uncharted rock with an estimated depth of 14<sup>2</sup> meters (46-ft) in Latitude 41°06'10.62"N, Longitude 71°40'41.15"W was located by the present survey. This is in an area of the prior wire drag survey effective depths of 51 feet (15<sup>5</sup> m). A charting recommendation and discussion on this item is found in section 6.a.1) of this report.

b) An uncharted rock with an estimated depth of 13<sup>3</sup> meters (43 ft) in Latitude 41°06'53.96"N, Longitude 71°40'49.44"W was located by the present survey. This is in an area of the prior wire drag survey effective depths of 51 feet. The rock is 77 meters northeast of a charted 51-ft (15<sup>5</sup> m) sounding, in Latitude 41°06'52.0"N, Longitude 71°40'51.5"W, that originates with the prior wire drag survey as a 51 foot (15<sup>5</sup> m) hang. Present survey depths in the area of the charted 51-ft (15<sup>5</sup> m) sounding are 17 to 18<sup>1</sup> meters (56 to 59 ft). It is recommended that the present survey supersede the charted 51-ft sounding in the common area. It is also recommended that a rock with an estimated depth of 13<sup>3</sup> meters (13<sup>3</sup> Rk (A))



be charted as shown on the present survey.

There are no other conflicts between the present survey depths and the wire drag effective depths shown on prior survey H-9258WD (1971).

7. COMPARISON WITH CHART 13215 (12th Ed., June 23/90)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and miscellaneous sources not readily available. Specific items are discussed in section N. of the Descriptive Report and require no additional comments. The following should be noted:

1) There is no indication of any shoaling in the vicinity of a charted 72-ft (21<sup>9</sup> m) sounding in Latitude 41°07'15.0"N, Longitude 71°42'14.0"W. Present survey soundings range from 34 to 35 meters (111 to 115 ft). It is recommended that the 72-ft (21<sup>9</sup> m) sounding be deleted from the chart, and the present survey supersede the chart in the common area.

2) Numerous uncharted rocks were located by the present survey. The present survey data were used to determine the limits of boulder fields within the area surveyed. Limit lines were drawn on the smooth sheet during office processing. It is recommended that these areas be charted and noted as "rocky". It is also recommended that significant shoal soundings on rocks be charted as the scale of the chart allows.

3) Large areas of sand waves were located by the present survey. The present survey data were used to determine the limits of the sand wave areas within the area surveyed. Limit lines were drawn on the smooth sheet during office processing. It is recommended that these areas be charted and noted as "sand waves" with the appropriate symbol.

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

b. Dangers to Navigation

One Danger to Navigation concerning two items was submitted by the hydrographer to the Commander (OAN), First Coast Guard District, 408 Atlantic Avenue, Boston, MA 02110-3350. After application of approved tides during office



processing the shoals discussed in the previous danger to navigation dated August 30, 1990 are no longer considered hazards to navigation. A copy of the Danger to Navigation submitted by the hydrographer, and a copy of the report to supersede are appended to the Descriptive Report.

c. Aids to Navigation

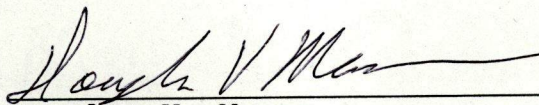
Two (2) floating aids to navigation were located by the hydrographer on the present survey. These aids appear adequate to serve their intended purpose.

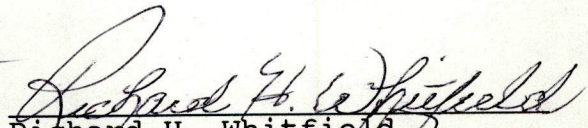
8. COMPLIANCE WITH INSTRUCTIONS

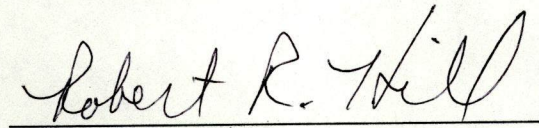
This survey complies with the Project Instructions except as noted elsewhere in this report.

9. ADDITIONAL FIELD WORK

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

  
 Douglas V. Mason  
 Cartographic Technician  
 Verification of Field Data

  
 Richard H. Whitfield  
 Cartographer  
 Evaluation and Analysis

  
 Robert R. Hill  
 Senior Cartographic Technician  
 Verification Check



APPROVAL SHEET  
H-10350

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disapproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson  
Robert G. Roberson  
Chief, Evaluation and Analysis Team  
Atlantic Hydrographic Section

Date: 6 January 1992

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

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

Date: 06 January 1992

\*\*\*\*\*

Final Approval:

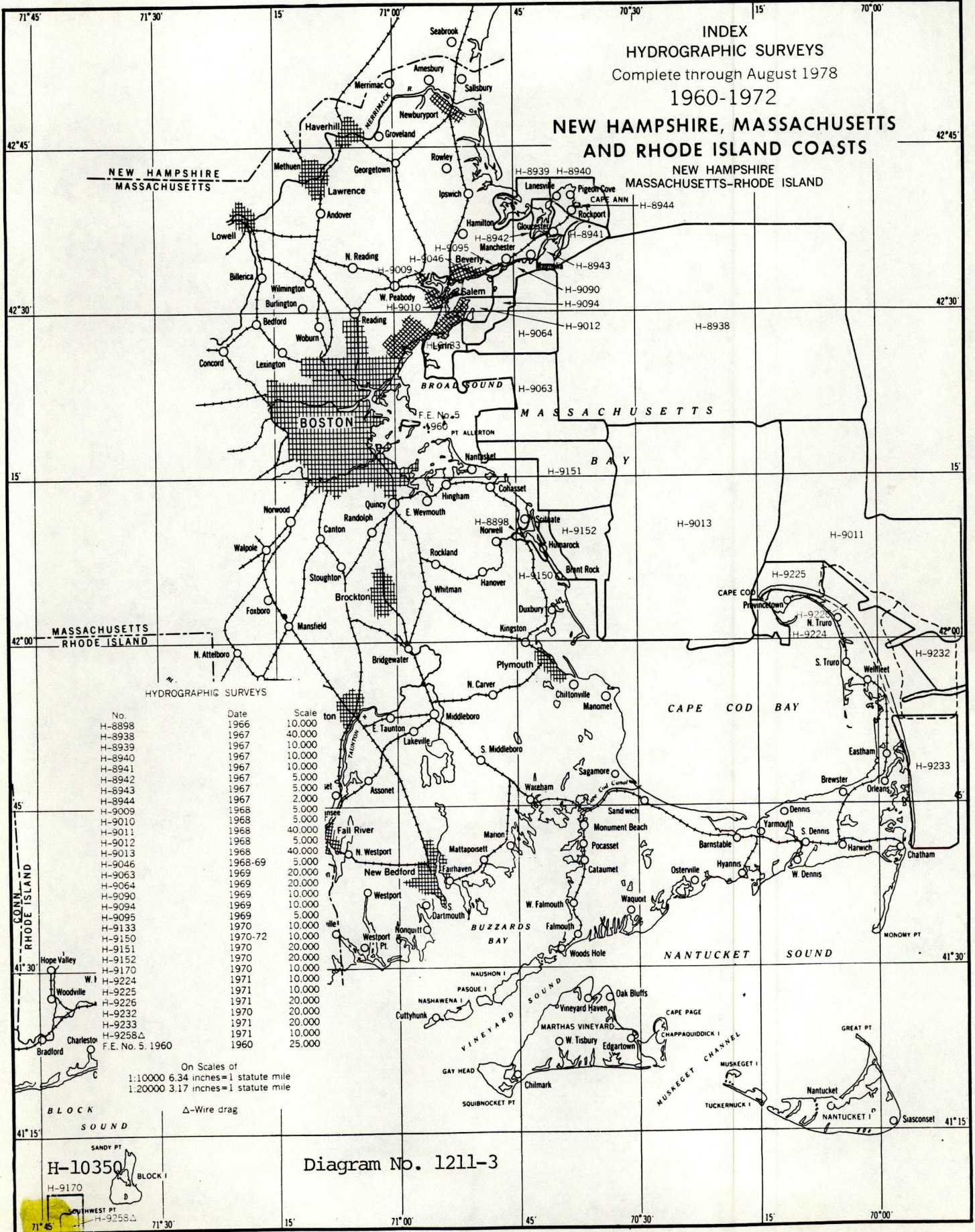
Approved: J. Austin Yeager  
J. Austin Yeager  
Rear Admiral, NOAA  
Director, Coast and Geodetic Survey

Date: Feb 12, 1992



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	2,000
H-8944	1967	2,000
H-9009	1968	5,000
H-9010	1968	40,000
H-9011	1968	5,000
H-9012	1968	40,000
H-9013	1968	5,000
H-9046	1968-69	5,000
H-9063	1969	20,000
H-9064	1969	10,000
H-9090	1969	10,000
H-9094	1969	5,000
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-9233	1971	10,000
H-9258	1960	25,000

F.E. No. 5, 1960

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

Δ-Wire drag

Diagram No. 1211-3





MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

**EXAMINED FOR NM**  
DMC - 4-14-92

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10350

**INSTRUCTIONS**

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

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

CHART	DATE	CARTOGRAPHER	REMARKS
13215	4/14/92	MCALINDEN	<del>Full Part Before</del> After Marine Center Approval Signed Via <b>EXAM FOR</b> Drawing No. <b>13</b> <b>CRIT CORR ONLY CK HISTORY #13 FOR CORRECTIONS</b>
			<b>Add Date</b>
13215	11/2/93	J. Barber	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. <b>14</b>
<del>13003</del>	<del>1-23-93</del> 5-13-93	<del>Roy W. Dimmond</del>	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. <b>#63</b> <b>NO CORRECTION, CHART SCALE.</b>
13205	1/25/93	J. Barber	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. <b>#54, then CHT 13215</b>
12300	1/15/93	J. Barber	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. <b>56, then CHT 13205</b>
13006	8/2/93	L. Arkenan	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. <b>49, then CHT 12300</b>
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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