FE348
SIDE SCAN

Diagram No. 1211-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ..... Side Scan Sonar

Field No. HE-10-4-90

Registery No. FE-348SS

LOCALITY

State ..... Rhode Island--New York

General Locality ..... Block Island Sound

Sublocality ..... Block Island to Montauk Point

1990

CHIEF OF PARTY
LCDR S.R. Iwamoto

LIBRARY & ARCHIVES

DATE ..... March 3, 1993

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

FE348
SIDE SCAN

ECIG
PRODUCTS
13217
13215
13209
13205
12300
CP2
13006-NC

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

FE-348ss

FIELD NO.

HE-10-4-90

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

State Rhode Island--New York

General locality Block Island Sound

Locality Block Island to Montauk Point

Scale 1:10,000 Date of survey May 18-August 14, 1990

Instructions dated February 22, 1990 Project No. OPR-B660-HE

Vessel HECK S-591 (EDPN 9140)

Chief of party LCDR Stanley R. Iwamoto, NOAA

Surveyed by D.W. Moeller, D.S. Wilkes

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF 6000N, and ~~Pneumofathometer~~ PNEUMATIC DEPTH GAUGE EG&G MODEL 260 SIDE SCAN SONAR

Graphic record scaled by D.W.Moeller, D.S.Wilkes

Graphic record checked by D.W.Moeller, D.S.Wilkes

Protracted by _____ Automated plot by HDAPS (FIELD) XYNETICS 1201 PLOTTER (AHS)

Verification by ATLANTIC HYDROGRAPHIC SECTION (AHS) PERSONNEL

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

REMARKS: All times UTC

Data are submitted to all Hydrographic section, N/CG244

NOTES IN RED WERE MADE DURING OFFICE PROCESSING

Always Surf 3/30/93
MCR

[redacted]

KWW 3/28/93

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-348SS
FIELD NUMBER HE-10-4-90
RHODE ISLAND--NEW YORK
BLOCK ISLAND SOUND
BLOCK ISLAND TO MONTAUK POINT
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 areas lie between the eastern end of Long Island, NY and Block Island, RI. Sheet A is located next to Montauk Point and consists of the search areas for AWOIS items 2512 and 2514. Sheet B is located on the west side of Block Island and consists of the search areas for AWOIS items 1825, 7280, 7784 and the development of a discontinued dump site (AWOIS 7285).

Survey operations began on May 18, 1990 (DOY 138), and were completed on August 14, 1990 (DOY 228).

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

The following versions of the NAVITRONIC NAVISOFT 300 software, provided to the ship by N/CG24, were used:

Name	Date	Function
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 138 - 164
	11901	164 - 228
Recorder	S/N 0011443	DOY 138 - 170, 198 - 228
	0012104	171 - 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 50, 100, and 150 meters were used during this survey. 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 throughout the survey to adequately demonstrate the performance of the units.

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 was 190 meters with lines run parallel such that the wide beam of the DSF echosounder insonafies the "overlap" between adjacent swaths. See section 4.c. of the Evaluation Report.

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.

One contact table was used during this survey. Table 1 contains the contacts associated with sheet A. 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):

VELOCITY TABLE	DATE	LOCATION
5	05/10/90 (DOY 130)	41° 14' 00"N 072° 04' 00"W
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 soundings where the selected sounding was altered. When altered the system shows incorrect 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 to corrected this problem.

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 correctors specified in the project instructions. Tidal correctors were applied on line via the HDAPS predicted tide table. Approved tidal correctors and tidal zoning values were applied during office processing

H. CONTROL STATIONS See also section 2. a. 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 H-10350, 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.

I. HYDROGRAPHIC POSITION CONTROL *See Section 2.a. of the Evaluation Report*

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-O tables were modified to reflected the correct Mini-Ranger code placement/Baseline Corrector values.

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.

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 also Section 2.b. of the Evaluation Report.*

Not applicable as per project instructions.

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

One crossline was run on the echosounder development of the dumpsite. Comparison to mainscheme soundings showed good agreement with random differences of ± one foot.

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

Not applicable as per project instructions.

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

Not applicable as per project instructions.

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

Comparison of surveyed soundings were made to NOS chart 13215, 12th edition, June 23, 1990 and 13217, 11th edition, February 10,1990, and 13209, 18th edition, March 3, 1990.

Charted soundings disagreed with soundings on sheet A (Field) of this survey due to the combination of rock fields and shifting sand waves. The following significant peaks are recommended for charting: Concur. Should the scale of the chart allow.

FIX #	DEPTH(ft)	(m)	Latitude (N)	Longitude (W)
111.15	22	6^7	41°05'57.42"	71°51'05.81"
123.75	~~21~~ 22	6^7	41°04'59.24"	71°50'57.95"
143.25	~~21~~ 22	6^8	41°04'59.13"	71°50'49.52"
256.24	24	7^4	41°05'06.78"	71°49'44.69"
377.25	29	8^8	41°06'22.69"	71°52'14.66"
478.23	~~24~~ 23	7^1	41°05'58.94"	71°51'01.50"
522.00	~~25~~ 24	7^3	41°05'07.47"	71°50'04.26"
533.25	~~20~~ 21	6^4	41°04'23.80"	71°50'21.87"
612.10	28	8^6	41°04'41.09"	71°49'28.49"
621.22	24	7^5	41°05'06.34"	71°49'20.02"
655.22	~~33~~ 34	10^4	41°05'57.42"	71°50'05.81"
825.00	25	7^6	41°04'40.69"	71°49'24.01"
848.17	29 - reported as Danger to Navigation 8^8 m			
870.50	22 - reported as Danger to Navigation 6^7 m			

The depths listed above have been highlighted on the field depth plot of sheet A.

Charted soundings on sheet B compare poorly with the survey soundings in the northwest corner of the dump site. Surveyed soundings were 3-4 feet shoaler in this area. The rest of this sheet compared well. See also section 6.a.3) of the Evaluation Report

Two dangers to navigation were submitted as a result of this survey. Both items were survey soundings, a 22ft (6.7m) at Lat 41-05-08 N / Lon 071-50-00 W, and a 29ft (8.8m) at Lat 41-04-49.3 N / Lon 071-49-08.6 W that were significantly shoaler than the charted soundings for the area. Revised at AHS and appended to this report

An uncharted wreck reported to the Heck by USCG Station Montauk was located at position Lat 41-04-~~30~~ 36.67 N / Lon 071-53-~~22~~ 22.32 W (fix #57, DOY) with a corrected least depth of 30 ft (9.1m). It is recommended that a Sunken Wreck not Dangerous to Surface Navigation be charted at the surveyed position. See also section 6.a.1) of the Evaluation Report

The area south of Lat 41-05-13 N and west of Lon 071-51-06 W could not be surveyed due to the close proximity of this area to shoals existing off Montauk Point.

Six AWOIS items were investigated with results as follows:

AWOIS 1825, the Montana, H4041/18-WD. This wreck is presently charted at Lat 41-12-08N, Lon 071-36-02.4W. NAD 27 The wreck was cleared to 51 ft by wire drag in 1941. The wreck was located using side scan sonar and the loran rates given in the AWOIS item listing. It is recommended that this item be revised to a Sunken Wreck not Dangerous to Surface Navigation with a corrected least depth of 70 ft. (21 M) See also section C.b. of the Evaluation Report

AWOIS 7280, a U.S. Navy transducer, CL1250/64. This item is charted as an obstruction at Lat 41-11-54.0N, (NAD 27) Lon 071-35-52.0W with a sounding of 45 ft. (13.7 M) The transducer was located using side scan sonar and a corrected least depth of 51 ft determined by echosounder. Divers were used to verify the existence of this item which remains upright and intact. It is recommended this item remain charted as an Obstruction with a known least depth of 51 ft. (15.5 M) See also section 7.a.1) of the Evaluation Report.

AWOIS 7285 is a reported discontinued disposal area CL85/72. The area, bounded by the limits of the dumping ground, was surveyed using Echosounder with 100/50 m line spacing. One item was found which is believed to be AWOIS item 7784, Block Island Sound experimental light. This item is described as a sunken barge with a pipe protruding up 10 ft from its'center. The item is located at the coordinates listed in the AWOIS listing. It was developed using side scan sonar on 100m and 50m range scales. The corrected least depth of 86 ft (26.1 M) was determined using echosounder. It is recommended that this item be charted as a Sunken Wreck not Dangerous to Surface Navigation and delete the pole symbol from the charts. It is also recommended that surveyed depths from surveys of 1918-1939 be deleted and replaced with soundings from this survey. See also section 6.a.3) of the Evaluation Report.

AWOIS 2512, the Dragnet, a reported sunken fishing boat, LNM 28/74. This SUNKEN wreck is presently charted in position APPROXIMATE Lat 41-06-18.3 N Lon 071-51-30 28.24 W. No evidence of the wreck was observed during this survey and it appears to have been buried or moved outside this area of by strong currents and shifting sands. It is recommended this item be deleted from the charts. Concur.

AWOIS 2514, a reported sunken fishing vessel, LNM 44/81. No evidence of this item was located within the search area which was a combination of rocks and sand waves. All significant contacts were developed using 50m side scan sonar and echosounder and in most cases were determined insignificant due to shoaler surrounding depths. It is recommended this item be deleted from the charts. Concur.

Presently charted as a DANGEROUS SUNKEN Wreck in:

LAT. 41°05'02.368"N

LON. 71°50'06.234"W

O. ADEQUACY OF SURVEY *See also sections 6 and 7. of the Evaluation Report*

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 also section 7.b. of the Evaluation Report*

One floating aid to navigation was located within the survey area; a green, bell buoy "1". The buoy was located by marking a fix as it was passed close abeam on the survey line. The position data was logged on the daily abstract page for DOY 177. The buoy is accurately charted.

Q. STATISTICS

ITEM for... NOAA Ship HECK	AMOUNT
1. Total No. of Positions	918 Fixes
2. Lineal NM of Soundings	142 NMi
3. Square NM Hydrography	7.2 Nmi^2
4. Days of Production	13 Days
5. Bottom Samples	0
6. Tide Stations Established	None
7. Current Stations Established	None
8. Velocity Casts Performed	4 Casts
9. Magnetic Stations Established	None
10. Detached Positions	1

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.

S. RECOMMENDATIONS

The great deal of difference between this survey and the charted soundings on sheet A due to 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 of Endeavor Shoals to warn mariners of the shifting nature of this area. The list of peaks in section N should also be placed on the charts as the charted soundings have either changed or were not surveyed previously. *Concur*

This survey demonstrated that prior surveys of this area are inadequate and that additional surveys surrounding Montauk Point from Montauk Harbor to Montauk Shoal need to be scheduled as soon as possible.

T. REFERRAL TO REPORTS

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

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

LIST OF HORIZONTAL CONTROL STATIONS

NUMBER	NAME	POSITION
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
273	BARTLETT REEF LIGHT	41° 16' 20.286"N 72° 08' 14.021"W

DIVING OPERATIONS
OPR-[redacted]-HE-90

DATE: 142 1990

UNIT: NOAA SHIP HECK S591
AWOIS ITEM #
CONTACT # 40' WRECK

LOCATION: [redacted]

VE MASTER: LT. MOELLER ✓
DERS: ST. MORRIS
SS LEWIS

DIVERS: LT MOELLER
LT WILKES ✓
ENS WINGEN

DIVE PLAN: CIRCLE SEARCH AND ITEM INVESTIGATION. MAX DEPTH: 40 FT
MAX TIME: 60 MIN
AVERAGE LEAST DEPTH: FT
LEAST DEPTH TIME:

DEPTH: (1) (2) (3)

EQUIPTMENT USED: OPEN CIRCUIT SCUBA.

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

CONDITIONS:
WIND: DIR KTS
SEAS: DIR FT
CURRENT: KTS

VISIBILITY:
AIR TEMP:
WATER TEMP:

ALL TIMES GMT

DIVERS NAME #	SI	GROUP	RNT	TANK PRES.psi IN	OUT	PRES. CHANGE	DIVE TIMES DOWN/UP	BOTTOM TIME	DEPTH	GROUP
WILKES 1	—	—	—	2900	900	2K	GMT D 1502	20	30'	
[redacted] NER	—	—	—	2900	200	2700	U 1522	20	30'	
WILKES 2							D			
?BISON 2							U			

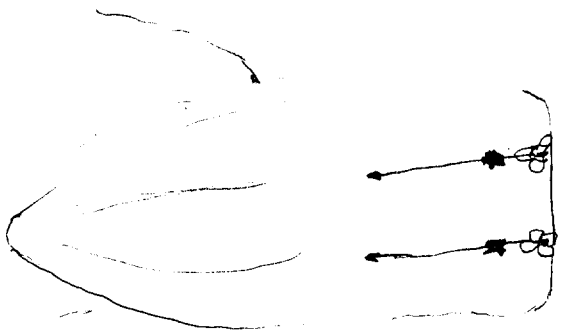
POST DIVE COMMENTS: Descended Buoy line 10 M Initial search found Wreck sitting upside-down. Appeared to have burned to the water line. Scour around edges. Wreck was free of any marine growth or corrosion. Heavy silting with very strong currents. Vis - 5-7

Daniel D Moeller
DIVE MASTER SIGNATURE

40' WRECK

SIDE

TOP



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: FE-348SS

LOCALITY: Montauk Point to Block Island

TIME PERIOD: May 18 - August 16, 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

1. Items 2512 and 2514 -apply a -02 hr 00 min time correction, and a X0.97 range ratio to all heights.
2. Items 1825, 7280, and 7285 -apply a -01 hr 30 min time correction, and a X1.01 range ratio to all heights.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

F3-348SS

Name on Survey	A ON CHART NO. 13209	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BLOCK ISLAND (title)										1
BLOCK ISLAND SOUND (title)										2
ENDEAVOR SHOALS										3
GREAT EASTERN ROCK										4
MONTAUK POINT (title)										5
NEW YORK (title)										6
PHELPS LEDGE										7
RHODE ISLAND (title)										8
										9
										10
										11
										12
										13
										14
				Approved:						15
										16
				Charles L. Harrington						17
				Chief Geographer - N/CG25						18
				FEB 10 1993						19
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										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

02/08/93

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-348SS

NUMBER OF CONTROL STATIONS	5
NUMBER OF POSITIONS	963
NUMBER OF SOUNDINGS	5904

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	83	05/06/91
VERIFICATION OF FIELD DATA	185	08/19/91
ELECTRONIC DATA PROCESSING	72	
QUALITY CONTROL CHECKS	64	
EVALUATION AND ANALYSIS	29	10/01/92
FINAL INSPECTION	29	02/05/93
TOTAL TIME	462	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 02/08/93

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.

N/CG244-27-93

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

18 February 1993

NUMBER OF PACKAGES

1 box

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

• FE-348SS

Rhode Island - New York, Block Island Sound, Block Island to Montauk Point

1 Box containing:

- 1 Envelope containing **Original Descriptive Report for FE-348SS** with 3 original page size surveys appended to the D. R.
- 1 Envelope containing original position overlays and excess overlays for sheets 1 to 3.
- 1 Envelope containing the original Descriptive Report Appendices and Separates
- 1 Envelope containing Velocity Graphs, Velocity Corrector Tables, and Sounding Correction Abstracts
- 1 Envelope containing Verification Contact Lists
- 1 Envelope containing Supplemental data removed from the printouts
- 1 Cahier with final sounding printout, position and control file printouts
- 13 Envelopes containing Side Scan Sonargrams, Fathograms and field printouts for JDs: 138, 142, 158, 159, 162, 166, 170, 171, 172, 176, 177, 227, and 228

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

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

D. S. Clark
3-3-93

Return receipted copy to:

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

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-006/1192

ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-348SS FIELD NO.: HE-10-4-90

Rhode Island--New York, Block Island Sound, Block Island to Montauk Point

SURVEYED: 18 May through 14 August 1990

SCALE: 1:10,000 PROJECT NO.: OPR-B660-HE

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, Pneumatic Depth Gauge (PDG), 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

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

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

b. Side scan sonar was operated simultaneously with the fathometer during survey operations. In cases where the side scan sonar was used to determine the estimated depth of a feature, the item is shown on the present survey with the upper case letter 'A' in parenthesis. 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 (sheet 2 of 3) 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.

c. Two (2) 1:10,000 and (1) 1:20,000 scale page size plots were generated during office processing and are attached to this report. These plots are considered the smooth plots for this survey.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H., 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 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD 27).

To place the 1:10,000 scale plot 1 of 3 on the NAD 27 move the projection lines 0.370 seconds (11.418 meters or 1.14 mm at the scale of the survey) north in latitude, and 1.793 seconds (41.776 meters or 4.18 mm at the scale of the survey) east in longitude.

To place the 1:20,000 scale plot 2 of 3 on the NAD 27 move the projection lines 0.367 seconds (11.315 meters or 0.57 mm at the scale of the survey) north in latitude, and 1.763 seconds (41.153 meters or 2.06 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale plot 3 of 3 on the NAD 27 move the projection lines 0.367 seconds (11.315 meters or 1.13 mm at the scale of the survey) north in latitude, and 1.763 seconds (41.153 meters or 4.12 mm at the scale of the survey) east in longitude.

All geographic positions in this report are NAD 83 positions. Positions originally listed on NAD 27 have been converted to NAD 83 using the program CORPSCON.

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

3. HYDROGRAPHY

a. Where applicable, soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1 and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. The standard depth curves could be drawn in their entirety.

c. The development of the 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, FIELD PROCEDURES MANUAL (FPM), and SIDE SCAN SONAR MANUAL with the following exceptions:

a. The field unit conducted dive operations on an uncharted wreck in Latitude 41°06'34.07"N, Longitude 71°53'38.32"W. The dive report submitted by the field unit contained no position information and no least depth determination using the PDG or any other acceptable method. The only source for a depth determination for this wreck is a single detached position taken when the dive buoy was deployed. No description, dimensions, were provided. It is imperative that the field unit provide conclusive evidence that the least depth has been determined using a lead line, sounding pole, PDG, or an echosounder development that conforms to the criteria in section 7.2.2 of the FPM.

b. The dive report submitted by the field unit is not the desired format. The "Standard Dive Report Form" is addressed in section 7.2.1.1, page 7-4, of the FPM. The form is on page 7-13 and 7-14 of the FPM. The report submitted did not contain pertinent data for the item investigated.

c. The data for side scan sonar investigation for AWOIS Items #2512 and #2514 were obtained using 190 meter line spacing. The prescribed rule for line spacing in section 2.1.3.1 of the SIDE SCAN SONAR MANUAL is 180 meters because of the required 2 mm overlap at the scale of the survey. Additionally, the Field Procedures Manual provides a formula for the determination of line spacing in section 7.3.2 and is as follows:

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

where LS_{max} is maximum Line Spacing
where RS is Range Scale
where ECR_{max} is maximum Error Circle Radius

Using the formula shown above the maximum line spacing that should have been used was 170 meters. The field unit used 190 meter line spacing for these two AWOIS items. The 190 meter line spacing used by the field unit by itself does not provide the needed coverage as determined by either of the previously discussed criteria. Any error in steerage, positional error, or deterioration of side scan sonar coverage caused by the system or natural phenomenon would have caused additional degradation in the area insonified. These factors indicate that the areas of

these two AWOIS items were not covered as required by the AWOIS listing.

d. In section M., COMPARISON WITH PRIOR SURVEYS, of the Descriptive Report the hydrographer states, "Not applicable as per Project Instructions." The Project Instructions and changes to the Instructions referenced in section A., PROJECT, of the Descriptive Report, were read thoroughly during the evaluation phase of office processing. Nowhere in the Project Instructions is there a statement that releases the hydrographer of the requirement of prior survey comparison. The statement in the Descriptive Report is in total error. The hydrographer failed to make a comparison with prior surveys as required by the project instructions.

5. JUNCTIONS

There are no junctional surveys for this survey.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-5344 (1933-34) 1:20,000
H-6443 (1939) 1:40,000

The prior surveys listed above cover the present survey area in its entirety. The following should be noted:

1) Prior survey H-5344 (1933-34) covers the search area of an uncharted wreck (sheet 3 of 3). The wreck was located by the field unit in Latitude 41°06'34.07"N, Longitude 71°53 38.32"W. Surrounding depths shown on the prior survey range from 33 to 37 feet (10.1 to 11.3 meters). A dive investigation was conducted by the field unit. As stated in section 4.a. of this report the only depth provided from the field unit was obtained when the dive buoy was deployed. No additional sounding lines were run and no depth determination was made by the divers. It is recommended that a wreck with a minimally observed depth of 7^3 meters (24 feet) be charted as shown on the present survey. See sheet 3 of 3.

2) Prior surveys H-5344 (1933-34) and H-6443 (1939) are common to the area of sheet 2 of 3 of the present survey. In general prior and present survey depths compared favorably with differences ranging plus or minus (±) 3 feet (1 meter). The most notable difference is in the vicinity of Latitude 41°04'15"N, Longitude 71°49'30"W where present survey depths are 5 to 7 feet (1^5 to 2^1) meters shoaler than prior survey depths. Prior survey

bottom characteristics shown in the present survey area include numerous "*rky*" notations. The present survey located numerous uncharted rocks using side scan sonar. Rocks shown on the present survey have the shoalest estimated depths computed or were determined to be rocks from the echogram. It is recommended that the chart compiler determine which rocks are appropriate for charting based on the chart scale. Rocks with estimated depths should be charted in accordance with Cartographic Order 004/89. See sheet 2 of 3.

3) Prior survey H-6443 (1939) has several sounding lines that are common to the hydrography shown on sheet 1 of 3. AWOIS Item ~~#7825~~ 7285, a charted Discontinued Disposal Area, in Latitude 41°11'~~15.370~~ 15.736"N, Longitude 71°~~49~~ 36'42.207"W is also in the common area. The present survey soundings are generally 3 feet (1 meter) shoaler than the prior survey soundings. It is recommended that the present survey soundings supersede the charted soundings in the Discontinued Disposal Area and the other areas common to the prior survey.

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

b. Wire Drag

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

One hang originating with the prior survey is in the area investigated by the present survey.

AWOIS Item #1825, a charted wreck "MONTANA" with a clearance depth of 51 feet (15^5 meters), in Latitude 41°12'08.370"N, Longitude 71°36'00.606"W, originates with the prior survey as a 51 foot (15^5 meter) sounding. The item was searched for and located in Latitude 41°12'08.36"N, Longitude 71°36'01.54"W using side scan sonar. The fathometer development run by the field unit is not considered adequate for the determination of a least depth on the wreck. It is recommended that a wreck with a minimally observed depth of 21^6 meters (71 feet) be charted as shown on the present survey. See sheet 1 of 3.

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

7. COMPARISON WITH CHART 13209 (18th Edition, Mar. 3/90)
13215 (12th Edition, Jun. 23/90).
13217 (11th Edition, Feb. 10/90)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys. The following should be noted:

1) AWOIS Item #7280, a charted Obstr, rep with a depth of 45 feet (13^{7} meters), in Latitude 41°11'54.370"N, Longitude 71°35'50.206"W, originates with Chart Letter 1250 of 1964 (CL1250/64). The field unit located the obstruction in Latitude 41°11'57.45"N, Longitude 71°35'54.00"W. A dive investigation confirmed that the obstruction was a transducer placed by the U.S. Navy. Neither a least depth nor detached position were obtained. The fathometer development run by the field unit is not considered adequate for the determination of a least depth on the obstruction. It is recommended that the charted Obstr, rep with a depth of 45 feet (13^{7} meters) be deleted and an obstruction with a minimally observed depth of 15^{5} meters (51 feet) be charted as shown on the present survey. See sheet 1 of 3.

2) AWOIS Item #7784, a charted Pole, in Latitude 41°11'58.36"N, Longitude 71°36'25.20"W, originating with Local Notice to Mariners 48 of 1970 (LNM 48/70), was searched for and located by the field unit. A sunken barge was located in Latitude 41°12'00.79"N, Longitude 71°36'28.20"W. The fathometer development run by the field unit is not considered adequate for the determination of a least depth on the sunken barge. Additionally, after a thorough office examination of the side scan sonargram, it has been determined that there are two extremities that protrude outward and upward from the hull of the sunken barge. The barge has a computed height of 2^{6} meters (8 feet) in surrounding depths of 29^{4} to 29^{9} meters (96 to 98 feet). The aspect that the barge was observed from on the sonargrams was not appropriate for determination of the height of the extremities protruding from the barge. It is recommended that a wreck (barge) with a minimally observed depth of 26^{1} meters (85 feet) be charted as shown on the present survey. It is also recommended that the Pole be deleted from the chart. See sheet 1 of 3.

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

b. Aids to Navigation

The hydrographer located one (1) floating aid to navigation in the survey area. This aid appears adequate to serve its intended purpose. See sheet 2 of 3.

c. Dangers to Navigation

Two dangers to navigation were found by the present survey. During office processing, a revised Dangers to Navigation report was submitted to the Commander (oan) of the First Coast Guard District. Copies of the notice submitted by the hydrographer and the revised notice are appended to the Descriptive Report.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions except as noted in section 4. of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey. No additional field work is recommended.

Leroy G. Cram
Supervisory Cartographic
Technician
Verification Check and
Verification of Field Data

Robert G. Roberson
Supervisory Cartographer
Evaluation and Analysis

APPROVAL SHEET
FE-348SS

Initial Approvals:

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

Richard H. Whitfield Date: 8 Feb. 1993
Richard H. Whitfield
Cartographer, Evaluation and Analysis Team
Atlantic Hydrographic Section

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

Christopher B. Lawrence Date: 8 February 1993
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

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Final Approval:

Approved: J. Austin Yeager Date: 3/25/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
Norfolk, Virginia 23510-1114

January 11, 1991

Commander
First Coast Guard District (oan)
408 Atlantic Avenue
Boston, MA 02210-2209

Dear Sir,

This notice supersedes a letter from the NOAA Ship HECK, dated 3 October 1990 concerning hazards to navigation located during hydrographic survey operations. A copy of the letter sent by the NOAA Ship HECK is attached.

The positions of the two (2) dangers to navigation reported by the NOAA Ship HECK have been adjusted as follows:

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number....FE-348SS
State.....Rhode Island--New York
General Locality.....Block Island Sound
Locality.....Block Island to Montauk Point
Project Number.....OPR-B660
Surveyed by.....NOAA Ship HECK

Objects Addressed:

1) A shoal with a least depth of 22 feet corrected to MLLW using predicted tidal correctors was found in Latitude 41°05'10.90"N, Longitude 071°50'00.44"W (NAD83). The charted depths in this area range from 28 to 34 feet.

2) A shoal with a least depth of 29 feet corrected to MLLW using predicted tidal correctors was found in Latitude 41°04'48.88"N, Longitude 071°49'07.86"W (NAD83). The charted depths in this area range from 33 to 43 feet.

Affected Nautical Charts:

Object 1

CHART NUMBER	EDITION NUMBER	DATE	HORIZ DATUM	GEOGRAPHIC POSITION LATITUDE	LONGITUDE
13205	29th	Aug. 5/89	NAD83	41°05'10.90"N	071°50'00.44"W
13215	12th	June 23/90	NAD83	41°05'10.90"N	071°50'00.44"W
13209	18th	Mar. 3/90	NAD83	41°05'10.90"N	071°50'00.44"W

Object 2

CHART NUMBER	EDITION NUMBER	DATE	HORIZ DATUM	GEOGRAPHIC POSITION LATITUDE	LONGITUDE
13205	29th	Aug. 5/89	NAD83	41°04'48.88"N	071°49'07.86"W
13215	12th	June 23/90	NAD83	41°04'48.88"N	071°49'07.86"W

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

Attachments

National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA SHIP HECK
439 W. YORK STREET
NORFOLK, VA. 23510
October 3, 1990

Commander
Aids to Navigation Office
First Coast Gaurd District
408 Atlantic Avenue
Boston, MA 02210

Dear Sir,
The following hazards to navigation were located while conducting survey operations on OPR-B660-HE, FE-348ss, Rhode Island--New York, Block Island Sound, Block Island to Montauk Point:

1. A shoal with a corrected least depth of 22 feet located at
   Latitude 41-05-08 N
   Longitude 071-49-08.6 W (NAD 83)

2. A shoal with a corrected least depth of 29 feet located at
   Latitude 41-04-49.3 N
   Longitude 071-49-08.6 W (NAD 83)

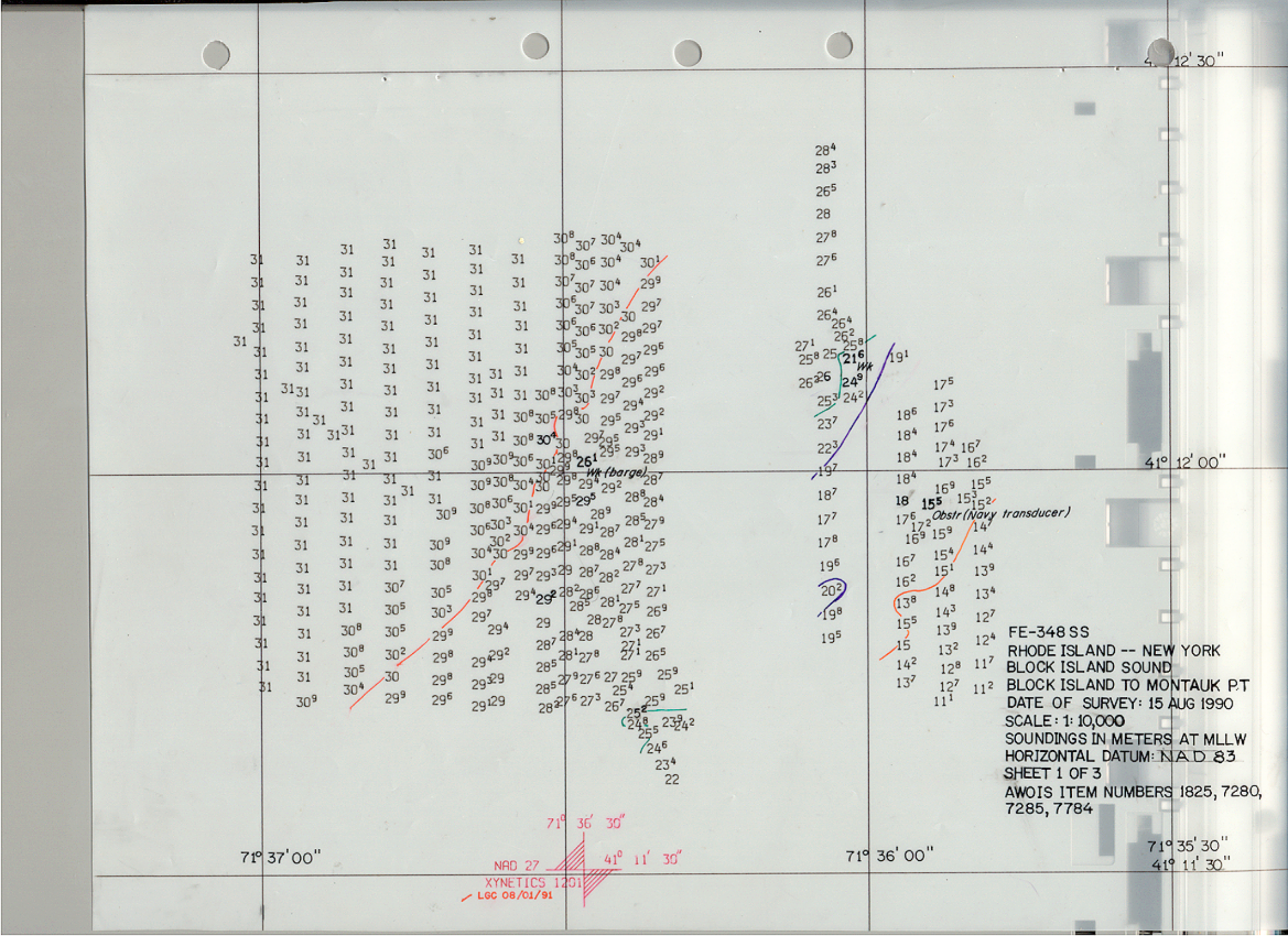
These items affect the following charts:

13215 Block Island Sound, 12th Ed., Jun 23, 1990.
13209 Block Island Sound and Gardiners Bay, 18th Ed., Mar 3, 1990.

If you have any questions or require additional information please contact LCDR Stanley Iwamoto at (804) 441-6639, 827-6639 FTS.

Sincerely,

Stanely R. Iwamoto, LCDR, NOAA
Commanding Officer
NOAA Ship Heck


41° 12' 30"
41° 12' 00"
Wk (barge)
Obstr (Navy transducer)
FE-348 SS
RHODE ISLAND -- NEW YORK
BLOCK ISLAND SOUND
BLOCK ISLAND TO MONTAUK PT
DATE OF SURVEY: 15 AUG 1990
SCALE: 1: 10,000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 83
SHEET 1 OF 3
AWOIS ITEM NUMBERS 1825, 7280, 7285, 7784
71° 37' 00"
71° 36' 30"
71° 36' 00"
71° 35' 30"
41° 11' 30"
NAD 27
XYNETICS 1201
LGC 08/01/91

FE-348 SS
RHODE ISLAND -- NEW YORK
BLOCK ISLAND SOUND
BLOCK ISL AND TO MONTAUK PT.
MAY 18 - AUG 16, 1990
SCALE: 1:20,000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 83
SHEET 2 OF 3
AWOIS ITEM NUMBERS 2512, 2514

ENDEAVER SHOALS

GREAT EASTERN ROCK

PHELPS LEDGE

BELL "1"

41° 08' 00"
41° 07' 00"
41° 06' 00"
41° 05' 00"
41° 04' 00"
41° 05' 00"
71° 54' 00"
71° 53' 00"
71° 52' 00"
71° 51' 00"
71° 50' 00"
71° 49' 00"
71° 48' 00"

NAD 27
XYNETICS 1274
LSC 8/13/91

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

*subm Obstr

71° 54' 00"

71° 53' 30"

71° 53' 00"

41° 07' 00"

7³ Wk

41° 06' 30"

FE-348 SS
RHODE ISLAND -- NEW YORK
BLOCK ISLAND SOUND
BLOCK ISLAND TO MONTAUK PT.
22 MAY 1990
SCALE: 1:10,000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 3 OF 3

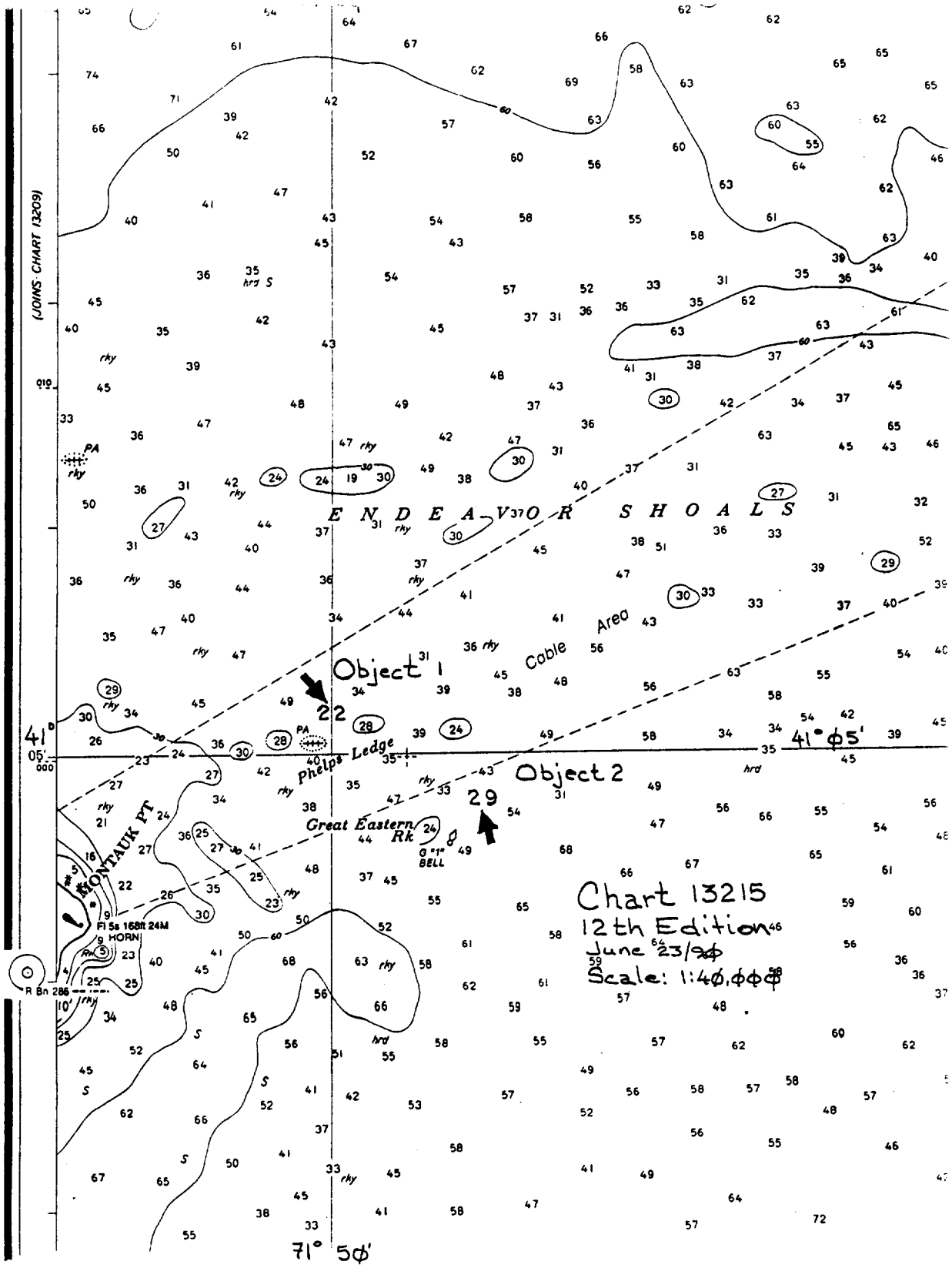
71° 53' 30"

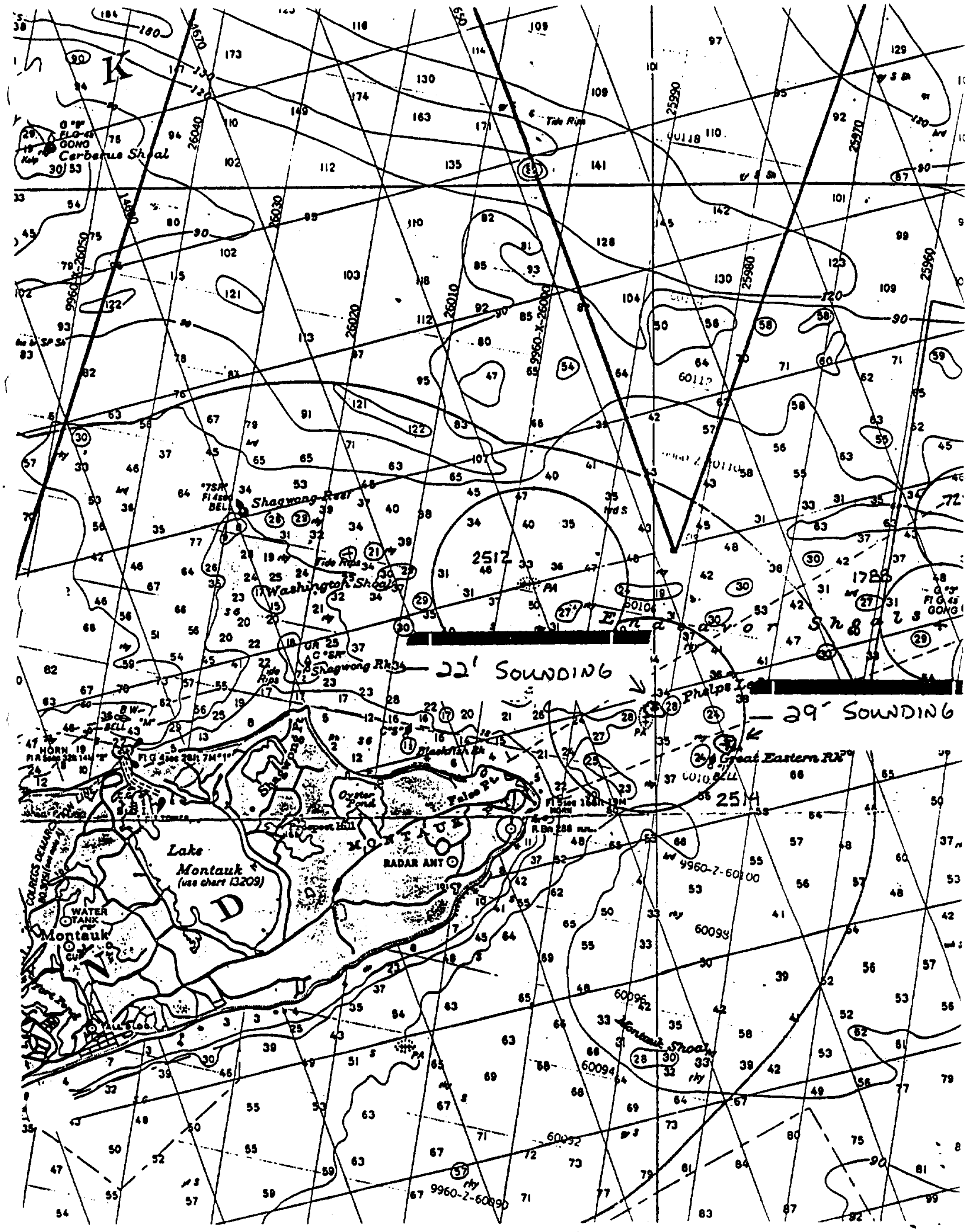
NAD 27 41° 06' 00"

XYNETICS 1201

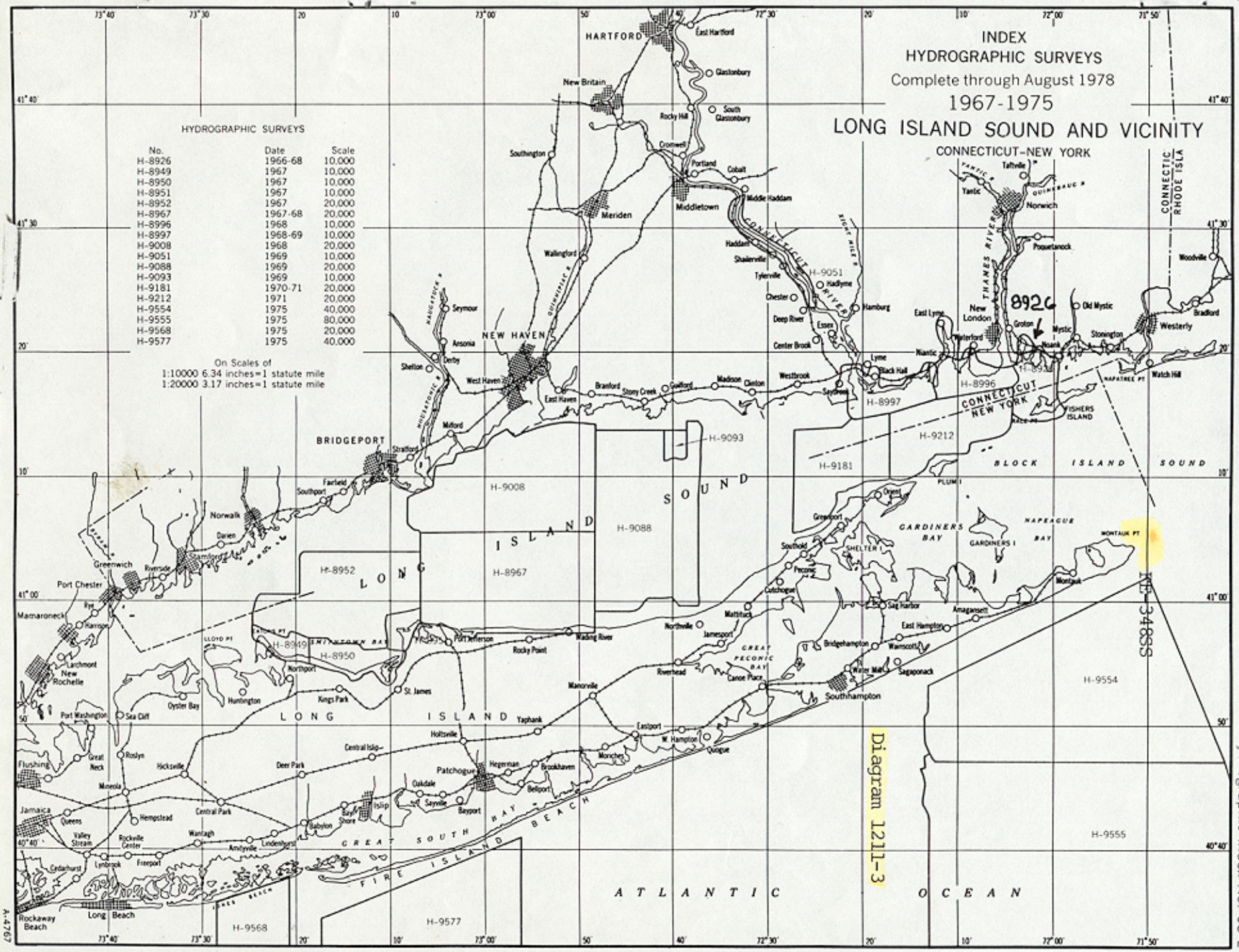
✓ LGC 8/16/91

41° 06' 00"


(JOINS CHART 13209)
ENDEAVOR SHOALS
Object 1
Object 2
Cable Area
Phelps Ledge
Great Eastern Rk
MONTAUK PT
Fl 5s 168ft 24M
9 HORN
R Bn 285
41° 05'
41° 05'
71° 50'
Chart 13215
12th Edition
June 23/80
Scale: 1:40,000



Cerberus Shoal
Shagwong Reef
Washington Shoal
Shagwong Rk
Tide Rips
[redacted]
22' SOUNDING
Phelps Le
[redacted]
29' SOUNDING
Great Eastern Rk
Endeavor Shoals
2512
1788
2514
Lake Montauk
(use chart 13209)
Oyster Pond
Montauk
WATER TANK
RADAR ANT
Montauk Shoal
9960-X-26000
9960-X-26050
9960-Z-60100
9960-Z-60090



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

Hydrographic Index No. 63 L

LC-3488S

A-4767

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-348SS

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
13217	4-9-93	Jenny Schumacher	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 19 Before final approval
13215	4-9-93	Jenny Schumacher	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 8 Before final approval
			Full Part Before After Marine Center Approval Signed Via
13205	4-22-93	Jeff Taylor	Drawing No. 3-4 Thru cht 13215 (Not signed only)
12300	8-27-93	John Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 56 thru cht 13205 - before final approval
			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.
			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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED