

FE343 SIDE SCAN

Diagram No. 1211-3, 1212-3

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-10-1-90 ..
Registry No. FE-343SS ..

LOCALITY

State New York--Connecticut ..
General Locality .. Long Island and Fishers Island
Sounds ..
Sublocality Approaches to New Haven and
New London Harbors ..
19 90
CHIEF OF PARTY
LCDR S.R. Iwamoto ..

LIBRARY & ARCHIVES

DATE July 16, 1992 ..

FE343
SIDE SCAN

EC/G
PRODUCTS

X12371 ALL
X12364
X12372
X12374
X12375
X13211
X13212
PS X13209 AMT

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

X12354
X13205 App'd 2-10-92 JF
X CP2
12300-NC

HYDROGRAPHIC TITLE SHEET

FE-343SS

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-10-1-90

State New York and ConnecticutGeneral locality Long Island and Fishers Island SoundsLocality Approaches to New Haven and New London HarborsScale 1:10,000 Date of survey 13MAR90 - 07MAY90Instructions dated February 22, 1990 Project No. OPR-B660Vessel HECK S-591 (EDPN 9140)Chief of party LCDR Stanley R. Iwamoto, NOAA, Commanding Officer, HECKSurveyed by ENS L.D. Weiner, LT D.W. Moeller, ST W.M. Morris, ENS H.A. Bannah
LT D.S. WilkesSoundings taken by echo sounder, ~~hand lead, X&X~~ and ~~Pneumofathometer~~*Pneumatic Depth Gauge*Graphic record scaled by HDAPSGraphic record checked by L.D.W., W.M.M., D.W.M., H.A.B.,Protracted by _____ Automated plot by HDAPS (FIELD)*XYNETICS 12 1/2 Plotter
(AHS)*Verification by Atlantic Hydrographic Section personnelSoundings in METERS
~~fathoms~~ ~~XXXX~~ at ~~XXXX~~ MLLWREMARKS: All times are UTCSoundings are in METERSData are submitted to N/CG 244 Atlantic Hydrographic
Section*Notes in the Descriptive Report were made in
red during office processing.**Awas and SURF
8/6/92 MCR**KWW 3/16/94*

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-343SS
FIELD NUMBER HE-10-1-90
CONNECTICUT AND NEW YORK
LONG ISLAND AND FISHERS ISLAND SOUNDS
APPROACHES TO NEW HAVEN AND NEW LONDON HARBORS
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.

The purpose of this project is to investigate and provide accurate information about reported wrecks and obstructions and provide updated sounding data for the construction of new charts.

B. AREA SURVEYED

The area surveyed consists of 13 AWOIS item investigations. The area surveyed extends from the entrance to New Haven Harbor to the entrance to New London Harbor.

Survey operations began on March 5, 1990, and were completed on May 10, 1990.

C. SURVEY VESSELS

All hydrographic data were collected by the NOAA Ship HECK (EDPN 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	22 FEB 1990	BASIC Operating System
SURVEY 2.45	22 FEB 1990	Pre Survey & Survey Files
POSTSUR 4.13	19 MAR 1990	Post Survey Processing
FILESYS 1.50	19 MAR 1990	File Management
CONPLOT 1.02	19 MAR 1990	Plot Routine

HDAPS data collected during the echosounder development of AWOIS #7500 (DOY 099, Fix # 823-850) were lost when a system error prevented transfer from RAM to Disk. The least depth and position for this item were determined using the HDAPS utility programs. The position and least depth data reported in the item investigation will require manual inputting into the HARRIS system by verification personnel.

E. SONAR EQUIPMENT

The HECK is equipped with an EG&G model 260 slant corrected Side Scan Sonar recorder (S/N 0011443) and a model 272 dual frequency towfish (S/N 0011591).

On March 18 the EG&G 260 Side Scan recorder (ser# 0012104) was swapped out for the spare unit (ser# 001143) due to a suspected problem with the annotator card. The problem was found to be in the software and not the recorder unit.

The beamwidth and downangle are not adjustable on this side scan unit. The 25 through 300 meter range and 100 kHz frequency settings were used. For the 100-300 meter range scales, 190 meter line spacing was used, for 75 meter range scale, 140 meter line spacing was used, and for 50 meter range scale 90 meter line spacing was used. Scales in excess of 100 meters were used primarily when the depth of the survey area prevented the "fish" from being "flown" within the 8 to 15 meters necessary for proper imaging at the 100 meter scale.

Confidence checks were obtained by towing the fish past known features or by using linear bottom features, such as sand waves and trawl marks, to show continuity of return to the extreme ends of coverage. When the bottom was flat and featureless confidence checks were obtained at least twice daily.

Required side scan sonar coverage was obtained, as per project instructions, for all disprovals. 200% side scan coverage was not accomplished when items were located prior to the completion of coverage, however, in areas containing features that were deemed worthy of additional development, the initial 100% coverage was completed.

At times the towfish would "loose" the bottom. This was probably due to thermoclines, cavitation by the ships screws, and/or matter in the water column.

Contacts that showed shadow on the outboard side were computed using the contact utility and placed in the contact table. Those items deemed significant as defined by the project instructions were investigated. Smooth swath plots were produced to verify coverage and cross-reference contacts.

F. SOUNDING EQUIPMENT

F1. Raytheon DSF 6000N Echosounder

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.

F2. Leadline and ^{Pneumatic Depth Gauge (PDG)} Pneumofathometer

All diver determined least depths were measured with a ^{PDG} ~~pneumo-~~fathometer. The HECK is equipped with two precision depth gauges, a 0-70 fsw depth gauge, and a 0-140 fsw depth gauge. The HECK's ~~pneumofathometer~~ ^{PDG} is built according to Hydrographic Guideline No. 55. Both gauges were most recently calibrated on January 18, 1990. System checks are performed periodically to ensure that the ~~pneumofathometer~~ ^{PDG} is still in tolerance.

The system check values are not applied to the diver determined depths. Weather conditions were not calm enough to yield correctors the HECK personnel felt were more accurate than the calibration of the gauge itself.

G CORRECTIONS TO ECHOSOUNDINGS

G1. Velocity Correctors

The following table shows the dates and locations that velocity correction data were obtained by making direct readings of sound velocity using the ODOM Digibar sound velocimeter (S/N 168):

<u>DATE</u>	<u>LOCATION</u>
03/12/90 (DOY 071)	41° 12' 00"N ; 72° 53' 00"W
03/26/90 (DOY 085)	41° 13' 00"N ; 72° 25' 00"W
04/09/90 (DOY 099)	41° 11' 12"N ; 72° 13' 42"W
04/24/90 (DOY 114)	41° 15' 23"N ; 72° 05' 25"W

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

On DOY 071, instrument error was computed by conducting a dual leadline comparison of echosounder and leadline depths. Digital depths agreed with leadline depths within 0.17 meters and 0.020 meter on the average.

G2. Vessel Draft Corrector

A static draft of 2.10 meters was applied online to all echosoundings by entering this value of 2.1 meters into the HDAPS offset table.

G3. 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.

Settlement and squat values were applied online to hydrographic soundings by entering the observed values into the HDAPS offset table.

Since no significant weight changes were made to the HECK since the previous settlement and squat computations HECK did not redetermine these correctors this field season.

G4. 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 midship near the transducer. The sensor gathers online 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.

G5. Tide Corrections

The tidal datum for this field examination was Mean Lower Low Water. The operating tide station at Bridgeport, CT., served as control for datum determination for AWOIS 1827. The tide station at New London was the reference station for the rest of the survey. No tide stations were established by the HECK in support of this survey.

All hydrographic depths have been corrected for ^{approved} predicted tides using the zoning correctors specified in the project instructions except for AWOIS 1827. No zoning correctors were provided for this item so the published correctors for station 1253 from Tide Tables 1989 High and Low Water Predictions, East Coast of North and South America were used. Tidal correctors were applied online by entering the appropriate values into an HDAPS predicted tide table. *Approved tides were applied during office processing and zoning*

HECK personnel used zone V correctors for the AWOIS items just outside the entrance to New London.

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 (Southwest Ledge Lighthouse Ecc, Little Gull Island Ecc, and Orient Point 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. * Horizontal Control listing appended to the Descriptive Report.

I. HYDROGRAPHIC POSITION CONTROL - See also section 2.a. of the Evaluation Report.

Vessel survey navigation was accomplished using multiple LOP's, utilizing Motorola MINI-RANGER Falcon 484 system 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.

A baseline calibration was performed for this field examination. The BLC was performed on February 21, 1990 (DOY 052).

No significant position control problems were encountered during this survey.

System checks were conducted daily in accordance with the Field Procedures Manual.

The hydrographer must specify each of three interactive parameters which "tune" the positioning algorithm. The following parameters were entered into the Offset Table:

- 1) acceleration limit 0.2 meters second⁻²
- 2) angle limit 0.3 degrees second⁻¹
- 3) crabbing limit 0.4 degrees

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). All data not meeting the requirements was either 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 3.2 of the Evaluation Report.

Where applicable see discussion under section N.

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

Not applicable as per project instructions

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

Comparison to prior surveys for items investigated appear in section N of this report.

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

THREE DANGERS TO NAVIGATION WERE LOCATED DURING THIS SURVEY (see Appendix I). Specific item investigations were conducted and the details of each are detailed as follows:

N.1 INVESTIGATION REPORT FOR AWOIS ITEM 1827 - Sheet 1 of 9.

AWOIS ITEM DESCRIPTION: Reported to be a 20 ft cabin cruiser 1.5 miles south of the center New Haven breakwater by the U.S. Army Corps of Engineers.

AREA OF INVESTIGATION:

State: Connecticut
City: New Haven
Locality: Entrance to New Haven
Latitude: 41-12-20.00
Longitude: 72-54-30.00

12371 ✓
12364

PRIOR SURVEYS: This item originates from NTM 7/66. It has been investigated on prior surveys H-9008 and FE-241 (400% SSS) and both have recommended deletion of this item. No indication of the reported wreck was observed during the 200% coverage of this survey. The ability of this wreck to avoid detection during the previous surveys prevents a comparison of item position and least depth from being made. Comparison of soundings collected during side scan operations to survey H-9008 showed very good agreement with random differences of one to two feet. No trends of shoaling or deepening were noted.

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
12371	New Haven Harbor	1:20K	20th	APR 85
12364SC	NH Harbor Ent & PJ to TN	1:40K	25th	JAN 87

Chart 12371 ✓
12372 ✓

Differences between surveyed and charted soundings were randomly dispersed and two feet or less in magnitude.

SURVEY PROCEDURES:

Positioning:	Falcon MINI-RANGER
Side Scan Sonar Search:	DOY 72,73,74,75,78,79,80, and 81
Diver Investigation:	DOY 81
Echosounder Investigation:	DOY 81

This item was investigated using the 75 and 100 meter range scale side scan sonar. The 25 and 50 meter range scales were used for further investigation. All side scan sonar data is shown on the various copies of HE-10-1-90A.

RESULTS: Nine contacts were located during the first 200% side scan coverage. Six of the contacts were deemed insignificant either during processing, when target heights were computed or after further side scan investigation. Of the three remaining *one was found to be already charted accurately. The second was investigated by divers and determined to be insignificant (merely an trawl door in the sand that does not protrude above the surrounding depths). The third contact, two rocks, was resolved through echosounder development and a ~~least~~ depth and position determined. *Shown as a rock with an echosounder depth of 9.8 meters (32 feet) in Lat 41° 11' 47.38" N, Lon. 72° 55' 42.42" W.*

RECOMMENDATIONS: Chart submerged rock, dangerous to navigation with a corrected ~~least~~ depth of ³²25.3 feet (7.7 meters) at 041-11-47.38³²N; 072-55-42.36³²W. HECK considers AWOIS #1827 disproved. - *Concur.*

* See also section 7.2.1) of the Evaluation Report.

N.2 INVESTIGATION REPORT FOR AWOIS ITEM 6817 - Sheet 2 of 9.

AWOIS ITEM DESCRIPTION: The wreck of the barge DIGHTON lies sunk in 14 fathoms in PA Lat 41-12-15N, Long 72-31-50W.

AREA OF INVESTIGATION:

12374 ✓

State:	Connecticut
City:	Clinton
Locality:	3.5 NM S of Clinton Harbor
Latitude:	41-12-15.00
Longitude:	72-31-50.00

PRIOR SURVEYS: This item does not appear on the prior survey for this area. No comparison to prior survey depths was made, however, a comparison to the charted soundings showed agreements as detailed below.

12374 ✓

CHART COMPARISON: - See sections 6 and 7 of the Evaluation Report.

Comparison between the smooth depth plot and charted soundings within the search area resulted in the following differences:

Differences of one to six feet were noted in the southern half of the search area around Six Mile Reef. These differences can be attributed to the predominance of sand waves, see echograms and sonargrams, that make the topography of this area highly variable.

Survey depths were consistently three to five feet deeper than those charted on the top of Six Mile Reef. The sonargrams of this structure show it to be a rocky ridge. Depth differences are unlikely to be due to bottom dynamics. The most probable cause for these differences is that the spacing of side scan lines did not provide the echosounder development necessary to locate the charted least depths for this structure.

Comparisons on the northern half of the search area, away from reef related dynamics, were much better with differences of only one to three feet.

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
12374	Duck Is. to Madison Reef	1:20K	11th	JUN 84
12372 sc	Watch Hill to NH Harbor	1:40K	24th	JUL 88

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
 Side Scan Sonar Search: DOY 87,88,92,93,94
 Diver Investigation: none
 Echosounder Investigation: DOY: 94

The item was investigated using 100 meter range scale. Echosounder development was conducted on the only significant contact located during the search.

RESULTS: Four contacts were located during the first 100% side scan coverage. Three of the contacts were deemed insignificant due to the relationship of their computed heights to the depths in the area. The fourth contact appears to be the AWOIS item. Strong currents and poor weather conditions prevented a diver investigation. ~~Least Depth~~ and position were determined by echosounder development. ~~Obstruction is located in Discartined Dumping ground.~~

RECOMMENDATIONS: ~~Revise~~ ^{Delete} charted Dangerous Sunken Wreck, PA. ~~to~~ Chart Sunken Wreck, Not Dangerous to Surface Navigation with a corrected least depth of 28.73 M (94.24 FT) at position 41-13-11.61N, 072-31-26.33W. Use survey soundings to supplement charted soundings. - ~~Concur~~

12375 ✓

N.3 INVESTIGATION REPORT FOR AWOIS ITEM 6818 - Sheet 3 of 9.

AWOIS ITEM DESCRIPTION: The coal barge JAMES SHERIDAN reported sunk in PA Lat 41-13-18N, Long 072-25-12W.

AREA OF INVESTIGATION:

State: Connecticut
City: Old Saybrook
Locality: Long Sand Shoal, 3.2 NM S. of Old Kelsey Pt.
Latitude: 41-13-18.00
Longitude: 72-25-12.00

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
12375	Connecticut River	1:20K	17th	APR 84
12372 sc	Watch Hill to NH Harbor	1:40K	24th	JUL 88

The limited amount of survey data gathered on this item prevented relevent comparisons from being made.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
Side Scan Sonar Search: DOY 086
Diver Investigation: none
Echosounder Investigation: DOY 086

The item was located using side scan sonar and a ~~least~~ depth and position determined by echosounder development.

RESULTS: The item was located near its charted position by side scan. Echosounder development was conducted and a least depth and position were determined.

RECOMMENDATIONS: Revise the presently charted Dangerous, Sunken Wreck, PA to a Sunken Wreck with a least depth of ~~15.2~~^{19.1} Meters (52.2 FT) at position Lat. 41-13-15.608N, Long. 072-24-42.832W.

53

61

84

12375 ✓

N.4 INVESTIGATION REPORT FOR AWOIS ITEM 7500 - Sheet 4 of 9.

AWOIS ITEM DESCRIPTION: This is an unidentified ^{uncharted} wreck that rises off the bottom about 12 feet on a rocky slope.

AREA OF INVESTIGATION:

State: Connecticut
City: Old Saybrook
Locality: Long Sand Shoal, 3.2 NM S. of Old Kelsey Pt.
Latitude: 41-14-45.00
Longitude: 72-15-45.00

PRIOR SURVEYS: This wreck does not appear on any prior survey.

CHART COMPARISON: This wreck is not currently charted. Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
12375	Connecticut River	1:20K	17th	APR 84
12372SC	Watch Hill to NH Harbor	1:40K	24th	JUL 88

The limited amount of online data collected prevented a relevant comparison from being made.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
Side Scan Sonar Search: DOY 099
Diver Investigation: none
Echosounder Investigation: DOY 099

The item was located using side scan sonar and a ~~least~~ depth and position determined by echosounder development.

RESULTS: The item was located near its reported position by side scan. Echosounder development was conducted and a least depth and position were determined. The digital data from the echosounder was lost, manual input by N/CG24412 is required.

RECOMMENDATIONS: Add a sunken wreck, not dangerous with a corrected least depth of 29.9 Meters (98.1 FT) at position Lat. 41° 14' 41.919N, Long. 072° 15' 47.183"W. - Concur. Chart limits provided chart scale will allow.

13212 ✓

N.5 INVESTIGATION REPORT FOR AWOIS ITEM 1844 - Sheet 5 of 9

AWOIS ITEM DESCRIPTION: This item is a 90 ft steel barge. It first appeared in LNM 52/75.

AREA OF INVESTIGATION:

State: Connecticut
City: New London
Locality: 3/4 NM south of New London Harbor Dumping Ground
Latitude: 41-15-24.00
Longitude: 72-05-00.00

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
13212	Approaches to NL Harbor	1:20K	30th	JUN 85

Comparison of survey and charted ^{sounding} showed good agreement with random differences of less than three feet in magnitude except for the area of the two "Reported" soundings at 41-16N; 072-05W.

The surveyed depths in this area are from 2 to 13 ft shoaler than charted. The surveyed least depth for this area was 50 feet, 2 feet shoaler than the previously reported 52' sounding. The fact that this area of the AWOIS search lies within a designated dumping ground accounts for this shoaling.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
Side Scan Sonar Search: DOY 102,103,110,122
Diver Investigation: DOY 130
Echosounder Investigation: DOY 109,113,122

RESULTS: The item was not located despite 200% side scan sonar coverage of the area. Fifteen contacts were originally noted on the sonargrams of which, five were eventually deemed significant. Four were developed using the echo sounder. The fifth a wreck, was investigated by divers.

RECOMMENDATIONS: Delete the dangerous wreck PD. Chart a dangerous wreck at 41-15-56.182N; 072-05-17.679W with a known depth of 16m (52 ft).
Supersede charted and reported depths within the bounds of the dumping ground with depths from this survey. -Concur

Is coverage total?

WC ✓

N.6 INVESTIGATION REPORT FOR AWOIS ITEM 1864

AWOIS ITEM DESCRIPTION: NM33/19 Wreck of submarine G-2 lies sunk in 81FT of water with 46FT over periscope. 41-18-00.0N 072-08-54.0W.

AREA OF INVESTIGATION:

State: Connecticut
City: New London
Locality: Two Tree Channel
Latitude: 41-18-00.00
Longitude: 72-08-54.00

RESULTS: Contact with local mariners and divers resulted in the discovery that the G-2 had been raised and salvaged in the mid 1960's. The G-2 was removed whole and no wreckage remains. (Reference appendix VI)

RECOMMENDATIONS: This AWOIS item, originating in 1919, was not charted on the most recent version of the charts for this area. It is the hydrographers opinion that the removal of the wreck had been previously communicated to Nautical Charting and the symbol removed. The assignment of this item to this project was in error. Fortunately, little ship time was spent searching for it. *No change in charting status is recommended.*

N.7 INVESTIGATION REPORT FOR AWOIS ITEMS 3177 & 3178 - Sheet 6 of 9

AWOIS ITEM DESCRIPTION: Both of these items originate with wire drag survey H-9951 (1980). These two uninvestigated obstructions were charted due to the reviewer noting that the cleared depths reported on H-9951 did not match those reported on the prior wire drag survey H-4008 (1917-18). In the reviewers opinion they were not bottom features but a wreck (3177) and a "cultural feature" (3178).

AREA OF INVESTIGATION:

State: Connecticut
City: New London
Locality: 0.5 NM South of Rapid Rock
Latitude: 41-16-48.80 41-16-42.20
Longitude: 72-06-27.30 72-06-13.80
AWOIS Item 3177 AWOIS Item 3178

13212

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
13212	Approaches to New London Harbor	1:20K	30th	JUN 85

13212 ✓

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
13212	Approaches to New London Harbor	1:20K	30th	JUN 85

Comparison of survey to charted soundings showed good agreement with the survey depths consistently one to three feet deeper than the charted soundings.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
 Side Scan Sonar Search: DOY 114, 117
 Diver Investigation: none
 Echosounder Investigation: none

RESULTS: The review of the sonargram showed only a few small boulder fields. None of these contacts were significant. The surveyed depths show that the original wire drag was passing within two feet of the bottom throughout the area and as such the recommendation of the hydrographer that these were both groundings is well founded. The presumption of the reviewer appears to be in error.

RECOMMENDATIONS: It is recommended that both charted symbols Obstruction, Dangerous to Surface Navigation, Cleared 41 FT be deleted from the chart. ~~The present charted soundings of 41, 42, and 43 feet are sufficient to depict this area and the retention of two wire cleared depths of 41 FT does little to improve navigational safety.~~ - Concur. See sections 6. b. 1) a) and 6. b. 1) b) of the Evaluation Report

N9. INVESTIGATION REPORT FOR AWOIS ITEMS 7073 AND 7109 - Sheet 8 of 9

AWOIS ITEM DESCRIPTION: Item 7073 is a car that fell off a ferry. It first appeared LNM 31/78; orange and white horizontally banded special purpose buoy "A" was established to mark the location. LNM 22/83; buoy was discontinued.

13212 ✓

Item 7109 is a 100'+ schooner that rises ten feet off the bottom.

AREA OF INVESTIGATION:

State: Connecticut
 City: New London
 Locality: 1.5 NM SE of New London Ledge Light
 Latitude: 41-17-35.00 41-17-05.00
 Longitude: 72-02-34.00 72-02-18.00
 AWOIS Item # 7073 7109

1300 ✓

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
13212	Approaches to New London Harbor	1:20K	30th	JUN 85

Comparison of survey to charted soundings showed good agreement with differences of less than three feet. The quality of agreement was very good considering the jagged profile of the bottom in the vicinity of the rock ridge that runs in a north south direction through the center of the sheet.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
 Side Scan Sonar Search: DOY 115,116,121
 Diver Investigation: 116,127
 Echosounder Investigation: 117,130

RESULTS: Side Scan Sonar shows a very rocky area ^{South} near the center of AWOIS 7073. This is the shoalest section of the search area. Divers went down on this rock field and did not find a car however, due to the heavy marine growth and the large number of rocks HECK cannot say that the car is not there. The remains of a car do not pose as significant a danger as does the rock, least depth 27-9 ft, investigated by divers on DOY 117. - See section 7.2.2) of the Evaluation Report
 33 ft (10.1m)

Side Scan Sonar located five wreck like objects in the eastern section of the search area. Divers investigated three of the items. HECK believes that contact three, is AWOIS 7109. ① The items that the HECK did not dive look like barges on the sonargram and were echosounder developed due to the depth of water. ② Although not assigned HECK believes that contact #1 is AWOIS 7723, also a schooner, with reported Loran-C rates very close to those found by HECK. ① Concur. See also section 7.2.3) of the Evaluation Report. ② See section 7.2.4) of the Evaluation Report

RECOMMENDATIONS: Delete item 7073, Obstruction, depth unknown and in its place chart submerged rocks with the least depth, and position determined by this survey. Chart the other ^{two} ~~five~~ wrecks* located, (two dive investigated and ^{two} ~~three~~ echosounder developed,) as Wrecks with the least depths and positions determined in this survey. - Concur.

* and one obstruction

13210

N.10 INVESTIGATION REPORT FOR AWOIS ITEMS 1853 - Sheet 9 of 9

AWOIS ITEM DESCRIPTION: This item originates with wire drag survey H-4008. This survey indicated that the hang might be a wreck rather than a shoal area. H-8926 performed echosounder development and located nothing however, did not disprove.

AREA OF INVESTIGATION:

State: Connecticut
City: New London
Locality: 2.5 NM SE of New London Ledge Light
Latitude: 41-16-26.50
Longitude: 72-02-38.80

CHART COMPARISON: Charts used for comparison purposes:

CHART No.	TITLE	SCALE	ED.No.	DATE
12354	L I Sound, Eastern Part	1:80K	29th	JUL 89
13212	Approaches to New London Harbor	1:20K	30th	JUN 85

Comparison of survey to charted soundings showed good agreement with the survey depths consistently one to three feet deeper than the charted soundings.

SURVEY PROCEDURES:

Positioning: Falcon MINI-RANGER
Side Scan Sonar Search: DOY 114, 117
Diver Investigation: none
Echosounder Investigation: none

RESULTS: After 200% coverage HECK did not locate the item. Sonargrams indicated a very featureless bottom.

RECOMMENDATIONS: It is recommended that the charted symbol Obstruction, Dangerous to Surface Navigation, Cleared 23 FT be deleted from the chart. The present charted soundings of 41, 37, and 39 feet are sufficient to depict this area. - Concur

O. ADEQUACY OF SURVEY

All items addressed in this survey are resolved.

P. AIDS TO NAVIGATION

Buoy "NDA" was found to exist 660 meters north of where it is presently charted at position 41-16.4N; 74-04.2W. This was reported to Coast Guard First District. DP was taken on DOY 114.
Concur. See sheet 7 of 9

Buoy "ODAS" was found to be on station (as reported in LNM 3/90) within the bounds of the New London dump grounds.
Concur. See sheet 5 of 9

HECK located a 1 meter diameter mooring buoy near Clinton Harbor. (see Appendix I) - Does not fall in area of any plot.

Q. STATISTICS

<u>ITEM</u>	<u>for... NOAA Ship HECK</u>	<u>AMOUNT</u>
1. Total No. of Positions		1240 Fixes
2. Lineal NM of Soundings		54.9 NM ²
3. Square NM Hydrography		N/A NM ²
4. Days of Production		30 Days
5. Linear NM of SSS		184.9 NM
6. Tide Stations Established		None
7. Current Stations Established		None
8. Velocity Casts Performed		4 Casts
9. Magnetic Stations Established		None
10. Detached Positions		6
11. Bottom Samples		None

R. MISCELLANEOUS

R1. ANOMALOUS TIDAL OR CURRENT CONDITIONS

No anomalies in either tide or current, other than mentioned in the individual ITEM INVESTIGATIONS, were noted.

R2. BOTTOM SAMPLE SUBMISSIONS

No bottom samples taken.

S. RECOMMENDATIONS

None other than those mentioned.

T. REFERRAL TO REPORTS

<u>Report Submitted Separately</u>	<u>Date</u>
<u>Sent</u>	
1. Coast Pilot for New York, Long Island north shore from Montauk Point to Sands Point. Sent to N/MOA23	16 JUN 89
2. Coast Pilot for Connecticut/New York north shore Long Island Sound from New London to Throgs Neck. Sent to N/MOA23	23 JUN 89
3. Electronic Control Data Report Sent to N/MOA23	16 MAR 90

DESCRIPTIVE REPORT APPENDICES

- I. DANGER TO NAVIGATION REPORTS
- II. NON-FLOATING AIDS AND LANDMARKS FOR CHARTS *
- III. LIST OF HORIZONTAL CONTROL STATIONS
- IV. GEOGRAPHIC NAMES (FIELD) *
- V. TIDES AND WATER LEVELS *
- 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

* Removed from original Descriptive Report; filed with field data.

APPENDIX I

DANGER TO NAVIGATION REPORTS



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NOAA Ship HECK
439 W. York St.
Norfolk, VA 23510
09 APR 1990

Handwritten initials

Commander, First Coast Guard District
Aids to Navigation Office
408 Atlantic Avenue
Boston, MA 02110-2209

Dear Sir,

The following uncharted item was discovered during survey operations in Long Island Sound.

NOAA SHIP HECK REPORT OF DANGER TO NAVIGATION

Survey Title: Field Examination HE-10-1-90
State: Connecticut
General Locality: Long Island Sound
Sublocality: Clinton Harbor
Project Number: OPR-B660-90-HE

Object Discovered: 1 meter diameter mooring buoy.

Affected nautical charts ...

CHART NUMBER	EDITION NO.	DATE	CHARTED	GEOGRAPHIC POSITION	
			HORIZONTAL DATUM	LATITUDE	LONGITUDE
12354	29th	JUL 89	NAD 83	41° 15' 11"	072° 31' 26"
12374	11th	JUN 84	NAD 27	same as above	
12372	24th	APR 88	NAD 83	same as above	

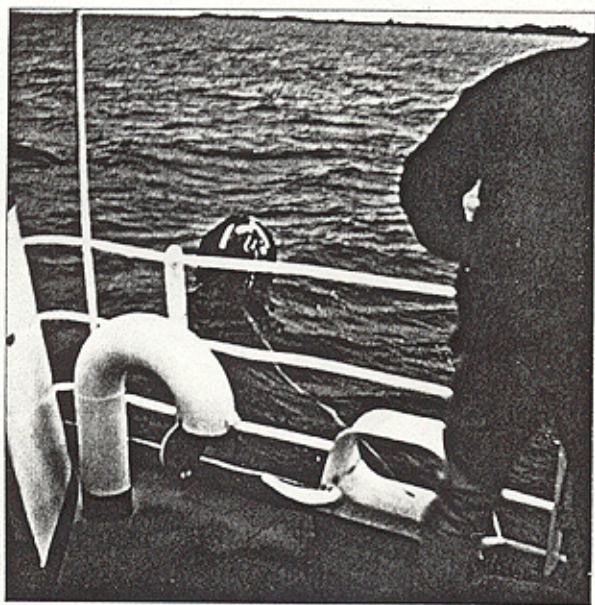
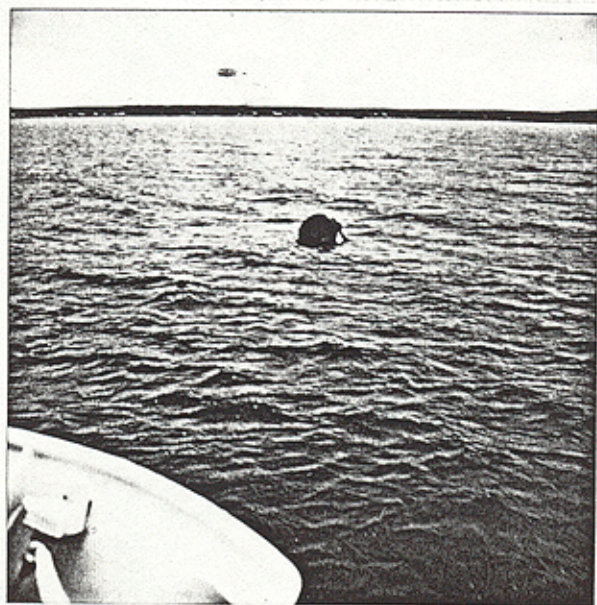
Any questions concerning this report can be directed to either the NOAA Ship HECK at the above address, or the NOAA Atlantic Marine Center at (804) 441 6264.

Sincerely,

Handwritten signature of LCDR S.R. Iwamoto

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







UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
NOAA Ship HECK S-591
439 W. York Street
Norfolk, VA 23510-1114

May 14, 1990

Commander, First Coast Guard District
 Aids to Navigation Office
 408 Atlantic Avenue
 Boston, MA 02110-2209

Dear Sir:

The following obstructions were located during survey operations in Long Island Sound.

Survey Title: Field Examination 343SS (HE-10-1-90)
 State: Connecticut
 General Locality: Long Island Sound
 Sub Locality: Entrance to New Haven Harbor

Object Discovered: Submerged Rock, Dangerous to Navigation, Least Depth 25.3 feet, corrected for predicted tides.

Affected Nautical Charts

CHART NUMBER	EDITION		DATUM		GEOGRAPHIC POSITION	
	NO	DATE	HORIZONTAL		LATITUDE	LONGITUDE
12354	29TH	JUL 89	NAD 83		41-11-47.368N; 072-55-42.363W	
12364SC	25TH	JAN 87	NAD 27	SAME	SAME	
12371	20TH	APR 85	NAD 27	SAME	SAME	

12371 ✓
12364 ENC

Sub Locality: Entrance to New London Harbor

Object Discovered: Submerged Wreck, Dangerous to Navigation, Least Depth 52.5 feet, corrected for predicted tides.

13212 ✓

Affected Nautical Charts

CHART NUMBER	EDITION		DATUM		GEOGRAPHIC POSITION	
	NO	DATE	HORIZONTAL		LATITUDE	LONGITUDE
12354	29TH	JUL 89	NAD 83		41-15-56.182N; 072-05-17.679W	
13272SC	24TH	JUL 88	NAD 27	SAME	SAME	
13212	30TH	JUN 85	NAD 27	SAME	SAME	

Sincerely,

LCDR S.R. Iwamoto, NOAA
 Commanding Officer, HECK





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
NOAA Ship HECK S-591
439 W. York Street
Norfolk, VA 23510-1114

May 18, 1990

Commander, First Coast Guard District
 Aids to Navigation Office
 408 Atlantic Avenue
 Boston, MA 02110-2209

*N/A
 superseded by
 LNM 8/92*

Dear Sir:

The following buoy was found to be approximately 600 meters north of its charted coordinates.

Survey Title: Field Examination 343SS (HE-10-1-90)
 State: Connecticut
 General Locality: Long Island Sound
 Sub Locality: Entrance to New Haven Harbor

Object Discovered: Yellow buoy "NDA" privately maintained, in vicinity of New London Dumping Grounds.

Affected Nautical Charts

CHART NUMBER	EDITION		DATUM HORIZONTAL	GEOGRAPHIC POSITION	
	NO	DATE		LATITUDE	LONGITUDE
12354	29TH	JUL 89	NAD 83	41-16-27N;	072-04-11W
12364SC	25TH	JAN 87	NAD 27	SAME	SAME
12371	20TH	APR 85	NAD 27	SAME	SAME

For further information contact HECK at 203-823-9410

Sincerely,

SRI
 LCDR S.R. Iwamoto, NOAA
 Commanding Officer, HECK



APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

LIST OF HORIZONTAL CONTROL STATIONS

<u>NUMBER</u>	<u>NAME</u>	<u>POSITION</u>	
130	SW LEDGE LTHSE OFFSET (<i>Field Position</i>)	41 14' 03.95881"	72 54' 43.54188"
133	DARROW ROCK FLAGPOLE, 1933	41 14' 45.63071"	72 51' 28.22115"
135	BRANFORD REEF LTHSE (<i>Branford Reef Light</i>)	41 13' 16.66935"	72 48' 19.16645"
160	FALKNER ISLAND LIGHTHOUSE, 1882 (<i>Falkner Island Light</i>)	41 12' 43.05452"	72 39' 12.94416"
165	DUCK ISLAND W BRKWTR LT, 1934 (<i>Duck Island W Breakwater Light 2 DI</i>)	41 15' 22.63226"	72 29' 06.62158"
166	SAYBROOK BREAKWATER LIGHT	41 15' 47.53600"	72 20' 33.91199"
168	ORIENT POINT LTHSE ECC (<i>Field Position</i>)	41 09' 48.50170"	72 13' 25.08028"
273	BARTLETT REEF LIGHT, 1954)	41 16' 28.28582"	72 08' 14.02100"
276	LITTLE GULL IS LH ECC (<i>Field Position</i>)	41 12' 23.07802"	72 06' 24.61611"
279	RACE ROCK LIGHTHOUSE, 1882 (<i>Race Rock Light</i>)	41 14' 36.50927"	72 02' 49.68067"
282	SEAFLOWER LIGHT, 1954 (<i>Seaflower Reef Light</i>)	41 17' 45.59504"	72 01' 59.72749"
283	NOANK LIGHT, 1934 (<i>Noank Light 5</i>)	41 18' 58.70694"	71 59' 13.87537"
163	Stone Island Reef (<i>Stone Island Ledge Daybeacon 3</i>)	41 14 36.684	72 24 39.169

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 13, 1990

MARINE CENTER: Atlantic

OPR: B660-HE-90

HYDROGRAPHIC SHEET: FE-343SS

LOCALITY: Long Island and Fishers Island Sounds:
Approaches to New London and New Haven Harbors

TIME PERIOD: March 13 - May 10, 1990

TIDE STATIONS USED: 846-1490 New London, CT.
846-7150 Bridgeport, CT.

PLANE OF REFERENCE (MEAN LOWER LOW WATER):
846-1490 = 3.34 ft.
846-7150 = 1.81 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:
846-1490 = 2.8 ft.
846-7150 = 7.0 ft.

REMARKS: RECOMMENDED ZONING

HE-10-1-90A - apply times direct and a X0.93 range ratio to all heights at Bridgeport, CT. (846-7150).

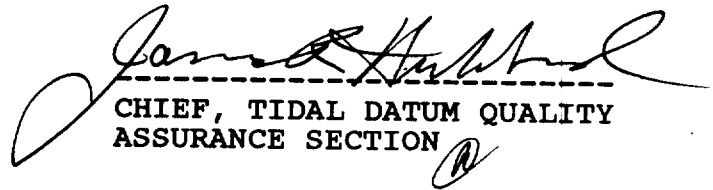
HE-10-1-90B - apply a -0 hr 30 min time correction and a X0.67 range ratio to all heights at Bridgeport, CT. (846-7150).

HE-10-1-90C - apply a +1 hr 20 min time correction and a X1.55 range ratio to all heights at New London, CT. (846-1490).

FE-343SS

HE-10-1-90D - apply a +0 hr 40 min time correction and a X1.16 range ratio to all heights at New London, CT. (846-1490).

HE-10-1-90E, HE-10-1-90F, HE-10-1-90I, HE-10-1-90J, HE-10-1-90K - apply times direct and a X0.97 range ratio to all heights at New London, CT. (846-1490).



CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION *A*

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-343SS

LOCALITY: Approaches to New Haven and New London harbors

TIME PERIOD: July 24, 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

HE-10-1-90E and HE-10-90K- apply times direct, and a X0.97 range ratio to all heights.



CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

06/04/92

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-343SS

NUMBER OF CONTROL STATIONS	13
NUMBER OF POSITIONS	1351
NUMBER OF SOUNDINGS	7606

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	85	07/09/90
VERIFICATION OF FIELD DATA	368	07/30/91
ELECTRONIC DATA PROCESSING	199	
QUALITY CONTROL CHECKS	219	
EVALUATION AND ANALYSIS	115	05/27/92
FINAL INSPECTION	15	04/01/92
TOTAL TIME	1001	
ATLANTIC HYDROGRAPHIC SECTION APPROVAL		05/28/92

REFERENCE NO.

4N/CG244-45-92

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) _____

DATE FORWARDED

10 June

NUMBER OF PACKAGES

1 box

TO:

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

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-343SS

New York--Connecticut Long Island and Fishers Island Sounds, Approaches to New Haven and New London Harbors

1 Box containing:

- 1 Original Descriptive Report with 9 page size smooth sheets
- 1 Envelope containing smooth position and sounding overlays
- 1 Envelope containing Supplemental data removed from printouts
- 1 Envelope containing Misc. data removed from the original Descriptive Report and Separates
- 1 Envelope containing Velocity data
- 1 Cahier with final position listing, control listing, sounding listing and line file listing
- 34 Envelopes containing Side Scan Sonargrams, fathograms and daily printouts for:
 VESNO 9140 for JDs: 072-075, 078-081, 086-088, 092-094, 099, 102, 103, 109, 110, 113, 114-117 (2ea), 121, 122, 127, 130 (2), and 205 (Add. work)

FROM: (Signature)

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)


D. S. Clark
7/16/92

Return receipted copy to:


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

APPENDIX VII

APPROVAL SHEET




Submitted by: ENS Lee D. Weiner, NOAA
Field Operations Officer
NOAA Ship HECK



Reviewed by: LT David W. Moeller, NOAA
Executive Officer
NOAA Ship HECK

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, field sheets, and data records have been closely reviewed and are complete and adequate for charting.



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

**COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT**

SURVEY NO.: FE-343SS

FIELD NO.: HE-10-1-90

New York--Connecticut, Long Island and Fishers Island Sounds,
Approaches to New Haven and New London Harbors

SURVEYED: 13 March through 7 May 1990

SCALE: 1:10,000

PROJECT NO.: OPR-B660-HE-90

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

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

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

Surveyed by.....D. W. Moeller

.....D. S. Wilkes

.....H. A. Bonnah

.....L. D. Weiner

.....W. R. Morris

Automated Plot by.....XYNETICS 1201 Plotter (AH\$)

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A Raytheon DSF-6000N fathometer was operated concurrently with the side scan sonar. The hydrography is considered reconnaissance hydrography and is not to be charted except for the shoalest soundings and least depths determined. Pneumatic depth gauges were used to determine least depths. No wire drag was accomplished during this survey.

b. Five (5) 1:10,000, one (1) 1:15,000 and three (3) 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.

c. No unusual problems were encountered during office processing.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H., 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 sheets have been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place the 1:10,000 scale sheet 1 of 9 on the NAD 27 move the projection lines 0.350 seconds (10.792 meters or 1.08 mm at the scale of the survey) north in latitude, and 1.635 seconds (38.063 meters or 3.81 mm at the scale of the survey) east in longitude.

To place the 1:20,000 scale sheet 2 of 9 on the NAD 27 move the projection lines 0.358 seconds (11.058 meters or 0.55 mm at the scale of the survey) north in latitude, and 1.683 seconds (39.095 meters or 1.95 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheet 3 of 9 on the NAD 27 move the projection lines 0.358 seconds (11.058 meters or 1.10 mm at the scale of the survey) north in latitude, and 1.683 seconds (39.095 meters or 3.91 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheet 4 of 9 on the NAD 27 move the projection lines 0.351 seconds (10.899 meters or 1.09 mm at the scale of the survey) north in latitude, and 1.713 seconds (39.993 meters or 3.99 mm at the scale of the survey) east in longitude.

To place the 1:20,000 scale sheet 5 of 9 on the NAD 27 move the projection lines 0.355 seconds (10.971 meters or 0.55 mm at the scale of the survey) north in latitude, and 1.729 seconds (40.246 meters or 2.01 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheets 6, 7, and 9 on the NAD 27 move the projection lines 0.355 seconds (10.971 meters or 1.09 mm at the scale of the survey) north in latitude, and 1.729 seconds (40.246 meters or 4.02 mm at the scale of the survey) east in longitude.

To place the 1:15,000 scale sheet 8 of 9 on the NAD 27 move the projection lines 0.355 seconds (10.971 meters or 0.73 mm at the scale of the survey) north in latitude, and 1.729 seconds (40.246 meters or 2.68 mm at the scale of the survey) east in longitude.

All geographic positions listed in this report are on the

NAD 83 datum unless otherwise specified. Items originating with prior sources that are brought forward to the present survey have been converted to the present survey datum, NAD 83

b. There is no shoreline with the limits of this survey.

3. HYDROGRAPHY

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

b. The standard depth curves were drawn in their entirety.

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

4. CONDITION OF SURVEY

The smooth sheets and accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL, SIDE SCAN SONAR MANUAL, FIELD PROCEDURES MANUAL, and Project Instructions with the following exception:

a) The requested additional field work to complete the required 400% side scan sonar coverage of AWOIS Items #3179 and #3180 was not submitted for inclusion with the present survey. The hydrographer investigated AWOIS Item #1858 during survey operations on FE-345SS (1990), and stated that required additional field data was included with the subsequent survey data. The area to be investigated for AWOIS Item #1858 included AWOIS Items #3179 and #3180. The data acquired during FE-345SS (1990) operations could not be and was not removed from the data for the subsequent survey. This data was not specifically acquired for inclusion with the present survey. The field unit did not meet the requirement to investigate the AWOIS items as directed. The data included in FE-345SS (1990), AWOIS Item #1858, that covered the area of required additional field work was examined during office processing of this survey. A final disposition based on the present survey data and the data acquired for AWOIS Item #1858 is found in sections 6.b.1) and 6.b.2) of this report.

b) Prior surveys common to the present survey were not listed in the Descriptive Report nor was an adequate discussion of the prior surveys in the Descriptive Report.

5. JUNCTIONS

There are no contemporary junctional surveys. There are no junctional requirements in the Project Instructions.

6. COMPARISON WITH PRIOR SURVEYSa. Hydrographic

H-8926	(1966)	1:10,000
H-8996	(1968)	1:10,000
H-9008	(1968)	1:20,000
H-9089	(1969)	1:20,000
H-9181	(1970)	1:20,000
H-9212	(1971)	1:20,000

The prior surveys listed above are common to the entire present survey.

Prior survey H-8926 (1966) is common to sheets 8 and 9 of 9. The prior survey is in good agreement with the present surveys. Scattered present soundings are 1 to 2 feet (0^3 to 0^6 m) shoaler than the prior survey.

Prior survey H-8996 (1968) is common to sheet 6 of 9 and covers half of the area of sheet 7 of 9. The prior survey is in good agreement with the present survey considering the rocky nature of the bottom. Present survey soundings agree within plus or minus (\pm) 0^6 to 1 m (2 to 3 ft).

Prior survey H-9008 (1968) is common to sheet 1 of 9. The prior survey is in good agreement with the present survey with soundings agreeing within plus or minus (\pm) 1 to 2 feet (0^3 to 0^6 m).

Prior survey H-9089 (1969) and sheet 2 of 9 are in good agreement with soundings agreeing within plus or minus (\pm) 1 to 2 feet (0^3 to 0^6 m). A shoal area in the vicinity of Latitude $41^{\circ}12'00''N$, Longitude $72^{\circ}32'00''W$ that is part of "Six Mile Ridge" shows prior depths of 25 to 31 feet. The present survey shows the ridge with depths of 8^5 to 9^8 m (28 to 32 ft) approximately 100 meters to the west.

Prior survey H-9181 (1970) 1:20,000 is common to sheet 3 of 9. Present survey soundings are 3 to 10 feet (1 to 3 m) shoaler than prior survey soundings.

Prior survey H-9212 (1971) covers sheets 4 and 5 of 9 and the southern parts of sheets 6 and 7 of 9. Present survey

soundings on sheet 4 of 9 show good agreement with prior survey soundings. Present soundings on sheet 5 of 9 are in good agreement with the prior survey with present soundings agreeing within plus or minus 1 to 2 feet (0^3 to 0^6 m). A shoal in the vicinity of Latitude $41^{\circ}16'00''N$, Longitude $72^{\circ}04'45''W$ on sheet 5 of 9 shows present survey soundings up to 22 feet (6^7 m) shoaler than the prior survey in an area of a dumping ground. Present soundings on sheet 6 of 9 are in good agreement with the present survey considering the rocky nature of the bottom. Present survey soundings agree within plus or minus (\pm) 0^6 to 1 m (2 to 3 ft). Present survey soundings on sheet 7 of 9 compare favorably with prior soundings with soundings 1 to 2 feet (0^3 to 0^6 m) deeper than the prior survey.

With the exception of sheets 3 and 4 of 9 where the hydrography is considered reconnaissance, the hydrography on the remaining present survey sheets is adequate to supersede the prior surveys in the common areas.

b. Wire Drag

H-4008WD (1917-18)

H-9951WD (1980) 1:10,000

1) There are no conflicts between present survey sheet 9 of 9 and the wire drag effective depths shown on prior survey H-4008WD (1917-18).

2) There are no conflicts between present survey sheet 6 of 9 in the common area of AWOIS items #3177 and #3178, and sheet 7 of 9 in the common area of AWOIS items #3179 and #3180 and the wire drag effective depths shown on prior survey H-9951WD (1980).

a) AWOIS item #3179, a charted obstruction with a wire drag clearance depth of 41 ft (12^4 m) in Latitude $41^{\circ}17'00.25''N$, Longitude $72^{\circ}04'34.27''W$, originates with the prior wire drag survey as an uninvestigated hang with a depth of 43 feet (13^1 m) subsequently cleared by 41 feet (12^4 m). A shoal depth of 13^4 meters (44 ft) is shown on the present survey in Latitude $41^{\circ}17'00.90''N$, Longitude $72^{\circ}04'33.45''W$ in surrounding depths of 14 to 14^2 meters (46 ft). It is believed that this is the AWOIS Item #3179. A thorough examination of the side scan sonograms in the vicinity of AWOIS Item #3179 acquired by the field unit while investigating AWOIS Item #1858 revealed two things; poor side scan sonar records and no contacts in the vicinity of this AWOIS item. Considering the

near 300%+ coverage of the area the item is considered disproved by the present survey and the data acquired for FE-345SS (1990). It is recommended that the area be charted as shown on the present survey. See sheet 7 of 9. 1322 ✓

b) AWOIS item #3180, a charted obstruction PA with a wire drag clearance depth of 41 ft (12⁴ m) in Latitude 41°16'47.35"N, Longitude 72°04'27.87"W, originates with the prior wire drag survey as an uninvestigated hang at a depth of 42 feet (12⁸ m) subsequently cleared by 41 feet (12⁴ m). During office processing a contact was identified at position 1580.23S on the side scan sonargram. An estimated depth of 13¹ meters (43 ft) was computed. This contact is in Latitude 41°16'47.93"N, Longitude 72°04'28.39"W. Surrounding present depths are 14 to 14² meters (46 ft). It is believed that this is the AWOIS Item #3180. A thorough examination of the side scan sonargrams and fathograms in the vicinity of AWOIS Item #3180 acquired by the field unit while investigating AWOIS Item #1858 revealed two things; poor side scan sonar records and no contacts in the vicinity of this AWOIS item. Considering the near 300%+ coverage of the area the item is considered disproved by the present survey and the data acquired for FE-345SS (1990). It is recommended that the area be charted as shown on the present survey. See sheet 7 of 9. 1322 ✓

7. COMPARISON WITH CHARTS 12354 (30th Ed., Feb. 2/90)
12371 (21st Ed., Jan. 27/90)
12373 (13th Ed., Dec. 30/89)
12374 (12th Ed., Aug. 18/90)
12375 (18th Ed., Nov. 11/89)
13212 (31st Ed., Nov. 11/89)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and sources not readily ascertainable. The previously discussed prior surveys require no further consideration. Attention is directed to the following:

- 1) A charted dangerous submerged rock with a depth of 27 feet (8² m), in Latitude 41°12'17.61"N, Longitude 72°55'39.35"W, originates with FE-254WD (1983). A pneumatic depth gauge least depth of 27 feet at MLW was obtained by divers in 1983. The rock, in Latitude 41°12'17.47"N, Longitude 72°55'39.29"W, was noted during side scan sonar operations, and an estimated depth of 7² meters (23 ft) was computed. The dangerous submerged rock was brought forward from the prior survey to supplement the present survey. It is recommended that the dangerous submerged rock with a depth of 12371 ✓
12364 ✓

27 feet (8² m) be retained as charted. See sheet 1 of 9. 13212 ✓

2) AWOIS item #7073, a charted dangerous obstruction with an unknown depth in Latitude 41°17'35.36"N, Longitude 72°02'32.27"W, originates with Local Notice to Mariners 31 of 1978 (LNM 31/78). A diver least depth of 10¹ meters (33 ft) was obtained on a rock. A shoaler fathometer depth of 9³ (27 ft) meters (30 ft) was obtained on a rock in Latitude 41°17'34.95"N, Longitude 72°02'33.64"W. It is recommended that the charted dangerous obstruction with an unknown depth be revised to a rock with a depth of 9³ meters (9³ Rk) as shown on the present survey. See sheet 8 of 9.

3) AWOIS item #7109, an uncharted wreck in Latitude 41°17'05.36"N, Longitude 72°02'16.27"W, originates with AWOIS Reference No. 205. A diver least depth of 12⁶ meters (41 ft) was obtained on a wreck in Latitude 41°17'07.50"N, Longitude 72°02'11.95"W. The wreck is believed to be the AWOIS item. It is recommended that the AWOIS item be charted as wreck with a depth 12⁶ meters (12⁶ Wk) as shown on the present survey. See sheet 8 of 9. 13212 ✓

4) An uncharted wreck was located by the field unit in Latitude 41°17'06.58"N, Longitude 72°01'54.38"W. A diver least depth of 16⁹ meters (55 ft) was obtained. A shoaler fathometer depth of 16 meters (52 ft) was found during office processing. It is recommended that a wreck with a depth of 16 meters (16 Wk) be charted as shown on the present survey. See sheet 8 of 9. * 13212 ✓

With the exception of sheets 3 and 4 of 9 where the hydrography is considered reconnaissance, the hydrography on the remaining present survey sheets is adequate to supersede the charted hydrography in the common areas.

b. Aids to Navigation

The hydrographer located three (3) floating aids to navigation in the survey area. These aids appear adequate to serve their intended purposes.

c. Dangers to Navigation

Four Dangers to Navigation reports were submitted by the hydrographer to Commander (oan), First Coast Guard District, 408 Atlantic Avenue, Boston, Massachusetts 02110-2209. Copies of the notices are appended to the Descriptive Report.

* also found in search area: 13212 ✓
 74.8' 22⁸ meter depth on a wreck in lat. 41°-17'-11.72N
 long. 72°-01'-51.35W
 74.5' 22⁷ meter depth on a wreck in lat. 41-17-12.85N
 long. 72-01-45.44W 13212 ✓
 98.4' 30 meter depth on unkn obstruction in lat. 41-17-17.97N
 long 72-01-47.58W 13212 ✓

8. COMPLIANCE WITH INSTRUCTIONS

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

9. ADDITIONAL FIELD WORK

This is a good side scan sonar survey. Additional work is recommended for AWOIS items #3179 and #3180 as discussed in sections 7.a.1) and 2) of this report.

Franklin L. Saunders
Franklin L. Saunders
Cartographic Technician
Verification of Field Data

Richard H. Whitfield
Richard H. Whitfield
Cartographer
Evaluation and Analysis

Robert R. Hill
Robert R. Hill
Senior Cartographic Technician
Verification Check

APPROVAL SHEET
FE-343SS

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.

Robert G. Roberson Date: 28 May 92
Robert G. Roberson
Chief, 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: 28 May 1992
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: J. Austin Yeager Date: 3/15/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic
Survey

72° 56' 00"

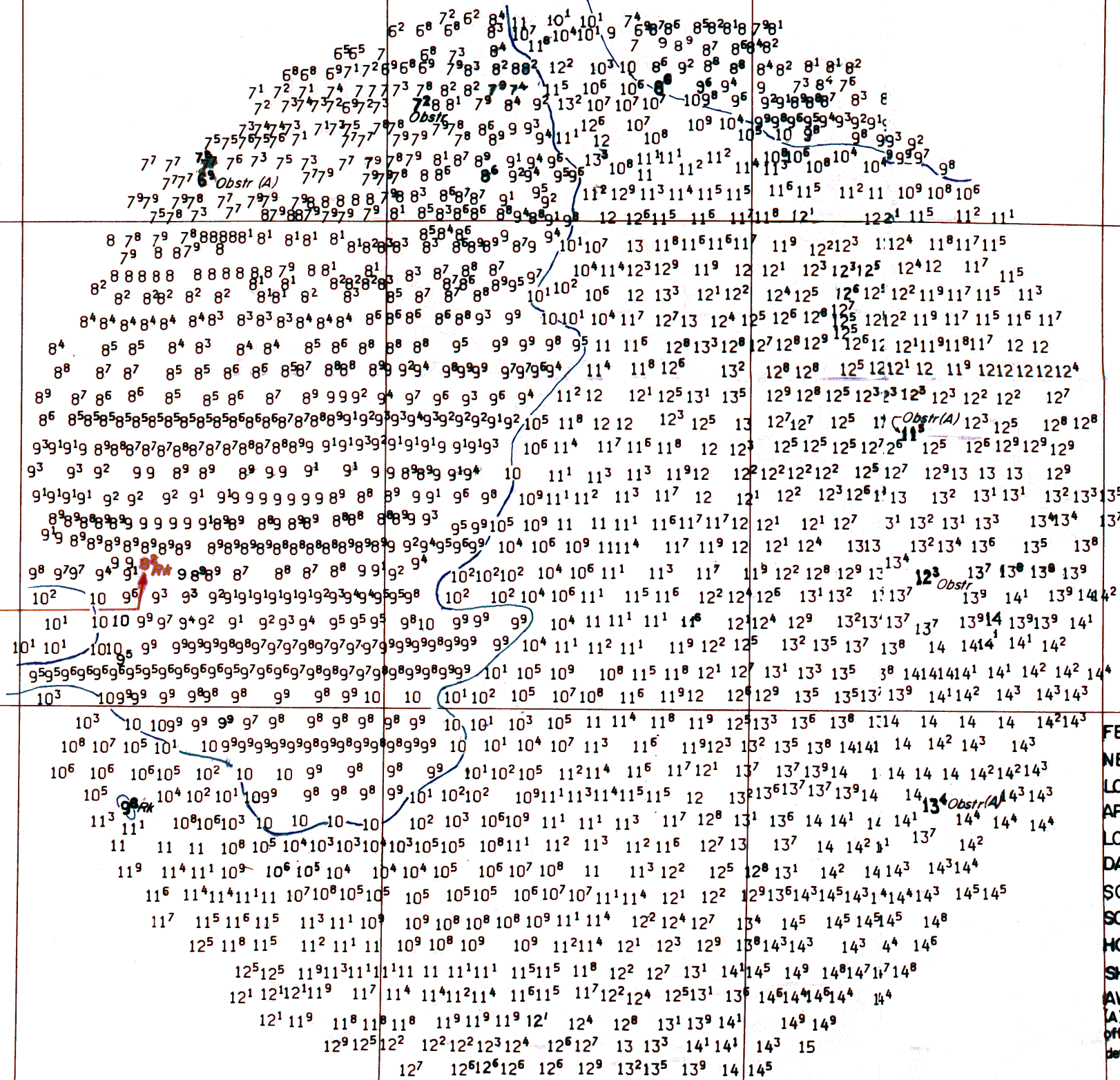
72° 55' 00"

72° 54' 00"

72° 53' 00"

41° 14' 00"

72° 52' 00"



From
FE-254(1983)

41° 13' 00"

72° 52' 00"

41° 12' 00"

NAD 27

41° 12' 00"

FE-343 SS
 NEW YORK -- CONNECTICUT
 LONG ISLAND AND FISHERS ISLAND SOUNDS
 APPROACHES TO NEW HAVEN AND NEW
 LONDON HARBORS
 DATE OF SURVEY: 13-22 MARCH 1990
 SCALE: 1:20,000
 SOUNDINGS IN METERS AT MLLW
 HORIZONTAL DATUM: NAD 1983
 SHEET 1 OF 9
 AWOIS ITEM NUMBER 1827

XYNETICS 1201
/ LGC 5/30/91

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

12 51

72° 34' 00"

72° 33' 00"

72° 32' 00"

72° 31' 00"

72° 30' 00"

34
 30⁴ 33 33 33 33 33 34 34 33 33 34 34 34 34 34 33 33 32
 29⁷ 31 29⁷ 33 34 33 32 34 33 33 33 33 34 35 32 32 34 34 32 31 30¹ 29⁸
 31 31 30⁸ 30³ 29⁶ 28⁴ 29⁴ 28 30² 32 32 30⁷ 32 32 32 32 32 31 32 31 30⁴ 29⁶ 29⁴ 27⁷

31 27⁵ 30² 29¹ 28⁷ 28⁸ 28⁴ 28⁴ 27⁸ 27⁶ 27⁶ 27⁵ 27⁹ 27⁹ 28³ 29 28⁷ 27⁷ 27³ 26⁷ 25⁷

28³ 28 27⁷ 27³ 27⁶ 27⁵ 27⁵ 27⁷ 27⁶ 27⁸ 27³ 27⁵ 27⁵ 26⁸ 24⁸ 25³ 24⁸ 24 23⁹ 23⁴ 23¹ 23 21⁷

26⁴ 26² 26¹ 26¹ 26³ 26⁵ 26⁵ 26⁹ 27² 27² 27³ 27² 27⁵ 27² 27⁴ 27¹ 26⁹ 24 22⁵ 27² 23⁸ 27⁵ 2223⁷ 21⁷ 18⁷ 2120

25⁴ 25⁷ 25⁶ 25⁹ 25⁹ 26² 26³ 26⁴ 26⁷ 26⁴ 26⁸ 26⁷ 26⁹ 27⁵ 27⁴ 27³ 26⁹ 28¹ 25⁵ 22¹ 25⁴ 26² 20⁷ 22³ 17⁷ 21¹ 22⁷ 20⁷

26 25⁹ 26⁴ 26³ 26⁶ 27¹ 27 27⁷ 28 27⁵ 27⁹ 28⁴ 28¹ 29 27⁹ 27⁸ 27 28⁶ 27⁶ 26¹ 28⁶ 26¹ 24² 25⁸ 23 20⁵ 20⁹ 19⁸ 20 17⁴ 22⁵ 23⁷ 26⁵ 25⁴

27 26⁹ 27⁶ 27³ 27⁵ 27⁹ 28⁶ 27³ 29 28³ 26⁶ 27⁵ 24⁶ 26² 23⁶ 27¹ 26⁶ 27⁴ 25¹ 27⁹ 22² 22⁶ 17⁶ 22⁹ 19⁵ 19⁶ 20³ 18⁷ 22⁸ 22²

28⁷ 27⁸ 27⁹ 28⁵ 27⁸ 28⁴ 26⁶ 27⁹ 26⁵ 27⁶ 24⁸ 25⁴ 24⁹ 25⁸ 21⁶ 27⁸ 27⁷ 21⁸ 20⁴ 19⁸ 20⁷ 18² 21⁹ 26² 21⁹

27⁷ 27⁷ 27³ 27⁵ 27⁹ 27¹ 27⁵ 26 25⁸ 25⁶ 27² 25⁵ 26⁷ 23⁷ 27 27¹ 22¹ 17⁸ 15⁶ 17² 20⁸ 18¹ 18⁶ 20⁵ 21⁸ 19⁷ 20⁶ 22⁸ 20⁷ 22 21⁸ 21²

26⁵ 26⁵ 27 26² 25⁹ 23⁴ 24² 21⁷ 2221² 25⁶ 23⁷ 23 14⁶ 14 15 14 14 21⁸ 16⁵ 18⁸ 20⁶ 19⁸ 21² 19⁵ 21² 20² 19 20²

25⁴ 25² 24⁵ 24² 23⁴ 24 23⁶ 23 21¹ 18³ 18³ 16⁷ 9 12⁷ 12⁴ 14⁹ 14² 13⁷ 15⁴ 15⁴ 17⁸ 21 19⁸ 20⁸ 20⁷ 21² 22⁴ 23⁹

24⁵ 24² 23⁸ 23⁵ 23¹ 23⁵ 22³ 22¹ 20⁸ 21¹ 19³ 18 17² 15³ 8⁵ 10⁹ 12⁸ 14² 13² 14⁴ 15¹ 16⁵ 17⁷ 20¹ 21⁹ 22⁶ 24⁵ 25⁷ 26⁵ 28⁷ 32

23³ 23² 23³ 23³ 22⁴ 21⁵ 23 21⁵ 20⁵ 18³ 19³ 18⁴ 16⁹ 14⁹ 12⁵ 10⁸ 8⁵ 12 13 14 13⁹ 15⁴ 16¹ 17² 17³ 19⁵ 20 19⁹ 21⁵ 23⁴ 25⁹ 28¹ 30⁸ 31 31 34 33

23¹ 21⁹ 22³ 21³ 20⁸ 18⁸ 20⁶ 18¹ 17³ 15¹ 12 11¹ 11⁸ 9⁵ 12⁹ 13⁹ 15¹ 15⁶ 17 18⁶ 17³ 19² 20 20² 22¹ 22⁶ 25⁴ 25⁸ 25² 27⁸ 26⁶

23⁵ 22⁷ 21⁴ 20⁹ 21 18⁷ 17⁵ 19¹ 14⁵ 13³ 12⁸ 11⁹ 9³ 13⁸ 15¹ 13⁸ 15¹ 16³ 15⁵ 17⁹ 19 17¹ 20⁴ 18⁸ 21 20² 20¹

23⁹ 21⁴ 22² 21⁷ 22⁷ 21³ 20³ 18⁸ 19² 17² 15 17¹ 14¹ 15 12⁹ 9⁸ 14³ 13¹ 14² 12⁵ 15⁴ 13⁹ 16² 16⁴ 15² 15⁶ 16⁵

24⁵ 23⁸ 24⁵ 23² 22⁸ 22³ 22² 19⁵ 21⁶ 20⁷ 20 19³ 17¹ 17⁷ 16³ 15⁶ 10² 13⁴ 10³ 14⁴ 10⁵ 14¹ 11⁶ 13⁷ 12⁶

25⁴ 24⁶ 25 24⁸ 23⁶ 23⁶ 22³ 22 21¹ 21⁴ 20⁴ 20⁹ 19¹ 20² 17 17¹ 15² 14⁴ 13¹ 10³

24 24⁴ 23² 22⁶ 21³ 20⁹ 19⁵ 19² 18⁹ 18⁶ 17⁸ 17⁴ 17² 16³

41° 13' 00"

41° 12' 00"

123741

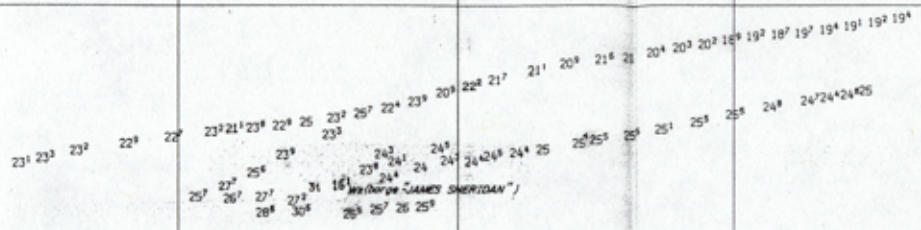
FE-343 SS
 NEW YORK -- CONNECTICUT
 LONG ISLAND AND FISHERS ISLAND SOUNDS
 APPROACHES TO NEW HAVEN AND NEW
 LONDON HARBORS
 DATE OF SURVEY: 28 MAR -- 4 APR, 1990
 SCALE: 1:20,000
 SOUNDINGS IN METERS AT MLLW
 HORIZONTAL DATUM: NAD 1983
 SHEET 2 OF 9
 AWOIS ITEM NUMBER 6817

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

72° 30' 00"
 41° 11' 00"
 NAD 27
 KINETICS 1201
 LOC 6/05/91

72° 25' 30" 72° 25' 00" 72° 24' 30" 72° 24' 00" 72° 23' 30"

41° 13' 30"



16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
"SHERIDAN"

41° 13' 00"

FE-343 SS
NEW YORK -- CONNECTICUT
LONG ISLAND AND FISHERS ISLAND SOUNDS
APPROACHES TO NEW HAVEN AND NEW
LONDON HARBORS
DATE OF SURVEY: 27 MARCH 1990
SCALE: 1:10,000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD1983
SHEET 3 OF 9
AWOIS ITEM NUMBER 6819

12575

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

72° 24' 00"
41° 12' 30"
NPD 27
SYNTHETIC I.D.I.
1:100 06/24/91

41° 12' 30"

72° 06'

72° 05'

72° 04'

72° 04' 00"

NAD 27

41° 17' 00"

XYNETICS 1201

41° 17'

LSC 08/17/91

FE-343 SS

NEW YORK -- CONNECTICUT

LONG ISLAND AND FISHERS ISLAND SOUNDS

APPROACHES TO NEW HAVEN AND NEW

LONDON HARBORS

DATE OF SURVEY: 12 APR-10 MAY 1990

SCALE: 1:20,000

SOUNDINGS IN METERS AT MLLW

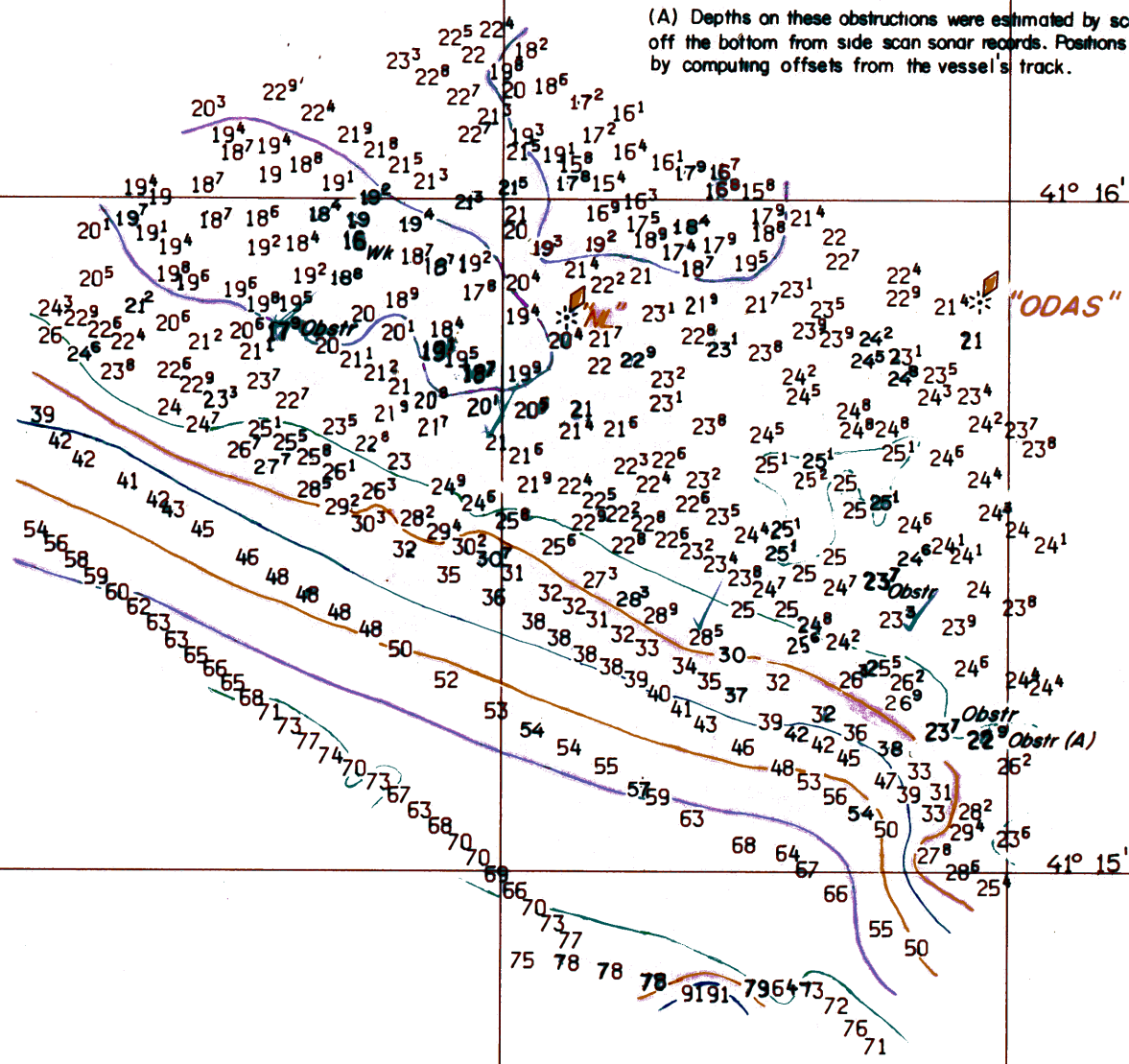
HORIZONTAL DATUM: NAD 1983

SHEET 5 OF 9

AWOIS ITEM NUMBER 1844

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

13213



41° 16'

"ODAS"

41° 15'

72° 05' 00"

72° 04' 30"

72° 04' 00"

41° 17' 30"

14 ⁹									
14 ⁵	14 ⁶								
	14 ³								
13 ⁹	14	13 ⁸		13 ⁷				13 ⁵	
13 ⁶		13 ⁹	13 ⁸	13 ⁵	13 ⁸	13 ⁸		13 ⁸	
13 ³	13 ⁹	13 ⁸	13 ⁶	13 ⁹	14	13 ⁹		13 ⁹	
13 ⁸	13 ⁸	13 ⁹	14	14 ¹	13 ⁷	13 ⁸			
13 ⁹	14 ¹	13 ⁹	13 ⁹	14 ¹	14 ¹	14 ¹		14 ¹	
13 ⁸	14 ²	14 ³	13 ⁹	14 ¹	14 ¹	13 ⁹			
14 ²	14 ¹	14 ¹	14 ²	13 ⁵	14 ¹	13 ⁵			
14 ⁴	14 ²	14 ⁴	13 ⁴	14	13 ⁸	13 ⁵			
14 ⁴	14 ²	14 ⁴	14	14	13 ⁹	13 ⁸			
14 ⁴	13 ⁸	14 ⁴	13 ⁴	14 ¹	13 ⁹	14			
14 ⁶	14 ³	14 ⁵	14 ³	14 ²	14	14 ¹			
14 ⁵	14	14 ⁵	14 ²	14 ¹	14 ³	14 ¹			
14 ³	14 ⁴	14 ³	14 ²	13 ⁹	14 ³	14 ²			
14 ⁵	14 ⁹	13 ⁹	13 ⁸	13 ⁸	14 ³	14 ⁴			
15	15 ¹	14 ⁴	13 ⁷	13 ⁹	14 ¹	14 ³			
15 ¹	14 ⁵	14 ⁷	13 ⁹	14 ²	13 ⁸	14 ²			
15 ³	15 ⁴	14 ⁹	14 ³	14 ⁸	14 ⁴	14 ⁹			
16 ¹	15 ⁵	15 ⁸	14 ⁵	15	15 ¹	15 ⁵			
16 ⁴	15 ⁵	15 ⁸	15	15 ⁹	16 ²	16 ⁶			
17 ¹	16 ⁴	15 ⁴	15	16 ⁴	16 ³	16 ⁶			
17 ⁶	17 ¹	17	15 ⁵	16 ⁴	16 ³	16 ⁶			
17 ⁶	17 ²	16 ⁹	16	16 ¹	15 ⁷	16 ⁹			
17 ⁷	17 ²	16 ⁹	15 ³	15	15 ⁶	16 ⁸			
17 ⁹		16 ⁵		14 ⁷	14 ⁵	16 ⁷			
17 ⁷		15 ⁷		14 ¹	15 ⁶	16 ⁷			
17 ²				14 ⁷	15 ⁶	16 ⁷			
		15 ²			16 ²	16 ⁴			

41° 17' 00"

72° 04' 00"

41° 16' 30"

41° 16' 30"

FE-343 SS

NEW YORK -- CONNECTICUT

LONG ISLAND AND FISHERS ISLAND SOUNDS

APPROACHES TO NEW HAVEN AND NEW

LONDON HARBORS

DATE OF SURVEY: 24-27 APRIL 1990

SCALE: 1: 10,000

SOUNDINGS IN METERS AT MLLW

HORIZONTAL DATUM: NAD 1983

SHEET 7 OF 9

AWOIS ITEM NUMBERS 3179 / 3180

NAD 27

KYNETICS 1201

LOC 08/01/91

"NDA"

72° 03' 00"

72° 02' 00"

NAD 27

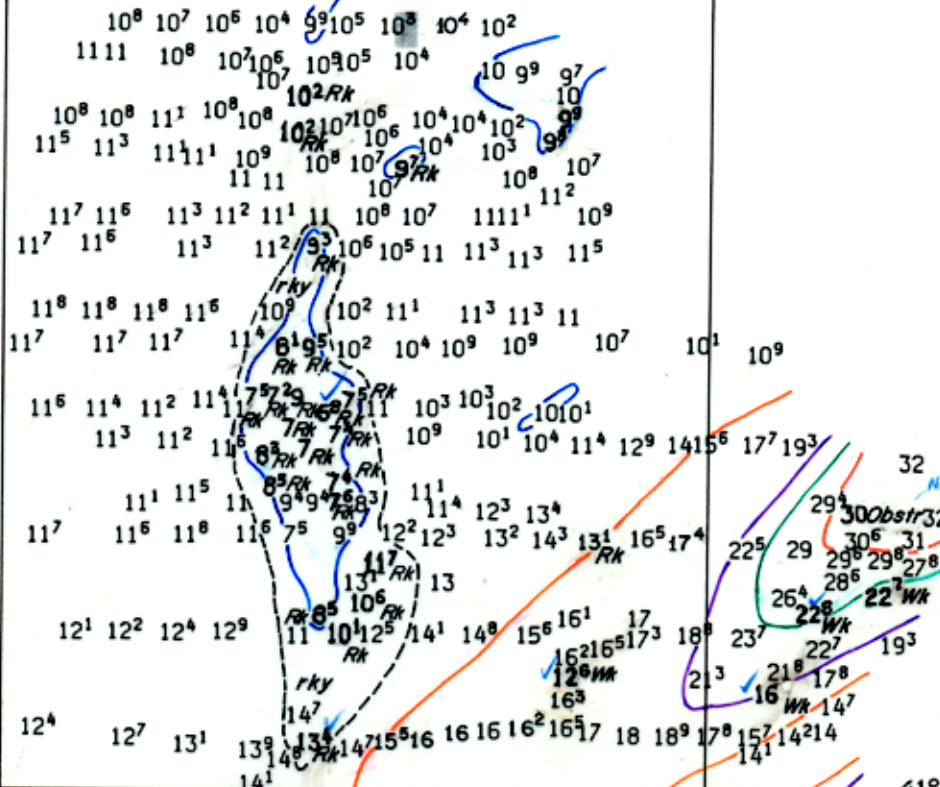
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XYNETICS 1201

41° 18' 00"

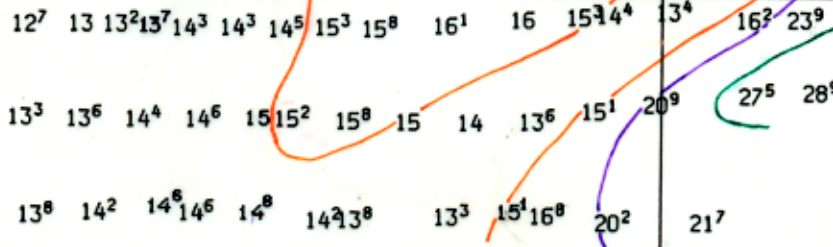
/LGC 06/24/91

72° 02' 00"



Not added scale (13205)

41° 17' 00"



FE-343 SS ✓
 NEW YORK -- CONNECTICUT
 LONG ISLAND AND FISHERS ISLAND SOUNDS
 APPROACHES TO NEW HAVEN AND NEW
 LONDON HARBORS
 DATE OF SURVEY: 25 APRIL, 10 MAY, 1990
 SCALE: 1:15,000
 SOUNDINGS IN METERS AT MLLW
 HORIZONTAL DATUM: NAD 1983
 ✓ SHEET 8 OF 9
 AWOIS ITEM NUMBERS 7073 / 7109

13212

41° 16' 00"

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1967-1975

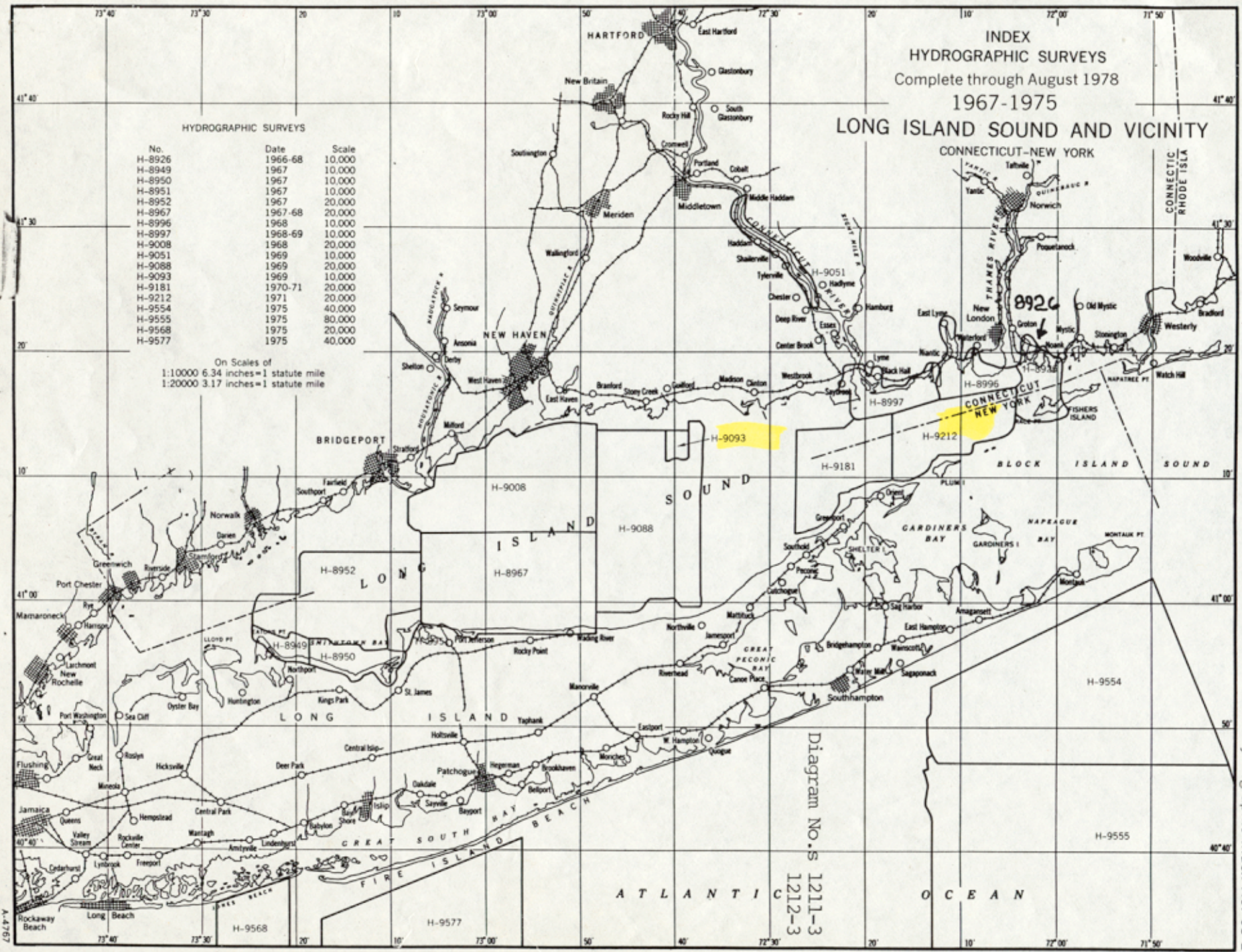
LONG ISLAND SOUND AND VICINITY

CONNECTICUT-NEW YORK

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8926	1966-68	10,000
H-8949	1967	10,000
H-8950	1967	10,000
H-8951	1967	10,000
H-8952	1967	20,000
H-8967	1967-68	20,000
H-8996	1968	10,000
H-8997	1968-69	10,000
H-9008	1968	20,000
H-9051	1969	10,000
H-9088	1969	20,000
H-9093	1969	10,000
H-9181	1970-71	20,000
H-9212	1971	20,000
H-9554	1975	40,000
H-9555	1975	80,000
H-9568	1975	20,000
H-9577	1975	40,000

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



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

Hydrographic Index No. 63 L

Diagram No.s 1211-3
1212-3

A-4787

