FE340
SIDE SCAN

Diagram No. 1212-2

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-10-13-89

Registery No. FE-340SS

LOCALITY

State New York--Connecticut

General Locality Long Island Sound

Sublocality Vicinity of Stratford Point to Long Sand Shoal

19 89

CHIEF OF PARTY
LCDR S.R. Iwamoto

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DATE July 29, 1992

FE340
SIDE SCAN

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CP-2
12375

NOAA FORM 77-28 (72) | U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTER NO.

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: FE-340SS ✓

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-10-13-89 ✓

State CONNECTICUT ~~AND~~ NEW YORK ✓

General locality LONG ISLAND SOUND ✓

Locality VICINITY OF STRATFORD POINT TO LONG SAND SHOAL ✓

Scale 1:10,000 Date of survey 14SEP89 to 15NOV89

Instructions dated August 21 ~~May 26,~~ 1989 Project No. OPR-B660-89

Vessel NOAA Ship HECK S-591 EDPN 9140

Chief of party LCDR Stanley R. Iwamoto

Surveyed by LT G.H. Tuell, ENS L.D. Weiner, ENS H.W. Bonnah, ST W.R. Morris
LT A.E. Francis

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF 6000N AND ~~Pneumofathometer~~ Pneumatic Depth Gauge (PDG)

Graphic record scaled by Automated HDAPS system

Graphic record checked by G.H.T., L.D.W., H.W.B., W.R.M.

Protracted by _____ Automated plot by ~~HDAPS system~~ (FIELD) XYNETICS 1241 Plotter (AHS)

Verification by Atlantic Hydrographic Section personnel

Soundings in ~~fathoms~~ feet at ~~MHW~~ MLLW

REMARKS: All times are UTC

This Descriptive Report is in a nonstandard format.

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

AWOIS and SURF check
8/24/92 MCR

KWW 3/16/94

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

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APPENDICES

* Data removed from the original Descriptive Report; filed with original field records.

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-340SS
FIELD NUMBER HE-10-13-89
NEW YORK AND CONNECTICUT
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO LONG SAND SHOAL
Scale 1:10000
NOAA SHIP HECK S-591
LCDR Stanley R. Iwamoto, CMDG

A. PROJECT DESCRIPTION

A1. Project Authorization

This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU/HE, Southern New England Coast, Connecticut and New York, dated August 21, 1989; CHANGE NO. 1 dated September 13, 1989.

A2. Project Purpose

The project purpose was to respond to requests from the Northeast Marine Pilots Inc., of Newport, Rhode Island, to verify or disprove and determine least depths for certain wrecks and obstructions in western Long Island Sound. The data from this project will supplement a basic hydrographic survey (OPR-B285) which is scheduled for this area in 1989-1991. The U.S. Navy, as well as state and local governments, have requested updated bathymetric and hydrographic survey data for western Long Island Sound and vicinity to aid in proposed biological, chemical, environmental, and coastal zone management studies in this region.

B. PROJECT OVERVIEW

B1. General

This report includes all work performed on the following AWOIS items: 7108, 1797, 1751, 6929, 2639, 1820, 6819, and 6820. Horizontal control recovery and installation of navigation units began on September 05, 1989. Hydrographic survey operations began on September 14, 1989, and continued until November 15, 1989.

B2. METHODOLOGY

The survey requirements for each AWOIS item were specified by the Hydrographic Surveys Branch (N/CG24) in an AWOIS listing. This listing was included as a Presurvey Review (PSR).

This survey was conducted according to procedures dictated in the Hydrographic Manual Fourth Edition; the Field Procedures Manual for Hydrographic Surveying; the Side Scan Sonar Manual; and the Hydrographic Guidelines.

Survey data acquisition and processing were accomplished utilizing the HDAPS system and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24. The specific survey instrumentation utilized is discussed in Sections F through H of this text.

C. AREA SURVEYED

This report covers survey operations performed to resolve AWOIS items located in Long Island Sound, along the New York and Connecticut shores, in the area east of Stratford Shoal Middle Ground and west of The Connecticut River.

D. SURVEY VESSELS

All hydrographic and side scan sonar data were collected by the NOAA Ship HECK (EDPN 9140).

A 17 foot Boston Whaler skiff was used for installation and maintenance of MINIRANGER shore stations and for general utility work.

A 23 foot SISU launch was used as a dive support boat. The pneumofathometer was mounted in this launch and all diver least depths were measured from the SISU.

E. SURVEY SHEETS (FIELD SHEETS)

All survey sheets submitted in this report were generated using the Preplot Plotter Sheet utility of the Presurvey menu of the NAVISOFT 300 software on the HDAPS system. A Brunning 824 CS Plotter (S/N 15237) was used as the plotting device. All sheets are Modified Transverse Mercator projections and are plotted on the North American Datum of 1983 (NAD 83).

Eight survey sheets are submitted in this survey. Each sheet is briefly described in the following text. See APPENDIX V, PROJECT and PLOTTER SHEET PARAMETERS,* for the technical specifications on each sheet. A raw data and edited data tape are submitted for each survey sheet except in the case of raw data tape 25710 where the tape was accidentally erased by HECK personnel.

E1. HE-10-13-89A

This 1:10000 scale sheet is oriented conventionally and covers the area 2.5 miles southeast of Stratford Shoal Middle Ground. One AWOIS item was surveyed on this sheet; 7108. The raw data for this sheet are logged on tape 25710 and the edited data are logged on tape 25720.

Three copies of HE-10-13-89A are submitted:

1 field swathplot on mylar
1 smooth swathplot on mylar
1 smooth depthplot on mylar

E2. HE-10-13-89B

This 1:10000 scale sheet is oriented conventionally and covers the area 4.0 miles northeast of Stratford Shoal Middle Ground. One AWOIS item was surveyed on this sheet; 1797. The raw data for this sheet are logged on tape 25710 and 26310 and the edited data are logged on tape 25720 and 26320.

Three copies of HE-10-13-89B are submitted:

1 field swathplot on mylar
1 smooth swathplot on mylar
1 smooth depthplot on mylar

E3. HE-10-13-89C

This 1:10000 scale sheet is oriented conventionally and covers the area 1.0 mile north of Shoreham. One AWOIS item was surveyed on this sheet; 1751. The raw data for this sheet are logged on tape 25710 and the edited data are logged on tape 25720.

Two copies of HE-10-13-89C are submitted

1 field swathplot on mylar
1 smooth swathplot on mylar

* Data removed from the original Descriptive Report; filed with original field records.

E4. HE-10-13-89D

This 1:10000 scale sheet is oriented conventionally and covers the area 2.5 miles southeast of the New Haven Harbor entrance. One AWOIS item was surveyed on this sheet; 6929. The raw data for this sheet are logged on tape 27610 and 29610 and the edited data are logged on tape 27620 and 29620.

Seven copies of HE-10-13-89D are submitted:

1 field swathplot on mylar
1 smooth swathplot MS on paper
1 smooth swathplot XL on paper
1 smooth swathplot holiday on paper
1 smooth contact plot on paper
1 smooth depthplot on paper
1 smooth trackplot on paper

E5. HE-10-13-89E

This 1:10000 scale sheet is oriented conventionally and covers the area 4.0 miles east northeast of Shoreham. One AWOIS item was surveyed on this sheet; 2639. The raw data for this sheet are logged on tape 29610 and the edited data are logged on tape 29620.

Two copies of HE-10-13-89E are submitted

1 field swathplot on mylar
1 smooth swath/contact plot on mylar

E6. HE-10-13-89F

This 1:10000 scale sheet is oriented conventionally and covers the area 7.0 miles southeast of New Haven Harbor entrance. One AWOIS item was surveyed on this sheet; 1820. The raw data for this sheet are logged on tape 27610 and 29610 and the edited data are logged on tape 27620 and 29620.

Five copies of HE-10-13-89F are submitted

1 field swathplot on mylar
1 smooth swathplot on mylar
1 smooth contact plot on paper
1 smooth depthplot on paper
1 smooth trackplot on paper

additionally two 1:5000 scale enlargements are submitted

E7. HE-10-13-89G

This 1:10000 scale sheet is oriented conventionally and covers the area 2.0 miles south of Duck Island Roads. One AWOIS item was surveyed on this sheet; 6819. The raw data for this sheet are logged on tape 29610 and 31710 and the edited data are logged on tape 29620 and 31720.

Five copies of HE-10-13-89G are submitted

1 field swathplot on mylar
1 smooth swathplot MS on paper
1 smooth swathplot XL on paper
1 smooth contact plot on paper
1 smooth 200% swathplot on mylar

E8. HE-10-13-89H

This 1:10000 scale sheet is oriented conventionally and covers the area 2.5 miles southeast of Duck Island Roads. One AWOIS item was surveyed on this sheet; 6820. The raw data for this sheet are logged on tape 31710 and the edited data are logged on tape 31720.

Two copies of HE-10-13-89H are submitted

1 field swathplot on mylar
1 smooth swathplot on paper

F SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

F1. Raytheon DSF 6000N Echosounder

All hydrographic soundings for this survey were acquired using a Raytheon DSF 6000N echosounder. System performance was checked daily with an Electronic Depth Simulator Instrument (EDSI) provided by AMC's EEB. The daily tests are included as part of each day's raw data records.

Both low and high frequency depths were digitized, but only the high frequency depths were used for survey operations. The automatic gain function was utilized. Operations were conducted using both 40 and 80 range scale settings. The auto phase function was used. The digitizing gate was set at 10 percent of depth.

F2. EG&G Model 260 Side Scan Sonar

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).

The towfish is led through a fairlead block over the stern and towed astern at speeds of 3 to 5 knots. Fish height over bottom

is controlled by a combination of cable out and ship speed. The 25 through 150 meter range and 100 kHz frequency settings were used. The paper speed on the recorder was set manually. The operator made frequent checks of vessel speed and adjusted the paper speed as necessary. This procedure eliminated paper "speed jumps" caused by spikes in the navigation LOPs and insured that targets were depicted in their correct size and shape.

Side scan operations were conducted in accordance with the Side Scan Sonar Manual dated September 1988. Periodic confidence checks were performed by either towing the fish by a previously located contact, or by noting recognizable bottom characteristics at the edges of the sonar range scale in use. The SSS system worked very well for the duration of the survey. The large number of lobster pots in the project area required frequent jogs to the left and right of intended course lines. Recent improvements to the towfish pigtail connector assembly have proved to be very valuable in protecting the pigtail from the inevitable "hooks" of the lobster pot marker buoys.

The styli on the recording unit became worn resulting in poor image quality. No replacement styli were available, therefore the entire recording unit was replaced.

F3. ~~Pneumofathometers~~ Pneumatic Depth Gauge (PDG)

All dive determined least depths were measured with a pneumofathometer. The HECK is equipped with two precision depth gauges, a 0 - 70 FSW depth gauge, and a 0 - 140 FSW gauge. The HECK's ~~pneumofathometer~~ PDG is built and operated according to procedures specified in Hydrographic Guideline 55. Both gauges were most recently calibrated on January 5, 1989. A copy of each of these calibrations is included in APPENDIX I.H, ~~PNEUMOFATHOMETER~~ PDG CALIBRATIONS AND SYSTEM CHECKS.*

A system check was performed on DOY 297 on the pneumofathometer. The result of this check are also included in APPENDIX I.H.

The system check values were not applied to the diver determined depths. Weather conditions were not calm enough to yield correctors that HECK personnel felt were more accurate than the calibration of the gauge itself. This policy is a conservative approach in that application of the correctors from the system checks would make diver determined least depths deeper than the depths submitted.

G CORRECTIONS TO ECHO SOUNDINGS

G1. Velocity Correctors

Velocity correction data for the Raytheon DSF 6000N echosounder were obtained by the MARTEK (S/N 177). The MARTEK instrument was most recently calibrated on March 3, 1989. A copy of the calibration report is included in APPENDIX I.C.* On May 18 simultaneous casts were conducted with the DIGIBAR and the MARTEK.

* Material removed from the original Descriptive Report; filed with the original field records.

The following table shows the date, location and instruments used for the cast:

DATE	LOCATION		INSTRUMENT
9/07/89 (DOY 250)	41° 00.9"	073° 06.3'	MARTEK
10/06/89 (DOY 279)	41° 02.8"	073° 03.0'	DIGIBAR
10/31/89 (DOY 304)	41° 03.6"	072° 34.3'	DIGIBAR
11/27/89 (DOY 331)	41° 14.0"	072° 19.0'	MARTEK

The velocity cast data were reduced and velocity corrections calculated using program VELOCITY. The computed velocity correctors were then applied online to echosounder depths by entering the correction data into the HDAPS sound velocity table. Reference APPENDIX I.A, VELOCITY CORRECTION DATA,* for listings of the cast data and output from the VELOCITY software. HDAPS velocity table listings are also shown in APPENDIX I.B.*

Velocity correctors were verified by conducting a dual leadline comparison of echo sounding to leadline depths on DOY 250 and DOY 304. Digital depths agreed with leadline depths within one half foot. Results of the comparison are included in APPENDIX I.C., LEADLINE COMPARISONS.*

After data had been collected, HECK personnel noted that the wrong velocity correctors were used online for DOY 277, and 272. The results of the survey were not affected adversely.

G2. Tide Corrections

The tidal datum for this project is mean lower low water. The operating tide station at Bridgeport, Connecticut (846-7150) will serve as control for datum determination. The New Haven Harbor Entrance time and height correctors were used for predicted tides. No tide stations were established by the HECK in support of this survey.

All hydrographic and diver determined depths have been corrected for predicted tides. The tidal values were taken from Tide Tables 1989 High and Low Water Predictions, East Coast of North and South America.

Tidal correctors were applied online by entering the appropriate values into the HDAPS predicted tide tables. Four predicted tide tables were used. These tables are included in APPENDIX I.D., HDAPS PREDICTED TIDES TABLES.* Approved tides and zoning were applied during office processing.
A Request for Approved Tides was mailed to Chief, Sea and Water Levels Branch, on January 18, 1990. A copy of this letter is enclosed in Appendix I.E.*

*Material removed from the original Descriptive Report; filed with original field records.

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. An observer was put ashore with a level instrument, and changes in relative height were measured as the ship passed by the observer while running at various speeds. (Reference APPENDIX I.G, SETTLEMENT AND SQUAT DATA)* ** New curve drawn during office processing.

Settlement and squat values were applied online to hydrographic soundings by entering the observed values into the HDAPS offset table. A copy of this table is included in APPENDIX I.G, HDAPS OFFSET TABLE.*

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 midships 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. Vessel Draft Corrector

During a February 1988 drydock period, an exact measurement of 19.0 feet was taken from the DSF transducers to a fixed point on each bridge wing of the ship. After refloating the ship, the height above the waterline was determined for this point. The ships static draft was calculated to be exactly 6.9 feet (2.10 meters).

This draft was applied online to hydrographic soundings by entering the value of 2.1 meters as the high frequency transducer height in the HDAPS offset table. See APPENDIX I.G, HDAPS OFFSET TABLE.*

H. HORIZONTAL CONTROL

H1. Survey Navigation - See also section 2.a. of the Evaluation Report.

Vessel survey navigation was accomplished by the range-range method, utilizing the Motorola MINIRANGER Falcon 484 system.

The MINIRANGER system is interfaced to the HDAPS system in such a way that only the ranges and signal strengths are recorded; the position computation capability of the Falcon system is not utilized. Vessel position is computed by a least squares predictor/corrector algorithm within the NAVITRONIC NAVISOFT 300 software.

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

* Material removed from original Descriptive Report; filed with original field records.

1) acceleration limit ..... 0.2 meters second $^{-2}$

2) angle limit ..... 0.3 degrees second $^{-1}$

3) crabbing limit ..... 0.4 degrees

The algorithm simultaneously uses up to four electronic lines of position (LOP's). Additionally, the ship's gyro heading and speed are used to predict a position. Whenever more than two acceptable LOP's are measured, the position computation is mathematically overdetermined. In order to utilize all available information, a least squares adjusted position is computed.

Three measures of the quality of this adjusted position are: the magnitude of the residuals on each range; the size and orientation of the error ellipse; and the radius of the 95% confidence error circle. HDAPS provides the hydrographer with a continuous graphic display of these data as well as a rough graphic of survey geometry. The required survey navigation positional accuracies are specified in terms of the maximum residual and the error circle radius. These requirements are stated in the Project Instructions.

The HECK routinely conducted surveying operations using four MINIRANGER LOP's, although occasionally one or more ranges were automatically rejected from the solution due to poor signal strength. At no time during this project did the maximum residual consistently exceed 0.5 mm at the survey scale (5 meters). The 95% confidence error circle radius very rarely exceeded 1.5 mm at the survey scale (15 meters).

A pre-project baseline calibration (BLC) of the MINIRANGER system was conducted at Fentress Airforce Base on January 31, 1989. A mid-season BLC was conducted at Port Jefferson, New York, on May 20, 1989. During these calibrations, the range correctors were determined for each combination of transponder and shipboard R/T and RPU. A minimum acceptable signal strength (MASS) was also determined for each transponder. All data in this survey utilized correctors determined during the Baseline Calibration of May 20, 1989. Reference APPENDIX II.C, MINIRANGER BASELINE CALIBRATION DATA,* for the results of this calibration. BLC raw data, computations, and graphs are included in Electronic Control Report OPR-B660-HE-89, which is submitted under separate cover.

The range corrector and MASS for each MINIRANGER code was entered into the HDAPS system using the Pre-Survey C-O Table Utility. This table provides the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOP's with signal strengths below MASS. A new C-O Table was generated each time any change was made to the navigation configuration. Reference APPENDIX II.C, HDAPS C-O TABLES,* for the various C-O tables used during this survey.

During a portion of the survey, there was an error in the C-O table used. Table 4 had an incorrect station number for code A.

* Material removed from original Descriptive Report; filed with original field records.

This resulted in a corrector value of 0.00 being used and causing a 6 meter error in that LOP. HECK determined that this did not affect the survey to the point where the data became unacceptable.

Non-critical navigation system checks were performed daily to insure that the instrumentation was functioning within specifications.

MINIRANGER shore station installations were placed directly over Third Order Class I or better geodetic stations. Control station positions were entered into the HDAPS Control Station Tables using the Pre-Survey menu. (See APPENDIX II.A, LIST OF HORIZONTAL CONTROL STATIONS). The appropriate MINIRANGER codes were attached to the station number on this table. Each time the survey navigation configuration was altered, the control station table was modified so that it reflected the correct MINIRANGER code placement. APPENDIX II.E, DAILY ABSTRACT OF HDAPS TABLES,* correlates control stations, MINIRANGER codes, position numbers and dates of use.

The MINIRANGER system performed well for the duration of this survey except for the following: Code C (S/N c-2067) failed on DOY 269 while installed at Branford Reef Light. Code 2 (S/N f-3296) failed on DOY 265 while installed at New Haven Breakwater Light. Code 4 (S/N e-2923) failed on DOY 279 while installed at Branford Reef Light. Code 6 (S/N f3242) failed on DOY 283 while installed at Stratford Shoal Middle Ground. On DOY 286 HECK received four new MINIRANGER shore stations. On DOY 287 HECK performed a Baseline Calibration. No further problems were encountered with navigation.

H2. GEODETIC CONTROL - See also section 2.a. of the Evaluation Report.

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). The coordinates for all published stations were taken from the NGS publication: Geodetic Control Data, NAD 83 coordinates for New York and Connecticut. Recovery notes for these stations are included in Appendix II.B.* All stations used as navigation sites were recovered by HECK personnel.

No new stations were established.

AUTOMATED DATA PROCESSING

Hydrographic and side scan sonar data acquisition and processing were accomplished using the HDAPS hardware and the most recent version of the NAVITRONIC NAVISOFT 300 software provided to the ship. This software is still under development and some problems do exist:

1) The positioning algorithm occasionally generates a "flyer" which causes the plotter sheet to scroll in an unpredictable manner. HECK personnel tried unsuccessfully to edit these "flyers" in the nightly processing. Therefore, the plotter continued to scroll even in the off-line data processing mode.

*Material removed from original Descriptive Report; filed with original field records.

2) Coordinates for control stations are altered by the software after they have been entered. This problem is most likely caused by rounding errors in the GP > MTM > GP conversion process. The potential errors are quite small (decimeter). However, the reader must be aware that the error is introduced by the software and that the coordinates were originally entered correctly.

3) Data transfer problems sometimes created the necessity to reject data because the data could not be transferred to the hard disk from the raw data tape. This problem occurred whenever there was an abnormal interrupt of a survey line; the final data set number (DSN) was not written to the raw data tape. If this interrupt occurred, the entire line was irretrievable. One known source of this problem was the delay in writing HIPPY data to the tape. If the HDAPS system is taken off-line before waiting out the HIPPY delay, then the survey line cannot be written to the hard disk for editing. Not all such problems were caused by HIPPY delay. Occasionally data could not be transferred from the raw tape and the problem could not be identified.

MARTEK and DIGIBAR velocity cast data were processed on the ship's IBM-PC XT using program VELOCITY.

Geodetic computations were performed on the ship's IBM-PC XT using the MTEN ENHANCEMENTS routines which were obtained from the National Geodetic Survey.

J. COMPARISON WITH CHARTS - See also section 7. of the Evaluation Report.

Hydrographic soundings from this survey were compared with the largest scale chart of the area:

NOS Chart 12354
Long Island Sound Eastern Part
1:80000
28th Edition October 1986

NOS Chart 12370
Housatonic R. and Milford Harbor
1:20000
15th edition

NOS Chart 12373
Long Is Sound Gulford Hbr. to Farm R.
1:20000
12th edition

NOS Chart 12374
Long Is Sound Duck Is to Madison Reef
1:20000
11th edition

NOS Chart 12375
Connecticut River - Long Island Sound
to Deep River
1:20000
17th edition

specific details of the comparisons are discussed in Section K of this report, under the Item Investigation Reports for each AWOIS item.

K. AWOIS ITEM INVESTIGATION REPORTS

Eight AWOIS items were investigated on the sheets covered by this report. Each item is discussed individually in the remaining text. If more than one contact was investigated, each is discussed separately as a subsection of the appropriate AWOIS item.

SSS imagery covering each contact is abstracted on the target abstract for the individual AWOIS item (See APPENDIX IV). The following table summarizes the results of the investigations.

AWOIS ITEM	STATUS
7108	not resolved - concur
1797	resolved
1751	resolved
6929	resolved
2639	resolved
1820	resolved
6819	disproved
6820	resolved

K1. INVESTIGATION REPORT FOR AWOIS 7108 - Sheet 1 of 8.

AREA OF INVESTIGATION:

N/A

State:	New York
County:	Suffolk
Locality:	Long Island Sound, NY
Latitude:	41° 02' 28.0" N
Longitude:	073° 02' 42.0" W

SURVEY PROCEDURES:

Positioning:	Falcon Mini Ranger
Side Scan Sonar Search:	14 Sept 1989 (DOY 257)
	18 Sept 1989 (DOY 261)
	20 Sept 1989 (DOY 263)

A search was centered over the Loran C coordinates provided: 9960- X-26612.7, Y-43958.9 As specified in the PSR the HECK spent slightly more than 2 hours searching for this wreck but did not locate any contacts. Six 100 meter survey lines were run in the vicinity of the wreck. These lines are shown on sheet HE-10-13-89A. The quality of side scan records is very good, indicating a smooth, uneventful bottom.

Telephone conversation between N/CG24, Ms. Meg Moore, and Mr. Richard Taracka, revealed that the original source of this wreck was a fisherman in the Port Jefferson, NY area. The Wreck's presence had not been verified by divers. The wreck may exist but would not represent a danger to navigation because the water depth is greater than 100 feet.

CHARTING RECOMMENDATIONS: HECK recommends that this be charted as a non-dangerous wreck, PA, at 41° 02' 28.0" N, 073° 02' 42.0" the GP of the loran rates provided by Mr. Taracka. - Do not concur. No change in charting status is recommended.

This AWOIS item was not fully investigated. Additional field work is recommended at an opportune time.

K2. INVESTIGATION REPORT FOR AWOIS ITEM 1797 - Sheet 2 of 8.

CHTS. 12370 ✓ 12354 ✓

AREA OF INVESTIGATION:

State:	New York
County:	Suffolk
Locality:	Long Island Sound, NY
Latitude:	41° 07' 28.9" N
Longitude:	073° 02' 10.8" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	20 Sept 1989 (DOY 263)
	21 Sept 1989 (DOY 264)
Diver Investigation	21 Sept 1989 (DOY 264)

A side scan sonar search was conducted over the coordinates provided by the Pre Survey Review. The swath coverage is shown on sheet HE-10-13-89B submitted in this survey.

The contact was originally located on the side scan sonar record at position 28.03S and then later again at 30.02S. Heights and positions were worked using the contact utility provided in the post processing mode of HDAPS. The most significant contact was investigated by divers. A dive marker buoy was deployed when the contact was noted on the echosounder.

Divers moved the buoy the highest point on the contact. The HECK maneuvered along side the buoy and fix 32 was taken when the contact was noted on the echosounder.

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 21 September 1989 (DOY 264). ENS Weiner and LT Tuell descended the marker buoy. Visibility was very poor (less than 1 foot). The divers began swimming in a westerly direction, and within 5 meters found a wreck. The divers then swam to the top of the wreck and performed a 30 meter circle search. Visibility on top of the wreck improved to 5 feet. The least depth was measured on a section of the bow that was sticking up slightly higher than the rest of the wreck.

CONTACT DESCRIPTION: Divers discovered a large steel ship, possibly a gravel barge, with two large spools on top. The wreckage was badly deteriorated. It rose at places to about 10 feet off the bottom.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a ~~pneumofathometer~~. PDG.

Date of measurement: 21 September 1989 (DOY 264)
Time of measurement: 15:07 UTC

PDG
~~Leadline~~ depth: 49.2
~~Predicted~~ tidal corrector: ~~-0.9~~ 1.0

Least Depth 48.$\frac{8}{2}$ feet 48 ft (plotted) 14.6 m

POSITION DETERMINATION:

Fix number : 32
Number of LOPs : 3
Max Residual : 0.6 meters
Error Circle Radius : 6.2 meters

Easting: 152984.7
Northing: 41830.7

Latitude: 41° 07' 29.83~~4~~" N
Longitude: 073° 02' 08.5$\frac{14}{54}$" W

Loran C rates: chain - ~~9660~~ 9960

W-15106.5 X-26621.3 Y-44001.4 Z-60073.2

CHARTING RECOMMENDATIONS The wreck is presently charted as an obstruction with a known depth of 48 feet. ~~HECK recommends that this symbol be changed to show a submerged wreck with a known depth of 48 feet at 41° 07' 29.834" N 073° 02' 08.514" W. HECK considers this item resolved~~
It is recommended that the charted obstruction be deleted from the chart. It is recommended that a dangerous sunken wreck with a depth of 48 ft (14.6m) (48 W/K) be charted as shown on the smooth plot.

K3. INVESTIGATION REPORT FOR AWOIS ITEM 1751 - Sheet 3 of 8.

AREA OF INVESTIGATION:

CHT. 12354

State:	New York
County:	Suffolk
Locality:	Long Island Sound, NY
Latitude:	40° 58' 48.0" N
Longitude:	072° 52' 23.0" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	25 Sept 1989 (DOY 268) - Data Rejected by field
	27 Sept 1989 (DOY 270)
Diver Investigation	29 Sept 1989 (DOY 272)
Contacts:	Five

A side scan sonar search was conducted over the coordinates provided by the Pre Survey Review. The swath coverage is shown on sheet HE-10-13-89C submitted in this survey. All data from DOY 268 were rejected due to navigational errors.

During the investigation of this AWOIS item there was an error in the C-O table. The table had an incorrect station number for code A. Subsequently , a corrector value of 0.00 was used in the positioning computation. This resulted in a 6 meter error in that LOP. When the DP was taken there were four LOPs with acceptable error circle radius and maximum residuals. The 6 meter error was not significant enough to reject the data.

Three significant contacts were located on this AWOIS item. Numerous high quality sonar images were acquired of these contacts which are correlated on the side scan sonar target abstract in appendix IV.* None of these contacts appeared to be wreckage. A diver investigation was conducted on the highest contact. This contact was originally located at position 61.4P

Divers moved the buoy to the highest point on the contact. The HECK maneuvered along side the buoy and fix 87 was taken when the contact was noted on the echosounder.

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 29 September 1989 (DOY 272). ENS Weiner and LT Tuell descended the marker buoy. Visibility was poor (3 to 5 feet). The divers performed a 30 meter circle search.
A large rock was located that rose off the bottom 12 feet. The buoy was moved to the highest point on the rock where another circle search was performed however, no more significant contact was located. Least depth was measured with a ~~pneumofathometer~~. PDG.

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

CONTACT DESCRIPTION: Divers discovered a large rock that rose off the bottom approximately 12 feet. The rock was 20 feet across at the widest point.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement by ~~pneumofathometer~~. PDG

Date of measurement: 29 September 1989 (DOY 272)
Time of measurement: 16:50 UTC

PDG ~~Leadline~~ depth:	53.1
~~Predicted~~ tidal corrector:	~~-6.1~~ -5.4
Least Depth	~~47.7~~ ~~47.0~~ feet

47 Ft (14.3 m) plotted

POSITION DETERMINATION:

Fix number	: 87
Number of LOPs	: 4
Max Residual	: 3.7 meters
Error Circle Radius	: 5.2 meters

Easting: 166860.4
Northing: 25896.3

Latitude: 40° 58' 49.65~~3~~4" N
Longitude: 072° 52' 19.9~~59~~6" W

Loran C rates: chain - ~~9660~~ 9960

W-15062.9 X-26515.1 Y-43912.6 Z-60050.6

CHARTING RECOMMENDATIONS: No wreckage was found in the search area and the AWOIS item is considered disproved. However a large rock with a least depth of 47.0 feet was found near the reported position.

HECK located a privately maintained buoy marking the outlet of Shoreham Nuclear Power Plant. HECK recommends that this buoy be charted at 040° 58' 47.63~~8~~' N; 072° 52' 07.1~~58~~6" W. See section VI for a picture of this buoy.

HECK recommends that the WK, 51 feet, symbol be deleted from the chart. A dangerous submerged rock with known depth of 47.0 feet (14.3m) be charted at position 40° 58' 49.65~~3~~4" N 072° 52' 19.~~959~~6" W. HECK considers this item resolved. - Concur

K4. INVESTIGATION REPORT FOR AWOIS ITEM 6929 - Sheet 4 of 8.

AREA OF INVESTIGATION:

CHTS: 12371 ✓
12372 ✓
12373 ✓
12364 ✓
12354

State:	New York
County:	Suffolk
Locality:	Long Island Sound
Latitude:	41° 12' 55.0" N
Longitude:	072° 51' 21.0" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	03 Oct 1989 (DOY 276)
	04 Oct 1989 (DOY 277)
	10 Oct 1989 (DOY 283)
	11 Oct 1989 (DOY 284)
	18 Oct 1989 (DOY 291)
	23 Oct 1989 (DOY 296)
	24 Oct 1989 (DOY 297)
	26 Oct 1989 (DOY 299)
	27 Oct 1989 (DOY 300)
Diver Investigation	23 Oct 1989 (DOY 296)
	24 Oct 1989 (DOY 297)
	27 Oct 1989 (DOY 300)
Contacts:	Twenty Three

A side scan sonar search was conducted over the coordinates provided in the Pre Survey Review. The hydrography and side scan sonar imagery indicate a smooth bottom occasionally interrupted by boulder fields, which are probably glacial erratics. The southern limit of the search radius is Townsend Ledge Buoy. This buoy is marking a shoal area that is thirty feet shoaler than surrounding areas. The swath coverage is shown on sheet HE-10-13-89D submitted in this survey.

Twenty three contacts were initially identified during the nightly processing. These contacts are listed on the target abstract in Appendix IV.* Two of them are rocks which are significantly shoaler than charted depths and which pose a threat to navigation. HECK's divers investigated these rocks. A Danger to Navigation Report was issued and is included in ~~Appendix VI~~ this Report. The charted depths apparently originated on prior survey H-9008. These boulders seem to have fallen between sounding lines. Additionally, one wreck was located. This wreck is probably the item specified in the AWOIS listing, but a positive identification could not be made.

*Data removed from the original Descriptive Report; filed with original field records.

CONTACT INVESTIGATION REPORT CONTACT #30: This contact was originally located at position 5..1.4p. A dive buoy was deployed at position 582.

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 27 October 1989 (DOY 300). ENS Weiner and LT Tuell descended the marker buoy. Visibility was very poor (1-2 feet). The divers began swimming a thirty meter circle search. Three quarters of the way through the circle search, the divers located a large mass of fishing nets. Divers then swam along the nets until the remains of a ship were located. Determining the highest point was difficult due to the presence of nets and since the wreck was so badly deteriorated. Divers were not able to get a ~~pneumofathometer~~ PDS least depth. The echosounder depth is reported as the least depth.

CONTACT DESCRIPTION: Divers discovered a large mass of fishing nets near a very old deteriorating wooden and steel ship. Divers located no protruding objects from the wreck. The only recognizable part left was the gunwhale.

LEAST DEPTH DETERMINATION: The ~~least~~ depth was determined by direct measurement of a echosounder. POSITION NUMBER 583

Date of measurement: 27 October 1989 (DOY 300)
Time of measurement: 13:37:07 UTC

Fathometer depth:	28.0
Draft corrector:	6.9
Velocity corrector:	~~1.0~~ 0.5
Predicted tidal corrector:	-6.4 (-6.2 smooth Tide)
Least Depth	29.5
	29.0 PLOTTED

FAX TRANSMITTAL
To STEVE VERRY
Dept/Agency HSR
Fax # 301-713-4533
From N. WIKE
Phone # 804 441-6862
Fax # 804 441-6601
# of pages 1
OPTIONAL FORM 99 (7-90)
NSN 7540-01-317-7368 5099-101
GENERAL SERVICES ADMINISTRATION

POSITION DETERMINATION:

Fix number	: 583
Number of LOPs	: 3
Max Residual	: 1.1 meters
Error Circle Radius	: 5.9 meters

Easting: 167363.3
Northing: 57504.9

Latitude 41° 12' 39.571" N
Longitude: 072° 51' 48.354" W

Loran C rates: chain - ~~9960~~ 9960

W-15028.2 X-26544.9 Y-44027.0 Z-60096.2

* IT IS RECOMMENDED THAT THE CHARTED DANGEROUS SUNKEN WRECK BE DELETED, AND A WRECK WITH A KNOWN DEPTH OF 29 FT (29WK) AND A DANGER CURVE BE CHARTED IN PRESENT SURVEY LOCATION.

NAW 4/5/91

CHARTING RECOMMENDATIONS: HECK believes that this contact is not the wreck indicated in the PSR. The wreckage is about 40 feet long. A positive ID could not be made due to poor visibility and the presence of the fishing nets. This was the only wreckage found in the search area. This wreck does not represent a danger due to its close proximity to Townsend Ledge. ~~HECK recommends that the charted PA symbol be deleted from the chart and that a new symbol, non-dangerous wreck, depth 29 feet, be charted at the position determined for contact 30. HECK considers this item disproved.~~ *

SND 5/9/91

CONTACT INVESTIGATION REPORT CONTACT #3: This contact was initially located at position 122.35s. A marker buoy was deployed at position 353.

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 23 October 1989 (DOY 296). LT Francis and LT Tuell descended the marker buoy. Visibility was 2 feet with a very strong current. Divers performed a 40 meter circle search. A Large coral encrusted boulder was located at the end of the tagline. Divers mover the buoy to the boulder. Two other smaller boulders were located however, the least depth was taken on the largest of the three.

CONTACT DESCRIPTION: Divers discovered three coral encrusted boulders, one being larger than the other two. They rose 6 to 7 feet off a flat muddy bottom.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a ~~pneumofathometer~~. PDG

Date of measurement: 23 October 1989 (DOY 296)
Time of measurement: 21:11 UTC

PDG
~~Pneumofathometer~~ depth: 22.4
~~Predicted~~ tidal corrector: ~~-4.2~~ -3.6

Least Depth 18.8 ~~18.2~~ feet (5.7 m)
19 feet (5.7m) plotted

POSITION DETERMINATION:

Fix number : 400
Number of LOPs : 3
Max Residual : 1.6 meters
Error Circle Radius : 6.4 meters

Easting: 167428.9
Northing: 53848.4

Latitude: 41° 13' 55.51~~8~~" N
Longitude: 072° 51' 44.6~~08~~ 61" W

Loran C rates: chain - NOT TAKEN

CHARTING RECOMMENDATIONS: These particular rocks are not presently charted. HECK recommends that contact be charted as a submerged rock with a known depth of ~~18~~ 19 feet. This rock is seven feet shoaler that the nearest charted depth on NOS chart 12373. HECK has issued a Danger to Navigation Report on this contact. A copy of this report is included in ~~Appendix VI~~. - Concur this report

CONTACT INVESTIGATION REPORT CONTACT #16: This contact was originally located at position 207.13.

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 24 October 1989 (DOY 297). ENS Weiner and LT Tuell descended the marker buoy. Visibility was very poor (1 foot). The divers performed a fifteen meter circle search. Divers soon found a pinnacle rock that rose off the bottom approximately sixteen feet. Divers moved the marker buoy to the rock and took a least depth at the pinnacle.

CONTACT DESCRIPTION: Divers discovered a large rock that rose off the bottom approximately sixteen feet high.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a ~~pneumofathometer~~.

Date of measurement: 24 October 1989 (DOY 297)
Time of measurement: 19:34 UTC

~~Pneumofathometer~~ depth 24.1
~~Predicted~~ tidal corrector: ~~-1.2~~ -1.8

Least Depth 22.3 ~~22.8~~ feet (6.8 m)
22 ft (6.8 m) plotted

POSITION DETERMINATION:

Fix number : 460
Number of LOPs : 4
Max Residual : 3.5 meters
Error Circle Radius : 7.5 meters

Easting: 168925.8
Northing: 53070.2

Latitude: 41° 13' 29.835" N
Longitude: 072° 50' 40.654" W

Loran C rates: chain - NOT TAKEN

CHARTING RECOMMENDATIONS: ~~These~~ This rocks ~~are~~ is not presently charted. HECK recommends that ~~they~~ it be charted as a submerged rock with a known depth of ~~20~~ 22 feet. A Danger to Navigation Report has been issued on this contact. This report is included in ~~Appendix VI~~ the Descriptive Report.

CONTACT INVESTIGATION REPORT CONTACT #30: This contact was originally located at position 561.4p. A dive buoy was deployed at position 582.

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 27 October 1989 (DOY 300). ENS Weiner and LT Tuell descended the marker buoy. Visibility was very poor (1-2 feet). The divers began swimming a thirty meter circle search. Three quarters of the way through the circle search, the divers located a large mass of fishing nets. Divers then swam along the nets until the remains of a ship were located. Determining the highest point was difficult due to the presence of nets and since the wreck was so badly deteriorated. Divers were not able to get a ~~pneumofathometer~~ least depth. The echosounder depth is reported as the least depth.

CONTACT DESCRIPTION: Divers discovered a large mass of fishing nets near a very old deteriorating wooden and steel ship. Divers located no protruding objects from the wreck. The only recognizable part left was the gunwhale.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a echosounder.

Date of measurement: 27 October 1989 (DOY 300)
Time of measurement: 13:37:07 UTC

Fathometer depth:	28.0
Draft corrector:	6.9
Velocity corrector:	~~1.0~~ 0.8
~~Predicted~~ tidal corrector:	~~-6.4~~ -6.2
Least Depth	~~29.5~~ 29.5 ft (9.0 m) 29 ft (9.0 m) plotted

POSITION DETERMINATION:

Fix number	: 583
Number of LOPs	: 3
Max Residual	: 1.1 meters
Error Circle Radius	: 5.9 meters

Easting: 167363.3
Northing: 57504.9

Latitude: 41° 12' 39.57⅛" N
Longitude: 072° 51' 48.35¼" W

Loran C rates: chain - ~~9660~~ 9960

W-15028.2 X-26544.9 Y-44027.0 Z-60096.2

CHARTING RECOMMENDATIONS: HECK believes that this contact is not the wreck indicated in the PSR. The wreckage is about 40 feet long. A positive ID could not be made due to poor visibility and the presence of the fishing nets. This was the only wreckage found in the search area. This wreck does not represent a danger due to its close proximity to Townsend Ledge. HECK recommends that the charted PA symbol be deleted from the chart and that a new symbol, non-dangerous wreck, depth 29feet,(9.0m) be charted at the position determined for contact 30. HECK considers this item disproved.

K5. INVESTIGATION REPORT FOR AWOIS ITEM 2639 - See sheet 5 of 8

EST: 12354

AREA OF INVESTIGATION:

State:	New York
County:	Suffolk
Locality:	Long Island Sound, NY
Latitude:	40° 59' 00.0" N
Longitude:	072° 44' 48.0" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	30 Oct 1989 (DOY 303)
Diver Investigation	30 Oct 1989 (DOY 303)
Contacts:	One

A side scan sonar search was conducted over the coordinates provided in the Pre Survey Review. HECK located only one object during the sidescan investigation. Due to the distinct shape of the image there was no doubt that it was the AWOIS described in the PSR. The swath coverage is shown on sheet HE-10-13-89E submitted in this survey. Several passes were made at various range scales.

A dive marker buoy was deployed when the contact was noted on the echosounder.

Divers moved the buoy to the highest point on the contact. The HECK maneuvered along side the buoy and fix 622 was taken when the contact was noted on the echosounder.

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 30 October 1989 (DOY 303). ENS Weiner and LT Tuell descended the marker buoy. Visibility was poor. The divers noticed that the buoy was dropped directly on the hull of the airplane. Divers then swam along the plane, determined the least depth, and moved the marker buoy to that point.

CONTACT DESCRIPTION: Divers discovered an airplane with its tail section and forward propeller missing. It had an aluminum hull and is sitting on its belly.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a ~~pneumofathometer~~. PDG

Date of measurement: 30 October 1989 (DOY 303)
Time of measurement: 20:56 UTC

PDG
~~Leadline~~ depth: 58.2
~~Predicted~~ tidal corrector: ~~-1.3~~ -1.4

Least Depth 56.8 ~~56.9~~ feet (17.3 m)

POSITION DETERMINATION: 57 ft (17.3) m plotted

Fix number : 622
Number of LOPs : 3
Max Residual : 0.9 meters
Error Circle Radius : 8.0 meters

Easting: 177095.5
Northing: 26517.5

Latitude: 41° 59' 06.541" N
Longitude: 072° 45' 01.918" W

Loran C rates: chain - ~~9660~~ 9960

W-15016.1 X-26452.6 Y-43903.8 Z-

CHARTING RECOMMENDATIONS: This ~~wreck~~ obstruction is currently not charted. HECK recommends that it be charted as a ~~non-~~dangerous ~~wreck~~ obstruction with a known depth of 57 feet at 41° 59' 06.541" N, 072° 45' 01.918"W. HECK considers this item to be resolved. -Concur

K6. INVESTIGATION REPORT FOR AWOIS ITEM 1820 - See sheet 6 of 8

AREA OF INVESTIGATION:

CNTS: 12372 12373 12354

State:	Connecticut
County:	Middlesex
Locality:	Long Island Sound
Latitude:	41° 11' 15.0" N
Longitude:	072° 45' 05.0" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	12 Oct 1989 (DOY 285)
	25 Oct 1989 (DOY 298)
Diver Investigation	25 Oct 1989 (DOY 298)
Contacts:	Twelve (see text)

A side scan sonar search was conducted over the coordinates provided by the Pre Survey Review. While scanning the area HECK located many rock fields. Only the most significant ones were abstracted. HECK performed hydrographic development over the highest density of rocks. HECK determined the most significant rock and performed a dive investigation. This contact was three feet shoaler than any of the soundings from the hydrographic development. The swath coverage is shown on sheet HE-10-13-89F submitted in this survey.

A dive marker buoy was deployed at position 504 when the contact was noted on the echosounder.

Divers moved the buoy the highest point on the contact. The HECK maneuvered along side the buoy and fix 505 was taken when the contact was noted on the echosounder.

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 25 October 1989 (DOY 298). ENS Weiner and LT Tuell descended the marker buoy. Visibility was poor. The divers performed a thirty meter circle search. A rock field was located and the marker buoy was moved to the rock field. A second dive was needed to determine the highest point in the rock field. Divers found the pinnacle rock, moved the marker buoy to it, and took a ~~pneumofathometer~~ PDG depth on it.

CONTACT DESCRIPTION: Divers discovered a large out cropping of rocks. One of the rocks was more prominent then the others.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a ~~pneumofathometer~~. PDG

Date of measurement: 25 October 1989 (DOY 298)
Time of measurement: ~~19~~20:39 UTC
PDG
~~Pneumofathometer~~ depth: 45.6
~~Predicted~~ tidal corrector: ~~-0.6~~ -0.8

Least Depth 44.8 ~~45.0~~ feet (13.7 m)
45 ft (13.7 m) plotted

POSITION DETERMINATION:

Fix number : 505
Number of LOPs : 3
Max Residual : 1.8 meters
Error Circle Radius : 7.9 meters

Easting: 176904.2
Northing: 48929.5

Latitude: 41° 11' 13.~~039~~04" N
Longitude: 072° 45' 00.01~~2~~8" W

Loran C rates: chain - ~~9660~~ 9960

W-14987.9 X-26481.6 Y-44003.7 Z-60106.0

CHARTING RECOMMENDATIONS: There is currently a charted sounding of 42 feet with an indication of a rocky bottom. The HECK's sonar and echosounder records confirm the presence of numerous large boulders. The HECK recommends that the 42 foot depth be deleted, and that a ~~45 foot depth be charted at 41° 11' 13.039" N 072° 45' 00.012" W~~. submerged rock with a knowndepth of 45 ft (13.7 m), 45Rk, be charted as shown on the smooth plot. See sheet 6 of 8.

K7. INVESTIGATION REPORT FOR AWOIS ITEM 6819 - Sheet 7 of 8

AREA OF INVESTIGATION:

CHTS: 12372 ✓ 12374 ✓ 12354 ✓

State:	Connecticut
County:	Middlesex
Locality:	Long Island Sound
Latitude:	41° 13' 31.0" N
Longitude:	072° 29' 41.5" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	8 12 NOV 1989 (DOY 312)
	13 NOV 1989 (DOY 317)
	14 NOV 1989 (DOY 318)
	15 NOV 1989 (DOY 319)
Contacts:	Twenty-One

A 100 meter range scale side scan sonar search was conducted over the coordinates provided in the Pre Survey Review. HECK initially located a total of twenty-one contacts within the specified search area. The side scan sonar image indicates a very rough terrain. A large number of significant rocks are scattered throughout the small search area. HECK performed further side scan sonar investigation over those contacts deemed most dangerous to surface navigation. HECK did not locate any contacts that appeared to be wreckage within the search area. None of the contacts warranted a dive investigation due to the convoluted nature of the bottom. Swath coverage for this AWOIS is shown on sheet HE-10-13-89G submitted in this survey.

Conducting a side scan search over this type of bottom terrain was very difficult. Keeping the fish at a constant height above the bottom required constant attention to cable length and vessel speed.

CHARTING RECOMMENDATIONS: HECK found no indication of the wreck in question. HECK recommends that the wreck symbol be removed from the chart. The shoalest charted sounding in the area is 39 feet. ✓ HECK recommends that the hard bottom be changed to a rocky symbol. - Concur. It is also recommended that a rock with a depth of 39 ft (11.9 m) (39 Rk) be charted in Lat. 41°13'33.64"N, Long 72°29'34.69"W.

K8. INVESTIGATION REPORT FOR AWOIS ITEM 6820 - See sheet 8 of 8.

OMTS: 12375 12372 12354

AREA OF INVESTIGATION:

State:	Connecticut
County:	Middlesex
Locality:	Long Island Sound
Latitude:	41° 14' 21.0" N
Longitude:	072° 25' 33.0" W

SURVEY PROCEDURES:

Positioning	Falcon Mini Ranger
Side Scan Sonar Search:	14 NOV 1989 (DOY 318)
Diver Investigation	15 NOV 1989 (DOY 319)
Contacts:	One

A side scan sonar search was conducted over the coordinates provided in the Pre Survey Review. HECK located one contact at the coordiantes provided. The swath coverage is shown on sheet HE-10-13-89H submitted in this survey.

Excellent imagery was obtained on first a mainscheme line and on a crossline. Heights and positions were worked using ~~using~~ the contact utility provided in the post processing mode of HDAPS. A dive marker buoy was deployed when the contact was noted on the echosounder. Divers were unable to locate the contact on their first dive and deteriorating weather conditions made further dive investigation for the 1989 field season impossible.

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 15 November 1989 (DOY 319). ENS Weiner and LT Tuell descended the marker buoy. Visibility was very poor (less than 1 foot) due to heavy current. Divers performed a 30 meter circle search and located nothing. HECK suspects that the buoy moved due to the heavy current. A second buoy drop was made, however the current was too strong to complete a second dive and HECK divers aborted the dive after three minutes.

LEAST DEPTH DETERMINATION: The least depth was determined by direct measurement of a DSF 6000 echosounder.

Date of measurement: 15 November 1989 (DOY 319)
Time of measurement: 18:04 UTC

Echosounder depth	~~34.0~~ 33.9
Draft corrector	6.9
Velocity Corrector	0.8
Predicted tidal corrector:	~~-4.7~~ - 5.6
Least Depth	36.ϕ ~~37.0~~ feet (1ϕ.9 m)
	36 Ft (1ϕ.9 m) plotted

POSITION DETERMINATION:

Fix number	: 696
Number of LOPs	: 3
Max Residual	: 2.1 meters
Error Circle Radius	: 6.0 meters

Easting: 204286.1
Northing: 55047.8

Latitude: 41° 14' 20.~~30~~31" N
Longitude: 072° 25' 21.52~~0~~" W

Loran C rates: chain - NOT TAKEN

CHARTING RECOMMENDATIONS: Even though this contact was not located by divers, HECK believes that the coordinates and depth obtained by echosounder are sufficient for charting purposes. AWOIS 6820 is charted as a wreck with a reported depth of 40 feet. ~~HECK recommends that this symbol be changed to a charted obstruction at 41° 07' 29.834" N; 073° 02' 08.514" W with a known depth of 37 feet. HECK feels that a dive is not required~~ OK due to an excellent match between the AWOIS description and our side scan sonar imagery. There do not appear to be any protrusions above the general trend of the wreck.
This item is not considered disproved. Only two side scan lines were run. It is recommended that AWOIS Item #682ϕ, a charted dangerous sunken wreck with a reported depth of 4ϕ feet be deleted from the chart and a wreck with a fathometer depth of 36 Ft (1ϕ.9 m) be charted in lat 41°14'2ϕ.31"N, Long 72°25'21.52"W. Additional work is recommended at an opportune time.

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

Reviewed by: Grady H. Tuell, LT, NOAA
Executive Officer
NOAA Ship HECK

L. LETTER OF APPROVAL

During the period JULY 27, 1989, to AUGUST 31, 1989, 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

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

NOAA Ship HECK
439 W. York St.
Norfolk, VA 23510-1114
Feburary 21, 1990

Commander, First Coast Guard District
Aids To Navigation Office
408 Atlantic Ave.
Boston, MA 02110-2209

Dear Sir,

The following items were discovered during survey operations in Long Island Sound and were considered dangers to navigation.

NOAA SHIP HECK REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: FE-340-SS
Survey Title: Field Number HE-40-2-89
State: Connecticut and New York
General Locality: Long Island Sound
Sublocality: Vicinity of Stratford Point to Long Sand Shoal
Project No. : OPR-B660-89-HE

The following items were discovered during Hydrographic Survey Operations.

Objects Discovered: Significant Rocks in Vicinity of Townsend Ledge.

Shown in terms of least depth (shoalest point) as referenced to MLLW and using predicted tides for that area.

Affected nautical charts. Largest scale shown first.

12373 / 12371

CHART NO	EDITION NO	LEAST DEPTH	HOR DATUM CHARTED	GEOGRAPHIC POSITION
12371	20	18.2 FEET	NAD 83	041-13-55.512"N
12373	12			072-51-44.608"W
12372	24			
12354	28			
~~12371~~	~~20~~ NA	22.8 FEET	NAD 83	041-13-29.835"N
12373	12			072-50-40.654"W
12372	24			
12354	28			

Questions concerning this report should be directed to the Atlantic Marine Center at (804) 441-6264

Sincerely,

LCDR Stan Iwamoto
Commanding Officer, HECK

cc N/CG222

06/05/92

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-340SS

NUMBER OF CONTROL STATIONS	11
NUMBER OF POSITIONS	650
NUMBER OF SOUNDINGS	2816

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	56	04/13/90
VERIFICATION OF FIELD DATA	163	03/08/91
ELECTRONIC DATA PROCESSING	37	
QUALITY CONTROL CHECKS	76	
EVALUATION AND ANALYSIS	52	06/04/92
FINAL INSPECTION	17	06/03/92
TOTAL TIME	401	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 06/04/92

LIST OF HORIZONTAL CONTROL STATIONS

NUMBER	NAME	POSITION
123	OLD FIELD POINT BEACON, ~~1989~~ 67 (OLD FIELD POINT LIGHT) ~~(Field Position)~~	40° 58' 37.19911" 73° 07' 06.81994
126	STRATFORD SHOAL LTHSE, 1989 (STRATFORD SHOAL MIDDLE GROUND LIGHT) (Field Position)	41° 03' 35.72832" 73° 06' ~~40.58926~~ 04.58926
127 *	BRIDGEPORT E BRKWTR LH	41° 09' 17.35211" 73° 10' 36.45716"
	BREAK HOUSATONIC R BRK WTR LT, ~~1989~~ 1931	
128	HOUSATONIC R BRKWATER LH, 1989	41° 09' 38.60716" 73° 05' 34.90260"
129 *	STRATFORD POINT LTHSE	41° 09' 07.14923" 73° 06' 11.96759"
130	SOUTHWEST LEDGE LH OFFSET, 1989 (Field Position)	41° 14' 03.95879" 72° 54' 43.54241"
133	DARROW RK FLAGPOLE, 1989 DARROW ROCKS FLAGPOLE, ~~1989~~ 1933 ~~(Field Position)~~	41° 14' 45.631" 72° 51' 28.221"
135	BRANFORD LIGHTHOUSE, ~~1989~~ 1931 (BRANFORD REEF LIGHT)	41° 13' 16.66935" 72° 48' 19.16645"
160	FALKNER IS LIGHTHOUSE, 1882 ~~(Field Position)~~	41° 12' 43.05452" 72~~73~~° 39' 12.94416"
	HORTON POINT LH OLD TOWER, ~~1989~~ 1867	
255	HORTON POINT LIGHTHOUSE ~~(Field Position)~~	41° 05' 06.49732" 72° 26' 44.04724"
165	DUCK ISLAND WEST BREAKWATER LT, ~~1989~~ 1934	41° 15' 22.632" 72° 29' 06.622"
166	SAYBROOK BREAKWATER LH, 1886	41° 15' 47.536" 72° 24' 33.912"
172	MATTITUCK ~~INLET~~ BREAKWATER LIGHT, 1939	41° ~~06~~ ' 55.698" 72° ~~26~~ 33' 39.791

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: MARCH 27, 1990

MARINE CENTER: ATLANTIC

OPR: B660-HE-89

HYDROGRAPHIC SHEET: FE-340-SS

LOCALITY: Long Island Sound; Vicinity of Stratford Point to Long Sand Shoal, Connecticut and New York.

TIME PERIOD: September 14 to November 15, 1989

TIDE STATION USED: 846-1490 New London, Conn.
846-7150 Bridgeport, Conn.

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

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:
New London(846-1490) = 2.8 ft.
Bridgeport(846-7150) = 7.0 ft.

OPR: B660-HE-89

FE-340-SS

REMARKS: RECOMMENDED ZONING

AWOIS ITEM

1751 (HE-10-13-89-C) - times are direct and apply a X0.89 range ratio to Bridgeport, Conn.(846-7150).

1797 (HE-10-13-89-B) - times are direct and apply a X0.98 range ratio to Bridgeport, Conn.(846-7150).

1820 (HE-10-13-89-F) - times are direct and apply a X0.85 range ratio to Bridgeport, Conn.(846-7150).

2639 (HE-10-13-89-E) - times are dirct and apply a X0.85 range ratio to Bridgeport, Conn.(846-7150).

6819 (HE-10-13-89-G) - apply a -0 hr 30 min time correction and X0.67 range ratio to Bridgeport, Conn. (846-7150).

6929 (HE-10-13-89-D) - times are direct and apply a X0.89 range ratio to Bridgeport, Conn.(846-7150).

7108 (HE-10-13-89-A) - times are direct and apply a X0.98 range ratio to Bridgeport, Conn.(846-7150).

6820 (HE-10-13-89-H) - apply a +1 hr 20 min time correction and X1.55 range ratio to New London, Conn. (846-1490).

James R. Hubbard

CHIEF, TIDAL DATUM QUALITY ASSURANCE SECTION

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-340SS FIELD NO.: HE-10-13-89

Connecticut--New York, Long Island Sound, Vicinity of Stratford Point to Long Sand Shoal

SURVEYED: 14 September through 15 November 1989

SCALE: 1:10,000 PROJECT NO.: OPR-B660-HE-89

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

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

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

Surveyed by.....G. H. Tuell
.....L. D. Weiner
.....H. W. Bonnah
.....A. E. Francis
.....W. R. Morris

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

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A RAYTHEON DSF-6000N fathometer was operated concurrently with the side scan sonar. 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. Seven (7) 1;10,000 scale page size plots and one (1) 1:20,000 scale page size plot were generated during office processing and are attached to this report.

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 section H. 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 plots have 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 sheets 1 and 2 of 8 on the NAD 27 move the projection lines 0.352 seconds (10.8 meters or 1.08 mm at the scale of the survey) north in latitude, and 1.61 seconds (37.7 meters or 3.77 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheets 3 and 5 of 8 on the NAD 27 move the projection lines 0.353 seconds (10.9 meters or 1.09 mm at the scale of the survey) north in latitude, and 1.64 seconds (38.3 meters or 3.83 mm at the scale of the survey) east in longitude.

To place the 1:20,000 scale sheet 4 of 8 on the NAD 27 move the projection lines 0.352 seconds (10.9 meters or .545 mm at the scale of the survey) north in latitude, and 1.64 seconds (38.3 meters or 1.92 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheet 6 of 8 on the NAD 27 move the projection lines 0.352 seconds (10.9 meters or 1.09 mm at the scale of the survey) north in latitude, and 1.64 seconds (38.3 meters or 3.83 mm at the scale of the survey) east in longitude.

To place the 1:10,000 scale sheets 7 and 8 of 8 on the NAD 27 move the projection lines 0.358 seconds (11.0 meters or 1.10 mm at the scale of the survey) north in latitude, and 1.68 seconds (39.2 meters or 3.92 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 within the limits of the present survey.

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. Where applicable, the standard or supplemental depth curves could be drawn in their entirety.

c. The development of the bottom configuration and determination of least depths of items located and shown on the smooth plots is considered adequate.

4. CONDITION OF SURVEY

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

a. The quality of the side scan sonargrams was poor at best for the following reasons:

1) The WAG motor was in need of adjustment beginning on day 268. The problem persisted and worsened through day 276. In some cases the range, gain setting, time, and position number were either illegible or nonexistent. There was no indication made by the field unit that there was any problem with the recorder or these sonargrams. Section F2., paragraph 3, of the Descriptive Report states, "The SSS system worked very well for the duration of the survey." Section F2., paragraph 4, of the Descriptive Report noted a "styli" problem with the system. These sonargrams were submitted as acceptable data. The data should have been rejected and the lines rerun.

2) On several days the sea state was noted as "2-4 feet" on the echogram. An examination of some areas of the echogram showed consistent wave heights of 5-6 feet. The resultant side scan sonargrams have tell tale light and dark bands indicative of the fish surging in the water. The resultant swaths do not achieve the swath width claimed.

3) The amount of tow cable out during survey operations was, in some cases, as little as 3 meters. The sonargram has little or no value with such short cable length because the towfish was in the screw wash and screw noise thus preventing the sonar signal from being sent or received as it should be. The field unit interpreted screw noise or turbulence in the water as fish. The height of the tow fish was not easily determined because the line showing tow fish height was obscured in this situation.

b. The search requirement AWOIS Item #6820 was not met. A full 200% side scan sonar search was required for a 1000 meter radius. Two lines were run. A contact was seen on one

of these lines. A second line was run normal to the first line. The hydrographer stated that the contact was an "... excellent match between the AWOIS description and our side scan sonar imagery." The AWOIS description of the wreck is "A steel launch has been reported sunk in 58 ft of water with a reported depth of 40 ft of water over it in approx pos Lat 41-14-21N, Long 72-25-33W." The contact located is 230 meters east of the AWOIS listing position in Latitude 41°14'20.31"N, Longitude 72°25'21.52"W. Additional work is recommended at an opportune time to complete the required search.

5. JUNCTIONS

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

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-1591 (1883)	1:40,000
H-8967 (1967)	1:20,000
H-9008 (1968)	1:20,000
H-9088 (1969)	1:20,000

The prior surveys listed above cover the search areas of the present survey. The prior surveys show a general trend of varying plus or minus (±) 0.5 ft from the present survey. The following should be noted:

A charted shoal with depths to 18 ft, shown on prior survey H-9008 (1968), in the vicinity of Latitude 41°12'41.5"N, Longitude 72°51'42.8"W was investigated by the present survey. The shoal was investigated during the side scan sonar investigation of AWOIS item #6929. A dangerous submerged rock with a known depth of 20 ft (20*Rk*), in Latitude 41°12'37.45"N, Longitude 72°51'43.11"W, was located by the present survey. A charting recommendation for AWOIS item #6929 can be found in section K.4., pages 28-46, of the Descriptive Report. It is recommended that the charted shoal to 18 ft be deleted. It is also recommended that the dangerous submerged rock with a known depth of 20 ft (20*Rk*) be charted as shown on sheet 4 of 8.

12373 ✓
12371 ✓

A shoal with depths to 47 ft, shown on prior survey H-9088 (1969), in the vicinity of Latitude 41°11'13.0"N, Longitude 72°45'06.0"W was investigated by the present survey. A dangerous submerged rock with a known depth of 45 ft (45*Rk*), in Latitude 41°11'13.03"N, Longitude 72°45'00.01"W, was located by the present survey. AWOIS Item #1820, a charted

12373 ✓

42-ft sounding, in Latitude 41°11'15"N, Longitude 72°45'05"W, 12373✓ is presently charted in this area. It is recommended that the charted sounding be deleted, and the dangerous submerged rock be charted as shown on sheet 6 of 8.

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

7. COMPARISON WITH CHART 12354 (28th Edition, Oct. 4/86)
12370 (15th Edition, Sep. 22/84)
12371 (20th Edition, Apr. 6/85)
12373 (12th Edition, May 23/81)
12374 (11th Edition, June 23/84)
12375 (17th Edition, Apr. 14/84)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and unascertainable sources. The prior surveys require no further consideration. The hydrographer makes adequate chart comparisons in sections J. and K. of the Descriptive Report.

The present survey is adequate to supersede the charted hydrography within the common areas.

b. Dangers to Navigation

The hydrographer identified two (2) dangers to navigation and submitted information for inclusion in Local Notice to Mariners to Commander (oan), First Coast Guard District, Boston, Massachusetts and to National Ocean Service (NOS) , Chart Information Section, N/CG222, Rockville, Maryland. A copy of the letter is appended to the hydrographer's report. No additional comments concerning the hazards are required.

c. Aids to Navigation

Two (2) floating aids to navigation were located within the limits of this survey. These aids appear adequate to serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

Additional work is recommended for AWOIS item #6820 at an opportune time.

Leroy G. Cram
Senior Cartographic Technician
Verification of Field Data

Norris A. Wike
Cartographer
Evaluation and Analysis

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-340 SS

Name on Survey	A ON CHART NO. 12354	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	
CONNECTICUT	X									1
LONG ISLAND SOUND	X									2
LONG SAND SHOAL	X									3
NEW YORK	X									4
STRATFORD POINT	X									5
										6
										7
										8
										9
										10
										11
										12
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				Approved:						14
										15
				Charles E. Hallington						16
				Chief Geographer - NOS CG2X5						17
				JUL 29 1991						18
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										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

APPROVAL SHEET
FE-340SS

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: 4 June 1992
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: 4 June 1992
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

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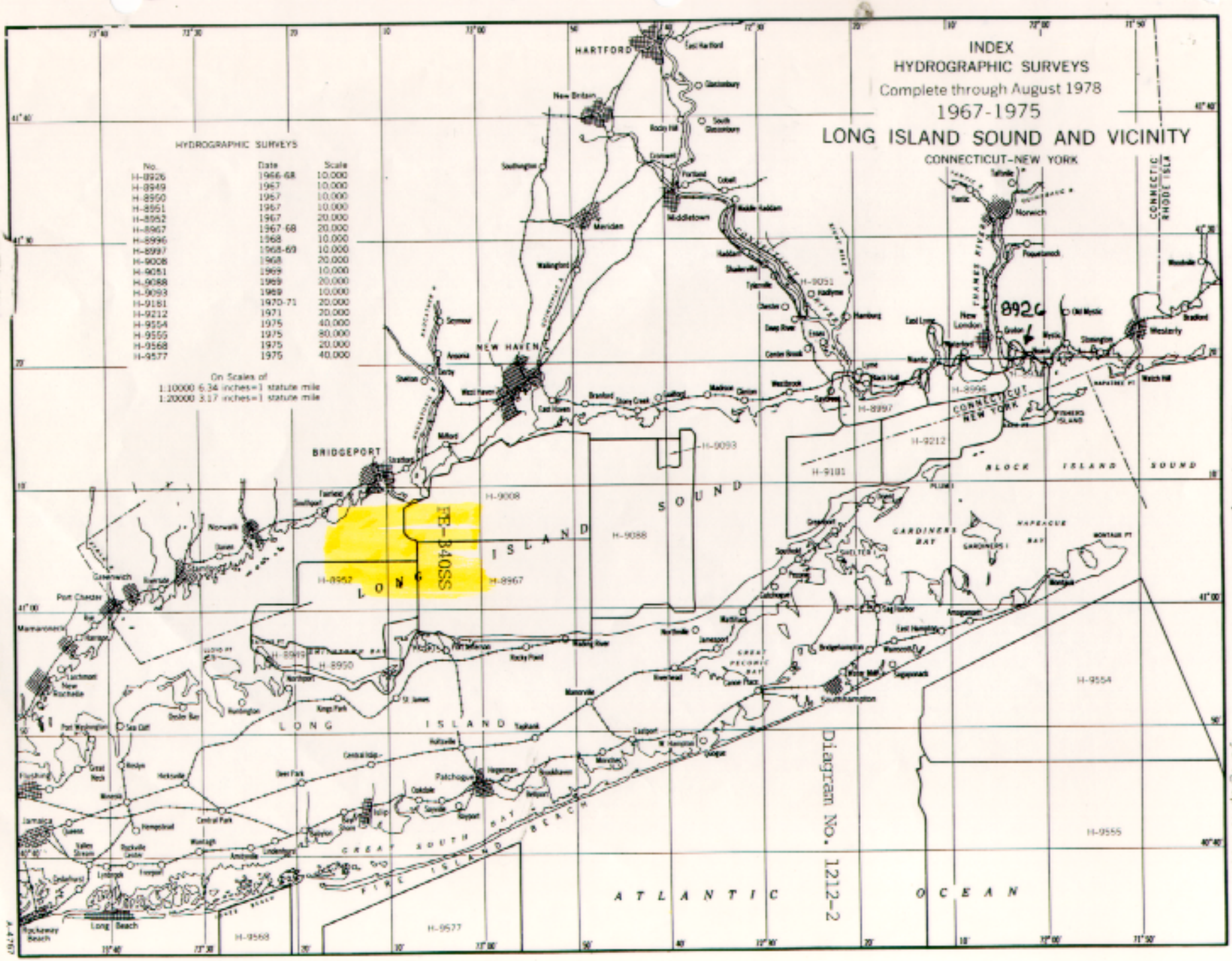
Final Approval:

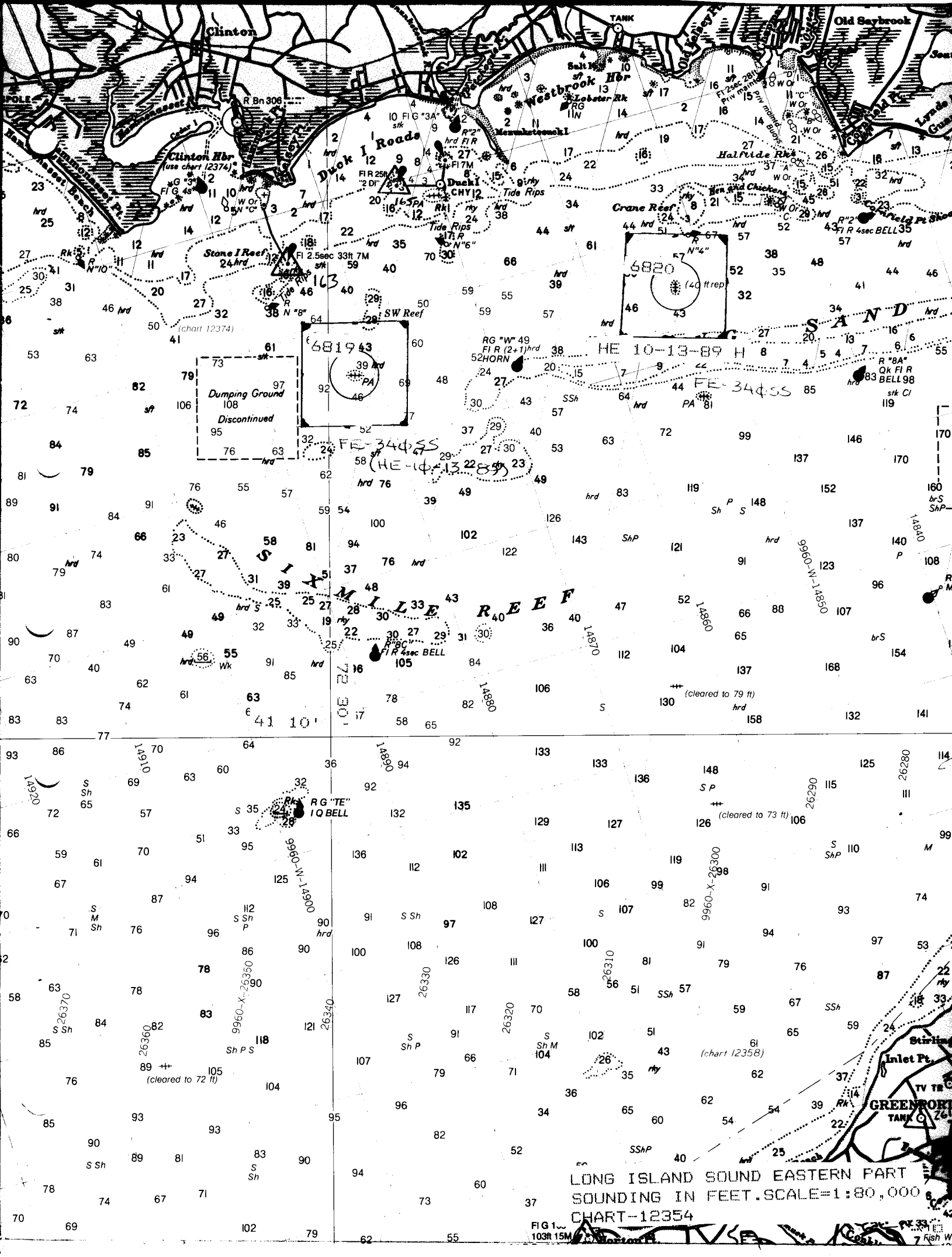
Approved: J. Austin Yeager Date: 3/15/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

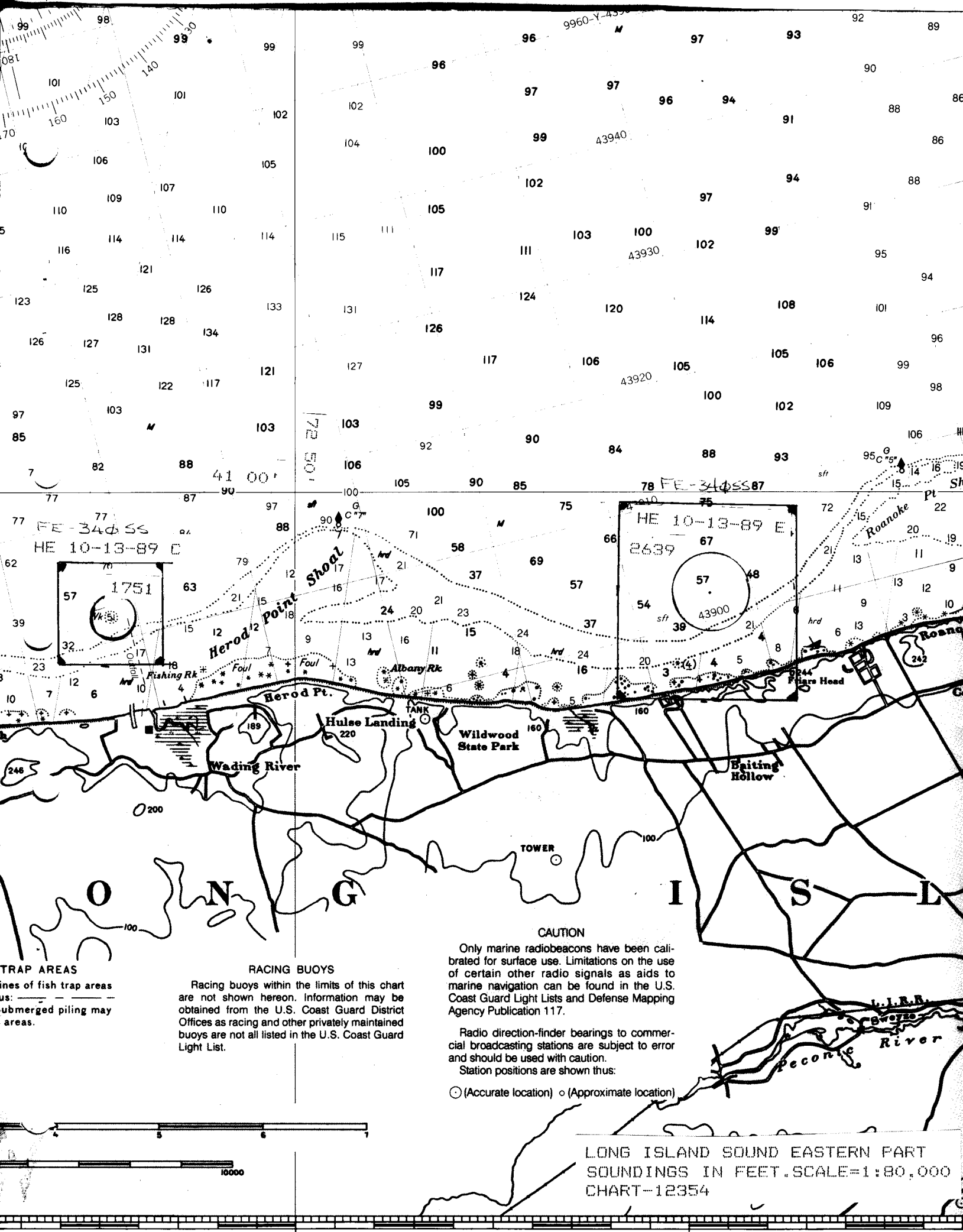


DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 63 L

A-4767


Clinton
Clinton Hbr
(use chart 12374)
Duck I Roads
Duck I
Stone I Reef
SW Reef
Dumping Ground
Discontinued
(chart 12374)
Westbrook Hbr
Lobster Rk
Old Saybrook
Halfride Rk
Crane Reef
Tide Rips
6820
(40 ft rep)
SAND
HE 10-13-89 H
FE-3405S
SIX MILE REEF
(cleared to 79 ft)
(cleared to 73 ft)
(cleared to 72 ft)
(chart 12358)
Inlet Pt.
GREENPORT
LONG ISLAND SOUND EASTERN PART
SOUNDING IN FEET. SCALE=1:80,000
CHART-12354



TRAP AREAS

ines of fish trap areas
us: — — — — —
ubmerged piling may
areas.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other privately maintained buoys are not all listed in the U.S. Coast Guard Light List.

CAUTION

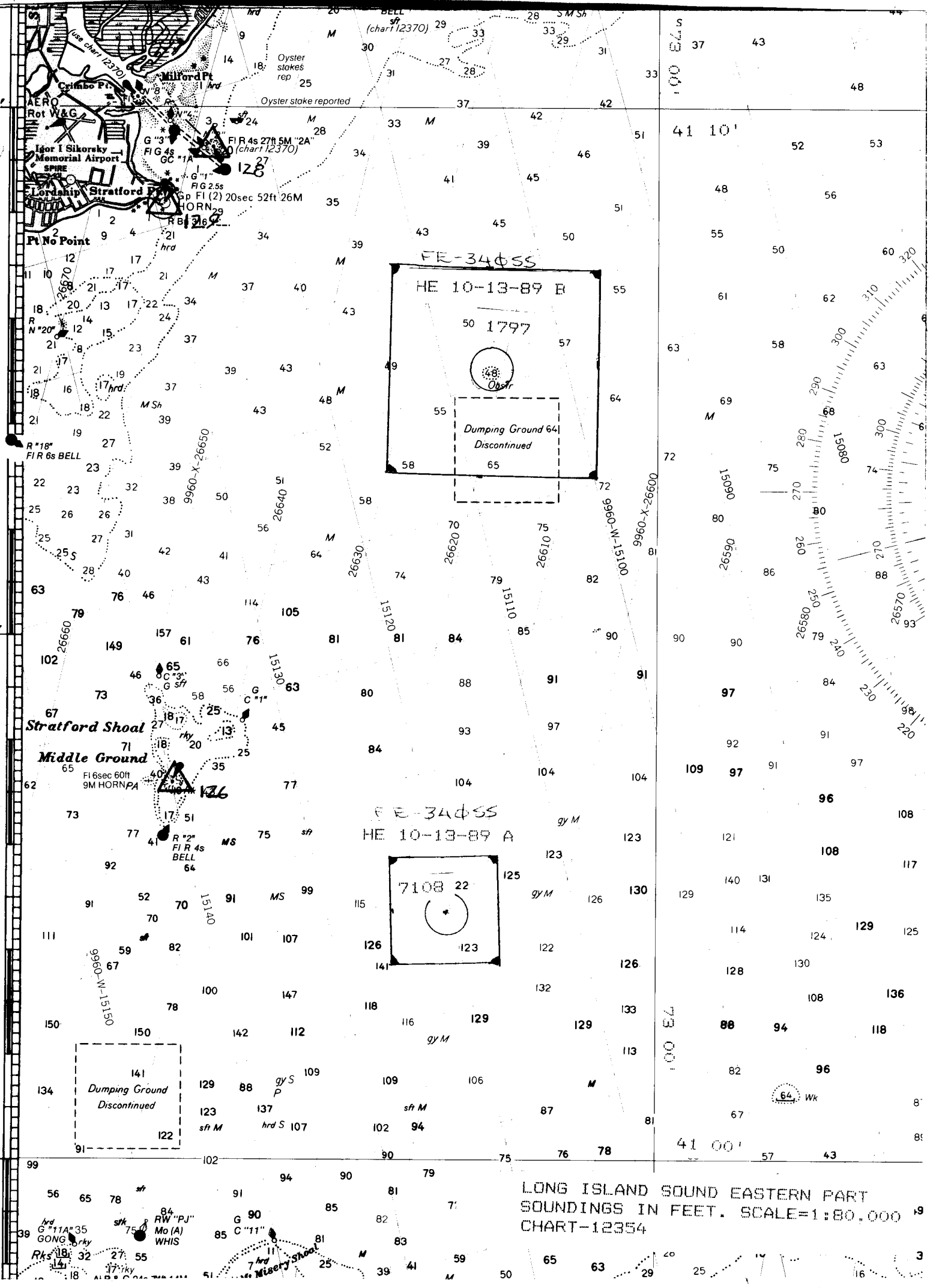
Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Publication 117.

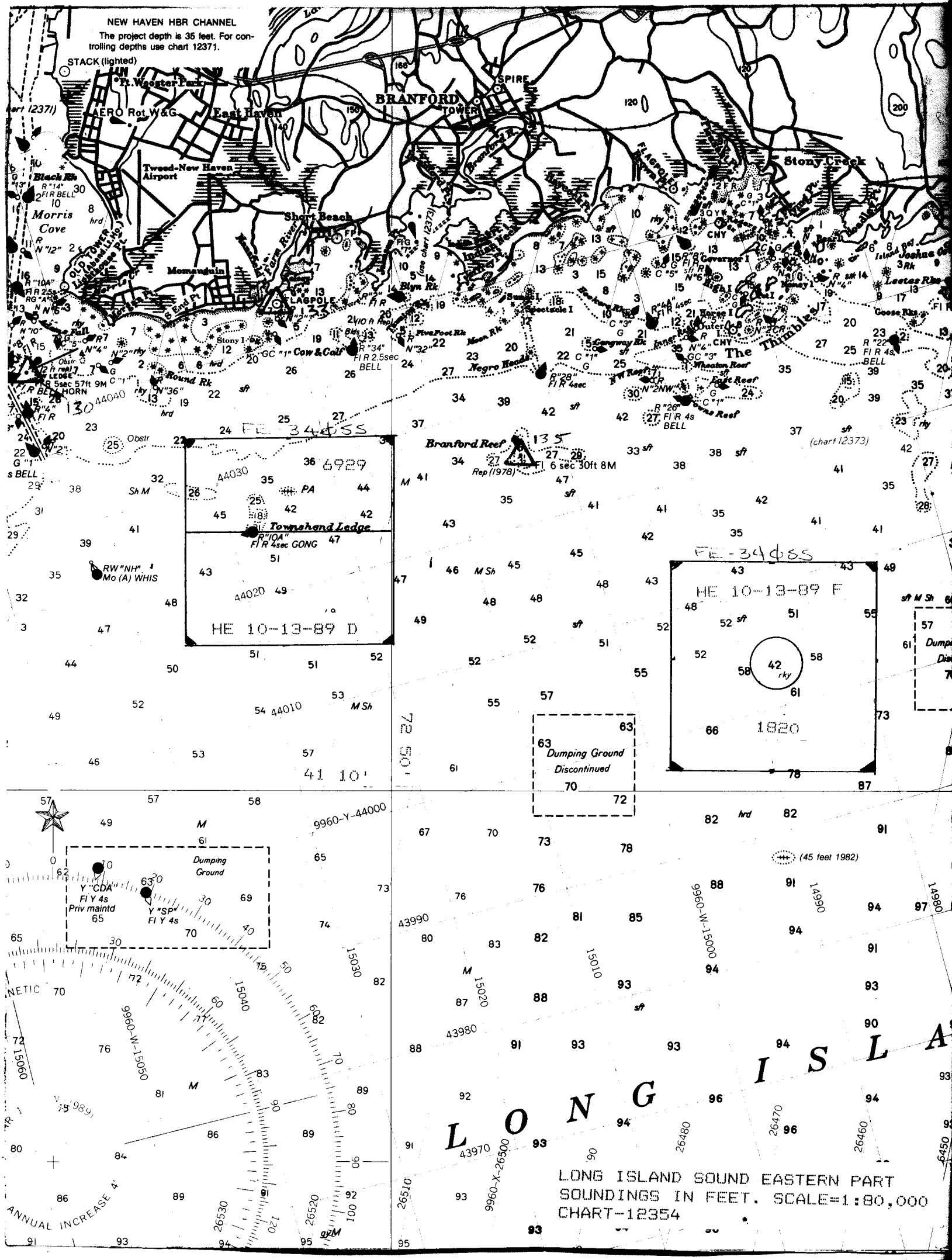
Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.

Station positions are shown thus:

⊙ (Accurate location) ○ (Approximate location)

LONG ISLAND SOUND EASTERN PART
SOUNDINGS IN FEET. SCALE=1:80,000
CHART-12354


JOINS CHART 12363)
10'
41°
41 10'
41 00'
73 00'
Use chart 12370
Crimbo Pt
Milford Pt
AERO
Rot W&G
Igor I Sikorsky Memorial Airport
SPIRE
Lordship
Stratford Pt
Pt No Point
Oyster stakes rep
Oyster stake reported
G "3" Fl G 4s GC "1A"
Fl R 4s 27ft 5M "2A" (chart 12370)
Gp Fl (2) 20sec 52ft 26M HORN
R Bn 216°
R "18" Fl R 6s BELL
R "2" Fl R 4s BELL
Fl 6sec 60ft 9M HORN PA
Stratford Shoal
Middle Ground
FE-34055
HE 10-13-89 B
1797
Dumping Ground 64 Discontinued
FE-34055
HE 10-13-89 A
7108 22
Dumping Ground Discontinued
Misery Shoal
9960-X-26650
9960-X-26600
9960-W-15100
9960-W-15150
LONG ISLAND SOUND EASTERN PART
SOUNDINGS IN FEET. SCALE=1:80,000
CHART-12354


NEW HAVEN HBR CHANNEL
The project depth is 35 feet. For controlling depths use chart 12371.
STACK (lighted)
Ft. Wooster Park
AERO Rot W&G
East Haven
BRANFORD TOWER
SPIRE
Tweed-New Haven Airport
Morris Cove
Short Beach
Momaugunin
Stony Creek
Thimbles
The Thimbles
Townshend Ledge
Fl R 4sec GONG
Branford Reef
Fl 6 sec 30ft 8M
Rep (1978)
Negro Heads
Five Foot Rk
Round Rk
Cow & Calf
Dumping Ground
Discontinued
Dumping Ground
Y "CDA"
Fl Y 4s
Priv maintd
Y "SP"
Fl Y 4s
HE 10-13-89 D
HE 10-13-89 F
FE-3455
FE-3455
6929
1820
(45 feet 1982)
LONG ISLAND SOUND EASTERN PART
SOUNDINGS IN FEET. SCALE=1:80,000
CHART-12354
ANNUAL INCREASE 4'

73° 03' 00"

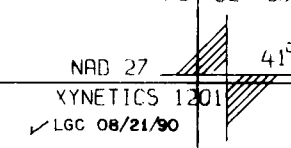
73° 02' 30"

73° 02' 00"

41° 03' 00"

41° 02' 30"

41° 02' 00"



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FE-340 SS
CONNECTICUT--NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO LONG SAND SHOAL
DATE OF SURVEY: 21 SEPT 1989
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 1 OF 8
AWOIS ITEM NUMBER 7108

73° 02' 30"

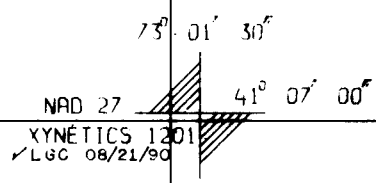
73° 02' 00"

73° 01' 30"

41° 08' 00"

41° 07' 30"

46 Wk (Wreck Barge)



FE-340 SS
CONNECTICUT-- NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO LONG SAND SHOAL
21 SEPT 1969
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 2 OF 8
AWOIS ITEM NUMBER 1797

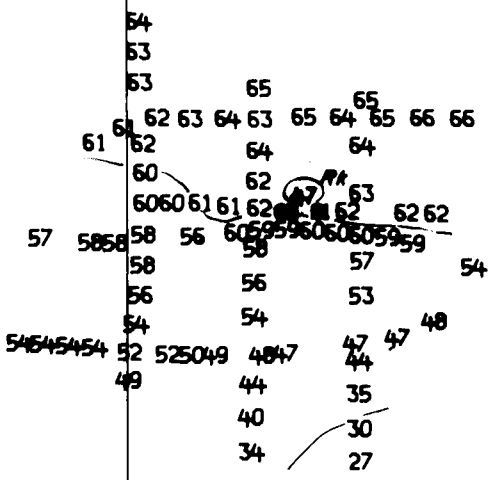
72° 53' 00

72° 52' 30"

72° 52' 00"

40° 59' 30"

40° 59' 00"



72° 52' 00"

NAD 27 40° 58' 30"

XYNETICS 1201

LGC 05/25/90

FE-340 SS

CONNECTICUT--NEW YORK

LONG ISLAND SOUND

VICINITY OF STRATFORD POINT TO LONG SAND SHOAL

DATE OF SURVEY: SEPT 25-29, 1989

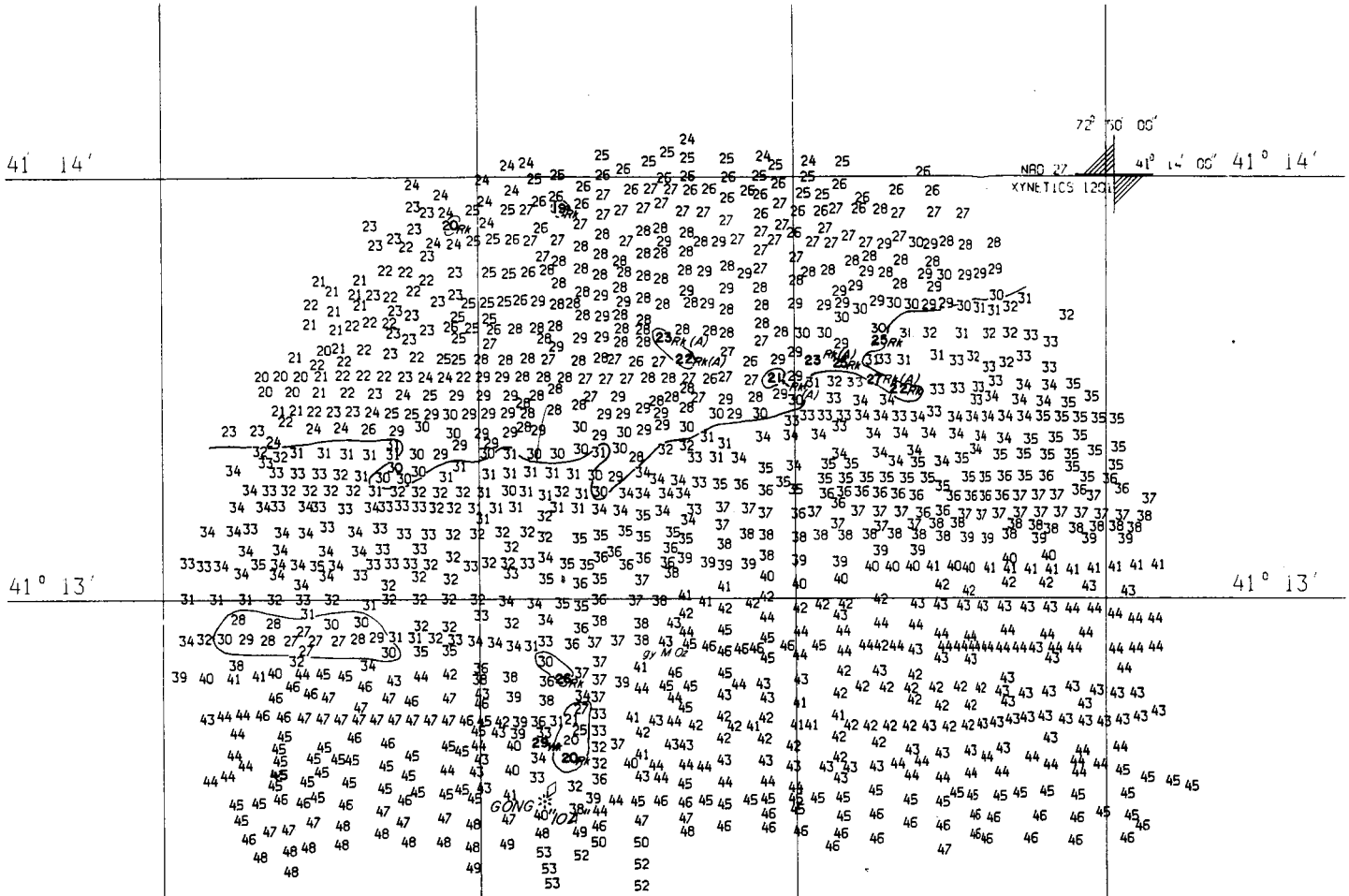
SCALE: 1:10,000

SOUNDINGS IN FEET AT MLLW

HORIZONTAL DATUM: NAD 1983

SHEET 3 OF 8

AWOIS ITEM NUMBER 1751



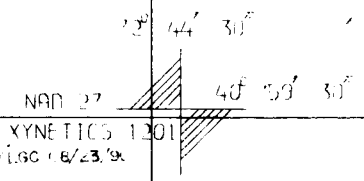
FE-340 SS
CONNECTICUT--NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO
LONG SAND SHOAL
DATE OF SURVEY : OCT 3-27, 1989
SCALE : 1:20,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM : NAD 1983
SHEET 4 OF 8
AWOIS ITEM NUMBER 6929

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

72° 45' 30"

72° 45' 00"

72° 44' 30"



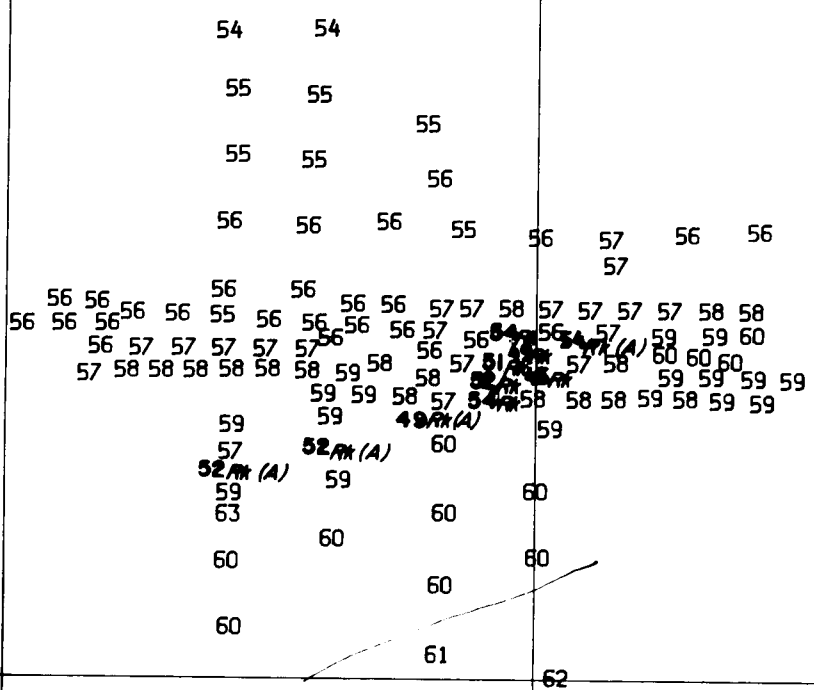
57 Obstr (airplane)

40° 59' 00"

40° 58' 30"

FE-340 SS

CONNECTICUT -- NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO LONG SAND SHOAL
30 OCT 1989
SCALE: 1: 10,000
SOUNDING IN FEET AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 5 OF 8
AWOIS ITEM NUMBER 2639



72° 44' 30"

YYNETICS 1201
✓LGC 8/27/90

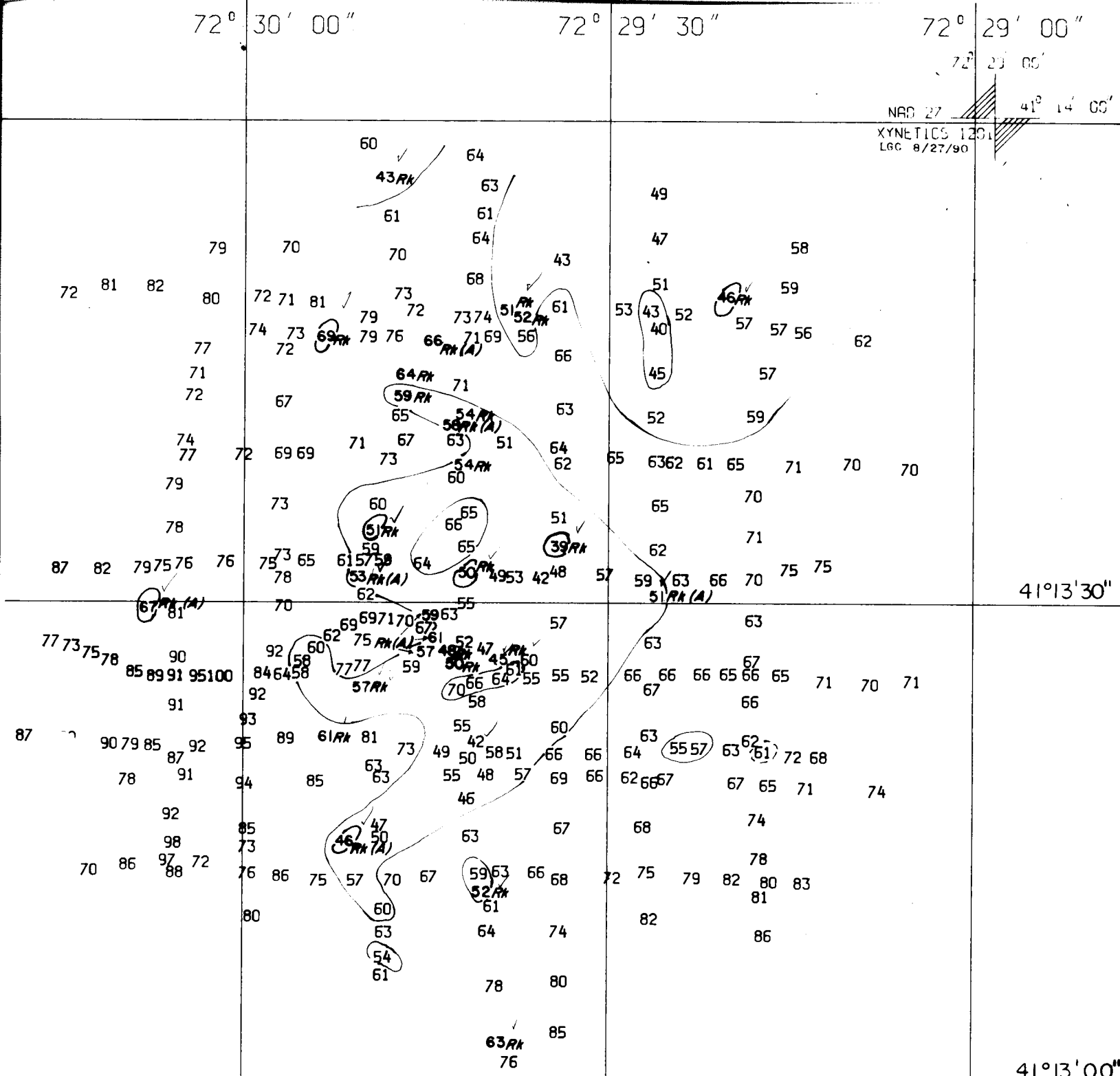
41° 11' 00"

FE-340 SS
CONNECTICUT--NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO
LONG SAND SHOAL
DATE OF SURVEY: 12-25 OCT 1989
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 6 OF 8
AWOIS ITEM NUMBER 1820

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

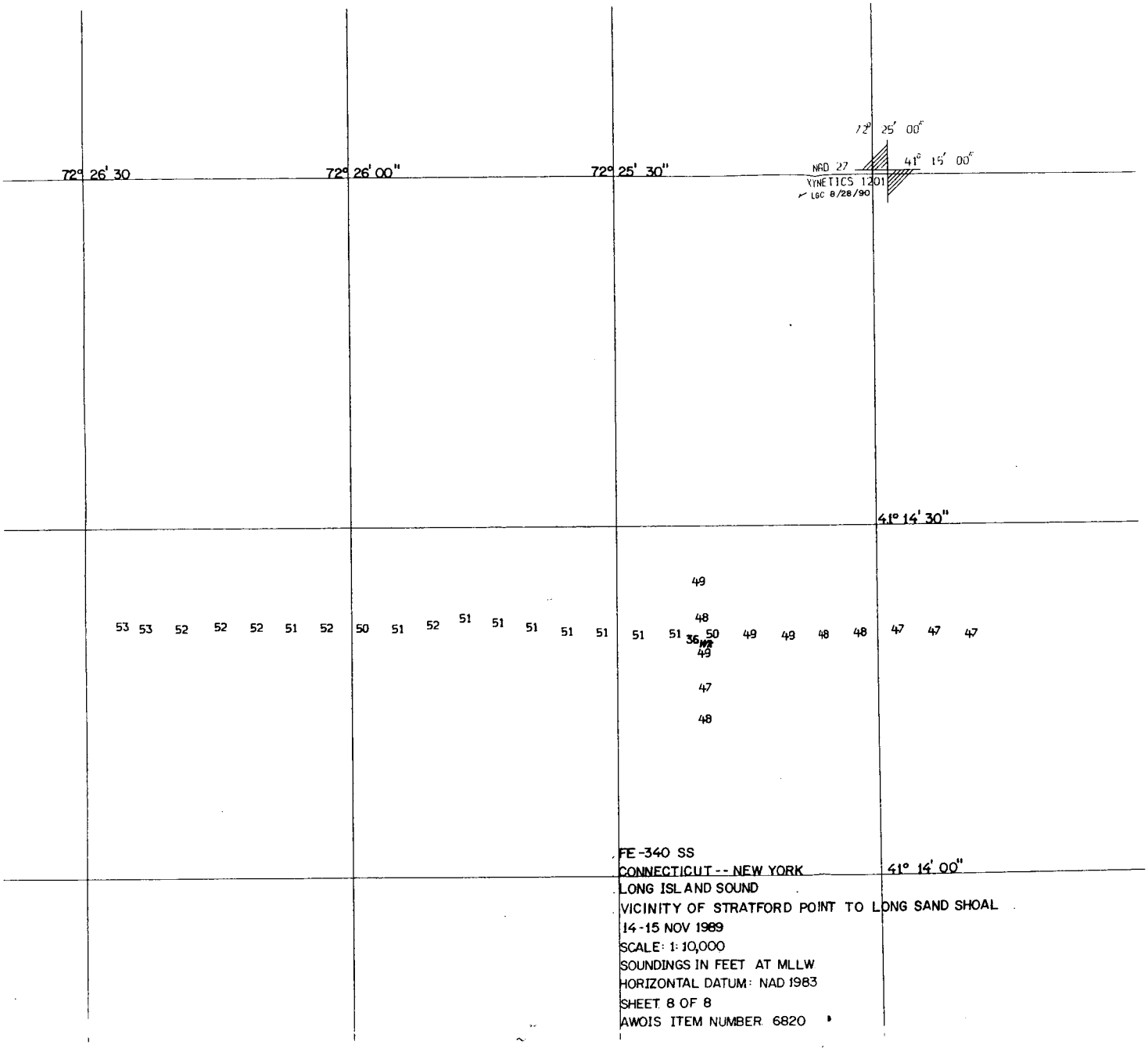
41° 10' 30"

72° 45' 30" 72° 45' 00" 72° 44' 30"



FE-340 SS
CONNECTICUT--NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO
LONG SAND SHOAL
DATE OF SURVEY : NOV 8-15, 1989
SCALE : 1:10,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM : NAD 1983
SHEET 7 OF 8
AWOIS ITEM NUMBER 6819

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


72° 25' 00"
NAD 27
41° 15' 00"
XYNETICS 1201
LGC 8/28/90
72° 26' 30
72° 26' 00"
72° 25' 30"
41° 14' 30"
53 53 52 52 52 51 52 50 51 52 51 51 51 51 51 51 50 49 49 48 48 47 47 47
49
48
36
49
47
48
41° 14' 00"
FE-340 SS
CONNECTICUT -- NEW YORK
LONG ISLAND SOUND
VICINITY OF STRATFORD POINT TO LONG SAND SHOAL
14-15 NOV 1989
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 8 OF 8
AWOIS ITEM NUMBER 6820

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-340SS

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
12375	10/26/92	John Barber	~~Full Part Before~~ FULL After Marine Center Approval Signed Via
			Drawing No. 32
12374	10/26/92	John Barber	~~Full Part Before~~ FULL After Marine Center Approval Signed Via
			Drawing No. 21
12373	10/26/92	John Barber	~~Full Part Before~~ FULL After Marine Center Approval Signed Via
			Drawing No. 27
12372	10/26/92	John Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
12370	11/17/92	L. Atkinson	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 26
12371	11/19/92	John Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
12364	11/18/92	John Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 28
12354	11/20/92	John Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 60
			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