

FE303 SIDE SCAN

Diagram No. 1213-4

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. RU-10-1-88
Registry No. FE-303SS

LOCALITY

State New York
General Locality .. Long Island Sound
Sublocality Vicinities of Hart Island
..... Execution Rocks, and Dosoris Island

19 88

CHIEF OF PARTY

..... CDR A.D. Anderson

LIBRARY & ARCHIVES

DATE August 8, 1989

☆U.S. GOV. PRINTING OFFICE: 1985-568-054

**FE303
SIDE SCAN**

CP
CHT
12366
12367
12364 (E) Fmsd 11
12363 ✓

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HYDROGRAPHIC TITLE SHEET

FE-303-SS

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

FIELD NO.

RU-10-1-88

State New York

General locality Long Island Sound

Locality Vicinities of Hart Island, Execution Rocks and Dosoris Island.

Scale 1:10000 Date of survey July-August, 1988

Instructions dated May 26, 1988
July 06, 1988

Project No. OPR-B660-RU/HE-88

Vessel NOAA SHIP RUDE S-590 Hull No. 9040

Chief of party LCDR A. D. Anderson

Surveyed by LT Craig L. Bailey, LT(jg) Thomas R. Waddington AST Mark Sramek

Soundings taken by echo sounder, ~~hand lead, pole~~ RAYTHEON DSF-6000N

Graphic record scaled by CLB, TRW, MAS

Graphic record checked by CLB, TRW, MAS

Protracted by _____ Automated plot by BRUNING-NICOLET ZETA
124 CS Plotter (FIELD)

Verification by Hydrographic Surveys Branch (AHC)

Soundings in ~~XXXX~~ feet at ~~MLLW~~ MLLW _____

SYNETICS 1201 PLOTTER (AHC)

REMARKS: *Notes in red were made during office processing*

AW015/SURF GMSM 8/28/89

EW 10/14/93

TABLE OF CONTENTS

<u>REPORT SECTION</u>	<u>PAGE</u>
A. PROJECT DESCRIPTION	1
B. PROJECT OVERVIEW	1
C. AREA SURVEYED	1
D. SURVEY SHEETS	2
E. SURVEY VESSELS	3
F. SOUNDING EQUIPMENT	3
G. CORRECTIONS TO ECHO SOUNDINGS	4
H. HORIZONTAL POSITION CONTROL	6
I. AUTOMATED DATA PROCESSING	8
J. COMPARISONS WITH PRIOR SURVEYS	10
K. AWOIS ITEM INVESTIGATION REPORTS	
ITEM 4394	13
ITEM 4400	21
ITEM 4403	22
ITEM 4404	22
ITEM 6503	32
L. MISCELLANEOUS	38
M. RECOMMENDATIONS	38
N. APPROVAL SHEET	39

APPENDIX SECTION

* I.	TIDES	
	REQUEST FOR SMOOTH TIDES	
	FIELD TIDE NOTE	
	PREDICTED TIDE TABLES	
	ABSTRACT OF TIMES OF HYDROGRAPHY	
* II.	INSTRUMENT CALIBRATIONS	
	PRECISION DEPTH GAGE	
* III.	CONTROL STATION INFORMATION	
	CONTROL STATION TABLE	
	CONTROL STATION REFERENCE LIST - <i>included in Descriptive Report</i>	
* IV.	CORRECTOR	
	ELECTRONIC CORRECTOR ABSTRACT	
	C-O TABLES	
	OFFSET TABLE	
	CRITICAL CALIBRATIONS	
	SETTLEMENT AND SQUAT GRAPH	
* V.	PARAMETERS	
	PLOTTER SHEET DESCRIPTION	
	PROJECT TABLE	
	SHEET & SEGMENT TABLES	
* VI.	AWOIS LIST	
VII.	CORRESPONDENCE	
* VIII.	ABSTRACTS	
	DATA PROCESSING ABSTRACTS - 4394	
	DATA PROCESSING ABSTRACTS - 4400	
	DATA PROCESSING ABSTRACTS - 4403	

** Filed with the
original field
records.*

DATA PROCESSING ABSTRACTS - 4404

DATA PROCESSING ABSTRACTS - 6503

* IX. BASELINE CALIBRATION DATA, SOUND VELOCITY DATA AND
PNEUMOFATHOMETER SYSTEMS CHECKS (BOUND SEPARATELY)

** filed with original field records*

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-303-SS
RU-10-1-88
Scale 1:10,000
NOAA Ship RUDE (S590)
CDR Alan D. Anderson, Commanding

A. PROJECT DESCRIPTION

This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU/HE-88, Southern New England Coast, Connecticut and New York, dated May 26, 1988, as amended by Change No. 1, dated July 06, 1988.

The purpose of this project was to verify or disprove the existence of charted submerged wrecks and obstructions in Western Long Island Sound and vicinity.

The survey involved Side Scan Sonar (SSS) investigations utilizing a EG&G Model 260 slant range corrected Side Scan Sonar and a Model 272, 100/500 KHZ Side Scan towfish. Side Scan sonification was supplemented by echo-soundings that were obtained from the ship's Raytheon DSF-6000N echo-sounder. Least depths on targets that were found by diver investigation were taken with a ~~pneumofathometer~~ ^{PNEUMATIC DEPTH GAGE}. Because polluted water around AWOIS 4394 prevented dive operations, least depths for this item were obtained through echosounder developments.

B. PROJECT OVERVIEW

This project responds to requests from the Northeast Marine Pilots, Inc., of Newport, Rhode Island, to verify or disprove and provide least depths of wrecks and obstructions in western Long Island Sound. The data from this project will supplement a basic hydrography survey (OPR-B285) which is scheduled for this area in 1989-91. 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.

During the course of this project the RUDE continued to assist in the implementation and testing of the Hydrographic Data Acquisition and Processing System (HDAPS). Prior to leaving Norfolk, we received a newer version of the HDAPS program which we were to use and test while conducting this project.

C. AREA SURVEYED

The RUDE and HECK were issued an AWOIS Listing on July 7, 1988. Five items were selected by the RUDE for inclusion in this report. The requirements cited in the AWOIS listing for these five items are

included below. *The AWOIS listing is included in Appendix VI of this report.

The following AWOIS investigations are included in this report:

AWOIS NO.	CHARTED POSITION	REQUIRED SEARCH RADIUS	REQUIRED COVERAGE
4394	040° 51' 50" N 073° 46' 00" W	500 meters	200%
4400	040° 53' 18" N 073° 40' 36" W	500 meters	400%
4403	040° 53' 34" N 073° 38' 54.3" W	75 meters	200%
4404	040° 53' 36.5" N 073° 38' 48" W	200 meters	400%
6503	040° 53' 12.7" N 073° 43' 57.1" W	125 meters	200%

D. SURVEY SHEETS

All survey sheets were produced aboard the NOAA Ship RUDE using the HDAS Computer and the Bruning-Nicolet ZETA 824A CS Plotter. Each sheet was plotted on the Modified Transverse Mercator Projection. Field sheets, track plots and swath plots were plotted at a scale of 1:10000 for ease of on-line observations and plotting. For each of the AWOIS items covered, we have included the on-line swath or track plots, post-processing track plots (200% coverage per plot), post-processing swath plots (100% coverage per plot), and contact plots. *Refer to Appendix V for the parameters of the AWOIS plotting sheets. Appendix V contains a listing of each individual plotter sheet included with this survey.

**Filed with original field records*

E. SURVEY VESSELS

The following vessels were used during the project:

<u>VESSEL</u>	<u>ELECTRONIC DATA PROCESSING NUMBER</u>	<u>PRIMARY FUNCTION</u>
NOAA Ship RUDE (S590)	9040	Side Scan Operations
RUDE Launch (RU3)	1290	Diving Operations
RUDE Skiff (RU1)	----	Mini-Ranger Service and Diving Operations

F. SOUNDING EQUIPMENT

F1. Raytheon DSF-6000N

Echo soundings were taken utilizing a Raytheon DSF-6000N Echo-Sounder (s/n 047). The unit was calibrated periodically using an Electronic Depth Simulator Instrument (EDSI) provided by AMC/EEB.

F2. EG&G Model 260 Side Scan Sonar

Side Scan coverage was accomplished using an EG&G Model 260 Slant Range Corrected Side Scan Sonar unit with a Model 272, 100/500 KHZ Towfish. Periodic "rub tests" were performed on the towfish. Our confidence in the proper functioning of the EG&G system was assured as the quality of the image displayed on the recorder was critically evaluated during every operation. Periodically the side scan fish was towed past a 100 kHz bottom pinger as an additional confidence check. This Data Sonics pinger was moored approximately 2 meters off the bottom in the work area. The side scan trace shows a pair of hyperbolic arcs as the tow fish nears the pinger. At the closest point of approach to the pinger these hyperbolic arcs will be nearest the center line of the side scan trace. This unit was also placed on dive buoys when marking dive targets. This allowed us to tow past the site and check on the dive buoys location in relation to the target. This procedure eliminated many useless dives which would have resulted from improperly placed dive buoys. Confidence checks were conducted daily on the sonargram as the tow fish was towed past known objects. Two on the items investigated had underwater pipelines running through them. These pipelines provided a clear, graphic record that the side scan sonar was properly functioning across the full range. The side scan images of these pipelines are well annotated on the sonargram.

F3. *Pneumatic Depth* Pneumofathometer Gauge

Least depths for diver investigated contacts were determined using a ~~pneumofathometer~~ *pneumatic depth* gauge as described in Hydrographic Survey Guideline No. 55. Prior to each dive, a systems check was performed at the dive

location to ensure the ~~pneumofathometer~~ ^{pneumatic depth gage} worked properly.* Data from these systems checks is contained in Appendix IX. Corrector values for both the deep and shallow gauges are taken from calibrations performed on 17 February 1988 at Instruments East Labs of Norfolk, VA. The calibration information is provided in Appendix IX.

G. CORRECTIONS TO ECHO SOUNDINGS

G1. Velocity Corrections

Velocity correction data was obtained through frequent MARTEK CTD (s/n 246) casts taken in the survey area. In late July, the depth sensor on our MARTEK began to malfunction and we could no longer accurately measure the depth. Because of this, we employed our leadline which we securely fastened to the sensor housing of the MARTEK and used as a reference to obtain depths which were recorded to the nearest whole foot. Velocity corrections were calculated for all MARTEK casts by using the new velocity computation package VELOCITY. Sound velocity correctors were applied to data by date of Martek cast. Data acquisition and plotting was conducted with the most recent Velocity Corrector Table preceeding the date of data acquisition.*The MARTEK cast data along with results generated by the velocity program has been included in Appendix IX. The Martek calibration data is found in Appendix IX.

Martek casts were taken on the following days at the indicated positions.

<u>Date / DOY</u>	<u>Position</u>	<u>Table No.</u>
July 26 / 208	40° 53' 18" [—] 73° 40' 36" [—]	1
July 28 / 210	40° 51' 49" [—] 73° 45' 59" [—]	2
August 16 / 229	40° 54' 30" [—] 73° 39' 06" [—]	3

G2. Tide Corrections

The operating tidal station at Willets Pt., NY was the reference station used when determining predicted tides for various sites within the project area. In HDAPS software, predicted tidal correctors were able to be applied to the on-line sounding data compiled throughout the project. Tidal zone correctors were applied to the predicted tides at Willets Pt., NY to compute the least depths over obstructions. The New England Coast has a tidal range on the order of 8 feet. Smooth tides data should be applied to all least depths taken on wrecks and obstructions during the course of this survey.

* Filed with original field data.

The following list shows which tide table was used to plot data for each individual AWOIS item. Some of the initial on-line data was gathered using the incorrect time meridian within the HDAPS tide table. This occurred within Tide Tables 1 & 2; these tables were replaced with Tide Tables 3 & 4 and all data was post-processed using the correct predicted tide table.

<u>HDAPS TIDE TABLE NUMBER / Zone</u>	<u>DOY FROM-TO</u>	<u>APPLICATION AWOIS ITEM / DOY</u>
3 / Execution Rocks	205-219	4400 / 208,209,210,211 4403,4 / 211,216,217 4394 / 210,218 6503 / 209
4 / Execution Rocks	220-234	4400 / 231 4403,4 / 230,231,232 4394 / 221,222,223, 225,228 6503 / 222,224,228,229

G3. Settlement and Squat

A settlement and squat measurement was taken on March 17, 1988, DOY 077, at Little Creek, VA. A level was set up on the shore and used to sight readings on a staff located on the RUDE bridge wing. The ship was initially observed dead in the water, allowing the shore party to observe the static height. The RUDE was then run past the level at varying speeds and the heights recorded. Listed below are the settlement and squat correctors observed on March 17, 1988 DOY 077.

Settlement and squat values are applied to the data through the HDAPS Offset Table. This table allows 5 data points to be entered for S&S values. The first and last data points on this table are entered for speeds slower and faster (respectively) than those at which the RUDE operates. These end values are only filler points in the table, as S&S corrector values were only calculated for 3 data points, within the range of speeds at which the RUDE operates. *Raw Settlement and Squat data can be found in Appendix IV, titled CORRECTORS.

<u>Engine Speed (RPM)</u>	<u>Knots</u>	<u>Meters/Second</u>	<u>S & S Corrector</u>
200	4.6	2.4	0.15 Ft. .04 M
300	7.0	3.6	0.48 Ft. .15 M
400	9.0	4.6	0.82 Ft. .25 M

* Filed with original field data.

G4. Heave, Roll, Pitch

Heave, roll and pitch were measured by the Datawell B.V. Sensor commonly known as the "Hippy". The HDAS software applies Hippy data when in the echosounding mode only. All data gathered during on-line side scan operations does not have heave applied. All echo suounding development data was conducted in the echosounding mode. Therefore heave is applied to this data.

G5. VESSEL DRAFT

Transducer draft marks were painted on the side of the RUDE during the 1988 winter inport dry dock period. These marks are located even with the 100 kHz transducer at frame 13.5. Each mark is 1 inch wide, with three inch spacing between marks. The mark corresponding to 7 feet above the transducer is denoted by pointed ends (this is the fourth mark from the top). Transducer draft can be read directly from these marks in calm weather by observation from small boat.

The transducer location was also measured from the top of the bridge wing wooden rail. This distance is 19.1 feet and correspondes to frame number 13.5. To calculate the transducer draft using these values subtract the distance from the water to the wooden rail from 19.1 feet. This value is the actual draft of the transducer. Either of these methods can be used to measure transducer draft.

Effective transducer draft is determined by measuring from the wooden rail at frame 13.5 to the bottom and subtracting 19.1 feet. This measurement yields the mean height of transducer off the bottom. The digital depth recorded at the time of the lead line readings is corrected for sound velocity and subtracted from the height of transducer yielding an instrument error. The effective transducer height is the sum of the instrument error and the physical transducer draft (as measured in the first paragraph above). Ten readings using this method were averaged to obtain the value for effective transducer draft.*Appendix IV contains computations of this measurement.

H. HORIZONTAL POSITION CONTROL *See section 2. of the Evaluation Report.*

H1. ELECTRONIC POSITIONING CONTROL

Positioning information for this survey was provided by the Motorola Mini-Ranger Falcon 484 microwave positioning system. Several control stations were established which provided good Lines Of Position (LOP) geometry throughout the survey. There were no significant positioning problems experienced in this survey. In some areas, classical phase cancellation interference was encountered causing the loss of one or more LOP's from the HDAPS Least Square solution. An algorithm incorporated into the HDAPS software selectively evaluated all four incoming LOPs along with the heading of the vessel, and used only that data which appeared to be accurate. The Minimum Accepted Signal Strengths (MASS) were predetermined from the baseline calibration;

**filed with original field records.*

these are supplied to the HDAPS Program in the C-O tables. Any LOP received by HDAPS below the programmed MASS would be disregarded and not applied to the positioning algorithm. This greatly reduced the effect of occasional "flyers" and the associated position busts.

All of the Motorola Mini-Ranger Falcon 484 codes were calibrated with each of the two Receiver / Transmitter units and with each of the two Range Processing Units to assure the accuracy that was required for the survey. This calibration was conducted on July 6, 1988, at Fentress Air Station near Norfolk.*See Appendix IX.

Position quality is checked daily through a unique feature which has been added to the HDAPS system menu. A graphic display on the screen shows the LOP's for all stations selected, the geometry of the stations in relation to the ship, angles of intersection between stations, and a 95% Error Circle Radius. The Error Circle Radius is an approximation of positional accuracy and is a function of LOP geometry and assumed standard errors. It is a theoretical value which is computed without any real-time range data. Station numbers and residual values are also displayed. Residuals are a measure of LOP accuracy. If a significant error exists in one or more of the LOP's, the problem will be reflected in one or more of the LOP's having a large residual value.

Critical system checks were computed using the standard three point sextant fix to four known visible landmarks in the survey area. The angles derived from the three point sextant fix were then entered into the HDAPS Computer for comparison to the ranges received by the Mini-Ranger system. These checks in accordance with the project instructions were only made when at least one of the following conditions existed:

- 1) Once a month on a given electronic control network.
- 2) Each time the electronic control scheme changed.
- 3) When the maximum residual value consistently (5 minutes) exceeds the larger of the following two values:
 - i) 0.5 mm at the scale of the survey
 - ii) 3 Meters

In accordance with the project instructions a closing base line calibration of the Mini-ranger transponders was not required.

H2. GEODETIC POSITIONING CONTROL *see section 2.c. of the Evaluation Report.*

The horizontal datum for this project was the North American Datum of 1983. Four control stations were used as Mini-ranger locations on this survey.

Listings of the control stations used during this project under the

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NAD 83 were provided to the RUDE by N/MOA2222 prior to the start of the project. This listing is from Job No. HC-8603 conducted by N/MOA2222 in support of project OPR-B660-86-RU/HE.*The control station list is provided in Appendix III along with a†control station reference list that was generated to aid in the correlation of station names, numbers, and positions. The source for the positions used to control the work on these items was through N/MOA2222.

† Appended to the Descriptive Report

I. AUTOMATED DATA PROCESSING

I1. Overview

All data collected during this survey was processed using HDAPS. A general description of the steps involved in the data processing sequence is discussed below. In addition, we also present any unique problems which we encountered while working on a particular AWOIS item. Most of the steps involved in the data processing sequence apply only to those items which are disprovals and therefore require accurate post-processing coverage plots. AWOIS items which are investigated and positively identified require only an accurate determination of their detached position and least depth. In conjunction with the AWOIS investigations, we also gathered depth information which allowed us to make general comparisons with prior surveys conducted in these areas.

When running survey operations on-line, all HDAPS data were stored on a raw data tape. The HDAPS tape number is a five digit number assigned according to day of year the tape was first loaded, the tape number for that particular day, and whether it is a raw (0) or smooth tape (1). For instance, the second raw tape loaded on DOY 147 would have the tape number 14720. Concurrently with HDAPS data collection, we were also acquiring side-scan and echosounder traces, an on-line plot of our survey, and a raw data printout of all selected soundings by survey line along with associated data (see raw data printout). At the completion of a day's work, we scanned all side-scan and echosounder traces identifying potential targets and noting any coverage deficiencies. We then manually summarized the data collected in a Daily and Post Processing Data Abstract and a Side Scan Sonar Target Abstract.*These abstracts are included in Appendix VIII.

The Daily and Post Processing Abstracts are grouped by AWOIS item and are a line by line summary of the survey run for that item. For all lines run, this abstract includes the day of year, the raw tape number, the fix numbers for that line, and the sidescan range which was run. In addition, for all data which was smooth plotted this abstract will list the smooth tape number and the effective sidescan range. Finally, any pertinent comments are entered in the far right column of the abstract. The Side Scan Sonar Target Abstracts are also grouped by AWOIS item and are used to account for any potential targets identified on either the sidescan or echosounder traces.

*Filed with original field records.

In order to begin post-processing the raw data, we had to transfer the data from the raw data tape onto the hard disk. Although we supposedly had the ability to transfer and access data by fix number, we found that this method allowed only single line transfers (which is time consuming when dumping a tape onto hard disk), and also resulted in missing data. For this reason, we still used the Data Set Number (DSN) when transferring and accessing data. After transferring data to hard disk, we then obtained a hard disk catalog which listed all the data currently stored on the hard disk along with the renumbered DSNs. HDAPS still does not store fix data on tape for detached positions, so all detached position data is on the raw data printout only. We then performed any edits necessary, which at this time consists mainly of our ability to hard smooth over any positioning busts and inserting echosounder peaks. Basically, a hard smooth consists of dead-reckoning between two good fixes over any major positioning busts. These edits were noted on the hard disk catalog and the raw data printouts (by bracketing the fixes which were hard smoothed).

After editing, we then smooth plotted the data as required. In order to illustrate our side-scan coverage, we produced multiple 100% swathplots for all areas surveyed. Using an HDAPS feature, we were able to vary the effective swath range within plots. For each line that was smooth plotted, we have listed the effective swath range for that line in the Daily and Post Processing Abstract. We derived this effective swath range by examining the side-scan traces and determining the minimum swath range for each line. The multiple swathplots, when viewed collectively, provide an accurate picture of the side-scan coverage obtained around each AWOIS item. In addition to the coverage plots, we also plotted several echo-sounding lines using the HDAPS Depthplot function. These depthplots were used to make comparisons with prior surveys. Because all AWOIS data was gathered in the sidescan mode, we were unable to collect heave, pitch, and roll data. (Currently, heave data can be collected only when HDAPS is in the Echosounder mode.) In cases where heave appeared to be significant, we manually corrected the depth using the HDAPS edit depth function.

After the data on hard disk was edited and plotted, it was then transferred back to a tape which became the edited data tape. Because only one tape file could be stored on the hard disk at a time, it was necessary to perform multiple iterations of the data transfer process when raw data for an AWOIS item was stored on multiple tapes. Finally, we loaded the entire edited tape onto the hard disk and obtained a hard disk catalog of this information; this provided a line by line summary of all the data stored on the edited tape. The following section discusses the results of the edited data lists and presents any other data processing irregularities associated with each of the AWOIS items.

I2. AWOIS 4400

Raw data for this item was stored on Tape 20800. All edited and plotted data was successfully transferred onto Tape 21011. A line by line data summary for Tape 21011 is included in Appendix VIII.*

I3. AWOIS 4403, 4404

Raw data for these items were stored on Tape 20900. All edited and plotted data was successfully transferred onto Tape 23012. A line by line data summary for Tape 23012 is included in Appendix VIII.*

I4. AWOIS 4394

Raw data for this item was stored on Tape 21010. Several initial lines of data for this item were assigned duplicate fix numbers with AWOIS 4400. Using the HDAPS Block Edit function these duplicate fixes were reassigned a much higher unused block of fix numbers. As such, the early lines of data begin with higher fix numbers than the later lines. All edited and plotted data was successfully transferred onto Tape 22911. A line by line data summary for Tape 22911 is included in Appendix VIII.*

I5. AWOIS 6503

Raw data for this item was stored on Tape 20911. As with AWOIS 4394, several initial lines of data for this item were assigned duplicate fix numbers with AWOIS 4400. Using the HDAPS Block Edit function these duplicate fixes were also reassigned a much higher unused block of fix numbers. As such, the early lines of data begin with higher fix numbers than the later lines. All edited and plotted data was successfully transferred onto Tape 23011. A line by line data summary for Tape 23011 is included in Appendix VIII.*

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J. COMPARISONS WITH PRIOR SURVEYS *See section 6. of the Evaluation Report.*

Sounding data from each AWOIS item was plotted at a scale of 1:10,000 and compared with 4 prior surveys as listed in the table below.

<u>Survey No.</u>	<u>Date</u>	<u>Scale</u>	<u>AWOIS No.</u>
H-1732A	1914	1:20,000	4403 4404 4400 6503
H-5544	1934	1:10,000	4403 4404
H-5547	1934	1:10,000	6503
H-5407	193 ³ 4	1:10,000	4394

Agreement between the present survey and all prior surveys is within one foot. Shoaler soundings were found on the present survey. The majority of the sounding line spacing on the prior surveys is 50 meters. With this line spacing several shoal soundings on rocks were not detected on the prior surveys. These rocks and shoal soundings have been detected and fully investigated on this survey with 200% bottom coverage via side scan sonar. *Concor.*

K. AWOIS ITEM INVESTIGATION REPORTS

AWOIS ITEM NUMBER: 4394 *See also section 7. a. 1) of the Evaluation Report.*

I. Area of Investigation

- (a) State / County: New York / Nassau
- (b) Sublocality: 1.5 nm SW of Execution Rocks Lighthouse
- (c) Method of Positioning: Falcon Mini-Ranger

II. Description

AWOIS 4394 is reported to be a 26 foot hull sunken in position Lat 40° 51' 50" N, Long 073° 46' 00" W in 29 feet of water. Survey requirements are for 200% sidescan sonar coverage at a 500 meter radius and diver investigation and least depth if found.

III. Procedures

Side scan coverage for AWOIS 4394 began on 28 July (DOY 210). Fourteen contacts were identified from the side scan and echo sounder coverage. All contacts were plotted on a contact sheet and a detailed echosounder investigation was conducted on each contact. Echosounding developments were run with line spacing that would allow a maximum theoretical error of .5 feet if the high point was exactly mid point between the lines. Due to the polluted water in the work area diving was not possible on this item.

Several contacts were indeed the same object. In all, seven⁽⁷⁾ significant targets were investigated and least depths were obtained on each of these targets. All least depths were obtained by 100% echosounder coverage of the bottom in the vicinity each target. To calculate these least depths all fathograms were scanned for the shoalest sounding on each line. Corrections for tides, sound velocity and vessel draft were applied to these shoal soundings. Presently HDAS does not apply all corrections properly to plotted soundings. The exact cause of this problem is not apparent. The difference between HDAS plotted soundings and those calculated by hand are on the order of one foot. HDAS also uses a rounding function which plots soundings in feet and does not include tenths. All least depths were calculated by hand to obtain depths to the nearest tenth of a foot. *Sounding problems resolved during office processing.*

To portray the location of each least depth, the echosounding development line containing that depth was plotted on the contact plot sheet. This sheet gives a graphic representation of the least depth of each target. Note that the true least depth to the nearest tenth of a foot is annotated for each target.

IV. TARGET INVESTIGATION

TARGET: 4394 A ✓

(a) This item was first identified on the sonargram as contact number 1030.28P, it was plotted on the contact sheet as A04. The sonargram indicated that the object rose 5 feet off the bottom in 35 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 24.5 feet.

(b) DESCRIPTION OF TARGET FOUND: The initial sonogram shows this object to be a rock approximately 7 meters wide. Echosounding lines over this contact show the object on 3 lines with line spacing of 3 meters. The fathogram shows this rock to be 5 feet above the bottom.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394A be charted as a 24 ~~feet~~^{feet} sounding over a rock at the prescribed position. *Concur, chart as a rock with a depth of 24 ft (24 Rk). see also paragraph (e).*

(d) LEAST DEPTH:

Taken by DSF 6000 Echosounder on Aug. 9, 1988 (DOY: 222)
(S/N 047)

TIME: 1211(L); 1611(Z) LEAST DEPTH READING (FT): 22.1 ✓

LEAST DEPTH READING	(FT) :	22.1 ✓
VELOCITY CORRECTOR	(FT) :	0.8 ✓
EFFECTIVE DRAFT COR.	(FT) :	7.83
PREDICTED TIDAL ZONE COR.	(FT) :	-5.9 -6.2
ACTUAL LEAST DEPTH (FT)	:	24.8 ✓

(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 581.10 ✓ E: 91594.4 N: 12164.2

Calculated G.P.: Lat: 40° 51' ^{34.21" ✓} 43.189" N ✓
Long: 073° 45' 58.907" W
95

TARGET: 4394 B ✓

12366

(a) This item was first identified on the fathogram as contact number 1025.07F, it was plotted on the contact sheet as A03. The contact was again detected on the fathogram as contact 1032.12F and plotted on the contact plot as A05. The initial fathogram indicated that the object rose 5 feet off the bottom in 38 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 18.4 feet.

(b) DESCRIPTION OF TARGET FOUND: The initial sonogram shows this object to be a shoal. Echosounding lines over this contact also indicate a shoal as the peak flattens out as the sounding lines progress to the northeast. *Chart 12366 adequately represents this shoal. Buoy C"3" is positioned near this item and properly identifies this shoal. * Do not Concur

(c) RECOMMENDATIONS: This shoal is properly indicated on the chart. *Do not concur. See section 7.2.1 a) of the Evaluation Report.*

(d) LEAST DEPTH:

Taken by DSF 6000 Echosounder on Aug. 12, 1988 (DOY: 225)
(S/N 047)

TIME: 1433(L); 1833(Z) LEAST DEPTH READING (FT): 16.1

LEAST DEPTH READING (FT) : 16.1
VELOCITY CORRECTOR (FT) : 0.4 .6
EFFECTIVE DRAFT COR. (FT) : 7.9 .3
~~PREDICTED~~ TIDAL ZONE COR. (FT) : ~~6.0~~ 5.8

ACTUAL LEAST DEPTH (FT) : 18.2 (18.0 plotted)

✓ (e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 758.50 E: 91313.7 N: 12375.9

Calculated G.P.: Lat: 40° 51' ^{40.95"} ~~41.041"~~ N
Long: 073° 46' ^{710"} 10.903" W

TARGET: 4394 C ✓

12366

(a) This item was first identified on the fathogram as contact number 1017.32F, it was plotted on the contact sheet as A01. The contact was again detected on the fathogram as contact 1037.23F and plotted on the contact sheet as A06. The initial fathogram indicated that the object rose 10 feet off the bottom in 37 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing. Echosounding data between position numbers 689 - 747 which spans an area 42 meters wide show this target to be a shoal. The limits of this shoal are well defined on the fathogram. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 21.6 feet.

(b) DESCRIPTION OF TARGET FOUND: The initial fathogram shows this object to be a peak with no indication on the sonogram. Echosounding lines over this contact also indicate a shoal as the peak flattens out as the sounding lines progress away from the least depth. this shoal appears on the sonogram at position 781.25. The width is 42 meters as determined from the echosounding between position numbers 689 - 747.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394C be charted as a sounding of 21.6 feet at the prescribed position. *Do not Concur. See section 7.a.i) b) of the Evaluation Report.*

(d) LEAST DEPTH:

Taken by DSF 6000 Echosounder on 8 Aug., 1988 (DOY: 221)
(S/N 047)

TIME: 1326(L); 1726(Z) LEAST DEPTH READING (FT): 16.2

LEAST DEPTH READING (FT) : 16.2
VELOCITY CORRECTOR (FT) : 0.4 .6
EFFECTIVE DRAFT COR. (FT) : 7.8 .3
~~PREDICTED~~ TIDAL ZONE COR. (FT) : -2.8 .0

ACTUAL LEAST DEPTH (FT) : 21.6 ^{2.1} (reduced to 22 ft)

✓(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 425.24 E: 91401.0 N: 12565.1

Calculated G.P.: Lat: 40° 51' ^{46.85"} ~~47.178"~~ N
Long: 073° 46' 07.185" W
^{130"}

TARGET: 4394 D ✓

12306

(a) This item was first identified on the sonargram as contact number 1019.05P, it was plotted on the contact sheet as A02. The contact was detected 3 more times on the sonargram as contact 278.31P, 285.24P, 289.24P these were plotted on the contact sheet as A11, A12, and A13 respectively. The sonargram indicated that the object rose 3.5 feet off the bottom in 37 feet of water. The fathogram representing the least depth shows the boat to extend 4 feet off the bottom. Echosounder coverage was conducted over this target with 3 meter line spacing. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 27.1 feet. The side scan sonar tow fish was towed past the object on oblique courses to obtain various views of the boat. No masts or spars were identified.

(b) DESCRIPTION OF TARGET FOUND: The initial sonargram shows this object to be a boat approximately 9x4 meters. Subsequent traces from the sonargram confirm that target 4394D is a boat with the approximate dimensions stated above. By the general shape of the target on the sonargram this item appears to be a sail boat. Echosounding lines over these contacts indicate a steep canyon with a large rock at the bottom (contact plot no.s A12 & A13). The wreck is about half way up the side of the canyon (contact plot no.s A02 & A03). The least depth over this wreck is 44.5 feet. This wreck is insignificant as the canyon is extremely steep and shoaler depths lie only 20 meters away. The least depth obtained from the echosounding of the area is on the edge of the canyon approximately 50 meters from the wreckage. It is felt that this wreck is AWOIS item 4394 because of its size, shape and location. *Concur*

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394D be charted as a sounding over a wreck with a least depth of 27 feet at the prescribed position. This wreck was located and lies in a steep canyon, it is not a danger to navigation as the surrounding depths are shoaler. *Concur. Chart as a sunken wreck with a depth of 26 feet (26 Wk) in the position determined by the present survey*

(d) LEAST DEPTH: *See paragraph (c). no danger curve or tint*
Taken by DSF 6000 Echosounder on Aug.09, 1988 (DOY: 222)
(S/N 047)

TIME: 1108(L); 1508(Z) LEAST DEPTH READING (FT): 25.0

LEAST DEPTH READING (FT) : 25.0
VELOCITY CORRECTOR (FT) : ~~1.0~~ .8
EFFECTIVE DRAFT COR. (FT) : ~~7.9~~ 7.3
~~PREDICTED~~ TIDAL ZONE COR. (FT) : ~~-6.8~~

ACTUAL LEAST DEPTH (FT) : ~~27.1~~ 26.3

✓(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 559.20 E: 91176.1 N: 12602.0

Calculated G.P.: Lat: 40° 51' 48.³⁸66" N
Long: 073° 46' 16.⁸³90" W

TARGET: 4394 E ✓
12366

(a) This item was first identified on the fathogram as contact number 375.40F, it was plotted on the contact sheet as A14. The fathogram indicated that the object rose 3.5 feet off the bottom in 34 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 34.1 feet.

(b) DESCRIPTION OF TARGET FOUND: The fathogram shows this item to be a rock protruding 3 feet from the wall of a steep canyon. Four sounding lines were run over this rock at 3 meter spacing. The rock did not show on the two outer lines.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394E be charted as a sounding over a rock of $3\frac{1}{2}$ feet at the prescribed position. *Concur. Chart as a submerged rock with a least depth of 33 feet (33 Rk) in the position determined by the present survey.*

(d) LEAST DEPTH: *Survey. See paragraph (c).*
Taken by DSF 6000 Echosounder on Aug.09, 1988 (DOY: 222)
(S/N 047)

TIME: 1107(L); 1507(Z) LEAST DEPTH READING (FT): 31.8

LEAST DEPTH READING (FT) : 31.8
 VELOCITY CORRECTOR (FT) : 1.2 .0
 EFFECTIVE DRAFT COR. (FT) : 7.4 .3
~~PREDICTED~~ TIDAL ZONE COR. (FT) : ~~-6.8~~ .8
 ACTUAL LEAST DEPTH (FT) : ~~34.1~~ 33.3

(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 673.40 E: 91166.6 N: 12625.1

Calculated G.P.: Lat: 40° 51' 49.²⁶~~114~~" N
 Long: 073° 46' 17.³⁶~~197~~" W

12300-NL

TARGET: 4394 F ✓

(a) This item was first identified on the sonargram as contact number 1064.01P, it was plotted on the contact sheet as A07. The contact was again detected on the fathogram as contact 328.34F, and was plotted on the contact sheet as A08. The sonargram indicated that the object rose 3.5 feet off the bottom in 32 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 30.6 feet. The fathogram indicated a height of 4 feet above the bottom. Side scan images were gathered from various angles to better identify any objects protruding from the wreck. No masts or spars were sighted.

(b) DESCRIPTION OF TARGET FOUND: The initial sonogram shows this object to be a boat approximately 7x4 meters. Subsequent traces from the sonargram confirm that target 4394F is a boat with the approximate dimensions stated above. The sonargram traces are not adequate to determine the hull type of this vessel. *Concur. Target has wreck-like characteristics*

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394F be charted as a sounding over a wreck of 30 feet at the prescribed position. The surrounding depths in the area are 32 to 34 feet. This is not a hazard to surface navigation and should not be charted as such. *Concur. Chart as a SUNKEN wreck with a least depth of 29 feet (29wk) in the position determined by the present survey. See paragraph (e).*

(d) LEAST DEPTH:

Taken by DSF 6000 Echosounder on Aug.12, 1988 (DOY: 225)
 (S/N 047)

TIME: 0929(L); 1329(Z)

LEAST DEPTH READING (FT): 25.2

LEAST DEPTH READING (FT) : 25.2
 VELOCITY CORRECTOR (FT) : 0.8
 EFFECTIVE DRAFT COR. (FT) : 7.5 .3
~~PREDICTED~~-TIDAL ZONE COR. (FT) : ~~-2.9~~ -4.0

 ACTUAL LEAST DEPTH (FT) : ~~30.6~~ 29.3

(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 642.05 E: 91851.0 N: 12540.0

Calculated G.P.: Lat: 40° 51' 46.⁴³381" N
 Long: 073° 45' 47.³⁸968" W

TARGET: 4394 G

(a) This item was first identified on the sonargram as contact number 298.00S, it was plotted on the contact sheet as A09. The contact was again detected on the sonargram as contact 301.20S, and was plotted on the contact sheet as A10. The sonargram indicated that the object rose 8 feet off the bottom in 41 feet of water. Echosounder coverage was conducted over this target with 3 meter line spacing between position numbers 428 - 513 and 650 - 658. The fathograms were scanned for peaks and correctors were applied to obtain a least depth of 40.4 feet. The echosounding is extensive in the area. The fathogram shows target 4394G on only 4 lines. This contact was investigated fully with echosounder. The fathometer indicated a height of 3 feet above the bottom. Images were obtained at various angles with the side scan to identify any objects protruding from the wreck. None were found.

(b) DESCRIPTION OF TARGET FOUND: The initial sonogram shows this object to be a boat approximately 7x4 meters. Subsequent traces from the sonargram confirm that target 4394G is a boat with the approximate dimensions stated above. The sonargram traces are not adequate to determine the hull type of this vessel.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 4394G be charted as a sounding over a wreck of 40 feet at the prescribed position. This boat is not a hazard to surface navigation and should not be charted as such. *Concur. Chart as a sunken wreck with a depth of 39 feet (39 Wk) in the position determined by the present survey. See paragraph (e). no danger curve on tint*

(d) LEAST DEPTH:
 Taken by DSF 6000 Echosounder on 8 Aug., 1988 (DOY: 221)
 (S/N 047)

TIME: 1529(L); 1929(Z) LEAST DEPTH READING (FT): 32.0

LEAST DEPTH READING (FT) : 32.0
 VELOCITY CORRECTOR (FT) : 1.2 .0
 EFFECTIVE DRAFT COR. (FT) : 7.5 .3
~~PREDICTED~~ TIDAL ZONE COR. (FT) : ~~-0.7~~ -1.0

ACTUAL LEAST DEPTH (FT) 19 : ~~40.4~~ 39.3

✓(e) POSITION OF TARGET AND FIX NUMBERS: This position was taken from on-line echosounding data.

HDAS FIX NO: 505.37 E: 92062.0 N: 12764.0

Calculated G.P.: Lat: 40° 51' 53.⁷⁴650" N ✓
Long: 073° 45' 38.⁸³968" W ✓

V. AWOIS ITEM 4394 SUMMARY ✓

Fourteen contacts were identified within the search area of AWOIS item 4394. Echosounder developments were conducted on all significant contacts. Least depths were determined from the echosounding development for 7 targets. Specific recommendations as to charting of these items is contained in the recommendation section for each target. It is recommended that the "hazardous wreck PA" symbol representing AWOIS 4394 be removed from the chart. *Concur.*

AWOIS ITEM NUMBER: 4400

I. Area of Investigation

- (a) State / County: New York / Nassau
- (b) Sublocality: 2.9 nm NE of Execution Rocks Lighthouse
- (c) Method of Positioning: Falcon Mini-Ranger

✓ II. Description

Prior survey FE293/86SS--OPR-B660 RU/HE-86 indicates AWOIS item 4400 as a P A wreck at Lat 40° 53' 18.0" N Long 073° 40' 36.0" W. The present survey requires 200% sidescan sonar coverage (to supplement the 200% coverage from work conducted in 1986) with echosounding development or diver investigation and determination of least depth if found. We were also required to investigate a suspicious echosounder trace that had been detected during the 1986 work on this item.

III. Procedures

Initial side scan coverage for AWOIS 4400 was conducted from 07/26/88 (DOY 208) thru 07/29/88 (DOY 211). Survey operations were hampered during this time period by heavy sport fishing traffic concentrated within the search area. We also experienced slight water column disturbances which limited our effective side scan range. During this initial period, 100% coverage was obtained along both a north/south and an east/west orientation. In addition, we also ran a line which duplicated the line on which the suspicious echosounder trace was noted from the earlier survey. No evidence of a feature was *Concur* noticeable. During this 200% coverage, only one contact was identified and additional recon lines showed it to be insignificant. Several of the "donut-like" features described in the prior survey were noted throughout the search area and provided periodic side scan confidence checks. These features appeared only as slight depressions when passed over with the echosounder. Upon a later review of this initial data, we noted several instances where the effective side scan range was less than what we had originally plotted. Because of this, we ran several additional lines on 08/17/88 (DOY 231) in order to complete the required coverage. No additional contacts were identified during this later coverage.

IV. AWOIS ITEM 4400 SUMMARY

In conjunction with the prior survey, AWOIS Item 4400 is considered disproved by 400% side scan coverage. During this coverage, no significant contacts were identified within the required search area. *Concur. See also section 7. a. 2) of the Evaluation Report.*

AWOIS ITEM NUMBER: 4403, 4404 See section 6.6 of the Evaluation Report.

I. Area of Investigation

- (a) State / County: New York / Nassau
- (b) Sublocality: 4.2 nm NE of Execution Rocks Lighthouse
- (c) Method of Positioning: Falcon Mini-Ranger

✓ II. Description

AWOIS Items 4403 and 4404 were discovered in Survey H5078/30WD Project No. 64. AWOIS 4403 is described as a wreck, in 25 feet of water, located in Lat 040° 53' 34.0" N, Long 073° 38' 54.30" W. Survey requirements for this item are disproval through 200% sidescan sonar coverage at a 75 meter search radius, with diver investigation and least depth if found. AWOIS 4404 was described as a grounding, in 23 feet of water, located in Lat 040° 53' 36.5" N, Long 073° 38' 48.0" W. Survey requirements for this item are disproval through 400% sidescan sonar coverage at a 200 meter radius with diver investigation and least depth if found.

III. Procedures

Because of their close proximity, the side scan investigations for these two items were run concurrently. All survey lines were run to encompass the required search areas for both items. Initial side scan coverage was conducted on 7/29/88 (DOY-211) during which time three significant targets were identified. After investigating these targets with diver investigations, additional side scan coverage was conducted on 8/17/88 (DOY-230) in order to obtain the required 400% coverage for AWOIS 4404. During this search, three additional significant targets were identified. The results of the diver investigations for all six significant targets are presented in the following section.

IV. Target Investigation

TARGET: 4403A ✓

(a) DIVE SUMMARY: On 8/3/88 a marker buoy was deployed and divers descended down this line to a depth of approximately 40 feet. Divers conducted a 10m circle search about the buoy anchor and quickly discovered a large rock. The buoy anchor was moved to this location and a 10m constant depth circle search was conducted about the high point of this rock. No shoaler obstructions were encountered and a pneumo depth gauge least depth was obtained from this high point.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403A was found to be a large rock approximately 8 feet in diameter and rising 7 feet off

the bottom. It was an isolated rock resting in 40 feet of water on a firm gravelly bottom.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403A be charted as a sounding over a rock with a least depth of 37³ feet at position 40° 53' 43.181" N, 073° 38' 53.469" W.
Concur. Chart as a submerged rock with a depth of 33 feet. (33 Rk)

(d) LEAST DEPTH:

Taken by pneumofathometer on 03 August, 1988 (DOY: 216)
 (S/N 8705140N)

1) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): 36.0
2) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): 36.0
3) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): <u>35.8</u>

AVERAGE LEAST DEPTH (FT): 35.9

AVERAGE PNEUMO DEPTH (FT)	: 35.9
PNEUMO GAUGE CORRECTOR (FT)	: 0.1 .2
PREDICTED TIDAL ZONE COR (FT)	: 4.8 3.0
ACTUAL LEAST DEPTH (FT)	: 31.2 32.1

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) FIX NO: 232	E: 101556.8	N: 16137.3
2) FIX NO: 233	E: 101558.0	N: 16139.5
3) FIX NO: 234	E: 101559.7	N: 16142.6
4) FIX NO: 235	<u>E: 101554.6</u>	<u>N: 16135.2</u>

AVERAGE D.P.: E: 101557.3 N: 16138.6

Calculated G.P.: Lat: 40° 53' 43.181" N
 Long: 073° 38' 53.469" W

(f) LORAN C RATES:	<u>9960-W</u>	<u>9960-X</u>	<u>9960-Y</u>	<u>9960-Z</u>
	15364.5	26896.5	43938.8	59992.7
	15364.6	26896.4	43938.8	59992.8
	<u>15364.6</u>	<u>26896.5</u>	<u>43938.8</u>	<u>59992.8</u>
<u>AVERAGE LORAN:</u>	15364.6	26896.5	43938.8	59992.8

TARGET: 4403B ✓

(a) DIVE SUMMARY: On 8/4/88 (DOY 217) a marker buoy was deployed and divers descended down this line to a depth of almost 40 feet. A large rock was located close to the buoy anchor. The anchor was moved to the rock and the divers then conducted a 10m constant depth circle search about this rock. Several additional rocks were identified during this search, however none had shoaler depths than the initial one. A pneumo depth gauge least depth was obtained from the high point on this rock.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403B was found to be a large rock approximately 12 feet in diameter and rising 6 feet off the bottom in 32 feet of water. The rock rested on a firm, gravelly bottom and was surrounded by many smaller rocks.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403B be charted as a sounding over a rock with a least depth of 28.7 feet at position $40^{\circ} 53' 36.042'' N$, $073^{\circ} 38' 51.955'' W$.
Concur. See also Section 6.6. of the Evaluation Report.

(d) LEAST DEPTH:

Taken by pneumofathometer on 04 August, 1988 (DOY: 217)
(S/N 8705140N)

1) TIME: 1316(L); 1716(Z)	LEAST DEPTH READING (FT): 28.4
2) TIME: 1316(L); 1716(Z)	LEAST DEPTH READING (FT): 28.4
3) TIME: 1316(L); 1716(Z)	LEAST DEPTH READING (FT): <u>28.6</u>

AVERAGE LEAST DEPTH (FT): 28.5

AVERAGE PNEUMO DEPTH (FT)	: 28.5
PNEUMO GAUGE CORRECTOR (FT)	: 0.0
PREDICTED TIDAL ZONE COR (FT)	: 3.0 -1.4
ACTUAL LEAST DEPTH (FT)	: 25.5 27.2

✓(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) FIX NO: 253	E: 101593.3	N: 15916.3
2) FIX NO: 254	E: 101592.8	N: 15918.5
3) FIX NO: 255	E: 101592.4	N: 15918.4

AVERAGE D.P.: E: 101592.8 N: 15918.4

Calculated G.P.: Lat: $40^{\circ} 53' 36.042'' N$
Long: $073^{\circ} 38' 51.955'' W$

(f) LORAN C RATES:	<u>9960-W</u>	<u>9960-X</u>	<u>9960-Y</u>	<u>9960-Z</u>
	15364.6	26895.8	43937.6	59992.4
	15364.6	26895.9	43937.6	59992.3
	<u>15364.6</u>	<u>26895.9</u>	<u>43937.6</u>	<u>59992.3</u>
<u>AVERAGE LORAN:</u>	15364.6	26895.9	43937.6	59992.3

TARGET: 4403C ✓

(a) DIVE SUMMARY: On 8/4/88 (DOY 217) a marker buoy was deployed and divers descended down this line to a depth of almost 50 feet. While conducting a 10m circle search about the buoy anchor, divers located a large steel object projecting off the bottom. The buoy anchor was moved to this object, and divers then conducted a 10m constant depth circle search about this point. No additional projections were encountered during this search, and divers obtained a pneumo depth gauge least depth from the high point on this object. After obtaining the least depth, divers conducted a thorough recon of the object obtaining measurements and attempting to identify the object.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403C was found to be a large steel object approximately 30 feet long by 12 feet wide rising 8 feet off the bottom. The object resembled a cement mixer in shape, but no positive identification was possible. The object was covered with heavy marine growth indicating that it had been down for many years. There were also several 3-inch angle iron mounting brackets protruding from the sides. It is felt that this is the boiler from the remains of the steamer GLEN ISLAND that sank in 1904. See page 35 of book SCUBA NORTHEAST, Vol. 2 by Robert G. Bachand, published by Sea Sports Publications.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403C be charted as a submerged obstruction with a least depth of 32 feet at position $40^{\circ} 53' 46.496''$ N, $073^{\circ} 38' 46.851''$ W.
Convey. Chart as a submerged obstruction with a depth of 32 feet (32 obstr.)

(d) LEAST DEPTH:

Taken by pneumofathometer on 04 August, 1988 (DOY: 217)
 (S/N 8705140N)

1) TIME: 1109(L); 1509(Z)	LEAST DEPTH READING (FT): 32.2
2) TIME: 1109(L); 1509(Z)	LEAST DEPTH READING (FT): 32.4
3) TIME: 1109(L); 1509(Z)	LEAST DEPTH READING (FT): <u>32.6</u>

AVERAGE LEAST DEPTH (FT): 32.4

AVERAGE PNEUMO DEPTH (FT) : 32.4
 PNEUMO GAUGE CORRECTOR (FT) : 0.0
 PREDICTED TIDAL ZONE COR (FT) : -0.2
 ACTUAL LEAST DEPTH (FT) : 32.2

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

- 1) FIX NO: 239 E: 101711.6 N: 16238.3
- 2) FIX NO: 240 E: 101712.1 N: 16239.6
- 3) FIX NO: 241 E: 101712.1 N: 16240.4
- 4) FIX NO: 242 E: 101712.2 N: 16242.5
- 5) FIX NO: 243 E: 101712.8 N: 16243.8

AVERAGE D.P.: E: 101712.2 N: 16240.9

Calculated G.P.: Lat: 40° 53' 46.496" N
 Long: 073° 38' 46.851" W

(f) LORAN C RATES:	<u>9960-W</u>	<u>9960-X</u>	<u>9960-Y</u>	<u>9960-Z</u>
	15363.8	26895.6	43939.1	59993.2
	15363.7	26895.6	43939.1	59993.2
	<u>15363.8</u>	<u>26895.7</u>	<u>43939.1</u>	<u>59993.2</u>
<u>AVERAGE LORAN:</u>	15363.8	26895.6	43939.1	59993.2

TARGET: 4403D

(a) DIVE SUMMARY: On 8/19/88 (DOY 232) a marker buoy was deployed and divers descended down this line to a depth of approximately 35 feet, locating a large rock adjacent to the buoy anchor. The buoy anchor was moved to the rock and a 10m constant depth circle search was conducted about the high point. Several additional rocks were identified but no shoaler obstructions were encountered and a pneumo depth gauge least depth was obtained from this high point.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403D was found to be a large rock approximately 7 feet in diameter and rising 5 feet off the firm bottom. It rested in 35 feet of water and was surrounded by several smaller rocks.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403D not be charted because of its close proximity to 4403B which is slightly shoaler. *Do not Consider. See section 6.6. of the Evaluation Report*

(d) LEAST DEPTH:

Taken by pneumofathometer on 19 August, 1988 (DOY: 232)
(S/N 8705140N)

- | | |
|---------------------------|---------------------------------------|
| 1) TIME: 1225(L); 1625(Z) | LEAST DEPTH READING (FT): 28.8 |
| 2) TIME: 1225(L); 1625(Z) | LEAST DEPTH READING (FT): 28.6 |
| 3) TIME: 1225(L); 1625(Z) | LEAST DEPTH READING (FT): <u>28.6</u> |

AVERAGE LEAST DEPTH (FT): 28.7

AVERAGE PNEUMO DEPTH (FT)	: 28.7
PNEUMO GAUGE CORRECTOR (FT)	: 0.1
PREDICTED TIDAL ZONE COR (FT)	: -3.1 -2.4
ACTUAL LEAST DEPTH (FT)	: 25.7 26.4

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

- | | | |
|-----------------|--------------------|-------------------|
| 1) FIX NO: 1618 | E: 101552.4 | N: 15869.5 |
| 2) FIX NO: 1619 | E: 101551.9 | N: 15870.0 |
| 3) FIX NO: 1620 | E: <u>101551.5</u> | N: <u>15870.3</u> |

AVERAGE D.P.: E: 101551.9 N: 15870.3

Calculated G.P.: Lat: 40° 53' 34.483" N
Long: 073° 38' 53.702" W

(f) LORAN C RATES:	<u>9960-W</u>	<u>9960-X</u>	<u>9960-Y</u>	<u>9960-Z</u>
	15364.7	26896.1	43937.4	59992.2
	15364.8	26896.1	43937.4	59992.2
	<u>15364.8</u>	<u>26896.1</u>	<u>43937.5</u>	<u>59992.3</u>
<u>AVERAGE LORAN:</u>	15364.8	26896.1	43937.4	59992.2

TARGET: 4403F ✓

Omit

(a) DIVE SUMMARY: On 8/18/88 (DOY 231) a marker buoy was deployed and divers descended down this line to a depth of 34 feet. Divers conducted a 10m circle search about the buoy anchor and quickly discovered a large rock. The buoy anchor was moved to this location and a 10m constant depth circle search was conducted about the high point of this rock. No shoaler obstructions were encountered and a pneumo depth gauge least depth was obtained from this high point.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403F was found to be a large rock approximately 11 feet in diameter and rising 5 feet off the firm bottom. It rested in approximately 35 feet of water and was surrounded by many smaller rocks.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403F be charted as a sounding over a rock with a least depth of 25 feet at position $40^{\circ} 53' 27.804''$ N, $073^{\circ} 38' 50.731''$ W.
Concur. Chart as a submerged rock with a depth of 25 feet (25 RK)

(d) LEAST DEPTH:

Taken by pneumofathometer on 18 August, 1988 (DOY: 231)
(S/N 8705140N)

1) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): 30.2
2) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): 30.2
3) TIME: 1305(L); 1705(Z)	LEAST DEPTH READING (FT): 30.3

AVERAGE LEAST DEPTH (FT): 30.2

AVERAGE PNEUMO DEPTH (FT) : 30.2

PNEUMO GAUGE CORRECTOR (FT) : 0.2

PREDICTED TIDAL ZONE COR (FT) : -5.3

ACTUAL LEAST DEPTH (FT) : 25.1

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) FIX NO: 1615	E: 101621.3	N: 15670.6
2) FIX NO: 1616	E: 101621.4	N: 15667.0
3) FIX NO: 1617	E: <u>101621.8</u>	N: <u>15655.3</u>

AVERAGE D.P.: E: 101621.5 N: 15664.3

Calculated G.P.: Lat: $40^{\circ} 53' 27.804''$ N
Long: $073^{\circ} 38' 50.731''$ W

(f) LORAN C RATES: 9960-W 9960-X 9960-Y 9960-Z

15364.7	26895.3	43935.2	59991.4
15364.7	26895.3	43935.2	59991.4
15364.7	26895.3	43935.2	59991.4

AVERAGE LORAN: 15364.7 26895.3 43935.2 59991.4

TARGET: 4403G

(a) DIVE SUMMARY: On 8/18/88 (DOY 231) a marker buoy was deployed and divers descended down this line to a depth of approximately 35

feet. Divers conducted a 10m circle search about the buoy anchor and quickly discovered a large rock. The buoy anchor was moved to this location and a 10m constant depth circle search was conducted about the high point of this rock. No shoaler obstructions were encountered and a pneumo depth gauge least depth was obtained from this high point.

(b) DESCRIPTION OF TARGET FOUND: AWOIS item 4403G was found to be a large rock approximately 7 feet in diameter and rising 3 feet off the bottom. It rested in approximately 35 feet of water and was surrounded by many smaller rocks.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that AWOIS item 4403X^G not be charted because of its close proximity to 4403F which is slightly shoaler. *Do not concur. Chart as a submerged rock with a depth of 26 feet (26 RH) should the scale of the chart allow.*

(d) LEAST DEPTH:

Taken by pneumofathometer on 18 August, 1988 (DOY: 231)
(S/N 8705140N)

1) TIME: 1354(L); 1754(Z)	LEAST DEPTH READING (FT): 32.2
2) TIME: 1354(L); 1754(Z)	LEAST DEPTH READING (FT): 32.2
3) TIME: 1354(L); 1754(Z)	LEAST DEPTH READING (FT): 32.4

AVERAGE LEAST DEPTH (FT): 32.3

AVERAGE PNEUMO DEPTH (FT)	: 32.3
PNEUMO GAUGE CORRECTOR (FT)	: 0.2
PREDICTED TIDAL ZONE COR (FT)	: -6.5
ACTUAL LEAST DEPTH (FT)	: 26.0

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) FIX NO: 1611	E: 101606.8	N: 15704.1
2) FIX NO: 1612	E: 101606.9	N: 15701.2
3) FIX NO: 1613	E: 101607.0	N: 15695.1

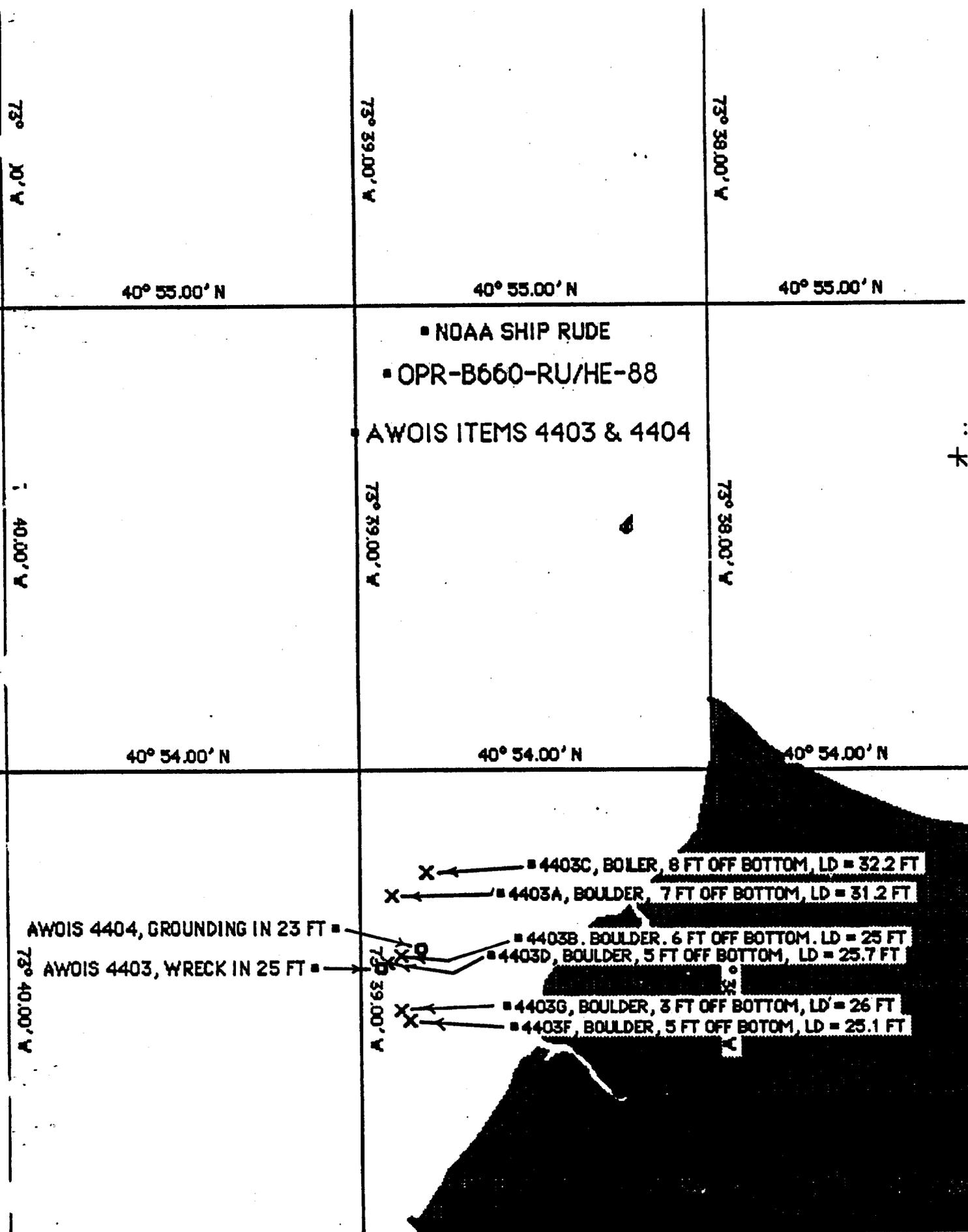
AVERAGE D.P.: E: 101606.9 N: 15700.1

Calculated G.P.: Lat: 40° 53' 28.965" N
Long: 073° 38' 51.354" W

(f) LORAN C RATES:	9960-W	9960-X	9960-Y	9960-Z
	15364.6	26895.5	43936.5	59991.8
	15364.6	26895.5	43936.5	59991.8
	15364.6	26895.5	43936.5	59991.8
AVERAGE LORAN:	15364.6	26895.5	43936.5	59991.8

IV. AWOIS ITEM 4403/4404 SUMMARY

The search area for 4403 and 4404 is littered with numerous boulders of various sizes. The sonargrams were reviewed and the most significant contacts were identified. In all six items were investigated by divers. Specific recommendations as to charting are contained in the individual target write-ups. A letter to the First Coast Guard District detailing two uncharted rocks was sent, requesting the positions be included in the Local Notice to Mariners. a copy of this letter is included. ~~in Appendix VII.~~ It is felt that AWOIS items 4403 and 4404 have been disproved and their symbols should be removed from the chart. *Concur. See also section 6.6. of the Evaluation Report.*



■ NOAA SHIP RUDE
 ■ OPR-B660-RU/HE-88
 ■ AWOIS ITEMS 4403 & 4404

X ← ■ 4403C, BOILER, 8 FT OFF BOTTOM, LD = 32.2 FT

X ← ■ 4403A, BOULDER, 7 FT OFF BOTTOM, LD = 31.2 FT

AWOIS 4404, GROUNDING IN 23 FT ■

■ 4403B, BOULDER, 6 FT OFF BOTTOM, LD = 25 FT

AWOIS 4403, WRECK IN 25 FT ■

■ 4403D, BOULDER, 5 FT OFF BOTTOM, LD = 25.7 FT

X ← ■ 4403G, BOULDER, 3 FT OFF BOTTOM, LD = 26 FT

X ← ■ 4403F, BOULDER, 5 FT OFF BOTTOM, LD = 25.1 FT

AWOIS ITEM NUMBER: 6503

I. Area of Investigation

- (a) State / County: New York / Nassau
- (b) Sublocality: 0.6 nm NE of Execution Rocks Lighthouse
- (c) Method of Positioning: Falcon Mini-Ranger

II. Description

AWOIS Item 6503 was reported to be a large obstruction lying in approximately 50 feet of water with a least depth of 35 feet. The obstruction is currently reported at position Lat 40° 53' 12.7" N Long 073° 43' 57.1" W. The survey required verification and least depth if found, or disproval through 200% side scan coverage at a 125 meter search radius.

III. Procedures

Side scan coverage for AWOIS 6503 was conducted from July 27, 1988 through August 16, 1988. 200% side scan coverage was obtained, four significant contacts were identified and investigated by divers. Divers made thorough searches of the 4 contacts and obtained least depths on each by pneumofathometer.

IV. TARGET INVESTIGATION

TARGET: 6503A ✓

(a) DIVE SUMMARY: Dive operations were made on AWOIS 6503 A on August 09, 1988 (DOY 222). Divers descended down a marker buoy line which was deployed on this date. The buoy drop was very near a prominent submerged rock. After placing the buoy weight on this rock, divers conducted a 60-foot radius constant depth circle search about this rock. Near the completion of this search they located a shoaler rock and transferred the buoy weight to this rock. A 60-foot radius circle search was conducted about this rock, and no shoaler obstructions were located.

(b) DESCRIPTION OF TARGET FOUND: Target 6503 A was found to be a rock, projecting 10 feet off the bottom. This rock is approximately 20 x 30 feet in dimensions.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that target 6503A be charted as a sounding over a rock of 26 feet at the prescribed location. *Concur. Chart as a submerged rock with a depth of 26 feet (26 BK) in the position determined by the present survey. See paragraph (e).*

(d) LEAST DEPTH:

Taken by pneumofathometer on August 09, 1988 (DOY 222).
(S/N 8705140 N)

1) TIME: 1509 (LOCAL) 1909 (GMT) LEAST DEPTH READING (FT): 27.6 ✓
TIME: 1509 (LOCAL) 1909 (GMT) LEAST DEPTH READING (FT): 27.6 ✓
TIME: 1509 (LOCAL) 1909 (GMT) LEAST DEPTH READING (FT): 27.8 ✓

AVERAGE LEAST DEPTH (FT): 27.7 ✓

AVERAGE PNEUMO DEPTH (FT) : 27.7 ✓
PNEUMO GAUGE CORRECTOR (FT) : 0.2 ✓
PREDICTED TIDAL ZONE CORRECTOR : -1.5 ✓

ACTUAL LEAST DEPTH (FT) : 26.4 ✓

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) HDAPS FIX NO: 602 ✓ E: 94302.8 ✓ N: 15275.9 ✓
2) HDAPS FIX NO: 603 ✓ E: 94302.3 ✓ N: 15276.6 ✓
3) HDAPS FIX NO: 604 ✓ E: 94302.2 ✓ N: 15278.7 ✓

AVERAGE D.P.: E: 94302.4 ✓ N: 15277.1 ✓

Calculated G.P.: Lat: 040° 53' 15.187" N ✓
Long: 073° 44' 03.382" W ✓

(f) LORAN-C RATES: 9960-W: 15397.3 ✓
9960-X: 26937.7 ✓
9960-Y: 43942.1 ✓
9960-Z: 59985.7 ✓

TARGET: 6503B ✓

(a) DIVE SUMMARY: Dive operations were made on AWDIS 6503B on August 16, 1988 (DOY 229). Divers descended down a marker buoy line which was deployed on this date. The buoy weight landed directly atop a very prominent rock. The divers conducted a 10 meter radius constant depth circle search about the high point of this rock. No rocks of shoaler depth were encountered, but divers noted several much smaller rocks surrounding the initial dive target.

(b) DESCRIPTION OF TARGET FOUND: Target 6503 B was found to be a rock which rose approximately 10 feet off the bottom. It appeared to be somewhat rounded and was nearly 12 feet in diameter.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that target 6503B not be charted as it plots very near a 19 feet sounding. Do not concur. CHART AS A SUBMERGED ROCK WITH A DEPTH OF 21 FEET (21RK) SHOULD BE

(d) LEAST DEPTH:

Scale of the chart allowed. See paragraph (e)
Taken by pneumofathometer on 16 August, 1988 (DOY 229)
(S/N - 8705140N)

1) TIME: 1314(L); 1714(Z) ✓ LEAST DEPTH READING (FT): 28.0 ✓
2) TIME: 1314(L); 1714(Z) ✓ LEAST DEPTH READING (FT): 28.0 ✓
3) TIME: 1314(L); 1714(Z) ✓ LEAST DEPTH READING (FT): 28.0 ✓

AVERAGE LEAST DEPTH (FT): 28.0 ✓

AVERAGE PNEUMO DEPTH (FT) : 28.0 ✓
PNEUMO GAUGE CORRECTOR (FT) : 0.0 ✓
~~PREDICTED~~ TIDAL ZONE COR (FT) : -7.1 ✓

ACTUAL LEAST DEPTH (FT) : ~~20.9~~ 21.1 ✓

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 1505 ✓ E: 94342.3 ✓ N: 15456.8 ✓
2) HDAS FIX NO: 1506 ✓ E: 94339.6 ✓ N: 15456.6 ✓
3) HDAS FIX NO: 1507 ✓ E: 94321.1 ✓ N: 15455.3 ✓

AVERAGE D.P.: E: 94334.6 ✓ N: 15456.2 ✓

Calculated G.P.: Lat: 40° 53' 20.994" N ✓
Long: 073° 44' 02.025" W ✓

(f) LORAN C RATES: 9960-w: 15397.4 ✓
9960-x: 26938.3 ✓
9960-y: 43943.0 ✓
9960-z: 59986.0 ✓

TARGET: 6503C ✓

(a) DIVE SUMMARY: Dive operations were made on AWDIS 6503C on August 11, 1988 (DOY 224). On this date a dive buoy was deployed and divers descended down this line to a depth of almost 40 feet. Upon reaching the dive buoy weight, a large rock was discovered nearby. The anchor was moved to the highest point on the item and a constant depth circle search of 10 meter radius was conducted about this point. There were many smaller boulders scattered about in the area. No other objects with shoaler depths were found. A least depth was obtained by pneumofathometer.

(b) DESCRIPTION OF TARGET FOUND: Target 6503C was found to be a large rock which rose off the bottom about 7 feet and is approximately 15 feet in diameter.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 6503C be charted as a sounding over a rock of 34² feet at the prescribed location. *Concur. Chart as a submerged rock with a depth of 32 feet (32 RK) in the position determined by the present survey. See paragraph (e).*

(d) LEAST DEPTH:

Taken by pneumofathometer on 11 August, 1988 (DOY 224)
(S/N 8705140N)

1) TIME: 1310(L); 1710(Z) ✓	LEAST DEPTH READING (FT): 38.2 ✓
2) TIME: 1310(L); 1710(Z) ✓	LEAST DEPTH READING (FT): 38.2 ✓
3) TIME: 1310(L); 1710(Z) ✓	LEAST DEPTH READING (FT): 38.2 ✓

AVERAGE LEAST DEPTH (FT): 38.2 ✓

AVERAGE PNEUMO DEPTH (FT)	: 38.2 ✓
PNEUMO GAUGE CORRECTOR (FT)	: 0.2 ✓
PREDICTED TIDAL ZONE COR (FT)	: 3.8 -6.6
ACTUAL LEAST DEPTH (FT)	: 34.6 31.8

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 619	E: 94332.1	N: 15030.1
2) HDAS FIX NO: 620	E: 94332.3	N: 15030.6
3) HDAS FIX NO: 621	E: <u>94332.6</u>	N: <u>15031.0</u>

AVERAGE D.P.: E: 94332.3 N: 15030.6

Calculated G.P.: Lat: 40⁰ 53' 07.196" N ✓
Long: 073⁰ 44' 02.096" W

(f) LORAN C RATES: 9960-w: 15397.4 ✓
9960-x: 26937.1 ✓
9960-y: 43940.9 ✓
9960-z: 59985.2 ✓

TARGET: 6503D ✓

(a) DIVE SUMMARY: Dive operations were made on AWDIS 6503 D on August 16, 1988 (DOY 229). On this date a dive buoy was deployed and divers descended down this line to a depth of almost 50 feet. Upon reaching the dive buoy anchor, a large mass of concrete was discovered nearby but which had no true discernable shape. The anchor was moved

to the highest point on the item and a constant depth circle search of 10 meter radius was conducted about this point. No other objects were found during the search. A least depth was obtained by pneumofathometer.

(b) DESCRIPTION OF TARGET FOUND: Target 6503D is a large mass of concrete with no discernable shape, projecting 4 feet off the bottom. Much algae and other various forms of sea life abound on the item, making the exact identification difficult. Diver's estimate the item to be approximately 12-15 feet long, 3-4 feet wide and approximately 4 feet tall. This target plots very near the reported position of 6503.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 6503D be charted as a sounding over ^{an obstruction} a rock of 40 feet at the prescribed location. *Concur. See section 6.c. of the Evaluation Report.*

(d) LEAST DEPTH:

Taken by pneumofathometer on 16 August, 1988 (DOY 229)
(S/N 8705140N)

1) TIME: 1034(L); 1434(Z)	LEAST DEPTH READING (FT): 42.5
2) TIME: 1034(L); 1034(Z)	LEAST DEPTH READING (FT): 42.5
3) TIME: 1034(L); 1034(Z)	LEAST DEPTH READING (FT): <u>42.5</u>

AVERAGE LEAST DEPTH (FT): 42.5

AVERAGE PNEUMO DEPTH (FT)	: 42.5
PNEUMO GAUGE CORRECTOR (FT)	: 0.2
PREDICTED TIDAL ZONE COR (FT)	: 2.9 -1.6
ACTUAL LEAST DEPTH (FT)	: 39.8 41.1

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 1500	E: 94495.2	N: 15198.6
2) HDAS FIX NO: 1501	E: 94508.4	N: 15198.0
3) HDAS FIX NO: 1502	<u>E: 94510.3</u>	<u>N: 15198.1</u>

AVERAGE D.P.: E: 94504.6 N: 15198.2

Calculated G.P.: Lat: 40° 53' 12.634" N
Long: 073° 43' 54.742" W

(f) LORAN C RATES: 9960-w: 15396.5
9960-x: 26936.4
9960-y: 43941.6
9960-z: 59985.5

V. AWOIS ITEM 6503 SUMMARY

Divers conducted investigations on four contacts for AWOIS item 6503. Numerous rocks were found on each of these dives. The boulder field extending north of Execution Rocks is larger than presently charted. The Hydrographer in Charge recommends that the symbol "rky" (Chart No. 1, section 0, page 13, symbol no. 39) be added to the chart at position $40^{\circ} 53' 12.634''$ N, $73^{\circ} 43' 54.742''$ W.* This is the position of dive target 6503D, which is the most easterly of the 4 contacts investigated by RUDE. It is felt that AWOIS item 6503 has been located (6503D). The present charting symbols representing this item should be removed and replaced with the specific recommendations contained in these individual target writeups. *Concur. See also section 6. c. of the Evaluation Report.*

** Do not Concur.*

L. MISCELLANEOUS

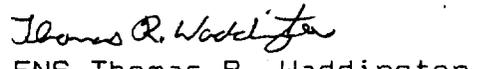
This system software represents a substantially different way of "doing business". Numerous advances have been made, the most important of which is the use of multiple lines of position. Current guidelines for Hydrography do not adequately describe how the work should be done with this system on an "Item Investigation Survey". It will most likely take some time to revise those guidelines, OPORDERS, and instructions to reflect the use of this system. Because those guidelines are not yet revised, we have in the name of efficient and practical operations, changed the necessary procedures during the conduct of this project. The most significant change is the form and content of the descriptive report. We have attempted to include all of the information necessary to adequately review the survey and forward critical information for charting.

M. RECOMMENDATIONS

Specific recommendations as to charting symbols are contained in the individual AWOIS item investigation reports.

Report submitted by:


Lt Craig L. Bailey
Executive Officer
NOAA Ship RUDE


ENS Thomas R. Waddington
3rd Officer
NOAA Ship RUDE


AST Mark A. Sramek
Junior Survey Technician
NOAA Ship RUDE

LETTER OF APPROVAL

FIELD NO. RU-10-1-88

REGISTRY NO. FE-303 SS

OPR-B660-RU/HE-88

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for charting.

Alan D. Anderson
Alan D. Anderson, CDR, NOAA
Commanding Officer
NOAA Ship RUDE

CONTROL STATION REFERENCE LIST

STATION NAME	STATION NUMBER	GEOGRAPHIC POSITION	
Sands Point Beacon	104	Lat. 040 ^o 52' 01.269" N	Long. 073 ^o 43' 57.460" W
Larchmont Harbor Light "2"	107	Lat. 040 ^o 55' 05.071" N	Long. 073 ^o 43' 52.470" W
Glen Cove Light "5"	109	Lat. 040 ^o 51' 43.217" N	Long. 073 ^o 39' 37.151" W
Kalpakjian 1986	110	Lat. 040 ^o 54' 09.444" N	Long. 073 ^o 37' 59.010" W
Sands Point Lighthouse	205	Lat. 040 ^o 51' 57.163" N	Long. 073 ^o 43' 46.171" W
Execution Rocks Lighthouse	206	Lat. 040 ^o 52' 40.994" N	Long. 073 ^o 44' 15.736" W
David Island Tank	207	Lat. 040 ^o 53' 15.083" N	Long. 073 ^o 46' 14.681" W



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RUDE
439 West York St.
Norfolk, VA 23510

18 August, 1988

Commander, First Coast Guard District
Aids to Navigation Office
408 Atlantic Avenue
Boston, Massachusetts, 02210-2209

The NOAA Ship RUDE has discovered a rock with a least depth of 40¹ feet (corrected for predicted tides) on chart 12366. This depth was determined by divers. The rock is located at position 40° 53' 12.634" North, 73° 43' 54.742" West, it bears 029° true at a distance of .6 nm from Execution Rocks Light House. Charted depths in the vicinity of this rock are 46 feet. This position is on the North American datum of 1983. Charts 12364 and 12363 are also affected. Please include this information in the next Local Notice to Mariners.

For reference purposes this survey is being conducted under project instructions OPR-B660-RU/HE-88, the field sheet number is RU-10-1-88, the Registry number is FE-303-SS. If you have any further questions concerning this item contact the ship on cellular phone at (203) 964-7767.

Sincerely,

Alan D. Anderson
for

Alan D. Anderson
Commanding Officer
NOAA Ship RUDE

cc: N/MOA23x1
N/CG222
DMAHTC





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RUDE
439 West York St.
Norfolk, VA 23510

19 September, 1988

Commander, First Coast Guard District
Aids to Navigation Office
408 Atlantic Avenue
Boston, Massachusetts, 02210-2209

The NOAA Ship RUDE has discovered a rock with a least depth of ^{33.0}~~31.2~~ feet (corrected for predicted tides) on chart 12366. This depth was determined by divers. The rock is located at position 40° 53' 43.181" North, 73° 38' 53.469" West. It bears 236° true at a distance of .68 nm from Matinecock Point. Charted depths in the vicinity of this rock are 38 feet.

The RUDE has also located a steel obstruction with a least depth of 32.2° feet (corrected for predicted tides) on chart 12366. This depth was also determined by divers. The ~~rock~~ ^{obstruction} is located at position 40° 53' 46.496" North, 73° 38' 46.851" West. It bears 236° true at a distance of .78 nm from Matinecock Point. Charted depths in the vicinity of this obstruction are 37 feet.

Both these positions are on the North American datum of 1983. Charts 12364, 12367 and 12363 are also affected. Please include this information in the next Local Notice to Mariners. For reference purposes this survey is being conducted under Project Instructions OPR-B660-RU/HE-88, Registry No. FE-303 SS. If you have any further questions concerning this item contact the ship on cellular phone at (203) 964-7767.

Sincerely,

Andrew Snella
Andrew Snella
Commanding Officer
NOAA Ship RUDE

cc: N/MOA23x1
N/CG222
DMAHTC



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 22, 1988

MARINE CENTER: Atlantic

OPR: B660

HYDROGRAPHIC SHEET: FE-303-SS (RU-10-1-88)

LOCALITY: Western Long Island Sound

TIME PERIOD: July 27 - August 20, 1988

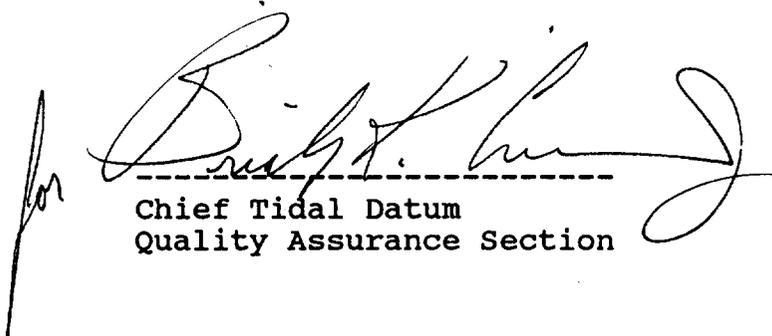
TIDE STATION(S) USED: 851-6990 Willets Point, NY

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 5.00 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 7.4 ft.

REMARKS: RECOMMENDED ZONING

1. For AWOIS Items 4394, 4400, 4403, 4404, 6503, zone direct.



Chief Tidal Datum
Quality Assurance Section

GEOGRAPHIC NAMES

FE-303SS

Name on Survey	Source of Name									
	A	B	C	D	E	F	G	H	K	
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST		
DOSORIS ISLAND (title)										1
EXECUTION ROCKS (title)										2
HART ISLAND (title)										3
LONG ISLAND SOUND (title)										4
NEW YORK (title)										5
										6
										7
										8
										9
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										22
										23
										24
										25

05/12/89

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-303SS

NUMBER OF CONTROL STATIONS	7
NUMBER OF POSITIONS	801
NUMBER OF SOUNDINGS	2848

	TIME-HOURS	DATE COMPLETED
* PREPROCESSING EXAMINATION	35	11/10/88
VERIFICATION OF FIELD DATA	115	02/21/89
QUALITY CONTROL CHECKS	44	
EVALUATION AND ANALYSIS	61	05/12/89
FINAL INSPECTION	9	05/10/89
TOTAL TIME	229	
MARINE CENTER APPROVAL		05/12/89

* Preverification time is not considered as part of total verification time.

REFERENCE NO.
MOA23-71-89

LETTER TRANSMITTING DATA

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

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

TO:

Chief, Data Control Branch, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
Rockville, MD 20852

DATE FORWARDED
31 July 1989NUMBER OF PACKAGES
1 tube, 1 box

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

FE-303SSNew York, L.I. Sound, Vicinities of Hart Is. Execution Rks & Dosoris Island

Pkg # 1 (Tube) containing the following field plotter sheets:

- † 4394 hydro development sheet, 1:25,000 scale, Post-processed
- † 4394 depthplot data from DOY's 221-225, with plot contact no's A07, A08, A09, A10, 1:10,000 scale, post-processed
- † 4394 depthplot data from DOY's 221-225, with contact no. A04, 1:10,000 scale, post-processed
- † 4394 depthplot, 1:10,000 post-processed
- † 4394 hydro development sheet, DOYa 225 data, 1:2,500 sheet, post-processed
- † 4394 1st 100% on-line swathplot, 1:1,000 scale
- † 4394 2nd 100% on-line swathplot, 1:1,000 scale
- † 4394 contact plot, 1:5,000 scale, post-processed
- † 4394 on-line depthplot DOY's 221-225, 1:1000 scale
- † 4394 contact plot & least depth sounding lines @ 1:2,500
- † 6503 dive target plot, 1:10,000 post-processed
- † 6503 contact plot, 1:10,000 post processed
- † 6503 1st 100% swathplot, post-processed

page 1 of 3

FROM: (Signature)

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/CG244
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

Dwayne S. Clark
Aug 8, 1989

REFERENCE NO.
MOA23-71-89

LETTER TRANSMITTING DATA

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

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

TO:
Chief, Data Control Branch, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
Rockville, MD 20852

DATE FORWARDED
31 July 1989

NUMBER OF PACKAGES
1 tube, 1 box

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

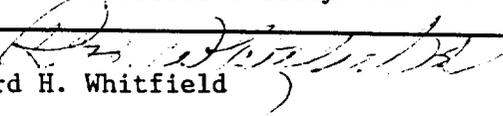
Pkg #1 continued:

- ✓ 6503 2nd 100% swathplot, post-processed
- ✓ 6503 200% trackplot, post-processed
- ✓ 4400, 4403, 4404 & 6503 on-line swathplot, 1:10,000
- ✓ 4400, 4403, 4404 1st 100% swathplot, post-processed
- ✓ 4400, 4403, 4404 2nd 100% swathplot, post-processed
- ✓ 4400, 4403, 4404 & 6503 depthplot, 1:10,000, post-processed
- ✓ 4403 & 4404 contact plot, 1:10,000, post-processed
- ✓ 4400, 4403 & 4404 200% trackplot, 1:10,000, post-processed

Pkg #2 containing:

- ✓ Original Descriptive Report with four (4) smooth sheets appended to the report
- ✓ Envelope with supplemental data removed from the printouts
- ✓ Envelope with miscellaneous data removed from the original Descriptive Report
- ✓ Envelope with contact file and sounding corrector abstracts
- ✓ Envelope containing:
 - 1 Position overlay for sheet 1 of 4
 - 2 Excess overlays for sheet 1 of 4
 - 2 Position overlays for sheet 3 of 4
 - 2 Position overlays for sheet 4 of 4

(page 2 of 3)

FROM: (Signature) 
Richard H. Whitfield

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N/CG244
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

REFERENCE NO.
MOA23-71-89

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- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
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TO:

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Pkg #2 continued:

- 1 Envelope with Appendix IX, Baseline, Sound velocity and Pneumo Depth Gage Data
- 26 Envelops containing side scan sonargrams fathograms and printouts for:
 - AWOIS #4394 JD's: 210, 218 (2), 221, 222, 223, 225 and 228
 - AWOIS #6503 JD's: 209, 222, 224, 228, and 229
 - AWOIS #4403 & 4404 JD's: 209, 211, 216, 217, 230, 231, and 232
 - AWOIS #4400 JD's: 208, 209, 210, 211 (2), and 231

(page 3 of 3)

FROM: (Signature)

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
 N/CG244
 Atlantic Marine Center
 439 W. York Street
 Norfolk, VA 23510-1114

INSPECTION REPORT
FE-303SS

The data that make up this Side Scan Sonar survey have been inspected to gain insight into its overall completeness regarding survey coverage, presentation of survey results, and the verification or disproval of charted data. This survey, except as noted in the Evaluation Report, is considered complete and adequate to meet National Ocean Service standards. Processing is considered complete. The survey records comply with NOS requirements except as noted in the Evaluation Report.

Inspected

Martin E. Nickerson
for Robert G. Roberson
Chief, Evaluation and Analysis
Group
Hydrographic Surveys Branch

William A. Wert
William A. Wert, LCDR, NOAA
Chief Hydrographic Surveys
Branch

Approved: 12 June 1989

Ray E. Moses
Ray E. Moses, RADM, NOAA
Director, Atlantic Marine Center

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: FE-303SS

FIELD NO.: RU-10-1-88

New York, Long Island Sound, Vicinities of Hart Island, Execution Rocks,
and Dosoris Island

SURVEYED: 26 July through 19 August 1988

SCALE: 1,10,000

PROJECT NO.: OPR-B660-RU/HE-88

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.....A. D. Anderson
.....C. L. Bailey
.....T. R. Waddington
.....M. A. Sramek

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

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A Raytheon DSF-6000N fathometer was operated concurrently with the side scan sonar. Fathometer development was conducted to search for items and to determine the shoalest soundings. The hydrography is considered reconnaissance hydrography and is not to be charted except for the shoalest soundings and least depths determined. Fathometer depths were used to determine least depths in areas where least depths by diver were prohibited by Project Instructions, west of Execution Rocks. Pneumatic depth gauges were used to determine least depths in areas where diving was permitted. No wire drag was accomplished during this survey.

b. Three (3) 1:10,000 scale and one (1) 1:5,000 scale page size smooth sheets were generated during office processing, and are attached to this report. Sheets 1, 3, and 4 of 4 show the items found by the field unit. Sheet 2 of 4 shows the area of a side scan sonar investigation by the field unit. These plots are considered the final plots or smooth sheets 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 section H. of the Descriptive Report.

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

c. Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83). Office processing of this survey is based on these values. The smooth sheets have been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD27).

To place the 1:10,000 scale plots, sheets 2, 3, and 4, on the NAD27 datum, move the projection lines 0.359 seconds (11.1 meters or 1.11 mm at the scale of the survey) north in latitude, and 1.533 seconds (35.9 meters or 3.59 mm at the scale of the survey) east in longitude.

To place the 1:5,000 scale plot, sheet 2, on the NAD27 datum, move the projection lines 0.359 seconds (11.1 meters or 2.22 mm at the scale of the survey) north in latitude, and 1.533 seconds (35.9 meters or 7.18 mm at the scale of the survey) east in longitude.

All geographic positions listed from other sources are on the North American Datum of 1927.

3. HYDROGRAPHY

The hydrography collected on this survey during side scan sonar operations is of reconnaissance value only and was not verified. This does not pertain to the depths of AWOIS items shown on the smooth plots included in this report.

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 and the PROVISIONAL SIDE SCAN SONAR MANUAL with the following exceptions:

a. Not all the prior surveys listed in section 7.8 of the Project Instructions were compared with as required. In particular prior survey H-5078WD (1930), which is the source document for 2 of the 5 items investigated, was not considered in comparisons with prior surveys by the hydrographer. See section 6.b. of this report.

b. Some areas of boulder fields are common to the present survey. In areas where features such as boulder fields exist, the limits of the, boulder fields should be portrayed and the most significant boulders should be plotted on the field sheets.

c. Numerous side scan sonar contacts are not noted or plotted on the side scan sonar coverage/contact overlays. Even though the contacts had been noted earlier all contacts should be plotted and labeled with appropriate descriptive notes.

5. JUNCTIONS

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

6. COMPARISON WITH PRIOR SURVEYSa. Hydrographic

H-1732A (1914) 1:20,000
 H-5407 (1933) 1:10,000
 H-5544 (1934) 1:10,000
 H-5547 (1934) 1:10,000

The prior surveys listed above are common to the entire present survey. Comparisons between present and prior hydrography were not made since all present hydrography, except the detached soundings on items located, is considered reconnaissance hydrography. Adequate comparisons between the reconnaissance hydrography and the prior surveys have been made by the hydrographer in section J. of the Descriptive Report, and need no further discussion in this report.

b. Wire Drag

H-5078WD (1930) 1:20,000

Prior wire drag survey H-5078WD is common to the entire present survey. AWOIS items #4403 and #4404 originate with this prior wire drag survey.

AWOIS item #4403 is a charted dangerous sunken wreck with a least depth of 25 feet in Latitude $40^{\circ}53'34.0''N$, Longitude $73^{\circ}38'54.3''W$ originating with the prior survey. A least depth of 26 feet by pneumatic depth gauge was obtained on a rock (target 4403D) in Latitude $40^{\circ}53'34.48''N$, Longitude $73^{\circ}38'53.70''W$. This is approximately 20 meters northeast of the charted wreck. The wreck apparently has deteriorated over a period of 59 years between the prior and present survey. There is no mention of any wreck or wreckage by the divers. No wreck-like contacts are visible on side scan sonar grams in the immediate area. It is recommended that AWOIS item #4403, the charted dangerous sunken wreck with a least depth of 25 feet, be removed from the chart, and a rock with a least depth of 26 feet (26 Rk) be charted in the position determined by the present survey. See sheet 3 of 4.

AWOIS item #4404 is a charted obstruction in Latitude $40^{\circ}53'36.5''N$, Longitude $73^{\circ}38'48.0''W$ originating with the prior survey as a 23 foot grounding. This item was searched for by side scan sonar and fathometer. A least depth of 27 feet by pneumatic depth gauge was obtained on a rock (target 4403B) in Latitude $40^{\circ}53'36.40''N$, Longitude $73^{\circ}38'51.95''W$. This is approximately 93 meters southwest of the charted obstruction. No other unusual contacts or traces were found in the vicinity of the AWOIS item. It is recommended that the charted obstruction be removed from the chart, and a rock with a least depth of 27 feet (27 Rk) be charted in the position determined by the present survey. See sheet 3 of 4.

It should be noted that the 23 foot grounding (AWOIS item #4404) originating with prior survey H-5078WD (1930) was erroneously transferred to prior survey H-5544 (1934) as a 29 foot sounding.

c. Side Scan SonarFE-293SS (1986) 1:10,000

AWOIS item #6503 is an uncharted dangerous submerged obstruction, PA in approximate Latitude 40°53'12.7"N, Longitude 73°43'57.1"W originating with the prior survey. During the investigation of the AWOIS item, four contacts 6503A, B, C, and D were located by the hydrographer using side scan sonar. Charting recommendations and discussions for contacts 6503A, B, and C are found on pages 32 to 35 of the Descriptive report. Contact 6503D, located by the hydrographer in Latitude 40°53'12.634"N, Longitude 73°43'54.742"W, is considered to be AWOIS item #6503. It is recommended that a dangerous submerged obstruction (concrete mass) with a depth of 41 feet (41 Obstr) be charted in the position determined by the present survey. See sheet 4 of 4.

7. COMPARISON WITH CHART 12366 (20th Ed., Nov. 1/86)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) AWOIS item #4394 is a charted dangerous sunken wreck, PA in Latitude 40°51'50.0"N, Longitude 73°46'00.0"W, originating with Local Notice to Mariners No. 44 of 1973. Seven (7) contacts, lettered A, B, C, D, E, and F, were located by the hydrographer. Discussion and charting recommendations for these items and AWOIS item #4394 can be found on pages 13 through 20 of the Descriptive Report. Attention is directed to the following:

a) Target 4394B is an uncharted 18-ft sounding located by the hydrographer in Latitude 40°51'40.95"N, Longitude 73°46'10.71"W. The hydrographer states on page 15 of the Descriptive Report that the shoal is adequately represented on NOS chart 12366. The charted 18-ft shoal, in Latitude 40°51'46.8"N, Longitude 73°46'17.8"W, referred to by the hydrographer is approximately 253 meters northwest of the present survey position. This charted 18-ft shoal is not considered relative to the 18-ft sounding shown on the present survey. The 18-ft sounding (target 4394B) is in substantial agreement with a charted 16-ft sounding in Latitude 40°51'38.9"N, Longitude 73°46'12.3"W that originates with prior survey H-5407 depths of 16 to 18 feet. This shoal area, shown on the prior survey, is approximately 52 meters south of the present survey position. The charted 16-ft sounding, in Latitude 40°51'39.3"N, Longitude 73°46'10.8"W (NAD83), was brought forward from the prior survey to supplement the present survey. It is recommended that the charted 16-ft sounding be retained as charted, and, if the scale of the chart permits, the 18-ft sounding be charted in the position determined by the present survey. See sheet 1 of 4.

b) Target 4394C is an uncharted 22-ft sounding located by the hydrographer in Latitude 40°51'46.85"N, Longitude 73°46'07.13"W. This sounding is in the same area as a charted 21 foot sounding in Latitude 40°51'46.1"N, Longitude 73°46'08.9"W, shown on prior survey H-5407 (1933), and originating with prior survey H-2914WD (1907). The present survey depth is 12 meters NNW of the charted 21-ft sounding. Considering the source of the charted sounding and the present criteria for determining a least depth using a fathometer, it is believed that the charted sounding and the 22-ft sounding are the same feature. It is recommended that the charted 21-ft sounding be deleted, and the 22-ft depth be charted as shown on the present survey. See sheet 1 of 4.

2) AWOIS item #4400 is a charted dangerous sunken wreck, PA in Latitude 40°53'18.0"N, Longitude 73°40'36.0"W originating with Chart Letter 1286 of 1966 (CL 1286/66). This item was investigated by side scan sonar and fathometer search with negative results. Deficiencies in side scan coverage were noted during office processing. The side scan sonar data collected at the 100 meter and 75 meter range settings were only providing acceptable returns out to approximately 70 meters. This lack of full coverage was probably due to interference in the water column. This problem was of limited extent because only a few coverage lines were run at the 100 meter range setting and sufficient overlap occurred on the 75 meter range setting lines. The initial conclusion was that 200% coverage was not achieved to fully support the hydrographer's recommendation of disproof. However, considering the limited number of gaps in the present 200% coverage and the fact that this item had been previously surveyed with 200% side scan sonar coverage, FE-293SS (1986), with negative results, the evaluator concurs with the hydrographer's conclusion that the item has been disproved. It is recommended that the charted dangerous sunken wreck, PA be removed from the chart. See sheet 2 of 4.

b. Aids to Navigation

There are no fixed or floating aids to navigation within the limits of this survey.

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 survey. No additional work is recommended.

Franklin L. Saunders

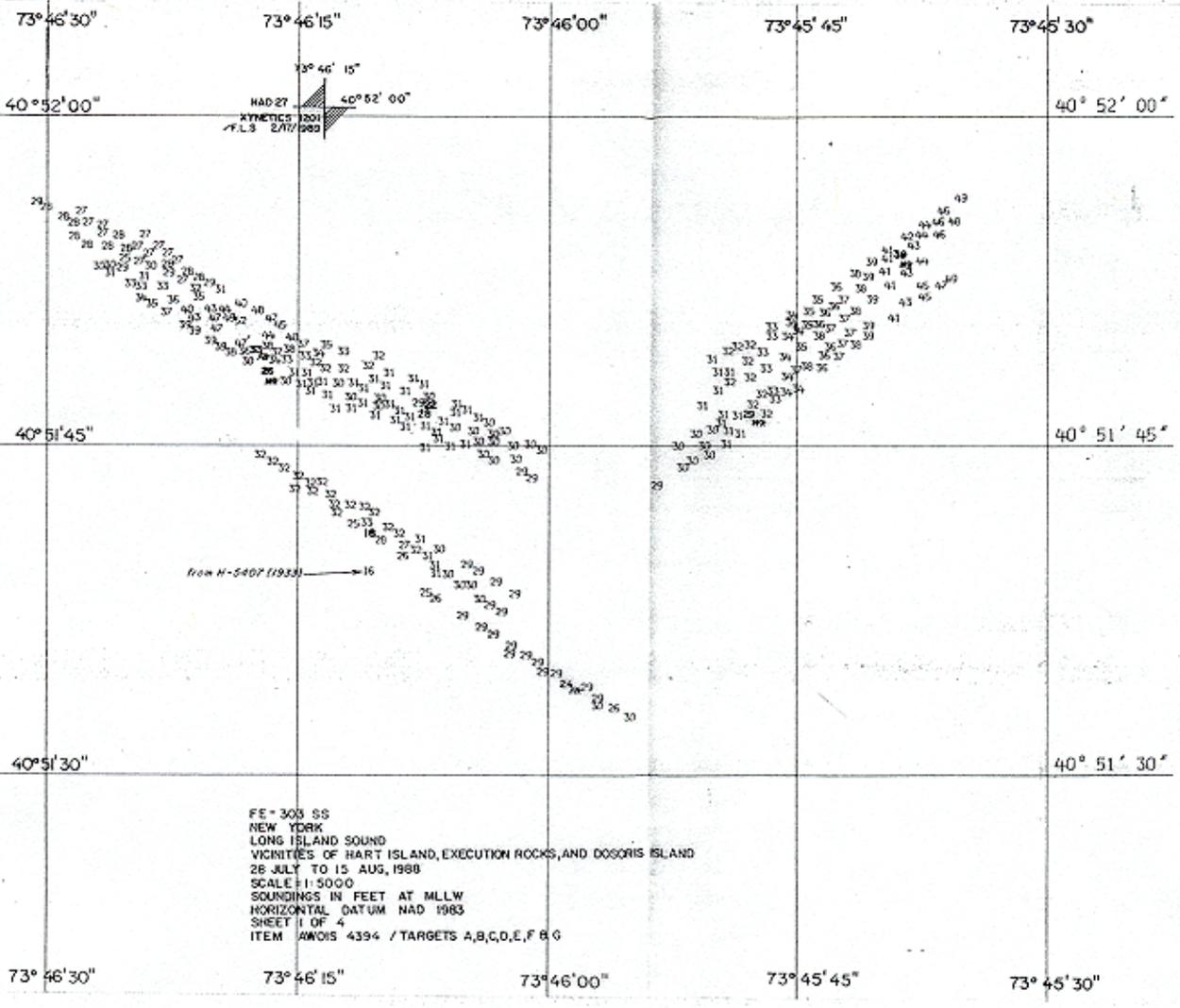
Franklin L. Saunders
Cartographic Technician
Verification of Field Data

Richard H. Whitfield

Richard H. Whitfield
Cartographer
Evaluation and Analysis

Leroy G. Cram

Leroy G. Cram
Supervisory Cartographic Technician
Verification Check



40° 54' 00"

73° 41' 00"

73° 40' 30"

40° 54' 00"

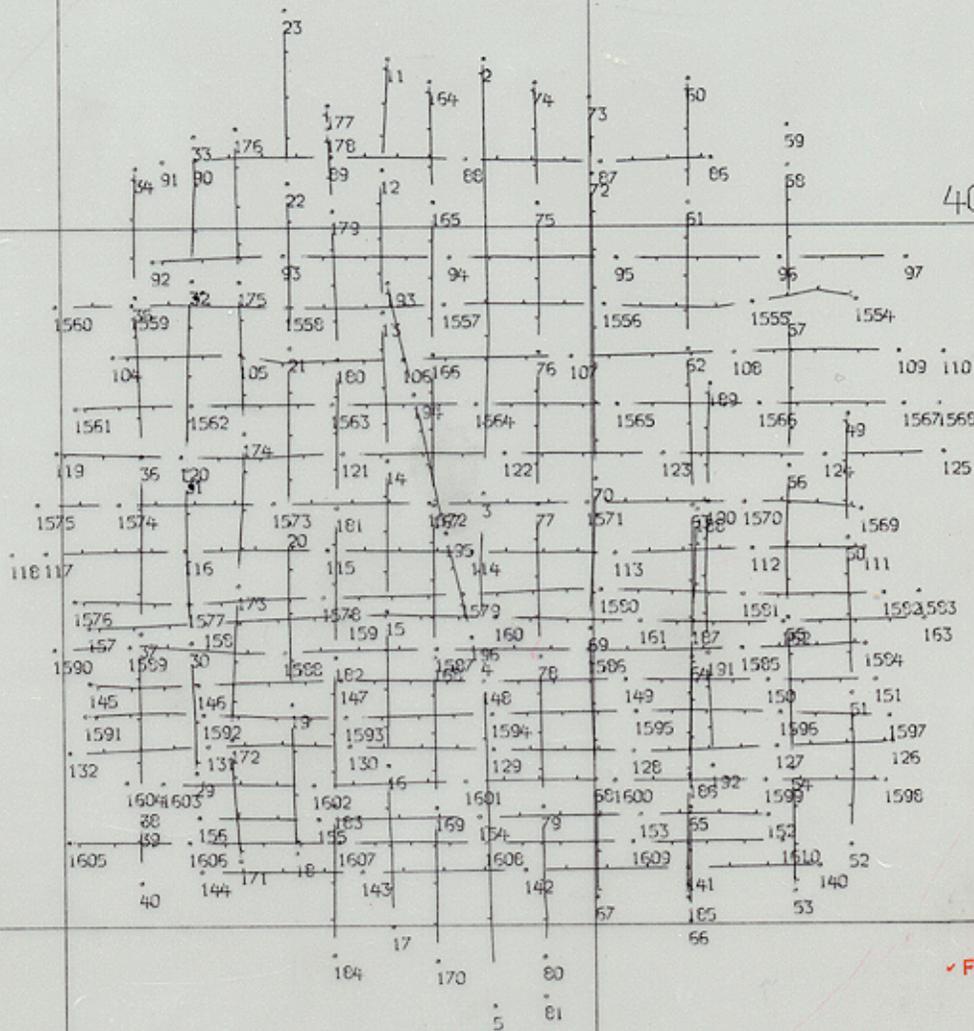
40° 53' 30"

40° 53' 30"

40° 53' 00"

73° 40' 00"

40° 53' 00"



NAD 27
 XYNETICS 1201
 F.L.S 02/15/1989

FE-303 SS
 NEW YORK
 LONG ISLAND SOUND
 VICINITIES OF HART ISLAND, EXECUTION ROCKS AND DOSORIS ISLAND
 26 JULY TO 18 AUG, 1988
 SCALE = 1:10000
 POSITION OVERLAY
 HORIZONTAL DATUM NAD 1983
 SHEET 2 OF 4
 ITEM AWOIS 4400

4

73° 41' 00"

73° 40' 30"

73° 40' 00"

73° 39' 00"

73° 38' 30"

73° 38' 00"

40° 54' 00"

73° 38' 30"
 NAD 27
 XYNETICS 1201
 ✓ F.L.S 1/23/89

40° 54' 00"

32 *Obstr*

33 *Rk*

27 *Rk*

26 *Rk*

40° 53' 30"

40° 53' 30"

26 *Rk*
25 *Rk*

FE-303 SS
 NEW YORK
 LONG ISLAND SOUND
 VICINITIES OF HART ISLAND, EXECUTION ROCKS, AND DOSORIS ISLAND
 27 JULY TO 19 AUG, 1988
 SCALE = 1:10000
 SOUNDINGS IN FEET AT MLLW
 HORIZONTAL DATUM NAD 1983
 SHEET 3 OF 4
 ITEM AWOIS 4403/4404
 CONTACTS A, B, C, E, F, & G

40° 53' 00"

40° 53' 00"

73° 39' 00"

73° 38' 30"

73° 38' 00"

40° 54' 00" 73° 44' 00" 73° 43' 30" 40° 54' 00"

40° 53' 30"

40° 53' 30"

21 Rk

26 Rk

41 Obstr (concrete mass 12 to 15 ft long by 3 to 4 ft wide)

32 Rk

40° 53' 00"

73° 43' 30"
NAD 27
XYNETICS 1201
F.L.S. 1/23/89
40° 53' 00"
40° 53' 00"

FE-303 SS
NEW YORK
LONG ISLAND SOUND
VICINITIES OF HART ISLAND, EXECUTION ROCKS, AND DOSORIS ISLAND
27 JULY TO 16 AUG, 1988
SCALE = 1:10000
SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM NAD 1983
SHEET 4 OF 4
ITEM AWOIS 6503

73° 44' 30"

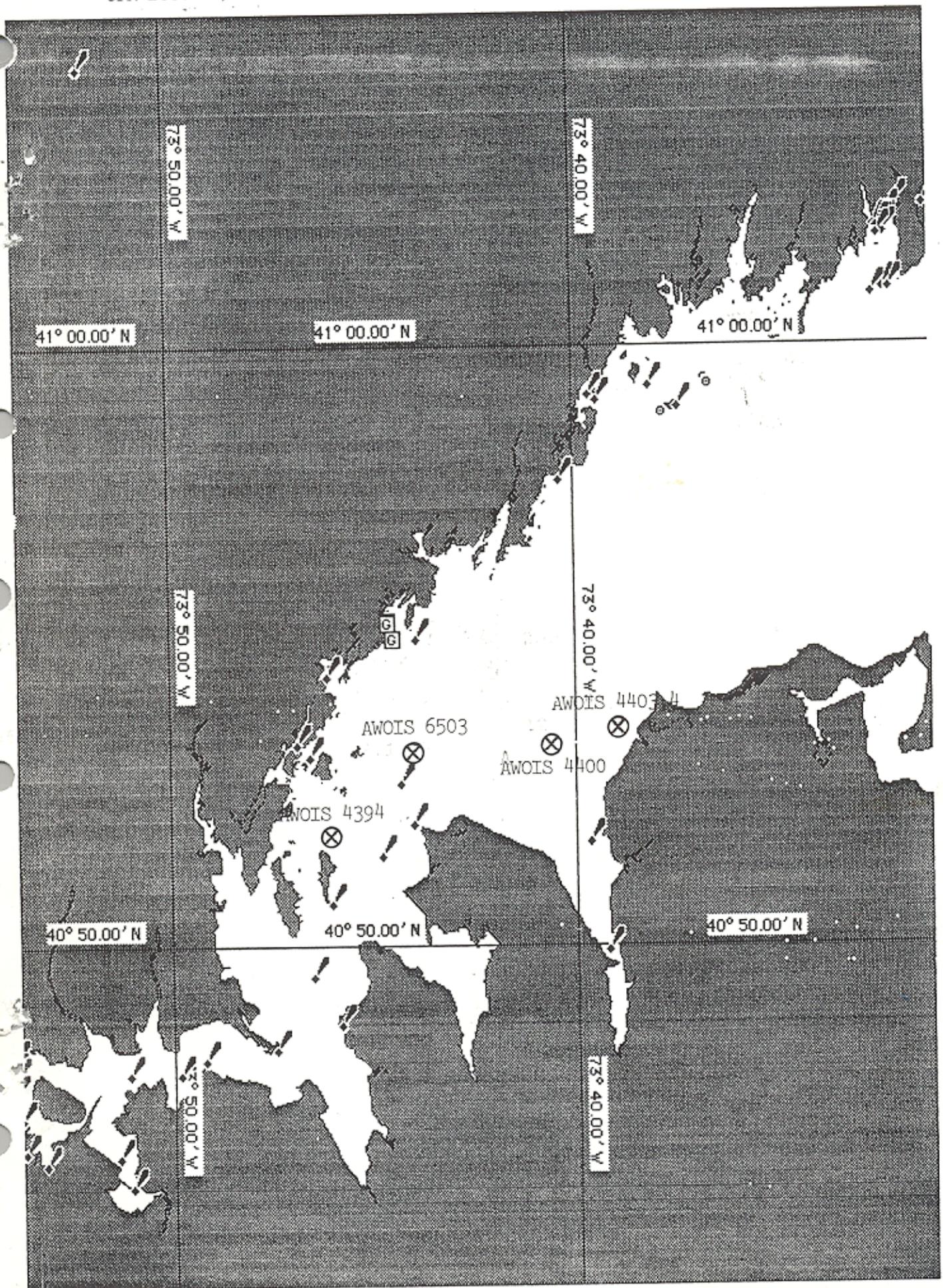
73° 44' 00"

73° 43' 30"

Chartlet of Project Area

OPR-B660-RU/HE-88

Western Long Island Sound



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

Hydrographic Index No. 63 L

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1967-1975
LONG ISLAND SOUND AND VICINITY

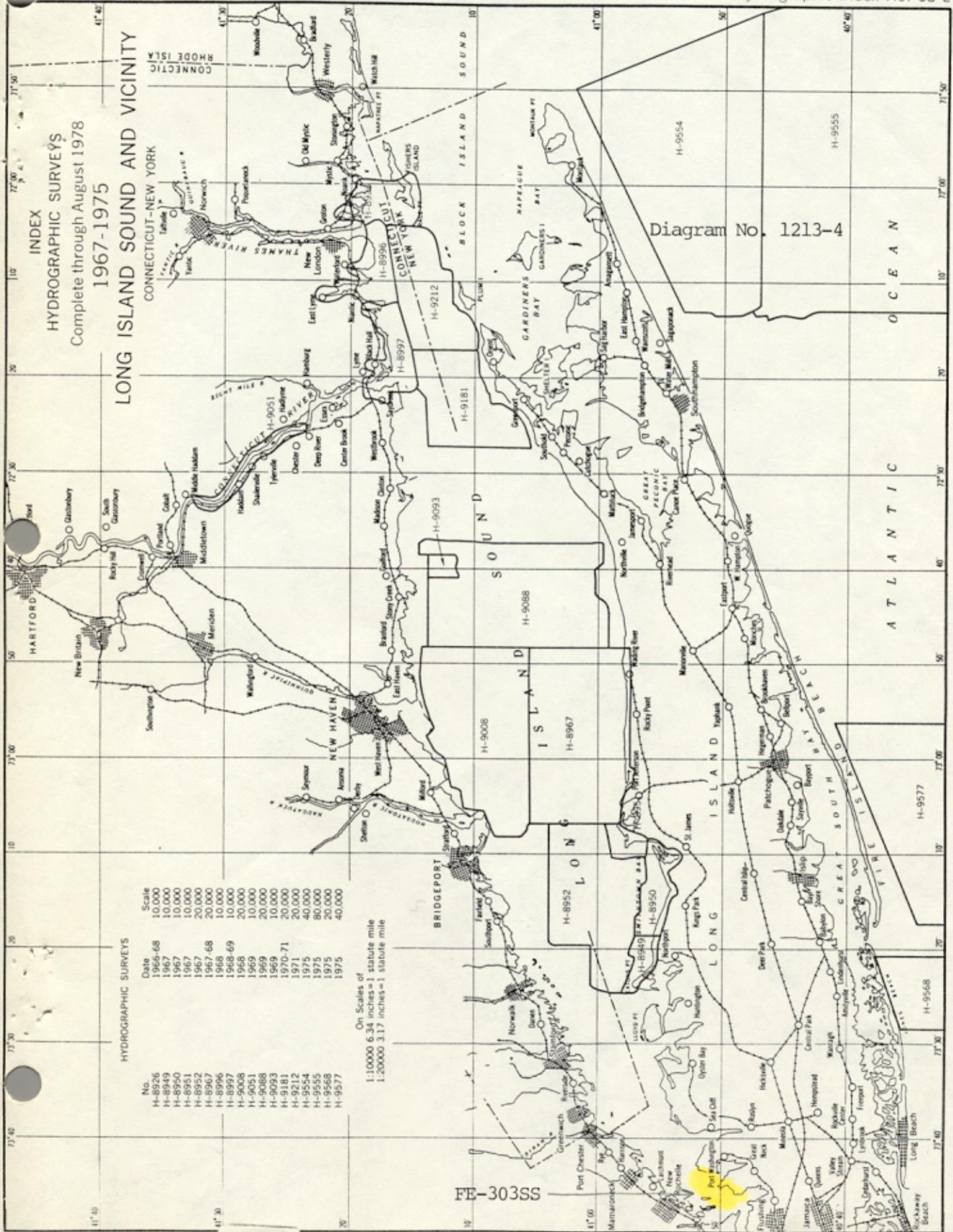
CONNECTICUT-NEW YORK

Diagram No. 1213-4

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8526	1966-68	10,000
H-8549	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



FE-303SS

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

**EXAMINED FOR NM
GDBU**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-303SS

2-12-90

2-15-90

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
12367	1-5-90	<i>G. J. Steward</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 33 <i>Revised Critical Corr's only</i>
12366	1-5-90	<i>G. J. Steward</i>	<i>FULLY APPLIED</i> Full Part Before After Marine Center Approval Signed Via Drawing No. 40 <i>Revised Critical Corr's only</i> <i>FULLY APPLIED</i>
12367	4/7/90	<i>A. Polz</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 33 <i>Revised in full</i>
12364	4-16-90	<i>John Pierce</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 26
12366	8-29-90	<i>William B. Sturge</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 40 <i>ReApplied</i>
12363	2-26-91	<i>John Pierce</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 51
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.