

H11044

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* Hydrographic /  
Side Scan Sonar / Multibeam

*Field No.* Sheet C

*Registry No.* H11044

### LOCALITY

*State* Connecticut - New York

*General Locality* Long Island Sound

*Locality* Oyster Point To

Stratford Shoal Middle Ground

2001

CHIEF OF PARTY  
LCDR Andrew L Beaver

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NOAA FORM 77-28  
U.S. DEPARTMENT OF COMMERCE  
(11-72)  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

**H11044**

**HYDROGRAPHIC TITLE SHEET**

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

State: Connecticut - New York

General Locality: Long Island Sound

Sub-Locality: ..... Oyster Point to Stratford Shoal Middle Ground

Scale: ..... 1:20,000

Date of Survey: 7 May to 13 Nov, 2001

Instructions Dated: 2 April, 2002

Project Number: OPR-B340-RU

Vessel: NOAA Ship RUDE (s590), NOAA launch 1419

Chief of Party: LCDR Andrew L. Beaver, NOAA

Surveyed by: RUDE Personnel

Soundings by: Odom Echotrac DF3200 MK II Echosounder, Reson SeaBat 9003

Graphic record scaled by: RUDE Personnel

Graphic record checked by: RUDE Personnel

Automated Plot: N/A

Verification by: Atlantic Hydrographic Branch Personnel

Soundings in: fathoms feet Meters At MLW MLLW ~~Meters~~ Feet at MLLW

Remarks: ***Bold, red, italicized notes in the Descriptive Report were made during office processing.***

*1) All Times are UTC.*

*2) This is a Basic Hydrographic Survey.*

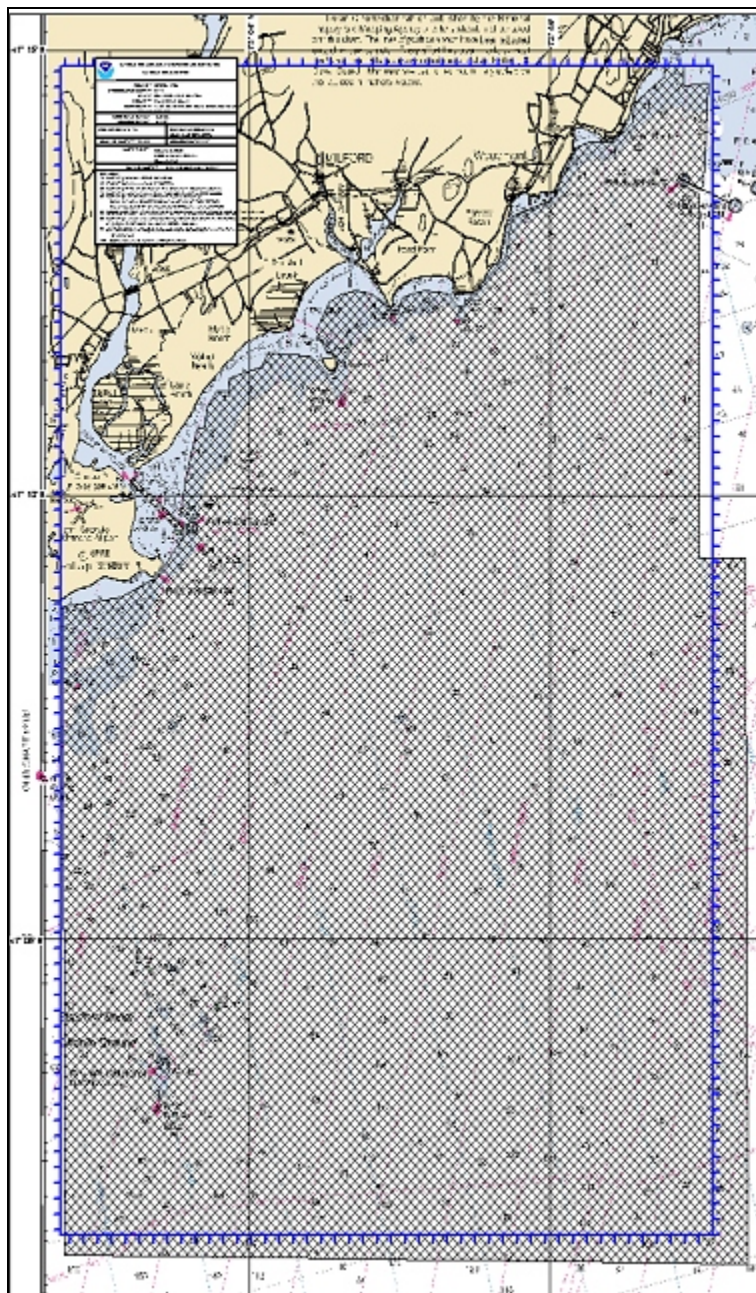
*3) Projection is UTM Zone 18 mCR 6/25/04*

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**Descriptive Report to Accompany Hydrographic Survey  
OPR-B340-RU, H11044  
Scale: 1:20,000, Year 2001  
NOAA Ship RUDE (s590)  
LCDR Andrew L. Beaver, NOAA, Commanding**

**A. AREA SURVEYED**



## A.1 Instructions

This survey was conducted in accordance with Hydrographic Survey Letter Instructions for OPR-B340-RU, Long Island Sound, New York and Connecticut, dated 2 April 2001, Change No. 1 to these instructions, dated 2 April 2001, and subsequent verbal communication with Hydrographic Surveys Division personnel.

## A.2 Motivation

This survey responds to a request from the Northeast Marine Pilots Association. Increased oil tanker traffic bound up and down Long Island Sound and associated lightering requires that modern hydrographic survey techniques be applied to accurately portray the bottom and locate or disprove shipwrecks and obstructions. This survey will also update National Ocean Service (NOS) charts for some areas last surveyed in 1897.

## A.3 Sonar Coverage

Full bottom coverage, consisting of either 200% side scan sonar or 100% side scan sonar and 100% multi-beam sonar coverage, was achieved from the survey limits to the 6-meter curve. Basic hydrography was acquired from between the 6- and 4-meter curves. An additional graphic detailing the sonar systems employed in each region of the survey area is included in Appendix V \*, Supplemental Survey Records and Correspondence. A track plot, side scan sonar mosaic, and digital terrain model are included in the digital submission package.

As shown in the plot above, the actual area surveyed slightly exceeds the assigned sheet limits. The Mapinfo sheet limit tables issued by the Hydrographic Surveys Division with the letter instructions were mistakenly created without an assigned projection or datum. RUDE personnel reprojected the sheet limits in the projection and datum (UTM 18 / NAD83) specified in the letter instructions for line planning purposes. This operation introduced a slight expansion and skew to the sheet limits used aboard RUDE which was not detected until data acquisition was complete. RUDE personnel, in consultation with the Atlantic Hydrographic Branch, decided to submit all data collected rather than attempt to trim the survey to the assigned sheet limits and discard the remainder.

## B. DATA ACQUISITION AND PROCESSING *See also evaluation report*

Detailed information regarding RUDE's vessels, equipment, data acquisition systems, processing software, and procedures can be found in the *NOAA Ship RUDE 2001 Data Acquisition and Processing Report (DAPR)\**, filed with the original field records. The following section summarizes the major hydrographic systems and *\* Data filed with original field records.*

processing procedures employed during this survey, and describes discrepancies from the 2001 DAPR \* which are specific to this survey.

## **B.1 Equipment**

All data were collected by NOAA Ship RUDE (s590, EDP#9040) and NOAA Survey Launch 1419.

RUDE is a Class V Hydrographic Survey Ship, 90 feet in length overall, with a 22-foot beam and 7-foot draft. The ship is equipped with a Reson Seabat 9003 Shallow Water Multi Beam Echosounder (SWMB, MBES), Odom Echotrac DF3200 Mk II Dual Frequency Vertical (VBES), and EdgeTech 272T / ACI Side Scan Sonar (SSS) system. Vessel position and attitude were determined primarily by a Seatex Seapath 200, with a Trimble DSM-212L DGPS receiver as a backup. (See the DAPR \* for complete discussion of the failure of the Seapath 200 during this survey.) Sound velocity data were acquired by Seabird SBE-19 Conductivity, Temperature, and Depth sensors (CTDs).

Launch 1419 is a 23 foot SeaArk aluminum launch, with a 8.5 foot beam, and 1.5 foot draft. 1419 is equipped with an Odom Echotrac DF3200 Mk II Dual Frequency Vertical Beam (VBES) and EdgeTech 272T / ACI Side Scan Sonar (SSS) system. Vessel position, course, and speed are determined by a Starlink DNAV-212 DGPS receiver. 1419 is not equipped with an attitude sensor. Sound velocity data were acquired by Seabird SBE-19 CTD.

As noted in the DAPR \*, RUDE's primary positioning and attitude sensor system failed during the survey on 11 September 2001. After this casualty, backup systems were used to complete the survey. Although positioning and attitude data from these systems were less accurate than those measured by the Seapath, ship operations were modified to minimize the affect on final data quality, and at no time did vertical or horizontal accuracy exceed the standards specified in the NOS Hydrographic Surveys Specifications and Deliverables. This equipment failure and the steps taken to keep RUDE operational are described in detail in the 2001 DAPR.\*

## **B.2 Quality Control**

### **B.2.a Side Scan Sonar Quality Control**

Side scan sonar image quality was monitored continuously during data acquisition by observing the sonograms produced by known targets, typically lobster pots. Under conditions of questionable data quality due to high refraction or surface noise, these confidence checks were conducted as often as possible. SSS data

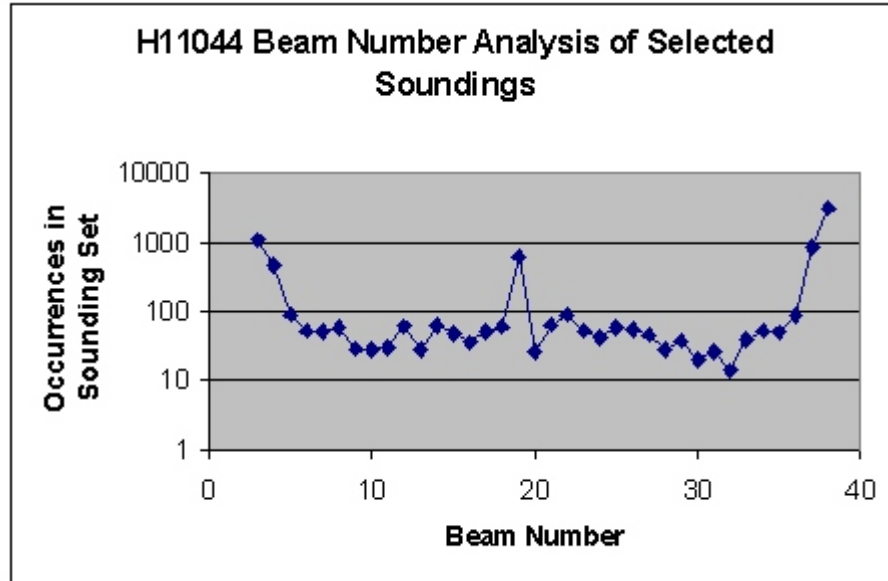
*\* Data filed with original field records*

acquisition was suspended when targets approximately 1 meter in characteristic size could not be resolved to the edge of the range scale.

### B.2.b Bathymetry Quality Control

To the extent possible in the field, RUDE personnel specifically and regularly addressed the major sources of echo sounder error as described in the NOS Hydrographic Surveys Specifications and Deliverables. These measures and procedures are described in detail in the DAPR.\* In summary, aboard RUDE SWMB data quality was assured by pre-season measurement of static and dynamic draft, a complete patch test, and a reference surface test indicating RUDE's SWMB system met the IHO "Special Order" specification.

During data acquisition, errors were minimized by daily monitoring of tide station function and ship's loading condition, continuous measurement of surface sound velocity in comparison to the last full CTD cast, and continuous online comparison of VBES and MBES soundings. After data were fully processed and plotted, final selected soundings were analyzed for systematic beam bias, and plotted as a function of beam number below. Note that the data are plotted on a logarithmic scale. Beams 1, 2, 39, and 40 are rejected on conversion, and therefore not represented in the final selected soundings.



The final sounding set is heavily biased toward the outer beams of the multibeam swath. This is primarily the result of the 9003's amplitude based bottom detection algorithm, which produces increasingly noisy data as grazing angle decreases. Since this noise is random with variance increasing toward the edges of the swath, NOAA's shoal biasing algorithm preferentially selects the

***\* Data filed with original field records***

shallowest soundings from these noisy beams over the deeper but more accurate soundings from the center of the swath. The result is a final data set in which the least precise measurements are heavily over represented.

The bias toward the higher numbered outer beams over the lower numbers probably indicates a slight error in the roll axis alignment of the attitude sensor and multibeam head. The large number of selected soundings from beam 19 is less easily explained. Visual inspection of raw data suggests that soundings from beam 19 may be slightly shoaler than the rest of the swath, though no more than a few centimeters at most. The hydrographer finds that this bias is within the bounds of the error budget.

Launch 1419 data quality was also carefully checked. Without an attitude sensor, the single largest source of error in 1419 data was excessive sea state. Launch personnel continually monitored the VBES record and sea conditions to ensure that standards set in the NOAA Hydrographic Manual for vessels without attitude sensors were met.

### **B.2.c Crosslines**

Cross line comparison was the primary bathymetry quality control tool employed by RUDE personnel. Sixty-Five nautical miles of crosslines were acquired by RUDE and Launch 1419, 5.3% of the total main scheme lines acquired on H11044. Cross line data is included in the final data set.

The hydrographer is unaware of any tools currently available to produce the beam by beam statistical comparison of cross and mainscheme lines as required by the NOS Hydrographic Surveys Specifications and Deliverables. The CARIS “QC Report”<sup>\*</sup> includes these statistics, but only in areas with full MBES coverage. As discussed in Section B.2.b above, a “QC Report”<sup>\*</sup> was generated for RUDE’s reference surface area, but could not be used for hydrographic survey areas without 100% coverage. As a result, cross and main scheme lines were compared manually. First, full density soundings were checked in CARIS subset mode as part of the data “check scanning” process (see DAPR <sup>\*</sup> for more details). Discrepancies between main scheme and cross line soundings found at this stage were in general the result of errors in the sound velocity or tide application process, and were corrected before plotting the final data set. Finally, main scheme soundings were excessed at survey scale and overlaid with cross line data. Comparison of these selected soundings showed excellent agreement between collocated main scheme and cross line depths. Differences of no more than 1 foot were observed, with SWMB main scheme soundings generally slightly shoaler than VBES cross line data. The hydrographer believes this tendency to be an artifact of the over representation of noisy data in the final SWMB data set, as described above in Section B.2.b.

<sup>\*</sup> *Data filed with original field records*

A Mapinfo workspace of the cross line comparison plot is included on the digital data submission CD.

#### **B.2.d Junctions *See also evaluation report.***

H11044 has one junction with a contemporary survey. H11011, a 1:10,000 scale navigable area survey of the area off New Haven, CT, was completed in Fall 2000. H11011 junctions with the current survey in a strip approximately 500 meters wide by 10 kilometers long on the north half of the east side of the H11044 sheet limits.

Comparison between H11044 and H11011 soundings was accomplished by creating a difference map in Mapinfo Vertical Mapper. A triangular interface network grid of survey scale selected soundings was created for both surveys. H11011 was then subtracted from H11044 to yield a new grid of the differences between the two surveys. This grid was displayed color mapped according to the depth difference to highlight areas of discrepancy, and overlaid with soundings from both surveys. A Mapinfo workspace of the survey junction comparison is included on the digital data submission CD.

Agreement between the two surveys is excellent. Scattered minor discrepancies of one foot were found by visual examination of the two sets of soundings. No specific areas of disagreement were located on the difference map. The Vertical Mapper grid math results indicate that 88% of the soundings in the junction area differ by less than 0.25 meters. This result is somewhat skewed by grid interpolation along the edge of each data set; visual inspection of soundings in the junction area suggests agreement between the surveys is actually much better. The hydrographer recommends that soundings from the current survey supersede all previous data in the common area.

#### **B.3 Corrections to Echo Soundings**

There were no deviations from the procedure described in *NOAA Ship RUDE 2001 Data Acquisition and Processing Report*.\*

### **C. VERTICAL AND HORIZONTAL CONTROL**

#### **C.1 Vertical Control**

Application of water level correctors for this project was consistent with the methods and procedures described in the *H11044 Vertical and Horizontal Control Report* \* and the *NOAA Ship RUDE 2001 Data Acquisition and Processing Report*. \* Operation of the control gauges at Bridgeport, CT (846-7150) and \* *Data filed with original field records*

Kings Point, NY (851-6945) and subordinate gauge at New Haven, CT (846-5705) was monitored on the CO-OPS internet site and by TIDEBOT email. All soundings were reduced to Mean Lower Low Water with verified tides corrected with the zoning information provided by CO-OPS with the Survey Letter Instructions, Change No.1, dated April 2, 2001. No tide station installation or leveling was conducted by RUDE personnel.

A Request for Final Approved Tides was submitted to N/OPS1 on May 20, 2002. A copy of this request is included in Appendix IV. ***\*\*Approved tides and zones were reapplied in caris to this survey during office processing.***

## C.2 Horizontal Control *See also evaluation report.*

All data collected during this survey are positioned in the North American Datum of 1983 (NAD83), projected in Universal Transverse Mercator Zone (UTM) 18.

Horizontal control data for this survey was collected as described in the *NOAA Ship RUDE 2001 Data Acquisition and Processing Report*, \* using the Global Positioning System corrected with data from U.S. Coast Guard differential beacons. The following Coast Guard beacon stations were used during H11044 data acquisition:

| Site           | Frequency | Baud Rate | Latitude (N) | Longitude (W) |
|----------------|-----------|-----------|--------------|---------------|
| Moriches, NY   | 293 kHz   | 100 BPS   | 40° 47.4'    | 72° 44.7'     |
| Sandy Hook, NJ | 286 kHz   | 200 BPS   | 40° 28.3'    | 74° 0.7'      |

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

Over 379 million individual soundings were acquired on H11044, which were thinned to 9117 soundings at survey scale. General agreement between the current data set and charted depths is addressed in Section D.1.b. Specific soundings and features located during H11044 acquisition are discussed in Sections D.1.c (AWOIS Items), d (Other Charted Features), and e (New Items). Of the 1479 significant contacts representing 1079 physical features located in the H11044 survey area, 42 items were selected for charting.

***\* Data filed with original field records***

**D.1.a Charts Affected:** All or part of the following NOAA nautical charts are contained within the limits of H11044:

| Chart Number | Edition | Edition Date  | Scale    |
|--------------|---------|---------------|----------|
| 12354        | 39th    | 15 Dec. 2001  | 1:80,000 |
| 12363        | 39th    | 15 July 2000  | 1:80,000 |
| 12364 SC     | 33rd    | 16 Feb. 2002  | 1:40,000 |
| 12369        | 24th    | 28 March 1998 | 1:20,000 |
| 12370        | 17th    | 6 March 1993  | 1:20,000 |
| 12371        | 22nd    | 25 July 1992  | 1:20,000 |

United States Coast Guard Notice to Mariners and Local Notice to Mariners corrections were applied to all charts through 13 April 2002 (NM and LNM 15/02).

Current survey soundings and features were compared to charted depths and features on NOAA Charts 12354, 12369, 12370, and 12371. Chart 12354 is the only chart which covers the entire survey area. Charts 12369, 12370, and 12371 are large scale charts covering the Connecticut coastline in the northern part of the H11044 survey area. Chart 12364SC is a small craft chart booklet which does not cover the entire survey area. Chart 12363 is a small scale chart of western Long Island Sound which covers only the extreme western edge of H11044 where charts 12354 and 12363 junction.

**D.1.b General Description of Surveyed Area and Sounding Comparison:**

H11044 covers a large area (approximately 90 square nautical miles) from Stratford Point to New Haven along the Connecticut coast and south across Long Island Sound to approximately 3.5 nautical miles north of Long Island. In general, the characteristics of the survey area are typical for Long Island Sound, exhibiting a generally flat bottom composed primarily of sand and mud. This relatively simple bathymetry is punctuated by rocky outcrops and ledges close to shore, clusters of glacial erratic boulders offshore, a large area of dynamic submarine sand formations sculpted by tidal current, and

Stratford Shoal. Also, as Long Island Sound and the ports of southern Connecticut have been major centers of maritime commerce for over 300 years, numerous sunken wrecks and other man made features were located.

Although H11044 was assigned as a 1:20,000 scale survey, the hydrographer recommends that office verification and processing be conducted at 1:10,000 scale or larger. The coastal area covered by H11044 is a dynamic, rocky environment with numerous hazards, which supports heavy recreational and commercial vessel traffic. Much of this area has not been surveyed since the 1890's, and there are significant discrepancies between charted depths and current survey soundings. The hydrographer believes that analysis of H11044 at a larger scale is necessary to accurately portray the results of this survey on the 1:20,000 scale coastal charts of the common area. As noted in Section B and the Data Acquisition and Processing Report, all sounding data for H11044 were imported into the Pydro PSS at a 15 meter grid and can be excessed back to this density if increased sounding resolution is required. ***Concur in part. Three 1:20,00 scale charts are affected by this survey, and the area should have been assigned as four 1:10,000 scale surveys. Analysis at larger than data acquisition scale would be desirable if not for the gross increase in administrative overhead that would be incurred. Making such an adjustment after the fact would be an extremely poor use of limited resources. The data collected and portayed at 1:20,000 is adequate to update the charts.***

The color scheme varies between charts in the survey area. Charts 12354, 12363, 12369, and 12371 are printed with blue tint from shore to the 18 foot contour, while Charts 12364SC and 12370 are printed with blue tint only to the 6 foot contour. The hydrographer recommends that color schemes be consistent for all charts. ***Concur.***

Detailed descriptions of each of the main areas of the survey, the degree of agreement between charted depths and current survey soundings, and tabulated significant soundings follow below. AWOIS Items, other charted features, and new "non-skin-of-the-earth" features are described in sections D.1.c, d, and e, respectively.

#### *Stratford Point to Stratford Shoal*

This roughly triangular area is bounded on the north by the Connecticut coastline from Point No Point to the mouth of the Housatonic River, and on the south by Stratford Shoal Buoy G "3". The bottom in this area is primarily sand, which is continually sculpted by the tidal current choked between Stratford Shoal and Stratford Point. While charted depths outside the 30 foot contour are in generally good agreement with current survey soundings, inshore bathymetry has changed dramatically since this area was last surveyed in the 1890's.

Of particular concern is the area directly southwest of the Housatonic River entrance, which supports heavy yacht and commercial fishing boat traffic. The current survey located a sand bar with least depths of 7-8 feet extending northeast approximately 600 meters from the southern tip of Stratford Point. The 8 foot

sounding at the extreme northeast end of this bar (Pydro feature ru01\_sb/2001-278/809\_1136/181/1) was submitted as a Danger to Navigation on 13 September, 2001. (See section Appendix I for the original DTON report.) The hydrographer recommends that charted soundings and depth curves in the common area be updated with data from the current survey. *Concur.*

Charted depths at the mouth of the Housatonic River are generally shoaler than soundings from the current survey. This area was investigated with a combination of 200% SSS and SWMB and VBES development. The following charted depths were found to be in error:

| Chart                     | Charted Depth | Charted Latitude (N) | Charted Longitude (W) | Survey Sounding |
|---------------------------|---------------|----------------------|-----------------------|-----------------|
| 12369,<br>12370,<br>12354 | 6 feet        | 41°09'26.849"        | 073°05'36.159"        | 14-15 feet      |
| 12369,<br>12370           | 13 feet       | 41°09'32.239"        | 073°05'32.567"        | 20-21 feet      |

The hydrographer recommends that charted soundings and depth curves in the common area be updated with data from the current survey. *Concur.*

The Housatonic River Entrance Channel was surveyed with SWMB as far as buoy R "8". Survey soundings were consistent with tabulated depths with the exception of the following 10 foot soundings in the left outside quarter of the channel in the vicinity of buoy G "1A".

| Chart           | Tabulated Depth | Sounding Latitude (N) | Sounding Longitude (W) | Survey Sounding |
|-----------------|-----------------|-----------------------|------------------------|-----------------|
| 12369,<br>12370 | 11.1 feet       | 41°09'33.405"         | 073°05'40.342"         | 10 feet         |
| 12369,<br>12370 | 11.1 feet       | 41°09'32.621"         | 073°05'39.163"         | *10 feet        |

*\* Not shown on Smooth Sheet due to scale*

The area between Point No Point, Stratford Point, and Stratford Point buoy R"20" is a confused region of sandy bottom shaped by tidal current, and was investigated with a combination of 200% SSS and basic VBES hydrography at

25m line spacing. Charted depths and current survey soundings in this area are typically between 10 and 18 feet, but the shape of the submarine features and distribution of depths has changed since the last survey. The hydrographer does not consider these discrepancies to pose a hazard to navigation, since the range of depths in the area is unchanged, but does recommend updating the charts with current survey data. **Concur.**

There is a large region of well developed sand waves oriented approximately north-south, starting near in the vicinity of Stratford Point buoy R "20" and extending south roughly 4.3 kilometers. This area was investigated with 200% SSS, and 100% SWMB between the 30 and 18 foot contours. Seaward of the 30 foot contour, the peaks of the sand waves were selected from SSS imagery and developed with SWMB. This is a highly dynamic environment, and while survey soundings and charted depths generally agree to within +/- 1-2 feet, some larger discrepancies were found. Sand wave ridges were selected as significant contacts, and annotated "Sand Wave" or "Sand Ridge" in the feature "Remarks" of the Pydro PSS. The hydrographer recommends updating the chart with soundings from the current survey and charting the annotation "Sandwaves" in this area to alert mariners to the possibility of changing depths over time. **Concur.**

There is a deep channel between the shallow tongue of Stratford Point discussed above and Stratford Shoal. One hundred percent SWMB coverage was acquired in this area. Soundings from the current survey generally agree well with charted depths, with discrepancies of more than 2% noted only in the following two locations:

| Chart | Charted Depth | Charted Latitude (N) | Charted Longitude (W) | Survey Sounding                |
|-------|---------------|----------------------|-----------------------|--------------------------------|
| 12369 | 185 feet      | 41°04'58.203"        | 073°06'24.468"        | <del>164</del> <b>156</b> feet |
| 12369 | 148 feet      | 41°05'07.605"        | 073°05'46.153"        | <del>131</del> <b>130</b> feet |

The hydrographer recommends updating the charts with current survey data in the common area. **Concur.**

#### *Stratford Shoal Middle Ground*

Stratford Shoal is a large area of sand and rocks which rises from the surrounding 70-100 foot depths of Long Island Sound to least depths less than 10 feet. The feature is roughly triangular, bounded by Stratford Shoal buoys G "1", R "2", and G "3". Stratford Shoal Light is built on the shallowest point of the shoal, in the southern vertex of the buoy triangle.

RUDE and Launch 1419 acquired 200% SSS and 100% SWMB coverage of Stratford Shoal from approximately the 60 to 18 foot contours. Numerous discrepancies between charted depths and survey soundings were observed, particularly in the rocky areas along the southeast, south, and west sides of the shoal. Several Dangers to Navigation have been selected in this area (see sections D.1.d.iii and D.1.e, and Appendix I)\*. These soundings and “Rk” annotations will hopefully minimize the possibility of a maritime casualty, but create an unsatisfactory cartographic product. The hydrographer recommends removing these individual rocks from the next chart editions, updating depths and contours in the common area with data from the current survey, and adding the annotation “Rky” at regular intervals throughout the area as chart scale permits. (See section D.1.d.iii below for more complete discussion of this area.) **Concur.**

There is a slight depression on Stratford Shoal depicted on Chart 12369 in approximate latitude 41°03'59" N, longitude 073°06'00" W. This depression is enclosed by the 30 foot contour, the interior of which is tinted blue rather than left white. The hydrographer recommends that soundings and depth contours in the common area be updated with current survey data, and that tint in this area be revised for consistency with the rest of the chart.

**Concur, MCD action recommended**

Inside the 18 foot contour in the vicinity of Stratford Shoal Light, RUDE and Launch 1419 acquired 200% SSS coverage, VBES hydrography at 10 meter line spacing, and VBES and SWMB development as close as to the light as navigation safety permitted. Survey soundings in this area were in general somewhat deeper than charted depths. In particular, the following charted shoal depths were not found during the current survey: **Concur.**

| Chart | Charted Depth | Charted Latitude (N) | Charted Longitude (W) | Survey Sounding                      |
|-------|---------------|----------------------|-----------------------|--------------------------------------|
| 12369 | 1 foot        | 41°03'35.123"        | 073°06'02.285"        | <del>12-17</del> feet<br><b>9-15</b> |
| 12369 | 3 feet        | 41°03'32.956"        | 073°06'02.890"        | 20-21 feet                           |

The 1 foot sounding was covered with 2 lines of VBES development. The 3 foot sounding was partially covered by SSS, and fully covered with basic VBES hydrography. The hydrographer recommends updating charted soundings and depth curves with current survey data.

*Coastline from the Housatonic River to New Haven West Breakwater*

The coastal area from the Housatonic River to New Haven Harbor seaward to the 30 foot contour is defined by a series of shallow, sand and mud bottomed bights

**\* Data filed with original field records**

separated by rocky points and ledges. This region was covered with 200% SSS and VBES to the 6 meter contour, and VBES hydrography at 25 meter line spacing inshore to the 4 meter contour, with SWMB and VBES development over features and shoal areas.

In the bays and offshore to the 30 foot curve, the bottom is flat and charted depths and survey soundings are in general agreement. However, numerous discrepancies between charted depths and survey soundings were found on the ledges extending from Charles Island, Welches Point, Pond Point, and the shoreline between Pond and Oyster River Points. Significant features in this area are addressed in section D.1.e. As on Stratford Shoal, numerous individual rocks have been submitted as Dangers to Navigation. The hydrographer recommends removing these individual rocks from forthcoming chart editions, updating depths and contours in the common area with data from the current survey, and adding the annotation “Rky” at regular intervals throughout the area as chart scale permits. *Concur.*

*Offshore area*

Offshore of the 30 foot contour and outside the areas described above, survey soundings agreed well with charted depths. This region was investigated with a combination of 200% SSS coverage and 100% SWMB / 100% SSS coverage (a detailed chartlet illustrating the sonar systems used in each area of the survey is included in Appendix V)\*. With the exception of soundings on features discussed in sections D.1.c, d, and e below, differences were within 2 feet as far as 90 foot depths, and approximately 2% in water deeper than 90 feet. The hydrographer recommends updating the charts with current survey data in the common area.

*Concur.*

**D.1.c** Automated Wreck and Obstruction Information System Items:

Fourteen items from the AWOIS database fall within the H11044 survey limits. Of these, 8 were assigned to RUDE for full investigation, and 6 were for information only. Items were marked in the Pydro PSS according to the significance of any associated feature or sounding.

*\* Data filed with original field records*

**D.1.c.i AWOIS 1769****Item Description:** Shoal Sounding**Source:** CL453/81**AWOIS Position:** 41°02'36.350" N, 073°03'46.370" W**Required Investigation:** Information**Charts Affected:** 12354**Charting Status:** Not Charted**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Pydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

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**Investigation Summary:**

One hundred percent side scan and one hundred percent multibeam sonar coverage showed no evidence of shoaling or significant obstructions in this area.

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**Charting Recommendations:**

The hydrographer recommends updating the common area with current survey soundings. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.ii AWOIS 1771****Item Description:** Shoal**Source:** H8967/67-68--OPR-474**AWOIS Position:** 41°03'01.950" N, 073°06'18.480" W**Required Investigation:** Information**Charts Affected:** 12369, 12354**Charting Status:** Charted Depths**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Pydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

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**Investigation Summary:**

One hundred percent multibeam sonar coverage was acquired in this area.

Survey soundings agree well with currently charted depths.

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**Charting Recommendations:**

The hydrographer recommends updating the common area with current survey soundings. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.iii AWOIS 1797**

**Item Description:** Wreck, probable barge

**Source:** H9008/68--SP-AMC-11-68, OPR-474

**AWOIS Position:** 41°07'29.830" N, 073°02'08.540" W

**Required Investigation:** SD, S2, SWMB, DI

**Charts Affected:** 12370, 12354

**Charting Status:** Charted "Wk" with danger curve, tint, and 48' sounding

**Investigation**

**Date(s) / DN(s):** 12, 26 June, 16, 18 July 2001 / 163, 177, **197**, 199

**Investigation Method:** S2, SWMB, DI

**Pydro Primary Feature Name(s):**

Imagery: ru00\_sss\_trimble/2001-177/280\_1751/0001

**MBES Bathymetry:** ru00\_mb/2001-197/809\_1621/119/34

Dive DP: RU\_dive/2001-199/07182001/ 15:36:00

**Surveyed Position:** 41°07'29.498" N, 073°02'09.680" W

**Position Source:** DGPS

---

**Investigation Summary:**

Two hundred percent side scan coverage of the required search area was acquired as part of H11044 main scheme coverage. A large contact matching the description of AWOIS 1797 was found in the side scan sonar imagery 26 meters west of the AWOIS position. A least depth of 48 feet (14.64 meters) in latitude 41°07'29.498" N, longitude 073°02'09.680" W was determined by multibeam echosounder development on DN 197. Divers investigated the contact on DN 199, and found a sunken metal barge loaded with coal. The wreck is approximately 30m long with an east-west orientation, and rises roughly 3 meters off the surrounding bottom. The divers acquired a least depth gauge reading at the top of the coal pile which corrected to a depth approximately 1 foot deeper than the SWMB value.

Copies of the Dive Report are included in Appendix V. \* *Data filed with original field records*

---

**Charting Recommendations:**

The hydrographer recommends removing the 48 foot sounding, danger circle, and "Wk" annotation charted in latitude 41°07'29.520" N, 073°02'05.831" W, and charting a 48 foot sounding, danger circle, and "Wk" annotation in latitude 41°07'29.498" N, longitude 073°02'09.680" W. The hydrographer also recommends updating the common area with present survey soundings.

*Concur.*

**Recommended Position:** 41°07'29.498" N, 073°02'09.680" W

**Recommended Least Depth:** 48 feet

**Compilation Notes:**

**D.1.c.iv AWOIS 6882**

**Item Description:** Sunken 26' cabin cruiser

**Source:** LNM39/70--3RD CGD

**AWOIS Position:** 41°03'35.350" N, -073°06'24.380" W

**Required Investigation:** SD, S2, SWMB, DI

**Charts Affected:** 12369, 12354, 12363

**Charting Status:** Charted "Dangerous Wreck, Depth Unknown" with "PA" and "rep" annotations

**Investigation**

**Date(s) / DN(s):** N/A

**Investigation Method:** N/A

**Pydro Primary Feature Name(s):** N/A

**Surveyed Position:** N/A

**Position Source:** N/A

---

**Investigation Summary:**

The required search radius was covered with two hundred percent side scan sonar coverage to the 6 meter contour and vertical beam echosounder hydrography between the 6 and 4 meter contours as part of H11044 main scheme coverage. Neither side scan sonar imagery nor vertical or multibeam echosounder bathymetry showed any evidence of a wreck within the search radius

---

**Charting Recommendations:**

The hydrographer recommends removing the wreck symbol charted in latitude 41°03'35.350" N, longitude 073°06'24.380" W and the associated "PA" and "Rep" annotations, and updating the common area with present survey soundings. *Concur.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**Compilation Notes:**

**D.1.c.v AWOIS 6883****Item Description:** Sunken Pile Driver Barge**Source:** NM42/62**AWOIS Position:** 41°07'56.850" N, 073°07'26.890" W**Required Investigation:** SD, S2, SWMB, DI**Charts Affected:** 12369, 12370, 12354, 12363, 12364SC**Charting Status:** Charted "Dangerous Wreck, Depth Unknown" with "Rep 1968" annotation**Investigation****Date(s) / DN(s):** 11, 30 October, 9 November 2001 / 284, 303, 313**Investigation Method:** S2, SWMB, DI**Pydro Primary Feature Name(s):**

Imagery: ru01\_sss/2001-284/202\_2059/0001

ru01\_sss/2001-284/104\_2005/0001

**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

Two hundred percent side scan sonar coverage of the required search radius on DN 284 located two potentially significant features. Feature "ru01\_sss/2001-284/202\_2059/0001" was further investigated by multibeam sonar on DN 303 and identified as a correctly charted natural sand formation. Contact "ru01\_sss/2001-284/104\_2005/0001" was developed with multibeam sonar on DN 303, and investigated by divers on DN 313. This feature was identified as uncharted machinery wreckage not matching the description of AWOIS 6883 (see section D.2*1*e for discussion of this new item).

Copies of the Dive Report are included in Appendix V. \*

*\* Data filed with original field records*

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**Charting Recommendations:**

The hydrographer recommends removing the charted wreck symbol in latitude 41°07'56.850" N, longitude 073°07'26.890" W *concur* and the associated "Rep 1968 annotation\*\*" and updating the common area with present survey soundings. *Concur w/clarification.*

*\*\*The charted note "Rep 1968" is not associated with the near by wreck symbol. This note applies to AWOIS item #6884, an 11 ft sounding southwest of the note on charts # 12369 & 12370.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**Compilation Notes:**

**D.1.c.vi AWOIS 6884****Item Description:** Shoal**Source:** NM25/68**AWOIS Position:** 41°07'52.350" N, 073°07'29.390" W**Required Investigation:** Information**Charts Affected:** 12369, 12370, 12354, 12363, 12364SC**Charting Status:** Charted 11 foot depth**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Pydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

The area surrounding AWOIS 6884 was covered by 200% side scan sonar and vertical beam echo sounder hydrography at 25 meter line spacing as part of the investigation of AWOIS 6883 and main scheme coverage of H11044. Two 9 foot (2.72 meter) soundings were found within 30 meters of the charted 11 foot depth. This is a highly dynamic region with strong current and shifting sand, with significant discrepancies observed between charted depths and survey soundings. Stratford Point Buoy R "20" is stationed seaward of this shoal.

---

**Charting Recommendations:**

The hydrographer recommends updating the common area with current survey soundings. *Concur w/ clarification*

*It is also recommended that the annotation "Rep 1968" be deleted from the chart.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.vii AWOIS 6934**

**Item Description:** Milford Dumping Ground, discontinued 1977

**Source:** CL929/50

**AWOIS Position:** 41°06'48.350" N, 073°01'52.370" W

**Required Investigation:** Information

**Charts Affected:** 12354

**Charting Status:** Not Charted

**Investigation**

**Date(s) / DN(s):** 159, 178, 243

**Investigation Method:** S2, SWMB

**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-243/901\_1558/0001

ru00\_sss\_trimble/2001-178/270\_1833/0002

ru00\_mb/2001-159/157\_1413/0002

**Surveyed Position:** N/A

**Position Source:** N/A

---

**Investigation Summary:**

Two hundred percent side scan sonar coverage identified three possible dump rings within the limits of the discontinued dumping ground. All three were covered by multibeam echosounder main scheme coverage or development, and found to be insignificant. Survey soundings throughout the area are in

close agreement with charted depths.

---

**Charting Recommendations:**

The hydrographer recommends updating the common area with current survey soundings. *Concur.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**Compilation Notes:**

**D.1.c.viii AWOIS 7108****Item Description:** Wreck**Source:** Greenwich Police Department**AWOIS Position:** 41°02'28.350" N, 073°02'40.370" W**Required Investigation:** Information**Charts Affected:** 12354**Charting Status:** Not Charted**Investigation****Date(s) / DN(s):** 16 May, 16 July, 25 October 2001 / 136, 197, 298**Investigation Method:** S1, SWMB1**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-136/112\_2229/0002

**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

One hundred percent side scan and one hundred percent multibeam sonar coverage was acquired in the area of AWOIS 7108. A dark, approximately hull shaped feature with no shadow (ru00\_mb/2001-136/112\_2229/0002) was located approximately 280 meters northwest of the AWOIS position. Subsequent multibeam sonar development of this feature indicated a depression approximately 10 centimeters deep and no vertical extension above the surrounding bottom, with a least depth of 117 feet (35.86 meters). The contact was not investigated by divers due to depth and insignificance.

---

**Charting Recommendations:**

The hydrographer recommends updating the common area with current survey soundings. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.ix AWOIS 7539****Item Description:** Wreck**Source:** FE241WD/82--OPR-B660-RU/HE-82**AWOIS Position:** 41°02'36.350" N, 073°04'23.880" W**Required Investigation:** SD, S2, SWMB, DI**Charts Affected:** 12354**Charting Status:** Charted "Non Dangerous Wreck"**Investigation****Date(s) / DN(s):** 16 May, 16 July, 24, 31 October 2001 / 136, 197, 297, 304**Investigation Method:** S1, SWMB, DI**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-136/113\_1554/0006

Bathymetry: ru00\_mb/2001-197/814\_1342/155/20

**Surveyed Position:** 41°02'37.055" N, 073°04'21.278" W**Position Source:** DGPS

---

**Investigation Summary:**

One hundred percent side scan and one hundred percent multibeam sonar coverage was acquired in the area of AWOIS 7539. A large contact matching the description of AWOIS ~~1797~~ **7539** was found in the side scan sonar imagery 85 meters east of the AWOIS position. A least depth of 98 feet (29.87 meters) in latitude 41°02'37.055" N, longitude 073°04'21.278" W was determined by multibeam echosounder development on DN 197. Divers investigated the contact on DN 304, and found a large pile of coal with some debris scattered on top. No hull was observed. Full investigation of the wreck and surrounding area was not possible due to depth and bottom time limitations, but the hydrographer believes this contact to be the fuel left from the wreck of a wooden steamship, the hull of which has since rotted away. The wreck is approximately 20m long with an east-west orientation, and rises roughly 4 meters off the surrounding bottom. No diver least depth gauge reading was taken.

Copies of the Dive Report are included in Appendix V.

---

**Charting Recommendations:**

The hydrographer recommends removing the "Non Dangerous Sunken Wreck, least depth unknown" symbol in latitude 41°02'36.350" N, longitude 073°04'23.880" W from the chart, and charting a ~~98~~ **97** foot sounding and "Wk" annotation in latitude 41°02'37.055" N, longitude 073°04'21.278" W. The hydrographer also recommends updating the common area with current survey soundings. *Concur.*

**Recommended Position:** 41°02'37.055" N, 073°04'21.278" W

**Recommended Least Depth:** 97 98 feet

*chart 97 Wk*

**Compilation Notes:**

**D.1.c.x AWOIS 7555**

**Item Description:** Wreck of Steamship *Lexington*

**Source:** Greenwich Police Department

**AWOIS Position:** 41°02'03.350" N, 073°07'21.380" W

**Required Investigation:** SD, S2, SWMB, DI

**Charts Affected:** 12354, 12363

**Charting Status:** Not Charted

**Investigation**

**Date(s) / DN(s):** 21, 29, 30 May, 16 July, 13 August, 19 September, 25 October / 141,149, 150, 197, 225, 262, 298

**Investigation Method:** S2 , S1/SWMB1, SWMB

**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-149/100\_1237/0002

ru00\_mb/2001-150/103\_1140/0001

ru00\_mb/2001-225/900\_1329/0002

**ru00\_mb/2001-150/104\_1451/0006**

Bathymetry: **ru00\_mb/2001-197/813\_1307/ 155/27**

**Surveyed Position:** 41°01'56.482" N, 073°07'21.427" W

**Position Source:** DGPS

---

**Investigation Summary:**

One hundred percent side scan and one hundred percent multibeam sonar or two hundred percent side scan sonar coverage was acquired in that portion of the required search radius falling inside the H11044 survey limits. Several possible wrecks were identified in the side scan imagery and developed with multibeam sonar.

Feature "ru00\_mb/2001-149/100\_1237/0002" has the appearance of a well defined metal hulled wreck, inconsistent with the known age of the *Lexington*. No diver investigation was possible due to the extreme depth (141 feet).

Features "h11044/ru00\_mb/2001-150/103\_1140/0001" and "ru00\_mb/2001-225/900\_1329/0002" appear to be a heavily deteriorated debris piles and were developed by multibeam sonar. Neither contact was found to have a height of greater than one meter above the surrounding bottom. The small size and insignificant height of these features are not consistent with the description of AWOIS 7555.

Feature "ru00\_mb/2001-150/104\_1451/0006" is approximately 200 meters south of the position of AWOIS 7555, and was identified by local divers as

the bow section of *Lexington*. The contact appears to be a somewhat deteriorated vessel or part thereof, approximately 30 meters in length. The feature was developed with multibeam sonar and found to rise 2 to 3 meters above the surrounding bottom with a least depth of 116 feet (35.41 meters). This depth prevented RUDE divers from independently verifying the feature's identity.

AWOIS 7555 will be further investigated as part of H11045.

---

**Charting Recommendations:**

The hydrographer recommends charting a 116 foot sounding and "Wk" annotation at the multibeam least depth position obtained on feature "~~ru00\_mb/2001-150/104\_1451/0006~~" "***ru00\_mb/2001-197/813\_1307/155/27***", and updating the common area with present survey soundings. ***Concur.***

***chart 116 Wk***

**Recommended Position:** 41°01'56.482" N, 073°07'21.427" W

**Recommended Least Depth:** 116 feet

**Compilation Notes:**

**D.1.c.x AWOIS 11035****Item Description:** Oyster Stakes Reported**Source:** CL1534/81**AWOIS Position:** 41°10'09.250" N, 073°04'40.980" W**Required Investigation:** SD, S2, SWMB, DI**Charts Affected:** 12370, 12371, 12354**Charting Status:** Charted Annotation "Oyster Stakes Rep"**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Hydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

Numerous (50-100) oyster stakes were observed in an area bounded approximately by the 30 foot contour to seaward, the Housatonic River entrance on the west, and New Haven West Breakwater on the east. These stakes are constructed of light bamboo, and as such are subject to damage or destruction by sea condition and vessel traffic. After consulting Hydrographic Surveys Division personnel, the hydrographer determined that it was not necessary to specifically investigate each of these semi-permanent features.

**Charting Recommendations:**

The hydrographer believes that charting these features individually would be impractical and add unwarranted "clutter" to the chart. The hydrographer recommends removing the charted "Oyster Stakes Reported" annotation and charting the annotation "Numerous oyster stakes" at regular intervals inside the 30 foot contour between the Housatonic River and New Haven West Breakwater as chart scale permits. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.xi AWOIS 11036****Item Description:** Oyster Stakes Reported**Source:** CL1534/81**AWOIS Position:** 41°10'21.140" N, 073°04'50.390" W**Required Investigation:** SD, S2, SWMB, DI**Charts Affected:** 12370, 12371, 12354**Charting Status:** Charted Annotation "Oyster Stakes Rep"**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Pydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

Numerous (50-100) oyster stakes were observed in an area bounded approximately by the 30 foot contour to seaward, the Housatonic River entrance on the west, and New Haven West Breakwater on the east. These stakes are constructed of light bamboo, and as such are subject to damage or destruction by sea condition and vessel traffic. After consulting Hydrographic Surveys Division personnel, the hydrographer determined that it was not necessary to specifically investigate each of these semi-permanent features.

---

**Charting Recommendations:**

The hydrographer believes that charting these features individually would be impractical and add unwarranted "clutter" to the chart. The hydrographer recommends removing the charted "Oyster Stakes Reported" annotation and charting the annotation "Numerous oyster stakes" at regular intervals inside the 30 foot contour between the Housatonic River and New Haven West Breakwater as chart scale permits. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.xii AWOIS 11037****Item Description:** Oyster Stakes Reported**Source:** CL1534/81**AWOIS Position:** 41°10'23.340" N, 073°04'52.060" W**Required Investigation:** SD, S2, SWMB, DI**Charts Affected:** 12370, 12371, 12354**Charting Status:** Charted Annotation "Oyster Stakes Rep"**Investigation****Date(s) / DN(s):** N/A**Investigation Method:** N/A**Hydro Primary Feature Name(s):** N/A**Surveyed Position:** N/A**Position Source:** N/A

---

**Investigation Summary:**

Numerous (50-100) oyster stakes were observed in an area bounded approximately by the 30 foot contour to seaward, the Housatonic River entrance on the west, and New Haven West Breakwater on the east. These stakes are constructed of light bamboo, and as such are subject to damage or destruction by sea condition and vessel traffic. After consulting Hydrographic Surveys Division personnel, the hydrographer determined that it was not necessary to specifically investigate each of these semi-permanent features.

---

**Charting Recommendations:**

The hydrographer believes that charting these features individually would be impractical and add unwarranted "clutter" to the chart. The hydrographer recommends removing the charted "Oyster Stakes Reported" annotation and charting the annotation "Numerous oyster stakes" at regular intervals inside the 30 foot contour between the Housatonic River and New Haven West Breakwater as chart scale permits. *Concur.*

**Recommended Position:** N/A**Recommended Least Depth:** N/A**Compilation Notes:**

**D.1.c.xiii AWOIS 11038**

**Item Description:** Oyster Stakes Reported

**Source:** CL1534/81

**AWOIS Position:** 41°10'31.840" N, 073°04'26.730" W

**Required Investigation:** SD, S2, SWMB, DI

**Charts Affected:** 12370, 12371, 12354

**Charting Status:** Charted Annotation "Oyster Stakes Rep"

**Investigation**

**Date(s) / DN(s):** N/A

**Investigation Method:** N/A

**Pydro Primary Feature Name(s):** N/A

**Surveyed Position:** N/A

**Position Source:** N/A

---

**Investigation Summary:**

Numerous (50-100) oyster stakes were observed in an area bounded approximately by the 30 foot contour to seaward, the Housatonic River entrance on the west, and New Haven West Breakwater on the east. These stakes are constructed of light bamboo, and as such are subject to damage or destruction by sea condition and vessel traffic. After consulting Hydrographic Surveys Division personnel, the hydrographer determined that it was not necessary to specifically investigate each of these semi-permanent features.

---

**Charting Recommendations:**

The hydrographer believes that charting these features individually would be impractical and add unwarranted "clutter" to the chart. The hydrographer recommends removing the charted "Oyster Stakes Reported" annotation and charting the annotation "Numerous oyster stakes" at regular intervals inside the 30 foot contour between the Housatonic River and New Haven West Breakwater as chart scale permits. *Concur.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**Compilation Notes:**

**D.1.d** Other Charted Features:

There are 5 features charted in the survey area which are not listed in the AWOIS Database.

**D.1.d.i**

**Item Description:** Mooring Buoy  
**Charted Position:** 41°10'21.140" N, 073°04'50.390" W  
**Charts Affected:** 12369, 12370, 12354  
**Charting Status:** Charted Mooring Buoy

**Investigation**  
**Investigation Method:** Visual  
**Pydro Primary Feature Name(s):** N/A  
**Surveyed Position:** N/A

---

**Investigation Summary:**

The charted mooring buoy was not observed by RUDE personnel.

---

**Charting Recommendations:**

The hydrographer recommends removing the mooring buoy charted in latitude 41°10' ~~09~~21.140~~53.11~~" N, longitude 073°04' ~~05~~50.390~~17.96~~" W.  
*Concur w/clarification - defer to MCD Update Services Branch for buoy positioning.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**D.1.d.ii**

**Item Description:** Rock

**Charted Position:** 41°03'30.219" N, 073°06'01.318" W

**Charts Affected:** 12369, 12354

**Charting Status:** 10 foot sounding with "Rk" annotation

**Investigation**

**Investigation Method:** 200% SSS, SWMB Development

**Pydro Primary Feature Name(s):**

Imagery: ru01\_sss/2001-253/936\_1417/0005

Bathymetry: ru00\_mb\_navgyro/2001-316/911\_1351/744/28

**Surveyed Position:** 41°03'30.146" N, 073°06'01.288" W

---

**Investigation Summary:**

The charted rock was located in the SSS imagery, and a least depth of 12 feet (3.64 meters) determined by SWMB development. See Pydro PSS for details.

---

**Charting Recommendations:**

The hydrographer recommends updating charted depths in the common area with current survey soundings, and retaining the "Rk" annotation.

***Do Not Concur. See E & A report, D.4.***

**Recommended Position:** 41°03'30.146" N, ~~073°06'01.288" W~~

**Recommended Least Depth:** ~~12~~

The following ~~charted~~ items were not depicted on the charts of the survey area during H11044 data acquisition. They were located and submitted as Dangers to Navigation by RUDE personnel in Fall 2001 and subsequently added to the chart by Notice to Mariners correction prior to survey submission.

#### D.1.d.iii

**Item Description:** Rock

**Charted Position:** 41°03'54.306"N, 073°05'18.007" W

**Charts Affected:** 12369, 12354, 12364SC

**Charting Status:** 12369: 18 foot sounding in danger circle and "Wk" annotation  
12354: 12 foot sounding in danger circle and "Rk" annotation

#### **Investigation**

**Investigation Method:** 200% SSS, 100% SWMB

**Pydro Primary Feature Name(s):**

Imagery: ru01\_sss/2001-232/103\_1752/0014

Bathymetry: ru00\_mb\_navgyro/2001-268/334\_1701/305/10

**Surveyed Position:** 41°03'54.~~203~~**306**" N, 073°05'18.~~496~~**007**" W

---

#### **Investigation Summary:**

The rock was located in the SSS imagery, and a least depth of 12 feet (3.86 meters) determined by SWMB development. See Pydro PSS for details.

The feature was submitted as a Danger to Navigation by RUDE personnel on 20 November, 2001 and published correctly in the Notice to Mariners (5/02). The correction was properly charted on Charts 12354 and 12364SC, but on Chart 12369 an 18 foot sounding, danger circle, and "Wk" annotation were applied instead of the correct feature. As of the last Notice to Mariners applied to this survey (15/02), this error had not been corrected. The hydrographer contacted Mr. Greg Norris, Marine Chart Division, regarding this problem on 14 May 2002. At that time, a correction to the raster chart was to be issued immediately.

---

#### **Charting Recommendations:**

The areas between Stratford Shoal Buoy G "1" and Stratford Shoal Light, and directly west of Stratford Shoal Light, have numerous large submerged boulders with least depths shoaler than current charted depths. In the interest of minimizing chart "clutter", the hydrographer recommends that these features not be charted individually. The hydrographer recommends removing of the charted danger circle and "Rk" annotation from charts 12354

and 12364 SC, and the charted danger circle and “*Rk Wk*” annotation from chart 12369. The hydrographer recommends updating these charts with current survey soundings in the common area, and charting the annotation “Rky” at regular intervals as chart scale permits within in this area. The hydrographer suggests the following approximate positions for this annotation: *Concur.*

| New Item Description | Surveyed Latitude (N) | Surveyed Longitude (W) | Charting Recommendation |
|----------------------|-----------------------|------------------------|-------------------------|
| Boulder Field        | 41°04'18”             | 073°05'34"             | “Rky” annotation        |
| Boulder Field        | 41°04'05"             | 073°05'02"             | “Rky” annotation        |
| Boulder Field        | 41°03'53"             | 073°05'22"             | “Rky” annotation        |
| Boulder Field        | 41°03'35"             | 073°05'53"             | “Rky” annotation        |
| Boulder Field        | 41°03'28"             | 073°06'13"             | “Rky” annotation        |

*Concur.*

**Recommended Position:** N/A

**Recommended Least Depth:** N/A

**D.1.d.iv**

**Item Description:** Wreck, remains of marine propulsion plant  
**Charted Position:** 41°04'39.757" N, 073°05'52.950" W  
**Charts Affected:** 12369, 12354  
**Charting Status:** 44 foot sounding with danger circle and "Wk" annotation

**Investigation**

**Investigation Method:** 200% SSS, SWMB Development, **DI**

**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-219/249\_1234/0002

Bathymetry: ru00\_mb\_navgyro/2001-317/805\_1409/325/22

**Dive DP: RU\_dive/2001-317/11132001/Dive drop 11\_13\_01**

**Surveyed Position:** 41°04'39.529" N, 073°05'53.305" W

**Investigation Summary:**

This feature was located on SSS imagery, developed by SWMB, and investigated by divers who found what appeared to be the remains of a ship's steam engine plant, from boiler to propeller, with no hull present. The divers' least depth gauge reading was slightly shoaler than the SWMB least depth. See Pydro PSS for details.

The feature was submitted as a Danger to Navigation by RUDE personnel on 20 November, 2001, with a least depth of 44 feet. Subsequent application of verified tides to the divers' least depth gauge reading yielded a least depth of 43 feet.

Copies of the Dive Report are included in Appendix V.

**Charting Recommendations:**

The hydrographer recommends removing the charted 44 foot sounding, danger circle, and "Wk" annotation from latitude 41°04'39.757" N, longitude 073°05'52.950" W, and charting a 43 foot sounding, danger circle, and "Wk" annotation in latitude 41°04'39.529" N, longitude 073°05'53.305" W. The hydrographer also recommends updating the chart with current survey soundings in the common area. *Concur.*

**Recommended Position:** 41°04'39.529" N, 073°05'53.305" W

**Recommended Least Depth:** 43 feet *chart 43 Wk*

## D.1.d.v

**Item Description:** Wreck of small powerboat  
**Charted Position:** 41°07'24.247" N, 073°05'53.893" W  
**Charts Affected:** 12369, 12370, 12354, 12364SC  
**Charting Status:** 26 foot sounding with danger circle and "Wk" annotation

**Investigation**

**Investigation Method:** 200% SSS, SWMB Development, DI

**Pydro Primary Feature Name(s):**

Imagery: ru00\_mb/2001-137/108\_1735/0001

Bathymetry: ru00\_mb\_navgyro/2001-303/800\_1423/311/31

**Dive DP:** RU\_dive/2001-303/10302001/ 15:29:00

**Surveyed Position:** 41°07'24.132 **121**" N, 073°05'54.287 **411**" W

**Investigation Summary:**

This feature was located on SSS imagery, developed by SWMB, and investigated by divers who found the wreck of a small powerboat approximately 25 feet long standing vertically with its stern buried in the sediment. The divers' least depth gauge reading was slightly shoaler than the SWMB least depth, though both corrected to 26 feet.

The feature was submitted as a Danger to Navigation by RUDE personnel on 20 November, 2001.

Copies of the Dive Report are included in Appendix V.

**Charting Recommendations:**

The hydrographer recommends retaining this feature as charted, and updating the chart with current survey soundings in the common area. **Concur.**

**Recommended Position:** 41°07'24.132 **121**" N, 073°05'54.287 **411**" W

**Recommended Least Depth:** 26 feet **chart 26 Wk w/danger curve**

**D.1.e** New Features:

The following 37 previously uncharted features have been selected as chart items. The table below is intended to serve as a guide for finding these items in the Pydro PSS, which contains complete information on each. Explanatory notes follow this table.

| New Item Description | Surveyed Latitude (N)                    | Surveyed Longitude (W)                      | Pydro Primary Feature Names                                                                                                           | Charted Depth | Charting Recommendation                                            | Notes                |
|----------------------|------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------|----------------------|
| Wreck                | 41°01'32.144"                            | 073°07' <del>05.703</del> "<br><b>4.445</b> | Imagery: ru00_mb/2001-149/100_1237/0002<br>Bathy: ru00_mb_navgyro/2001-298/800_1537/31/28                                             | 150 - 67      | 122 foot sounding<br>"Wk" annotation                               | <i>Concur</i>        |
| Wreck                | 41°05'58. <del>845</del> "<br><b>558</b> | 072°59'32. <del>903</del> "<br><b>92</b>    | Imagery: ru00_mb/2001-158/153_2242/0001<br>DI: RU_dive/2001-199/07182001/13:54:56                                                     | 80 - 81       | 78 foot sounding<br>"Wk" annotation                                | 1<br><i>Concur</i>   |
| Wreck                | 41°05'13.532"                            | 073°06'29.358"                              | Imagery: ru00_mb/2001-164/801_2038/0001<br>Bathy: ru00_mb/2001-164/800_2051/68/31<br>DI: RU_dive/2001-201/07212001/16:04:00           | 92 - 104      | 79 foot sounding<br>"Wk" annotation                                | 1<br><i>Concur</i>   |
| Wreck                | 41°10'18.539"                            | 073°01'43.259"                              | Imagery: ru00_mb/2001-199/201_1656/0002<br>Bathy: ru00_mb/2001-247/807_2123/421/16<br>DI: RU_dive/2001-234/08222001/20:48:00          | 39 - 40       | 38 foot sounding<br>"Wk" annotation                                | 1<br><i>Concur</i>   |
| Wreck                | 41°08'53.868"                            | 073°03'27.853"                              | Imagery: ru00_mb/2001-199/202_1833/0001<br>Bathy: ru00_mb_navgyro/2001-313/830_1803/398/4                                             | 39 - 40       | 40 foot sounding<br>"Wk" annotation<br><i>See E &amp; A, D.2.</i>  |                      |
| Wreck                | 41°08'11.325"                            | 073°00'27.743"                              | Imagery: ru00_sss_trimble/2001-176/288_1839/0001<br>Bathy: ru00_mb/2001-226/800_1948/753/15<br>DI: RU_dive/2001-235/08232001/20:14:00 | 55            | 59 foot sounding<br>"Wk" annotation"<br><i>See E &amp; A, D.2.</i> | 1,2                  |
| Obstruction          | 41°08'01.777"                            | 073°07'29.161"                              | Imagery: ru01_sss/2001-284/104_2005/0001<br>Bathy: ru00_mb_navgyro/2001-303/801_1443/327/12<br>DI: RU_dive/2001-303/10302001/16:10:00 | 19            | 14 foot sounding<br>"Obstn" annotation                             | 1,3<br><i>Concur</i> |
| Wreck                | 41°05'22.975"                            | 072°56'59.642"                              | Imagery: ru00_mb/2001-213/258_1839/0001<br>Bathy: ru00_mb_navgyro/2001-298/821_1756/95/5                                              | 88 - 93       | 81 foot sounding<br>"Wk" annotation                                | <i>Concur</i>        |

| New Item Description | Surveyed Latitude (N) | Surveyed Longitude (W) | Pydro Primary Feature Names                                                                 | Charted Depth | Charting Recommendation                                                 | Notes                |
|----------------------|-----------------------|------------------------|---------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------|----------------------|
| Rock on ledge        | 41°11'51.902"         | 073°02'06.451"         | Imagery: ru01_sss/2001-218/131_2105/0005<br>Bathy: ru01_sb/2001-289/559_1348/241/1          | 16 -19        | 9 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.1.</i>       | 3,4<br><i>Concur</i> |
| Rock on ledge        | 41°11'44.207          | 073°01'59.048"         | Imagery: ru01_sss/2001-221/227_2023/0001<br>Bathy: ru00_mb_navgyro/2001-316/802_1553/175/4  | 18 - 24       | 13 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.1.</i>      | 3,4<br><i>Concur</i> |
| Rock on ledge        | 41°11'25.271"         | 073°03'00.173"         | Bathy: ru01_sb/2001-288/373_1636/292/1                                                      | 18            | 11 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.1.</i>      | 3,5<br><i>Concur</i> |
| Isolated Rock        | 41°10'54.810"         | 073°03'48.393"         | Imagery: ru01_sss/2001-225/210_1533/0001<br>Bathy: ru00_mb_navgyro/2001-316/800_1519/359/23 | 25 - 26       | 19 foot sounding<br>"Rk" annotation<br><i>See E &amp; A, D.5.</i>       | 3<br><i>Concur</i>   |
| Rock on outcrop      | 41°11'00.815"         | 073°03'49.123"         | Imagery: ru01_sss/2001-219/212_2332/0001<br>Bathy: ru01_sb/2001-285/917_1838/95/1           | 22 - 25       | 17 foot sounding<br>retain "Rky"<br><i>See E &amp; A, D.1.</i>          | 3,6<br><i>Concur</i> |
| Rock on outcrop      | 41°11'07.317"         | 073°03'53.748"         | Imagery: ru01_sss/2001-213/115_2048/0002<br>Bathy: ru01_sb/2001-285/894_1749/78/1           | 20 - 22       | 12 foot sounding<br>retain "Rky"<br><i>See E &amp; A, D.1.</i>          | 3,9<br><i>Concur</i> |
| Isolated Rock        | 41°11'59.704"         | 073°01'20.533"         | Imagery: ru01_sss/2001-214/123_1947/0001<br>Bathy: ru01_sb/2001-292/573_1216/92/1           | 19 - 21       | 15 foot sounding<br>"Rkrky" annotation<br><i>See E &amp; A, D.1.</i>    | 3<br><i>Concur</i>   |
| Isolated Rock        | 41°11'30.519"         | 073°01'54.080"         | Imagery: ru01_sss/2001-221/221_2213/0001<br>Bathy: ru00_mb_navgyro/2001-297/367_1416/145/34 | 25 - 29       | 20 19 foot sounding<br>"Rkrky" annotation<br><i>See E &amp; A, D.1.</i> | 3<br><i>Concur</i>   |
| Isolated Rock        | 41°11'33.363"         | 073°01'56.457"         | Imagery: ru01_sss/2001-221/222_2154/0001<br>Bathy: ru00_mb_navgyro/2001-316/803_1538/473/19 | 21 - 29       | 18 foot sounding<br>"Rkrky" annotation<br><i>See E &amp; A, D.1.</i>    | 3<br><i>Concur</i>   |
| Outcrop              | 41°12'57.151"         | 073°00'00.823"         | Imagery: ru01_sss/2001-220/138_1811/0005<br>Bathy: ru01_sb/2001-312/908_1216/80/1           | 20 - 24       | 11 foot sounding<br>"Rkrky" annotation<br><i>See E &amp; A, D.1.</i>    | 3<br><i>Concur</i>   |

|                   |               |                |                                                                                             |         |                                                                                                |                      |
|-------------------|---------------|----------------|---------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------|----------------------|
| Outcrop           | 41°13'02.538" | 073°00'00.923" | Bathy: ru01_sb/2001-312/913_1224/166/1                                                      | 18 - 20 | 7 foot sounding<br><del>"Rk"</del><br>"rky" annotation<br><i>See E &amp; A, D.1.</i>           | 3,7<br><i>Concur</i> |
| Rock on Ledge     | 41°13'14.216" | 072°59'42.041" | Imagery: ru01_sss/2001-240/238_1253/0004<br>Bathy: ru01_sb/2001-297/774_1957/194/1          | 18 - 22 | 5 foot sounding<br><i>See E &amp; A, D.1.</i>                                                  | 3<br><i>Concur</i>   |
| Outcrop           | 41°13'13.519" | 072°59'47.237" | Imagery: ru01_sss/2001-220/141_1900/0001<br>Bathy: ru01_sb/2001-297/764_2022/141/1          | 17      | <del>11</del> 10 foot sounding<br><del>"Rk"</del><br>"rky" annotation<br><i>add "rky" note</i> | <i>Concur</i>        |
| Sounding on Ledge | 41°12'01.864" | 073°01'07.951" | Bathy: ru01_sb/2001-278/228_1343/205/1                                                      | 14      | <del>10</del> 9 foot sounding<br>retain "Rky"                                                  | 3<br><i>Concur</i>   |
| Rock              | 41°10'21.099" | 072°59'08.906" | Imagery: ru01_sss/2001-243/953_1304/0001<br>Bathy: ru00_mb_navgyro/2001-296/325_1733/912/37 | 44      | 39 foot sounding<br>"Rk" annotation                                                            | <i>Concur</i>        |
| Outcrop           | 41°10'28.527" | 072°58'49.834" | Imagery: ru00_mb/2001-171/203_1527/0002<br>Bathy: ru00_mb_navgyro/2001-298/832_1956/268/36  | 40 - 43 | 38 foot sounding<br>"Rk" annotation                                                            | <i>Concur</i>        |
| Outcrop           | 41°09'34.277" | 072°59'22.697" | Imagery: ru00_mb/2001-172/304_2137/0001<br>Bathy: ru00_mb_navgyro/2001-298/829_1932/264/18  | 44 - 48 | 42 foot sounding<br><del>"Rks"</del><br>"Rk"                                                   | <i>Concur</i>        |
| Outcrop           | 41°08'57.091" | 072°57'58.527" | Imagery: ru00_mb/2001-170/186_1520/0001<br>Bathy: ru00_mb/2001-191/297_0002/4273/23         | 50 - 56 | <del>48</del> 47 foot sounding<br>"Rk" annotation                                              | <i>Concur</i>        |
| Wreck             | 41°09'28.301" | 073°03'13.439" | Imagery: ru00_mb/2001-152/106_1044/0001<br>Bathy: ru00_mb/2001-248/859_1706/499/11          | 35 - 37 | 39 foot sounding<br>"Wk" annotation<br><i>See E &amp; A, D.2.</i>                              | <i>do not Concur</i> |
| Debris field      | 41°07'58.746" | 073°04'58.708" | Imagery: ru00_mb/2001-152/106_1044/0002<br>Bathy: ru00_mb/2001-197/808_1644/722/23          | 39 - 40 | 37 foot sounding<br>"Obstn" annotation<br><i>See E &amp; A, D.2.</i>                           | <i>do not Concur</i> |
| Wreck             | 41°08'21.542" | 072°56'28.592" | Imagery: ru00_mb/2001-190/291_1540/0003<br>Bathy: ru00_mb_navgyro/2001-298/823_1859/181/17  | 63 - 65 | 66 foot sounding<br>"Wk" annotation<br><i>See E &amp; A, D.2.</i>                              | <i>do not Concur</i> |

| Obstruction          | 41°12'28.641"         | 072°58'56.881"         | Imagery: ru00_mb/2001-201/227_0012/0001<br>Bathy: ru00_mb/2001-249/800_2043/677/26           | 30-31         | 29 foot sounding<br>"Obstn" annotation                                           | <i>Concur</i>        |
|----------------------|-----------------------|------------------------|----------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------|----------------------|
| Rock on Outcrop      | 41°11'55.711"         | 073°01'03.626"         | Bathy: ru00_mb_navgyro/2001-303/914_1309/553/27                                              | 20 - 22       | 17 foot sounding<br>" <del>R</del> rky" annotation<br><i>See E &amp; A, D.I.</i> | 3<br><i>Concur</i>   |
| New Item Description | Surveyed Latitude (N) | Surveyed Longitude (W) | Pydro Primary Feature Names                                                                  | Charted Depth | Charting Recommendation                                                          | Notes                |
| Rock on Ledge        | 41°11'06.925"         | 073°03'07.185"         | Imagery: ru01_sss/2001-221/230_1853/0001<br>Bathy: ru01_sb/2001-295/830_2154/113/1           | 16            | 12 foot sounding<br>" <del>R</del> rky" annotation<br><i>See E &amp; A, D.I.</i> | 3<br><i>Concur</i>   |
| Rock                 | 41°03'56.154"         | 073°05'23.973"         | Imagery: ru01_sss/2001-232/104_1739/0010<br>Bathy: ru00_mb_navgyro/2001-269/348_1142/7212/25 | 20 – 22       | 11 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.I.</i>               | 3,8<br><i>Concur</i> |
| Rock                 | 41°03'54.890"         | 073°05'31.125"         | Imagery: ru01_sss/2001-232/105_1727/0008<br>Bathy: ru00_mb_navgyro/2001-270/378_1405/827/3   | 20 - 22       | 13 foot sounding<br>"Rky" annotation                                             | 3,8<br><i>Concur</i> |
| Rock                 | 41°04'12.380"         | 073°05'01.280"         | Imagery: ru01_sss/2001-233/204_1923/0020<br>Bathy: ru00_mb_navgyro/2001-268/340_1955/10911/3 | 46            | 36 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.I.</i>               | 3,8<br><i>Concur</i> |
| Rock                 | 41°03'44.990"         | 073°05'56.038"         | Imagery: ru01_sss/2001-232/107_1703/0001<br>Bathy: ru00_mb_navgyro/2001-269/428_1338/150/17  | 26 - 27       | 18 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.I.</i>               | 3,8<br><i>Concur</i> |
| Rock                 | 41°04'10.369"         | 073°05'29.102"         | Imagery: ru01_sss/2001-233/209_2033/0008<br>Bathy: ru00_mb_navgyro/2001-268/332_2130/396/22  | 20 - 22       | 16 foot sounding<br>"Rky" annotation<br><i>See E &amp; A, D.I.</i>               | 3,8<br><i>Concur</i> |

Notes: 1. Copies of dive investigation records are included in Appendix V. *Data filed with original field records*

2. This feature is of potential historical significance. The contact fits the profile of the *Washington*, an early steam ship known to have been lost in the area.
3. Submitted as a Danger to Navigation by RUDE personnel, 17 May 2002. Copies of all H11044 DTON submissions are included in Appendix I.
4. These features mark the seaward extent of a ledge extending from Welches Point, and were submitted as individual rocks in the DTON report. Numerous submerged rocks are present, with least depths of 7 to 13 feet. On the next edition of the chart, the hydrographer recommends charting survey soundings in the common area and adding the “Rky” annotation rather than charting rocks individually. See Pydro PSS Remarks and Recommendations for further details.
5. This feature marks the seaward extent of a ledge extending east from Charles Island. Numerous shoal soundings are present outside the 12 foot contour, with least depths of 11 to 12 feet. The hydrographer recommends charting survey soundings in the common area and adding the “Rky” annotation rather than charting rocks individually. See Pydro PSS Remarks and Recommendations for further details.
6. This feature marks the seaward extent of a rocky outcrop southwest of Charles Island with least depths of 12 to 17 feet in charted depths of 20 to 25 feet. The hydrographer recommends updating charted depths and contours with current survey data and retaining the charted “Rky” annotation. See Pydro PSS Remarks and Recommendations for further details.
7. This feature marks the least depth on a significant outcrop south of Merwin Beach. The hydrographer recommends charting survey soundings in the common area and adding the “Rky” annotation.
8. These features on Stratford Shoal were submitted as individual rocks in the DTON report. On the next edition of chart 12369, the hydrographer recommends removing these “Rk” annotations, updating depths and contours with current survey data, and charting the annotation “Rky” at regular intervals throughout the area as chart scale permits (see section D.1.d.iii above).
9. This feature marks the seaward extent of a 12’ rocky outcrop southwest of Charles Island, and was submitted as an individual rock in the DTON. On future chart editions, the hydrographer recommends removing this rock annotation, updating charted depths and contours with current survey data, and retaining the charted “Rky” annotation. See Pydro PSS Remarks and Recommendations for further details

In addition to the features listed above, there are two large areas of boulders in the southeast corner of the survey area. These features were covered with SWMB and survey soundings in this region range from 79 to approximately 140 feet. These boulders do not pose a hazard to surface navigation. The hydrographer recommends updating the chart with survey soundings and charting the annotation “Rky” at the following positions to represent these features. *Concur.*

| New Item Description | Surveyed Latitude (N) | Surveyed Longitude (W) | Charting Recommendation |
|----------------------|-----------------------|------------------------|-------------------------|
| Boulder Field        | 41°04'23"             | 072°57'55"             | “Rky” annotation        |
| Boulder Field        | 41°02'08"             | 072°58'46"             | “Rky” annotation        |

## D.2 Additional Results

**D.2.a Shoreline:** The Hydrographic Survey Letter Instructions for OPR-B340-RU do not require formal shoreline investigation. No discrepancies between charted and existing shoreline were noted during field work on H11044. *Concur.*

**D.2.b Prior Survey Comparison:** No prior survey comparison was conducted.

**D.2.c Aids to Navigation:** Detached Positions (DPs) were acquired at 4 fixed and 19 floating Aids to Navigation. All ATON DPs were marked collected on DNs 297 and 313, converted in Pydro into the “RU\_DP” vessel, and marked “Significant” and “Chart” in the PSS. With the following exceptions, all ATONs were found on station (within acceptable error for watch circle) and are serving their intended purpose.

The following ATON in the Housatonic River was found off station. Strong tidal current at the time of the survey may have contributed to this discrepancy in position. The hydrographer recommends confirming the buoy’s station with the U.S. Coast Guard Aids to Navigation Team at USCG Group New Haven. *Concur.*

| Buoy Designation | Charted Position                    | Approximate direction and distance off station | Observed Position                   |
|------------------|-------------------------------------|------------------------------------------------|-------------------------------------|
| G “3”            | 41°09'48.033" N<br>073°06'04.268" W | 40 meters SE                                   | 41°09'46.963" N<br>073°06'03.318" W |

Based on new soundings from the current survey, the hydrographer believes the following ATONs, while correctly charted, are not serving their intended purpose.

The hydrographer recommends suggesting to the Coast Guard that it consider repositioning these Aids. ***Concur - Defer to MCD Update Service Branch.***

| Buoy Designation | Current Position                                              | Approximate direction and distance to move | Suggested new position              |
|------------------|---------------------------------------------------------------|--------------------------------------------|-------------------------------------|
| R "12"           | 41°11'56.260" N<br>073°01'03.213" W<br>(guarding 18' contour) | 90 meters SE                               | 41°11'54.165" N<br>073°00'59.969" W |
| R "20"           | 41°07'49.395" N<br>073°07'28.333" W<br>(guarding 18' contour) | 110 meters S                               | 41°07'45.919" N<br>073°07'30.311" W |
| R "2"            | 41°11'55.230" N<br>073°02'10.910" W<br>(guarding 12' contour) | 165 meters SE                              | 41°11'51.185" N<br>073°02'06.225" W |

**D.2.d Overhead Features:** There are no bridges, overhead cables, overhead pipelines, or other overhead obstructions within the H11044 survey limits.

**D.2.e Submarine Cables:** Two submarine conduits and one Cable Area are charted within the H11044 survey limits.

A pipeline is charted from shore at Trumbull Beach (41 11'58" N, 073 03'54" W) running southeast around Charles Island and thence southwest, exiting the survey area approximately 6.7 km south of Point No Point (41 05'11" N, 073 07'41" W). This pipeline was located on side scan sonar imagery, and multibeam echosounder bathymetry was acquired along the extent of the feature in the survey area. Agreement between the pipeline's charted and surveyed positions was generally good, except in the area of a "dogleg" turn in approximate latitude 41°06'04" N, longitude 073°05'28" W. In this area, the pipeline follows a more natural bend than the sharp turn charted. The hydrographer recommends consulting the side scan sonar mosaic and feature plots to accurately chart the pipeline in the area of this turn. The following Pydro features correspond to the charted pipeline: ***Concur w/Clarification - In the vicinity of the "dogleg" area noted above, pipeline is adequately charted.***

| Pipeline Pydro Primary Feature Names |
|--------------------------------------|
| ru00_mb/2001-152/103_1420/0003       |
| ru00_mb/2001-152/104_1313/0004       |

|                                         |
|-----------------------------------------|
| ru00_mb/2001-152/105_1151/0001          |
| ru00_mb/2001-152/107_0937/0002          |
| ru00_mb/2001-158/148_1340/0001          |
| ru00_mb/2001-158/149_1453/0002          |
| ru00_mb/2001-158/151_1817/0004          |
| ru00_mb/2001-158/152_2118/0001          |
| ru00_mb/2001-158/153_2205/0002          |
| ru00_mb/2001-197/100_1721/0001          |
| ru00_mb/2001-197/100_1721/0001          |
| ru00_mb/2001-197/104_1811/0001          |
| ru00_mb/2001-197/105_1823/0001          |
| ru00_mb/2001-197/106_1836/0001          |
| ru00_mb/2001-197/107_1850/0002          |
| ru00_mb/2001-197/108_1904/0002          |
| ru00_mb/2001-198/200_2255/0001          |
| ru00_mb/2001-198/201_2242/0002          |
| ru00_mb/2001-198/203_2158/0001          |
| ru00_mb/2001-198/207_2100/0002          |
| ru00_mb/2001-199/203_2021/0004          |
| ru00_mb/2001-207/261_1502/0001          |
| ru00_mb/2001-213/257_2037/0002          |
| ru00_sss_trimble/2001-179/264_1222/0002 |
| ru00_sss_trimble/2001-179/265_1048/0001 |
| ru00_sss_trimble/2001-179/266a0918/0001 |



A submarine cable is charted running approximately east-west across the southern edge of the survey area, entering the sheet limits in latitude 41 02'33" N, longitude 072 56'30" W, and exiting in latitude 41 01-28.26 N, longitude 073 06'50" W. This cable was located on side scan sonar imagery and 100% multibeam echosounder bathymetry was acquired of the area. No significant discrepancies between the cable's charted and surveyed positions were observed. The hydrographer recommends this feature be retained as charted and that charted depths be updated with soundings from the current survey. *Concur.*

A Cable Area is charted running south-southwest across the southeast corner of the survey area, entering the sheet limits in latitude 41 06'12" N, 072 56'30" W and exiting in latitude 41 01'29" N, longitude 072 59'02" W. Side scan sonar imagery and multibeam sonar bathymetry gave no indication of any cables in this area. *Concur.*

**D.2.f Ferry Routes:** Year round ferry service between Bridgeport, CT and Port Jefferson, NY is operated by the Bridgeport and Port Jefferson Steamboat Company. These vessels run directly between Bridgeport and Port Jefferson harbors and cross the southwest corner of the survey area from approximately latitude 41°03'26" N, longitude 073°08'10" W to latitude 41°01'30" N to longitude 073°07'12" W. *Concur w/clarification - Ferry crossing not currently charted.*

**D.2.g Bottom Samples:** Bottom sediment samples were collected at 84 sites in the survey area. Significant discrepancies were found between observed sediment characteristics and charted bottom types. Sediment samples were analyzed in conjunction with the side scan sonar mosaic to identify regions of similar bottom type. Based on this analysis, the hydrographer recommends removing the following charted bottom characteristics, and charting the survey characteristics. *Concur.*

| Charted Latitude (N) | Charted Longitude (W) | Charted Characteristics | Pydro Name of Nearest Sample     | Observed Characteristics |
|----------------------|-----------------------|-------------------------|----------------------------------|--------------------------|
| 41 13' 31.64"        | 072 57' 12.64"        | sft                     | RU_DP/2001-130/05102001/12:36:10 | stk gn M S Sh            |
| 41 13' 52.83"        | 072 58' 29.94"        | sft                     | RU_DP/2001-130/05102001/12:27:43 | stk gn M                 |
| 41 13' 09.66"        | 072 59' 35.69"        | hrd                     | RU_DP/2001-130/05102001/11:57:44 | stk gn M S               |

|               |                |             |                                  |                      |
|---------------|----------------|-------------|----------------------------------|----------------------|
| 41 12' 13.54" | 072 57' 37.51" | Sh gy M     | RU_DP/2001-130/05102001/11:02:49 | stk gn M Sh          |
| 41 12' 05.72" | 072 59' 31.77" | fne gy M    | RU_DP/2001-130/05102001/11:24:30 | stk gn M Sh          |
| 41 10' 54.02" | 072 57' 34.38" | gy M        | RU_DP/2001-130/05102001/10:52:21 | stk gn M Sh          |
| 41 10' 49.54" | 072 59' 44.67" | crs gy S    | RU_DP/2001-130/05102001/10:30:50 | stk gn M crs S<br>Sh |
| 41 09' 48.75" | 073 01' 20.0"  | spk gy M    | RU_DP/2001-129/05092001/00:18:51 | stk gn M             |
| 41 08' 36.30" | 073 01' 13.06" | gy M        | RU_DP/2001-129/05092001/00:03:20 | stk gn M             |
| 41 02' 30.41" | 073 04' 42.21" | M S         | RU_DP/2001-128/05082001/18:34:00 | stk br M             |
| 41 03' 07.73" | 073 04' 22.1"  | so          | RU_DP/2001-128/05082001/18:24:19 | stk br M             |
| 41 08' 38.42" | 073 02' 59.31" | gy M        | RU_DP/2001-128/05082001/23:51:22 | stk gn M Sh          |
| 41 09' 52.67" | 073 02' 59.47" | gy M        | RU_DP/2001-130/05102001/00:28:43 | stk gn M Sh          |
| 41 08' 33.24" | 073 04' 06.71" | gn stk M Sh | RU_DP/2001-128/05082001/23:39:52 | gy M                 |
| 41 03' 04.15" | 073 05' 17.06" | M S         | RU_DP/2001-128/05082001/18:14:55 | M                    |
| 41 02' 06.61" | 073 06' 25.29" | so          | RU_DP/2001-128/05082001/18:01:48 | fne br S             |
| 41 09' 52.67" | 073 02' 59.47" | gy M        | RU_DP/2001-129/05092001/00:28:27 | stk gn M Sh          |

Examination of the side scan mosaic and observed bottom types also indicated that a large area of distinct bottom type with no current charted bottom

characteristics. The hydrographer recommends that the following survey bottom characteristic be added to the chart: **Concur.**

| Sample Latitude (N) | Sample Longitude (W) | Pydro Name of Sample             | Observed Characteristics |
|---------------------|----------------------|----------------------------------|--------------------------|
| 41° 01' 54.269"     | 072° 58' 37.858"     | RU_DP/2001-128/05082001/20:48:53 | fne br S                 |

Detached Positions corresponding to the bottom samples which differed from charted bottom characteristics were flagged “Significant” and “Chart” in the Pydro PSS. Bottom samples which agreed with charted bottom characteristics were flagged “Significant” but not “Chart”.

In addition, many of bottom characteristics on Chart 12369 are currently charted with non-standard abbreviations. The hydrographer recommends these bottom characteristics be re-charted with the correct abbreviations from Table A.4, Appendix 2 of the *NOS Hydrographic Surveys Specifications and Deliverables*.

**Concur.**

The original Oceanographic Log Sheets for Bottom Sediment Data (NOAA Form 75-44) are included in Appendix V\*, Supplemental Survey Records and Correspondence. **\*Data filed with original field records**



**REPORT OF DANGER TO NAVIGATION**

Hydrographic Survey Registry Number: H11044

Survey Title:           State:           Connecticut  
                               Locality:        Long Island Sound  
                               Sublocality:   Oyster Point to Stratford Shoal Middle Ground

Project Number:       OPR-B340-RU

Survey Date:           7 September - 13 November 2001

Soundings are reduced to Mean Lower Low Water (MLLW) using preliminary unverified tides. Horizontal datum is WGS84. Positions were determined using Differential Global Positioning System (DGPS).

Chart affected: 12354 38<sup>th</sup> Edition, May 13, 2000, Scale 1:80,000, NAD83  
                           12369 24<sup>th</sup> Edition, March 28, 1998, Scale 1:20,000, NAD83  
                           12364 SC 32<sup>nd</sup> Edition, July 14, 2001, Scale 1:40,000, NAD83

**DANGER TO NAVIGATION**

| <u>FEATURE</u> | <u>DEPTH</u>      | <u>LATITUDE (N)</u>        | <u>LONGITUDE (W)</u>       |
|----------------|-------------------|----------------------------|----------------------------|
| 1. Wreck       | 26'               | 41 07' 24.131"             | 73 05' 54.287"             |
| 2. Wreck*      | <del>43</del> 44' | 41 04' 39.519"             | 73 05' 53.334"             |
| 3. Rock*       | 12'               | 41 03' 54.203" <b>31</b> " | 73 05' 18.196" <b>01</b> " |

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

*\*These items were determined not to be DtoN, during office processing. Correction determined during office processing.*

**REPORT OF DANGERS TO NAVIGATION**

Hydrographic Survey Registry Number: H11044

Survey Title:           State:           Connecticut  
                          Locality:       Long Island Sound  
                          Sublocality:   Oyster Point to Stratford Shoal Middle Ground

Project Number:       OPR-B340-RU

Survey Date:           7 May - 13 November 2001

Soundings are reduced to Mean Lower Low Water (MLLW) using verified tides. Horizontal datum is WGS84. Positions were determined using Differential Global Positioning System (DGPS).

Chart affected: 12354 38<sup>th</sup> Edition, May 13, 2000, Scale 1:80,000, NAD83  
                  12363 39<sup>th</sup> Edition, July 15, 2000, Scale 1:80,000, NAD83  
                  12364 SC 33<sup>rd</sup> Edition, February 16, 2002, Scale 1:40,000, NAD83  
                  12369 24<sup>th</sup> Edition, March 28, 1998, Scale 1:20,000, NAD83  
                  12370 17<sup>th</sup> Edition, March 6, 1993, Scale 1:20,000, NAD83  
                  12371 22<sup>nd</sup> Edition, July 25, 1992, Scale 1:20,000, NAD83

**DANGERS TO NAVIGATION**

Please see table on next page for a guide to the Pydro DTON PSS file "H11044\_dton\_051702", which contains the details of this Danger to Navigation Report.

Note: As packaged for transmittal to MCD, this PSS has no charts associated with it. To view DTONS with charts, open the PSS and select BSB .kap files using File->Open->Open BSB Chart. Chart layers can then be arranged using File->Arrange Charts.

Questions concerning this report should be directed to the Commanding Officer, NOAA Ship RUDE at (757) 615-6465.

| Feature         | Depth (ft) | Surveyed Latitude (N) | Surveyed Longitude (W) | Pydro Primary Feature Names                                                                                                           |
|-----------------|------------|-----------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Obstruction     | 14         | 41°08'01.777"         | 073°07'29.161"         | Imagery: ru01_sss/2001-284/104_2005/0001<br>Bathy: ru00_mb_navgyro/2001-303/801_1443/327/12<br>DI: RU_dive/2001-303/10302001/16:10:00 |
| Rock on ledge   | 9          | 41°11'51.902"         | 073°02'06.451"         | Imagery: ru01_sss/2001-218/131_2105/0005<br>Bathy: ru01_sb/2001-289/559_1348/241/1                                                    |
| Rock on ledge   | 13         | 41°11'44.207"         | 073°01'59.048"         | Imagery: ru01_sss/2001-221/227_2023/0001<br>Bathy: ru00_mb_navgyro/2001-316/802_1553/175/4                                            |
| Rock on ledge   | 11         | 41°11'25.271"         | 073°03'00.173"         | Bathy: ru01_sb/2001-288/373_1636/292/1                                                                                                |
| Isolated Rock   | 19         | 41°10'54.810"         | 073°03'48.393"         | Imagery: ru01_sss/2001-225/210_1533/0001<br>Bathy: ru00_mb_navgyro/2001-316/800_1519/359/23                                           |
| Rock on outcrop | 17         | 41°11'00.815"         | 073°03'49.123"         | Imagery: ru01_sss/2001-219/212_2332/0001<br>Bathy: ru01_sb/2001-285/917_1838/95/1                                                     |
| Rock on outcrop | 12         | 41°11'07.317"         | 073°03'53.748"         | Imagery: ru01_sss/2001-213/115_2048/0002<br>Bathy: ru01_sb/2001-285/894_1749/78/1                                                     |
| Isolated Rock   | 15         | 41°11'59.704"         | 073°01'20.533"         | Imagery: ru01_sss/2001-214/123_1947/0001<br>Bathy: ru01_sb/2001-292/573_1216/92/1                                                     |
| Isolated Rock   | 20         | 41°11'30.519"         | 073°01'54.080"         | Imagery: ru01_sss/2001-221/221_2213/0001<br>Bathy: ru00_mb_navgyro/2001-297/367_1416/145/34                                           |

| Isolated Rock        | 18         | 41°11'33.363"         | 073°01'56.457"         | Imagery: ru01_sss/2001-221/222_2154/0001<br>Bathy: ru00_mb_navgyro/2001-316/803_1538/473/19  |
|----------------------|------------|-----------------------|------------------------|----------------------------------------------------------------------------------------------|
| New Item Description | Depth (ft) | Surveyed Latitude (N) | Surveyed Longitude (W) | Pydro Primary Feature Names                                                                  |
| Outcrop              | 11         | 41°12'57.151"         | 073°00'00.823"         | Imagery: ru01_sss/2001-220/138_1811/0005<br>Bathy: ru01_sb/2001-312/908_1216/80/1            |
| Outcrop              | 7          | 41°13'02.538"         | 073°00'00.923"         | Bathy: ru01_sb/2001-312/913_1224/166/1                                                       |
| Rock on Ledge        | 5          | 41°13'14.216"         | 072°59'42.041"         | Imagery: ru01_sss/2001-240/238_1253/0004<br>Bathy: ru01_sb/2001-297/774_1957/194/1           |
| Sounding on Ledge    | 10         | 41°12'01.864"         | 073°01'07.951"         | Bathy: ru01_sb/2001-278/228_1343/205/1                                                       |
| Rock on Outcrop      | 17         | 41°11'55.711"         | 073°01'03.626"         | Bathy: ru00_mb_navgyro/2001-303/914_1309/553/27                                              |
| Rock on Ledge        | 12         | 41°11'06.925"         | 073°03'07.185"         | Imagery: ru01_sss/2001-221/230_1853/0001<br>Bathy: ru01_sb/2001-295/830_2154/113/1           |
| Rock                 | 11         | 41°03'56.154"         | 073°05'23.973"         | Imagery: ru01_sss/2001-232/104_1739/0010<br>Bathy: ru00_mb_navgyro/2001-269/348_1142/7212/25 |
| Rock                 | 13         | 41°03'54.890"         | 073°05'31.125"         | Imagery: ru01_sss/2001-232/105_1727/0008<br>Bathy: ru00_mb_navgyro/2001-270/378_1405/827/3   |
| Rock                 | 36         | 41°04'12.380"         | 073°05'01.280"         | Imagery: ru01_sss/2001-233/204_1923/0020                                                     |

|                      |            |                       |                        |                                                                                             |
|----------------------|------------|-----------------------|------------------------|---------------------------------------------------------------------------------------------|
|                      |            |                       |                        | Bathy: ru00_mb_navgyro/2001-268/340_1955/10911/3                                            |
| Rock                 | 18         | 41°03'44.990"         | 073°05'56.038"         | Imagery: ru01_sss/2001-232/107_1703/0001<br>Bathy: ru00_mb_navgyro/2001-269/428_1338/150/17 |
| New Item Description | Depth (ft) | Surveyed Latitude (N) | Surveyed Longitude (W) | Pydro Primary Feature Names                                                                 |
| Rock                 | 16         | 41°04'10.369"         | 073°05'29.102"         | Imagery: ru01_sss/2001-233/209_2033/0008<br>Bathy: ru00_mb_navgyro/2001-268/332_2130/396/22 |

## E. APPROVAL SHEET

## LETTER OF APPROVAL

REGISTRY NO. H11044

Data acquisition, processing, and analysis contributing to the accomplishment of this navigable area survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All data, field sheets, this Descriptive Report, and accompanying records were reviewed in their entirety and are approved.

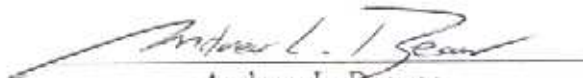
This survey is adequate to supersede all prior surveys in common areas, and is considered complete and adequate for nautical charting.

Respectfully Submitted:



Benjamin K. Evans  
Lieutenant (junior grade), NOAA  
Field Operations Officer  
NOAA Ship RUDE

Approved:



Andrew L. Beaver  
Lieutenant Commander, NOAA  
Commanding Officer  
NOAA Ship RUDE



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 3, 2002

HYDROGRAPHIC BRANCH: Atlantic  
HYDROGRAPHIC PROJECT: OPR-B340-RU-2001  
HYDROGRAPHIC SHEET: H11044

LOCALITY: Oyster Point to Stratford Shoal Middle Ground, CT/NY  
TIME PERIOD: May 7 November 13, 2001

TIDE STATION USED: 846 5705 New Haven, CT  
Lat. 41° 17.0'N Lon. 72° 54.5'W  
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.948 meters

TIDE STATION USED: 846-7150 Bridgeport, CT  
Lat. 41° 10.4'N Lon. 73° 10.9'W  
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.130 meters

REMARKS: RECOMMENDED ZONING  
Use zone(s) identified as: LIS20, LIS23, LIS32, LIS 37, LIS40,  
LIS42, LIS45.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units  
(meters), relative to MLLW and on Greenwich Mean Time.

*Thomas J. Mero* 7/3/02  
-----  
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



REFERENCE NO.  
N/CS33-02-04

**LETTER TRANSMITTING DATA**

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

- ORDINARY MAIL       AIR MAIL  
 REGISTERED MAIL       EXPRESS  
 GBL (Give number) \_\_\_\_\_

DATE FORWARDED      01/26/2004

NUMBER OF PACKAGES      1

**TO:**

CHIEF, DATA CONTROL GROUP, N/CS3x1  
 NOAA / NATIONAL OCEAN SERVICE  
 STATION 6815, SSMC3  
 1315 EAST-WEST HIGHWAY  
 SILVER SPRING, MARYLAND 20910-3282

**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.

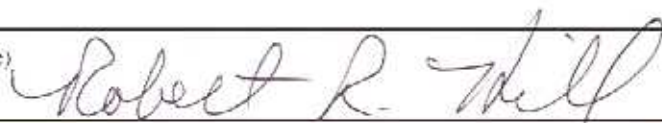
H11044

CONNECTICUT - NEW YORK, LONG ISLAND SOUND, OYSTER POINT TO STRATFORD SHOAL MIDDLE GROUND

ONE TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY H11044 ON MYLAR
- 1 H-DRAWING FOR H11044 ON MYLAR FOR CHART 12354
- 1 H-DRAWING FOR H11044 ON MYLAR FOR CHART 12369
- 1 H-DRAWING FOR H11044 ON MYLAR FOR CHART 12370
- 1 H-DRAWING FOR H11044 ON MYLAR FOR CHART 12371
- 1 DESCRIPTIVE REPORT FOR H11044

FROM: (Signature)



**RECEIVED THE ABOVE**  
(Name, Division, Date)

**Return receipted copy to:**

NOAA / NATIONAL OCEAN SERVICE  
 ATLANTIC HYDROGRAPHIC BRANCH N/CS33  
 439 WEST YORK STREET  
 NORFOLK, VA. 23510-1114

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H11044 (2001)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**B. DATA ACQUISITION AND PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System  
MicroStation J, version 7.1  
I/RAS B, version 5.01  
NADCON, version 2.10  
MapInfo, version 6.5  
CARIS HIPS/SIPS 2000  
PYDRO, version 2.5.3

The smooth sheet was plotted using a Hewlett Packard Design Jet 2500CP plotter.

**Junctions**

H11011 (2000) to the northeast

A standard junction could not be effected between the present survey and H11011 (2000). The junctional survey is archived at NOS headquarters, Silver Spring, Maryland. Any adjustments to the depth curves in the junctional areas will have to be made on the chart during compilation at Marine Chart Division(MCD).

There are no junctional surveys to the north, southeast, south, or to the west. Present survey depths are in harmony with the charted hydrography to the north, southeast, south and to the west.

**C. VERTICAL AND HORIZONTAL CONTROL**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values.

D. COMPARISON WITH CHARTS 12354 (40<sup>th</sup> Edition, AUG. /03)  
12369 (25<sup>th</sup> Edition, JUN. /02)  
12370 (18<sup>th</sup> Edition, AUG. /02)  
12371 (23<sup>rd</sup> Edition, MAY /03)

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report. Attention is directed to the following:

1. The following features originate with the present survey and are being shown as dangerous submerged rocks on NOS charts 12369 (25<sup>th</sup> Ed., Jun./02), 12370 (18<sup>th</sup> Ed., Aug./02), 12371 (23<sup>rd</sup> Ed., May /03) and 12354 (40<sup>th</sup> Ed., Aug. /03):

| <u>Features</u>     | <u>Latitude</u> | <u>Longitude</u> | <u>Charts Affected</u> |
|---------------------|-----------------|------------------|------------------------|
| 12 Rk               | 41°03'54.31"N   | 73°05'18.01"W    | 12369                  |
| 9 Rk                | 41°11'51.9"N    | 73°02'06.45"W    | 12370, 12354           |
| 13 Rk               | 41°11'44.21"N   | 73°01'59.05"W    | 12370, 12354           |
| 11 Rk               | 41°11'25.27"N   | 73°03'00.17"W    | 12370, 12354           |
| 17 Rk               | 41°11'00.73"N   | 73°03'48.89"W    | 12370, 12354           |
| 12 Rk               | 41°11'07.32"N   | 73°03'53.75"W    | 12370, 12354           |
| 15 Rk               | 41°11'59.7"N    | 73°01'20.53"W    | 12370, 12354           |
| <del>20</del> 19 Rk | 41°11'30.52"N   | 73°01'54.08"W    | 12370                  |
| 18 Rk               | 41°11'33.36"N   | 73°01'56.46"W    | 12370, 12354           |
| 11 Rk               | 41°12'57.15"N   | 73°00'00.82"W    | 12371, 12354           |
| 7 Rk                | 41°13'02.54"N   | 73°00'00.92"W    | 12371, 12354           |
| 5 Rk                | 41°13'14.22"N   | 72°59'42.04"W    | 12371, 12354           |
| 17 Rk               | 41°11'55.71"N   | 73°01'03.63"W    | 12371, 12354           |
| 12 Rk               | 41°11'06.93"N   | 73°03'07.19"W    | 12370, 12354           |
| 11 Rk               | 41°03'56.15"N   | 73°05'23.97"W    | 12354                  |
| 36 Rk               | 41°04'12.38"N   | 73°05'01.28"W    | 12354                  |
| 18 Rk               | 41°03'44.99"N   | 73°05'56.04"W    | 12354                  |
| 16 Rk               | 41°04'10.37"N   | 73°05'29.10"W    | 12354                  |

It is recommended that the above features be deleted from the chart and the common areas be updated with present survey depths and the annotation rky.

2. The following features were located by the present survey and are shown on the smooth sheet:

| <u>Features</u> | <u>Latitude</u> | <u>Longitude</u> |
|-----------------|-----------------|------------------|
| 40 Wk           | 41°08'53.87"N   | 73°03'27.85"W    |
| 59 Wk           | 41°08'11.33"N   | 73°00'27.74"W    |
| 39 Wk           | 41°09'28.3"N    | 73°03'13.44"W    |
| 37 Obstr        | 41°07'58.75"N   | 73°04'58.71"W    |
| 66 Wk           | 41°08'21.54"N   | 72°56'28.59"W    |
| 18 Rk           | 41°04'06.89"N   | 73°06'08.69"W    |
| 13 Rk           | 41°03'54.85"N   | 73°05'30.86"W    |

Due to the close proximity of shoaler features or depths in the common areas, it is recommended that they not be charted.

3. An uncharted obstruction with a depth of 51 feet, in Latitude 41°08'08.89"N, Longitude 73°00'25.5"W, was located by the field unit. This feature was not addressed by the hydrographer. It is recommended that a dangerous submerged obstruction with a least of depth 51 feet be charted as shown on the present survey.

4. A charted rock with a depth of 10 feet, in Latitude 41°03'30.22"N, Longitude 73°06'01.32"W, originates with an unknown source. This feature was investigated by the field unit using a shallow water multibeam sonar system and side scan sonar. A rock with a least depth of 12 feet was located in Latitude 41°03'30.15"N, Longitude 73°06'01.29"W. It is recommended that the chart be updated in the common area with representative soundings from the present survey along with the annotation "rky".

5. A charted rock with a depth of 19 feet, in Latitude 41°10'54.81"N, Longitude 73°03'48.39"W, originates with the present survey. No change in charting is recommended on NOS chart 12370; however, it is recommended that the 19-ft rock, shown on NOS chart 12354, in Latitude 41°10'54.81"N, Longitude 73°03'48.39"W, be deleted and representative soundings in the common area from the present survey, along with the annotation "rky", be charted.

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

### Miscellaneous

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring,

Maryland. The following NOS Charts were used for compilation of the present survey:

12354 (40<sup>th</sup> Edition, AUG. /03)  
12369 (25<sup>th</sup> Edition, JUN. /02)  
12370 (18<sup>th</sup> Edition, AUG. /02)  
12371 (23<sup>rd</sup> Edition, MAY /03)

**Adequacy of Survey**

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

*Robert Snow*

---

**Robert Snow**

Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

APPROVAL SHEET  
H11044

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

Robert R. Hill Jr.

Robert R. Hill  
Cartographer,  
Atlantic Hydrographic Branch

Date: 12-8-03

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

Approved:

Emily B. Christman

Emily B. Christman  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

Date: 1/9/2004

Approved / SUPP ✓ 1/9/12 ss ✓

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

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-11044

**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                                                                            |
|---------------------|---------|---------------|------------------------------------------------------------------------------------|
| 12354               | 1-15-04 | Robert Hill   | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12369               | 1-12-04 | Robert Hill   | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12370               | 1-13-04 | Robert Hill   | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12371               | 1-14-04 | Robert Hill   | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12354 <sup>PS</sup> | 3/30/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12369 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12370 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12371 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12364 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12363 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full <del>Part Before</del> After Marine Center Approval Signed Via<br>Drawing No. |
| 12372 <sup>PS</sup> | 6/22/04 | Frank Pomeroy | Full After " " " " "<br>" "                                                        |