

H11255

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: **Navigable Area**

Registry Number: **H11255**

LOCALITY

State: New York and Connecticut

General Locality: Long Island Sound

Sub-locality: 4NM N of Roanoke Point Shoal

2004

CHIEF OF PARTY
CDR Emily B. Christman, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11255

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: **New York and Connecticut**

General Locality: **Long Island Sound**

Sub-Locality: **4NM North of Roanoke Point Shoal**

Scale: **1:10,000** Date of Survey: **09/09/04 to 10/13/04**

Instructions Dated: **08/06/04** Project Number: **OPR-B370-TJ-04**

Vessel: **NOAA Ship THOMAS JEFFERSON, S222**

Chief of Party: **CDR Emily B. Christman, NOAA**

Surveyed by: **THOMAS JEFFERSON Personnel**

Soundings by: **Kongsberg Simrad EM1002 Multibeam Echo Sounder**

Graphic record scaled by: **N/A**

Graphic record checked by: **N/A**

Protracted by: **N/A** Automated Plot: **N/A**

Verification by: **Atlantic Hydrographic Branch Personnel**

Soundings in: ~~Meters~~ **Feet at MLLW**

Remarks: ***Bold, red, italic notes in the Descriptive Report were made during office processing
Charted depths in feet at MLLW.***

- 1) All Times are UTC.***
- 2) This is a Navigable Area Hydrographic Survey.***
- 3) Projection is UTM Zone 18.***

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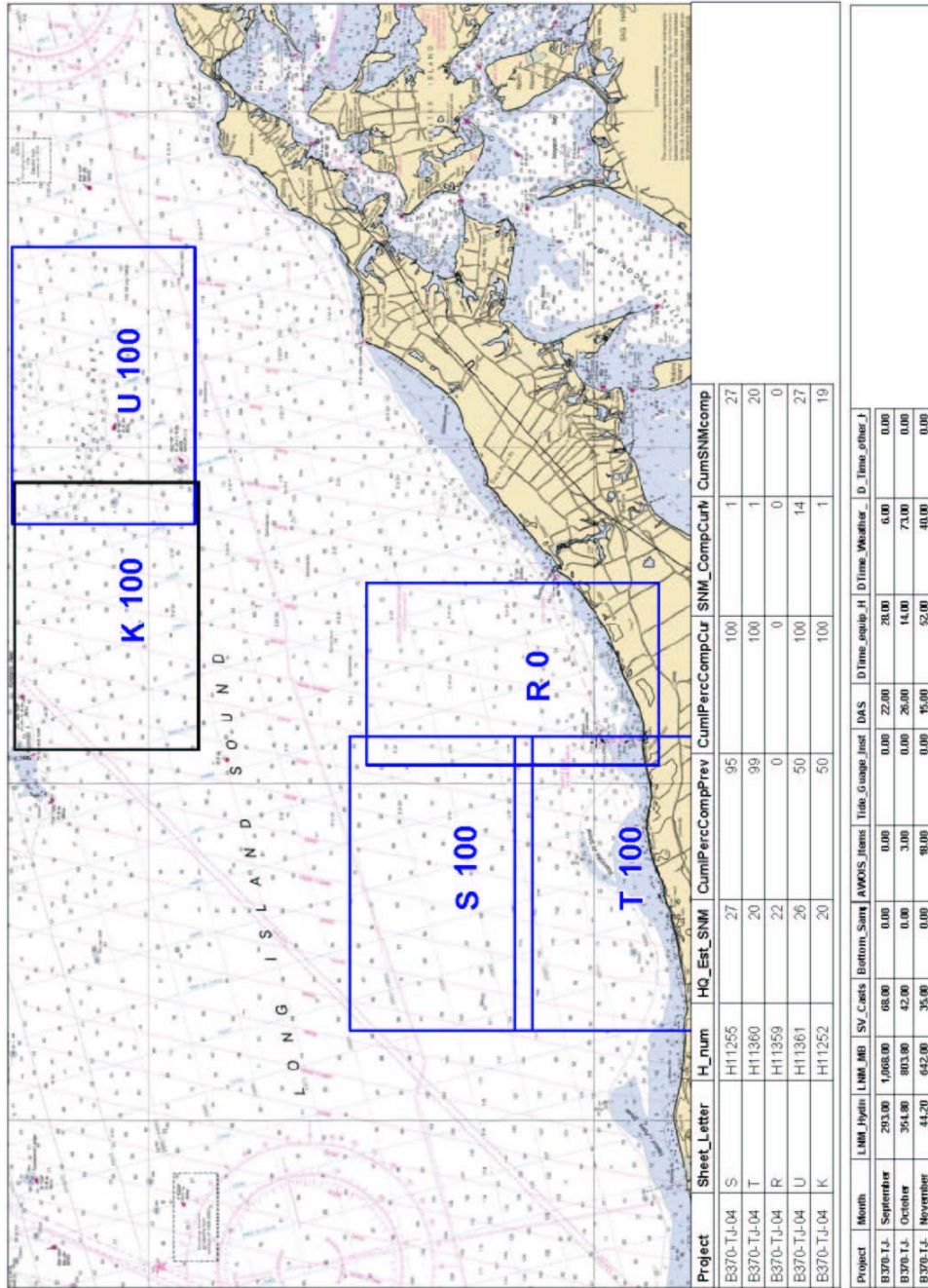
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APPENDIX V – SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES *

** DATA FILED WITH THE ORIGINAL FIELD RECORDS*

APPENDIX III

PROGRESS SKETCH



Progress Sketch OPR-B370-TJ-04. November, 2004

DESCRIPTIVE REPORT

To Accompany
HYDROGRAPHIC SURVEY H11255

Scale of Survey: 1:10,000

Year of Survey: 2004

NOAA Ship THOMAS JEFFERSON
CDR Emily B. Christman, Commanding

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions* for project OPR-B370-TJ-04, Eastern Long Island Sound, New York and Connecticut. The original instructions are dated 6 August 2004.

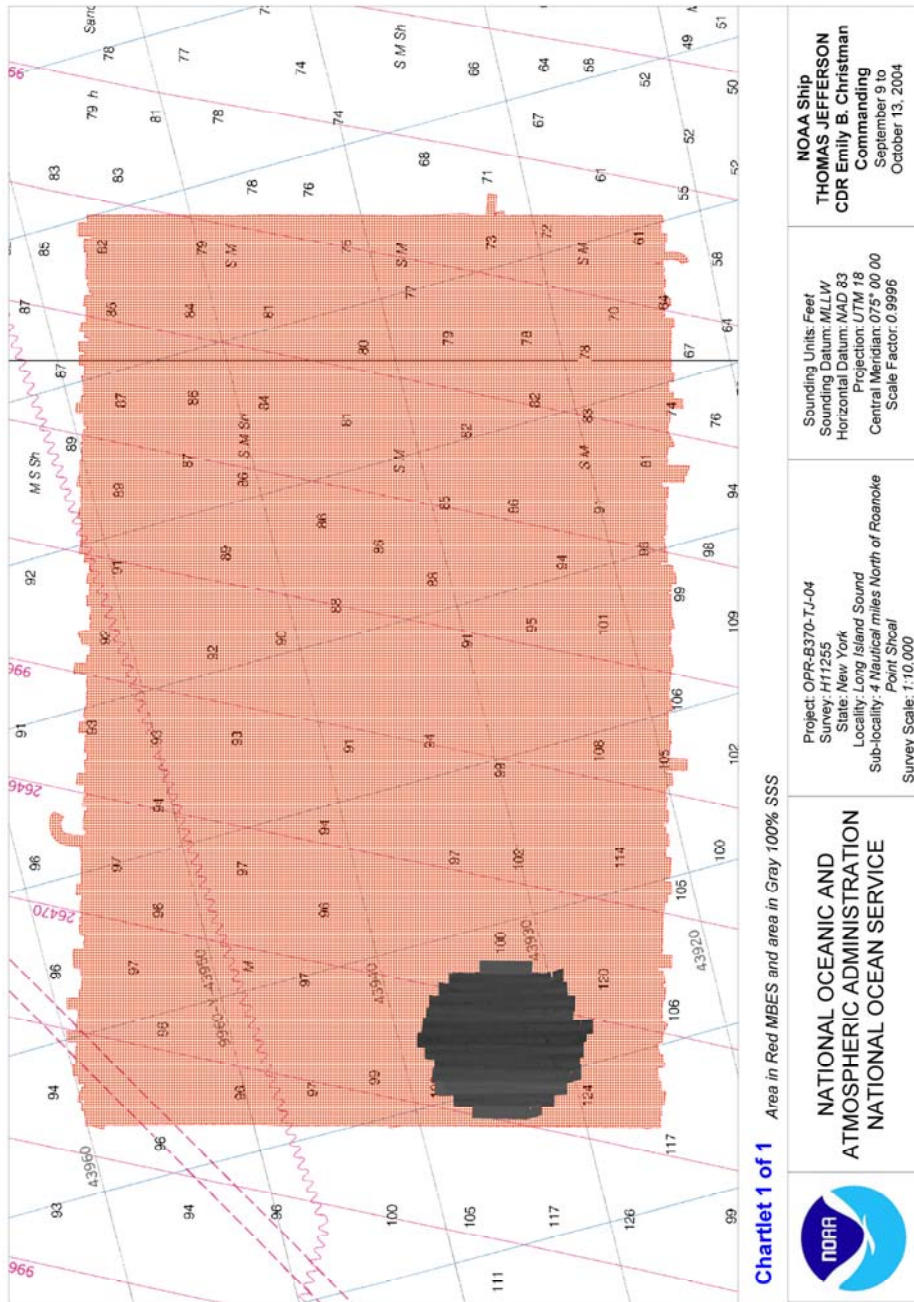
This Descriptive Report pertains to sheet "S" of project OPR-B370-TJ-04, which covers an area 4NM north of Roanoke Point Shoal. The assigned registry number for this sheet is H11255, as prescribed in the Letter Instructions.*

The main purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts, thus reducing the critical survey backlog in the Long Island Sound region. It will also provide modern survey coverage of the major traffic routes and approaches to the Tosco Corporation Riverhead Terminal, located one nautical mile north of Jacob's Point in southern Long Island Sound. Modern survey coverage in this area will ensure safe navigation for deep draft petroleum tankers bound for the Tosco Corporation Riverhead Terminal.

For complete survey limits, see the chartlet on the following page.

**** FILED WITH THE ORIGINAL FIELD RECORDS AT THE ATLANTIC HYDROGRAPHIC BRANCH (AHB)***

Figure 1: Complete Survey Limits & Data Coverage



B. DATA ACQUISITION AND PROCESSING *See also the Evaluation Report*

EQUIPMENT

Data were acquired by NOAA Ship THOMAS JEFFERSON, which is a 63.4 meter hydrographic survey vessel with an average transducer draft of 4.6 meters.

NOAA Ship THOMAS JEFFERSON acquired multibeam echo sounder (MBES) data with a SIMRAD EM1002. Positioning and attitude data were determined with a TSS POS/MV 320 Version 3 GPS-aided inertial navigation system. Sound velocity casts were conducted with a Sea Bird 19 Profiler.

On 10 September 2004 (DN254), the POS/MV unit froze, losing all positioning data. Logging was ceased until the POS was rebooted, which fixed the problem, and then acquisition was resumed. This problem was encountered several more times throughout the project, but no data were acquired while the POS was offline.

The ship's main engine was shut down for repairs on 11 September 2004 (DN255). The ship transferred to the back-up engine and data acquisition continued at reduced speed. Data from DN255 through DN258 were acquired at a maximum speed of five knots. This did not adversely affect data quality.

Refer to the July-November 2004 Data Acquisition and Processing Report * (DAPR; dated <pending>, submitted <pending>) for detailed equipment and vessel configuration information.

** DAPR filed at AHB*

QUALITY CONTROL

Multibeam Echo Sounder Quality Control

There were no faults with the ship MBES system which affected data integrity. Confidence checks examining the internal consistency of the MBES were made by comparing overlapping lines.

BASE Surfaces

CARIS HIPS BASE (Bathymetry Associated with Statistical Error) surfaces, which incorporate each sounding's total propagated error (TPE), were created according to depth intervals. Depths of 24.0-1000 meters are contained in a finalized 2 meter resolution surface (H11255_2m_Final). Depths 0-24.5 meters are contained in a finalized 1 meter resolution surface (H11255_Shallow_1m_Final).

Please refer to this project's DAPR* for detailed discussion of MBES (EM1002) system calibrations, data acquisition and processing. **DAPR filed at AHB.*

Crosslines

A total of 45.74 nautical miles (nmi) of MBES crossline data were acquired, equivalent to 9.5% of the 478.53 nmi of main scheme data. No traditional crossline comparison was performed on the multibeam data, because quality control procedures have been incorporated into the depth, standard deviation and uncertainty models produced by CARIS 5.4. *The field did not give any quantitative indication of how well the crosslines agreed with the mainscheme data. Good agreement was found when comparing the crosslines with the mainscheme at AHB, on the order of 0-30cm in 30m of water, which meets IHO Order 1 specs.*

Side Scan Sonar Quality Control

Side scan sonar (SSS) data were acquired in a limited area over an assigned AWOIS item. These data were acquired for the sole purpose of searching for a wreck. A confidence check was performed at the beginning of side scan operations. No unusual problems or faults affecting data integrity were encountered.

Junctions

This survey area junctions with Sheets R, K and T (H11359, ~~H11252~~ and H11360) of the same project, OPR-B370-TJ-04. These are all navigable area surveys.

A comparison was made between H11255 and 11360 in the field. There was good agreement between the data sets in the overlapping area. Viewing the data in CARIS Subset Editor, it was not possible to tell the data from one sheet apart from the other sheet, because the bathymetry was in such good agreement. Deepening was noted in the Southwest quadrants of H11255 and Northeast quadrants of H11360.

Acquisition on H11359 (Sheet R) has not begun at the time of writing this DR. No comparison has been made between H11255 and H11359 ~~or H11252~~.

CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR.* A table detailing all sound velocity casts is located in Separate III.**

All sound velocity casts were applied based on distance to the survey lines. A separate crossline sound velocity file was created to encompass the survey area covered by all cross-lines and sound velocity corrections were applied to the crosslines based on distance. Correcting the sound velocity on this survey based on distance rather than by time brought the data to within allowable error measurements as per NOAA Specs & Deliverables.

C. VERTICAL AND HORIZONTAL CONTROL *See also the Evaluation Report*

VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network station at New London, CT (846-1490) and the Physical Oceanographic Real Time System station at New Haven, CT (846-5705) served as datum control for the survey area, as well as control for datum determination at the subordinate stations.

The final zones used for this survey are as follows:

ZONE NAME	CORRECTOR (min)	RATIO	REFERENCE
LIS48	-12	0.96	846-5705
LIS48B	0	0.96	846-5705
LIS51	-12	0.93	846-5705
LIS51B	0	0.93	846-5705
LIS54	-18	0.89	846-5705
LIS54A	0	0.89	846-5705
LIS56A	-18	0.86	846-5705
LIS56B	0	0.86	846-5705

* *DAPR filed at AHB*

** *Data filed with the original field records*

A Request for Approved Tides letter was sent to N/OPS1 on October 13, 2004 (Appendix IV).^{*} Observed tide files were e-mailed by TideBot during acquisition and applied to all sounding data. **** Data filed with the original field records***

Verified tides were downloaded from the N/OPS1 CO-OPS website on October 24 2004. These Water levels were applied to all sounding data using the preliminary zoning. Preliminary tide zoning was received from N/OPS1 CO-OPS with the Project Instructions. ***Approved tides and zoning were applied in CARIS during office processing. See also the Evaluation Report.***

HORIZONTAL CONTROL *See also the Evaluation Report*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 18.

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary and only DGPS beacon used for this survey was Moriches, New York (site ID = 804, transmission frequency = 293 kHz). No horizontal control stations were established for this survey.

D. RESULTS AND RECOMMENDATIONS

CHART COMPARISON

There are two charts affected by this survey:

Number	Version	Edition Date	Scale
12354	41 st Ed.	04/24/2004	1:80,000
12358	19 th Ed.	09/01/2002	1:40,000

Table 1: Affected Charts

General Agreement with Charted Soundings, Features, and Notes

Both affected charts were used for comparisons and there is good general agreement between the charted soundings and the bathymetric data acquired during this survey. There are no features charted within the survey limits, with the exception of a wreck

PA. This item was assigned as a full investigation AWOIS item and is discussed on the following section.

Item Investigation Reports

There were three AWOIS items within the survey limits; one assigned for full investigation and two for information only. All three items were investigated with 100% MBES. Two of the items have the same position and description according to AWOIS database and nothing was found at either site. The search radius of the item assigned for full investigation was also covered with 100% SSS data. None of the items were located. *Concur.* The item investigation reports for the AWOIS items are contained in Appendix I. *Item investigation reports are attached to the Descriptive Report.*

There were no DToN's submitted for this survey. *Concur.*

ADDITIONAL RESULTS

Prior Surveys

This survey overlaps three prior surveys:

Survey	Scale	Year
H01591	1:40,000	1883
H09088	1:20,000	1969
H10930	1:10,000	1999

Table 2: List of Prior Surveys

Of the three prior surveys, only one (H10930) can be considered a contemporary data set. Overlap is limited to the southeast corner of the survey limits for this sheet. No comparison was made between the two surveys in the field.

The data from the current survey should be used to validate and update depths indicated on affected nautical charts. *Concur.*

Aids to Navigation and Other Detached Positions

There were no AtoN's or detached positions within the survey limits. *Concur.*

Bridges and Overhead Cables

There were no bridges or overhead cables within the survey limits. *Concur.*

Ferry Routes

There are no ferry routes within the survey limits. *Concur.*

Submarine Cables and Pipelines

There is a charted Cable Area in the northwest corner of the sheet. The 100% MBES data over this area were carefully examined, but there was no evidence of submarine cables. *Concur.* The hydrographer has no recommendations for the charted cable area. *Retain as charted. There is also a charted cable that crosses the survey area, south of the charted cable area but still in the northwest corner of the sheet. There is a scour depression over this charted cable, suggesting that the cable may have become partially unburied. Soundings over this cable are comparable to surrounding soundings. Defer charting disposition to Marine Chart Division, Nautical Data Branch, Source Data Unit.*

There are no charted pipelines within the survey area. *Concur.*

Recommended New Surveys

Future plans are already in place for additional surveys of surrounding areas. There are no further recommendations at this time.

Registry Number: H11255
State: New York
Locality: Long Island Sound
Sub-locality: 4 Nautical Miles North Of Roanoke Point Shoal
Project Number: OPR-B370-TJ-04
Survey Date:

Charts Affected

Number	Version	Date	Scale
12358	19th Ed.	09/01/2002	1:40000
12354	41st Ed.	04/01/2004	1:80000
12300	44th Ed.	07/01/2004	1:400000
13006	31st Ed.	06/01/2003	1:675000
5161	13th Ed.	10/01/2003	1:1058400
13003	47th Ed.	06/01/2003	1:1200000

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS	[no data]	[no data]	[no data]	---
1.2	AWOIS	[no data]	[no data]	[no data]	---
1.3	AWOIS	[no data]	[no data]	[no data]	---

1.1) AWOIS #9481 - UNKNOWN

Search Position: 041° 03' 48.000" N, 72° 42' 54.000" W
Historical Depth: [None]
Search Radius: 0
Search Technique: ES,S2,MB,DI,SD
Technique Notes: [None]

History Notes:

****LTR. DATED 6/17/95; FROM CAPT. LADA SIMEK TO N/CG241; LARGE SCOW (OVER 100 FEET LONG) IN 95 FEET, 20 FEET OFF THE BOTTOM; GOOD FISHING SPOT; LORAN-C RATES (9960 CHAIN): X= 26444.9; Y= 43939.3; POSITION PLOTTED IN APPROX. LAT. 41-03.8N, LONG. 72-42.9W; NOT PRESENTLY CHARTED. (ENT 6/27/95, SJV)

Survey Summary

Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Item investigated with 100% Simrad EM1002 MBES. This item would have been detected with this MBES system. This item and AWOIS #9482 are the same item. There was nothing found.

A phone conversation with Mr. Steve Verry at Hydrographic Surveys Branch was made referencing this discrepancy and the response was that the difference in positions were due to a scaling error with originally provided Loran position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
opr-b370-tj-04_awois	AWOIS # 9481	0.00	000.0	Primary

Hydrographer Recommendations

The hydrographer recommends charting as per digital data. *Concur with clarification. Chart present survey soundings. It is recommended that AWOIS*

S-57 Data

item 9481 be deleted from the AWOIS database, as it is not presently charted.

[None]

1.2) AWOIS #9482 - UNKNOWN

Search Position: 041° 04' 12.000" N, 72° 42' 42.000" W
Historical Depth: [None]
Search Radius: 0
Search Technique: ES,S2,MB,DI,SD
Technique Notes: [None]

History Notes:

**** LTR. DATED 6/17/95; FROM CAPT. LADA SIMEK TO N/CG241; SCOW APPROX. 100 FEET LONG IN 95 FEET RISING 20 FEET OFF THE BOTTOM; GOOD FISHING SPOT; LORAN-C RATES (9960 CHAIN): X= 26444.0, Y= 43941.8; POSITION PLOTTED IN APPROX. LAT. 41-04.2N, LONG. 72-42.7W. (ENT 6/27/95, SJV)

Survey Summary

Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Item investigated with 100% Simrad EM1002 MBES. This item would have been detected with this MBES system. This item and AWOIS #9481 are the same item. See Appendix V for more information. *

** Data filed with the original field records.*

Hydrographer Recommendations

[None] *Chart present survey soundings. It is recommended that AWOIS item 9482 be deleted from the AWOIS database, as it is not presently charted.*

S-57 Data

[None]

1.3) AWOIS #11923 - CONTESA

Search Position: 041° 02' 30.000" N, 72° 46' 30.000" W
Historical Depth: [None]
Search Radius: 1000
Search Technique: ES,S2,MB,DI,SD
Technique Notes: [None]

History Notes:

LNM43/94, CGD1 26OCT94 -- 80-foot CONTESA reported sunk in approximate position 41/02/30.0 north latitude, 072/46/30.0 west longitude (NAD83). Submerged wreck PA applied to chart. (Entered 8/03 by CG)

Survey Summary

Charts Affected: 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Item investigated with 100% Simrad Em1002 MBES and 100% SSS. This item would have been detected with either Em1002 MBES or Klein SSS. Nothing was found

Feature Correlation

Address	Feature	Range	Azimuth	Status
opr-b370-tj-04_awois	AWOIS # 11923	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted Wreck PA. Chart soundings as per digital data. *Concur.*

S-57 Data

[None]

E. APPROVAL SHEET

**OPR-B370-TJ-04
Long Island Sound
New York and Connecticut**

**4NM North of Roanoke Shoal
Survey Registry No. H11255**

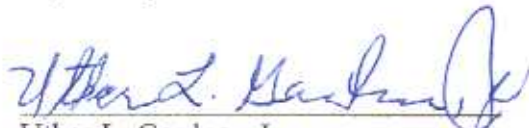
Field operations for this navigable area hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas and for application to the relevant NOS nautical charts.

Also submitted in association with this descriptive report has been a series of reports and data:

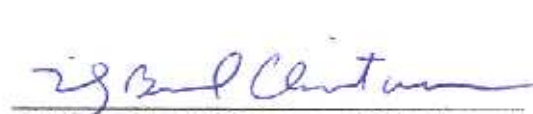
- SEPARATES TO ACCOMPANY PROJECT OPR-B370-TJ-04, SHEET S, H11255
- OPR-B370-TJ-04 HORIZONTAL AND VERTICAL CONTROL REPORT (~~dated pending~~; submitted ~~pending~~) **12/07/2004**
- JULY-NOVEMBER 2004 DATA ACQUISITION AND PROCESSING REPORT (~~dated~~ ~~pending~~; submitted ~~pending~~) **12/15/2004**

Respectfully Submitted:


Uther L. Gardner, Jr.
Hydrographer

Approved and Forwarded:


LTJg Marc S. Moser, NOAA
Field Operations Officer


CDR Emily B. Christman, NOAA
Commanding Officer



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 3, 2005

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-B370-TJ-2004
HYDROGRAPHIC SHEET: H11255

LOCALITY: 4 NM North of Roanoke Point Shoal,
Long Island Sound, NY
TIME PERIOD: September 9 - September 21, 2004

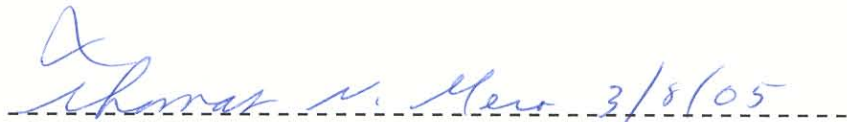
TIDE STATION USED: 851-2668 Mattituck Inlet, NY
Lat. 41° 00.9'N Lon. 72° 33.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.620 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: LIS48, LIS48B, LIS51, LIS51B, LIS54,
LIS54A, LIS56A & LIS56B

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 on
the new 1983-2001 National Tidal Datum Epoch (NTDE).



CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



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**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11255 (2004)**

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 (AHB):

MapInfo, version 8.0
CARIS HIPS/SIPS version 6.0
PYDRO, version 6.4.9
CARIS BASE Editor, version 1.0
CARIS HOM ENC, version 3.3
CARIS GIS, version 4.4a
FUGAWI View ENC, version 1.0.0.3
dKart Inspector, version 5.0

Office processing entailed the use of CARIS HIPS/SIPS to generate a Bathymetry Associated with Statistical Error (BASE) navigation surface model. The BASE surface model serves as the source for all cartographic components incorporated within the submitted BASE Cell ENC exchange file.

The field unit submitted two surface models generated at 1m and 2m resolutions based upon depth ranges that allowed the highest resolution possible. After data verification and sounding designation AHB personnel generated a surface model at a 2 meter resolution.

CARIS BASE Editor processing included the creation of contours and the extraction of sounding data sets for survey scale and chart scale. The surface model was created at a scale of 1:10,000, and then generalized to a 10 meter resolution product surface at a scale of 1:10,000 (survey scale) with the default generalization radius of 100 meters, cell resolution of 10 meters, and no horizontal defocusing. The survey scale sounding data set was extracted from the full density multibeam data at 1mm @ 1:10,000 (survey scale) with a radius value of 5. The chart scale sounding selection was suppressed using the CARIS HOM sounding suppression routine.

The suppression parameters used were a scale of 1mm @ 1:40,000 and a radius value of 1. The chart scale BASE Cell file (*.000) contains only the background soundings, while the survey scale product contains the background and suppressed sounding selections.

The final processing routines were performed using CARIS HOM and followed standard CARIS processing routines for S-57 ENC production. In addition, dKart Inspector tests were used to check the (*.000) files for errors. Many of the errors that occur indicate that the files are not totally S-57 compliant. Those errors were allowed in order for the files to be compatible with Marine Chart Division (MCD) specifications. Other errors or warnings were ignored because they were immaterial or made no sense. An example is the warning (LG0059) that indicates most of the soundings are deeper than the depth area they are in. This is true for the soundings that are on the wrong side of the curve to make the curve smoother, but there aren't as many of those as the test indicated. Also, a vessel cannot hit a deep. More worrying is the warning (LG0058) that indicates that all the rest of the soundings are shoaler than their depth area. This hides the real shoal soundings, which are important. Other errors and warnings include:

- Error LG0111 Spot sounding not in the water (not true)
- Warning LG0180 No depth contour between two depth areas (not true)
- Error LG0069 Depth continuity is broken between depth areas (not true)
- Warning GG2005 Pairs of vertexes are identical (does not matter)
- Error GG1018 Edge is used more than once in depth area (not true)
- Error GG1005 Contour is self crossed (not true)
- Error GG1007 Contour has wrong nesting (not true)
- Error GG1015 Contour touches other contours (not true)
- Error GG1006 Contour has wrong direction (doesn't matter)

Three of the last four errors occurred because the program is mistaking the perimeter line for a contour.

Contour and Depth Area Feature Objects

Depth areas and curves were omitted as per Office of Coast Survey H-Cell Specifications Version 2.0, dated April 2, 2007. All soundings are contained in one depth area to which arbitrary DRVAL1 and DRVAL2 limits were assigned in order to capture the entire range of sounding values.

CROSS LINES

The field unit collected the required amount of crossline data. However, crosslines should be run before mainscheme lines are run. See the *Hydrographic Manual, Fourth Edition*, July 4, 1976, sections 1.4.2, 4.3.6 and 4.6.1.

JUNCTIONS**H11360 (2004) to the south**

A standard junction was effected between H11360 (2004) and the present survey. Present survey depths are in harmony with the charted hydrography to the east, west and north.

C. VERTICAL CONTROL

Approved tides and zoning were applied in CARIS during office processing, necessitated by the selection of a different gage for the approved tides than the original preliminary tide gages.

HORIZONTAL CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83), UTM projection zone 18. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. During CARIS HOM processing the horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) prior to exporting the HOM file to the S-57 ENC format. The S-57 ENC format serves as the exchange file submitted to MCD.

D.1 CHART COMPARISON 12354 (41st Edition, Apr/04)

Corrected through NM Apr 24/04

Corrected through LNM Apr 13/04

12358 (19th Edition, Sep/02)

Corrected through NM Sep 14/02

Corrected through LNM Sep 3/02

Hydrography

The charted hydrography originates with the discussed

prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report.

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

COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys and the survey data was not done during office processing in accordance with section 4. of the memorandum titled "*Changes to Hydrographic Survey Processing*" dated May 24, 1995. The present survey is considered adequate to supersede the prior surveys in the common area.

ADEQUACY OF SURVEY

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

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 (41st Edition, Apr/04)
Corrected through NM Apr 24/04
Corrected through LNM Apr 13/04

Marilyn L. Schlüter

Cartographer

Verification of Field Data

Evaluation and Analysis

APPROVAL SHEET
H11255

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

_____ Date: _____
Marilyn L. Schlüter
Cartographer
Atlantic Hydrographic Branch

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted in the Evaluation Report.

_____ Date: _____
Helen Stewart
Physical Scientist
Atlantic Hydrographic Branch

I have reviewed the ENC exchange file (*.000), 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: _____ Date: _____
P. Tod Schattgen
Commander, NOAA
Chief, Atlantic Hydrographic Branch