

H11252

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: **H11252**

LOCALITY

State: New York and Connecticut

General Locality: Eastern Long island Sound

Sub-locality: West of Six Mile Reef

2004

CHIEF OF PARTY
CDR Emily B. Christman, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11252

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: **Easterrn Long Island Sound**

Sub-Locality: **West of Six Mile Reef**

Scale: **1:10,000** Date of Survey: **10/24/04 to 11/15/04**

Instructions Dated: **08/6/04** Project Number: **OPR-B370-TJ-04**

Vessel: **NOAA Ship THOMAS JEFFERSON, S-222**

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

Surveyed by: **THOMAS JEFFERSON Personnel**

Soundings by: **Simrad Em1002 multibeam echosounder**
Reson 8125 multibeam echosounder

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, italic, red notes in Descriptive Report were made during office processing.***

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

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** Data filed with original field records.*

DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SURVEY H11252

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 August 6, 2004. *Concur.*

This Descriptive Report pertains to sheet "K" of project OPR-B370-TJ-04. The assigned registry number for this sheet is H11252, as prescribed in the Letter Instructions. This sheet was reduced to a 1:10,000 scale sheet with reduced survey area, see Appendix V for the e-mail dated November 12, 2004 discussing this change. *Concur.*

The purpose of FY 2004 survey operations in Eastern Long Island Sound is two-fold: (1) to provide contemporary surveys to update National Ocean Service (NOS) nautical charts thus reducing the critical survey backlog in the Long Island Sound region, and to provide a 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 the 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. *Concur.*

For complete survey limits, see the chartlet on the following page. * *See Evaluation Report (ER) for a discussion regarding a modification to the submitted MBES survey limits.*

B. DATA ACQUISITION AND PROCESSING

See also ER.

EQUIPMENT

Data were acquired by NOAA Ship THOMAS JEFFERSON, and NOAA Launch 1014. Launch 1014 is a NOAA standard 8.5-meter aluminum Jensen vessels with a 0.5-meter transducer draft. NOAA Ship THOMAS JEFFERSON is a 63.4-meter hydrographic survey vessel with an average transducer draft of 4.6 meters.

THOMAS JEFFERSON acquired side scan sonar (SSS) data with a towed Klein 5000 system and multibeam echosounder (MBES) data with a Simrad EM1002 MBES.

Launch 1014 acquired MBES bathymetry data with a RESON Seabat 8125 shallow-water multibeam system.

All platforms acquired positioning and attitude data with an on-board TSS POS/MV (version 3) GPS-aided inertial navigation system. Refer to the 2004 Fall Data Acquisition and Processing Report (DAPR) for details related to each individual vessel.

** Data filed with original field records.*

Sound velocity data were acquired by both platforms. Launch 1014 used a Sea-Bird SBE19+ SEACAT conductivity, temperature, and depth profiler (CTD). THOMAS JEFFERSON used a SBE19 SEACAT CTD.

There were no vessel configurations or changes to the Hips Vessel File (HVF) for this survey that are not included in the 2004 Fall DAPR*. There were no survey-specific equipment problems on Launch 1014 or THOMAS JEFFERSON. For all other acquisition or processing details related to this survey, refer to the 2004 Fall DAPR.

Due to mechanical failures of the ship service generators, acquisition was arrested for H11252 before full MBES coverage was attained in the northwestern portion of this sheet. These minor gaps are covered with 100% SSS data. The hydrographer recommends updating the nautical charts using the available data. *Concur.*

QUALITY CONTROL

Side Scan Sonar Quality Control

There were no major faults with the SSS system which affected data integrity. One hundred percent side scan sonar coverage was not required for the entire sheet as per Letter Instructions. Full 100% SSS data were acquired over portions of this survey only. Areas with SSS coverage include areas with less than 20 meters depth and developments of MBES coverage where SSS imagery helped identify item. One hundred percent SSS data were not acquired in the far northwestern portion of the sheet near Falkner Island between five and twelve meters depths *and a small area near the central northern edge of the sheet with depths ranging from approximately 19 to 20 meters*. All SSS data were acquired by THOMAS JEFFERSON. Daily confidence checks were performed by observing sand waves and other features in these data. *Concur. See ER for additional comments.*

Shallow Water Multibeam Quality Control

There were no major faults with the MBES system which affected data integrity. Daily confidence checks examining the internal consistency of the MBES data were made by comparing overlapping lines. Refer to this project's DAPR for detailed discussion of MBES system calibrations, data acquisition, and data processing.

One area in the northwestern part of the sheet has minor gaps in MBES coverage. This MBES data gap overlaps the area of 100% SSS coverage. No significant contacts were seen in the SSS data where there was no MBES coverage.

The Em1002 was used in depths shoaler than 20 meters for portions of this survey. Although THOMAS JEFFERSON usually does not acquire Em1002 MBES data in these depths, there were no problems observed with the data. ** See ER for a systematic error not addressed by the Hydrographer.* Since the area was so well mixed, there were no *significant* problems with sound velocity with this MBES system. *Concur.*

The hydrographer recommends updating the nautical charts based on the available data. *Concur.*

Crosslines

Twenty one nautical miles of crosslines (about 5% of the 435 nm of mainscheme MBES data) were acquired. No traditional crossline comparison was performed on the multibeam data because quality control procedures have been incorporated into the depth and uncertainty models produced by CARIS 5.4. Minor differences (0.2 meters) *(with isolated differences of up to 0.6 meters)* between the two MBES systems used were noted where crosslines overlapped another system. These depth differences are expected due to the different operating frequencies of these systems. These differences are within the NOS accuracy standards. *Concur.*

Junctions

This survey junctions with H11361 (Sheet U). Data compared very favorably between the two surveys. Minor differences were observed where different MBES systems were used. *Concur.*

CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR. All sound velocity casts are included in the Pydro PSS. Sound velocity correctors* were applied based on distance and time (four hours). ** Data filed with original field records. See ER for additional comments.*

C. VERTICAL AND HORIZONTAL CONTROL

VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). No temporary tide gauge was installed for this survey. The New Haven Harbor, CT (846-5705) tide gauge was used initially for this survey. *Final tide zoning references 851-2668, Mattituck Inlet, NY.*

A Request for Approved Tides letter was sent to N/OPS1 on November 19, 2004 (Appendix IV). Verified tides from the N/OPS1 CO-OPS website for New Haven Harbor, CT (846-5705) were downloaded and applied to all sounding data using preliminary zoning. *Approved tide levels and final zones were reapplied to the survey in CARIS during office processing.* Refer to the Fall 2004 DAPR for a summary of the methods used to determine, evaluate, and apply tide corrections to sounding data.

HORIZONTAL CONTROL

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

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary DGPS beacon used for this survey was Moriches (site ID = 803, transmission frequency = 293). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily on the ship and both launches. That value did not exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

D. RESULTS AND RECOMMENDATIONS

CHART COMPARISON

There are nine charts affected by this survey:

Table 1: Affected Charts

Number	Version	Edition Date	Scale
12373	14 th Ed.	10/20/2001	1:20,000
12374	13 th Ed.	10/28/2000	1:20,000
12358	19 th Ed.	09/01/2002	1:40,000
12372	33 rd Ed.	08/01/2004	1:40,000
12354	41 th Ed.	04/01/2004	1:80,000
12300	44 st Ed.	07/01/2004	1:400,000
13006	31 th Ed.	06/01/2003	1:675,000
5161	13 th Ed.	10/01/2003	1:1,058,400
13003	47 th Ed.	06/01/2003	1:1,200,000

General Agreement with Charted Soundings, Features, and Notes

Surveyed soundings showed significant change in one area due to shifting sandwaves. See Appendix I for feature reports. *Concur.*

Item Investigation Reports

One Danger To Navigation (DtoN) was submitted December 8, 2004 for this survey (see Appendix I). There were no assigned AWOIS items for this project within the limits of survey. Five uncharted items are discussed in Appendix I.

ADDITIONAL RESULTS

Prior Surveys

The survey overlaps five prior surveys:

Survey	Scale	Year
H00035	20,000	1838
H00040	20,000	1838
H01591	40,000	1883
H09088	20,000	1969
H09089	20,000	1969

The survey area was previously surveyed with only lead lines and single beam echosounder data without the aid of differential GPS. This present survey is adequate to supersede all charted depths in the common area. *Concur.*

Aids to Navigation and Other Detached Positions

Aids to navigation were not positioned with detached positions. Aids to navigation were observed near charted positions.

Bridges and Overhead Cables

There were no bridges or overhead cables in the survey area to be considered. *Concur.*

Ferry Routes

There were no ferry routes in the survey area to be considered. *Concur.*

Submarine Cables and Pipelines

One cable area crossed the northwestern portion of the sheet. No indications of the cable area were observed in either the MBES or SSS data. There were no charted pipelines in the survey area to be considered. The hydrographer has no recommendations for charting cable areas or pipelines in the survey area.

E. APPROVAL SHEET**OPR-B370-TJ-04
Eastern Long Island Sound, NY and CT****West of Six Mile Reef
Survey Registry No. H11252**

Field operations for this basic 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 K, H11252
- DATA ACQUISITION AND PROCESSING REPORT (*dated <pending>; submitted <pending>*)
- HORIZONTAL AND VERTICAL CONTROL REPORT (*dated 12/6/2004; submitted 12/9/2004*)

Respectfully Submitted:

LT Marc S. Moser, NOAA
Field Operations Officer

Approved and Forwarded:

CDR Emily B. Christman, NOAA
Commanding Officer

APPENDIX I

ITEM INVESTIGATION REPORTS

Following are item investigation reports detailing two groups of features:

- 1) Dangers to Navigation (Dton's)
- 2) Uncharted Features

H11252 Descriptive Report Features

Registry Number: H11252
State: Connecticut
Locality: Easten Long Island Sound
Sub-locality: Vicinity of Sixmile Reef
Project Number: OPR-B370-TJ-04
Survey Dates: 10/24/2004 - 07/17/2006

Charts Affected

Number	Version	Date	Scale
12373	14th Ed.	10/20/2001	1:20000
12374	13th Ed.	10/28/2000	1:20000
12358	19th Ed.	09/01/2002	1:40000
12372	33rd Ed.	08/01/2004	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.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	DR_UnCharted 653/155	Rock	6.16 m	041° 12' 49.523" N	72° 37' 26.509" W	---
1.2	DR_UnCharted "26 Rk"	Rock	7.88 m	041° 12' 47.647" N	72° 37' 29.817" W	---
1.3	DR_unCharted 2818/86	Wreck	24.40 m	041° 12' 03.800" N	72° 32' 44.834" W	---
1.4	DR_unCharted 3952/43	Wreck	27.61 m	041° 10' 54.443" N	72° 36' 30.987" W	---
1.5	DR_Uncharted "74 Rk"	Rock	22.60 m	041° 10' 52.712" N	72° 38' 31.165" W	---
1.6	DR_UnCharted 2410/100	Rock	10.79 m	041° 12' 43.920" N	72° 37' 30.960" W	---
1.7	DR_UnCharted 655/41	Obstruction	27.03 m	041° 11' 04.481" N	72° 38' 23.088" W	---
1.8	DR_UnCharted 820/92	Obstruction	22.38 m	041° 10' 41.952" N	72° 34' 14.298" W	---
1.9	DR_Uncharted "82 Rk"	Rock	25.16 m	041° 10' 48.484" N	72° 38' 33.652" W	---
1.10	DR_UnCharted rky #1	GP	[None]	041° 12' 47.025" N	72° 37' 28.346" W	---

1.11	DR_UnCharted Sandwave #1	GP	[None]	041° 09' 21.317" N	72° 32' 41.640" W	---
1.12	DR_UnCharted Sandwave #2	GP	[None]	041° 11' 52.929" N	72° 32' 12.379" W	---
1.13	DR_UnCharted rky #2	GP	[None]	041° 10' 50.331" N	72° 38' 33.830" W	---
2.1	DToN 1495/36	Shoal	11.69 m	041° 10' 47.427" N	72° 33' 06.502" W	---

1 - New Features

1.1) DR_UnCharted 653/155

Survey Summary

Survey Position: 041° 12' 49.523" N, 72° 37' 26.509" W
Least Depth: 6.16 m
Timestamp: 2004-320.15:39:32.542 (11/15/2004)
Survey Line: h11252 / 1014_mb / 2004-320 / 549_1537
Profile/Beam: 653/155
Charts Affected: 12374_1, 12372_16, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Least depth on rock in rocky area. Least depth by Reson 8125 MBES.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/1014_mb/2004-320/549_1537	653/155	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

20ft (12374_1, 12372_16, 12354_1)
 3 ¼fm (12300_1, 13006_1, 13003_1)
 6.1m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - Least depth on rock in rocky area. Least depth by Reson 8125 MBES.
 QUASOU - 6:least depth known
 STATUS - 1:permanent
 TECSOU - 3:found by multi-beam
 VALSOU - 6.159 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. The office reviewer recommends charting a dangerous rock with a least depth of 20 feet at 41°12'49.523" N, 072°37'26.509" W.

1.2) DR_UnCharted "26 Rk"

Survey Summary

Survey Position: 041° 12' 47.647" N, 72° 37' 29.817" W
Least Depth: 7.88 m
Timestamp: 2004-320.15:46:43.245 (11/15/2004)
Survey Line: h11252 / 1014_mb / 2004-320 / 553_1545
Profile/Beam: 426/145
Charts Affected: 12374_1, 12372_16, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Least depth on rock in rocky area. Least depth by Reson 8125 MBES.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/1014_mb/2004-320/553_1545	426/145	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

26ft (12374_1, 12372_16, 12354_1)
 4 ¼fm (12300_1, 13006_1, 13003_1)
 7.9m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - Least depth on rock in rocky area. Least depth by Reson 8125 MBES.
 QUASOU - 6:least depth known
 STATUS - 1:permanent
 TECSOU - 3:found by multi-beam
 VALSOU - 7.883 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. The office reviewer recommends charting a dangerous rock with a least depth of 26 feet at 41°12'47.647" N, 072°37'29.817" W.

1.3) DR_unCharted 2818/86

Survey Summary

Survey Position: 041° 12' 03.800" N, 72° 32' 44.834" W
Least Depth: 24.40 m
Timestamp: 2004-298.18:13:48.889 (10/24/2004)
Survey Line: h11252 / s222_mb / 2004-298 / 0236_20041024_180327_raw
Profile/Beam: 2818/86
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Least depth on wreck in deep water. Least depth by Em1002 MBES and investigated with SSS.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-298/0236_20041024_180327_raw	2818/86	0.00	000.0	Primary
h11252/s222_100/2004-314/044_2048	0001	6.05	328.0	Secondary
h11252/s222_100/2004-314/600_2010	0001	18.36	176.6	Secondary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

80ft (12374_1, 12372_11, 12354_1)

13fm (12300_1, 13006_1, 13003_1)

24m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 1:non-dangerous wreck

INFORM - Least depth on wreck in deep water. Least depth by Em1002 MBES and investigated with SSS.

STATUS - 1:permanent

TECSOU - 2:found by side scan sonar; 3:found by multi-beam

VALSOU - 24.404 m

WATLEV - 3:always under water/submerged

Office Notes

Concur. The office reviewer recommends charting a non-dangerous wreck with a least depth of 80 feet at 41°12'03.800" N, 072°32'44.834" W.

1.4) DR_unCharted 3952/43

Survey Summary

Survey Position: 041° 10' 54.443" N, 72° 36' 30.987" W
Least Depth: 27.61 m
Timestamp: 2004-299.20:59:39.815 (10/25/2004)
Survey Line: h11252 / s222_mb / 2004-299 / 0214_20041025_204546_raw
Profile/Beam: 3952/43
Charts Affected: 12374_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Either flat bottom boat or small barge keel up. Wreck in deep scour. Least depth by Em1002 MBES and investigated with SSS.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-299/0214_20041025_204546_raw	3952/43	0.00	000.0	Primary
h11252/s222_100/2004-315/702_2003	0001	4.40	098.4	Secondary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

90ft (12374_1, 12354_1)

15fm (12300_1, 13006_1, 13003_1)

27m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 1:non-dangerous wreck

INFORM - Either flat bottom boat or small barge keel up. Wreck in deep scour. Least depth by Em1002 MBES and investigated with SSS.

STATUS - 1:permanent

TECSOU - 2:found by side scan sonar; 3:found by multi-beam

VALSOU - 27.612 m

WATLEV - 3:always under water/submerged

Office Notes

Concur. The office reviewer recommends charting a non-dangerous wreck with a least depth of 90 feet at 41°10'54.443" N, 072°36'30.987" W.

1.5) DR_Uncharted "74 Rk"

Survey Summary

Survey Position: 041° 10' 52.712" N, 72° 38' 31.165" W
Least Depth: 22.60 m
Timestamp: 2004-299.20:47:20.386 (10/25/2004)
Survey Line: h11252 / s222_mb / 2004-299 / 0214_20041025_204546_raw
Profile/Beam: 442/97
Charts Affected: 12373_1, 12374_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-299/0214_20041025_204546_raw	442/97	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

74ft (12373_1, 12374_1, 12354_1)

12fm (12300_1, 13006_1, 13003_1)

22m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: VALSOU - 22.599 m
 WATLEV - 3:always under water/submerged

Office Notes

The feature is the least depth on a rock not addressed in the DR. The rock was located with 100% EM1002 MBES and is the shoalest rock in a relatively small cluster of rocks/boulders. The reviewer recommends charting the feature as a non-dangerous rock with a least depth of 74 feet. (See also Evaluation Report.)

1.6 DR_UnCharted 2410/100

Survey Summary

Survey Position: 041° 12' 43.920" N, 72° 37' 30.960" W
Least Depth: 10.79 m
Timestamp: 2004-316.16:18:54.932 (11/11/2004)
Survey Line: h11252 / s222_mb / 2004-316 / 0687_20041111_161236_raw
Profile/Beam: 2410/100
Charts Affected: 12374_1, 12372_16, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Large rock in rock grouping. Least depth by Kongsberg EM1002 MBES.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-316/0687_20041111_161236_raw	2410/100	0.00	000.0	Primary
h11252/s222_100/2004-316/687_1612	0004	9.23	240.1	Secondary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

35ft (12374_1, 12372_16, 12354_1)

5 ¾fm (12300_1, 13006_1, 13003_1)

10.8m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 6:least depth known
 TECSOU - 3:found by multi-beam
 VALSOU - 10.793 m

Office Notes

Concur. The reviewer recommends charting a dangerous rock with a least depth of 35 feet at 41°12'43.920" N, 072°37'30.960" W.

1.7) DR_UnCharted 655/41

Survey Summary

Survey Position: 041° 11' 04.481" N, 72° 38' 23.088" W
Least Depth: 27.03 m
Timestamp: 2004-299.18:15:53.217 (10/25/2004)
Survey Line: h11252 / s222_mb / 2004-299 / 0217_20041025_181341_raw
Profile/Beam: 655/41
Charts Affected: 12374_1, 12372_16, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-299/0217_20041025_181341_raw	655/41	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

88ft (12374_1, 12372_16, 12354_1)

15fm (12300_1, 13006_1, 13003_1)

27m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: TECSOU - 3:found by multi-beam
 VALSOU - 27.031 m
 WATLEV - 3:always under water/submerged

Office Notes

The reviewer does not concur with the hydrographer's least depth or recommendation for this feature. The hydrographer originally picked as the least depth for this feature a sounding on the lip of the scour surrounding the feature, and not the shoalest part of the feature itself. The current feature is the actual least depth of the obstruction. Also, the hydrographer classified the feature as a underwater rock, but the office reviewer believes the feature to be an obstruction. The office reviewer recommends charting an non-dangerous obstructiton with a least depth of 88 feet at 41°11'04.481" N, 072°38'23.088" W. (See also Evaluation Report.)

1.8) DR_UnCharted 820/92

Survey Summary

Survey Position: 041° 10' 41.952" N, 72° 34' 14.298" W
Least Depth: 22.38 m
Timestamp: 2004-299.16:10:57.308 (10/25/2004)
Survey Line: h11252 / s222_mb / 2004-299 / 0210_20041025_160819_raw
Profile/Beam: 820/92
Charts Affected: 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-299/0210_20041025_160819_raw	820/92	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

73ft (12372_11, 12354_1)

12fm (12300_1, 13006_1, 13003_1)

22m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 TECSOU - 3:found by multi-beam
 VALSOU - 22.381 m
 VERDAT - 12:Mean lower low water
 WATLEV - 3:always under water/submerged

Office Notes

The feature is the least depth over an uncharted obstruction that was not addressed in the DR. The obstruction has a least depth of 73 feet and a surrounding depth of 84 feet. The obstruction was located with 100% EM1002 MBES data. The MBES coverage over the item is from a single line, with no correlating data from another line. There are no SSS data over the obstruction. The office reviewer recommends charting the feature (DR_UnCharted 820/92) as a non-dangerous obstruction with a least depth of 73 feet at 41°10'41.952" N, 072°34'14.298" W. (See also Evaluation Report.)

1.9) DR_Uncharted "82 Rk"

Survey Summary

Survey Position: 041° 10' 48.484" N, 72° 38' 33.652" W
Least Depth: 25.16 m
Timestamp: 2004-299.16:42:55.009 (10/25/2004)
Survey Line: h11252 / s222_mb / 2004-299 / 0213_20041025_164133_raw
Profile/Beam: 365/111
Charts Affected: 12373_1, 12374_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-299/0213_20041025_164133_raw	365/111	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

82ft (12373_1, 12374_1, 12354_1)

14fm (12300_1, 13006_1, 13003_1)

25m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: VALSOU - 25.16 m
 WATLEV - 3:always under water/submerged

Office Notes

The feature is the least depth on a rock that is not addressed in the DR. The feature was located with 100% EM1002 MBES and is the 2nd shoalest rock in a relatively small cluster of rocks. (Item DR_Uncharted "74 Rk" at 41°10'52.712" N, 072°38'31.165" W, is the shoalest rock in the cluster of rocks.) The reviewer recommends charting the feature as a non-dangerous rock with a least depth of 82 feet at 41°10'48.484" N, 072°38'33.652" W. (See also Evaluation Report.)

1.10) DR_UnCharted rky #1

Survey Summary

Survey Position: 041° 12' 47.025" N, 72° 37' 28.346" W
Least Depth: [None]
Timestamp: 2006-198.11:26:29 (07/17/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 12374_1, 12372_16, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary
h11252/1014_mb/2004-320/538_1923	70/46	0.48	027.9	Secondary (grouped)

Hydrographer Recommendations

S-57 Data

Geo object 1: Seabed area (SBDARE)
Attributes: NATSUR - 9:rock

Office Notes

The feature is a digitized chartGP that represents a rocky area centered at 41°12'47.025" N, 072°37'28.346" W. The office reviewer recommends charting 'rky' at 41°12'47.025" N, 072°37'28.346" W. (See also Evaluation Report.)

1.11) DR_UnCharted Sandwave #1

Survey Summary

Survey Position: 041° 09' 21.317" N, 72° 32' 41.640" W
Least Depth: [None]
Timestamp: 2006-198.16:10:33 (07/17/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 2
Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	2	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Sand waves (SNDWAV)

Office Notes

The office reviewer recommends charting a sandwave feature at 41°09'21.317" N, 072°32'41.640" W to portray a prominent area of migrating sandwaves. (See also Evaluation Report.)

1.12) DR_UnCharted Sandwave #2

Survey Summary

Survey Position: 041° 11' 52.929" N, 72° 32' 12.379" W
Least Depth: [None]
Timestamp: 2006-198.16:14:52 (07/17/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 3
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	3	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Sand waves (SNDWAV)

Office Notes

The office reviewer recommends charting a sandwave feature at 41°11'52.929" N, 072°32'12.379" W to portray a prominent area of migrating sandwaves. (See also Evaluation Report.)

1.13) DR_UnCharted rky #2

Survey Summary

Survey Position: 041° 10' 50.331" N, 72° 38' 33.830" W
Least Depth: [None]
Timestamp: 2006-198.17:12:19 (07/17/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 4
Charts Affected: 12373_1, 12374_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	4	0.00	000.0	Primary
h11252/s222_mb/2004-299/0213_20041025_164133_raw	362/57	0.86	307.6	Secondary (grouped)

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Seabed area (SBDARE)
Attributes: NATSUR - 9:rock

Office Notes

The feature (in addition to the non-dangerous rock at 41°10'52.712" N, 072°38'31.165" W and the non-dangerous rock at 41°10'48.484" N, 072°38'33.652" W) represents an isolated cluster of rocks not addressed in the DR. The reviewer recommends charting "rky" at 41°10'50.331" N, 072°38'33.830" W. (See also Evaluation Report.)

2 - Dangers to Navigation

2.1) DToN 1495/36

DANGER TO NAVIGATION

Survey Summary

Survey Position: 041° 10' 47.427" N, 72° 33' 06.502" W
Least Depth: 11.69 m
Timestamp: 2004-313.19:39:20.800 (11/08/2004)
Survey Line: h11252 / s222_mb / 2004-313 / 0570_20041108_193425_raw
Profile/Beam: 1495/36
Charts Affected: 12374_1, 12372_11, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Crest of large sand wave. LD by Simrad EM1002 MBES. Dton submitted 12/8/2004.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11252/s222_mb/2004-313/0570_20041108_193425_raw	1495/36	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

38ft (12374_1, 12372_11, 12354_1)

6 ¼fm (12300_1, 13006_1, 13003_1)

11.7m (5161_1)

S-57 Data

Geo object 1: Sand waves (SNDWAV)
Attributes: INFORM - Crest of large sand wave. LD by Simrad EM1002 MBES. Dton submitted 12/8/2004.
Geo object 2: Sounding (SOUNDG)
Attributes: INFORM - Crest of large sand wave. LD by Simrad EM1002 MBES. Dton submitted 12/8/2004.
 QUASOU - 6:least depth known

TECSOU - 3:found by multi-beam

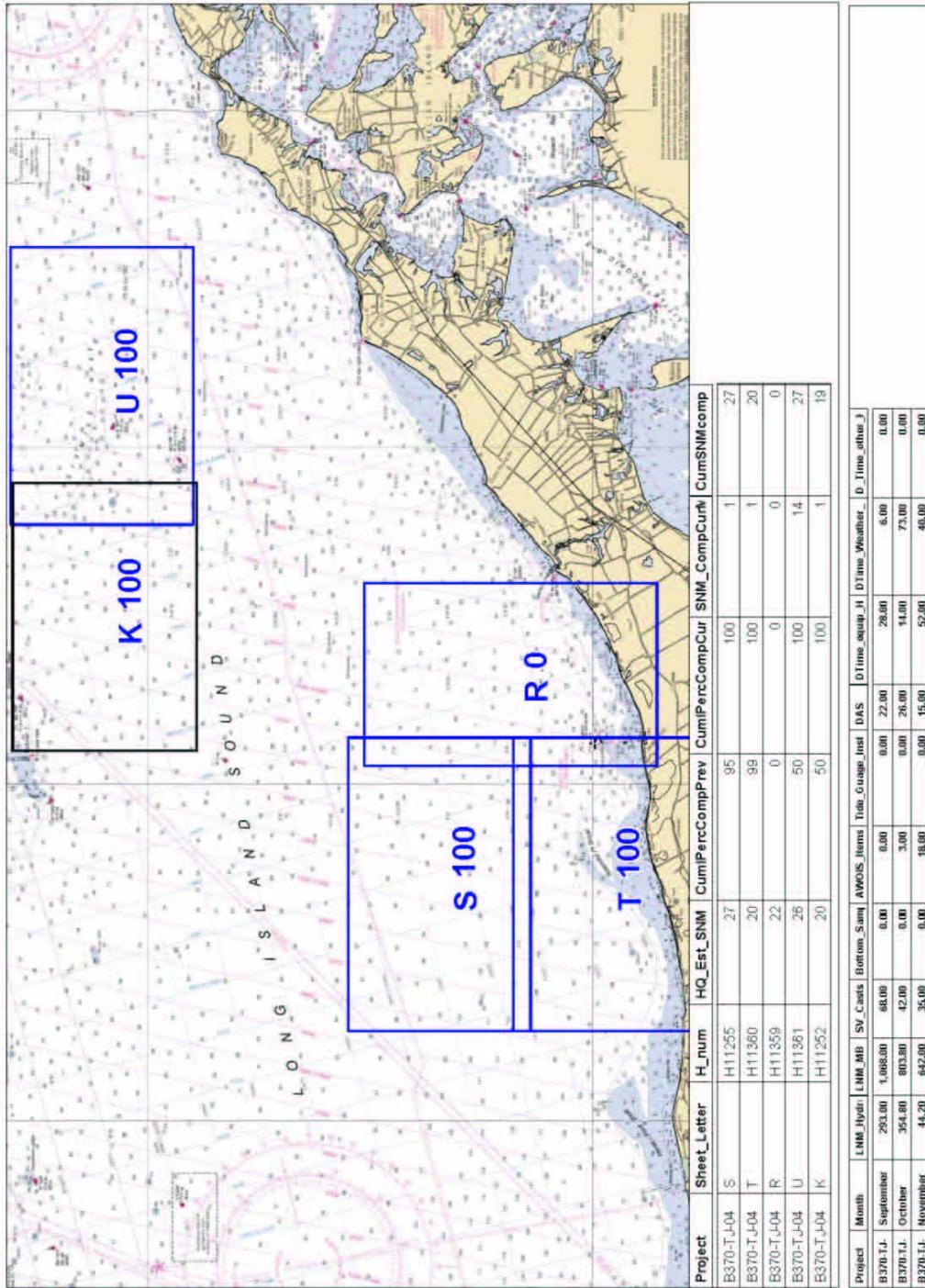
Office Notes

Concur with clarification. After final office processing, the least depth of the current feature did not change. The reviewer recommends charting a 38-foot sounding at 41°10'47.427" N, 072°33'06.502" W, and charting the text "Sandwaves" slightly offset to the east at 41° 10' 45.645" N, 072° 33' 01.961" W to represent a prominent area of migrating sandwaves.

APPENDIX II**LIST OF GEOGRAPHIC NAMES**

Geographic names as displayed on chart were observed in common usage. Hydrographer has no particular recommendation on geographic names.

APPENDIX III
PROGRESS SKETCH



Progress Sketch OPR-B370-T-J-04. November, 2004

APPENDIX IV

TIDES AND WATER LEVELS

- 1) Field Tide Note (Section 5 of Project Instructions)
- 2) Smooth Tide Request (November 19, 2003)
- 3) Times of Hydrography

Tide Requirements for OPR-B370-TJ-2004
East Long Island Sound, NY & CT
MMC 07/19/2004

5.0. TIDES

5.1. Purpose: All tide requirements in these instructions are in direct support of hydrographic survey operations.

5.2 through 5.6. Refer to Standing Instructions.

5.7. Vertical Datums:

Refer to Standing Instructions.

5.7.1. The operating National Water Level Observation Network (NWLON) station at New London, CT (846-1490), and the Physical Oceanographic Real Time System (PORTS)^R station at New Haven, CT (846-5705) will serve as datum control for the survey area as well as control for datum determination at the subordinate stations. Therefore, it is critical that these stations remain in operation during all periods of hydrography.

5.7.1.1. Water level data acquisition monitoring

Refer to Standing Instructions.

5.7.1.2. Water level station operation and maintenance

Refer to Standing Instructions.

5.7.1.3. No leveling is required at New London, CT (846-1490) or New Haven, CT (846-5705) by NOAA Ship THOMAS JEFFERSON personnel.

5.8. Water Level Station Requirements: The operating water level stations at New London, CT (846-1490), New Haven, CT (846-5705), and Silver Eel Pond (851-0719) will also provide water level reducers for this project, reiterating the importance of their operation during all periods of hydrography. See Sections 5.7.1.1. and 5.7.1.2. concerning responsibilities.

5.8.1. Subordinate Water Level Stations:

Refer to Standing Instructions.

5.8.1.1. 30-Day Station(s): Install the following water level stations. Operate the stations for a minimum of 30 days, from 4 hours before to 4 hours after the period of hydrography and/or shoreline verification for the sheet(s) or area(s) specified in Section 5.8.4. of these instructions. However, if the period of hydrography is less than 30 days, this 30-day requirement is waived beyond the 4 hours after the period of hydrography.

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
851-0719 **	Silver Eel Pond, Fishers Is, NY	41° 15.4'	72° 01.8'
851-2668 **	Mattituck Inlet, NY	41° 00.9'	72° 33.7'

** These stations are currently installed and operating.

Section 5.8.1.2. is not applicable for this project.

5.8.2. GOES Satellite Enabled Subordinate Stations

Refer to Standing Instructions.

The following preliminary satellite antenna pointing angles are provided for the station in Sections 5.8.1.1. to facilitate GOES satellite transmission. Complete GOES information will be provided after the station location is finalized and reported to CO-OPS/RDD. If a suitable site for transmitting via satellite cannot be found within the required area, then a station should be established within the area and the data downloaded onto diskette and forwarded to CO-OPS/RDD. As a backup for all stations, data must be forwarded to CO-OPS/RDD on diskette.

<u>STATION</u>	<u>GOES EAST-EAST</u>	<u>GOES EAST-CENTRAL</u>
851-0719	ELEV. 42.2° AZIMUTH(T) 184.5°	38.9° 206.2°
851-2668	ELEV. 42.5° AZIMUTH(T) 183.7°	39.3° 205.6°

5.8.3. Recovering Historical bench marks:

Refer to Standing Instructions.

5.8.3.1. This section provides GPS requirements for all bench marks recovered. Obtain GPS Latitude and Longitude positioning for all historical bench marks recovered/installed at each required subordinate water level station. Refer to the "**Basic GPS Observation Guidelines for NOAA In-House Hydrographic Surveying**" document from CO-OPS and accompanying manuals provided on the project CD-ROM. If GPS equipment is not available for this survey, GPS requirements from this section are waived.

5.8.4. Operate the water level station listed in Section 5.8.1.1. of these instructions for the following hydrographic area(s) or zone(s).

<u>Station Number</u>	<u>Hydrographic Area(s) or Zone(s)</u>
851-0719	Zones: LIS80, LIS83, LIS84, LIS90, LIS91, LIS93, LIS94, LIS95, LIS96, LIS97, LIS98, LIS99, LIS100, LIS101, LIS102, LIS103, LIS104,

LIS107, LIS108, BIS21, BIS24, BIS25, BIS26,
BIS27, & BIS28

851-2668

Zones: LIS48, LIS48A, LIS48B, LIS51, LIS51B,
LIS54, LIS54A, LIS56A, LIS56B, LIS59, LIS60,
LIS60A, LIS62, LIS63, LIS63A, LIS66, LIS67,
LIS67A, LIS69, LIS69A, LIS73, LIS74, LIS76,
LIS77 & LIS79

5.9. Zoning: For hydrography in the area of Eastern Long Island Sound, New London, CT (846-1490), New Haven, CT (846-5705), and Silver Eel Pond, NY (851-0719) are the reference stations for predicted tides. Predictions may be retrieved in one month increments over the Internet from the CO-OPS Home Page at <http://www.co-ops.nos.noaa.gov/> and then clicking on "Predictions." Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. Apply the following time and height correctors to the predicted tides at New London, Silver Eel and New Haven during the acquisition and preliminary processing phases of this project for correcting all sounding data.

Zone Name	Time Corrector(mins)	Range Ratio	Predicted Reference
BIS21	-24	x0.99	851-0719
BIS24	-12	x0.99	851-0719
BIS25	+6	x0.99	851-0719
BIS26	+6	x1.01	851-0719
BIS27	+18	x1.03	851-0719
BIS28	+36	x1.05	851-0719
LIS48	-12	x0.96	846-5705
LIS48A	-6	x0.96	846-5705
LIS 48B	0	x0.96	846-5705
LIS51	-12	x0.93	846-5705
LIS51B	0	x0.93	846-5705
LIS54	-18	x0.89	846-5705
LIS54A	0	x0.89	846-5705
LIS56A	-18	x0.86	846-5705
LIS56B	0	x0.86	846-5705
LIS59	-24	x0.83	846-5705
LIS60	-12	x0.83	846-5705
LIS60A	0	x0.83	846-5705
LIS62	-24	x0.80	846-5705
LIS63	-12	x0.80	846-5705
LIS63A	0	x0.80	846-5705
LIS66	-30	x0.76	846-5705
LIS66A	-12	x0.74	846-5705
LIS67	-12	x0.76	846-5705
LIS67A	-6	x0.76	846-5705
LIS69	-30	x0.73	846-5705
LIS69A	-18	x0.73	846-5705
LIS72	+66	x1.68	846-1490
LIS73	+72	x1.68	846-1490

LIS74	+84	x1.68	846-1490
LIS75	+60	x1.60	846-1490
LIS76	+72	x1.60	846-1490
LIS77	+78	x1.60	846-1490
LIS78	+60	x1.52	846-1490
LIS79	+72	x1.52	846-1490
LIS80	+54	x1.45	846-1490
LIS81	+66	x1.45	846-1490
LIS82	+54	x1.37	846-1490
LIS83	+48	x1.37	846-1490
LIS84	+60	x1.37	846-1490
LIS85	+54	x1.29	846-1490
LIS86	+60	x1.31	846-1490
LIS87	+60	x1.31	846-1490
LIS88	+66	x1.31	846-1490
LIS89	+78	x1.31	846-1490
LIS90	+42	x1.29	846-1490
LIS91	+54	x1.29	846-1490
LIS92	+42	x1.21	846-1490
LIS93	+36	x1.21	846-1490
LIS94	+42	x1.21	846-1490
LIS95	+30	x1.15	846-1490
LIS96	+42	x1.13	846-1490
LIS96A	+30	x1.09	846-1490
LIS97	+24	x1.11	846-1490
LIS98	+18	x1.02	846-1490
LIS99	+12	x1.07	846-1490
LIS99A	+18	x1.05	846-1490
LIS100	+6	x1.12	851-0719
LIS101	+6	x1.03	851-0719
LIS102	0	x1.09	851-0719
LIS103	0	x1.03	851-0719
LIS104	-6	x1.05	851-0719
LIS104A	-6	x1.01	851-0719
LIS105	-6	x0.98	846-1490
LIS106	0	x1.00	846-1490
LIS107	-12	x1.01	851-0719
LIS107C	-12	x1.01	851-0719
LIS107A	-6	x1.01	851-0719
LIS107B	-7	x0.92	846-1490
LIS108	-18	x1.01	851-0719

NOTE: The tide corrector values referenced to New London, CT (846-1490), New Haven (846-5705), and Silver Eel, NY (851-0719) are provided in the zoning file "B370TJ2004CORP" for this project and are in the fourth set of correctors designated as TS4. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo representation of west longitude.

NOTE: For time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the predicted tides at the reference station, whereas, a

positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights relative to MLLW at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

5.9.1. A zoning diagram, created in MapInfo, is provided in both digital and hard copy format to assist with the zoning provided in Section 5.9.

5.10. Tidal Records:

Refer to Standing Instructions on what data records, reports and requests to submit to CO-OPS and the address where these documents should be submitted too.

November 19, 2004

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPSI

FROM: CDR Emily B. Christman, Thomas Jefferson

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-B370-TJ-04
Registry No.: H11252
State: New York and Connecticut
Locality: Long Island Sound
Sublocality: West of Six Mile Reef

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from pydro on CD/diskette

cc: N/CS33

Request for Approved Tides

Times of Hydrography

Year_DOY	Min Time	Max Time
2004_298	12:31:14	21:15:17
2004_299	13:32:58	21:16:05
2004_300	12:17:06	21:16:18
2004_301	12:16:55	21:34:01
2004_302	12:21:31	21:31:40
2004_303	12:01:02	13:03:01
2004_308	07:34:56	21:47:04
2004_309	13:16:53	20:48:59
2004_311	13:39:06	18:30:02
2004_313	19:34:26	21:16:56
2004_314	13:24:39	17:10:00
2004_316	13:53:11	16:43:53
2004_317	16:22:04	18:16:58
2004_320	13:48:49	22:50:00

APPENDIX V**SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES****V.1. COAST PILOT REPORT, NOAA FORM 77-6**

Coast Pilot 2, 33rd Edition was consulted and the hydrographer has no recommendations.

V.2. BOTTOM SAMPLE, NOAA FORM 75-44

No bottom samples were acquired during this survey.

V.3. NONFLOATING AIDS OR LANDMARKS FOR CHARTS, NOAA FORM 76-40

No nonfloating aids or landmarks were positioned during this survey.

BASE SURFACE COLLECTION

This list contains all of the used BASE surfaces for H11252.

Fieldsheet	BASE Surface	Depth Range	Resolution (meters)
OPR-B370-TJ-04 H11252 A	OPR-B370-TJ-04 H11252 A 0.5m	0-15	0.5
	OPR-B370-TJ-04 H11252 A 1m	14-31	1.0
OPR-B370-TJ-04 H11252 B	OPR-B370-TJ-04 H11252 B 0.5m	0-15	0.5
	OPR-B370-TJ-04 H11252 B 1m	14-31	1.0
OPR-B370-TJ-04 H11252 C	OPR-B370-TJ-04 H11252 C 1m	14-31	1.0
OPR-B370-TJ-04 H11252 D	OPR-B370-TJ-04 H11252 D 0.5m	0-15	0.5
	OPR-B370-TJ-04 H11252 D 1m	14-31	1.0
	OPR-B370-TJ-04 H11252 D 2m	30-60	2.0
B370 TJ 04 Combined	OPR-B370-TJ-04 H11252 Combined 2m	N/A	2.0

Nine BASE surfaces were used for the BASE surface collection. The combined surface, *OPR-B370-TJ-04_H11252_Combined_2m* was inserted into the Pydro PSS.

E. APPROVAL SHEET**OPR-B370-TJ-04
Eastern Long Island Sound, NY and CT****West of Six Mile Reef
Survey Registry No. H11252**

Field operations for this basic 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 K, H11252
- DATA ACQUISITION AND PROCESSING REPORT (*dated <pending>; submitted <pending>*)
- HORIZONTAL AND VERTICAL CONTROL REPORT (*dated 12/6/2004; submitted 12/9/2004*)

Respectfully Submitted:



LT Marc S. Moser, NOAA
Field Operations Officer

Approved and Forwarded:



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: H11252

LOCALITY: West of Six Mile Reef, Long Island Sound
TIME PERIOD: October 24 - November 15, 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: LIS56A, LIS59, LIS60, LIS62 & LIS66

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).

Thomas V. Hero 3/8/05

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Printed on Recycled Paper



**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11252 (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.

A. AREA SURVEYED

There was a discrepancy between the submitted MAPINFO MBES survey outline table and the limits of the submitted MBES data. See figure 1.

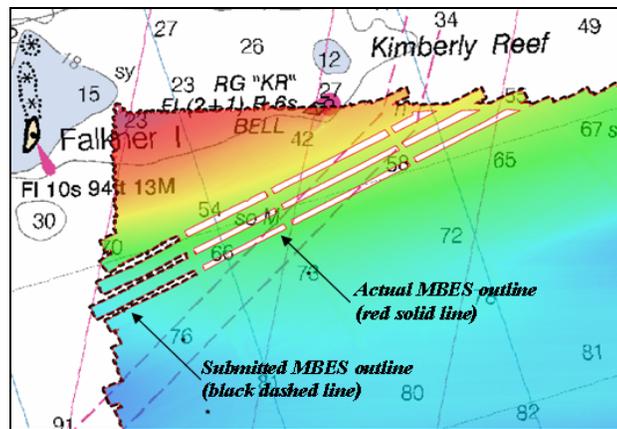


Figure 1: Modification to Submitted MBES Outline

The reviewer believes (1) that there was an oversight when converting the CARIS-produced perimeter file into a MAPINFO table representing MBES coverage (the gaps in the MBES coverage were not included) and (2) that there are MBES holidays in addition to those indicated by the submitted MBES coverage outline.

B. DATA ACQUISITION AND PROCESSING

B.1 EQUIPMENT

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

- MAPINFO 6.5 & MAPINFO 8.0
- CARIS GIS 4.4a
- CARIS HIPS/SIPS 5.4, SP1
- CARIS HIPS/SIPS 6.0, SP1
- CARIS HOM ENC 3.3, SP3

- CARIS BASE Editor 1.0
- PYDRO 5.3.3rc5 & PYDRO 5.9.4
- DKART INSPECTOR 5.0

B.2 PROCESSING

The field unit submitted a series of surface models generated at different resolutions based upon depth ranges that allowed the highest resolution possible. AHB re-generated surface models at 0.5-meter and 1-meter resolutions. The reviewer determined that the MBES data in the relatively small area, approximately 2 x 0.5 km, covered by the field-generated *OPR-B370-TJ-04-H11252_D_2m* is dense enough to support a one-meter resolution BASE surface and be incorporated into *OPR-B370-TJ-04-H11252_D_1m*.

BASE Editor processing consisted of generating two product surfaces from the survey's 1-m resolution combined surface: a product surface from which the sounding layer was generated and a product surface from which the contour/depth area layer was generated. The sounding layer product surface was created with a radius of 100 meters, a resolution of 5 meters, and a defocusing factor of 5 meters.

The contour/depth area product surface was created with a radius of 5000 meters, a resolution of 20 meters, and a defocusing factor of 90 meters. The BASE-Editor-produced contour/depth area layer was modified, in HOM, in certain places to maintain cartographic clarity. The modifications included (1) either enlarging very small enclosed depth areas that were shoaler than the surrounding depth area or incorporating these small depth areas into nearby corresponding depth areas, (2) deleting very small enclosed depth areas that were deeper than the surrounding depth area, and (3) smoothing portions of contours that were deemed too irregular.

The sounding layer was generated using the "Use Radius" option in BASE Editor's 'Selected Sounding Wizard.' The single defined radius was set at 5 mm at a map scale of 1:10,000. This 5mm-at-survey scale density sounding layer was then suppressed to mimic the existing charted depth density of the largest scale chart in the survey area. The "table" suppression method was used with a depth range of 0-60 meters and a spacing of 20mm (which,

at an h-cell scale of 1:20,000, is 400 metes on the ground).

The final processing routines were performed using CARIS HOM and followed standard CARIS processing routines for S-57 ENC production. The H-Cell for survey H11252 was created in HOM to produce the following final base cell file products:

Base Cell File	Description
US511252_CU.000	Chart-scale compilation
US511252_SS.000	Survey-scale sounding set

The layers in the HOM H-cell are organized as follows:

Layer	Description
100	Soundings
200	Skin-of-the-Earth
300	Non-bathy, non-meta features
600	Meta-features

Quality Control

Side Scan Sonar Quality Control

Upon submission, the SSS data appeared to have been slant range corrected without "beam pattern" selected. The reviewer re-slant range corrected the SSS data with "beam pattern" selected.

Shallow Water Multibeam Quality Control

The Hydrographer did not address four minor systematic errors that are apparent in the BASE surfaces.

1. An unaddressed systematic error is seen in figure 2. The reviewer believes that this systematic error was due to an inappropriate EM1002 outer beam angle coefficient corrector and not inappropriate sound velocity data because (1), as indicated by the Hydrographer in the DR, the water column was very well mixed and (2) the error is more angular, starting at a specific point, and not a gradual curve.

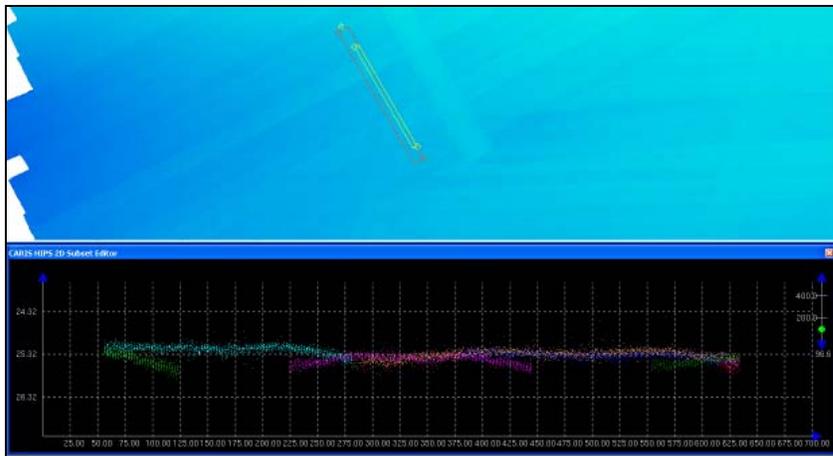


Figure 2: Outer beam coefficient systematic error

2. An unaddressed systematic error is seen in figure 3. The systematic error appears as a sinuous pattern of across-track ridges (up to 0.2 meters high) when viewed in the 2-d editor. The artifact extends the entire width of the swath. The affected areas are those where S222 EM1002 MBES data (the yellow track lines) overlap launch 1014 RESON 8125 data. The artifact appears to be a result of the vertical displacement between the two sonar systems (EM1002 and RESON 8125), which was addressed in the DR (although greater differences were observed by the reviewer than those reported in the DR). The artifact is observed, although not as extreme, in the 1-m and combined BASE surfaces (see figure 4).

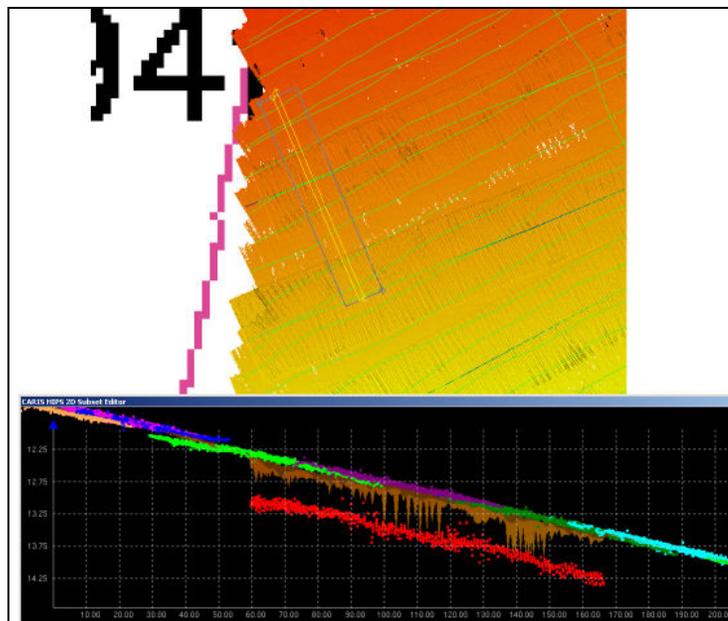


Figure 3: 0.5-meter resolution BASE Surface

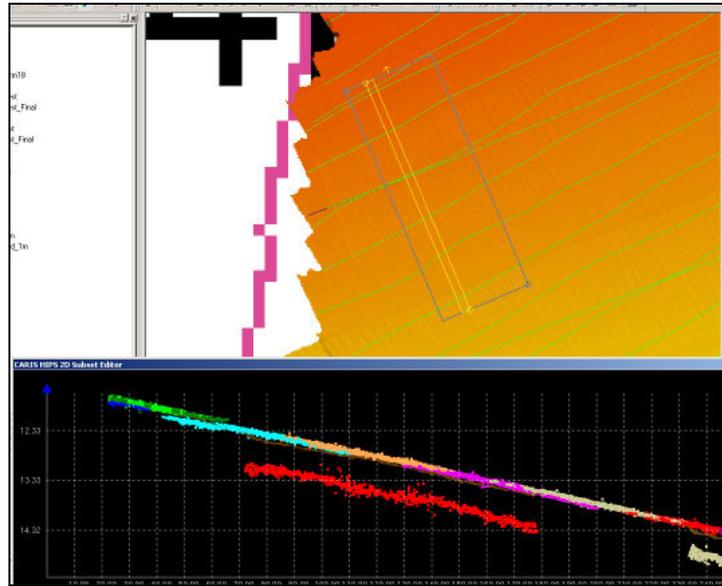


Figure 4: 1-meter resolution BASE surface

3. An unaddressed artifact is seen in figure 4, which is vertically exaggerated 3 times. The artifact appears in RESON 8125 data and appears to be roll-related, since a rise of the swath on one side corresponds to a dip of the swath on the other side. The artifact is very minuscule ($< 0.1\text{m}$) and is not a significant error source.

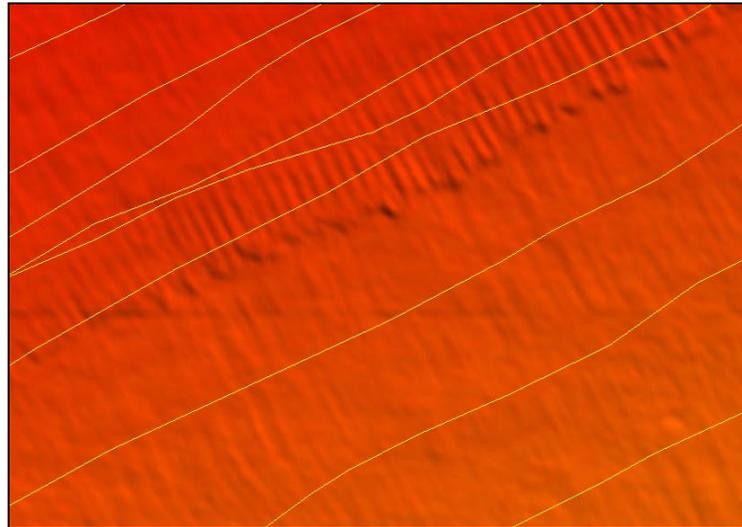


Figure 5: RESON 8125 possible roll artifact

4. An unaddressed systematic error is seen in figure 4. The systematic error appears as a very subtle sinuous pattern (about 0.2 meters high) when viewing the data in 2-d editor. The artifact is observed in the outer ranges of S222 EM1002 MBES data. The error appears to be pitch and/or heave related, as a rise on one side corresponds to a rise on the opposite side. A similar systematic error, with the same sonar, has been reported by THOMAS JEFFERSON in the past.

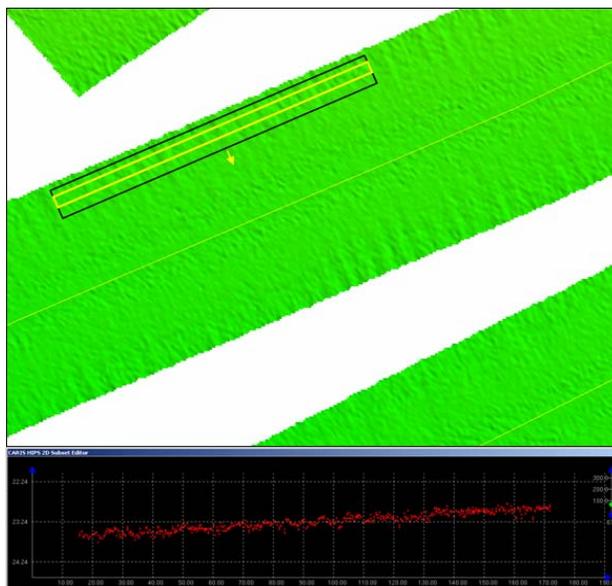


Figure 6: Possible EM1002 pitch/heave error

Corrections to Echo Soundings

There was one cast, 04320152.svp, from 11/15/2004 (dn320) that was not a GP feature in the submitted PSS, but was in the S222 concatenated master svp file that was located in the submitted correctors folder of the project directory. After reviewing the cast, the reviewer (1) determined that the cast should indeed be applied to all affected data, (2) removed the S222 master svp file that the Hydrographer had inserted into the PSS, and (3) then reinserted the appropriate S222 master svp file, which included the missing cast, into the PSS.

C. VERTICAL AND HORIZONTAL CONTROL

Horizontal Control

There was no horizontal control for this survey. Data acquisition relied on GPS and Coast Guard differential corrector beacons.

Vertical Control

Final vertical correction processing was completed by AHB for H11252 using final approved zoning and water level data provided by N/OPSI CO-OPS.

D. RESULTS AND RECOMMENDATIONS

Chart Comparison

Raster Navigational Charts (RNCs)

<i>Chart</i>	<i>Edition</i>	<i>Date</i>	<i>NM</i>	<i>LMN</i>
12373	15	06/01/05	01/28/06	01/24/06
12374	13	10/28/00	01/28/06	01/24/06
12358	19	09/01/02	01/28/06	01/24/06
12372	33	08/01/04	01/28/06	01/24/06
12354	41	04/01/04	01/28/06	01/24/06

Electronic Navigational Charts (ENCs)

<i>Cell Name</i>	<i>Chart</i>	<i>Edition</i>	<i>Update Application Date</i>	<i>Issue Date</i>
US4NY1GM	12354	4	05/20/06	2/11/06

For information only:

Within and near the survey area, there are four charted discrepancies that are not addressed in the DR. Recommendations regarding these four items are deferred to MCD.

1. On chart 12374, a 76-foot depth is charted near position 41° 12' 3.6648" N, 72° 37' 34.716" W, and on charts 12372(_16) and 12354, a 73-foot depth is charted near the same position.

2. On chart 12372(_16) an 83-foot depth is charted near position 41° 11' 25.278" N, 72° 38' 13.1172" W, and on chart 12374, an 84-foot depth is charted near the same position.
3. On chart 12372(_16), a 79-foot depth is charted near position 41° 11' 45.8664" N, 72° 38' 21.2532" W, and on chart 12354, a 76-foot depth is charted near the same position.
4. Outside of the survey area, approximately 390 meters north of buoy RG "DR," on charts 12374 and 12354, a 12-foot depth is charted near position 41° 13' 3.1908" N, 072° 37' 23.8548" W; however, this 12-foot depth, which is the shoalest depth in the area, is not charted on chart 12372.

Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D of the Descriptive Report (DR), except for as noted below:

1. At 41°10'41.952" N, 072°34'14.298" W, there is an uncharted obstruction with a least depth of 73 feet and a surrounding depth of 84 feet that the hydrographer did not address in the DR. The obstruction was located with 100% EM1002 MBES data. The MBES coverage over the item is from a single line, with no correlating data from another line. There are no SSS data over the obstruction. The office reviewer recommends charting the feature (DR_UnCharted 820/92) as a non-dangerous obstruction with a least depth of 73 feet.
2. In addition to two rocks that the hydrographer recommended charting near the RG "KR" buoy (DR item "DR_UnCharted 2410/100" at 41°12'43.920" N, 072°37'30.960" W, and DR item "DR_UnCharted 653/155" at 41°12'49.523" N, 072°37'26.509" W) the office reviewer recommends charting 'rky' at 41°12'47.025" N, 072°37'28.346" W to represent the rocky area immediately south of the RG "KR" buoy.

3. The reviewer does not concur with the hydrographer's least depth or recommendation for DR_UnCharted 676/29). The hydrographer picked as the least depth for this feature a sounding on the lip of the scour surrounding the feature and not the shoalest part of the feature itself. Although the feature's actual least depth is deeper than the surrounding depths, the reviewer recommends charting a non-dangerous rock with the actual least depth of 88 feet at 41°11'04.481" N, 072°38'23.088" W.
4. At 41°10'52.712" N, 072°38'31.165" W, (feature *DR_Uncharted "74 Rk"*) there is an uncharted feature that is not addressed in the DR. The feature is the shoalest rock in a relatively small cluster of rocks. The reviewer recommends charting the feature as a non-dangerous rock with a least depth of 74 feet.
5. At 41°10'48.484" N, 072°38'33.652" W, (feature *DR_Uncharted "82 Rk"*) there is an uncharted feature that is not addressed in the DR. The feature is the 2nd shoalest rock in the small cluster of rocks mentioned in item #4 above. The reviewer recommends charting the feature as a non-dangerous rock with a least depth of 82 feet.
6. In addition to charting the non-dangerous 74-foot rock at 41°10'52.712" N, 072°38'31.165" W and the non-dangerous 82-foot rock at 41°10'48.484" N, 072°38'33.652" W, the reviewer recommends charting "rky" at 41°10'50.331" N, 072°38'33.830" W to represent a small cluster of rocks.
7. In addition to the "Sandwaves" that the hydrographer recommended charting with "Dton 1495/36," the office reviewer recommends charting a sandwave feature at 41° 09' 21.317" N, 72° 32' 41.640" W to portray a prominent area of migrating sandwaves.
8. In addition to the "Sandwaves" that the hydrographer recommended charting with "Dton 1495/36," the office reviewer recommends charting a sandwave feature at 41° 11' 52.929" N, 72° 32' 12.379" W, to portray a prominent area of migrating sandwaves.

Comparison with Prior Surveys

A comparison with prior surveys was not done during office processing in accordance with section 4 of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

Adequacy of Survey

The present survey is adequate to supersede the charted hydrography within the common area. This is an adequate navigable area survey with full bottom multibeam coverage, except where noted in Section A above. No additional field work was recommended by the hydrographer nor noted during office processing.

Miscellaneous

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, VA. Compilation data will be forwarded to Marine Chart Division, Silver Spring, MD. The following charts were used for compilation of the present survey:

Raster Navigational Charts

12374, 13th Edition, 10/28/00, 1:20,000
Corrected through NM 01/28/06
Corrected through LNM 01/24/06

12358, 19th Edition, 09/01/02, 1:40,000
Corrected through NM 01/28/06
Corrected through LNM 01/24/06

Electronic Navigational Charts

US4NY1GM, 4th Edition
Update Application Date, 05/20/06
Issue Date, 02/11/06

Nicholas A. Forfinski

Nicholas A. Forfinski
Physical Scientist
Verification of Field Data
Evaluation Report

APPROVAL SHEET

H11252

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.

Nicholas G. Forfinski

Nicholas Forfinski

Physical Scientist

Atlantic Hydrographic Branch

Date: 7/28/06

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: P. Tod Schattgen

P. Tod Schattgen

Commander, NOAA

Chief, Atlantic Hydrographic Branch

Date: 7/28/2006