

H12482

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12482

LOCALITY

State(s): New York

General Locality: Long Island Sound

Sub-locality: Jacobs Pt to Mattituck Inlet

2013

CHIEF OF PARTY
CDR Lawrence T. Krepp

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12482

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(s): **New York**

General Locality: **Long Island Sound**

Sub-Locality: **Jacobs Pt to Mattituck Inlet**

Scale: **20000**

Dates of Survey: **03/30/2013 to 04/20/2013**

Instructions Dated: **02/13/2013**

Project Number: **OPR-B370-TJ-13**

Field Unit: **NOAA Ship *Thomas Jefferson***

Chief of Party: **CDR Lawrence T. Krepp**

Soundings by: **Multibeam Echo Sounder**

Imagery by:

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks: *The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.*

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Descriptive Report to Accompany Survey H12482

Project: OPR-B370-TJ-13

Locality: Long Island Sound

Sublocality: Jacobs Pt to Mattituck Inlet

Scale: 1:20000

March 2013 - April 2013

NOAA Ship *Thomas Jefferson*

Chief of Party: CDR Lawrence T. Krepp

A. Area Surveyed

This survey covers an area of approximately 24 SNM in Long Island Sound in the vicinity of Jacobs Pt to Mattituck Inlet.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
41° 6" 23.4' N 72° 38" 49.2' W	41° 1" 16.8' N 72° 33" 16.2' W

Table 1: Survey Limits

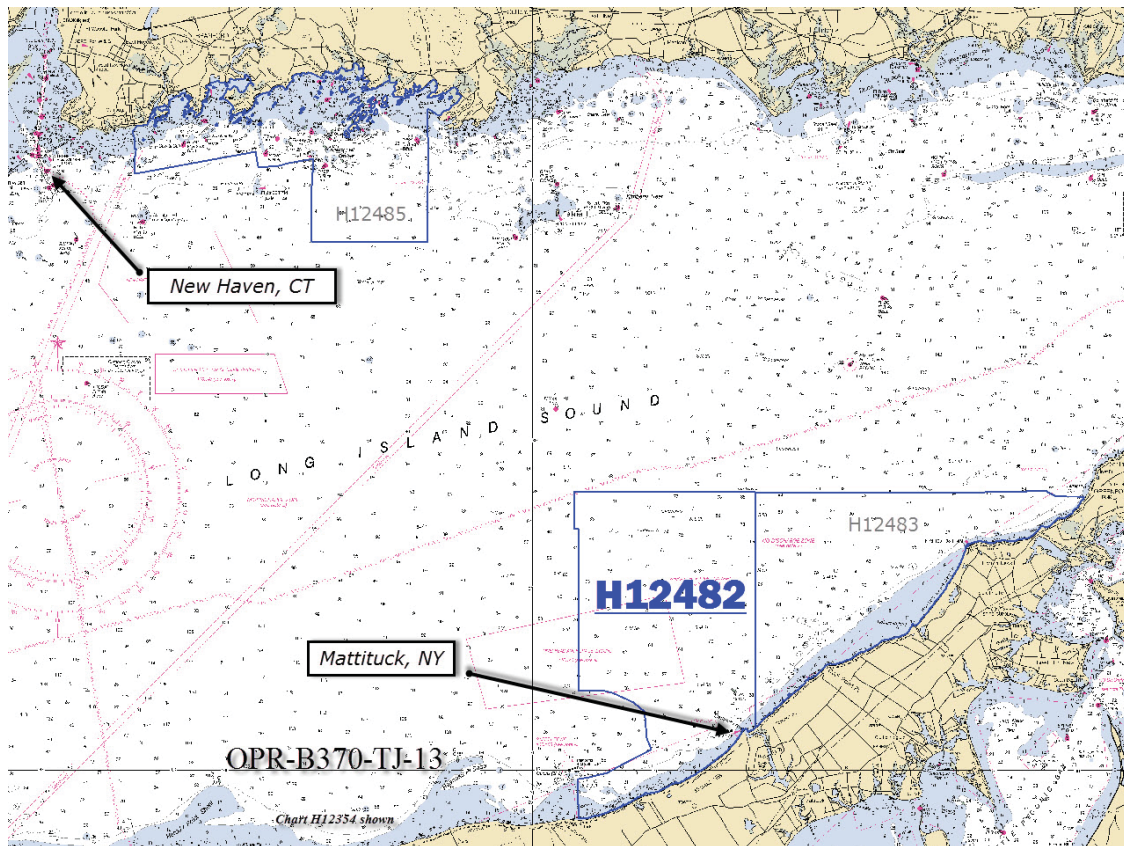


Figure 1: H12482 Survey Area within OPR-B340-TJ-13

Survey Limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

This project is being conducted in support of NOAA's Office of Coast Survey to provide contemporary hydrographic data in order to update the nautical charting products and reduce the survey backlog within the area. In addition, data from this project will support the Long Island Sound Seafloor Mapping Initiative in New York and Connecticut. This project will cover approximately 61 square nautical miles of which 48 square nautical miles are critical survey areas as designated in the NOAA Hydrographic Survey Priorities, 2012 edition.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

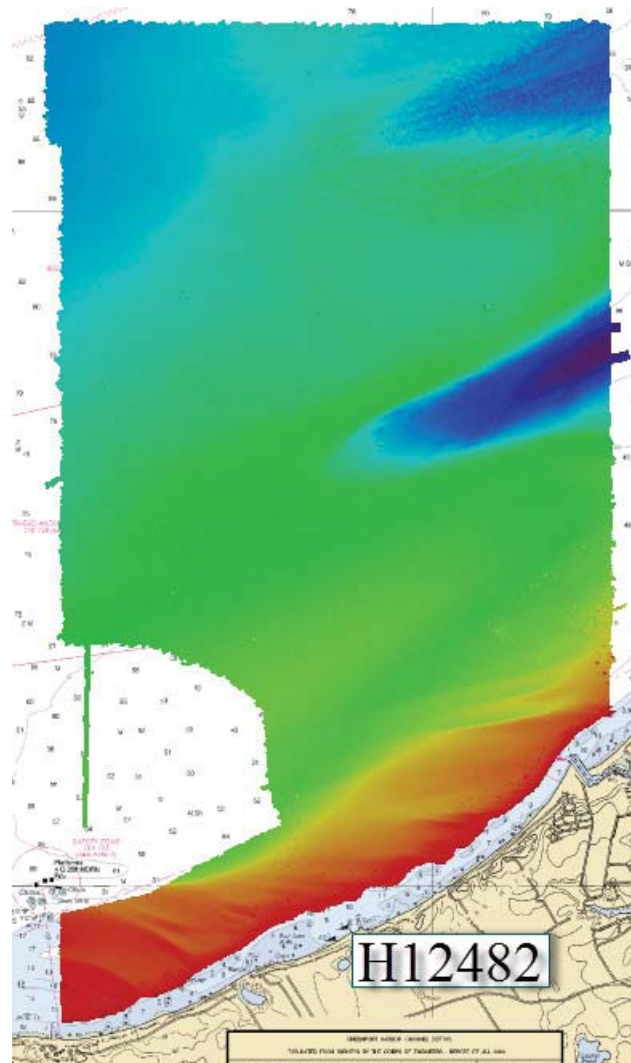


Figure 2: H12482 Coverage Area

Survey H12482 contains 17 holidays within the survey extents. They are the result of improper sonar tuning, poor vessel steering, or failure to meet the edge of the defined sheet limit.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	3102	S-222	Total
LNM	SBES Mainscheme	0	0	0
	MBES Mainscheme	272.4	783.5	1055.9
	Lidar Mainscheme	0	0	0
	SSS Mainscheme	0	0	0
	SBES/MBES Combo Mainscheme	0	0	0
	SBES/SSS Combo Mainscheme	0	0	0
	MBES/SSS Combo Mainscheme	0	0	0
	SBES/MBES Combo Crosslines	18.5	35.5	53.9
	Lidar Crosslines	0	0	0
	Number of Bottom Samples			
Number AWOIS Items Investigated				1
Number Maritime Boundary Points Investigated				0
Number of DPs				0
Number of Items Items Investigated by Dive Ops				0
Total Number of SNM				24

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Julian Day Number
03/30/2013	89
03/31/2013	90
04/01/2013	91
04/02/2013	92
04/03/2013	93
04/04/2013	94
04/05/2013	95
04/06/2013	96
04/07/2013	97
04/08/2013	98
04/09/2013	99
04/16/2013	106
04/17/2013	107
04/18/2013	108
04/20/2013	110

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	<i>S-222</i>	<i>HSL 3102</i>
LOA	208 feet	31 feet
Draft	15 feet	5.2 feet

Table 4: Vessels Used

S-222 and HSL 3102 acquired multibeam, sound velocity, attitude data, and bottom samples.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Seabird	SBE 19+	Conductivity, Temperature, and Depth Sensor
Brooke Ocean	MVP 100	Sound Speed System
Applanix	POS/MV	Positioning and Attitude System
Reson	7125 SV1	MBES
Reson	7125 ROV	MBES
Reson	SVP71	Sound Speed System
Applied Micro Systems	Smart SV&T	Sound Speed System
Trimble	SPS351	Positioning System

Table 5: Major Systems Used

Vessel configurations, equipment operations, and data acquisition and processing were consistent with specifications described in the DAPR.

B.2 Quality Control

B.2.1 Crosslines

Crosslines, acquired for this survey, totalled 5.1% of mainscheme acquisition.

The Thomas Jefferson and HSL 3102 collected 53.9 linear nautical miles of MBES crosslines, equating to 5.1% of mainscheme data. Crosslines were filtered to 45 degrees on either side of nadir and compared to mainscheme using a difference surface, created in CARIS BathyData BASE. Using the difference surface, every instance of overlap was evaluated. For the 2m grid, 838,701 nodes of 838,761 were within 1.0 meter. The difference in depth ranged from -1.96 meters to 1.03 meters. The mean was 0.0 meters, and the standard deviation was 0.06 meters. For the 50cm grid, 4,022,179 nodes of 4,022,306 were within 1.0 meter. The difference in depth ranged from -5.98 meters to 6.74 meters. The mean was 0.0 meters, and the standard deviation was 0.06 meters. Survey H12482 complies with section 5.2.4.3 of the HSSD (2013 ed.)

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.00 meters	0.00 meters
0.102 meters	0.00 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S-222		1 meters/second	0.2 meters/second
3102	4 meters/second		0.2 meters/second

Table 7: Survey Specific Sound Speed TPU Values

The method used to calculate Total Propagated Uncertainty values for survey H12482 varied based on the process used to apply water level values to the data. The first method was applied to data reduced to MLLW using a POSpac IAAPK 3D positional solution and a VDatum separation mode. For this data, realtime uncertainty values for roll, pitch, gyro, navigation, and elevation were supplied via a SBET RMS file generated by Applanix POSpac. The remaining sources of uncertainty were a combination of: field assigned values for sound speed uncertainties; Operations Branch assigned values for VDatum separation model uncertainty; and a priori values for sonar mounting and vessel speed based on Appendix 4, table 4.9 of the NOAA Field Procedure Manual (ed 2013). Field assigned values for sound speed are in Table 7 above, Operations Branch assigned values for the VDatum model are in row 2 of Table 6.

The second method used to calculate Total Propagated Uncertainty was applied to data reduced to MLLW via TCARI tides. This data again used a POSPac IAAPK 3D positional solution, but used a TCARI grid to reduce the data to MLLW. Uncertainties for this data also used an SBET RMS file for realtime roll, pitch, gyro, navigation, and elevation uncertainties, as well as a priori values for sonar mounting and vessel speed. However, uncertainties associated with water level measurements and interpolation were automatically calculated as part of the TCARI water levels, and applied to the data during the Merge process. Since TCARI automatically calculates the error associated with water levels, no field assigned values were given in the Tide Uncertainty (see row 1 of Table 6). Field assigned values for sound speed uncertainties remained the same as data reduced via VDatum (see table 7).

Total Propagated Uncertainties for the entire survey were evaluated to ensure compliance with section 5.1.3 of NOAA's HSSD (ed 2013). First the maximum allowable uncertainty for each node was calculated using the equation: $-\text{Uncertainty}/((0.5^2 + ((\text{Depth} * 0.013)^2))^0.5)$. Second the ratio between the actual uncertainty and maximum allowed uncertainty was found for each node. The resulting 'IHO_Order1' layer was filtered using a colour map to show any areas where the ratio exceeded -1.0, indicating the surface failed to meet IHO Order 1 standards.

The hydrographer noted that uncertainty increased in three distinct instances on the survey. The first increase was over the crest of sandwaves, particularly in the Northeast section of the 2m grid. The uncertainty over these sandwaves stems from two sources, a timing error detailed in section B.2.9 of this report, and a vertical offset described in section B.2.5 of this report. Despite the offsets, a majority of the sandwave area meets IHO order 1 vertical uncertainty. The exceptions to IHO Order 1 occur along the steep slopes of the larger sandwaves. The second increase in Uncertainty was seen as alongtrack striping on overlapping outerbeams between parallel survey lines. The striping occurs on Julian Days 090 and 091 for platform S222, particularly when those lines have low overlap in the outerbeams. The source of the error could be the result of the vertical offset previously mentioned, poor sound velocity resolution, or the timing error described in section B.2.9 of this report. At no point does the striping exceeded IHO order 1 specifications. The third increase in Uncertainty occurred on Julian Days 095 and 096, on which poor sonar tuning created noisy data. The noise does not cause fliers in the CUBE surface, but can be seen as stippling in the IHO_Order 1 layer.

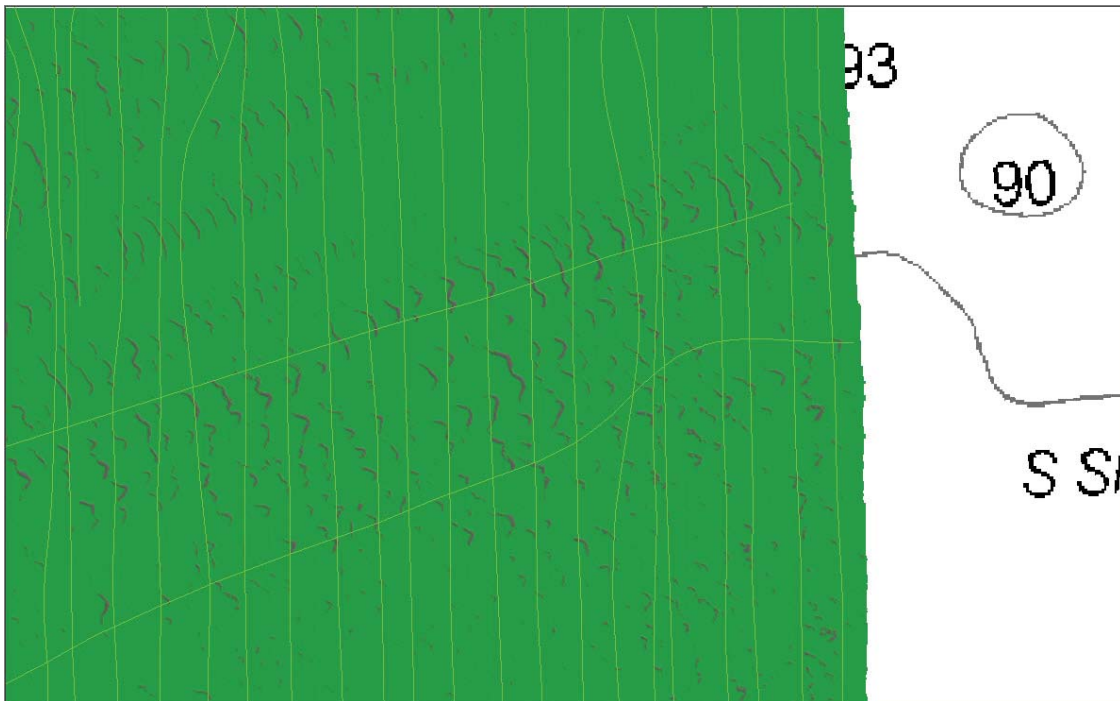


Figure 3: H12482 Uncertainty : Sandwaves slopes show as red exceptions to IHO Order 1.

B.2.3 Junctions

Six contemporary junction surveys exist with H12482. Two difference surfaces, one for 50cm grid resolution and another for 2m resolution, were created in Caris BaseEditor to evaluate general agreement between H21482 and each respective junction survey.

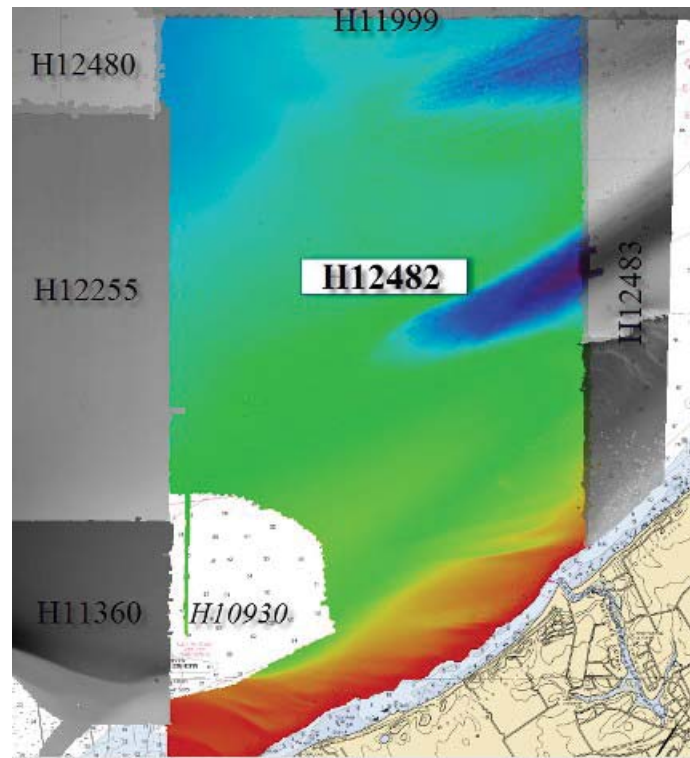


Figure 4: H12482 Junction Surveys

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H10930	1:10000	1999	NOAA Ship RUDE	SW
H12480	1:20000	2012	NOAA Ship THOMAS JEFFERSON	NW
H11255	1:10000	2004	NOAA Ship THOMAS JEFFERSON	W
H11360	1:10000	2004	NOAA Ship THOMAS JEFFERSON	SW
H11999	1:10000	2008	NOAA Ship THOMAS JEFFERSON	N
H12483	1:20000	2013	NOAA Ship THOMAS JEFFERSON	E

Table 8: Junctioning Surveys

H10930

A comparison with H10930 was not conducted because the .xyz file provided could not be properly converted to a .csar file.

H12480

The difference between the current survey and survey H12480 ranged from -0.22 meters to 0.342 meters. The mean was -0.03 meters. The standard deviation was 0.054 meters. Out of 43,716 nodes at the junction 100% were within 1.0 meter.

H11255

The difference between the current survey and survey H11255 ranged from -0.158 meters to 0.813 meters. The mean was 0.344 meters. The standard deviation was 0.097 meters. Out of 90,440 nodes at the junction 100% were within 1.0 meter.

H11360

The difference between the current survey and survey H11360 ranged from -0.468 meters to 1.238 meters. The mean was -0.115 meters. The standard deviation was 0.107 meters. Out of 30,452 nodes at the junction 99.9% were within 1.0 meter.

H11999

The difference between the current survey and survey H11999 ranged from -2.245 meters to 3.027. The mean was 0.163 meters. The standard deviation was 0.42 meters. Out of 62,342 nodes at the junction 95.5% were within 1.0 meter. The junction covers a sandwave area, and the difference likely stems from movement of the sandwaves.

H12483

At the time the junction between H12482 and H12483 was analyzed, H12483 had only been preliminarily processed by the field unit. For the 2m grid, 197,665 nodes of 202,228 (97.7%) were within 1 meter. The difference in depths ranged from -3.748 meters to 3.264 meters. The mean was -0.019 meters. The standard deviation was 0.347 meters. For the 50cm grid, 1,683,343 nodes out of 1,690,818 (99.5%) were within 1 meter. The difference in depths ranged from -8.007 meters to 6.258 meters. The field unit believes the large depth range is a result of fliers in the uncleaned surface of H12483. The mean was -0.096 meters. The standard deviation was 0.154 meters.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

On Julian Day 090 the Thomas Jefferson ran tracklines perpendicular to the prevailing current. As a result, the ship experienced a settlement and squat artifact that was not resolved by the dynamic draft table input in the vessel's CARIS HVF file. The vertical offset can be seen in the base surface, but does not exceed IHO Order 1 specifications, with the exception of the Northeast corner. This area is dominated by sandwaves, the crests of which accentuate the artifact and exceed IHO Order 1 specifications.

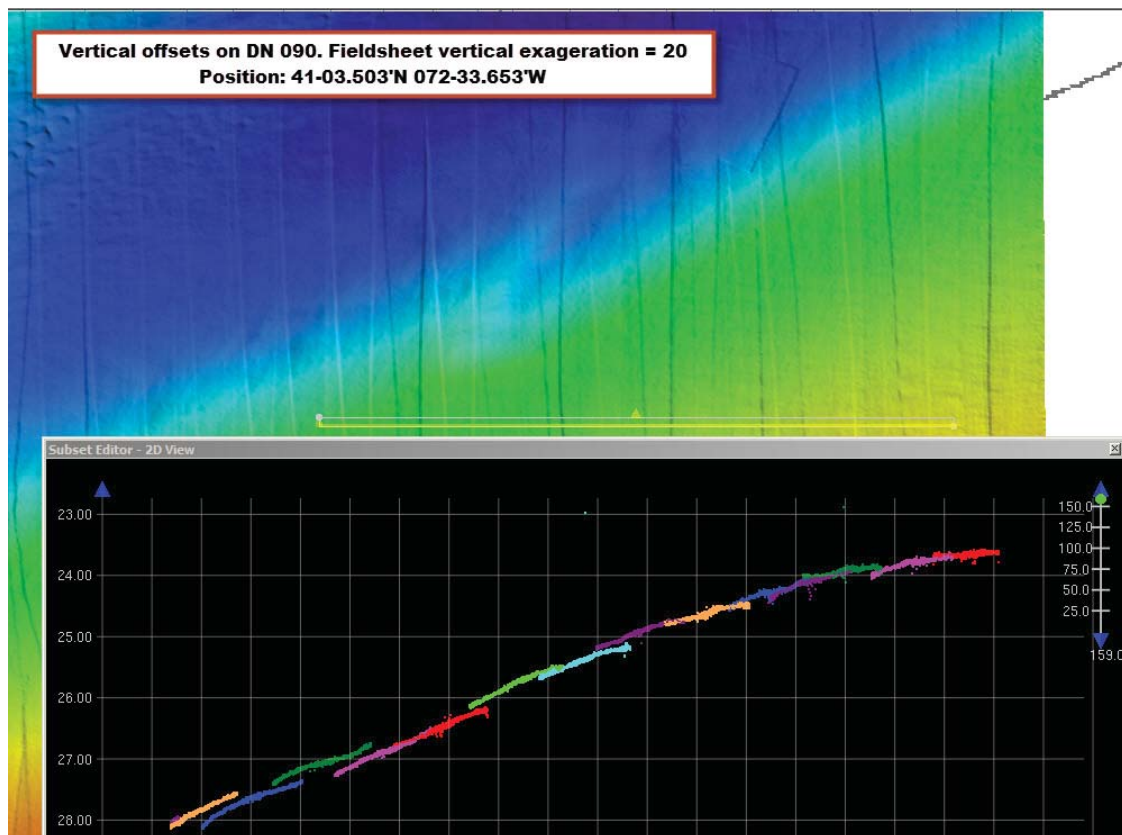


Figure 5: Vertical Offset induced by high current environment.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Sound speed casts were taken every 30 minutes to 1 hour from S-222 using the ship's Moving Vessel Profiler. On 3102, casts were taken at least twice per day using the Seabird Seacat 19+ CTD.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.2.9 Changes to HVF for S-222

During post-processing, a variable timing error was noted for S-222 data on Julian Days 089 and 090. The timing error induced a horizontal offset visible in the sand waves on the Northeast section of the sheet. Due to the variable nature of the timing offsets, the error was reduced but not eliminated by entering corrections into the vessel's HVF file. The remaining horizontal error is still visible in the sand wave area when viewed in Caris Subset Editor, but remains within Horizontal Uncertainty specifications listed in Section 3.1.1 of the HSSD (ed. 2013).

B.2.10 Density Requirements

The density of all surfaces was calculated using the compute statistics function in CARIS Base Editor. It was found that greater than 95% of nodes contain 5 or more soundings.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw Backscatter was logged as a 7k file and has been sent to the Processing Branch. One line per vessel, per day was processed aboard the Thomas Jefferson in order to assess and ensure quality. No processing or visualization errors were noted.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: NOAA ProfileField Version 5.3.2

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12482_CUBE_CombFinal_2m_Final	CUBE	2 meters	1.57 meters - 35.00 meters	NOAA_2m	Complete MBES
H12482_Cube_2m_MLLW_Final	CUBE	2 meters	18.00 meters - 35.00 meters	NOAA_2m	Complete MBES
H12482_CUBE_50cm_MLLW_Final	CUBE	0.5 meters	1.57 meters - 20.00 meters	NOAA_0.5m	Object Detection

Table 9: Submitted Surfaces

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. Per section 5.2.2.1 of NOAA HSSD Manual (2013 ed), all MBES were gridded according to depth: 0.5m resolution for depths ranging from 0-20m, and 2m for depths 19m and greater.

B.5.3 ERS Surfaces

The survey deliverables do not include surfaces with data reduced to the ellipsoid.

B.5.4 True Heave Error

Line 011_2205, collected by S-222 on DN 091 does not have True Heave applied to it because of an error in CARIS HIPS/SIPS.

C. Vertical and Horizontal Control

Vertical control for this survey was done with a combination of TCARI and VDATUM ERS methods, as discussed below.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

TCARI

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
New Haven, CT	8465705
New London, CT	8461490

Table 10: NWLON Tide Stations

The following subordinate water level stations were established for this survey:

Station Name	Station ID
Mattituck Inlet, NY	8512668

Table 11: Subordinate Tide Stations

There was no Water Level file associated with this survey.

File Name	Status
B370TJ2013_Final	Final

Table 12: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 04/22/2013. The final tide note was received on 06/07/2013.

All data have TCARI tides calculated using verified water levels and final TCARI gridding. Preliminary zoning did not include the Mattituck Inlet gauge installed by the field unit due to issues with the tidal data reducing to MLLW. Final zoning includes this gauge.

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

2013_B370_VDatum_Ellip_MLLW

A majority of survey H12482 was post processed to the ellipsoid using a POSPac 3D IAPPK positional solution, and then reduced to MLLW using an VDatum separation model supplied by HSD's Operations Branch. Per Appendix I of the Hydrographic Survey Project Instructions, the field unit analyzed the accuracy of the separation model via parallel processing of crosslines. Based on the analysis, the field unit submitted a request to use VDatum as a final vertical datum reducer, which the Operations Branch approved. For a full description of the validation request and approval, refer to Appendix I of this report. To review the crossline analysis, refer to Separates II of this report.

During post processing, the hydrographer noted an occasional vertical offset induced by applying the separation model. The field unit was unable to discover the nature of the error, and reverted some data to TCARI water levels. Additional lines could not be reduced via VDatum due to improper logging of POSPac files. For a complete list of lines reduced to MLLW via TCARI, refer to the document H12482_reduced_via_TCARI.xls, located in Appendix II of this report.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is 18 N.

The following PPK methods were used for horizontal control:

Smart Base

The real-time GPS navigation data were overwritten by post-processed SBET data using Smart Base.

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
NJTW	Mount Laurel, NJ
CTNE	Newington, CT
MOR5	East Moriches, NY
ZNY1	New York WAAS 1, NY
NYRH	Riverhead, NY
CTGR	Groton, CT
CTGU	Guilford, CT
CTMA	Mansfield, CT
CTDA	Darien, CT
NYCI	Central Islip, Ny

Table 13: CORS Base Stations

The following DGPS Stations were used for horizontal control:

DGPS Stations
Moriches, NY (238 kHz)

Table 14: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

A chart comparison was conducted with a survey sounding set overlaid with the largest scale raster chart. The comparison with the ENC was conducted using a difference surface of the combined grids and an interpolated TIN of the ENC soundings.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
12358	1:40000	21	07/2011	06/28/2011	07/09/2011

Table 15: Largest Scale Raster Charts

12358

Charted and surveyed soundings generally agree within three feet. Exceptions occur in the sand wave area of the northeastern section of the sheet and in the central part of the sheet, where the 100 foot contour has shifted westward and surveyed soundings are 10-15 feet deeper than charted. The 12-ft and 18-ft contours were surveyed to be inshore of those currently charted.

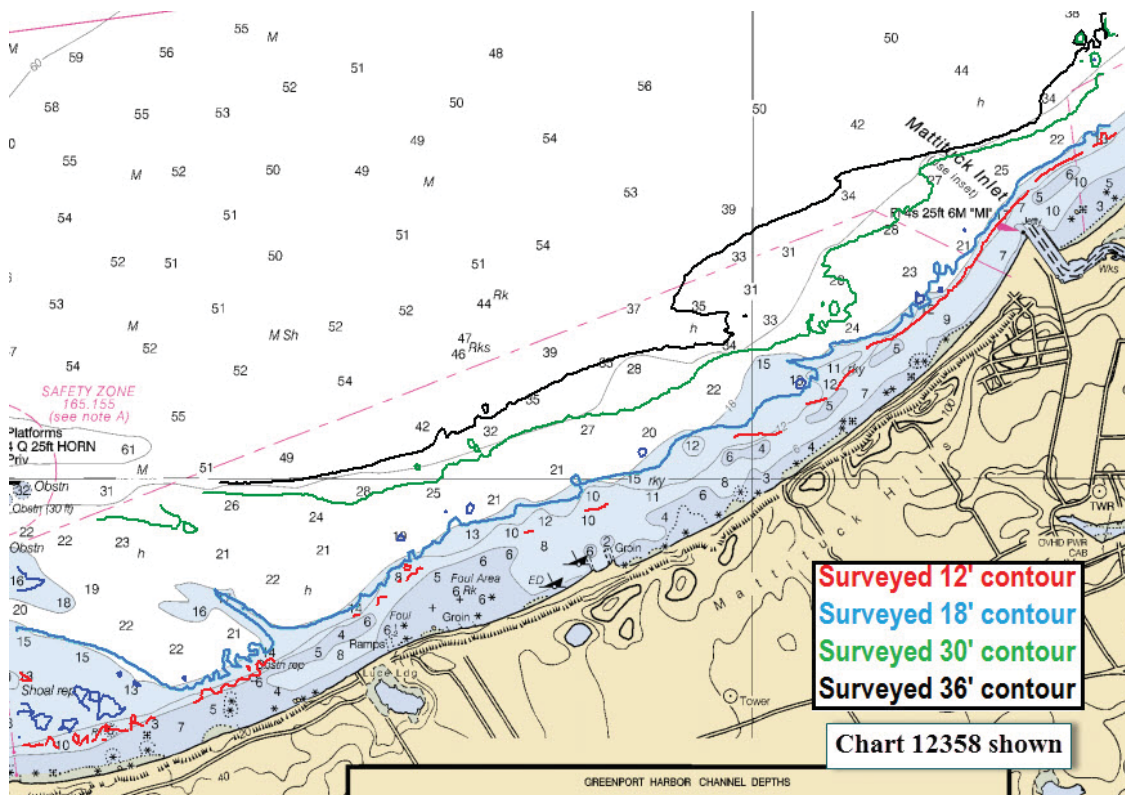


Figure 6: H12482 - Contours

D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5NY1IM	1:40000	5	02/15/2013	02/15/2013	NO

Table 16: Largest Scale ENC's

US5NY1IM

Charted soundings and those surveyed generally agree within 2 meters. Exceptions occur in the northeastern section of the sheet, which is a sand wave area, and in the central part of the sheet, where there is an area west of the charted 100 foot contour that was surveyed to be approximately five meters deeper than currently charted. There is shifting of the 12 foot and 18 foot contours, similar to that present on the raster chart.

D.1.3 AWOIS Items

A total of three AWOIS items fell within the bounds of survey H12482. Two were located inshore of the NALL and were not addressed. The search radius for the third AWOIS item also extended inshore of the NALL, and was not fully developed. For a full description, see the Final Feature File.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

See Final Feature File.

D.1.6 Uncharted Features

See Final Feature File.

D.1.7 Dangers to Navigation

Danger to Navigation Reports are included in Appendix II of this report.

D.1.8 Shoal and Hazardous Features

See Final Feature File.

D.1.9 Channels

The charted soundings within the designated anchorage area in the western section of this sheet generally agree with the surveyed soundings within two feet.

D.1.10 Bottom Samples

Of 22 assigned bottom samples, only 8 were collected. See Final Feature File for details.

D.2 Additional Results

D.2.1 Shoreline

The shoreline investigation requirements stated in the Project Instructions include verification of features inshore of the NALL. These features were not developed by the field unit because it was deemed unsafe.

D.2.2 Prior Surveys

Prior survey comparisons exist for this survey, but were not investigated.

D.2.3 Aids to Navigation

Aids to navigation (ATONs) exist for this survey, but were not investigated.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

The most northwestern extent of this survey touches a cable area. No visible cables were seen in the submitted grids; any cables are assumed to be properly buried.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

See Final Feature File.

D.2.9 Construction and Dredging


No present or planned construction or dredging exist within the survey limits.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Lieutenant Commander Christiaan van Westendorp	Acting Commanding Officer	09/12/2013	
Lieutenant Megan R. Guberski	Operations Officer	09/12/2013	Megan R. Guberski ^{LT} / _{NOAA}
Lieutenant Junior Grade Lindsey L. Norman	Sheet Manager	09/12/2013	

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Station
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positioning System timing message
ZDF	Zone Definition File

APPENDIX I
TIDES AND WATER LEVELS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : June 7, 2013

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-B370-TJ-2013
HYDROGRAPHIC SHEET: H12482

LOCALITY: Jacobs Pt to Mattituck Inlet, Long Island Sound
TIME PERIOD: March 30 - April 20, 2013

TIDE STATION USED: 8461490 New London, CT
Lat. 41° 21.7' N Long. 72° 05.4' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.839 meters

TIDE STATION USED: 8465705 New Haven, CT
Lat. 41° 17.0' N Long. 72° 54.5' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.946 meters

Tide STATION USED: 8512668 Mattituck Inlet, NY
Lat. 41° 0.9' Long. 72° 33.7' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.611 meters

REMARKS: RECOMMENDED GRID

Please use the TCARI grid "B370TJ2013_Final.tc" as the final grid for project OPR-B370-TJ-2013, H12482, during the time period between March 30 - April 20, 2013.

Refer to attachments for grid information.

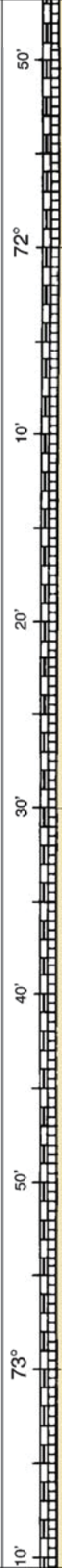
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

HOVIS.GERAL
D.THOMAS.13
65860250

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HOVIS.GERALD.THOMAS.1365860250
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ou=DoD, ou=PKI, ou=OTHER,
cn=HOVIS.GERALD.THOMAS.1365860
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CHIEF, PRODUCTS AND SERVICES BRANCH





TRAN-C

EXPLANATION

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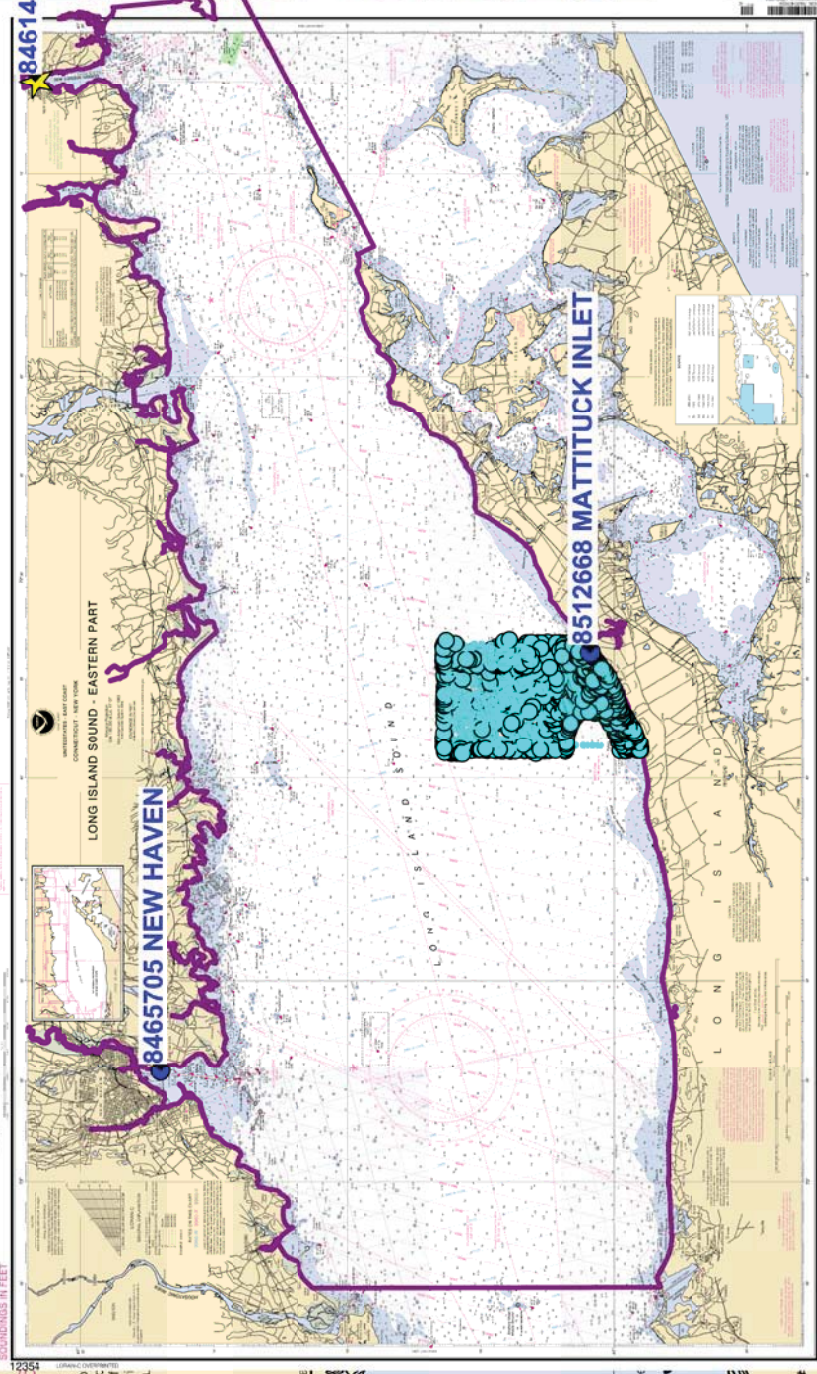
NOTE E
TRAFFIC SEPARATION SCHEME
 One-way traffic lanes overlprinted on this chart are RECOMMENDED for use by all vessels traveling between the points involved. They have been

NOTE F
TAPPING RANGE

NOTE G
PRECAUTIONARY AREAS
 Traffic within the Precautionary Areas may consist of vessels making the transition between operating in Ambrose or Sandy Hook Channels and one of the established Naragansett, Buzzards Bay and Buzzards Bay and are advised to exercise extreme care in

POLLUTION REPORTS
 Report all spills of oil and hazardous substances to the National Response Center via 1-800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication

Final TCARI Grid for OPR-B370-TJ-2013, H12482 Jacobs Pt to Mattituck Inlet, Long Island Sound



SOUNDINGS IN FEET

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE



Megan Guberski - NOAA Federal <megan.guberski@noaa.gov>

OPR-B370-TJ-13, HSSD & FPM 2013

Paul Turner - NOAA Federal <paul.turner@noaa.gov>

Wed, Apr 17, 2013 at 3:55 PM

To: Megan Guberski - NOAA Federal <megan.guberski@noaa.gov>, _OMAO MOA OPS Thomas Jefferson <ops.thomas.jefferson@noaa.gov>

Cc: Marc Moser - NOAA Federal <marc.s.moser@noaa.gov>, Paul Turner - NOAA Federal <paul.turner@noaa.gov>

Hi Megan-

LCDR Moser approved your request to operate under the 2013 Hydrographic Surveys Specifications and Deliverables and Field Procedures Manual for OPR-B370-TJ-13. Please be advised that the 2013 version of the Field Procedures Manual has not been released yet and I will forward you a copy once it has been approved. This email is to serve as your official notice, please include this email in all Descriptive Reports produced for OPR-B370-TJ-13.

Hydrography for OPR-B370-TJ-13 shall consist of Navigable Area Surveys in accordance with the following support documents:

NOS Field Procedures Manual for Hydrographic Surveying (FPM), April 2013

NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2013

Hydrographic Survey Technical Directive (HTD): HTD 2012-2 Config Mgmt

Hydrographic Survey Technical Directive (HTD): HTD 2011-3 XML Reports

Hydrographic Survey Technical Directive (HTD): HTD 2012-1 CARIS 7.1

Please let me know if you have any comments or questions.

Thank you,

Paul Turner

–

Paul Turner

Physical Scientist

NOAA - Office of Coast Survey

301-713-2700 *106

Paul.Turner@noaa.gov

APPENDIX III
SURVEY FEATURES REPORT

AWOIS - one
Dangers to Navigation - two
Maritime Boundary - none
Wrecks - none

H12482 Features Report

Registry Number: H12482
State: New York
Locality: Long Island Sound
Sub-locality: Jacobs Pt to Mattituck Inlet
Project Number: OPR-B370-TJ-13
Survey Dates: 03/30/2013 - 07/11/2013

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12358	21st	07/01/2011	1:40,000 (12358_1)	USCG LNM: 10/15/2013 (10/15/2013) CHS NTM: None (9/27/2013) NGA NTM: 12/4/1999 (10/26/2013)
12354	42nd	12/01/2006	1:80,000 (12354_1)	[L]NTM: ?
12300	47th	05/01/2008	1:400,000 (12300_1)	[L]NTM: ?
13006	34th	05/01/2007	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	49th	04/01/2007	1:1,200,000 (13003_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS 12433 - Retain OBSTRN	Obstruction	[None]	40° 59' 15.3" N	072° 37' 28.4" W	
2.1	Dton #1 - 18 ft. Rock	Rock	5.68 m	41° 01' 39.0" N	072° 33' 22.9" W	---
2.2	DtoN #2 - 16 ft. Rock	Rock	5.07 m	41° 01' 34.3" N	072° 33' 18.5" W	---

1 - AWOIS Features

1.1) AWOIS 12433 - Retain OBSTRN

Feature for AWOIS Item # 12433

Search Position: 40° 59' 15.3" N, 072° 37' 28.4" W
Historical Depth: [None]
Search Radius: [unknown]
Search Technique: [unknown]
Technique Notes:

History Notes:

[unknown]

Survey Summary

Survey Position: 40° 59' 15.3" N, 072° 37' 28.4" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2008-092.00:00:00.000 (04/01/2008)
Dataset: H12482_AWOIS_12433.000
FOID: US 0000300322 00001(0226000495220001)
Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

OBSTRN/remrks: Obstruction was not found with surveyed with MBES; however, entire AWOIS search radius was not investigated because it falls inside the NALL.

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12482_AWOIS_12433.000	US 0000300322 00001	0.00	000.0	Primary

Hydrographer Recommendations

Retain obstruction as charted.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: NINFOM - retain OBSTN
QUASOU - 2:depth unknown
SORDAT - 20080400
SORIND - US,US,graph,Chart 12358
WATLEV - 3:always under water/submerged

Office Notes

SAR NOTE: Concur. AWOIS radius investigated up to NALL line. Recommend retain as charted.

Compile: Retain OBSTRN.



Office of Coast Survey
Automated Wreck and Obstruction Information System

[home](#)
[options](#)
[logout](#)

Awois Record:

[Return to Normal View](#)

General Information

Vesselterms: **OBSTRUCTION** Chart: **12358** Depth: **6** Area: **B** Recrd: **12433**

Cartocode: **067** Sndingcode: **127**

Status: **Awois Item Available**

Status last updated: **N/A**

Position Information

Native Lat/Lon: Datum:**NAD27**

Deg-Min-Sec: **40 / 59 / 14.99 N 72 / 37 / 29.91 W**

Lat/Lon 83:

Deg-Min-Sec: **40 / 59 / 15.35 N 72 / 37 / 28.25 W**

Decimal Degrees: **40.987597 N 72.624514 W**

Gpquality: **High** Gpsource: **Scaled**

Project Information

Project: **OPR-B370-TJ-13** Itemstatus: **Assigned** Searchtype: **Full**

Radius: **200** Init: **PTT** Assigned: **01/07/2013**

Techniq: **ES, S2, MBES, SD, VI, DI** Yearsunk: **Reference:**

Descriptive Information

Techniqnote:

History:

L-818/69 -- AN UNCHARTED ROCK WAS REPORTEDLY HIT 300 YARDS OFFSHORE BY A BOAT THAT DRAWS 5.5 FT. THE LOCATION OF THE COLLISION WAS REPORTED TO THE USCGS AS: 40° 59' 15" N 072° 37' 30". THE USCG SUBSEQUENTLY IDENTIFIED THE UNCHARTED ROCK ON AIR PHOTOS. A 6 FT OBSTRUCTION NOW CHARTED IN POSITION 40° 59' 15.35" N 072° 37' 28.25" W [NAD 83]. [ENTERED 5/19/04 JCM].

Fieldnote:

Proprietary:

2 - Dangers To Navigation

2.1) Dton #1 - 18 ft. Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 01' 39.0" N, 072° 33' 22.9" W
Least Depth: 5.68 m (= 18.62 ft = 3.104 fm = 3 fm 0.62 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2013-192.13:36:00.000 (07/11/2013)
Dataset: H12482_DtoNs.000
FOID: 0_ 0000000157 00001(FFFE0000009D0001)
Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Found rock with 100% SWMB.

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12482_DtoNs.000	0_ 0000000157 00001	0.00	000.0	Primary

Hydrographer Recommendations

Chart rock.

Cartographically-Rounded Depth (Affected Charts):

18ft (12358_1, 12354_1)
 3fm (12300_1, 13006_1, 13003_1)
 5.7m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20130420
 SORIND - US,US,graph,H12482
 TECSOU - 3:found by multi-beam

VALSOU - 5.676 m

WATLEV - 3:always under water/submerged

Office Notes

SAR NOTES: DtoN represented on RNC 12358. Verification has determined a shoaler depth. Recommend to update the depth value. Defer the final charting disposition to AHB Compile Team.

Compile: Delete charted 19 Rks and chart an 18 Rk.

Feature Images

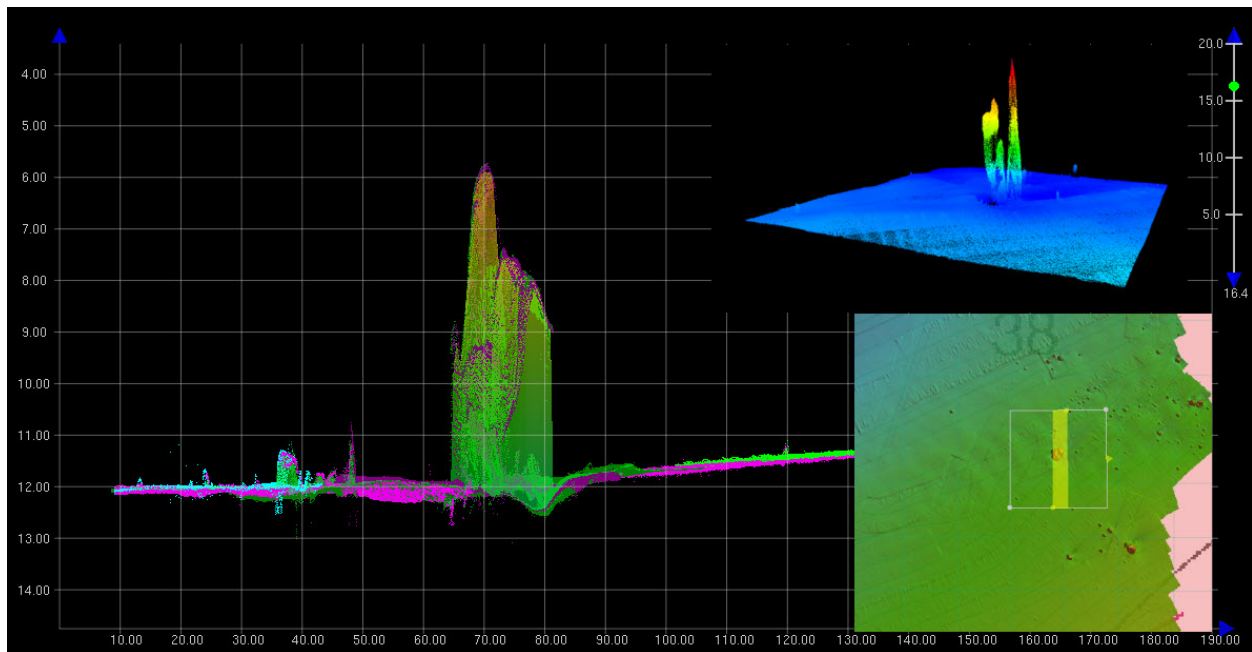


Figure 2.1.1

2.2) DtoN #2 - 16 ft. Rock

DANGER TO NAVIGATION

Survey Summary

Survey Position: 41° 01' 34.3" N, 072° 33' 18.5" W
Least Depth: 5.07 m (= 16.64 ft = 2.773 fm = 2 fm 4.64 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2013-192.13:51:33.000 (07/11/2013)
Dataset: H12482_DtoNs.000
FOID: 0_ 0007139519 00001(FFFE006CF0BF0001)
Charts Affected: 12358_1, 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

UWTROC/remrks: Found rock with 100% SWMB.

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12482_DtoNs.000	0_ 0007139519 00001	0.00	000.0	Primary

Hydrographer Recommendations

Chart rock.

Cartographically-Rounded Depth (Affected Charts):

- 16ft (12358_1, 12354_1)
- 2 ¾fm (12300_1, 13006_1, 13003_1)
- 5.0m (5161_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20130420
 SORIND - US,US,graph,H12482
 TECSOU - 3:found by multi-beam

VALSOU - 5.072 m

WATLEV - 3:always under water/submerged

Office Notes

SAR NOTES: DtoN submisison least depth 17.97ft requires updating. Recommend update least depth of feature during compilation.

Compile: Delete charted 18 Rks and chart a 16 Rk.

Feature Images

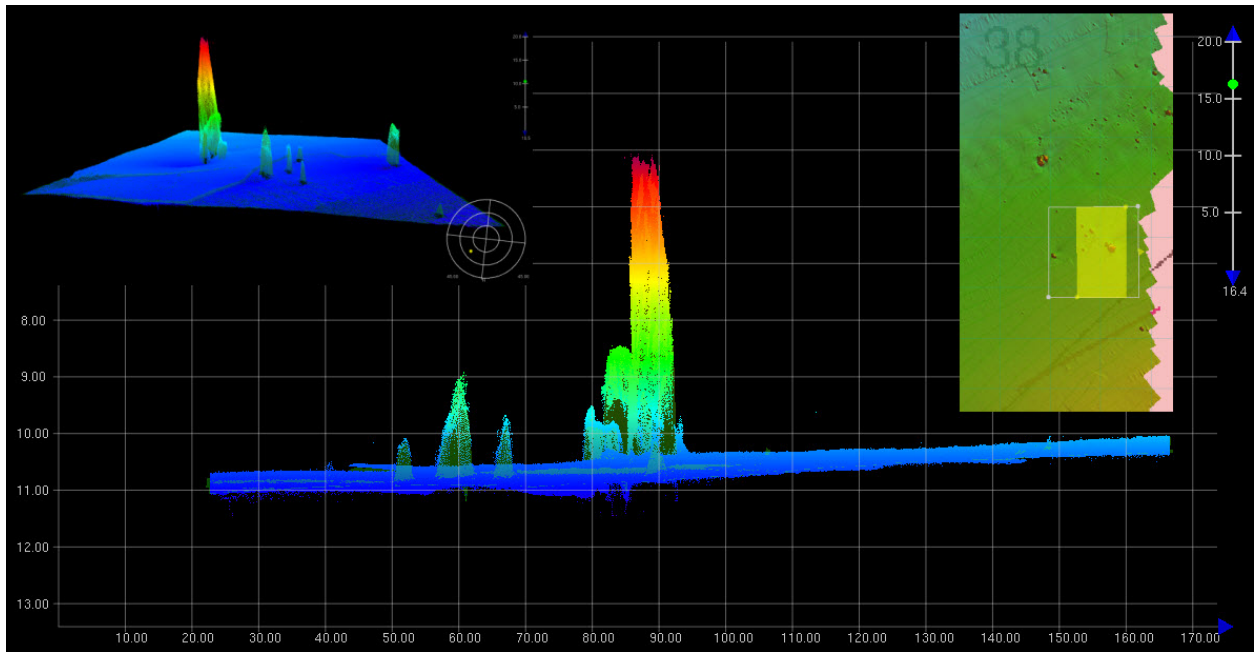


Figure 2.2.1

APPROVAL PAGE

H12482

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- H12482_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12482_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Lieutenant Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch