

H12480

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: H12480

LOCALITY

State: Connecticut

General Locality: Long Island Sound

Sub-locality: 4 NM South of Falkner Island, CT

2012

CHIEF OF PARTY
CDR Lawrence T. Krepp

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12480

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

State: **Connecticut**

General Locality: **Long Island Sound**

Sub-Locality: **4 NM South of Falkner Island, CT**

Scale: **20000**

Dates of Survey: **09/27/2012 to 10/10/2012**

Instructions Dated: **06/13/2012**

Project Number: **OPR-B370-TJ-12**

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**

H-Cell Compilation Units: ***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 H12480

Project: OPR-B370-TJ-12

Locality: Long Island Sound

Sublocality: 4 NM South of Falkner Island, CT

Scale: 1:20000

September 2012 - October 2012

NOAA Ship *Thomas Jefferson*

Chief of Party: CDR Lawrence T. Krepp

A. Area Surveyed

Hydrographic survey registry number H12480 covers an area of 22 square nautical miles and is approximately 4 NM south of Falkner Island, CT. The coverage requirements, as per Hydrographic Survey Letter Instructions OPR-370-TJ-12, Eastern Long Island Sound, NY, dated June 13, 2012, were met using complete multibeam coverage in accordance with the Hydrographic Surveys Specifications and Deliverables Manual (HSSD), dated April 2012. It is recommended that this survey receive normal processing priority.

A.1 Survey Limits

Data was acquired within the following survey limits:

Northeast Limit	Southwest Limit
41.0897444444 N	41.1526916667 N
72.7867666667 W	72.6365972222 W

Table 1: Survey Limits

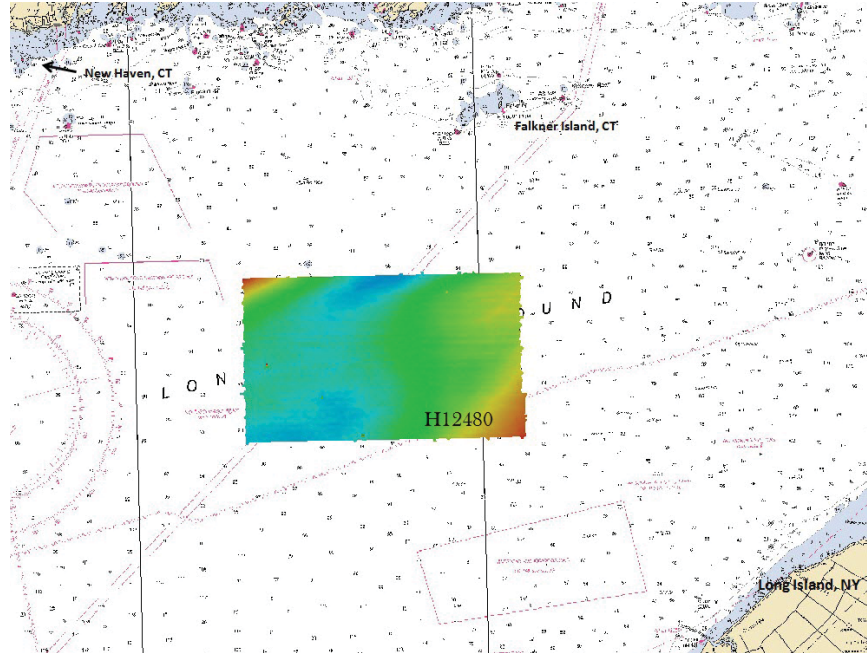


Figure 1: H12480 Survey Limits

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 138 NM² of which 120 NM² are critical survey areas as designated in the NOAA Hydrographic Survey Priorities, 2011 edition.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

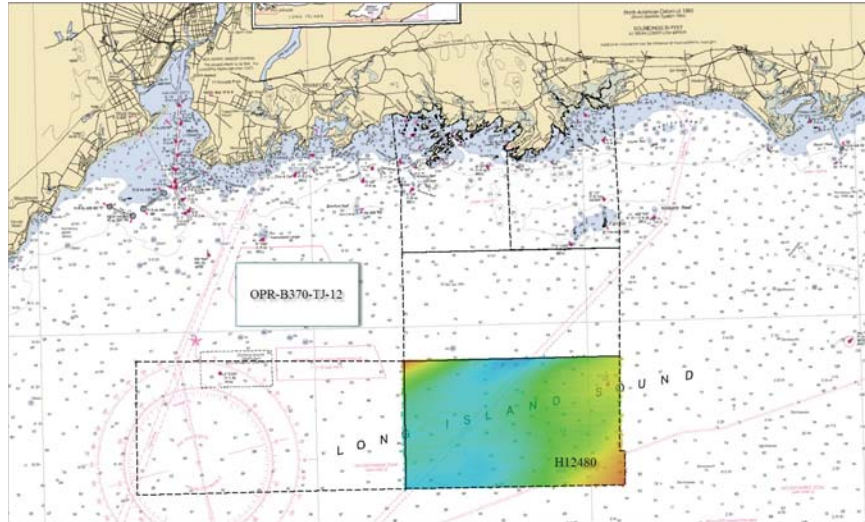


Figure 2: H12480 Survey Coverage

If the definition of a holiday is kept to the most conservative (that a 1x4 gap is a holiday) then there is one holiday in the south-east portion of the sheet.

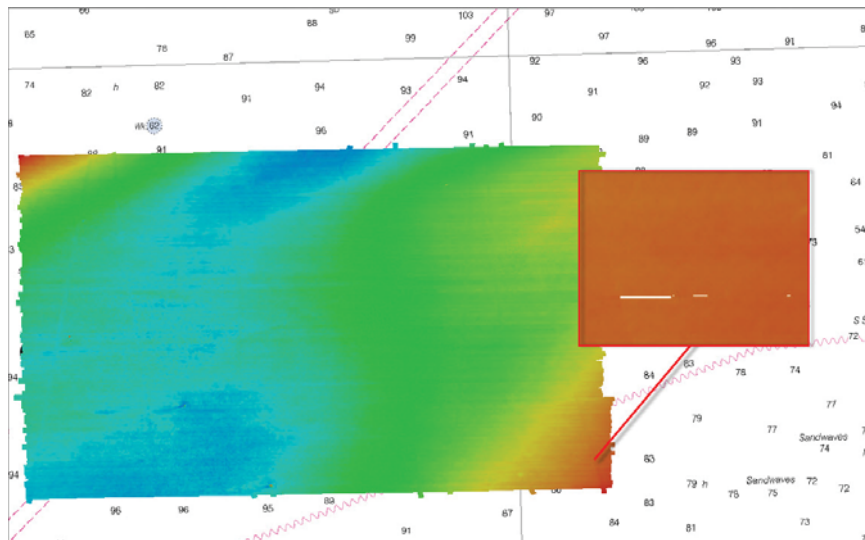


Figure 3: Holiday in SE section of H12480

A.5 Survey Statistics

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

	HULL ID	S222	Total
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	508.01	508.01
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/MBES Combo Mainscheme	0	0
	SBES/SSS Combo Mainscheme	0	0
	MBES/SSS Combo Mainscheme	0	0
	SBES/MBES Combo Crosslines	33.26	33.26
	Lidar Crosslines	0	0
	Number of Bottom Samples		
Number of DPs			0
Number of Items Items Investigated by Dive Ops			0
Total Number of SNM			22

Table 2: Hydrographic Survey Statistics

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

<i>Survey Dates</i>
09/27/2012
10/02/2012
10/03/2012
10/04/2012
10/05/2012
10/06/2012
10/07/2012
10/08/2012
10/09/2012
10/10/2012

Table 3: Dates of Hydrography

A.6 Shoreline

Shoreline was investigated in accordance with the Project Instructions and the HSSD.

A.7 Bottom Samples

Bottom Samples were acquired in accordance with the Project Instructions or the HSSD.

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>
LOA	208 feet
Draft	15 feet

Table 4: Vessels Used

No launches acquired data on this sheet.

B.1.2 Equipment

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

Manufacturer	Model	Type
Reson	7125 ROV	MBES
Applanix	POSMV	Positioning and Attitude System
Brooke Ocean Technology LTD	MVP	Sound Speed System

Table 5: Major Systems Used

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

B.2 Quality Control

B.2.1 Crosslines

MBES crosslines totaling 33.26 LNM, approximately 6.5% of total hydrography, were acquired during this survey. A difference surface of crosslines and mainscheme was created in CARIS BathyDataBASE. The mean of this surface was -0.002 meters, and the standard deviation was 0.067 meters. As per email dated 10 Sept, 2009 from AHB in the Descriptive Report, Appendix 5, quality control was performed using the standard deviation layer of the survey's CUBE surface. Areas of unusually high standard deviation were investigated and resolved in processing, except where caused by areas of high bathymetric relief or as described in Section B.5 Data Processing. The maximum standard deviation is 0.35m. The mean standard deviation for the combined 2m surface is 0.02m.

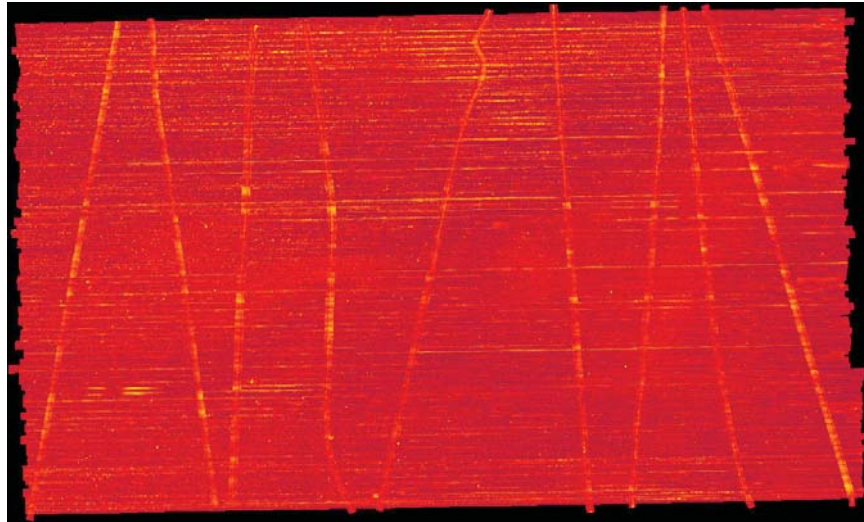


Figure 4: Standard deviation for H12480

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.102meters	0.00meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S-222	0meters/second	1meters/second	0.2meters/second

Table 7: Survey Specific Sound Speed TPU Values

The values for tidal uncertainty listed above were used for all ERS data processing. This value was the uncertainty of the associated VDatum Separation model. All data except for line 907_1345 on DN 276 used these values. Line 907_1345 did not have ERS data and therefore had 0's input for Tidal uncertainty and used TCARI.

An IHOness examination was performed on the combined 2 meter grid for H12480. This examination tests whether the uncertainty values are met as specified in HSSD section 5.1.3 Uncertainty Standards. The IHO Publication S-44 is stated as $\pm (a^2 + (b \cdot d)^2)^{0.5}$ where: (a) represents that portion of the uncertainty that does not vary with depth; (b) is a coefficient which represents that portion of the uncertainty that varies with depth (b x d) represents that portion of the uncertainty that does vary with depth; (d) is the depth; and the variables a and b shall be defined as follows"

In depths less than 100 meters, a = 0.5 meters and b = 0.013 (IHO Order 1).

Through CARIS processing, each node receives formula computation minus the computed uncertainty of the depth layer. Positive values pass IHO whereas negative values fail. Out of all the nodes, all of them passed IHO Order 1 TVU specifications.

A compliance review for density was performed. This computes basic statistics to assess compliance with NOS Hydrographic Specifications and Deliverables sections 5.1.3 and 5.2.2.1 2012. A filter for the density layer of the combined 2 meter grid was set to minimum 0 and maximum 4. This filtered low density nodes and confirmed that over 99% of the soundings for H1248- met the density requirements specified in HSSD.

B.2.3 Junctions

Two junction surveys, H12479 and H12481, were acquired during the 2012 field season. Two prior surveys, H11255 and H11999, were also analyzed. A difference surface was created for each junction in CARIS BathyData Base.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12481	1:40000	2012	NOAA Ship THOMAS JEFFERSON	W
H12479	1:10000	2012	NOAA Ship THOMAS JEFFERSON	N
H11999	1:10000	2008	NOAA Ship THOMAS JEFFERSON	E
H11255	1:10000	2004	NOAA Ship THOMAS JEFFERSON	S

Table 8: Junctioning Surveys

H12481

The difference surface between H12480 and H12481 ranged from -0.13 meters to 0.18 meters. The mean was 0.01 meters, and the standard deviation was 0.02 meters.

H12479

The difference surface between H12480 and H12479 ranged from -0.20 meters to 0.19 meters. The mean was 0.0 meters. The standard deviation was 0.01 meters.

H11999

The difference surface between H12480 and H11999 ranged from -0.50 meters to 0.31 meters. The mean was -0.06 meters, and the standard deviation was 0.11 meters.

H11255

The difference surface between H12480 and H11255 ranged from -0.83 meters to 0.76 meters. The mean was -0.34 meters. The standard deviation was 0.1 meters.

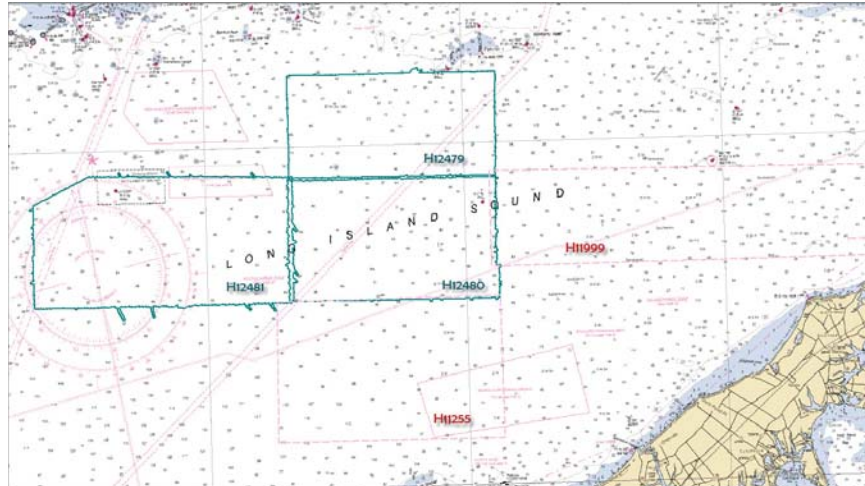


Figure 5: H12480 Junction Surveys

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

B.2.5.1 None Exist

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

B.2.6.1 None Exist

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 approximately every 30 minutes from S-222 using the ship's Moving Vessel Profiler. All casts fall within the sheet limits.

B.2.8 Coverage Equipment and Methods

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

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Line number 907_1345, acquired by S222 on DN 276, was reduced to MLLW via TCARI because the SBET for the day did not cover the time range of the line.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter was logged as a 7k file and submitted to the IOCM processing center and/or directly to NGDC, and is not included with the data submitted to the Branch.

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: V. 5.2

B.5.2 Surfaces

The following CARIS surfaces were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12480_CUBE_MLLW_2m_Final	CUBE	2 meters	24.81 meters - 30.70 meters	NOAA_2m	Complete MBES

Table 9: CARIS Surfaces

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to NOAA_2m for all MBES surfaces. Refer to the 2012 Data Acquisition and Processing Report, 2012 Field Procedures Manual, and CARIS HIPS and SIPS User Guide for further discussion. The survey data were cleaned using the swath and subset editor tools in CARIS HIPS.

B.5.3 ERS Surfaces

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

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

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 London, CT	8461490
New Haven, CT	8465705

Table 10: NWLON Tide Stations

File Name	Status
8465705.tid	Final Approved
8461490.tid	Final Approved

Table 11: Water Level Files (.tid)

File Name	Status
B370TJ2012.tc	Final

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

A request for final approved tides was sent to N/OPS1 on 10/12/2012. The final tide note was received on 10/25/2012.

All data have TCARI tides calculated using Verified tides and the final TCARI grid. Only one line, 907_1345, is currently merged with TCARI.

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

2012_B340_VDatum_Ellip_MLLW.xyz

The ellipsoid to MLLW separation model for the area that was output from VDATUM was supplied to the field unit with the Project Instructions and project files. This separation model was provided in text file format and is used by CARIS HIPS/SIPS to transform the bathymetry data from the ellipsoid back to chart datum, MLLW. The results of Thomas Jefferson's ERS interim deliverable analysis of the ERS vs TCARI methods were submitted to HSD for a determination of the method to be used for survey submission. HSD recommended that final deliverable grids for this survey should be reduced to MLLW via the ERS method when feasible. Most bathymetry data were reduced to MLLW via the ERS methods. The 2012_B340_VDatum_Ellip_MLLW model was used to reduce this survey from the ellipsoid to Mean Lower-Low Water as described in section B.3. The only line not processed to the ellipsoid was 907_1345.

C.2 Horizontal Control

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

The following PPK methods were used for horizontal control:

Smart Base

Real-time navigation data were replaced with post-processed SBET navigation data with Smart Base.

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
Riverhead, NY	NYRH
Groton, CT	CTGR
Brookfield, CT	CTBR
Guilford, CT	CTGU
Moriches 5; East Moriches, NY	MOR5
Brooklyn Pier, NY	NYBR
New York WAAS 1, NY	ZNY1
Darien, CT	CTDA

Table 13: CORS Base Stations

Moriches was broadcasting on low power the entire time we were acquiring on this sheet.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Moriches, NY
Acushnet, MA

Table 14: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

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
12354	1:80000	44	05/2012	06/05/2012	08/11/2012
12358	1: 20000 40K	21	07/2011	01/22/2013	01/26/2013

Table 15: Largest Scale Raster Charts

12354

Collected data generally agree with charted soundings within three feet with charted depths generally shoaler than surveyed soundings. There are three areas with soundings four to five feet deeper than those charted.

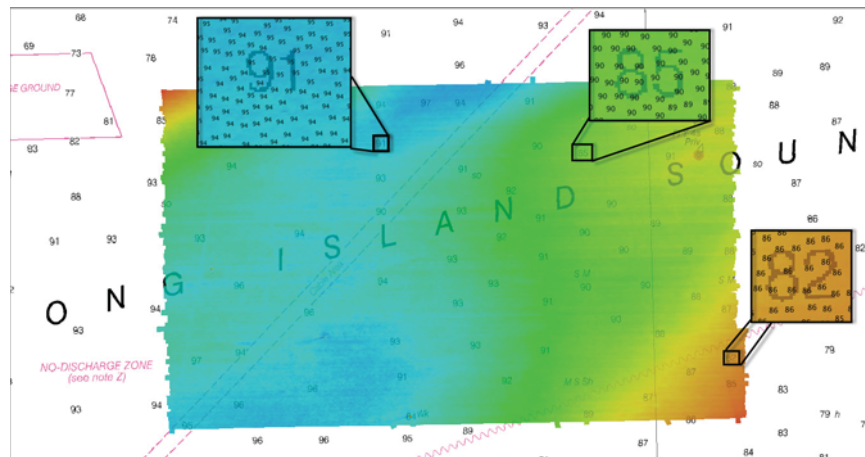


Figure 6: H12480: Soundings deeper than charted

12358

Charted soundings generally agree within 2ft. In the NW corner of this chart, there are two charted shoals, one which is charted at 87ft and one at 88ft. Neither are present on the smaller scale chart or in the current survey data and current survey data is 4-5ft deeper than charted there (Figure 7). There is also a charted 82ft depth on the eastern side of the sheet. Surveyed soundings in this area are 4ft deeper (Figure 8). The charted 90ft contour has migrated to the east on this sheet up to almost 1500km; however this is a very gently sloping surface and this change is not significant (Figure 9).

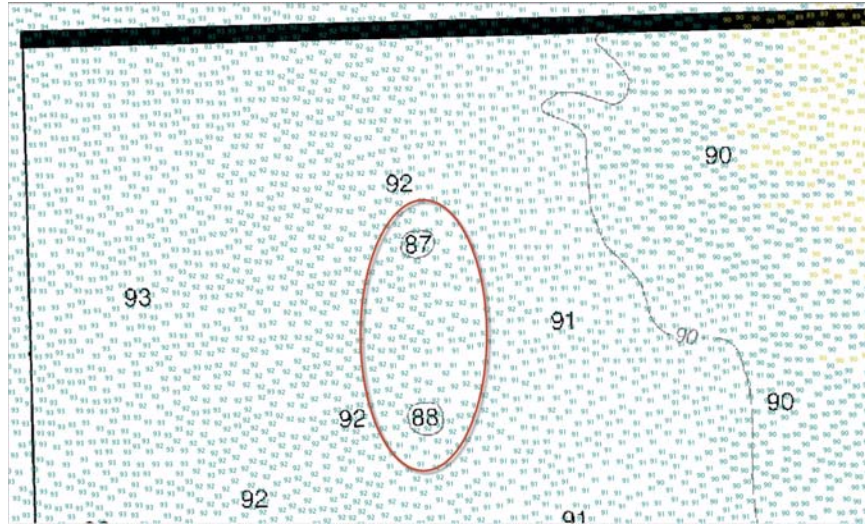


Figure 7: Charted Shoals

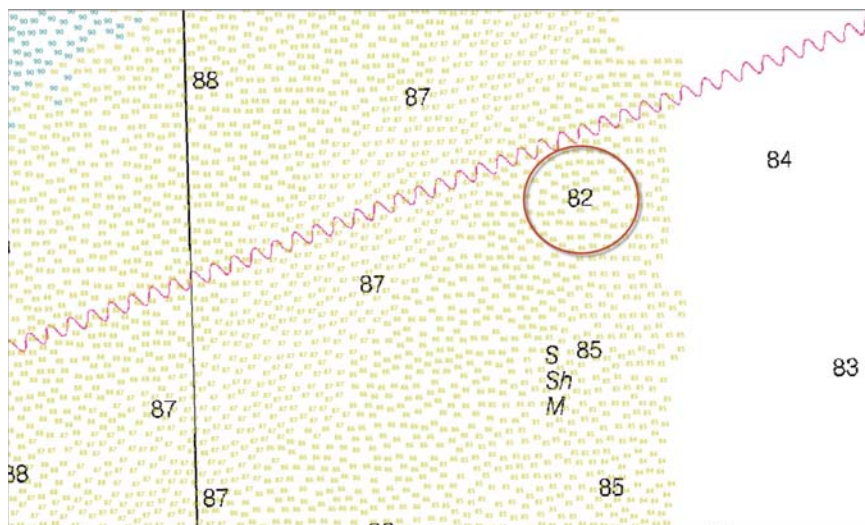


Figure 8: Charted 82ft Sounding

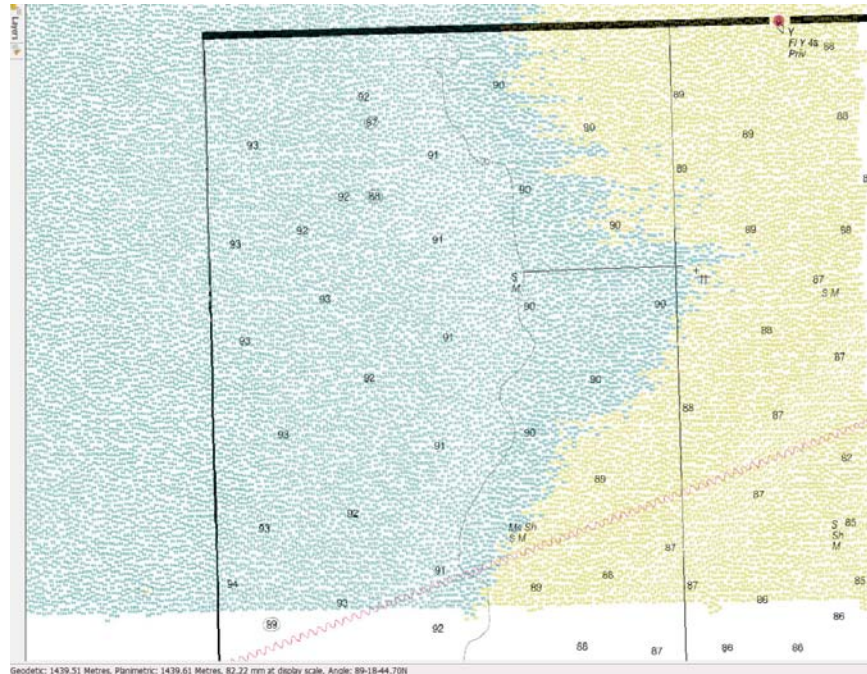


Figure 9: 90ft Contour

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?
US4NY1JM	1:80000	3	11/30/2011	04/11/2012	NO
US4NY1GM	1:80000	20	04/03/2012	04/03/2012	NO

Table 16: Largest Scale ENC's

US4NY1JM

Data acquired for H12480 generally agree with the charted soundings within three feet. Three notable exceptions exist on the eastern side of the survey; collected soundings are approximately 4-5 feet deeper than those charted in these areas. Four buoys, which fall in the extents of the survey, are charted on the ENC. Three of these were not observed by the field unit.

US4NY1GM

Data acquired for H12480 generally agree with the charted soundings within three feet. One notable exception exists in the center of the sheet; collected soundings are approximately four feet deeper in this area.

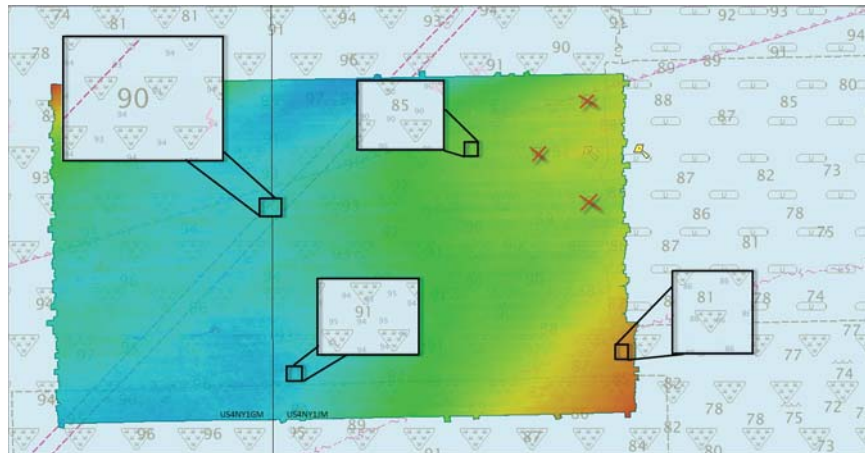


Figure 10: H12480 comparison to ENCs

D.1.3 AWOIS Items

Number of AWOIS Items Addressed: 1

Number of AWOIS Items Not Addressed: 0

One AWOIS item was investigated for this survey. For a full discussion, see Final Feature File.

D.1.4 Charted Features

No charted features exist for this survey.

D.1.5 Uncharted Features

One uncharted significant feature was found in H12480. See the Final Feature File.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.8 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

One ATON exists for this survey on both the raster and ENC charts. It is a yellow, privately maintained buoy in the northeastern section of the sheet; it was seen on station and serving its intended purpose. Three yellow buoys are charted on US4NY1JM but not the corresponding raster chart. These buoys were not observed by the field unit.

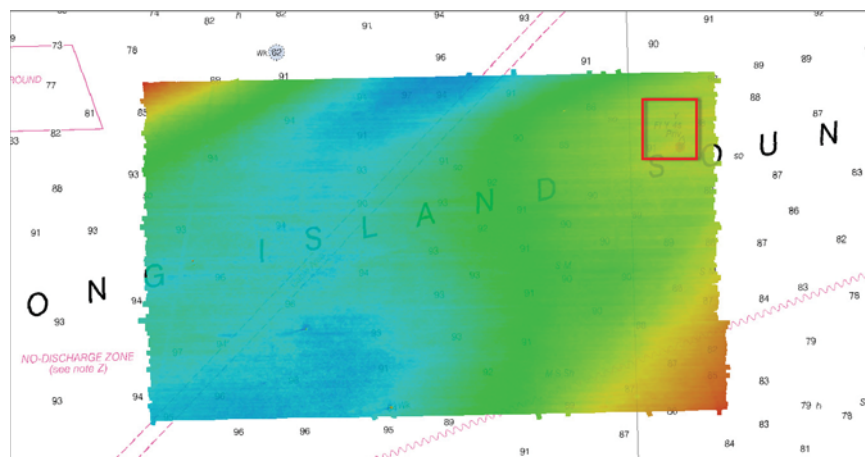


Figure 11: H12480 Buoy

D.2.4 Overhead Features

Overhead features do not exist for this survey.

D.2.5 Submarine Features

There is a cable area and a separate cable charted on this sheet. Neither were evident in the survey data and 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

No significant features exist for this survey.

D.2 Construction and Dredging

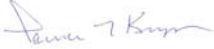


There is no present or planned construction or dredging within the survey limits.

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
Lawrence Krepp	Commanding Officer	01/16/2013	
William Winner	Field Operations Officer	01/16/2013	
Lindsey Norman	Sheet Manager	01/16/2013	

F. Table of Acronyms

Acronym	Definition
AFF	Assigned Features File
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
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
HSSDM	Hydrographic Survey Specifications and Deliverables Manual

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 : October 23, 2012

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-B307-TJ-2012
HYDROGRAPHIC SHEET: H12480

LOCALITY: 4 NM South of Falkner Island, Long Island Sound, CT
TIME PERIOD: September 27 - October 10, 2012

TIDE STATION USED: New Haven, CT 8465705
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: 1.945 meters

TIDE STATION USED: New London, CT 8461490
Lat. 41° 21.7' N Long. 72° 5.4' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.839 meters

REMARKS: RECOMMENDED GRID

Please use the TCARI grid "B307TJ2012.tc" as the final grid for project OPR-B307-TJ-2012, H12480, during the time period between September 27 and October 10, 2012.

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.GERALD.
THOMAS.13658
60250

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HOVIS.GERALD.THOMAS.1365860250
DN: c=US, o=U.S. Government,
ou=DoD, ou=PKI, ou=OTHER,
cn=HOVIS.GERALD.THOMAS.1365860
250
Date: 2012.10.25 12:38:25 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH



Preliminary as Final TCARI Grid for OPR-B370-TJ-2012, H12480 Eastern Long Island Sound, CT & NY

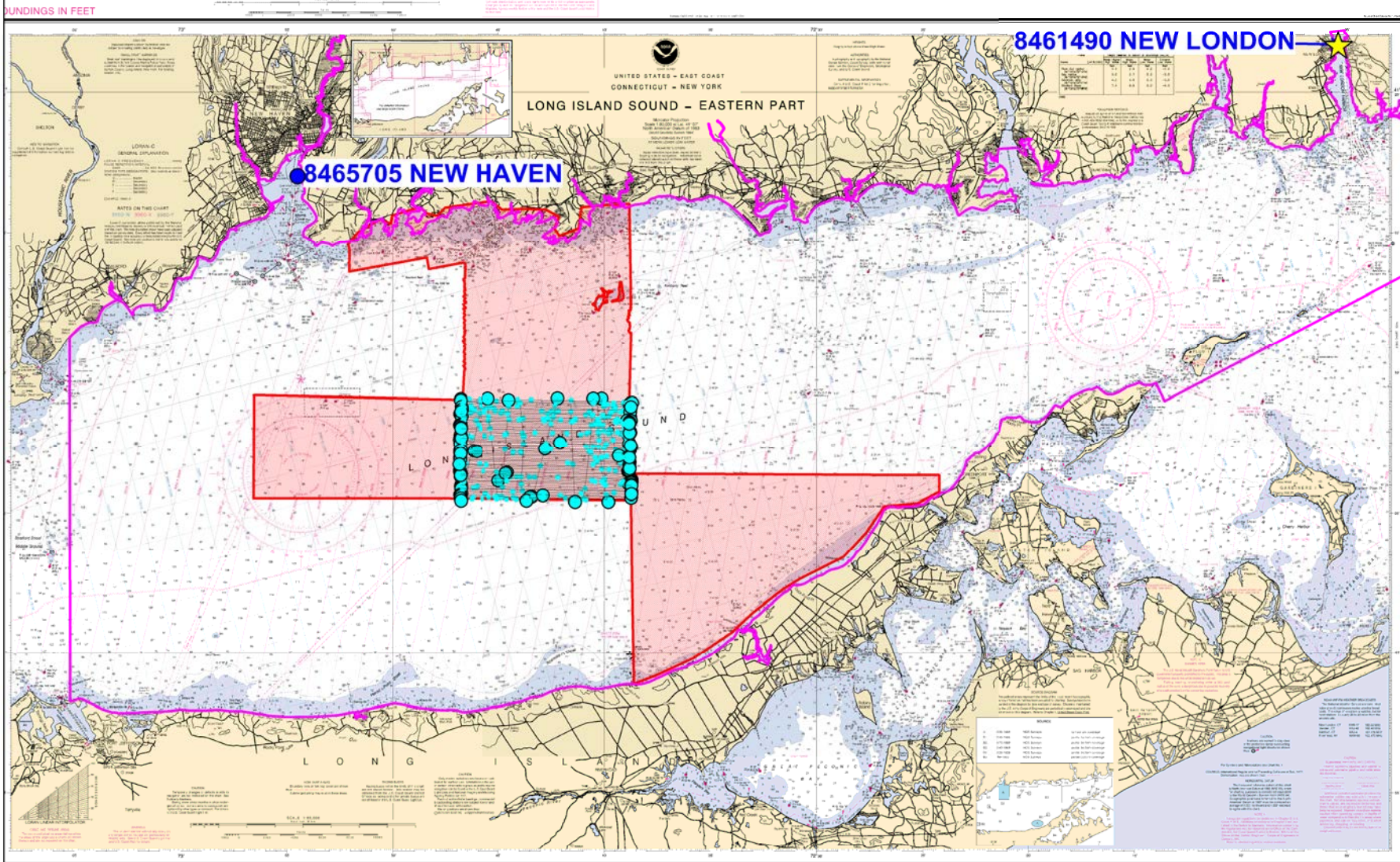


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APPENDIX II

SUPPLEMENTAL SURVEY RECORDS
AND CORRESPONDENCE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

January 22, 2013

MEMORANDUM FOR: CDR Larry Krepp, NOAA
Commanding Officer, NOAA Ship *Thomas Jefferson*

FROM: Jeffrey Ferguson
Chief, Hydrographic Surveys Division

SUBJECT: Vertical Datum Transformation Technique,
OPR-B370-TJ-12, Long Island Sound, NY

Hydrographic survey H12480 is approved for vertical reduction to chart datum, Mean Lower Low Water (MLLW), using the NOAA Vertical Datum Transformation (VDatum) (<http://vdatum.noaa.gov>) derived separation (SEP) model provided on the project CD/DVD.

Approval of VDatum, in lieu of the NOAA Center for Operational Oceanographic Products and Services (CO-OPS) TCARI package as per the Project Instructions, is based on your recommendation and the review of comparison results you included in your memo from December 3, 2012, Subject "H12480 Interim Deliverables".

The results of the data analysis show that ellipsoidally referenced survey (ERS) techniques with VDatum used as the vertical datum reducer to MLLW in this area indicate a better internal consistency of the survey data and produces final sounding values that meet or exceed horizontal and vertical specifications for hydrographic surveys.

The comparison techniques are in line with the procedures that were developed and approved as part of the CSDL Ellipsoidally Referenced Survey (ERS) project. These procedures and deliverables were added to the April 2012 edition of the NOS Hydrographic Surveys Specifications and Deliverables Manual and Field Procedures Manual documents.

You shall include a description of your ERS processing procedures and the comparisons you conducted between ERS and traditional tides in the appropriate Descriptive Report (DR), Horizontal and Vertical Control Report and/or Data Acquisition and Processing Report.

This memo and your memo, shall be included in the supplemental correspondence Appendix of the DR.





3 December 2012

MEMORANDUM TO: Jeffrey Ferguson
Chief, Hydrographic Surveys Division

FROM: Lawrence T. Krepp, CDR/NOAA
Commanding Officer

SUBJECT: H12480 Interim Deliverables

As per the project instructions for OPR-B370-TJ-12, NOAA Ship *Thomas Jefferson* was tasked with providing a recommendation on the vertical transformation technique to be used for each sheet. This recommendation is based upon an analysis of crossline data processed with TCARI tidal zoning and VDatum ERS. This analysis was performed using Pydro's Post Acquisition Tools.

Crossline Analysis

Crosslines from H12480 were parallel processed with one set of depths reduced to MLLW via TCARI tidal zoning and the other set reduced via VDatum ERS. Pydro's Post Acquisition Tool "Compare Time Series Data" yielded the following results:

File-wise Statistics

H12480_GPS_TJ_S222_RESON7125_STBD_MiddlePD.txt | H:\Surveys\H12480\Descriptive Report\Appendices\4_Tides_&_Water_Levels\ERSvsTCARI
- (minus)
H12480_TCARI_TJ_S222_RESON7125_STBD_MiddlePD.txt |
H:\Surveys\H12480\Descriptive Report\Appendices\4_Tides_&_Water_Levels\ERSvsTCARI
=====
N,mean,stdev = 73196,0.018,0.081

Sensor-wise Statistics

MiddlePD: N,mean,stdev = 73196,0.018,0.081

Discussion

Results of the analysis showed that the mean difference between ERS and TCARI tidal corrections was 1.8cm with a standard deviation of 8.1cm.

Recommendation

Our recommendation is to utilize ERS VDatum for tidal corrections for this survey. The results of the analysis show that there are only minor differences between sounding data reduced to MLLW using TCARI and ERS VDatum. This difference is less than the uncertainty of the VDatum model (10.2cm).



Subject: Re: Crossline comparison

From: Chris van Westendorp <Christiaan.VanWestendorp@noaa.gov>

Date: Thu, 10 Sep 2009 13:00:35 -0400

To: "mark.blankenship" <Mark.Blankenship@noaa.gov>

CC: LCDR Rick Brennan <Richard.T.Brennan@noaa.gov>, Castle Parker <Castle.E.Parker@noaa.gov>, Edward Owens <Edward.Owens@noaa.gov>, LT Jasper Schaer <jasper.schaer@noaa.gov>, CDR Shep Smith <Shep.Smith@noaa.gov>, Daniel Wright <Daniel.Wright@noaa.gov>

Mark,

Per 5.1.4.3 of the HSSD, AHB authorizes TJ to use the Standard Deviation layer to conduct surface difference comparison and analysis on future survey submissions of multibeam data. This meets the crossline comparison requirement laid out in HSSD.

Please let me know if you have any questions or need for further clarification.

R/

LCDR Chris van Westendorp, NOAA

mark.blankenship wrote:

Chris,

You mentioned in the meeting today that AHB was not going to require the multiple CUBE surface comparison, instead allowing us to use a single surface standard deviation layer to do our checks with. Is there any memo coming out for that?

Mark

LCDR Chris van Westendorp <christiaan.vanwestendorp@noaa.gov>

Atlantic Hydrographic Branch

NOAA OCS



Vanessa Self - NOAA Federal <vanessa.self@noaa.gov>

H12480 Bottom Samples

2 messages

Vanessa Self - NOAA Federal <vanessa.self@noaa.gov>

Mon, May 6, 2013 at 11:34 AM

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

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>

Megan,

I know you are probably swamped with the start of the FY13 survey season, so I apologize for adding an additional item to your plate.

I am currently conducting the SAR review of survey H12480. The DR states that bottom samples were collected however, I've looked through all the data provided and can not find bottom samples in any format. The only reference material I see is an old NOAA form 75-44. The problem with this form is that the locations are not in the survey area and the form has a final date modified of 02/09/2010 (1.5 years prior to the commencement of survey H12480). Can you provide me with the appropriate bottom samples and/or verify if bottom samples were collected for survey H12480.

Respectfully,

Vanessa Self Miller

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

Fri, May 10, 2013 at 7:18 AM

To: Vanessa Self - NOAA Federal <vanessa.self@noaa.gov>

Vanessa,

I looked into the bottom samples for OPR-B370-TJ-12, and there were none assigned to sheet H12480. I see that the DR stated "*Bottom Samples were acquired in accordance with the Project Instructions or the HSSD*", which I suppose is basically true, though a little misleading when no bottom samples were assigned.

Is the 75-44 form you mentioned named *NOAA Form 75_44Oceanographic_LogM_BS_H11710* located in *....H12480_OPR-B370-TJ-12_East_LIS\Data\Descriptive_Report\Appendices\5_Supplemental_Survey_Records_Correspondence*? If so, it appears that several boilerplate emails and forms that should have been stripped out before submission were retained.

Let me know if you need more info. I can continue hunting,
Megan

[Quoted text hidden]

--

LT Megan Guberski, NOAA
4th Officer, NOAA Ship *Thomas Jefferson*
439 W. York Street
Norfolk, VA 23510
cell: 757 647-0187
land: 757 451-6322

APPENDIX III
FEATURES REPORT

DTONS -- NONE

AWOIS -- ONE

WRECK -- TWO-(see AWOIS)

MARITIME BOUNDARIES -- NONE

H12480 Features Report

Registry Number:

State:

Locality:

Sub-locality:

Project Number:

Survey Date: 10/10/2012

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12354	44th	05/01/2012	1:80,000 (12354_1)	USCG LNM: 9/3/2013 (9/3/2013) CHS NTM: None (7/26/2013) NGA NTM: 12/4/1999 (9/14/2013)
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	add 80ft. Wreck	Wreck	24.49 m	41° 07' 10.9" N	072° 46' 10.5" W	---
2.1	AWOIS 14093 - 83 ft. Wreck	Wreck	25.54 m	41° 05' 34.2" N	072° 43' 26.5" W	14093

1.1) add 80ft. Wreck

Survey Summary

Survey Position: 41° 07' 10.9" N, 072° 46' 10.5" W
Least Depth: 24.49 m (= 80.35 ft = 13.391 fm = 13 fm 2.35 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2012-284.00:00:00.000 (10/10/2012)
Dataset: H12480_Features.000
FOID: US 0000078662 00001(0226000133460001)
Charts Affected: 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

WRECKS/remrks: uncharted wreck

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12480_Features.000	US 0000078662 00001	0.00	000.0	Primary

Hydrographer Recommendations

chart non-dangerous wreck

Cartographically-Rounded Depth (Affected Charts):

80ft (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
 EXPSOU - 1:within the range of depth of the surrounding depth area
 NINFOM - add Wreck
 QUASOU - 6:least depth known
 SORDAT - 20121010
 SORIND - US,US,graph,H12480

TECSOU - 3:found by multi-beam

VALSOU - 24.490 m

WATLEV - 3:always under water/submerged

Office Notes

SAR: Ensonified with object detection MBES. The feature is real. Final charting disposition deferred to compilation.

Compile: add 80 Wreck

Feature Images

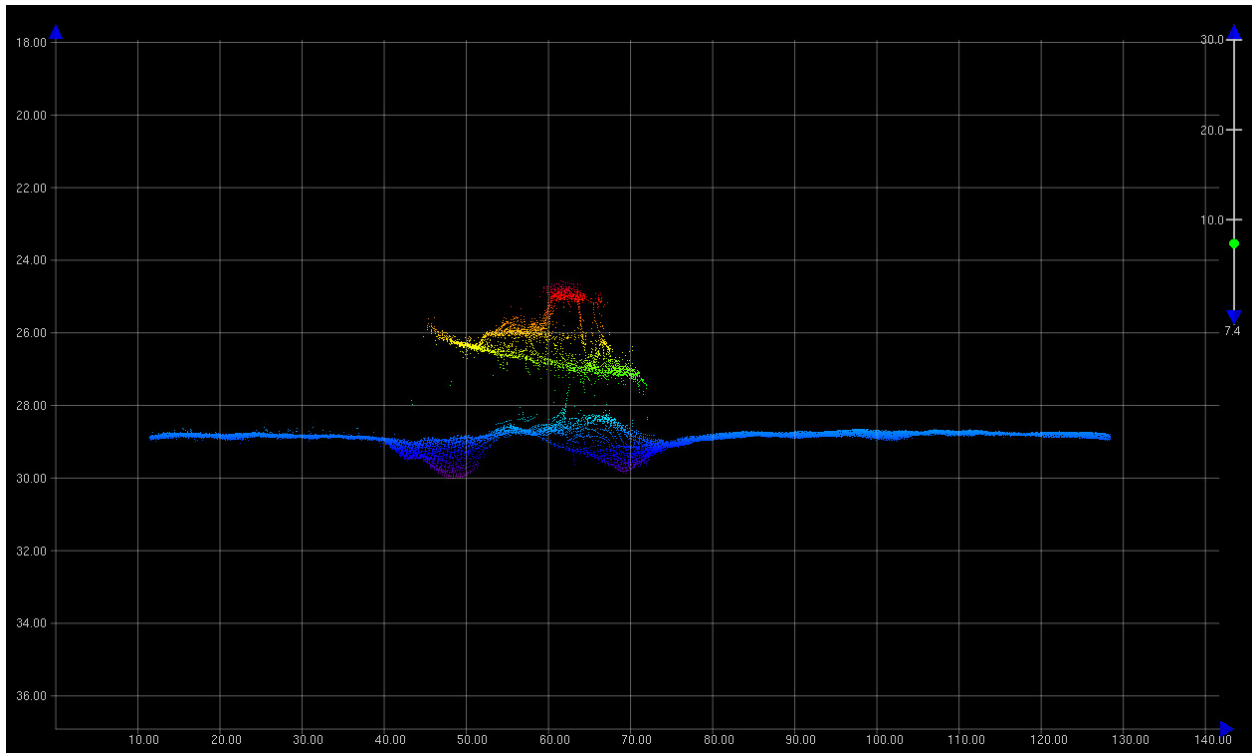


Figure 1.1.1

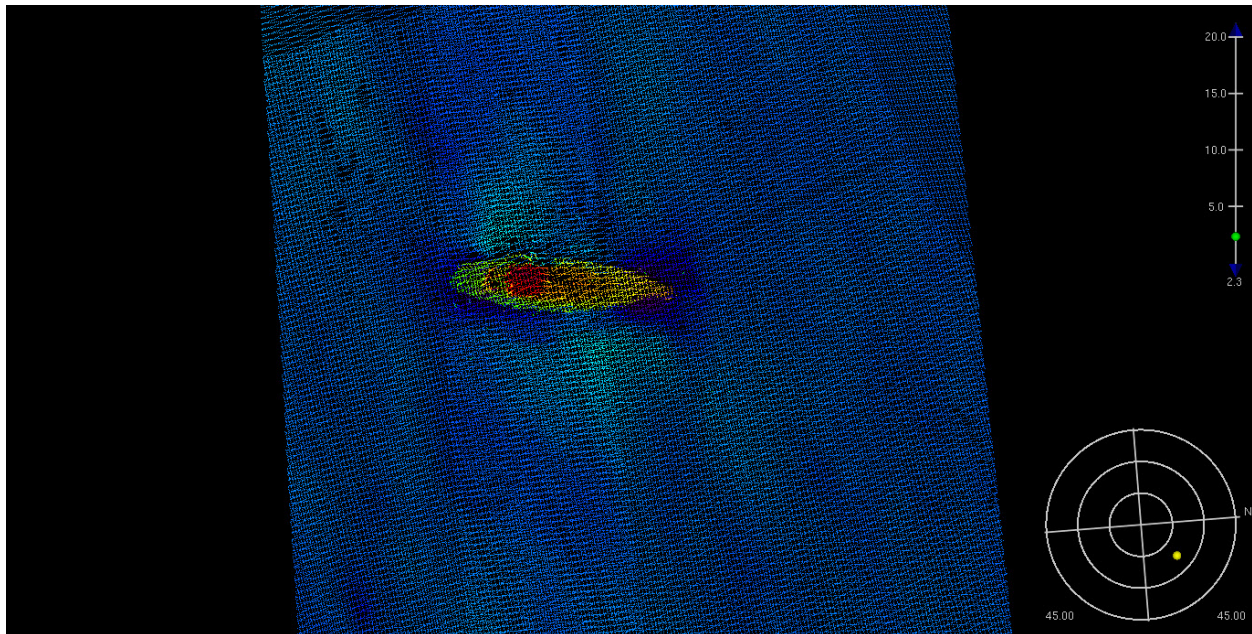


Figure 1.1.2

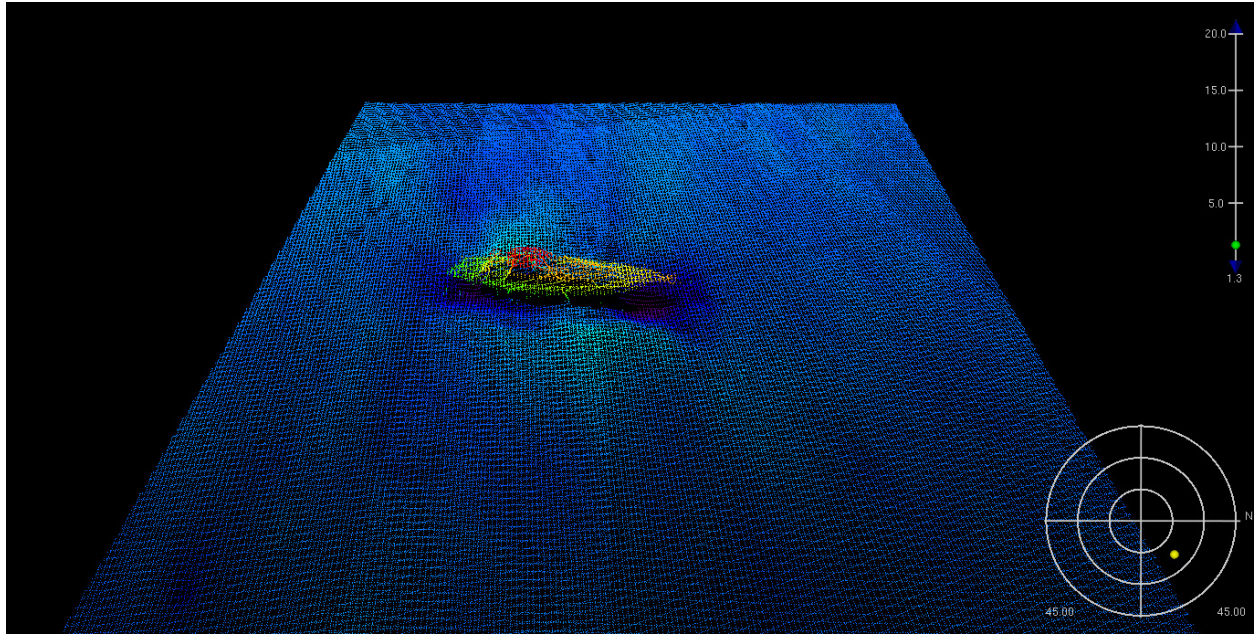


Figure 1.1.3

2 - AWOIS Features

2.1) AWOIS 14093 - 83 ft. Wreck

Primary Feature for AWOIS Item #14093

Search Position: 41° 05' 34.2" N, 072° 43' 26.7" W
Historical Depth: 25.60 m
Search Radius: 100
Search Technique: MB, SSS
Technique Notes: [None]

History Notes:

S00002/02--S-B600-RU--Sunken ship - appears to be covered completely by muddy bottom; Chart 84ft Wk in Lat. 41°05'34.237", Long. 72°43'26.748" (RES 9/21/07).

Survey Summary

Survey Position: 41° 05' 34.2" N, 072° 43' 26.5" W
Least Depth: 25.54 m (= 83.81 ft = 13.968 fm = 13 fm 5.81 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2012-284.00:00:00.000 (10/10/2012)
Dataset: H12480_Features.000
FOID: US 0000078661 00001(0226000133450001)
Charts Affected: 12354_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12480_Features.000	US 0000078661 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 14093	4.79	090.0	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

84ft (12354_1)

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

26m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: EXPSON - 2:shoaler than range of depth of the surrounding depth area
NINFOM - add Wreck
QUASOU - 6:least depth known
SORDAT - 20121010
SORIND - US,US,graph,H12480
TECSOU - 3:found by multi-beam
VALSOU - 25.544 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Ensoified with object detection MBES. AWOIS coverage parameters were met. Feature was found as charted. Field unit submitted feature as an OBTRN. However, the object was change to its original feature type by the SAR reviewer. Defer to compilation for final charting disposition.

Compile: Delete charted Wreck and add 83 Wreck

Feature Images

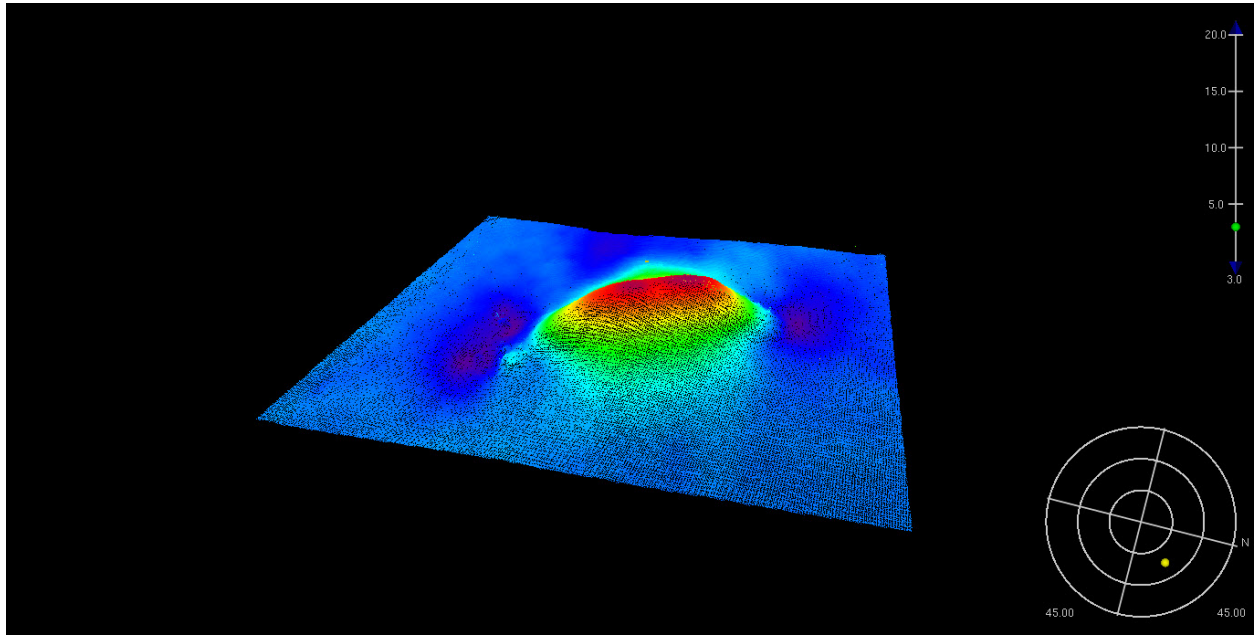


Figure 2.1.1

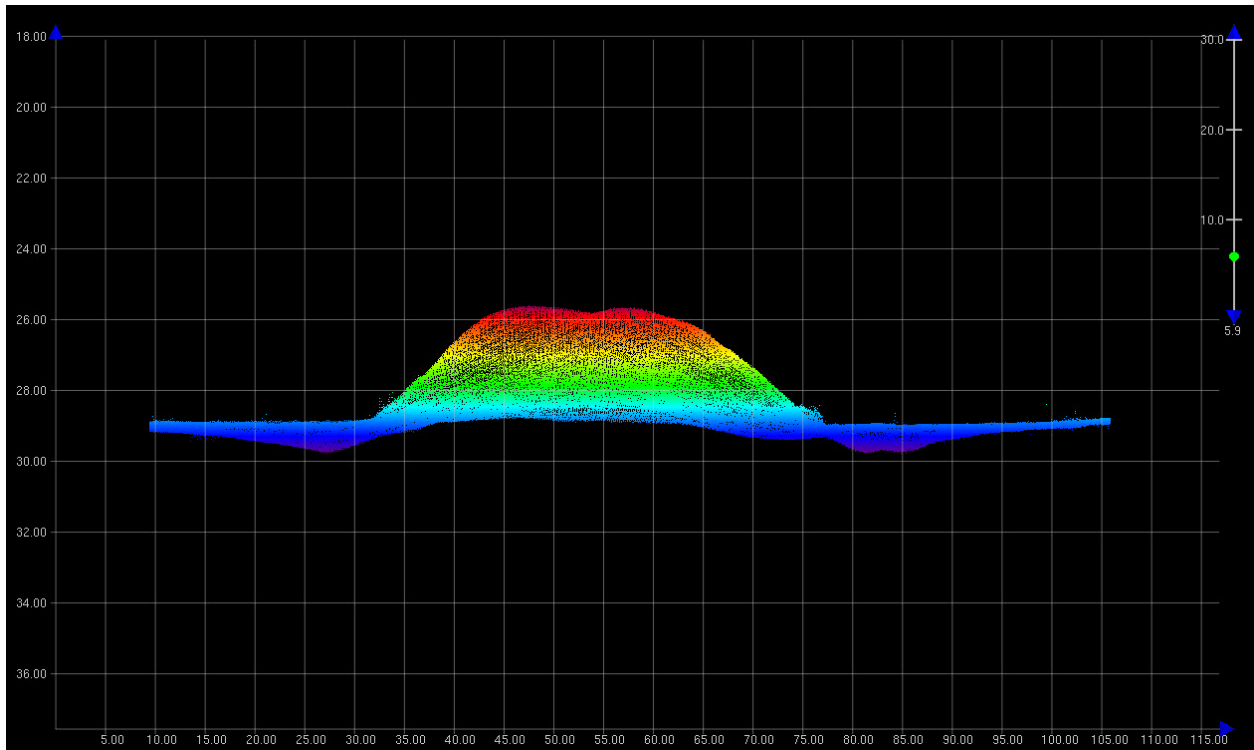


Figure 2.1.2

APPROVAL PAGE

H12480

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

- H12480_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12480_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: _____

For: LT Abigail Higgins, NOAA
Chief, Atlantic Hydrographic Branch