

H13094

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H13094

LOCALITY

State(s): Virginia

General Locality: Virginia/North Carolina

Sub-locality: NW sheet, 23NM offshore of False Cape, VA

2018

CHIEF OF PARTY
LCDR Matthew Jaskoski, NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13094

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): **Virginia**

General Locality: **Virginia/North Carolina**

Sub-Locality: **NW sheet, 23NM offshore of False Cape, VA**

Scale: **40000**

Dates of Survey: **02/11/2018 to 03/15/2018**

Instructions Dated: **01/05/2017**

Project Number: **OPR-D304-FH-18**

Field Unit: **NOAA Ship Ferdinand R. Hassler**

Chief of Party: **LCDR Matthew Jaskoski, NOAA**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter**

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 Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>.

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Descriptive Report to Accompany Survey H13094

Project: OPR-D304-FH-18

Locality: Virginia/North Carolina

Sublocality: NW sheet, 23NM offshore of False Cape, VA

Scale: 1:40000

February 2018 - March 2018

NOAA Ship Ferdinand R. Hassler

Chief of Party: LCDR Matthew Jaskoski, NOAA

A. Area Surveyed

This survey was conducted southeast of the Chesapeake Bay entrance, approximately 23 nautical miles offshore of False Cape, Virginia

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
36° 49' 46.56" N 75° 28' 38.64" W	36° 41' 4.56" N 75° 13' 13.08" W

Table 1: Survey Limits

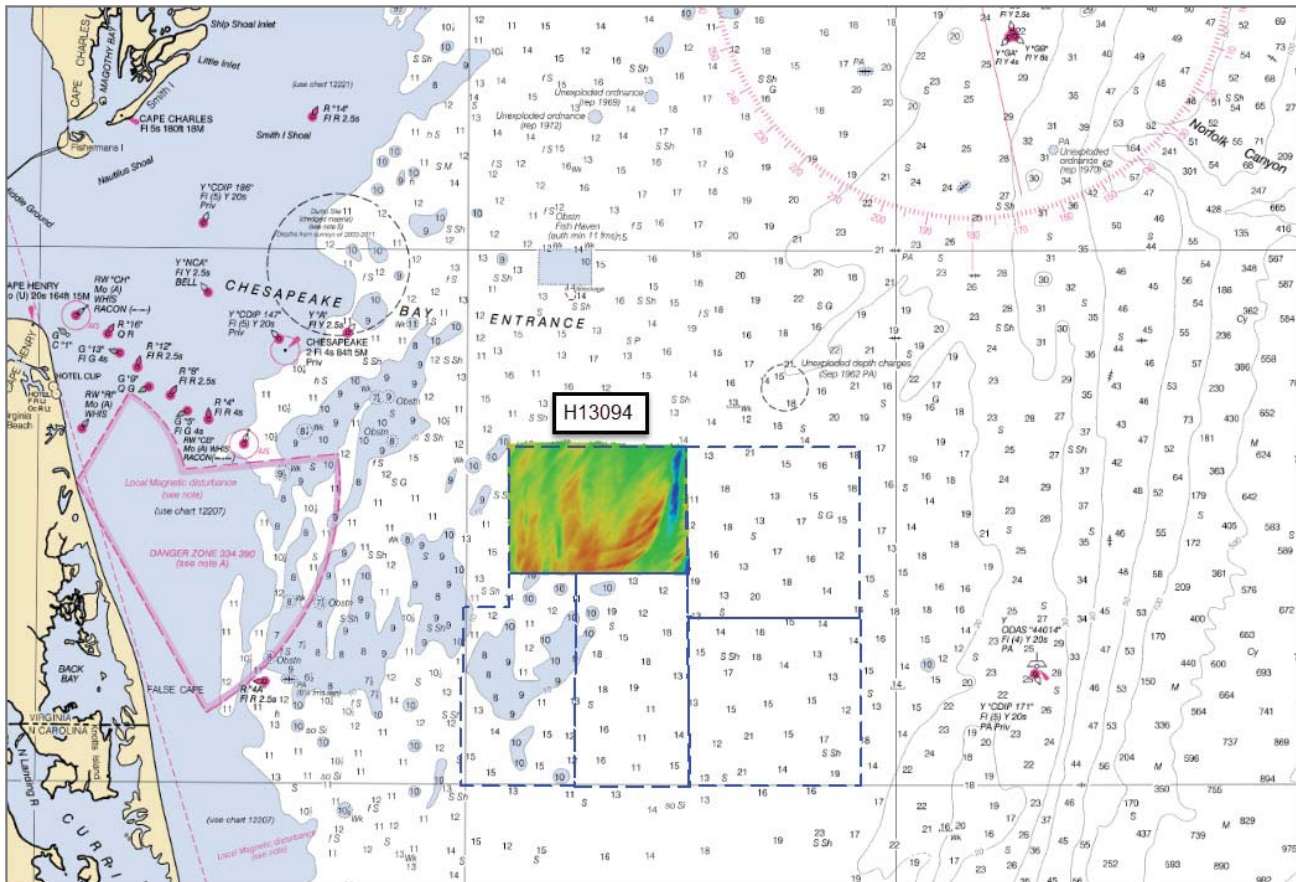


Figure 1: H13094 Survey Limits

Data were acquired to the survey limits in accordance with the requirements in the Project Instructions and the 2017 NOS Hydrographic Surveys Specifications and Deliverables (HSSD).

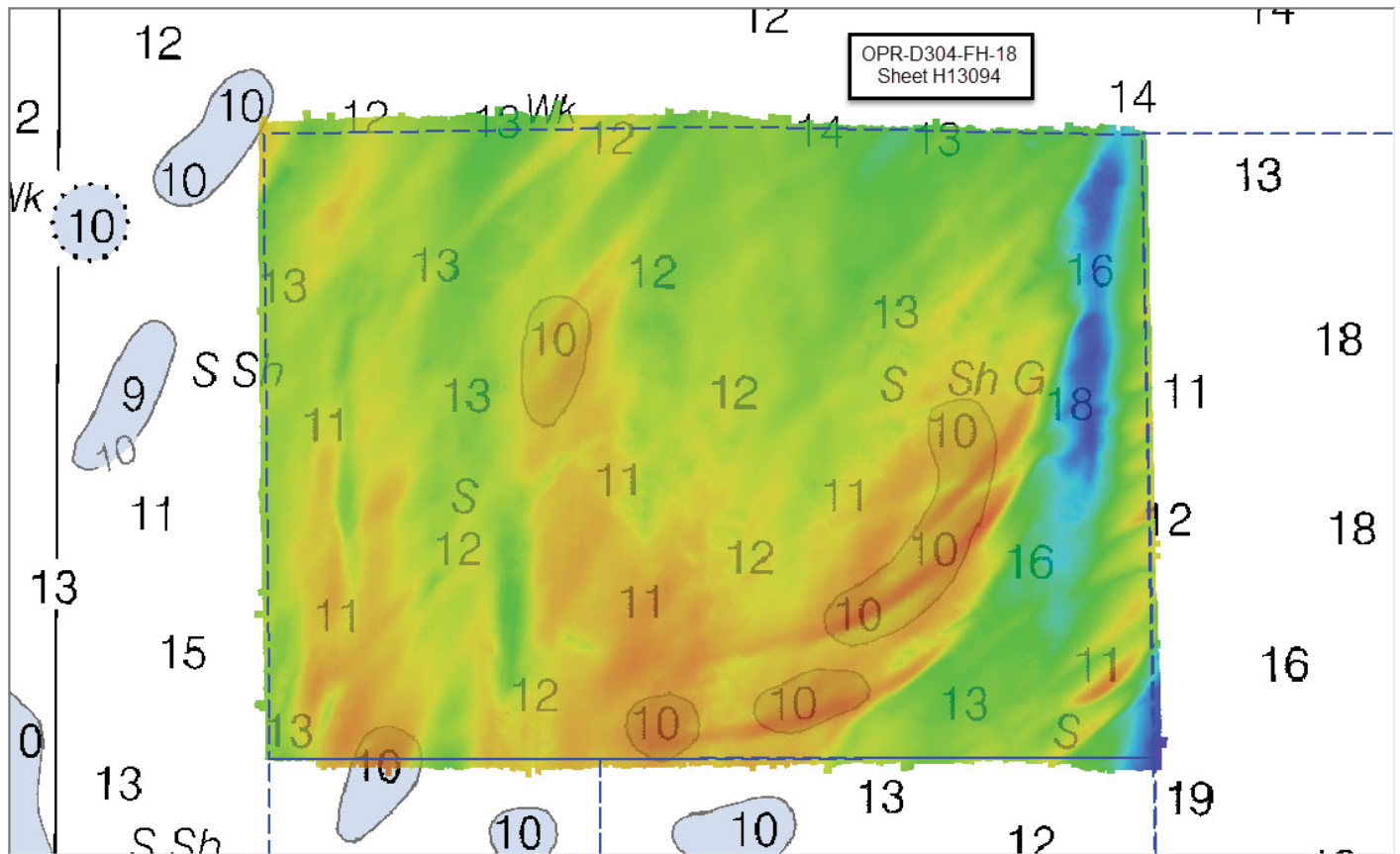


Figure 2: H13094 survey extents with respect to survey limits

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. This survey covers approximately 74 SNM of the project area in the approach to Hampton Roads, home to the world's largest naval base and a port that annually receives over 5,000 arrivals / departures of deep-draft vessels which continually increase in size over time. Within the survey area, there are currently reported depths that are comparable to those of the dredged Thimble Shoal Channel. A vessel ballasted for little-under keel clearance in the channel could risk grounding in the working area if uncharted shoaling has occurred. There are likely substantial changes to the seabed since the most recent partial-bottom coverage survey, which took place in the 1930s. This survey is a critical part of an ongoing, multi-year hydrographic survey covering the approaches to Chesapeake Bay to support the safety of commerce and monitor the habitat and the environmental health of the region.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

All MBES data was acquired to Complete Coverage requirements as specified in the 2017 HSSD.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey area	Complete Coverage (Refer to HSSD Section 5.2.2.3)
All waters in survey area	Acquire backscatter data during all multibeam data acquisition (Refer to HSSD Section 6.2)

Table 2: Survey Coverage

The original requirement in the Project Instructions of Object Detection Coverage (HSSD 5.2.2.2) was changed to Complete Coverage (HSSD 5.2.2.3) based on a request to HSD OPS on 2/15/2018. After the draft hydro health model and the water depths in the assigned area, it was determined that a Complete Coverage survey was more appropriate. See also Appendix II: Supplemental Survey Records & Correspondence.

Complete Coverage requirements were met for data acquisition on the entirety of the H13094 survey area as specified in the 2017 HSSD.

Two (2) holidays were found outside of the H13094 sheet limits but within the MBES data coverage. One holiday in the NE corner of the sheet is covered by previous survey H12502. The other holiday, also outside the H13094 sheet limits, will be covered by the survey of H13096 which is also assigned as part of the OPR-D304-FH-18 project area. Please see images below.

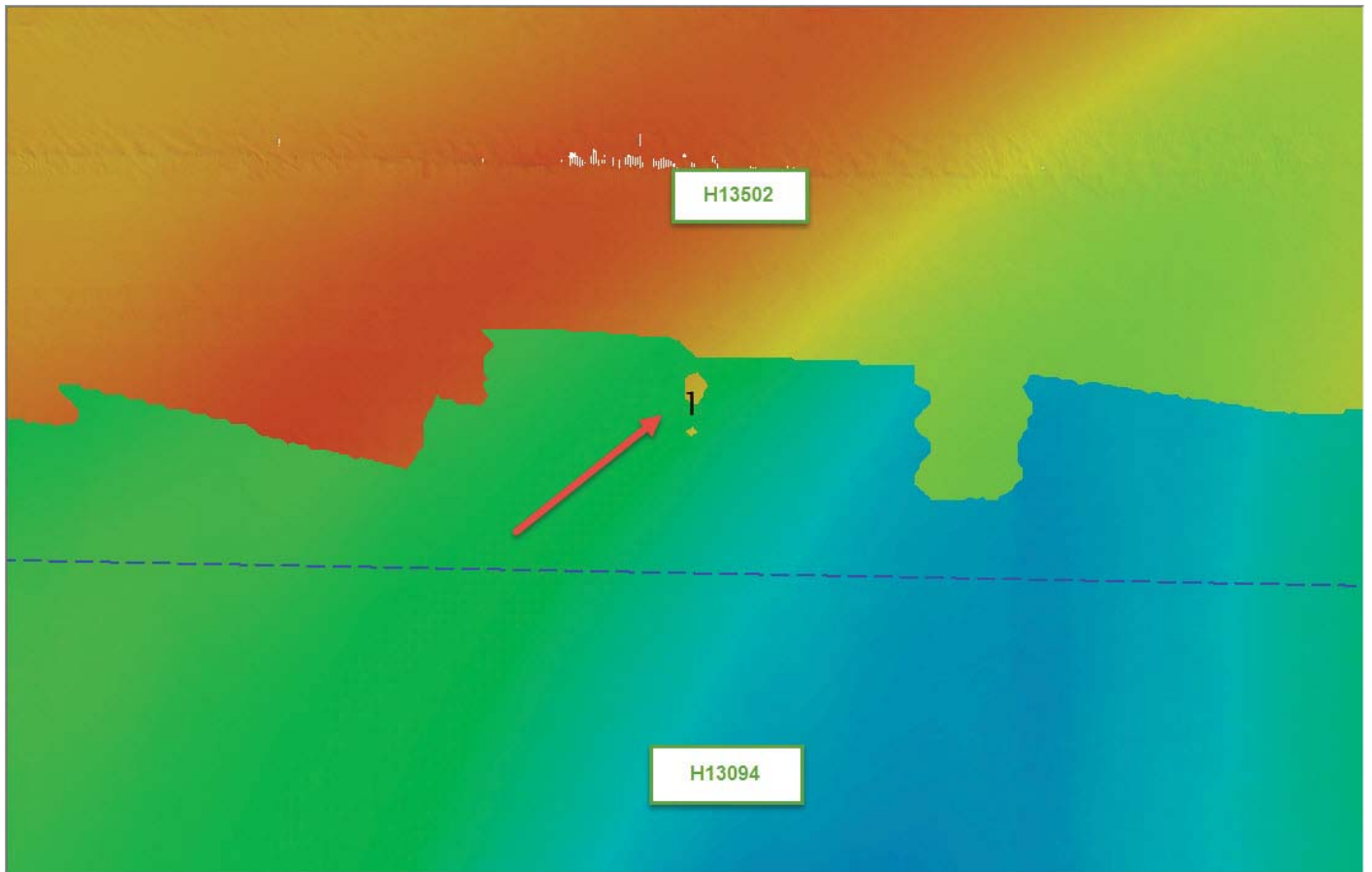


Figure 3: Holiday in the H13094 - H12502 junction area

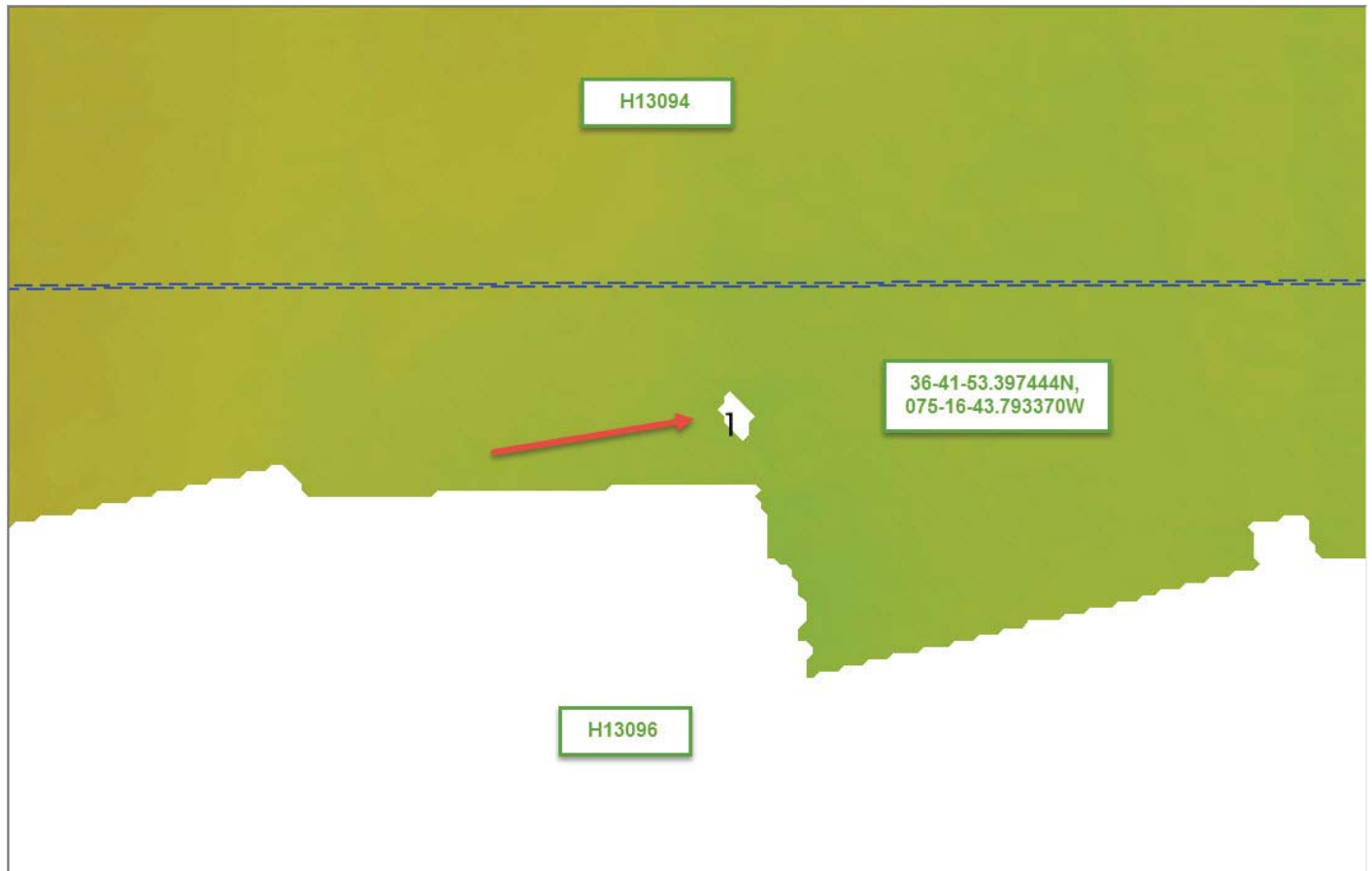


Figure 4: Holiday in the H13094 - H13095 junction area

A.6 Survey Statistics

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

	HULL ID	<i>S250</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	1329.4	1329.4
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	0	0
	SBES/MBES Crosslines	116.0	116
	Lidar Crosslines	0	0
Number of Bottom Samples			12
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			73.9

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
02/11/2018	42
02/12/2018	43

Survey Dates	Day of the Year
02/13/2018	44
02/14/2018	45
02/15/2018	46
02/16/2018	47
02/25/2018	56
02/26/2018	57
02/27/2018	58
02/28/2018	59
03/01/2018	60
03/14/2018	73
03/15/2018	74

Table 4: Dates of Hydrography

All survey acquisition lines were run with the dual-head Reson 7125 multibeam echo sounder system. Linear nautical mile calculations were performed by taking one half (1/2) of the sum of port and starboard total linear nautical miles (LMN).

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>S250</i>
LOA	37.7 meters
Draft	3.77 meters

Table 5: Vessels Used

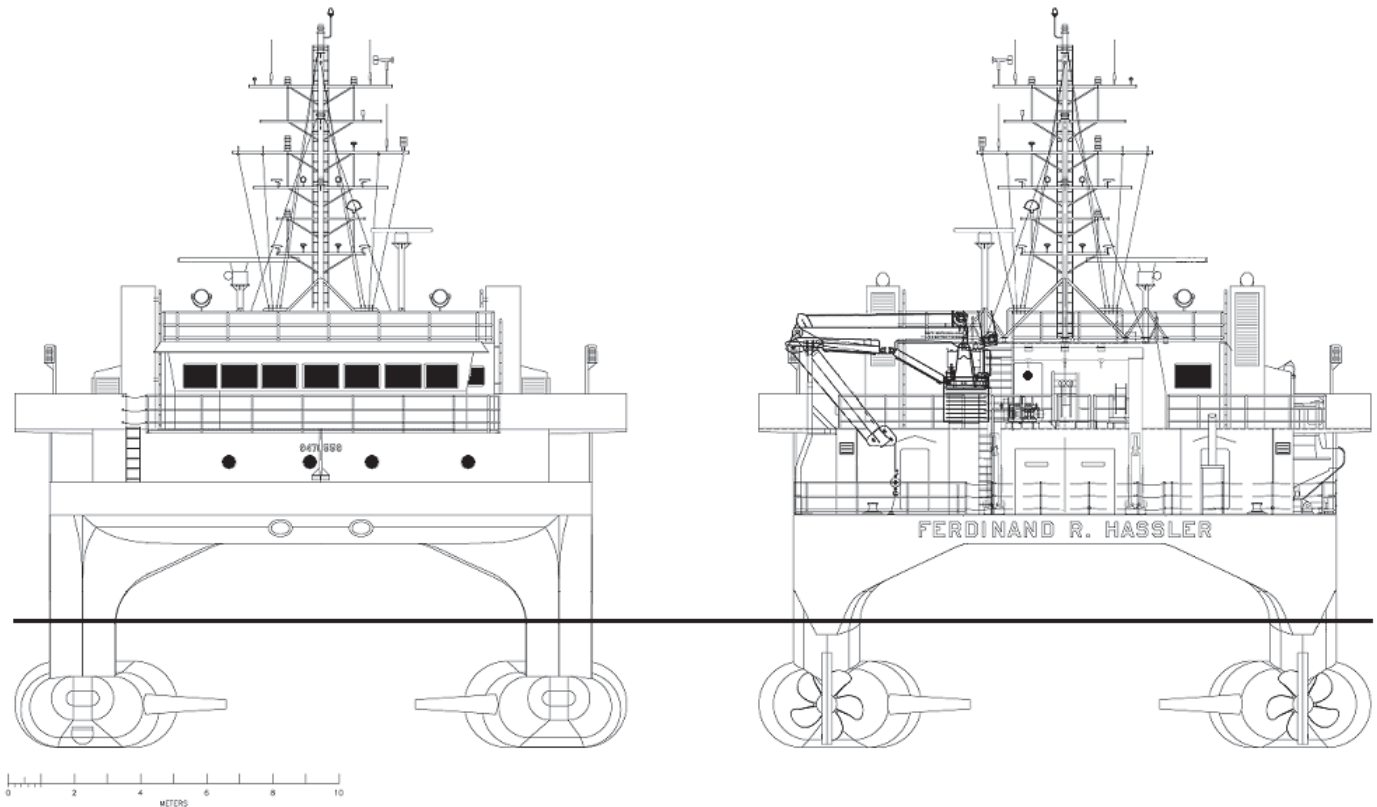


Figure 5: NOAA Ship Ferdinand R. Hassler

NOAA Ship FERDINAND R. HASSLER (S250) acquired all soundings during operations for H13094

B.1.2 Equipment

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

Manufacturer	Model	Type
ODIM Brooke Ocean	MVP200	Sound Speed System
Applanix	POS MV 320 v5	Positioning and Attitude System
Teledyne RESON	SeaBat 7125 SV	MBES
Teledyne RESON	SVP 70	Sound Speed System
ODIM Brooke Ocean	Micro-CTD	Conductivity, Temperature, and Depth Sensor

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 8.73% of mainscheme acquisition.

To evaluate crossline agreement, two surfaces of 2-meter grid resolution were created; one from the crossline depths, the other from the mainscheme depths. These two surfaces were differenced and statistics generated using the Pydro Compare Surfaces tool and results reviewed in CARIS HIPS & SIPS. The statistical analysis of the differences between the mainscheme and crossline surfaces is shown below. The minimum and maximum depth difference between H13094 mainscheme and crossline surfaces is -1.6 and 0.50 meters respectively. The average difference between the surfaces is 0.02 meters with a standard deviation of 0.10 meters; 95% of nodes agree within +/- 0.19 meters of the mean.

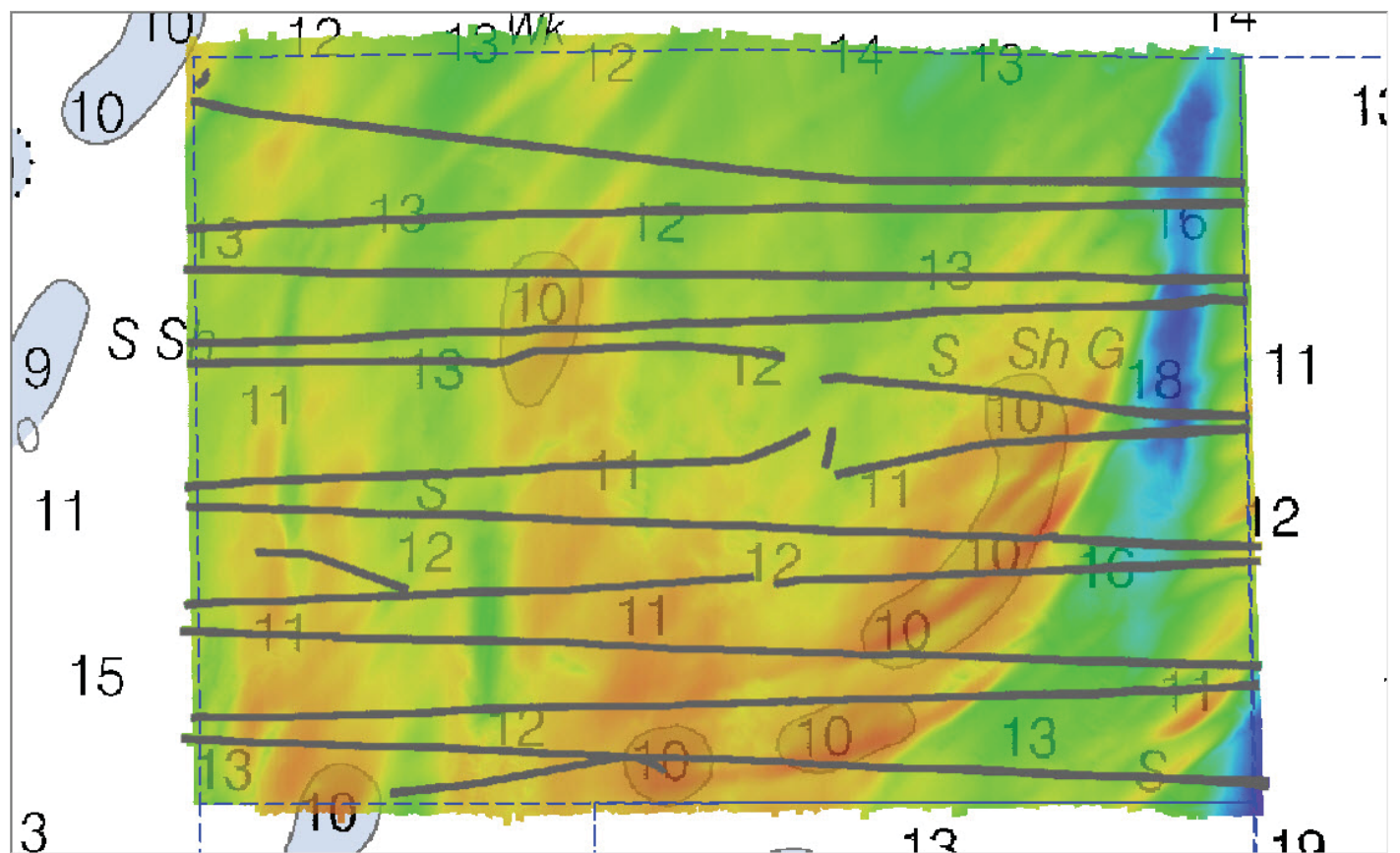


Figure 6: H13094 Crossline Coverage

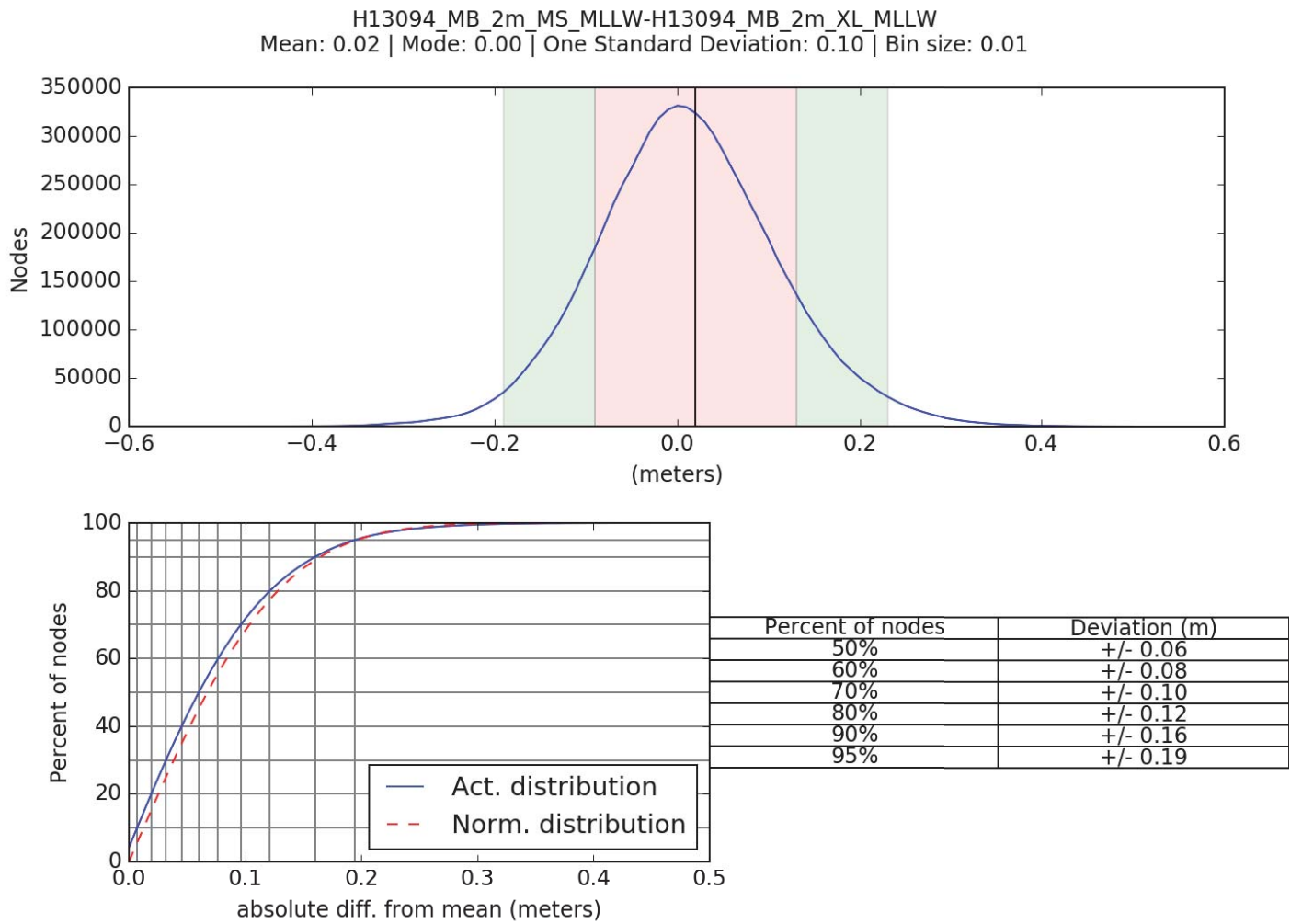


Figure 7: H13094 Crossline difference statistical analysis

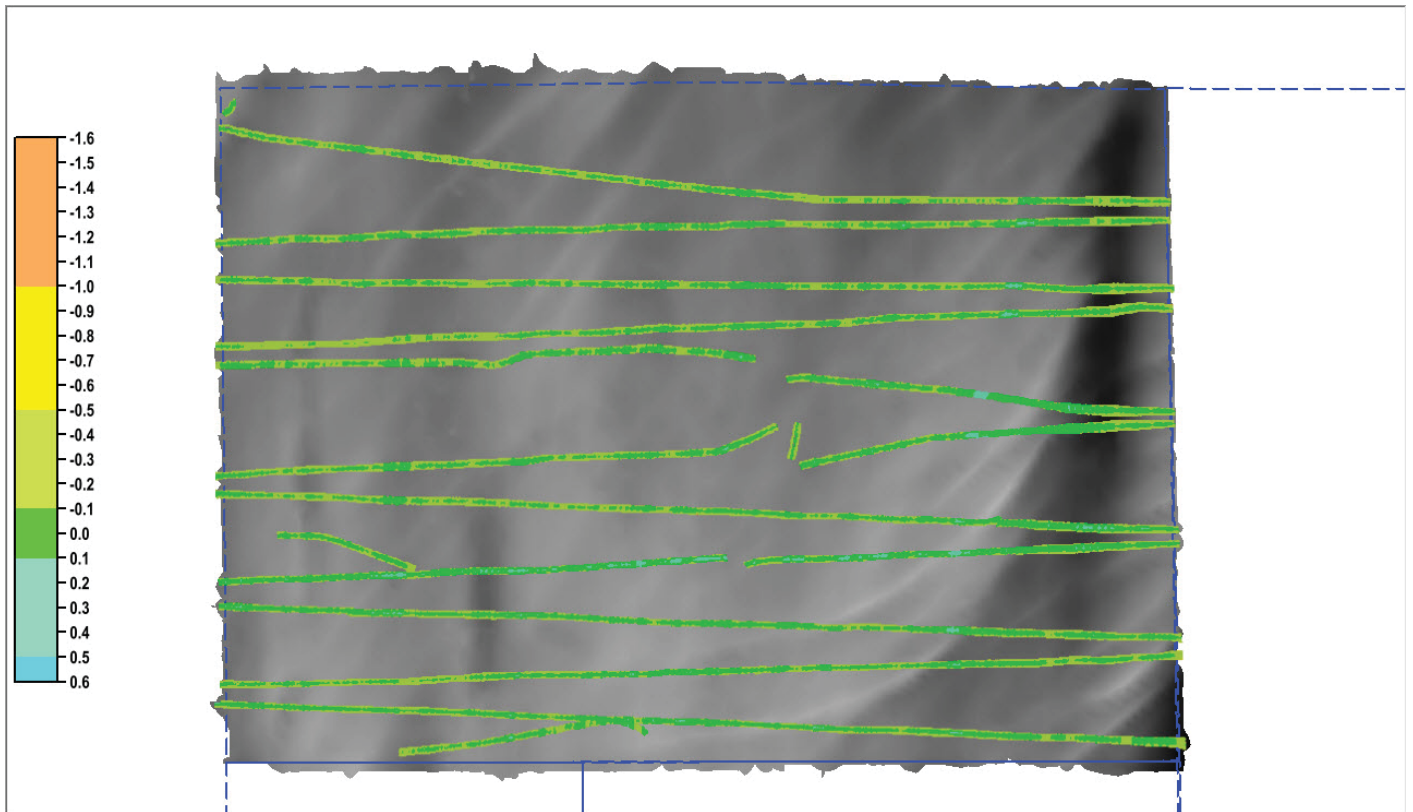


Figure 8: H13094 Mainscheme - Crosslines Difference

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0 meters	0.099 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
S250	1.0 meters/second	1.0 meters/second	0.5 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

B.2.3 Junctions

H13094 junctions with H12307 acquired by the NOAA Ship THOMAS JEFFERSON in 2011, H12502 and H12503 acquired by the NOAA Ship FERDINAND R. HASSLER in 2012, and H12575 acquired by the NOAA Ship FERDINAND R. HASSLER in 2013. Junction analysis was performed between H13094 and each adjacent survey to compare surfaces of equal resolutions using the Pydro Compare Surfaces tool to generate the difference surfaces and statistics and using Caris to display the difference surfaces for review.

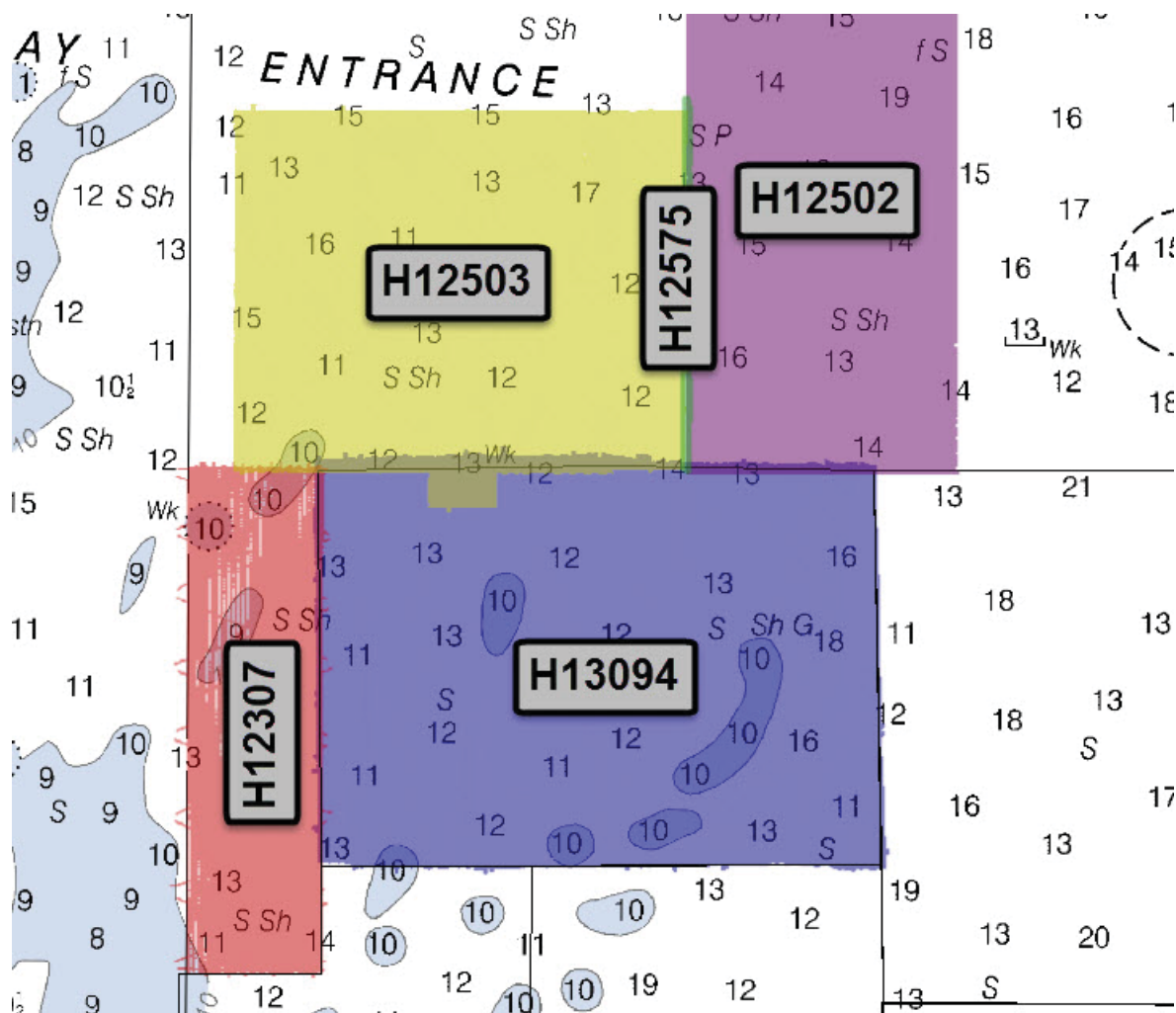


Figure 9: H13094 Junction Overview

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12307	1:40000	2011	NOAA Ship THOMAS JEFFERSON	W
H12575	1:20000	2013	NOAA Ship FERDINAND R. HASSLER	N
H12502	1:40000	2012	NOAA Ship FERDINAND R. HASSLER	N
H12503	1:40000	2012	NOAA Ship FERDINAND R. HASSLER	NW

Table 9: Junctioning Surveys

H12307

The minimum and maximum depth difference between H13094 and H12307 is -0.76 and 0.66 meters respectively. The average difference is 0.09 meters with a standard deviation of 0.12 meters; 95% of the differenced nodes are within +/- 0.23 meters of the mean. Junction overlap ranges from ~110m to ~220m.

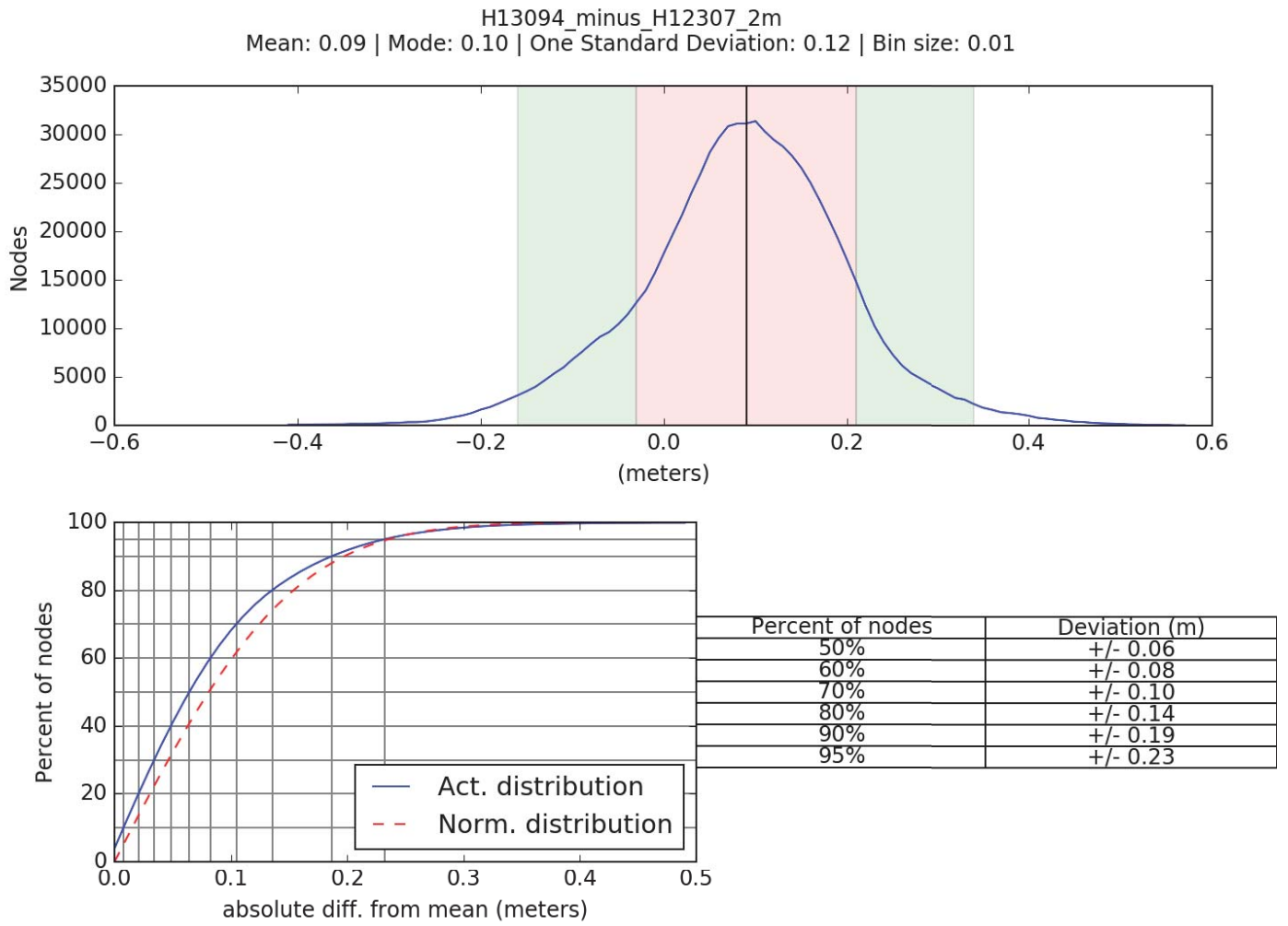


Figure 10: Difference Surface Statistics for H13094 and H12307

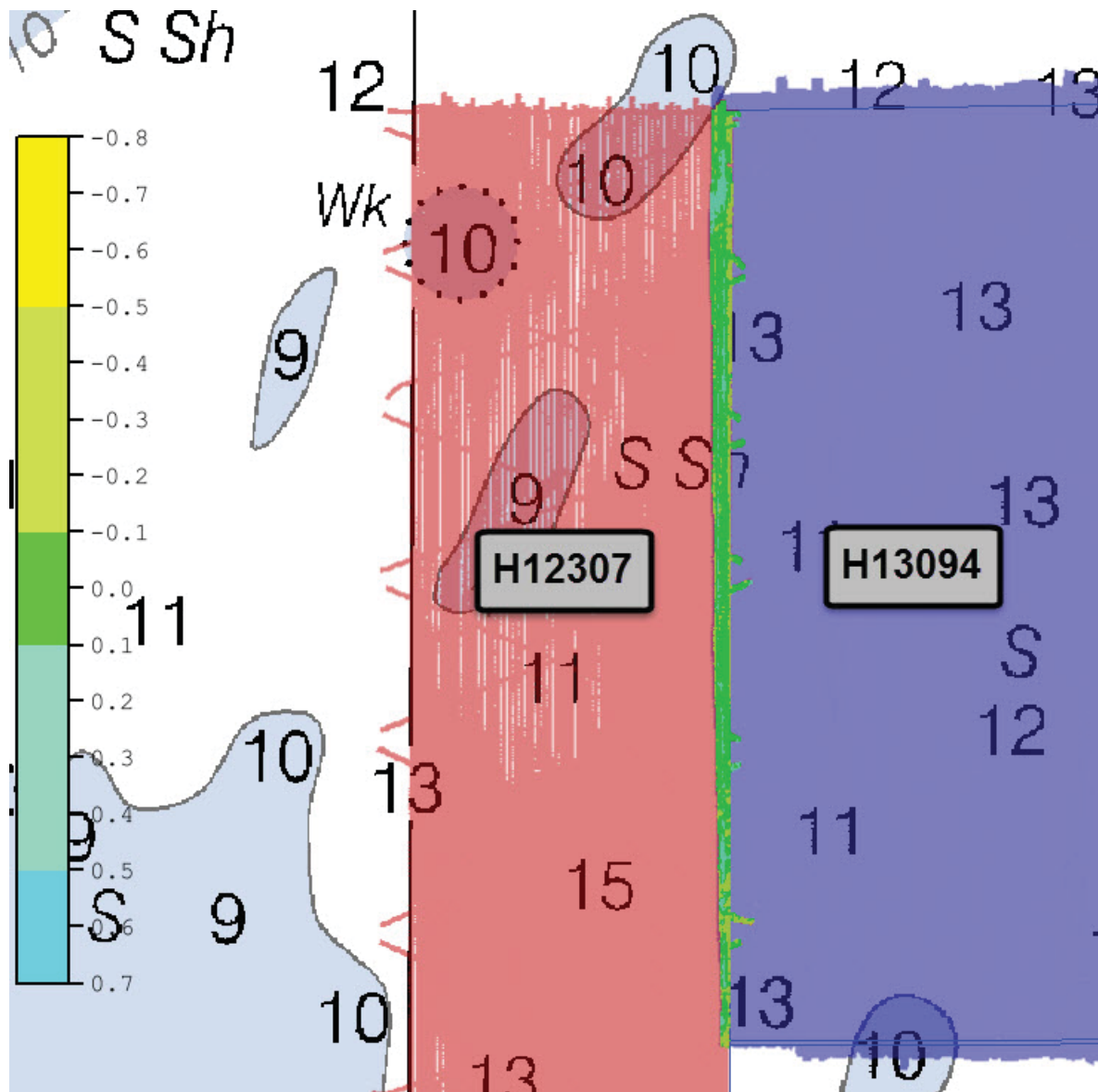


Figure 11: Junction between H13094 and H12307

H12575

The minimum and maximum depth difference between H13094 and H12575 is -1.01 and 0.48 meters respectively. The average difference is -0.17 meters with a standard deviation of 0.18 meters; 95% of the differenced nodes are within +/- 0.34 meters of the mean. Junction overlap ranges from ~380 to ~400m. A visual inspection of the H12575 surface shows large position and attitude related artifacts which is likely the cause of the large offsets.

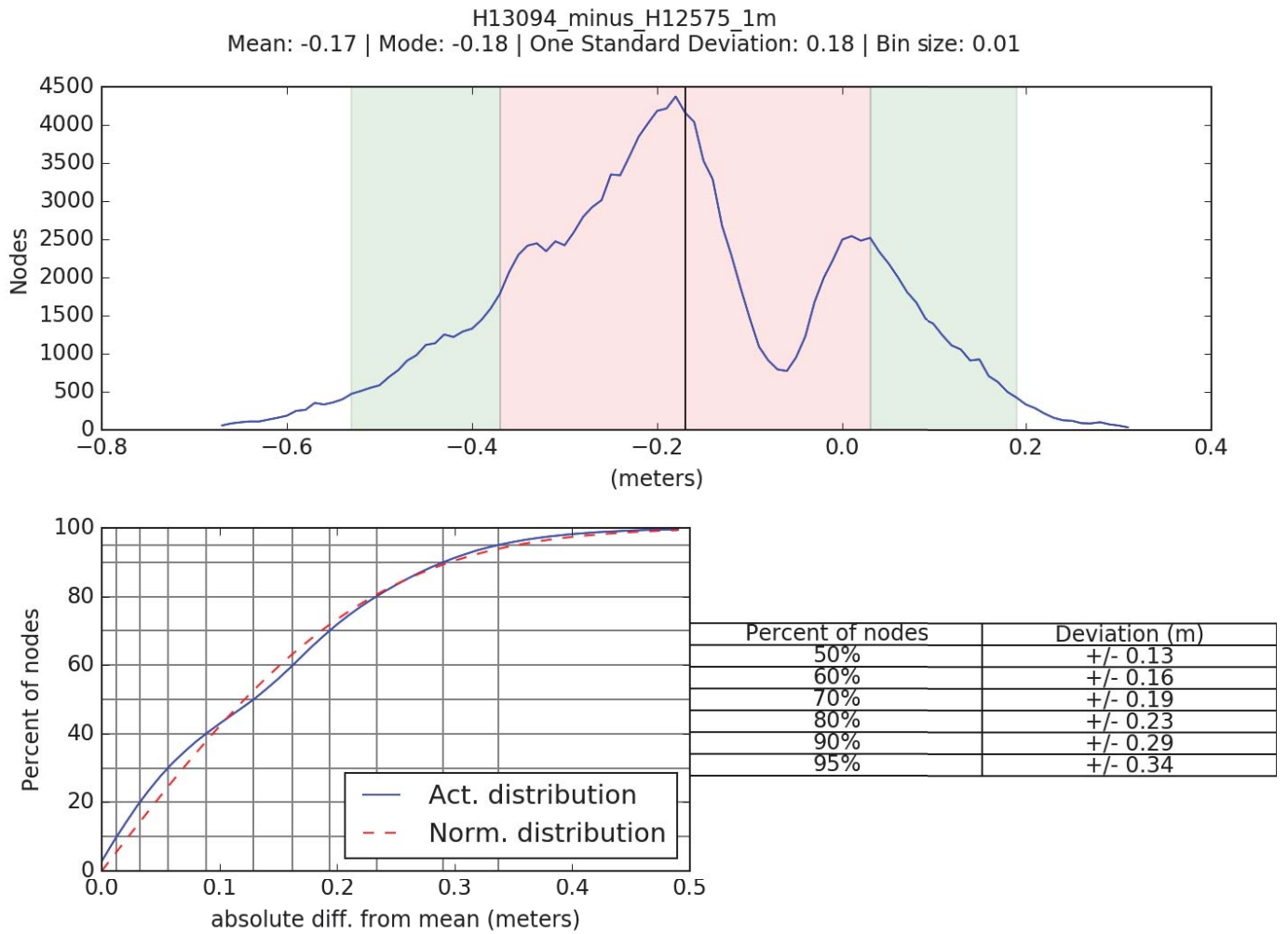


Figure 12: Difference Surface Statistics for H13094 and H12575

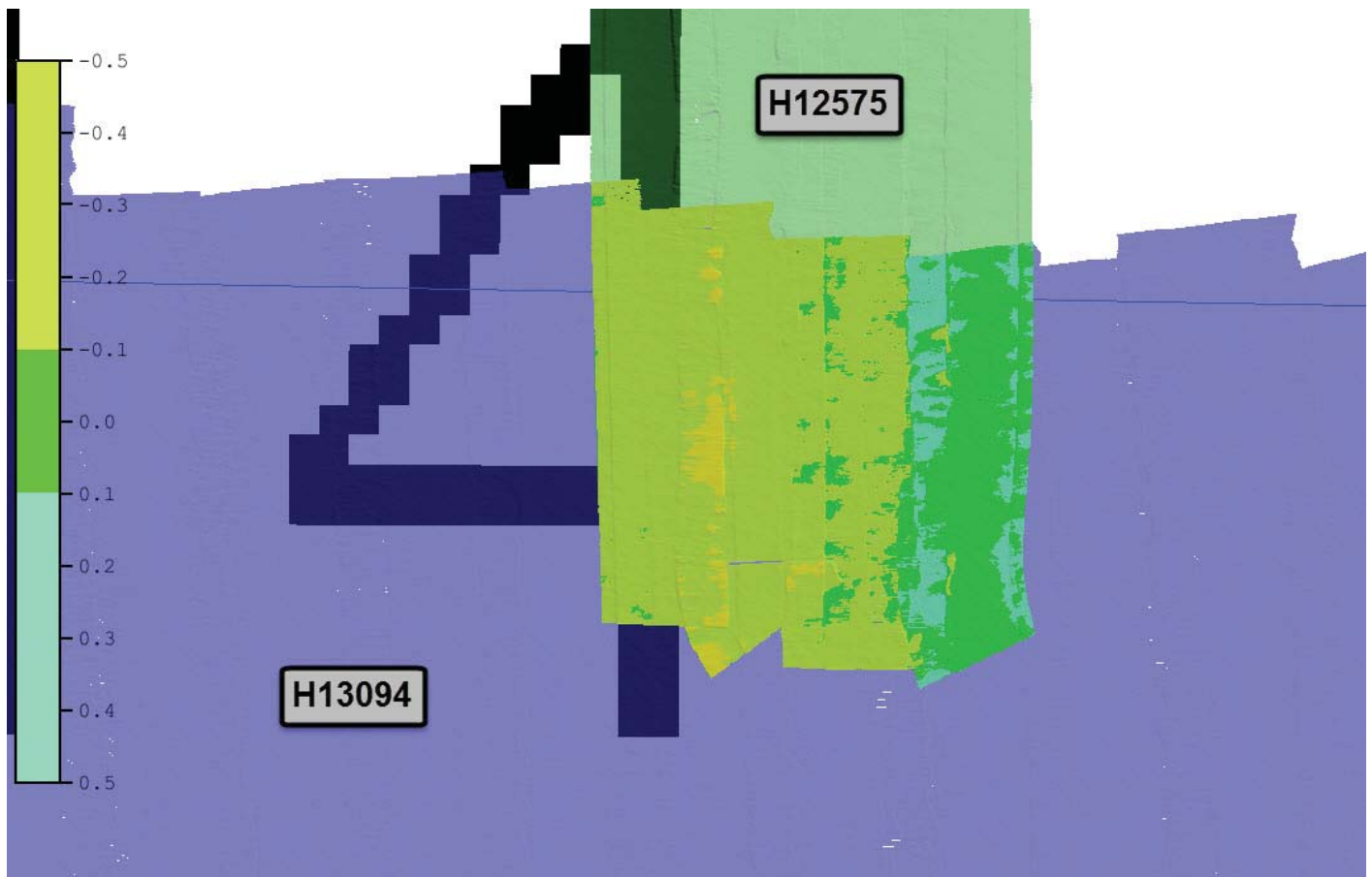


Figure 13: Junction between H13094 and H12575

H12502

The minimum and maximum depth difference between H13094 and H12502 is -2.08 and 1.32 meters respectively. The average difference is -0.11 meters with a standard deviation of 0.12 meters; 95% of the differenced nodes are within +/- 0.24 meters of the mean. Junction overlap ranges from ~200m to ~450m.

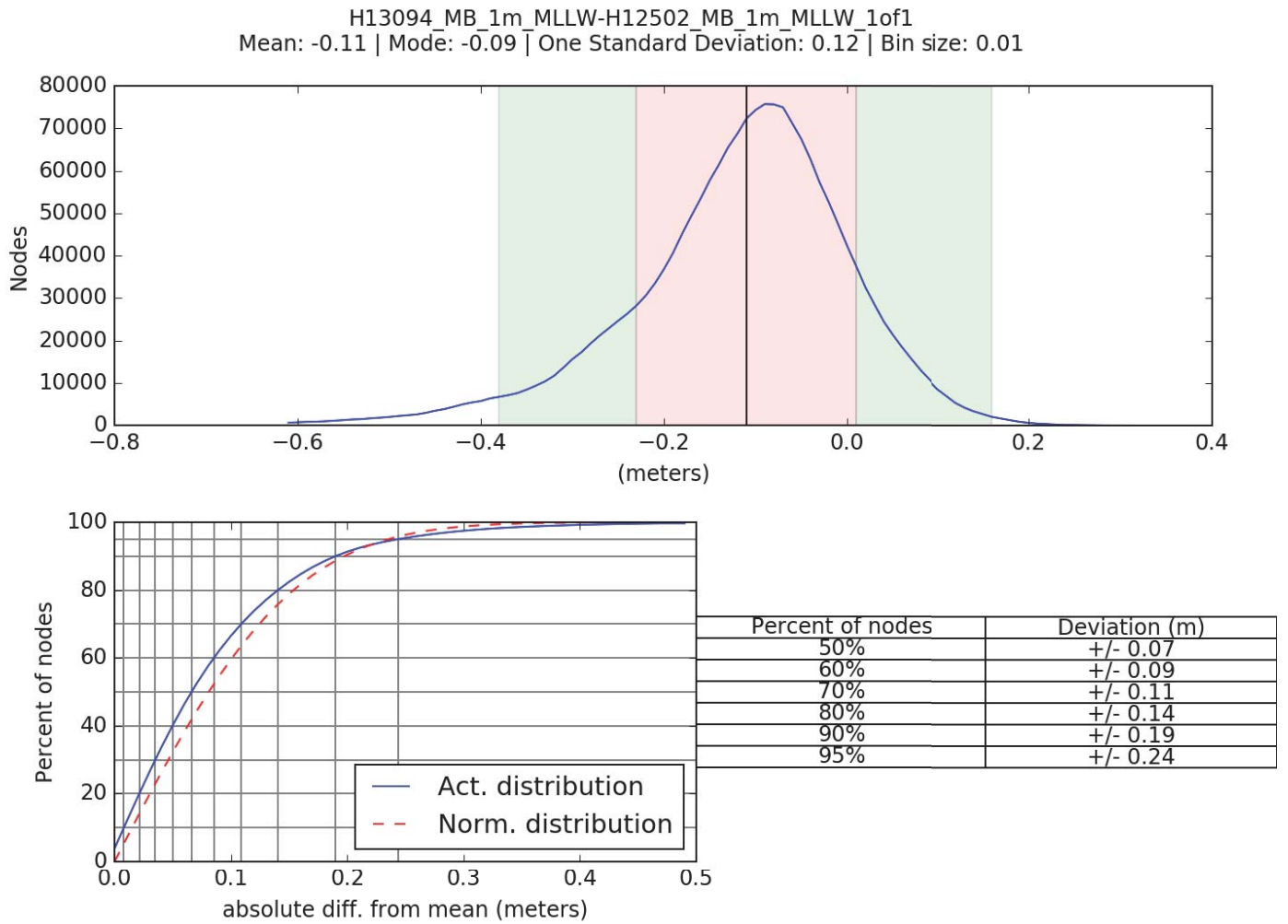


Figure 14: Junction between H13094 and H12502



Figure 15: Junction between H13094 and H12502

H12503

The minimum and maximum depth difference between H13094 and H12503 is -2.25 and 1.32 meters respectively. The average difference is -0.05 meters with a standard deviation of 0.09 meters; 95% of the differenced nodes are within +/- 0.18 meters of the mean. Junction overlap ranges from ~180m to ~1,591m.

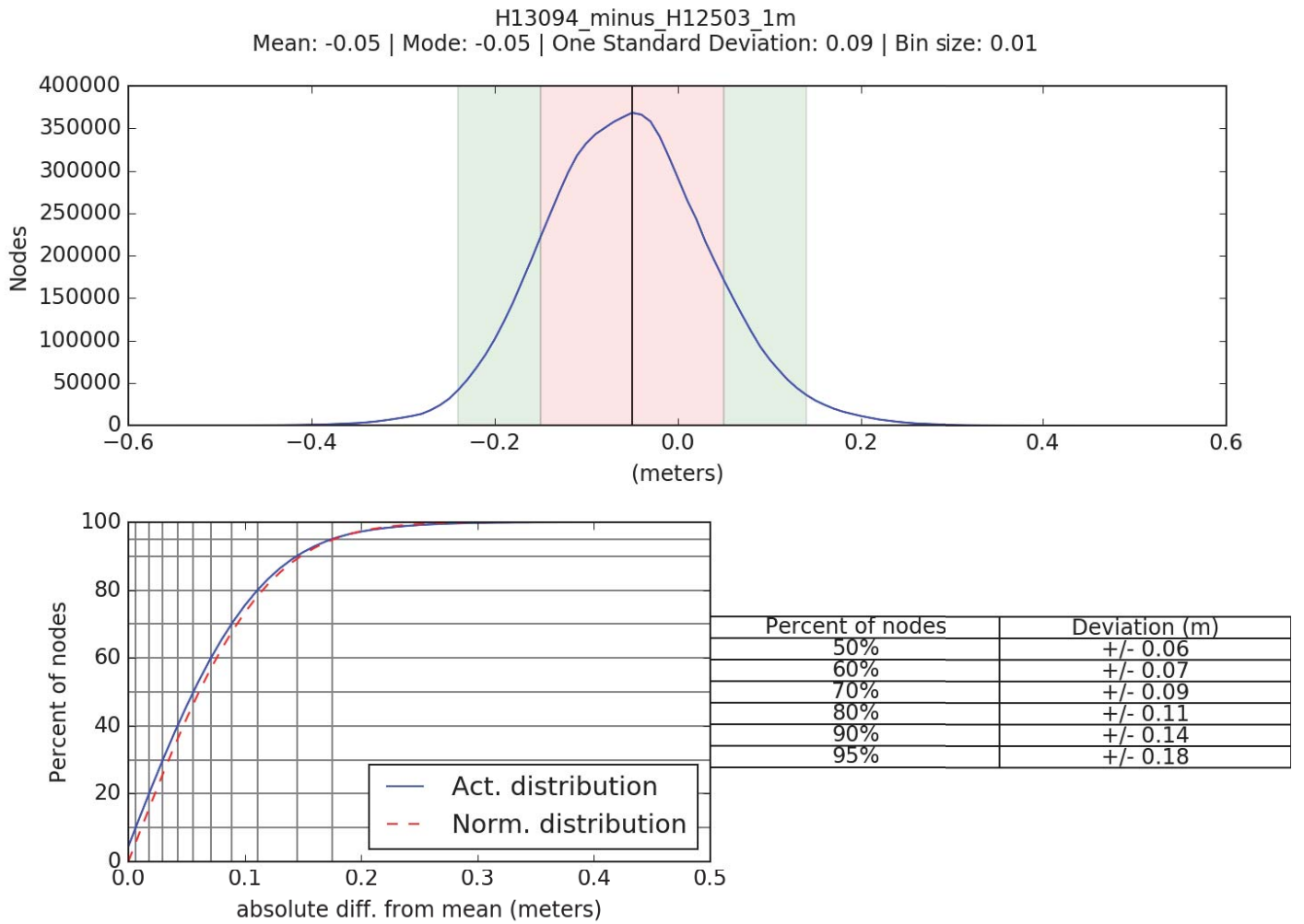


Figure 16: Difference Surface Statistics for H13094 and H12503

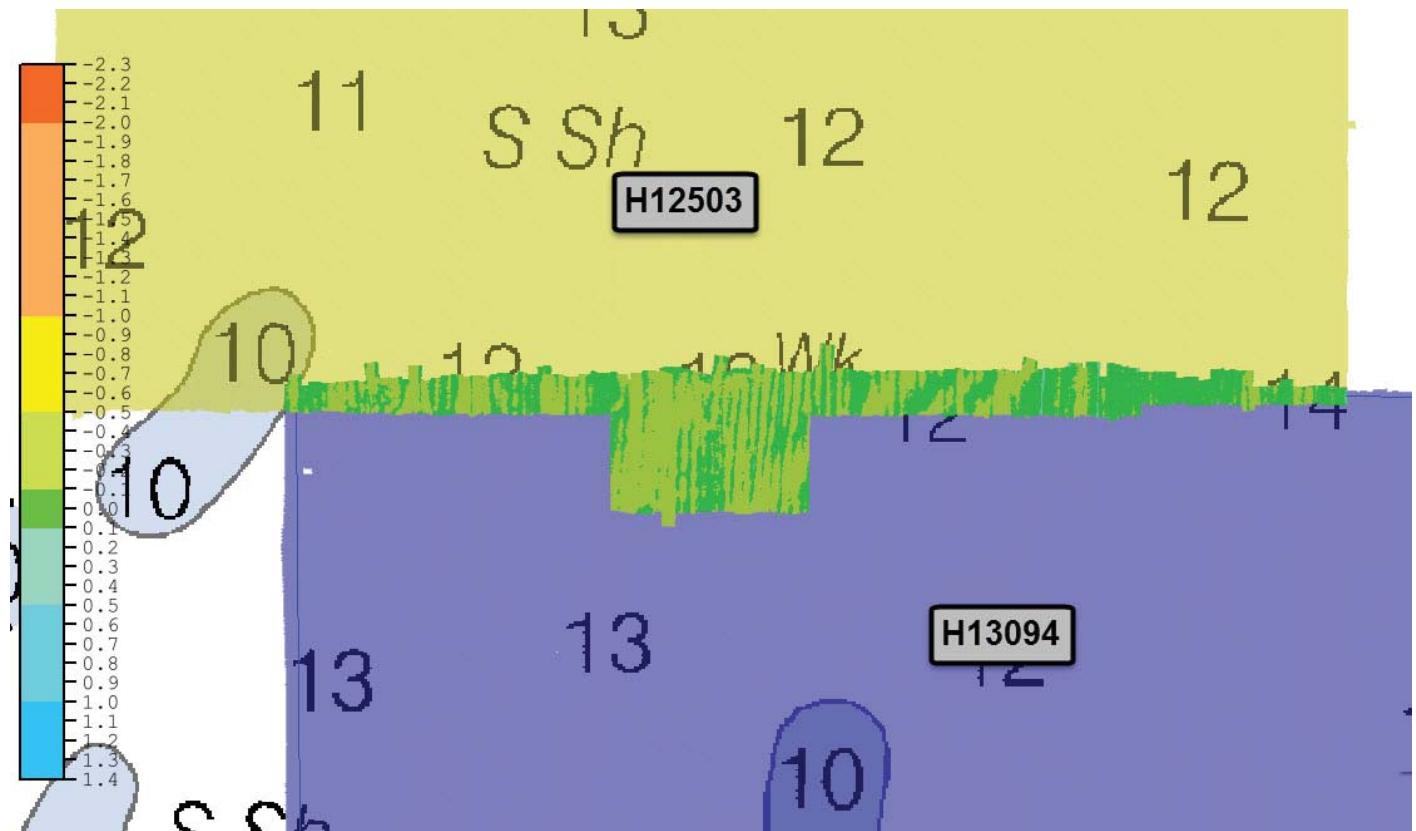


Figure 17: Junction between H13094 and H12503

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

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

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 acquired approximately every 0.5-2 hours via Moving Vessel Profiler.

During acquisition operations a total of 253 sound speed measurements were collected using the Moving Vessel Profiler (MVP 200 with Micro-CTD). Sound speed corrections were applied in CARIS HIPS/SIPS using the Nearest in Distance Within Time (NIDWT) option with a maximum time of 4 hours.

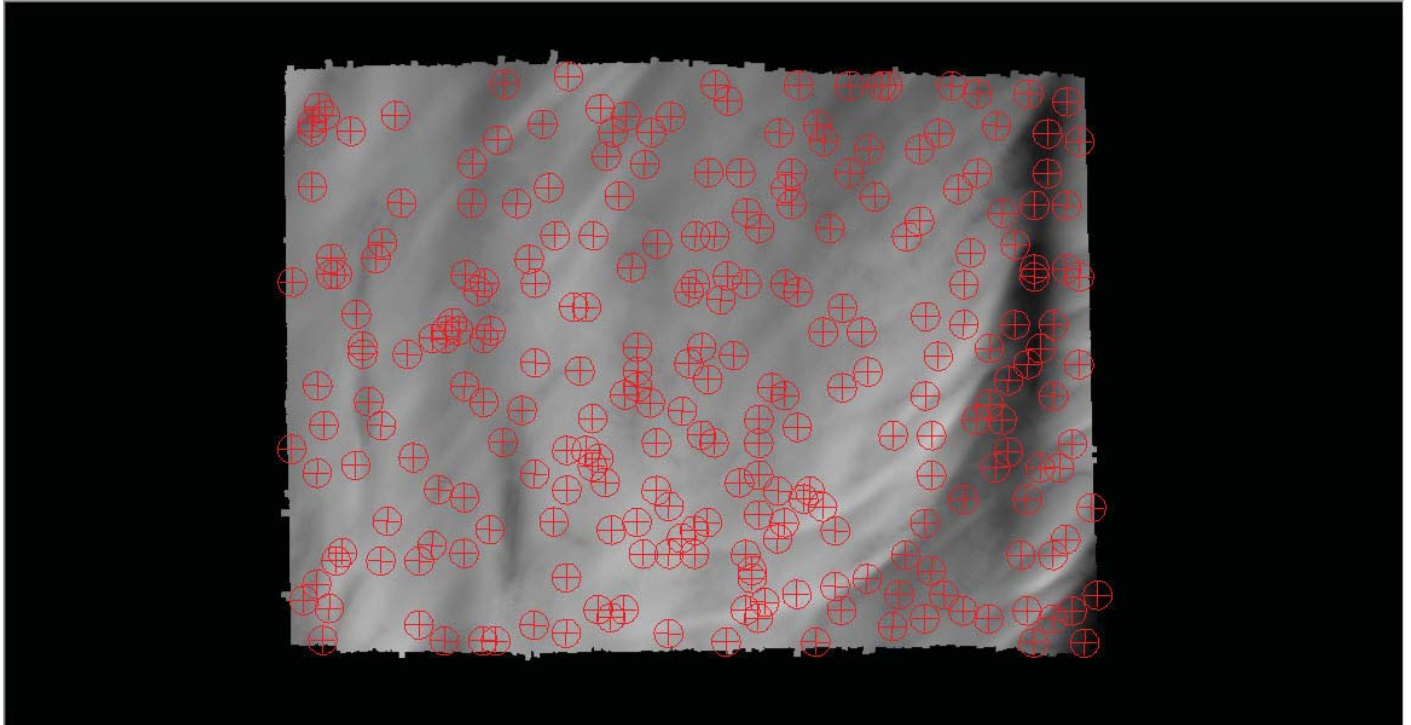


Figure 18: H13094 sound speed profile locations

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

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 recorded within the Reson .s7k files. Backscatter was processed in accordance with Hydrographic Technical Directive (HTD) 2017-4 using the QPS Fledermaus GeoCoder Toolbox software.

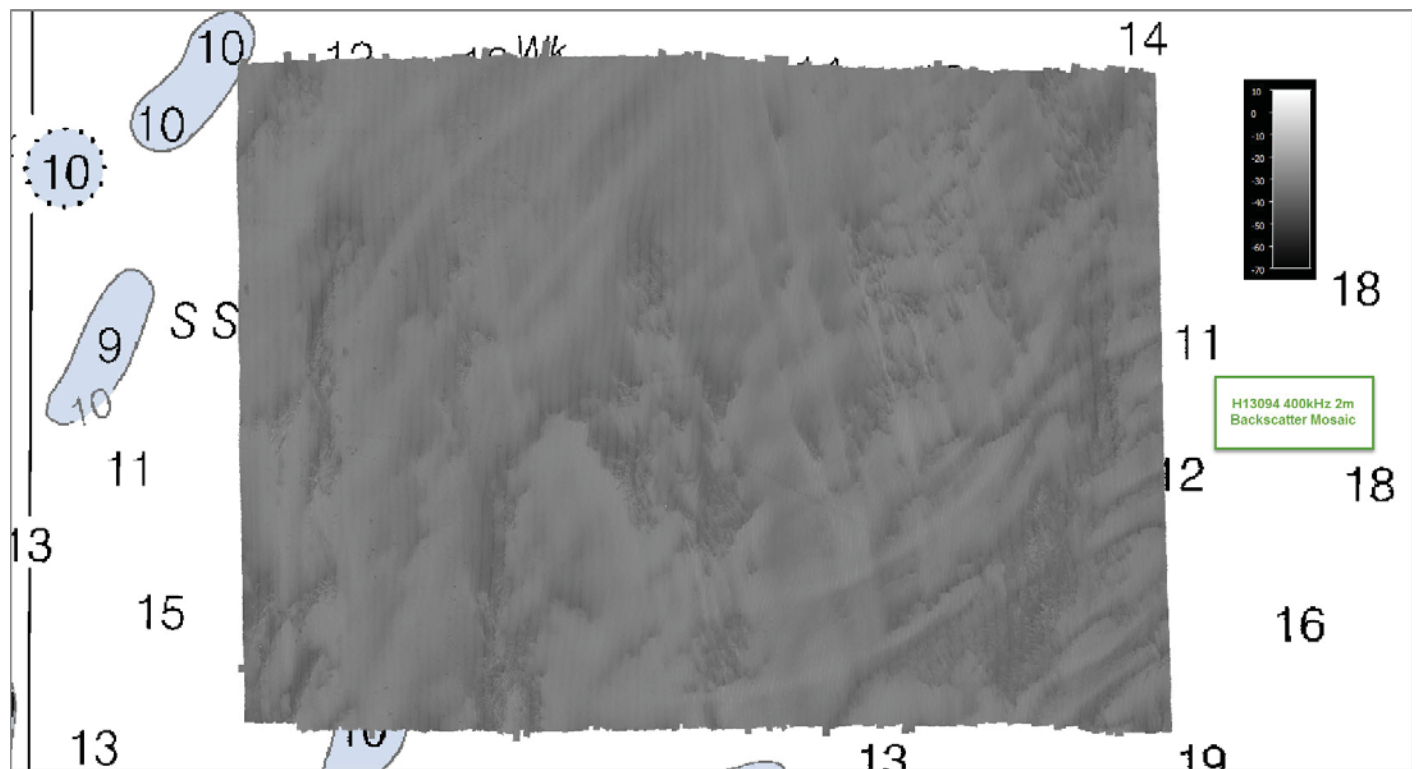


Figure 19: H13094 400kHz 2m Mosaic

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

Manufacturer	Name	Version
Caris	HIPS/SIPS	10.3.3

Table 10: Primary bathymetric data processing software

The following software program was the primary program used for imagery data processing:

Manufacturer	Name	Version
Fledermaus	FMGT	7.7.6

Table 11: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA Profile Version 5.7.

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
H13094_MB_VR_MLLW	CARIS VR Surface (CUBE)	Variable Resolution meters	18.1 meters - 36.6 meters	NOAA_VR	Complete MBES
H13094_MB_VR_MLLW_Final	CARIS VR Surface (CUBE)	Variable Resolution meters	18.1 meters - 36.6 meters	NOAA_VR	Complete MBES

Table 12: Submitted Surfaces

A density analysis was run using the VR finalized surface to calculate the number of soundings per surface node. The results determined that greater than 99.5% of all nodes contained five or more soundings which meets the data density specifications. A TVU analysis was run using the VR finalized surface. The results determined that greater than 99.5% of nodes were within IHO allowable Total Vertical Uncertainty for Order 1a surveys.

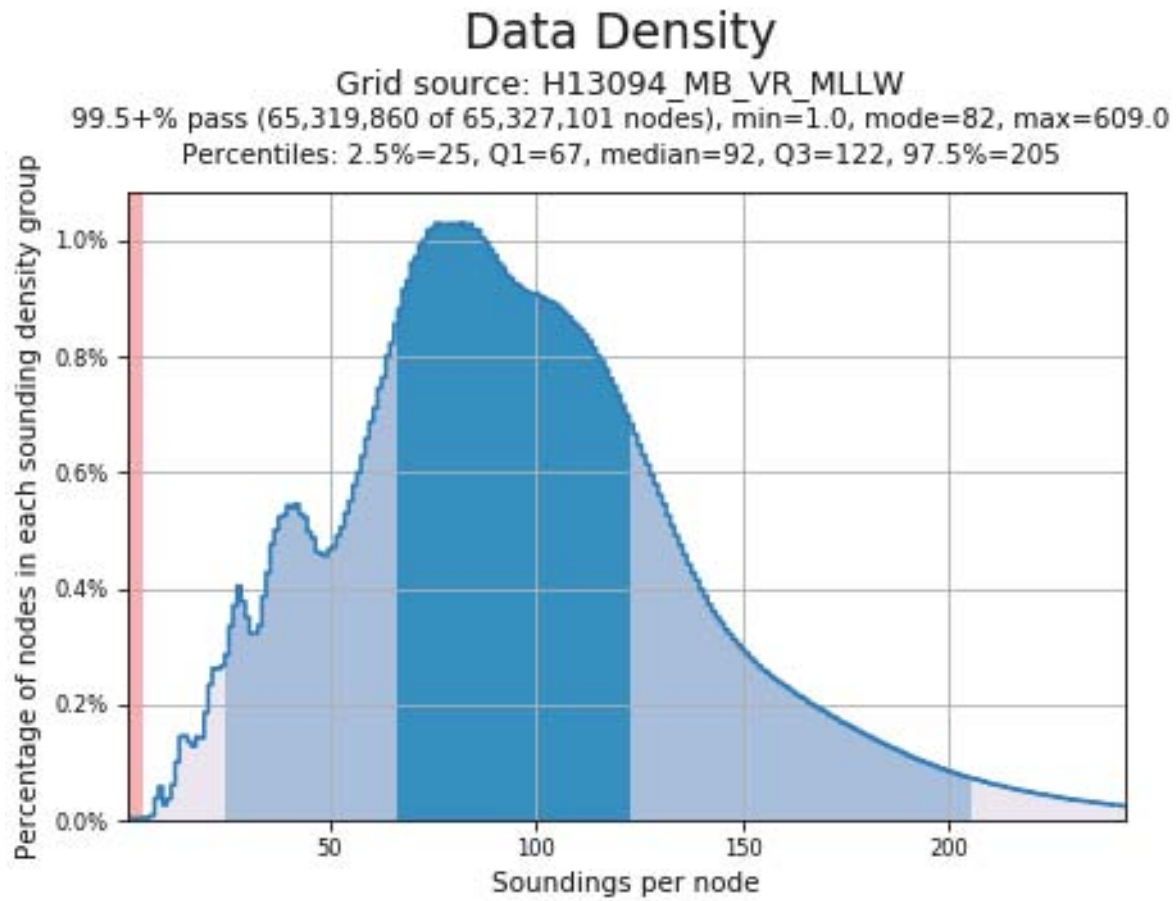


Figure 20: H13094 Data density of the VR finalized surface

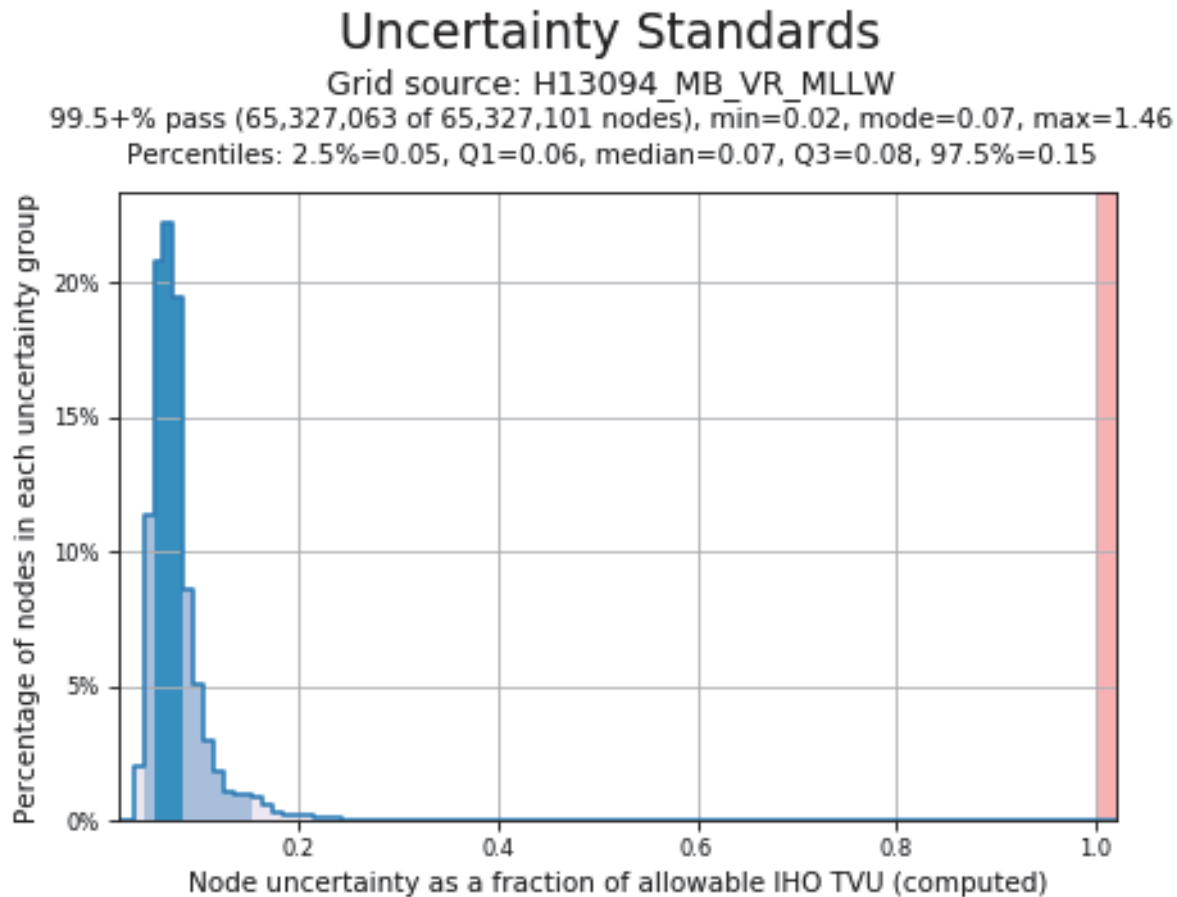


Figure 21: H13094 Total Vertical Uncertainty in the VR finalized surface

B.5.3 Designated Soundings

H13094 contains 1 (one) designated sounding in accordance with HSSD Section 5.2.1.2.3. 0 (zero) designated soundings represent DTONs, and 1 (one) designated sounding was selected to accurately represent the seafloor. The designated sounding occurs over 1 (one) "Update" feature, and is addressed in the Final Feature File.

C. Vertical and Horizontal Control

All data for survey H13094 have been reduced to Mean Lower Low Water (MLLW) using documented VDatum techniques. The Ferdinand R. Hassler is equipped with Applanix POS/MV position and orientation systems on the port and starboard hulls. Both POS/MV systems have been integrated with Fugro's Marinestar service, which provides real-time GPS correctors via satellite. The correctors are derived using a Precise Point Positioning (PPP) approach. The POS/MV data was post-processed in Applanix POSpac

MMS to produce Smoothed Best Estimates of Trajectory (SBETs) and RMS uncertainty files using the method of Post Processed Precise Point Positioning (5P).

C.1 Vertical Control

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

ERS Methods Used:

ERS via VDATUM

Ellipsoid to Chart Datum Separation File:

OPR_D304_FH_18_VDatum_xyNAD83-MLLW_geoid12b.csar

C.2 Horizontal Control

The horizontal datum for this project is North American Datum 1983.

The projection used for this project is Projected UTM 18N.

D. Results and Recommendations

D.1 Chart Comparison

Survey soundings from H13094 were generated from a variable resolution CUBE surface in CARIS HIPS and SIPS and compared with the soundings from the largest scale Electronic Navigational Charts using the QC Tools 2 triangle rule tool. Contours from H13094 were also generated and visually compared with the charted contours from the largest scale Electronic Navigational Charts. Of the six (6) soundings that were flagged by using the triangle rule, all differences were less than 1.3 meters.

D.1.1 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?
US3DE01M	1:419707	20	11/13/2017	09/25/2017	NO

Table 13: Largest Scale ENC's

US3DE01M

ENC US3DE01M generally compares well with survey H13094. The surveyed 20m contour generally agrees throughout the survey but has apparently shifted or has dissappeared in some locations. In the NW quadrant of the sheet a charted 20m contour does not exist in the surveyed soundings. Soundings as surveyed agree to within 1.3 meters as compared with currently charted depths.

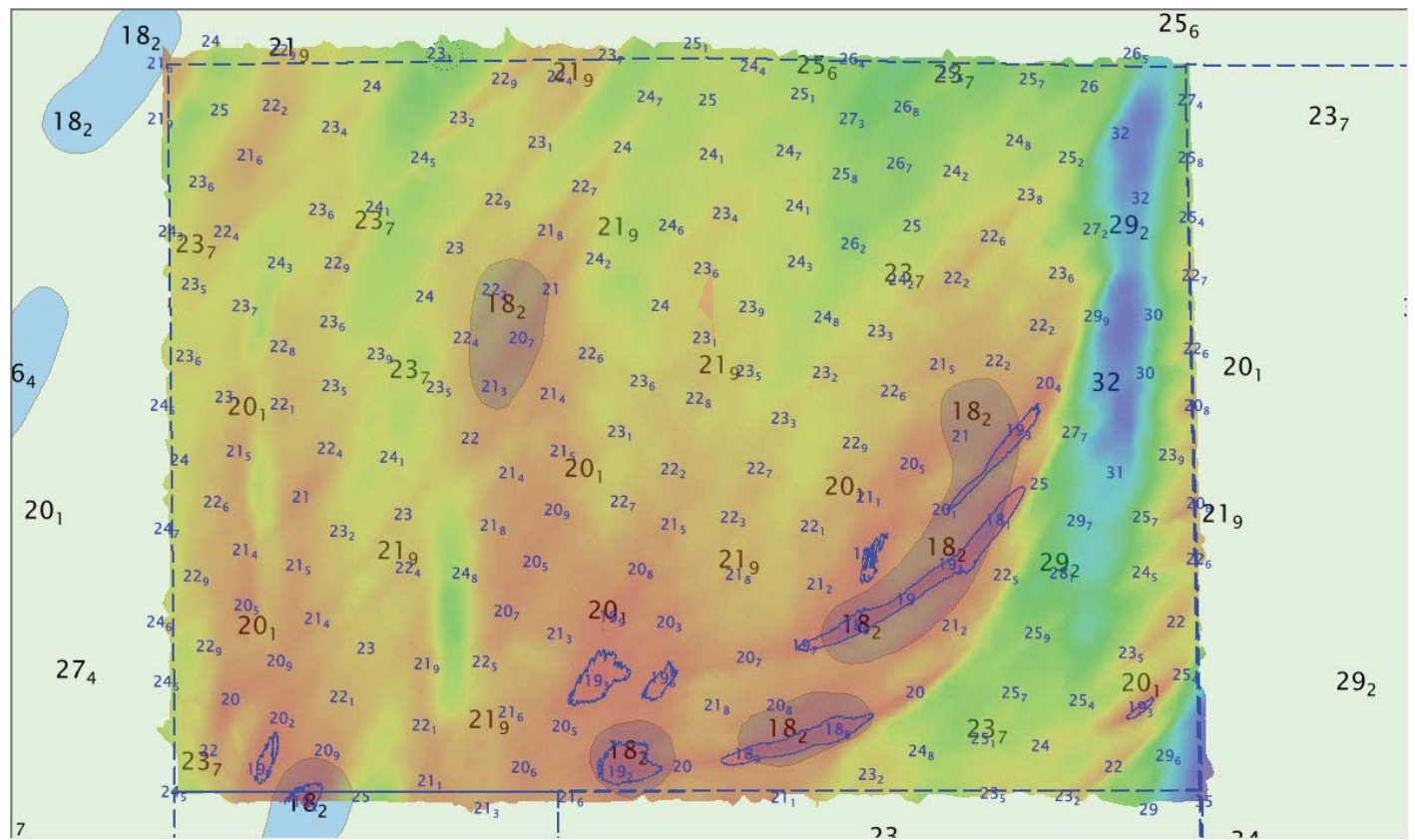


Figure 22: 20-meter contours and soundings (blue) as compared to ENC US3DE01M

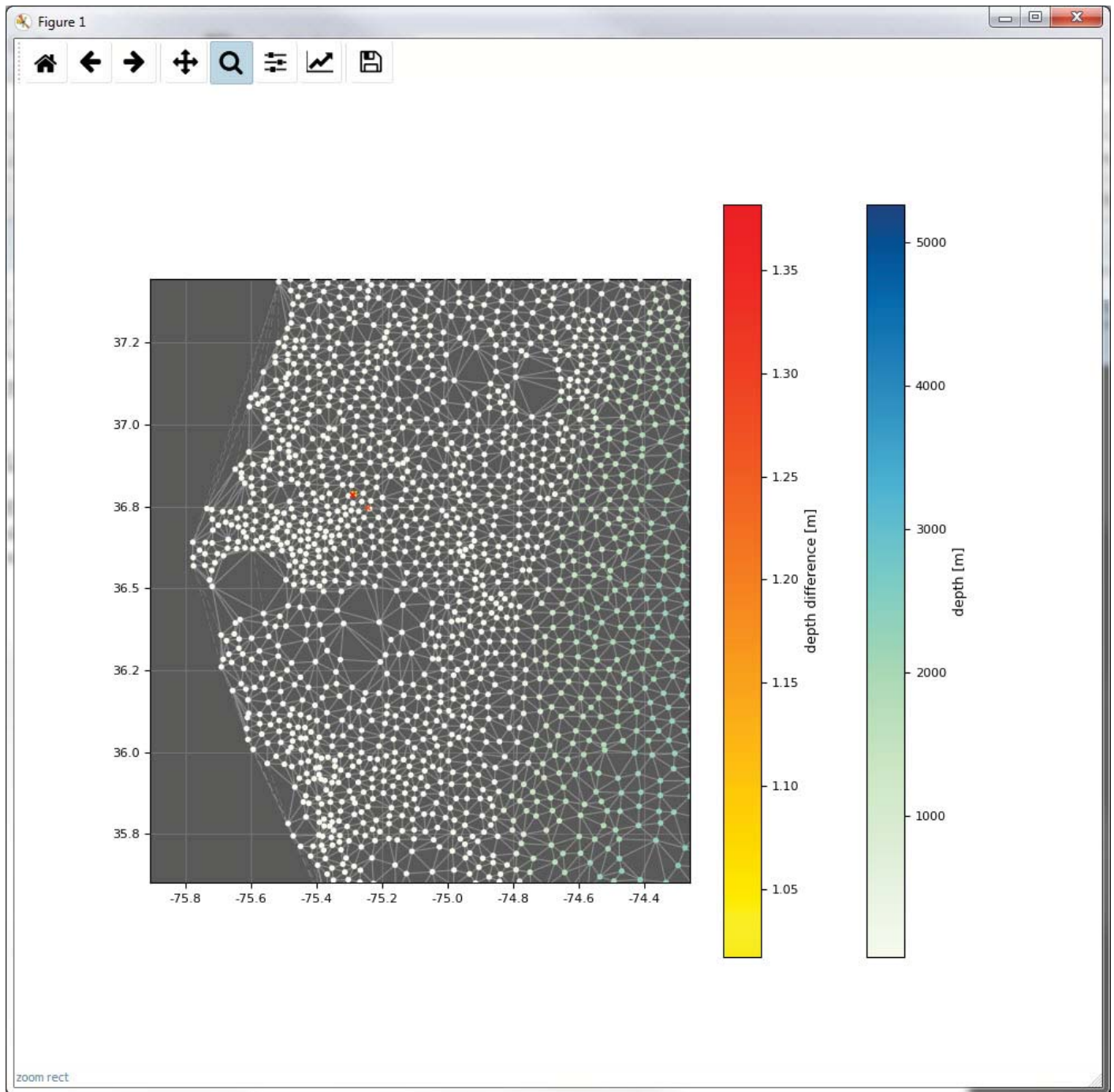


Figure 23: QC Tools Triangle Rule comparison result

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

A charted wreck that was unassigned in the Project Instructions was investigated and was addressed in the Final Feature File.

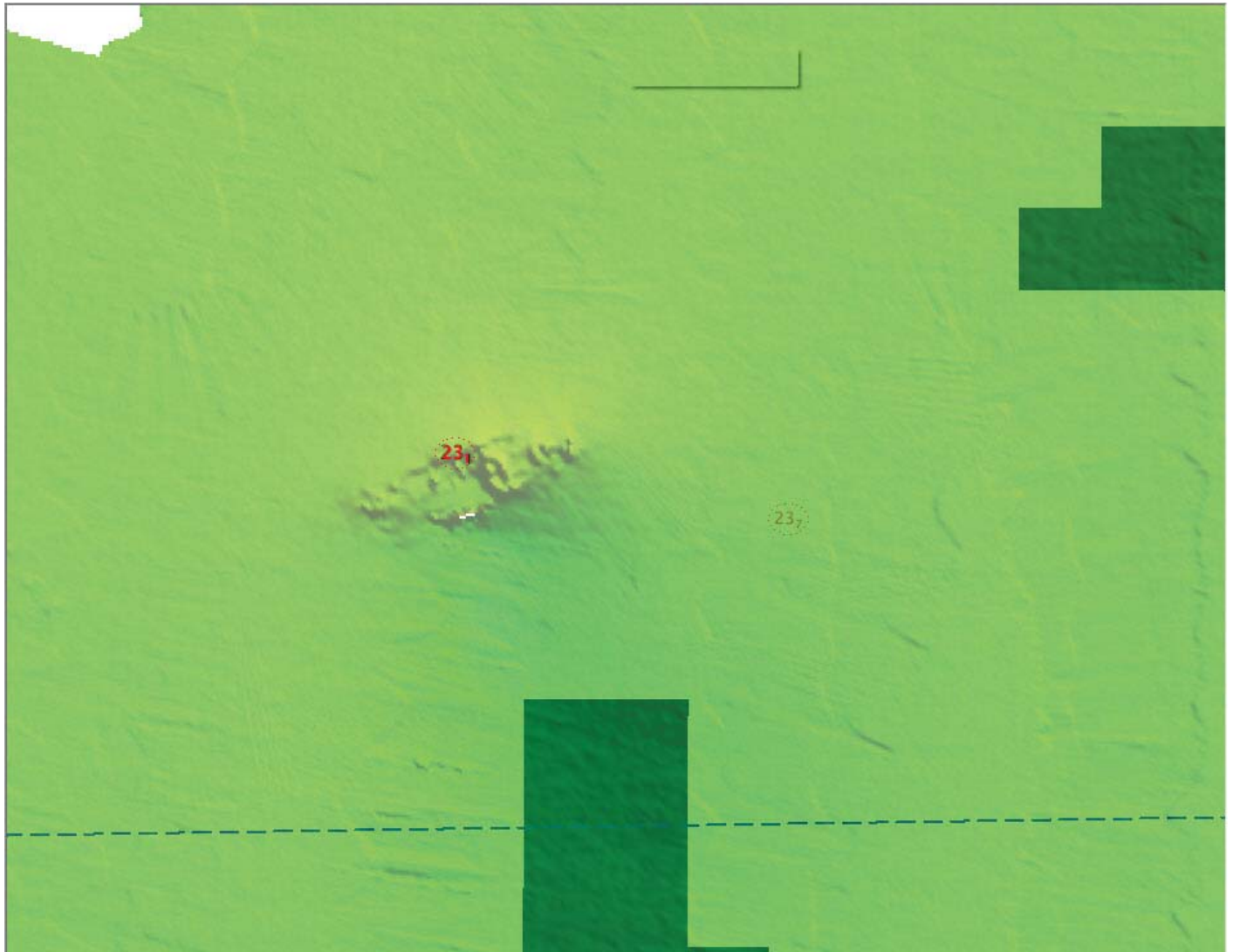


Figure 24: Wreck feature in H13094

D.1.4 Uncharted Features

Zero (0) new features were addressed in the Final Feature File.

D.1.5 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.6 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.1.7 Bottom Samples

Twelve (12) bottom samples were acquired as part of H13094 and are addressed in the Final Feature File.

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

No Aids to navigation (ATONs) exist for this survey.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

Two submarine telecommunication cable crossings exist within the sheet limits of H13094. The presence of these cables was made known to the ship via email from the Director of Tyco Electronics Sebsea Communications LLC (TE SubCom), the company that maintains the cables. The Route Position List (RPL) for the MAREA and BRUSA fiber-optic telecommunication cables were obtained and plotted to aid in the avoidance during bottom sampling operations. Evidence of the more recently installed BRUSA cable can be easily seen in the MBES data which shows two distinct ridges along the axis of the cable separated by

approximately 1m. These sediment ridges are anticipated to be smoothed out by bottom water currents and large wave action.

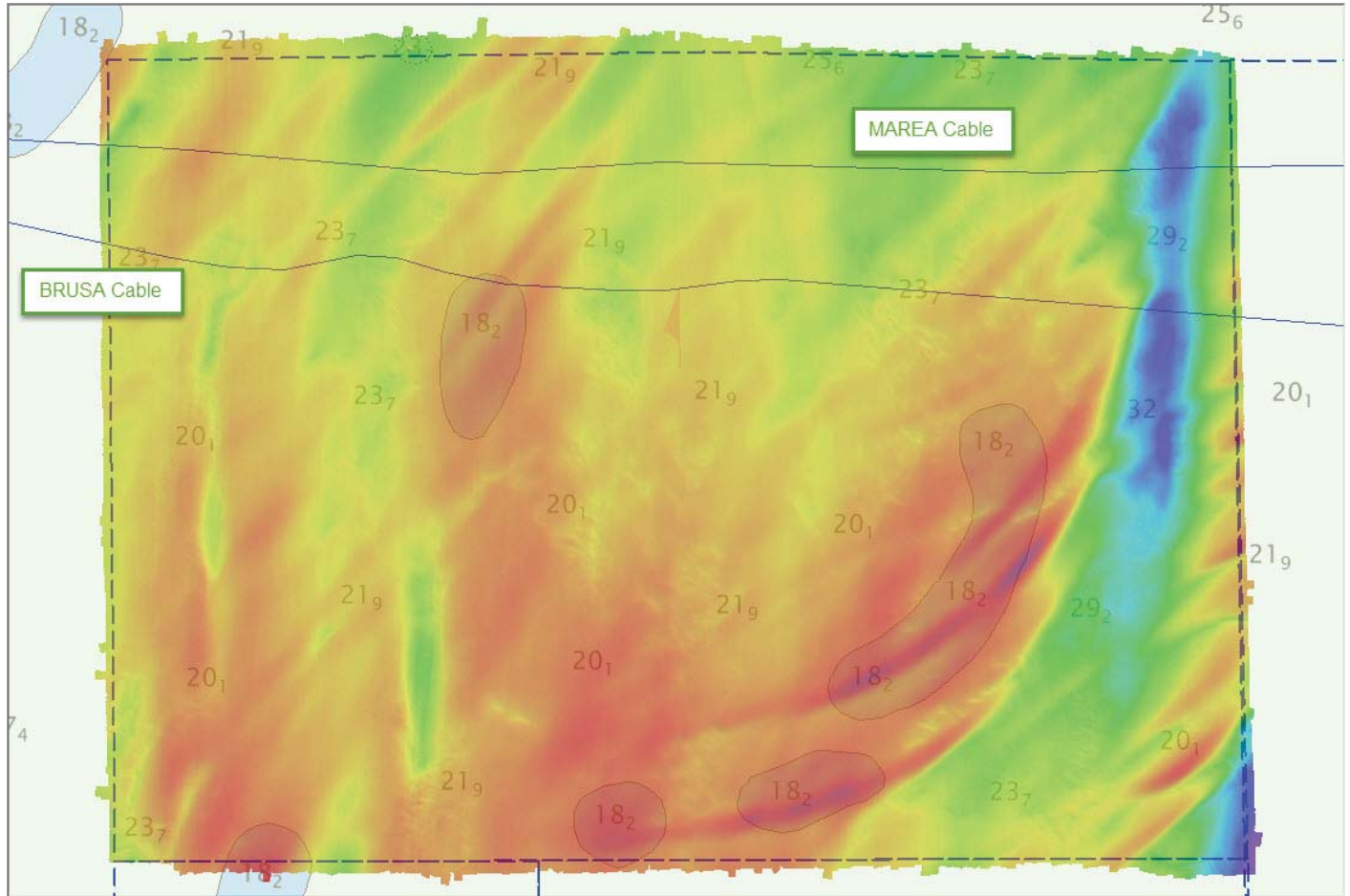


Figure 25: BRUSA and MAREA submarine fiber optic cables passing through H13094

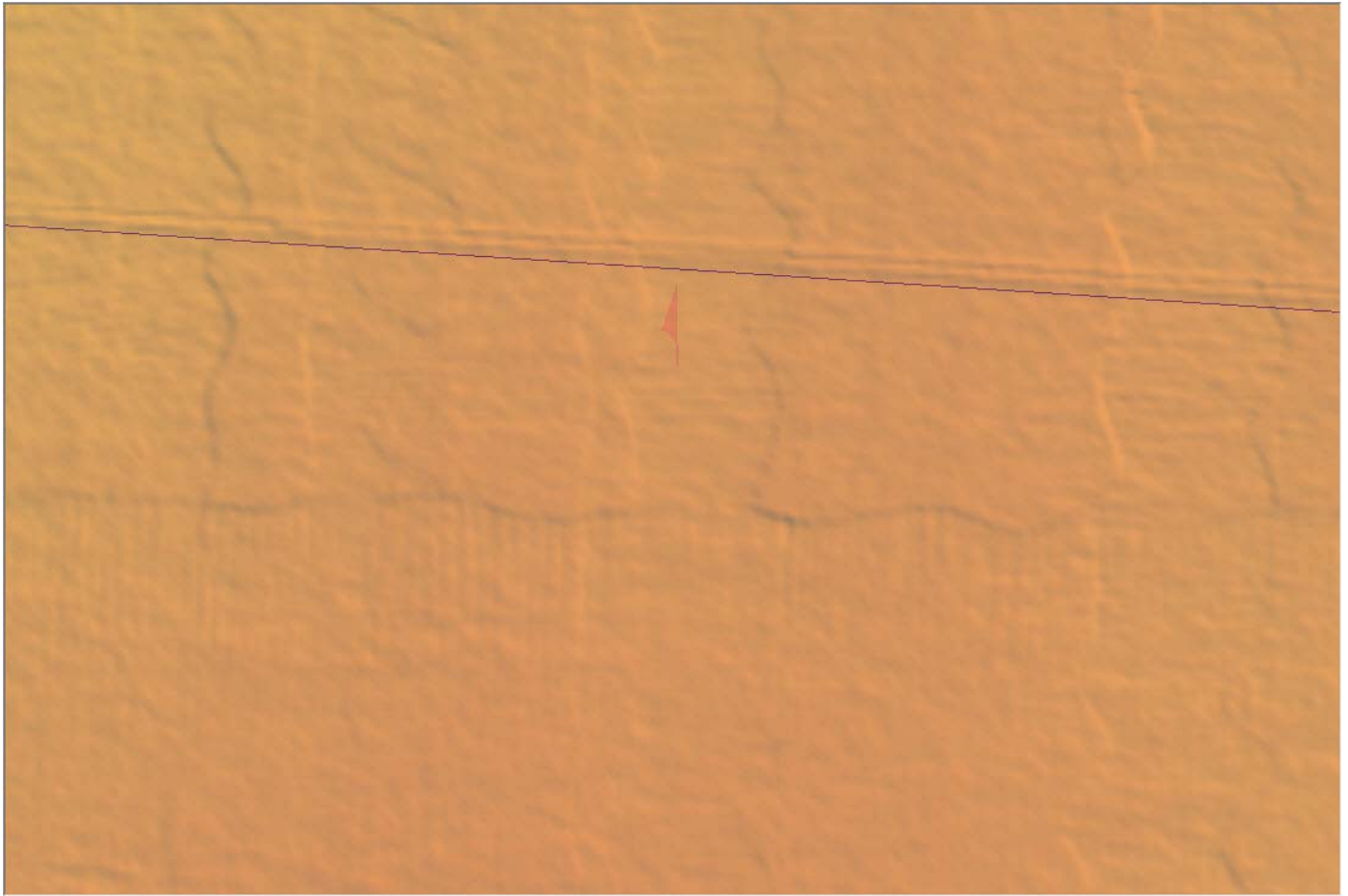


Figure 26: BRUSA submarine cable trench visible in MBES survey data

D.2.6 Platforms

No platforms exist for this survey.

D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.8 Abnormal Seafloor and/or Environmental Conditions

No abnormal seafloor and/or environmental conditions exist for this survey.

D.2.9 Construction and Dredging

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

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation

No new insets are recommended for this area.



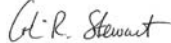
E. Approval Sheet

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, Field Procedures Manual, 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.

Report Name	Report Date Sent
Data Acquisition and Processing Report	2018-03-17

Approver Name	Approver Title	Approval Date	Signature
Matthew Jaskoski, LCDR/NOAA	Chief of Party	03/17/2018	
John R Kidd, LT/NOAA	Field Operations Officer	03/17/2018	 2018.03.20 07:54:41 -04'00'
Colin Stewart	Sheet Manager	03/17/2018	

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	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
PRF	Project Reference File

Acronym	Definition
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
TPE	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated 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

No tide or water level documentation
associated with H13094.

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

14 messages

Rapp, Ronald <rapp@subcom.com>

Mon, Feb 12, 2018 at 11:26 AM

To: "ops.ferdinand.hassler@noaa.gov" <ops.ferdinand.hassler@noaa.gov>, "co.ferdinand.hassler@noaa.gov"

<co.ferdinand.hassler@noaa.gov>

Cc: "Sheridan, Sydney" <:ssheridan@subcom.com>

Dear Matthew Jaskoski, Matthew Forrest,

We observe your vessel operating over international telecom cables landing in VA Beach. Please confirm that the vessel is not engaged in any bottom invasive operations that could damage the cables. See attached information on the cables.

The cables are charted on British Admiralty charts for this area but are not yet on the NOAA charts. I understand NOAA is working on this now.

Would appreciate a confirmation that you have received the information attached.

Thank you for your cooperation.

Best,

Ron

Ronald J Rapp – Director, TE SubCom

+1 908-930-1146

From: Rapp, Ronald

Sent: Monday, February 12, 2018 11:15 AM

To: sectorhr@usgc.mil

Cc: Sydney Sheridan (ssheridan@subcom.com) <ssheridan@subcom.com>

Subject: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

Importance: High

Dear Lt DePorto – Thank you for taking my call today. I have attached the information on the MAREA telecom cable. As you can see from the attached image there is a new cable installed in the last two weeks call BRUSA (red line) just south of the MAREA cable. We ask that you inform the vessel of the presence of these cables.

I would appreciate a confirmation that you were able to reach the vessel.

Best,

Ron

Ronald J Rapp – Director, TE SubCom

+1 908-930-1146

From: Rapp, Ronald
Sent: Monday, February 12, 2018 10:46 AM
To: omao.comments@noaa.gov
Cc: Sydney Sheridan (ssheridan@subcom.com) <ssheridan@subcom.com>; Santos, Mariano <mariano.santos@subcom.com>
Subject: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT
Importance: High

Dear NOAA Vessel Operator – We observe your vessel over international telecom cables landing in VA Beach. Please confirm that the vessel is not engaged in any bottom invasive operations that could damage the cable. See attached. Thank you.

Ronald J. Rapp

Director, Industry & Marine Liaison

TE SubCom

250 Industrial Way West

Eatontown, NJ 07724

office: +1 732-578-7370

mobile: +1 908-930-1146

rrapp@subcom.com

subcom.com

3 attachments

 **Ferdinand R Hassler VA Beach Feb 12 2018.pdf**
195K

 **MAREA-VirginiaBeach-CA-2017-Flyer.pdf**
2979K

 **Copy of MAREA_Virginia-Beach-Bilbao_Agency RPL Issue0.13.xlsx**
112K

CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 11:49 AM
To: "Rapp, Ronald" <rrapp@subcom.com>
Cc: "ops.ferdinand.hassler@noaa.gov" <ops.ferdinand.hassler@noaa.gov>, "Sheridan, Sydney" <ssheridan@subcom.com>

Hello Mr Rapp,
Hassler is not engaged in any bottom invasive operations over the telecom cables.

thanks,

Lieutenant Commander Matthew Jaskoski, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)

CO cell: (240) 687-4602
Ship's VIOP: (541) 867-8935
Sat Phone: (808) 851-3826
Personal cell: (757) 647-3356

[Quoted text hidden]

CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 11:51 AM
To: "OPS.Ferdinand Hassler" <ops.ferdinand.hassler@noaa.gov>

Hey John,
make sure we don't have any bottom samples over the cable area.

thanks,
CO

Lieutenant Commander Matthew Jaskoski, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)
CO cell: (240) 687-4602
Ship's VIOP: (541) 867-8935
Sat Phone: (808) 851-3826
Personal cell: (757) 647-3356

----- Forwarded message -----

From: **Rapp, Ronald** <rrapp@subcom.com>
Date: Mon, Feb 12, 2018 at 11:26 AM
Subject: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

[Quoted text hidden]

3 attachments

 **Ferdinand R Hassler VA Beach Feb 12 2018.pdf**
195K

 **MAREA-VirginiaBeach-CA-2017-Flyer.pdf**
2979K

 **Copy of MAREA_Virginia-Beach-Bilbao_Agency RPL Issue0.13.xlsx**
112K

CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 11:52 AM
To: "OPS.Ferdinand Hassler" <ops.ferdinand.hassler@noaa.gov>

also please save the images attached here to the project correspondence folder for the project.

thanks,

Lieutenant Commander Matthew Jaskoski, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)
CO cell: (240) 687-4602
Ship's VIOP: (541) 867-8935
Sat Phone: (808) 851-3826
Personal cell: (757) 647-3356

[Quoted text hidden]

Rapp, Ronald <rrapp@subcom.com> Mon, Feb 12, 2018 at 11:56 AM
To: "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>
Cc: "ops.ferdinand.hassler@noaa.gov" <ops.ferdinand.hassler@noaa.gov>, "Sheridan, Sydney" <ssheridan@subcom.com>

Dear Lieutenant Commander Jaskoski – Many thanks for that confirmation. Best, Ron

Ronald J Rapp – Director, TE SubCom

+1 908-930-1146

From: CO.Ferdinand Hassler - NOAA Service Account [mailto:co.ferdinand.hassler@noaa.gov]
Sent: Monday, February 12, 2018 11:50 AM
To: Rapp, Ronald <rrapp@subcom.com>
Cc: ops.ferdinand.hassler@noaa.gov; Sheridan, Sydney <ssheridan@subcom.com>
Subject: Re: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

The following message was sent from an external e-mail address. Be cautious when clicking on links, opening attachments or providing sensitive information.

[Quoted text hidden]

CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 12:18 PM
To: "Rapp, Ronald" <rrapp@subcom.com>
Cc: "ops.ferdinand.hassler@noaa.gov" <ops.ferdinand.hassler@noaa.gov>, "Sheridan, Sydney" <ssheridan@subcom.com>

Mr. Rapp,
Not a problem, thanks for reaching out. We will also include in our final survey report the cable area for inclusion in the chart.

regards,

Lieutenant Commander Matthew Jaskoski, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)
CO cell: (240) 687-4602
Ship's VIOP: (541) 867-8935
Sat Phone: (808) 851-3826
Personal cell: (757) 647-3356

[Quoted text hidden]

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 1:07 PM
To: "Rapp, Ronald" <rrapp@subcom.com>
Cc: "Sheridan, Sydney" <ssheridan@subcom.com>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Mr. Rapp,

Could you please send a GIS based file of the cable location so we can include the feature in our survey report? A .shp file would be greatly appreciated.

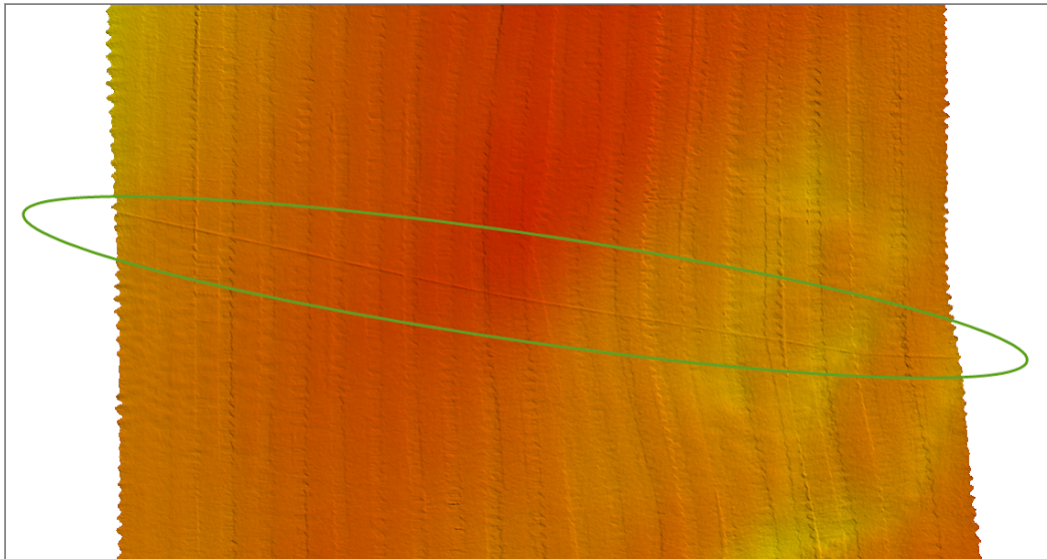
LT John Kidd
Field Operations Officer, NOAA Ship *FERDINAND R. HASSLER*
ship's cell: 603-812-8748 * VOIP: 541-867-8935 * iridium: 808-851-3826
Physical Address (UPS/FedEx):
UNH Judd Gregg Marine Research Complex
29 Wentworth Rd
New Castle, NH 03854
Mailing Address: PO Box 638, New Castle, NH 03854

[Quoted text hidden]

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Mon, Feb 12, 2018 at 3:46 PM
To: "Rapp, Ronald" <rrapp@subcom.com>
Cc: "Sheridan, Sydney" <ssheridan@subcom.com>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Mr. Rapp,

We found the cable in data. We will digitize the feature and submit with our survey deliverables. FYI we will be conducting bottom sample in the area to characterize the bottom sediment but will make sure and keep a safe distance from the cable.



LT John Kidd
Field Operations Officer, NOAA Ship FERDINAND R. HASSLER
ship's cell: 603-812-8748 * VOIP: 541-867-8935 * irridium: 808-851-3826
Physical Address (UPS/FedEx):
UNH Judd Gregg Marine Research Complex
29 Wentworth Rd
New Castle, NH 03854
Mailing Address: PO Box 638, New Castle, NH 03854

[Quoted text hidden]

Rapp, Ronald <rrapp@subcom.com> Mon, Feb 12, 2018 at 3:53 PM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>
Cc: "Sheridan, Sydney" <ssheridan@subcom.com>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Dear LT John Kidd – Great find. Note that there are now two cables running in parallel as shown in the AIS image I sent earlier. Were you able to find both? Thanks, Ron

Ronald J Rapp – Director, TE SubCom
+1 908-930-1146

From: OPS.Ferdinand Hassler - NOAA Service Account [mailto:ops.ferdinand.hassler@noaa.gov]
Sent: Monday, February 12, 2018 3:47 PM

To: Rapp, Ronald <rrapp@subcom.com>
Cc: Sheridan, Sydney <ssheridan@subcom.com>; CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov>

[Quoted text hidden]

[Quoted text hidden]

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Wed, Feb 21, 2018 at 11:10 AM
To: "Rapp, Ronald" <rrapp@subcom.com>
Cc: "Sheridan, Sydney" <ssheridan@subcom.com>, "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Mr. Rapp,

Looking at the AIS image and matching the trace of the cable we see in our data, I believe we are looking at the BRUSA cable. Because it was recently installed, it would make sense that the mound of sediment that is created when the cable is buried is still present. I am unable to see any evidence of the MAREA cable and therefore will not be able to digitize this feature from our data.

LT John Kidd
Field Operations Officer, NOAA Ship FERDINAND R. HASSLER
*ship's cell: 603-812-8748 * VOIP: 541-867-8935 * iridium: 808-851-3826*
Physical Address (UPS/FedEx):
UNH Judd Gregg Marine Research Complex
29 Wentworth Rd
New Castle, NH 03854
Mailing Address: *PO Box 638, New Castle, NH 03854*

[Quoted text hidden]

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Wed, Feb 21, 2018 at 12:15 PM
To: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Ryan Wartick <ryan.wartick@noaa.gov>
Cc: CO HASSLER <co.ferdinand.hassler@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>

Greetings,

Wanted to strike up a conversation about two submarine cables that exist on our current survey, OPR-D304-FH-18 H13094.

As you can read in the forwarded email chain, these features exist on the Admiralty Charts but have yet to find their way on the NOAA charts. Mr. Rapp is under the impression that this is in the works. Wasn't sure who should be the primary point of contact so I am reaching out to both HSD OPS and Mid-Atlantic Nav Manager.

As the interface between the maritime industry and MCD, LT Wartick, can we get verification that this is on MCD's radar?

From a survey standpoint, how should we handle the processing of these features in our final feature file? It would be easy to digitize one of the two cables from the MBES data but the MAREA cable does not show in the data.

LT John Kidd
Field Operations Officer, NOAA Ship FERDINAND R. HASSLER
*ship's cell: 603-812-8748 * VOIP: 541-867-8935 * iridium: 808-851-3826*
Physical Address (UPS/FedEx):
UNH Judd Gregg Marine Research Complex
29 Wentworth Rd
New Castle, NH 03854
Mailing Address: *PO Box 638, New Castle, NH 03854*

----- Forwarded message -----

From: **OPS.Ferdinand Hassler - NOAA Service Account** <ops.ferdinand.hassler@noaa.gov>
Date: Wed, Feb 21, 2018 at 11:10 AM
Subject: Re: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

[Quoted text hidden]

Martha Herzog - NOAA Federal <martha.herzog@noaa.gov> Wed, Feb 21, 2018 at 12:43 PM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>
Cc: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Ryan Wartick <ryan.wartick@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>

John,

Most of the guidance for reporting these is in 1.7 and 8.1.4 of the HSSD. There is no need to put the pipeline in the FFF as NOAA isn't the source authority and MCD will only chart items from the authority. (The FFF clarification is going in the HSSD for 2018) You will need to document the pipeline(s) in the DR and submit all correspondence. Ryan may know more about the method the pipeline owner contacts the source authority and notifies MCD.

Thanks,
Martha

[Quoted text hidden]

ryan.wartick@noaa.gov <ryan.wartick@noaa.gov> Wed, Feb 21, 2018 at 1:00 PM
To: ops.ferdinand.hassler@noaa.gov

FYI, I will keep you in the loop if I hear anything

Sent from my iPhone

Begin forwarded message:

From: Steve Soherr - NOAA Federal <steve.soherr@noaa.gov>
Date: February 21, 2018 at 12:53:46 EST
To: Ryan Wartick - NOAA Federal <ryan.wartick@noaa.gov>, NDB Mailbox <ocs.ndb@noaa.gov>
Subject: Re: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

Ryan,

Nautical Data Branch (included here) may have a permit on this cable. Typically, the permittee provides the as built data so that we can apply the cables. IN trying to follow the email chain, it sounds like GIS as built data may already have been provided to the Hassler.

NDB - do you guys have any info on these cables? If not, perhaps Ryan and I we can work to help secure as built for you.

Thanks,
Steve

On Wed, Feb 21, 2018 at 12:26 PM, Ryan Wartick - NOAA Federal <ryan.wartick@noaa.gov> wrote:
Steve,

Do you have experience with dealing with something like this or know who I should handle it?

V/R

Ryan Wartick LCDR/NOAA
Navigation Services Division
Mid-Atlantic Navigation Manager
(757) 364-7458 (office)
(571) 305-0995 (work cell)
(757) 268-8164 (cell)

<http://www.nauticalcharts.noaa.gov/>

----- Forwarded message -----

From: **OPS.Ferdinand Hassler - NOAA Service Account** <ops.ferdinand.hassler@noaa.gov>

[Quoted text hidden]

--

Steve Soherr
Cartographic Advisor
Office of Coast Survey
240-533-0080
steve.soherr@noaa.gov

Ryan Wartick - NOAA Federal <ryan.wartick@noaa.gov>
To: "OPS.Ferdinand Hassler" <ops.ferdinand.hassler@noaa.gov>

Wed, Feb 21, 2018 at 1:44 PM

FYI

----- Forwarded message -----

From: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Date: Wed, Feb 21, 2018 at 1:38 PM

Subject: Re: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT

To: Steve Soherr - NOAA Federal <steve.soherr@noaa.gov>

CC: Ryan Wartick - NOAA Federal <ryan.wartick@noaa.gov>, Tara Wallace <Tara.Wallace@noaa.gov>

Steve and Ryan,

We do have info for the MAREA cable, which was permitted under USACE permit number NAO-2016-0517. It was assigned out for compilation in NDB and should be available for team compilation relatively shortly, though I'd hesitate to provide a hard and fast timeline. The DREG document number is L152-2018.

The BRUSA cable is permitted under USACE permit number SAJ-2016-01308 and we do have a permit in the database. NDB sent out the typical yearly request for a status update on 6/2/2017, but it does not look like we heard back - which is par for the course for incomplete projects. We'll mail out another inquiry in June, along with inquiries for the rest of the Jacksonville District permits. If it's useful, the contact info for the permittee is:

Mr. Guillermo Cañate
Telefónica Internacional Wholesale Services Puerto Rico, Inc.
1111 Brickell Avenue, Suite 1800, Miami, FL 33131
305-925-5433
guillermo.canete@telefonica.com

FYI I tracked down Mr. Cañate's email and phone number via this [website](#), which relates to an unrelated FCC document.

I've attached copies of both of the permits. Does that answer your questions? Please let me know if you need more info and I'll see what I can track down.

Thanks,

Johnny
Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
Contact: ocs.ndb@noaa.gov



On Wed, Feb 21, 2018 at 12:53 PM, Steve Soherr - NOAA Federal <steve.soherr@noaa.gov> wrote:
Ryan,

Nautical Data Branch (included here) may have a permit on this cable. Typically, the permittee provides the as built data so that we can apply the cables. IN trying to follow the email chain, it sounds like GIS as built data may already have been provided to the Hassler.

NDB - do you guys have any info on these cables? If not, perhaps Ryan and I we can work to help secure as built for you.

Thanks,
Steve

On Wed, Feb 21, 2018 at 12:26 PM, Ryan Wartick - NOAA Federal <ryan.wartick@noaa.gov> wrote:
Steve,

Do you have experience with dealing with something like this or know who I should handle it?

V/R

Ryan Wartick LCDR/NOAA
Navigation Services Division
Mid-Atlantic Navigation Manager
(757) 364-7458 (office)
(571) 305-0995 (work cell)
(757) 268-8164 (cell)

<http://www.nauticalcharts.noaa.gov/>

----- Forwarded message -----

From: **OPS.Ferdinand Hassler - NOAA Service Account** <ops.ferdinand.hassler@noaa.gov>
Date: Wed, Feb 21, 2018 at 12:15 PM
Subject: Fwd: FW: Ferdinand R Hassler observed over telecom cables VA Beach - Please exercise caution - URGENT
To: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Ryan Wartick <ryan.wartick@noaa.gov>
Cc: CO HASSLER <co.ferdinand.hassler@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>


[Quoted text hidden]


--

Steve Soherr
Cartographic Advisor
Office of Coast Survey
240-533-0080
steve.soherr@noaa.gov

--
V/R Ryan Wartick LT/NOAA
[757-268-8164](tel:757-268-8164)

2 attachments

 **NAO-2016-0517 (MAREA).pdf**
489K

 **SAJ-2016-01308 (BRUSA).pdf**
4986K



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

Re: D304 object detection requirement

2 messages

Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Tue, Feb 20, 2018 at 9:55 AM

To: "CO.Ferdinand Hassler - NOAA Service Account" <co.ferdinand.hassler@noaa.gov>

Cc: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>

CO,

Fundamentally, we should all acknowledge that obtaining OD will have implications to speed/efficiency regardless of the platform, and that alone isn't a justifiable reason to lessen our coverage requirements. That said, after re-evaluation of the draft hydro health model and the water depths in the assigned area, you may use this email as official record of Ops changing the coverage requirement from Object Detection to Complete Coverage for all sheets assigned to OPR--D304-FH-18.

Regards, Corey

On Thu, Feb 15, 2018 at 1:38 PM, CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov> wrote:

Hey Corey,

I just wanted to confirm that there is a need for our current D-304 survey to be object detection. The reason I ask is that it is a pretty big efficiency loss for us. We're running ~1/3 slower than our normal survey speed to get the density requirements for the 50cm grid and the added holidays (both density and coverage) are going to be substantial considering we have to run at slower speeds in fairly poor weather conditions.

We're only about half done with mainscheme our first sheet, whereas if it were complete coverage I think we would be nearly done with mainscheme at this point.

thanks,
hope you're doing well,

Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)
CO cell: (240) 687-4602
Ship's VIOP: (541) 867-8935
Sat Phone: (808) 851-3826
Personal cell: (757) 647-3356

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J. Corey Allen
Chief (acting), Operations Branch
Office of Coast Survey, NOAA
Corey.Allen@noaa.gov

[240.533.0037](tel:240.533.0037) (Office)

[301.717.7271](tel:301.717.7271) (Cell)

[Click here for information on our planned survey activities](#)

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CO.Ferdinand Hassler - NOAA Service Account <co.ferdinand.hassler@noaa.gov>

Tue, Feb 20, 2018 at 10:26 AM

To: Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Cc: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>

Awesome, thanks Corey,

Jasko

Lieutenant Commander Matthew Jaskoski, NOAA

Commanding Officer, NOAA Ship *Ferdinand R. Hassler* (S-250)

CO cell: [\(240\) 687-4602](tel:240.687.4602)

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Sat Phone: [\(808\) 851-3826](tel:808.851.3826)

Personal cell: [\(757\) 647-3356](tel:757.647.3356)

[Quoted text hidden]



OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov>

H13094 Survey Outline

1 message

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Mon, Mar 19, 2018 at 4:44 PM
To: _NOS OCS Survey Outlines <survey.outlines@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>
Cc: CO HASSLER <co.ferdinand.hassler@noaa.gov>

Greetings,

Please see attached survey outline for H13094 completed on 03/15/2018.

LT John Kidd

Field Operations Officer, NOAA Ship FERDINAND R. HASSLER

*ship's cell: 603-812-8748 * VOIP: 541-867-8935 * iridium: 808-851-3826*


Physical Address (UPS/FedEx):

UNH Judd Gregg Marine Research Complex

29 Wentworth Rd

New Castle, NH 03854

Mailing Address: PO Box 638, New Castle, NH 03854

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APPROVAL PAGE

H13094

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 NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- Bottom Samples
- GeoPDF of survey products

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: _____

Commander Briana W. Hillstrom, NOAA
Chief, Atlantic Hydrographic Branch