

H12977

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12977

LOCALITY

State(s): Florida

General Locality: Jacksonville, FL

Sub-locality: Main Channel

2017

CHIEF OF PARTY
Matthew Jaskoski, LCDR/NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12977

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): **Florida**

General Locality: **Jacksonville, FL**

Sub-Locality: **Main Channel**

Scale: **40000**

Dates of Survey: **08/31/2017 to 09/05/2017**

Instructions Dated: **01/09/2017**

Project Number: **OPR-G343-FH-17**

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

Chief of Party: **Matthew Jaskoski, LCDR/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/>.

Table of Contents

A. Area Surveyed.....	1
A Survey Coverage.....	3
A.1 Survey Limits.....	1
A.2 Survey Purpose.....	2
A.3 Survey Quality.....	2
A.5 Survey Statistics.....	5
B. Data Acquisition and Processing.....	7
B.1 Equipment and Vessels.....	7
B.1.1 Vessels.....	7
B.1.2 Equipment.....	8
B.2 Quality Control.....	9
B.2.1 Crosslines.....	9
B.2.2 Uncertainty.....	11
B.2.3 Junctions.....	12
B.2.4 Sonar QC Checks.....	16
B.2.5 Equipment Effectiveness.....	16
B.2.6 Factors Affecting Soundings.....	16
B.2.7 Sound Speed Methods.....	17
B.2.8 Coverage Equipment and Methods.....	17
B.3 Echo Sounding Corrections.....	18
B.3.1 Corrections to Echo Soundings.....	18
B.3.2 Calibrations.....	18
B.4 Backscatter.....	18
B.5 Data Processing.....	19
B.5.1 Primary Data Processing Software.....	19
B.5.2 Surfaces.....	19
B.5.3 Designated Soundings.....	21
C. Vertical and Horizontal Control.....	21
C.1 Vertical Control.....	22
C.2 Horizontal Control.....	22
C.3 Additional Horizontal or Vertical Control Issues.....	22
3.3.1 Marinestar Solution - Vertical Offsets.....	22
D. Results and Recommendations.....	24
D.1 Chart Comparison.....	24
D.1.1 Electronic Navigational Charts.....	25
D.1.2 Maritime Boundary Points.....	31
D.1.3 Charted Features.....	31
D.1.4 Uncharted Features.....	31
D.1.5 Shoal and Hazardous Features.....	31
D.1.6 Channels.....	31
D.1.7 Bottom Samples.....	31
D.2 Additional Results.....	31
D.2.1 Shoreline.....	31

D.2.2 Prior Surveys	31
D.2.3 Aids to Navigation	32
D.2.4 Overhead Features	32
D.2.5 Submarine Features	32
D.2.6 Platforms	32
D.2.7 Ferry Routes and Terminals	32
D.2.8 Abnormal Seafloor and/or Environmental Conditions	32
D.2.9 Construction and Dredging	32
D.2.10 New Survey Recommendation	32
D.2.11 Inset Recommendation	32
E. Approval Sheet	34
F. Table of Acronyms	35

List of Tables

Table 1: Survey Limits	1
Table 2: Hydrographic Survey Statistics	6
Table 3: Dates of Hydrography	7
Table 4: Vessels Used	7
Table 5: Major Systems Used	8
Table 6: Survey Specific Tide TPU Values	11
Table 7: Survey Specific Sound Speed TPU Values	12
Table 8: Junctioning Surveys	13
Table 9: Primary bathymetric data processing software	19
Table 10: Primary imagery data processing software	19
Table 11: Submitted Surfaces	19
Table 12: Largest Scale ENCs	25

List of Figures

Figure 1: H12977 Survey Limits	2
Figure 2: Data gap which occurs outside of sheet limits	4
Figure 3: Data gap in 1m grid	5
Figure 4: NOAA Ship Ferdinand Hassler	8
Figure 5: H12977 Crossline Coverage	10
Figure 6: H12977 Crossline difference statistical analysis	11
Figure 7: H12977 Junction Overview	12
Figure 8: Difference Surface Statistics for H12977 and H12976	13
Figure 9: Junction between H12977 and H12976	14
Figure 10: Difference Surface Statistics for H12977 and H11821	15
Figure 11: Junction between H12977 and H11821	16
Figure 12: H12977 sound speed profile locations	17
Figure 13: H12977 Backscatter Overview	18
Figure 14: Data density of the VR finalized surface	20

<u>Figure 15: Total Vertical Uncertainty in the VR finalized surface.....</u>	<u>21</u>
<u>Figure 16: Most extreme example of ERS SBET vertical offset; DN244; 15x exaggeration; 30-24-22.17N 81-06-24.49W.....</u>	<u>23</u>
<u>Figure 17: 1m Difference Surface; data referenced to traditional tides minus data referenced to the ellipse.....</u>	<u>24</u>
<u>Figure 18: 60-foot surveyed contour and soundings (blue) as compared to ENC US4FL50M in the northwest corner of H12977.....</u>	<u>26</u>
<u>Figure 19: 60-foot surveyed contour and soundings (blue) as compared to ENC US4FL50M in the northwest corner of H12977.....</u>	<u>27</u>
<u>Figure 20: 60-foot surveyed contour and soundings (blue) as compared to ENC US5FL51M in the northwest corner of H12977.....</u>	<u>28</u>
<u>Figure 21: 60-foot surveyed contour and soundings (blue) as compared to ENC US5FL51M in the northwest corner of H12977.....</u>	<u>29</u>
<u>Figure 22: H12977 surveyed soundings (blue) vs. ENC USGA10M.....</u>	<u>30</u>

Descriptive Report to Accompany Survey H12977

Project: OPR-G343-FH-17

Locality: Jacksonville, FL

Sublocality: Main Channel

Scale: 1:40000

August 2017 - September 2017

NOAA Ship *Ferdinand R. Hassler*

Chief of Party: Matthew Jaskoski, LCDR/NOAA

A. Area Surveyed

Survey H12977 was conducted east of Jacksonville, FL in the recommended two-way routes for use by vessels traveling into or out of Jacksonville and Fernandina Beach.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
30° 24' 52.06" N 81° 8' 40.72" W	30° 17' 52.28" N 80° 57' 50.12" W

Table 1: Survey Limits

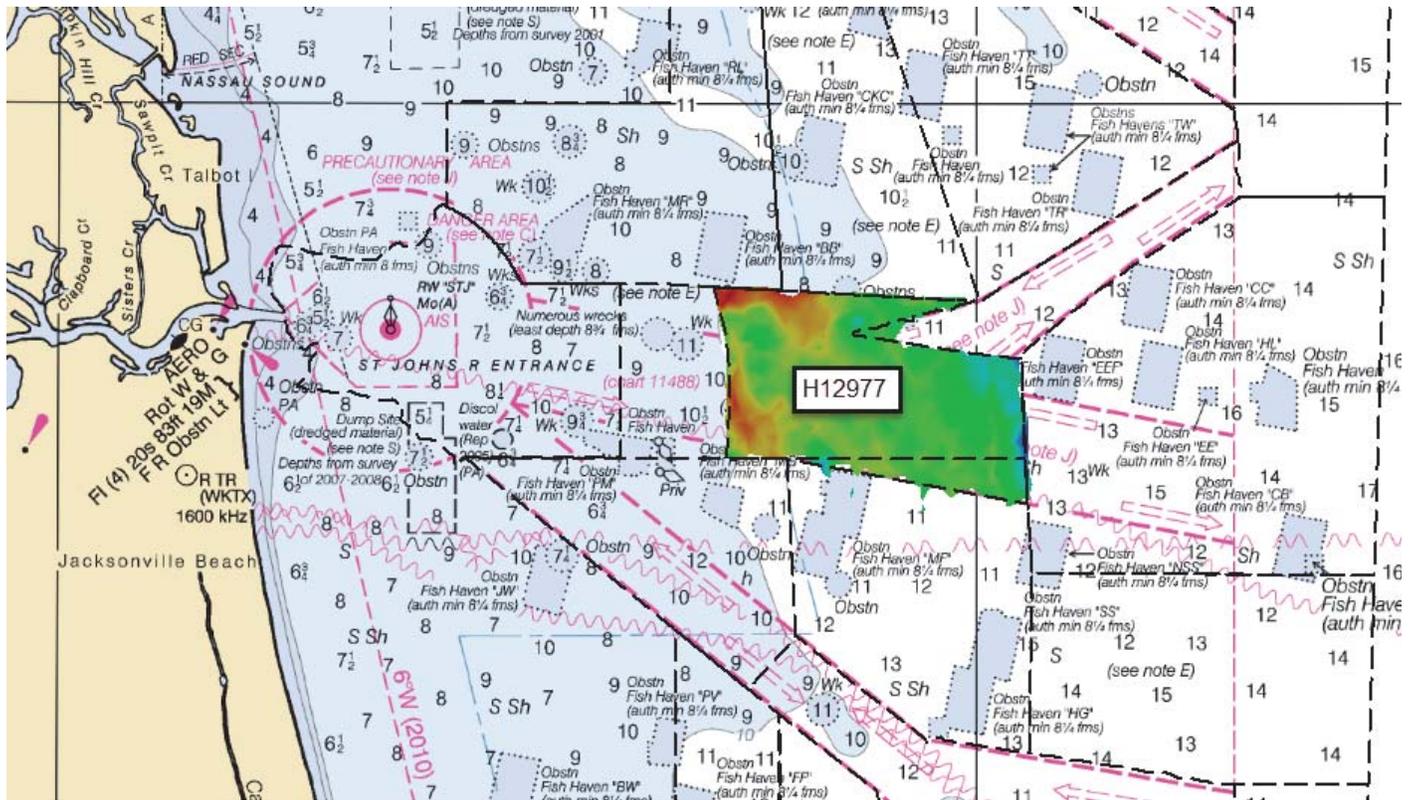


Figure 1: H12977 Survey Limits

The survey limits for H12977 were adjusted as follows:

- 1) The western sheet limit boundary was moved eastward to account for coverage acquired as part of junction survey H12976 which was conducted in 2017.
- 2) The southern sheet limit boundary was extended to include the charted two-way route.
- 3) The northeast sheet limit boundary was extended to ensure adequate MBES overlap with junction survey H11821.

See also Appendix II: Supplemental Survey Records & Correspondence.

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. The Port of Jacksonville has seen a drastic increase in container volume and will be adding a JAXPORT Cruise Terminal for Carnival Cruises. The harbor and channel entrance is in need of updated mapping to meet the needs of larger ships transiting into the Port of Jacksonville. The charts would aid in continuing to support larger, fully loaded Neo-Panamax ships transiting to the Port of Jacksonville.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A 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	All MBES acquisition requires backscatter acquisition (refer to HSSD Section 6.2)

Two (2) holidays occur within sheet H12977.

The first holiday (30-22-34.28N 81-08-10.43W) was due to a spacing error while getting on line. This holiday occurs outside of required sheet limits and is covered by previous FH survey H12976. See Figure 2.

The second holiday (30-24-18.08N 81-08-06.98W) is due to lack of line overlap. See Figure 3.



Figure 2: Data gap which occurs outside of sheet limits

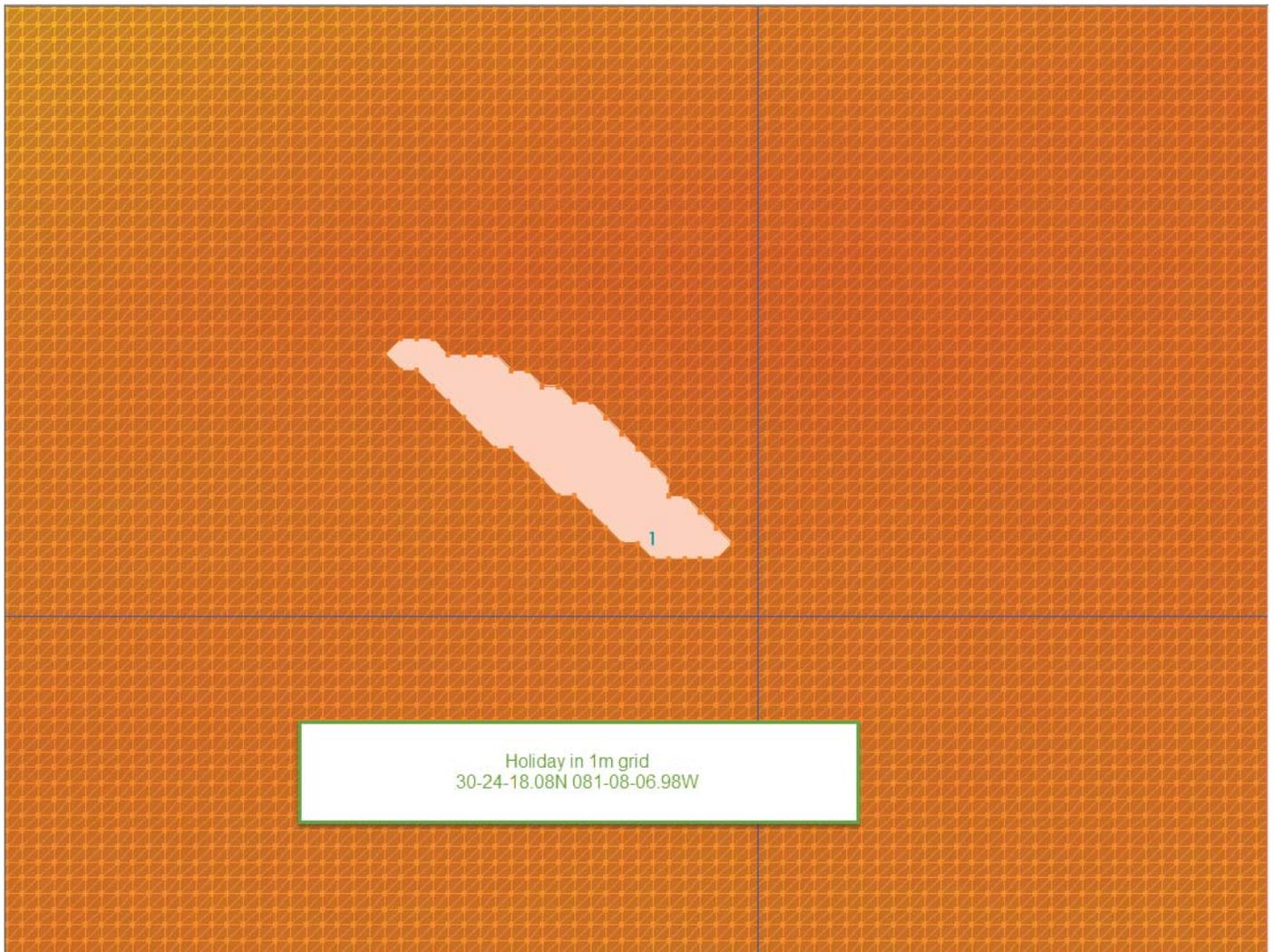


Figure 3: Data gap in 1m grid

A.5 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	855.8	855.8
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	0	0
	SBES/MBES Crosslines	37.8	37.8
	Lidar Crosslines	0	0
Number of Bottom Samples			2
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			40.58

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
08/31/2017	243
09/01/2017	244

Survey Dates	Day of the Year
09/02/2017	245
09/03/2017	246
09/04/2017	247
09/05/2017	248

Table 3: Dates of Hydrography

Mainscheme survey lines were run with a dual-head multibeam echo sounder. Linear nautical miles were calculated by dividing the sum of port and starboard total NM by two (2).

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>S50</i>
LOA	37.7 meters
Draft	3.77 meters

Table 4: Vessels Used

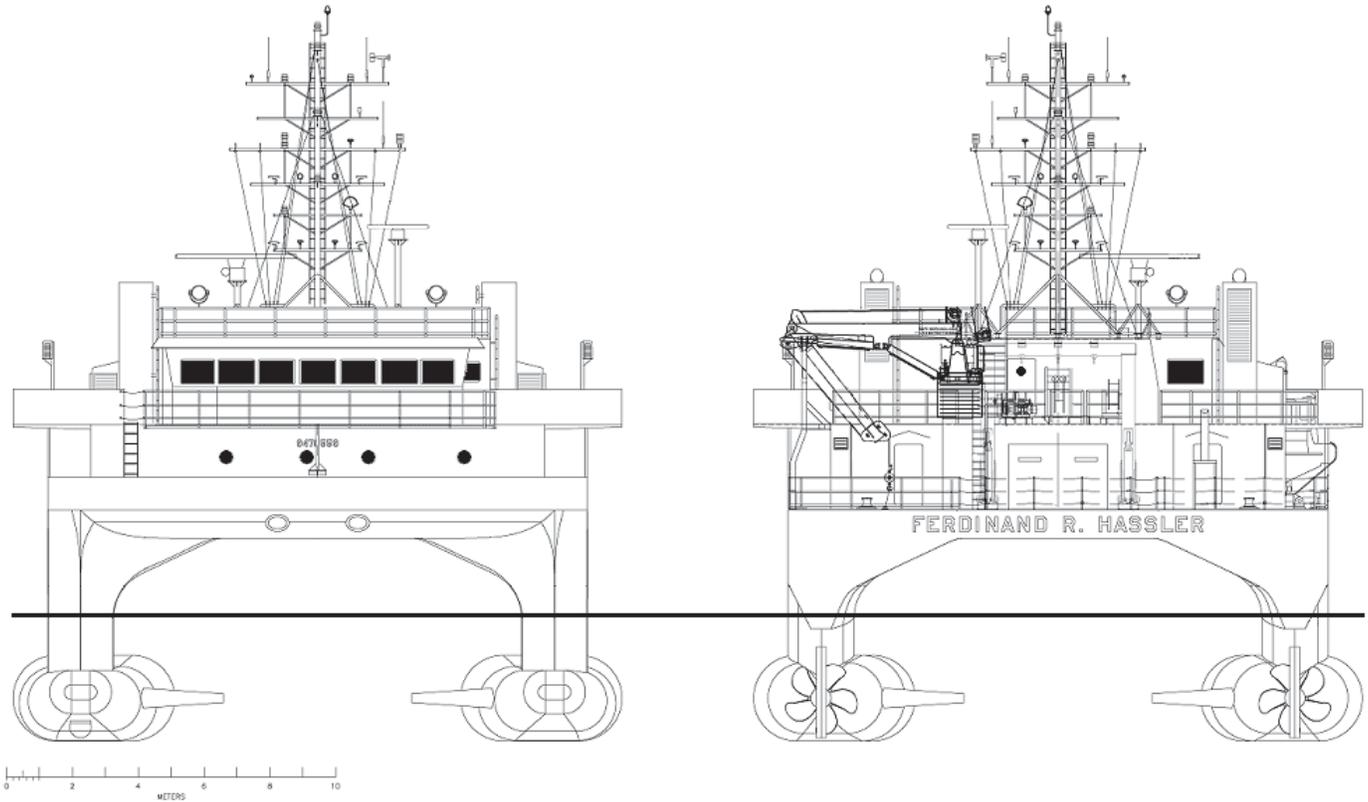


Figure 4: NOAA Ship *Ferdinand Hassler*

NOAA Ship FERDINAND R. HASSLER (S250) acquired all soundings during operations for H12977.

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
Sea-Bird Scientific	SBE 19plus	Conductivity, Temperature, and Depth Sensor
Applanix	POS MV 320 v5	Positioning System
Teledyne RESON	SeaBat 7125 SV	MBES
Teledyne RESON	SVP 70	Sound Speed System

Table 5: 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 4.42% of mainscheme acquisition.

Note that the southern sections of four (4) crosslines extend outside of the sheet limits. This additional crossline mileage (which does not intersect with mainscheme lines) is not included in the final mainscheme vs. crossline percentage

A geographic plot of crosslines is shown in Figure 5. 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 using CARIS HIPS & SIPS. The statistical analysis of the differences between the mainscheme and crossline surfaces is shown in Figure 6. The average difference between the surfaces is -0.09 meters with a standard deviation of 0.11 meters; 95% of nodes agree within +/- 0.18 meters of the mean.

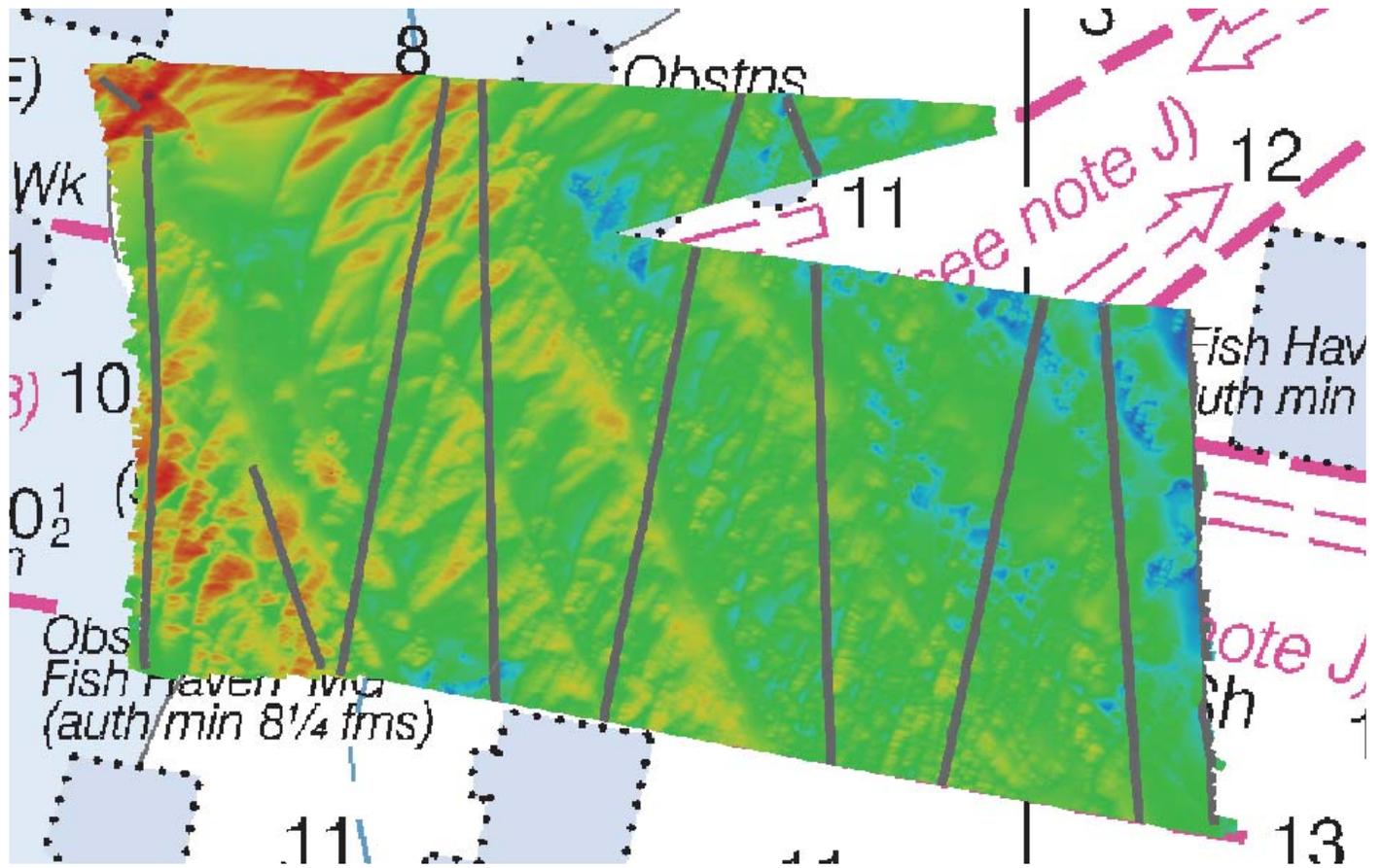


Figure 5: H12977 Crossline Coverage

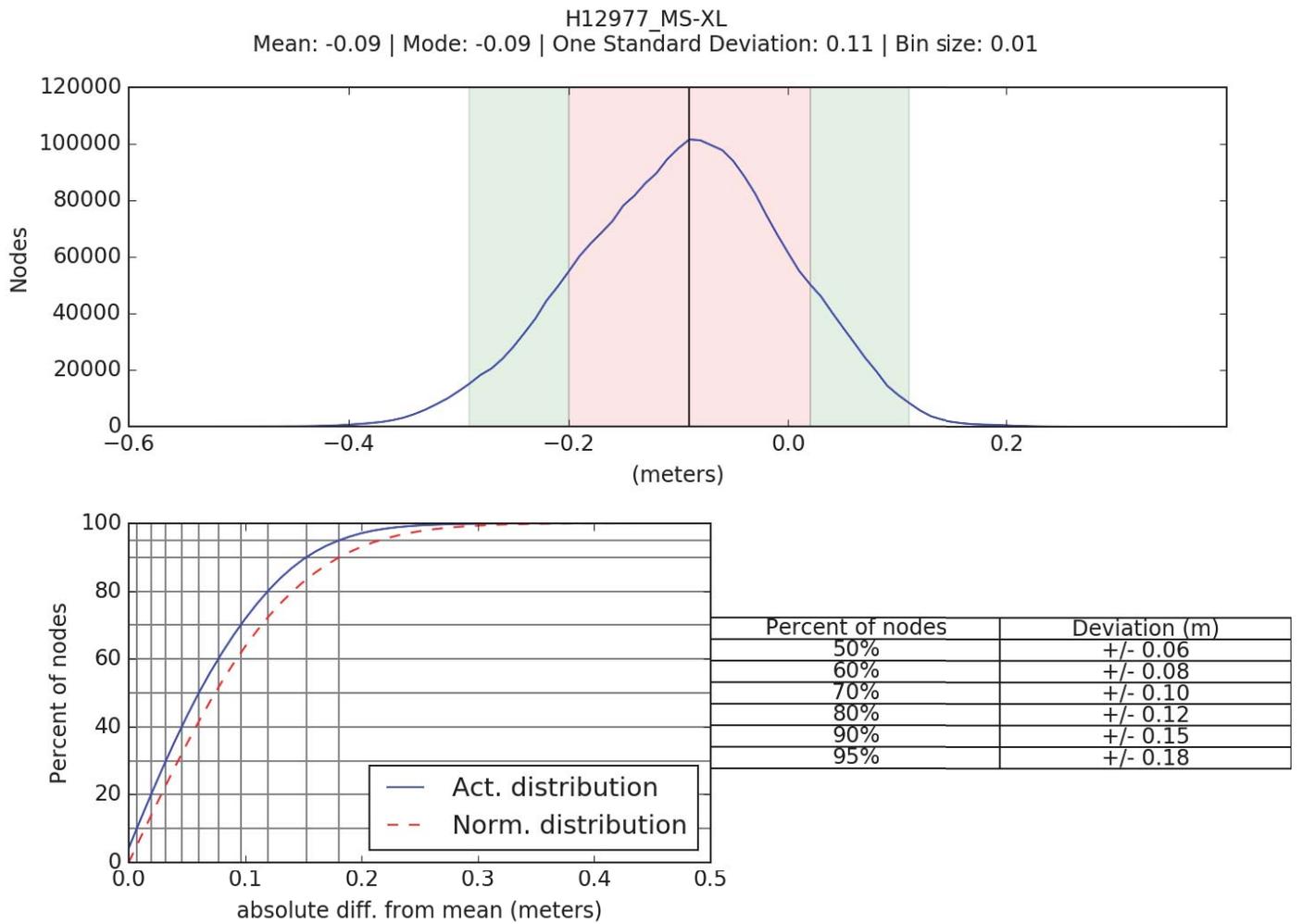


Figure 6: H12977 Crossline difference statistical analysis

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.00 meters	0.093 meters

Table 6: 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 7: Survey Specific Sound Speed TPU Values.

B.2.3 Junctions

H12977 junctions with H12976, which was acquired by the *Ferdinand R. Hassler* earlier in 2017 and is part of the current project. H12977 also junctions with prior survey H11821, conducted by NOAA Ship *Thomas Jefferson* in 2008.

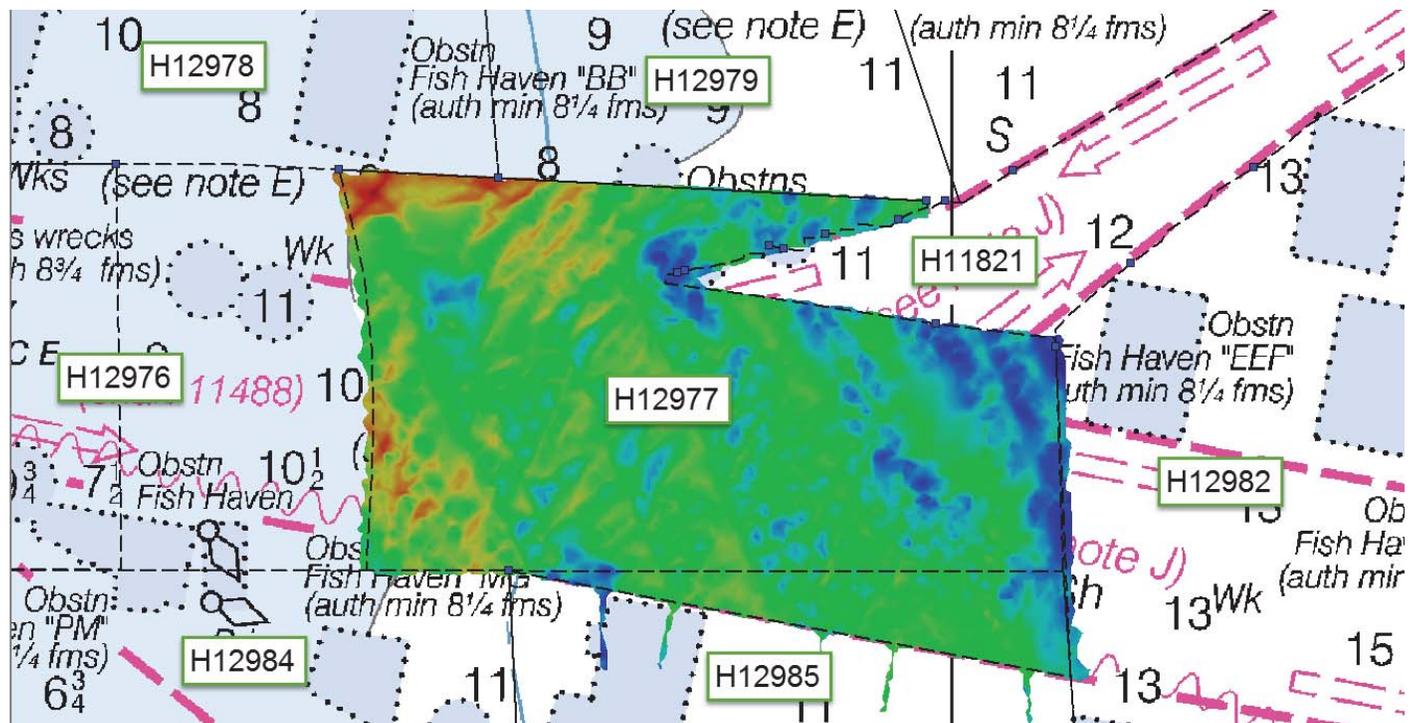


Figure 7: H12977 Junction Overview

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12976	1:40000	2017	NOAA Ship FERDINAND R. HASSLER	W
H11821	1:20000	2008	NOAA Ship THOMAS JEFFERSON	NE

Table 8: Junctioning Surveys

H12976

The minimum and maximum depth difference between H12976 and H12977 is -1.74 and 1.25 meters respectively. The average difference is 0.11 meters with a standard deviation of 0.10 meters; 95% of the differenced nodes are within +/- 0.19 meters of the mean. Junction overlap ranges from ~250m to ~350m.

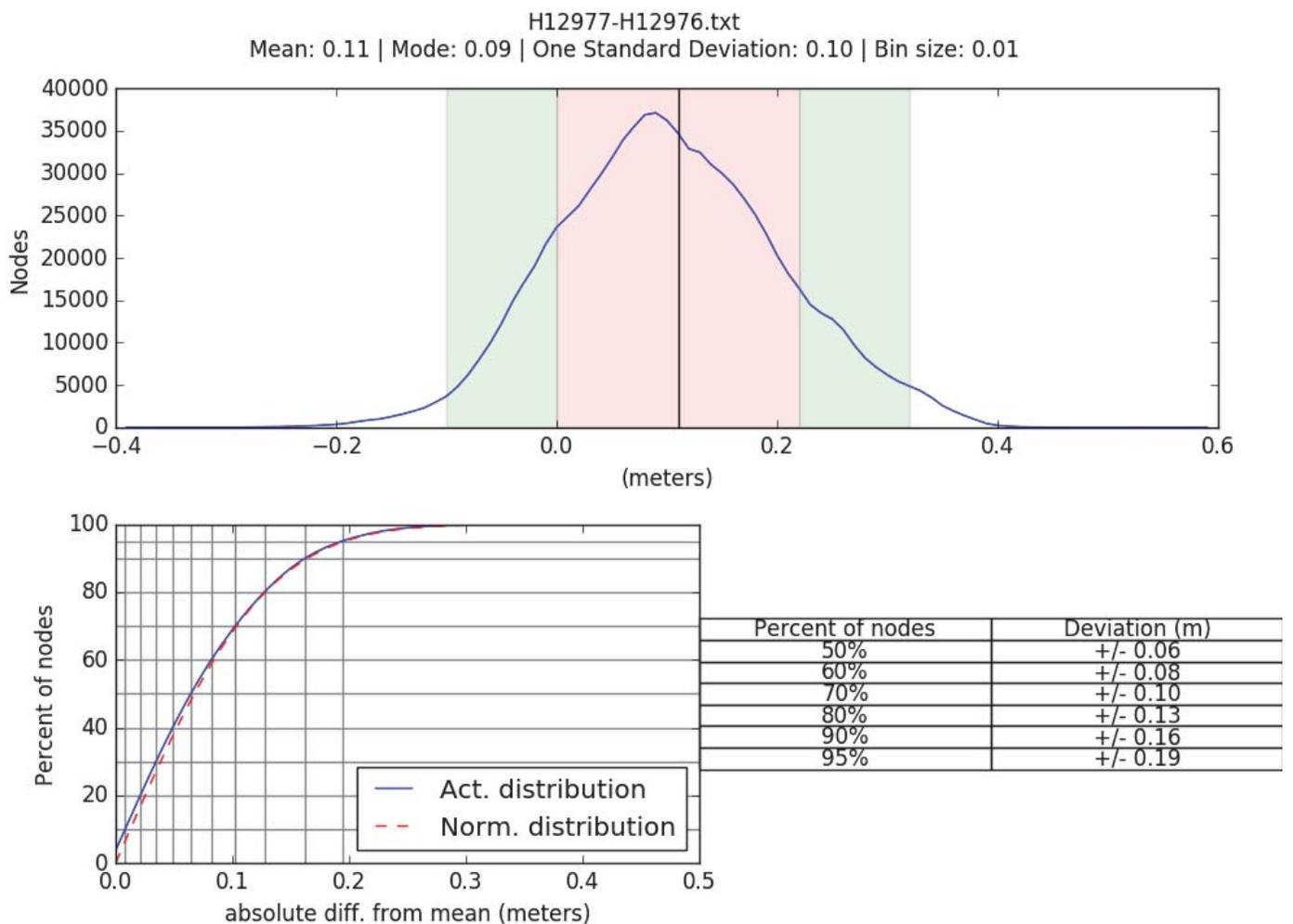


Figure 8: Difference Surface Statistics for H12977 and H12976

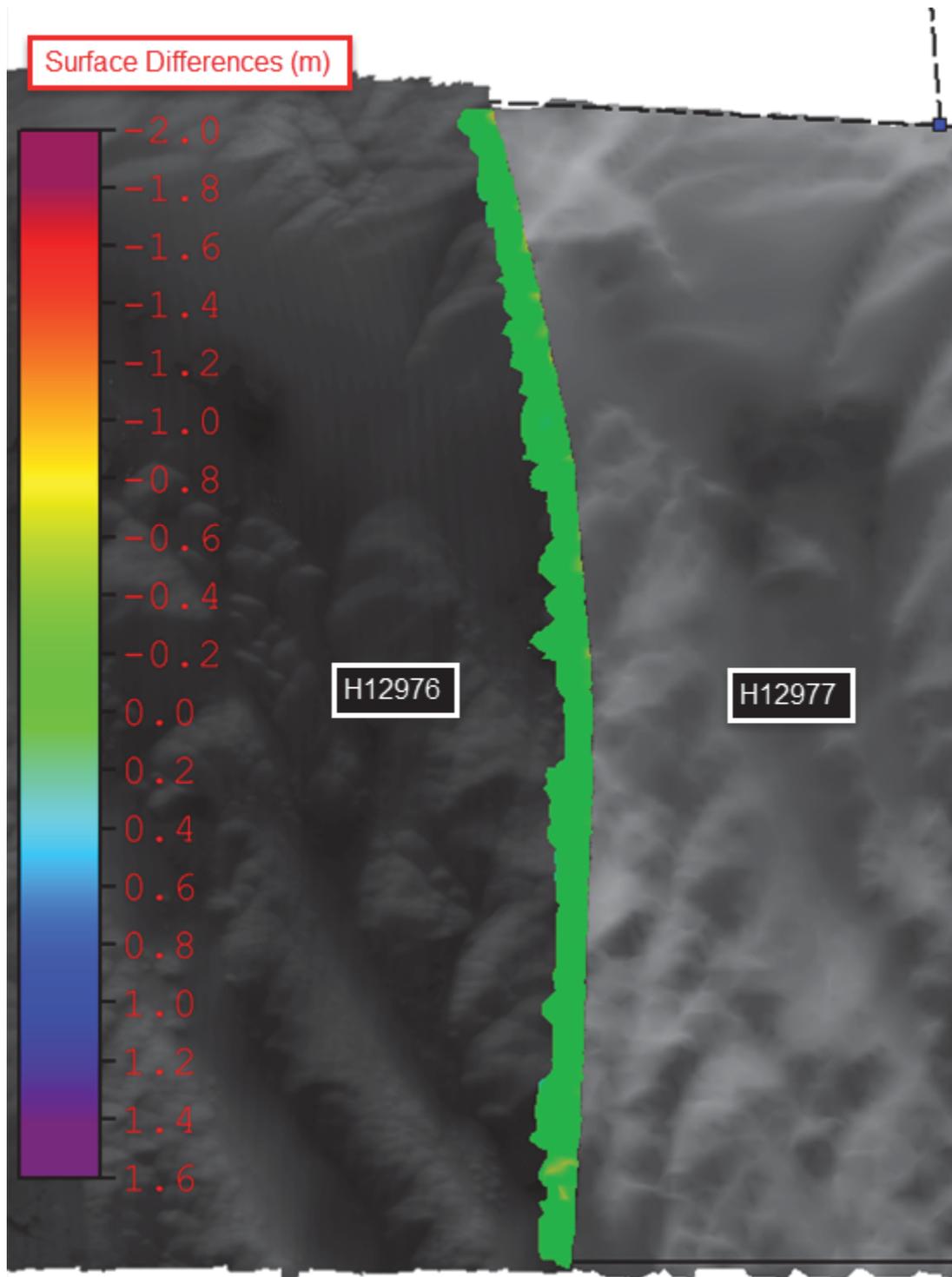


Figure 9: Junction between H12977 and H12976

H11821

Prior survey H11821 was acquired via set line spacing. The minimum and maximum depth difference between H11821 and H12977 is -0.06 and 4.47 meters respectively. The average difference is 0.14 meters with a standard deviation of 0.13 meters; 95% of the differenced nodes are within +/- 0.26 meters of the mean. Junction overlap ranges from ~850m to ~90m.

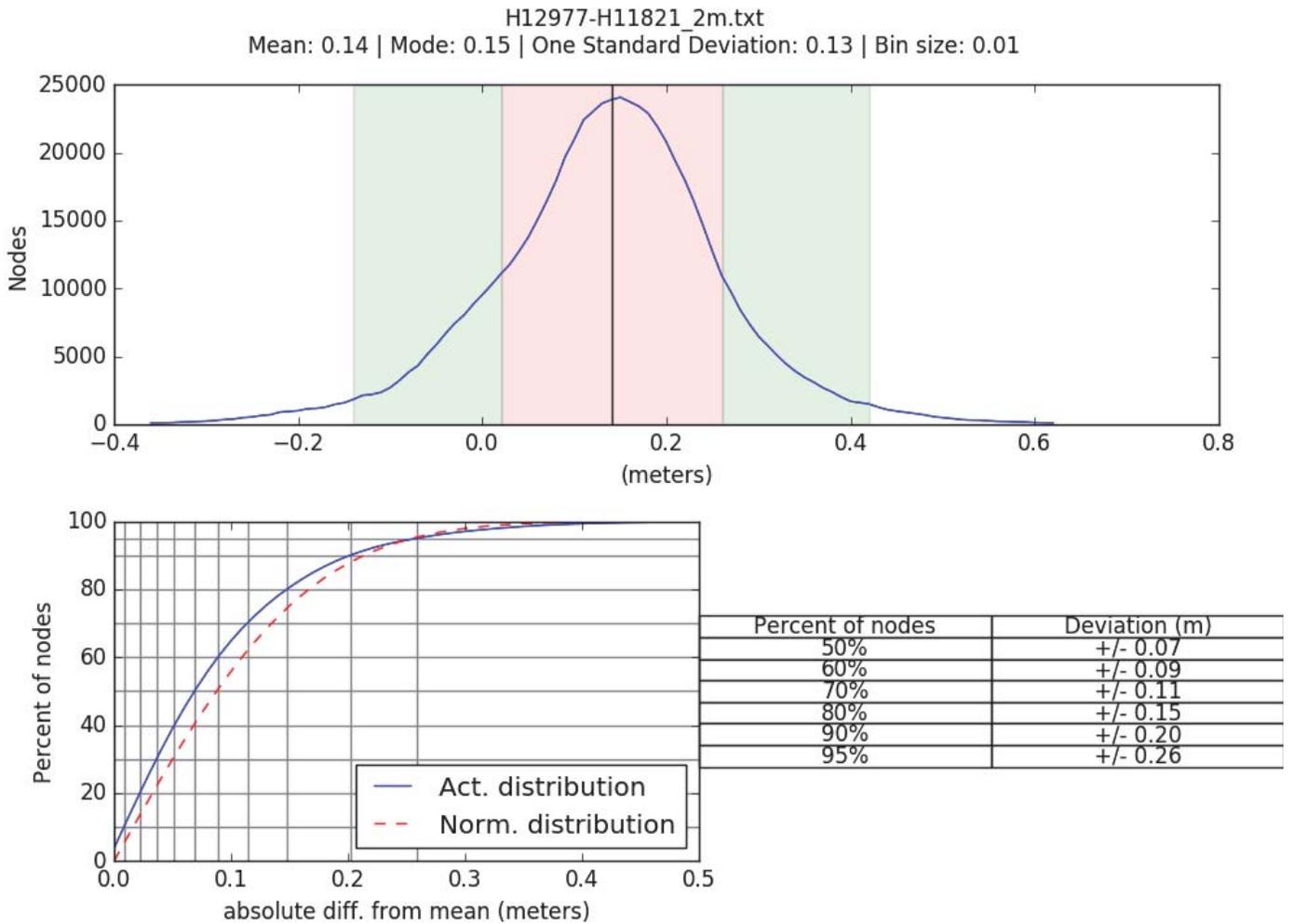


Figure 10: Difference Surface Statistics for H12977 and H11821.

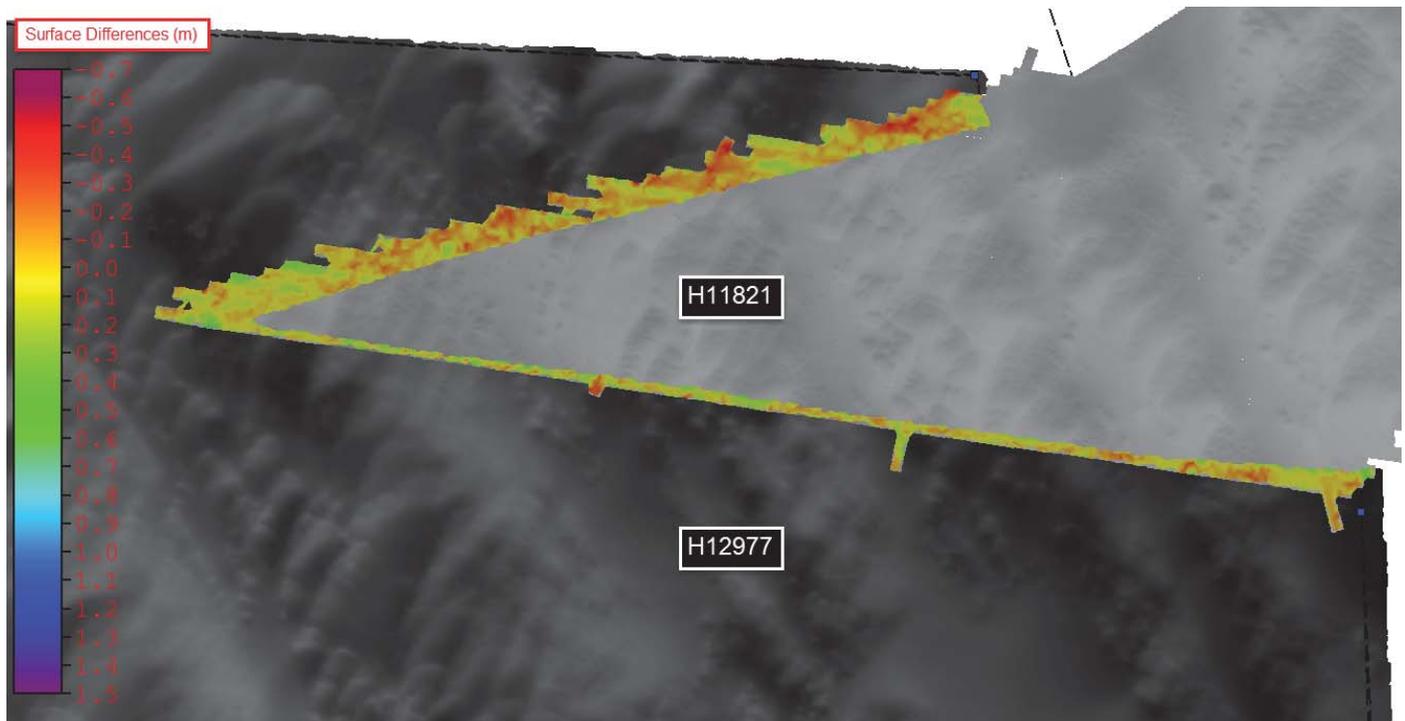


Figure 11: Junction between H12977 and H11821

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 two to three hours via Moving Vessel Profiler and Seabird CTD.

During the course of acquisition a total of sixty-three (63) sound speed measurements were collected via Moving Vessel Profiler and Seabird-CTD. Sound speed corrections were applied in CARIS HIPS/SIPS using the Nearest in Distance Within Time (NIDWT) selection with time frequency of 4 hours.

Note: Manual CTD casts were taken for the last three days of the survey (September 3rd-5th) due to a frayed cable that prevented the use of the MVP.

Due to vessel traffic, 2 (two) casts were taken over 200m outside of acquired sheet limits. One cast is located ENE of the sheet, ~415m from collected data, the other is located ~385m NW of collected data.

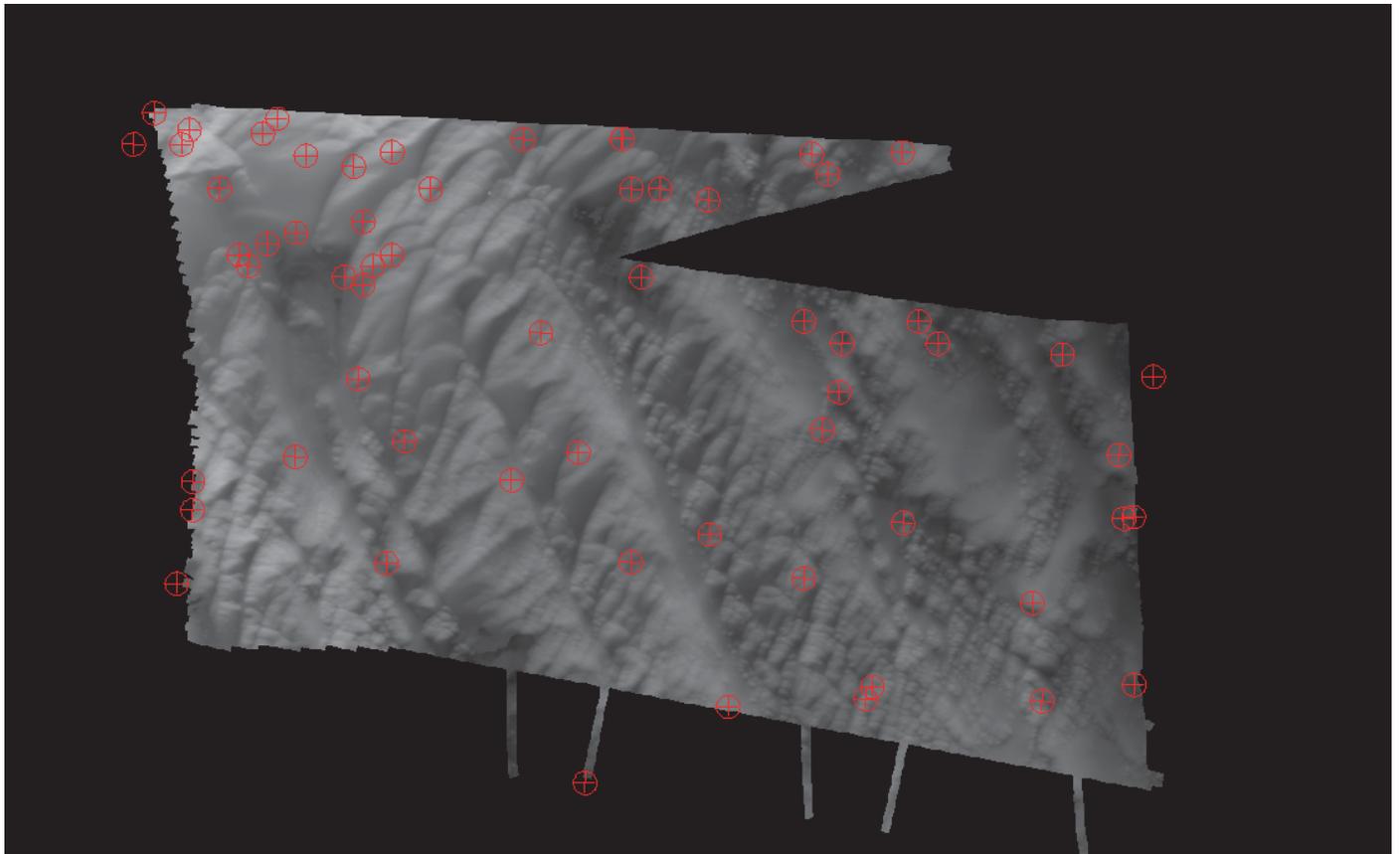


Figure 12: H12977 sound speed profile locations

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 logged as s7k files and has been processed by the field unit as per HTD 2017-4.

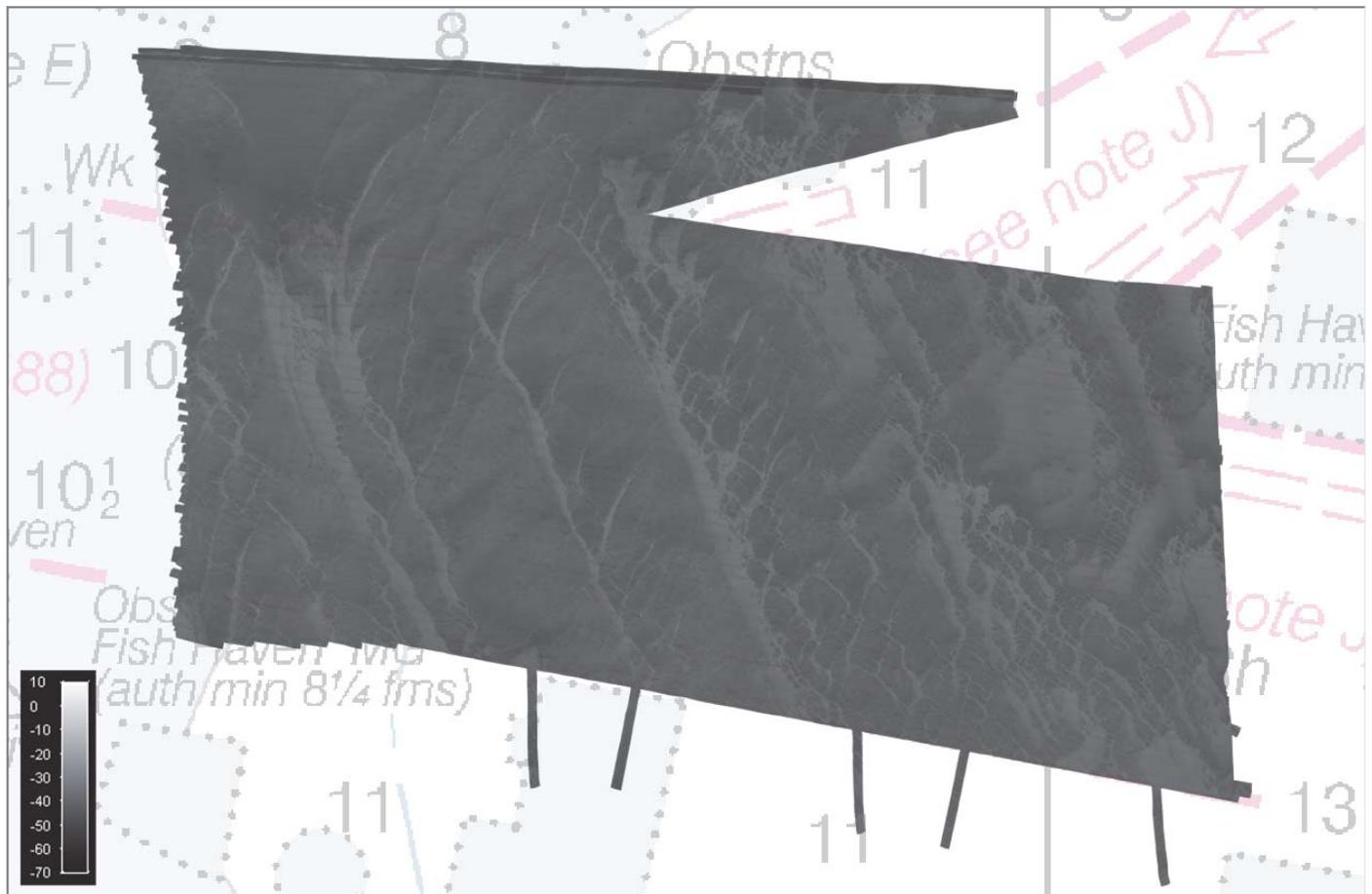


Figure 13: H12977 Backscatter Overview

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 9: 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

Table 10: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA Profile Version 5.6.

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
H12977_MB_VR_MLLW_Final	CARIS VR Surface (CUBE)	Variable Resolution meters	16 meters - 27 meters	NOAA_VR	Complete MBES
H12977_MB_VR_MLLW	CARIS Raster Surface (CUBE)	Variable Resolution meters	15.887 meters - 27.703 meters	NOAA_VR	Complete MBES

Table 11: 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. See Figure 14.

A TVU analysis was run using the VR finalized surface. The results determined that greater than 99.5% of nodes passed. See Figure 15.

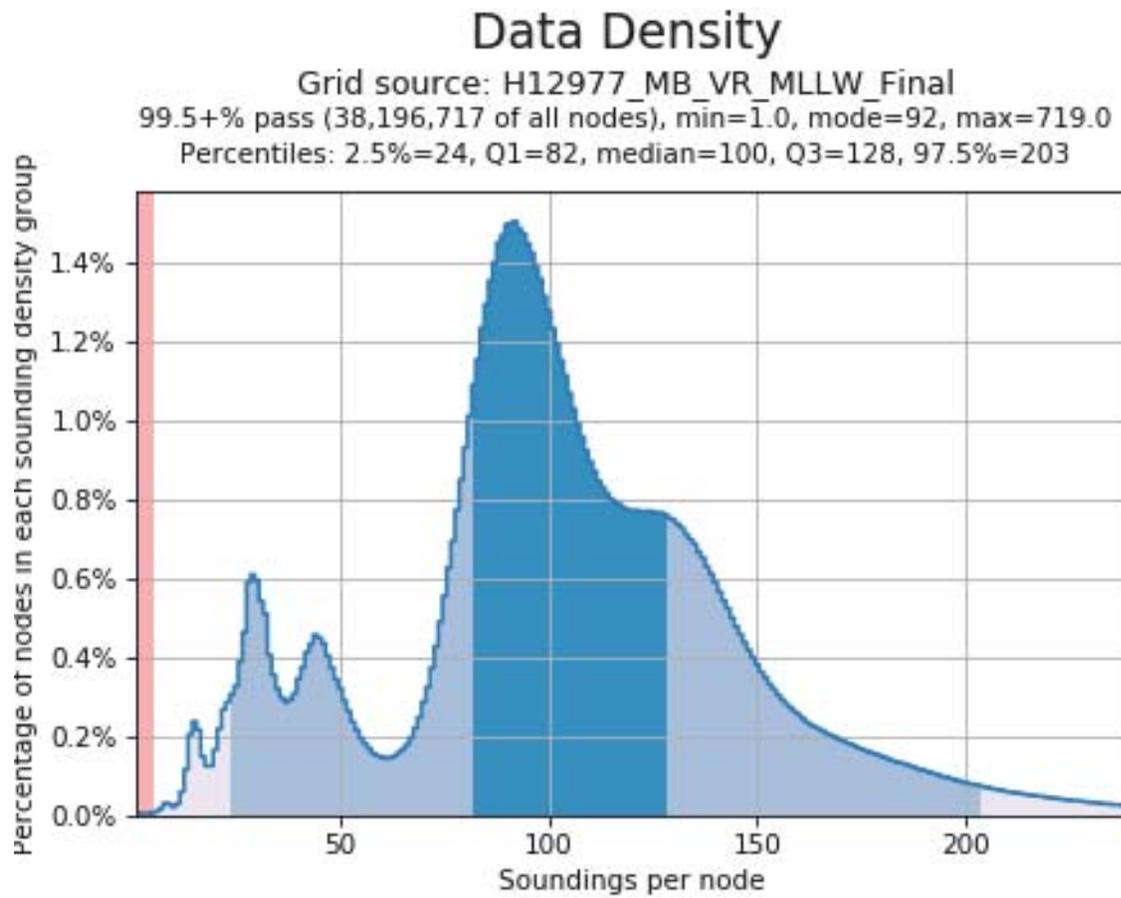


Figure 14: Data density of the VR finalized surface

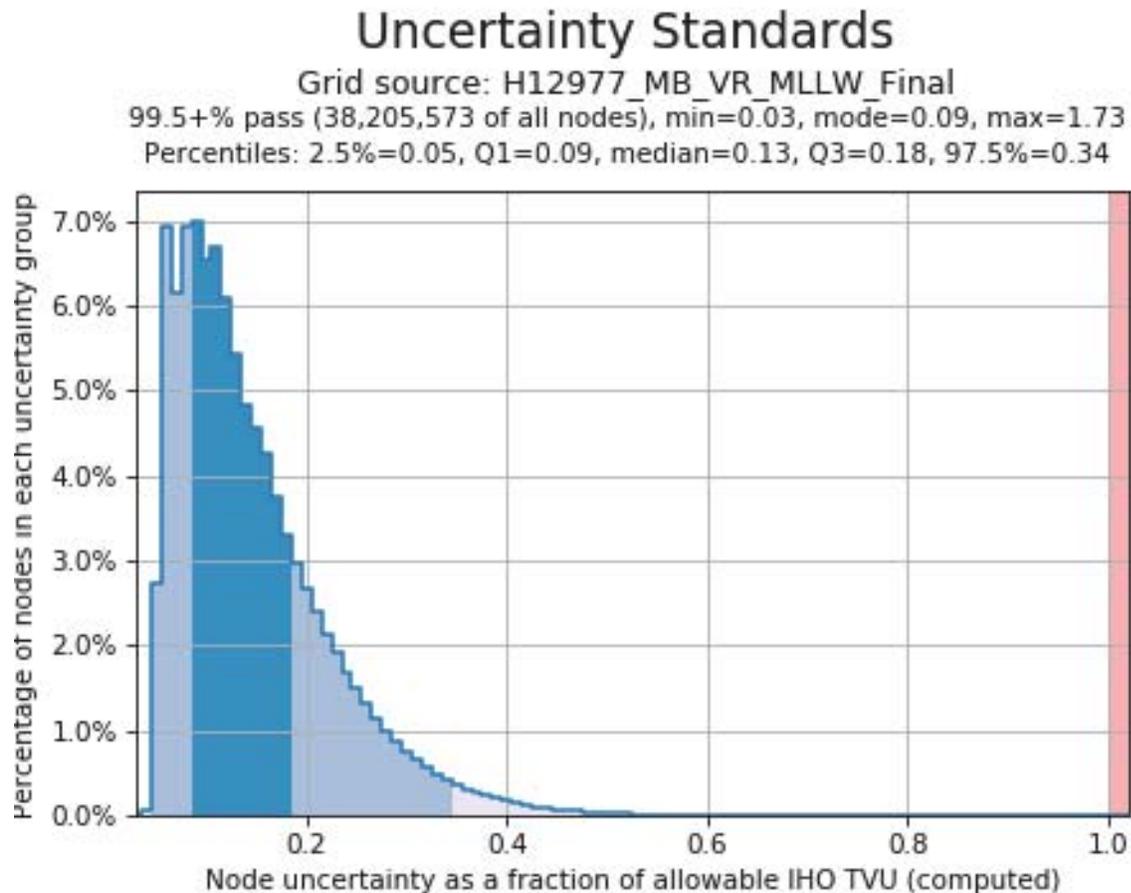


Figure 15: Total Vertical Uncertainty in the VR finalized surface

B.5.3 Designated Soundings

H12977 contains 1 (one) designated sounding in accordance with HSSD Section 5.2.1.2.3. 0 (zero) designated soundings represent DTONs, and the remaining 1 (one) designated sounding was selected to accurately represent the seafloor. The designated sounding occurs over a "New" feature and is discussed in the Final Feature File.

C. Vertical and Horizontal Control

All data for survey H12977 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). See section 3.3.1 for vertical offset details.

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:

VDatum_shapefile_xyNAD83-MLLW_geoid12b.csar

C.2 Horizontal Control

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

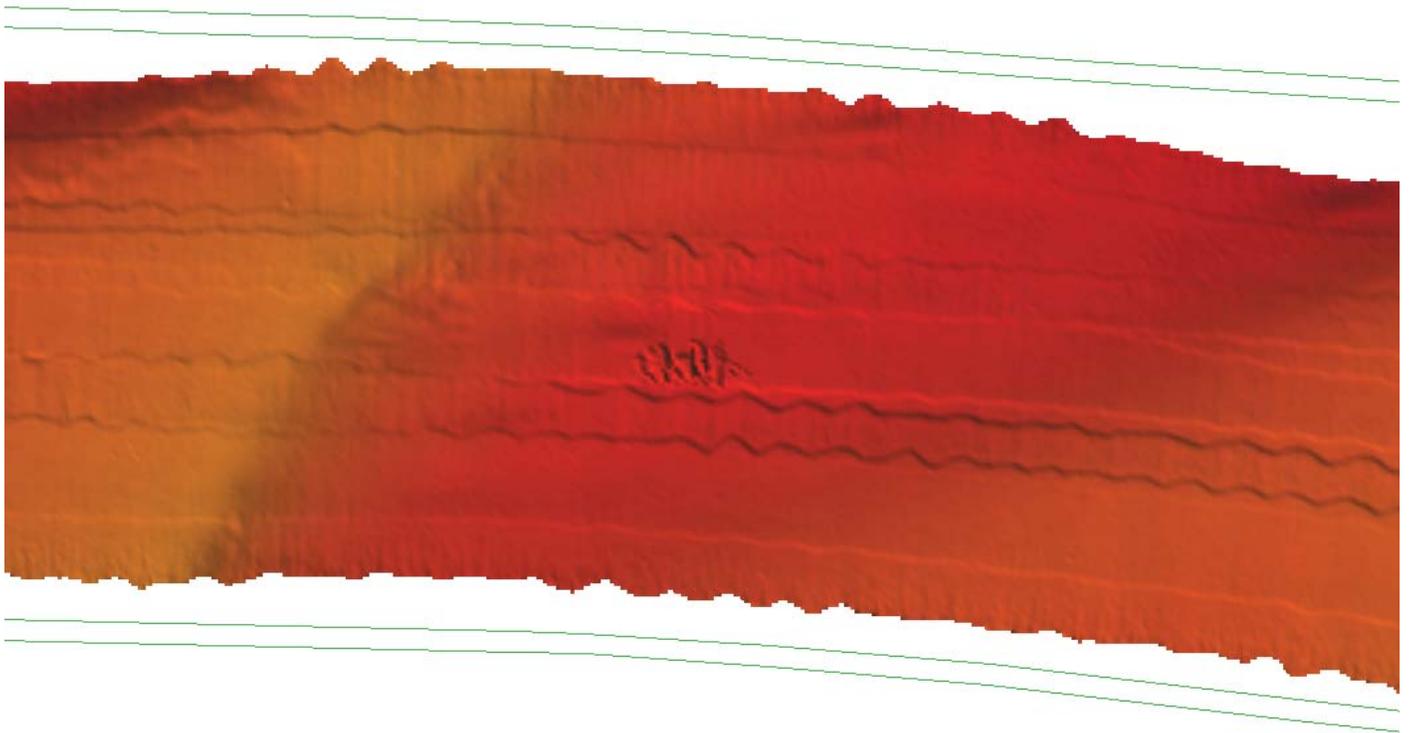
The projection used for this project is UTM Zone 17 N .

C.3 Additional Horizontal or Vertical Control Issues

3.3.1 Marinestar Solution - Vertical Offsets

After processing and applying Marinestar SBETS to port and starboard lines on H12977, vertical offsets of up to 40cm were discovered in the data. AutoQC results showed a few long periods where the ERZT SEP is ~20cm offset from that of the VDatum SEP. When data were referenced to MLLW via traditional tides, the offsets do not appear. Errors may have been due to satellite solution anomalies, but data fell within 2017 HSSD Specs and Marinestar SBETS were retained.

Singlebase and Smartbase SBET's were created for test purposes, but were not applied to the data.



*Figure 16: Most extreme example of ERS SBET vertical offset;
DN244; 15x exaggeration; 30-24-22.17N 81-06-24.49W*

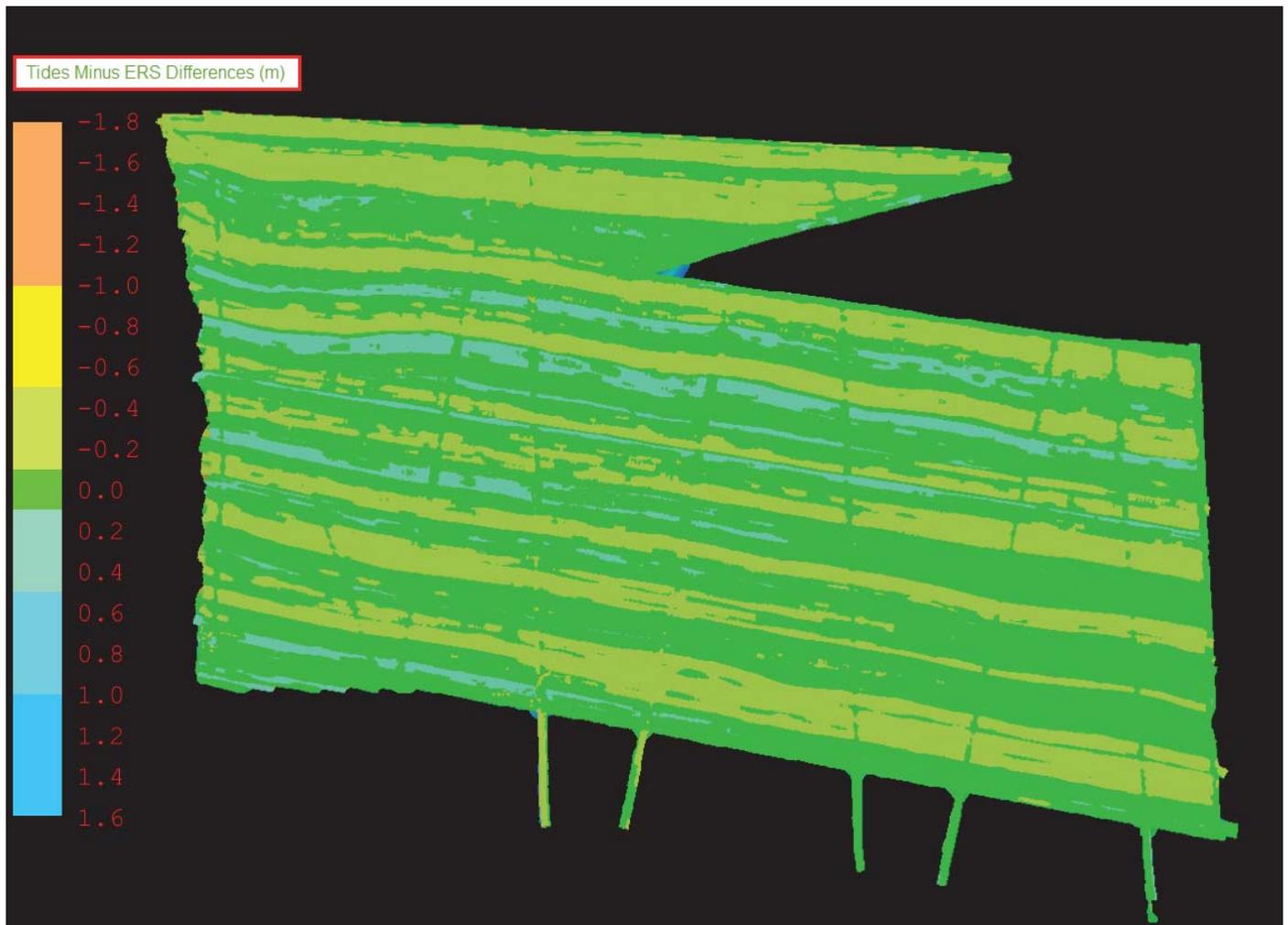


Figure 17: 1m Difference Surface; data referenced to traditional tides minus data referenced to the ellipse.

D. Results and Recommendations

D.1 Chart Comparison

Surveyed sounding and contour layers from H12977 were generated from a 1 meter CUBE grid in CARIS Base Editor and compared with the largest scale Electronic Navigational Charts. Details for each chart comparison are noted below.

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?
US4FL50M	1:80000	9	08/15/2013	08/15/2013	NO
US5FL51M	1:40000	28	07/29/2013	07/29/2013	NO
USGA10M	1:449659	21	12/19/2013	12/19/2013	NO

Table 12: Largest Scale ENC's

US4FL50M

ENC US4FL50M generally compares well with survey H12977. The surveyed 60 foot contour is slightly shallower than charted in the northwest and southwest corners of the survey. Soundings as surveyed agree to within +/- four feet as compared with currently charted depths.

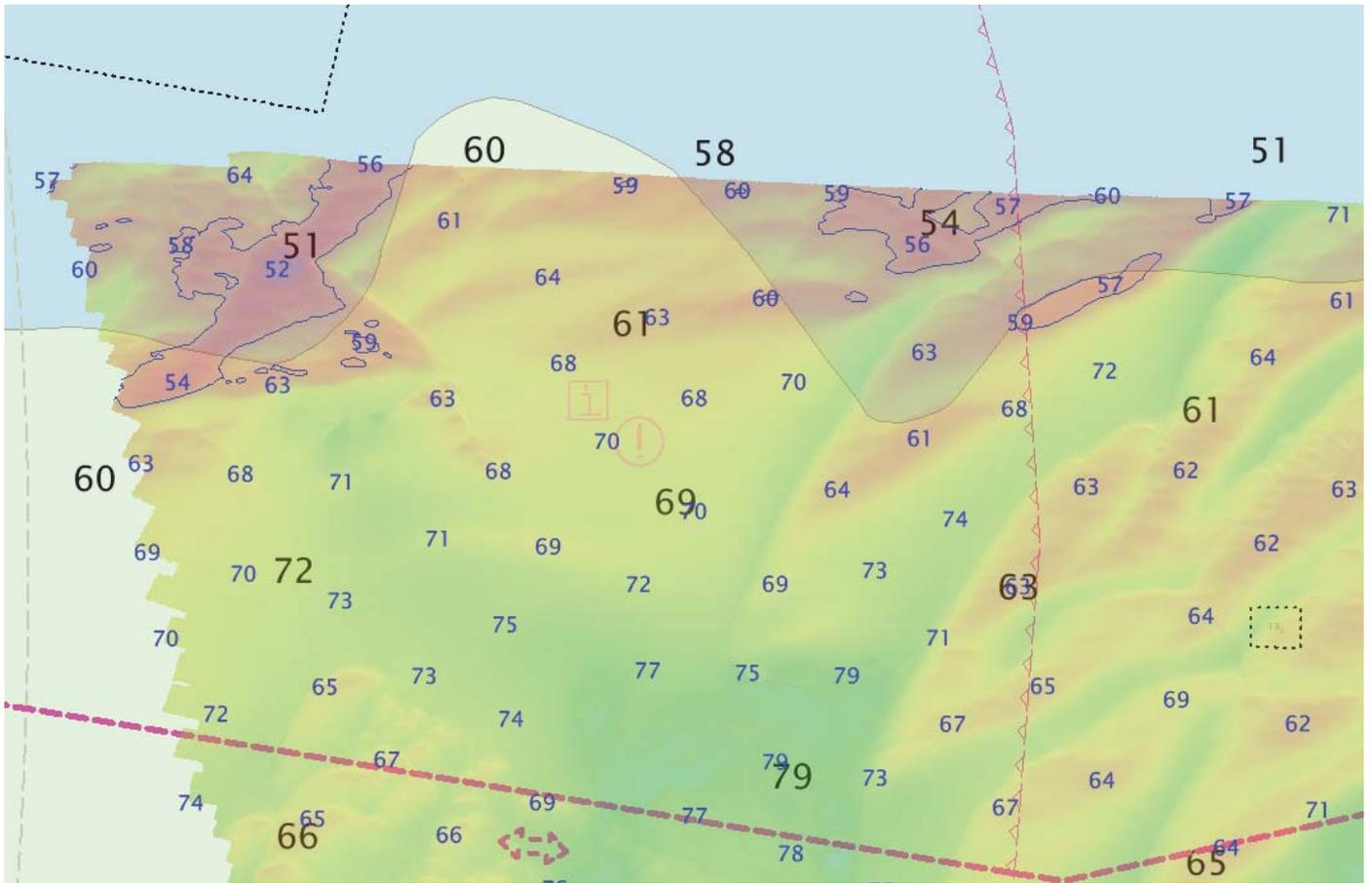


Figure 18: 60-foot surveyed contour and soundings (blue) as compared to ENC US4FL50M in the northwest corner of H12977.

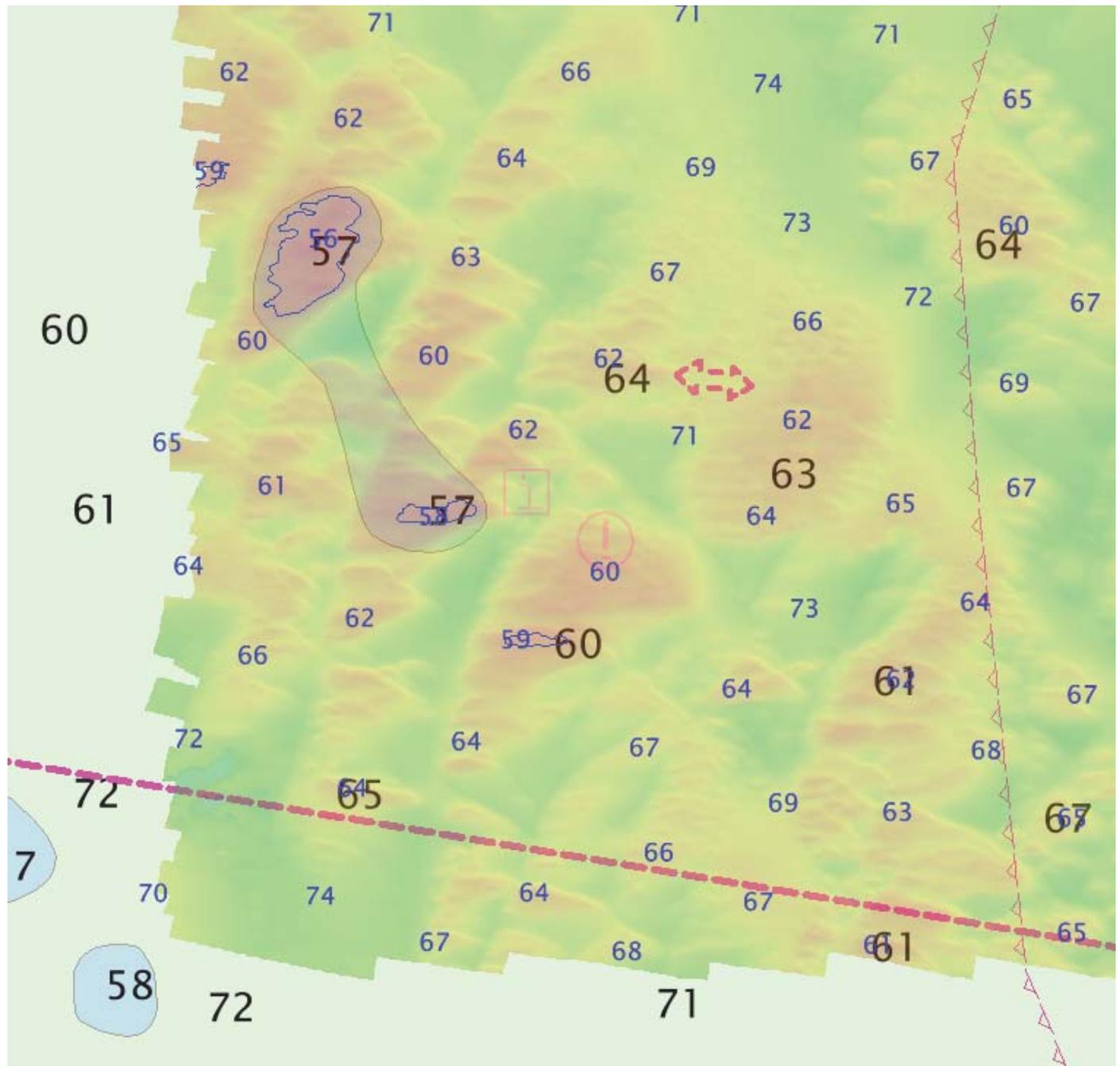


Figure 19: 60-foot surveyed contour and soundings (blue) as compared to ENC US4FL50M in the northwest corner of H12977.

US5FL51M

ENC US5FL51M generally compares well with survey H12977. The surveyed 60 foot contour is slightly shallower than charted in the northwest and southwest corners of the survey. Soundings as surveyed agree to within +/- four feet as compared with currently charted depths.

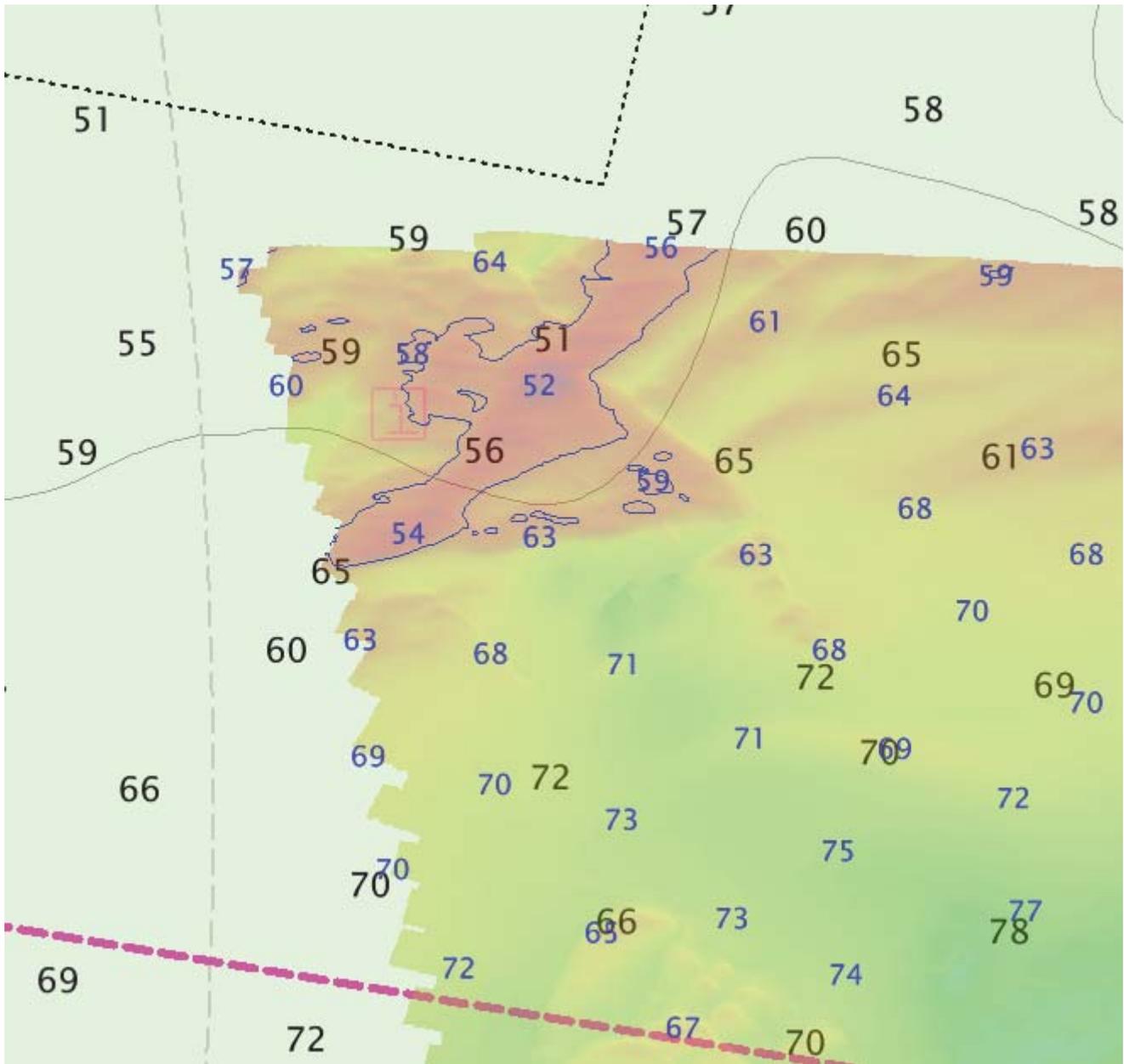


Figure 20: 60-foot surveyed contour and soundings (blue) as compared to ENC US5FL51M in the northwest corner of H12977.

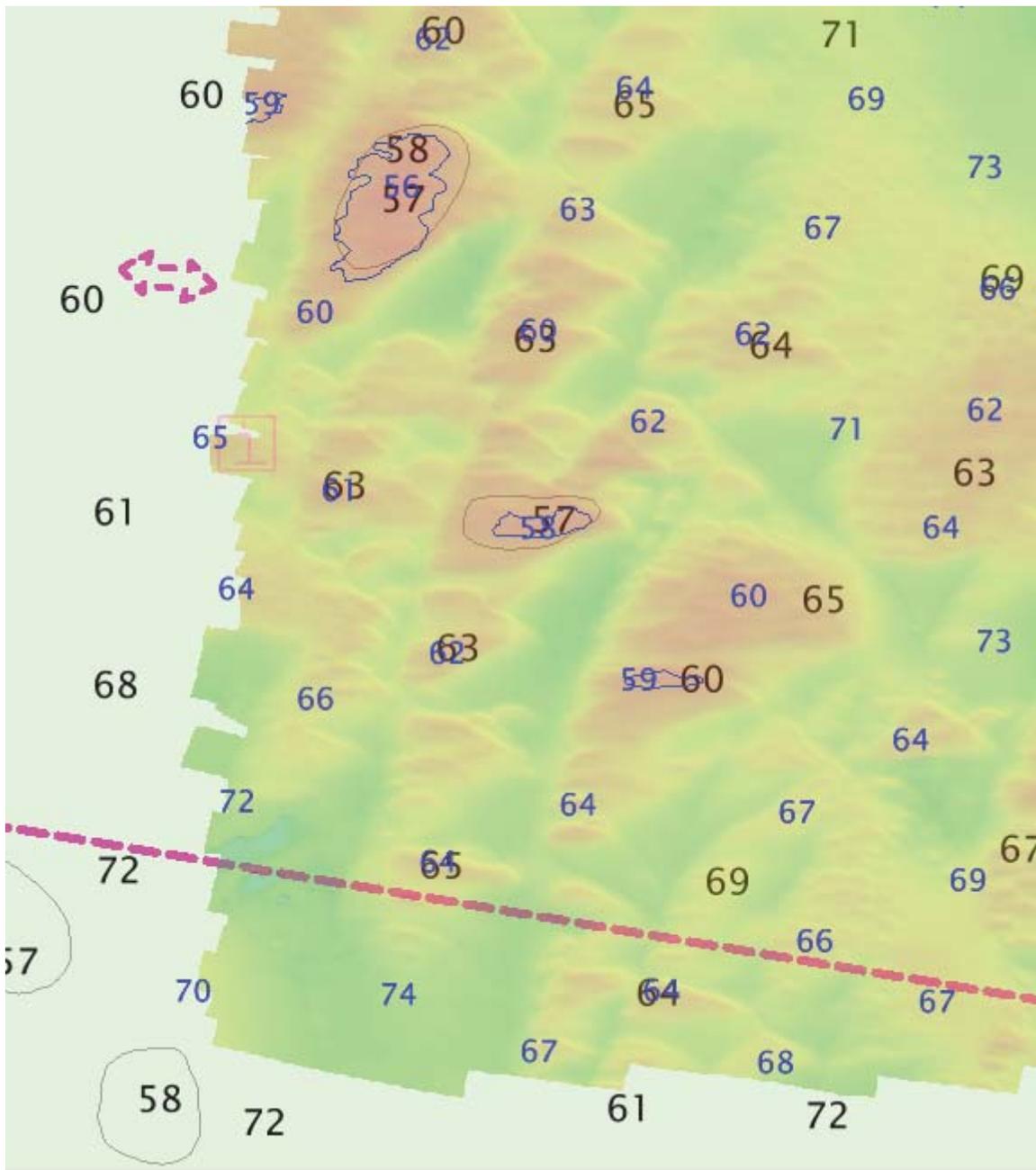


Figure 21: 60-foot surveyed contour and soundings (blue) as compared to ENC US5FL51M in the northwest corner of H12977.

USGA10M

The eastern side of survey H12977 corresponds to ENC USGA10M. Soundings as surveyed generally agree to within +/- one fathom as compared to currently charted depths.

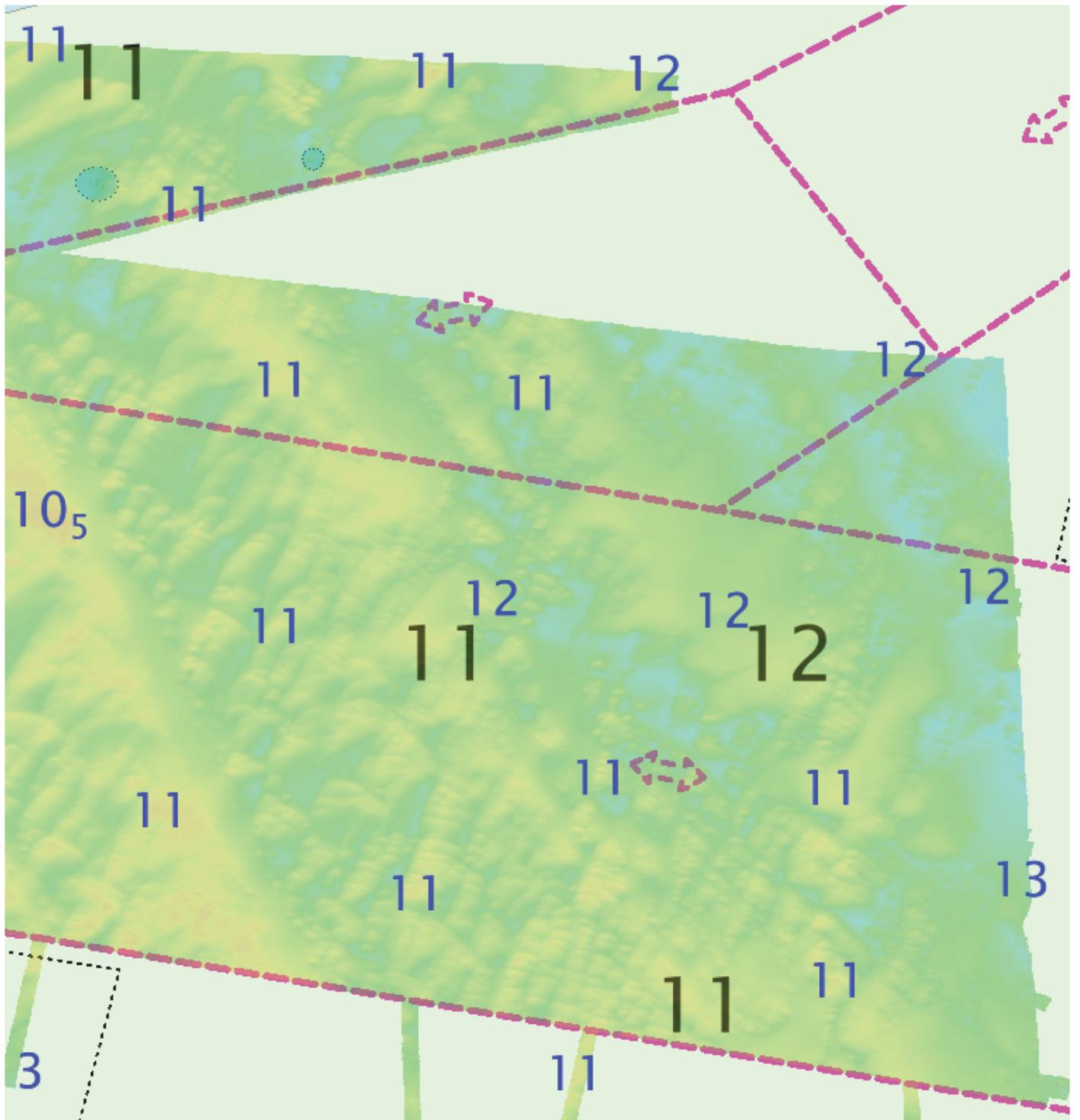


Figure 22: H12977 surveyed soundings (blue) vs. ENC USGA10M.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

Two PA obstructions and a PA fish haven were investigated as part of H12977 and are addressed in the Final Feature File.

D.1.4 Uncharted Features

One new obstruction was addressed in the FFF, located ~500m NE of the charted fish haven.

D.1.5 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.6 Channels

Survey H12977 was acquired over a charted precautionary area for northern right whale critical habitat. This "recommended two-way whale avoidance route" is annotated as Note D on chart 11488 and Note J on chart 11480 for use by all vessels traveling into or out of Brunswick, Fernandina Beach, and Jacksonville. It is recommended that the two-way route and Right Whale critical habitat precautionary area be retained as charted.

D.1.7 Bottom Samples

Two (2) bottom samples were acquired as part of H12977 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

*Note that the PA obstruction area feature (fish haven) is annotated in the ENC attribution table under "Information" that "The buoys marking these fish havens are not charted." No buoys were observed during survey operations for H12977.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

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

Abnormal seafloor and/or environmental conditions were not observed 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 Specifications and 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	2017-09-27

Approver Name	Approver Title	Approval Date	Signature
LCDR Matthew Jaskoski	Chief of Party	10/04/2017	 Digitally signed by JASKOSKI, MATTHEW.J.1275636262 Date: 2017.10.04 09:00:00 -04'00'
LT John Kidd	Field Operations Officer	10/04/2017	 2017.10.04 09:16:16 -04'00'
PS Robert Short	Sheet Manager	10/04/2017	Robert Short Digitally signed by Robert Short DN: cn=Robert Short, o=NOAA, ou=Atlantic Hydrographic Branch, email=robert.short@noaa.gov, c=US Date: 2017.10.04 09:06:56 -04'00'

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



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Ship FERDINAND R. HASSLER (MOA-FH)
29 Wentworth Road
New Castle, NH 03854

September 10, 2017

MEMORANDUM FOR: Gerald Hovis, Chief, Products and Services Branch, N/OPS3

FROM: Matthew Jaskoski, LCDR/NOAA, NOAA Ship FERDINAND R. HASSLER (MOA-FH)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

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

Transmit data to the following:

Atlantic Hydrographic Branch (N/CS33)
439 West York St
Norfolk, VA 23510

NOAA Ship FERDINAND R. HASSLER (MOA-FH)
29 Wentworth Road
New Castle, NH 03854

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

Project No.: OPR-G343-FH-17
Registry No.: H12977
State: Florida
Locality: Approaches to Jacksonville, FL
Sublocality: Main Channel

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID & MIF files of the track lines from Pydro

cc: N/CS33
MOA-FH



Year_DOY	Min Time	Max Time
2017_243	08:44:35	23:52:35
2017_244	00:07:41	23:48:34
2017_245	00:15:37	23:52:19
2017_246	00:23:46	23:50:45
2017_247	00:12:04	23:46:22
2017_248	00:10:28	17:46:35



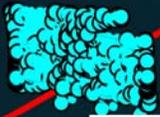
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910



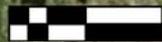
**Preliminary as Final Tidal Zoning for
OPR-G343-FH-2017, H12977
Main Channel, Approaches to Jacksonville, FL**

8720218 MAYPORT, FL 

- SA196
- SA201
- SA197
- SA195
- SA202
- SA200
- SA199
- SA203
- SA207
- SA198
- SA204
- SA206
- SA208
- SA205
- SA209



0 10



nautical miles



APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE



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

Final Tide Notes for OPR-G343-FH-17, Registry Nos. F00695 and H12977

1 message

Hua Yang - NOAA Affiliate <hua.yang@noaa.gov>

Wed, Sep 20, 2017 at 6:35 AM

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

Cc: Corey Allen - NOAA Federal <Corey.allen@noaa.gov>, Castle Parker - NOAA Federal <Castle.E.Parker@noaa.gov>, AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Gerald Hovis <gerald.hovis@noaa.gov>, "_NOS.CO-OPS.HPT" <nos.coops.hpt@noaa.gov>



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

DATE: 09/20/2017

MEMORANDUM FOR: LCDR Matthew Jaskoski
Commanding Officer, NOAA Ship FERDINAND R. HASSLER (MOA-FH)

FROM: Gerald Hovis
Chief, Products and Services Branch, N/OPS3

SUBJECT: Delivery of Tide Requirements for Hydrographic Surveys

This is notification that the preliminary zoning is accepted as the final zoning for survey project OPR-G343-FH-17, Registry Numbers F00695 and H12977 during the time period between August 31 - September 05, 2017. The accepted reference station for Registry Numbers F00695 and H12977 is Mayport, FL (8720218).

Included with this memo are the Tide Notes in .PDF format, stating the preliminary zoning has been accepted as the final zoning.

Best regards,

Hua Yang

Hydrographic Planning Team
NOAA/National Ocean Service
Center for Operational Oceanographic Products and Services
Station 7128
1305 East West Highway, SSMC4
Silver Spring, MD 20910
Office: 240-533-0612
Email: Hua.Yang@noaa.gov
Web: <http://tidesandcurrents.noaa.gov/>

Hydro Hot List: <http://tidesandcurrents.noaa.gov/hydro.shtml>

2 attachments

H12977.pdf

9/20/2017

National Oceanic and Atmospheric Administration Mail - Final Tide Notes for OPR-G343-FH-17, Registry Nos. F00695 and H12977

646K



F00695.pdf

646K



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

Request Final Tides - H12977

1 message

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Sun, Sep 10, 2017 at 1:18 PM

To: Final Tides <Final.Tides@noaa.gov>

Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Brendan Guthrie - NOAA Federal <brendan.guthrie@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

Greetings,

Please see attached Request Final Tides for OPR-G343-FH-17 Sheet H12977.

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

2 attachments

 **H12977_Final_Tides_Request.pdf**
34K

 **H12977_Final_Tides_Request.zip**
127K



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

URGENT: H12977 - Feature search radii

2 messages

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

Mon, Sep 4, 2017 at 3:14 PM

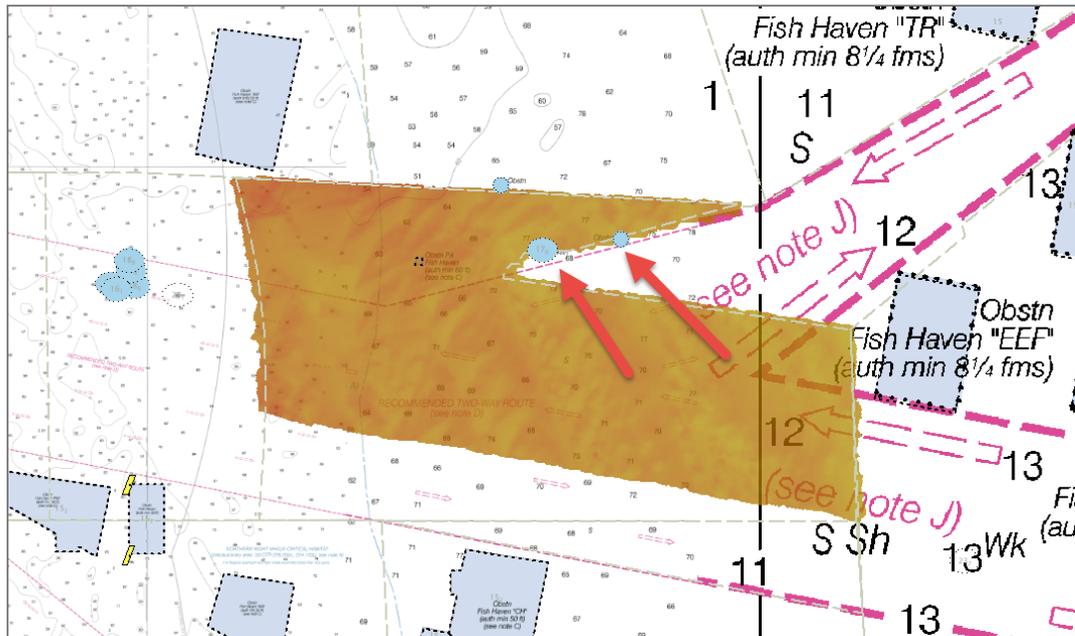
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>

Cc: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Tyanne Faulkes - NOAA Federal <tyanne.faulkes@noaa.gov>, Kurt Mueller - NOAA Federal <kurt.mueller@noaa.gov>, Matthew Sharr - NOAA Federal <matthew.sharr@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

Kathryn,

We are working on finishing up H12977 and noticed that we do not have a prescribed wreck/obstruction search radii for the CSF features. I have attached an image of the two features in question. Note: the feature to the north outside of the sheet limits of H12977 will be addressed when we do H12979.

Until we hear back, we will operate on the assumption that for known features the search radius is 2mm @ survey scale or 50m, whichever is greater (typically up to 100m).



LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

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

Tue, Sep 5, 2017 at 7:18 AM

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

Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Tyanne Faulkes - NOAA Federal <tyanne.faulkes@noaa.gov>, Kurt Mueller - NOAA Federal <kurt.mueller@noaa.gov>, Matthew Sharr - NOAA Federal <matthew.sharr@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

LT Kidd,

At the time of release of these instructions, we hadn't yet set into motion the practice of providing the radii in the CSF. Under our new paradigm (pending CAPT Brennan's approval) known features will have a radius of 1mm at largest chart scale (50m Min, 100m Max). PAs/Reported features 2mm largest chart scale (100m Min, 160m Max), PDs/EDs 3mm largest chart scale (150m Min, 240m Max).

Katy is very busy at the moment wrapping up our last task order for the year, but I'll see if she can get this on her radar and update in the PRF coming week.

Regards, Corey

[Quoted text hidden]

--

J. Corey Allen

Chief (acting), Operations Branch

Hydrographic Surveys Division

Office of Coast Survey, NOAA

Corey.Allen@noaa.gov

240.533.0037 (Office)

301.717.7271 (Cell)

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



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

OPR-G343-FH-17 H12977 Sheet Limits

3 messages

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Mon, Sep 4, 2017 at 11:09 AM
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
Cc: _NOS OCS HSD OPS <hsd.ops@noaa.gov>

Kathryn,

Seeing that the western boundary of H12977 and that the direction the mainscheme lines developed, we have chosen to extend the sheet limits a little to the south to cover the remainder of the inbound traffic lanes. Sorry I didn't contact you guys earlier about this, it was a bit of a last minute decision. I have attached a .shp file of the proposed new sheet limits.

Also attached an updated, just for an update

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

5 attachments

-  **OPR-G343_FH-17_SheetLimits_TESARE_Polygon.shp**
8K
-  **OPR-G343_FH-17_SheetLimits_TESARE_Polygon.shp_rxl**
2K
-  **OPR-G343_FH-17_SheetLimits_TESARE_Polygon.shx**
1K
-  **OPR-G343_FH-17_SheetLimits_TESARE_Polygon.dbf**
89K
-  **OPR-G343-FH-17_H12977_update.pdf**
825K

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Mon, Sep 4, 2017 at 12:43 PM
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
Cc: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

Kathryn,

In the event that hurricane Irma dogs-right and heads up the eastern shore, I would expect we would get tasked to do some sort of hurricane response. Because of this and after we have achieved a complete survey with the existing sheet limits, we would like to avoid opening up another sheet. We are planning to continue working south on H12977 until we need to head back into port. This would result in ~12-18 hr of additional main-scheme lines.

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

[Quoted text hidden]

Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> Tue, Sep 5, 2017 at 12:52 PM
To: "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>
Cc: _NOS OCS HSD OPS <hsd.ops@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

LT Kidd,

That is understandable. Just submit the final outline of H12977 as complete as possible before you have to head back to port. We can ingest the unsurveyed area of H12977 into the final outline of sheets H12984 and H12985 when we survey those sheets.

Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
[240-533-0033](tel:240-533-0033)
kathryn.pridgen@noaa.gov

On Mon, Sep 4, 2017 at 12:43 PM, OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> wrote:

Kathryn,

In the event that hurricane Irma dogs-right and heads up the eastern shore, I would expect we would get tasked to do some sort of hurricane response. Because of this and after we have achieved a complete survey with the existing sheet limits, we would like to avoid opening up another sheet. We are planing to continue working south on H12977 until we need to head back into port. This would result in ~12-18 hr of additional main-scheme lines.

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

On Mon, Sep 4, 2017 at 11:09 AM, OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> wrote:

Kathryn,

Seeing that the western boundary of H12977 and that the direction the mainscheme lines developed, we have chosen to extend the sheet limits a little to the south to cover the remainder of the inbound traffic lanes. Sorry I didn't contact you guys earlier about this, it was a bit of a last minute decision. I have attached a .shp file of the proposed new sheet limits.

Also attached an updated, just for an update

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854



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

Survey Outline - H12977

2 messages

OPS.Ferdinand Hassler - NOAA Service Account <ops.ferdinand.hassler@noaa.gov> Sun, Sep 10, 2017 at 12:53 PM

To: _NOS OCS Survey Outlines <survey.outlines@noaa.gov>

Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, CO HASSLER <co.ferdinand.hassler@noaa.gov>

Greetings,

Please see the attached survey outline for Project OPR-G343-FH-17 Sheet H12977

'H12977_Survey_Outline.000'

LT John Kidd
Field Operations Officer, NOAA Ship *Ferdinand R. Hassler*
29 Wentworth Road
New Castle, NH, 03854

 **H12977_Survey_Outline.000**
10K

Brian Mohr - NOAA Federal <brian.mohr@noaa.gov>

Fri, Sep 15, 2017 at 1:55 PM

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

Got them, Thanks.

Brian Mohr
Physical Scientist - Data Manager
Hydrographic Surveys Division
brian.mohr@noaa.gov
301 713 2700

[Quoted text hidden]

APPROVAL PAGE

H12977

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

- H12977_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12977_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: _____

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