

H12767

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12767

LOCALITY

State(s): South Carolina

General Locality: Southeast Atlantic Ocean

Sub-locality: 9.5 NM East of Charleston Harbor Channel Buoy,
Pilot area "A".

2015

CHIEF OF PARTY
Shepard M. Smith, CAPT/ NOAA

LIBRARY & ARCHIVES

Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		H12767
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):	South Carolina	
General Locality:	Southeast Atlantic Ocean	
Sub-Locality:	9.5 NM East of Charleston Harbor Channel Buoy, Pilot area	
Scale:	20000	
Dates of Survey:	10/25/2015 to 11/07/2015	
Instructions Dated:	04/09/2015	
Project Number:	OPR-G380-TJ-15	
Field Unit:	NOAA Ship <i>Thomas Jefferson</i>	
Chief of Party:	Shepard M. Smith, CAPT/ NOAA	
Soundings by:	Multibeam Echo Sounder	
Imagery by:	Side Scan Sonar	
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 H12767

Project: OPR-G380-TJ-15

Locality: Southeast Atlantic Ocean

Sublocality: 9.5 NM East of Charleston Harbor Channel Buoy, Pilot area "A".

Scale: 1:20000

October 2015 - November 2015

NOAA Ship *Thomas Jefferson*

Chief of Party: Shepard M. Smith, CAPT/ NOAA

A. Area Surveyed

Survey H12767 is located 9.5 NM East of Charleston Harbor Channel Buoy, Pilot area "A".

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
32° 36' 27.15" N 79° 21' 42.19" W	32° 36' 28.4" N 79° 21' 41.93" W

Table 1: Survey Limits



A.2 Survey Purpose

Survey H12767 was conducted in support of NOAA's Office of Coast Survey to provide contemporary hydrographic data in support of a new nautical chart in this area and in response to a harbor deepening project in the Port of Charleston which will better serve deeper draft ships transiting the area. This survey was identified as priority number 10 in the Project Instructions signed April 9th, 2015 and modified May 15th, 2015.

A.3 Survey Quality

2

Data acquired on survey H12767 met Object Detection coverage requirements, including the 5 soundings per node data density requirements outlined in section 5.2.2.1 of the HSSD.

Object Detection coverage was calculated by using the "compute Statistics" function in CARIS Hips and Sips on a finalized grid for the 50cm and 1 meter resolutions. The resultant ASCII file computed from the density layer was then exported to an Excel spreadsheet.

On the 50cm grid, 32,530,834 nodes were examined, of which only 812,343 failed to meet the requirement, making the final ratio 97.5% meeting the 5 pings per node requirement. (figure 2.)

On the 1 meter grid, 62,897,346 nodes were examined, of which only 263,626 failed to meet the requirement, making the final ratio 99.6% meeting the 5 pings per node requirement. (figure 3.)

The entire survey is adequate to supersede previous data.

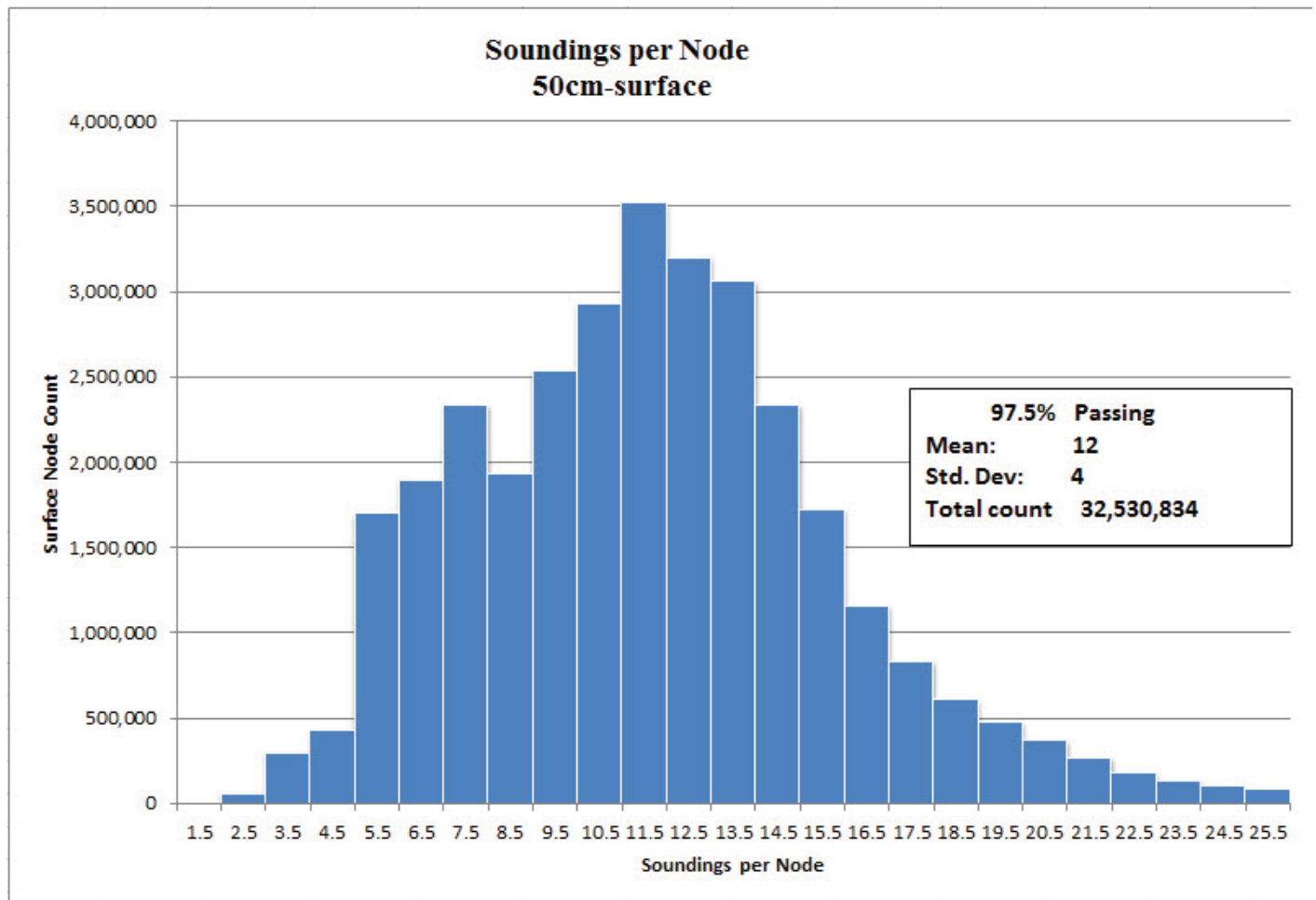


Figure 2: Survey H12767 summary graph showing percentage of nodes satisfying 5 soundings density requirement at the 50 centimeter gridded resolution.

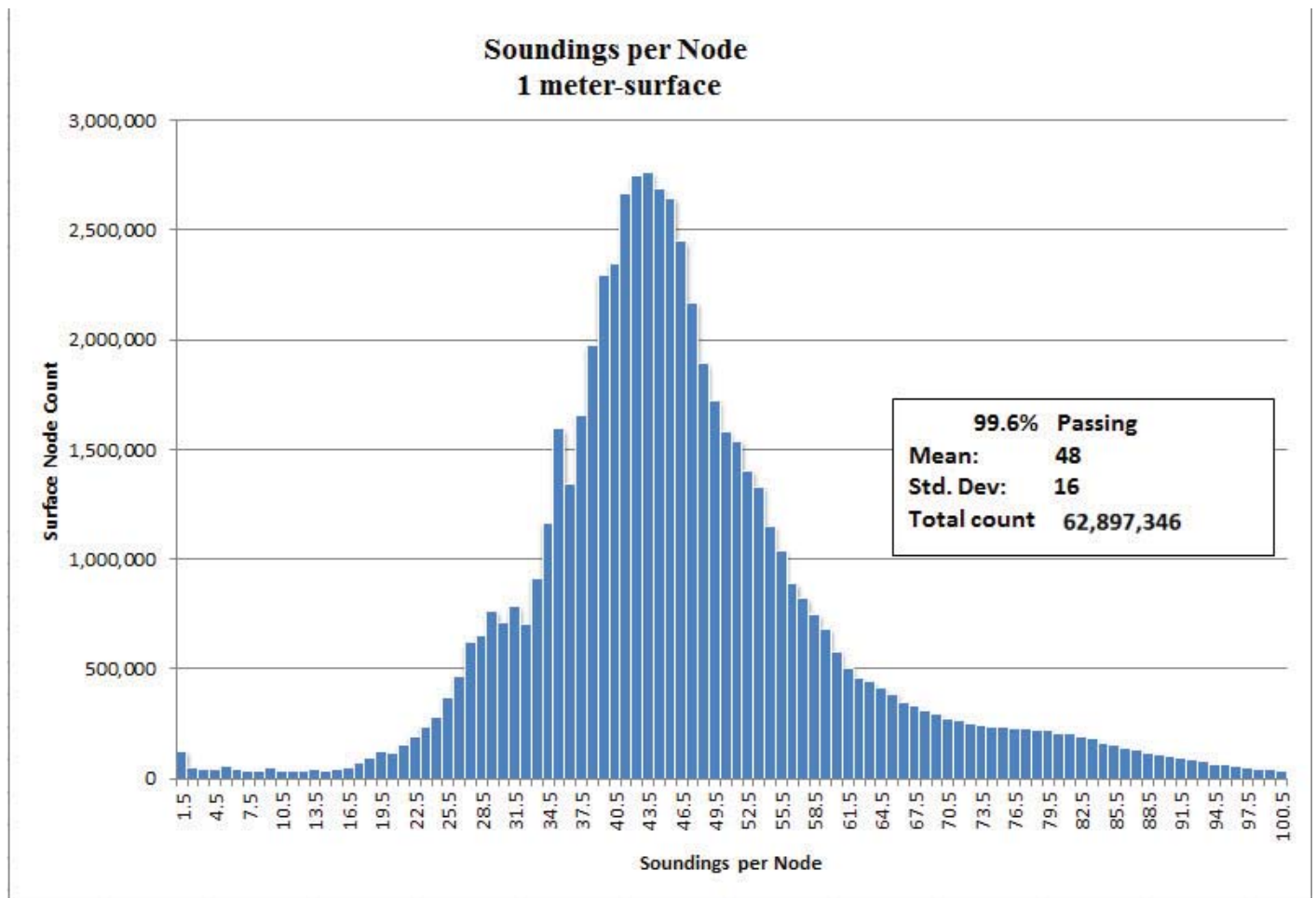


Figure 3: Survey H12767 summary graph showing percentage of nodes satisfying 5 soundings density requirement at the 1 meter gridded resolution.

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.	Object Detection : Either A) 200% SSS with concurrent set line spacing SBES or MBES with backscatter, or B) Object detection MBES with Backscatter.

200% side scan coverage and Object Detection multi-beam data were achieved within the sheet limits as defined in the Project Instructions.

The side scan winch on the Thomas Jefferson was inoperable from DN298 to DN299 where the Thomas Jefferson acquired Object Detection MBES with the RESON SV2 system in the southern section of the

sheet. All survey data collected by Object Detection Multibeam was computed to a 50cm finalized CUBE surface.

The 100% side scan mosaic on the eastern edge of the sheet limits contains various small holidays at the edge of the sheet limits.

Both 100% and 200% mosaics contains small holiday areas (4m X 120m). When SonarPro (Klein acquisition software) creates a new file, a one second time frame passes, equating to a 4x120 meter holiday. The overlapping mosaic covers these small areas. The corresponding MBES lines were investigated resulting in no significant contacts.

An 84 meter multi-beam along-track holiday (84m X 65m) is located at 32-37-32N, 79-21-52W. This area is well represented in the surrounding multi-beam acquisition as well as both side scan mosaics and no indication of features or shoaling were observed.

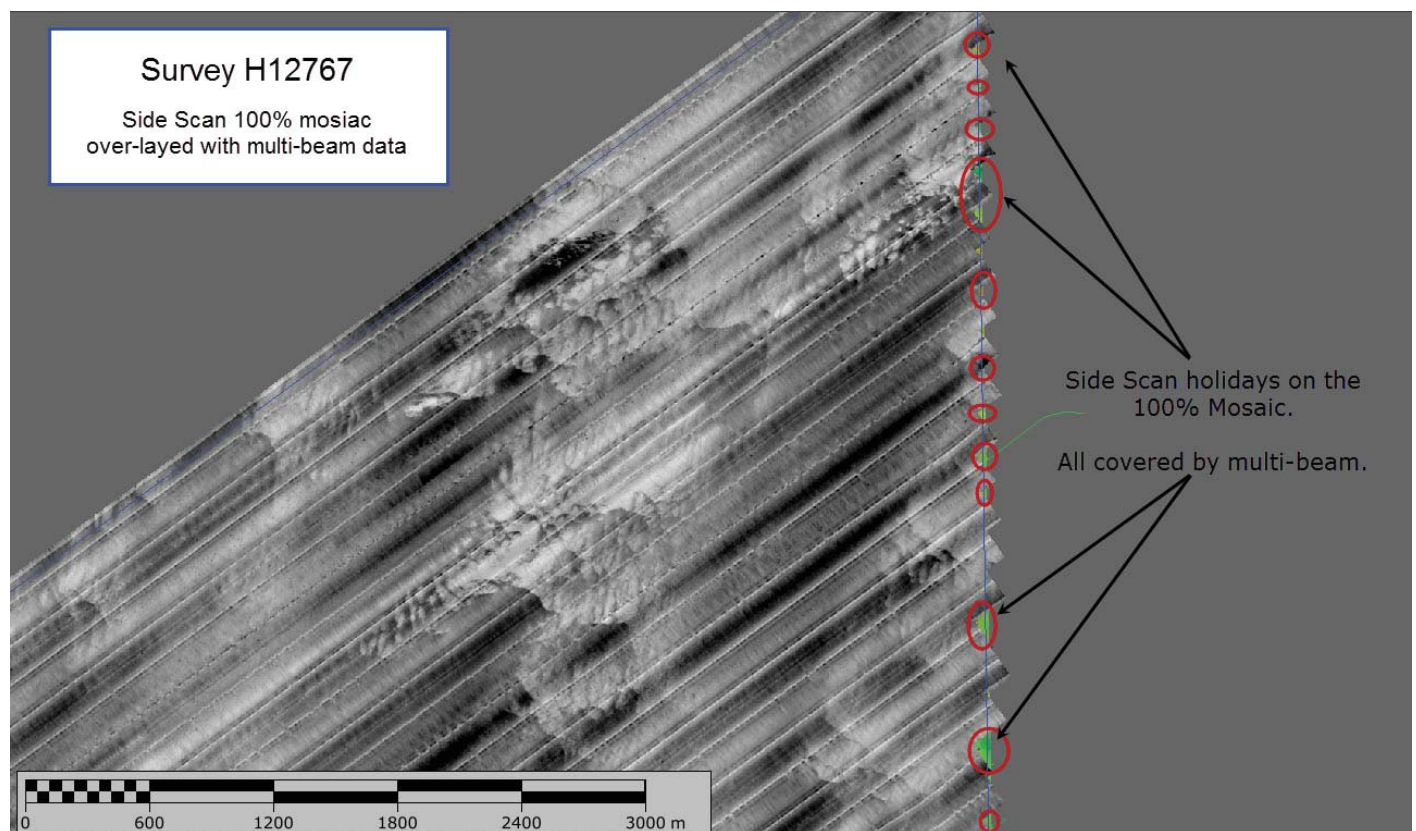


Figure 4: Survey H12767 100% Side Scan Mosaic holidays with multi-beam data underlaid.

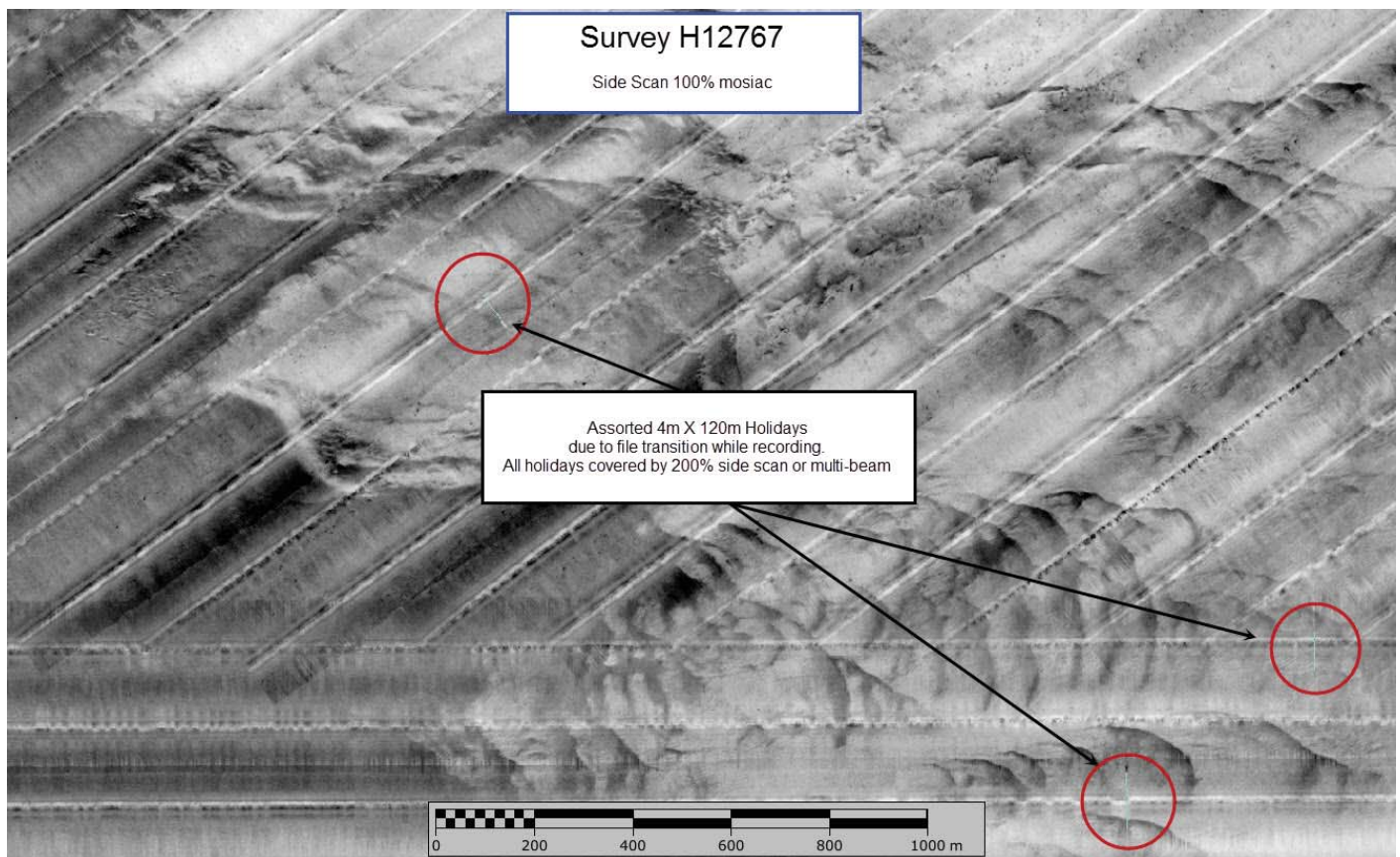


Figure 5: Survey H12767 Side Scan mosaic showing areas where the file read/write time on the hard drive lagged approximately 1 second while acquiring data.

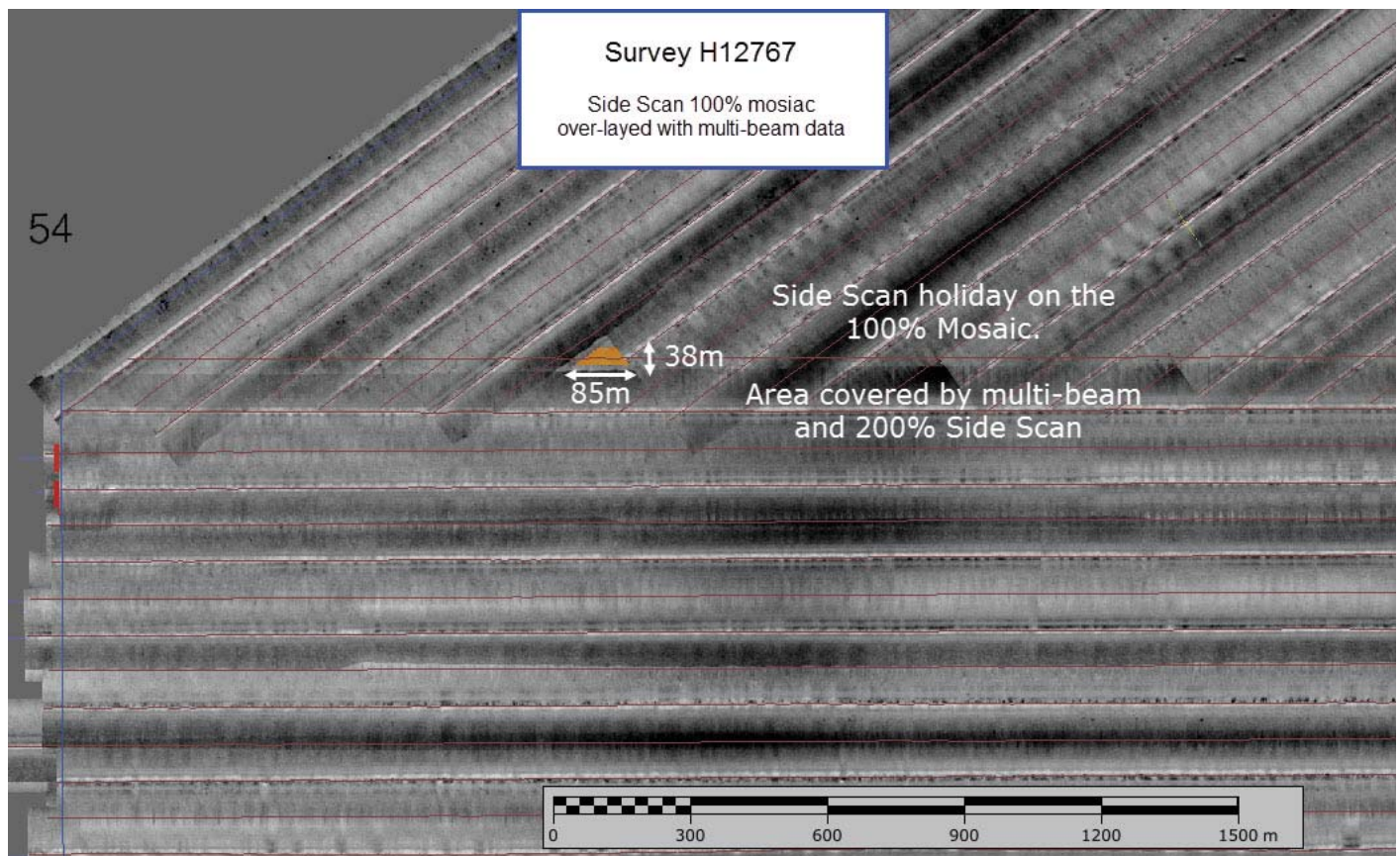


Figure 6: Survey H12767 100% Side Scan mosaic showing a 38m by 85m holiday. This holiday is covered with data from multi-beam and 200% side Scan.

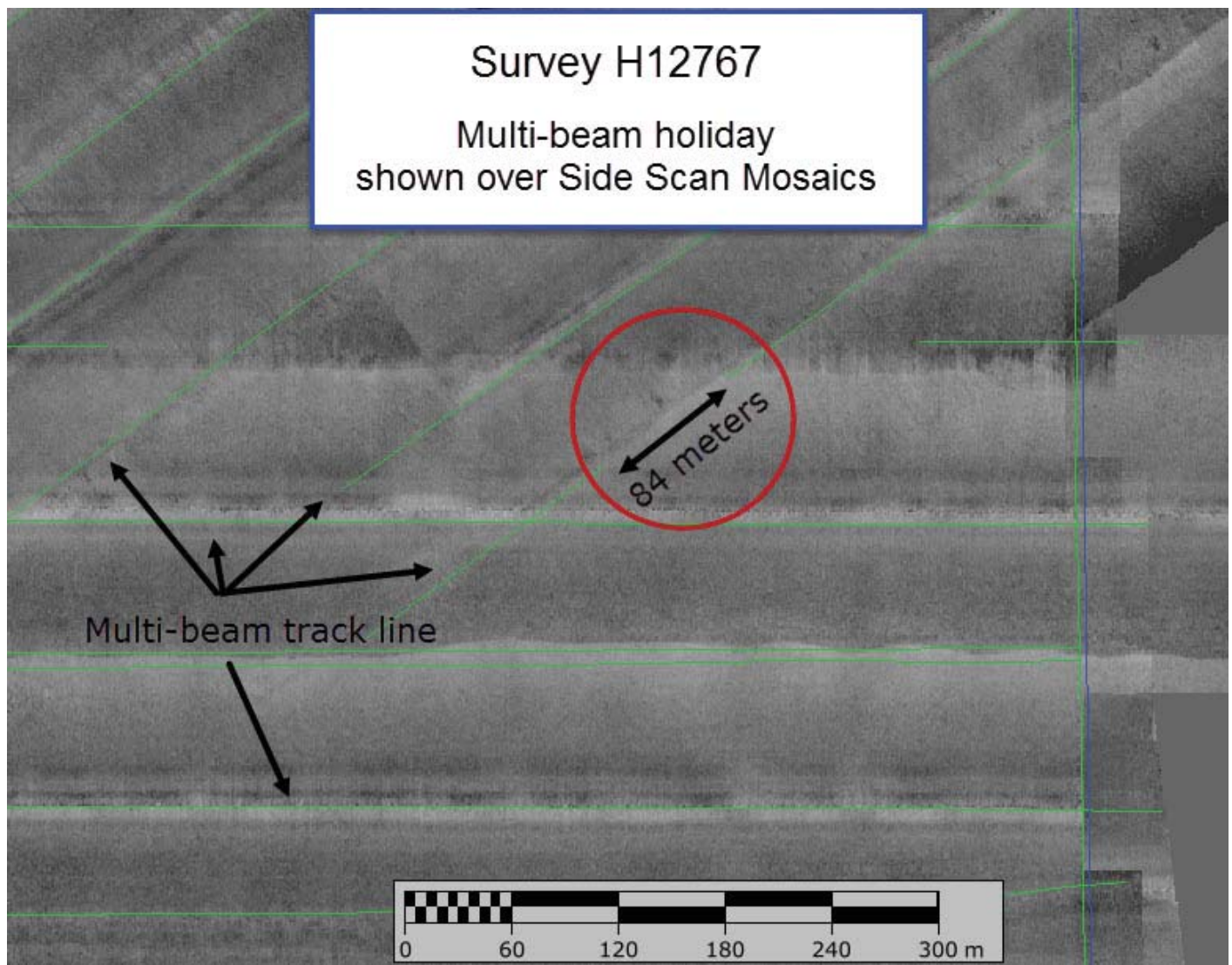


Figure 7: Multi-beam track line holiday while acquiring data for survey H12767.

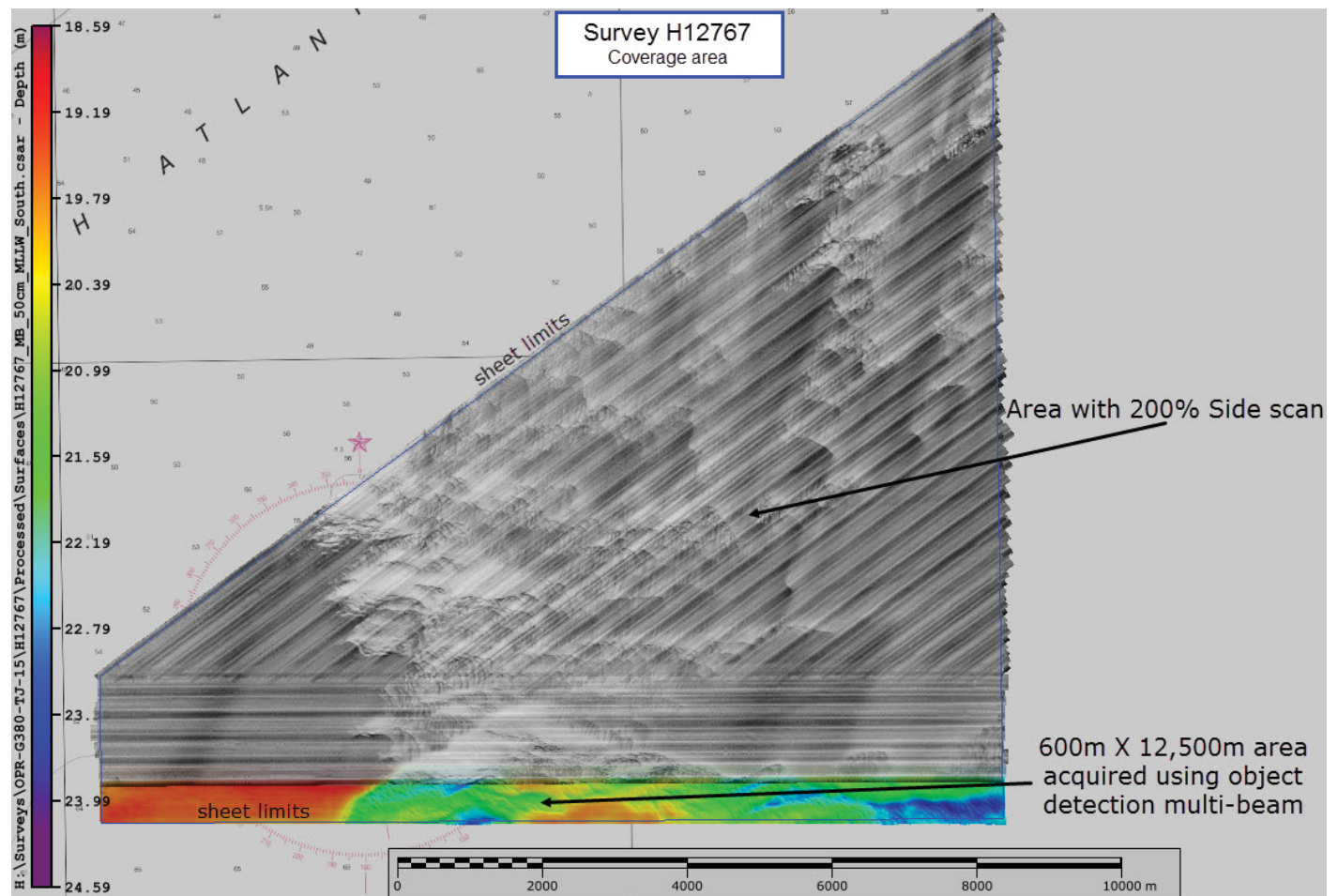


Figure 8: Survey H12767 showing areas of coverages by type. Northern area is 200% Side Scan while the Southern most section is acquired with Object Detection Multi-beam.

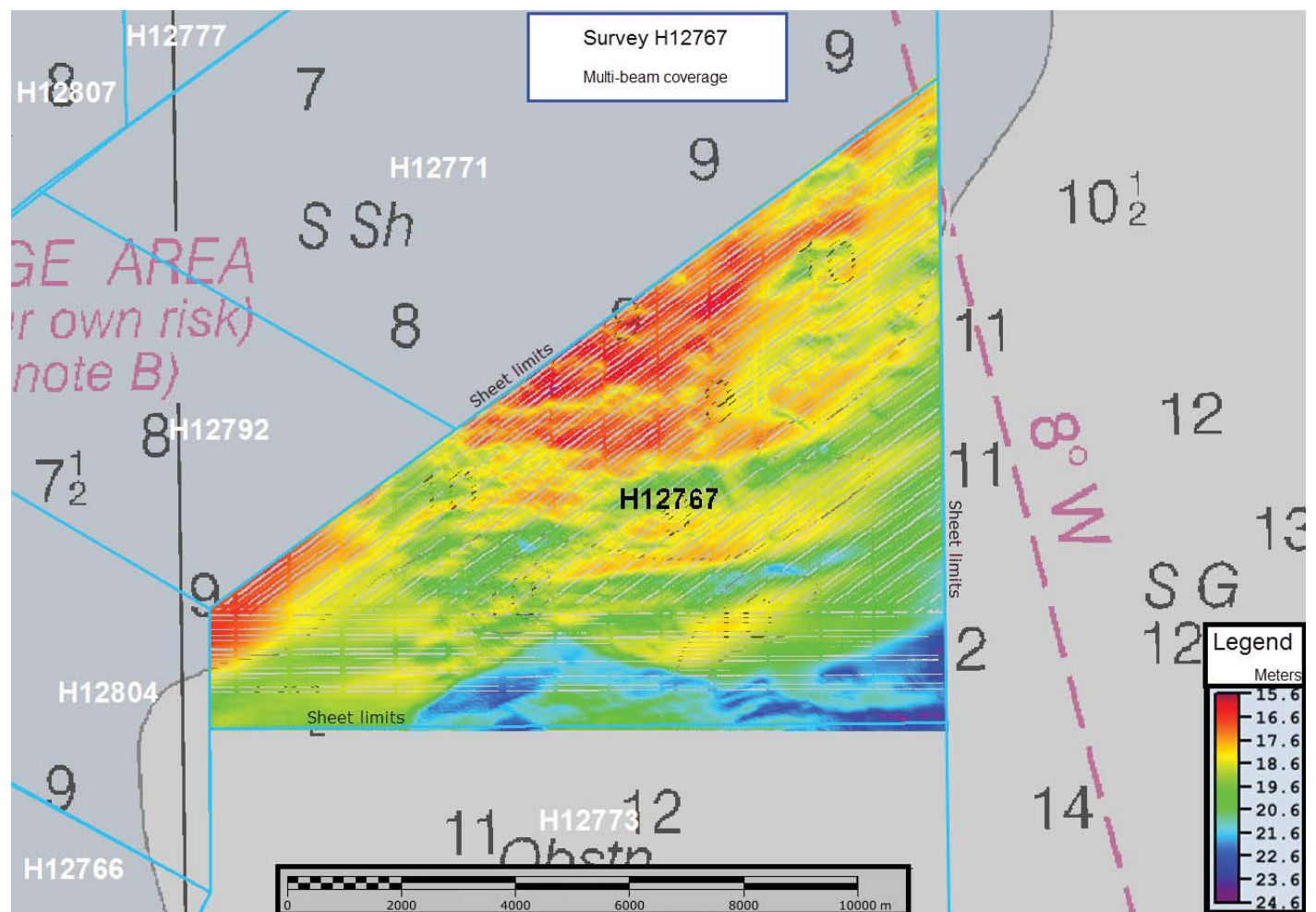


Figure 9: Survey H12767 multi-beam coverage.

A.5 Survey Statistics

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

	HULL ID	<i>S222</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	105.6	105.6
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	517.0	517
	SBES/MBES Crosslines	50.15	50.15
	Lidar Crosslines	0	0
Number of Bottom Samples			0
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			24.06

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
10/25/2015	298
10/26/2015	299

Survey Dates	Day of the Year
10/27/2015	300
10/28/2015	301
10/29/2015	302
10/30/2015	303
11/02/2015	306
11/03/2015	307
11/04/2015	308
11/05/2015	309
11/06/2015	310
11/07/2015	311

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

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

B.1.1 Vessels

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

Hull ID	<i>S222</i>
LOA	208 feet
Draft	15 feet

Table 4: Vessels Used

B.1.2 Equipment

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

Manufacturer	Model	Type
Applanix	POS MV v5	Positioning and Attitude System
RESON	7125 ROV	MBES
RESON	7125 SV2	MBES
RESON	SVP 70	Sound Speed System
Klein	5000 V2	SSS
Rolls Royce-Brooke Ocean Technologies	Moving Vessel Profiler 100	Sound Speed System
AML- Oceanographic	AML Smart SV & P Probe	Sound Speed System
Sea-Bird electronics	Seacat 19	Conductivity, Temperature, and Depth Sensor

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 8.05% of mainscheme acquisition.

The Thomas Jefferson collected 50.15 linear nautical miles of MBES crosslines, equating to 8.05% of mainscheme MBES data. All crosslines and most of the mainscheme data for survey H12767 utilized the Reson 7125 SV2 echosounder system. Thomas Jefferson typically uses the RESON 7125 ROV mounted on a starboard pod for mainscheme data collection due to its alignment with the side scan sonar and as a quality assurance check compare crosslines utilizing the RESON SV2 mounted on a port side pod. Unfortunately, The RESON ROV system malfunctioned leaving nearly all the mainscheme data acquired after DN306 using the RESON SV2 system.

Crosslines were compared to mainscheme by creating a difference surface in Caris Hips and Sips from a 1m CUBE surface created using strictly mainscheme lines. An additional 1 meter grid was created using only crosslines. A swath filter reducing the beam angles on the port and starboard sides from 70 degrees to 60 degrees was applied to all crosslines collected with the Reson 7125 SV2 to reduce outer beam uncertainty. The two surfaces were then differenced. A total of 4,598,251 nodes were examined in this process with a

mean of - 0.01 m and standard deviation of 0.1 m. Survey H12767 complies with section 5.2.4.3 of the HSSD (2015 ed).

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning	Method
0 meters	0.125 meters	TCARI

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S222	4 meters/second	1 meters/second	0.2 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Total Propagated Uncertainty values for survey H12767 were derived using a combination of real time uncertainties for vessel motion, a priori of values for equipment and vessel characteristics, assigned values for tidal datum uncertainties, and field assigned values for sound speed uncertainties. The realtime uncertainties for vessel motion include roll, pitch, gyro, navigation, and elevation. The uncertainties in these measurements were recorded as part of the POSPac "5P" ERS solution and were applied to the soundings via an SBET RMS file generated by Applanix POSPac per Chapter 3.4.2.1.1 of the NOAA Field Procedures Manual (2014 ed). The NOAA ship THOMAS JEFFERSON employed a subscription service, "Marinestar", to generate real-time correctors for position and vertical heights broadcast over the L-Band from a geosynchronous orbital satellite. Uncertainties for sonar mounting and vessel speed were assigned using the a priori values found in Chapter 4 of the NOAA Field Procedures Manual (2014 ed). These values were applied to the data via the CARIS HIPS Hydrographic Vessel File. The uncertainty associated with sound speed measurements were based on the frequency and location of CTD and MVP casts in accordance with Appendix 4 of the FPM (2014 ed).

The uncertainty associated with the VDatum separation model was supplied by the Hydrographic Services Division's Operations Branch, and is listed under the Zoning (see Table 6).

Total Propagated Uncertainty was evaluated to ensure compliance with section 5.1.3 of NOAA's Hydrographic Survey Specification and Deliverables (HSSD). First, a custom layer was created for each finalized surface to determine the maximum allowable uncertainty for each node using the equation: $-\text{Uncertainty}/((0.5^2 + ((\text{Depth} * 0.013)^2))^0.5)$. Second, the ratio between actual uncertainty and maximum allowed uncertainty is found for each node. To quantify the extent to which nodes met the accuracy requirements, the preceding "IHO" layers were queried within CARIS and then exported to an EXCEL spreadsheet. Overall, 100% of survey H12767 met the accuracy requirements stated in the HSSDM.

H12767_MB_1M_MLLW_Final has 62,897,340 nodes passed (100.0%) out of 62,897,346 total nodes examined with a mean of -0.614 meters and a standard deviation of 0.027 meters.

H12767_MB_50cm_MLLW_Final has 32,530,791 nodes passed (100.0%) out of the 32,530,834 total nodes examined with the mean of -0.601 meters and a standard deviation of 0.008 meters.

Resolution	Depth range	IHO Order	Number of nodes	Nodes satisfying given IHO Order accuracy	Percent of nodes satisfying given IHO Order accuracy
50 cm	0 - 25m	Order 1	32,530,834	32,530,791	100.0%
1m	0 - 25m	Order 1	62,897,346	62,897,340	100.0%
TOTAL:			95,428,180	95,428,131	Percentage by node 100.0%
TOTAL (by area):			284,120,218	284,120,151	Percentage by area 100.0%

Figure 10: Summary table showing the percentage of nodes satisfying the indicated IHO accuracy level, sub divided by the appropriate depth range.

B.2.3 Junctions

Four surveys were acquired during the same relative time frame of acquisition of H12767. Surveys H12771 and H12804 were acquired by the Thomas Jefferson in June and May of 2015 respectively. H12773 was directly preceding survey H12767. Depth comparisons were performed using the CARIS difference surface (at the 1-meter resolution), from which descriptive statistics were generated. Multibeam data was also examined in CARIS Subset Editor, along with the cursor Tool Tip for consistency and agreement.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12771	1:20000	2015	NOAA Ship THOMAS JEFFERSON	N
H12773	1:20000	2015	NOAA Ship THOMAS JEFFERSON	S
H12804	1:20000	2015	NOAA Ship THOMAS JEFFERSON	W
H12792	1:20000	2015	NOAA Ship THOMAS JEFFERSON	NW

Table 8: Junctioning Surveys

H12771

Survey H12771 was acquired by Thomas Jefferson in June 2015 for project OPR-G380-TJ-15. The difference between survey H12767 and survey H12771 ranged from -0.40m to 0.40m. The mean was 0.000 and the standard deviation was 0.1m. Out of a total of 1,322,164 nodes examined, 459 fell beyond a 0.305m threshold of the surface, making an agreement of 99.9%

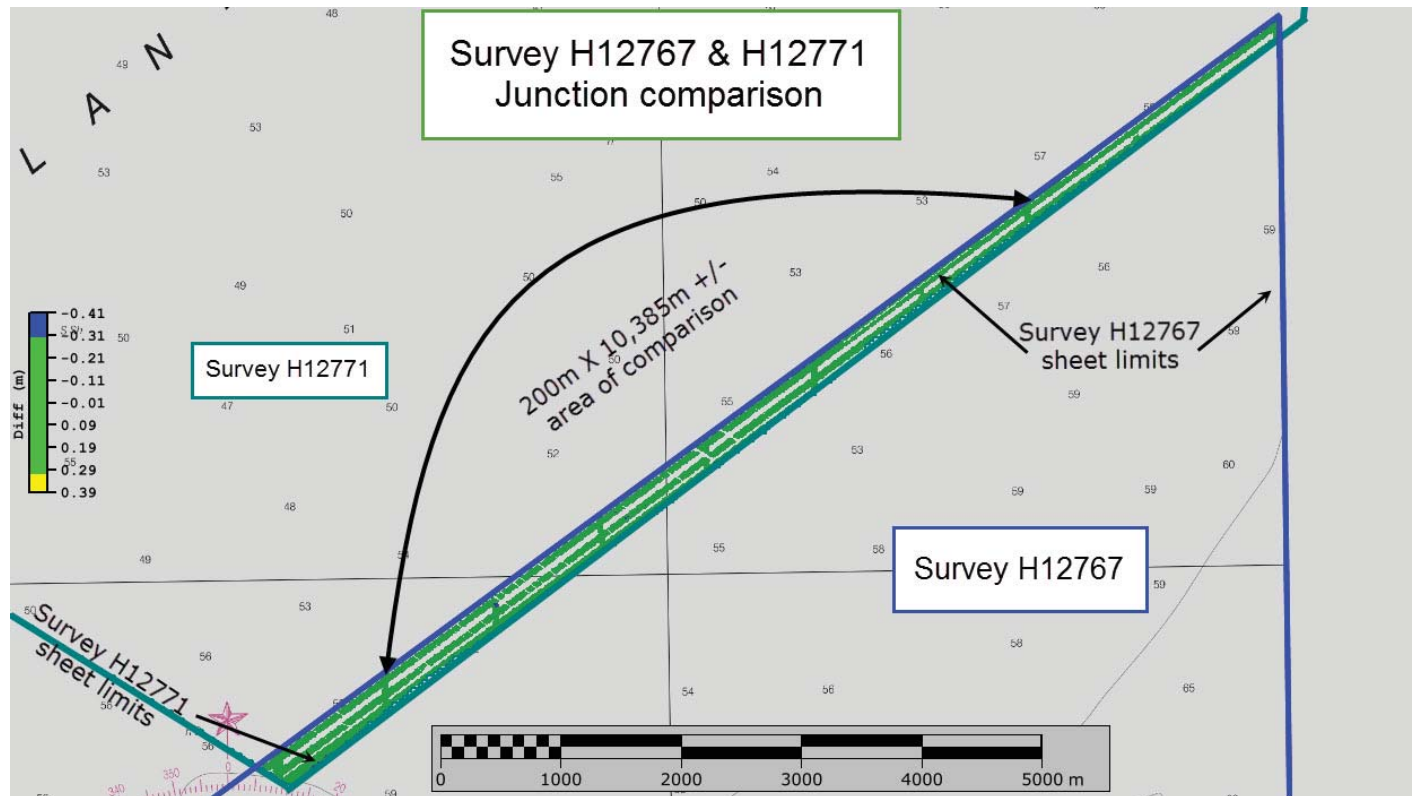


Figure 11: Survey H12767 and Survey H12771 junction area.

H12773

Survey H12773 was acquired concurrently with survey H12767 during project OPR-G380-TJ-15. The difference between survey H12773 and survey H12767 ranged from -0.5m to 0.4m. The mean between the two surveys was -0.1m making H12773 slightly deeper than survey H12767. The standard deviation was 0.1m. Out of a total of 288,234 nodes examined, 3,447 fell beyond the 0.305m threshold of the surface, making an overall agreement of 98.8%.

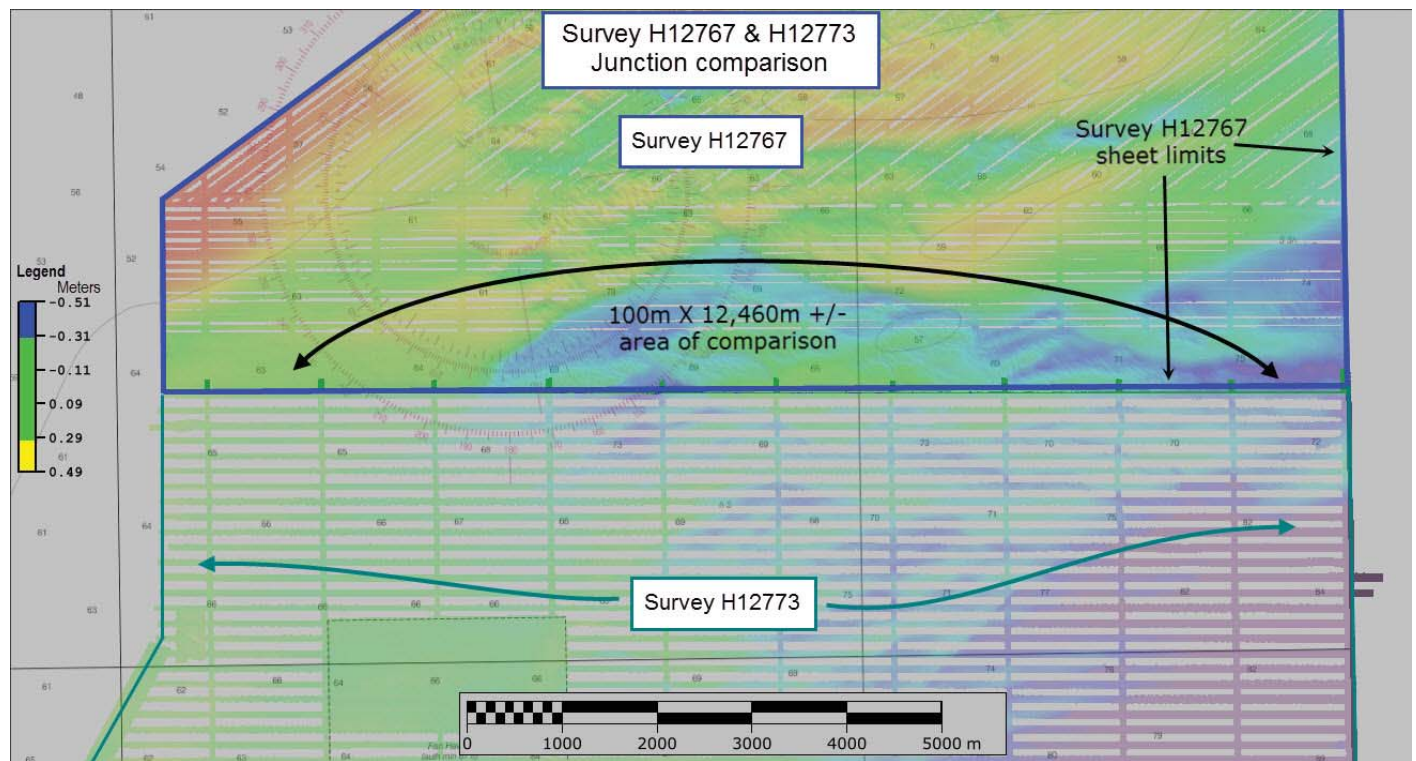


Figure 12: Survey H12767 and Survey H12773 junction area.

H12804

Survey H12804 was acquired in May of 2015 by the Thomas Jefferson for project OPR-G380-TJ-15. The difference between survey H12804 and survey H12767 ranged from -0.5m to 0.4m. The mean between the two surveys was 0.0m. The standard deviation was 0.1m. Out of a total of 211,085 nodes examined, 3,978 fell beyond the 0.305m threshold of the surface, making an overall agreement of 98.0%.

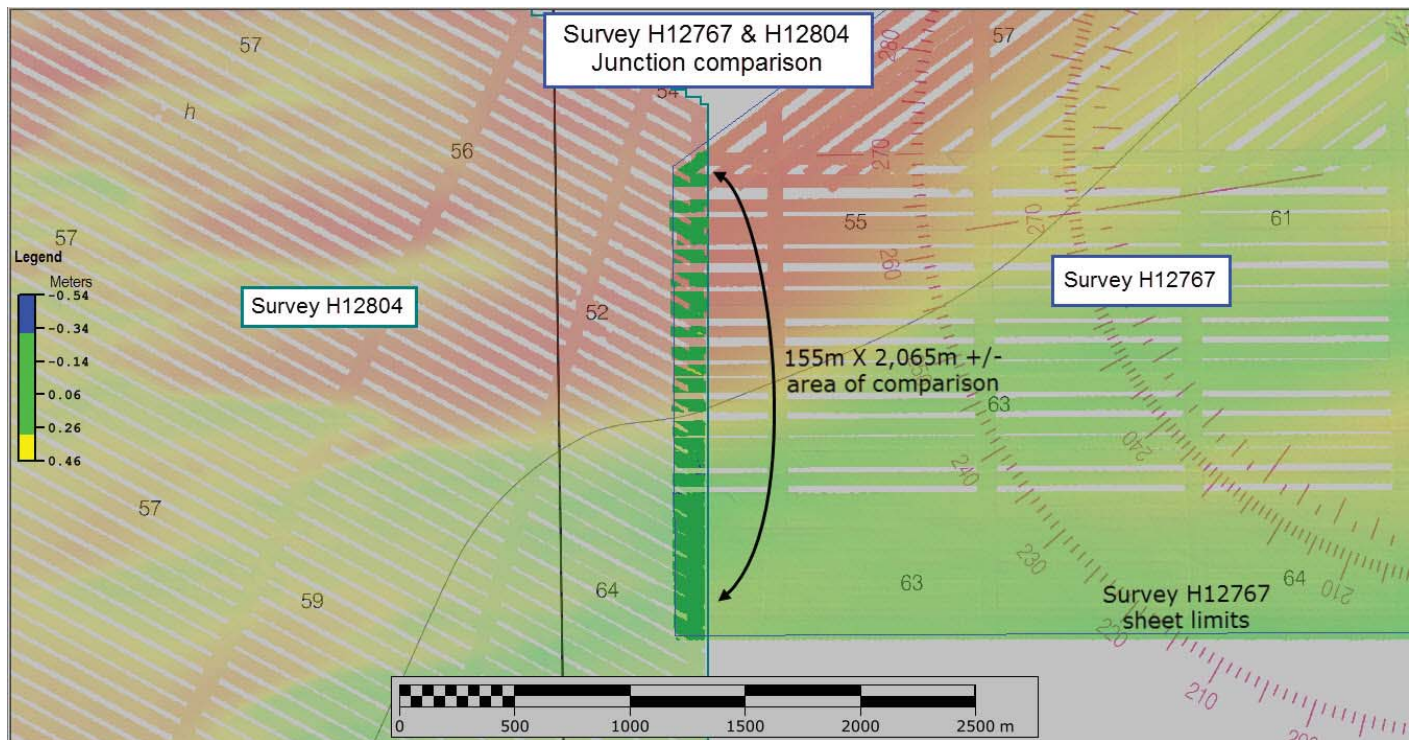


Figure 13: Survey H12767 and Survey H12804 junction area.

H12792

Survey H12792 was acquired by Thomas Jefferson in June 2015 for project OPR-G380-TJ-15. The difference between survey H12767 and survey H12792 ranged from -0.302m to 0.355m. The mean was 0.019 making survey H12767 deeper than H12792. The standard deviation was 0.093m. Out of a total of 632,159 nodes examined, 395 fell beyond a 0.305m threshold of the surface, making an agreement of 99.9%

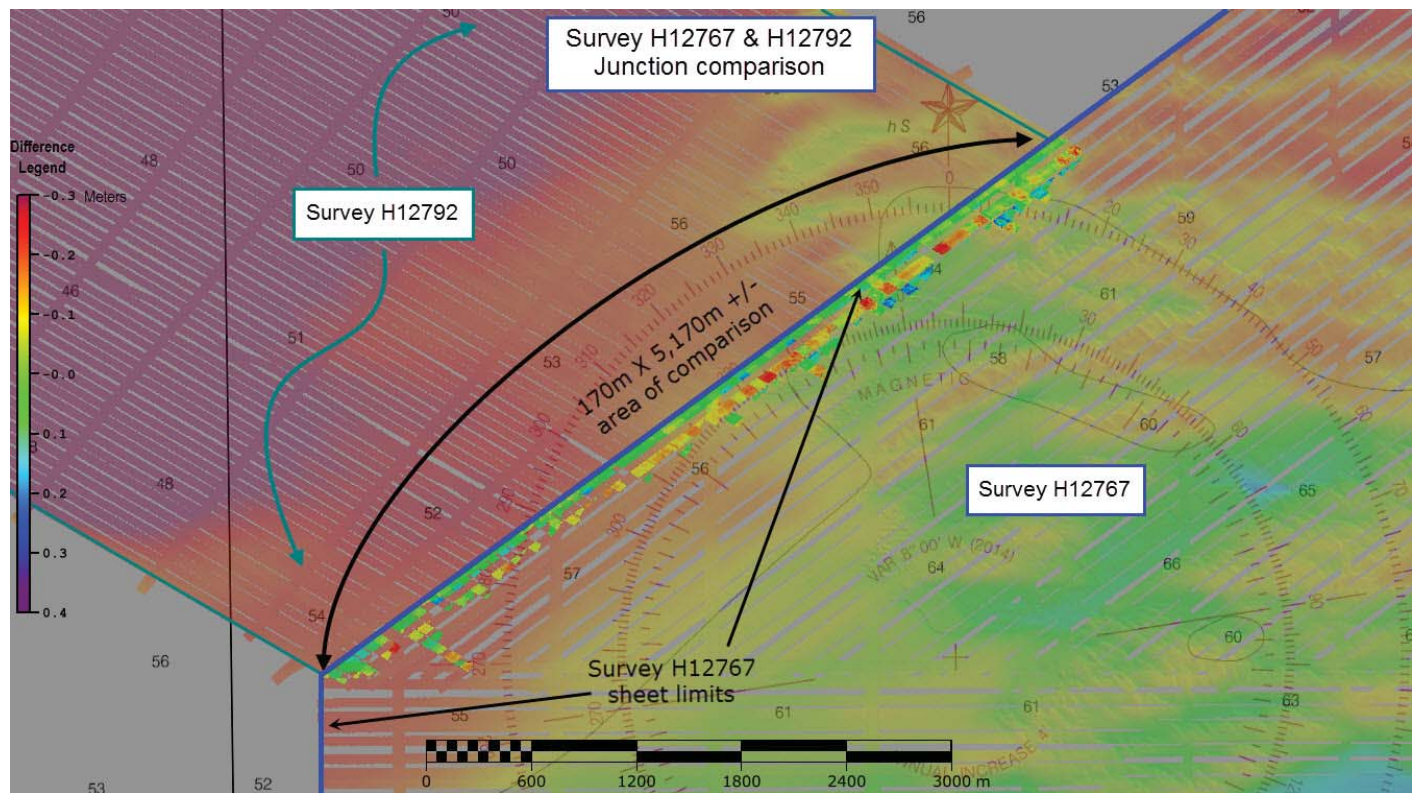


Figure 14: Survey H12767 and Survey H12792 junction area.

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 profiles were measured in accordance with the HSSD 2015 standards on Thomas Jefferson (S-222) using the Rolls Royce-Brooke-Ocean MVP 100 approximately every 30 to 60 minutes with efforts made to evenly distribute the casts spatially and temporally throughout the

survey area. All MVP casts were collected into one survey wide concatenated file per vessel and applied to multibeam data in CARIS using nearest in distance within a time of 1 hour.

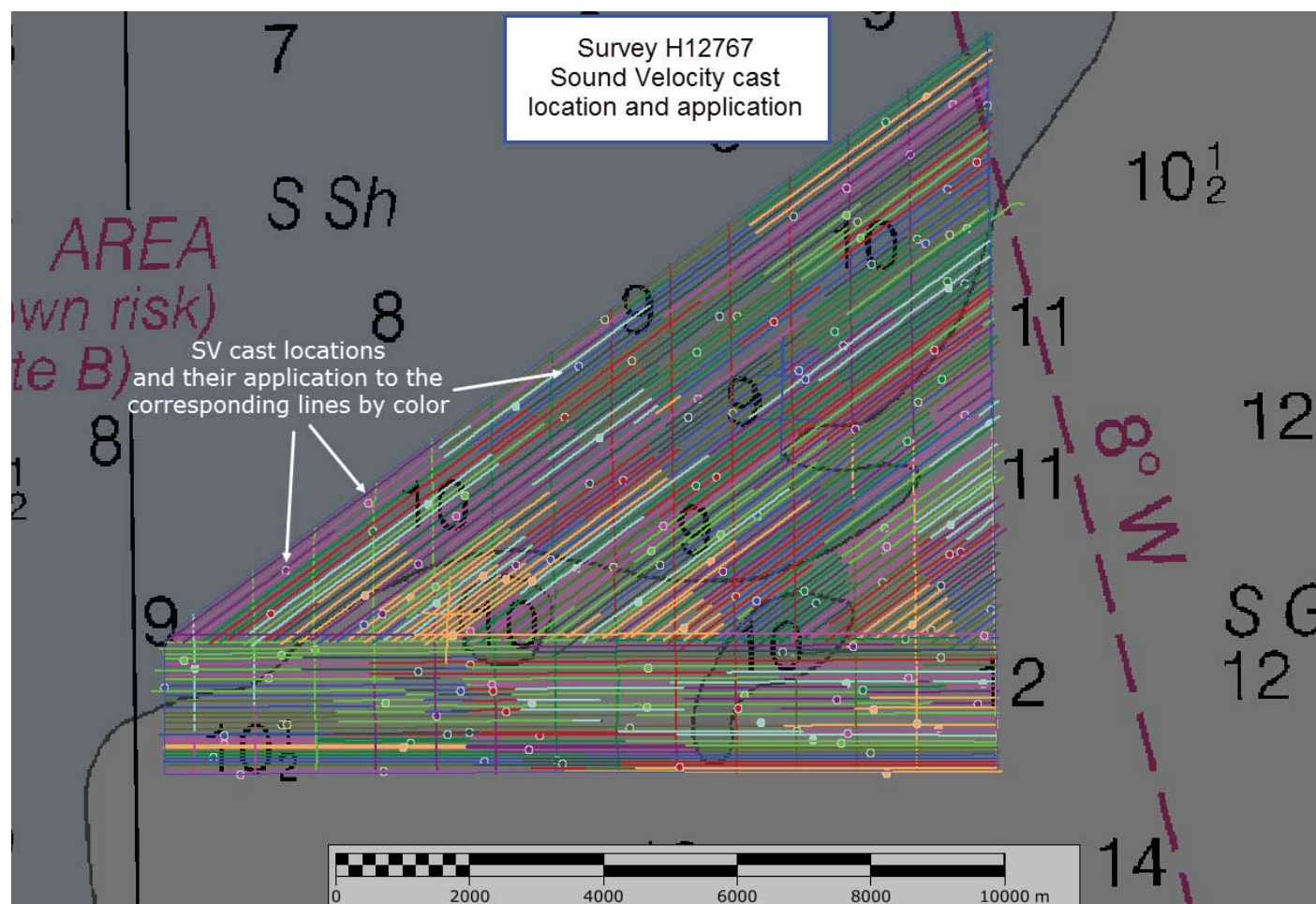


Figure 15: Survey H12767 Sound Velocity cast location and their application to acquired data.

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

Backscatter was logged as a 7k file and submitted to the Atlantic Hydrographic Branch for processing. One line per vessel, per day was processed aboard the Thomas Jefferson in order to assess and ensure quality. No deficiencies were noted.

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	9.0.20

Table 9: Primary bathymetric data processing software

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

Manufacturer	Name	Version
Caris	HIPS/SIPS	9.0.19

Table 10: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA profile V 5.3.3

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
H12767_SSS_100	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	100% SSS

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12767_SSS_200	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	100% SSS
H12767_MB_1m_MLLW	CUBE	1 meters	15.65 meters - 24.25 meters	NOAA_1m	MBES TracklineSBES Set Line Spacing
H12767_MB_1m_MLLW_final	CUBE	1 meters	15.67 meters - 24.29 meters	NOAA_1m	MBES TracklineSBES Set Line Spacing
H12767_MB_50cm_MLLW	CUBE	50 centimeters	18.84 meters - 24.21 meters	NOAA_0.5m	Object Detection
H12767_MB_50cm_MLLW_final	CUBE	50 centimeters	18.84 meters - 24.21 meters	NOAA_0.5m	Object Detection

Table 11: Submitted Surfaces

C. Vertical and Horizontal Control

Per section 5.1.2.3 of the FPM (2014 ed), no Horizontal and Vertical Control Report has been generated for Survey H12767.

C.1 Vertical Control

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

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

2015_G380_VDatum_NAD83_MLLW_rev2.csar

All soundings submitted as H12767 are reduced to MLLW using documented VDatum techniques. If it is deemed necessary to change the water level reduction method to discrete zoning the following additional information will be useful:

- 1) The National Water Level Observation Network (NWLON) stations serving as datum control for this survey is Charleston, SC (8665530).
- 2) The submitted water level files (8665530.tid) are the final approved water levels for the period of hydrography. These files have been loaded to all CARIS lines submitted as H12767.
- 3) The submitted tide corrector (G380TJ2015CORP.zdf) is the preliminary zoning file that was accepted as final per final tide note, submitted in Appendix I. This file has been loaded to all CARIS lines submitted as H12767.
- 4) A request for final approved tides was sent to COOPS on November 7, 2015. At the time of this report, the final tide note has not been received.

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 17 North.

Additional information regarding the use of Post-Processed Precise Point Positioning (5P) for this survey can be found in the accompanying DAPR.

C.3 Additional Horizontal or Vertical Control Issues

3.3.1 Vertical offset when SBETS are applied

Survey vessel Thomas Jefferson collects positioning data via POSMV v5 unit with Fugro Marinestar Precise Point Positioning raw data input. All raw data were processed through Post Processed Precise Point Positioning (5P) using POSPac MMV 7.1.5637.21708 software. Occasionally there were 5P anomalies of height in the reduced data. Although noticeable, the data was within HSSD specifications and the ERS 5P model was used throughout.

On day numbers 307 and 308 a few lines exhibited a noticeable height difference and standard deviation. By processing these lines using IAPPK the offset was reduced from 0.46m to 0.09m.

Lines reprocessed were;

DN307: 119_1735, 119_1755; 122_1543, 122_1603; 124_1439, 1459.

DN 308 249_1443, 249_1503, 249_1523; 250_1544, 250_1604, 250_1624.

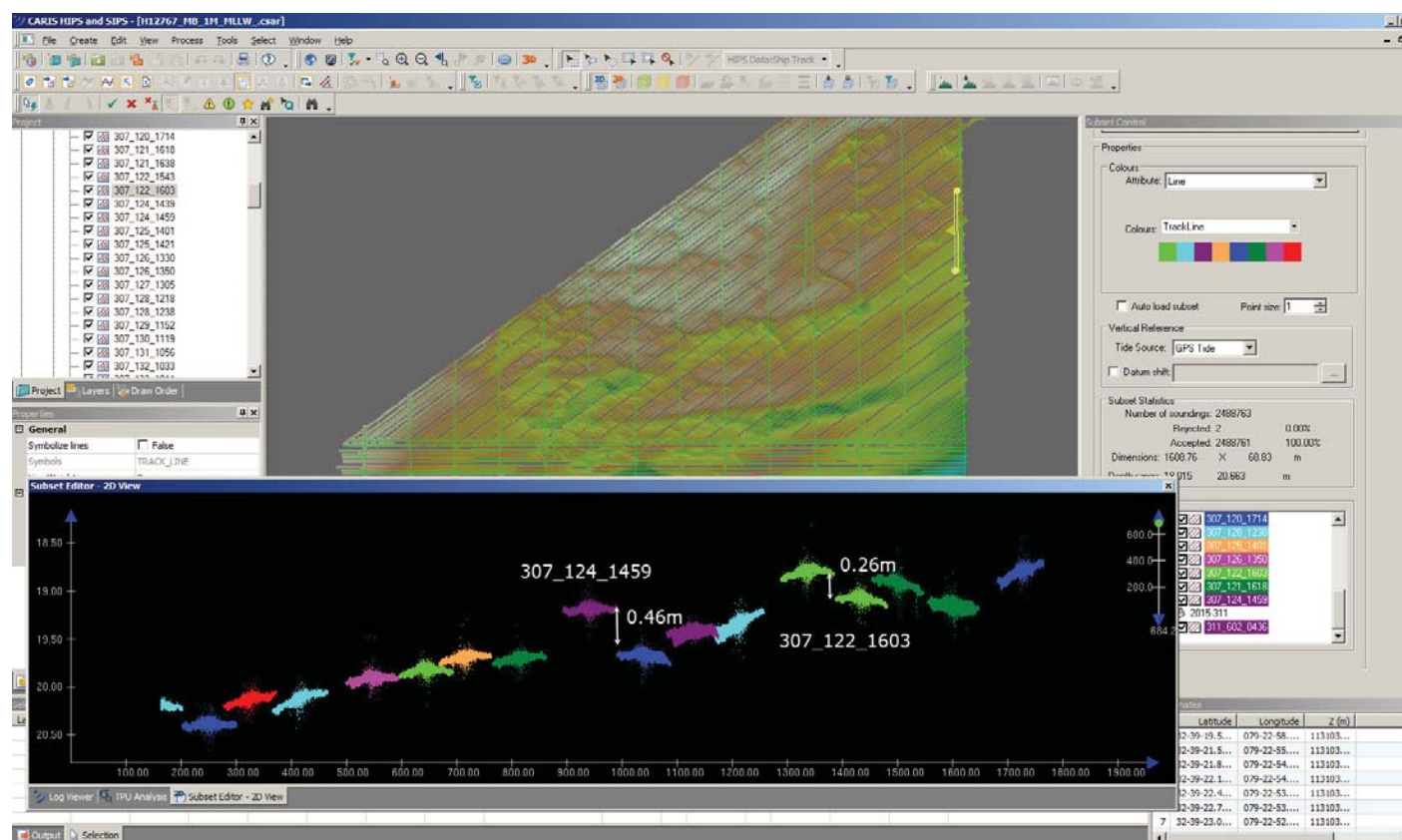


Figure 16: Survey H12767 DN307 lines 122 to 124 depicting vertical offset after SBETS were applied.

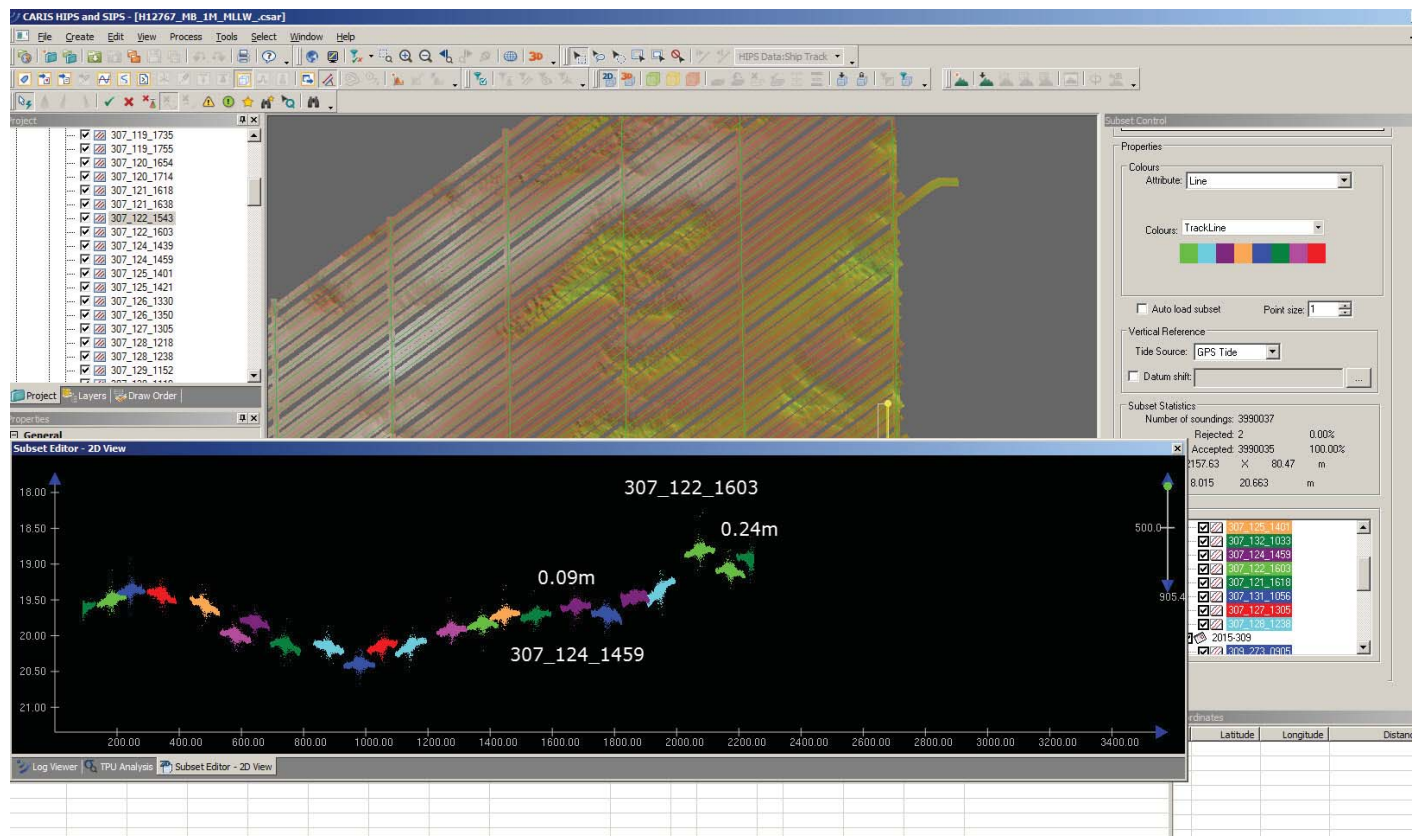


Figure 17: Survey H12767 DN307 lines 122 to 124 reprocessed using IAPPK removing the vertical offset after initial SBETS were applied.

D. Results and Recommendations

D.1 Chart Comparison

Chart comparison procedures were followed as outlined in section 4.5 of the FPM (2014 ed) and section 8.1.4 subsection D.1 of the HSSD (2015 ed). The ENC and RNC versions of the relevant charts were reviewed to ensure that the latest USCG Local Notice to Mariners (LNM) has been applied.

The majority of the chart comparison was performed by comparing survey H12767 finalized CUBE surface to a digital surface generated from the ENC at the same gridded resolution. A 1 meter surface was generated from a TIN that was created from the soundings. The soundings were compared to the ENC at the same scale. Contours and chart scale soundings were created from the TIN. The chart comparison was conducted by creating and reviewing the resultant difference surface in CARIS HIPS & SIPS software.

D.1.1 Raster Charts

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

Chart	Scale	Edition	Edition Date	LNK Date	NM Date
11528	1:40000	1	07/2014	09/24/2015	07/25/2015

Table 12: Largest Scale Raster Charts

11528

Survey H12767 generally aligned well with existing depth soundings on the 11528 RNC to within 2 feet. H12767 contours generated show a small shift to the south from those on the 11528 RNC. This can be contributed to sand shoals migrating. The Hydrographer recommends updating all contours and soundings with the digital data from survey H12773.

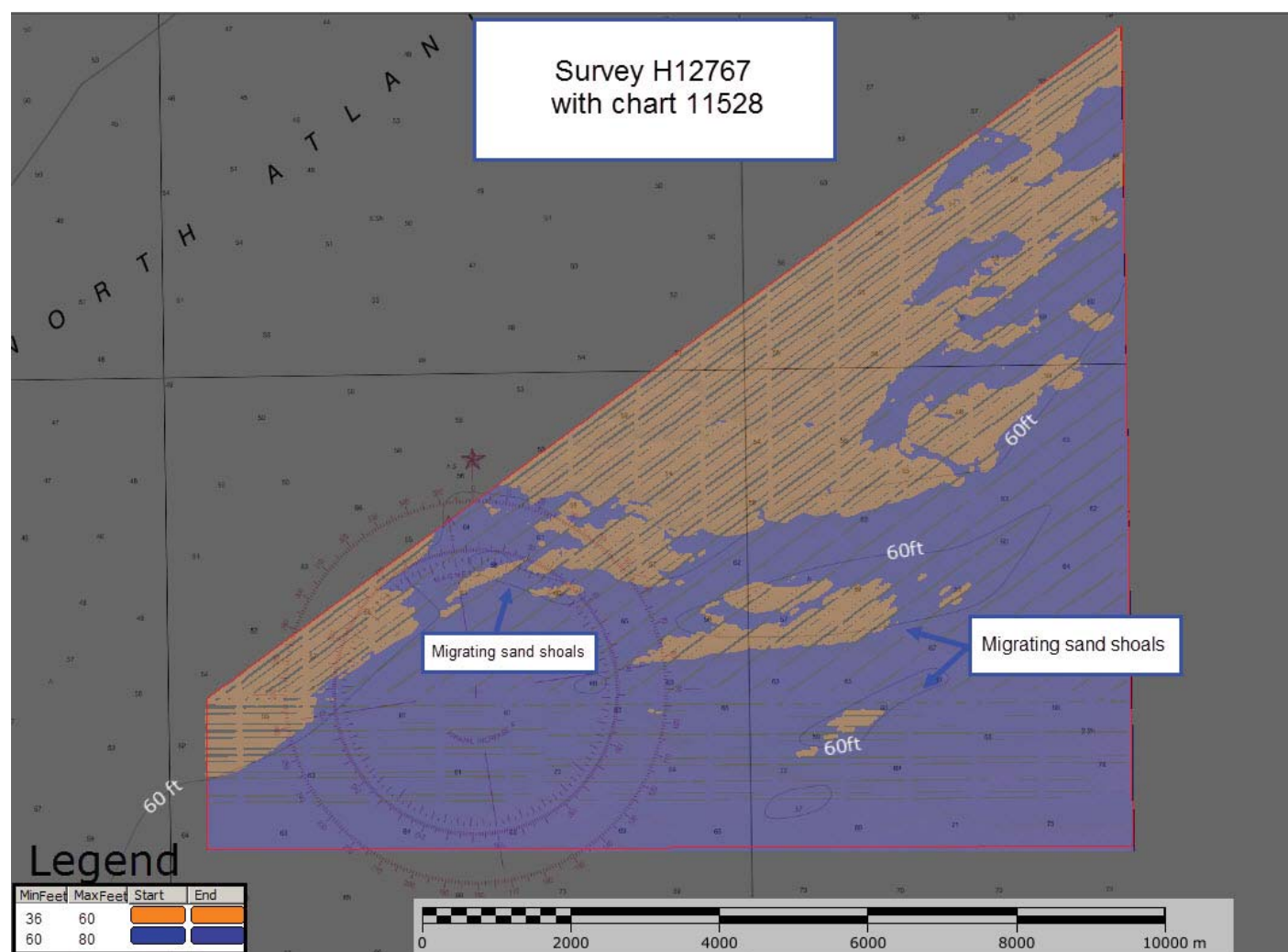


Figure 18: Contour comparison between H12767 survey data and chart 11528.

D.1.2 Electronic Navigational Charts

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

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5SC25M	1:40000	1	10/06/2014	10/05/2015	NO

Table 13: Largest Scale ENC's

US5SC25M

ENC US5SC25M coincides with raster chart 11528. The depths and contours on the ENC match the raster 11528. The comparison between survey H12767 and the ENC is equivalent to the preceding comparison with Chart 11528. The Hydrographer recommends updating all contours and soundings with the digital data from survey H12767.

D.1.3 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.4 Charted Features

No charted features exist for this survey.

D.1.5 Uncharted Features

A 2 meter obstruction was located 18.5 meters of water.

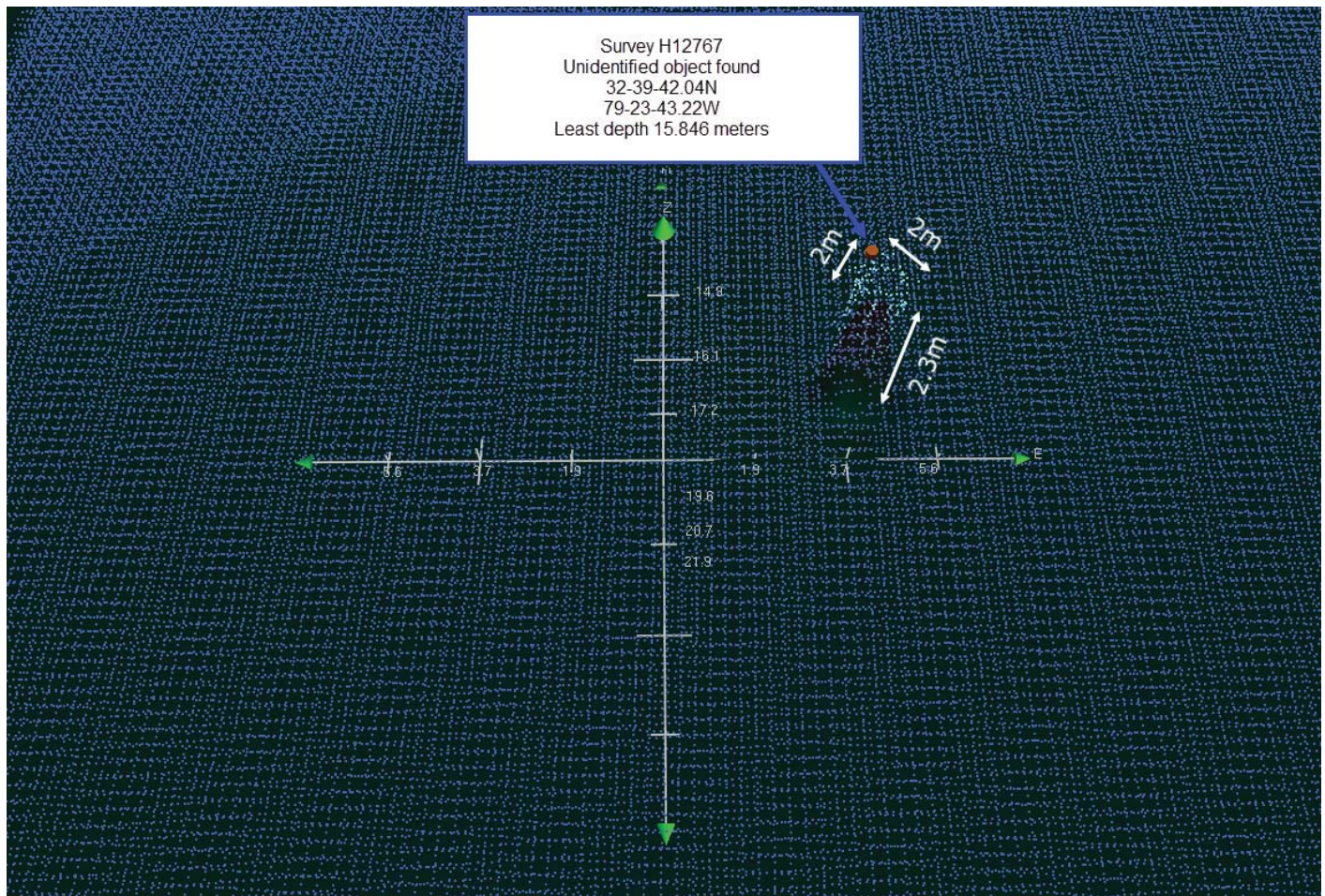


Figure 19: Obstruction found while acquiring data for survey H12767.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.8 Channels

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

D.1.9 Bottom Samples

No bottom samples were required for this survey.

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

No submarine features exist for this survey.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

No significant features exist for this survey.

D.2.9 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 Manual, 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.

Approver Name	Approver Title	Approval Date	Signature
Shepard M. Smith, CAPT NOAA	Chief of Party	02/02/2016	 c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=SMITH.SHEPARD.M.100677 8930 2016.02.02 14:20:21 -05'00'
Joseph K. Carrier, LT/NOAA	Field Operations Officer	02/02/2016	 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=CARRIERJOSEPH.KELSO.III.115 5373152 Date: 2016.02.02 18:53:14 Z
Todd A. Walsh	Senior Survey Technician	02/02/2016	 Todd A. Walsh 2016.02.02 18:40:02 Z

F. Table of Acronyms

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

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

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

APPENDIX I

TIDE NOTE AND GRAPHICS



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : November 18, 2015

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-G380-TJ-2015
HYDROGRAPHIC SHEET: H12767

LOCALITY: 5 NM North of Charleston Harbor Channel Buoy, SC
TIME PERIOD: October 25 - November 7, 2015

TIDE STATION USED: 8665530 Charleston, SC
Lat. 32° 46.9' N Long. 79° 55.4' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.648 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-G380-TJ-2015, H12767, during the time period between October 25 - November 7, 2015.

Please use the zoning file G380TJ2015CORP submitted with the project instructions for OPR-G380-TJ-2015. Zones SA138 and SA139 are the applicable zones for H12767.

Refer to attachments for zoning information.

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

HOVIS.GERALD.THOMAS.JR.1365860250

Digitally signed by
HOVIS.GERALD.THOMAS.JR.1365860250
DN: c=US, o=U.S. Government, ou=DoD,
ou=PKI, ou=OTHER,
cn=HOVIS.GERALD.THOMAS.JR.1365860250
Date: 2015.11.19 15:37:45 -05'00'

CHIEF, PRODUCTS AND SERVICES BRANCH



Preliminary as Final Tidal Zoning for

OPR-G380-TJ-2015, H12767

5 NM North of Charleston Harbor Channel Buoy, SC

8665530 CHARLESTON, SC



SA139
Reference 8665530

SA138
Reference 8665530



APPENDIX II

SUPPLEMENTAL SURVEY RECORDS
AND CORRESPONDENCE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations,
Marine Operation Center-Atlantic, NOAA Ship Thomas Jefferson
Norfolk, Virginia 23510

August 11, 2015

MEMORANDUM FOR: Captain Eric W. Berkowitz
Chief, Hydrographic Surveys Division

FROM: Captain Shepard M. Smith, NOAA
Commanding Officer, NOAA Ship Thomas Jefferson

SUBJECT: NOAA Ship *Thomas Jefferson* ERS Capability

Under the project instructions OPR-G380-TJ-15, the NOAA Ship *Thomas Jefferson* (TJ) was tasked with surveying the approaches to Charleston, SC by referencing the vertical datum to the ellipse.

The crew of the *Thomas Jefferson* with support from the Atlantic Hydrographic Branch, Hydrographic Systems Technical Programs and Hydrographic Surveys Division collaborated to evaluate different methods of surveying to the ellipse. The ship and launches were integrated with Fugro's Marinestar-XP service, which provides a 1 sigma accuracy of approximately +/-10cm in the horizontal and +/-15cm in the vertical planes using a combination of GPS satellites and geostationary communications satellites.

The majority of the project area was beyond 30km from the nearest CORS base station, SCHA. When TJ arrived at the project area, station SCHA was offline for multiple days making initial comparisons impossible. Both the proximity and availability of the CORS station data made further attempts to test and compare the single base IAPPK and Real-time PPP challenging. Once the CORS station was available and ephemeris could be downloaded, multiple days were processed using IAPPK on the inshore sheet H12779. The availability of IAPPK to validate and or resolve vertical issues with 5P proved valuable in determining whether the hydrographer chose to interpolate or to plan and execute ERS holidays.

Testing and subsequent integration of the Post Processed Precise Point Positioning (5P) method has proven efficient, accurate and reliable. Compared to traditional methods using discrete zoned/TCARI based tides, the *Thomas Jefferson* found Fugro's commercial service, MarineStar during data acquisition and post processing to consistently provide results within acceptable tolerances outlined in the Hydrographic Survey Specifications and Deliverables HSSD. Further, the system generally provided output within the stated 15cm of vertical uncertainty documented in its technical capabilities.

A comparison between crosslines and mainscheme at 1m resolution demonstrated the internal consistency of the VDatum method was more accurate than traditional zoned tides (internal document: Faulkes, et al., 2015). Using an Ellipsoid Referenced Zone Tide comparison with Survey H12766, the observed vertical solution demonstrated parity with the regional separation model provided by HSD Operations, giving confidence that the SBET solutions created from 5P were satisfactory. Further, the reduced processing times associated with 5P allowed TJ survey personnel to more quickly identify problematic lines within the survey, thereby reducing bottlenecks and increasing efficiency. Throughout the project, the TJ worked with HSTP to develop new tools and procedures necessary to analyze and identify issues with the Smoothed Best Estimate of Trajectory (SBET). These tools provided the hydrographer with the ability to identify



suspected problem areas between ERS and the resultant grids through interpolation using the Pydro Pospac auto QC tool (v5092). In areas of extensive communication loss of MarineStar data(>8min), the ship found it more efficient to resurvey lines or utilize IAPPK. Since there currently are no specifications in regards to interpolating ERS data, the TJ incorporated a higher percentage of crosslines than required by the Hydrographic Specifications and Deliverables (2015 ed.) to better constrain areas of data dropouts, and ensure any systematic errors were promptly discovered and resolved in a timely manner.

The *Thomas Jefferson* expects to submit all of the surveys under Project OPR-G380-TJ-15 as full Ellipsoidally Referenced Surveys.



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Charleston Channel: Sunken Buoy

2 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Fri, Jun 26, 2015 at 11:17 PM

To: Kyle Ward - NOAA Federal <kyle.ward@noaa.gov>

Cc: ops.thomas.jefferson@noaa.gov, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Kyle,

Attached is an image and brief description of the sunken buoy TJ found near the approaches to Charleston. If you share this with the CG, please make sure to follow up with OCS if and when they decide to salvage the buoy so it gets charted properly.

Thanks for your continued support and we look forward to working with you again this fall.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>



Sunken Charleston Entrance Channel Buoy.docx

1444K

Kyle Ward - NOAA Federal <kyle.ward@noaa.gov>

Mon, Jun 29, 2015 at 2:39 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Cc: _NMAO MOA OPS Thomas Jefferson <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Joe,

Thanks for this report. I have passed it on to the local USCG office and Pilots with instruction to provide updates if they are planning on removing this item.

Best Regards,
Kyle

Kyle R. Ward, Navigation Manager Southeast
NOAA Office of Coast Survey
843.740.1153
301.651.4852 cell



Find us on
nauticalcharts.noaa.gov
Twitter [@NOAAcharts](https://twitter.com/NOAAcharts)

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Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Final Tides Request?

3 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>

Mon, Jun 8, 2015 at 6:43 PM

Katy,

We found two lines on a sheet we closed last week that we should rerun however the tides request has already been submitted. Since these surveys are to the Ellipse and we have only been using tides as a reference check against ERS, do you need us to resubmit a final tides note on the sheet in question?

Thanks in advance for your help.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Mon, Jun 8, 2015 at 7:07 PM

You do not need to resubmit a final tides note on that sheet, just re-run the lines.

Katy

[Quoted text hidden]

—

Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
Cc: Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>, Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Tue, Jun 9, 2015 at 3:58 AM

Thanks Katy

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187

6/9/2015

National Oceanic and Atmospheric Administration Mail - Final Tides Request?

voip: (301) 713-7782

fax: (757) 512-8295

<http://www.moc.noaa.gov/tj/>

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Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

OPR-G380-TJ-15: Horcon Report

5 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Sun, Jun 7, 2015 at 8:55 PM

To: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

LCDR Jaskoski,

Historically, TJ hasn't managed tide or base stations during survey operations and therefore didn't submit a Horcon report with surveys. Using Fugro's MarineStar we have been able to stay out of the tide gauge and base station installation business. Do you foresee a need for TJ to submit a Horcon report with these Charleston surveys using MarineStar?

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Mon, Jun 8, 2015 at 1:09 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Hey Joe,

Assuming the ship isn't generating another report about the MarineStar integration and ERS on the project (that will accompany the data to NGDC) - I think it would be a good idea to submit an HVCR since it is a project-wide element that represents a significant departure from our past-practices. I think you could use Tyanne's report on MarineStar as the bulk of your text for your HVCR. All you really need is some background information on how the MarineStar Systems works, and a brief description of the methods, adequacy of positioning, and any confidence checks that were done - to meet the intent of the HVCR. The intent is to document the positioning activities that took place as part of the project.

hope this helps,
regards,
Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
Office: 757-441-6746 x200
Cell: 757-647-3356

[Quoted text hidden]

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Jun 8, 2015 at 1:48 PM

To: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Jasko,

Thanks for the quick reply. Since TJ has never installed tide gauges or base stations for projects in the past and I don't have any examples on our network to work from. If you have one you can share like the ERS survey from the Hassler I'd really like to take a look and see how they did their report.

Since I'm going to be using Tyanne's report as a reference, do you mind if I ask for her help on revising the HVCR to make sure it's accurate?

Regards,
Joe

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

[Quoted text hidden]

Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Mon, Jun 8, 2015 at 3:40 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

hey Joe,

I think this got kicked back to me because of the attached DAPR pdf file sizes. did you get the earlier email? note there is a change in my recommendation regarding the HVCR

Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
Office: 757-441-6746 x200
Cell: 757-647-3356

On Mon, Jun 8, 2015 at 11:35 AM, Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov> wrote:

Hey Joe,

I'm going to reverse course on my earlier recommendation that you include an HVCR. It looks like FH did not do an HVCR for the survey that they completed to the elipse, I believe they detailed everything in the DR/DAPR. This seems like a legitimate way to proceed, and considering you all did not establish any actual HorVerCon equipment the generation of a HVCR might be an unnecessary encumbrance on the ship. You could/should detail the MarineStar info in the DAPR - particularly sections A.4, B.1.4, and probably C.4-5.

from AHB's view we are content if you want to skip the HVCR and add the information about MarineStar in the DAPR (with any project specific deviations from the DAPR outlined in the appropriate DR).

Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
Office: 757-441-6746 x200
Cell: 757-647-3356

[Quoted text hidden]

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Jun 8, 2015 at 4:49 PM

To: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Jasko,

Thanks for the update and thanks for reconsidering the HVCR!

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
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fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

[Quoted text hidden]



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

OPR-G380-TJ-15Combined sheets

6 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Sun, Jun 7, 2015 at 10:34 PM

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

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Katy,

TJ would like to modify the sheet layout to match available resources and keep the momentum we have with the early sheets. Essentially, we need to combine H12771 and H12803 because we don't have an available sheet manager. It's been great to give everyone the experience with at least one sheet but TJ feels these two sheets can be combined and managed with much less overhead; one package from TJ, one DR, one SAR, one H-cell, etc... If the weather holds and equipment stays operational, we should be able to close it out by the time we leave Charleston.

Please let us know if you have any concerns. Attached is a screen grab of the proposed sheet limits.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
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voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>



[Quoted text hidden]

—

Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Jun 8, 2015 at 1:50 PM

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

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Katy,

Thank you for working with us on this one and for the quick reply. Please cancel H12803 and add the coverage area to H12771.

Joe

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

[Quoted text hidden]

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

Mon, Jun 8, 2015 at 1:57 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Alright, its all fixed, my sheet are now identical to your graphic.

Katy

[Quoted text hidden]

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Jun 8, 2015 at 3:16 PM

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

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Thanks Katy

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295

<http://www.moc.noaa.gov/tj/>

[Quoted text hidden]

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

Mon, Jun 8, 2015 at 3:42 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Joe and the rest of the TJ,

I am getting ready to go to sea on the Rainier (I leave on Wednesday) for the remainder of the Charleston project. While I am at sea, Jacklyn James, will be the HSD contact for the rest of the Charleston Survey. For any further questions, comments, or issues please contact Jackie at HSD, jacklyn.c.james@noaa.gov.

Thanks!

Katy

[Quoted text hidden]



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

OPR-G380-TJ-15

2 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Sun, Jun 7, 2015 at 11:06 PM

To: Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>

Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

LCDR Gonsalves,

The project instructions require TJ to use HSSD 2014. TJ is requesting to use the 2015 HSSD for OPR-G380-TJ-15.

Please advise if HSD has any concerns.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>

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

Mon, Jun 8, 2015 at 2:00 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Joe,
HSD has no issues with using HSSD 2015 instead of HSSD 2014.

Katy Pridgen

[Quoted text hidden]

—

Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

OPR-G380-TJ-15Combined sheets

3 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Sun, Jun 7, 2015 at 10:34 PM

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

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Katy,

TJ would like to modify the sheet layout to match available resources and keep the momentum we have with the early sheets. Essentially, we need to combine H12771 and H12803 because we don't have an available sheet manager. It's been great to give everyone the experience with at least one sheet but TJ feels these two sheets can be combined and managed with much less overhead; one package from TJ, one DR, one SAR, one H-cell, etc... If the weather holds and equipment stays operational, we should be able to close it out by the time we leave Charleston.

Please let us know if you have any concerns. Attached is a screen grab of the proposed sheet limits.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>



On Sun, Jun 7, 2015 at 6:34 PM, Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov> wrote:

Katy,

TJ would like to modify the sheet layout to match available resources and keep the momentum we have with the early sheets. Essentially, we need to combine H12771 and H12803 because we don't have an available sheet manager. It's been great to give everyone the experience with at least one sheet but TJ feels these two sheets can be combined and managed with much less overhead; one package from TJ, one DR, one SAR, one H-cell, etc... If the weather holds and equipment stays operational, we should be able to close it out by the time we leave Charleston.

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Very respectfully,
Joe Carrier, LT/NOAA

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—
Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Jun 8, 2015 at 1:50 PM

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

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>, "OPS.Thomas Jefferson - NOAA Service Account" <ops.thomas.jefferson@noaa.gov>

Katy,

Thank you for working with us on this one and for the quick reply. Please cancel H12803 and add the coverage area to H12771.

Joe

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
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<http://www.moc.noaa.gov/tj/>

On Mon, Jun 8, 2015 at 1:47 PM, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> wrote:

Joe,

I don't think that will be a problem, especially if you are confident that the combined sheet will be completely

surveyed by the end of the survey. I dont want to leave a sheet partially surveyed. I will work on combining those two sheets into one sheet H12771, I will cancel the other sheet H12803. Will that work?

Katy

On Sun, Jun 7, 2015 at 6:34 PM, Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov> wrote:

Katy,

TJ would like to modify the sheet layout to match available resources and keep the momentum we have with the early sheets. Essentially, we need to combine H12771 and H12803 because we don't have an available sheet manager. It's been great to give everyone the experience with at least one sheet but TJ feels these two sheets can be combined and managed with much less overhead; one package from TJ, one DR, one SAR, one H-cell, etc... If the weather holds and equipment stays operational, we should be able to close it out by the time we leave Charleston.

Please let us know if you have any concerns. Attached is a screen grab of the proposed sheet limits.

Very respectfully,
Joe Carrier, LT/NOAA

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—

Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

OPR-G380: Soundings and Set line spacing

5 messages

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Sat, May 30, 2015 at 11:43 PM

To: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Jasko,

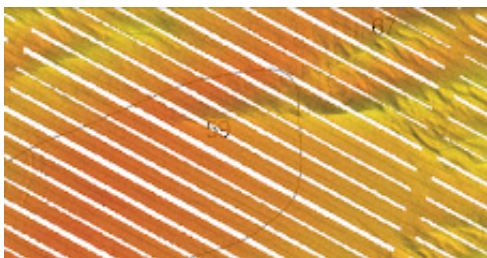
When sorting through some of the Charleston surveys where TJ is using set line spacing with concurrent 200% MB to achieve object detection. We noticed that there were a few soundings per sheet that land between the MB lines.

Section 5.2.2.3 of the 2014 HSSD says "All charted depths falling between sounding lines and shallower than adjacent surveyed soundings shall be verified or disproved."

In TJ's case, most of these soundings fall within very flat bottom areas and are 1-2 ft different on either side of the soundings (see attached). At such slight differences, it would be hard to say if it were within our estimated uncertainty or just a shoal sounding. Interested to hear what AHB's thoughts are and please don't hesitate to ask if you would like to discuss further.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
cell: (757) 647-0187
voip: (301) 713-7782
fax: (757) 512-8295
<http://www.moc.noaa.gov/tj/>



59foot_32_33_48n_79_32_00W_sounding.jpg
470K

Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Mon, Jun 1, 2015 at 6:30 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, Edward Owens - NOAA Federal <edward.owens@noaa.gov>

Cc: "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Hey Joe (I'm looping in Ed here for carto-perspective),
I think by the letter of the law the centroid should be ensonified to remove the charted shoal sounding with a deeper one. However, as you point out 1-2 ft is right about the TVU as well as right around the charted depth vertical uncertainty for a CATZOC A1 area as depicted on the final product.

Considering there has been little change to the seafloor, and the new depths are w/in 1-2ft of the charted depths it does seem like a waste of resources to slit these lines simply to "paint the number" I don't think we will have a

problem superseding soundings in the type of situation you described - Ed what do you think?

Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
Office: 757-441-6746 x200
Cell: 757-647-3356

[Quoted text hidden]

CAPT Shepard Smith <shep.smith@noaa.gov>

Mon, Jun 1, 2015 at 7:04 PM

To: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Cc: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, Edward Owens - NOAA Federal <edward.owens@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Also, there is no indication of anything unusual in the sidescan, and no indication of unresolved shoaling (gradient of seafloor is level on both sides of the gap).

CAPT Shepard M. Smith, NOAA

[Quoted text hidden]

Edward Owens - NOAA Federal <edward.owens@noaa.gov>

Tue, Jun 2, 2015 at 3:46 PM

To: CAPT Shepard Smith <shep.smith@noaa.gov>

Cc: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>, Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

CAPT, et al,

Didn't seem to get any of the graphics described in the thread...? No matter, think I get the gist. Based on Shep's last statement, that recount is the best practice we apply for shoal disprovals in set line spacing datasets. If there is an indication of shoaling or indication thereof in the SS we would question the ability to disprove that shoal sounding and apply logic of the magnitude of depth variance and nav. signif. between the surveyed and charted depths to decide the charting action. If no shoaling is indicated by those same means the shoaler charted sounding is superseded by the survey data. If this occurs on the edge of the survey (outermost line) we would typically resort to retaining the shoaler charted value. Does that hit all the notes?

Regards, Edward

[Quoted text hidden]

Shep Smith - NOAA Federal <shep.smith@noaa.gov>

Tue, Jun 2, 2015 at 4:29 PM

To: Edward Owens - NOAA Federal <edward.owens@noaa.gov>

Cc: Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>, Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, "CO.Thomas Jefferson - NOAA Service Account" <co.thomas.jefferson@noaa.gov>

Ed,

Thanks, I think that answers the question, and I think is a reasonable approach. We will use this guidance in choosing when to split.

Best Regards,

Shep

CAPT Shepard M. Smith, NOAA
Commanding Officer, NOAA Ship Thomas Jefferson
National Oceanic and Atmospheric Administration

[Quoted text hidden]



Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Re: TJ DAPR Questions

2 messages

Russell Quintero - NOAA Federal <russell.quintero@noaa.gov>

Tue, Jun 2, 2015 at 2:37 AM

To: matthew.jaskoski@noaa.gov

Cc: _OMAO MOA OPS Thomas Jefferson <OPS.Thomas.Jefferson@noaa.gov>, "LTJG Matthew Forrest, NOAA" <Matthew.R.Forrest@noaa.gov>

Pulling Joe and Matt into the conversation.

On 5/30/15, Russell Quintero - NOAA Federal <russell.quintero@noaa.gov> wrote:

> Jasko,

>

> I'm helping TJ with their DAPR for this year while I'm out here
> augmenting. We wanted to get AHB's feedback on a few things we are
> doing a little differently.

>

> The xmlDAPR is certainly helpful, but there are parts of the
> implementation that create far more work than is necessary, and even
> deviate from the HSSD.

>

> The TJ DAPR is undergoing final review, but is essentially done
> already. To facilitate the speed of composition, we have deviated from
> the xmlDAPR while continuing to adhere to the HSSD. The specific
> changes are:

>

> 1) We are not tracking interchangeable hardware. We obviously track
> the serial numbers of all components of the sensor (Tpu and fish for a
> SSS for instance), but anything that can be swapped out at will is not
> tracked. Processing computers that are freely interchangeable with no
> effect on the data are not tracked in the DAPR. Already hardware like
> monitors and external hard drives that are deemed to have no effect
> are not tracked, we are just shifting that line slightly further.

>

> 2) The xmlDAPR requires that you transcribe out of the HVF all of the
> values used in the survey, for every sensor and vessel. It also
> requires transcribing the output of things like the dynamic draft and
> patch test. In contrast, the HSSD actually specify that these should
> be in a separate appendix.

>

> Doing these as a separate appendix is actually far, far faster on the
> ship, far easier, and less prone to error. The Vessel Editor in Caris
> can generate a report that contains all of the relevant info with only
> a few button clicks instead of manually transferring every single
> value.

>

> As such, we complied with the HSSD instead of the xmlDAPR schema. To
> make that work, we occasionally had to mark "Not Applied" to some
> correctors, and then add an "Additional Discussion" block immediately
> following that explained how we did those correctors and referenced
> the appropriate appendix.

>

>

> While we are confident that we are in compliance with the HSSD, we
> wanted to make sure the Branch wouldn't have any opposition to this

> approach.
>
> V/r,
> Russ
>
> --
> Lieutenant Russell Quintero, NOAA
> DoD Liaison, Office of Coast Survey
> 1315 East-West Highway
> SSMC3 - 6110
> Silver Spring, MD 20910
>
> 301-713-2780x152 Office
> 970-481-2030 Mobile
>

--
Lieutenant Russell Quintero, NOAA
DoD Liaison, Office of Coast Survey
1315 East-West Highway
SSMC3 - 6110
Silver Spring, MD 20910

301-713-2780x152 Office
970-481-2030 Mobile

Matthew Jaskoski - NOAA Federal <matthew.jaskoski@noaa.gov>

Tue, Jun 2, 2015 at 11:53 AM

To: Russell Quintero - NOAA Federal <russell.quintero@noaa.gov>

Cc: _OMAO MOA OPS Thomas Jefferson <OPS.Thomas.Jefferson@noaa.gov>, "LTJG Matthew Forrest, NOAA" <Matthew.R.Forrest@noaa.gov>

Hey Russ,
I don't have a problem if you all want to generate a *.pdf DAPR in the traditional manner as opposed to using the xml (as long as it meets the requirements of HSSD, of course).

I believe the xmlDAPR is in a phase of substantial re-write and I would highly recommend you email the current deficiencies to the xmlDR/DAPR folks for inclusion in the re-scheming discussion. My understanding is that in the new version the vessel offsets and inventory items will be automatically populate from the HVF and Hybase respectively, so that may be part of the different schema/stylesheets architecture.

thanks for the heads-up,
Jasko

Lieutenant Commander Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
Office: 757-441-6746 x200
Cell: 757-647-3356

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Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

VDatum SEP Uncertainty

2 messages

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

Tue, Apr 14, 2015 at 1:04 PM

To: Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>, Shep Smith - NOAA Federal <shep.smith@noaa.gov>

We failed to include the uncertainty for the VDatum SEP. The uncertainty for the provided model is 0.125m two sigma.

—

Kathryn Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2722 ext 145
kathryn.pridgen@noaa.gov

Joseph Carrier - NOAA Federal <joseph.carrier@noaa.gov>

Mon, Apr 20, 2015 at 12:24 PM

To: _OMAO MOA XO Thomas Jefferson <xo.thomas.jefferson@noaa.gov>, Alex Ligon - NOAA Federal <alex.c.ligon@noaa.gov>, Allison Stone - NOAA Federal <allison.c.stone@noaa.gov>, Brittany Anderson - NOAA Federal <brittany.l.anderson@noaa.gov>, Diane Perry - NOAA Federal <diane.m.perry@noaa.gov>, Eileen Pye - NOAA Federal <eileen.o.pye@noaa.gov>, Kimberly Glomb - NOAA Federal <kimberly.glomb@noaa.gov>, Peter Lewit - NOAA Federal <peter.lewit@noaa.gov>, Rita Bowker - NOAA Federal <rita.s.bowker@noaa.gov>, Stephen Moulton <stephen.f.moulton@noaa.gov>, Todd Walsh - NOAA Federal <todd.walsh@noaa.gov>, Abigail Winz - NOAA Federal <abigail.higgins@noaa.gov>, Daniel Hodge - NOAA Federal <daniel.w.hodge@noaa.gov>, Marybeth Head <Marybeth.Head@noaa.gov>, Megan Guberski <Megan.Guberski@noaa.gov>, Shepard Smith <shep.smith@noaa.gov>, Tyanne Faulkes - NOAA Federal <tyanne.faulkes@noaa.gov>

FYI, on the Charleston project planning.

Very respectfully,
Joe Carrier, LT/NOAA

Field Operation's Officer, NOAA Ship *Thomas Jefferson*
439 West York Street
Norfolk, VA 23510
(301) 713-7782
(757) 483-8755
<http://www.moc.noaa.gov/tj/>
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APPROVAL PAGE

H12767

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

- H12767_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12767_H12773_GeoImage.pdf

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

Approved: _____
Lieutenant Commander Briana Welton, NOAA
Chief, Atlantic Hydrographic Branch