

H13260

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H13260

LOCALITY

State(s): Louisiana

General Locality: Chandeleur Islands, Louisiana

Sub-locality: 12 NM East of North Islands

2019

CHIEF OF PARTY
Jonathan L. Dasler, PE, PLS, CH

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13260

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): **Louisiana**

General Locality: **Chandeleur Islands, Louisiana**

Sub-Locality: **12 NM East of North Islands**

Scale: **40000**

Dates of Survey: **06/14/2019 to 08/02/2019**

Instructions Dated: **06/19/2019**

Project Number: **OPR-J311-KR-19**

Field Unit: **David Evans and Associates, Inc.**

Chief of Party: **Jonathan L. Dasler, PE, PLS, CH**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter & Side Scan Sonar**

Verification by: **Atlantic Hydrographic Branch**

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

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 16N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

Table of Contents

A. Area Surveyed	1
A.1 Survey Limits.....	1
A.2 Survey Purpose.....	2
A.3 Survey Quality.....	3
A.4 Survey Coverage.....	3
A.6 Survey Statistics.....	5
B. Data Acquisition and Processing	6
B.1 Equipment and Vessels.....	6
B.1.1 Vessels.....	6
B.1.2 Equipment.....	7
B.2 Quality Control.....	8
B.2.1 Crosslines.....	8
B.2.2 Uncertainty.....	9
B.2.3 Junctions.....	11
B.2.4 Sonar QC Checks.....	16
B.2.5 Equipment Effectiveness.....	17
B.2.6 Factors Affecting Soundings.....	17
B.2.7 Sound Speed Methods.....	17
B.2.8 Coverage Equipment and Methods.....	17
B.2.9 Density.....	18
B.3 Echo Sounding Corrections.....	19
B.3.1 Corrections to Echo Soundings.....	19
B.3.2 Calibrations.....	19
B.4 Backscatter.....	20
B.5 Data Processing.....	20
B.5.1 Primary Data Processing Software.....	20
B.5.2 Surfaces.....	21
B.5.3 Designated Soundings.....	21
B.5.4 CARIS HDCS Navigation Sources.....	21
C. Vertical and Horizontal Control	22
C.1 Vertical Control.....	22
C.2 Horizontal Control.....	22
D. Results and Recommendations	23
D.1 Chart Comparison.....	23
D.1.1 Electronic Navigational Charts.....	24
D.1.2 Shoal and Hazardous Features.....	24
D.1.3 Charted Features.....	24
D.1.4 Uncharted Features.....	24
D.1.5 Channels.....	24
D.2 Additional Results.....	25
D.2.1 Aids to Navigation.....	25
D.2.2 Maritime Boundary Points.....	25
D.2.3 Bottom Samples.....	25

D.2.4 Overhead Features.....	25
D.2.5 Submarine Features.....	25
D.2.6 Platforms.....	25
D.2.7 Ferry Routes and Terminals.....	25
D.2.8 Abnormal Seafloor or Environmental Conditions.....	26
D.2.9 Construction and Dredging.....	26
D.2.10 New Survey Recommendations.....	26
D.2.11 ENC Scale Recommendations.....	26
E. Approval Sheet.....	27
F. Table of Acronyms.....	28

List of Tables

Table 1: Survey Limits.....	1
Table 2: Survey Coverage.....	3
Table 3: Hydrographic Survey Statistics.....	5
Table 4: Dates of Hydrography.....	6
Table 5: Vessels Used.....	6
Table 6: Major Systems Used.....	7
Table 7: Survey Specific Tide TPU Values.....	9
Table 8: Survey Specific Sound Speed TPU Values.....	10
Table 9: Junctioning Surveys.....	13
Table 10: Primary bathymetric data processing software.....	20
Table 11: Primary imagery data processing software.....	20
Table 12: Submitted Surfaces.....	21
Table 13: ERS method and SEP file.....	22
Table 14: USCG DGPS Stations.....	23
Table 15: Largest Scale ENCs.....	24

List of Figures

Figure 1: OPR-J311-KR-19 Assigned Survey Areas.....	2
Figure 2: H13260 Survey Outline.....	4
Figure 3: S/V Blake.....	7
Figure 4: H13260 Crossline Difference.....	9
Figure 5: Node TVU statistics - 1m finalized.....	10
Figure 6: Node TVU statistics - 2m finalized.....	11
Figure 7: Survey junctions with registry number H13260.....	12
Figure 8: Distribution summary plot of survey H13260 1-meter vs H12530 4-meter.....	14
Figure 9: Distribution summary plot of survey H13260 1-meter vs H12955 1-meter.....	15
Figure 10: Distribution summary plot of survey H13260 1-meter vs H13134 1-meter.....	16
Figure 11: Node density statistics - 1m finalized.....	18
Figure 12: Node density statistics - 2m finalized.....	19

Descriptive Report to Accompany Survey H13260

Project: OPR-J311-KR-19

Locality: Chandeleur Islands, Louisiana

Sublocality: 12 NM East of North Islands

Scale: 1:40000

June 2019 - August 2019

David Evans and Associates, Inc.

Chief of Party: Jonathan L. Dasler, PE, PLS, CH

A. Area Surveyed

David Evans and Associates, Inc. (DEA) conducted a hydrographic survey of the assigned area in the Chandeleur Islands. Survey H13260 was conducted in accordance with the May 21, 2019 Statement of Work and Hydrographic Survey Project Instructions June 19, 2019.

The Hydrographic Survey Project Instructions reference the National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables Manual (HSSD) (March 2019) as the technical requirements for this project.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 46' 51.08" N 88° 40' 36.22" W	29° 55' 23.38" N 88° 34' 46.64" W

Table 1: Survey Limits

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

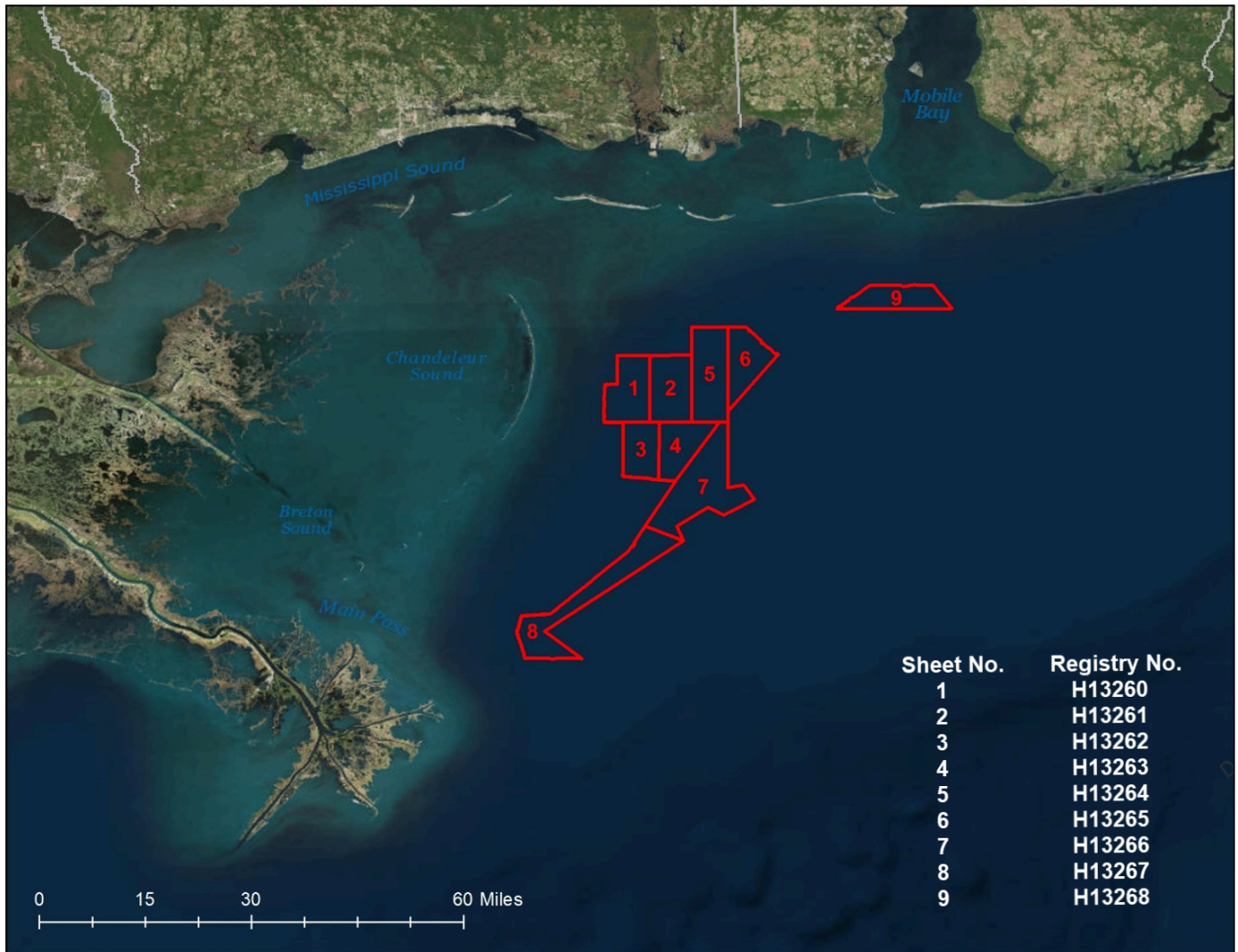


Figure 1: OPR-J311-KR-19 Assigned Survey Areas

A.2 Survey Purpose

The project’s survey purpose for all surveys, which was defined in the Project Instructions, is “The Chandeleur Islands is an active oil and gas exploration area, as well as a popular fishing grounds and includes the Breton National Wildlife Refuge.*1 The Chandeleur Islands were also severely impacted by recent hurricanes like Dennis and Katrina, which resulted in major erosion of the islands. Erosion, sea level rise, and sediment influx from the Mississippi River have endangered the future of these islands.*2

This area also supports a wide variety of vessel traffic and commercial and sport fishing traffic near the Mississippi Entrance Channel and includes a major portion of the safety fairway. Due to the high traffic, this project has been planned as one of a multi-year approach to update charts in this area. Before this project, this area was last surveyed by the Office of Coast Survey in 1922 and 1940. This survey will allow vessel traffic safe passage to offshore Gulf of Mexico.

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products, this project will address numerous approximately charted hazards, reducing the risk to navigation. Survey data from this project is intended to supersede all prior survey data in the common area.”

*1 Breton National Wildlife Refuge. Wikipedia. Retrieved 27 February 2019

*2 Moore, Laura J.; Patch, Kiki; List, Jeffery H.; Williams, S. Jeffress (2014). “The potential for sea-level-rise-induced barrier island loss: Insights from the Chandeleur Islands, Louisiana, USA”. *Marine Geology*. 355: 244-259. doi:10.1016/j.margeo.2014.05.022. ISSN 0025-3227

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

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

Water Depth	Coverage Required
All waters in survey area	Complete Coverage Option B (Refer to HSSD Section 5.2.2.3)

Table 2: Survey Coverage

Multibeam echosounder (MBES) data with time series backscatter was collected concurrently with side scan sonar (SSS) data to obtain complete coverage in all waters in the survey area. This coverage type follows Option B of the Complete Coverage requirement specified in Section 5.2.2 of the 2019 HSSD.

Surveyed contacts and features were developed at complete coverage resolution as required by the coverage classification. Complete coverage multibeam was also obtained within the search radii for all feature disapprovals. Survey coverage was obtained within the survey area depicted in the Project Reference File (PRF) OPR-J311-KR-19_PRF_FINAL.000. Figure 2 depicts the survey outline that was obtained for H13260.

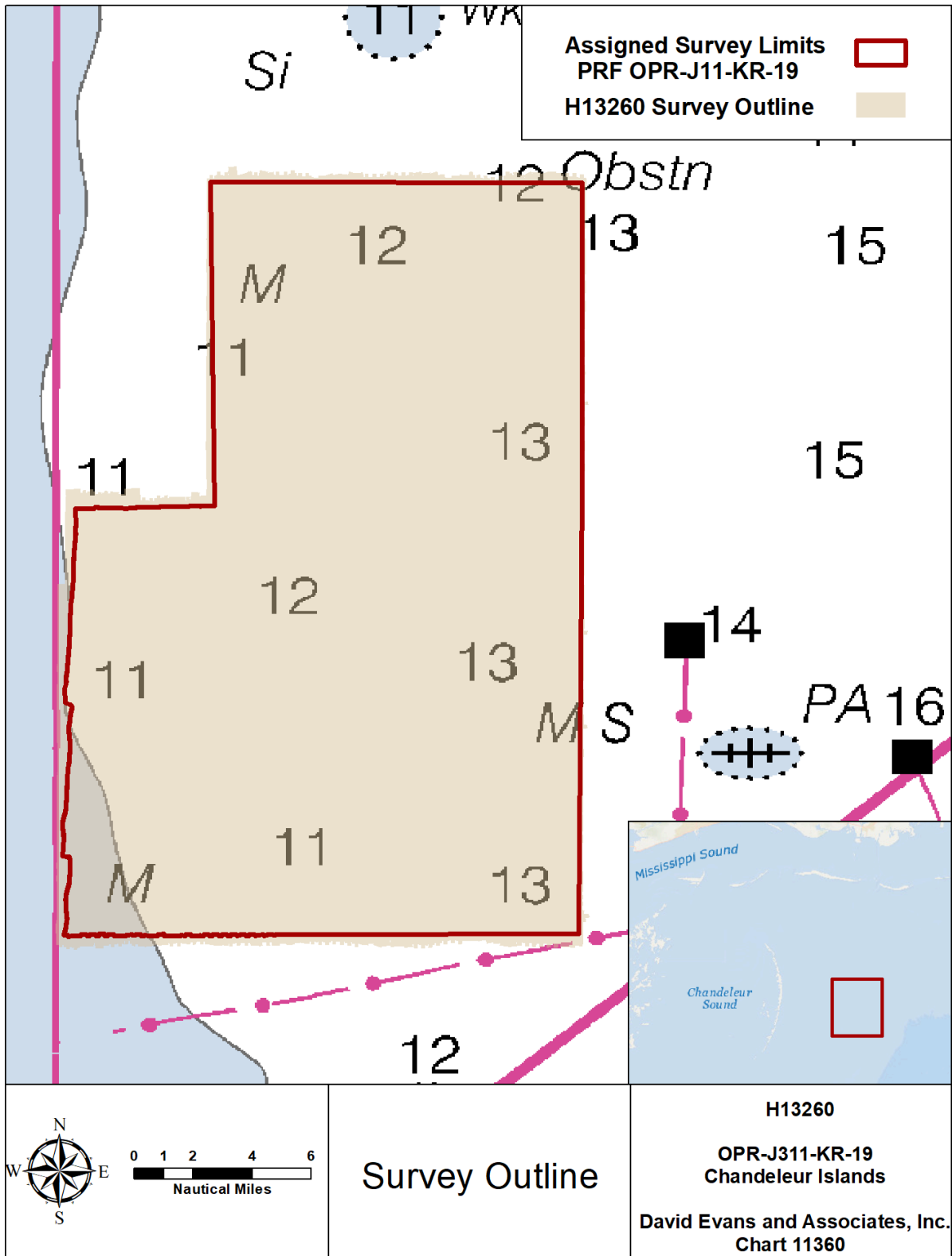


Figure 2: H13260 Survey Outline

A.6 Survey Statistics

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

	HULL ID	<i>S/V Blake</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	31.21	31.21
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	525.94	525.94
	SBES/MBES Crosslines	27.18	27.18
	Lidar Crosslines	0	0
Number of Bottom Samples			3
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			36.93

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
06/14/2019	165
06/15/2019	166
06/16/2019	167
06/17/2019	168
06/18/2019	169
06/27/2019	178
06/28/2019	179
08/01/2019	213
08/02/2019	214

Table 4: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

The OPR-J311-KR-19 Data Acquisition and Processing Report (DAPR), submitted with this survey H13260, details equipment and vessel information as well as data acquisition and processing procedures. There were no vessel or equipment configurations used during data acquisition that deviated from those described in the DAPR.

B.1.1 Vessels

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

Hull ID	<i>S/V Blake</i>
LOA	82 feet
Draft	4.5 feet

Table 5: Vessels Used



Figure 3: S/V Blake

B.1.2 Equipment

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

Manufacturer	Model	Type
Teledyne RESON	SeaBat 7101	MBES
EdgeTech	4200	SSS
Applanix	POS MV 320 v5	Positioning and Attitude System
AML Oceanographic	Micro SV-Xchange	Sound Speed System
AML Oceanographic	Micro SVP&T	Sound Speed System
AML Oceanographic	BaseX2	Sound Speed System
Trimble	SPS851	Positioning System
Sea-Bird Scientific	SBE 19	Conductivity, Temperature, and Depth Sensor

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam crosslines were run across the entire survey area to provide a varied spatial and temporal distribution for analysis of internal consistency within the survey data.

Crossline analysis was performed using the CARIS Hydrographic Information Processing System (HIPS) Quality Control (QC) Report tool, which compares crossline data to a gridded surface and reports results by beam number. Crosslines were compared to a 1-meter CUBE surface encompassing mainscheme, fill, and investigation data for the entire survey area. The QC Report tabular output and plots are included in Separate II Crossline Comparison.

DEA performed an additional crossline analysis using the NOAA Pydro Compare Grids tool to analyze the differences between gridded mainscheme depths and gridded crossline depths. Input grids were 1-meter resolution CUBE surfaces of mainscheme and crossline depths. Results from the crossline to mainscheme difference analysis are depicted in Figure 4, units are represented in meters.

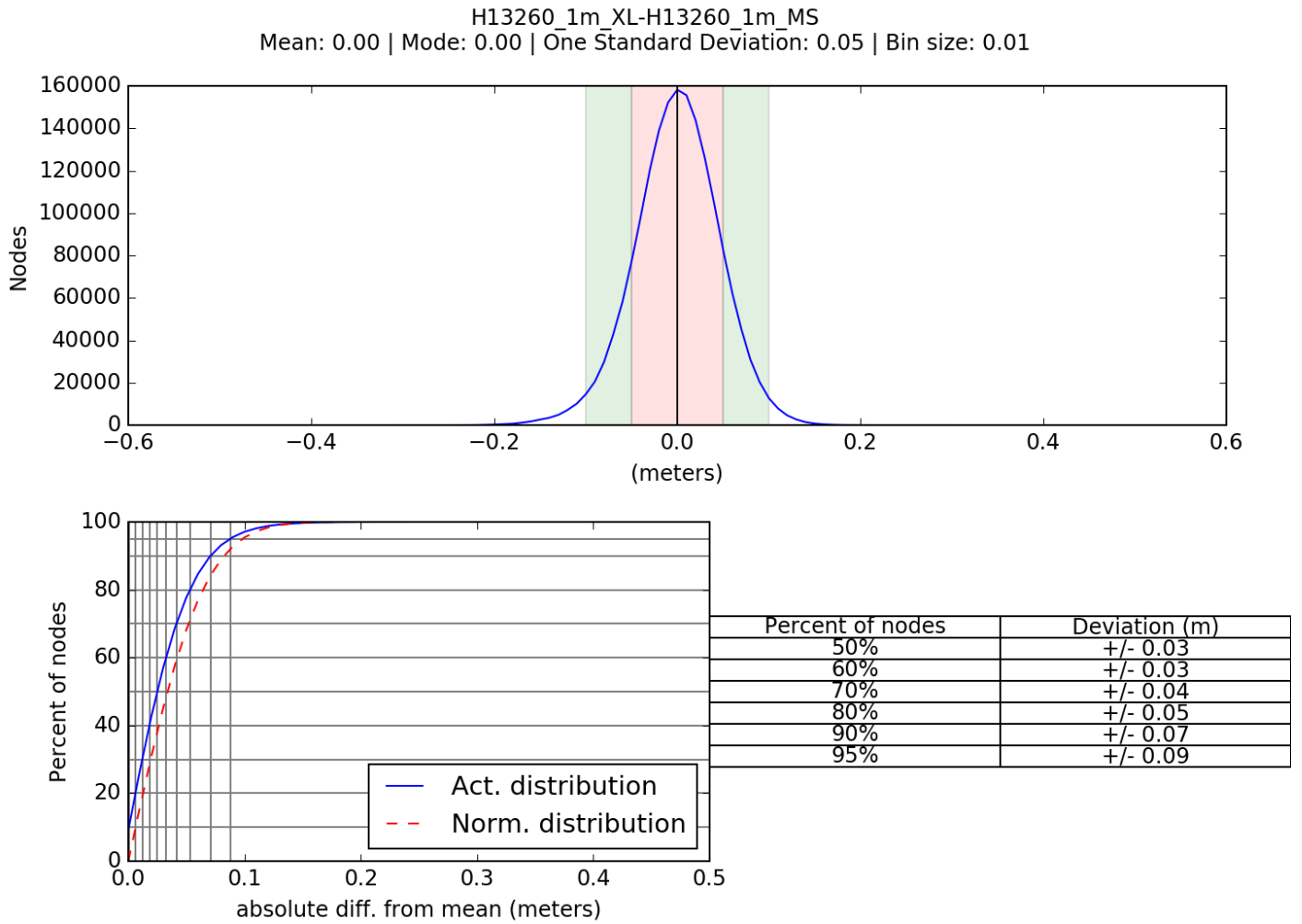


Figure 4: H13260 Crossline Difference

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.05 meters	0.168 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
S/V Blake	n/a meters/second	1.0 meters/second	0.5 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Additional discussion of these parameters is included in the DAPR.

During surface finalization in HIPS, the "Greater of the two values" option was selected, where the calculated uncertainty from Total Propagated Uncertainty (TPU) is compared to the standard deviation of the soundings influencing the node, and where the greater value is assigned as the final uncertainty of the node. The uncertainty of the finalized surfaces increased for nodes, where the standard deviation of the node was greater than the TPU. To determine if the surface grid nodes met IHO Order 1 specification, a ratio of the final node uncertainty to the allowable uncertainty at that depth was determined. As a percentage, this value represents the amount of error budget utilized by the total vertical uncertainty (TVU) at each node. Values greater than 100% indicate nodes exceeding the allowable IHO uncertainty. The resulting calculated TVU values of all nodes in the submitted finalized surfaces are shown in Figures 5 and 6.

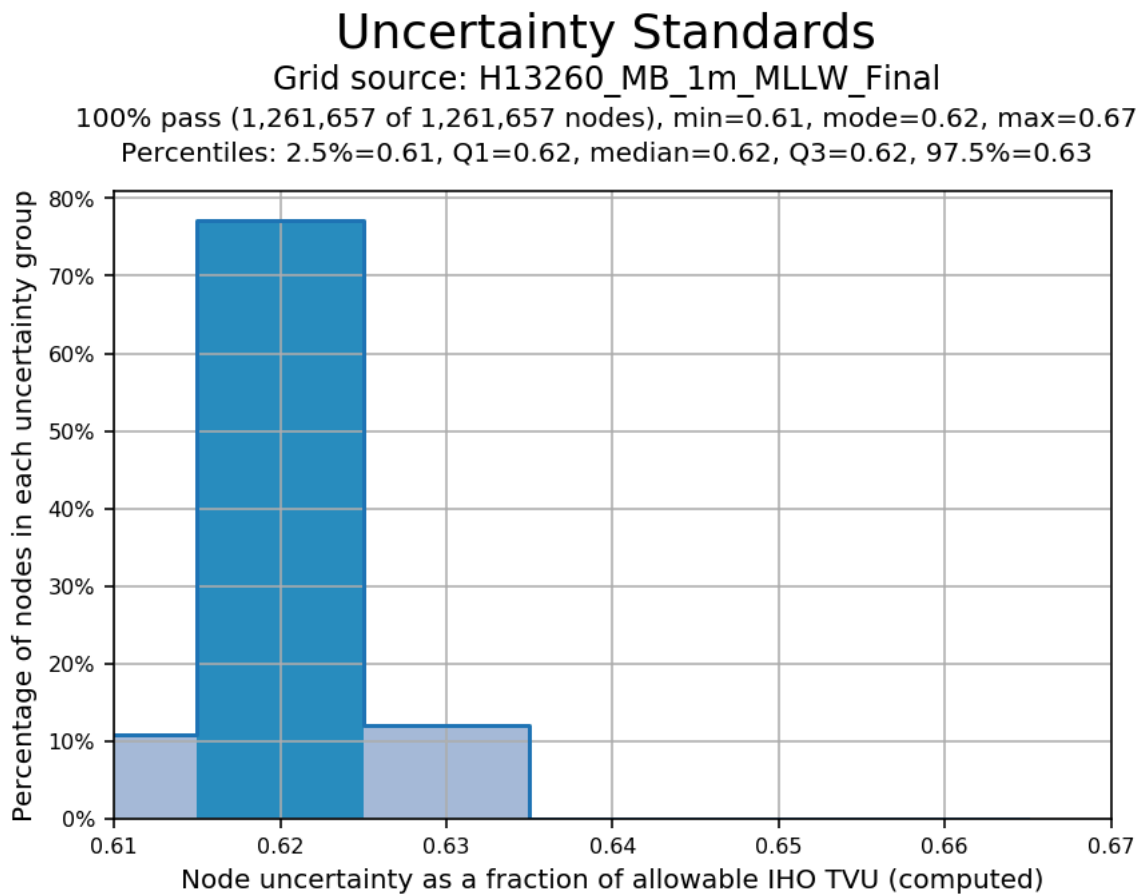


Figure 5: Node TVU statistics - 1m finalized

Uncertainty Standards

Grid source: H13260_MB_2m_MLLW_Final

99.5+% pass (17,288,853 of 17,288,854 nodes), min=0.57, mode=0.60, max=1.01

Percentiles: 2.5%=0.58, Q1=0.59, median=0.60, Q3=0.61, 97.5%=0.62

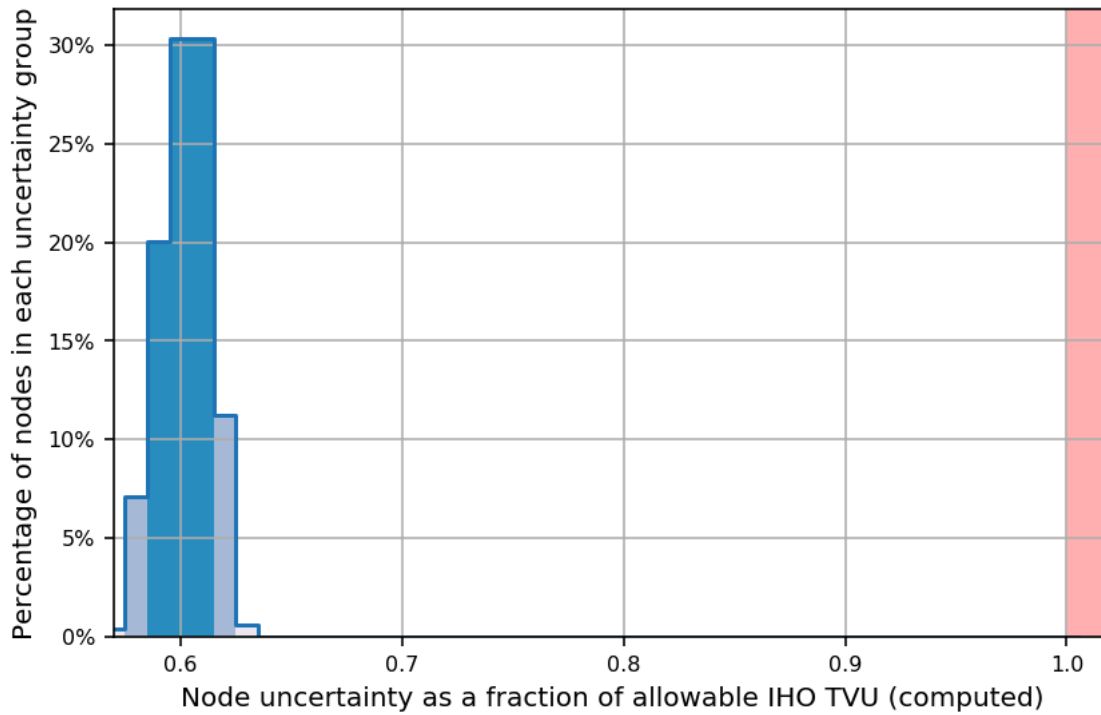


Figure 6: Node TVU statistics - 2m finalized

B.2.3 Junctions

Survey H13260 junctions with current surveys H13261 and H13262. Prior surveys: H12530, H12955, and H13134 were specified as junctions in the Project Instructions for survey H13260. Figure 7 depicts H13260 and the junctioning surveys.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13261	1:40000	2019	David Evans & Associates, Inc.	E
H13162	1:40000	2019	David Evans & Associates, Inc.	S
H12530	1:40000	2013	David Evans & Associates, Inc.	N
H12955	1:40000	2016	David Evans & Associates, Inc.	W
H13134	1:40000	2018	Leidos	S

Table 9: Junctioning Surveys

H13261

At the time of writing, data from survey H13261 was still being processed. The Descriptive Report for H13261 will include the junction analysis with H13260.

H13162

At the time of writing, data from survey H13262 was still being processed. The Descriptive Report for H13262 will include the junction analysis with H13260.

H12530

The mean difference between H13260 and H12530 survey depths is 29 centimeters (H13260 deeper than H12530), shown in Figure 8. Major differences are representative of surveys impacted by subsidence over a 6 year period and the use of varying tidal application methods.

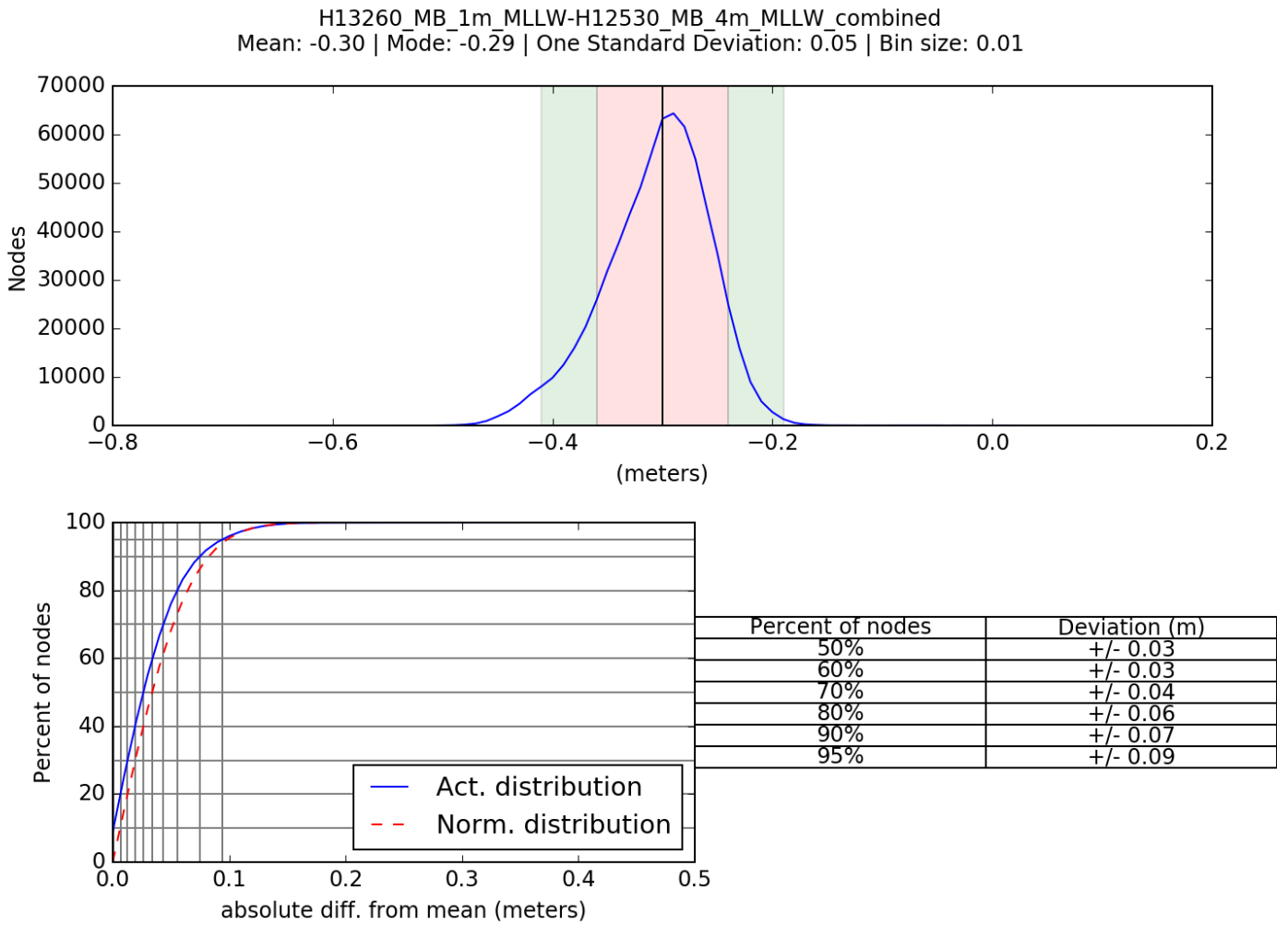


Figure 8: Distribution summary plot of survey H13260 1-meter vs H12530 4-meter

H12955

The mean difference between H13260 and H12955 survey depths is 21 centimeters (H13260 deeper than H12955), shown in Figure 9. Major differences are representative of surveys impacted by subsidence over a 3 year period and the use of varying tidal application methods.

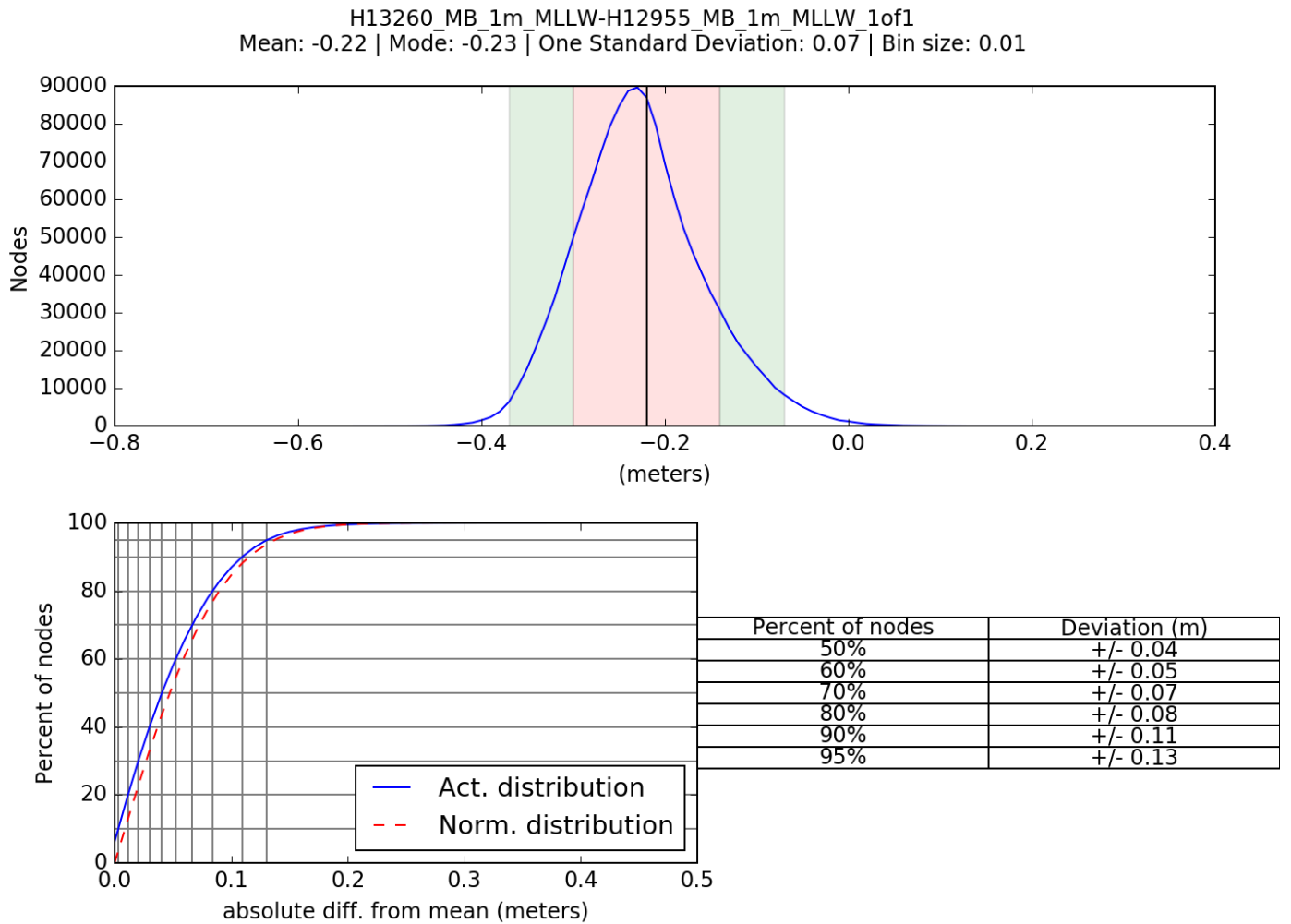


Figure 9: Distribution summary plot of survey H13260 1-meter vs H12955 1-meter

H13134

The mean difference between H13260 and H13134 survey depths is 29 centimeters (H13260 deeper than H13134), shown in Figure 10. Major differences are representative of surveys impacted by subsidence over a one year period and the use of varying tidal application methods. According to the Descriptive Report for the prior survey, H13134 used ERS with Poor Mans VDATUM for Vertical Control methods where survey H13260 used ERS methods relying on the published VDATUM model for the area. Using prior data available on the National Centers for Environmental Information (NCEI) website, the separation model used for survey H13134 was recreated and compared to the separation model used for survey H13260. The prior model was reconstructed by computing a difference surface between the combined MLLW and ellipsoid bathymetry grids available for survey H13134. The hydrographer found a 14-centimeter difference between the two models at the survey junction.

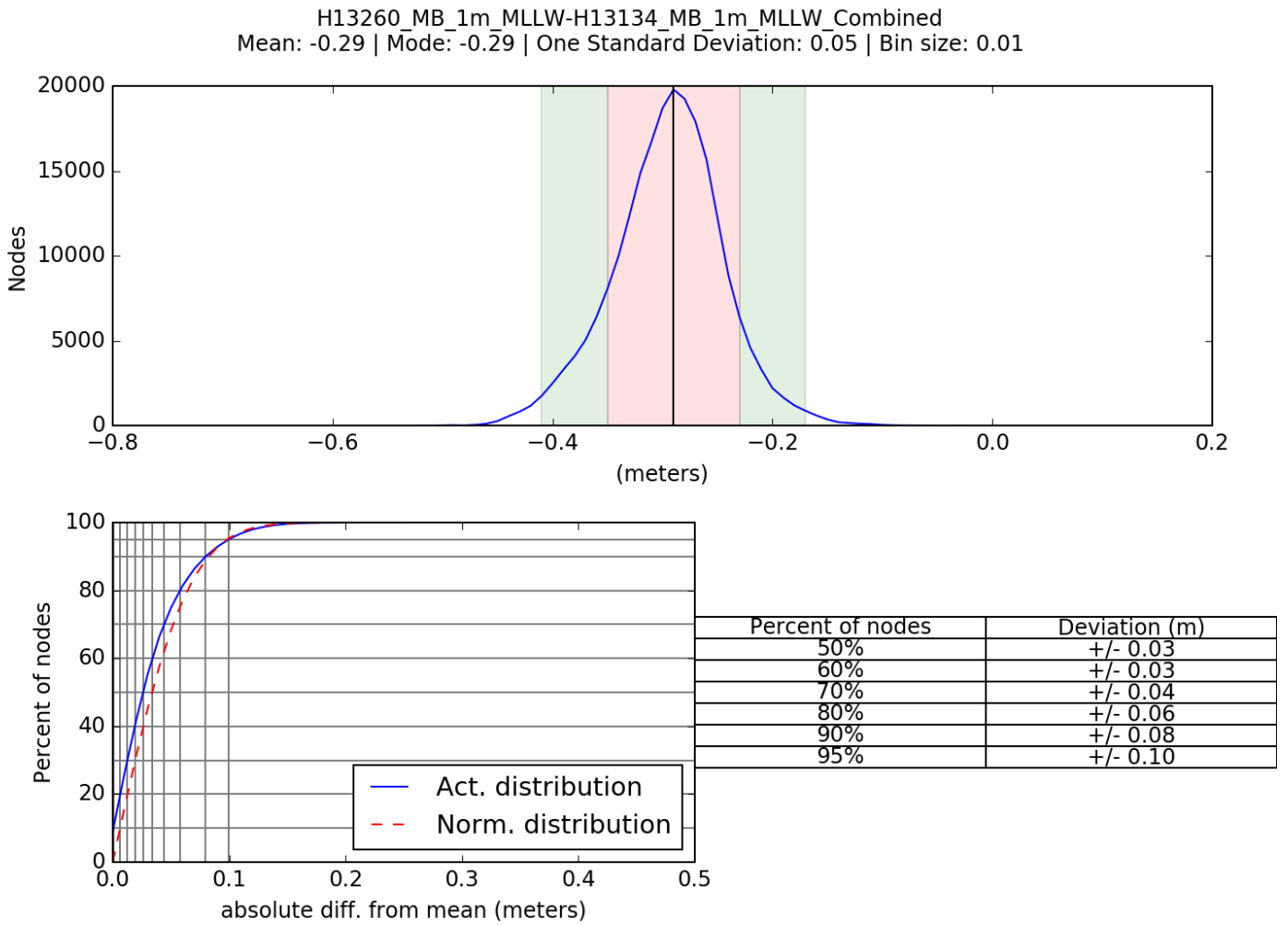


Figure 10: Distribution summary plot of survey H13260 1-meter vs H13134 1-meter

B.2.4 Sonar QC Checks

Quality control is discussed in detail in Section B of the DAPR. Results from weekly position checks and weekly multibeam bar checks are included in Separate I Acquisition and Processing Logs of this report. Sound speed checks can be found in Separate II Sound Speed Data Summary of this report.

Multibeam data were reviewed at multiple levels of data processing including: CARIS HIPS conversion, subset editing, and analysis of anomalies revealed in CUBE surfaces.

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: Approximately 20 minute intervals

An AML Oceanographic Moving Vessel Profiler (MVP) was the primary instrument used to acquire sound speed readings during multibeam operations. Additional discussion of sound speed methods can be found in the DAPR.

For H13260 survey operations, casts were distributed both temporally and spatially based on observed changes in sound speed profiles. Sound speed readings were applied in CARIS using the nearest in distance within a one-hour interval. All sound speed measurements were made within 500 meters of the survey limits.

During survey operations on June 15, 2019 (DN166), the MVP required a cable termination. Sound speed readings were applied in CARIS using the nearest in distance within a two-hour interval based on equipment being offline for the following lines:

2019BL1661732

2019BL1661749

The deviation from one hour to two hours between casts had no discernible impact on data quality as casts were relatively consistent.

B.2.8 Coverage Equipment and Methods

Survey speeds were maintained to meet or exceed along-track sounding density requirements and side scan sonar ensonification requirements.

Multibeam data and side scan mosaics were thoroughly reviewed for holidays and areas of poor-quality coverage due to biomass, vessel wakes, or other factors. Side scan sonar contacts were developed with multibeam sonar to obtain a least depth of the contact using Complete Coverage requirements.

Complete coverage multibeam was acquired inside the disapproval radii for assigned charted features and over all new features. Additional discussion of coverage methods can be found in the DAPR.

B.2.9 Density

The sounding density requirement of 95% of all nodes, populated with at least five soundings per node, was verified by analyzing the density layer of each finalized surface. Individual surface results are stated in Figures 11 and 12.

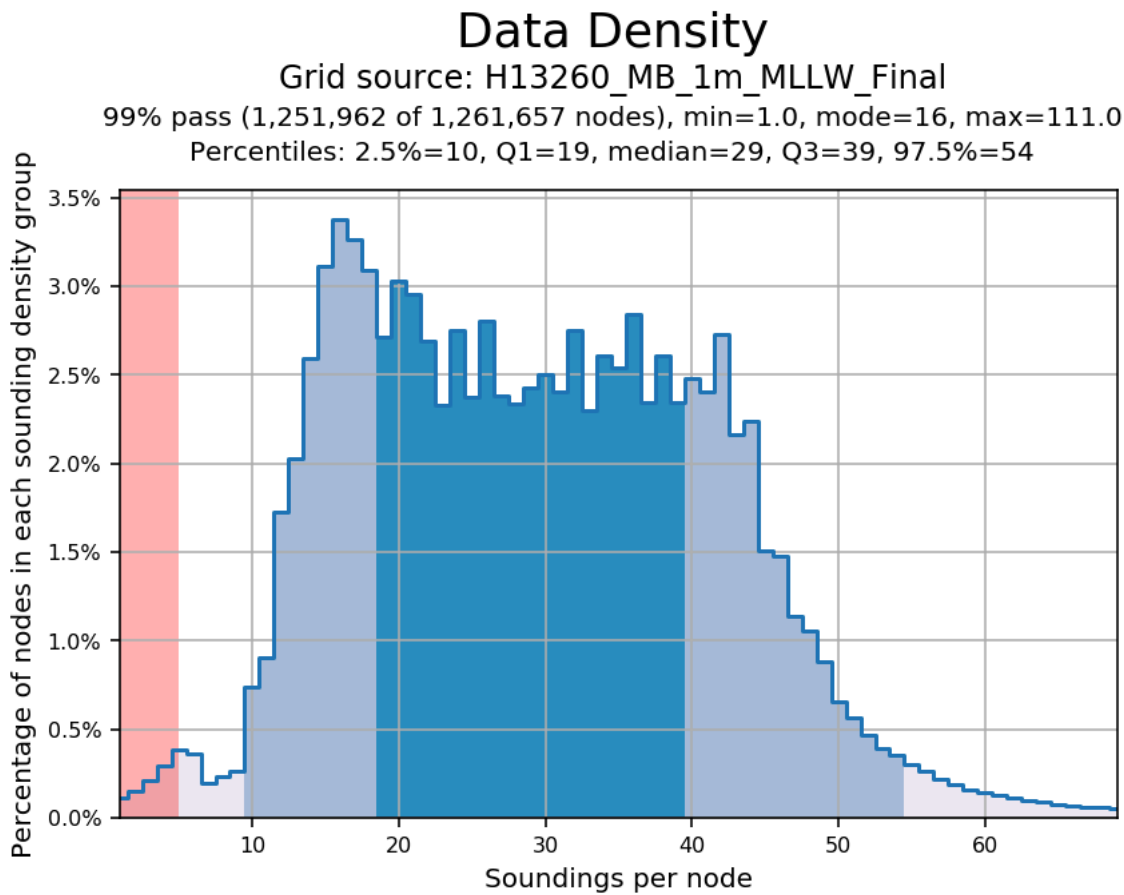


Figure 11: Node density statistics - 1m finalized

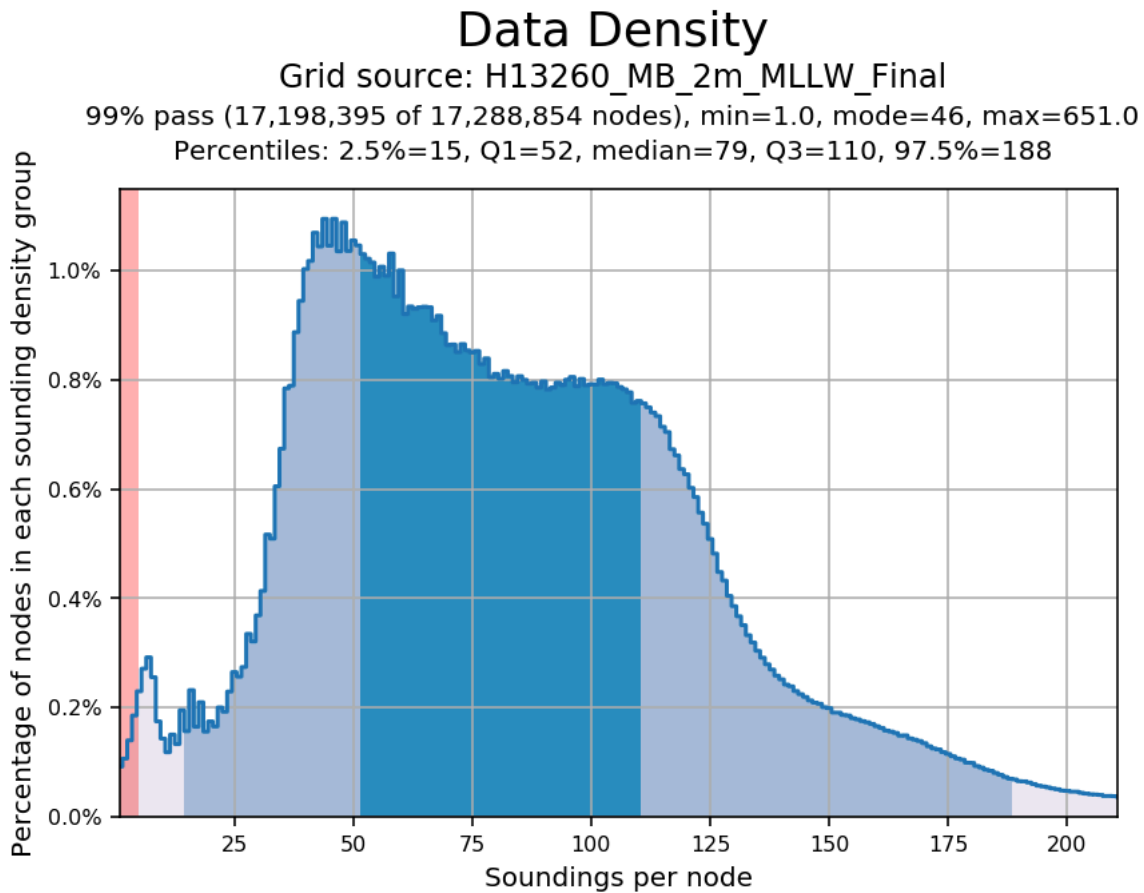


Figure 12: Node density statistics - 2m finalized

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Data reduction procedures for survey H13260 are detailed in the DAPR. Summary multibeam and side scan sonar processing logs are included in Separate I of this report.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Multibeam backscatter was logged in Hypack 7k format and included with the H13260 digital deliverables. Data were processed periodically in CARIS HIPS to evaluate backscatter quality, but the processed data is not included with the deliverables. For data management purposes, the names of multibeam crosslines have been appended with the suffix XL. This change was made to HIPS files only. The original file names of raw data files (Hypack HSX and 7k) have been retained.

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	10.4.5

Table 10: Primary bathymetric data processing software

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

Manufacturer	Name	Version
Chesapeake Technology, Inc.	SonarWiz	7.04.01

Table 11: Primary imagery data processing software

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

A detailed listing of all data processing software is included in the OPR-J311-KR-19 DAPR.

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
H13260_MB_1m_MLLW	CARIS Raster Surface (CUBE)	1 meters	19.519 meters - 27.438 meters	NOAA_1m	Complete MBES
H13260_MB_2m_MLLW	CARIS Raster Surface (CUBE)	2 meters	19.534 meters - 27.121 meters	NOAA_2m	Complete MBES
H13260_MB_1m_MLLW_Final	CARIS Raster Surface (CUBE)	1 meters	19.519 meters - 20.000 meters	NOAA_1m	Finalized Complete MBES
H13260_MB_2m_MLLW_Final	CARIS Raster Surface (CUBE)	2 meters	19.534 meters - 27.121 meters	NOAA_2m	Finalized Complete MBES
H13260_SSSAB_1m_600kHz_1of1	SSS Mosaic	1 meters	0.000 meters - 0.000 meters	N/A	100% SSS

Table 12: Submitted Surfaces

Bathymetric grids were created relative to Mean Lower Low Water (MLLW) in CUBE format using Complete Coverage resolution requirements as specified in the HSSD.

B.5.3 Designated Soundings

A total of one sounding in H13260 was designated in bathymetric data to facilitate feature management for inclusion in the H13260 Final Feature File (FFF). No soundings are designated to override the gridded surface model.

B.5.4 CARIS HDCS Navigation Sources

During processing of HDCS lines, navigation information was imported from SBET.out files while importing motion and associated RMS values. This navigation source, Applanix.SBET, is automatically applied at merge when it exists. However, when a CARIS project file is rebuilt, CARIS will report that the navigation source is the HDCSNav. This is a display issue only and does not change the navigation source.

Additionally, when a line is renamed, such as with the suffix _XL, the HDCSNav source disappears from the metadata display. Again, this appears to be a display issue only and does not change any navigation sources.

All HDCS lines were processed using the SBET.out files and the navigation source is Applanix.SBET for this survey. Additional processing information is detailed in the DAPR.

C. Vertical and Horizontal Control

A summary of the horizontal and vertical control for survey H13260 follows.

C.1 Vertical Control

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

ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR-J311-KR-19_VDatum2_xyNAD83- MLLW_geoid12b.csar

Table 13: ERS method and SEP file

The separation model listed in Table 13 was provided with the Project Instructions and used for sounding correction within the assigned survey area. Realtime navigation for all MBES survey lines were overwritten with post-processed navigation solutions in SBET format. Post-processed solutions were generated using Applanix POSPac MMS using the Trimble CenterPoint RTX option which relies on precise satellite orbit and timing information to create centimeter level positioning and elevation without the use of traditional local base stations. Information on survey control is detailed in the DAPR.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD 83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 16.

DGPS

The following DGPS Stations were used for horizontal control:

DGPS Stations
English Turn, LA (293 kHz)

Table 14: USCG DGPS Stations

Real-time positioning for side scan sonar operations was provided by differential GPS using corrections received from the US Coast Guard National Differential GPS (NDGPS) coverage network from differential beacons at English Turn, LA (293 kHz).

WAAS

The Federal Aviation Administration Wide Area Augmentation System (FAA WAAS) was enabled to be active if the English Turn station experienced periods of down time.

D. Results and Recommendations

D.1 Chart Comparison

The chart comparison was performed by comparing H13260 survey depths to a digital surface generated from electronic navigational charts (ENCs) covering the survey area. A 50-meter product surface was generated from a triangular irregular network (TIN) created from the ENC's soundings, depth contours, and depth features. The 50-meter HIPS product surface of the entire survey area was generated from the 2-meter CUBE surface. The chart comparison was conducted by creating and reviewing a difference surface using the ENC surface and survey surface as inputs. The chart comparison also included a review of all assigned charted features within the survey area. The results of the comparison are detailed below. The relevant charts used during the comparison were reviewed to check that all US Coast Guard (USCG) Local Notice to Mariners (LNMs) issued during survey acquisition, and impacting the survey area, were applied and addressed by this survey.

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
US3GC04M	1:250000	63	08/01/2019	11/19/2019

Table 15: Largest Scale ENC's

D.1.2 Shoal and Hazardous Features

No Dangers to Navigation (Dtons) were submitted for this survey.

D.1.3 Charted Features

This survey contains one assigned feature intersecting the northern edge of the survey extents.

The charted obstruction was verified inside an assigned disapproval radius with 100% MBES coverage. The charted obstruction has been included in the FFF with a description of 'Delete'. An obstruction feature reporting the surveyed position and least depth of the feature has been included in the FFF with a description of 'New'.

D.1.4 Uncharted Features

All uncharted features are portrayed in the FFF as surveyed and attributed with the description of 'New'.

D.1.5 Channels

No channels exist within the survey extents. There are no precautionary areas, traffic separation schemes, or pilot boarding areas within the survey limits.

The Mississippi River-Gulf Outlet Channel to Mobile Ship Channel Safety Fairway (33 CFR 166.200) is charted to the southeast of the survey area. The safety fairway was outside of the survey area and was not investigated during survey operations for this survey. The hydrographer recommends encoding the name of this and other safety fairways in the ENC's. Safety fairway names are included in the Code of Federal Regulations.

D.2 Additional Results

D.2.1 Aids to Navigation

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

D.2.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.2.3 Bottom Samples

Three bottom samples were acquired on August 1, 2019 (DN213) and August 2, 2019 (DN214). The bottom sampling plan followed suggested sample locations included in the Project Reference File (PRF) provided. Minor adjustments were made to the recommended sampling locations in order to sample the varying bottom types observed in the side scan data. This modification was approved by the Contracting Officer's Representative (COR). Correspondence is included in Appendix II Supplemental Survey Records & Correspondence of this report.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

There is one assigned submerged pipeline in the southeast corner of the survey extents for H13260. This feature was carefully reviewed for any portion of pipeline that was exposed or posed a risk to navigation. No extents of the assigned pipeline in survey H13260 was observed in SSS or MBES data. The pipeline is included in the FFF with a description of 'Retain' due to the inability of the field unit to determine if pipelines are buried.

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 or Environmental Conditions

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

D.2.9 Construction and Dredging

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

D.2.10 New Survey Recommendations

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

D.2.11 ENC Scale Recommendations

No new insets are recommended for this area.

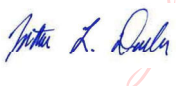


E. Approval Sheet

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

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

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

Report Name	Report Date Sent
Data Acquisition and Processing Report	2020-02-18

Approver Name	Approver Title	Approval Date	Signature
Jonathan L. Dasler, PE, PLS, CH	NSPS/THSOA Certified Hydrographer, Chief of Party	02/19/2020	 Digitally signed by Jonathan L. Dasler DN: cn=Jonathan L. Dasler, o=David Evans and Associates, Inc, ou=Marine Services Division, email=jld@deainc.com, c=US Date: 2020.02.19 15:40:12 -08'00'
Jason Creech, CH	NSPS/THSOA Certified Hydrographer, Charting Manager / Project Manager	02/19/2020	 Digitally signed by Jason Creech DN: cn=Jason Creech, o=David Evans and Associates, Inc., ou, email=jasc@deainc.com, c=US Date: 2020.02.19 15:41:28 -08'00'
Callan McGriff, EIT	IHO Cat-A Hydrographer, Lead Hydrographer	02/19/2020	 Digitally signed by Callan McGriff DN: cn=Callan McGriff, o=David Evans and Associates, Inc., ou, email=cemc@deainc.com, c=US Date: 2020.02.19 15:47:46 -08'00'
Steven Loy	IHO Cat-A Hydrographer, Lead Hydrographer	02/19/2020	 Digitally signed by Steven Loy DN: cn=Steven Loy, o=David Evans and Associates, Inc, ou=Marine Services Division, email=stlo@deainc.com, c=US Date: 2020.02.19 15:38:45 -08'00'

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	Continuously 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
ERTDM	Ellipsoidally Referenced Tidal Datum Model
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

Acronym	Definition
HSSD	Hydrographic Survey Specifications and Deliverables
HSTB	Hydrographic Systems Technology Branch
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
MBAB	Multibeam Echosounder Acoustic Backscatter
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NALL	Navigable Area Limit Line
NTM	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
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
RTX	Real Time Extended
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
SSSAB	Side Scan Sonar Acoustic Backscatter
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Propagated Uncertainty
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDF	Zone Definition File

Jason Creech

From: Jason Creech
Sent: Thursday, December 5, 2019 8:02 PM
To: 'survey.outlines@noaa.gov'
Cc: Kathryn Pridgen - NOAA Federal
Subject: OPR-J311-KR-19 Survey Outlines
Attachments: H13260_survey_outline.000

Good Evening

I have attached the survey outline for H13280 (OPR-J311-KR-19). We still need to acquire some fill and investigation data on the other sheets and will submit the outstanding outlines after the surveys are completed.

Thanks,
Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager
David Evans and Associates, Inc.

2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com
t: 804.806.4440 | c: 804.516.7829 | jasc@deainc.com

[ENERGY](#) | [LAND DEVELOPMENT](#) | [MARINE SERVICES](#) | [SURVEYING AND GEOMATICS](#) | [TRANSPORTATION](#) | [WATER AND ENVIRONMENT](#)

OPR-J311-KR-19
Marine Mammal Trained Observers

Inclusive Dates: 5/21/2019 - 2/15/2020
General Locality: Chandeleur Islands

H Number	Sub Locality	Priority
H13260	12 NM East of North Islands	1
H13261	19 NM East of North Islands	2
H13262	19 NM East of Freemason Islands	3
H13263	25 NM East of Freemason Islands	4
H13264	23 NM East of North Islands	5
H13265	27 NM East of North Islands	6
H13266	27 NM ESE of Freemason Islands	7
H13267	24 NM East of Brenton Islands	8
H13268	12 NM South of Mobile Point	9

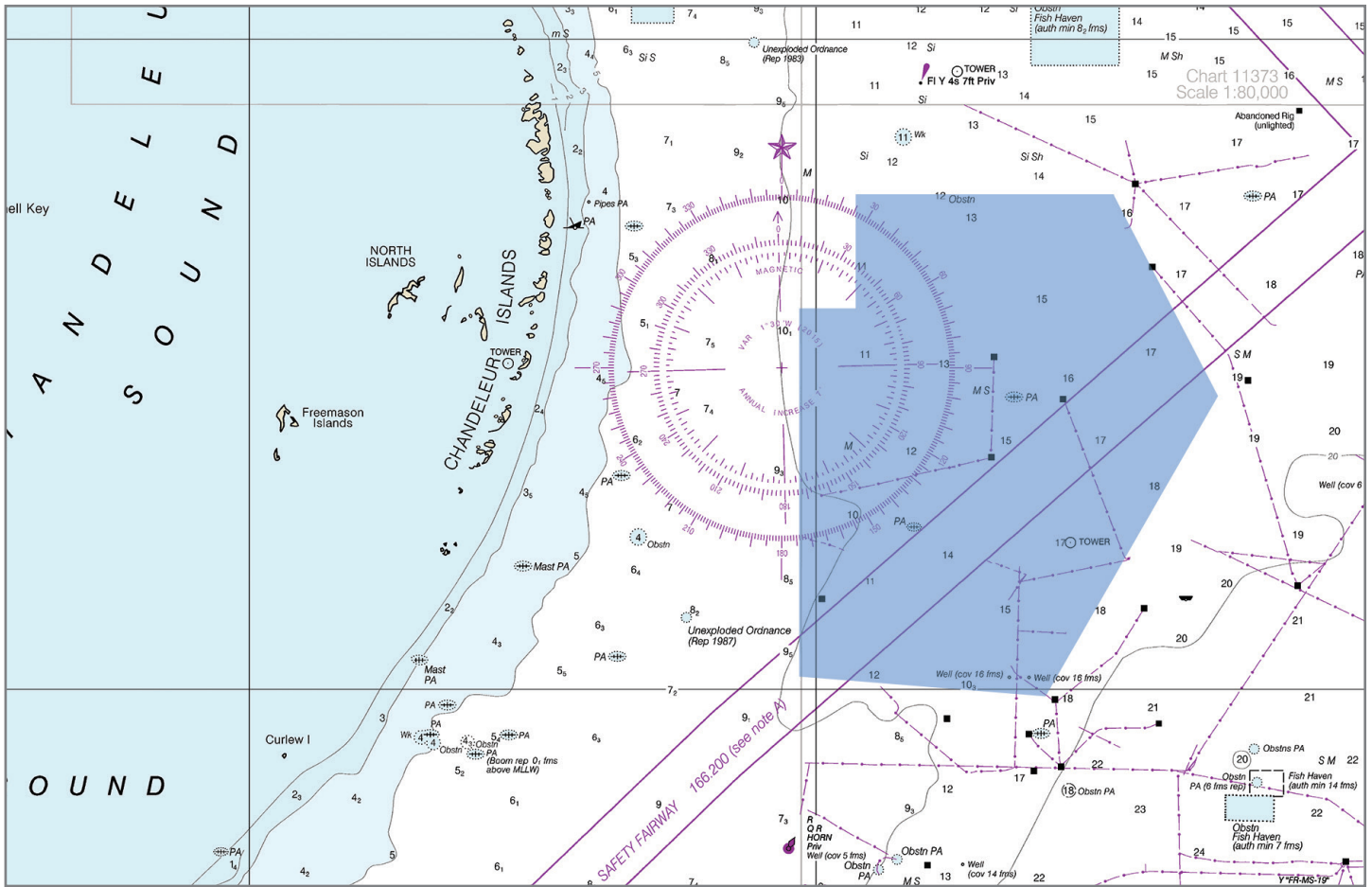
Observer	Position	Training Video ¹ Date
Alexandra Juneau	Survey Crew	6/7/2019
Andrew Beets	Survey Crew	7/12/2019
Callan McGriff	Survey Crew	6/15/2019
Daniel Prince	Survey Crew	6/7/2019
David Moehl	Survey Crew	6/7/2019
Erin Haphey	Survey Crew	7/8/2019
Jason Dorfman	Survey Crew	6/6/2019
Laura Rajnak	Survey Crew	6/7/2019
Matthew Chatterton	Survey Crew	6/20/2019
Rachel Hausmann	Survey Crew	6/12/2019
Sam Werner	Survey Crew	6/6/2019
Steven Loy	Survey Crew	3/13/2019
Tyler Ball	Survey Crew	9/11/2019
George Hopkins	Vessel Crew	6/22/2019
Harry Stutzke	Vessel Crew	6/13/2019
Jarrold Leckich	Vessel Crew	6/22/2019
Jason Privett	Vessel Crew	9/10/2019
Jerry David Keith	Vessel Crew	6/13/2019
Jonathan Jones	Vessel Crew	9/11/2019
Joseph Ziz	Vessel Crew	7/15/2019
Ryan Willis	Vessel Crew	6/13/2019
Timothy Kennedy	Vessel Crew	6/13/2019

¹ Marine Species Awareness Training Video: <https://www.youtube.com/watch?v=KKo3r1yVBBA>

Coast Pilot Investigation Items for OPR-J311-KR-19 Chandeleur Islands Offshore

(All paragraphs are referenced to the 46th edition of Coast Pilot 5 (02 December 2018))

Survey Limits for OPR-J311-KR-19



The area for survey OPR-J311-KR-19 is outlined in blue above. There are no paragraphs included in U.S. Coast Pilot 5 that describe this area and thus, there are no investigation items to be listed.

Should you come across any type of new information that you feel would benefit the users of the Coast Pilot, please submit this and don't hesitate to suggest items for inclusion. If you have any questions about the items in this report or anything in Coast Pilot, please contact:
Richard.Powell@noaa.gov or **coast.pilot@noaa.gov**.

There were no assigned Coast Pilot investigation items for this survey. A Coast Pilot Report was not submitted for OPR-J311-KR-19.

Paragraphs Affected
 None

Jason Creech

From: NODC.DataOfficer@noaa.gov
Sent: Monday, February 3, 2020 9:27 AM
To: Jason Creech
Subject: [Send2NCEI] data submission confirmation for Reference ID: ODMBMT

Dear Jason Creech,

Thank you for submitting your data collection, titled "SOUND VELOCITY collected from S/V Blake in Gulf of Mexico from 2019-06-14 to 2020-01-16", to the NOAA National Centers for Environmental Information (NCEI). Your submission package has been assigned Reference ID: ODMBMT. After reviewing your data and metadata, NCEI will update you about the archival status of your submission package.

You will be notified if NCEI creates an archival information package (accession) of your data, including the unique identifier for that archival information package (the NCEI Accession number). When your data are archived, NCEI keeps an exact copy of the data and metadata you sent and will develop necessary tracking and discovery metadata. In addition, NCEI may create additional versions to ensure your data are preserved for long-term access.

Upon completion of these archival ingest actions, NCEI will publish your data online (including a copy of your original files). You will receive another email once your submission package (Reference ID: ODMBMT) is published for global access. In addition, NCEI may include all or part of your data into one or more product databases, such as the World Ocean Database.

If you have any questions about NCEI archival processes, please contact NODC.DataOfficer@noaa.gov. Also, if at any time you wish to update your submission package, please send an e-mail to NODC.DataOfficer@noaa.gov with your request. Please remember to include your submission package Reference ID.

Thank you again for choosing to archive your data with the National Centers for Environmental Information (NCEI).

NCEI Data Officer Team
NOAA National Centers for Environmental Information NOAA/NESDIS
1315 East-West Highway
Silver Spring, MD 20910
USA

APPROVAL PAGE

H13260

The survey data meet or exceed the current requirements of the Office of Coast Survey hydrographic data review process and may be used to update NOAA products. The following survey products will be archived at the National Centers for Environmental Information:

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of acoustic backscatter mosaics
- Bottom samples
- Geospatial PDF of survey products

Approved: _____

Commander Meghan McGovern, NOAA
Chief, Atlantic Hydrographic Branch