

H13136

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

DESCRIPTIVE REPORT

Type of Survey: Basic Hydrographic Survey

Registry Number: H13136

LOCALITY

State(s): Louisiana

General Locality: Chandeleur Islands

Sub-locality: 18 NM NE from Blind Bay

2018

CHIEF OF PARTY
Alex T. Bernier

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13136

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**

Sub-Locality: **18 NM NE from Blind Bay**

Scale: **40000**

Dates of Survey: **08/24/2018 to 11/06/2018**

Instructions Dated: **06/12/2018**

Project Number: **OPR-J311-KR-18**

Field Unit: **Leidos**

Chief of Party: **Alex T. Bernier**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter**

Verification by: **Atlantic Hydrographic Branch**

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

Remarks:

Contract: EA-133C-14-CQ-0033/TO-0004.

Contractor: Leidos, 221 Third Street, Newport, RI 02840 USA.

Subcontractors: Divemasters, Inc., 15 Pumpshire Road, Toms River, NJ 08753; OARS, 8705 Shoal Creek Blvd, Suite 109, Austin, TX 78757.

Leidos Doc. 19-TR-006.

All times were recorded in UTC.

Data were collected in UTM Zone 16N.

The purpose of this survey is to provide contemporary data to update National Oceanic and Atmospheric Administration (NOAA) nautical charts. 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 surveyed features 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.

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Descriptive Report to Accompany Survey H13136

Project: OPR-J311-KR-18

Locality: Chandeleur Islands

Sublocality: 18 NM NE from Blind Bay

Scale: 1:40000

August 2018 - November 2018

Leidos

Chief of Party: Alex T. Bernier

A. Area Surveyed

The area surveyed was a section of the Gulf of Mexico east of the Chandeleur Islands in Louisiana (Figure 1).

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 29' 31.25" N 088° 50' 48.98" W	29° 23' 14.42" N 088° 41' 55.40" W

Table 1: Survey Limits

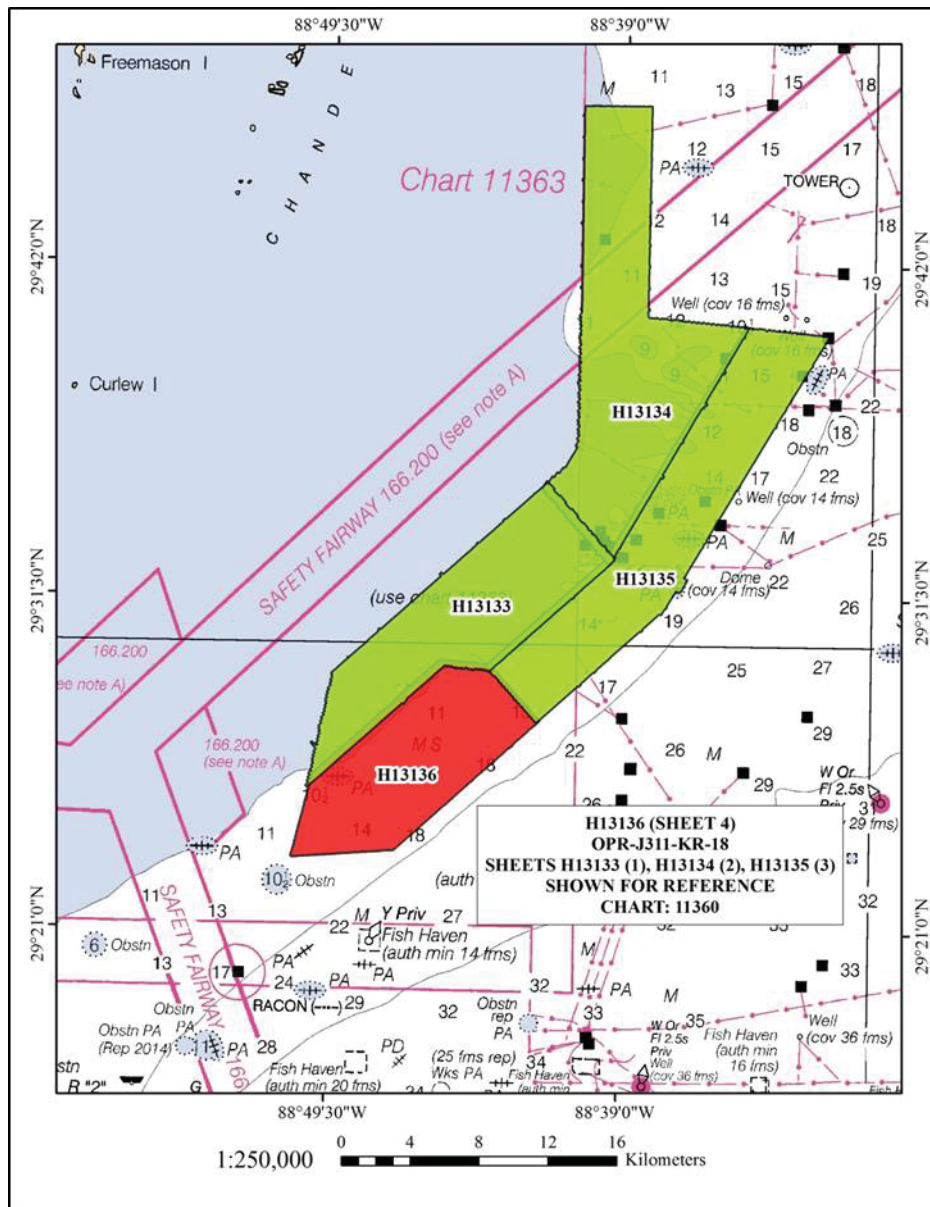


Figure 1: H13136 Survey Bounds

Survey limits were acquired in accordance with the requirements in the Project Instructions and the Hydrographic Surveys Specifications and Deliverables (HSSD).

A.2 Survey Purpose

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. The Chandeleur Offshore survey occupies 105 SNM through active oil and gas exploration areas and future state-leasing waters and is designated for further petroleum exploration and production. Located immediately outside of Louisiana's main traffic fairway and Mississippi Entrance

Channel, Chandeleur Offshore is in an area of extremely high vessel traffic while supporting one of the oldest and largest offshore hydrocarbon producing regions in the world. Oil and Gas is a leading industry in Louisiana. The total direct and indirect impact on the state is approximately \$73.8 billion: direct impact coming from taxes, royalties, and fees; the indirect impact results from the salaries and wages earned by oil and gas employees and service companies doing business with oil and gas companies. This area was last surveyed by the Office of Coast Survey in 1922 and 1940. The central Gulf of Mexico is regularly impacted by severe storms and numerous dangerous hazards have been reported from damaged or destroyed drilling rigs, platforms, and seafloor pipelines. The quality of the bathymetry in the area indicates a 50 to 100 point gap in the risk based model between a healthy bathymetry safe for navigation and a high risk under keel clearance. The depths of the project area are shoaler than 20 fathoms. This survey will identify hazards and changes in bathymetry, providing contemporary data to update National Ocean Service (NOS) nautical charting products.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

All valid data from this survey met the International Hydrographic Organization's (IHO) Standards for Hydrographic Surveys, Special Publication 44, Fifth Edition, February 2008, Order 1a.

Leidos warrants only that the survey data acquired by Leidos and delivered to NOAA under Contract EA-133C-14-CQ-0033 reflects the state of the sea floor in existence on the day and at the time the survey was conducted.

H13136 was surveyed in accordance with the following documents:

1. Project Instructions, OPR-J311-KR-18, dated 12 June 2018
2. Hydrographic Surveys Specifications and Deliverables (HSSD), April 2018
3. OPR-J311-KR-18 Statement of Work, dated 14 June 2018

A.4 Survey Coverage

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

Water Depth	Coverage Required
All waters in survey area	Complete Coverage (Refer to HSSD Section 5.2.2.3)
All waters in survey area	Acquire backscatter data during all multibeam data acquisition (Refer to HSSD Section 6.2)
All waters in survey area	LNM no less than 2816 LNM. Report significant shoaling via weekly progress report. COR may adjust survey prioritization based on observed shoaling

Table 2: Survey Coverage

Leidos chose to achieve the coverage requirement using Complete Coverage, Option A (Complete Coverage Multibeam). Survey coverage achieved was in accordance with the requirements in the Project Instructions and the HSSD (Figure 2). The survey coverage was achieved through both traditional manned survey operations as well as through autonomous vessel operations. See Section D.2.11 and the Data Acquisition and Processing Report (DAPR) for more information on autonomous survey operations.

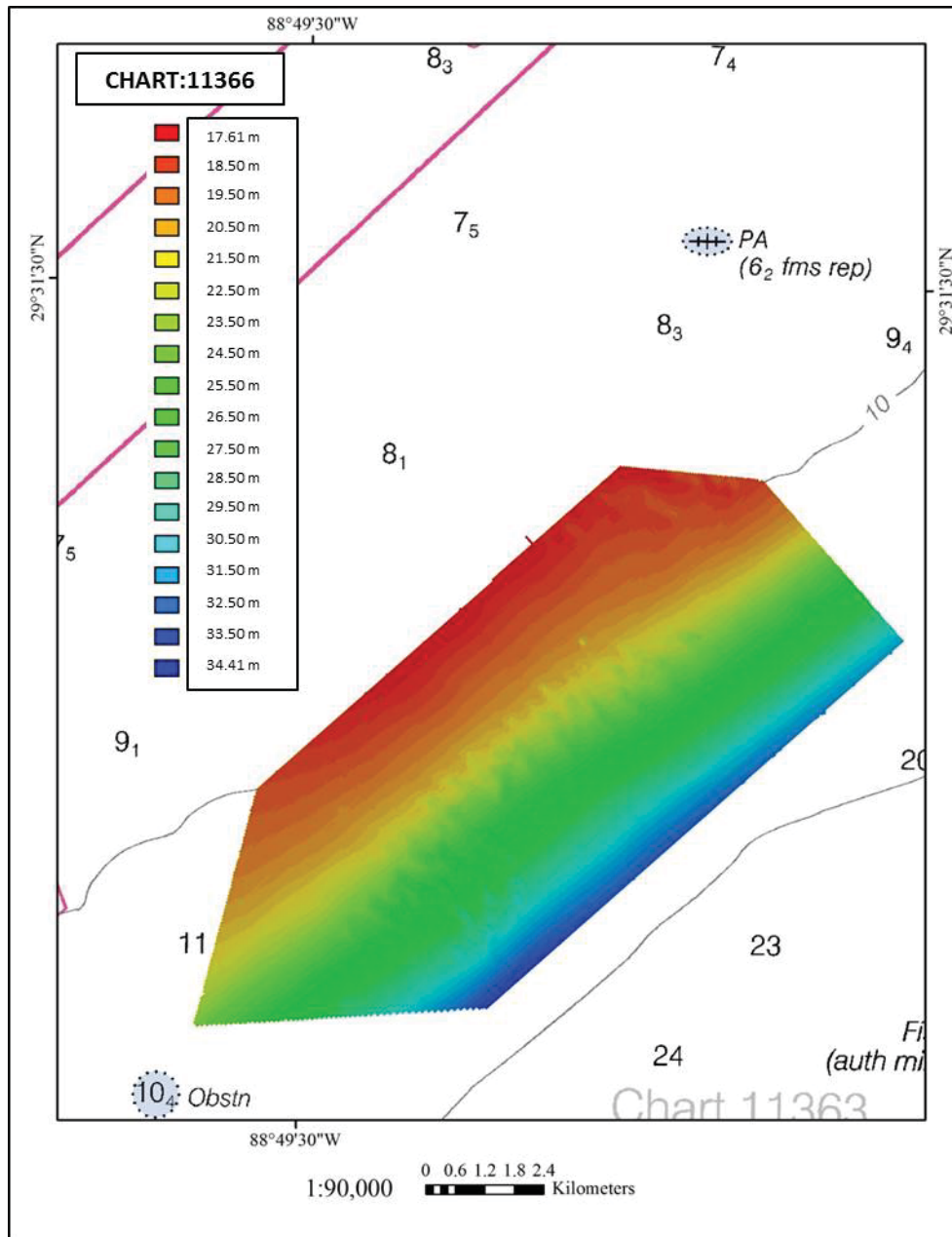


Figure 2: Final Bathymetry All Coverage for H13136

A.5 Survey Statistics

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

	HULL ID	<i>M/V Atlantic Surveyor</i>	<i>R/V Pathfinder</i>	Total
LNM	SBES Mainscheme	0	0	0
	MBES Mainscheme	722.16	300.45	1022.61
	Lidar Mainscheme	0	0	0
	SSS Mainscheme	0	0	0
	SBES/SSS Mainscheme	0	0	0
	MBES/SSS Mainscheme	0	0	0
	SBES/MBES Crosslines	52.63	19.00	71.63
	Lidar Crosslines	0	0	0
Number of Bottom Samples				7
Number Maritime Boundary Points Investigated				0
Number of DPs				0
Number of Items Investigated by Dive Ops				0
Total SNM				26 25.59

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
08/24/2018	236
08/25/2018	237
09/17/2018	260
09/18/2018	261
10/13/2018	286
10/14/2018	287
10/15/2018	288
10/28/2018	301
10/29/2018	302
10/30/2018	303
10/31/2018	304
11/03/2018	307
11/04/2018	308
11/05/2018	309
11/06/2018	310

Table 4: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Leidos used their ISS-2000 software on a Windows 7 platform to acquire these survey data. Survey planning and data analysis were conducted using the Leidos SABER software on Red Hat Enterprise 6 Linux platforms.

A detailed description of the systems and vessels used to acquire and process these data is included in the DAPR for OPR-J311-KR-18, delivered concurrently with the Descriptive Report for H13133. There were no variations from the equipment configuration described in the DAPR other than those detailed in Section B.1.2.

B.1.1 Vessels

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

Hull ID	<i>M/V Atlantic Surveyor</i>	<i>R/V Pathfinder</i>
LOA	110 feet	40 feet
Draft	9 feet	5 feet

Table 5: Vessels Used



Figure 3: M/V Atlantic Surveyor



Figure 4: R/V Pathfinder

The M/V Atlantic Surveyor (Figure 3) was used to collect multibeam echo sounder (MBES) (RESON SeaBat T50) and sound speed data during twenty-four hours per day survey operations. The R/V Pathfinder (Figure 4) was used to collect MBES (RESON SeaBat 7125 SV2) and sound speed data during twenty-four hours per day survey operations. All data acquisition completed by R/V Pathfinder was done with both the vessel and survey systems operating autonomously. Refer to Section D.2.11 for additional information regarding autonomous survey operations and Section A.3.1 in the DAPR.

A detailed description of the vessels used is included in Section A of the DAPR.

B.1.2 Equipment

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

Manufacturer	Model	Type
Teledyne RESON (RESON)	SeaBat T50	MBES (M/V Atlantic Surveyor)
Teledyne RESON (RESON)	SeaBat 7125 SV2	MBES (R/V Pathfinder)
Applanix	POS/MV 320 V5	Positioning and Attitude System
Trimble	Probeacon	Positioning System
AML Oceanographic	MVP30	Sound Speed System
AML Oceanographic	BaseX2	Sound Speed System
Coastal Environmental Systems	Weatherpak WP2000	Environmental Monitoring System (R/V Pathfinder)

Table 6: Major Systems Used

A detailed description of the equipment installed is included in Section A of the DAPR. In addition to the equipment for the R/V Pathfinder listed in the DAPR, a WeatherPak (WP2000) sensor was also integrated into ISS-2000 to record and report real-time weather conditions, while two live camera feeds provided additional situational awareness. The full rate environmental data from the WeatherPak was continuously logged by ISS-2000 and individual entries were autonomously input to the acquisition logs every 30 minutes.

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 7.00% of mainscheme acquisition.

Refer to Separates II for details about how the crossing analyses were performed and a complete discussion of each analysis and tabular results. Figure 5 summarizes the crossline comparison results as well as the comparison conducted between the M/V Atlantic Surveyor and R/V Pathfinder.

Difference Grid	Grid Resolution	Minimum and Maximum CUBE Depth (meters) of Crossline Grid	IHO Order 1A Maximum Allowable Uncertainty (meters) for the Range of Depths	Percentage of Depth Differences Less than IHO Order 1A Maximum Allowable Uncertainty
Mainscheme to Crossline (Class 1) (All valid multibeam)	two-meter	17.668 – 34.021	0.550 – 0.668	100.00
<i>M/V Atlantic Surveyor</i> RESON SeaBat T50 Mainscheme to Crossline (Class 1)	two-meter	17.847 – 34.021	0.551 – 0.668	100.00
<i>R/V Pathfinder</i> RESON SeaBat 7125 SV2 Mainscheme to Crossline (Class 1)	two-meter	17.668 – 33.893	0.550 – 0.666	100.00
<i>M/V Atlantic Surveyor</i> RESON SeaBat T50 multibeam to <i>R/V Pathfinder</i> RESON SeaBat 7125 SV2 multibeam	two-meter	17.668 – 34.128	0.550 – 0.668	99.99

Figure 5: Summary of Repeatability Analysis

B.2.2 Uncertainty

For specific details on the use and application of the SABER Total Propagated Uncertainty (TPU) model, see Section B.2 in the DAPR. Once the TPU model was applied to the GSF bathymetry data, each beam was attributed with the horizontal uncertainty and the vertical uncertainty at the 95% confidence level. The vertical and horizontal uncertainty values, estimated by the TPU model for individual multibeam soundings, varied little across the dataset, tending to be most affected by beam angle. Individual soundings that had vertical and horizontal uncertainty values above IHO S-44 5th Edition, Order 1a were flagged as invalid during the uncertainty attribution.

As discussed in Section B.2 of the DAPR, SABER generates two vertical uncertainty surfaces; the Hypothesis Standard Deviation (Hyp. StdDev) and the Hypothesis Average Total Propagated Uncertainty (Hyp. AvgTPU). A third vertical uncertainty surface is generated from the larger value of these two uncertainties at each node and is referred to as the Hypothesis Final Uncertainty (Hyp. Final Uncertainty).

The final H13136 two-meter PFM CUBE surface contained final vertical uncertainties that ranged from 0.230 to 0.616 meters. The IHO Order 1a maximum allowable vertical uncertainty was calculated to range between 0.550 to 0.668 meters, based on the minimum CUBE depth (17.668 meters) and maximum CUBE

depth (34.128 meters). Results from the SABER Check PFM Uncertainty function identified that there were no nodes in the final H13136 two-meter PFM CUBE surface with final vertical uncertainties that exceeded IHO Order 1a allowable vertical uncertainty. The SABER Frequency Distribution Tool was also used to review the Hyp. Final Uncertainty surface within the final H13136 two-meter PFM grid, and the results showed that in the final two-meter PFM grid, 100.00% of all nodes had final uncertainties less than or equal to 0.616 meters.

B.2.3 Junctions

As requested in the Project Instructions, analyses of the H13136 junctions with adjacent surveys were performed. Figure 6 shows the general locality of H13136 as it relates to the sheets to which junctions were performed. Details for each survey are listed in Table 7. Junction comparisons to surveys H12736, H13133, and H13135 were performed against the final respective BAG file or PFM grid for each sheet. Refer to Separates II for details about how the junction analyses were performed and a complete discussion of each analysis and tabular results.

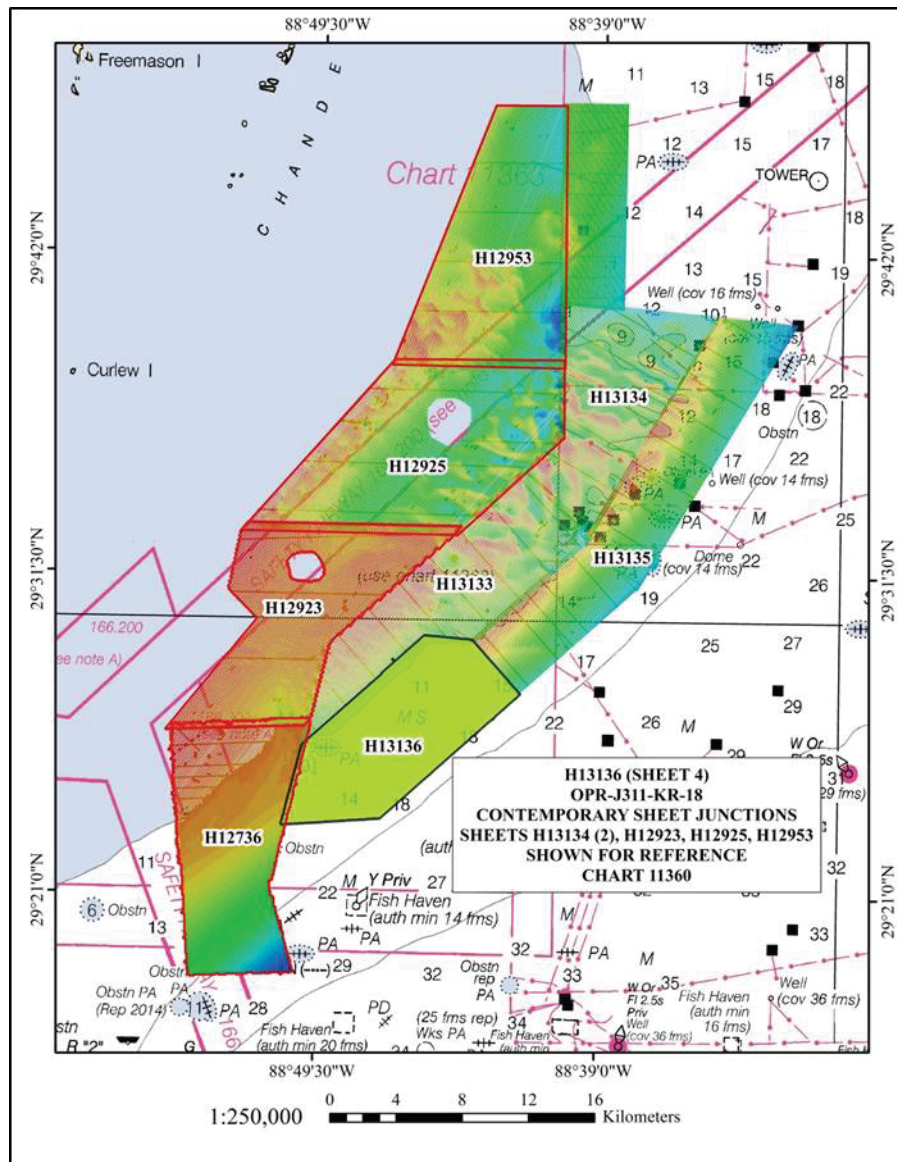


Figure 6: General Locality of H13136 with Junctioning Surveys

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12736	1:40000	2015	Ocean Surveys, Inc.	SW
H13133	1:40000	2018	Leidos	NW
H13135	1:40000	2018	Leidos	NE

Table 7: Junctioning Surveys

H12736

H12736 junctions with H13136 to the southwest; 100.00% of the two-meter comparisons agreed within ± 0.466 meters.

H13133

H13133 junctions with H13136 to the northwest; 100.00% of the one-meter comparisons agreed within ± 0.573 meters.

H13135

H13135 junctions with H13136 to the northeast; 100.00% of the two-meter comparisons agreed within ± 0.416 meters.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in Section A.5 of the DAPR.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness for acquisition of valid data used for final surfaces.

B.2.6 Factors Affecting Soundings

During data acquisition on H13136 there were intermittent local weather events producing increased winds and sea state. Occasionally during the localized weather events, some residual heave artifacts were visible in the data and most often ranged from ± 4 to 20 centimeters (Figure 7). These heave artifacts were more prominent in the R/V Pathfinder (a smaller vessel than the M/V Atlantic Surveyor). There were also some occurrences where overlapping MBES data had a small vertical offset, that when observed most often ranged from ± 10 to 30 centimeters. This small vertical offset could even be observed between overlapping MBES data collected by the same vessel, within the same day at time spans differing by only hours (Figure 8). These intermittent vertical offsets can be attributed to the achievable accuracies of the PP-RTX solution used to correct the MBES data for reference to the Ellipsoid. See Section C.1 for information regarding the vertical control used for these survey operations. When observed, the occasional vertical offsets and heave artifacts were within the IHO Order 1a allowable vertical uncertainty for the H13136 water depths.

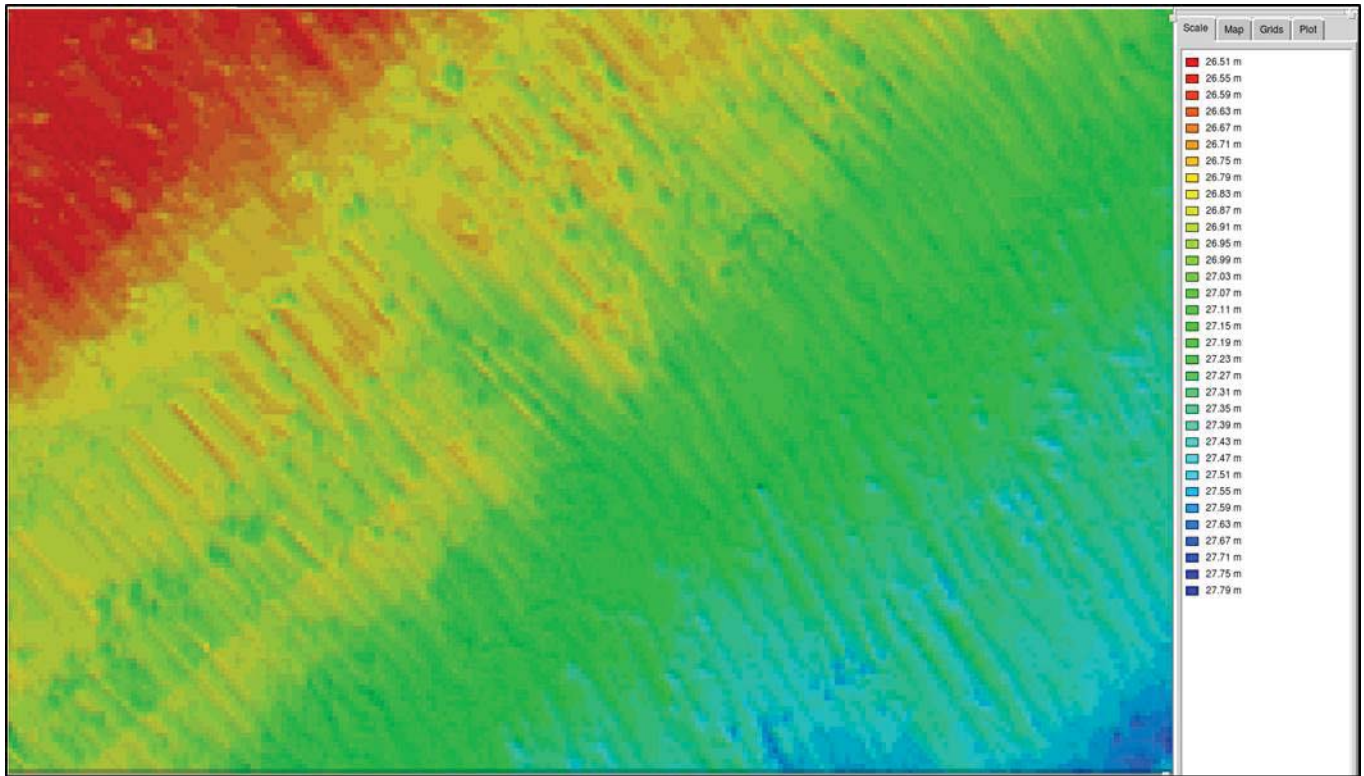


Figure 7: CUBE Heave Artifacts Resulting from Local Weather Events

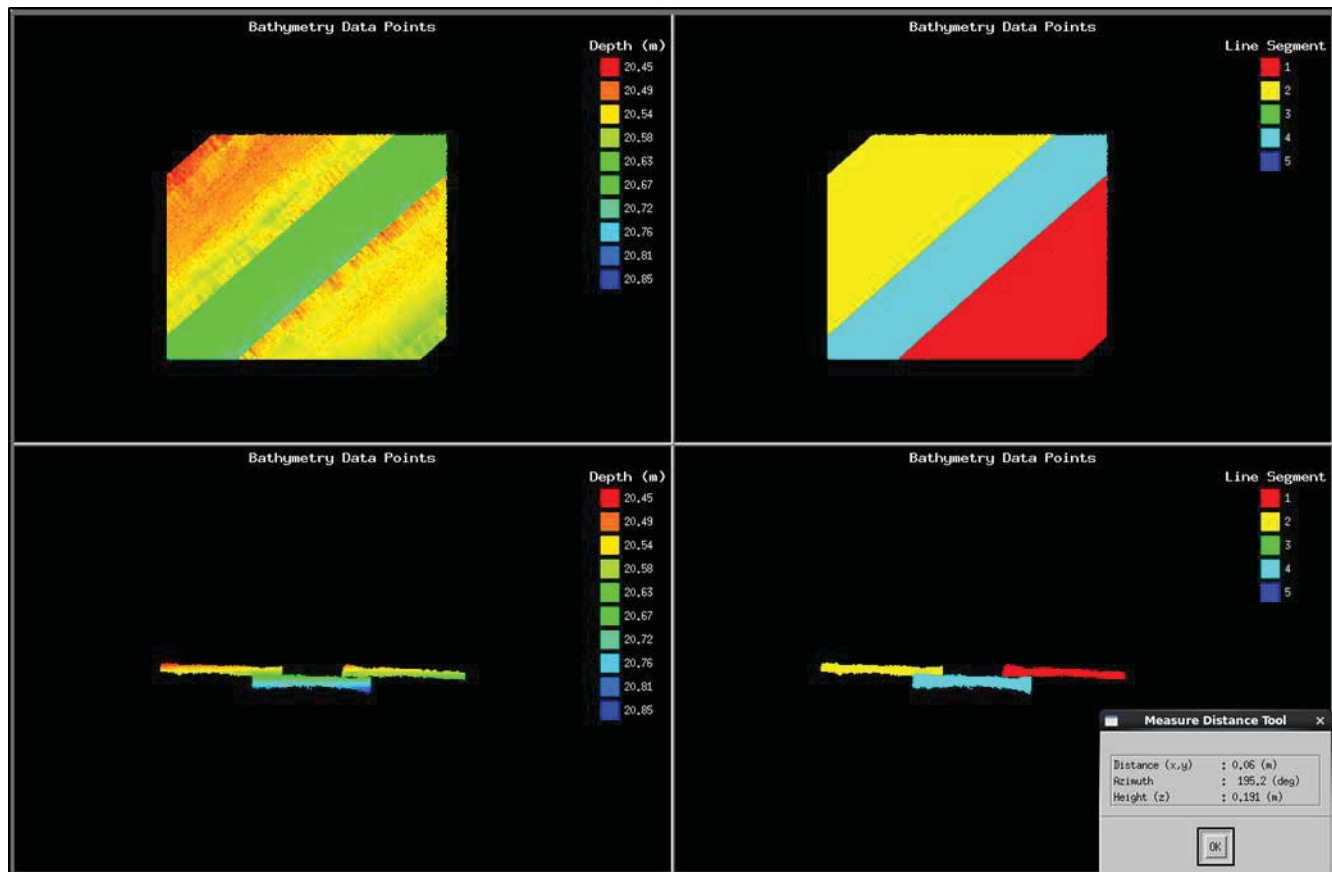


Figure 8: Example of Occasional Vertical Offset Observed During ERS Survey Operations, Between MBES From the Same Vessel (M/V Atlantic Surveyor JD 301 0600 UTC in Red, 0800 UTC in Yellow, 1100 UTC in Cyan)

In addition to the intermittent local weather events which occurred during online survey operations, there were a number of larger storms including multiple hurricane force events, which occurred in the survey area over the timespan of operations. These larger storm events caused significant operational downtime, specifically for the smaller vessel R/V Pathfinder, with 36 days lost to weather for H13136 between both vessels. As a result data collection on H13136 spanned 74 days, inclusive of the observed intermittent weather downtime.

The offshore, near coastal areas east of the Chandeleur Islands are relatively dynamic, and finer-grained sediments (e.g., fine sands and silt) are routinely transported through normal coastal processes. In addition, periodic large storm events may be capable of re-suspending and transporting coarser-grained bottom sediments. Over the ten week period of these survey operations, small-scale changes in the bottom topography, likely due to normal migration of finer-grained bottom sediments, was evident. In some cases where overlapping multibeam data were acquired, relatively minor changes in the seafloor between the times of acquisition could be observed, as shown in Figure 9 through Figure 11. These differences were most noticeable during some of the holiday gap fill or rerun operations that were typically conducted after most of the mainscheme operations had been completed. Though we did observe small-scale seafloor change over

the course of this survey, the observed depths throughout this area remained relatively stable, and all of the final valid survey data were within the allowable uncertainty standards, as described in Section B.2.2.

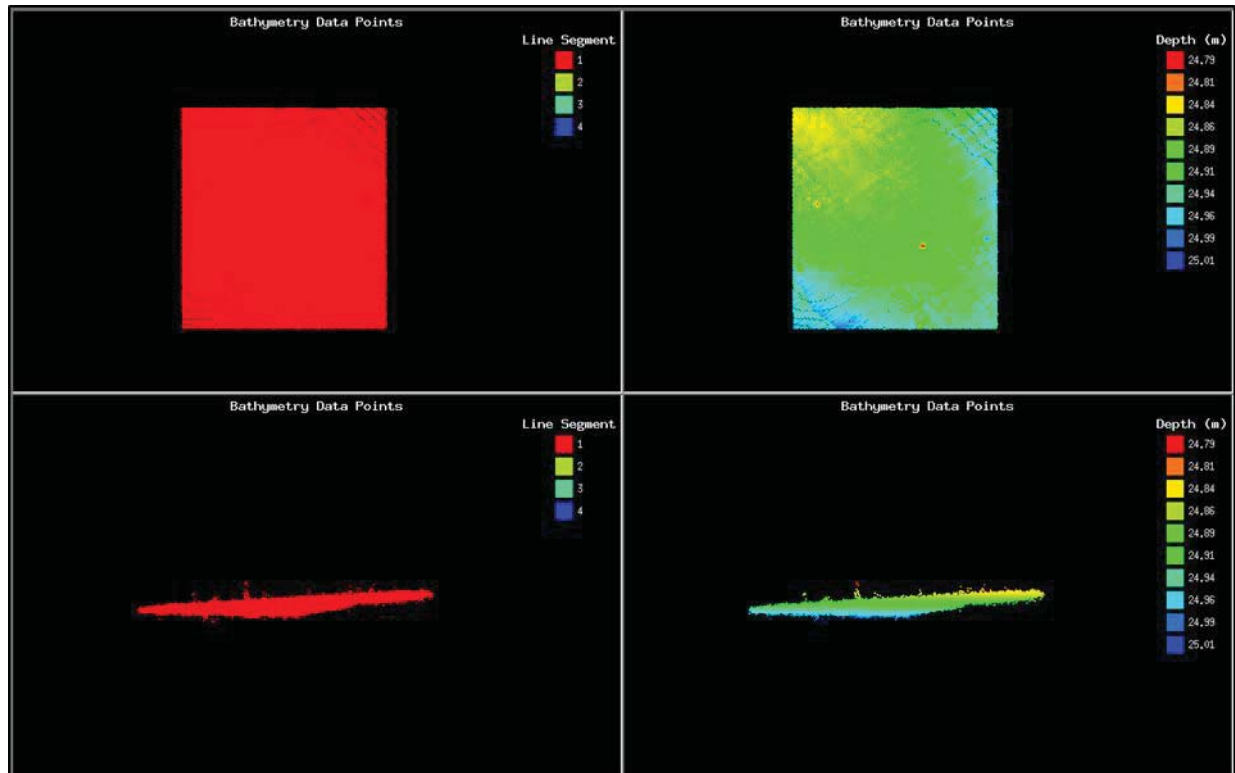


Figure 9: MBES Data Acquired on JD 237 Showing No Seafloor Depressions

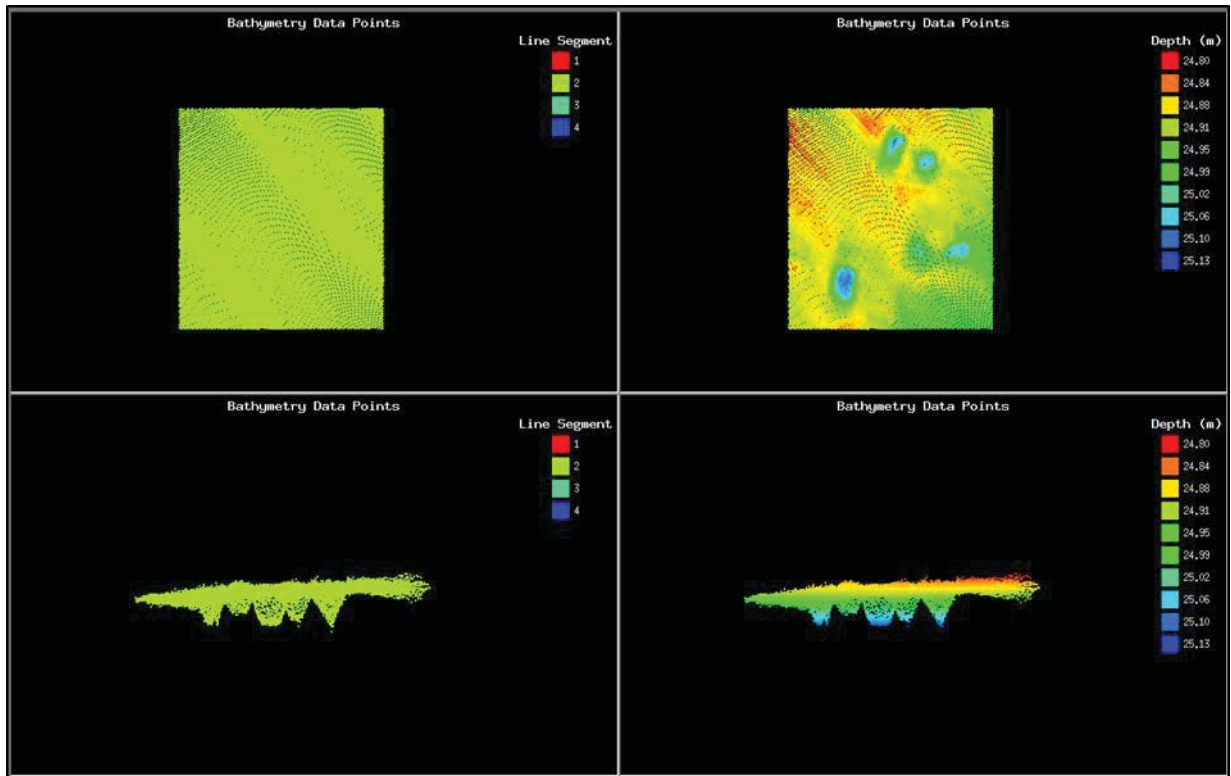


Figure 10: MBES Data Acquired on JD 308 Showing Seafloor Depressions, Overlapping JD 237 MBES from Figure 9

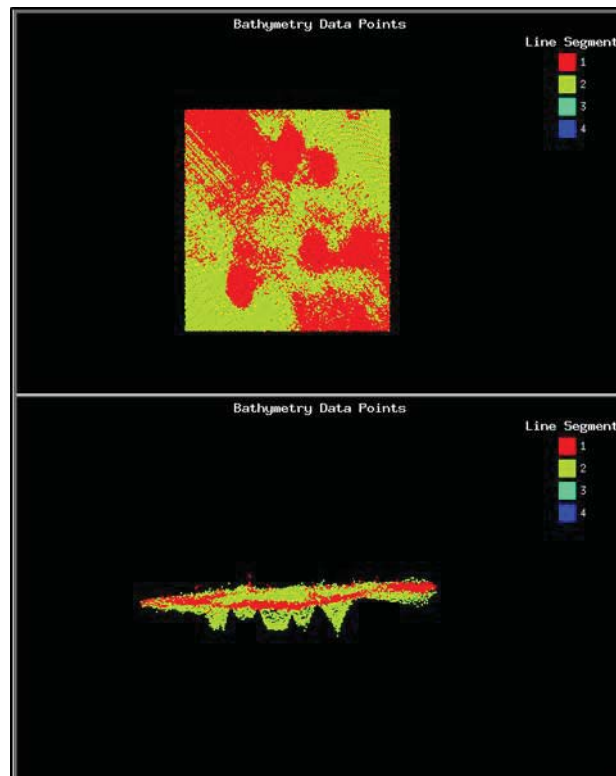


Figure 11: JD 237 (red) and JD 308 (yellow) Overlapping MBES Showing Minor Seafloor Changes Over Survey Duration

During data acquisition on H13136 between October 14 and November 03, 2018 (JD 287-307) intermittent fresh water intrusions within the survey area produced increased sound speed artifacts in the bathymetry data. During post processing, the valid MBES swath width was decreased to reduce the artifacts within bathymetry data that exhibited residual sound speed artifacts, and in some cases SSP data were reapplied to resolve or reduce the observed artifacts. If the artifacts were not able to be resolved in post processing, the data were flagged invalid and holiday surveys were created or the survey lines were rerun altogether. Figure 12 illustrates the results of decreasing swath width to mitigate residual sound speed artifacts. After all acquisition and post processing, the resulting data from the occasional sound speed artifacts were within the IHO Order 1a allowable vertical uncertainty for the H13136 water depths. See Section B.2.7 for more details on sound speed.

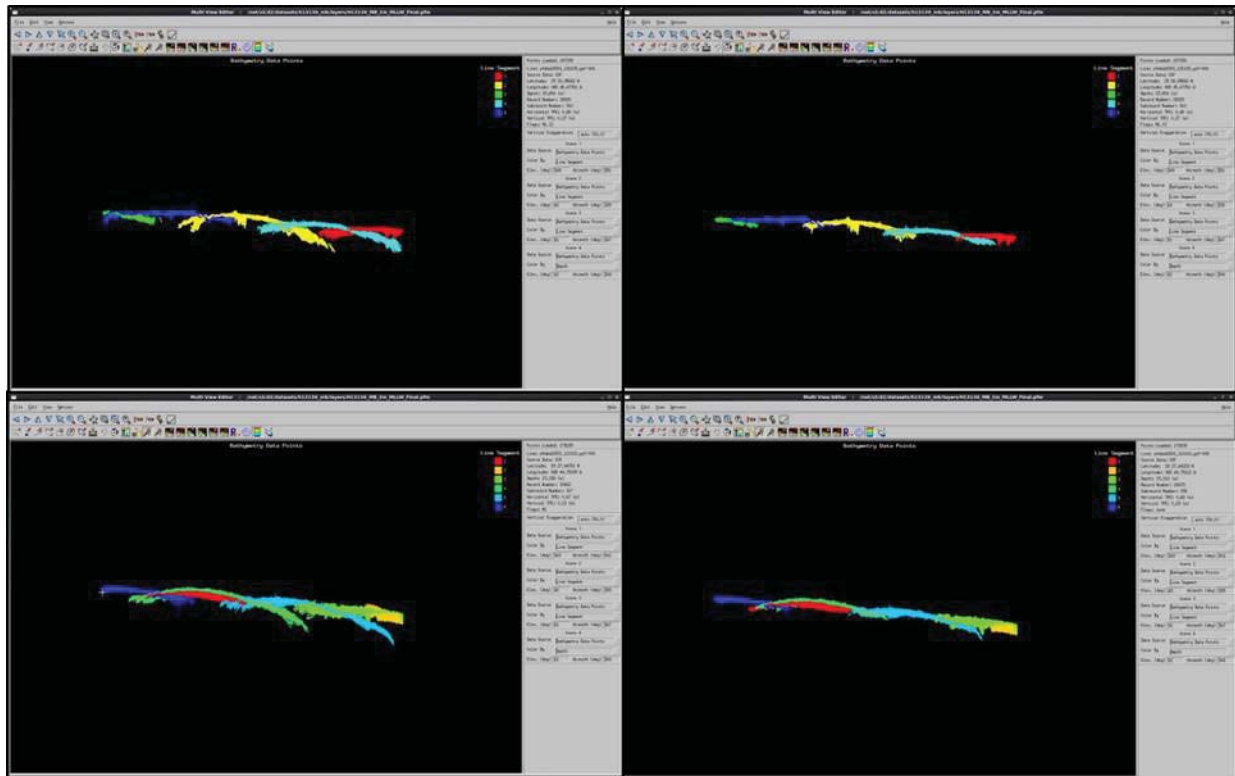


Figure 12: Two Separate Examples of Sound Speed Artifacts Resulting from Fresh Water Intrusion Before (left) and After (right) Reducing the Bathymetry Swath Width

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: The MVP30 was the primary system used to collect sound speed profile (SSP) data on the M/V Atlantic Surveyor and the R/V Pathfinder. As discussed in the DAPR, the AML Base X2 system was used to acquire SSP data for a short period of time onboard the R/V Pathfinder while the MVP30 system underwent minor field repairs. SSP data were obtained at intervals frequent enough to meet depth accuracy requirements. Section 5.2.3.3 of the HSSD requires that if the sound speed measured at the sonar head differs by more than two meters/second from the commensurate profile data, then another cast shall be acquired. Intermittent minor sound speed deltas were observed in the survey area throughout the course of acquisition. Between October 14 and November 03, 2018 (JD 287-307) fresh water intrusions within the survey area produced large sound speed deltas between the values measured at sonar head and the values in the sound speed profile. During these times the MVP was set to take a new cast as often as every two minutes, essentially continuously redeploying the MVP towfish as soon as it had finished winching in from the previous cast. Even with this aggressive approach for collecting new SSP data to reduce the delta between the values measured at sonar head and the commensurate profile data, the delta was still not able to be maintained below the two meters/second threshold. As a result of these environmental impacts, new bathymetry data were either re-acquired, or post processing efforts were employed to reduce the valid MBES swath width (refer to Separates I Processing Logs) and/or re-apply other valid SSP data as described

in Section B.2.6. The product of these efforts resulted in the final data bearing no significant artifacts due to sound speed.

All sound speed profiles applied for online bathymetry data collection were acquired within 250 meters of the bounds of the survey area as specified in Section 5.2.3.3 of the HSSD. Please refer to the DAPR for specific details regarding acquisition (Section A.7) and application (Section C.1.3) of sound speed profiles.

During multibeam acquisition, SSP casts were uploaded to ISS-2000 immediately after they were taken. In ISS-2000 on the M/V Atlantic Surveyor, the profiles were reviewed for quality, edited as necessary, compared to the preceding casts, and then applied (loaded into the multibeam system for use). In ISS-2000 on the R/V Pathfinder, the profiles were processed autonomously as described in Section D.2.11. Once applied, the multibeam system used the SSP data for depth calculation and ray tracing corrections to the multibeam data. If sounding depths exceeded the cast depth, ISS-2000 used the deepest sound speed value of the profile to extend the profile to the maximum depth. Similarly, during application of an acquired profile ISS-2000 extended the first profile depth up to zero meters, and also inserted the sound speed value from the sensor collocated with the RESON T50 MBES system into the appropriate depth of the profile data, based on draft of the MBES system.

Confidence checks of the sound speed profile casts were conducted by comparing at least two consecutive casts taken with different SSP sensors. Eight sound speed confidence checks were conducted during H13136 and the results can be found in Separates II within the “Comparison Cast Log” section.

All individual SSP files are delivered with the H13136 data and are broken out into sub-folders, which correspond to the purpose of each cast. Also, all individual SSP files for H13136 have been concatenated into four separate files based on the purpose of the cast, provided in CARIS format files (.svp), and delivered under (H13136/Processed/SVP/CARIS_SSP) on the delivery drive. In addition sound speed data for the entire OPR-J311-KR-18 project were submitted to NCEI following the NetCDF template format as specified in Section 8.3.6 of the HSSD, refer to Separates II for more details.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods are detailed in the DAPR. Additionally, see Section D.2.11 for details of the autonomous survey operations conducted.

B.2.9 Multibeam Coverage Analysis

Leidos chose to achieve the coverage requirement using 100% multibeam bathymetry. To achieve this coverage, mainscheme line spacing varied between 40, 60, and 80 meters based on water depth to ensure 100% MBES coverage.

The SABER Gapchecker program was used to flag MBES data gaps within the CUBE surface. Additionally, the entire surface was visually scanned for holidays at various points during the data processing effort. Additional survey lines were run to fill any holidays that were detected. The results from Gapchecker and

the final review of the CUBE Depth surface of the H13136 two-meter PFM showed that there was only one single unpopulated node within the assigned Statement of Work (SOW) area, therefore satisfying the requirements for complete coverage surveys, Option A, as specified in Section 5.2.2.3 of the HSSD which defines a holiday as “at least three by three unpopulated nodes in the surface at the required resolution”.

The final H13136 CUBE PFM was examined for the number of soundings contributing to the chosen CUBE hypotheses for each node by running SABER’s Frequency Distribution Tool on the Hypothesis Number of Soundings (Hyp. # Soundings) surface. The Hyp. # Soundings surface reports the number of soundings that were used to compute the chosen hypothesis. Analysis of the H13136 Hyp. # Soundings surface of the final two-meter CUBE PFM, revealed that 99.99% of all nodes contained five or more soundings; satisfying the requirements for complete coverage surveys, Option A, as specified in Section 5.2.2.3 of the HSSD.

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

Multibeam Echo Sounder Seafloor Backscatter: In accordance with the HSSD and Project Instructions, Leidos collected MBES backscatter with all GSF data acquired by the RESON SeaBat T50 and RESON SeaBat 7125 SV2. The MBES settings used were checked to ensure acceptable quality standards were met and to avoid acoustic saturation of the backscatter data as practical. The MBES backscatter data acquired were written to the GSF in real-time by ISS-2000 and are delivered in the final GSF files for this sheet. Per the Project Instructions, backscatter data were not processed by Leidos and no additional products were produced.

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
Leidos	SABER	5.4.0.10.2

Table 8: Primary bathymetric data processing software

The following Feature Object Catalog was used: NOAA Extended Attribute File V5-4.

The primary data processing software used for bathymetry was SABER. The final SABER version used for bathymetric data processing differs from the version noted in the DAPR submitted with H13133, as an update to the software was released after the delivery of the 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
H13136_MB_2m_MLLW_Final.bag	BAG	2 meters	17.668 meters - 34.128 meters	N/A	Complete Coverage, Option A (Complete Coverage Multibeam)

Table 9: Submitted Surfaces

Complete Coverage Section 5.2.2.3 of the HSSD requires one-meter node resolution for depths ranging from zero meters to 20 meters, and two-meter node resolution for depths ranging from 18 meters to 40 meters. Leidos generated preliminary CUBE PFM grids for H13136 at one-meter and two-meter resolutions. During PFM evaluation it was noted that the majority of the SOW area would be covered by the two-meter, 18 meters to 40 meters grid surface as there was only a 50-meter by 70-meter section of a swath with depths less than 18 meters on the northwest edge of the SOW. On 08 January 2019 Leidos requested an exemption from delivering a one-meter gridded surface. On 06 February 2019 Leidos was granted the waiver via email to proceed with a single two-meter gridded surface for final deliverables. Refer to Appendix II for further details.

Therefore, the CUBE Depth surface of the final H13136 two-meter PFM (containing all valid depth data) was used to assess and document multibeam survey coverage. SABER populates the CUBE depth with either the node's chosen hypothesis or the depth of a feature or designated sounding set by the hydrographer, which overrides the chosen hypothesis. The range of CUBE depths of the H13136 two-meter PFM was from

17.668 meters (57.966 feet; 0.230 meters Total Vertical Uncertainty [TVU]) to 34.128 meters (111.968 feet; 0.250 meters TVU).

The final gridded bathymetry data are delivered as a Bathymetric Attributed Grid (BAG). The BAG file was exported from the CUBE PFM grid as detailed in Section B.1.8 of the DAPR.

C. Vertical and Horizontal Control

Additional information discussing the vertical and horizontal control for this survey can be found in the OPR-J311-KR-18 DAPR.

C.1 Vertical Control

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

ERS Methods Used:

ERS via Poor Mans VDATUM

Ellipsoid to Chart Datum Separation File:

OPR-J311-KR-18_NAD83_PMVD_MLLW.cov

A Poor Man's Vertical Datum (PMVD) separation model was used to transform the multibeam data to Mean Lower Low Water (MLLW). Refer to the DAPR for details on the generation and application of the PMVD; also Appendix II of H13136; the Vertical Control Memo. Per the Project Instructions, as the PMVD was used for the final datum transformation the requirement to request TCARI Final Solutions was waived for OPR-J311-KR-18. Therefore no final tide note was provided from NOAA Center for Operational Oceanographic Products and Services (CO-OPS). While a final tide note was not required, a final tide note has been provided by Leidos in Appendix I.

There were instances where overlapping MBES data had a vertical offset, but were within the IHO Order 1a allowable vertical uncertainty for the given water depths, as described in Section B.2.6.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83) 2011 realization 2010 (NAD83(2011)2010.0).

The projection used for this project is UTM Zone 16, North.

Applanix POSPac software was used to post-process the vessel kinematic data (POS/MV files) and used the Applanix PP-RTX solution for post-processing to generate the Smoothed Best Estimate of Trajectory (SBET) solutions which were applied through SABER to the multibeam data. Refer to the DAPR for additional information and for details regarding all antenna and transducer offsets.

Any soundings with total horizontal uncertainties exceeding the maximum allowable IHO S-44 5th Edition Order 1a specifications were flagged as invalid and therefore were not used in the CUBE depth calculations.

D. Results and Recommendations

D.1 Chart Comparison

The chart comparisons were conducted using a combination of SABER and CARIS' HIPS and SIPS.

United States Coast Guard (USCG) District 8 Local Notice to Mariners (LNM) publications were reviewed for changes subsequent to the date of the Project Instructions and before the end of survey (as specified in Section 8.1.4 of the HSSD). The LNM reviewed were from week 34/18 (22 August 2018) until week 46/18 (14 November 2018). Two charted platforms that fell within the survey area of H13136 were deleted from the chart as detailed in LNM Week 43/18 and LNM Week 46/18, see Section D.2.6 for details of these platforms.

H13136 data met data accuracy standards and bottom coverage requirements. Recommend updating the common areas of all charts using data from this survey. Charting recommendations for all features found, and updates to charted features, are documented in the H13136 S-57 FFF, named H13136_FFF.000. Additional charted objects are discussed in later sections.

D.1.1 Electronic Navigational Charts

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

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4LA34M	1:80000	35	10/23/2018	11/29/2018	NO
US3GC04M	1:250000	62	12/20/2018	01/02/2019	NO

Table 10: Largest Scale ENC's

US4LA34M

ENC US4LA34M covers the H13136 survey area in its entirety (Figure 13).

CUBE depths within H13136 were generally deeper than charted depths across the survey area, with observed depths approximately 0.2m to 1.5m deeper than the charted depths. The 18.2-meter contour migrated northwest, as shown in Figure 14 and Figure 15.

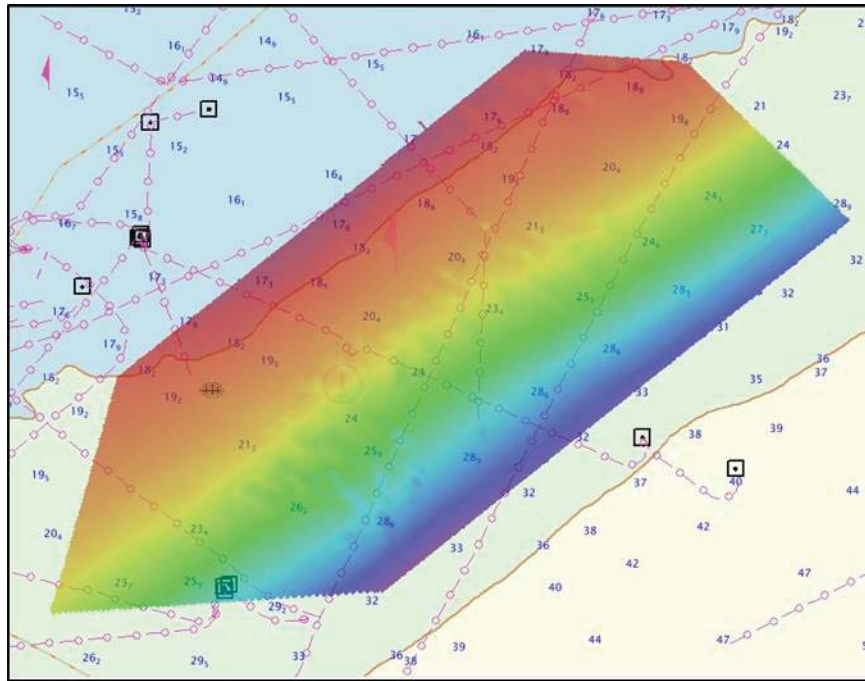


Figure 13: ENC US4LA34M with H13136 CUBE Depth Surface

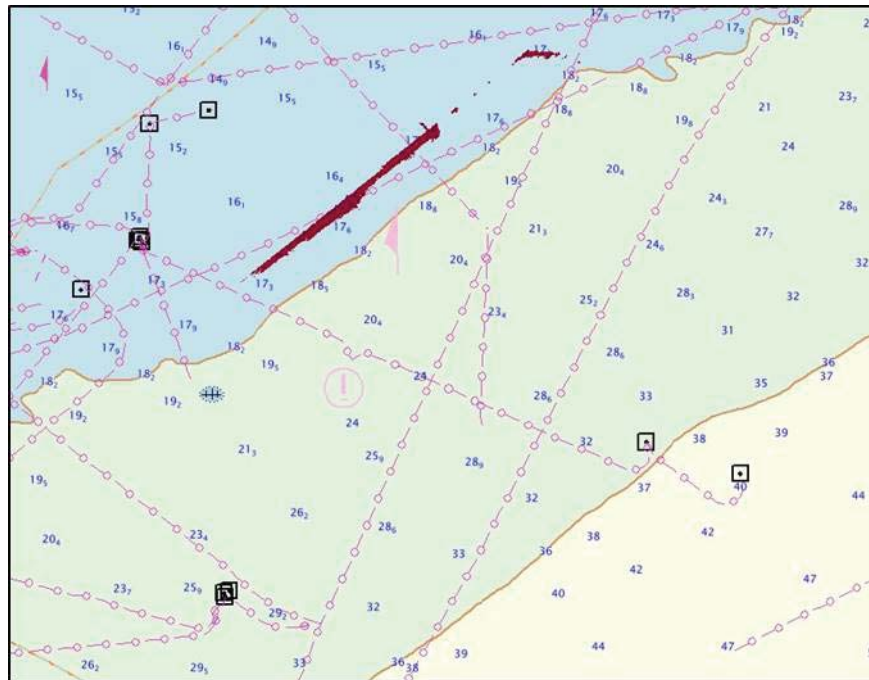


Figure 14: ENC US4LA34M with Charted 18.2-Meter Contour and CUBE Depths Less than 18.2 Meters from the H13136 Survey

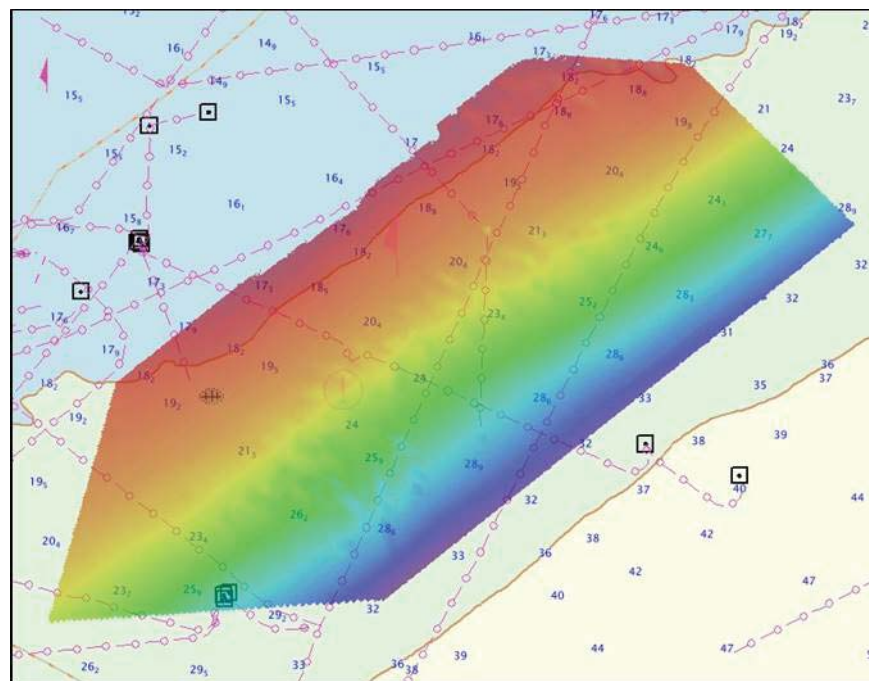


Figure 15: ENC US4LA34M with Charted 18.2-Meter Contour and CUBE Depths Greater than 18.2 Meters from the H13136 Survey

ENC US3GC04M covers the H13136 survey area in its entirety (Figure 16).

There were four charted depths covered by the H13136 survey. The observed CUBE depths within H13136 were generally deeper than the charted depths across the survey area, with observed depths approximately 0.4m to 2.0m deeper than the charted depths. The 18.2-meter contour migrated northwest, as shown in Figure 17 and Figure 18.

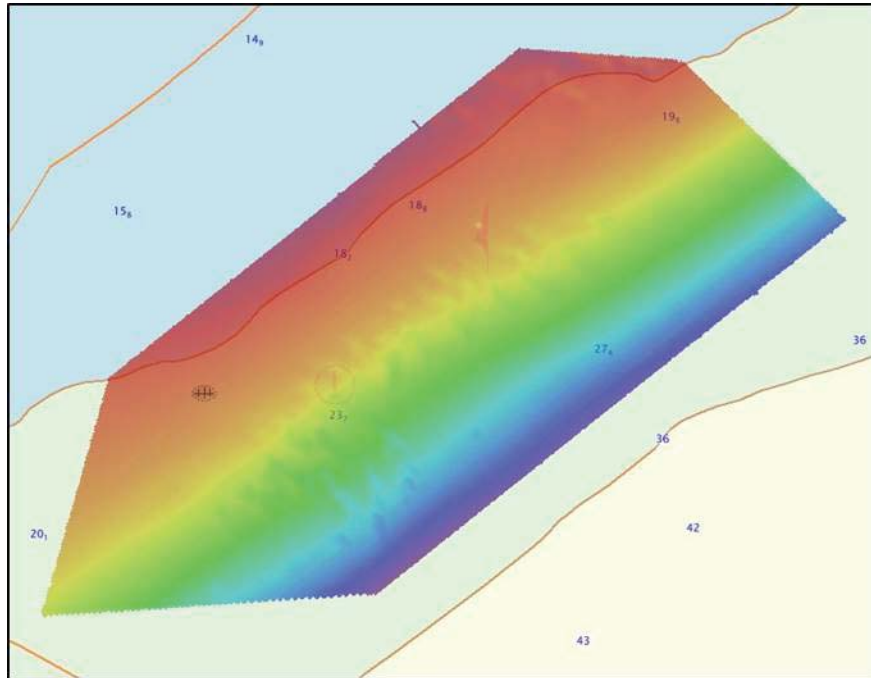


Figure 16: ENC US3GC04M with H13136 CUBE Depth Surface

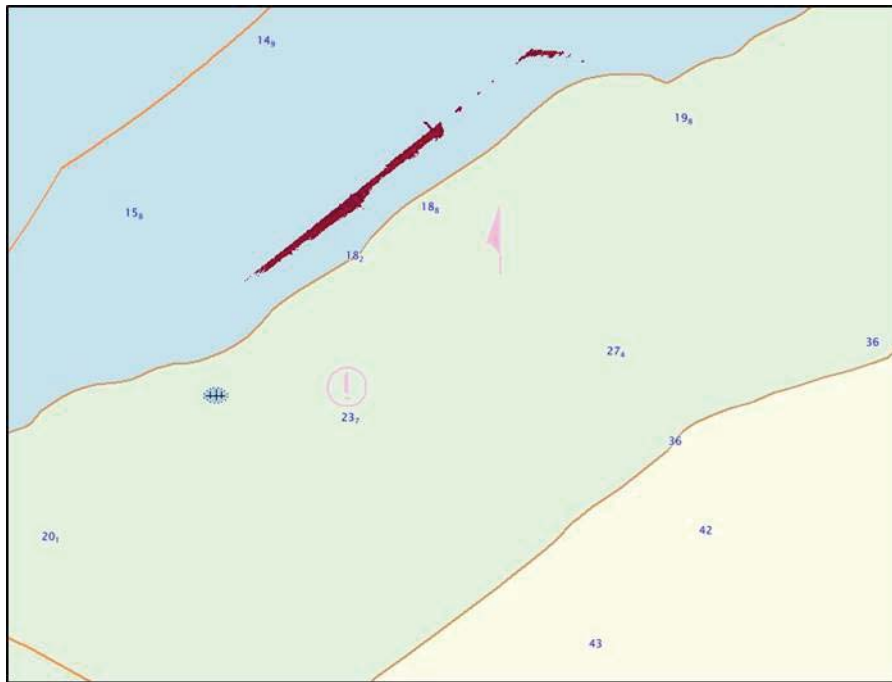


Figure 17: ENC US3GC04M with Charted 18.2-Meter Contour and CUBE Depths Less than 18.2 Meters from the H13136 Survey

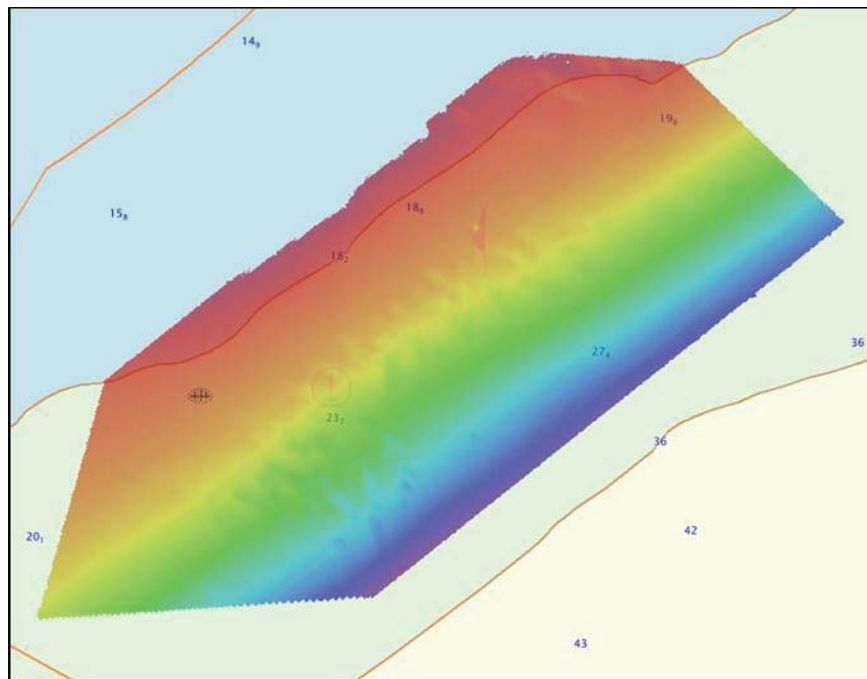


Figure 18: ENC US3GC04M with Charted 18.2-Meter Contour and CUBE Depths Greater than 18.2 Meters from the H13136 Survey

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

There was one charted feature, a wreck, which was assigned in the final CSF, 2018_0621_OPR-J311-KR-18_CSF_Final.000, within the SOW of H13136. This assigned wreck was also charted on ENC US4LA34M and ENC US3GC04M, designated as dangerous, always under water/submerged, and with depth unknown. Within the assigned search radius of this charted feature, a wreck was observed in the MBES data, and has been retained as Feature 01 for H13136. See Section D.2.12 and the H13136 S-57 FFF for all the details and recommendations regarding this feature.

D.1.4 Uncharted Features

See Section D.2.12 and the H13136 S-57 FFF for all details and recommendations regarding new uncharted features investigated.

D.1.5 Shoal and Hazardous Features

There were no significant shoals or hazardous features within the area covered by this survey other than those discussed in Sections D.1.3 and D.1.4.

D.1.6 Channels

There were no channels within the area covered by this survey.

D.1.7 Bottom Samples

In accordance with both the Project Instructions and Section 7.2.3 of the HSSD, bottom characteristics were obtained for H13136. Bottom characteristics were acquired at the seven locations assigned in the Project Reference File (PRF) by NOAA. Leidos did not modify the bottom sample locations from the location proposed by NOAA in the PRF. Bottom characteristics collected during H13136 are included in the H13136 S-57 FFF within the Seabed Area (SBDARE) object, and are classified according to the requirements set forth in Appendix H of the HSSD. In addition, images of the sediment obtained for each bottom sample, short videos, and still images from the video of the seafloor at each bottom sample location are referenced in the H13136 S-57 FFF and are included on the delivery drive under the folder H13136/Processed/Multimedia when available.

D.2 Additional Results

D.2.1 Shoreline

All features in the CSF within the assigned Survey Limits of H13136 were resolved. There were no assigned features inshore of the NALL.

D.2.2 Prior Surveys

Junction analysis with assigned prior survey H12736 (2015) was conducted and the results are presented in Section B.2.3 of this Descriptive Report and within Separates II. There were no other assigned prior surveys provided by NOAA under OPR-J311-KR-18 that junction H13136.

D.2.3 Aids to Navigation

There were no aids to navigation that fell within this survey area.

D.2.4 Overhead Features

There were no overhead features within this survey area.

D.2.5 Submarine Features

There were twelve charted pipelines assigned within the bounds of H13136. In accordance with HSSD Section 1.7, three exposed pipelines found within H13136 were submitted as a Non-DTON Pipeline Report. The email correspondence for Leidos' submission of the H13136 Non-DTON Pipeline Report is included within Appendix II of this Descriptive Report. In accordance with HSSD Section 1.7, the identified charted exposed pipelines are not included in the S-57 FFF. PIPSOL objects delivered in the CSF, 2018_0621_OPR-J311-KR-18_CSF_Final.000, are captured in the S-57 FFF.

D.2.6 Platforms

There were five offshore platform objects assigned in the CSF, 2018_0621_OPR-J311-KR-18_CSF_Final.000, provided on 27 June 2018, which fell within the SOW for H13136. All five of the assigned platforms were charted on ENC US4LA34M at the time the Project Instructions were assigned. During survey acquisition none of the platforms were visible above the waterline, and were therefore covered with 100% MBES as specified in the project instructions to fulfill charted feature disproval requirements.

Additionally, since the Project Instructions were assigned, two of the five charted platforms that fell within the survey area of H13136 were deleted from the chart as detailed in the USCG LNM Week 43/18 and LNM Week 46/18, quoted below (note that while these platforms detailed and deleted by the LNM matched the

CSF assigned platform position, the LNM listed these platforms with a name differing from that listed in the CSF or ENC US4LA34M).

LNM Week 43/18, Page 32 of 47

11363 46th Ed. 01-JUL-17 Last LNM: 42/18 NAD 83

Chart title: Chandeleur and Brenton Sounds

Main Panel 55 Chandeleur and Breton Sounds

DELETE; Platform: (Fieldwood-107-16); CGD08 29-25-15.465N/088-46-00.433W

LNM Week 46/18, Page 27 of 43

11363 46th Ed. 01-JUL-17 Last LNM: 44/18 NAD 83

Chart title: Chandeleur and Brenton Sounds

Main Panel 55 Chandeleur and Breton Sounds

DELETE; Platform: (Fieldwood-107-50); CGD08 29-27-33.884N/088-45-57.976W

See the S-57 FFF, H13136_FFF.000, Offshore Platform (OFSPLF) objects, for details and charting recommendations for the assigned platforms.

D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist within this survey area.

D.2.8 Abnormal Seafloor and/or Environmental Conditions

No abnormal seafloor or environmental conditions, as defined in Section 8.1.4 of the HSSD, exist within this survey area other than those discussed in Section D.1.4, Section B.2.6, and Section B.2.7.

D.2.9 Construction and Dredging

No construction or dredging exists for this survey area.

D.2.10 New Survey Recommendation

No new survey recommendations are made for the area surrounding this survey area.

D.2.11 Autonomous Survey Operations

As noted in Sections A.4 and B.1.1, autonomous bathymetric survey operations were conducted by the R/V Pathfinder for the H13136 survey. Additionally, autonomous data processing routines were conducted in near real-time onboard R/V Pathfinder in parallel with the autonomous survey acquisition. Details of the R/V Pathfinder autonomy solution and operations are presented in Section A.3.1 of the DAPR, and the autonomous data processing routines are described in Section B and B.1 of the DAPR.

As conveyed in the Project Instructions, the Chandeleur Offshore survey area is in an area of extremely high vessel traffic. While surveying online in autonomous mode, R/V Pathfinder encountered five COLREGS engagements with other vessels which required a reaction from R/V Pathfinder. During each of these encounters, R/V Pathfinder successfully demonstrated the capability to autonomously maintain COLREGS compliance, reacting to real-world “interferers”, while demonstrating the ability of the system to divert from a planned survey line during a required COLREGS maneuver, reacquire the survey line once safe to do so, and if prudent rejoin the line prior to where the initial break in the survey plan began in order to repair any gaps in coverage (Figure 19). Additional encounters occurred with other vessels operating in the survey area, but did not require a maneuver from R/V Pathfinder to maintain COLREGS compliance, and therefore the autonomy system continued to maintain course along the survey line.

During autonomous survey operations for H13136, 518.9 online linear nautical miles of MBES data were acquired by R/V Pathfinder, consisting of both mainscheme and crosslines (Figure 20). There were 517 sound speed profiles acquired autonomously during online survey which were then automatically processed, cleaned, and applied to the MBES data autonomously in real-time (Figure 21). As described in Section B.2.6, there were a number of challenging environmental factors encountered during survey of H13136 which required MBES data to be trimmed in post processing and in some cases lines rerun. After all data post processing was completed, MBES data acquired autonomously by R/V Pathfinder accounted for approximately 30% of the Complete Coverage Multibeam surface achieved for H13136 (Figure 2 and Figure 22). All valid data resulting from the autonomous bathymetric survey operations met IHO Order 1a standards, as detailed in Section A.3.

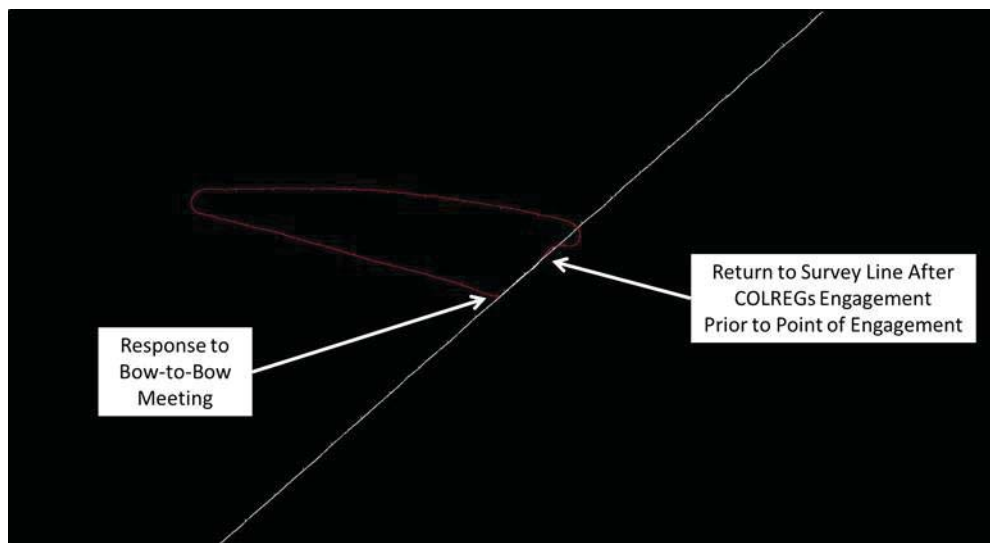


Figure 19: Vessel Trackline (White) Illustrating COLREGs Maneuver (Red) During R/V Pathfinder Autonomous Bathymetric Survey Acquisition

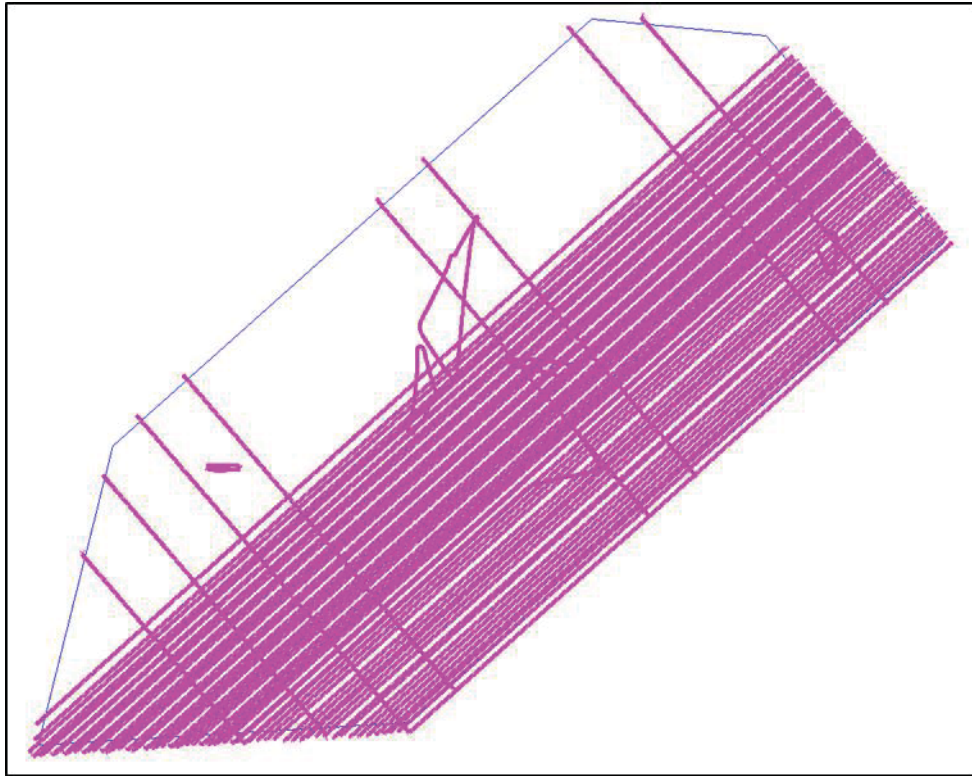


Figure 20: Real-time Trackline Data (magenta) of R/V Pathfinder Autonomous Bathymetric Survey Acquisition on H13136 (SOW area in blue)

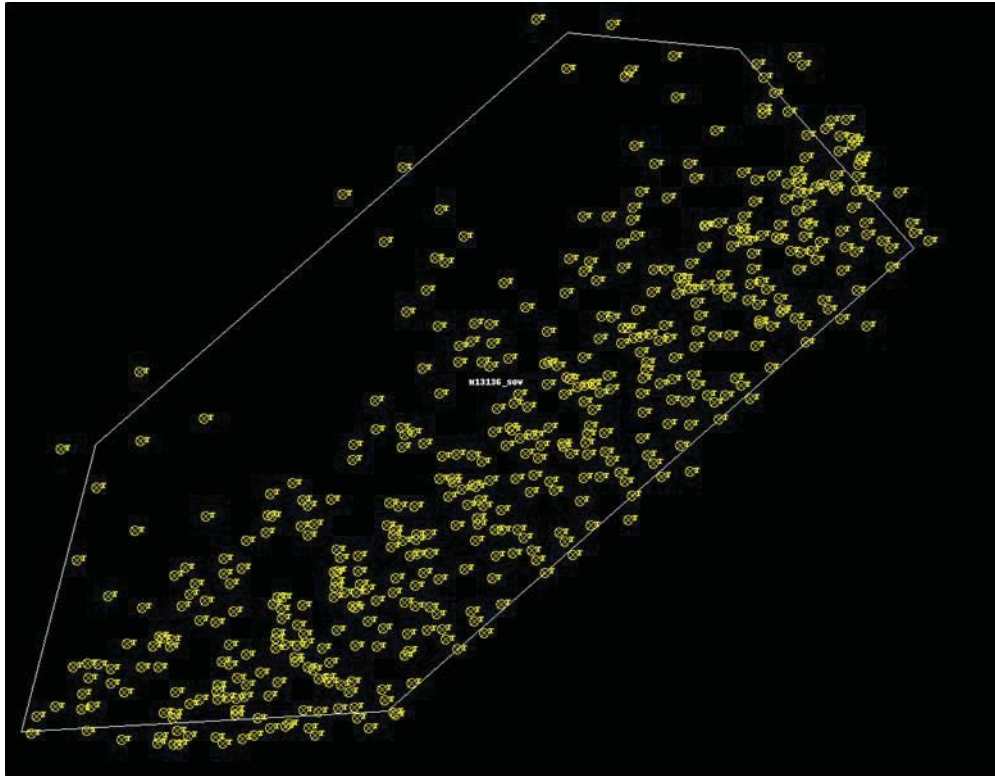


Figure 21: SSP Casts (yellow) Taken and Applied Autonomously During R/V Pathfinder Autonomous Bathymetric Survey Acquisition on H13136 (SOW area in white)

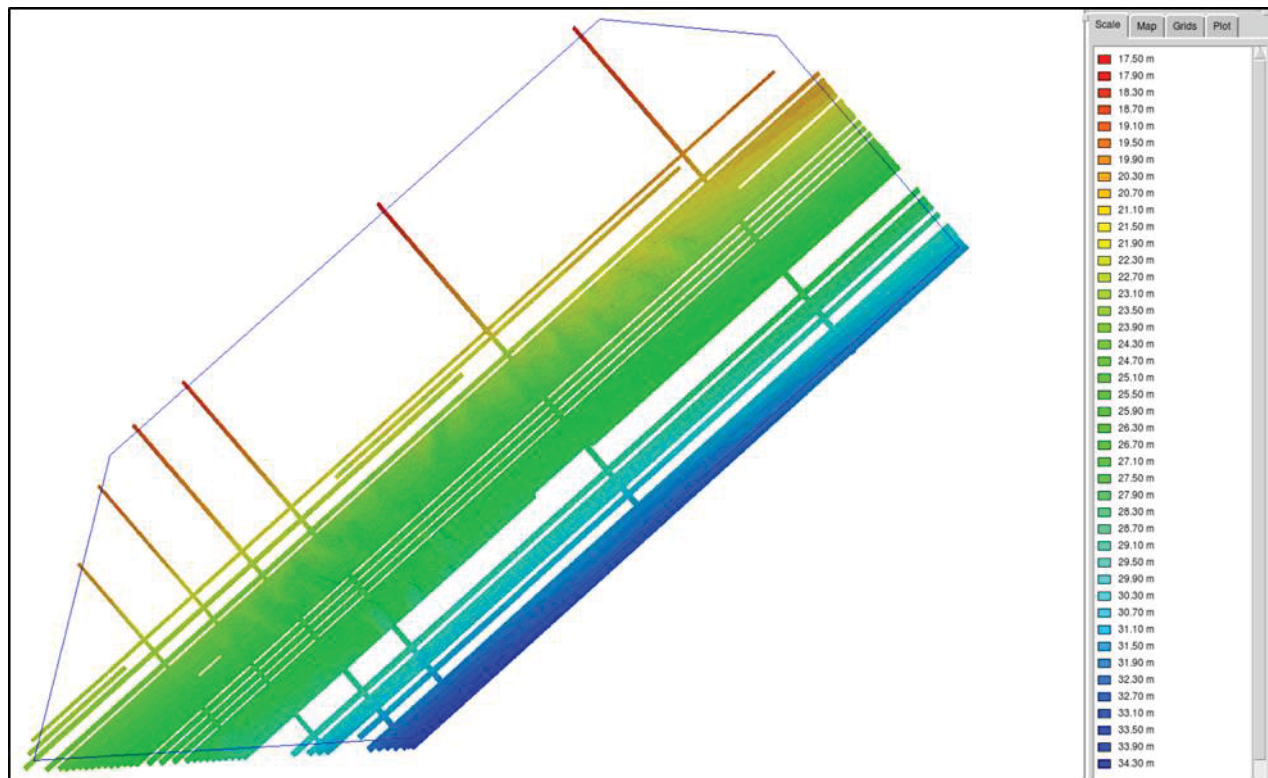


Figure 22: R/V Pathfinder Autonomously Acquired Final Bathymetry Coverage for H13136 (SOW area in blue)

D.2.12 Designated Soundings

Separate flags exist in the Generic Sensor Format for designated soundings and features. Designated soundings or feature flags were used to help better preserve the shallowest sounding relative to the computed depth surface. All depths flagged as features and designated soundings override the CUBE best estimate of the depth in the final BAG files. Both the designated sounding and feature flags, as defined within GSF, are mapped to the same HDCS flag when ingested into CARIS (PD_DEPTH_DESIGNATED_MASK).

No GSF designated sounding flags were set for H13136; however there were three feature flags set for H13136. Feature 01 was set on a wreck and Feature 03 was set on a discrete obstruction; both were found with a significant height for their respective surrounding depth area. Feature 02 was set on a linear obstruction. While Feature 02 was not found with a significant height for the surrounding water depths, a feature flag was retained on this object given its overall size and length and because the object was not appropriately retained by the CUBE surface without the feature flag set. See the H13136 S-57 FFF for all details and recommendations regarding features.

D.2.13 Final Feature S-57 File

Included with H13136 delivery is the S-57 FFF, H13136_FFF.000. Details on how this file was generated and quality controlled can be found in Section B.1.9 of the DAPR. The S-57 FFF delivered for H13136 contains millimeter precision for the value of sounding (VALSOU) attribute. As specified in Section 2.2 of the HSSD, the S-57 FFF is in the WGS84 datum and is unprojected with all depth units in meters. All significant, and recommended for charting, features found in H13136 are included within the S-57 FFF.

In accordance with the HSSD, Leidos addressed all assigned objects within the bounds of H13136 from the provided CSF S-57 file in the S-57 FFF.

For each feature contained in the FFF (S-57), the Feature Correlator Sheet was exported as an image file (.jpg) and is included in the S-57 FFF under the NOAA Extended Attribute field “images”.

D.2.14 Coast Pilot Review Report

In accordance with the Project Instructions and HSSD Section 8.1.3, a Coast Pilot Review was performed for OPR-J311-KR-18. Within the Coast Pilot Field Report (OPR-J311-KR-18CoastPilotReview.pdf) provided by NOAA to Leidos on 27 June 2018, there were no assigned investigation items or paragraphs affected. Therefore, Leidos reviewed and updated the actual Coast Pilot paragraphs as possible for the survey areas, port of call, and areas frequently transited. Updates were made to the Coast Pilot paragraphs as defined in the HSSD Section 8.1.3 and incorporated in to a consolidated Coast Pilot Review Report (OPR-J311-KR-18_Coast Pilot Review Report.pdf) which was submitted to NOAA on 19 December 2018. The email correspondence for Leidos’ submission of the Coast Pilot Review Report is included within Appendix II of this Descriptive Report.

D.2.15 Inset Recommendation

No inset recommendations are made for the area covered by this survey.


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.

The BAG file, 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 Hydrographic Surveys Specifications and Deliverables, Project Instructions, and Statement of Work. 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. Previously, or concurrently, submitted deliverables for OPR-J311-KR-18 are provided in the table below.

Report Name	Report Date Sent
OPR-J311-KR-18_Marine_Species_Awareness_Training_Record.pdf	2018-12-19
OPR-J311-KR-18_Coast Pilot Review Report.pdf	2018-12-19
OPR-J311-KR-18 Analysis of PMVD as Final Water Level Correctors.pdf	2018-12-20
OPR-J311-KR-18_Marine_Mammal_Observation_Log.pdf	2019-01-17
OPR-J311-KR-18_Sea_Turtle_Observation_Log.pdf	2019-01-17
OPR-J311-KR-18_DAPR.pdf	2019-01-22
H13133_DR.pdf	2019-01-22
H13133_DR_rev1.pdf	2019-02-04
H13134_DR.pdf	2019-02-04
H13135_DR.pdf	2019-02-08
OPR-J311-KR-18_20190215.zip (NCEI Sound Speed Data)	2019-02-15
H13135_Acquisition_and_Processing_Logs_rev1.pdf	2019-02-22

Approver Name	Approver Title	Approval Date	Signature
Alex T. Bernier	Lead Hydrographer	02/22/2019	 Digitally signed by Alex T Bernier Date: 2019.02.20 20:08:45 -05'00'

APPENDIX I
TIDES AND WATER LEVELS

APPENDIX I. TIDES AND WATER LEVELS**Field Tide Note**

A field tide note was not required for H13136.

Final Tide Note

Per the Project Instructions H13136, multibeam data were to be corrected to Mean Lower Low Water (MLLW) by utilizing ellipsoid referenced survey (ERS) techniques. Ellipsoid to chart datum transformation was accomplished through the use of a Poor Man's Vertical Datum (PMVD) separation model. Thorough analysis on the validity of the PMVD separation model was conducted and the results are presented in the OPR-J311-KR-18 Data Processing & Acquisition Report (DAPR), which was delivered concurrently with H13133. Additionally refer to the Vertical Control Memo (OPR-J311-KR-18 Analysis of PMVD as Final Water Level Correctors) previously delivered on 20 December 2018 and provided in Appendix II and Section C.1 of this Descriptive Report.

As the PMVD was used for the final datum transformation, per the Project Instructions the requirement to request TCARI Final Solutions was waived for OPR-J311-KR-18. Therefore, no final tide note was provided from NOAA

The on-line times for acquisition of valid hydrographic data are presented in the Abstract Times of Hydrography (Table A-1).

Abstract Times of Hydrography

Project: OPR-J311-KR-18

Registry No.: H13136

Contractor Name: Leidos

Date: 22 February 2019

Sheet Designation: 4

Inclusive Dates: 24 August 2018 – 06 November 2018

Field work is complete.

Begin Date	Begin Julian Day	Begin Time	End Date	End Julian Day	End Time
24 August 2018	236	20:27:30.932	24 August 2018	236	20:41:23.924
25 August 2018	237	00:23:29.215	25 August 2018	237	02:04:31.405
17 September 2018	260	22:52:29.935	18 September 2018	261	03:35:44.046
13 October 2018	286	17:20:55.348	13 October 2018	286	23:58:59.898
14 October 2018	287	01:15:47.333	14 October 2018	287	11:35:43.110
14 October 2018	287	17:36:16.299	14 October 2018	287	23:18:48.484
15 October 2018	288	00:29:56.709	15 October 2018	288	12:39:02.119
15 October 2018	288	13:52:48.669	15 October 2018	288	20:35:41.038
28 October 2018	301	00:08:10.993	28 October 2018	301	00:43:48.939
28 October 2018	301	01:58:54.274	28 October 2018	301	12:22:26.648
28 October 2018	301	13:11:09.458	28 October 2018	301	22:59:49.914
28 October 2018	301	23:19:15.991	29 October 2018	302	00:26:53.876

Begin Date	Begin Julian Day	Begin Time	End Date	End Julian Day	End Time
29 October 2018	302	01:34:21.122	29 October 2018	302	11:40:44.740
29 October 2018	302	12:37:03.498	29 October 2018	302	13:41:18.722
29 October 2018	302	14:30:14.170	29 October 2018	302	15:48:14.119
29 October 2018	302	16:46:22.017	31 October 2018	304	04:58:18.736
03 November 2018	307	22:12:38.938	06 November 2018	310	09:05:55.905
06 November 2018	310	19:17:09.925	06 November 2018	310	23:53:51.977

Table A-1: Abstract Times of Hydrography, H13136

Transmittal Letter to CO-OPS

A transmittal letter to CO-OPS was not required for H13136.

Request for Approved Tides/Water Levels Letter

A “Request for Approved Tides/Water Levels” letter was not required for H13136.

Other Correspondence Relating to Tides

Please refer to Appendix II Supplemental Correspondence for the following correspondence related to water levels for H13136.

- Vertical Control Memo (OPR-J311-KR-18 Analysis of PMVD as Final Water Level Correctors)
- Dates of tide related correspondence
 - 13 July 2018
 - 18 October 2018
 - 28 November 2018
 - 20 December 2018

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

**APPENDIX II. SUPPLEMENTAL SURVEY RECORDS AND
CORRESPONDENCE**

This Appendix contains copies of email exchanges between Leidos and NOAA concerning various aspects of the survey, data processing, and submittal topics.

In addition, the following standalone files have been provided in the II_Supplemental_Survey_Records_&_Correspondence folder of Descriptive Report Appendices:

- Non-DTON Seep and Pipeline Reports for three exposed pipelines:
 - H13136_ExposedPipeline_01.zip
 - H13136_ExposedPipeline_02.zip
 - H13136_ExposedPipeline_03.zip
 - H13136_ExposedPipeline_Overview_Chart_11363.png
- OPR-J311-KR-18_Analysis_of_PMVD_as_Final_Water_Level_Correctors.pdf
- OPR-J311-KR-18_Marine_Species_Awareness_Training_Record.pdf
- OPR-J311-KR_11_Waiver_Feb6_2019.pdf

Note that this document includes correspondence through 12:56 PM on 15 February 2019.

CORRESPONDENCE

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Wednesday, March 28, 2018 2:25 PM
To: Smith, Karen G. [US-US] <Karen.G.Smith@leidos.com>
Cc: Stacy Fullerton - NOAA Federal <stacy.fullerton@noaa.gov>; Christina Belton - NOAA Federal <christina.belton@noaa.gov>; Tiffany Squyres - NOAA Federal <tiffany.squyres@noaa.gov>; Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>; Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Lepore, Christine A. [US-US] <Christine.A.Lepore@leidos.com>
Subject: EXTERNAL: Re: Questions regarding EA133C-14-CQ-0033 Request for Task Order Quote

Karen and Rebecca.

I have edited a few files in response to your last questions. I have edited the draft Project Instructions to better address the ATONs. I have also edited the PRF to address the gaps between sheets and junctions. The CSF did not need any edits so the one you have is still correct. The ATON you address is assigned in the CSF that you currently have. Please let me know if you have any other questions about the project.

Thank you,
Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

On Tue, Mar 27, 2018 at 3:16 PM, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> wrote:

Karen,

Thank you for your questions for the Task Order EA133C-14-CQ-0033 for Chadeleur Islands. Please see my comments to your questions below in red:

1. The Project Instructions state “This survey has a requirement to **acquire** survey data vertically-referenced to the ellipsoid using the provided VDATUM model.”

a. **Question:** Please confirm that the survey data are to be acquired to the ellipsoid and not just the delivered data are to be referenced to the ellipsoid. The answer will impact our proposed hardware and services for data acquisition versus just the post-processing methods planned.

The data can be acquired to your preferred method. The delivered data must be referenced to the ellipsoid per HSSD section 4

2. There was a wreck assigned in the CSF file (29 32 01.12N 088 44 28.27W) which appears to have been disproved on junctioning survey H12923. Note that the wreck was not within the boundaries of the H12923 SOW area but a disproval was carried out (confirmed in H12923 DR and review of BAG, where nothing was seen). Note that this object is still charted on ENCs US3GC04M and US4LA34M.

a. **Question:** We have planned disproval lines over this charted object as part of quote. Please confirm if these disproval lines should be removed.

This wreck should not be consider a feature disproval. Please survey the are with complete coverage.

3. There is a gap in the Sheet boundaries provided in the PRF file (~20m) between priority #2 and priority #3. This is due to extra point in priority #2 that isn't in priority #3 at ~29 34 42.65N 088 38 10.01W.

a. **Question:** The gap has not impacted our survey plans. This is just advising that this gaps exists for if/when final PRF files are provided.

There should be no gaps like this between the sheets. This was a mistake on our part. I am going to make a new CSF/PRF that has this fixed as well as the other discrepancies you brought to my attention. I hope to have those new files to by the end of the week.

4. The Project Instructions state “There are no ATONs specifically assigned for this project.” However there is one assigned privately maintained buoy in the CSF file at 29 35 06.7N 088 40 56.8W.

a. **Question:** We have planned disproval lines over this object. This is just advising for if/when final Project Instructions are provided.

Please include this ATON investigation in your proposal per the HSSD Section 7.3.5. We will edit the final PIs to reflect this assignment.

Thank you,
Katy

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Wednesday, June 27, 2018 1:29 PM
To: Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>
Cc: Stacy Fullerton - NOAA Federal <stacy.fullerton@noaa.gov>; Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Christina Belton - NOAA Federal <christina.belton@noaa.gov>; Donaldson, Paul L. [US-US] <PAUL.L.DONALDSON@leidos.com>
Subject: EXTERNAL: Communications for OPR-J311-KR-18 Chandeleur - Offshore

Rod,
Please be aware of the following communications needed for this project:

The following emails should be included in DR Appendix II. The HSD Project Manager/COR should be CC'ed on all emails.

- email to Jay.nunenkamp@noaa.gov that has a list of trained marine mammal observers and the date each observer viewed the training video
- email to pop.information@noaa.gov of the marine mammal observations (by project)
- email to larisa.avens@noaa.gov of any sea turtle sightings (by project)
- all DtoN reports to ahb.dton@noaa.gov
- emails to CO-OPS i.e. hydro hot list
- Weekly progress reports (PDF only) with a CC to progress.sketches@noaa.gov. Please submit the geotiff files to [here](#)
- email to survey.outlines@noaa.gov of the final survey outlines
- email to OCS.NDB@noaa.gov and coast.pilot@noaa.gov of the coast pilot review report
- email to NODC.submissions@noaa.gov of the NCEI sound speed data
- PDF of the letter transmitting data
- Submit monthly invoices to HSDInvoiceSubmission@noaa.gov

Please contact me or Christina Belton if you have any questions.

Thank you,
Katy

“What would an ocean be without a monster lurking in the dark? It would be like sleep without dreams.”

— Werner Herzog



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From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]

Sent: Wednesday, June 27, 2018 12:15 PM

To: Evans, Rod E. [US-US]

Cc: Stacy Fullerton - NOAA Federal; Lepore, Christine A. [US-US]; Smith, Karen G. [US-US]; Quintal, Rebecca T. [US-US]; Christina Belton - NOAA Federal; Corey Allen - NOAA Federal; Martha Herzog - NOAA Federal; Donaldson, Paul L. [US-US]; Eastern Operations Eastern Operations - NOAA Service Account

Subject: Re: EXTERNAL: Re: EA-133C-14-CQ-0036 Task Order Award - Louisiana Coast

Rod

Please see the attached final versions of the CSF and PRF for OPR-J311-KR-18 Chandeleur Islands

Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

From: [Evans, Rod E. \[US-US\]](#)
To: [Kathryn Pridgen - NOAA Federal](#)
Cc: [Christina Belton - NOAA Federal](#); [Corey Allen - NOAA Federal](#); [Martha Herzog - NOAA Federal](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: RE: EXTERNAL: Re: EA-133C-14-CQ-0036 Task Order Award - Louisiana Coast
Date: Friday, July 13, 2018 10:21:02 AM
Attachments: [image001.png](#)

Katy,

Thanks for the prompt response and clarification.

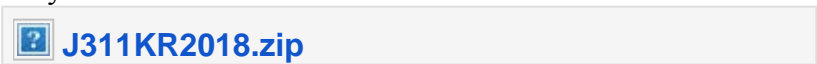
Regards, Rod.

From: [Kathryn Pridgen - NOAA Federal](#)
To: [Evans, Rod E. \[US-US\]](#)
Cc: [Christina Belton - NOAA Federal](#); [Corey Allen - NOAA Federal](#); [Martha Herzog - NOAA Federal](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: Re: EXTERNAL: Re: EA-133C-14-CQ-0036 Task Order Award - Louisiana Coast
Date: Friday, July 13, 2018 9:54:46 AM
Attachments: [image001.png](#)

Rod,

Sorry for the misunderstanding but the shapefile that was sent to you was not the final PMVD grid. We are still developing the final grid. In the meantime I have attached the TCARI grid files to use. We will get the final PMVD grid to you as soon as possible.

Thank you
Katy



 Kathryn "Katy" Pridgen
 Physical Scientist
 NOAA-HSD OPS
 240-533-0033
kathryn.pridgen@noaa.gov

On Thu, Jul 12, 2018 at 12:08 PM, Evans, Rod E. <RHODRI.E.EVANS@leidos.com> wrote:
Katy,

We have the following question on the PMVD:

We have been working in Pydro to convert the provided PMVD shape file to a grid; however the process fails to create a .csar grid as Leidos does not own a software license for CARIS BASE Editor. Could the generated surfaces please be provided to Leidos?

Thanks, Rod.

From: [Kathryn Pridgen - NOAA Federal](#)
To: [Bernier, Bridget W. \[US-US\]](#)
Subject: EXTERNAL: Re: Submitting Monthly Progress Report
Date: Friday, August 03, 2018 12:44:17 PM

Bridget,
The monthly reports can be submitted via TOMIS, which is now set up for this project.

Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

On Fri, Aug 3, 2018 at 12:28 PM, Bernier, Bridget W.
<BRIDGET.W.BERNIER@leidos.com> wrote:

Katy,

I have the prepared July monthly progress report for OPR-J311-KR-18, and have a question for where this should be submitted.

Links I have to access the Google Drive appear to be only for the Weekly Progress submittals.

The HSSD references that NOAA units are to submit to progress.sketches@noaa.gov

Can you please provide guidance as to where we should be submitting these files?

Thanks,

-Bridget

Bridget W. Bernier | Leidos

Data Processing Manager

Marine Survey and Engineering Solutions

office: 401.848.4615

bridget.w.bernier@leidos.com | leidos.com

Please consider the environment before printing this email.

From: [Christina Belton - NOAA Federal](#)
To: [Evans, Rod E. \[US-US\]](#)
Cc: [Kathryn Pridgen - NOAA Federal](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: EXTERNAL: Re: Weekly Progress Report: w/ending 10/14/2018: OPR-J311-KR-18, Offshore Chandeleur, LA
Date: Thursday, October 18, 2018 3:33:08 PM
Attachments: [image001.png](#)
[image002.png](#)
[image001.png](#)
[ChandeleurESR1asc500m2.zip](#)
[ChandeleurCSAR500m2.zip](#)

Good Afternoon Rod,
Please find attached the revised PMVD.
Thank You,
Christina

Christina Belton
Physical Scientist
Operations Branch
Hydrographic Surveys Division
Office of Coast Survey, NOAA
240-533-0057
christina.belton@noaa.gov

On Mon, Oct 15, 2018 at 11:20 AM Evans, Rod E. <RHODRLE.EVANS@leidos.com> wrote:

Christina,

We have some questions regarding the H13134_ext:

The provided PMVD surface does not fully cover the sheet bounds of H13134_ext from the PRF, please see the attached image.

- a. Can the following please be provided:
 - i. Updated CSAR grids of the PMVD
 - ii. Converted updated PMVD grids that are in meters not degrees
- b. We assume that the uncertainty of 9.7cm has not changed with the additional data being provided

Thanks,

Rod.

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

From: **Jack Riley - NOAA Federal** <jack.riley@noaa.gov>
Date: Thu, Sep 13, 2018 at 1:15 PM
Subject: Re: EXTERNAL: Re: Questions on the Leidos task order
To: Christina Belton - NOAA Federal <christina.belton@noaa.gov>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Hi Christina,

On Wed, Aug 22, 2018 at 10:53 AM, Jack L. Riley <jack.riley@noaa.gov> wrote:

It's an NSPMVD product using observations & modeling outside of VDatum. Yes, separate layers output & available as part of calculations. No doubt I compared VDatum's MSL-MLLW to NSPMVD's, so I expect they're close - but not the same per se. I may have the data with me - will check when I get a chance; worse case should be back in town before Friday. Uncertainty is 9.7 cm for entire NSPMVD model -- see the third sentence in Aug 4th email of this thread:

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

From: **Jack Riley - NOAA Federal** <jack.riley@noaa.gov>
Date: Sat, Aug 4, 2018 at 8:25 PM
Subject: Re: PMVD for Chandeleur
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Hi Katy,

See attached for OPR-J311-KR-18 ellipsoid-MLLW SEP "NSPMVD" models.

I included both CSAR & ESRI ASCII Grid file sets as shown below.

Modeled uncertainty for these NSPMVD SEPs is 9.7 cm.

From: Hua Yang - NOAA Affiliate <hua.yang@noaa.gov>
Sent: Wed, November 28, 2018 9:29 AM
To: Donaldson, Paul L. [US-US]
Cc: NOS.COOPS.HPT@noaa.gov; nos.coops.oetteam@noaa.gov; Christina Belton - NOAA Federal; Kathryn Pridgen - NOAA Federal
Subject: EXTERNAL: Re: OPR-K311-KR-18 Dauphin Island water level station 8735180

Hi Paul,

Thank you for the timely update. The station Dauphin Island (8735180) was just marked as "Completed" and will be deleted from the [Hydro Hot List](#) in a week.

Thanks,

Best regards,

Hua Yang

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

On Wed, Nov 28, 2018 at 9:17 AM Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com> wrote:

Leidos Proprietary

Please be advised that Leidos has completed hydrographic survey operations under project OPR-K311-KR-18.

Dauphin Island water level station 8735180 can be removed from the hydro hot list which was in support of OPR-K311-KR-18 survey operations.

Thank you,

Paul L. Donaldson CH (NSPS #241)|Leidos
Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com

221 Third Street, Building A
Newport, RI 02840 USA
Leidos.com

From: Donaldson, Paul L. [US-US]
Sent: Monday, July 16, 2018 2:37 PM
To: _NOS.CO-OPS.HPT; 'nos.coops.oetteam@noaa.gov'
Cc: christina.belton@noaa.gov; 'Kathryn Pridgen - NOAA Federal'
Subject: OPR-K311-KR-18 Dauphin Island water level station 8735180

Leidos Proprietary

Leidos will commence hydrographic survey operations on project OPR-K311-KR-18 on approximately 16 August 2017. Survey operations are currently scheduled to continue until November 2018. We respectfully request that Dauphin Island water level station 8735180 be added to the hydro hot list in support of OPR-K311-KR-18 survey operations. Leidos will alert you once survey operations are complete so the water level gauge can be removed from the hydro hot list.

Thank you,

Paul L. Donaldson CH (NSPS #241)|Leidos

Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com
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Newport, RI 02840 USA
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From: [Donaldson, Paul L. \[US-US\]](#)
To: ["survey.outlines@noaa.gov"](mailto:survey.outlines@noaa.gov); ["Kathryn Pridgen - NOAA Federal"](#)
Subject: Survey Outlines for H13133, H13134, H13135 and H13136 on OPR-J311-KR-18
Date: Thursday, December 06, 2018 12:35:00 PM
Attachments: [H13133_Survey_Outline.000](#)
[H13134_Survey_Outline.000](#)
[H13136_Survey_Outline.000](#)
[H13135_Survey_Outline.000](#)

Leidos Proprietary

Katy,

Please find attached the Survey Outline files for H13133 (Sheet 1), H13134 (Sheet 2 and sheet 2 ext.), H13135 (Sheet 3) and H13136 (sheet 4) from OPR-J311-KR-18, Chandeleur – Offshore, Task Order-0004.

The survey outlines have been generated as S-57 Feature Object Class M_COVR in .000 format (WGS84 datum, un-projected) as specified in the April 2018 HSSD (Section 8.1.2).

The outlines are being resubmitted due to a typo in the OPR # in the original submission. I am sorry for any inconvenience this may have caused.

Please let me know if you have any questions.

Paul L. Donaldson CH (NSPS #241) | Leidos
Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com

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From: [Kathryn Pridgen - NOAA Federal](#)
To: [Donaldson, Paul L. \[US-US\]](#)
Cc: survey.outlines@noaa.gov; [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: EXTERNAL: Re: Survey Outlines for H13133, H13134, and H13136 on OPR-K311-KR-18
Date: Thursday, December 06, 2018 11:46:34 AM

Received, thank you.

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

On Wed, Dec 5, 2018 at 4:21 PM Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com> wrote:

From: [Donaldson, Paul L. \[US-US\]](#)
To: survey.outlines@noaa.gov; [Kathryn Pridgen - NOAA Federal](#)
Cc: [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: Survey Outlines for H13133, H13134, and H13136 on OPR-K311-KR-18
Date: Wednesday, December 05, 2018 4:21:03 PM
Attachments: [H13133_Survey_Outline.000](#)
[H13134_Survey_Outline.000](#)
[H13136_Survey_Outline.000](#)

Leidos Proprietary

Katy,

Please find attached the Survey Outline files for H13133 (Sheet 1), H13134 (Sheet 2 and sheet 2 ext.), and H13136 (sheet 4) from OPR-K311-KR-18, Chandeleur – Offshore, Task Order-0004.

The survey outlines have been generated as S-57 Feature Object Class M_COVR in .000 format (WGS84 datum, un-projected) as specified in the April 2018 HSSD (Section 8.1.2).

Please let me know if you have any questions.

Paul L. Donaldson CH (NSPS #241) | Leidos
Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com

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From: [Brian Mohr - NOAA Federal](#)
To: [Kathryn Pridgen - NOAA Federal](#)
Cc: [Donaldson, Paul L. \[US-US\]](#); survey.outlines@noaa.gov; [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: EXTERNAL: Re: Survey Outline for H13135 on OPR-K311-KR-18
Date: Friday, November 30, 2018 1:30:57 PM

Got it thank you. I'll get SURDEX updated with H13135 shortly.

Brian

On Fri, Nov 30, 2018 at 1:11 PM Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> wrote:

From: [Kathryn Pridgen - NOAA Federal](#)
To: [Donaldson, Paul L. \[US-US\]](#)
Cc: survey.outlines@noaa.gov; [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: EXTERNAL: Re: Survey Outline for H13135 on OPR-K311-KR-18
Date: Friday, November 30, 2018 1:11:14 PM

Thank you for the submission

Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

On Fri, Nov 30, 2018 at 1:00 PM Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com> wrote:

From: [Donaldson, Paul L. \[US-US\]](#)
To: survey.outlines@noaa.gov; [Kathryn Pridgen - NOAA Federal](#)
Cc: [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: Survey Outline for H13135 on OPR-K311-KR-18
Date: Friday, November 30, 2018 1:00:40 PM
Attachments: [H13135_Survey_Outline.000](#)

Leidos Proprietary

Katy,

Please find attached the Survey Outline file for H13135 (Sheet 3), from OPR-K311-KR-18, Chandeleur – Offshore, Task Order-0004. Note that Survey Outlines for sheets H13133, H13134, and H13136 will be delivered next week within the 30 day requirement specified in the April 2018 HSSD (Section 8.1.2).

The survey outlines have been generated as S-57 Feature Object Class M_COVR in .000 format (WGS84 datum, un-projected) as specified in the April 2018 HSSD (Section 8.1.2).

Please let me know if you have any questions.

Thank you,

Paul L. Donaldson CH (NSPS #241)|Leidos
Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com

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From: [Laura Jeffery - NOAA Federal](#)
To: [Bernier, Bridget W. \[US-US\]](#)
Cc: ocs.ndb@noaa.gov; Coast.Pilot@noaa.gov; [Christina Belton - NOAA Federal](#); [Kathryn Pridgen \(kathryn.pridgen@noaa.gov\)](#); [Evans, Rod E. \[US-US\]](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#)
Subject: EXTERNAL: Re: OPR-J311-KR-18 Coast Pilot Review Report
Date: Wednesday, December 19, 2018 11:07:44 AM

Hello Bridget,

Thank you very much for your CP5 report.

Happy holidays!

--

Laura B. Jeffery

On Wed, Dec 19, 2018 at 10:58 AM 'Bernier, Bridget W.' via [_NOS OCS NSD Coast Pilot <coast.pilot@noaa.gov>](#) wrote:

Please find attached the Coast Pilot Review Report for Contract: EA-133C-14-CQ-0033, Project Number OPR-J311-KR-18, Task Order 0003 (Chandeleur - Offshore). The one attached .pdf file submitted addresses the Coast Pilot Field Report delivered to Leidos for OPR-J311-KR-18, and a separate review of the text of the actual Coast Pilot paragraphs.

Please contact me if there are any questions or problems with the attached.

Thank you,

-Bridget

Bridget W. Bernier | Leidos

Data Processing Manager

Marine Survey and Engineering Solutions

office: 401.848.4615 | mobile (new): 401.239.7847

bridget.w.bernier@leidos.com | leidos.com

Please consider the environment before printing this email.

From: [Bernier, Bridget W. \[US-US\]](#)
To: ocs.ndb@noaa.gov; Coast.Pilot@noaa.gov
Cc: [Christina Belton - NOAA Federal](#); [Kathryn Pridgen \(kathryn.pridgen@noaa.gov\)](mailto:Kathryn.Pridgen@noaa.gov); [Evans, Rod E. \[US-US\]](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#)
Subject: OPR-J311-KR-18 Coast Pilot Review Report
Date: Wednesday, December 19, 2018 10:57:59 AM
Attachments: [OPR-J311-KR-18 Coast Pilot Review Report.pdf](#)

Please find attached the Coast Pilot Review Report for Contract: EA-133C-14-CQ-0033, Project Number OPR-J311-KR-18, Task Order 0003 (Chandeleur - Offshore). The one attached .pdf file submitted addresses the Coast Pilot Field Report delivered to Leidos for OPR-J311-KR-18, and a separate review of the text of the actual Coast Pilot paragraphs.

Please contact me if there are any questions or problems with the attached.

Thank you,
-Bridget

Bridget W. Bernier | Leidos

Data Processing Manager
Marine Survey and Engineering Solutions
office: 401.848.4615 | mobile (new): 401.239.7847
bridget.w.bernier@leidos.com | leidos.com

Please consider the environment before printing this email.

From: [Bernier, Bridget W. \[US-US\]](#)
To: [Christina Belton - NOAA Federal](#); [Kathryn Pridgen \(kathryn.pridgen@noaa.gov\)](mailto:kathryn.pridgen@noaa.gov)
Cc: [Evans, Rod E. \[US-US\]](#); [Donaldson, Paul L. \(PAUL.L.DONALDSON@leidos.com\)](mailto:PAUL.L.DONALDSON@leidos.com); [Alex T. Bernier \(alex.t.bernier@leidos.com\)](mailto:alex.t.bernier@leidos.com)
Subject: OPR-J311-KR-18 Analysis of PMVD as Final Water Level Correctors
Date: Thursday, December 20, 2018 3:22:00 PM
Attachments: [OPR-J311-KR-18 Analysis of PMVD as Final Water Level Correctors.pdf](#)

Per the Project Instructions (dated June 14, 2018) for NOAA contract EA-133C-14-CQ-0033, Project Number OPR-J311-KR-18; Leidos is submitting the results of the analysis conducted between the ERZT model to the NOAA provided PMVD model. Please refer the attached file which details the results of the comparison.

Based on this analysis, Leidos will reduce the multibeam data from OPR-J311-KR-18 to MLLW using the PMVD provided by NOAA. Per the Project Instructions, as PMVD will be used for the final datum transformation; Leidos will not be requesting a final TCARI solution.

Please contact me if there are any questions or problems with the attached.

Thank you,
-Bridget

Bridget W. Bernier | Leidos

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Please consider the environment before printing this email.

From: [Donaldson, Paul L. \[US-US\]](#)
To: Jay.nunenkamp@noaa.gov
Cc: [Bernier, Bridget W. \[US-US\]](#)
Subject: FW: OPR-J311-KR-18_Marine_Species_Awareness_Training_Record
Date: Thursday, January 10, 2019 5:54:05 PM
Attachments: [OPR-J311-KR-18_Marine_Species_Awareness_Training_Record.pdf](#)

Leidos Proprietary

Jay,

For your awareness. Please find attached the Marine Species Awareness Training Record for OPR-J311_KR-18 Task Order 0004 (Chandeleur – Offshore). Please accept my apologies for missing you on the original submission delivered on December 19, 2018.

Paul L. Donaldson CH (NSPS #241)|Leidos
Hydrographic Survey & Data Solutions Acting Manager/Chief Hydrographer
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From: Donaldson, Paul L. [US-US]
Sent: Wednesday, December 19, 2018 2:30 PM
To: 'ocs.ecc@noaa.gov'
Cc: Kathryn Pridgen - NOAA Federal; 'christina.belton@noaa.gov'; Evans, Rod E. [US-US]; Bernier, Bridget W. [US-US]; Bernier, Alex T. [US-US]
Subject: OPR-J311-KR-18_Marine_Species_Awareness_Training_Record

Leidos Proprietary

In accordance with the Hydrographic Surveys Specifications and Deliverables (HSSD) April 2018, Section 1.5, attached is a record of staff who participated in hydrographic survey under NOAA contract EA-133C-14-CQ-0033, project number OPR-J311-KR-18, Task Order 0004 (Chandeleur - Offshore). Individuals conducted training prior to the start of the filed season, new personnel conducted training upon arrival.

Please contact me if there are any questions or problems with the attached.

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From: [Donaldson, Paul L. \[US-US\]](#)
To: "[pop.information@noaa.gov](#)"; "[ocs.ecc@noaa.gov](#)"
Cc: "[christina.belton@noaa.gov](#)"; [Kathryn Pridgen - NOAA Federal](#); [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: OPR-J311-KR-18 (Contract EA-133C-14-CQ-0033 T-004, Chandeleur - Offshore, sheets 1-4) Marnie Mammal Observation Log
Date: Thursday, January 17, 2019 11:24:00 AM
Attachments: [OPR-J311-KR-18 Marine Mammal Observation Log.pdf](#)

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In accordance with Section 1.5 of the Hydrographic Surveys Specifications and Deliverables, please find attached the "Marine Mammal Observation Logs" delivery for OPR-J311-KR-18 (Contract: EA-133C-14-CQ-0033 T-0004, Chandeleur - Offshore, Sheets 1-4).

The attached .pdf file submitted is a compilation of the individual Marine Mammal Observation Logs generated throughout the duration of OPR-J311-KR-18.

Please contact me if there are any questions or problems with the attached.

Thank you,

Paul L. Donaldson CH (NSPS #241)|Leidos
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From: [Donaldson, Paul L. \[US-US\]](mailto:Donaldson.Paul.L.[US-US])
To: ["larisa.avens@noaa.gov"](mailto:larisa.avens@noaa.gov)
Cc: ["christina.belton@noaa.gov"](mailto:christina.belton@noaa.gov); [Kathryn Pridgen - NOAA Federal](#); ["ocs.ecc@noaa.gov"](mailto:ocs.ecc@noaa.gov); [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: OPR-J311-KR-18 (Contract EA-133C-14-CQ-0033 T-004, Chandeleur - Offshore, sheets 1-4) Sea Turtle Observation Log
Date: Thursday, January 17, 2019 11:24:00 AM
Attachments: [OPR-J311-KR-18 Sea Turtle Observation Log.pdf](#)

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In accordance with Section 1.5 of the Hydrographic Surveys Specifications and Deliverables, please find attached the "Sea Turtle Observation Logs" delivery for OPR-J311-KR-18 (Contract: EA-133C-14-CQ-0033 T- 0004, Chandeleur - Offshore, Sheets 1-4).

The attached .pdf file submitted is a compilation of the individual Sea Turtle Observation Logs generated throughout the duration of OPR-J311-KR-18.

Please contact me if there are any questions or problems with the attached.

Thank you,

Paul L. Donaldson CH (NSPS #241)|Leidos
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From: [Donaldson, Paul L. \[US-US\]](#)
To: [Christina Belton - NOAA Federal](#)
Cc: [Kathryn Pridgen - NOAA Federal](#); [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#)
Subject: RE: EXTERNAL: Re: Grid Resolution Exemption Request for OPR-J311-KR-18, TO-004
Date: Wednesday, February 06, 2019 3:57:55 PM

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Christina,

Thank you. We will include this in the supplemental correspondence for H13135 and H13136.

Regards,

Paul L. Donaldson CH (NSPS #241)|Leidos
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From: Christina Belton - NOAA Federal [<mailto:christina.belton@noaa.gov>]
Sent: Wednesday, February 06, 2019 3:15 PM
To: Donaldson, Paul L. [US-US]
Cc: Kathryn Pridgen - NOAA Federal; Evans, Rod E. [US-US]; Bernier, Bridget W. [US-US]; Bernier, Alex T. [US-US]
Subject: EXTERNAL: Re: Grid Resolution Exemption Request for OPR-J311-KR-18, TO-004

Paul,
Please find the attached waiver for grid resolutions for sheets H13135 and H13136.
I know H13135 is due Friday and H13136 on Feb 22.
Thank you for your patience.
Christina

Christina Belton
Physical Scientist
Operations Branch
Hydrographic Surveys Division
Office of Coast Survey, NOAA
240-533-0057
christina.belton@noaa.gov

On Tue, Jan 8, 2019 at 10:53 AM Donaldson, Paul L.
<PAUL.L.DONALDSON@leidos.com> wrote:

From: [Donaldson, Paul L. \[US-US\]](#)
To: [Kathryn Pridgen - NOAA Federal: christina.belton@noaa.gov](#)
Cc: [Evans, Rod E. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#)
Subject: Grid Resolution Exemption Request for OPR-J311-KR-18, TO-004
Date: Tuesday, January 08, 2019 10:53:45 AM
Attachments: [H13133_images_for_resolution_exemption.zip](#)
[H13135_images_for_resolution_exemption.zip](#)
[H13136_images_for_resolution_exemption.zip](#)

Leidos Proprietary

Katy,

As Leidos are finalizing the data processing on OPR-J311-KR-18, TO-004, we respectfully request an exemption from the grid resolution requirements in Section 5.2.2.3 of the April 2018 HSSD. Section 5.2.2.3 for complete multibeam coverage specifies a 1-meter grid resolution for depth ranging from 0-20 meters and a 2 meter grid resolution for depths ranging from 18-40 meters.

The vast majority of the depths for H13133 fall within the 1-meter grid resolution depth range of 0-20 meters; however, there is a small area in the northeast with depths that exceed 20 meters with a max depth of 23.254m (see attached zip files). While normally this would require a separate grid at the 2m resolution per the HSSD, we would like to deliver only at 1m grid resolution, owing to the relatively small areas greater than 20m. Sounding density in the areas greater than 20m is adequate to support 1m resolution.

In addition, the vast majority of the depths for H13135 and H13136 fall within the 2-meter grid resolution depth range of 18-40 meters. In each sheet there are very small areas that are less than 18 meters with H13135 and H13136 having shoal depths of 17.282m and 17.661m respectively (see attached zip files). While normally this would require a separate grid at the 1m resolution per the HSSD, we would like to deliver only at 2m grid resolution, since the areas less than 18m are very small and there are no shoals or features associated with the areas.

Please advise as to whether this will be acceptable.

Thank you,

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From: [Bernier, Alex T. \[US-US\]](mailto:Bernier, Alex T. [US-US])
To: pipelines@bsee.gov
Cc: kathryn.pridgen@noaa.gov; christina.belton@noaa.gov; tim.osborn@noaa.gov; [Evans, Rod E. \[US-US\]](mailto:Evans, Rod E. [US-US]); [Donaldson, Paul L. \[US-US\]](mailto:Donaldson, Paul L. [US-US]); [Bernier, Bridget W. \[US-US\]](mailto:Bernier, Bridget W. [US-US])
Subject: OPR-J311-KR-18 Non-DTON Pipeline Report for H13136
Date: Thursday, February 14, 2019 10:25:09 AM
Attachments: [H13136 ExposedPipeline Overview Chart 11363.png](#)
[H13136 ExposedPipeline 01.zip](#)
[H13136 ExposedPipeline 02.zip](#)
[H13136 ExposedPipeline 03.zip](#)
[image001.png](#)

In accordance with Section 1.7 of the Hydrographic Surveys Specifications and Deliverables, please find below and attached the Non-DTON Pipeline Report for H13136 (OPR-J311-KR-18, Contract: EA-133C-14-CQ-0033 T- 0004, Chandeleur - Offshore).

While surveying in the Gulf of Mexico on Project Number OPR-J311-KR-18, Leidos discovered three sections of exposed charted pipeline within the area of Registry Number H13136. The features were found through analysis of the MBES data and determined to have a signature discernibly consistent with that of an exposed pipeline. The identified exposed pipelines were found to consist of a short section of exposed pipeline or be continuous lengths of alternating exposed and buried sections. All exposed pipeline features were within close proximity of currently charted pipelines. The details of each exposed pipeline are as follows and images of each are contained in the attached zip directories.

- H13136 Exposed Pipeline #01 consists of alternating exposed / buried sections covering approximately 90 meters in length from 29° 27' 33.53"N, 088° 45' 57.93"W, to 29° 27' 30.76"N, 088° 45' 58.86"W. This feature is generally in a NNE/SSW orientation and was found by MBES on Julian Day 261 (18 September 2018) at 0335 UTC with a depth of 22.400 meters and is approximately the same depth as the surrounding bathymetry. The exposed pipeline falls on a charted N/S pipeline on RNC 11363.
- H13136 Exposed Pipeline #02 consists of a section of exposed pipeline covering approximately 7.5 meters in length from 29° 27' 17.82"N, 088° 45' 59.14"W, to 29° 27' 17.58"N, 088° 45' 59.16"W. This feature is generally in a N/S orientation and was found by MBES on Julian Day 302 (29 October 2018) at 0940 UTC with a depth of 21.806 meters and is approximately the same depth as the surrounding bathymetry. The exposed pipeline falls on the junction of a charted N/S pipeline and a NE/SW pipeline on RNC 11363.

- H13136 Exposed Pipeline #03 consists of a section of exposed pipeline covering approximately 7.5 meters in length from 29° 25' 59.34"N, 088° 46' 02.46"W, to 29° 25' 59.11"N, 088° 46' 02.46"W. This feature is generally in a N/S orientation and was found by MBES on Julian Day 308 (04 November 2018) at 2130 UTC with a depth of 26.712 meters and is approximately the same depth as the surrounding bathymetry. The exposed pipeline falls on a charted N/S pipeline on RNC 11363.

Please contact me if there are any questions with the information above or attached image files.

Thank you,

Alex Bernier | Leidos

Lead Hydrographer | Marine Scientist
Marine Survey & Engineering Solutions
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mobile: 508.494.3485
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From: [Markham, Erin E. \[US-US\]](#)
To: NODC.submissions@noaa.gov
Cc: [Kathryn Pridgen - NOAA Federal](#); [Christina Belton - NOAA Federal](#); [Evans, Rod E. \[US-US\]](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: OPR-J311-KR-18 NetCDF Sound Speed Data Files
Date: Friday, February 15, 2019 12:56:53 PM
Attachments: [OPR-J311-KR-18_20190215.zip](#)
[image003.png](#)

Good Afternoon,

In accordance with Section 8.3.6 of the Hydrographic Surveys Specifications and Deliverables (April 2018), please find attached one zip file (OPR-J311-KR-18_20190215.zip) containing sound speed data in the NetCDF format used for Leidos hydrographic surveys under project number OPR-J311-KR-18 Contract: EA-133C-14-CQ-0033, Task Order: 4.

All individual sound speed profile files are delivered with the required .nc file extension and fields are populated with the project, survey, survey unit, and instrument. In addition, sound speed data files are broken out into four sub-folders, which correspond to the purpose of each cast as indicated below:

- OPR-J311-KR-18_NCEI_Used_for_Closing
- OPR-J311-KR-18_NCEI_Used_for_Comparison
- OPR-J311-KR-18_NCEI_Used_for_Final_Surfaces
- OPR-J311-KR-18_NCEI_Used_for_Lead_Line

Please contact me if there are any questions or problems with the attached.

Thank you,

Erin Markham | Leidos
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mobile: 914.282.8377
erin.e.markham@leidos.com



APPROVAL PAGE

H13136

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Data Acquisition and Processing Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Processed survey data and records
- GeoPDF of survey products
- Collection of Backscatter mosaics

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

Approved: _____

Commander Meghan McGovern, NOAA
Chief, Atlantic Hydrographic Branch