H13054

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

DESCRIPTIVE REPORT

Type of Survey:	Basic Hydrographic Survey
Registry Number:	H13054

LOCALITY

State(s):	Louisiana
General Locality:	Northern Gulf of Mexico
Sub-locality:	25 NM Southeast of Sabine Bank

2017

CHIEF OF PARTY
Alex T. Bernier

LIBRARY & ARCHIVES

Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H13054**

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:	**Northern Gulf of Mexico**
Sub-Locality:	**25 NM Southeast of Sabine Bank**
Scale:	**40000**
Dates of Survey:	**09/16/2017 to 10/30/2017**
Instructions Dated:	**06/28/2017**
Project Number:	**OPR-K371-KR-17**
Field Unit:	**Leidos**
Chief of Party:	**Alex T. Bernier**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Side Scan Sonar 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/T-0003. 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. 18-TR-012. All times were recorded in UTC. Data were collected in UTM Zone 15.

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 15N, 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 H13054

Project: OPR-K371-KR-17

Locality: Northern Gulf of Mexico

Sublocality: 25 NM Southeast of Sabine Bank

Scale: 1:40000

September 2017 - October 2017

Leidos

Chief of Party: Alex T. Bernier

A. Area Surveyed

The area surveyed was a section of the Gulf of Mexico south of Calcasieu Pass, LA (Figure 1).

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 05' 20.48" N 093° 35' 17.96" W	29° 00' 21.96" N 093° 22' 58.30" W

Table 1: Survey Limits

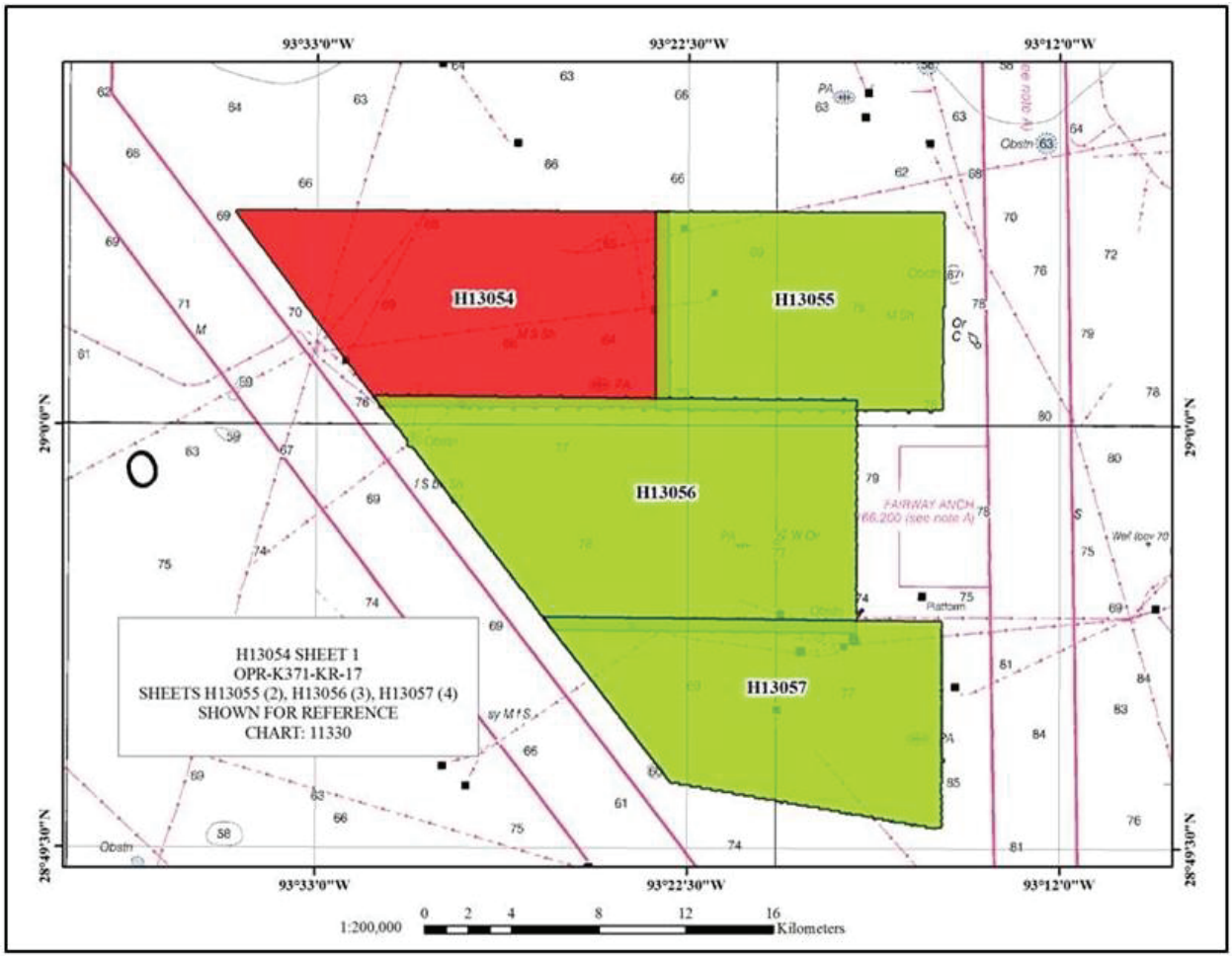


Figure 1: H13054 Survey Bounds

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. This survey will take place in the vicinity of Sabine, TX and Cameron, LA. This survey will help to complete the safe passage fairway of heavy traffic from Sabine Pass and Calcasieu Pass to safety offshore. Completion of charting in this area will allow many other lanes of traffic to become safe for navigation. The Calcasieu Shipping Channel connects Lake Charles, LA to the offshore areas of the Gulf of Mexico. This is a major shipping channel from the Gulf of Mexico to the Port of Lake Charles and extends over 30 miles. The size of ships using Calcasieu Channel has increased steadily from the 1920's along with the amount of transportation of materials for processing by the large refinery in Lake Charles, such as gasoline, natural gas, and chemicals. Similarly, this survey would connect the Sabine Passageway to safety offshore in the Gulf of Mexico. Current charts indicate there is high vessel traffic along this route.

This survey will allow this vessel traffic safe passage to offshore Gulf of Mexico. The project will also cover approximately 154 square nautical miles of high priority survey area identified in the 2017 Hydrographic Health model. The addition of a modern survey in this area will allow for the updating of modern charts and improve the hydro health of the area.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

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.

H13054 was surveyed in accordance with the following documents:
1. Project Instructions, OPR-K371-KR-17, dated 28 June 2017
2. Hydrographic Surveys Specifications and Deliverables (HSSD), April 2017
3. OPR-K371-KR-17 Statement of Work, dated 10 May 2017

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

Leidos chose to achieve the coverage requirement using Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam). Survey coverage achieved was in accordance with the requirements in the Project Instructions and the HSSD (Figure 2).

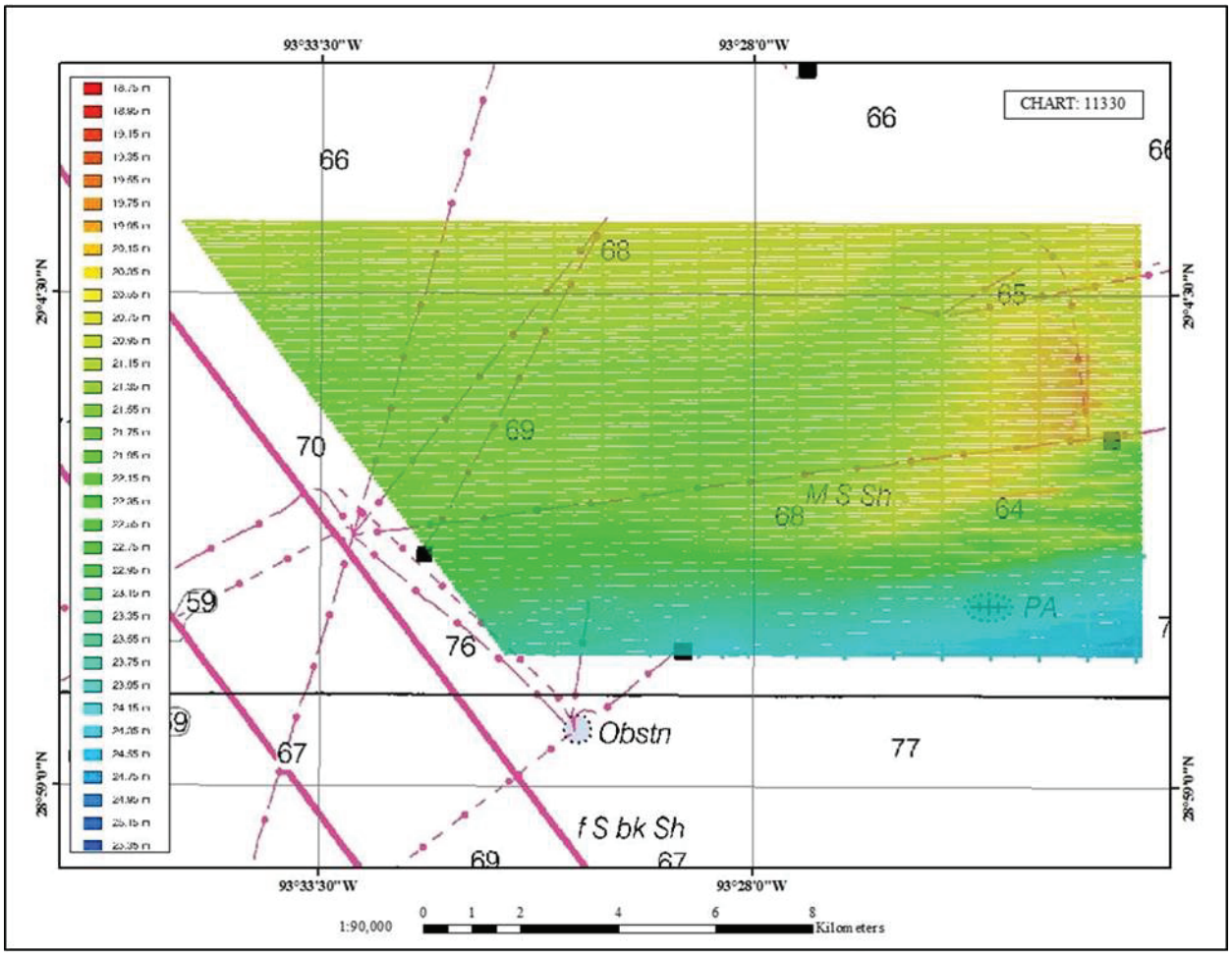


Figure 2: Final Bathymetry Coverage for H13054

A.5 Survey Statistics

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

	HULL ID	*M/V Atlantic Surveyor*	*Total*
LNM	**SBES Mainscheme**	0	0
	MBES Mainscheme	0	0
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	1043.77	1043.77
	SBES/MBES Crosslines	82.89	82.89
	Lidar Crosslines	0	0
Number of Bottom Samples			2
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			44

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
09/16/2017	259
09/17/2017	260
09/18/2017	261
09/19/2017	262
09/20/2017	263
09/21/2017	264
09/22/2017	265
09/23/2017	266
09/24/2017	267
09/25/2017	268
09/26/2017	269
10/29/2017	302
10/30/2017	303

Table 3: 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. Klein 3000 side scan sonar (SSS) data were collected on a Windows 7 platform using Klein's SonarPro software. Subsequent processing and review of the SSS data, including the generation of coverage mosaics, were accomplished using SABER.

A detailed description of the systems and vessel used to acquire and process these data is included in the Data Acquisition and Processing Report (DAPR) for OPR-K371-KR-17, delivered concurrently with this Data Report on 16 February 2018. There were no variations from the equipment configuration described in the DAPR.

B.1.1 Vessels

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

Hull ID	*M/V Atlantic Surveyor*
LOA	110 feet
Draft	9 feet

Table 4: Vessels Used

Figure 3: M/V Atlantic Surveyor

The M/V Atlantic Surveyor (Figure 3) was used to collect multibeam echo sounder (MBES) (RESON SeaBat 7125 SV), side scan sonar (SSS) (Klein 3000), and sound speed data during twenty-four hours per day survey operations.

A detailed description of the vessel 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 7125 SV	MBES
Klein Marine Systems, Inc. (Klein)	3000	SSS
Applanix	POS/MV 320 V5	Positioning and Attitude System
Trimble	Probeacon	Positioning System
AML Oceanographic	MVP30	Sound Speed System

Table 5: Major Systems Used

A detailed description of the equipment installed is included in Section A of the DAPR.

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 7.94% of mainscheme acquisition.

There were 82.89 linear nautical miles of crosslines and 1043.77 linear nautical miles of mainscheme lines surveyed on H13054. This resulted in crossline mileage of approximately 7.94% of the mainscheme mileage, which meets the requirement to achieve approximately four percent of mainscheme mileage for a Complete Coverage survey (Section 5.2.4.3 of the HSSD). H13054 requirements were for Complete Coverage, Option B, based on the classifications defined in Section 5.2.2.3 of the HSSD.

The mainscheme lines were oriented 90°/270° and spaced 80 meters apart. Crosslines were oriented 0°/180° and spaced 1000 meters apart or less. Refer to the “Multibeam Processing Log” section within Separates I for information on the delineation of mainscheme and crossline data files.

Refer to Separates II for details about how the crossing analysis was performed and a complete discussion of the analysis and tabular results. Figure 4 summarizes the comparison results.

Difference Grid	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
M/V Atlantic Surveyor Multibeam Crossline (Class 1) to Mainscheme	19.763 - 24.515	0.562 - 0.593	100

Figure 4: Summary of Crossing Analysis

B.2.2 Uncertainty

For specific details on the use and application of the SABER Total Propagated Uncertainty (TPU) model, see Section B.1 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 H13054 two-meter PFM CUBE surface contained final vertical uncertainties that ranged from 0.470 to 0.735 meters. The IHO Order 1a maximum allowable vertical uncertainty was calculated to range between 0.556 to 0.596 meters, based on the minimum CUBE depth (18.753 meters) and maximum CUBE depth (24.890 meters). The SABER Check PFM Uncertainty function was used to highlight all instances in the Hyp. Final Uncertainty surface where a given node exceeded the IHO Order 1a allowable vertical uncertainty for the CUBE depth at that node. The final H13054 two-meter PFM CUBE surface contained five individual CUBE nodes with final vertical uncertainties that exceeded IHO Order 1a allowable vertical uncertainty, which were all associated with a single wreck (Feature 01).

The SABER Frequency Distribution Tool was used to review the Hyp. Final Uncertainty surface within the final H13054 two-meter PFM grid. The results showed that in the final two-meter PFM grid, 99.99% of all nodes had final uncertainties less than or equal to 0.500 meters.

B.2.3 Junctions

As requested in the Project Instructions, analyses of the H13054 junctions with specified surveys were performed. Figure 5 shows the general locality of H13054 as it relates to the sheets to which junctions were performed. Details for each survey are listed in Table 6. For the H12187, H12878, and H12879 comparisons, the junction was performed against the final respective BAG for each sheet. Note that analysis of the junctions with sheets H13055 and H13056 was not conducted, as processing efforts for those sheets were still ongoing.

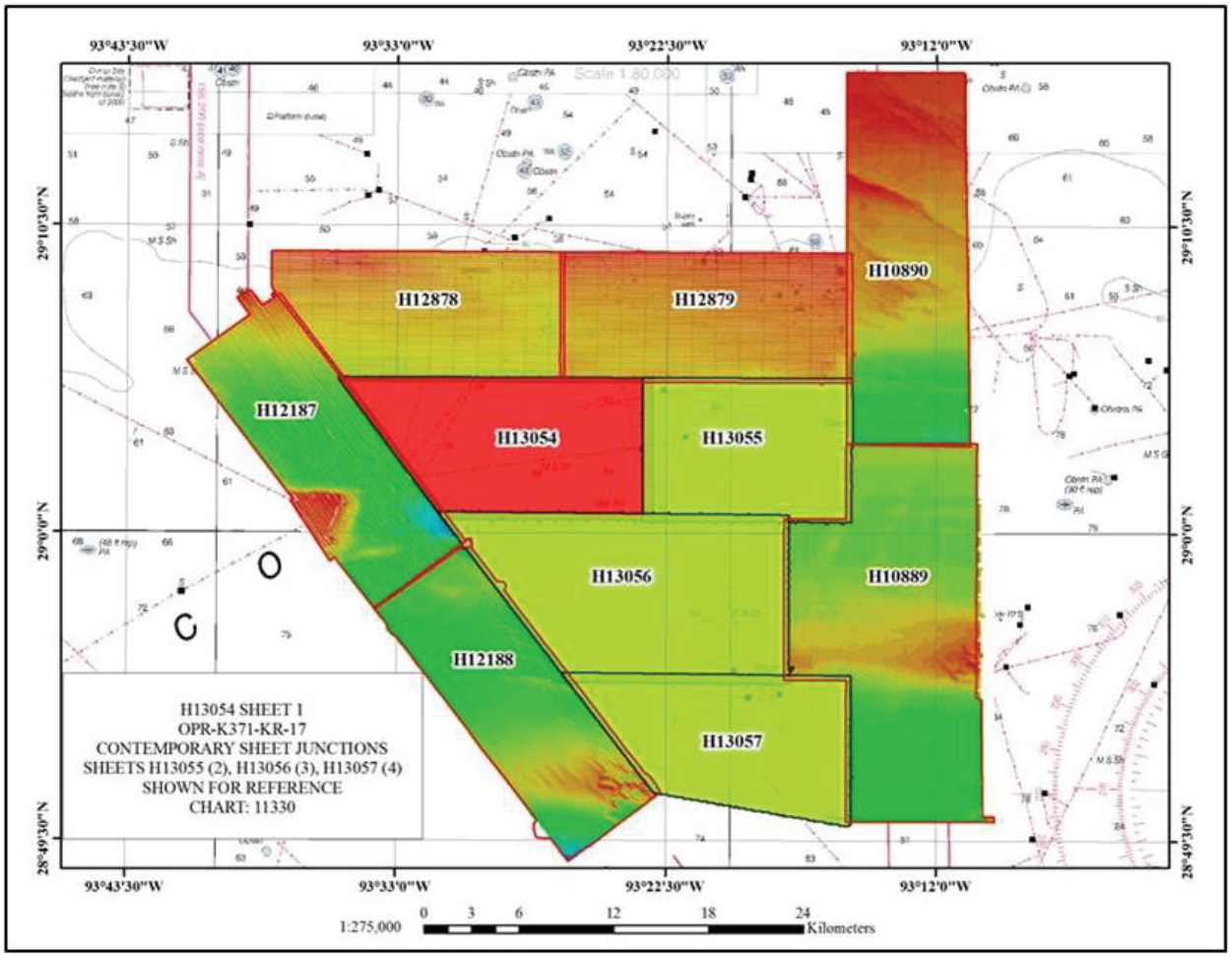


Figure 5: General Locality of H13054 with Junctioning Surveys

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12187	1:40000	2010	NOAA Ship Thomas Jefferson	W
H12878	1:40000	2016	Leidos	N
H12879	1:40000	2016	Leidos	NE

Table 6: Junctioning Surveys

H12187

H13054 junctions with H12187 to the west; 100.00% of the comparisons agreed within ±0.469 meters.

H12878

H13054 junctions with H12878 to the north; 100.00% of the comparisons agreed within ±0.443 meters.

H12879

H13054 junctions with H12879 to the northeast; 100.00% of the comparisons agreed within ±0.469 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.

B.2.6 Factors Affecting Soundings

During data acquisition on H13054 there were intermittent local weather events producing increased winds and sea state. Occasionally during the localized weather events, the water levels within the survey area differed slightly from the water level gauge located at Calcasieu Pass, LA. The artifact was seen in the multibeam CUBE surface and generally ranged between 10 to 15 centimeters when present (Figure 6). In addition, during these intermittent weather events, some residual heave artifacts were visible in the data and

ranged from 10 to 15 centimeters. However, these occasional vertical offsets and heave artifacts observed were within the IHO Order 1a allowable vertical uncertainty for the H13054 water depths.

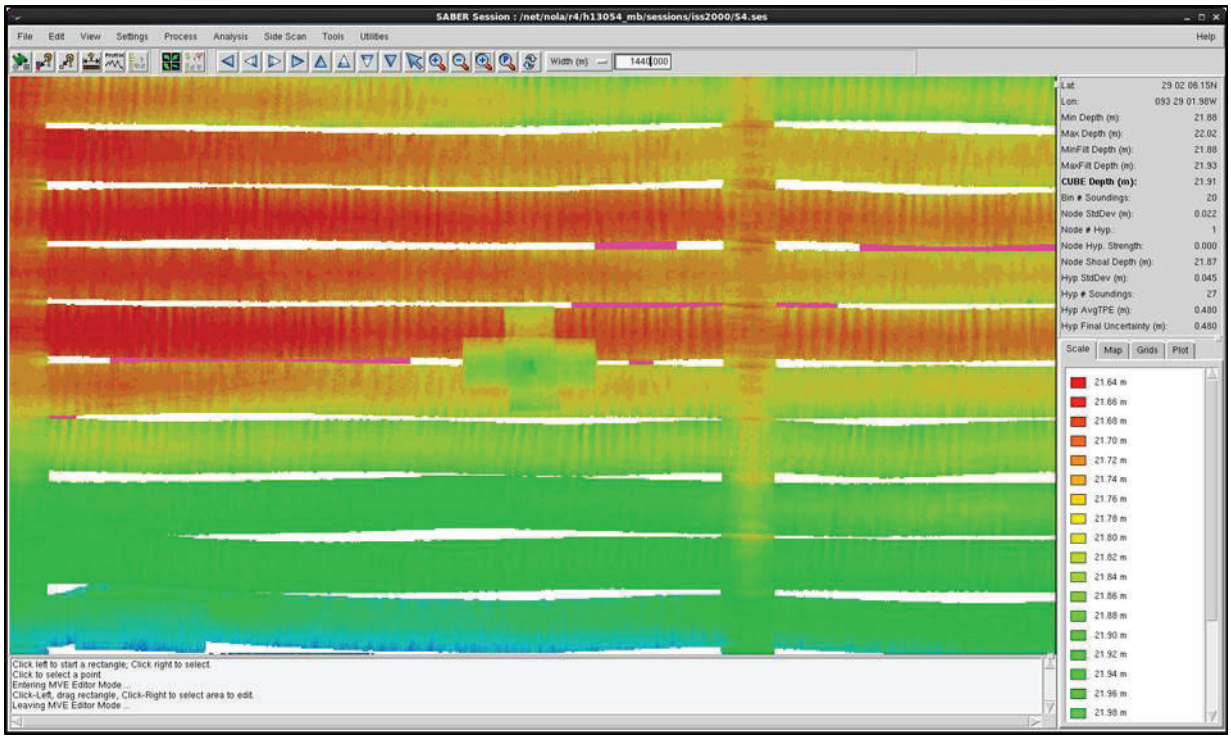


Figure 6: CUBE Depth Delta and Heave Artifacts Resulting from Local Weather Events

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: On the M/V Atlantic Surveyor, the MVP30 was used to collect sound speed profile (SSP) data. 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. There were times when the sound speed values exceeded the two meters/second threshold due to the local temporal and tidal variability. During these times, several profiles were acquired and reapplied in an effort to reduce these effects. The product of this effort resulted in the final data bearing no significant artifacts due to sound speed differences.

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

Confidence checks of the sound speed profile casts were conducted by comparing at least two consecutive casts taken with different SSP sensors. Four sound speed confidence checks were conducted during H13054 and the results can be found in Separates II within the “Comparison Cast Log” section.

All individual SSP files are delivered with the H13054 data and are broken out into sub-folders, which correspond to the purpose of each cast. Also, all individual SSP files for H13054 have been concatenated into four separate files based on the purpose of the cast, provided in CARIS format files (.svp), and delivered under (H13054/Data/Processed/SVP/CARIS_SSP) on the delivery drive. In addition sound speed data for the entire OPR-K371-KR-17 project will be submitted to NCEI following the NetCDF template format as specified in Section 8.3.6 of the HSSD.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods are detailed in the DAPR.

B.2.9 Multibeam Coverage Analysis

Leidos chose to achieve the coverage requirement using 100% side scan sonar coverage with concurrent multibeam bathymetry. To achieve this coverage, the M/V Atlantic Surveyor used a towed Klein 3000 SSS set to a 50-meter range scale. Mainscheme line spacing was 80 meters, which ensured 100% SSS coverage.

The HSSD stated that 100% SSS coverage was insufficient to disprove a charted feature. Therefore, Leidos reviewed the Composite Source File (CSF), BSB charts, and ENC charts and completed an additional 100% SSS coverage, and resulting MBES coverage over charted objects not found during survey in order to verify disproval in accordance with Section 7.3.4 in the HSSD. A disproval search radius was determined from the investigation requirement attribute (invreq) in the OPR-K371-KR-17_CSF_final.000 CSF file, or from additional correspondence between Leidos and NOAA as documented within Appendix II of this Data Report. For all charted objects within the assigned Survey Limits of H13054 each object's disproval data covered an area of at least the assigned disproval search radius.

The SABER Gapchecker routine 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. A final review of the CUBE Depth surface of the H13054 two-meter PFM containing all MBES data showed that there were a few instances where a three by three node gap exists. However, these were not considered holidays in the final MBES CUBE surface as these instances all resulted from either the holiday line data being slightly offset from the original line due to vessel line steering, or the swath width of the holiday lines being reduced compared to the original line due to water level differences. One additional instance exists where crossline data were turned off between mainscheme swath coverage, and additional crossline data were not needed, as the crossline percentage requirement had already been met.

The final H13054 two-meter 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 H13054 final two-

meter CUBE PFM grid revealed that 98.99% of all nodes contained five or more soundings; satisfying the requirements for complete coverage surveys, Option B, 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

Side Scan Sonar (SSS) Coverage Analysis: For all details regarding SSS data processing, see Section B.3 of the DAPR. Leidos chose to adhere to the coverage requirements in the Project Instructions using Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam). The HSSD stated that 100% SSS coverage was insufficient to disprove a charted feature. Therefore, 100% SSS coverage was collected and verified for the entire survey area, and an additional 100% SSS coverage was collected over charted objects that were not found, and CSF assigned objects, to verify disproval. Leidos generated two separate coverage mosaics at one-meter cell size resolution as specified in Section 8.2.1 of the HSSD. The first 100% and second 100% disproval coverage mosaics were independently reviewed using tools in SABER to verify data quality and swath coverage. The SABER Gapchecker routine was used to flag data gaps within each of the 100% SSS coverage mosaics. Additionally, the entirety of each SSS 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. Both coverage mosaics are determined to be complete and sufficient to meet the requirements contained within the Project Instructions and HSSD. The mosaics are delivered as TIFF (.tif) images with accompanying world files (.tfw), refer to Table 7.

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 7125 SV. The MBES settings used were checked to ensure acceptable quality standards were met and to avoid any acoustic saturation of the backscatter data. 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 Feature Object Catalog was used: NOAA Extended Attribute File V5-4.

The primary data processing software used for both bathymetry and imagery was SABER. There were no software configuration changes after the DAPR was submitted.

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
H13054_MB_2m_MLLW_Final	BAG	2 meters	18.753 meters - 24.890 meters	N/A	Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam)
H13054_SSS_1m_100	SSS Mosaic (.tif;.tfw)	1 meters	0 meters - 0 meters	N/A	100% SSS
H13054_SSS_Disproval	SSS Mosaic (.tif;.tfw)	1 meters	0 meters - 0 meters	N/A	200% SSS Charted Object Disproval

Table 7: Submitted Surfaces

The CUBE Depth surface of the H13054 two-meter PFM 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 in H13054 was from 18.753 meters (61.525 feet; 0.480 meters Total Vertical Uncertainty [TVU]) to 24.890 meters (81.660 feet; 0.478 meters TVU). Complete Coverage Section 5.2.2.3 of the HSSD requires two-meter grid resolution for depths ranging from 18 meters to 40 meters, and therefore a two-meter PFM CUBE Depth grid was generated for the entire H13054 surface (H13054_MB_2m_MLLW_Final.bag).

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.2.5 of the DAPR.

C. Vertical and Horizontal Control

No vertical or horizontal controls were established, recovered, or occupied during data acquisition for OPR-K371-KR-17, which includes H13054. Therefore, a Horizontal and Vertical Control Report was not required.

C.1 Vertical Control

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

Traditional Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Calcasieu Pass, LA	8768094

Table 8: NWLON Tide Stations

File Name	Status
8768094_verified_09012017_12042017.tid	Verified Observed

Table 9: Water Level Files (.tid)

File Name	Status
K371KR2017CORP_Rev.zdf	Final

Table 10: Tide Correctors (.zdf or .tc)

No final tide note was provided by the NOAA Center for Operational Oceanographic Products and Services (CO-OPS). Leidos is not required to have a final tide note from CO-OPS for H13054 however, a final tide note has been provided by Leidos in Appendix I.

The Tides Statement of Work specified NOAA tide station 8768094 Calcasieu Pass, LA as the source for water level correctors for OPR-K371-KR-17. A full explanation of the tide zone assessment is detailed in Section C.4 of the DAPR. For H13054, 8768094 Calcasieu Pass, LA was the source of all final verified

water level heights for determining correctors to soundings. All data for H13054 that contributed to the final CUBE surfaces were contained within three tide zones (WGM104, WGM87, and WGM88) which were provided by NOAA.

Leidos did not revise the delivered tide zones for tide station 8768094 Calcasieu Pass, LA as the water level zoning parameters in the file K371KR2017CORP_Rev.zdf, provided by National Ocean Service (NOS) were deemed adequate for the application of observed verified water levels. As a result, they were accepted as final and applied to all H13054 bathymetry data.

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 15, North.

Please refer to the DAPR for details regarding all antenna and transducer offsets.

During survey data acquisition, the ISS-2000 real-time system provided a continuous view and automatic monitoring of position accuracies. An alarm was triggered within ISS-2000 if any accuracy thresholds were not within a predefined range in accordance with specifications of the HSSD. 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.

The following DGPS Stations were used for horizontal control:

DGPS Stations
English Turn, LA (293 kHz)
Angleton, TX (301 kHz)

Table 11: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

The chart comparisons were conducted using a combination of SABER and CARIS' EasyView. Charting recommendations for depths follow Section 5.1.2 of the HSSD where depths and uncertainties are to be rounded by standard arithmetic rounding (round half up).

United States Coast Guard (USCG) District 8 Local Notice to Mariners 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 Notice to Mariners reviewed were from week 26/17 (28 June 2017) until week 44/17 (01 November 2017).

H13054 data meet 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 H13054 S-57 FFF. Additional charted objects such as submarine pipelines and platforms are discussed in later sections.

D.1.1 Electronic Navigational Charts

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

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US3GC02M	1:250000	31	09/29/2017	01/12/2018	NO

Table 12: Largest Scale ENCs

US3GC02M

ENC US3GC02M covers the H13054 survey area in its entirety.

CUBE depths within sheet H13054 agreed with the charted depths across most of the survey area and were generally within ±1 meter of the charted depths for all but one charted depth which was found to be charted approximately 2 meters shoaler than the survey CUBE depths.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

One charted object, a dangerous wreck with depth unknown, was present within the survey bounds. This charted dangerous wreck was assigned in the CSF, OPR-K371-KR-17_CSF_final.000, and is charted on ENC US3GC02M and Raster 11330. This wreck was labeled as PA in the OPR-K371-KR-17_CSF_final.000 and on Raster chart 11330. No significant features were found within the assigned search radius for the charted dangerous wreck, however, a wreck was found approximately 590 meters to the west of the charted dangerous wreck position. The details resulting from final processing of the data and recommendations are captured in the H13054 S-57 FFF.

There were no other charted features labeled PA, ED, PD, or Rep within the area covered by H13054.

D.1.4 Uncharted Features

See the H13054 S-57 FFF for all the 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 H13054 other than those discussed in Section D.1.4.

Leidos submitted one Danger to Navigation Report (DTON) for H13054 in S-57 format to the Atlantic Hydrographic Branch (AHB) which was not submitted to the Nautical Data Branch (NDB)/Marine Chart Division (MCD) as AHB did not deem the feature to be a danger to navigation. Figure 7 details the submitted DTON and the associated Feature number and object class in the S-57 FFF. Copies of the email correspondence for Leidos' submission of H13054 DTON Report 01 and the response from AHB are included within Appendix II of this Data Report.

DTON Report Name	Date Submitted to AHB	AHB submitted to MCD	Feature Number	S-57 Object Class
H13054_DTON01.000	2017-10-11	N/A	01	WRECKS

Figure 7: DTON Reports

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 H13054. Bottom characteristics were acquired at two locations, one of which was assigned in the Project Reference File (PRF) by NOAA. Leidos did not modify any bottom sample locations from the locations proposed by NOAA in the PRF. A second bottom sample was collected after review of the SSS data indicated a change in reflectivity which was approximately 4.1 kilometers from the closest assigned bottom sample location. Bottom characteristics collected during H13054 are included in the H13054 S-57 FFF, named H13054_FFF.000, within the Seabed Area (SBDARE) object and are classified according to the requirements set forth in Appendix H of the HSSD. In addition to the still images of the seafloor and sediment obtained for each bottom sample, which are referenced in the H13054_FFF.000, short videos of the seafloor at each bottom sample location are included on the delivery drive under the folder H13054/Data/Processed/Multimedia.

D.2 Additional Results

D.2.1 Shoreline

All features in the CSF within the assigned Survey Limits of H13054 were resolved. There were no assigned features inshore of the NALL.

D.2.2 Prior Surveys

Junction analysis with prior surveys H12187, H12878, and H12879 (collected in 2010 and 2016, respectfully) were conducted, and the results are presented in Section B.2.3 of this Data Report and within Separates II.

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

Ten pipeline (PIPSOL) objects (Features 03-12) are delivered in the S-57 FFF to represent sections of pipeline found within the bounds of H13054. Three pipeline objects (Features 03-05) are delivered as point objects identified as exposed pipeline. One pipeline object (Feature 06) is delivered as a line object identified as a small section of exposed pipeline that is associated with a longer section of identified charted buried pipeline. The remaining six pipeline objects (Features 07-12) are line objects depicting charted buried pipelines of which evidence of existence was observed in the side scan data only. Additional charted pipelines fall within the survey coverage; however, the multibeam and side scan data do not show evidence of them.

In accordance with HSSD Section 1.7, all four exposed pipelines found within H13054 were submitted as Non-DTON Seep and Pipeline Reports. The email correspondence for Leidos' submission of the H13054 Non-DTON Seep and Pipeline Reports is included within Appendix II of this Data Report. Figure 8 provides details regarding the Non-DTON Seep and Pipeline Reports, including the associated Feature number and object class in the H13054 S-57 FFF.

Non-DTON Seep and Pipeline Report	Date Leidos submitted to AHB (COR)	Feature Number	S-57 Object Class
H13054_Exposed_Pipeline_01	2018-01-22	03	PIPSOL
H13054_Exposed_Pipeline_02	2018-01-22	04	PIPSOL
H13054_Exposed_Pipeline_03	2018-01-22	05	PIPSOL
H13054_Exposed_Pipeline_04	2018-01-22	06	PIPSOL

Figure 8: Non-DTON Seep and Pipeline Reports

D.2.6 Platforms

There was one assigned offshore platform object in the CSF, OPR-K371-KR-17_CSF_final.000, provided on 17 July 2017, which fell within the assigned Survey Limits of H13054. This charted platform is also charted on ENC US3GC02M and Raster 11330. The charted platform was not found during survey operations and a disproval survey was conducted, where the charted platform was covered by 200% side scan and resulting multibeam over an area with a radius of at least 80 meters. There was no evidence of the platforms existence in the side scan or multibeam data and no platforms were visible above the waterline. See the S-57 FFF, H13054_FFF.000, Offshore Platform (OFSPLF) objects, for details and charting recommendations on the charted platform.

One additional offshore platform (also assigned in the CSF, OPR-K371-KR-17_CSF_final.000, provided on 17 July 2017, and charted on ENC US3GC02M and Raster 11330) which is positioned within the assigned Survey Limits of H13056, also surveyed by Leidos as part of OPR-K371-KR-17, was covered by overlapping data in the southern extents of the H13054 coverage area. Data processing for H13056 is ongoing at the time of data submission for sheet H13054. No platform was visually observed and the disproval survey data were collected on H13056 and will be included with the final delivery of that

sheet. This additional offshore platform is included in the S-57 FFF, H13054_FFF.000, Offshore Platform (OFSPLF) object, with remarks detailing the overlapping coverage of H13054 and H13056, and attributed as Retain as the disproval data and recommendation to delete the platform will be included in the H13056 S-57 FFF.

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 B.2.6.

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 Designated Soundings

Designated soundings were used to help better preserve the shallowest sounding relative to the computed depth surface. Separate flags exist in the Generic Sensor Format (version 3.06) for designated soundings and features. 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 H13054. GSF feature flags were set on significant features within H13054, and all information is contained in the H13054 S-57 FFF.

D.2.12 Final Feature S-57 File

Included with H13054 delivery is the S-57 FFF, H13054_FFF.000. Details on how this file was generated and quality controlled can be found in Section B.2.6 of the DAPR. The S-57 FFF delivered for H13054 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 H13054 are included within the S-57 FFF.

In accordance with the HSSD, Leidos addressed all assigned objects within the bounds of H13054 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.2.13 Side Scan Sonar Contacts S-57 File

Included with the H13054 delivery is the Side Scan Sonar Contact S-57 File, H13054_SSCon.000. Details on how this file was generated and quality controlled can be found in Section B.3.5 of the DAPR. As specified in Section 2.2 of the HSSD, the S-57 file is in the WGS84 datum and is unprojected with all depth units in meters.

Side scan sonar contacts were investigated and confirmed using SABER Contact Review. All side scan contacts are retained within the Side Scan Sonar Contact S-57 File. For each contact included in this S-57 file, a JPEG image of the side scan contact is included 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-K371-KR-17. Within the Coast Pilot Field Report (OPR-K371-KR-17CoastPilotReport.pdf) provided by NOAA to Leidos on 17 July 2017, 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-K371-KR-17_Coast Pilot Review Report.pdf) which was submitted to NOAA on 09 February 2018. The email correspondence for Leidos’ submission of the H13054 Coast Pilot Review Report is included within Appendix II of this Data 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.

All BAG files, 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 the OPR-K371-KR-17 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-K371-KR-17 are provided in the table below.

Report Name	Report Date Sent
OPR-K371-KR-17_Marine_Species_Awareness_Training_Video_Log.pdf	2018-02-07
OPR-K371-KR-17_Coast Pilot Review Report.pdf	2018-02-09
OPR-K371-KR-17_DAPR.pdf	2018-02-16

Approver Name	Approver Title	Approval Date	Signature
Alex T. Bernier	Lead Hydrographer	02/16/2018	Alex T. Bernier Digitally signed by Alex T. Bernier DN: cn=Alex T. Bernier, o=Marine Survey and Engineering Solutions, ou=Leidos, email=alex.t.bernier@leidos.com, c=US Date: 2018.02.13 16:23:54 -05'00'

APPENDIX I. TIDES AND WATER LEVELS

Field Tide Note

A field tide note was not required for H13054.

Final Tide Note

Observed verified water levels for the station in Calcasieu Pass, LA (8768094) were downloaded from the NOAA Tides and Currents web site. Water Level correctors were prepared for each zone using the **SABER Create Water Level Files** software. The **SABER Apply Correctors** software applied the water level data to the multibeam data according to the zone containing the nadir beam of each ping.

Please refer to the H13054 Descriptive Report Section C.1 for details regarding final tides for H13054. The water level zoning correctors applied to all multibeam data for H13054 were based entirely on Calcasieu Pass, LA (8768094).

No final tide note was provided by NOAA Center for Operational Oceanographic Products and Services (CO-OPS), Leidos is not required to have a final tide note from CO-OPS.

The on-line times for acquisition of valid hydrographic data are presented in the Abstract Times of Hydrography, H13054 (Table A-1).

Abstract Times of Hydrography

Project: OPR-K371-KR-17
Registry No.: H13054
Contractor Name: Leidos
Date: 16 February 2018
Sheet Designation: 1
Inclusive Dates: 16 September 2017 – 30 October 2017
Field work is complete.

Begin Date	Begin Julian Day	Begin Time	End Date	End Julian Day	End Time
09/16/2017	259	18:58:51	09/18/2017	261	01:06:03
09/19/2017	262	22:14:38	09/25/2017	268	00:02:10
09/25/2017	268	14:44:55	09/26/2017	269	18:43:24
10/29/2017	302	14:53:26	10/30/2017	303	13:04:49

Table A-1: Abstract Times of Hydrography, H13054

Transmittal Letter to CO-OPS

A transmittal letter to CO-OPS was not required for H13054.

Request for Approved Tides/Water Levels Letter

A Request for Approved Tides/Water Levels letter was not required for H13054.

Other Correspondence Relating to Tides

There is no other correspondence relating to tides and/or water levels.

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 Marine Species Awareness Training Log is provided in the II_Supplemental_Survey_Records_&_Correspondence folder of Descriptive Report Appendices:

- OPR-K371-KR-17_Marine_Species_Awareness_Training_Video_Log.pdf

Note that this document includes correspondence through 11:00 AM on 13 February 2018.

CORRESPONDENCE

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Monday, May 15, 2017 12:40 PM
To: Evans, Rod E. <RHODRI.E.EVANS@leidos.com>
Cc: Emily Clark - NOAA Federal <emily.clark@noaa.gov>; Lepore, Christine A. <Christine.A.Lepore@leidos.com>; Quintal, Rebecca T. <REBECCA.T.QUINTAL@leidos.com>
Subject: Re: EXTERNAL: Request for Task Order Quote, Sabine and Vicinity

Hi Rod,

I have some answers for the questions you sent us regarding some of the features assigned in the CSF for OPR-K371-KR-17 Sabine and Vicinity. My answers are in red.

Topic 1: Assigned Pipelines:

The pipelines provided in the CSF all had an assignment (asgnmt) attributed as "assigned". The investigation requirements (invreq) state: "See Section 1.6.2 for Elevated Pipeline guidance or Section 1.7 for Non-DTON Exposed Pipeline guidance. If pipeline is not elevated or exposed, include in FFF with descrp = retain. "

Leidos referred to Sections 1.62 and 1.7 which do not reference any S-57 FFF attribution or multibeam coverage requirements, as they discuss the submittal of an exposed pipeline or gas seep.

The orange part: Only applies if the pipeline is exposed or elevated, then it qualifies as a DTON and then it should be disproved using the disproval coverage (200% SSS)

The yellow part: If the pipeline is unexposed (as I think the ones assigned in the CSF are), then include in FFF with descrp=retain, and use normal coverage as assigned by the rest of the sheet (in this case complete coverage: 100% SSS with multibeam or 100% MBES)

I am going to change the invreq in the final CSF to read: "If the pipeline is exposed or elevated See Section 1.6.2 for Elevated Pipeline guidance or Section 1.7 for Non-DTON Exposed Pipeline guidance. If pipeline is not exposed, then include in FFF with descrp=retain, coverage requirements are the same as the sheet."

For the pipelines assigned in the CSF, they are only applicable within the sheet limits and as long as it is not exposed it should be follow the coverage requirements of the sheet, not DTON disproval coverage requirements.

Note that several of the provided pipelines extend beyond the bounds of the OPR-K371-KR-17 project limits.

Question:

1. What are the coverage requirements for these assigned pipelines? 100% complete coverage if not exposed.

a. Are we trying to prove or disprove the pipelines? Therefore needing 100% multibeam coverage or 200% SSS coverage? If yes, would we therefore need to perform a route survey over the pipeline within the PRF survey bounds? Would we need to extend the survey beyond the OPR-K371-KR-17 project limits? We are trying to prove unexposed pipelines within the sheet limits. We do not need to extend the survey beyond the sheet limits.

b. Or is the complete coverage Option B (100% side scan coverage with concurrent multibeam) for the sheet as a whole sufficient "coverage" over these assigned items? Yes. Complete coverage.

Topic 2: Object disproval:

Platforms are also assigned in the provided CSF. The invreq states "If visually confirmed, include in FFF with descrp=retain. If not visible, conduct a feature disproval (Section 7.3.4) and if disproved, include in FFF with descrp = delete." Note that the HSSD 2017 does not provide a search radius for disproval, and one was not indicated in the CSF for platforms.

Question:

1. Is there a defined search radius for features that do not have a position qualifier? In the 2016 Project Instructions there was the following text, "..and all other features without a position qualifier will have a search radius of 80 meters."

For platforms the disproval radius is 80m. The PA radius is specified in the invreq and is different from the platform disproval radius.

I hope this answers your questions. I am available to answer any more that you have. I am in the office this week, but then going to sea for the next two weeks. I will not have phone access but should be able to answer emails.

Thank you,
Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2702 ext 178
kathryn.pridgen@noaa.gov

On Thu, May 4, 2017 at 9:20 AM, Evans, Rod E. <RHODRI.E.EVANS@leidos.com> wrote:

Emily and Katy,

Thank you for granting an additional 2 weeks to the proposal deadline to now be through May 30, 2017.

Also, thanks for the CSF and PRF files for OPR-K371-KR-17 Sabine and Vicinity. We have the following questions regarding the CSF file sent for TO-03:

Topic 1: Assigned Pipelines:

The pipelines provided in the CSF all had an assignment (asgnmt) attributed as “assigned”. The investigation requirements (invreq) state: "See Section 1.6.2 for Elevated Pipeline guidance or Section 1.7 for Non-DTON Exposed Pipeline guidance. If pipeline is not elevated or exposed, include in FFF with descrp = retain. "

Leidos referred to Sections 1.62 and 1.7 which do not reference any S-57 FFF attribution or multibeam coverage requirements, as they discuss the submittal of an exposed pipeline or gas seep.

Note that several of the provided pipelines extend beyond the bounds of the OPR-K371-KR-17 project limits.

Question:

1. What are the coverage requirements for these assigned pipelines?

a. Are we trying to prove or disprove the pipelines? Therefore needing 100% multibeam coverage or 200% SSS coverage? If yes, would we therefore need to perform a route survey over the pipeline within the PRF survey bounds? Would we need to extend the survey beyond the OPR-K371-KR-17 project limits?

b. Or is the complete coverage Option B (100% side scan coverage with concurrent multibeam) for the sheet as a whole sufficient “coverage” over these assigned items?

Topic 2: Object disproval:

Platforms are also assigned in the provided CSF. The invreq states “If visually confirmed, include in FFF with descrp=retain. If not visible, conduct a feature disproval (Section 7.3.4) and if disproved, include in FFF with descrp = delete." Note that the HSSD 2017 does not provide a search radius for disproval, and one was not indicated in the CSF for platforms.

Question:

1. Is there a defined search radius for features that do not have a position qualifier? In the 2016 Project Instructions there was the following text, "..and all other features without a position qualifier will have a search radius of 80 meters."

Thanks, Rod.

Rod Evans Ph.D | Leidos
Branch Manager (Marine Survey and Engineering Solutions Branch)
Survey & Marine Operations Business Area Manager
Maritime Solutions Division
phone: 401.848.4783
evansrh@leidos.com | leidos.com/natsec
"What would an ocean be without a monster lurking in the dark? It would be like sleep without dreams."
— Werner Herzog

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Wednesday, May 03, 2017 10:18 AM
To: Emily Clark - NOAA Federal
Cc: Lepore, Christine A.; Evans, Rod E.; Quintal, Rebecca T.
Subject: Re: EXTERNAL: Request for Task Order Quote, Sabine and Vicinity

Christine,

Here are the CSF and PRF files for OPR-K371-KR-17 Sabine and Vicinity.

Katy

Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
301-713-2702 ext 178
kathryn.pridgen@noaa.gov

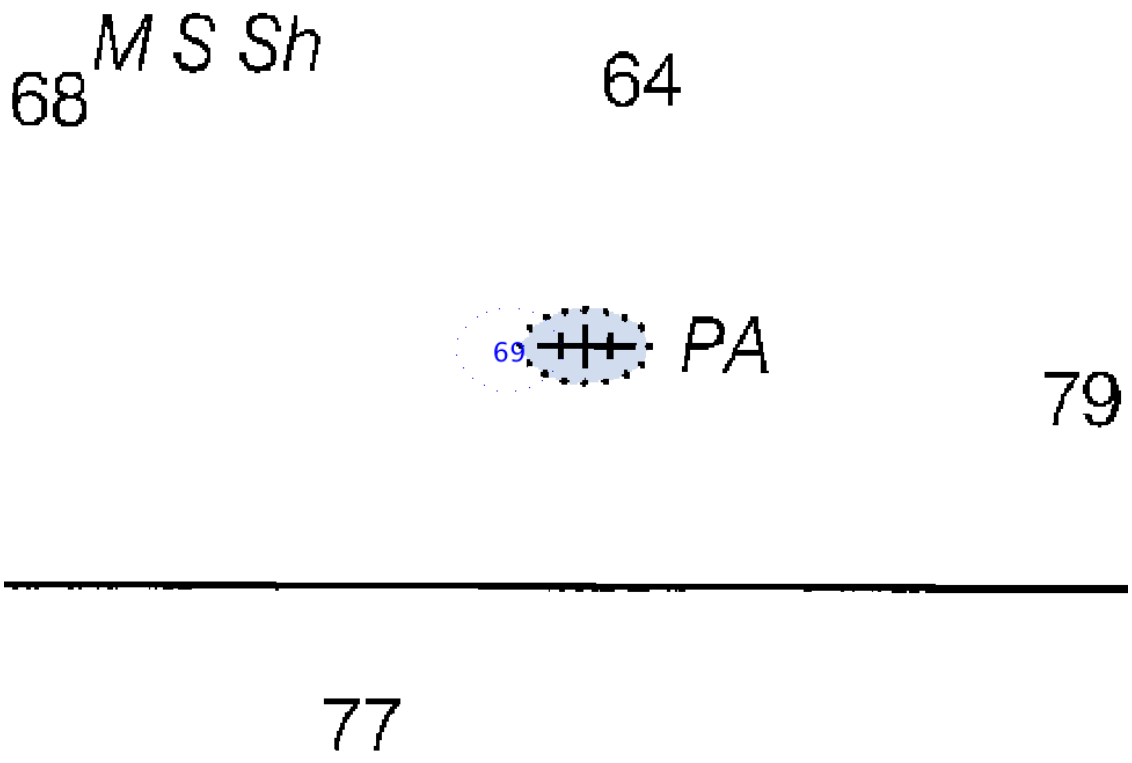
On Wed, May 3, 2017 at 9:36 AM, Emily Clark - NOAA Federal <emily.clark@noaa.gov> wrote:

Good Morning,

From: James J. Miller [mailto:james.j.miller@noaa.gov]
Sent: Thursday, October 12, 2017 10:40 AM
To: Corey Allen <corey.allen@noaa.gov>; Kathryn Pridgen (kathryn.pridgen@noaa.gov) <kathryn.pridgen@noaa.gov>; starla.robinson@noaa.gov
Cc: Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>; Donaldson, Paul L. [US-US] <PAUL.L.DONALDSON@leidos.com>; Bernier, Alex T. [US-US] <ALEX.T.BERNIER@leidos.com>; Nadeau, Richard C. [US-US] <RICHARD.C.NADEAU@leidos.com>; AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>; Castle Parker <castle.e.parker@noaa.gov>
Subject: EXTERNAL: Re: OPR-K371-KR-17 Danger to Navigation Report 01 for H13054

Corey, Kathryn, and Starla,

After discussion and review, AHB has decided to not submit H13054 DtoN #1 to NDB. The submission consists of a charted wreck that was located 590 meters west of its currently charted position. The surveyed least depth of the wreck is 21.078 meters (69 feet / 12 fathoms) and positioned between charted depths of 64, 68, 77, and 79 feet (Chart 11330):



AHB does not deem this feature a danger to navigation because it is already charted at approximately the correct position, it is deeper than 66 feet / 11 fathoms (2017 HSSD Section 1.6.1), and its least depth of 69 feet is consistent

with the range of charted depths. This feature will be fully addressed during HCell compilation once the survey is received.

AHB commends the field unit for prudently submitting this feature for review. The submission was complete, thorough, and included all necessary information.

Respectfully,
James Miller

James J. Miller
Physical Scientist
NOAA Office of Coast Survey
Atlantic Hydrographic Branch
439 W York St | Norfolk, VA | 23510
757-364-7465

On Wed, Oct 11, 2017 at 3:26 PM, Quintal, Rebecca T.
<REBECCA.T.QUINTAL@leidos.com> wrote:

Please find attached one Danger to Navigation Report:

- H13054 DTON #1

The files for the DTON submission are provided within a single zip folder containing:

- One (1) S-57 file (*.000)
- Image files that are referenced within the S-57 file (*.jpg)

Please feel free to contact us if there are any questions with the attached file.

Thank you,
-Rebecca

Rebecca T. Quintal | Leidos
Hydrographic Survey & Data Solutions Manager
Marine Survey & Engineering Solutions
office: 401.848.4607
mobile: 401.829.6242
rebecca.t.quintal@leidos.com

From: Quintal, Rebecca T. [US-US]
Sent: Friday, December 01, 2017 1:55 PM
To: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>; 'survey.outlines@noaa.gov' <survey.outlines@noaa.gov>; starla.robinson@noaa.gov
Cc: Rhodri E. Evans <rhodri.e.evans@leidos.com>; Paul Donaldson <PAUL.L.DONALDSON@leidos.com>; Bridget Bernier <bridget.w.bernier@leidos.com>; Bernier, Alex T. [US-US] <ALEX.T.BERNIER@leidos.com>
Subject: Survey Outlines for 2 Sheets on OPR-K371-KR-17 (H13054 and H13055)
Attachments: H13054_Survey_Outline.000, H13055_Survey_Outline.000

Katy,

Please find attached the Survey Outline files for H13054 (Sheet 1), H13055 (Sheet 2), from OPR-K371-KR-17, Sabine, LA, Task Order-0003. Note that survey is still ongoing on Sheets H13056 and H13057.

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 2017 HSSD (Section 8.1.2).

Please let me know if you have any questions.

Thank you,
-Rebecca

Rebecca T. Quintal | Leidos
Hydrographic Survey & Data Solutions Manager
Marine Survey & Engineering Solutions
office: 401.848.4607
mobile: 401.829.6242
rebecca.t.quintal@leidos.com

From: Bernier, Alex T. [US-US]
Sent: Monday, January 22, 2018 4:12 PM
To: kathryn.pridgen@noaa.gov; starla.robinson@noaa.gov
Cc: Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>; Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Donaldson, Paul L. [US-US] <PAUL.L.DONALDSON@leidos.com>
Subject: OPR-K371-KR-17 Non-DTON Seep and Pipeline Report, Exposed Pipelines 1 – 4 for H13054
Attachments: H13054_ExposedPipelines_ALL_Chart_11330.png; H13054_Exposed_Pipeline_01.zip; H13054_Exposed_Pipeline_02.zip; H13054_Exposed_Pipeline_03.zip; H13054_Exposed_Pipeline_04.zip;

While surveying in the Gulf of Mexico on Project Number OPR-K371-KR-17 Leidos discovered four individual sections of exposed pipeline within the area of Registry Number H13054. The features were found through analysis of the MBES and SSS data and determined to have a signature discernibly consistent with that of an exposed pipeline. All four features are also 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.

- H13054 Exposed Pipeline #1 was found at 29^0 03” 12.11’N, 093^0 23” 51.16’W, on Julian Day 265 (September 22, 2017) at 0843 UTC. This feature is an approximately 15 meter section of exposed pipeline found slightly curved in an northwest/southeast orientation and approximately 0.82m high in 20.60m of water (19.785m least depth). It is positioned approximately 120m west of a charted north/south pipeline.

- H13054 Exposed Pipeline #2 was found at 29^0 04” 04.48’N, 093^0 23” 52.71’W, on Julian Day 302 (29 October, 2017) at 2100 UTC. This feature is an approximately 10 meter section of exposed pipeline found curved in an east/west orientation and approximately 0.47m high in 20.76m of water (20.290m least depth). It is positioned approximately 55m east of a charted north/south pipeline.

- H13054 Exposed Pipeline #3 was found at 29^0 02” 11.65’N, 093^0 29” 28.61’W, on Julian Day 303 (30 October, 2017) at 1105 UTC. This feature is an approximately 12 meter section of exposed pipeline found in a northwest/southeast orientation and approximately 0.19m high in 21.87m of water (21.678m least depth). It is positioned approximately 35m south of a charted northeast/southwest pipeline.

- H13054 Exposed Pipeline #4 was found at 29^0 04” 33.83’N, 093^0 24” 00.17’W, on Julian Day 302 (29 October, 2017) at 2054 UTC. This feature is an approximately 12 meter section of exposed pipeline found in a northwest/southeast orientation and approximately 0.11m high in 20.90m of water

(20.852m least depth). It is positioned directly over a charted northwest/southeast pipeline, and at the junction with a charted east/west pipeline.

Please feel free to contact us 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
office: 401.848.4726
mobile: 508.494.3485
alex.t.bernier@leidos.com | leidos.com

From: Bernier, Alex T. [US-US]
Sent: Wednesday, February 07, 2018 9:43 AM
To: ocs.ecc@noaa.gov
Cc: kathryn.pridgen@noaa.gov; starla.robinson@noaa.gov; Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>; Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Donaldson, Paul L. [US-US] <PAUL.L.DONALDSON@leidos.com>; Bernier, Bridget W. [US-US] <BRIDGET.W.BERNIER@leidos.com>
Subject: OPR-K371-KR-17 Marine Species Awareness Training
Attachments: OPR-K371-KR-17_Marine_Species_Awareness_Training_Video_Log.pdf

Per section 1.5 of the April 2017 NOS Hydrographic Surveys Specifications and Deliverables, please find attached the Marine Species Awareness Training log. The attached log captures a list of trained marine mammal observers and the date each observer viewed the training video as required under NOAA hydrographic survey contract EA-133C-14-CQ-0033, project number OPR-K371-KR-17, Task Order 0003 (Sabine and Vicinity).

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

Alex Bernier | Leidos
Lead Hydrographer | Marine Scientist
Marine Survey & Engineering Solutions
office: 401.848.4726
mobile: 508.494.3485
alex.t.bernier@leidos.com | leidos.com

From: Bernier, Alex T. [US-US]
Sent: Friday, February 09, 2018 4:18 PM
To: OCS.NDB@NOAA.GOV; Coast.Pilot@NOAA.GOV
Cc: kathryn.pridgen@noaa.gov; starla.robinson@noaa.gov; Evans, Rod E. [US-US] <RHODRI.E.EVANS@leidos.com>; Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>; Donaldson, Paul L. [US-US] <PAUL.L.DONALDSON@leidos.com>; Bernier, Bridget W. [US-US] <BRIDGET.W.BERNIER@leidos.com>
Subject: OPR-K371-KR-17 Coast Pilot Review Report
Attachments: OPR-K371-KR-17_Coast Pilot Review Report.pdf

Please find attached the Coast Pilot Review Report for Contract: EA-133C-14-CQ-0033, Project Number OPR-K371-KR-17, Task Order 0003 (Sabine and Vicinity). The one attached .pdf file submitted addresses the Coast Pilot Field Report delivered to Leidos for OPR-K371-KR-17, 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.

Alex Bernier | Leidos
Lead Hydrographer | Marine Scientist
Marine Survey & Engineering Solutions
office: 401.848.4726
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alex.t.bernier@leidos.com | leidos.com

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Tuesday, February 13, 2018 10:13 AM
To: Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>
Subject: EXTERNAL: Re: Feature Coverage Grid Resolution Question

Rebecca,
For this surface please submit a 2m grid as the 2017 HSSD states that a complete coverage 2m grid covers depths of 18-40m. If there are any features shoaler than 18m (17.9m), then please submit a 1m grid.

Complete coverage in 2017 HSSD:

Depth Range (m)	Resolution (m)
0-20	1
18-40	2
36-80	4
72-160	8
144-320	16

I hope that helps!

Thanks
Katy

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

On Mon, Feb 5, 2018 at 11:53 PM, Quintal, Rebecca T.
<REBECCA.T.QUINTAL@leidos.com> wrote:

Hello Katy,

As we are finalizing our Sheet 1 (H13054) deliverables, we have identified an additional question regarding coverage grid resolution.

Leidos surveyed OPR-K371-KR-17 to *Complete Coverage, Option B: 100% side scan sonar coverage with concurrent multibeam* (HSSD 5.2.2.3*)* specifications. Within the *Option B* section is the statement that "*Multibeam sonar data shall follow complete coverage multibeam coverage specifications."*

Within the HSSD 5.2.2.3 *Option A: Complete Coverage Multibeam* section, grid resolution thresholds are defined. As the final min/max CUBE depths for H13054 were 18.753m/24.890m respectfully, the final BAG surface for H13054 was binned at a 2m

node resolution to meet the Option A grid-resolution threshold of "*18m-40m Depth Range = 2m Resolution*".

Also within the HSSD 5.2.2.3 *Option A: Complete Coverage Multibeam* section, is the statement that "*All significant shoals or features found in waters less than 20 m shall be developed to complete coverage standards (i.e. 1 m resolution surface in depths 0-20 m).*" Within the data of H13054, Leidos has identified two significant features with a least depth of less than 20m, both of which were found in surrounding water depths of 20m or greater. The following information details these significant features:

1. H13054 Feature #1, Least depth = 19.997m, Surrounding Water Depth = approximately 21.050m

2. H13054 Feature #4, Least depth = 18.753m, Surrounding Water Depth = approximately 20.900m

Would NOAA like Leidos to provide separate 1m node resolution BAG's for the examples listed above (and any other cases that may exist on the additional sheets of OPR-K371-KR-17) where the feature was found in surrounding water depths of 20m or greater but has a least depth point of less than 20m?

Thank you,
-Rebecca

Rebecca T. Quintal | Leidos
Hydrographic Survey & Data Solutions Manager
Marine Survey & Engineering Solutions
office: 401.848.4607
mobile: 401.829.6242
rebecca.t.quintal@leidos.com

From: Kathryn Pridgen - NOAA Federal [mailto:kathryn.pridgen@noaa.gov]
Sent: Tuesday, February 13, 2018 10:17 AM
To: Quintal, Rebecca T. [US-US] <REBECCA.T.QUINTAL@leidos.com>
Subject: EXTERNAL: Re: Horizontal and Vertical Control Report

Rebecca,
Yes this procedure will work just fine.

Katy

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

On Wed, Feb 7, 2018 at 1:33 PM, Quintal, Rebecca T. <REBECCA.T.QUINTAL@leidos.com> wrote:

Hello Katy,

Based on previous feedback, Leidos has not submitted a Horizontal and Vertical Control Report for surveys that did not require vertical control stations to be installed or recovered and/or horizontal control station installed. Instead we have included a Readme.txt file in the Horizontal_&_Vertical_Control_Report folder stating along the lines of: "No vertical or horizontal controls were established, recovered, or occupied during the survey. Vertical and horizontal control specifics are discussed in each sheet's DR."

For OPR-K371-KR-17 no vertical or horizontal control stations were installed, recovered or occupied. However, we wanted to confirm with you that this is still acceptable for OPR-K371-KR-17 to not deliver a HVCR.

Let us know if you would like to discuss.

Thank you,
-Rebecca

Rebecca T. Quintal | Leidos
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APPROVAL PAGE

H13054

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
- Geospatial PDF of survey products
- Collection of backscatter mosaics

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

Approved: MCGOVERN.MEGHAN.ELIZABETH.1284020495 Digitally signed by MCGOVERN.MEGHAN.ELIZABETH.1284020495 Date: 2020.06.15 09:47:25 -04'00'

Commander Meghan McGovern, NOAA
Chief, Atlantic Hydrographic Branch