

H13215

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H13215

LOCALITY

State(s): Texas

General Locality: Port Arthur, TX

Sub-locality: 9 NM South of Star Lake

2019

CHIEF OF PARTY
Alex T. Bernier

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13215

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): **Texas**

General Locality: **Port Arthur, TX**

Sub-Locality: **9 NM South of Star Lake**

Scale: **40000**

Dates of Survey: **05/05/2019 to 09/28/2019**

Instructions Dated: **02/21/2019**

Project Number: **OPR-K371-KR-19**

Field Unit: **SAIC**

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/TO-0005. 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. 20-TR-001. All times were recorded in UTC. Data were collected in North American Datum of 1983 (NAD83) 2011 realization 2010 (NAD83(2011)2010.0), UTM Zone 15N.

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 H13215

Project: OPR-K371-KR-19

Locality: Port Arthur, TX

Sublocality: 9 NM South of Star Lake

Scale: 1:40000

May 2019 - September 2019

SAIC

Chief of Party: Alex T. Bernier

A. Area Surveyed

The area surveyed was a section of the Gulf of Mexico south of Star Lake, Texas (Figure 1).

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 34' 55.63" N	29° 25' 3.35" N
94° 11' 46.76" W	94° 0' 28.58" W

Table 1: Survey Limits

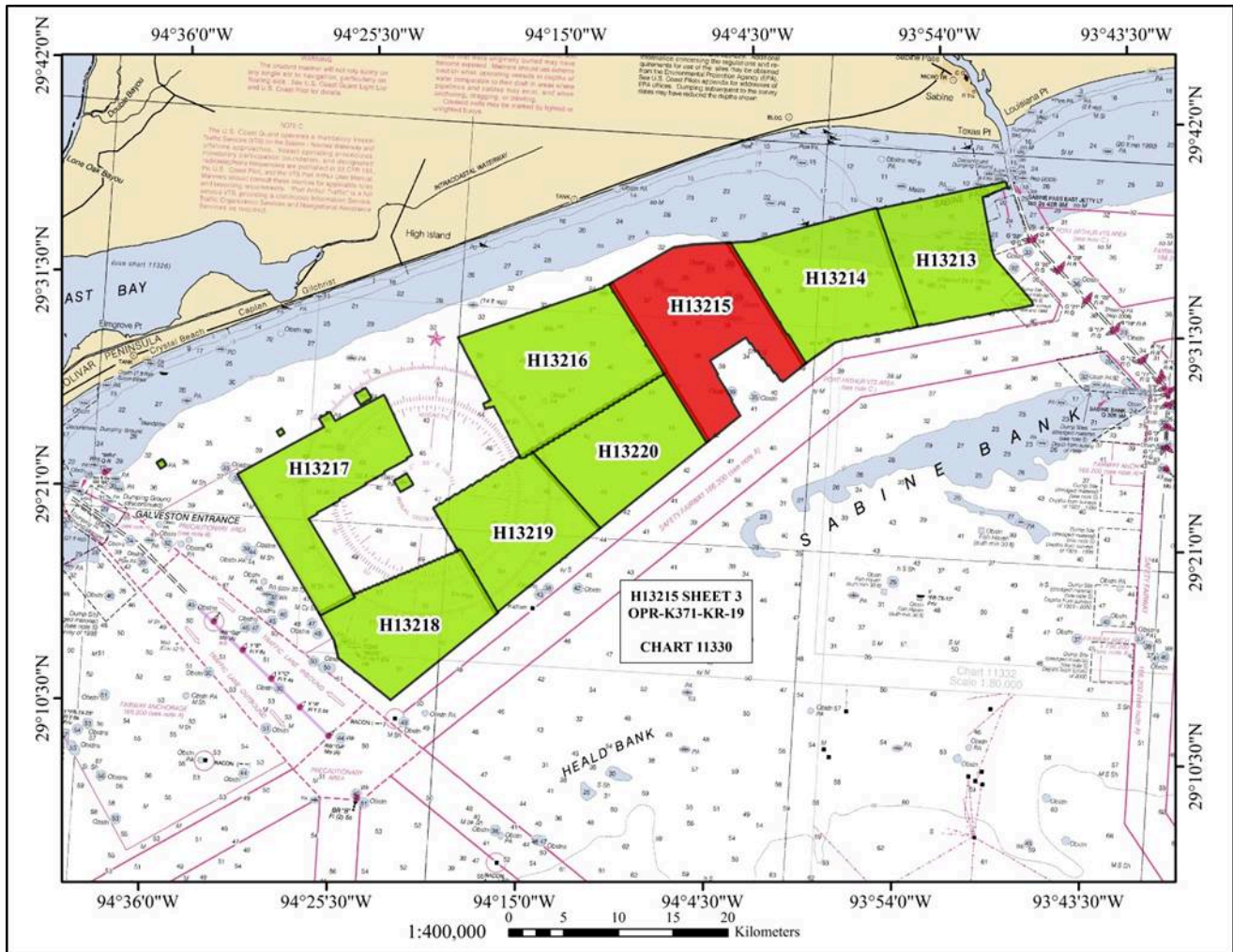


Figure 1: H13215 Survey Bounds

Survey limits were acquired in accordance with the requirements in the Project Instructions and the Hydrographic Surveys Specifications and Deliverables (HSSD) March 2019.

A.2 Survey Purpose

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. Port Arthur, located on the Gulf of Mexico Intra-coastal Waterway in Texas, is home to a large refinery network (1). The Port of Port Arthur hosts the Motiva refinery, the largest oil refinery in the United States (2). Traffic flow through the Port is heavy and in 2010, an oil spill occurred from an oil tanker and barge collision spilling 450,000 gallons of oil into the Sabine/Neche waterway (3). This busy seaport has also been hit by several hurricanes. On August 29, 2017, Hurricane Harvey hit Port Arthur bringing upwards of 40 inches of rainfall and widespread flooding to the area (4). This Hurricane had the potential to change the seafloor of the Port which sees over 35 million tons of vessel traffic (5).

To continue to promote safe passage of traffic through the Port, this project will survey 286 square nautical miles (SNM) of seafloor in Port Arthur. The survey will address concerns of migrating shoals and exposed hazards by updating bathymetry and positions of hazards and reducing the risk to navigation. Survey data from this project is intended to supersede all prior survey data in the common area and will provide contemporary data to update National Ocean Service (NOS) nautical charting products.

Citations

1. <https://www.portarthurtx.gov/236/About-Us>
2. "Tropical Storm Harvey Closes America's Biggest Refinery". *Maritime Executive*. 30 August 2017. Retrieved 31 August 2017.
3. Gonzalez, Angel (24 January 2010). "Oil Spill Hits Texas Port". *The Wall Street Journal*. Retrieved 24 January 2010.
4. Harrington, Rebecca. "Flash floods send Texans into 'survival mode' as Harvey hits Port Arthur with 26 inches of rain in one day". *BusinessInsider.com*. Business Insider. Retrieved 30 August 2017.
5. The U.S. Waterway System, 2016 Transportation Facts & Information. Navigation and Civil Works Decision Support Center, U.S. Army Corps of Engineers.

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.

H13215 was surveyed in accordance with the following documents:

1. Project Instructions, OPR-K371-KR-19, dated 21 February 2019
2. Hydrographic Surveys Specifications and Deliverables (HSSD), March 2019
3. Waiver_2019 HSSD_signed.pdf, dated 05 November 2019
4. OPR-K371-KR-19 Statement of Work, dated 21 February 2019

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). Complete 6443 LNMs. Transit mileage and data which do not meet HSSD specifications shall not count towards the completion of the LNM. Notify the Project Manager/COR upon nearing completion. The final survey area shall be squared off and ensure the full investigation of any features within the surveyed extent. Project Manager/COR may adjust survey prioritization based on observed shoaling. Additional or fewer sheets may be assigned based on survey area achieved.

Table 2: Survey Coverage

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 through Figure 4).

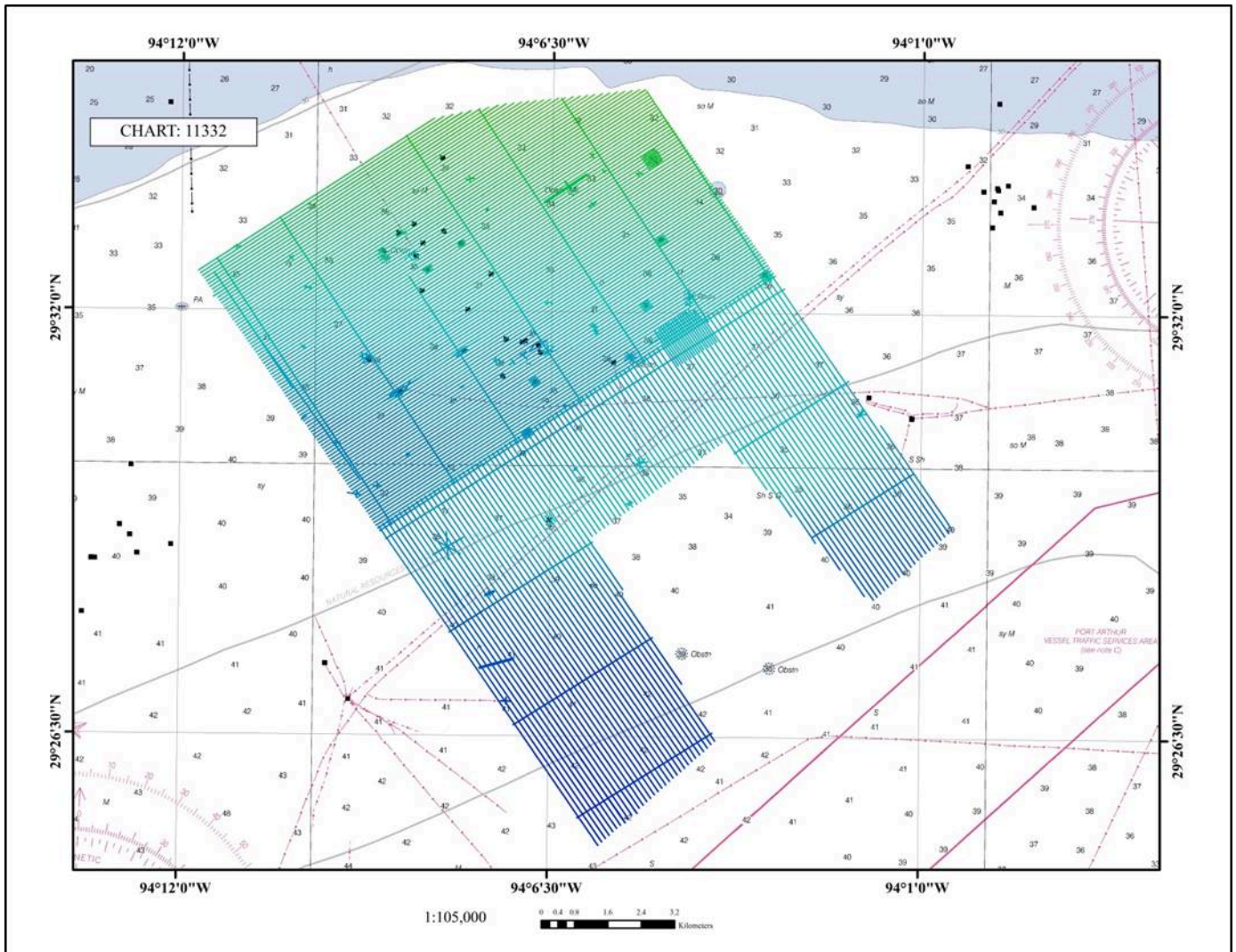


Figure 2: Final Bathymetry Coverage for H13215

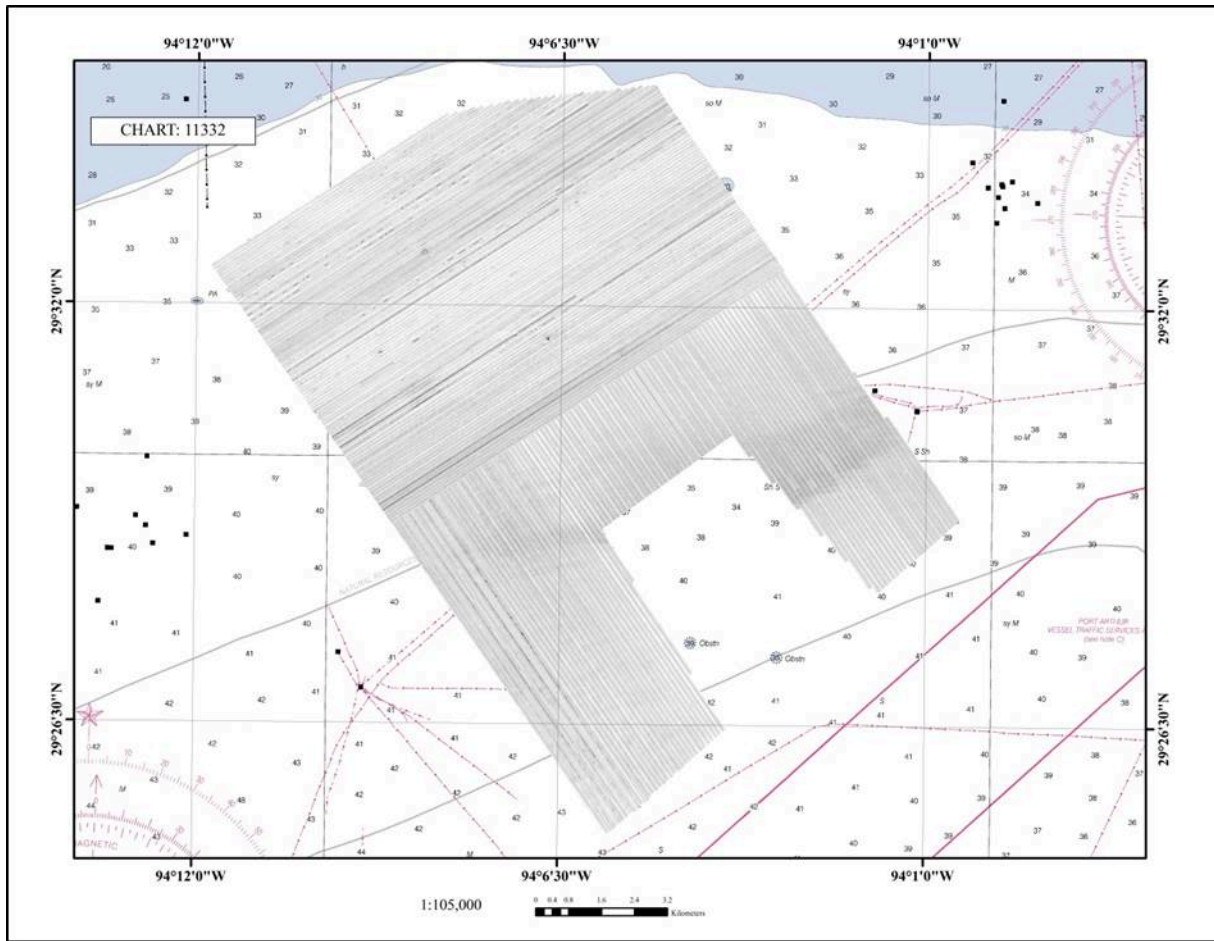


Figure 3: Final Side Scan Coverage for H13215 (100% coverage)

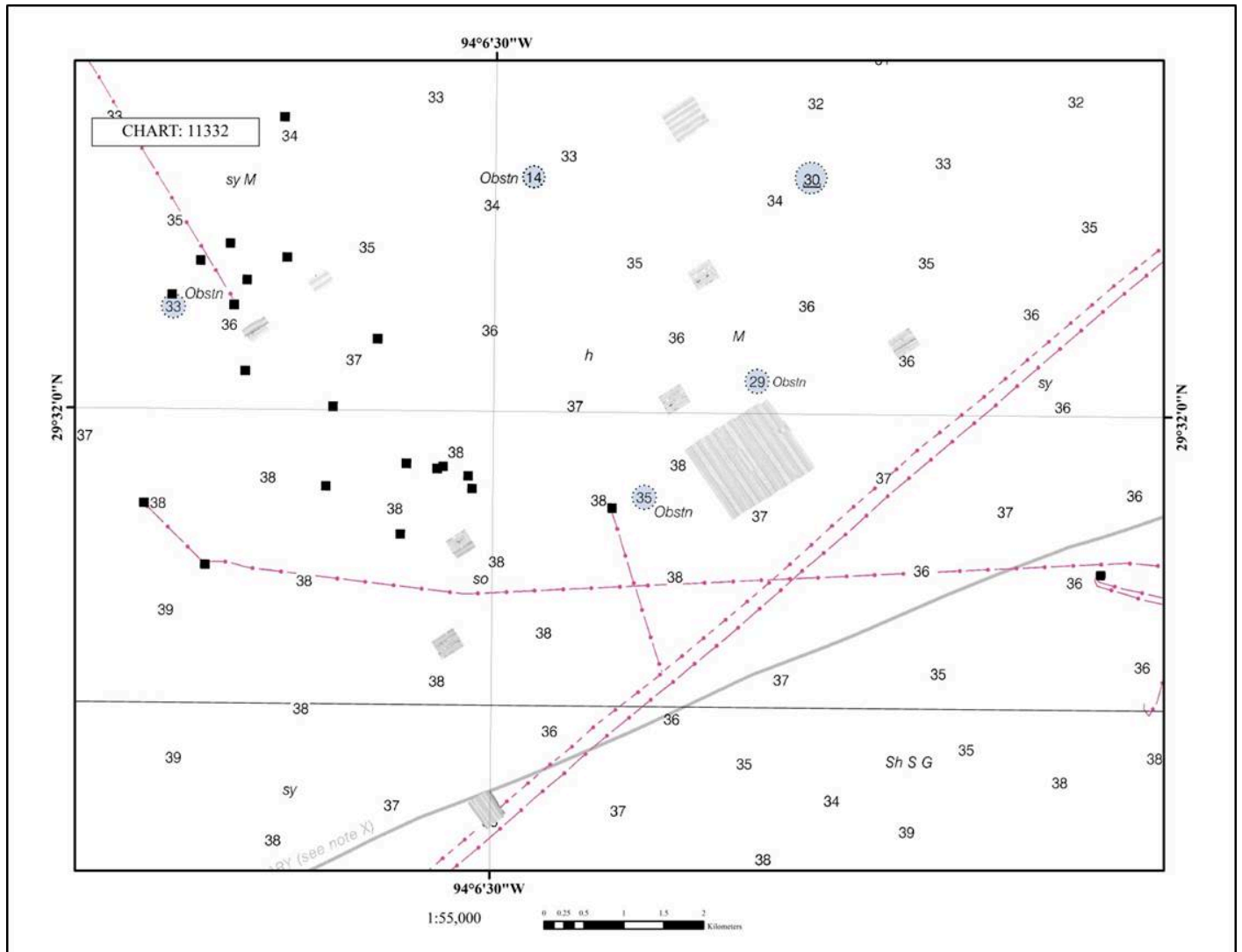


Figure 4: Final Side Scan Coverage for H13215 (disproval coverage)

A.6 Survey Statistics

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

	HULL ID	<i>M/V Atlantic Surveyor</i>	<i>Total</i>
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	972.20	972.20
	SBES/MBES Crosslines	46.37	46.37
	Lidar Crosslines	0	0
Number of Bottom Samples			6
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			45

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
05/05/2019	125

Survey Dates	Day of the Year
05/14/2019	134
05/15/2019	135
05/16/2019	136
05/17/2019	137
05/25/2019	145
05/26/2019	146
05/27/2019	147
05/30/2019	150
05/31/2019	151
06/01/2019	152
06/02/2019	153
06/03/2019	154
06/04/2019	155
08/03/2019	215
09/26/2019	269
09/27/2019	270
09/28/2019	271

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 7 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-19, delivered previously with the Descriptive Report for H13213. 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	<i>M/V Atlantic Surveyor</i>
LOA	110 feet
Draft	9 feet

Table 5: Vessels Used



Figure 5: M/V Atlantic Surveyor

The M/V Atlantic Surveyor (Figure 5) was used to collect multibeam echo sounder (MBES) (RESON SeaBat T50), 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 the DAPR.

B.1.2 Equipment

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

Manufacturer	Model	Type
Teledyne RESON	SeaBat T50-R	MBES
Klein Marine Systems	System 3000	SSS
Applanix	POS MV 320 v5	Positioning and Attitude System
AML Oceanographic	MVP30	Sound Speed System
AML Oceanographic	MicroX SV	Sound Speed System

Table 6: Major Systems Used

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

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 4.77% 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 6 summarizes the crossline 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
<i>M/V Atlantic Surveyor</i> Multibeam one-meter Crossline (Class 1) to one-meter Mainscheme	8.955 – 13.177	0.513 – 0.529	100.00

Figure 6: Summary of Crossing Analysis

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.00 meters	0.122 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
M/V Atlantic Surveyor	N/A meters/second	1.0 meters/second	1.0 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

For specific details on the use and application of the SABER Total Propagated Uncertainty (TPU) model, refer to 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 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 H13215 one-meter PFM CUBE surface contained final vertical uncertainties that ranged from 0.260 meters to 0.520 meters. The IHO Order 1a maximum allowable vertical uncertainty was calculated to range between 0.504 to 0.529 meters, based on the minimum CUBE depth (5.079 meters) and maximum CUBE depth (13.369 meters). Results from the SABER Check PFM Uncertainty function identified that there were no nodes in the final H13215 one-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 H13215 one-meter PFM grid, and the results showed that in the final one-meter PFM grid, 100.00% of all nodes had final uncertainties less than or equal to 0.520 meters.

B.2.3 Junctions

Per the Project Instructions, analyses of the H13215 junctions with adjacent surveys were performed. Junction analysis was conducted between H13215 and the surveys listed in Table 7. Figure 7 shows the general locality of H13215 as it relates to the sheets to which junctions were performed. Comparison results between H13215 and H13216 were reported in the H13216 Descriptive Report. Comparisons were not conducted to H13220, as processing efforts for that sheet were still on-going. Refer to Separates II for details about how the junction analyses were performed and a complete discussion of each analysis and tabular results.

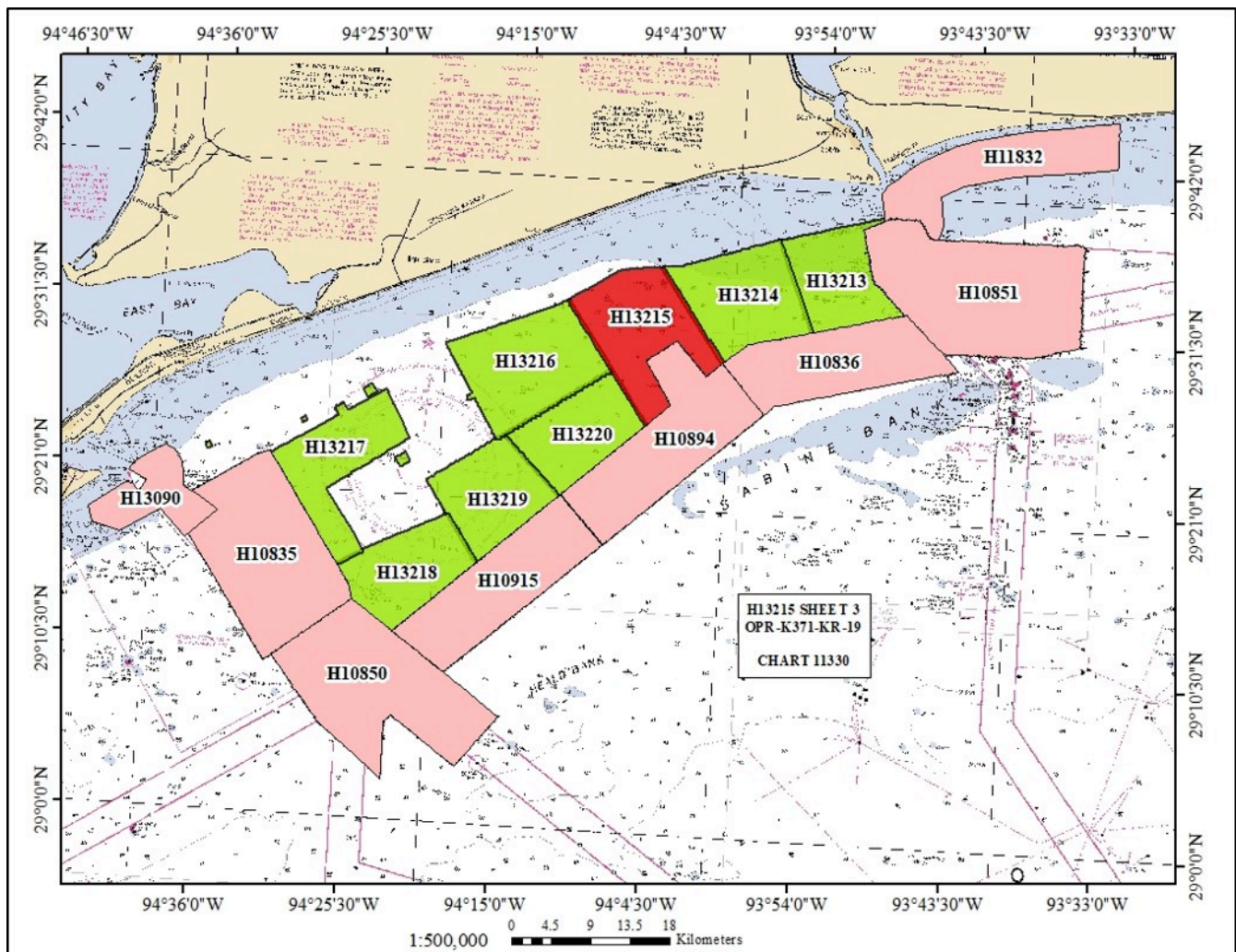


Figure 7: General Locality of H13215 with Junctioning Surveys

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13214	1:40000	2019	Leidos	E
H10894	1:20000	1999	Fugro Pelagos, Inc.	S
H10836	1:20000	1998	Fugro Pelagos, Inc.	SE

Table 9: Junctioning Surveys

H13214

H13214 junctions with H13215 to the east; 100% of the comparisons were within ± 0.197 meters, completely within the calculated maximum allowable TVU of 0.526 meters.

H10894

H10894 junctions with H13215 to the south; 99.99% of the comparisons agreed within ± 0.529 meters, the calculated maximum allowable TVU.

H10836

H10836 junctions with H13215 to the southeast; 100% of the comparisons agreed within ± 0.373 meters completely within the calculated maximum allowable TVU of 0.526 meters.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the DAPR and quality control checks conducted during H13215 are reported in Separates I.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: On the M/V Atlantic Surveyor, the MVP30 was the primary system used to collect sound speed profile (SSP) data, refer to the DAPR for additional details. 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. Additionally, there were significant periods of time when the sound speed values exceeded the two meters/second threshold due to the factors discussed in Section B.2.6. During these times several profiles were acquired and reapplied, often the MVP towfish would be continuously redeployed as soon as it had finished winching in from the previous cast, in an effort to reduce these effects. 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 always 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 mitigate an impact of the sound speed data. 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 500 meters of the bounds of the survey area as specified in Section 5.2.3.3 of the HSSD.

Confidence checks of the sound speed profile casts were conducted by comparing at least two consecutive casts taken with different SSP sensors. Five sound speed confidence checks were conducted during H13215 and the results can be found in Separates II within the "Comparison Cast Log" section.

All individual SSP files are delivered with the H13215 data and are broken out into sub-folders, which correspond to the purpose of each cast. Also, all individual SSP files for H13215 have been concatenated into four separate files based on the purpose of the cast, provided in CARIS format files (.svp), and delivered under (H13215/Processed/SVP/CARIS_SSP) on the delivery drive. In addition, sound speed data for the entire OPR-K371-KR-19 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 50-meter or 75-meter range scales. Mainscheme line spacing was 80 meters and 120 meters respectively, 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 and assigned 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 developed as specified in the Project Reference File (PRF), Final_OPR-K371-KR-19_PRF.000 provided on 18 March 2019 or following best practices if not specified. The radius is documented within the H13215 S-57 FFF. For all charted objects within the assigned H13215 Statement of Work (SOW), each object's disproval data covered an area of at least the assigned disproval search radius.

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. A final review of the CUBE Depth surface of the H13215 one-meter PFM showed that there were no holidays as defined for complete coverage surveys in Section 5.2.2.3 of the HSSD.

The final H13215 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 H13215 Hyp. # Soundings surface of the final H13215 one-meter PFM, revealed that 99.57% 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 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 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 single georeferenced raster files for each 100 percent coverage, as floating point GeoTIFF format as specified in Sections 8.2.1 and 8.3.3 in the HSSD.

Multibeam Echo Sounder Seafloor Backscatter: In accordance with the HSSD Section 6.2, Leidos collected MBES backscatter with all GSF data acquired. The MBES settings used were checked to ensure acceptable quality standards were met and to mitigate 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 HSSD Section 6.2.1, as the Project Instructions did not state to evaluate the backscatter data; 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	5.4.0.22.3

Table 10: Primary bathymetric data processing software

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

Manufacturer	Name	Version
Leidos	SABER	5.4.0.22.3

Table 11: Primary imagery 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
H13215_MB_1m_MLLW_Final-1_of_3	BAG	1 meters	12.375 meters - 13.369 meters	N/A	Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam)
H13215_MB_1m_MLLW_Final-2_of_3	BAG	1 meters	10.189 meters - 12.764 meters	N/A	Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam)
H13215_MB_1m_MLLW_Final-3_of_3	BAG	1 meters	5.079 meters - 12.983 meters	N/A	Complete Coverage, Option B (100% side scan sonar coverage with concurrent multibeam)

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13215_SSSAB_1m_100kHz_1of2	SSS Mosaic (.tif)	1 meters	0.00 meters - 0.00 meters	N/A	100% SSS
H13215_SSSAB_1m_100kHz_2of2	SSS Mosaic (.tif)	1 meters	0.00 meters - 0.00 meters	N/A	Second 100% SSS For Object Disproval

Table 12: 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. Leidos generated CUBE PFM grids for H13215 at one-meter resolution.

The CUBE Depth surface of the final H13215 one-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 H13215 one-meter PFM was from 5.079 meters (16.663 feet; 0.260 meters Total Vertical Uncertainty [TVU]) to 13.369 meters (43.861 feet; 0.260 meters TVU).

The final gridded bathymetry data are delivered as a Bathymetric Attributed Grid (BAG). The BAG files were exported from the CUBE PFM grid as detailed in the DAPR.

For the purposes of grid management, the Branch has created a single H13215_MB_1m_MLLW_1of1.bag that replaces the H13215_MB_1m_MLLW_Final-X_of_3 multibeam bathymetry grids submitted by the field unit. The H13215_MB_1m_MLLW_1of1.bag is the final deliverable to be used in charting products and for archive.

C. Vertical and Horizontal Control

Additional information discussing the vertical and horizontal control for this survey can be found in the DAPR.

C.1 Vertical Control

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

ERS Datum Transformation

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

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR-K371-KR-19_NAD83_VDatum_MLLW.cov

Table 13: ERS method and SEP file

Refer to the DAPR for details regarding the application of VDatum to the MBES data files. 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.

C.2 Horizontal Control

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

The projection used for this project is Universal Transverse Mercator (UTM) Zone 15.

PPP

The vessel kinematic data (POS/MV files) were post-processed in Applanix POSPac software using the Applanix PP-RTX solution 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 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 13/19 (27 March 2019) until week 52/19 (23 December 2019).

H13215 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 new features, and updates to charted features, are documented in the H13215 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 ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4TX71M	1:80000	37	11/08/2019	11/18/2019	NO

Table 14: Largest Scale ENC's

US4TX71M

ENC US4TX71M covers H13215 survey area in its entirety.

CUBE depths within the northeastern corner of the survey area H13215 were generally in agreement or were slightly shoaler than the charted depths (Figure 8) while the depths in the southern extents of the survey area were generally deeper (Figure 9). There were no depth contours from ENC US4TX71M within H13215 survey area.

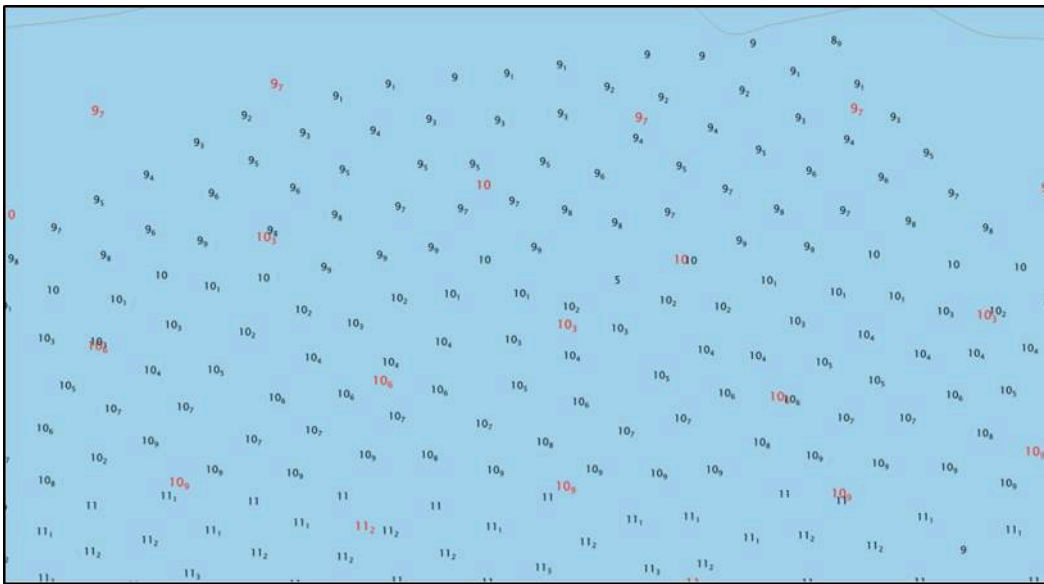


Figure 8: ENC US4TX71M Charted Soundings (red) with H13215 CUBE Depth Selected Soundings (black) Within the Northeastern Corner of the Survey Area

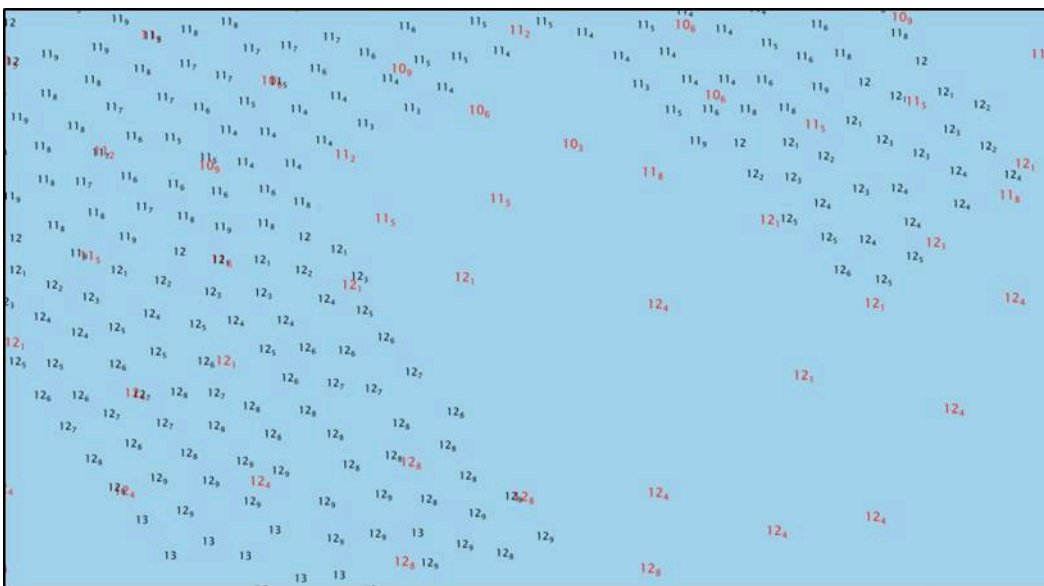


Figure 9: ENC US4TX71M Charted Soundings (red) with H13215 CUBE Depth Selected Soundings (black) in the Southern Extents of the Survey Area

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

There were three charted features which were assigned in the final CSF, Final_OPR-K371-KR-19_CSF.000, within the SOW of H13215. See the H13215 S-57 FFF for all the details and recommendations regarding these features.

There were two assigned charted obstructions with assigned disproval radii of at least 160 meters and one assigned wreck with an assigned disproval radius of at least 500 meters. The obstruction charted as always under water/submerged with a value of sounding of 4.2 meters was found within the disproval radius. The remaining assigned obstruction disproval radius was covered with 200% SSS and resulting MBES data. No objects were identified within the assigned disproval radius. The assigned wreck disproval radius was covered with 200% SSS and resulting MBES data. No wreck was identified within the assigned radius. There was a wreck found approximately 900 meters to the north of the charted wreck, outside the disproval search radius. The observed wreck feature was developed and a DTON in conjunction with an Anti-DTON (DTON 01) were submitted. As a result, an obstruction with a least depth of 8.8 meters was charted and the assigned charted wreck was removed. See section D.1.5 and H13215 S-57 FFF for further details and recommendations.

Two additional obstructions are charted within H13215 survey area, identified as exposed pipelines, with least depths of 10.8 meters and 11.2 meters. These two charted features were not assigned as they resulted from H13215 DTON 02 and 03. See section D.1.5 and H13215 S-57 FFF for further details and recommendations.

D.1.4 Uncharted Features

See the H13215 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 this survey other than those discussed in Section D.1.4.

Leidos submitted four DTONs for H13215. Each DTON was submitted in S-57 format to the Atlantic Hydrographic Branch (AHB).

1. DTON 01 was submitted on 21 May 2019 and consisted of a DTON for an uncharted wreck and an Anti-DTON for a charted dangerous wreck which was disproven. This DTON was submitted to Nautical Data Brach (NDB) and Marine Chart Division (MCD) on 22 May 2019. Per Section 1.6.1 of the 2019 HSSD, the DTON submission package for this uncharted wreck was submitted with the DTON attributed as an obstruction to ensure that a potentially sensitive feature was not added to the chart without undergoing review by the State Historic Preservation Officer.

2. DTON 02 and 03 were submitted as a single submission on 17 June 2019 and consisted of two sections of uncharted exposed pipelines. This was submitted to NDB and MCD on 20 June 2019 for both uncharted exposed sections of pipeline.
3. DTON 04 was submitted on 20 December 2019 for an obstruction. This DTON was submitted to NDB and MCD on 02 January 2020.

A copy of the email correspondence for Leidos' submissions of H13215 DTON Reports, as well as the DTON recommendation file and verification email from NDB, are included within Appendix II of this Descriptive Report. Figure 10 details the submitted DTONs and the associated Feature number and object class in the S-57 FFF.

One additional exposed pipeline was observed within the H13215 survey. This exposed pipeline feature was located within the overlap with the previously delivered H13214 survey. The feature was also developed during H13214 and was submitted as DTON 03 for H13214. The shoaler depth of the exposed pipeline object was observed during H13215 and is captured as Feature 27 in the H13215 S-57 FFF.

DTON Report Name	Date Submitted to AHB	AHB Submitted to NDB and MCD	NDB Registration	Feature Number(s)	S-57 Object Class in the S-57 FFF
H13215_DT0N01.000	2019-05-21	2019-05-22	DD-30897	01	WRECK
H13215_DT0N02_03.000	2019-06-17	2019-06-20	DD-31066	02 and 03	PIPSOL
H13215_DT0N04.000	2019-12-20	2020-01-02	DD-31800	05	OBSTRN

Figure 10: 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 H13215 at six separate locations. Bottom characteristics were acquired at the four locations assigned in the PRF by NOAA. Leidos did not modify the bottom sample locations from the location proposed by NOAA in the PRF. In addition to the assigned bottom sample locations, Leidos acquired two additional bottom samples within the H13215 survey area. These additional bottom samples were acquired at the location of charted hard bottom, as the review of the H13215 SSS imagery and MBES data indicated different bottom characteristics than the currently charted hard bottom. Bottom characteristics collected during H13215 are included in the H13215 S-57 FFF, named H13215_FFF.000, within the Seabed Area (SBDARE) object, and are classified according to the requirements set forth in the HSSD. In addition, images of the sediment obtained for each bottom sample are referenced in the H13215_FFF.000 and are included on the delivery drive under the folder H13215/Processed/Multimedia.

D.2 Additional Results

D.2.1 Shoreline

All features in the CSF within the assigned Survey Limits of H13215 were resolved. There were no assigned features inshore of the NALL.

D.2.2 Aids to Navigation

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

D.2.3 Overhead Features

There were no overhead features within this survey area.

D.2.4 Submarine Features

Refer to Section D.1.5, as H3216 DTON 02 and 03 contained sections of exposed uncharted pipelines. These pipelines are included in the S-57 FFF.

One seep was found within the bounds of H13215. In accordance with HSSD Section 1.7, the seep found within H13215 was submitted as a Seep Report. The email correspondence for Leidos' submission of the H13215 Seep Report is included within Appendix II of this Descriptive Report.

The seep identified within the MBES data of H13215 was identified within the MBES data to have a form and morphology typical of ascending gas or bubble plumes. The MBES data associated with the seep have been flagged as invalid and therefore were not used in the CUBE depth calculations. The identified seep was located approximately at 29° 26' 57.01"N 094° 07' 07.81"W and was found on the end of a charted pipeline (ENC US4TX71M, RNC 11332), however the H13215 MBES and SSS data did not indicate the presence of a pipeline in the area. Review of the CSF, Final_OPR-K371-KR-19_CSF.000, showed that there were six For Info Only wellhead obstructions (sourced from BOEM) located in the approximate area of this charted pipeline end and observed seep. Analysis of the H13215 MBES and SSS data showed that there were no wellheads at this location or in the immediately surrounding area, however there were two small objects found which had no significant size or height as compared to the surrounding depth areas. The two observed non-significant objects are preserved as SSS contacts only and details of these contacts, as well as those for the observed seep, are included in the S-57 SSCon and Separates I, Side Scan Review Log.

D.2.5 Platforms

There were 28 assigned offshore platform objects in the CSF, Final_OPR-K371-KR-19_CSF.000, which fell within the SOW for H13215. All of the assigned platforms were charted on ENC US4TX71M.

Investigation requirements for platforms within the CSF, Final_OPR-K371-KR-19_CSF.000, stated to “Visually confirm feature object existence. If feature exists, include in FFF with descrp=retain. If feature is not visible, conduct a feature disproval (Section 7.3.4).”

Of the 28 charted platforms assigned within the survey area for H13215, 20 platforms were visible above the waterline. The remaining eight assigned charted platforms were not found during survey operations therefore disproval surveys were conducted. The disproval survey was conducted by collecting 200% SSS and resulting MBES over an area centered at the CSF platform position with a radius of at least 80 meters. Within the disproval radii there was no evidence of a platform in the SSS or MBES data.

For platforms visible above the waterline, the surveyed position was derived from either the SSS or MBES data. Regardless of the source of the position, there were attribution revisions observed from survey data to the data from the CSF. In conjunction with the CSF investigation requirements Leidos also followed direction from HSSD Section 7.5.2:

- “Update = Modification to attribution, geometry, and/or feature object class”
- “1. Charted feature is found in new position via multibeam... regardless of proximity to charted feature”

When the final position was derived from MBES data, the data from H13215 was input into the S-57 FFF with a descrp of New and the corresponding platform from the CSF had a descrp of Delete. When the final position was derived from SSS data only, the positions within the S-57 FFF were retained from the position provided in the CSF. For these platforms, the descrp were set to Update; as there were attribution modifications observed during H13215. The attributes modified are documented within the S-57 FFF.

Figure 11 details the position provided from the CSF as well as each position, when present, from the H13215 data. As described above, the position within the S-57 FFF only differed from the CSF in five instances, listed in the Figure 11 with descrp Delete/New. The descrp Update only refers to attributes being modified within the S-57 FFF.

See the S-57 FFF, named H13215_FFF.000, Offshore Platform (OFSPLF) objects, for details and charting recommendations.

Position From OPR-K371-KR-19 CSF.000		Position Derived From Survey		Feature Number	S-57 FFF descrip value
Latitude	Longitude	Latitude	Longitude		
29 32 30.10N	094 03 20.03W	NOT PRESENT		N/A	Delete
29 33 00.29N	094 08 46.70W	29 32 59.43N	094 08 48.24W	15	Update
29 32 15.70N	094 08 25.94W	29 32 14.05N	094 08 26.60W	23	Update
29 33 07.38N	094 08 33.18W	29 33 07.15N	094 08 33.58W	25	Update
29 32 05.69N	094 05 05.95W	NOT PRESENT		N/A	Delete
29 32 56.85N	094 04 52.95W	NOT PRESENT		N/A	Delete
29 31 33.20N	094 06 41.31W	29 31 33.14N	094 06 41.63W	14	Update
29 33 01.69N	094 08 06.22W	29 33 02.76N	094 08 07.04W	24	Update
29 32 01.23N	094 07 44.60W	29 32 00.72N	094 07 45.69W	07	Update
29 31 37.15N	094 06 52.94W	29 31 36.62N	094 06 53.94W	22	Delete/New
29 31 38.14N	094 07 10.34W	29 31 38.63N	094 07 11.52W	26	Delete/New
29 31 28.67N	094 07 47.68W	29 31 28.77N	094 07 48.10W	10	Delete/New
29 29 17.95N	094 06 30.38W	NOT PRESENT		N/A	Delete
29 30 56.45N	094 08 43.67W	29 30 57.05N	094 08 44.61W	21	Update
29 32 52.48N	094 08 25.12W	29 32 51.48N	094 08 26.36W	19	Update
29 31 09.25N	094 07 12.45W	29 31 09.88N	094 07 12.97W	17	Update
29 31 05.07N	094 06 43.97W	NOT PRESENT		N/A	Delete
29 32 42.29N	094 08 31.43W	29 32 42.37N	094 08 32.52W	08	Update
29 32 52.37N	094 07 50.81W	NOT PRESENT		N/A	Delete
29 32 28.79N	094 07 24.13W	29 32 27.37N	094 07 23.34W	12	Delete/New
29 32 32.15N	094 08 20.74W	NOT PRESENT		N/A	Delete
29 32 46.19N	094 08 59.73W	29 32 46.10N	094 09 00.54W	18	Update
29 31 36.28N	094 06 55.49W	29 31 35.71N	094 06 56.36W	11	Update
29 30 25.97N	094 06 50.74W	NOT PRESENT		N/A	Delete
29 31 20.68N	094 05 34.44W	29 31 21.38N	094 05 34.66W	09	Update
29 31 28.20N	094 06 39.17W	29 31 29.40N	094 06 40.46W	13	Update
29 31 21.34N	094 09 12.26W	29 31 21.78N	094 09 12.54W	20	Delete/New
29 33 58.95N	094 08 08.25W	29 33 59.26N	094 08 09.25W	16	Update

Figure 11: Platforms within H13215

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist within this survey area.

D.2.7 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 except as previously discussed in Sections B.2.6 and B.2.7 of this report.

D.2.8 Construction and Dredging

No construction or dredging exists for this survey area.

D.2.9 New Survey Recommendation

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

D.2.10 Designated Soundings

Separate flags exist in the Generic Sensor Format (GSF) for a designated sounding and feature. During data analysis, designated soundings or feature flags are used to help better preserve the shoalest 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). GSF feature flags were set on significant features within H13215, and all information is contained in the H13215 S-57 FFF.

D.2.11 Final Feature S-57 File

Included with the H13215 delivery is the S-57 FFF, H13215_FFF.000. Details on how this file was generated and quality controlled can be found in the DAPR. The S-57 FFF delivered for H13215 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 H13215 are included within the S-57 FFF.

In accordance with the HSSD, Leidos addressed all assigned objects from the provided CSF S-57 file that fell within the bounds of H13215 in the S-57 FFF.

For each feature set within the H13215 data 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.2.12 Side Scan Sonar Contacts S-57 File

Included with the H13215 delivery is the Side Scan Sonar Contact S-57 File, H13215_SSCon.000. Details on how this file was generated and quality controlled can be found in 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.2.13 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-19. Within the Coast Pilot Field Report (OPR-K371-KR-18CoastPilotReport.pdf) provided

by NOAA to Leidos on 18 March 2019, it indicated that paragraphs 15 through 127 were relevant to the survey area of OPR-K371-KR-19 and there were no assigned investigation items. During survey, Leidos reviewed and updated the assigned and additional Coast Pilot paragraphs as possible for the survey area, port of call, and areas frequently transited. Leidos downloaded Coast Pilot 5 Chapter 10 from the Coast Pilot website, 47th Edition of Coast Pilot 5, dated 17 November 2019. Recommendations were documented using the text from the 47th Edition and are marked following the HSSD Section 8.1.3. Leidos followed NOAA's strategy for designating omitted paragraphs as provided in the delivered Coast Pilot Field Report (OPR-K371-KR-18CoastPilotReport.pdf). Leidos submitted the Coast Pilot Field Report on 22 November 2019. The email correspondence for Leidos' submission of the Coast Pilot Review Report is included within the Project Correspondence.

D.2.14 Inset Recommendation

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

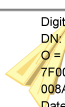
E. Approval Sheet

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.

This Descriptive Report, all BAG files, 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. Previously, or concurrently, submitted deliverables for OPR-K371-KR-19 are provided in the table below.

Report Name	Report Date Sent
OPR-K371-KR-19_Coast Pilot Review Report.pdf	2019-11-22
OPR-K371-KR-19_Marine_Species_Awareness_Training_Record.pdf	2019-11-22
OPR-K371-KR-19_DAPR.pdf	2019-12-06
H13213_DR.pdf	2019-12-06
H13214_DR.pdf	2019-12-13
H13216_DR.pdf	2019-12-20

Approver Name	Approver Title	Approval Date	Signature
Alex T. Bernier	Lead Hydrographer	01/06/2020	Alex T Bernier  <small>Digitally signed by: Alex T Bernier DN: CN = Alex T Bernier C = US O = Leidos OU = 7F0000010000015C894F07C100 008A1A Date: 2020.01.05 14:59:23 -05'00'</small>

F. Table of Acronyms

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

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

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
RTX	Real Time Extended
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
SSSAB	Side Scan Sonar Acoustic Backscatter
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Propagated Uncertainty
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDF	Zone Definition File

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

A field tide note was not required for H13215.

Final Tide Note

Per the Project Instructions H13215 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 the VDatum separation model. As the VDatum was used for the final datum transformation, no final tide note was provided nor required 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-K371-KR-19

Registry No.: H13215

Contractor Name: Leidos

Date: 06 January 2020

Sheet Designation: 3

Inclusive Dates: 05 May 2019 – 28 September 2019

Field work is complete.

Begin Date	Begin Julian Day	Begin Time	End Date	End Julian Day	End Time
05 May 2019	125	17:36:00	05 May 2019	125	18:22:20
14 May 2019	134	22:56:19	14 May 2019	134	23:59:59
15 May 2019	135	00:00:00	15 May 2019	135	23:59:59
16 May 2019	136	00:00:00	16 May 2019	136	23:59:59
17 May 2019	137	00:00:00	17 May 2019	137	23:59:59
25 May 2019	145	20:16:41	25 May 2019	145	23:59:59
26 May 2019	146	00:00:00	26 May 2019	146	23:59:59
27 May 2019	147	00:00:00	27 May 2019	147	16:09:55
30 May 2019	150	15:42:28	30 May 2019	150	23:59:59
31 May 2019	151	00:00:00	31 May 2019	151	23:59:59
01 June 2019	152	00:00:00	01 June 2019	152	05:23:35
02 June 2019	153	16:23:39	02 June 2019	153	23:59:59
03 June 2019	154	00:00:00	03 June 2019	154	23:59:59
04 June 2019	155	00:00:00	04 June 2019	155	01:47:09
03 August 2019	215	04:10:50	03 August 2019	215	08:50:19
26 September 2019	269	00:24:02	26 September 2019	269	23:59:59
27 September 2019	270	00:00:00	27 September 2019	270	14:45:41
28 September 2019	271	20:45:10	28 September 2019	271	23:47:59

Table A-1: Abstract Times of Hydrography, H13215

From: [OCS NDB - NOAA Service Account](#)
To: [Castle E Parker](#)
Cc: [AHB Chief](#); [Kathryn Pridgen - NOAA Federal](#); [Tim Osborn](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#); [Nadeau, Richard C. \[US-US\]](#); [Markham, Erin E. \[US-US\]](#); [_NOS OCS PBA Branch](#); [_NOS OCS PBB Branch](#); [_NOS OCS PBC Branch](#); [_NOS OCS PBD Branch](#); [_NOS OCS PBE Branch](#); [_NOS OCS PBG Branch](#); [Charles Porter - NOAA Federal](#); [Chris Libeau](#); [James M Crocker](#); [Ken Forster](#); [Kevin Jett - NOAA Federal](#); [Matt Kroll](#); [Michael Gaeta](#); [NSD Coast Pilot](#); [PHB Chief](#); [Tara Wallace](#); [William Winner](#)
Subject: EXTERNAL: Fwd: H13215 DtoN #1 and Anti-DtoN #1 Submission to NDB (OPR-K374-KR-19)
Date: Thursday, May 23, 2019 1:49:21 PM
Attachments: [H13215 DtoN 1 Anti-DtoN 1.zip](#)

DD-30897 has been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The reported DtoN (obstruction) and anti-DtoN (wreck PA) are southwest of Texas Point, TX.

The following charts have been assigned to the record:

11332 kapp 125
11330 kapp 195
11340 kapp 49
11300 kapp 178

The following ENC's have been assigned to the record:

US4TX71M
US3GC02M

References:

H13215
OPR-K371-KR-19

This information was discovered by a NOAA contractor and was submitted by AHB.

Nautical Data Branch/[Marine Chart Division](#)/
Office of Coast Survey/[National Ocean Service](#)/
[National Oceanic and Atmospheric Administration](#)
[United States Department of Commerce](#)
Contact: ocs.ndb@noaa.gov



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

From: **Castle Parker - NOAA Federal** <castle.e.parker@noaa.gov>
Date: Wed, May 22, 2019 at 12:46 PM
Subject: H13215 DtoN #1 and Anti-DtoN #1 Submission to NDB (OPR-K374-KR-19)
To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>, Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com>, Bernier, Alex T. <ALEX.T.BERNIER@leidos.com>, Bernier, Bridget W. <BRIDGET.W.BERNIER@leidos.com>, Nadeau, Richard C. <RICHARD.C.NADEAU@leidos.com>, Markham, Erin <ERIN.MARKHAM@leidos.com>

Good day,

Please find attached compressed file for H13215 DtoN Report #1, containing one 29ft obstruction, and one Anti-DtoN charted wreck PA (15ft rep) existence considered disproved. The 29ft obstructions is submitted to Nautical Data Branch (NDB) and Marine Chart Division (MCD) and intended for chart application. The submitted feature is located approximately 14.9nm SW of Texas Point.

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review and submission. The contents of the attached file were generated at AHB. The attached file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please contact me via email or phone 757-364-7472. Thank you for your assistance with this matter.

Respectfully,

Gene Parker

Castle Eugene Parker

NOAA Office of Coast Survey

Atlantic Hydrographic Branch

Hydrographic Team Lead / Physical Scientist

castle.e.parker@noaa.gov

office (757) 364-7472

Donaldson, Paul L. [US-US]

From: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Sent: Monday, June 24, 2019 11:52 AM
To: Clinton Marcus - NOAA Federal
Cc: AHB Chief; Castle E Parker; Corey Allen; Kathryn Pridgen - NOAA Federal; Donaldson, Paul L. [US-US]; _NOS OCS PBA Branch; _NOS OCS PBB Branch; _NOS OCS PBC Branch; _NOS OCS PBD Branch; _NOS OCS PBE Branch; _NOS OCS PBG Branch; Charles Porter - NOAA Federal; Chris Libeau; James M Crocker; Ken Forster; Kevin Jett - NOAA Federal; Matt Kroll; Michael Gaeta; NSD Coast Pilot; PHB Chief; Tara Wallace; William Winner
Subject: EXTERNAL: Fwd: OPR-K371-KR-18 H13215 DtoN Submission 2
Attachments: H13215_DtoN_2_3.zip

DD-31066 has been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The reported exposed pipeline obstructions are in the Gulf of Mexico, TX, south of Star Lake.

The following charts have been assigned to the record:

11332 kapp 125
11330 kapp 195
11340 kapp 49
11300 kapp 178

The following ENC's have been assigned to the record:

US4TX71M
US3GC02M

References:

H13215
OPR-K371-KR-18

This information was discovered by a NOAA contractor and was submitted by AHB.

Nautical Data Branch/[Marine Chart Division](#)/
Office of Coast Survey/[National Ocean Service](#)/
[National Oceanic and Atmospheric Administration](#)
[United States Department of Commerce](#)
Contact: ocs.ndb@noaa.gov



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

From: **Clinton Marcus - NOAA Federal** <clinton.r.marcus@noaa.gov>
Date: Thu, Jun 20, 2019 at 2:59 PM

Subject: OPR-K371-KR-18 H13215 DtoN Submission 2

To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com>

Good Day,

Please find attached a zip file for survey H13215 DtoN report # 2 for submission to Nautical Data Branch (NDB) of the Marine Chart Division (MCD). This Danger submission contains two uncharted exposed pipelines.

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review and processing. The contents of the attached WinZip file were generated at AHB. The attached zip file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please direct them back to me via email or phone (757-364-7706).

Thank you for your assistance with this matter.

Regards,

Clint Marcus

Physical Scientist

NOAA Office of Coast Survey

Atlantic Hydrographic Branch

Office: (757) 364-7706

Cell: (541) 264-6406

From: [OCS NDB - NOAA Service Account](#)
To: [Castle E Parker](#)
Cc: [AHB Chief](#); [Kathryn Pridgen - NOAA Federal](#); [Tim Osborn](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#); [Markham, Erin E. \[US-US\]](#); [_NOS OCS PBA Branch](#); [_NOS OCS PBB Branch](#); [_NOS OCS PBC Branch](#); [_NOS OCS PBD Branch](#); [_NOS OCS PBE Branch](#); [_NOS OCS PBG Branch](#); [Charles Porter - NOAA Federal](#); [Chris Libeau](#); [James M Crocker](#); [Ken Forster](#); [Kevin Jett - NOAA Federal](#); [Matt Kroll](#); [Michael Gaeta](#); [NSD Coast Pilot](#); [PHB Chief](#); [Tara Wallace](#); [William Winner](#)
Subject: EXTERNAL: Fwd: H13215 DtoN #4 Submission to NDB
Date: Friday, January 03, 2020 6:32:46 PM
Attachments: [H13215 DtoN 4.zip](#)

DD-31800 has been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The DtoN reported is one submerged obstruction located in the Gulf of Mexico, south of Star Lake and southwest of Texas Point, TX.

The following charts have been assigned to the record:

11323 KAPP 126
 11332 KAPP 125
 11330 KAPP 195
 11340 KAPP 49
 11300 KAPP 178

The following ENC's have been assigned to the record:

US4TX71M
 US3GC02M

References:

H13215
 OPR-K371-KR-19

This information was discovered by a NOAA contractor and was submitted by AHB.

Nautical Data Branch/[Marine Chart Division](#)/
 Office of Coast Survey/[National Ocean Service](#)/
[National Oceanic and Atmospheric Administration](#)
[United States Department of Commerce](#)
 Contact: ocs.ndb@noaa.gov



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

From: **Castle Parker - NOAA Federal** <castle.e.parker@noaa.gov>
Date: Thu, Jan 2, 2020 at 1:05 PM
Subject: H13215 DtoN #4 Submission to NDB
To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>, Donaldson, Paul L. <PAUL.L.DONALDSON@leidos.com>, Bernier, Alex T. <ALEX.T.BERNIER@leidos.com>, Bernier, Bridget W. <BRIDGET.W.BERNIER@leidos.com>, Markham, Erin <ERIN.MARKHAM@leidos.com>

Good day,

Please find attached compressed file for H13215 DtoN Report #4, containing one uncharted 33ft / 10.19m obstruction. The obstruction is submitted to Nautical Data Branch (NDB) and Marine Chart Division (MCD) and intended for chart application. The submitted feature is located approximately 20nm SW of Texas Point.

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review and submission. The contents of the attached file were generated at AHB. The attached file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please contact me via email or phone 757-364-7472. Thank you for your assistance with this matter.

Respectfully,

Gene Parker

Castle Eugene Parker

NOAA Office of Coast Survey

Atlantic Hydrographic Branch

Hydrographic Team Lead / Physical Scientist

castle.e.parker@noaa.gov

office (757) 364-7472

Marine Species Awareness Training Record

In accordance with the Hydrographic Surveys Specifications and Deliverables (HSSD) March 2019 Section 1.5, below is a record of staff who participated in survey work for Leidos under NOAA contract EA-133C-14-CQ-0033, project number OPR-K371-KR-19, Task Order 0005 (Port Arthur Traffic Lanes). Individuals conducted training prior to the start of the filed season; new personnel conducted training upon arrival.

Marine Species Awareness Training Record

Name	Organization	Date
Jason Infantino	Leidos	03/22/2019
Dorena Vogel	Leidos	03/22/2019
Christopher Englert	Leidos	03/22/2019
Joshua Saunders	Leidos	03/22/2019
Capt. Chris Sevastakis	Divemasters	03/23/2019
Capt. Bernie Borrelli	Divemasters	03/23/2019
Capt. Henry Dollman	Divemasters	03/23/2019
Matthew Spears	Divemasters	03/23/2019
Sean Davies	Divemasters	03/23/2019
Jeffrey Adams	Leidos	03/25/2019
Allison Weide	Leidos	03/25/2019
Lucas Cappellini	Leidos	03/25/2019
Richard Nadeau	Leidos	03/26/2019
Paul Donaldson	Leidos	03/26/2019
Alex Bernier	Leidos	03/26/2019
Stewart Kaczynski	Leidos	03/27/2019
Peter Reheis	Leidos	03/27/2019
Michael Cole	Leidos	03/29/2019
Erin Markham	Leidos	04/02/2019
Timothy Mayer	Leidos	04/01/2019
Daniel McGovern	Leidos	04/04/2019
Lisa Hill	OARS	04/19/2019
Veronica Holton	OARS	05/11/2019

Name	Organization	Date
Brian Biggert	OARS	07/06/2019
Darina DeBenedictis	OARS	07/06/2019
Roland Brennan	OARS	07/27/2019
Capt. Fred Derry	Divemasters	08/07/2019



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
NOAA Ship *Fairweather* (S220)
1010 Stedman Street, Ketchikan, Alaska 99901

Date: 11/05/2019

MEMORANDUM FOR: Rod Evans
Leidos, Inc.

FROM: Kathryn Pridgen, NOAA
Project Manager, Hydrographic Surveys Division Operations Branch
OPR-K371-KR-19 Port Arthur Traffic Lanes

SUBJECT: Request – 2019 Hydrographic Survey Specifications and Deliverables

At Leidos' request, I, Kathryn Pridgen, as Project Manager and COR, on behalf of HSD OPS, allow the use of the 2019 Hydrographic Survey Specifications and Deliverables (HSSD) in lieu of the 2018 Hydrographic Survey Specifications and Deliverables as specified in the project instructions for this project, OPR-K371-KR-19 Port Arthur Traffic Lanes.

Justification

This will allow the projects deliverables to be submitted using the most up to date specifications and requirements as outlined in the 2019 version of the HSSD.

PRIDGEN.KATHRYN.GRABOWSKI.1392550549
ABOWSKI.1392550549
Digitally signed by PRIDGEN.KATHRYN.GRABOWSKI.
1392550549
Date: 2019.11.05 13:56:54 -05'00'

Kathryn Pridgen
Project Manager and COR, NOAA
Hydrographic Survey Specifications and Deliverables



From: [Markham, Erin E. \[US-US\]](#)
To: NODC.submissions@noaa.gov
Cc: [Kathryn Pridgen - NOAA Federal](#); [Evans, Rhodri E. \[US-US\]](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#); [Bernier, Bridget W. \[US-US\]](#)
Subject: OPR-K371-KR-19 NetCDF Sound Speed Data Files
Date: Thursday, January 16, 2020 3:25:41 PM
Attachments: [image001.png](#)
[OPR-K371-KR-19_20200116.zip](#)

Leidos Proprietary

Good Afternoon,

In accordance with Section 8.3.6 of the Hydrographic Surveys Specifications and Deliverables (March 2019), please find attached one zip file (OPR-K371-KR-19_20200116.zip) containing sound speed data in the NetCDF format used for Leidos hydrographic surveys under project number OPR-K371-KR-19, Contract: EA-133C-14-CQ-0033 (Task Order: 05).

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-K371-KR-19_NCEI_Used_for_Closing
- OPR-K371-KR-19_NCEI_Used_for_Comparison
- OPR-K371-KR-19_NCEI_Used_for_Final_Surfaces
- OPR-K371-KR-19_NCEI_Used_for_Lead_Line

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

Thank you,

Erin Markham | Leidos

Hydrographer
Marine Survey & Engineering Solutions
office: 401.848.4707
mobile: 914.282.8377
erin.e.markham@leidos.com



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H13215, Appendix II

From: Bernier, Alex T. [US-US]

Sent: Thursday, January 2, 2020 8:36:00 AM

To: 'pipelines@bsec.gov'

Cc: kathryn.pridgen@noaa.gov; tim.osborn@noaa.gov; Evans, Rhodri E. [US-US]; Donaldson, Paul L. (PAUL.L.DONALDSON@leidos.com); Bernier, Bridget W. [US-US]; Markham, Erin

Subject: OPR-K371-KR-19 H13216: Seep Report

Sensitivity: Normal

Attachments:

H13215_Seep_Images.zip 

In accordance with Section 1.7 of the Hydrographic Surveys Specifications and Deliverables, please find below the Non-DTON Seep Report for H13215 (Project: OPR-K371-KR-19, Contract: EA-133C-14-CQ-0033 TO-0005, Port Arthur Traffic Lanes, TX).

While surveying in Texas on Project Number OPR-K371-KR-19, Leidos discovered one seep within the area of Registry Number H13215. The feature was found through analysis of the multibeam and side scan sonar data and determined to have a signature discernibly consistent with that of a seep. Details of the seep are as follows and corresponding images are contained in the attached zip directory.

1. H13215 Seep #01, approximately at 29° 26' 57.01"N, 094° 07' 07.81"W, with a least depth acquired of 12.263m, was identified in multibeam and side scan sonar data on Julian Day 269 (26 September 2019). The identified seep was found on the end of a charted pipeline (RNC 11332), however the review of the side scan sonar data and multibeam sonar data did not indicate the presence of an exposed pipeline in the area.

Please contact us if there are any questions concerning the information or attached files.

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



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From: Richard Powell - NOAA Federal <richard.powell@noaa.gov>
Sent: Tuesday, November 26, 2019 6:20 AM
To: Donaldson, Paul L. [US-US]
Subject: EXTERNAL: Re: OPR-K371-KR-19 Coast Pilot Review Report

Paul,
Thanks for this report. I will track it and make sure it gets registered as source document with our data branch. Once registered, I will make the appropriate changes to Coast Pilot 5.
Have a good day!

Sincerely,

Richard Hodge Powell
Cartographer / Marine Information
Nautical Publications Branch
240-533-0060

National Oceanic and Atmospheric Administration
National Ocean Service
Office of Coast Survey

From: Laura Jeffery - NOAA Federal <laura.jeffery@noaa.gov>
Sent: Monday, November 25, 2019 9:13 AM
To: Donaldson, Paul L. [US-US]
Subject: EXTERNAL: Re: OPR-K371-KR-19 Coast Pilot Review Report

Thank you very much for your Coast Pilot 5 field report. We will have it registered and applied to the CP as soon as possible.

Happy Thanksgiving!

On Fri, Nov 22, 2019 at 4:02 PM 'Donaldson, Paul L.' via _NOS OCS NSD Coast Pilot <coast.pilot@noaa.gov> wrote:

Leidos Proprietary

Please find attached the Coast Pilot Review Report for Contract: EA-133C-14-CQ-0033, Project Number OPR-K371-KR-19, Task Order 0005 (Port Arthur Traffic Lanes). The one attached .pdf file addresses the Coast Pilot Field Report delivered to Leidos for OPR-K371-KR-19, and a separate review of the text within the 47th Edition of Coast Pilot 5, Chapter 10 paragraphs.

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

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

Hydrographic Survey & Data Solutions Manager/Chief Hydrographer

Phone: 401.848.4757

Mobile: 401.261.7895

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

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--

Laura B. Jeffery
Nautical Publications Branch/NOS
Cartographer/Reviewer
240-533-0073

NOAA-NOS-OCS-NSD-NPB
1315 E. West Hwy
SSMC3, Station 6315
Silver Spring, MD 20910

From: Donaldson, Paul L. [US-US]
Sent: Friday, November 22, 2019 4:01 PM
To: 'OCS.NDB@noaa.gov'; 'Coast.Pilot@noaa.gov'
Cc: Kathryn Pridgen - NOAA Federal; Evans, Rhodri E. [US-US]; Bernier, Bridget W. [US-US]; Bernier, Alex T. [US-US]; Markham, Erin E. [US-US]
Subject: OPR-K371-KR-19 Coast Pilot Review Report
Attachments: OPR-K371-KR-19_Coast Pilot Review Report.pdf

Leidos Proprietary

Please find attached the Coast Pilot Review Report for Contract: EA-133C-14-CQ-0033, Project Number OPR-K371-KR-19, Task Order 0005 (Port Arthur Traffic Lanes). The one attached .pdf file addresses the Coast Pilot Field Report delivered to Leidos for OPR-K371-KR-19, and a separate review of the text within the 47th Edition of Coast Pilot 5, Chapter 10 paragraphs.

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

Paul L. Donaldson CH (NSPS #241) | Leidos
Hydrographic Survey & Data Solutions Manager/Chief Hydrographer
Phone: 401.848.4757
Mobile: 401.261.7895
Mobile: 860.857.8802
Fax: 401.849.1585
Email: paul.l.donaldson@leidos.com

221 Third Street, Building A
Newport, RI 02840 USA
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From: [Bernier, Bridget W. \[US-US\]](#)
To: "survey.outlines@noaa.gov"; [Kathryn Pridgen \(kathryn.pridgen@noaa.gov\)](#)
Cc: [Evans, Rhodri E. \[US-US\]](#); [Donaldson, Paul L. \[US-US\]](#); [Bernier, Alex T. \[US-US\]](#); [Markham, Erin E. \[US-US\]](#)
Subject: Survey Outlines for OPR-K371-KR-19 (H13215, H13216, and H13220)
Date: Thursday, October 24, 2019 1:51:20 PM
Attachments: [H13216_Survey_Outline.000](#)
[H13215_Survey_Outline.000](#)
[H13220_Survey_Outline.000](#)

Katy,

Please find attached the Survey Outlines for H13215 (Sheet 3), H13216 (Sheet 4), and H13220 (Sheet 8) from OPR-K371-KR-19, Port Arthur Traffic Lanes, Task Order-0005.

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 March 2019 HSSD (Section 8.1.2).

This completes the final submittal of survey outlines for the 8 sheets conducted during OPR-K371-KR-19.

Please let me know if you have any questions.

Thanks,
-Bridget

Bridget W. Bernier | Leidos

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

Please consider the environment before printing this email.

APPROVAL PAGE

H13215

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 side scan sonar mosaics
- Collection of backscatter mosaics

The survey evaluation and verification have 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: _____

Commander Meghan McGovern, NOAA
Chief, Atlantic Hydrographic Branch