H13043

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H13043

LOCALITY

State(s):	Louisiana
General Locality:	Gulf of Mexico
Sub-locality:	17 Miles South of South Point

2017

CHIEF OF PARTY
George G. Reynolds

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Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H13043**

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:	**Gulf of Mexico**
Sub-Locality:	**17 Miles South of South Point**
Scale:	**40000**
Dates of Survey:	**09/04/2017 to 10/12/2017**
Instructions Dated:	**06/21/2017**
Project Number:	**OPR-K354-KR-17**
Field Unit:	**Oceans Surveys, Inc.**
Chief of Party:	**George G. Reynolds**
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:

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. All times are recorded in UTC. Data recorded and presented relative to UTM Zone 15 North. THE INFORMATION PRESENTED IN THIS REPORT AND THE ACCOMPANYING BASE SURFACES REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY OCEAN SURVEYS, INC. DURING THE PERIOD OF 3 AUGUST 2017 TO 12 OCTOBER 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO OSI.

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The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via https://www.ncei.noaa.gov/.

Descriptive Report to Accompany Survey H13043

Project: OPR-K354-KR-17

Locality: Gulf of Mexico

Sublocality: 17 Miles South of South Point

Scale: 1:40000

August 2017 - October 2017

Oceans Surveys, Inc.

Chief of Party: George G. Reynolds

A. Area Surveyed

This survey provides hydrographic data for the Gulf of Mexico waters approaching the Louisiana Coast south of Marsh Island. The general locations of the survey limits are presented in Table 1.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 16' 26.23" N 91° 59' 7.13" W	29° 5' 48.47" N 91° 47' 11.55" W

Table 1: Survey Limits

Survey limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

Per the Hydrographic Survey Project Instructions: The Louisiana Coast project will provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. It is in the vicinity of the Atchafalaya River Delta and Port of Morgan City, LA. The survey will address concerns of migrating shoals and exposed hazards by updating bathymetry and positions of hazards, reducing the risk to navigation.

The Port of Morgan City is growing significantly and is working on programs to deepen and maintain the ship channel through the Gulf, bay, and up the Atchafalaya River to the Port of Morgan City where it will intersect with the Gulf of Mexico Intracoastal Waterway. The Port serves the offshore oil, shrimping, seafood, chemicals, and machinery industries. In addition to the port commerce, the Atchafalaya River Delta

has a rich ecosystem that supports both commercial fishing and recreational fishing communities. Updated charts from this project will support commerce and protect the environment by improving the safety of navigation for area traffic.

The project will cover approximately 185 square nautical miles of high priority survey area identified in the 2017 Hydrographic Health model. Adjacent modern surveys show shoaling, with contours that have migrated up to 9 miles since the 1935 vintage source surveys. The adjacent 2016 Atchafalaya survey uncovered numerous exposed pipelines and hazards. This project will significantly update the chart. Data from this project will supersede all prior survey data in the common area.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

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

Water Depth	Coverage Required
All waters in survey area	LNM not to exceed 6300 LNM. Acquire backscatter data during all multibeam data acquisition (HSSD Section 6.2). Report significant shoaling via weekly progress report. COR may adjust survey prioritization based on observed shoaling.
Inshore limit to 4 meters water depth for H13041 - H13043	200 meter set line spacing HSSD Section 5.2.2.4 Option A.
Greater than 4 meters water depth for H13041 - H13043	Complete Coverage (refer to HSSD Section 5.2.2.3)
All waters in survey area of H13040	Complete Coverage (refer to HSSD Section 5.2.2.3)
Disproval radius of features in all waters	Complete Coverage (refer to HSSD Section 5.2.2.3)

Survey Coverage is in accordance with the requirements in the Hydrographic Survey Project Instructions (June 21, 2017), the Statement of Work, [May 18, 2017 (SOW)], and the Hydrographic Surveys Specifications and Deliverables, [April 2017 (HSSD)]. Where required, Complete Coverage was accomplished by acquiring one hundred percent (100%) side scan sonar (SSS) coverage with concurrent multibeam echosounder (MBES) with backscatter or Complete Coverage MBES with backscatter.

Due to the presently charted water depths in the southeastern corner of H13043 it was anticipated that the altitude of the fixed mount SSS would be too high in the water column to satisfy the maximum-20%-of-range scale altitude specification. As such OSI planned to achieve Complete Coverage employing MBES.

As it turns out the water depths happened to be just shallow enough to have allowed for 100% "in-spec" SSS coverage with concurrent multibeam. Of course, the field team was not able to prove that 100% "in-spec" SSS was achievable until the depths were known. As with all of OSI's survey lines the SSS was turned on and recording despite the necessity to do so. As a result of the foregoing, OSI "covered" the deep southeast wedge of Survey H13043 with Complete Coverage MBES and achieved 100% in-spec SSS. For this reason the SSS is included in the coverage mosaic deliverables.

Additional SSS and MBES coverage was obtained as necessary to fill gaps in coverage, to provide a least depth for all significant SSS contacts and for charted feature disprovals. Gaps in the 100% SSS coverage were addressed with SSS fill-in lines or covered with complete MBES data. Bathymetric splits were also acquired to verify or disprove charted depths that fell between two MBES survey lines when the charted depth was shallower than the adjacent survey soundings. The final survey area covers 55.72 square nautical miles (Figure 1).

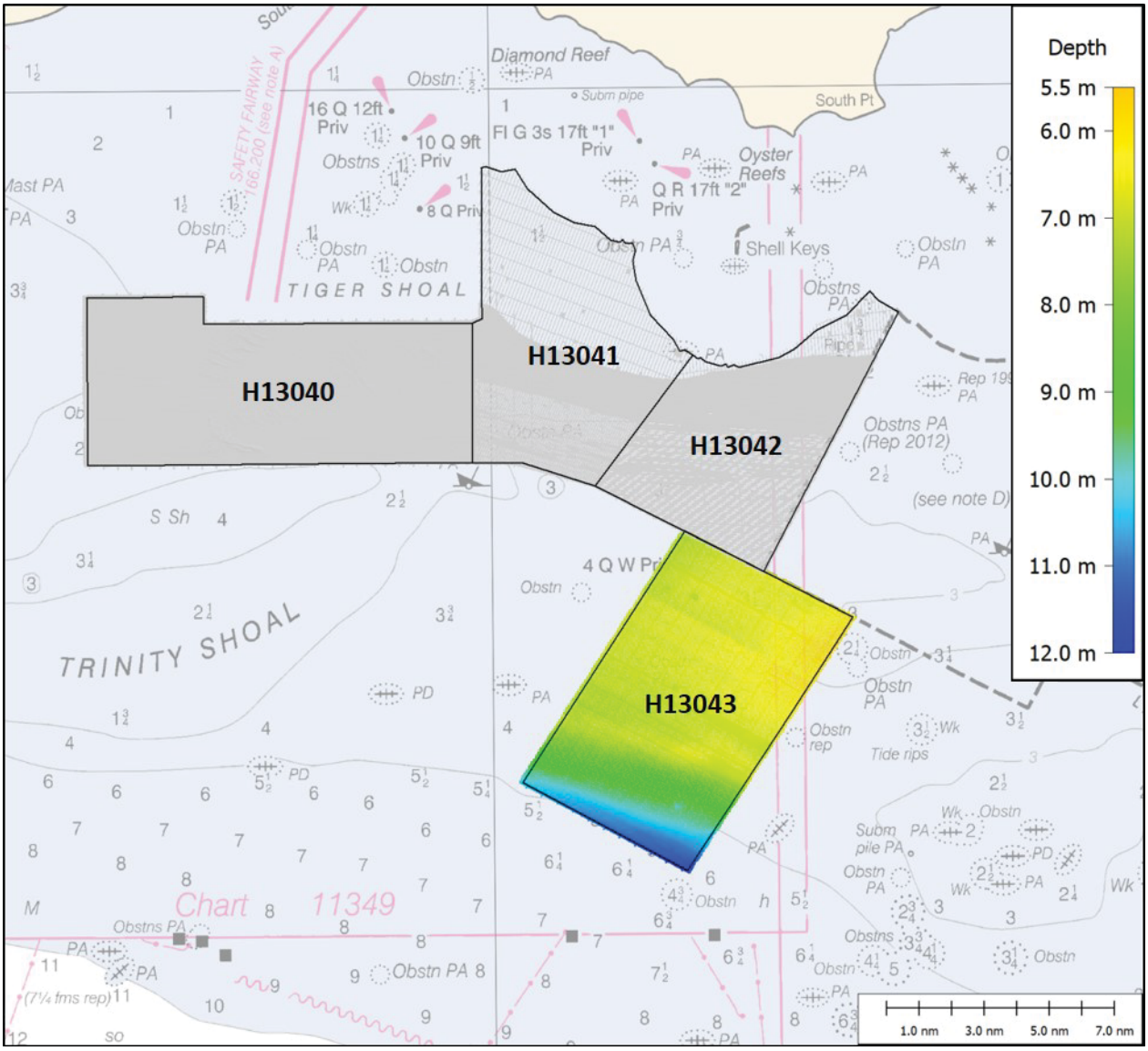


Figure 1: Survey H13043 MBES coverage overlaid on RNC 11340.

A.5 Survey Statistics

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

	HULL ID	*R/V Ocean Explorer "OE"*	*Total*
LNM	**SBES Mainscheme**	0	0
	MBES Mainscheme	188.12	188.12
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	1411.85	1411.85
	SBES/MBES Crosslines	107.72	107.72
	Lidar Crosslines	0	0
Number of Bottom Samples			14
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			55.72

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
09/04/2017	247
09/13/2017	256
09/14/2017	257
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
09/25/2017	268
09/26/2017	269
09/27/2017	270
09/28/2017	271
09/29/2017	272
09/30/2017	273
10/11/2017	284
10/12/2017	285

Table 3: Dates of Hydrography

The lineal nautical miles (LNM) for MBES only development and fill in lines were included under the heading "Mainscheme MBES" in Table 2, Hydrographic Survey Statistics. There were no SSS-only line miles in this survey. The crossline/mainscheme MBES line percentage is 6.7%.

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the OPR-K354-KR-17 Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

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

Hull ID	*R/V Ocean Explorer "OE"*
LOA	18 meters
Draft	2 meters

Table 4: Vessels Used

Project OPR-K354-KR-17 was conducted employing two vessels. However, for Survey H13043, only the R/V Ocean Explorer was employed. For the sake of clarity, especially as concerns the field data file naming convention, two distinct abbreviations are employed for Project OPR-K354-KR-17. Specifically, files generated on the R/V Ocean Explorer include “OE” in the name and files generated on the smaller vessel, the R/V Osprey, include “SB” which is meant to indicate “small boat” files. There are no "SB" files associated with Survey H13043.

B.1.2 Equipment

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

Manufacturer	Model	Type
EdgeTech	4125	SSS
Teledyne RESON	SeaBat 7125 SV2	MBES
ODIM Brooke Ocean	MVP30	Sound Speed System
AML Oceanographic	MicroX	Sound Speed System
AML Oceanographic	Base X	Sound Speed System
Applanix	POS MV 320 v4	Positioning and Attitude System
Trimble	ProBeacon	Positioning System
Trimble	MS750	Positioning System

Table 5: Major Systems Used

Table 5 summarizes the primary equipment used on the R/V Ocean Explorer vessel to acquire MBES and SSS data. All equipment was installed, calibrated and operated in accordance with the DAPR.

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 6.73% of mainscheme acquisition.

A total of 107.72 nm of crossline data were acquired on September 4, September 21, and September 23, 2017 (DN 247, 264, 266). Crosslines were run nominally perpendicular to mainscheme lines (Figure 2).

Soundings from mainscheme lines and crosslines were compared periodically throughout survey operations reviewing preliminary MBES surfaces and using CARIS HIPS Subset Editor. Crossline comparisons provided confirmation that the system offsets and biases were entered correctly and verified the accuracy of sounding correctors (i.e. tide, sound speed, TrueHeave).

Statistical quality control information was compiled from a difference surface, generated in CARIS HIPS, between the depth layer of a 1-meter CUBE surface composed only of crossline data and the depth layer of a 1-meter CUBE surface composed only of mainscheme data. The crossline analysis results demonstrate excellent agreement between crossline soundings and mainscheme soundings, with the depth differences less than or equal to 0.34 meters with an average difference of 0.00 meters. The allowable TVU for the range of water depths within Survey H13043 is 0.50 to 0.52 meters.

Figure 3 is a histogram showing the distribution of depth differences for all comparison grid cells considered. The total number of 1-meter comparison cells equaled 2,649,033. Of 2,649,033 possible comparison cells, 2,644,944 or 99.84% of the cells include crossline and mainscheme soundings that match within +/- 25 centimeters.

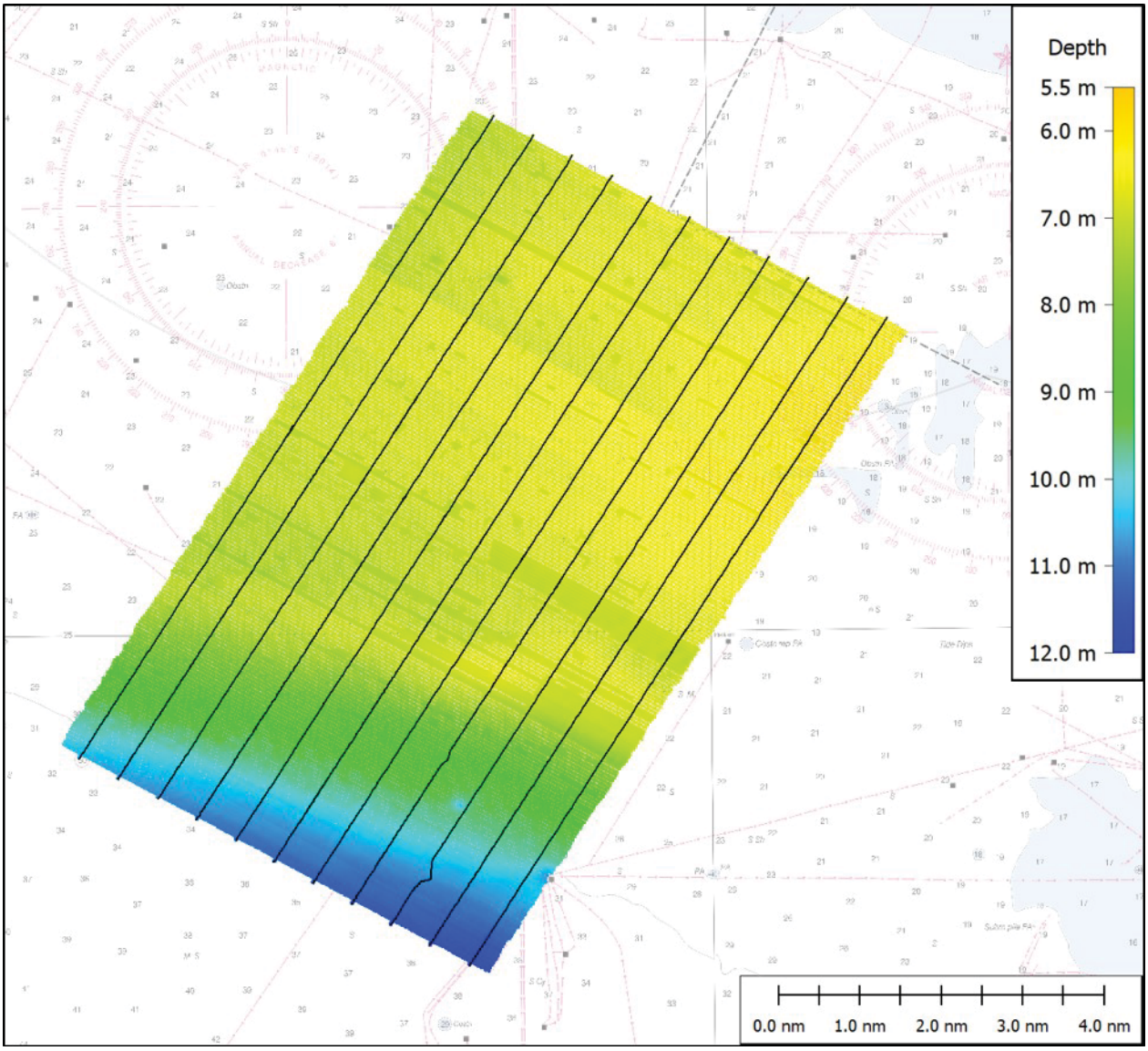


Figure 2: An overview of the crossline layout on a 1-meter surface created from mainscheme MBES data and colored by depth. RNC 11349 and RNC 11351 are visible in the background.

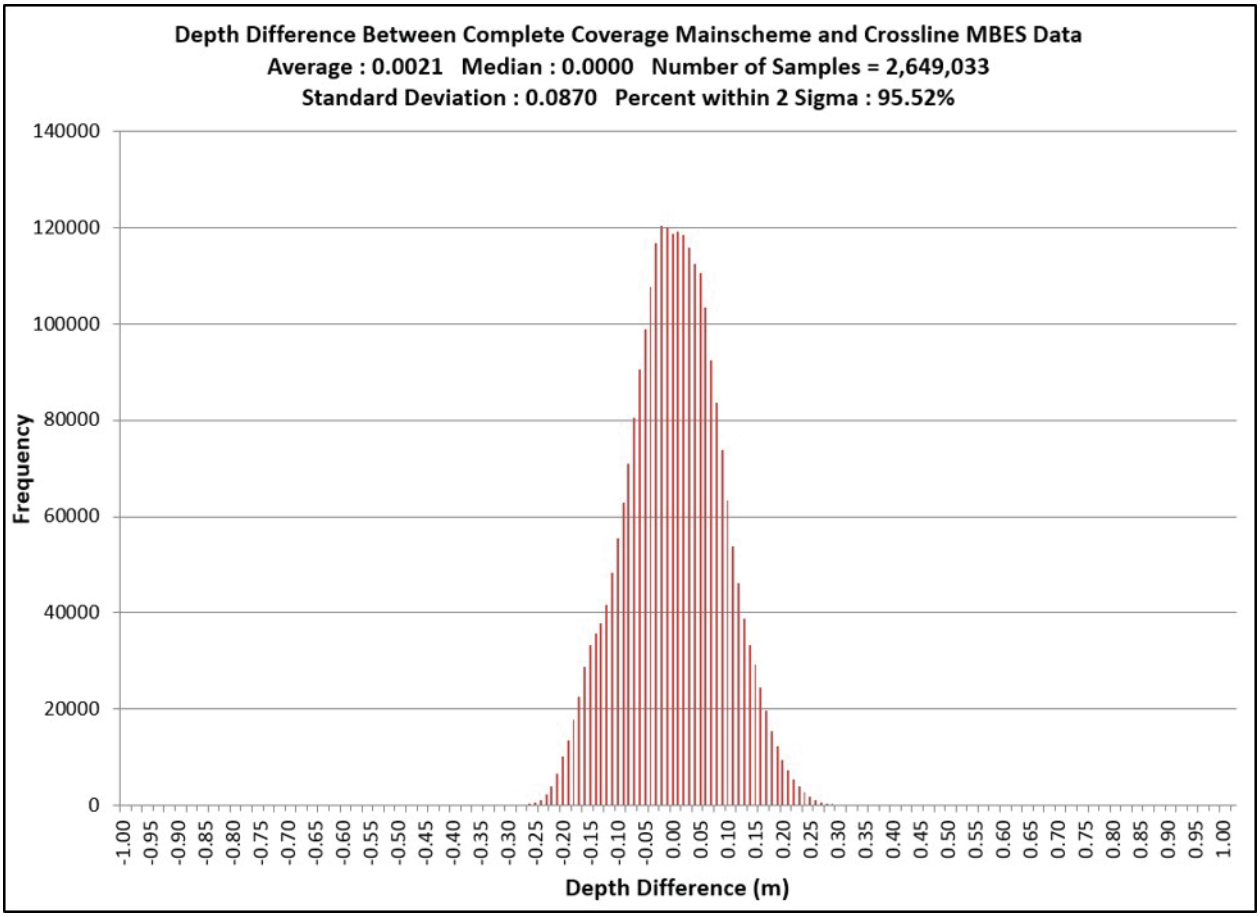


Figure 3: The graph shows a frequency distribution of the depth differences between the H13043 crossline data and the H13043 mainscheme MBES data. Statistics from the depth difference sample set are displayed above the graph.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
Discrete Zoning	0.01 meters	0.19 meters

Table 6: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
R/V Ocean Explorer		1 meters/second	2 meters/second

Table 7: Survey Specific Sound Speed TPU Values.

The methods used to minimize the uncertainty in the corrections to echo soundings are described in detail in Section B. Processing and Quality Control of the project DAPR. Survey H13043 did not deviate from the methods documented in the DAPR.

The Total Vertical Uncertainty Quality Check (TVU QC) "Ratio Method" was used to evaluate IHO uncertainty for all finalized surfaces. The TVU QC "Ratio Method" is described in the Chapter 4 Appendices of the NOAA OCS Field Procedures Manual (FPM) dated April 2014. Per the FPM TVU QC section, "The hydrographer should use the finalized surface because this surface will identify areas where either the uncertainty or the standard deviation exceeded the maximum allowable error and the greater of these two values is used in addition to having the uncertainty scaled to a 95% CI, whereas unfinalized surface uncertainties are reported at the 68% CI." The FPM TVU QC section also states that, "[ratio] values which do not require further examination are from -1 to 0 and the values which do require further examination are from -100 to -1."

A finalized surface was used in this analysis. The surface was finalized using the “greater of the two” option as the basis for calculating “Final Uncertainty” in the CARIS “Finalize Base Surface” utility.

One (1) MBES CUBE (Combined Uncertainty and Bathymetric Estimator) surface was delivered along with Survey H13043; "H13043_MB_1m_MLLW_Final." The 1-meter surface is intended to satisfy coverage and sounding density requirements for Complete Coverage, Option B: 100% side scan sonar coverage with concurrent multibeam. All investigations are included in the 1-meter Complete Coverage surface.

Results from the TVU QC indicate that 99.99% of the nodes from the submitted surface meets IHO Order 1 uncertainty specifications, i.e. the ratio values of nearly all the nodes are less than -1. Of the 79,755,461 nodes considered, 25 had a ratio value below -1. Upon examination it was found that the nodes with ratio values below -1 were located over known seafloor disturbances and/or known discrete features resulting in higher standard deviation values and finalized uncertainty values, which is to be expected.

B.2.3 Junctions

Three (3) prior surveys and one (1) contemporary survey junction with Survey H13043. Figure 4 displays the location of the prior and contemporary junction surveys for Project OPR-K354-KR-17. The allowable TVU for the range of water depths within Survey H13043 is 0.50 to 0.52 meters. Therefore, according to the XMLDR Junction Area "maximum difference" threshold guidance equation (SQRT2 * TVU) the junction discrepancy action threshold = 0.71 meters.

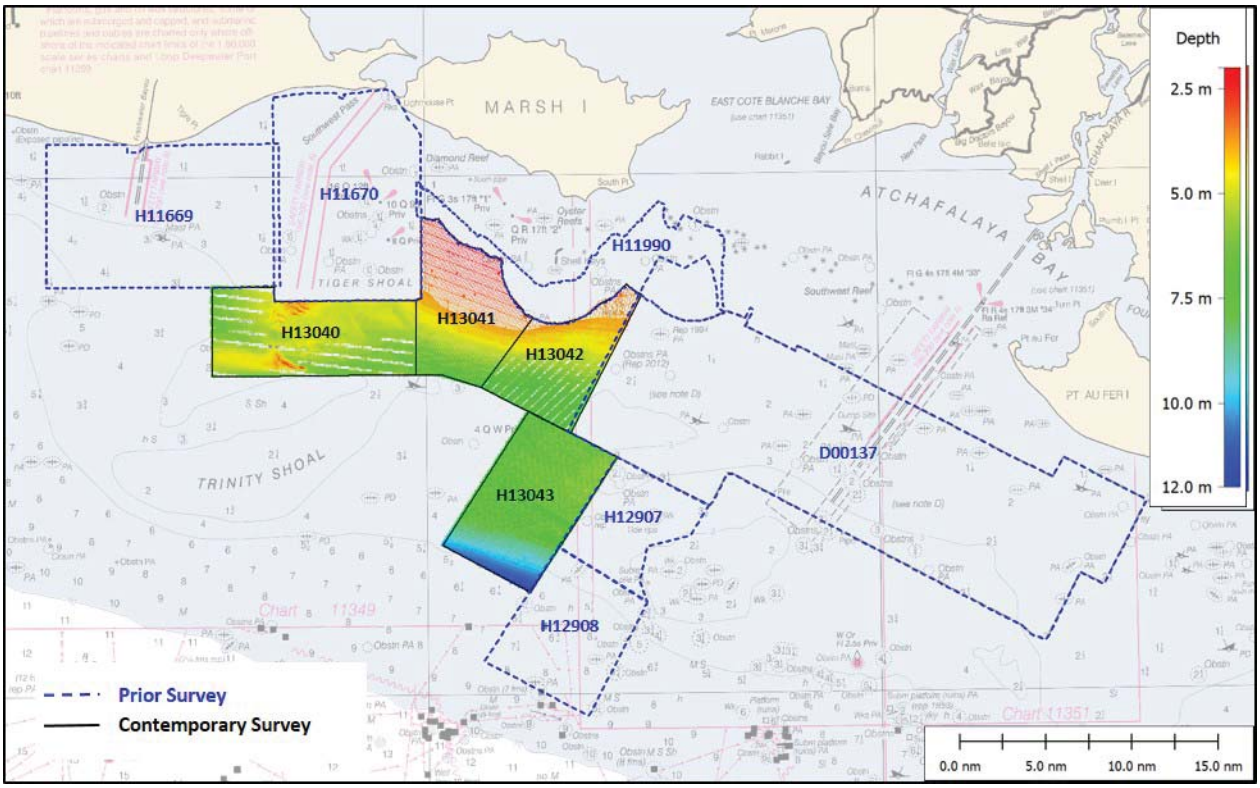


Figure 4: Survey junctions for Project OPR-K354-KR-17. RNC 11340 is displayed in the background.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
D00137	1:40000	2005	NOAA Time Charter	NE
H12907	1:40000	2016	Ocean Surveys, Inc.	NE
H12908	1:40000	2016	Ocean Surveys, Inc.	SE
H13042	1:40000	2017	Oceans Surveys, Inc.	NW

Table 8: Junctioning Surveys

D00137

Survey D00137, a reconnaissance survey conducted by NOAA in 2005, overlaps the eastern half of the north side of survey H13043. Survey D00137 was run on tracklines spaced at nominally 1,300 to 2,200 meter intervals. Survey H13043 was run with the intention of achieving Complete Coverage. The junction area between the two surveys is very sparse. The two surveys share a common border of approximately 5,700

meters with data overlap occurring at only two locations where the survey lines of D00137 intersect the perpendicular mainscheme lines of H13043.

Depth data for Survey D00137 were downloaded from the National Geophysical Data Center (NGDC) website (http://www.ngdc.noaa.gov) in the form of a 5-meter resolution Bathymetric Attributed Grid (BAG), "D00137_5m_MLLW_1of1."

To conduct the junction comparison a 5-meter CUBE surface was generated from the MBES data in the junction area for Survey H13043, "H13043_MB_5m_MLLW." In CARIS HIPS, depths from the "D00137_5m_MLLW_1of1" BAG were subtracted from the depths in the H13042_MB_5m_MLLW CUBE surface using the CARIS HIPS Difference Surface function. A histogram of the differences is shown in Figure 5. Depths from the H13043 survey show reasonable agreement with depths from the D00137 survey. Depth discrepancies equaled 25 centimeters or less with a mean difference of 15 centimeters, with Survey H13043 consistently the deeper of the two (Figure 5).

All (100%) junction comparison cells have a difference < 0.71 meters.

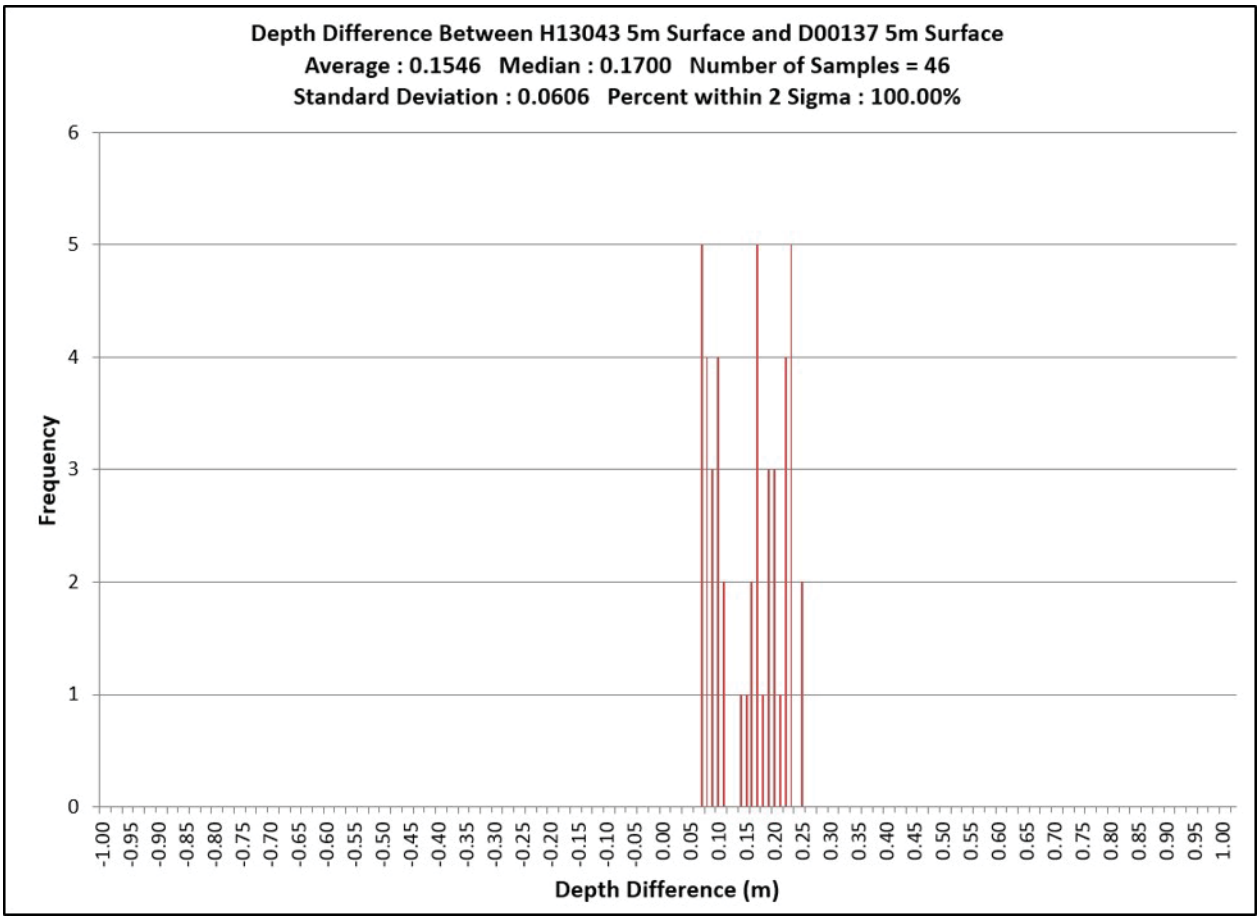


Figure 5: Surface-to-surface difference histogram comparing Survey H13043 to D00137.

H12907

Survey H12907, a MBES/SSS survey conducted by Ocean Surveys, Inc. in 2016, overlaps the northeastern border of H13043. Depth data for Survey H12907 were taken from the dataset delivered to NOAA by Ocean Surveys, Inc. on January 24, 2017 in the form of a 1-meter resolution CARIS Spatial Archive (csar) raster "H12907_MB_1m_MLLW_Final.csar." To conduct the junction comparison the depths from the H12907 data were subtracted from the depths in the "H13043_MB_1m_MLLW" surface using the CARIS HIPS Difference Surface function. A histogram of the differences is shown in Figure 6.

Survey H13043 and Survey H12907 were each run with the intention of achieving 100% SSS coverage and as such, each survey's MBES coverage is "skunk stripe coverage." The two survey's line plans were oriented perpendicularly to one another; the mainscheme lines of H13043 are nominally oriented NW-SE and the mainscheme lines of H12907 nominally oriented NE-SW. H13043 and H12907 share a common border of approximately 11,700 meters and the mainscheme lines overlap by approximately 300 meters. The crosslines of H12907 extend into H13043 survey data by as much as 550 meters.

Overall, depths from the H13043 survey show good agreement with depths from the H12907 survey. Depth discrepancies equaled 39 centimeters or less with a mean difference of 1 centimeter. There is no significant trend of one survey being deeper than the other.

All (100%) of junction comparison cells have a difference < 0.71 meters.

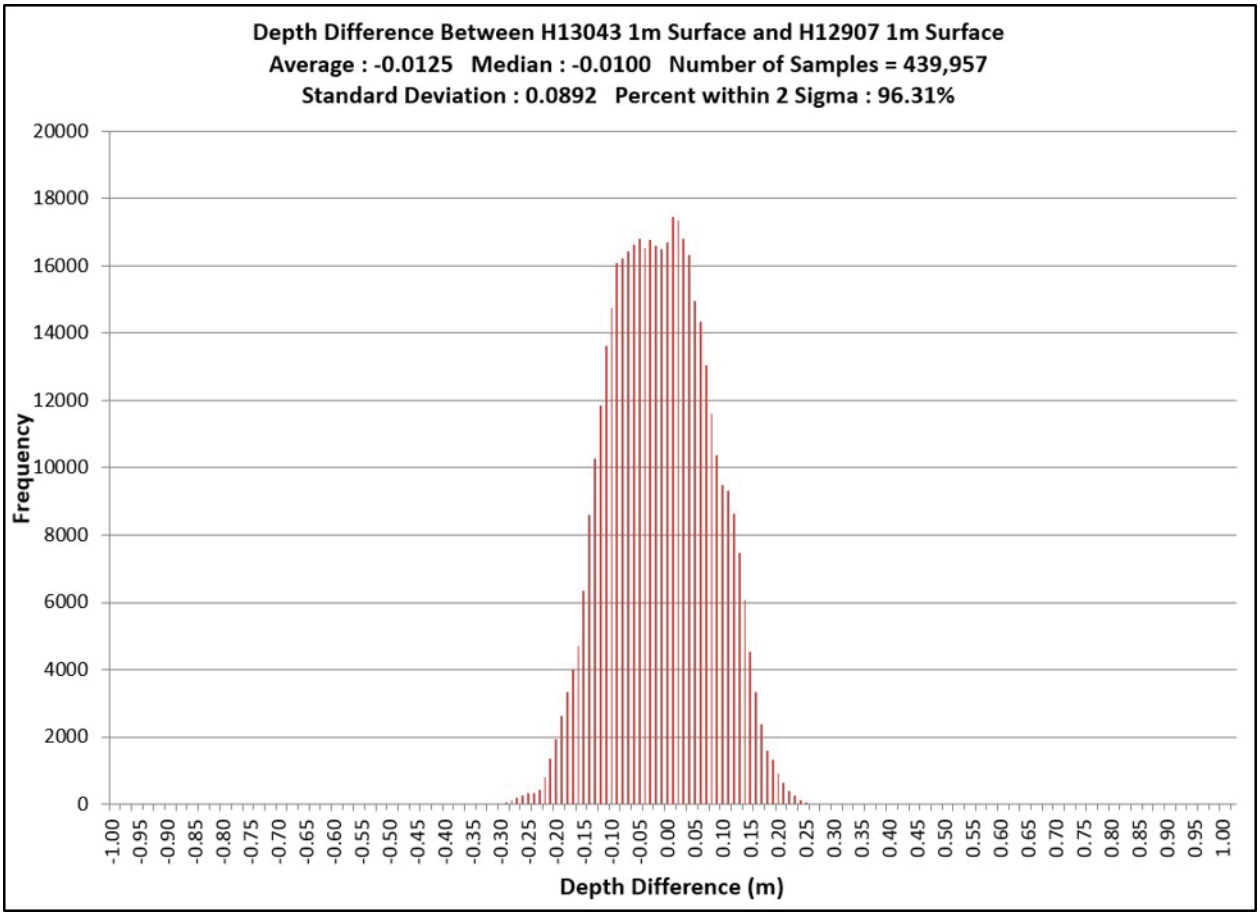


Figure 6: Surface-to-surface difference histogram comparing Survey H13043 to H12907.

H12908

Survey H12908, a MBES/SSS survey conducted by Ocean Surveys, Inc. in 2016, overlaps the southeastern border of H13043. Depth data for Survey H12908 were taken from the dataset delivered to NOAA by Ocean Surveys, Inc. on January 24, 2017 in the form of a 1-meter resolution CARIS Spatial Archive (csar) raster "H12908_MB_1m_MLLW_Final.csar." To conduct the junction comparison the depths from the H12908 data were subtracted from the depths in the "H13043_MB_1m_MLLW" surface using the CARIS HIPS Difference Surface function. A histogram of the differences is shown in Figure 7.

Survey H13043 and Survey H12908 were run with the intention of achieving 100% SSS coverage and as such, each survey's MBES coverage is "skunk stripe coverage." The two surveys' mainscheme line plans are oriented parallel to one another; the mainscheme lines of both surveys were nominally oriented NW-SE and the crosslines of both surveys nominally oriented NE-SW. The mainscheme lines from both surveys are closely aligned, leading to a relatively dense junction area. The surveys share a common border of approximately 5900 meters, and the mainscheme lines overlap by as much as 575 meters.

Overall, depths from the H13043 survey show good agreement with depths from the H12908 survey. Depth discrepancies equaled 44 centimeters or less with a mean difference of 12 centimeters. On average, Survey

H13043 was deeper than H12908. The largest discrepancy between survey depths, 40 centimeters, occurs primarily at locations where the mainscheme lines from H13043 meet the crossline from Survey H12908 that falls in the junction area.

All (100%) junction comparison cells have a difference < 0.71 meters.

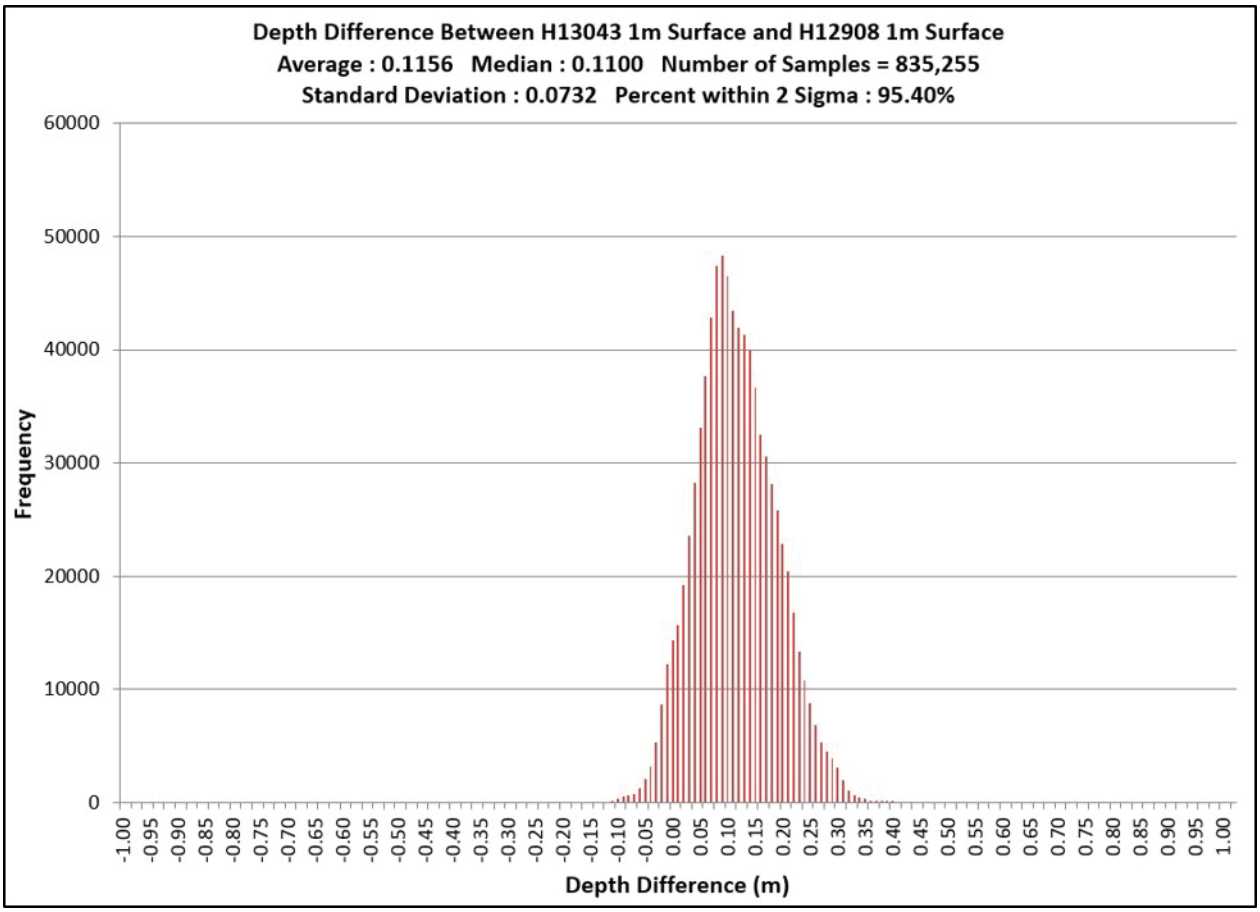


Figure 7: Surface-to-surface difference histogram comparing Survey H13043 to H12908.

H13042

The approximate overlap between the bathymetric data from contemporary Surveys H13043 and H13042 was approximately 300 meters along a common border of approximately 5,300 meters. Both surveys were acquired to meet 100% SSS Coverage over the length of the common border. Given that the respective line plans meet at an obtuse angle there is a fair amount of overlapping data despite the skunk stripe nature of Complete Coverage MBES coverage.

Depths from 1-meter BASE surfaces compiled from the MBES data from each survey, "H13043_MB_1m_MLLW" and "H13042_MB_1m_MLLW," were compared using the CARIS HIPS Difference Surface function. A histogram of the differences is shown in Figure 8. Depths from the H13043

survey show good agreement with the depths from the H13042 survey. Depth discrepancies generally equaled 25 centimeters or less with a mean difference of 10 centimeters.

All (100%) junction comparison cells have a difference < 0.71 meters.

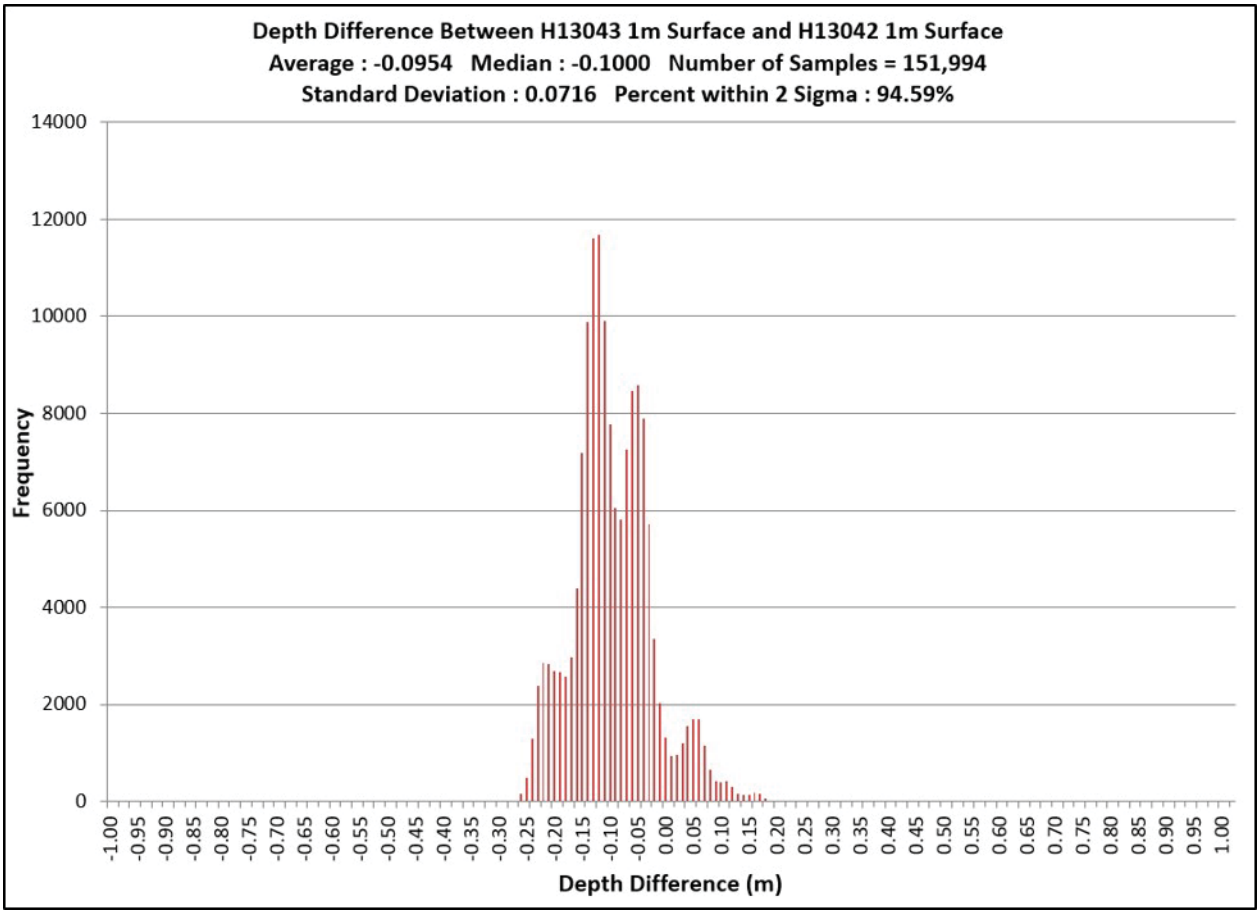


Figure 8: Surface-to-surface difference histogram comparing Survey H13043 to H13042.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the Quality Control section of the DAPR. Results from the MBES bar checks are included in Appendix II of the DAPR.

B.2.5 Equipment Effectiveness

R/V Ocean Explorer MBES Time Sync Errors

Onboard the R/V Ocean Explorer occasional time sync alarms were observed on the Reson 7125 Seabat display during data acquisition. The field personnel noted that along with the time sync alarm a brief gap may be observed in the real time display of the Seabat waterfall window. In some cases these events resulted in what appeared to be a gap in the recorded HYPACK .HSX file. Using an EXCEL utility developed by OSI, each and every HYPACK .HSX file was analyzed for these types of gaps upon check-in to the data processing flow. Upon review of the HYPACK .HSX files affected by the time sync gaps, it was noted that the sounding pings were in fact present but, a number of sounding pings would be time tagged with identical times. It is surmised that the gaps are not due to the Reson multibeam hardware, rather that the gaps are associated with acquisition computer buffering. The majority of gaps were less than 1 second. Throughout the entire project, 69 time sync gaps were detected.

When possible (and practical) the HYPACK .HSX time-stacked sounding pings were manually edited and the time stamps rewritten (interpolated/advanced at a 1/15 second interval until proper timing was reacquired). The 1/15 second interval was chosen because the sonar ping rate was limited, via user control, to a rate of 15 pings/second and the sonar range was maintained at a setting that did not limit the pings below 15/second. The affected lines were not converted to CARIS HDCS data until the time stacking editing had been completed. There were certain cases when a given gap was deemed unrepairable based on its duration or its relative location within a file.

By manually editing certain HYPACK .HSX files many lines were "saved." In some cases a gap occurred outside the bounds of the survey area or in an area with adjacent line overlap. In these cases the affected data were rejected. Between "saving" lines and rejecting certain affected data none of the delivered data contain gaps that exceeded 3x3 surface nodes in the 1-meter Complete Coverage surface.

POSPac TrueHeave gaps

Especially during the first few days of data acquisition (DN 218, DN 219, DN 220) and periodically thereafter the recorded, stand-alone Applanix POSPac files were affected by occasional brief network interruptions with durations on the order of around 5 to 22 seconds. It was believed initially that the cause of the outages was a faulty network cable on the R/V Ocean Explorer (which was replaced on DN 221). However, additional outages on the R/V Ocean Explorer after DN 221 and the fact that both vessels ultimately experienced outages suggest that network collisions may have been the culprit. The result of the network interruptions is an associated gap in the TrueHeave or delayed heave record for each file affected. It turns out that a number of the gaps described herein occur between times of data acquisition, e.g. before the start of acquisition for the day or between lines. For those files affected a custom "repair" was undertaken.

CARIS HIPS does not allow for application of TrueHeave files with data gaps. Rather than forgo using the discontinuous TrueHeave files, OSI developed a utility to “fill” TrueHeave gaps with the real-time heave data recorded by HYPACK. In practice the utility loops through a given POSPac file and searches for gaps in the TrueHeave record of > 0.1 second. If a gap is detected the utility then polls the appropriate

HYPACK .HSX file and extracts the non-delayed, real-time heave values for the period of the data gap. Finally, a TrueHeave file (supplemented with real-time heave as appropriate) is written as a TrueHeave group 111-only file (.000 format). During data check-in each and every POSPac file was analyzed for TrueHeave gaps. For the few days affected by the network interruptions, the OSI utility-generated .000 files were used in lieu of the POSPac .000 file for application of TrueHeave. The analysis and generation of “repaired” files described above were undertaken prior to ingestion into the CARIS HIPS data processing work flow. "The repaired" files include a "TH" for TrueHeave in the file name instead of the OSI default notation of "POS." For example, a file named "17ES024_OE_2017_TH_219_0807.000" was generated after repairing the POSPac file named "17ES024_OE_2017_POS_219_0807.000."

It is important to note that at no time did the network outages described above result in an interruption to the real time network stream as recorded by HYPACK.

B.2.6 Factors Affecting Soundings

SSS Refraction

Dynamic sound speed changes affected the SSS imagery at times, causing refraction in the outer ranges of the SSS swath (Figure 9). To ensure that 100% coverage of high quality SSS data was acquired, when necessary, SSS lines with excessive refraction were rejected or the portion of the line with severe refraction was re-run. Due to the relatively shallow water depths and the relatively close line spacing employed in some locations, there were many instances of outer range refraction that did not trigger a re-run or rejection. In these cases high quality, 100% SSS coverage was achieved using only a portion of the imagery from a given line. For example, if refraction affected only the outer 20 meters of the 50 meter image range but the vessel was running on a 40 meter offset line plan, ample overlap was still achieved between adjacent tracklines resulting in greater than 100% SSS coverage of the area. In this scenario SSS imagery was not rejected.

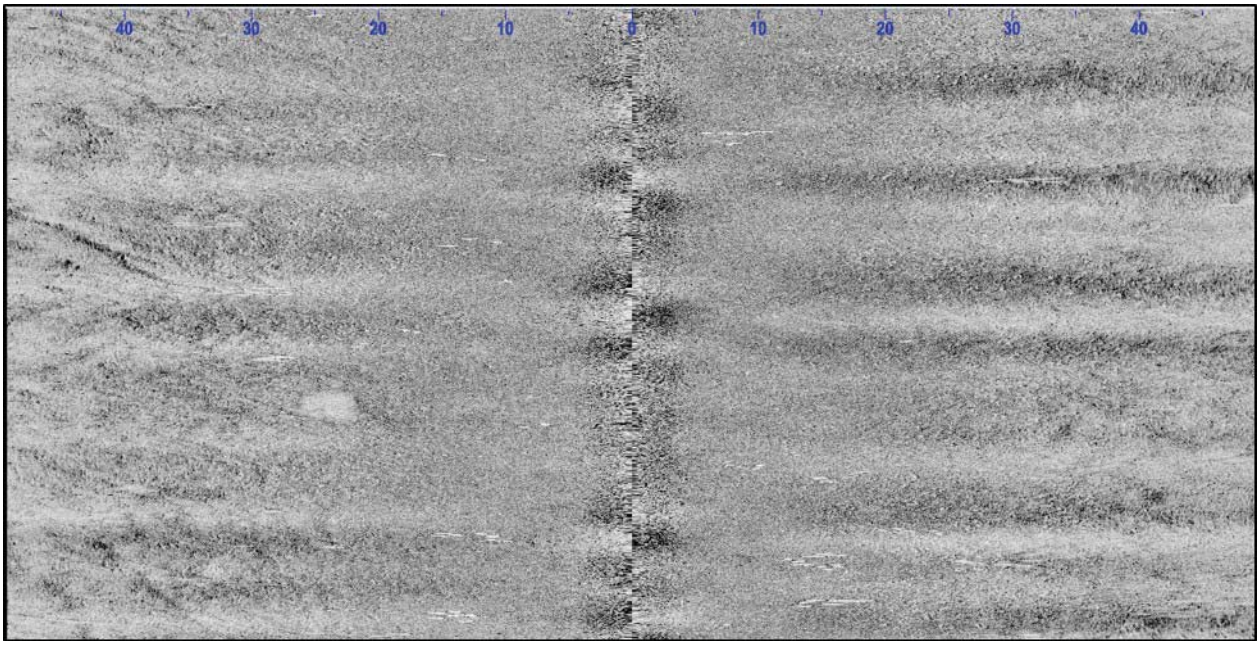


Figure 9: Refraction in the SSS imagery is visible in both channels of a survey line acquired with the fixed-mount 4125 SSS.

Sea State Induced White Streaks in SSS Imagery

The fixed mount SSS data were occasionally impacted by sea state conditions, such that when the wave frequency and height increased more cavitation effects were observed near the transducer head with a dark return noted at the top of the water column in the raw SSS record. The cavitation noise at the transducer head resulted in intermittent black lines across the SSS record, which occasionally coincided with blowouts in the MBES data (Figure 10). The term "black line" is seen in the acquisition log to denote these types of events. The acquisition SSS waterfall was the opposite palette as the CARIS SSS palette. Therefore, a "black line" noted in the log coincides with a white line in CARIS. To ensure that 100% coverage was attained where the white streaks occurred, holiday fill-in lines were acquired over the location of the streaks with either MBES or SSS coverage as necessary.

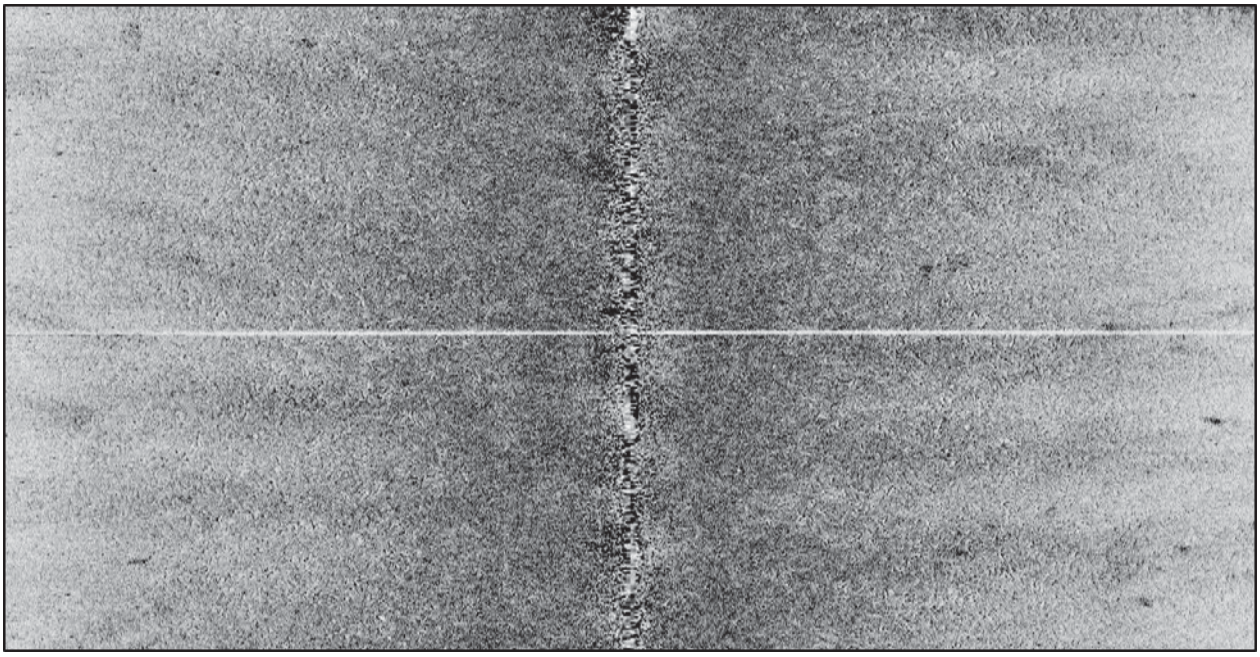


Figure 10: This figure shows how occasional cavitation noise at the fixed mount SSS transducer presented in the converted data. Noise at the 4125 TX head is visible as a dark return at the top of the water column with white streaking across the raw SSS imagery.

Tide Offset

Review of surface data indicated that there were a number of minor tide-related offsets between MBES data collected on different days scattered throughout Survey H13043. There were no noteworthy tide events that affected this survey. However, there was a consistent offset on the scale of 10 to 30 centimeters between the predicted and verified tides at the LAWMA, Amerada Pass LA tide station during the period of the survey. Overall, the tide correctors were modeled well for Survey H13043, showing good agreement between survey days. Tide offsets generally equaled 20 cm or less and are likely associated with local environmental effects, i.e. wind setup. Figure 11 highlights a portion of the survey area where a tide offset was noted between a crossline from DN 247 (rust), mainscheme data from DN 256 (yellow), and investigation data from DN 272 (cyan).

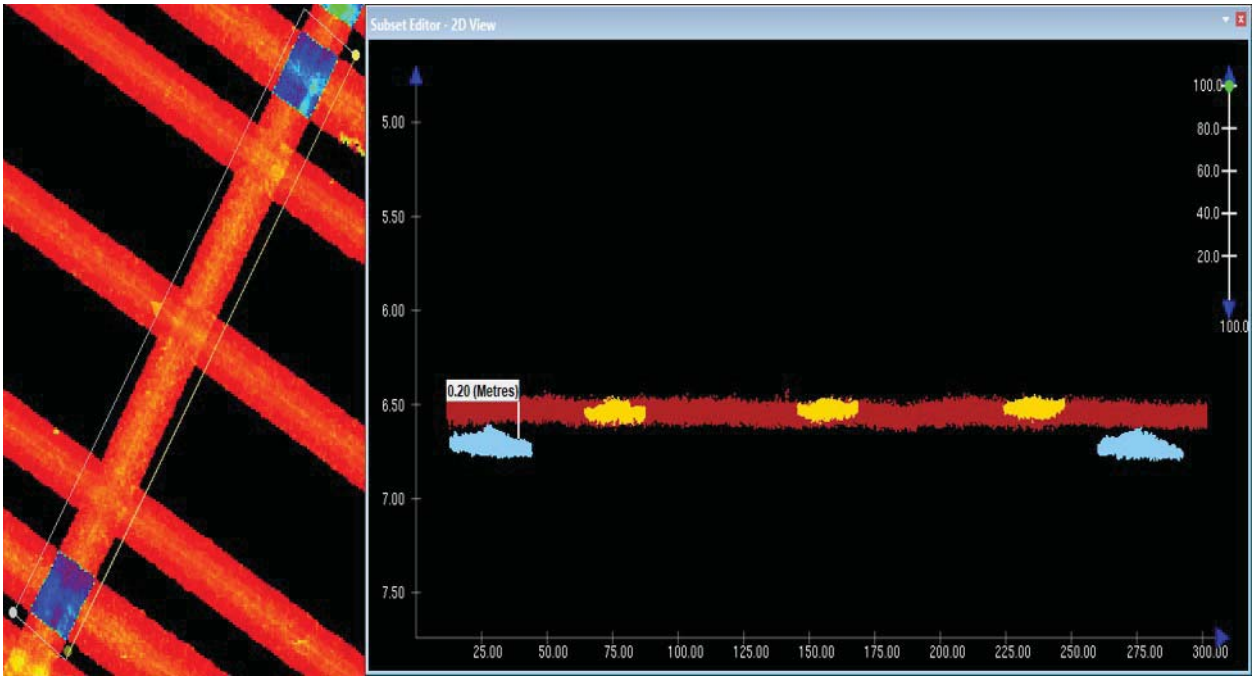


Figure 11: The left image shows a subset window displayed over the Standard Deviation layer from the H13043 1-meter CUBE surface. The blue/purple colors indicate areas of higher standard deviation in the surface due to a tide offset. The right image displays MBES data loaded into CARIS Subset Editor with a tide offset noted between DN 272 (cyan) and a crossline from DN 227 (rust). Lines from DN 256 (yellow) agree with the crossline depth. Depths and distances are in meters.

Fish in SSS Imagery and MBES Data

An abundance of fish and marine sea life were seen in the SSS and MBES data, either as lone swimmers or in schools (Figures 12-13). Fish and dolphins were noted in the acquisition log by the field team, and these areas were carefully reviewed during data processing. Shadows in the SSS, usually detached from a dark return, were typically associated with fish either in the water column or at a position closer to nadir. In the cases where a visible shadow was recorded in the SSS, the contact was designated as a fish, for two reasons: 1) the possibility that the assumed fish was actually a feature and 2) to assist processors in rejecting fish-related noise from the MBES data.

Dolphin pods were present within the survey area, as well as large schools of fish, which at times created large shadows in the SSS imagery and gaps in the MBES data where soundings on fish and dolphins were rejected. To ensure that possible significant features were not located in these fish and dolphin shadows, these fish/dolphin related coverage gaps were developed with 200% SSS coverage or complete MBES coverage.

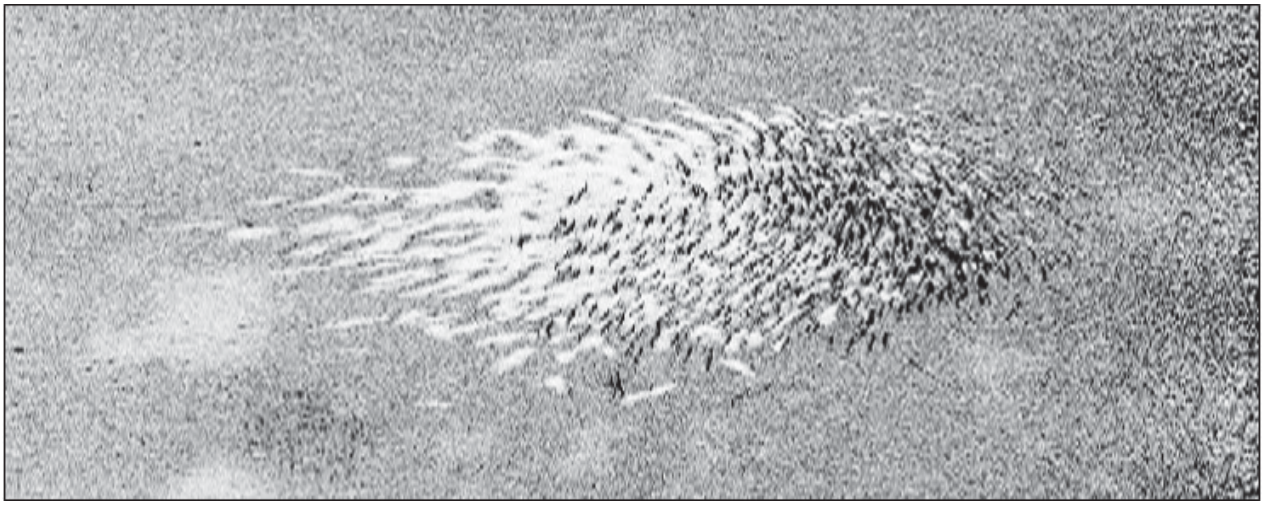


Figure 12: A school of individual fish as it appears in the SSS imagery.

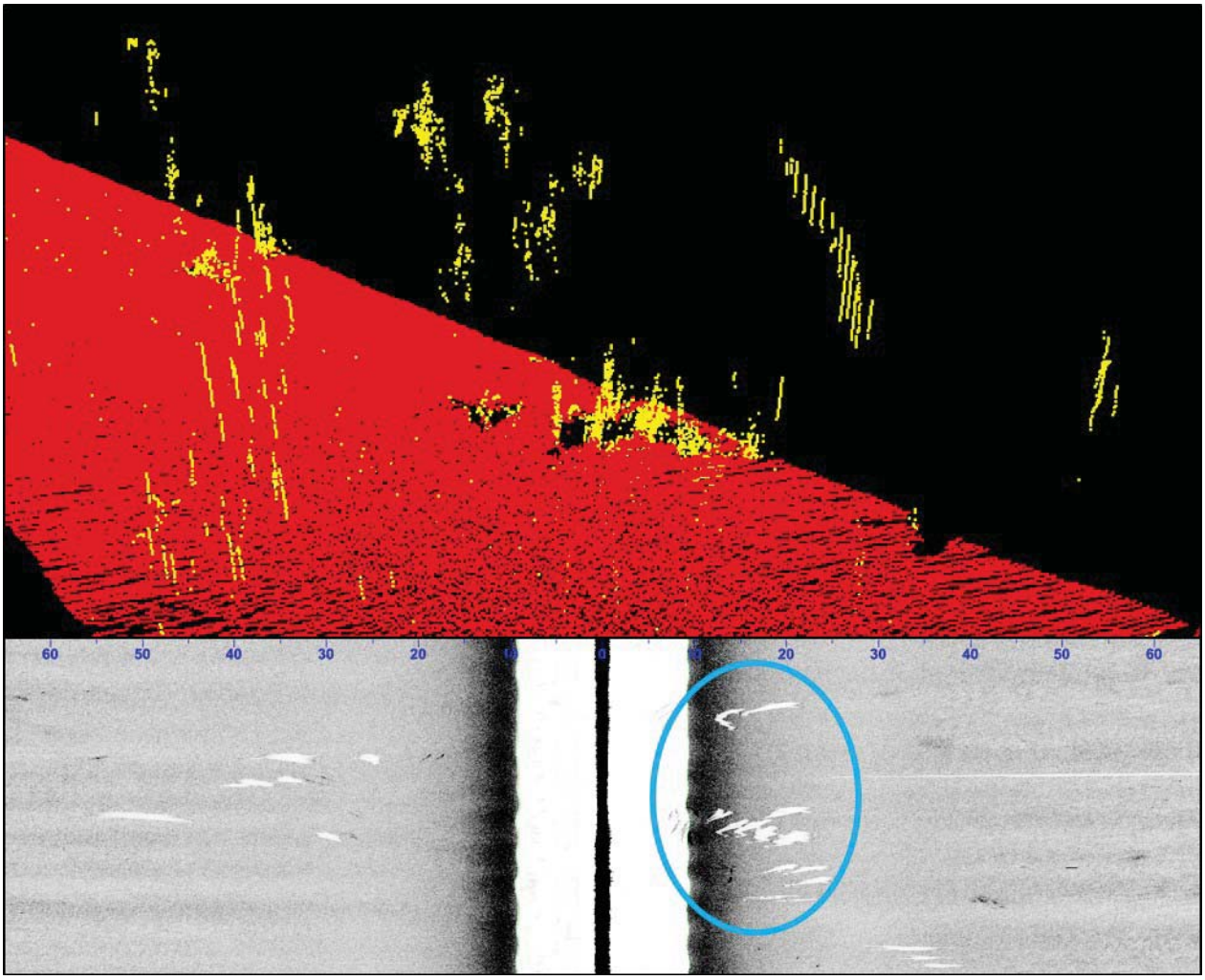


Figure 13: An example of dolphins as they appear in the water column of the MBES and un-slant range corrected SSS and the acoustic shadow cast in each dataset. In the top panel the rejected MBES soundings are colored yellow.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Onboard the R/V Ocean Explorer sound speed profile data were acquired with the ODIM MVP30 approximately every 15 minutes as documented in the DAPR.

All MBES lines were sound speed corrected using CARIS HIPS' "Nearest in Distance Within Time" method. For MBES data acquired by the R/V Ocean Explorer the interval used was one (1) hour. For the duration of data acquisition for Project OPR-K354-KR-17, the water column was relatively well-mixed.

OSI submitted H13043 sound speed data in NetCDF format to the National Centers for Environmental Information (NCEI) on December 7, 2017 via the S2N tool. NCEI assigned the sound speed submission

Accession Number 0169266. Correspondence regarding the NCEI data submission is included in Appendix II.

B.2.8 Coverage Equipment and Methods

This survey was conducted to develop 100% SSS coverage along with concurrent MBES with backscatter for depths 4-meters and greater, i.e. Complete Coverage, Option B as defined in Section 5.2.2.3 of the HSSD 2017. All of Survey H13043 has water depth greater than 4-meters. As mentioned previously due to the presently charted water depths in the southeastern corner of H13043 it was anticipated that the altitude of the fixed mount SSS would be too high in the water column to satisfy the maximum-20%-of-range scale altitude specification. As such OSI planned to achieve Complete Coverage employing MBES in the southeastern corner of the survey. As it turns out the water depths happened to be just shallow enough to have allowed for 100% "in-spec" SSS coverage with concurrent multibeam. Of course, the field team was not able to prove that 100% "in-spec" SSS was achievable until the depths were known. As with all of OSI's survey lines the SSS was turned on and recording despite the necessity to do so. As a result of the foregoing, OSI "covered" the deep southeast wedge of Survey H13043 with Complete Coverage MBES and achieved 100% in-spec SSS. For this reason the SSS is included in the coverage mosaic deliverables.

For all disprovals either 200% SSS or Complete Coverage MBES was achieved. All depths within Survey H13043 were shallower than 20 meters. Per the HSSD which states "Gaps in SSS coverage should be treated as gaps in MBES coverage and addressed accordingly," gaps in SSS coverage and holidays caused by fish, dolphins, or white line noise were developed with Complete Multibeam or a second side scan coverage. All potentially significant features located with mainscheme SSS or MBES were developed with high density multibeam sonar data to meet the Project Instructions/HSSD requirement of Complete Coverage Multibeam.

The survey methods used to meet coverage requirements did not deviate from those described in the DAPR.

B.2.9 Density

To confirm the HSSD Density coverage requirements, the Compute Statistics tool was utilized within CARIS HIPS and SIPS to generate statistics for the Density layer for each CUBE surface. The HSSD states that at least 95% of the surface nodes shall be populated with at least 5 soundings for the Complete Coverage (Option B) 1-meter surface.

The Compute Statistics tool generates an ASCII export containing two columns: 1) sounding density value and 2) the number of nodes that returned that value. This export was used to determine the percentage of nodes with a sounding density greater than or equal to 5 for every submitted CUBE surface.

The percentage of nodes with density greater than or equal to 5 soundings for the 1-meter Complete Coverage surface was as follows: H13043_MB_1m_MLLW = 99.43%.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter data were acquired concurrent with bathymetry data for Survey H13043. Backscatter data were recorded with HYSWEEP SURVEY in .7K format. These data were periodically reviewed to ensure function of the backscatter acquisition process. No specific instructions were made in the Project Instructions regarding coverage, ground truthing or processing for the Backscatter data, as such, these data are delivered in raw format in the "Preprocess\Backscatter" directory per the HSSD, Section 8.3.4 Backscatter Deliverables.

B.5 Data Processing

B.5.1 Primary Data Processing Software

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

Manufacturer	Name	Version
CARIS	HIPS	10.4

Table 9: Primary bathymetric data processing software

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

Manufacturer	Name	Version
CARIS	SIPS	10.4

Table 10: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA Profile V_5_5.

Software versions described in Section A of the DAPR were used throughout acquisition and processing of data for Project OPR-K354-KR-17.

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
H13043_MB_1m_MLLW_Final	CARIS Raster Surface (CUBE)	1 meters	5.30 meters - 11.89 meters	NOAA_1m	Complete Coverage (Option B)
H13043_SSS_1m_100	SSS Mosaic	1 meters	-	N/A	100% SSS
H13043_SSS_1m_200	SSS Mosaic	1 meters	-	N/A	200% SSS

Table 11: Submitted Surfaces

One (1) MBES CUBE surface and two (2) SSS mosaics comprise the total surfaces delivered with Survey H13043. To demonstrate MBES coverage requirements were met for Complete Coverage (Option B) a 1-meter CUBE surface was generated for the entire survey area.

Two 1-meter SSS mosaics were submitted as GeoTIFFs to satisfy the SSS coverage requirements of 100% coverage and 200% coverage over charted feature disprovals and SSS fill-ins. In addition, a higher resolution, 25-centimeter SSS mosaic image composed of all SSS lines was submitted in the ECW (Enhanced Compressed Wavelet) format to assist with the survey review.

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying Horizontal and Vertical Control Report (HVCR) for Project OPR-K354-KR-17.

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
LAWMA, Amerada Pass, LA	876-4227

Table 12: NWLON Tide Stations

File Name	Status
8764227.tid	Verified Observed

Table 13: Water Level Files (.tid)

File Name	Status
K354KR2017rev.zdf	Final

Table 14: Tide Correctors (.zdf or .tc)

A final verified tide file was created from verified water level data from the primary tide station LAWMA, Amerada Pass, LA (876-4227) obtained from the CO-OPS website upon completion of survey operations. Discrete zoning methods were utilized to apply tide correctors in CARIS HIPS. The survey area is located within Zones 236, 191, 66, and 65 as provided in the preliminary tidal zoning scheme included with the project SOW.

Final project data are delivered with verified tides applied using a slightly altered version of the preliminary zoning file provided by CO-OPS, “K354KR2017rev.zdf.” Neither time nor magnitude multiplier changes were made to the preliminary zoning file provided by CO-OPS. However, the CO-OPS provided zoning file was found to have a minor flaw in the 6th vertex of Zone #82. It was discovered during data processing that this vertex did not fall exactly on a nearby vertex of the adjacent zone (the presumed intention of CO-OPS). The result was a long, narrow, triangular area with no zoning coverage. The non-coverage triangle had two legs roughly 11.6 kilometers long with the third leg being only about 4 meters long. OSI adjusted the Zone #82 vertex which resulted in elimination of the non-coverage area. The OSI-edited zoning file included with the project deliverables uses the same name as noted above, i.e. the file name, as delivered by CO-OPS, was retained.

C.2 Horizontal Control

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

The projection used for this project is UTM Zone 15 North.

All data products, except the S-57 Final Feature File (FFF) are referenced to Latitude/Longitude, UTM Zone 15 North. The S-57 Final Feature File, H13043_FFF.000, is referenced to the World Geodetic System Datum of 1984 (WGS 84).

All MBES and SSS line and item investigation position data were acquired using an Applanix POS-MV operating in Differential GPS (DGPS) mode. The POS MV was configured to receive USCG Differential beacon correctors from the English Turn, LA station. A secondary GPS, used to facilitate real-time horizontal control confidence checks, was supplied with correctors from the Angleton, TX beacon. On two occasions during Survey H13043 USCG Differential beacon correctors from the Angleton, TX station were input to the POS MV on the R/V Ocean Explorer due to a relatively prolonged period of intermittent signal from the English Turn, LA beacon. In these cases the poor reception is believed to be attributable to foul weather between the English Turn, LA station and the survey area. The English Turn, LA outage on 9-14-2017 (DN 257) affected eight lines and lasted from approximately 04:45 to 10:23, and the outage on 10-11-2017 (DN 284) affected 12 lines and lasted from approximately 4:10 until 10:14.

Prior to and during the course of the survey the accuracy of the primary positioning system was verified by means of a physical measurement to a horizontal control point established at the vessel's base of operation. The R/V Ocean Explorer's checkpoint was established at Shell Morgan Landing in the Intracoastal Waterway. Position confidence checks for this vessel were accomplished, when practical, during fuel or weather stops. Refer to the DAPR and HVCR for additional details. For the R/V Ocean Explorer, positioning system confidence checks were performed utilizing both DGPS signal sources mentioned above.

The following DGPS Stations were used for horizontal control:

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

Table 15: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

Chart comparisons were performed in CARIS HIPS/SIPS using finalized BASE surfaces, contours and selected soundings. The latest editions of the NOAA NOS Electronic Nautical Charts (ENC) were downloaded from the NOAA Office of Coast Survey website (http://www.nauticalcharts.noaa.gov/) regularly during survey operations, and after the survey was completed for final comparisons. The ENCs used for final comparisons were downloaded on November 15, 2017 and are submitted with the survey deliverables.

Local Notice to Mariners (LNM) and Notice to Mariners (NM) spanning the period beginning subsequent to the date of issuance of the final Hydrographic Project Instructions (June 21, 2017) and ending on November 15, 2017 were consulted in conjunction with the chart comparison.

The following sections adhere to the Descriptive Report sounding rounding system as described in Section 5.1.2 of the HSSD. Specifically, features described below having “precision” depths are presented along with the sounding's TPU. Depth and TPU are rounded to the nearest centimeter by standard arithmetic rounding ("round half up").

During the chart comparison it was found that the shoalest soundings for charted regions were on non-shoal seafloor, i.e. there were no discrete shoals surveyed. The chart comparisons documented below will discuss general seafloor changes, shoaling and deepening trends. All new or charted features identified, updated or disproved within Survey H13043 were addressed and attributed in the S-57 Final Feature File. For more information on the methodology that was used to build the FFF see Section B.2.5 Feature Verification in the DAPR.

An overview of the areas of change between charted depths and H13043 surveyed soundings is shown in Figure 14. The figure displays a difference surface made by subtracting a 10-meter resolution depth surface generated from the H13043 MBES data from a 250-meter resolution depth surface interpolated from the charted ENC soundings within the project area. Regions of shoaling are represented by positive depth differences (hot colors) and regions of deepening are represented by negative depth differences (cool colors). As seen in Figure 14 there has been an overwhelming deepening trend across most of the survey area since the last survey.

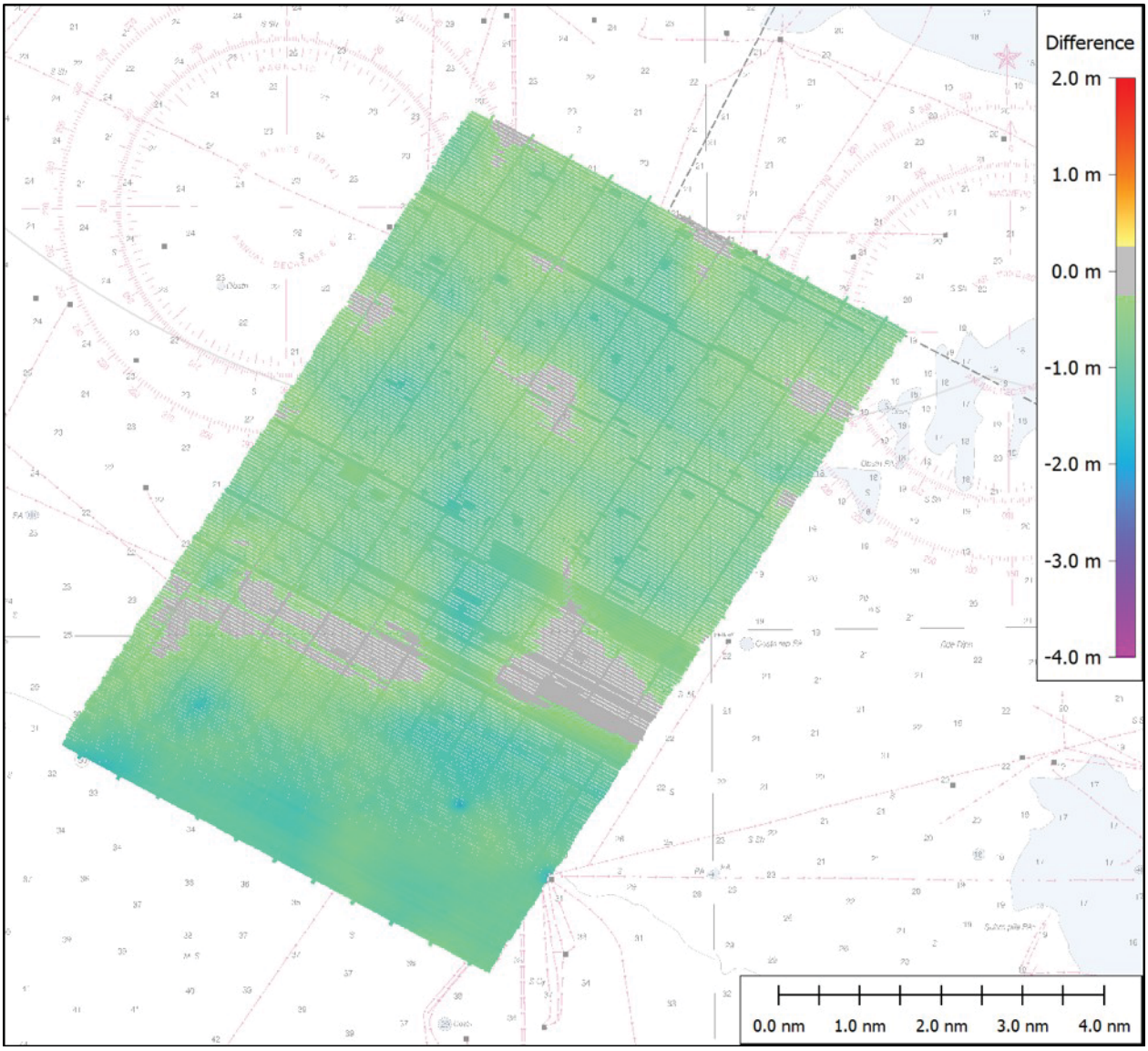


Figure 14: A depth difference surface overlaid on RNC 11349 and RNC 11351 provides an overview of the areas of change between charted depths and H13043 surveyed soundings.

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?
US4LA15M	1:80000	27	09/29/2017	10/27/2017	NO
US4LA21M	1:80000	30	08/25/2017	10/18/2017	NO
US3GC03M	1:458596	54	07/27/2017	10/13/2017	NO

Table 16: Largest Scale ENCs

US4LA15M

ENC US4LA15M is analogous to RNC 11349. In fact, these two chart products essentially share the same geographic footprint. Therefore, chart comparison notes entered under ENC US4LA15M apply to RNC 11349.

As noted above there is a general deepening trend across the extents of Survey H13043. This deepening trend affects all assigned ENC chart products.

An 18-foot depth area which spans both large scale ENCs at approximate position 29-11-55.84N, 91-48-51.20W was disproved. The depths in this area are now deeper than 20 feet.

A 30-foot depth area located at approximate position 29-08-29.00N, 91-58-50.00W falls just outside the assigned survey area but largely within project MBES which was acquired outside the bounds of the assigned survey area. The deepening trend noted above along with MBES data that intersects this 30-foot depth area suggest that this depth are should be removed from the ENC and RNC chart products.

Given the general deepening trend it follows that the charted 30-foot contour, which is represented slightly differently on ENC US4LA15M and ENC US3GC03M, will shift generally northward a distance of approximately 1,000 meters.

US4LA21M

ENC US4LA21M is analogous to RNC 11351. With a few exceptions these two chart products share the same geographic footprint. One exception occurs in the vicinity of the Lower Atchafalaya River entrance channel which is far outside the H13043 survey area and therefore does not apply to this survey. The second exception occurs within the H13043 survey area. In this case a portion of the western side of RNC 11351 extends approximately 1,500 meters further west than the western edge of ENC US4LA21M. Regardless, chart comparison notes entered under ENC US4LA21M apply to RNC 11351. The 1,500 meters of RNC

11351 not covered by ENC US4LA21M are covered by ENC US4LA15M. Within the survey area ENC US4LA21M overlaps ENC US3GC03M (discussed below).

As noted above there is a general deepening trend across the extents of Survey H13043. This deepening trend affects all assigned ENC chart products.

An 18-foot depth area which spans both large scale ENCs at approximate position 29-11-55.84N, 91-48-51.20W was disproved. The depths in this area are now deeper than 20 feet.

US3GC03M

ENC US3GC03M falls entirely within the bounds of RNC 11340. However, as seen in the figure below, despite the fact that the ENC and RNC charts are published at the same scale they do not share the same geographic boundary. Chart comparison notes entered under ENC US3GC03M apply to RNC 11340 where the two charts have overlapping coverage.

As noted above there is a general deepening trend across the extents of Survey H13043. This deepening trend affects all assigned ENC chart products.

Given the general deepening trend it follows that the charted 30-foot contour, which is represented slightly differently on ENC US4LA15M and ENC US3GC03M, will shift generally northward a distance of approximately 1,000 meters.

The charted 18-foot (3-fathom) contour at approximate position 29-12-52.64N, 91-48-16.48W was disproved. All surveyed soundings inscribed by the 18-foot contour are greater than 19.5 feet.

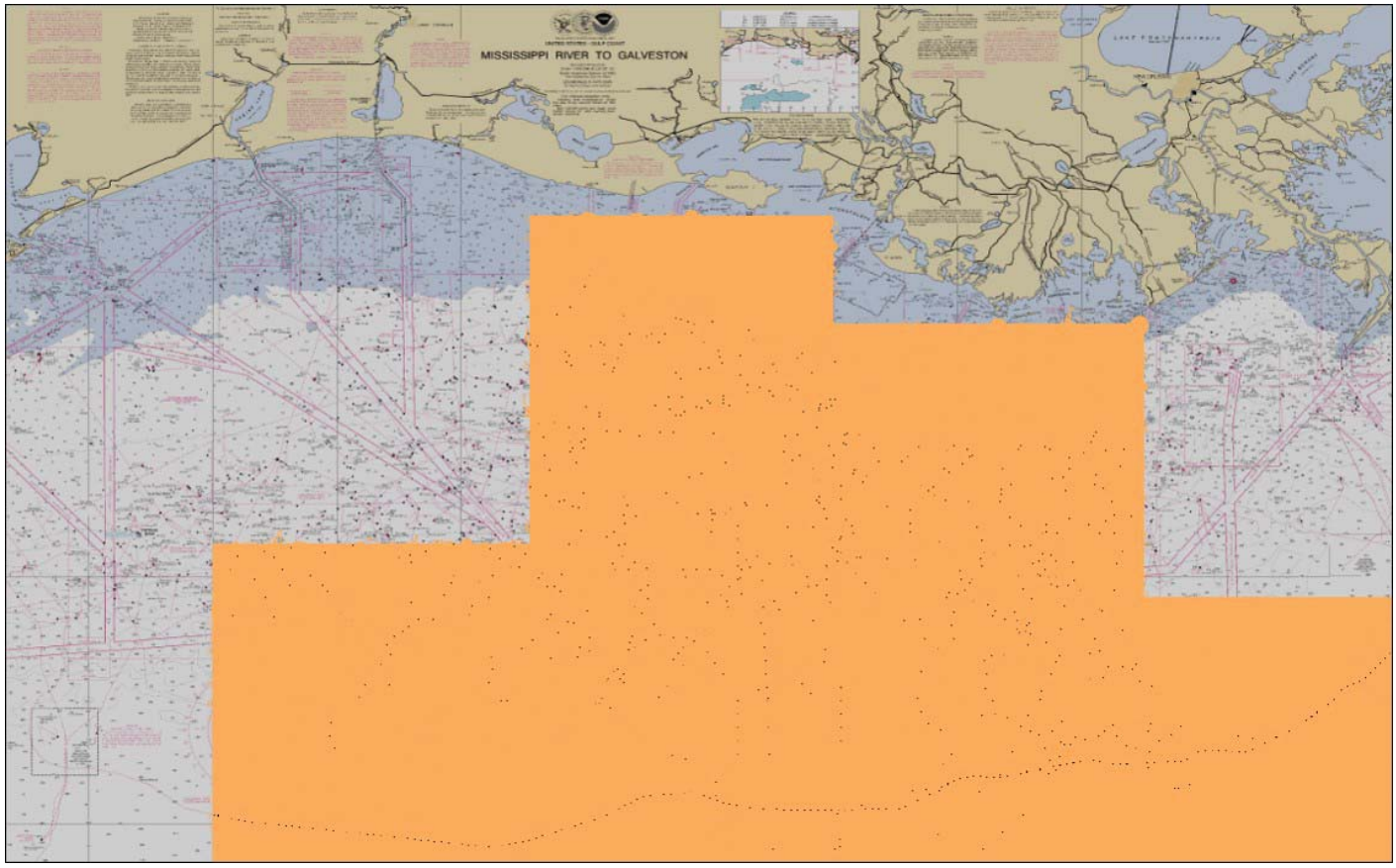


Figure 15: An overview of ENC US3GC03M (shaded orange) superimposed on RNC 11340.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

The Project Instructions' guidance on Shoreline and Nearshore Features states, "Submit a Final Feature File in accordance with HSSD Section 7. Contact the COR if there are any questions regarding feature assignments and feature management. All features with attribute ‘asgnmnt’ populated with ‘Assigned’ shall be addressed in accordance with Chapter 7 of the HSSD. Investigation requirements for all assigned features will be provided in the investigation requirement attribute ‘invreq.’ For the purposes of disproval, charted features labeled with a "PA" will have a search radius of 160 meters, charted features labeled with a "PD" will have a search radius of 240 meters, and other features without a position qualifier will have a search radius of 80 meters. With respect to wellheads, reference HSSD Chapter 7.5.1. If a wellhead is not found, for the purposes of disproval, a 50 m search radius shall be used following the feature disproval techniques for a complete coverage survey outlined in HSSD Section 7.3.4. Include feature in the FFF with descrp = delete."

Guidance on attribution of charted and CSF-assigned features varies between NOS-NOAA documents pertaining to this survey. For example, guidance on New/Delete vs. Update attribution is quite detailed in the HSSD Section 7.5.2 which lists numerous attribution change thresholds. In contrast, the CSF investigation requirements for platforms 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." The addition of uncharted BSSE Wellheads in the CSF (which were, as assigned, often closer to a surveyed platform than the CSF-defined position of the platform) creates further uncertainty on how to attribute certain features. Given the ambiguity in directives, OSI consulted with the COR for clarification via e-mail on December 6, 2017. The COR's December 11, 2017 response follows: "Include both the significant wellheads and platform features in the FFF, and reposition any platform that deviates greater than 10 meters from the center point of the corresponding charted feature, based on the Page 97 of the HSSD. These are all delete/add for the charted platforms." A record of this correspondence is included in DR Appendix II.

Within the bounds of Survey H13043, sixty four (64) features were assigned for investigation within the Composite Source File (CSF): one (1) beacon (BCNSPP), one (1) light (LIGHTS), one (1) wreck (WRECKS), five (5) platforms (OSFPLF), sixteen (16) pipeline sections (PIPSOL), and forty (40) obstructions (OBSTRN). Three (3) pipeline sections that intersect and exist within Survey H13043 were "unassigned" but are included in the following discussion bringing the total CSF features considered to sixty seven (67). Of the assigned obstructions, thirty nine (39) were "BSSE wellhead" obstructions.

The beacon and light are discussed in the ATON section of this report.

The assigned wreck was charted as "PA" and therefore had a search radius of 160 meters. This wreck was disproved with Complete Coverage MBES and 200% SSS within the search radius. The ENC US4LA15M wreck symbol correlate reasonably well with its RNC counterparts (about 9 meters apart). The ENC US3GC03M wreck symbol is approximately 55 meters from its ENC US4LA15M counterpart.

See DR Section D.2.6 Platforms for information regarding the verification or disproval of the charted platforms.

Of the forty (40) obstructions assigned for investigation all but one (1) are BSSE Wellheads. The non-BSSE Wellhead assigned obstruction is a non-specific OBSTN PA. The OBSTN PA was disproved with 200% SSS and partial MBES coverage within the feature-specific search radius of 160 meters. For the disproved "Obstruction PA" discussed herein the ENC US4LA15M obstruction symbol correlates well with its RNC counterpart. On ENC US3GC03M the obstruction symbol is over 400 meters from its its ENC US4LA15M counterpart.

Nineteen (19) pipeline features were either assigned (or included and unassigned) for investigation in the CSF. Many of the pipelines, as packaged and assigned in the CSF, extend outside the bounds of the H13043 survey area. As such, a number of the assigned pipelines are coincident with pipelines in adjacent sheets. During preliminary data processing, by coincidence only, there were nineteen (19) pipeline or potential pipeline detections identified in Survey H13043. Many of these detections are duplicate detections, i.e. a single feature imaged on one or more adjacent tracklines. Discounting the duplicated detections, the total number of pipeline or potential pipeline detections is eight (8). Two pipeline detections occur just east of

the eastern boundary of Survey H13043 where start-of-line or end-of-line extra data were acquired. Neither of these features is included in the FFF as they are 1) outside the survey area and 2) of insignificant height. One of the pipe features, located at position 29-06-56.17N, 91-52-22.22W, was the subject of OPR-K354-KR-16 H12908 DTON # 4-8. The second of these features, included in the H13043 Non-DTON Seeps and Pipeline report, is located at position 29-07-08.51N, 91-52-16.41W.

All pipeline detections are less than 1.0 meter above the seafloor. Therefore, none of the detections are deemed Dangers to Navigation (DTON) and all valid pipeline detections, as interpreted during late stage processing, were forwarded to the COR via email on December 21, 2017 according to guidance in Section 1.7 of the HSSD regarding Non-DTON Seeps and Pipelines. Three (3) "seeps" are included in the aforementioned Non-DTON pipeline notification.

All of the BSSE Wellhead obstructions are recommended for deletion. Among the thirty nine (39) assigned BSSE Wellhead obstructions there are two cases where evidence suggests the possible existence of a BSSE Wellhead. However, even in these cases, the wellheads are recommended for deletion. The first case, located at CSF-assigned position 29-06-03.28N, 91-53-12.33W, is 24 meters from a gas "seep" at position 29-06-03.77N, 91-53-13.03W. This seep was included in the "Non-DTON Seep and Pipeline Report" (Non-DTON Report Key #7). Given that the gas seep has the potential to mask a near-bottom feature it cannot be confidently stated that any structure exists.

The second possible well head detection (also recommended for deletion) occurs near CSF position 29-14-19.51N, 91-52-53.70W. In this case a number of insignificant features are present within the assigned BSSE Wellhead 50-meter search radius. The tallest of the features, approximately 0.7 meters proud of the seafloor, is located at position 29-14-20.35N, 91-52-53.81W. This feature warrants neither a designated sounding, nor a DTON notification. As such there is not an associated feature included in the FFF. This area coincides with the missing ATON which is the subject of H13043 DTON #1.

Two (2) of the CSF-defined BSSE Wellheads are coincident with charted/surveyed platforms. In each case of coincidence with verified charted platforms, no evidence of a wellhead aside from the verified platform was found within the disproval area centered on the CSF provided positions defined by a 50 meter search radius. The remaining BSSE Wellheads were disproved with 200% SSS and partial MBES coverage and/or Complete Coverage MBES within the feature-specific search radius of 50 meters. For a more complete description of the well head investigations, refer to the H13043 FFF. The source indication (SORIND) attribute field was blank for the BSSE well head features submitted in the CSF; therefore, the SORIND fields are blank for the disproved well heads attributed with a description (descrp) of "Delete" in the FFF.

Regarding the OCS-provided CSF, it should be noted that not all “assigned” features included in the CSF were addressed during the survey. This note is made in light of the Project Instructions’ directive that, “all features with attribute ‘asgnmnt’ populated with ‘Assigned’ shall be addressed in accordance with Chapter 7 of the HSSD.” The following time line and narrative are offered as an explanation thereof. The Draft Project Instructions are dated May 2, 2017 and the Draft Composite Source File (CSF) and Project Reference File (PRF) were issued on May 19, 2017. The Final Project Instructions are dated June 21, 2017, and the Final Data Package (including "final" CSF and PRF) was issued to OSI on July 5, 2017. The draft Project Instructions included seven (7) potential sheets, i.e. HXXXXX Registry Numbers. The negotiated survey effort, reflected in the Final Project Instructions and PRF include four (4) of the seven (7) original sheets. The remaining three (3) sheets are depicted as “unassigned” in the figure included with the Final

Project Instructions. However, the Final CSF (file date 5-19-2017) does not reflect the reduction in sheets mentioned above. As such, there are a number of Final CSF “assigned” features that fall well outside of the four surveyed sheets. OSI’s assumption that the CSF “assigned” features falling within the three “unassigned” sheets need not be addressed was confirmed in correspondence with the COR (see Descriptive Reports Appendix II, Correspondence). For clarity the CSF “assigned” features that fall within the three “unassigned” sheets mentioned above are not included in the FFFs.

Prior to this year, exposed pipes and seeps were handled as DTONs and therefore were appended to the FFF. The 2017 HSSD includes a new category of feature, "non-DTON seeps and pipes." However, the 2017 HSSD does not mention whether or not to include these non-DTON features in the FFF. The HSSD only addresses undetected charted pipelines and recommends that a non-detected pipeline should be attributed "Retain." In a December 11, 2017 e-mail to the COR, OSI inquired about how to treat exposed, non-DTON pipes and seeps in the FFF. The COR's December 12, 2017 response follows, "The current requirement of the "Non-DTON Seep and Pipeline Report" is a separate deliverable from the FFF. Your historic method of including the pipeline segments in the FFF is good. How you manage the other features is up to your discretion. The features that are not cartographically significant they will be ignored in the FFF." Given this latitude in how to treat the non-DTON seeps and pipes, OSI chose to include them in the FFF as discrete features.

D.1.4 Uncharted Features

In general there were very few new features surveyed in H13043. Of the relatively few SSS contacts chosen most were either fish (chosen independent of the mass fish targeting scheme described in the DAPR) or features of insignificant height. Only two noteworthy new obstructions were surveyed; nominally 1.0 meter and 2.0 meters proud of the seafloor (Figures 16-17). In consideration of the nearby soundings only one of the new obstructions warranted DTON notification. The first noteworthy feature, nominally 1-meter tall is located at position 29-12-00.31N, 91-49-01.63W. The second noteworthy feature, nominally 2-meters tall, appears to be a large angular obstruction detected at position 29-06-22.06N, 91-53-45.97W. This feature is the subject of H13043 DTON#2.

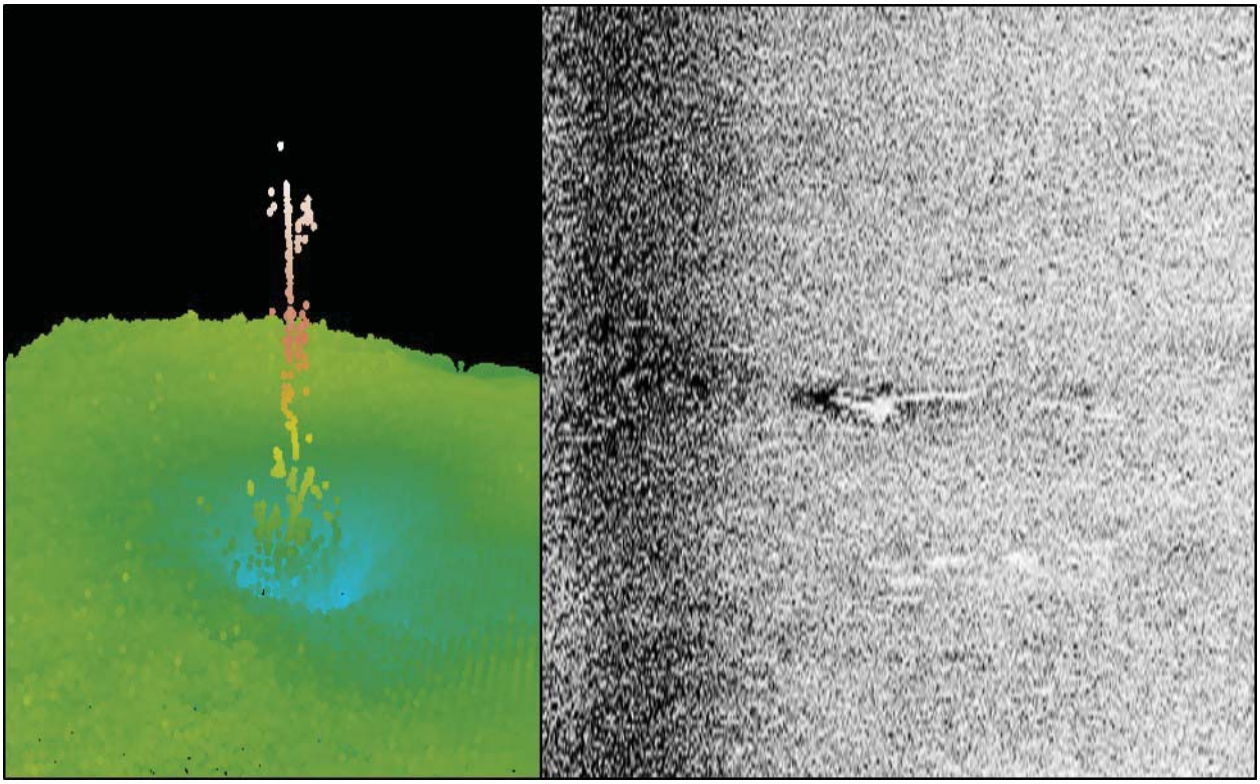


Figure 16: A nominally 1-meter tall feature is represented in CARIS HIPS Subset Editor 3D with the soundings colored by depth (left) and in the SIPS waterfall SSS imagery (right).

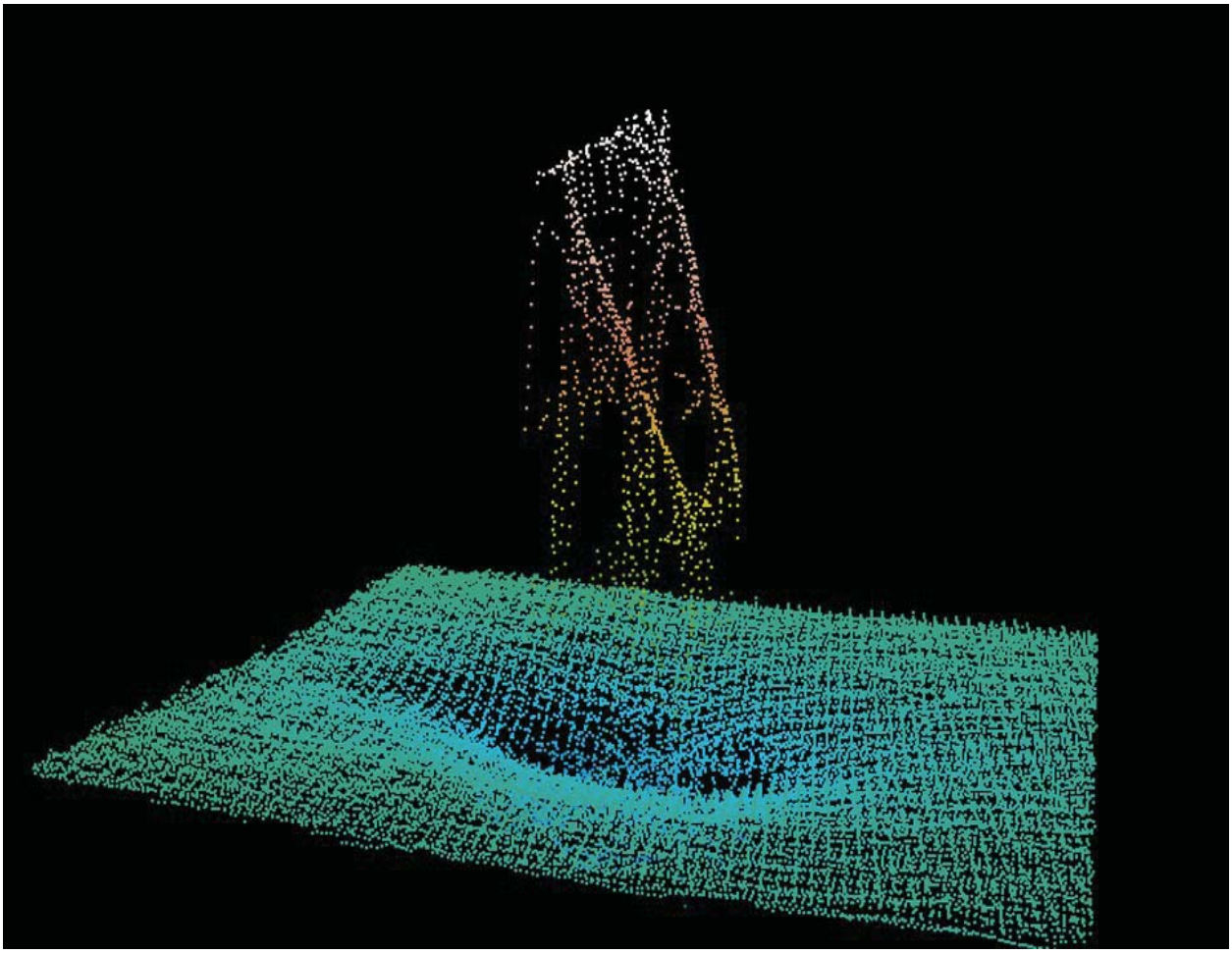


Figure 17: A nominally 2-meter tall angular obstruction is represented in CARIS HIPS Subset Editor 3D with the soundings colored by depth.

D.1.5 Shoal and Hazardous Features

The methods employed in conducting the Shoal and Hazard Features analysis are the same as described above for the Chart Comparison discussion.

As mentioned above there is a general deepening trend across the extents of Survey H13043. No new discrete dangerous shoals were surveyed.

A presently charted Caution Area (CTNARE) overlaps a portion of the northern boundary of Survey H13043. The CTNARE (Note C on RNC 11349 and Note D on RNC 11351) properly describes the charted data resulting from Survey D00137 and as such should remain, "The hydrography within the heavy dashed black line was surveyed by NOS in 2005. A shoaling condition has been observed in relation to prior surveys. The density of this most recent survey data is inadequate to rule out the possibility of shoaler depths or undetected submerged features in these areas."

Two (2) DTON reports were issued for Survey H13043.

D.1.6 Channels

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

D.1.7 Bottom Samples

Fourteen (14) bottom samples were acquired in close proximity to the recommended positions included in the PRF provided with the OPR-K354-KR-17 Project Instructions. A sediment sampler was deployed from a davit to acquire the requisite sample. Bottom sample locations were logged in a target file in HYPACK SURVEY. Once the sample was on deck it was photographed and classified based on the criteria outlined in Appendix H, Bottom Classification, in the HSSD. In general, sediment was found to be in keeping with anticipated nearshore, coastal Louisiana sediments and as-charted conditions. Specifically, sediment within Survey H13043 were primarily soft mud with some samples containing small sand and others containing shell hash.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

Prior survey data exist for this survey area. However, with the exception of the assigned junction surveys, prior data were not investigated.

D.2.3 Aids to Navigation

One ATON was assigned with Survey H13043. The CSF-"assigned" and ENC-charted Light (LIGHTS) and Beacon, special purpose/general (BCNSPP) are attributed with the same position: 29-14-19.245N, 91-52-52.689W. The Light List-published position of this light is 29-14-19.110N, 91-52-52.390W. This light is depicted on ENCs US4LA15M and US3GC03M as well as RNC 11349 and RNC 11340. The structure on which the light was presumably installed was disproved visually at the surface and with 200% SSS coverage and partial MBES coverage (Complete MBES over features) within the disproval area defined by an 80-meter radius centered on the CSF provided ATON position. According to the Light List the light was meant to mark “4 concrete obstructions.” Evidence of obstructions was found on the seafloor. However, the largest of the features is less than 1-meter tall. The least depth of the tallest feature is not considered a danger to navigation in light of the presently charted soundings surrounding the feature.

Although none of the chart products have any indication of an obstruction at this location, the CSF places a BSSE Wellhead obstruction about 28 meters WNW of the disproved light. This is also the location of an uncharted BOEM-published platform ("BOEM" platforms are discussed in the Platforms section of this report).

According to the full range of Local Notice to Mariners (LNM) consulted during preparation of this report (up to and including LNM 46/17 [November 15, 2017]) the status of the light, Merit-110-2, is "HAZ NAV/ LT EXT/SS INOP." According to the LNM abbreviations key the light's status abbreviation is meant to convey the following: "Hazard to Navigation, Light Extinguished, Not Operating." According to LNM 46/17 the LNM "start" of this notification occurred in LNM 41/11 which is dated October 12, 2011. This missing light is the subject of H13043 DTON #1. It is recommended that the light/beacon are removed from all chart products.

The missing light/beacon are the subject of H13043_DTON#1.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

As discussed above, nineteen (19) CSF pipelines (PIPSOL) are located within Survey H13043 (16-assigned and 3-unassigned). On RNC 11349 and RNC11351 only magenta pipeline symbols are shown. This symbol represents supply pipelines for oil, gas, chemicals, or water, according to U.S. Chart No. 1: Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts. None of the Information contained within ENC US4LA15M, ENC US4LA21M, or the CSF refute the RNC symbolism. None of the charted pipelines have a buried depth value (BURDEP). The majority of the charted pipelines were not visible in the SSS or MBES data.

All ENC and CSF pipelines within the survey area have a RNC counterpart. All RNC pipelines within the survey also have an ENC/CSF counterpart. However, the pipelines are not represented on ENC US3GC03M or RNC 11340.

To further the submarine features discussion an alternate pipeline information source was consulted. The consult includes review of information contained in a pipeline shape file (.SHP) downloaded from the Bureau of Ocean Energy Management (BOEM) on November 30, 2017. Prior to including the BOEM shape file in this analysis, the portion of the shape file that intersects with the OPR-K354-KR-17 project area was reprojected to UTM, Zone 15N, NAD83 and saved as a .DXF file. In CARIS HIPS/SIPS the BOEM pipeline .DXF file was then visually compared to the charted pipelines within the project area to identify any potentially uncharted BOEM pipelines.

The results of the analysis suggest that there are a few uncharted BOEM-listed pipe segments within Survey H13043. Furthermore, two of the charted pipelines are not represented in the BOEM .SHP file. Figure 18

depicts uncharted BOEM pipelines (yellow lines) and charted pipelines without a BOEM counterpart (blue lines).

The shape file, “ppl_arcs.shp” (contained within ppl_arcs.zip) and re-projected .DXF file, “BOEM_Pipelines_UTM_15N_NAD83_Meters.dxf” are included with the digital deliverables along with the RNC/ENC charts considered in the chart comparison. BOEM pipeline data were obtained at the following web address: https://www.data.boem.gov/Main/Mapping.aspx

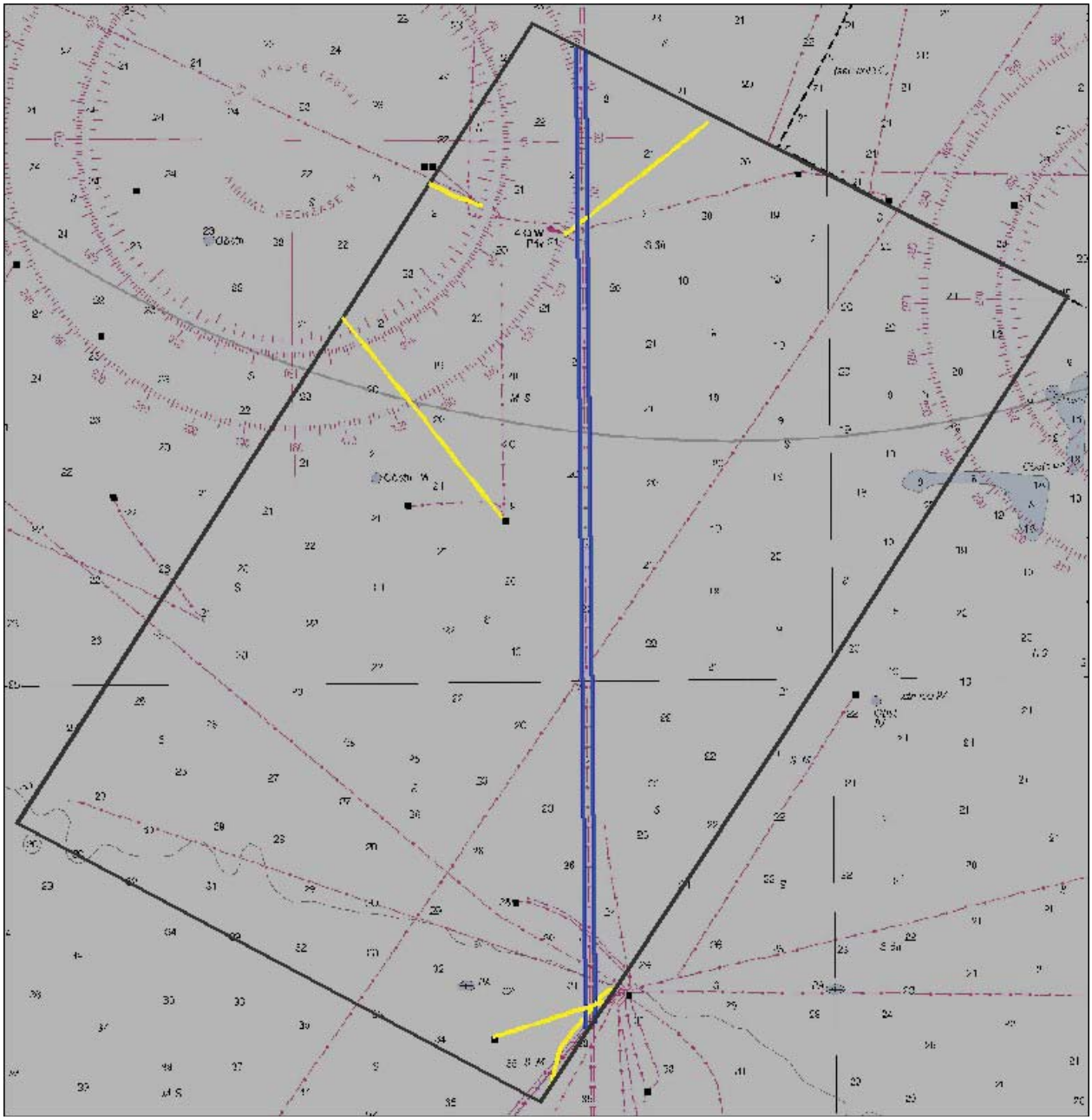


Figure 18: BOEM-defined pipelines that are not charted are highlighted in yellow in reference to RNC 11349 and RNC 11351. The charted pipelines without BOEM counterparts are highlighted in blue. Survey H13043 sheet limits are shown in black.

D.2.6 Platforms

Five (5) platforms (OFSPLF) were assigned for investigation in the CSF for Survey H13043. All of the assigned platforms exist on charts ENC US4LA15M and RNC 11349. None of the CSF-assigned platforms for Survey H13043 fall on ENC US4LA21M. No platforms are depicted on ENC US3GC03M.

Of the five (5) assigned platforms, two (2) were found to exist. All other CSF-assigned platforms are recommended for deletion as they were disproved visually at the surface and with 200% SSS coverage and partial MBES coverage within the disproval area defined by an 80-meter radius area centered on the CSF provided platform position.

The two (2) existing platforms were surveyed in close proximity to the CSF/ENC defined locations, i.e. a distance of less than 80 meters from the CSF/ENC defined position (80 m is equivalent to 2 mm at a scale of 1:40,000). However, as both platforms were farther than 10 meters from their charted position, they are attributed with "delete" in the FFF and new platform features located at the surveyed positions are recommended.

Images of the verified platforms are included in the FFF. The existing platforms are as follows (positions per CSF):
29-06-33.10N, 091-53-45.42W
29-07-52.22N, 091-53-31.15W

D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.8 Abnormal Seafloor and/or Environmental Conditions

Abnormal seafloor and/or environmental conditions were not observed for this survey.

D.2.9 Construction and Dredging

Except for the presence of temporary jackup barges attending to platform maintenance on the periphery of the survey, no construction or dredging was observed within the survey limits at the time of data acquisition.

D.2.10 New Survey Recommendation

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

D.2.11 Marine Mammal Observations

Per direction in Section 1.5 of the HSSD all personnel aboard the survey vessel used during Project OPR-K354-KR-17 were "trained" as Marine Mammal Observers prior to commencement of the survey. Training consisted of each surveyor and vessel crew member watching the US Navy video referenced in the HSSD.

As noted multiple times in the survey acquisition log, large, mobile water column sonar targets (assumed to be dolphins) were ensonified by either the MBES or the SSS. The dolphin-assumption is based on both the

size and behavior of the sonar targets. Often times these observations did not coincide with a visual (above water) sighting. Visual observations, when noted, were recorded on NOAA/NMFS,AFSC/NMML Form 11US (POP) which is included as Appendix L of the HSSD.

Completed digital 11US (POP) forms were compiled and transmitted along with the Project's digital marine mammal training record to pop.information@noaa.gov and ocs.ecc@noaa.gov with a CC to the Project's COR, Starla Robinson. These records are also included in Descriptive Report Appendix II.

D.2.12 Coast Pilot Review

In reference to the OPR-K354-KR-17 survey area the Coast Pilot Report, included with the July 6, 2017 Final Data Package, states that, "there are no paragraphs included in the U.S. Coast Pilot 5 that describe this area and thus, there are no investigation items to be listed." The survey area considered in the Coast Pilot Report does not exactly match the area ultimately surveyed. However, the Report's "no-investigations" statement still applies to the area actually surveyed. Furthermore, the Hydrographic Survey Project Instructions contained only general guidance regarding the Coast Pilot. As such OSI was not able to "respond to each question posed in the Coast Pilot Field Report" as mentioned in Section 8.1.3 of the HSSD. In lieu of targeted responses to an assigned Coast Pilot Field Report, OSI conducted a general review of relevant Coast Pilot excerpts. Specifically, pertinent paragraphs from the following Coast Pilot section were considered: Coast Pilot 5 - 45th Edition, 2017 updated through 12-October-2017, Mississippi River to Sabine Pass.

Within the Coast Pilot Edition mentioned above there are no specific, detailed, relevant entries concerning the assigned H13043 survey area. Rather, only entries of a general nature are mentioned and are not refutable based on the observations of the OSI field team. Regarding "areas frequently transited and facilities utilized during in-ports" (as mentioned in the HSSD Section 8.1.3), Coast Pilot entries are somewhat more relevant. However, there are only a few Coast Pilot entries that OSI's general review attempts to address as most entries were not relevant to the "areas frequently transited by the survey vessel and facilities utilized during in-ports."

OSI's Coast Pilot Review Report and the original Coast Pilot Report, mentioned above, were transmitted to ocs.nbd@noaa.gov and coast.pilot@noaa.gov with a CC to the Project's COR, Starla Robinson. These records are also included in Descriptive Report Appendix II.

D.2.13 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

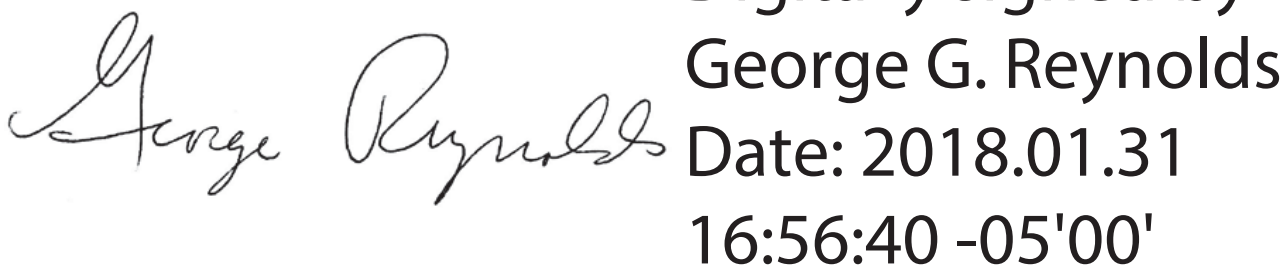
As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

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

The survey data meet or exceed requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Report Name	Report Date Sent
Data Acquisition and Processing Report	2018-01-19
Horizontal and Vertical Control Report	2018-01-19

Approver Name	Approver Title	Approval Date	Signature
George G. Reynolds	Chief of Party	01/31/2018	



F. Table of Acronyms

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

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

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

Appendix I

Tides and Water Levels

The following table summarizes the days in which data were collected that contribute to the final accepted data set.

Table 1
Abstract of Times of Hydrography

Date	Day Number	Min. Time UTC	Max. Time UTC
9/4/2017	247	3:58:48	11:30:11
9/13/2017	256	00:39:22	23:54:17
9/14/2017	257	00:34:53	13:04:09
9/17/2017	260	03:39:04	15:26:36
9/18/2017	261	17:45:08	23:51:02
9/19/2017	262	00:19:11	23:37:56
9/20/2017	263	06:43:39	23:55:51
9/21/2017	264	00:27:14	23:44:37
9/22/2017	265	00:23:42	23:50:05
9/23/2017	266	00:18:06	14:40:55
9/25/2017	268	17:11:47	23:40:10
9/26/2017	269	00:17:16	23:47:21
9/27/2017	270	00:30:25	23:47:46
9/28/2017	271	00:11:28	10:24:06
9/29/2017	272	08:28:50	23:52:49
9/30/2017	273	00:28:09	05:30:49
10/11/2017	284	01:39:26	23:48:17
10/12/2017	285	00:23:55	06:09:23

Tide/water levels for this project were provided exclusively by NOAA as verified data from NOAA Tide Station 876-4227, LAWMA, LA. The project is located within zones indicated by preliminary tidal zoning included in the project Statement of Work. Time and range corrections were applied to LAWMA, LA (876-4227) verified tide data according to Table 2.

Based on the results of crossline analysis, it appears that the time and range factors as provided in the preliminary zoning scheme are adequate.

Coordinated Universal Time (UTC) was used to annotate the tide records and all other data obtained for this project.

Preliminary tide correctors were retrieved daily from the CO-OPS website. Verified tides were retrieved as they were made available by CO-OPS. Tide data were applied to processed soundings employing the CARIS "Import Tide to HIPS" function.

A slightly altered version of the CARIS-format zoning file, "K354KR2017rev.zdf" (provided by CO-OPS), was employed to facilitate the application of final tide zoning scheme factors. During data processing OSI discovered a minor flaw in the 6th vertex of CO-OPS-provided Zone #82; the vertex did not fall exactly on a nearby vertex of the adjacent zone which is the presumed intention of CO-OPS. The result was a long, narrow, triangular area with no zoning coverage. The non-coverage triangle had two legs roughly 11.6 kilometers long with the third leg being only about 4 meters long. OSI adjusted the Zone #82 vertex which resulted in elimination of the non-coverage area. The 6th vertex as delivered by CO-OPS was 29.448176, -92.096407. OSI changed this vertex to 29.448128, -92.096409. In making the edit neither time nor magnitude multiplier changes were made to the preliminary zoning file. The OSI-edited zoning file, included with the project deliverables, uses the same name as noted above, i.e. the file name, as delivered by CO-OPS, was retained.

Table 2
Tide Zones Associated with Project OPR-K354-KR-17

Zone	Time Correction	Range Correction
65	-60	0.94
66	-60	1.03
82	-72	1.31
115	-78	1.28
154	-72	1.22
182	-60	1.12
189	-84	1.31
191	-66	1.12
193	-72	1.25
263	-66	1.03

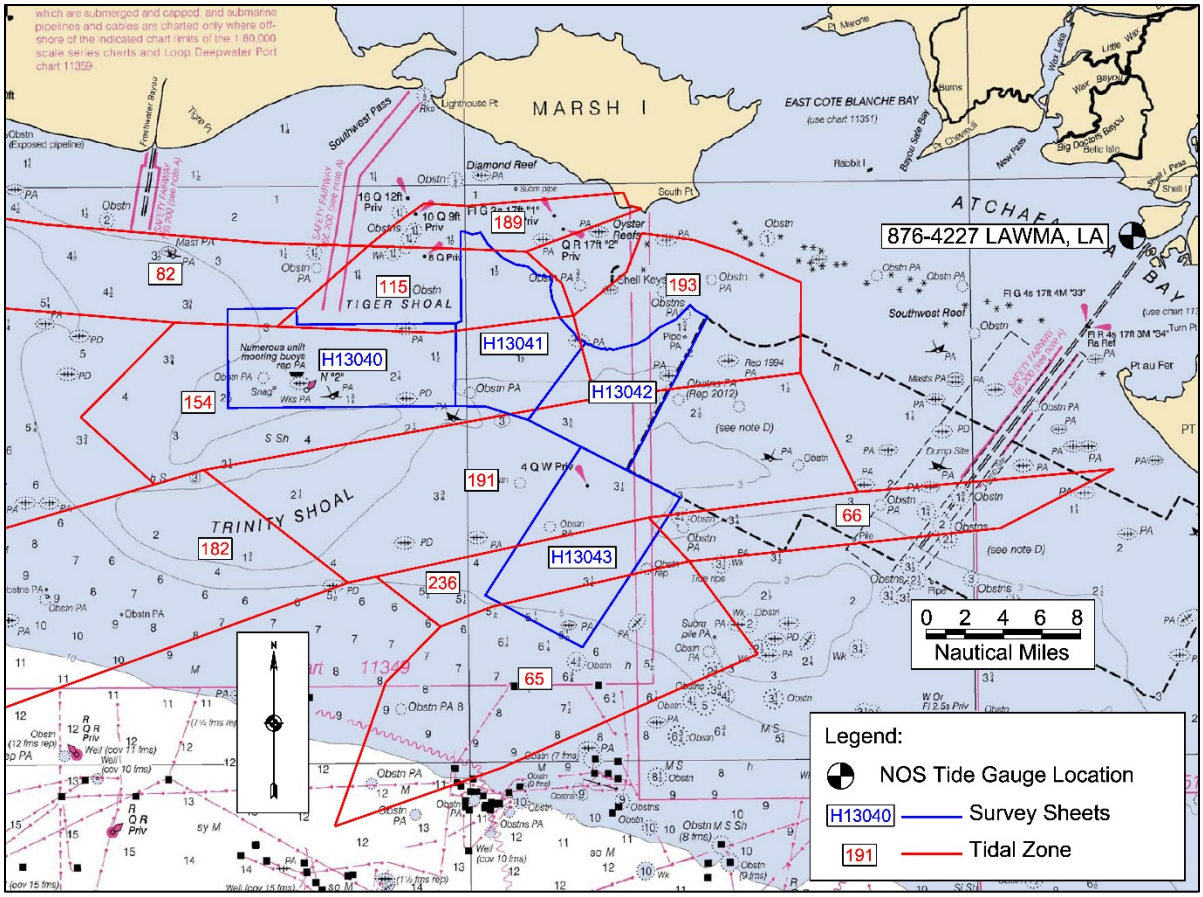


Figure 1. Project survey boundaries (blue lines), tidal zone boundaries (red lines), and the LAWMA, LA tide station location. In this figure the western end of Tide Zones 182 and 82 have been cropped for the sake of clarity of the 2017 project area.

Appendix II

Survey Correspondence

From: Castle Parker - NOAA Federal [mailto:castle.e.parker@noaa.gov]
Sent: Friday, January 26, 2018 9:17 AM
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>; George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>; David Somers <dts@oceansurveys.com>
Subject: RE: FW: DTON correspondence record request

FYI,

Reference attached spreadsheet regarding K354 OSI DtoN and feature submissions. I have annotated with dates where AHB either submitted emails to NDB and received registration emails.

AHB is somewhat perplexed with NDB and MCD policy with regards to exposed or unburied pipelines. NDB is hesitant to chart single point obstruction on a charted linear obstruction (pipeline). The subject matter remains a topic of conversation with no clear resolution as of today. OSI has done due diligence with the submissions and hope that I have provided the proper emails for DR inclusion.

Some conflict at AHB was during a time period of which I was out of the office and the Acting Team Lead did not understand the protocol of submitting uncharted platforms. Therefore, when re-addressing all of the elevated pipelines, the uncharted platforms were submitted to NDB.

All of the submitted DtoNs that were forwarded to the GOM Navigation Manager needed a time period for actions in contacting the source authorities. After 30 days with no response, AHB has submitted or intends to submit the features to NDB. If the reports are not generated or submitted by the time the survey is ready to submit, do not hold up the submission. AHB will add any reports or emails to the survey submission after it arrives.

Regarding uncharted or missing AtoNs, NDB and MCD determine that USCG is source authority, at least for the items documented in the USCG Light List. AHB forwards survey information to USCG with request to update the Light List (LL); after the LL is updated MCD will apply the AtoN to the chart, or delete the missing AtoN. Bearing in mind the flow of information, there will be delays with chart corrections for AtoNs.

Please respond with any questions or outstanding issues related to this discussion thread.
Regards,
Gene

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

From: Boriskie, Timothy B CIV [mailto:Timothy.B.Boriskie@uscg.mil]
Sent: Monday, December 18, 2017 8:17 AM
To: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>
Cc: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>; Edward Owens - NOAA Federal <edward.owens@noaa.gov>; Corey Allen - NOAA Federal <corey.allen@noaa.gov>; Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>; James Miller - NOAA Federal <james.j.miller@noaa.gov>; Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>; Briana Welton - NOAA Federal <Briana.Hillstrom@noaa.gov>; Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>; D08-DG-District-DPWPaton <D08-DG-District-DPWPaton@uscg.mil>
Subject: RE: [Non-DoD Source] USCG PATON Discrepancy for Coast Guard District 8 from NOAA Survey H13043 - (ZIP files removed by policy)

Thank you for the information. We will contact the owner and investigate further.

- Tim

v/r
Tim Boriskie
Program Manager
for Private Aids to Navigation
==========
Mailing address:
Eighth Coast Guard District (dpw)
Private Aids to Navigation Section
500 Poydras St., Suite 1230
New Orleans, LA 70130
==========
Direct: (504) 671-2124
Office: (504) 671-2328 or 2330
Fax: (504) 671-2137

Private Aids Inquiries Email to: d8OANpaton@uscg.mil

Eighth CG District Website:
http://www.atlanticarea.uscg.mil/district-8/district-divisions/waterways/PATON

"Good judgment comes from experience, and a lot of that comes from bad judgment. " - Will Rogers

From: AHB Chief - NOAA Service Account [mailto:ahb.chief@noaa.gov]
Sent: Monday, December 18, 2017 7:01 AM
To: D08-DG-District-DPWPaton
Cc: Castle Parker - NOAA Federal; Edward Owens - NOAA Federal; Corey Allen - NOAA Federal; Tim Osborn - NOAA Federal; James Miller - NOAA Federal; Clinton Marcus - NOAA Federal; Briana Welton - NOAA Federal; Starla Robinson - NOAA Federal
Subject: [Non-DoD Source] USCG PATON Discrepancy for Coast Guard District 8 from NOAA Survey H13043 - (ZIP files removed by policy)

Good day,

NOAA's Office of Coast Survey received a report from the field surveyor conducting NOAA hydrographic survey H13043 in the vicinity of South Point, Louisiana, regarding one disproved private Aid to Navigation (PATON):

1.) Private Aid to Navigation "Merit Energy Obstruction Lights" (USCG District 8 Light List #809) was disproved (not found) in position 29-14-19.110N, 091-52-52.390W as is currently reported in the Light List and depicted on NOAA chart products. See attached report for additional information.

For nautical charting purposes NOAA sources the position and characteristics of all ATONs from IATONIS. Any discrepancies noted by the field surveyor are routed directly to the appropriate USCG district. As a result, I wanted to pass along this information and recommend updating the Light List with the relevant information.

Best regards,

Bri

CDR Briana Welton Hillstrom, NOAA
Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510
office: NEW OFFICE PHONE #: 757-364-7460 (old: 757-441-6746, ext 200)

_____

The following file attachments were removed from this message:

From: David Somers [mailto:dts@oceansurveys.com]
Sent: Friday, December 15, 2017 4:19 PM
To: James J. Miller <james.j.miller@noaa.gov>
Cc: Corey Allen <corey.allen@noaa.gov>; Janice Eisenberg - NOAA Federal <janice.eisenberg@noaa.gov>; ahb.dton@noaa.gov; Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>; George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>
Subject: Re: H13040, H13041, H13042, and H13043 DtoNs

Hi James,

Please see detailed answers embedded below. Attached are 2 images referenced below and a pdf containing an excerpt of draft text from our DR with a more extensive discussion of H13043 DtoN #1.

Regards,
Dave

From: James J. Miller <james.j.miller@noaa.gov>
To: David Somers <dts@oceansurveys.com>
Cc: Corey Allen <corey.allen@noaa.gov>; Janice Eisenberg - NOAA Federal <janice.eisenberg@noaa.gov>; "ahb.dton@noaa.gov" <ahb.dton@noaa.gov>; Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>; George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>
Sent: Friday, December 15, 2017 1:59 PM
Subject: Re: H13040, H13041, H13042, and H13043 DtoNs

David Somers,

AHB has several questions regarding the disproved AtoNs. We greatly appreciate your assistance.

H13041 DtoN #1
The submitted DtoN feature attributes state that the charted aid to navigation light was found not to exist at or near the charted location. The light is currently charted in association with an offshore platform (OFSPLF). Were both of the features disproved, or just the light itself?

The provided side scan imagery possibly indicates something in the vicinity of the charted features (circled below). Do submerged remnants of the platform and light exist?

The side scan imagery shows an area of darker return, which is common around platforms, but there is no seafloor relief or platform remnants observed. The attached image (H13041_DtoN_1_MBES-SSS.jpg) depicts: 25m spaced shoal bias soundings on a 1m CUBE surface overlain on MBES and SSS data.

H13043 DtoN #1
The submitted DtoN feature attributes state that the charted aid to navigation light was found not to exist at or near the charted location The provided multibeam image possibly indicates

something in the vicinity of the charted feature (circled below). Do submerged remnants of the light exist?

Yes, submerged remnants of the platform exist, but they are insignificant, 2 features less than 70cm tall and a 25cm tall mound. The shoaler of the 2 features, if designated, would chart as a 21ft depth which matches the closest charted depth on chart 11349. See attached image H13043_DtoN_1_MBES.jpg.

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 Thu, Dec 14, 2017 at 5:22 PM, David Somers <dts@oceansurveys.com> wrote:

Good Afternoon,

OSI has compiled and attached 7 DtoN feature files along with supporting imagery for surveys H13040, H13041, H13042, and H13043.

H13040 DtoN 2 - Large platform

H13041 DtoN 1 - AtoN not present

H13042 DtoN 5 - Large platform, recently uncharted platform
H13042 DtoN 6 - Obstructions near platform
H13042 DtoN 7 - Obstruction near pipe arch

H13043 DtoN 1 - AtoN not present
H13043 DtoN 2 - Obstruction

Please let me know if OSI can provide any additional information regarding these DtoNs.

Regards,
Dave

David Somers
Data Processing Manager

OCEAN SURVEYS, INC.
129 Mill Rock Road East, Old Saybrook, CT 06475
T 860-388-4631 x135 **M** 860-575-3361 **F** 860-388- 5879
dts@oceansurveys.com | Ocean Surveys Incorporated

From: OCS NDB - NOAA Service Account [mailto:ocs.ndb@noaa.gov]
Sent: Monday, December 18, 2017 1:54 PM
To: James J. Miller <james.j.miller@noaa.gov>
Cc: Corey Allen <corey.allen@noaa.gov>; Janice Eisenberg - NOAA Federal <janice.eisenberg@noaa.gov>; Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>; Tim Osborn <tim.osborn@noaa.gov>; AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>; Castle Parker <castle.e.parker@noaa.gov>; Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>; David Somers <dts@oceansurveys.com>; George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>; _NOS OCS PBA Branch <ocs.pba@noaa.gov>; _NOS OCS PBB Branch <ocs.pbb@noaa.gov>; _NOS OCS PBC Branch <ocs.pbc@noaa.gov>; _NOS OCS PBD Branch <ocs.pbd@noaa.gov>; _NOS OCS PBE Branch <ocs.pbe@noaa.gov>; _NOS OCS PBG Branch <ocs.pbg@noaa.gov>; Charles Porter - NOAA Federal <charles.porter@noaa.gov>; James M Crocker <James.M.Crocker@noaa.gov>; Ken Forster <Ken.Forster@noaa.gov>; Kevin Jett - NOAA Federal <kevin.jett@noaa.gov>; Matt Kroll <Matt.Kroll@noaa.gov>; Michael Gaeta <Michael.Gaeta@noaa.gov>; Nautical Data Branch <OCS.NDB@noaa.gov>; NSD Coast Pilot <coast.pilot@noaa.gov>; PHB Chief <PHB.Chief@noaa.gov>; Tara Wallace <Tara.Wallace@noaa.gov>; Chris Libeau <Chris.Libeau@noaa.gov>
Subject: Re: H13043 DtoN #2 Submission to NDB

DD-29097 has been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The DtoN reported is one submerged obstruction located approximately 24 NM southwest of South Point in the Gulf of Mexico.

The following charts are affected:
11349 kapp 64
11340 kapp 49

The following ENCs are affected:
US4LA15M
US3GC03M

References:
H13043
OPR-K354-KR-17

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/
Contact: ocs.ndb@noaa.gov
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

From: James J. Miller [mailto:james.j.miller@noaa.gov]
Sent: Friday, December 15, 2017 6:59 PM
To: OCS NDB <ocs.ndb@noaa.gov>
Cc: Corey Allen <corey.allen@noaa.gov>; Janice Eisenberg - NOAA Federal <janice.eisenberg@noaa.gov>; Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>; Tim Osborn <tim.osborn@noaa.gov>; AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>; Castle Parker <castle.e.parker@noaa.gov>; Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>; David Somers <dts@oceansurveys.com>; George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>
Subject: H13043 DtoN #2 Submission to NDB

Good day,

Please find attached a compressed file for H13043 DtoN Report #2, containing one obstruction for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD).

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review, processing, 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 757-364-7465. Thank you for your assistance with this matter.

Respectfully,
James

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

From: David Somers [mailto:dts@oceansurveys.com]
Sent: Thursday, December 14, 2017 5:22 PM
To: ahb.dton@noaa.gov; Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>
Cc: George Reynolds <ggr@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>
Subject: H13040, H13041, H13042, and H13043 DtoNs

Good Afternoon,

OSI has compiled and attached 7 DtoN feature files along with supporting imagery for surveys H13040, H13041, H13042, and H13043.

H13040 DtoN 2 - Large platform

H13041 DtoN 1 - AtoN not present

H13042 DtoN 5 - Large platform, recently uncharted platform
H13042 DtoN 6 - Obstructions near platform
H13042 DtoN 7 - Obstruction near pipe arch

H13043 DtoN 1 - AtoN not present
H13043 DtoN 2 - Obstruction

Please let me know if OSI can provide any additional information regarding these DtoNs.

Regards,
Dave

David Somers
Data Processing Manager

OCEAN SURVEYS, INC.
129 Mill Rock Road East, Old Saybrook, CT 06475
T 860-388-4631 x135 **M** 860-575-3361 **F** 860-388-5879
dts@oceansurveys.com | Ocean Surveys Incorporated

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Friday, December 22, 2017 12:09 PM
To: Bob Wallace <rmw@oceansurveys.com>
Subject: Re: Non-DTON Seep and Pipeline Reports for H13042 and H13043

Thank you Bob. Reports received. Happy Holidays! – Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Thu, Dec 21, 2017 at 4:03 PM, Bob Wallace <rmw@oceansurveys.com> wrote:

Starla,

Attached are Non-DTON Seep and Pipeline reports for OPR-K354-KR-17, Surveys H13042 and H13043. We are presenting the information as stand-alone compilation reports (rather than in the body of an e-mail) since there are multiple reportable items per sheet.

The Non-DTON reports for Surveys H13040 and H13041 preceded this e-mail.

Please let me know that you received both e-mails once you have.

Thanks, Bob Wallace

Robert M. Wallace Jr.

Project Manager

OCEAN SURVEYS, INC.

129 Mill Rock Road East, Old Saybrook, CT 06475

T 860-388-4631 x129 **M** 860-227-3099 **F** 860-388-5879

rmw@oceansurveys.com | www.oceansurveys.com

Follow us: LinkedIn | Twitter | Facebook

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Tuesday, December 12, 2017 5:19 PM
To: George Reynolds <ggr@oceansurveys.com>
Cc: David T. Somers <dts@oceansurveys.com>; Bob Wallace <rmw@oceansurveys.com>; Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>; Corey Allen - NOAA Federal <corey.allen@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Subject: Re: non-DTON pipelines and seeps in the FFF

Hello George,

Excellent question.

The current requirement of the "Non-DTON Seep and Pipeline Report" is a separate deliverable from the FFF. Your historic method of including the pipeline segments in the FFF is good. How you manage the other features is up to your discretion. The features that are not cartographically significant they will be ignored in the FFF.

Thank you,
Starla
--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Mon, Dec 11, 2017 at 2:06 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Starla,

We are compiling the "Non-DTON Seep and Pipeline Report" and FFF files for our sheets and have a question about pipeline FFF attribution.

The pipeline investigation requirements are "See HSSD 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."

HSSD Sections 1.7 and 1.6.2 are straight forward but we are not as clear on the FFF requirements.

How should pipelines that have exposed sections or seeps be attributed in the FFF? Also, should the exposed pipelines and seeps be included in the FFF separately from the full-length pipeline object?

In prior years we have included exposed pipelines in the FFF because they were full DtoNs per the older HSSDs, but have not included the seeps as they were not physical features.

Thanks, George

Bryan Chauveau - NOAA Federal <bryan.chauveau@noaa.gov>

Gas Seeps and Exposed Pipelines within Hydrographic Survey H13043

1 message

Bryan Chauveau - NOAA Federal <bryan.chauveau@noaa.gov> Fri, Aug 24, 2018 at 12:57 PM
To: pipelines@bsee.gov, Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>
Cc: Briana Welton - NOAA Federal <Briana.Hillstrom@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>, Castle Parker <castle.e.parker@noaa.gov>

Good Day,

A NOAA contracting field unit surveying in the Gulf of Mexico discovered, what is interpreted to be, three natural seeps, and also identified seven exposed pipelines.

Please reference the attached report detailing the seeps and exposed pipelines observed within hydrographic survey H13043. Per Hydrographic Surveys Division protocol, this is submitted to BOEM and BSEE as source authority reporting this environmental occurrence.

If additional information or clarification is required, please respond to this email or call via phone.

Bryan Chauveau
Physical Scientist
NOAA Atlantic Hydrographic Branch
bryan.chauveau@noaa.gov
(757) 364-7457

H13043 BOEM BSEE non-DtoN Exposed Pipelines and Seeps.pdf
6987K

Hello George,

Attached are the updated tide zones for OPR-K354-KR-17, Louisiana Coast. These tide zones completely cover the project area.

Please copy this email into your correspondence folder.

Thank you,
Starla Robinson

PS: A change memo is pending. I wanted to make sure we sent the data to you sooner than waiting to finalize that process.

--

Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

---------- Forwarded message ----------
From: **David Wolcott - NOAA Federal** <david.wolcott@noaa.gov>
Date: Fri, Jul 28, 2017 at 6:11 PM
Subject: Project Instructions for OPR-K354-KR-2017 Louisiana Coast (Revised)
To: Russell Quintero - NOAA Federal <russell.quintero@noaa.gov>, Gerald Hovis <gerald.hovis@noaa.gov>, "_NOS.CO-OPS.HTP" <nos.coops.hpt@noaa.gov>, "J. Corey Allen" <corey.allen@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>

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

DATE: 07/28/2017

MEMORANDUM FOR: LT Russell Quintero
Chief, Operations Branch N/CS31

FROM: Gerald Hovis
Chief, Products and Services Branch, N/OPS3

SUBJECT: Delivery of Tide Requirements for Hydrographic Surveys

Tide requirements for hydrographic survey project OPR-K354-KR-2017 (Revised) Louisiana Coast are being provided in Microsoft Word format. A .ZIP file containing all pertinent ESRI ArcGIS files, as well as a tidal zoning graphic in PDF, is attached to this email and posted to the Sharepoint website under the project name "OPR-K354-KR-17". Six minute preliminary data for LAWMA, LA (8764227) may be retrieved in one month increments over the internet from the CO-OPS SOAP web services at http://opendap.co-ops.nos.noaa.gov/axis/text.html by clicking on "Six Minute Data".

--
David Wolcott
Oceanographic Division
Center for Operational Oceanographic Products and Services
National Ocean Service
National Oceanic and Atmospheric Administration

1305 East-West Highway, 7133
Silver Spring, MD 20910
Office: 240-533-0614
Fax: 301-713-4437

From: George Reynolds [mailto:ggr@oceansurveys.com]
Sent: Friday, June 23, 2017 10:06 PM
To: 'Starla Robinson - NOAA Federal' <starla.robinson@noaa.gov>
Cc: 'Douglas Wood - NOAA Affiliate' <douglas.wood@noaa.gov>; 'Emily Clark - NOAA Federal' <emily.clark@noaa.gov>; 'russell.quintero' <russell.quintero@noaa.gov>; 'Corey Allen - NOAA Federal' <corey.allen@noaa.gov>
Subject: RE: Final Project Instructions OPR-K354-KR-17, Louisiana Coast, LA

Hi Starla.

In reviewing the project instructions, it appears that the preliminary tide zoning does not cover H13040 (survey priority 1).

Thanks,
George

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Friday, September 15, 2017 11:08 AM
To: George Reynolds <ggr@oceansurveys.com>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>; Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>
Subject: Re: Louisiana Coast Sounding Verification

Good morning George,

Thank you for asking for clarification. The official guidance is:

All charted depths falling between sounding lines and shallower by two feet or greater than adjacent water-level corrected surveyed soundings shall be verified or disproved. Verification and disproval of shoal charted depths that fall between set line spacing shall be accomplished by acquiring a star-like pattern using three lines centered on the charted depth and each extending 1 mm at chart scale. All significant shoals or features found in waters less than 20 m deep shall be developed to complete coverage standards.

A 40-meter will radius star-like pattern at the centroid of the sounding will cover a 1mm footprint at chart scale. This will be sufficient to disprove the sounding.

Please copy this guidance to your consults folder.

Thank you,
Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Monday, September 11, 2017 3:33 PM
To: George Reynolds <ggr@oceansurveys.com>
Cc: Corey Allen - NOAA Federal <corey.allen@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>; Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>
Subject: Re: FW: H13040 sounding verification

Hello George,

Following up on our conversation regarding sounding disapprovals:

- If the multibeam lines, on either side of a sounding are shoaler than the sounding, the data will be superseded. No additional disproval of a *deep sounding* is required.

- If the multibeam lines are deeper then the sounding, the *shoal sounding* must be disproved using the star-like pattern discussed. This follows HSSD section 5.2.2.1 Bathymetric Splits.

Thanks,
Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Friday, November 17, 2017 5:56 PM
To: George Reynolds <ggr@oceansurveys.com>
Cc: Douglas Wood - NOAA Federal <douglas.wood@noaa.gov>; Corey Allen - NOAA Federal <corey.allen@noaa.gov>
Subject: Re: CSF "assigned" features in "unassigned" sheets

Hello George,

To confirm, OSI is not responsible for the CSF assigned features that are outside the surveyed area beyond the surveyed extent defined by what OSI was able to complete of the main scheme before squaring off (H13040 through H13043).

I absolutely agree with the assumption and thanks for asking.

Happy Holidays,
Starla

H13043	4	17 Miles South of South Point	Louisiana	40000	53	Additional sheet not yet assigned. As the LNM are completed, the KR will square off the acquired area and ensure the full investigation of any features within the surveyed extent.

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Fri, Nov 17, 2017 at 4:41 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Starla,

We have begun writing the project reports and, in re-reading the various project documentation and reviewing files, we noticed the following potential bookkeeping/reporting issue. You may recall that the Draft Project Instructions, Composite Source File (CSF) and Project Reference File (PRF) considered a seven-sheet survey program The Final Project Instructions and PRF consider the survey that was ultimately conducted, a four-sheet survey. However, the Final CSF does not reflect the change from seven sheets to four sheets. As such the Final CSF includes many "assigned" features that fall well outside of the four-sheet survey. We don't believe that NOAA intended for us to cover the 100+ CSF "assigned" features that fall outside of the assigned survey area, i.e. within the three sheets that were dropped from the original "draft" survey program. However, we have no documentation attesting to such. Assuming you agree with this assumption, would you please document that OSI is not responsible for investigating any features beyond those located within the four (4) assigned sheets. We will include your correspondence in with the Project Deliverables, i.e. a page in DR Appendix II, Correspondence.

Thanks, George

From: Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>
Date: 12/11/17 5:46 PM (GMT-05:00)
To: GGR Backup <ggr@oceansurveys.com>
Cc: Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>, Corey Allen - NOAA Federal <corey.allen@noaa.gov>, Briana Welton - NOAA Federal <Briana.Hillstrom@noaa.gov>, Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>, Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Subject: Re: Platform vs. Update Clarification

Hello George,

Include both the significant wellheads and platform features in the FFF, and reposition any platform that deviates greater than 10 meter from the center point of the corresponding charted feature, based on the page 97 of the HSSD. These are all delete/add for the charted platforms.

Thank you,
Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Wed, Dec 6, 2017 at 10:19 AM, GGR Backup <ggr@oceansurveys.com> wrote:

Good morning Starla,

We would like some S-57 clarification/guidance regarding offshore platforms and BSSE wellheads in close proximity to each other. Please see the attached PDF.

In the 2 examples provided and many other cases the wellhead position is much closer to the surveyed positioned of the platform and the surveyed platform position is greater than 20 meters from the CSF platform position. Given our survey scale of 1:40,000, what are the distance thresholds for updating vs new/delete for a feature position?

Should we mark both the CSF wellhead and CSF platform as "delete" and create a new platform feature at the surveyed position? Or, mark the welhead as "delete" and the platform as "retain" at the CSF position?

Thanks,

George

Reference HSSD 7.5.2

New/Delete vs. Update:

1.Charted feature is found in new position via multibeam, lidar, vessel-mounted laser scanning, or any remote sensing system capable of generating a georeferenced point cloud sufficient to differentiate features at survey scale, regardless of proximity to charted feature:

- descrp = Delete for charted feature (delivered from CSF)

- descrp = New for surveyed feature (derived from grid sounding for multibeam and lidar, derived frompoint cloud for laser scanning)

2.Charted feature is found via visual observation or handheld laser range finder, within 10 m of the charted feature:

- descrp = Update (populate surveyed height/depth of feature, not position)

3.Charted feature is found via visual observation or handheld laser range finder, greater than 10 m from the charted feature:

- descrp = Delete for charted feature (delivered from CSF)

- descrp = New for surveyed feature (derived from visual observation or handheld laser range finder)

4.Charted line or area feature geometry has changed.

- descrp = Update; then manually edit the geometry

Note: if the new area extents border the edge of bathymetry, instead of manually editing the geometry, the hydrographer may use ‘recomd’ = edit the geometry to extents of bathymetry

OR when extensive geometry changes are needed:

- descrp = Delete for incorrectly charted feature

CSF Investigation Requirements:

Platform. 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.

BSSE wellhead. See Project Instructions for further information. Contact HSD Project Manager/COR for clarification, if needed.

Project Instructions:

With respect to wellheads, reference HSSD Chapter 7.5.1. If a wellhead is not found, for the purposes of disproval, a 50 m search radius shall be used following the feature disproval techniques for a complete coverage survey outlined in HSSD Section 7.3.4. Include feature in the FFF with descrp = delete.

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Monday, June 26, 2017 1:47 PM
To: George Reynolds <ggr@oceansurveys.com>; Emily Clark - NOAA Federal <emily.clark@noaa.gov>
Cc: Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>; russell.quintero <russell.quintero@noaa.gov>; Corey Allen - NOAA Federal <corey.allen@noaa.gov>
Subject: Re: Final Project Instructions OPR-K354-KR-17, Louisiana Coast, LA

Hello Emily and George,

I want to follow up on a conversation George and I had this morning.

1) CO-OPS will have new tide zones for the area in August. We would like to supersede the existing tide zones via a change memo when they become available.

2) I stated that there is no expectation that OSI collects sidescan on the crosslines.

3) George would like to be CCed on any emails going to OSI.

Thank you,
Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Mon, Jun 26, 2017 at 11:34 AM, Starla Robinson - NOAA Federal <starla.robinson@noaa.gov> wrote:
Hello George,

Would OSI be willing to use a modified version of the existing zoning for now, and we will issue a memo with updated zoning in August?

Thanks,
Starla

On Fri, Jun 23, 2017 at 10:06 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Starla.

In reviewing the project instructions, it appears that the preliminary tide zoning does not cover H13040 (survey priority 1).

Thanks, George

From: Starla Robinson - NOAA Federal [mailto:starla.robinson@noaa.gov]
Sent: Tuesday, September 5, 2017 4:58 PM
To: George Reynolds <ggr@oceansurveys.com>; Corey Allen - NOAA Federal <corey.allen@noaa.gov>; Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>; Paul Turner - NOAA Federal <Paul.Turner@noaa.gov>
Subject: Re: Permission to start work on H13043

Permission to open sheet H13043 for crosslines, and then mainscheme working from the north to south is granted. Completing the first three sheets are the highest priority.

Thank you,
Starla

--
Starla D. Robinson, Physical Scientist
NOS - OCS - Hydrographic Survey Division - Operations Branch
National Oceanic Atmospheric Administration
Office: ***240-533-0034*** ***(Updated 6/13/17)***
Cell: 360-689-1431
Website: HSD Planned Hydrographic Surveys

On Tue, Sep 5, 2017 at 2:23 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Starla,

We anticipate the Large Vessel will complete the mainscheme work in 41 & 42 up to the 4.5m contour as early as tomorrow. That will leave only the 4 to 4.5m shallow water work on these sheets for the Large Vessel. As I mentioned during our phone conversation, we are reluctant to work in the shallow water areas unless sea conditions are relatively calm.

To keep the large boat "moving" when conditions in 41 & 42 prevent safe survey operations we request permission to begin work in 43. Our plan would be to acquire cross line data for the full sheet and then work mainscheme lines from north to south.

Attached is a worksheet tracking LNM acquired as of Sept 1st along with coverage graphic for your reference.

See attached XLS for current estimates, and pdf for completed(black) vs planned.

Please let me know if you have any questions.

Thanks, George

Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>

Survey Outlines for OPR-K354-KR-17

1 message

David Somers <dts@oceansurveys.com> Mon, Nov 13, 2017 at 5:14 PM
Reply-To: David Somers <dts@oceansurveys.com>
To: "survey.outlines@noaa.gov" <survey.outlines@noaa.gov>, Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>
Cc: George Reynolds <ggr@oceansurveys.com>, Douglas Wood - NOAA Affiliate <douglas.wood@noaa.gov>

Good Afternoon,

Attached are the survey outlines for Surveys H13040, H13041, H13042, and H13043 under project number OPR-K354-KR-17.

Please let me know if there is any additional information required.

Regards,

Dave

David Somers
Data Processing Manager

OCEAN SURVEYS, INC.
129 Mill Rock Road East, Old Saybrook, CT 06475
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dts@oceansurveys.com | www.oceansurveys.com
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4 attachments

- **H13040_Survey_Outline.000** 8K
- **H13041_Survey_Outline.000** 8K
- **H13042_Survey_Outline.000** 9K
- **H13043_Survey_Outline.000** 10K

From: Alexandra.Grodsky@noaa.gov [mailto:Alexandra.Grodsky@noaa.gov]
Sent: Thursday, December 14, 2017 11:30 AM
To: jjd@oceansurveys.com
Subject: NCEI acceptance confirmation for Reference ID: GUTAE6

Dear Joseph DiPalma:

Thank you for sending your data and metadata files to the NOAA National Centers for Environmental Information (NCEI). NCEI received these data, SOUND VELOCITY collected from R/V Ocean Explorer in Gulf of Mexico from
2017-08-04 to 2017-10-12, on 2017-12-07 21:47:46 via S2N.

After reviewing your submission package (metadata and data), I assigned your submission an NCEI Accession Number 0169266. This number is a tracking identifier for the NCEI Ocean Archive. Please reference this number when corresponding with NCEI about these data.

You can find information about these archived data at http://accession.nodc.noaa.gov/0169266.

After further reviewing your data, creating any additional representations of these data in a format that is more preservable in the NCEI Ocean Archive, and developing necessary tracking metadata, NCEI will publish these archived data online. You may access the archival copy of your original data via the link listed above.

In addition to creating an archival copy of these data, NCEI may include all or part of your data into one or more product databases, such as the World Ocean Database.

Please let me know if you have any questions or if you have additional data and documentation that you would like to archive with these data.

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

Regards,
Alexandra Grodsky
Alexandra.Grodsky@noaa.gov

Subject: [Send2NCEI] data submission confirmation for Reference ID: GUTAE6
To: jjd@oceansurveys.com
From: NODC.DataOfficer@noaa.gov

Dear Joseph DiPalma,

Thank you for submitting your data collection, titled "SOUND VELOCITY collected from R/V Ocean Explorer in Gulf of Mexico from 2017-08-04 to 2017-10-12", to the NOAA National Centers for Environmental Information (NCEI). Your submission package has been assigned Reference ID: GUTAE6. After reviewing your data and metadata, NCEI will update you about the archival status of your submission package.

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

Upon completion of these archival ingest actions, NCEI will publish your data online (including a copy of your original files). You will receive another email once your submission package (Reference ID: GUTAE6) is published for global access. In addition, NCEI may include all or part of your data into one or more product databases, such as the World Ocean Database.

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

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

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

From: Jay Nunenkamp - NOAA Federal [mailto:jay.nunenkamp@noaa.gov]
Sent: Wednesday, November 29, 2017 2:03 PM
To: Bob Wallace <rmw@oceansurveys.com>
Subject: Re: NOAA Contract Hydrographic Survey MMO Records (Project OPR-K354-KR-17)

Bob:

Received, thank you.

Sincerely,

Jay Nunenkamp
Environmental Compliance Coordinator
Office of Coast Survey
National Oceanic and Atmospheric Administration (NOAA)
240-533-0118
SSMC3 Room 6513

On Wed, Nov 29, 2017 at 1:59 PM, Bob Wallace <rmw@oceansurveys.com> wrote:

All,

Attached is a .7z format zip file containing a tabulation of OSI's "trained observers" as well as 32 individual Marine Mammal Observation Logs. Observations were made during OSI's contract hydrographic survey entitled "Louisiana Coast", NOAA Project Number OPR-K354-KR-17. The period of the survey was August 3, 2017 through October 12, 2017.

Please don't hesitate to contact me if you have any questions or concerns.

Regards, Bob Wallace

Robert M. Wallace Jr.

Project Manager

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rmw@oceansurveys.com | www.oceansurveys.com

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From: OCS NDB - NOAA Service Account [mailto:ocs.ndb@noaa.gov]
Sent: Friday, December 15, 2017 9:38 AM
To: Bob Wallace <rmw@oceansurveys.com>
Cc: NSD Coast Pilot <coast.pilot@noaa.gov>; Starla Robinson - NOAA Federal <starla.robinson@noaa.gov>; George G Reynolds <ggr@oceansurveys.com>
Subject: Re: NOAA Contract Hydrographic Survey Coast Pilot Review Report (Project OPR-K354-KR-17)

Good morning, Mr. Wallace,

Thanks for submitting this report. We here at NOAA's National Ocean Service, Marine Chart Division did indeed receive this info and it's been entered in the system for application to the Coast Pilot. Sorry for not responding, that was my oversight. I certainly appreciate you checking back.

Thanks again,

John Whiddon, Cartographer
Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
Contact: ocs.ndb@noaa.gov
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

On Fri, Dec 15, 2017 at 9:31 AM, Bob Wallace <rmw@oceansurveys.com> wrote:

All,

I sent this e-mail back on November 29, 2017. I never received a response from any of the NOAA addressees so I am sending again to be sure that it was received.

Would one of the NOAA folks please let me know if you received this e-mail and two attached .PDF documents.

Thanks, Bob Wallace

From: Bob Wallace [mailto:rmw@oceansurveys.com]
Sent: Wednesday, November 29, 2017 3:59 PM
To: 'ocs.ndb@noaa.gov' <ocs.ndb@noaa.gov>; 'coast.pilot@noaa.gov' <coast.pilot@noaa.gov>
Cc: 'starla.robinson@noaa.gov' <starla.robinson@noaa.gov>; 'George G Reynolds' <ggr@oceansurveys.com>; 'Bob Wallace' <rmw@oceansurveys.com>; 'David Somers' <dts@oceansurveys.com>
Subject: NOAA Contract Hydrographic Survey Coast Pilot Review Report (Project OPR-K354-KR-17)

All,

Attached are two Coast Pilot-related .PDFs. The first documents is the original Coast Pilot Report furnished with the July 6, 2017 "Final Data Package" for NOS-NOAA contract survey OPR-K354-KR-17. The second document is OSI's Coast Pilot Review Report. Given that there were no specific Coast Pilot Report investigations assigned, OSI conducted a general review of pertinent Coast Pilot sections as applies to the general locality of the survey area and the areas frequently transited and facilities utilized during in-ports.

Please don't hesitate to contact me if you have any questions or concerns.

Regards, Bob Wallace

Robert M. Wallace Jr.

Project Manager

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rmw@oceansurveys.com | www.oceansurveys.com

APPROVAL PAGE

H13043

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
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- Bottom samples
- GeoPDF of survey products

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

Briana Welton Hillstrom

Digitally signed by HILLSTROM.BRIANA.WELTON.1267667531
Date: 2018.11.21 14:21:18 -05'00'

Approved:_____

Commander Briana W. Hillstrom, NOAA
Chief, Atlantic Hydrographic Branch