U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey:	Hydrographic Survey
Project Number:	OPR-K339-KR-12
Registry Number:	H12425

LOCALITY

State:	Louisiana
General Locality:	Gulf of Mexico
Sub-locality:	6 NM S of Caminada Pass

2012

CHIEF OF PARTY
George G. Reynolds

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Date:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		**H12425**

State:	**Louisiana**
General Locality:	**Gulf of Mexico**
Sub-Locality:	**6 NM South of Caminada Pass**
Scale:	**1:20,000**
Date of Survey:	**May 25, 2012 to July 9, 2012**
Instructions Dated:	**March 30, 2012**
Project No.:	**OPR-K339-KR-12**
Vessel:	**R/V Ferrel - Official Number 1182802**
Chief of Party:	**George G. Reynolds**
Surveyed By:	**Ocean Surveys, Inc.**
Soundings by:	**Multibeam Echosounder**
Imagery by:	**Side Scan Sonar**
Verification by:	**Atlantic Hydrographic Branch**
Soundings Acquired in:	**Meters at MLLW**
H-Cell Compilation Units:	

Remarks: The purpose of this survey is to update existing NOS nautical charts in a high commercial traffic area. All times are recorded in UTC. Data recorded and presented relative to UTM Zone 16 North.

Contractor: Ocean Surveys, Inc.
129 Mill Rock Rd E
Old Saybrook, CT 06475

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. Revisions and Red notes were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. The discussion of the surveyed features within the descriptive report is considered preliminary. The final disposition of surveyed features is represented in the OCS nautical chart update products. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

THE INFORMATION PRESENTED IN THIS REPORT AND THE ACCOMPANYING BASE SURFACE REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY OCEAN SURVEYS, INC. DURING THE PERIOD OF 25 MAY 2012 TO 09 JULY 2012 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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APPENDICES

SEPARATES

Descriptive Report to Accompany Survey H12425

Project: OPR-K339-KR-12
Locality: Gulf of Mexico
Sub-Locality: 6 NM S of Caminada Pass
Scale: 1:20000
May 2012 – July 2012
Ocean Surveys, Inc. – *R/V Ferrel*
Chief of Party: George G. Reynolds

A. AREA SURVEYED

A.1 Survey Limits

This survey provides hydrographic data for the Gulf of Mexico waters south of Caminada Pass. The general locations of the survey limits are presented in Table 1.

Table 1
General Location of Survey H12425

Northeast Limit	Southwest Limit
29-08-28 N 89-59-49 W	29-03-20 N 90-08-38 W

A.2 Survey Purpose

The purpose of this survey is to provide NOAA with accurate hydrographic data to update existing National Ocean Service nautical charts in a high commercial traffic area located in the Gulf of Mexico, 6 nautical miles south of Caminada Pass, Louisiana. The survey area includes multiple offshore platforms and pipelines.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

Survey Coverage was in accordance with the requirements in the Hydrographic Survey Project Instructions (March 30, 2012), the Statement of Work, and the Hydrographic Survey Specifications and Deliverables Manual, April 2012 (HSSDM). Two hundred percent (200%) side scan sonar (SSS) coverage, with concurrent multibeam echo sounder (MBES) coverage were collected with set line spacing to water depths of approximately 65 feet. Additional MBES coverage was obtained as necessary to provide a least depth for all significant features. The final survey area covers 21.22 square nautical miles (Figures 1).

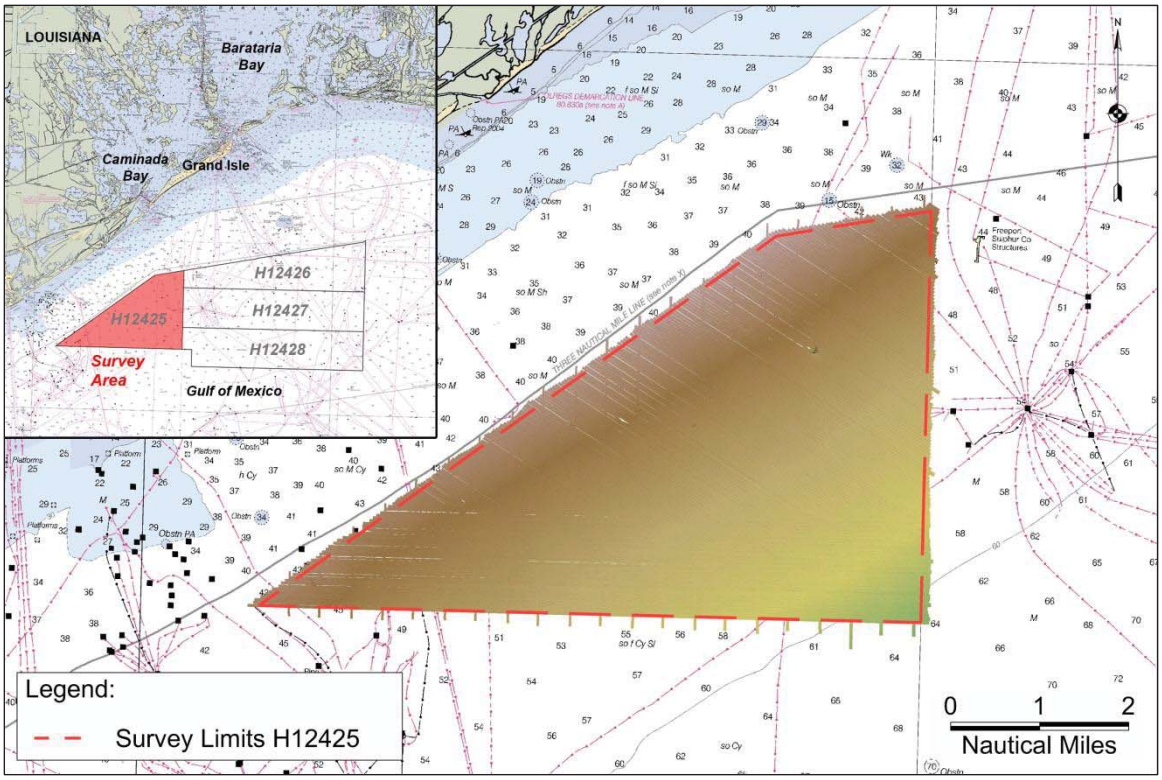


Figure 1. H12425 survey area overlain on RNC 11358.

SSS tracklines were separated by one-half the distance required for 100% coverage plus an allowance for overlap and trackline maintenance. Trackline offset and accompanying SSS range scale settings are presented in Table 2.

Table 2
H12425 Survey Line Spacing

Trackline Offset (meters)	SSS Range Scale (meters)
40	50
65	75
85	100

A.5 Survey Statistics

The following tables list the survey statistics (Table 3) and the dates of hydrography (Table 4).

Table 3
H12425 *R/V Ferrel* Survey Trackline Statistics

Concurrent MB/SSS Lineal NM	MBES Only Developments Lineal NM	SSS Only Developments Lineal NM	Cross Lines Lineal NM	Square Nautical Miles Covered	Bottom Samples Acquired	AWOIS Items Assigned	Number of Item Investigations
674.36	20.04	7.53	66.99	21.22	12	0	21

Table 4
Dates of Hydrography

Survey Dates
5/27/2012
6/6/2012
6/9/2012
6/19/2012
6/20/2012
6/28/2012
6/29/2012
6/30/2012
7/1/2012
7/2/2012
7/6/2012
7/7/2012
7/8/2012
7/9/2012

A.6 Shoreline

No shoreline exists within the limits of H12425.

A.7 Bottom Samples

Twelve (12) bottom samples were acquired to determine bottom characteristics. Bottom samples were assigned in the Projected Reference File (PRF) provided with the Hydrographic Survey Project Instructions. A table listing the positions and descriptions of the bottom samples is included in Appendix II. A position and description of each sample are provided as attributed SBDARE objects in the Final Feature File. Digital images with identification reference numbers are submitted with the survey data and referenced in the NOAA extended attributes 'images' field.

B. DATA ACQUISITION AND PROCESSING

B.1 Equipment and Vessels

Refer to OPR-K339-KR-12 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 included in this descriptive report.

B.1.1 Vessels

Survey operations were conducted from the *R/V Ferrel*. The *R/V Ferrel* R-492 is a 44.5-meter steel vessel, with a 9.8-meter beam and 1.8-meter draft and powered by two CAT D 353 diesel engines.

B.1.2 Equipment

Table 5 summarizes the primary equipment used to acquire MBES and SSS data. All equipment was installed, calibrated and operated in accordance with the DAPR.

Table 5
H12425 Primary Survey Equipment

Manufacturer	Model	Type
Reson	7101	Multibeam Echo Sounder
Reson	7125	Multibeam Echo Sounder
Klein	5000	Side Scan Sonar
ODIM	MVP30	Moving Vessel Profiler
Sea-Bird	SeaCAT SBE 19+	Sound Speed Profiler
Sea-Bird	MicroCAT SBE37	Sound Speed Sensor (Real-Time Surface Sound Speed)
Applanix/Trimble	POS MV 320 V.4	Primary Navigation DGPS
Applanix/Trimble	POS MV 320 V.4	Vessel Attitude and Heading

The Reson 7101 multibeam echosounder system was replaced with a Reson 7125 multibeam echosounder system on June 15, 2012 (DN 167).

B.2 Quality Control (QC)

B.2.1 Cross Lines

A total of 66.99 nm of cross line data were acquired on May 27, 2012 (DN 148) and June 6, 2012 (DN 158) with the Reson 7101 and on June 19, 2012 (DN 171) with the Reson 7125. Cross line mileage equaled 9.93% of the 674.35 nm of mainscheme MBES lines.

Statistical quality control information was generated by comparing each of the cross lines to the final combined CARIS BASE (Bathymetry Associated with Statistical Error) surfaces. Cross line comparisons showed excellent agreement with the finalized BASE surfaces generated from the mainscheme survey lines. All cross line soundings considered in the analyses met IHO Order 1a uncertainty standards. Statistics from the cross line comparisons completed with the CARIS QC Report utility are presented in Separate II.

A difference surface was generated in CARIS HIPS to calculate the difference between the survey depths in a coverage surface composed of only mainscheme and development line data and the survey depths in a surface composed only of cross line data. The difference surface and its statistical information are presented in Figures 2 and 3. The outlier depth difference value of 0.61 meters coincided with a designated sounding present in the mainscheme and development line surface that was not represented in the cross line surface. Overall, there was good agreement between overlapping line and day-to-day sounding coverage as observed in the BASE surface depth and standard deviation layers.

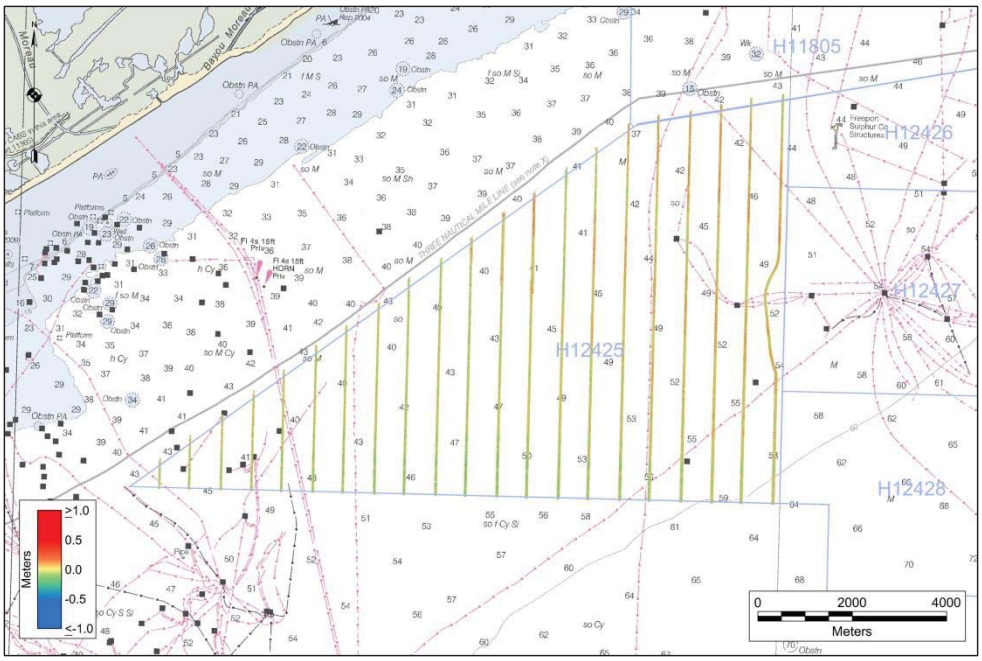


Figure 2. The difference surface calculated between mainscheme/development line depth surface and the cross line depth surface. The surface is colored by depth difference with units in meters. Chart 11358 is visible in the background.

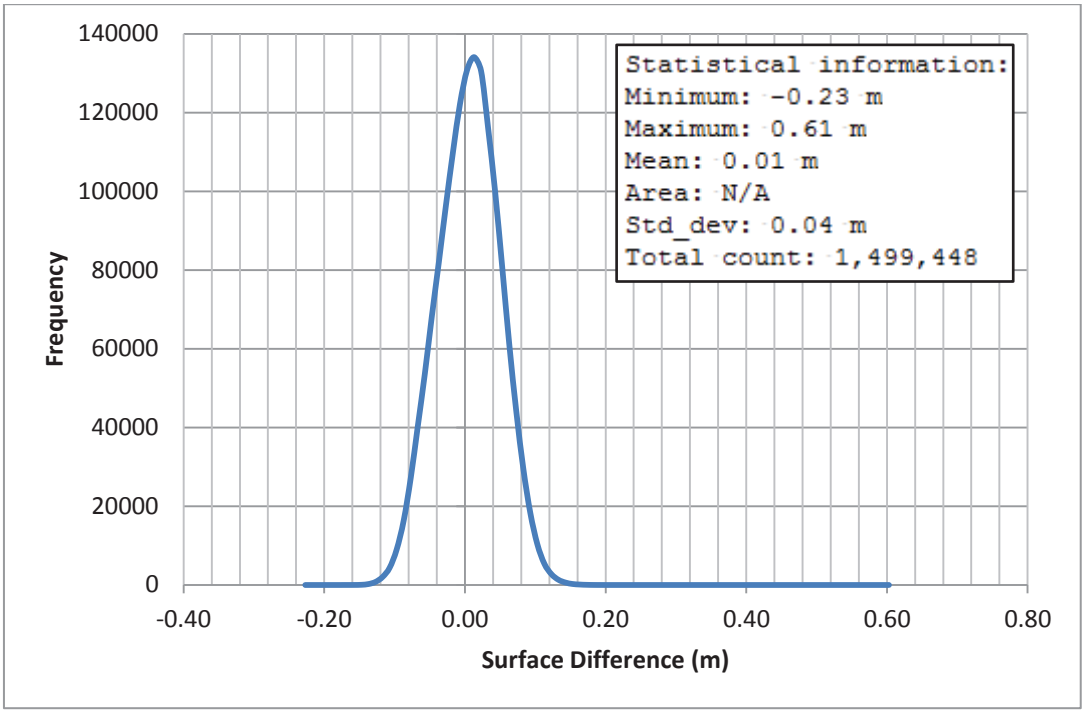


Figure 3. Statistical information from the depth difference surface between the H12425 cross line data and H12425 mainscheme/development line data.

B.2.2 Uncertainty

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 H12425 did not deviate from the methods documented in the DAPR.

Tables 6 and 7 list the survey specific parameters used to compute Total Propagated Uncertainty (TPU).

Table 6
H12425 Tide TPU Values

Measured	Zoning
0.01 meters	0.1 meters

Table 7
H12425 Sound Speed TPU Values

Sound Speed Profile - MVP	Surface Sound Speed - SBE37
1 meter/second	1 meter/second

The CARIS QC BASE surface report utility was used to evaluate IHO uncertainty for all finalized surfaces. Results from the QC BASE surface report indicate that 100% of the nodes from the finalized 2-meter set line spacing surfaces meet IHO Order 1a uncertainty specifications. The QC BASE surface reports indicated that over 99% of the nodes from fourteen (14) out of the fifteen (15) 0.5-meter object detection surfaces met the IHO Order 1a uncertainty specifications. For the surface titled Item_11_Inv_CUBE_0-5m_Final, 97.48% of the nodes met IHO Order 1a uncertainty specifications.

Since the finalized surface node uncertainty values were derived from the greater of either the node's Depth Uncertainty or Standard Deviation, the finalized object detection surface nodes that covered discrete features with high standard deviation values appeared to exceed the IHO Order 1a uncertainty budget. However, despite high standard deviation values over steep features, which are to be expected, the depth uncertainty values for all object detection and coverage surface nodes were below the depth dependent IHO Order 1a uncertainty threshold. QC BASE surface reports for all final surfaces are included in Separate II.

B.2.3 Survey Junctions

The following table lists the prior and contemporary surveys that junction with Survey H12425. Figure 4 displays the location of the prior and contemporary junction surveys for Project OPR-K339-KR-12.

Table 8
H12425 Survey Junctions

Registry Number	Scale	Year	Field Unit	Relative Location
H11537	1:40,000	2006-2007	M/V Brooks McCall	South
H11804	1:10,000	2009	R/V Locator & R/V Chinook	Northwest
H11805	1:10,000	2009	R/V Locator & R/V Chinook	North
H12426	1:40,000	2012	R/V Ferrel	Northeast
H12427	1:40,000	2012	R/V Ferrel	East
H12428	1:40,000	2012	R/V Ferrel	Southeast

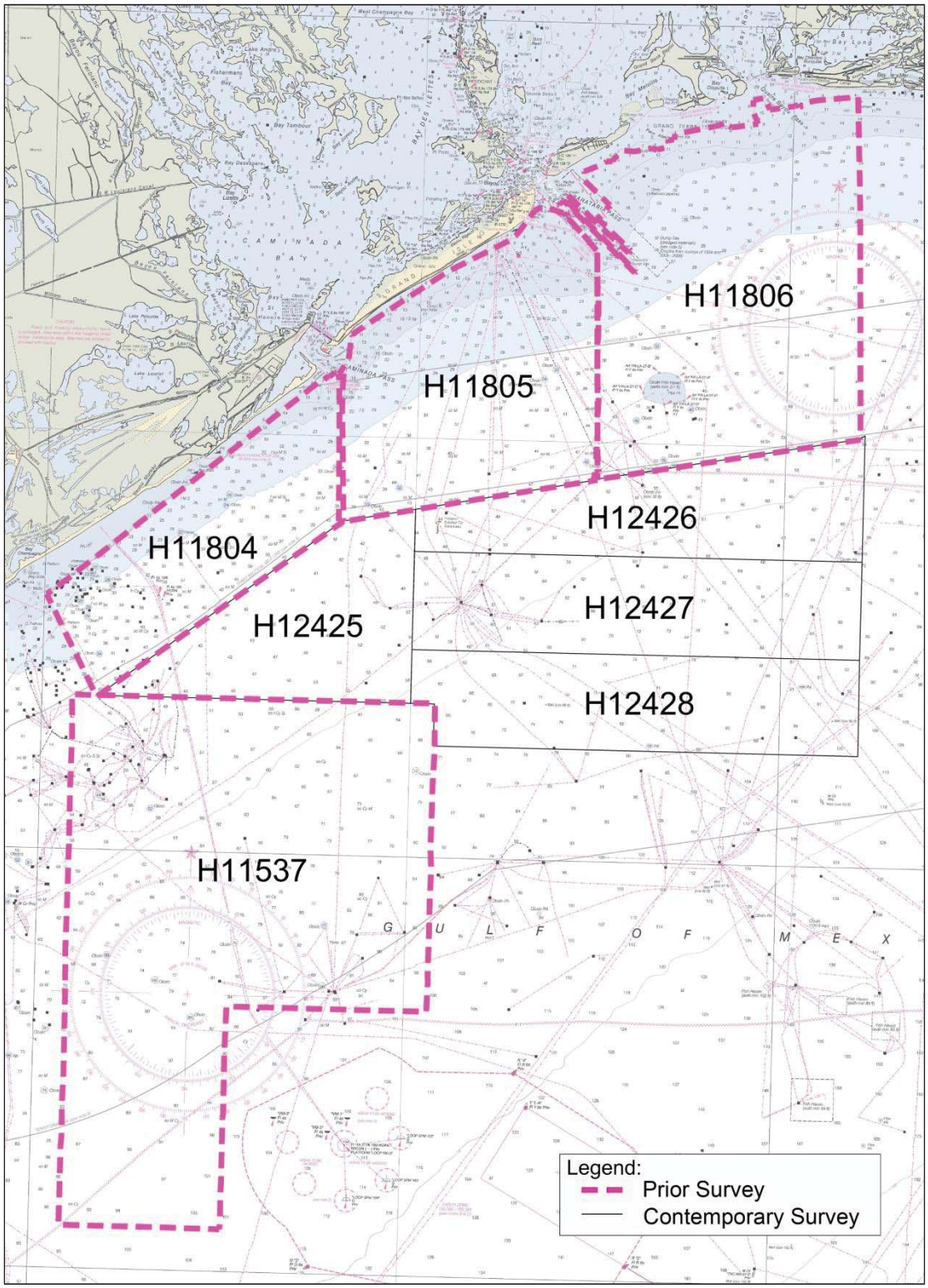


Figure 4. Survey junctions for Project OPR-K339-KR-12. RNC 11358 is displayed in the background.

H11537

There is an approximate overlap of 150 feet (45 meters) between bathymetric data from Survey H12425, acquired with the *R/V Ferrel*, and H11537, acquired with the *M/V Brooks McCall* (C&C Technologies). The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from Survey H12425 and the depths from the 'H11537_5m_MLLW_1of5' (5 meter resolution) bathymetric attributed grid (BAG) and the 'H11537_5m_MLLW_2of5' (5 meter) BAG. The resultant difference surface is shown in Figure 5 and a histogram of the depth differences is shown in Figure 6. Depths from the H12425 survey show good agreement with the depths from the H11537 survey. Depth discrepancies generally equaled 40 centimeters or less with a mean difference of 13 centimeters. The most likely reason for the discrepancy between the two surveys is the fact that Survey H11537 was conducted five (5) years prior to Survey H12425. The minimum depth difference value of -1.65 meters is located in the southwestern most corner of Survey H12425, where it appears that a depression approximately 3-5 feet (1-1.5 meters) deep that was present in the H11537 surface has filled with sediment since 2007. The approximate coordinates for the filled depression are 29-03-38.5 N, 90-08-37.4 W.

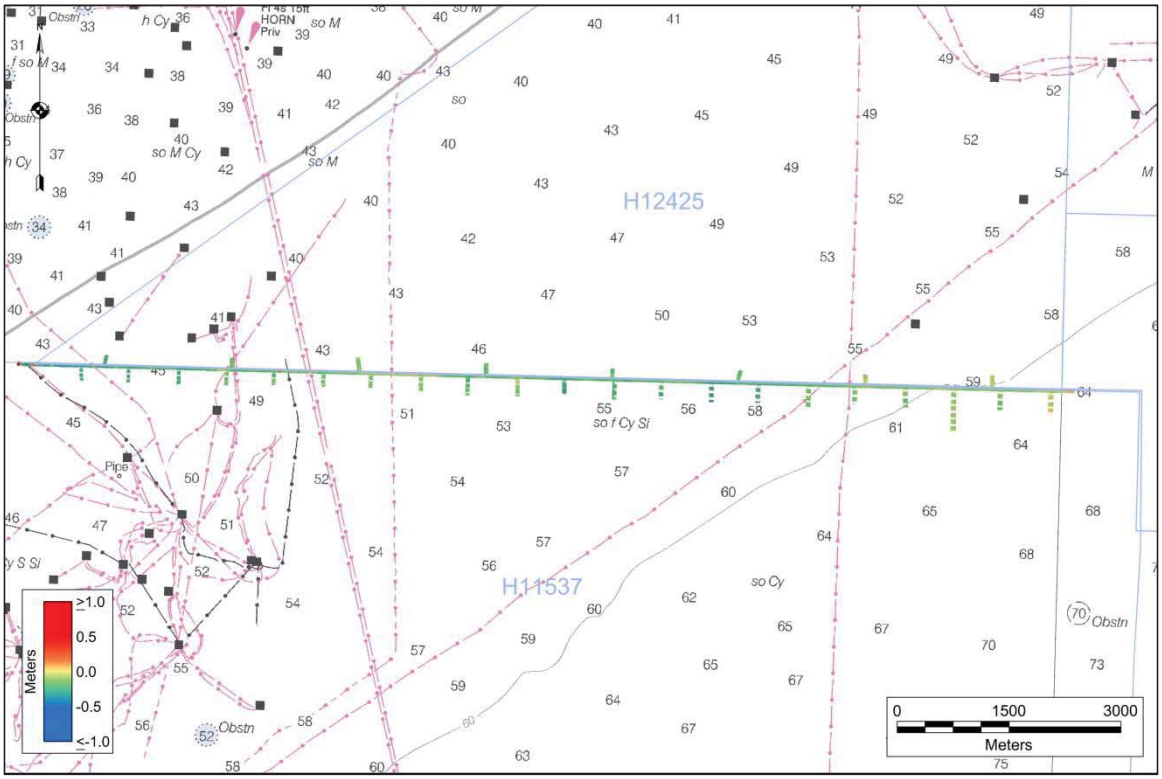


Figure 5. A difference surface calculated in CARIS HIPS using depth surfaces from junction surveys H12425 and H11537 overlaid on RNC 11358. Difference units are in meters.

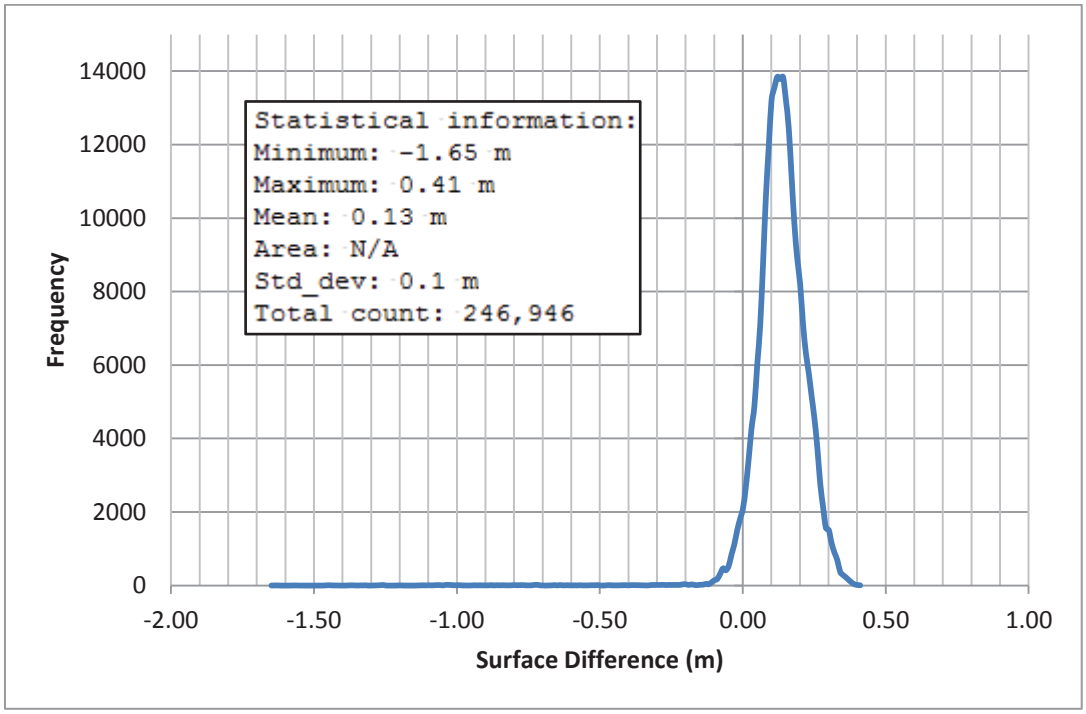


Figure 6. Depth difference histogram comparing Survey H12425 to Survey H11537.

H11804

There is an approximate overlap of 300 feet (90 meters) between bathymetric data from Survey H12425, acquired with the *R/V Ferrel*, and H11804, acquired with the *R/V Locator* and the *R/V Chinook* (Fugro). The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from Survey H12425 and the depths from the 'H11804_5m_MLLW_1of10' (5 meter resolution) BAG. The resultant difference surface is shown in Figure 7 and a histogram of the depth differences is shown in Figure 8. Depths from the H12425 survey show good agreement with the depths from the H11804 survey. Depth discrepancies generally equaled 40 centimeters or less with a mean difference of -21 centimeters. The most likely reason for the discrepancy between the two surveys is the fact that Survey H11804 was conducted three (3) years prior to Survey H12425 and survey H11804 was acquired with a single beam echosounder.

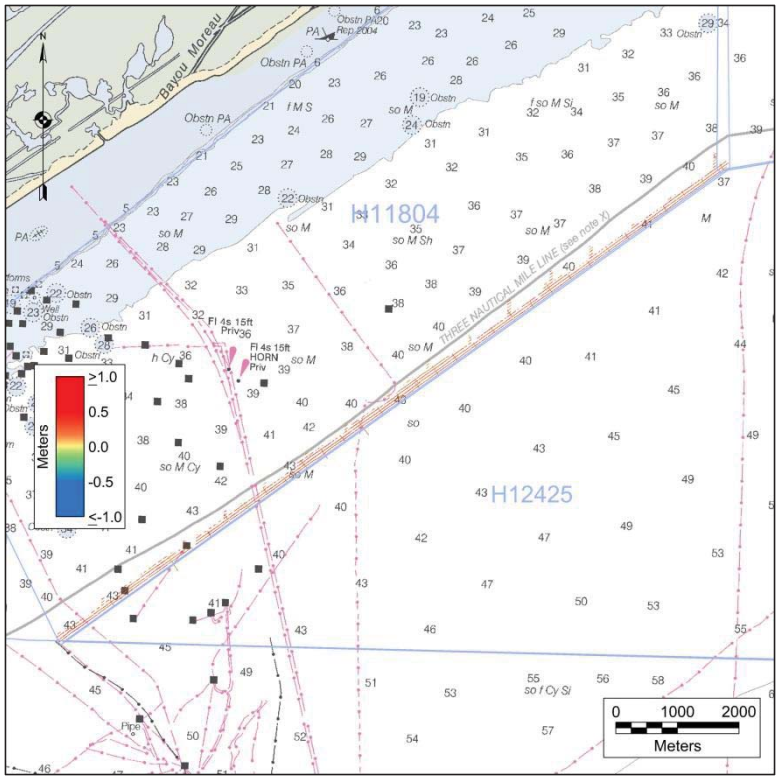


Figure 7. A difference surface calculated in CARIS HIPS using depth surfaces from junction Surveys H12425 and H11804 overlaid on RNC 11358. Difference units are in meters.

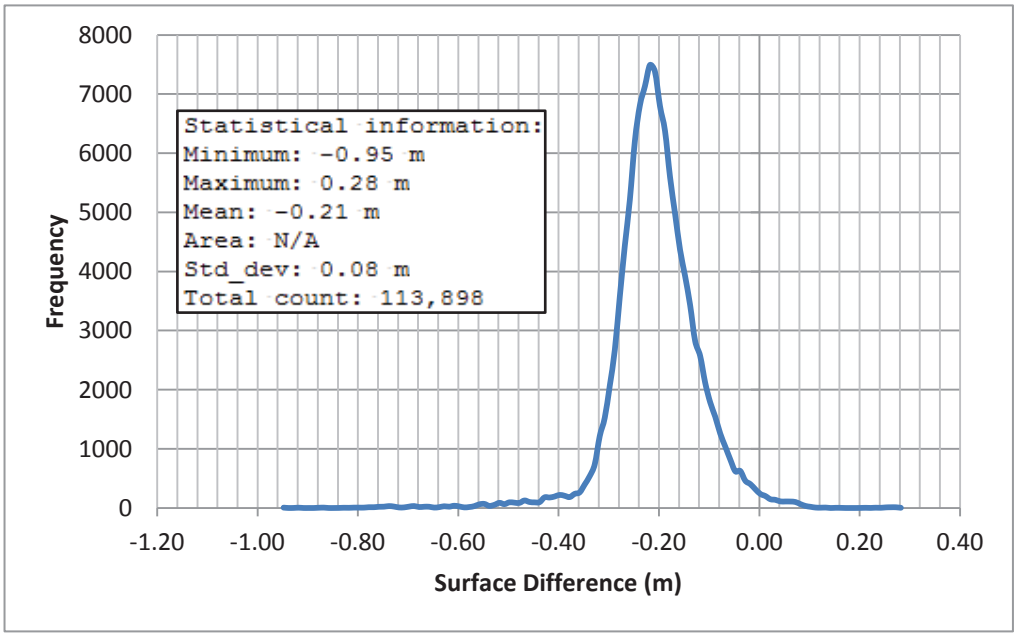


Figure 8. Depth difference histogram comparing Survey H12425 to Survey H11804.

H11805

There is an approximate overlap of 350 feet (106 meters) between bathymetric data from Survey H12425, acquired with the *R/V Ferrel*, and H11805, acquired with the *R/V Locator* and the *R/V Chinook* (Fugro). The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from Survey H12425 and the depths from the 'H11805_5m_MLLW_8of9' (5 meter resolution) BAG. The resultant difference surface is shown in Figure 9 and a histogram of the depth differences is shown in Figure 10. Depths from the H12425 survey show good agreement with the depths from the H11805 survey. Depth discrepancies generally equaled 35 centimeters or less with a mean difference of -10 centimeters.

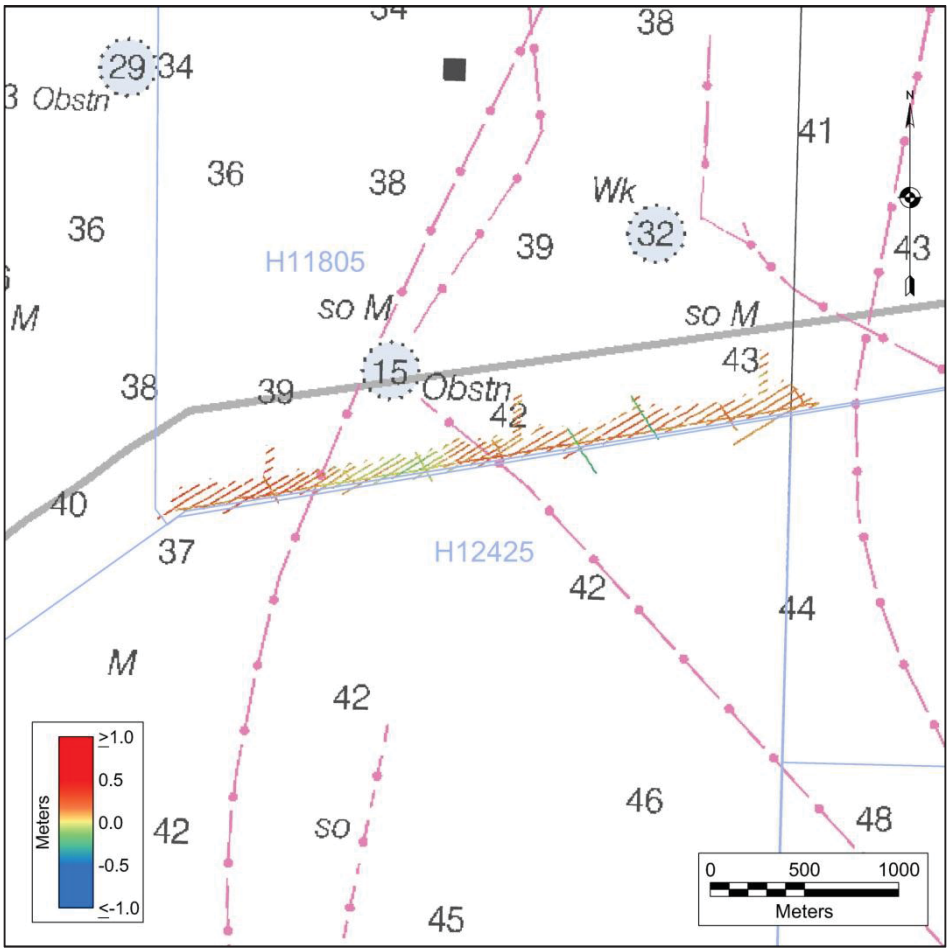


Figure 9. A difference surface calculated in CARIS HIPS using depth surfaces from junction Surveys H12425 and H11805 overlaid on RNC 11358. Difference units are in meters.

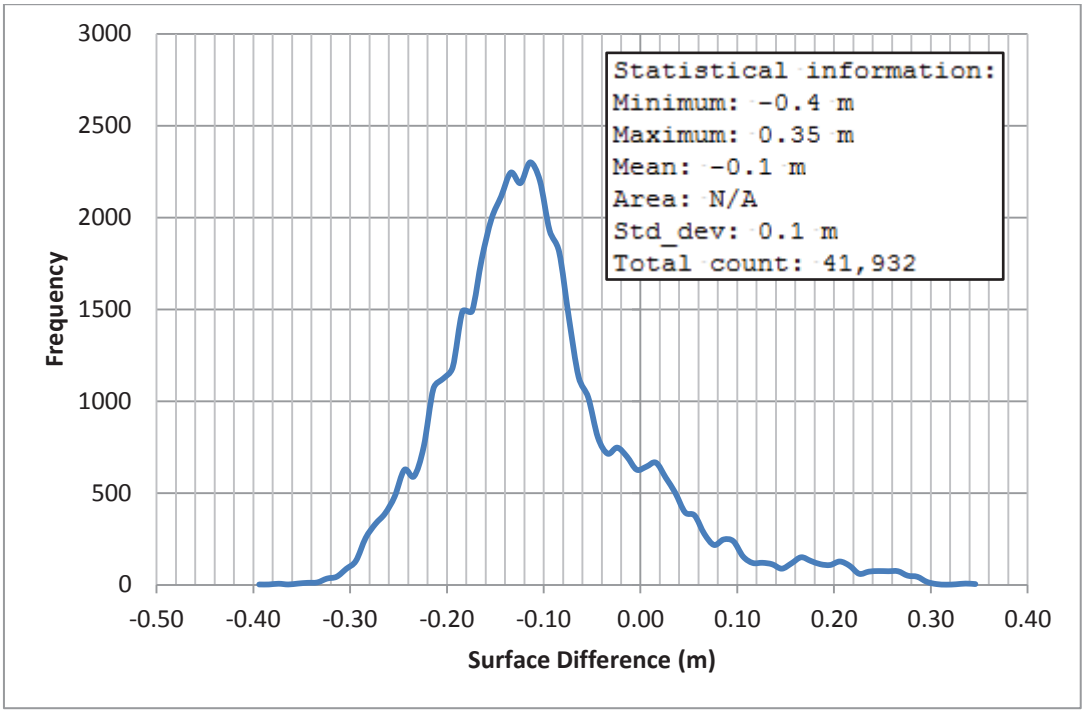


Figure 10. Depth difference histogram comparing Survey H12425 to Survey H11805.

H12426

There is an approximate overlap of 800 feet (240 meters) between bathymetric data from Survey H12426 and Survey H12425, both acquired with the *R/V Ferrel*. The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from Survey H12425 and a 2-meter finalized surface of Survey H12426. The resultant difference surface is shown in Figure 11 and a histogram of the depth differences is shown in Figure 12. Depths from the H12426 survey show good agreement with the depths from the H12425 survey. Depth discrepancies generally equaled 15 centimeters or less with a mean difference of 1 centimeter.

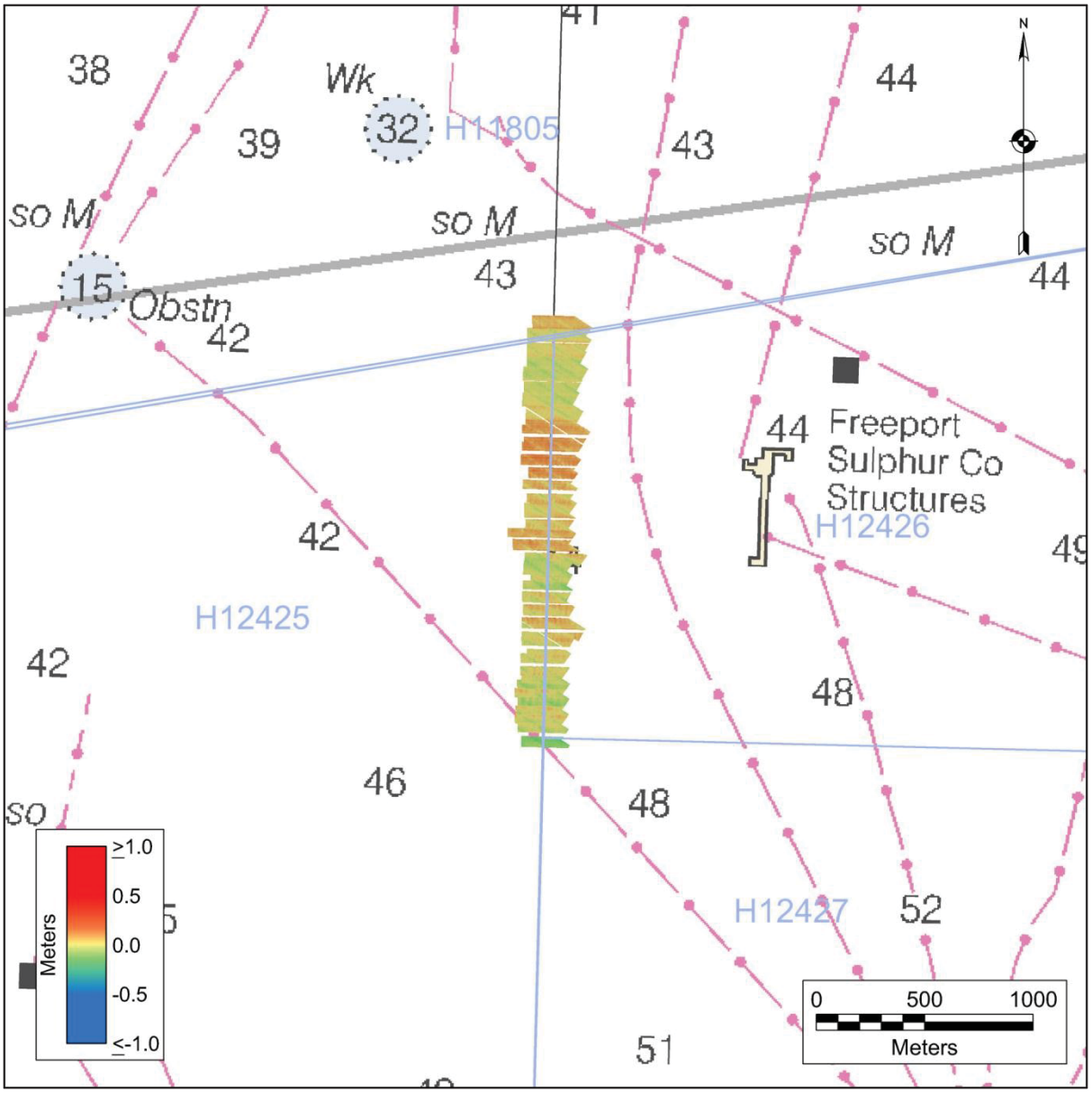


Figure 11. A difference surface calculated in CARIS HIPS using depth surfaces from junction Surveys H12425 and H12426 overlaid on RNC 11358. Difference units are in meters.

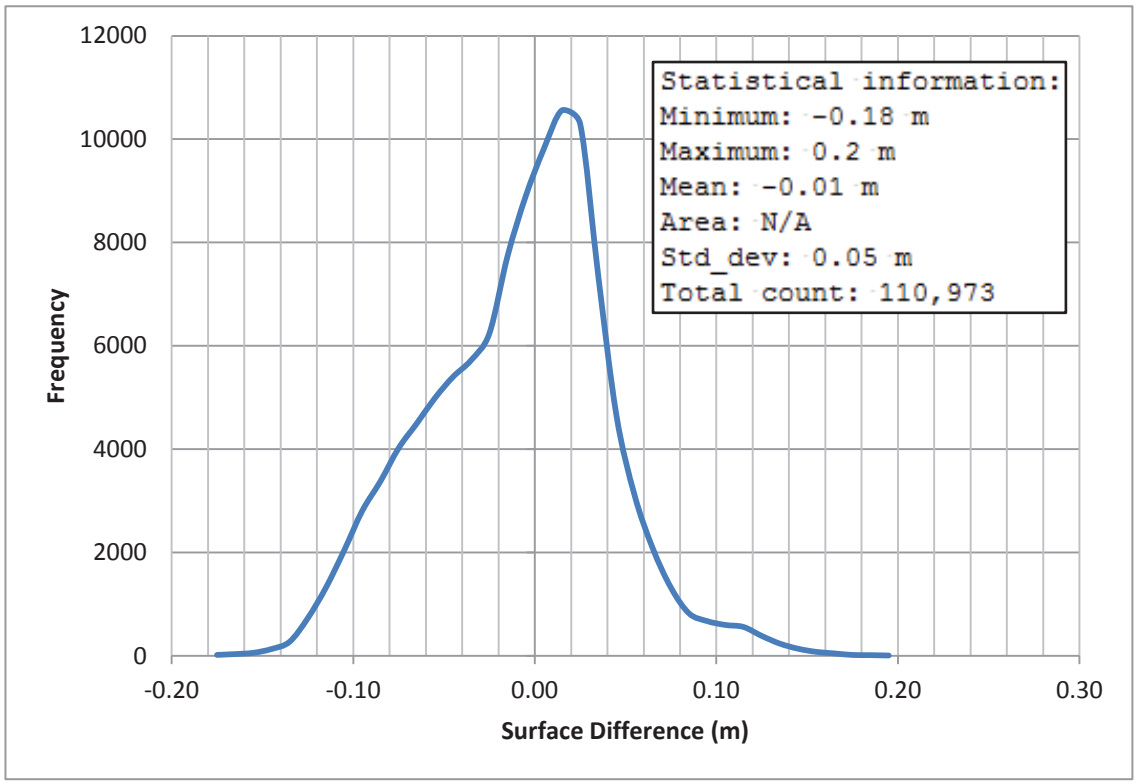


Figure 12. Depth difference histogram comparing Survey H12425 to Survey H12426.

H12427

There is an approximate overlap of 800 feet (240 meters) between bathymetric data from Survey H12425 and Survey H12427, both acquired with the *R/V Ferrel*. The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from Survey H12425 and a 2-meter finalized surface of Survey H12427. The resultant difference surface is shown in Figure 13 and a histogram of the depth differences is shown in Figure 14. Depths from the H12427 survey show good agreement with the depths from the H12425 survey. Depth discrepancies generally equaled 15 centimeters or less with a mean difference of 5 centimeters.

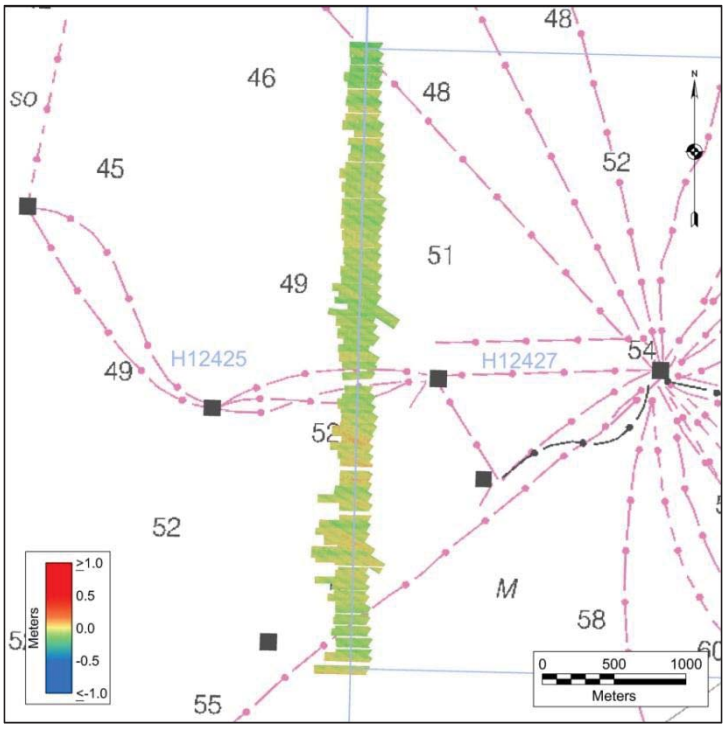


Figure 13. A difference surface calculated in CARIS HIPS using depth surfaces from junction Surveys H12425 and H12427 overlaid on RNC 11358. Difference units are in meters.

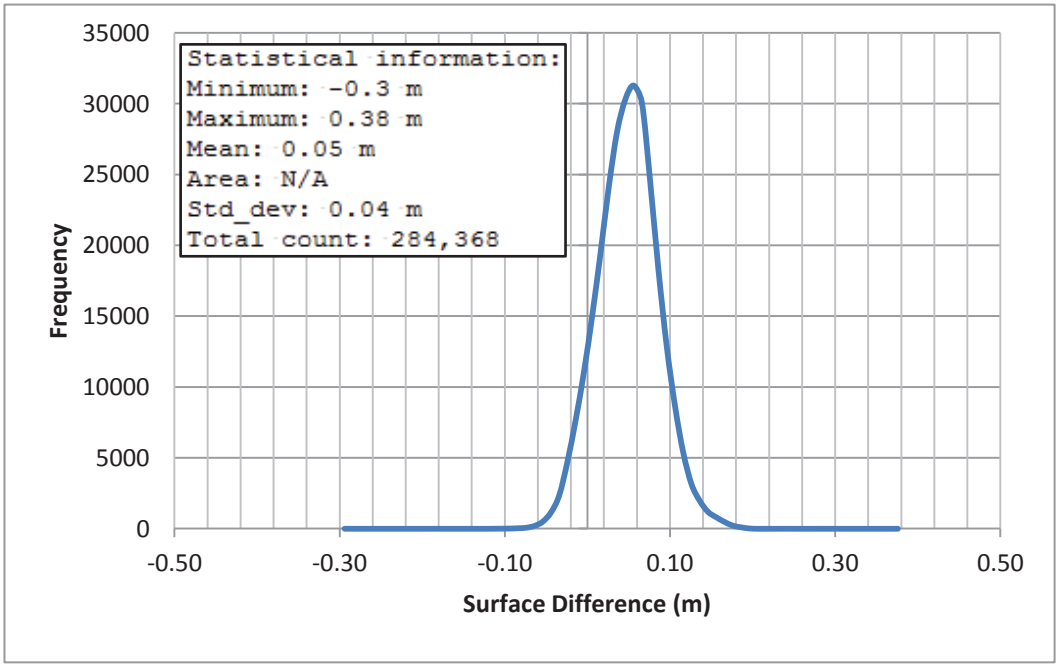


Figure 14. Depth difference histogram comparing Survey H12425 to Survey H12427.

H12428

There is an approximate overlap of 800 feet (240 meters) between bathymetric data from Survey H12428 and Survey H12425, both acquired with the *R/V Ferrel*. The CARIS HIPS Difference Surface function was used to calculate the difference between depths from a 2-meter finalized and combined BASE surface from survey H12425 and a 2-meter finalized surface of Survey H12428. The resultant difference surface is shown in Figure 15 and a histogram of the depth differences is shown in Figure 16. Depths from the H12428 survey show good agreement with the depths from the H12425 survey. Depth discrepancies generally equaled 15 centimeters or less with a mean difference of 2 centimeters.

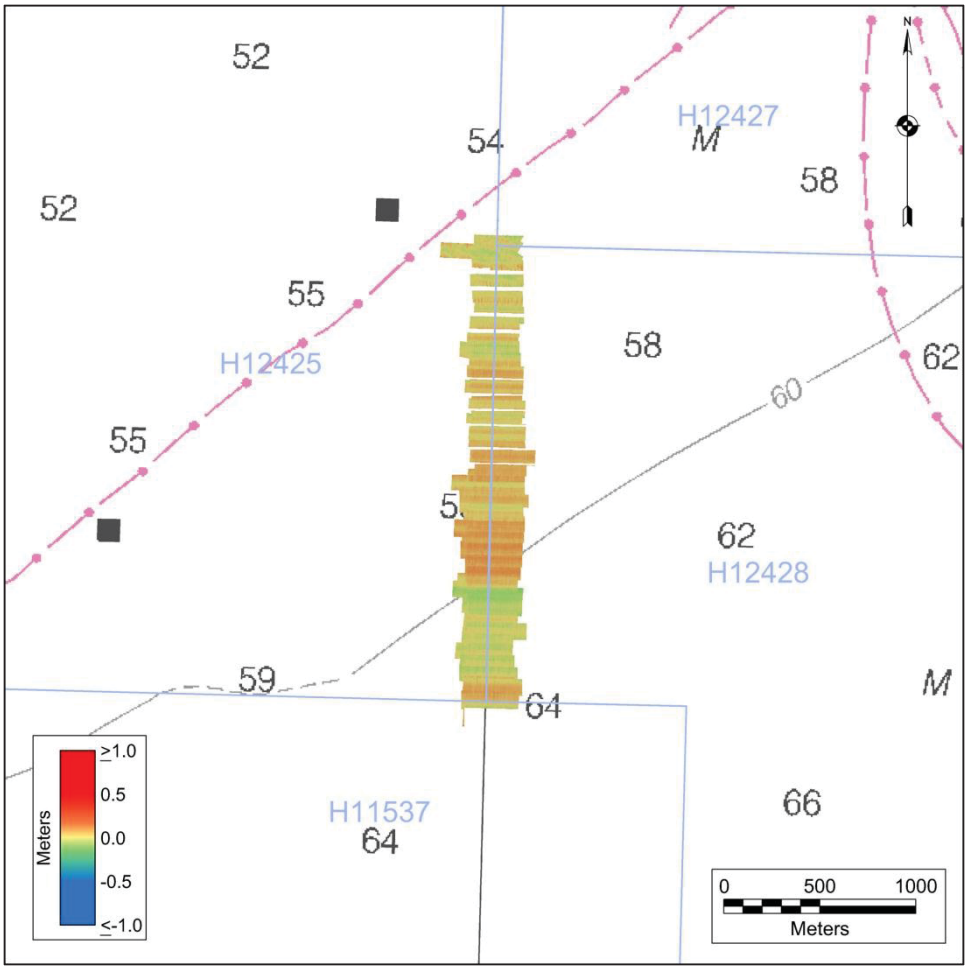


Figure 15. A difference surface calculated in CARIS HIPS using depth surfaces from junction Surveys H12425 and H12428 overlaid on RNC 11358. Difference units are in meters.

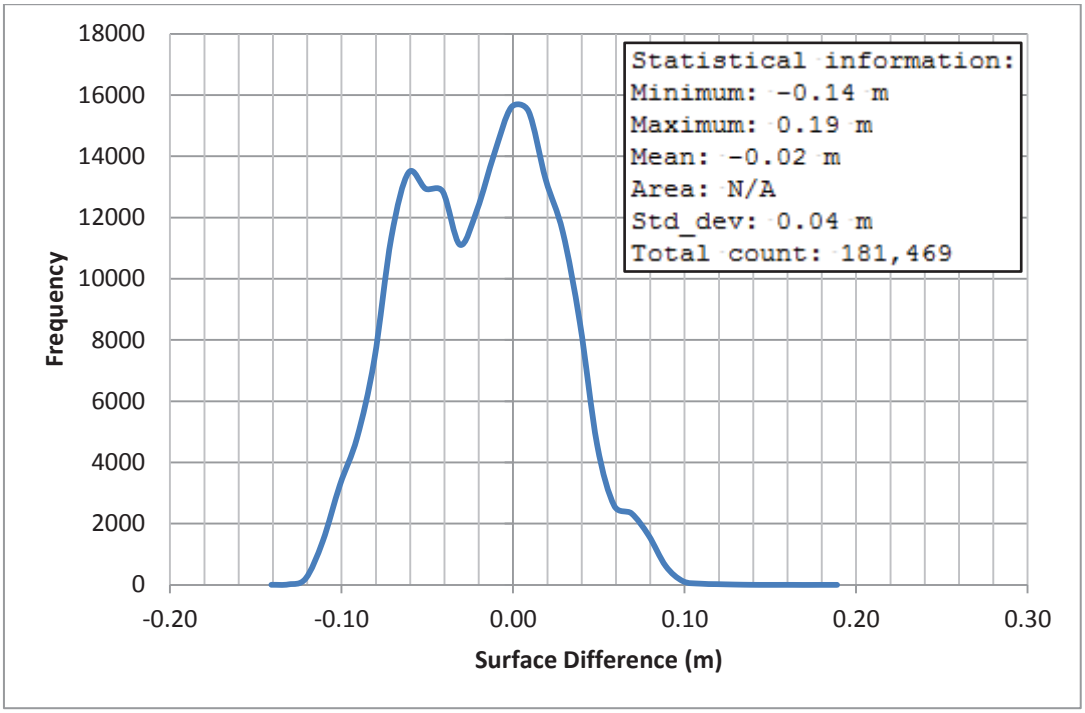


Figure 16. Depth difference histogram comparing Survey H12425 to Survey H12428.

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 weekly MBES bar checks are included in Appendix II of the DAPR.

B.2.5 Equipment Effectiveness

During calibration of the Reson 7101 MBES, a constant systematic artifact was discovered on the port side of the swath (Figure 17). A constant depression was evident between roughly 45 degrees and 70 degrees on the port side. The "smile" shaped signature has a typical maximum downward deflection of about 10 centimeters at about 60 degrees before trending upward to a deflection of about 5 centimeters at 70 degrees. The presence of this approximate 10-centimeter artifact does not exceed the allowable Total Vertical Uncertainty (TVU) for this project but it does exceed the Reson reported vertical uncertainty of 5 centimeters for this system.

Port side soundings were rejected beyond 45 degrees for all lines run with the Reson 7101 multibeam system per email correspondence from NOAA dated June 21, 2012 (see Appendix II). On June 15, 2012 (DN 167) the Reson 7101 multibeam system was replaced with a Reson 7125 MBES which was utilized for the remainder of survey operations.

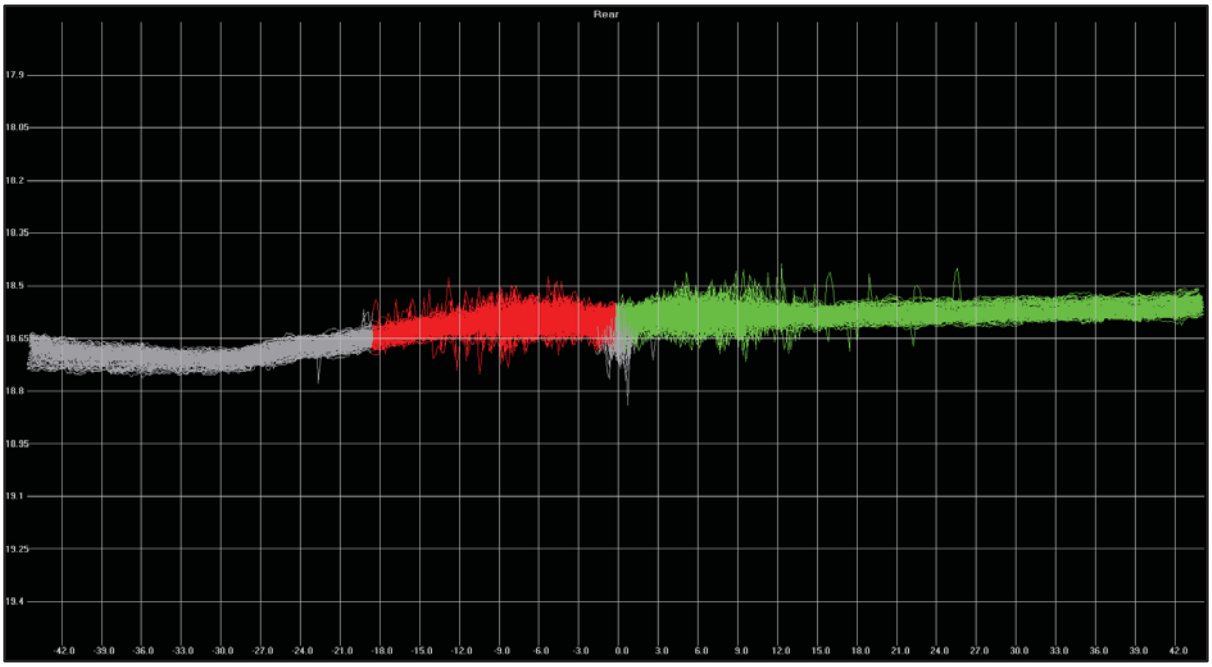


Figure 17. An example of the Reson 7101 port side swath artifact shown in CARIS Swath Editor with a 50x vertical exaggeration. The port side swaths are colored in red and the starboard swaths are colored green. The grey portion of the swath represents soundings rejected with a 45 degree swath beam filter.

The Reson 7101 and 7125 systems experienced periodic bursts of motion-induced noise or "blowouts," typically affecting between 1 and 4 sequential profiles. Efforts were made to reduce this noise during acquisition, including adjustments to system gain and power, in addition to the multibeam pole fairing that was installed to reduce cavitation effects. The frequency of the noise bursts would typically increase as sea state worsened. Therefore, operations were suspended when the frequency or length of blowouts became too high. The blowouts did not result in any nadir gaps in coverage in excess of 3 nodes in the along-track direction.

The Reson 7101 and 7125 systems displayed a trend in which the heights for features detected with the outer beams were greatly exaggerated. When a feature was detected with an outer beam, the soundings would seem to "ramp up" to an inflated height not supported by the correlating SSS contact heights from two or more side scan sonar passes (Figure 18). In these cases the outer beams were rejected in favor of soundings closer to nadir and the SSS contact heights were used to corroborate the feature's least depth.

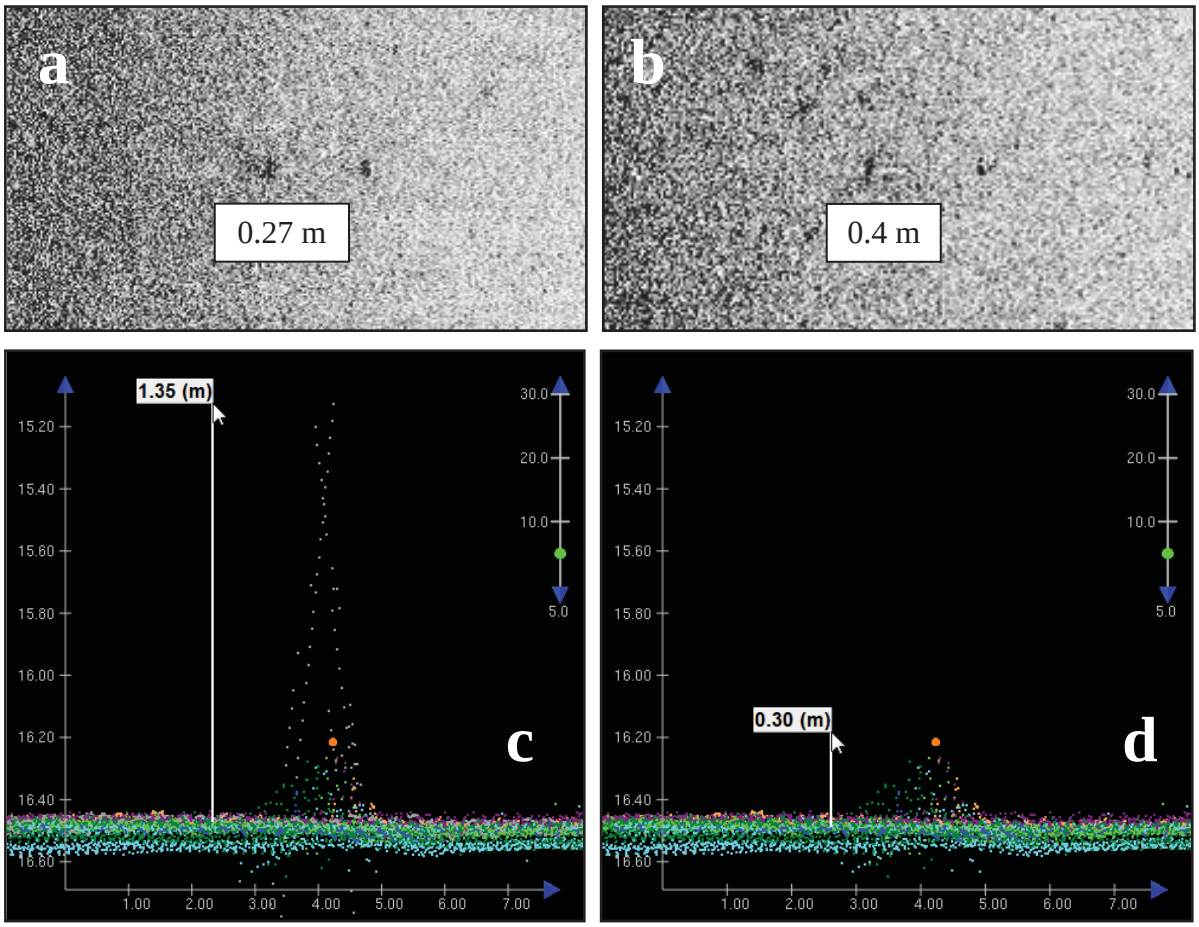


Figure 18. Example of Reson 7101 and 7125 outer beam detection issue where the system exaggerates the height of a feature. A small contact with insignificant height was positioned in the side scan record with a clear shadow measuring less than 40 centimeters, confirmed in both side scan coverages (a & b). The Reson 7125 outer beam soundings (colored in grey) greatly exaggerated the feature heights to over 1 meter tall (c). The outer beam data were rejected and soundings were selected from MBES development lines beams which are more reflective of the SSS contact heights to ensure the true feature height would be represented in the finalized surfaces (d).

On rare occasions, a black and white line – an example of which can be seen in Figure 19 – would appear across one or both sides of the SSS imagery swath. These lines were an artifact of the Klein 5000 system, not the result of environmental influences. Contact selection was not affected due to this phenomenon and care was taken to ensure that in the incidence of this brief loss of imagery in one 100% SSS coverage, the second coverage was good.

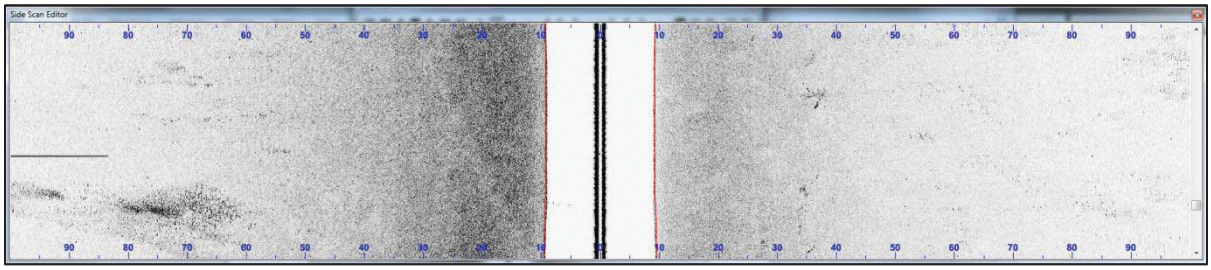


Figure 19. An example of the sporadic black and white line across the SSS imagery, displayed in CARIS Side Scan Editor.

B.2.6 Factors Affecting Soundings

An artificial "trench" was observed in the near nadir beams in both the Reson 7101 and 7125 MBES systems in areas where soft mud was present. The nadir trench was first observed during calibration testing. Analysis of the data indicated a soft bottom was the culprit, such that the sound pulse from the nadir beams was penetrating the soft surface sediment and returning a false depth. All bottom samples collected within the project area confirmed that the seabed in the survey area was composed of soft mud (Figure 20). The Reson 7101 multibeam system, operating at a frequency of 240 kHz, exhibited near nadir penetration on the order of 10-30 centimeters while the Reson 7125 multibeam system, operating at a frequency of 400 kHz, exhibited near nadir penetration on the order of 5-15 centimeters. The subbottom penetration was not constant within the survey area; it was assumed to vary with sediment type. Per email correspondence from NOAA dated July 2, 2012 (see Appendix II), near nadir soundings with a bottom signature below the apparent seafloor were rejected in an effort to provide BASE surfaces that are not biased by the subbottom penetration.

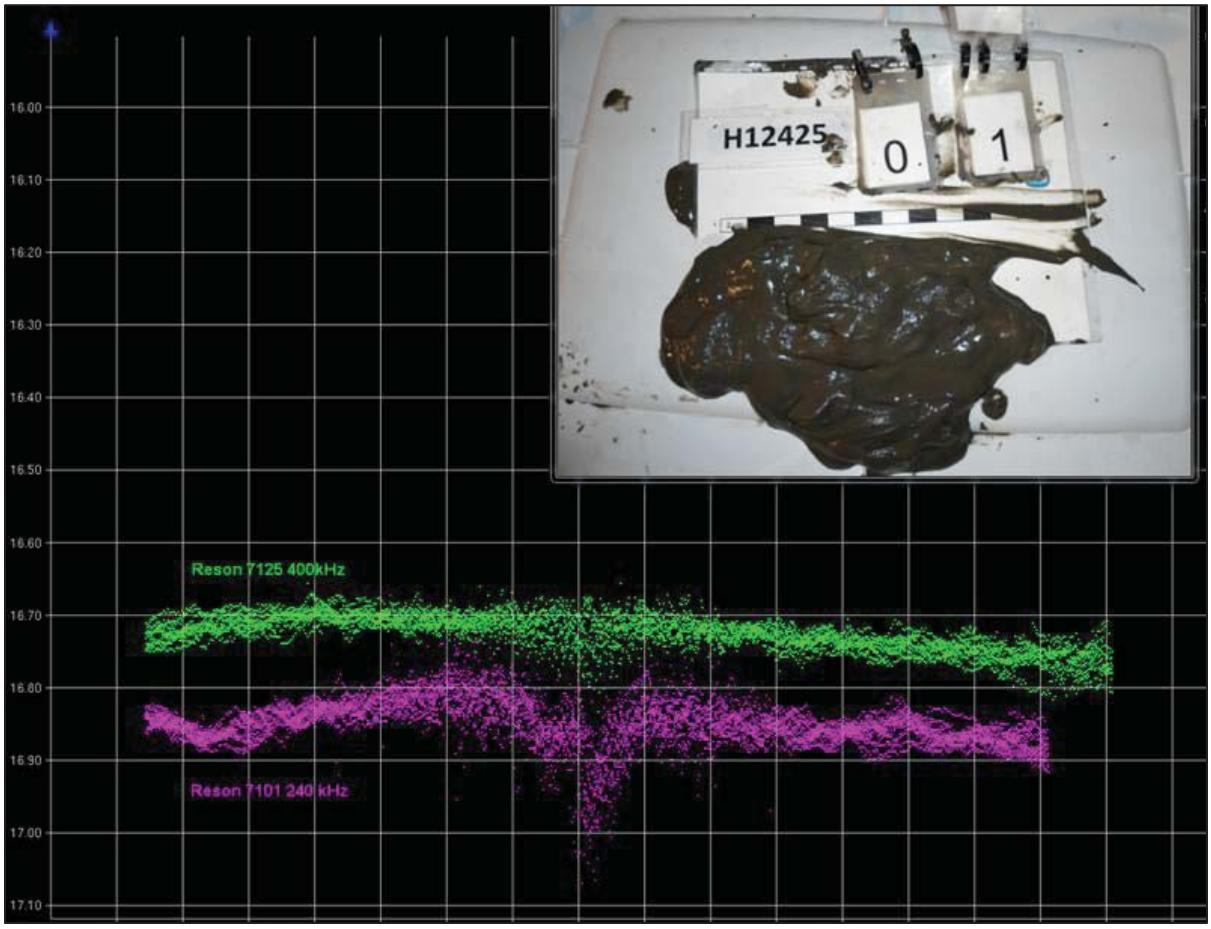


Figure 20. Example of Reson 7101 and 7125 near nadir subbottom penetration and a representative grab sample from Survey H12425. Portions of all surveys within Project OPR-K339-KR-12 were affected by this phenomenon.

The sound speed profiles measured throughout the limits of Survey H12425 showed high variability. Sound speed changes in the water column were time and space dependent and appear to be primarily attributed to the heating of the water surface and the influx of fresh water from the Mississippi River. Despite the efforts taken to reduce sound speed artifacts, slight refraction effects remain evident across the MBES swath, as displayed in the stereotypical sound speed "frowns" in Figure 21.

The surface sound speed was plotted for all MBES lines. The plots were used to isolate MBES lines most likely to be susceptible to sound speed related error. Soundings beyond 60 degrees were rejected for lines where high variability in surface sound speed correlated with excessive depth and positioning error in the outer beam soundings.

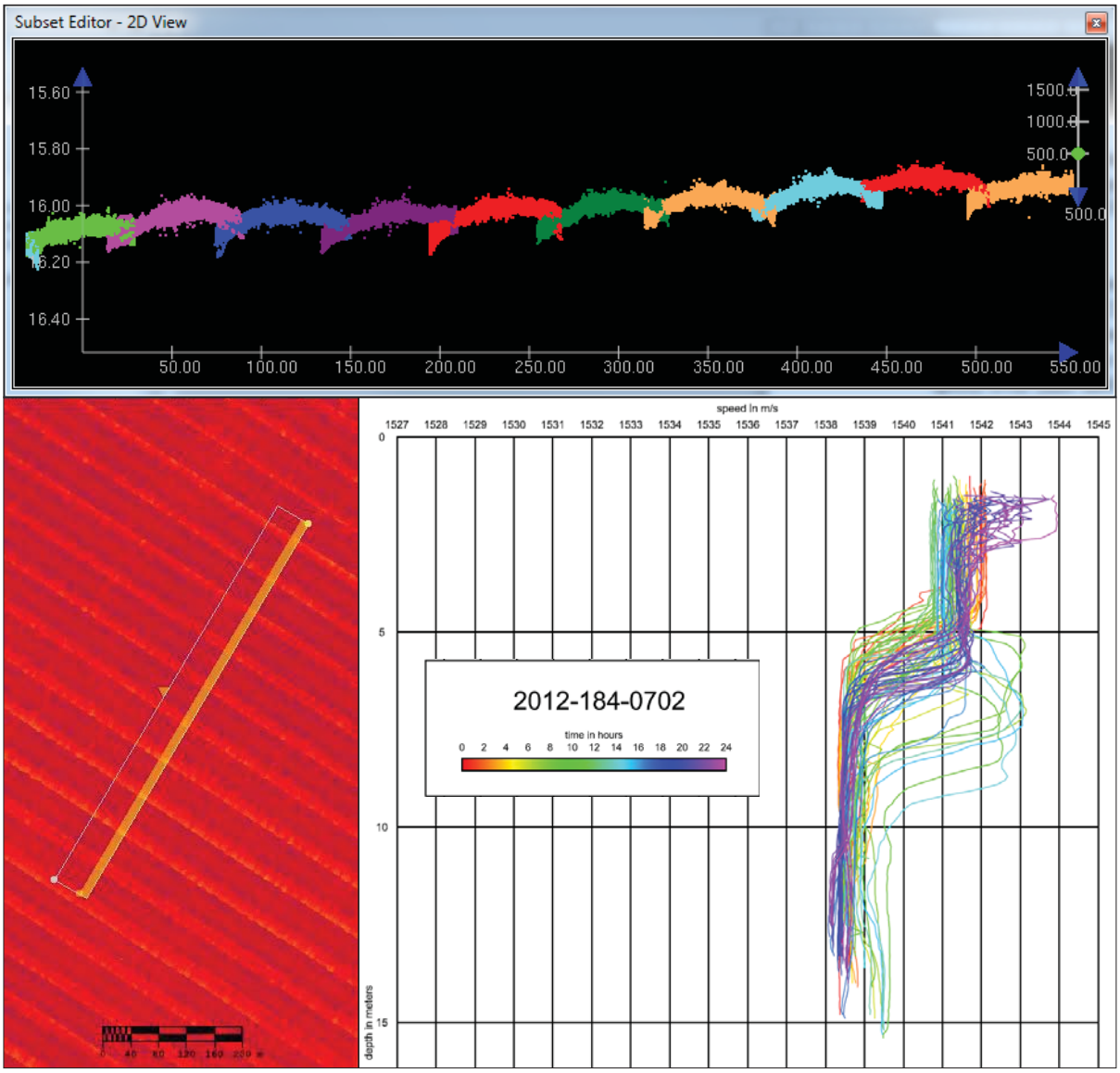


Figure 21. The top image is a cross section of Reson 7125 MBES lines from July 2, 2012 (DN 184) displayed in CARIS subset editor with soundings colored by depth and a 500x vertical exaggeration. A very slight sound speed "frown" is visible across the MBES swaths. The bottom left image shows the subset window over the standard deviation layer of the CUBE surface. The bottom right image is a plot of the sound speed profiles from July 2, 2012 (DN 184) colored by cast time to show the variability of the sound speed over time within the survey area.

The dynamic sound speed changes affected the SSS imagery at times, causing refraction in the outer ranges of the SSS swath. To lessen the impact of refraction, attempts were made to fly the tow fish below the refractive sound speed lens.

Overall, the tide correctors were modeled well for Survey H12425, showing good agreement between survey days. There were several areas where tide-related vertical offsets on the scale of 10 centimeters were noted between MBES data collected on different days. The tide-related vertical offset is most apparent when MBES data collected on June 28, 2012 (DN 180) intersects MBES cross lines collected on May 27, 2012 (DN 148) (Figure 22). Survey date June 28, 2012 (DN 180) was the first day of survey after Tropical Storm Debby, and there was still a large deviation between the predicted and verified tide data at the Port Fourchon, LA gauge noted on June 28, 2012 due to the storm surge (DN 180) (Figure 23).

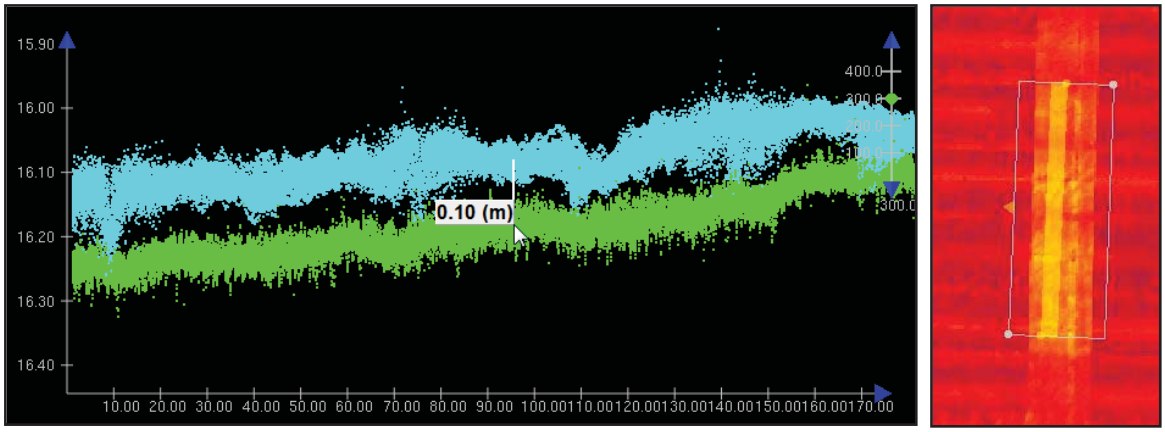


Figure 22. The left image is an example of the tide-related vertical offset between soundings collected on May 27, 2012 (DN 148) (green), and June 28, 2012 (DN 180) (turquoise) shown in CARIS HIPS Subset Editor. Depths and distances are in meters. The right image shows the subset window displayed over the Standard Deviation layer from a 2-meter CUBE surface. Areas with higher standard deviation are represented in yellow.

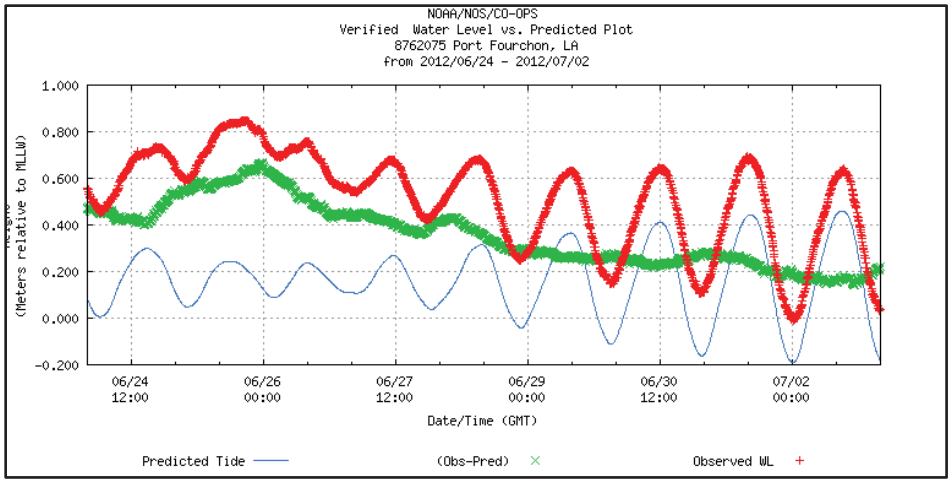


Figure 23. Verified tide versus predicted tide plot for the Port Fourchon, LA gauge downloaded from the NOS Tides and Currents website. The storm surge from Tropical Storm Debby appeared to peak on June 26, 2012 (DN 178), but its effect was still visible past June 28, 2012 (DN 180).

There was a large amount of vessel traffic within the project area, attributable to commercial and recreational fishing, and to vessels providing support to the numerous oil production platforms. It was a common occurrence to have vessel wakes recorded in the side scan imagery (Figure 24). Vessel wakes were noted in the acquisition and processing logs. When a wake was identified in one of the 100% coverage mosaics, the second coverage mosaic was reviewed to ensure clean data were acquired on the second SSS pass of the seafloor.

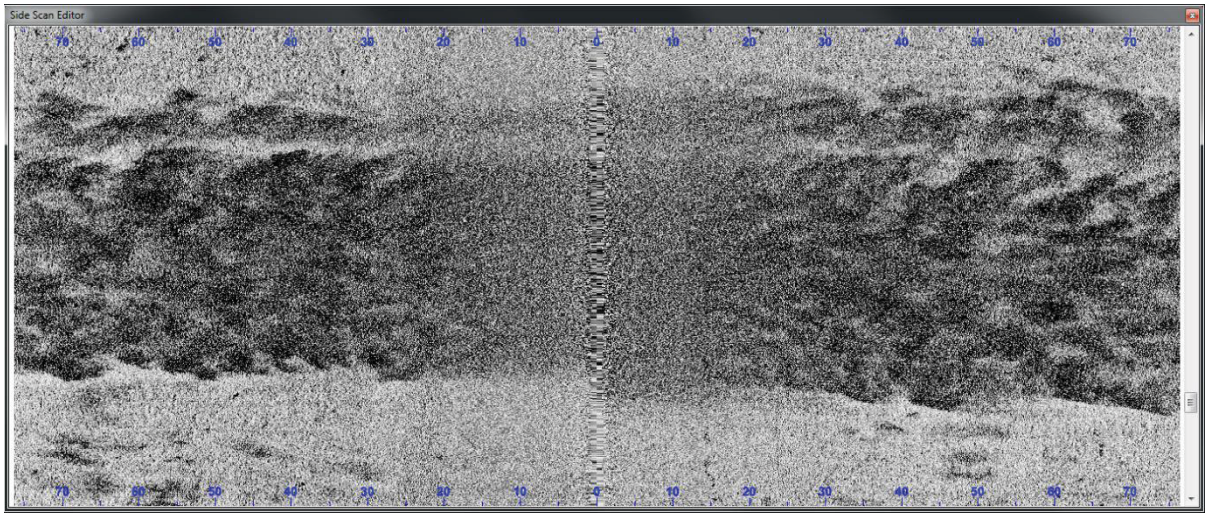


Figure 24. A vessel wake reflected from the surface as it appears in the SSS imagery.

In addition to vessel wakes, surface noise caused by choppy sea conditions was observed in the SSS records. The surface noise appeared as shadow-less dark spots in the SSS imagery. Surface reflections off of floating mats and/or strands of seaweed were also recorded by the side scan sonar (Figure 25). In an effort to minimize the effect of surface noise on the SSS imagery, the SSS operator attempted to keep the tow fish height at eight (8) percent of the range scale in use. There were brief instances when the tow fish height fell slightly below the eight (8) percent threshold; however, this was quickly adjusted since a fish height alarm was activated in SonarWiz to alert the operator when the lower or upper fish height threshold was reached. In addition, planned lines had sufficient overlap to account for the occasional reduction of effective scanning range. Lines that were affected by surface noise were carefully scrutinized to ensure all possible SSS contacts were selected.

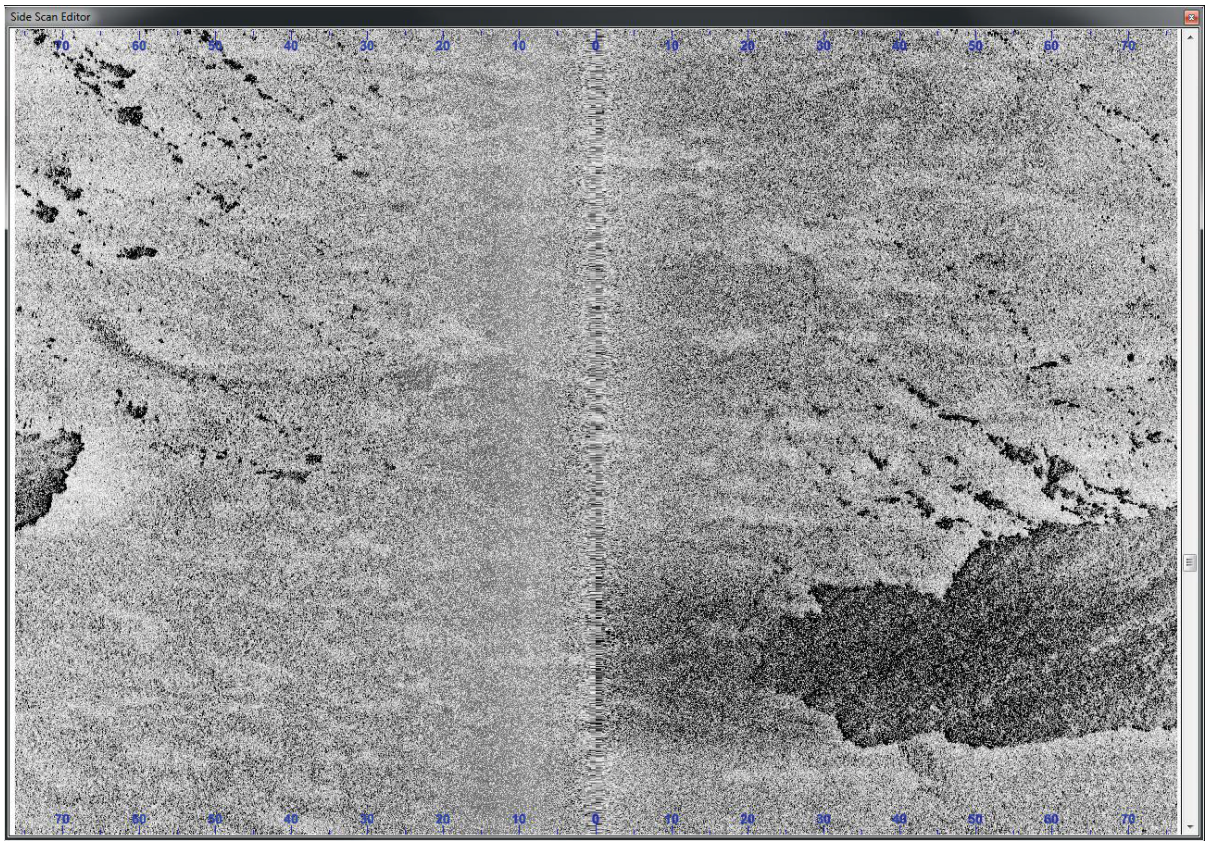


Figure 25. The reflection of surface noise from floating seaweed appears as shadow-less, dark patches across the side scan record.

An abundance of fish and/or marine mammals were seen in the SSS data, either as lone swimmers or in schools (Figure 26). Fish and dolphins were noted in the acquisition log by the field team, and these areas were carefully reviewed during data processing. Shadows, usually detached from a dark return, were typically associated with fish either in the water column or positioned closer to nadir. In the cases where a visible shadow was recorded, the contact was designated as a fish, for two reasons: 1) the possibility that the assumed fish is actually a feature and 2) to assist processors in rejecting fish-related noise from the MBES data. The fish designation was confirmed if no correlating item was found in the second coverage. If visible in both SSS coverages with a significant height, the contact was investigated with object detection MBES coverage to verify or disprove the presence of a feature.

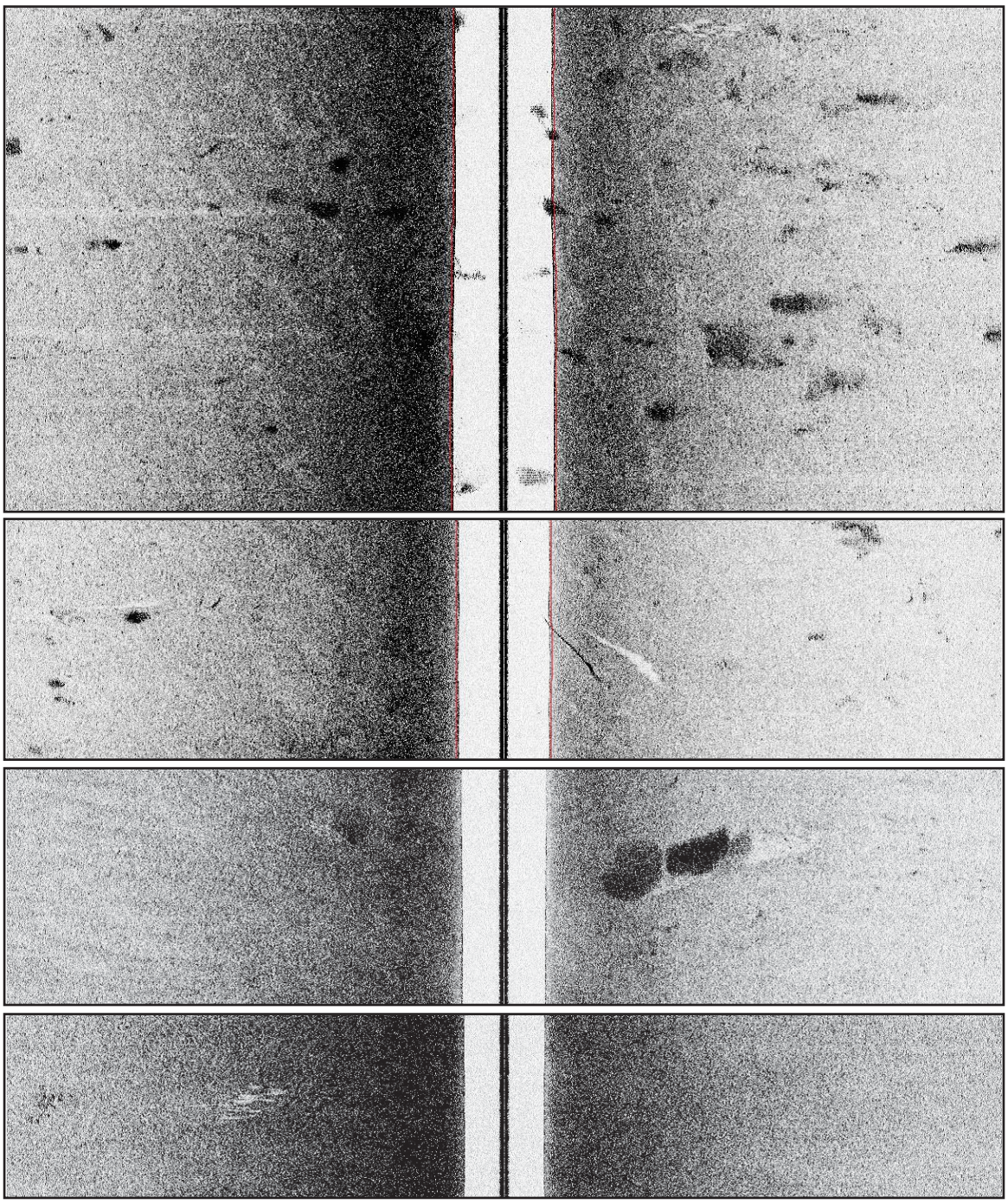


Figure 26. Examples of fish encountered in the side scan imagery.

The high volume of fish within the survey site resulted in MBES data afflicted with fish-related noise, which greatly increased the time spent manually rejecting soundings in CARIS HIPS Subset Editor. Balls of fish in the water column would give the appearance of rock-like features on the seafloor or large masses of soundings detached from the bottom. Within areas of overlapping multibeam coverage these false features would most often be present in

the outer beams of one line of MBES data, but were not found in the overlapping MBES coverage. In shallower survey areas where there was not abundant overlap between the mainscheme MBES data, each 100% SSS coverage was consulted to confirm or disprove a questionable feature in the MBES data. The standard deviation layers from the 1-meter cleaning BASE surfaces were used to identify areas dense with fish features, and the MBES data were carefully edited in Subset Editor. On several MBES lines, the rejection of large schools of fish resulted in patchy gaps in coverage in the outer swath (Figure 27). Any holidays at nadir caused by the rejection of fish were filled with MBES development lines.

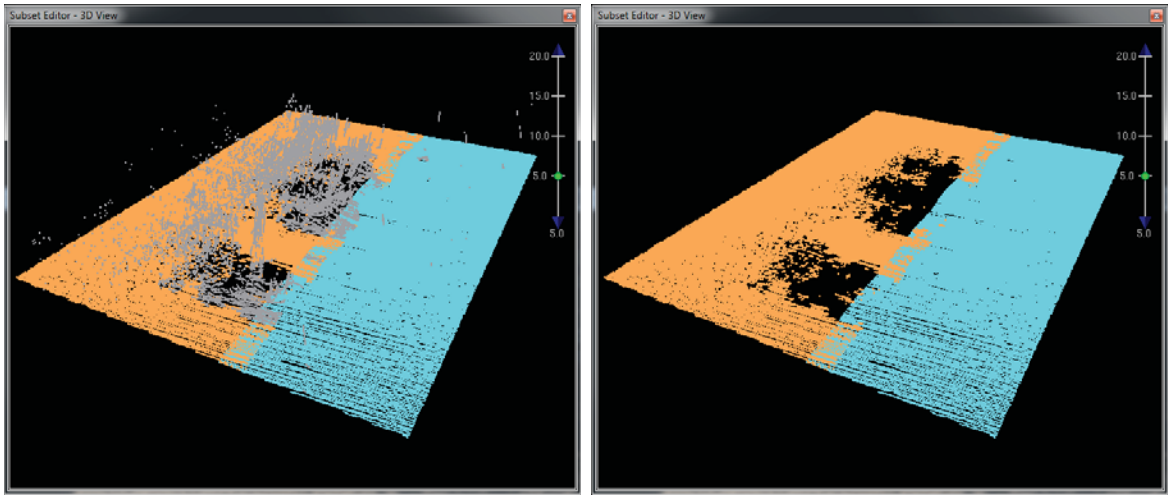


Figure 27. On the left, fish schools were rejected from the MBES mainscheme line colored in orange. The fish schools are represented by the grey soundings. On the right, where the fish have been rejected, a coverage gap has been created in the outer swath of the orange MBES line. All nadir gaps caused by fish school rejection were covered with MBES fill-in lines.

On July 8, 2012 (DN 190), portions of the imagery on the northwest ends of the mainscheme SSS lines were rejected due to an excessive amount of fish in the record. SSS fill-in lines were acquired on July 9, 2012 (DN 191) to complete the SSS coverage for Survey H12425.

B.2.7 Sound Speed Methods

Sound speed measurements were acquired and processed as documented in the DAPR. All MBES lines were sound speed corrected using CARIS HIPS' "Nearest in Distance Within Time" method with the time set to one (1) hour.

B.2.8 Coverage Equipment and Methods

This survey was conducted to develop 200% SSS coverage within the Survey limits along with concurrent MBES, referred to as "Set Line Spacing Coverage" in Section 5.2.2.3 of the HSSDM. There were no data gaps in either 100 percent side scan coverage mosaic within the survey limits for H12425. Though it was not required, nearly complete MBES coverage

was achieved within the survey area, with some visible gaps, or "skunk stripes" in the Set Line Spacing coverage surfaces.

All potentially significant features located with mainscheme SSS or MBES were developed with high density, near nadir multibeam sonar data to meet the HSSDM requirement of "Object Detection Coverage." The survey methods used to meet coverage requirements did not deviate from those described in the DAPR.

The original line plan for Survey H12425 featured planned lines oriented in an east-west direction. However, upon commencing operations in H12425 the field team was informed, via VHF radio, that Global Geophysical Services was conducting a "seismic prospect" within the bounds of the survey area. After initial contact the Global Geophysical Services project manager and OSI's lead hydrographer kept in close telephone and e-mail contact. In general the OSI operation worked around the seismic prospect. The geophysical survey was not listed in the Local Notice to Mariners for the area.

The geophysical survey employed hydrophone arrays oriented generally in a northwest-south east direction. The hydrophone arrays, installed at 500 meter parallel offsets, originated near shore and extended well into the middle of the survey area. Within the H12425 survey area the seismic prospect had a footprint of about 3,500 meters wide. Each array was buoyed at approximately 1,200-meter intervals along its length. The geophysical survey employed a sound source or "gun boat" that operated within the survey area almost continuously. The seismic prospect was mobile, i.e. the hydrophone arrays were deployed and recovered as the ground that they covered was "shot in" by the gun boat. Once an array on the east border of the prospect had completed its function it was recovered and deployed 500 meters to the west of the prospect. Arrays were recovered/deployed in this fashion as the prospect progressed generally in a northeast-southwest direction.

In order to avoid damage to the seismic equipment, OSI oriented the planned tracklines to run parallel with the prospect. In practice the OSI survey vessel was operated in front of the progression of the mobile seismic prospect (southwest side) before the hydrophone arrays were moved into a given area. Once an array or group of arrays was moved, the OSI survey vessel surveyed behind the prospect (northeast side). Figure 28 depicts the H12425 survey transects that were run on the original planned line file (east-west direction) and the transects that were run parallel to the seismic prospect (northwest-southeast direction).

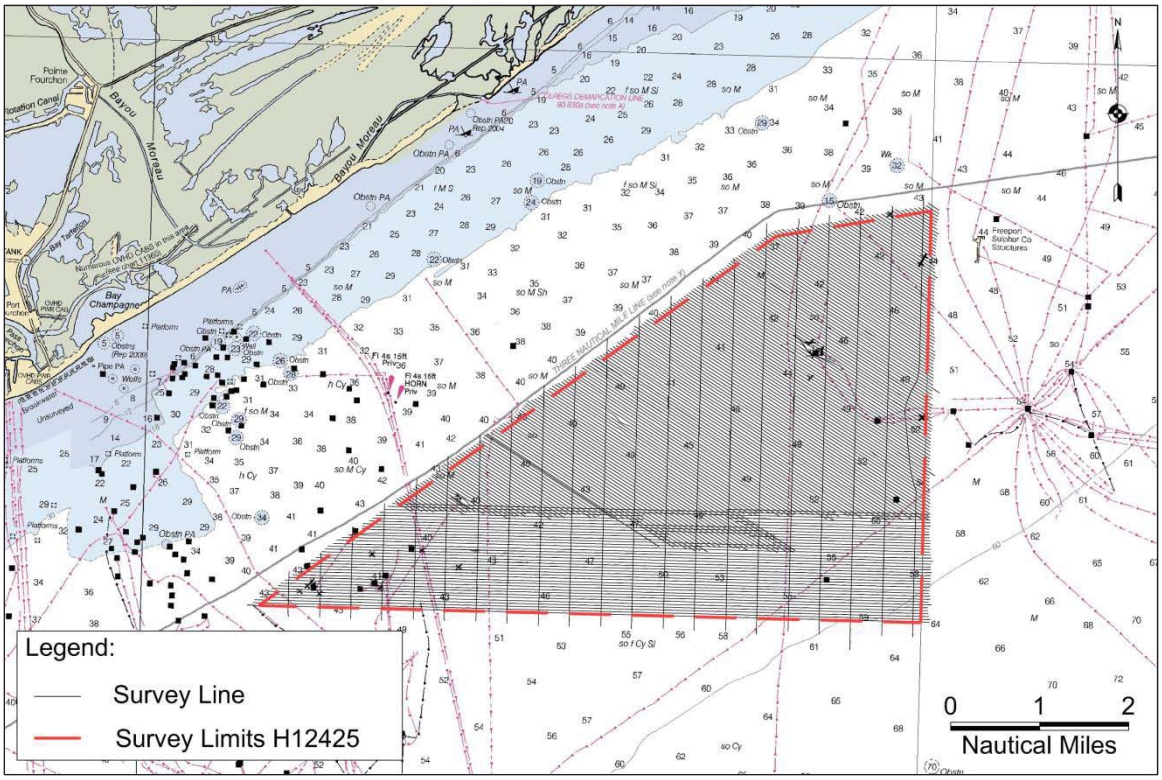


Figure 28. Survey tracklines for Survey H12425 overlaid on RNC 11358.

B.2.9 Density

To confirm the HSSDM coverage requirement that at least 95% of the surface nodes shall be populated with at least 5 soundings for object detection coverage surfaces and at least 3 soundings for set line spacing coverage surfaces, the Compute Statistics tool was utilized within CARIS HIPS and SIPS to generate statistics for the Density layer for each pre-finalized BASE surface. The pre-finalized BASE surfaces were used for this test because it was discovered that once a surface is finalized a density value of one (1) is assigned to all nodes containing a designated sounding, regardless of the node's sounding density value pre-finalization.

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 ≥ 5 for every object detection coverage CUBE surface and the percentage of nodes with a sounding density ≥ 3 for every set line spacing coverage CUBE surface. The results are presented in Table 9.

Table 9
Percentage of H12425 Nodes within Surface Density Requirement

BASE Surface Name	Percentage of nodes with Density ≥ 3 soundings	Percentage of nodes with Density ≥ 5 soundings
H12425_North_CUBE_2m	99.93 %	NA
H12425_South_CUBE_2m	99.97 %	NA
Item-1_Inv_CUBE_0-5m	NA	100 %
Item-2_Inv_CUBE_0-5m	NA	100 %
Item-3_Inv_CUBE_0-5m	NA	100 %
Item-4_Inv_CUBE_0-5m	NA	100 %
Item-5_Inv_CUBE_0-5m	NA	100 %
Item-6_Inv_CUBE_0-5m	NA	100 %
Item-7_Inv_CUBE_0-5m	NA	100 %
Item-8_Inv_CUBE_0-5m	NA	99.89 %
Item-9_Inv_CUBE_0-5m	NA	100 %
Item-10_Inv_CUBE_0-5m	NA	100 %
Item-11_Inv_CUBE_0-5m	NA	100 %
Item-12_Inv_CUBE_0-5m	NA	100 %
Item-13_Inv_CUBE_0-5m	NA	100 %
Item-14_Inv_CUBE_0-5m	NA	100 %
Item-15_Inv_CUBE_0-5m	NA	100 %

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Corrections to echo soundings were performed as documented in Section C. of the DAPR.

B.3.2 Calibrations

Preliminary patch test values were calculated in the field and final values were verified in CARIS HIPS. The initial patch and performance test for the Reson 7101 MBES was completed on May 26, 2012 (DN 147) and the initial patch and performance test for the Reson 7125 MBES was completed on June 15, 2012 (DN 167) prior to beginning survey operations with the respective systems.

Alignment correctors remained unchanged for the portion of survey operations collected with the Reson 7101 echosounder system. Latency and attitude bias values calculated from the initial patch test were confirmed by a final patch and performance test conducted before replacement of the Reson 7101 with the Reson 7125 echosounder system.

Survey operations were suspended on June 22, 2012 (DN174) in advance of Tropical Storm Debby necessitating the recovery of the transducer pole from its deployed position. When the transducer pole was redeployed on June 28, 2012 (DN 180) a slight roll offset was detected during preliminary processing. Once the offset was revealed, a roll calibration was conducted and the Reson 7125 CARIS Hydrographic Vessel Files (HVFs) were updated with a modified roll value of -0.12 degrees on June 28, 2012 (DN 180).

On July 4, 2012 (DN 186) following a diver inspection of the MBES transducer head, the transducer pole was reseated and calibration lines were again acquired. A roll offset of -0.16 degrees was calculated and updated in the Reson 7125 HVFs on July 4, 2012 (DN 186); this value was identical to the roll bias derived from the initial Reson 7125 echosounder system patch test. The HVF system latency and alignment offset values were confirmed by a final patch test collected on July 9, 2012 (DN 191).

B.4 Backscatter

Backscatter data were not acquired for H12425.

B.5 Data Processing

B 5.1 Software Updates

Table 10
H12425 Software Updates

Manufacturer	Name	Version	Service Pack	Hotfix	Installation Date	Use
CARIS	HIPS & SIPS	7.1	2	2	8/23/2012	Data Processing
CARIS	HIPS & SIPS	7.1	2	3	9/21/2012	Data Processing
CARIS	HIPS & SIPS	7.1	2	4	10/23/2012	Data Processing

The following Feature Object Catalog was used for NOAA extended attributes: Object catalog version 5.2

B.5.2 Surfaces

Table 11 lists the CARIS coverage surfaces that were generated for Survey H12425.

Table 11
H12425 CARIS Surfaces

Final Surface Name	Surface Type	Resolution (m)	Depth Range (m)	Surface Parameter	Purpose
H12425_North_CUBE_2m_Final	CUBE	2	12.08 – 18.18	MBES	Set Line Spacing Coverage
H12425_South_CUBE_2m_Final	CUBE	2	12.50 – 19.65	MBES	Set Line Spacing Coverage
Item-1_Inv_CUBE_0-5m_Final	CUBE	0.5	12.50 – 13.65	MBES	Obj Det Coverage
Item-2_Inv_CUBE_0-5m_Final	CUBE	0.5	12.77 – 14.22	MBES	Obj Det Coverage
Item-3_Inv_CUBE_0-5m_Final	CUBE	0.5	12.90 – 14.07	MBES	Obj Det Coverage
Item-4_Inv_CUBE_0-5m_Final	CUBE	0.5	13.13 – 13.87	MBES	Obj Det Coverage
Item-5_Inv_CUBE_0-5m_Final	CUBE	0.5	13.18 – 14.11	MBES	Obj Det Coverage
Item-6_Inv_CUBE_0-5m_Final	CUBE	0.5	13.35 – 14.42	MBES	Obj Det Coverage

Final Surface Name	Surface Type	Resolution (m)	Depth Range (m)	Surface Parameter	Purpose
Item-7_Inv_CUBE_0-5m_Final	CUBE	0.5	13.61 – 14.57	MBES	Obj Det Coverage
Item-8_Inv_CUBE_0-5m_Final	CUBE	0.5	13.53 – 14.68	MBES	Obj Det Coverage
Item-9_Inv_CUBE_0-5m_Final	CUBE	0.5	14.23 – 14.96	MBES	Obj Det Coverage
Item-10_Inv_CUBE_0-5m_Final	CUBE	0.5	13.23 – 14.63	MBES	Obj Det Coverage
Item-11_Inv_CUBE_0-5m_Final	CUBE	0.5	13.47 – 16.18	MBES	Obj Det Coverage
Item-12_Inv_CUBE_0-5m_Final	CUBE	0.5	14.45 – 15.48	MBES	Obj Det Coverage
Item-13_Inv_CUBE_0-5m_Final	CUBE	0.5	13.76 – 15.00	MBES	Obj Det Coverage
Item-14_Inv_CUBE_0-5m_Final	CUBE	0.5	15.41 – 16.41	MBES	Obj Det Coverage
Item-15_Inv_CUBE_0-5m_Final	CUBE	0.5	16.20 – 16.51	MBES	Obj Det Coverage
H12425_SSS_Coverage_100	Mosaic	1	all	SSS	100 % SSS Coverage
H12425_SSS_Coverage_200	Mosaic	1	all	SSS	200 % SSS Coverage

Survey H12425 was divided into two (2) field sheets to generate the Set Line Spacing coverage surfaces (Figure 29 and Table 11) based upon the number of grid nodes (limited by CARIS HIPS) per field sheet (less than 25 million nodes). Soundings from all cross line, mainscheme, and development MBES lines were included in the final coverage surface generation. Surveyed depths for the entire survey area were less than 20 meters; therefore, a grid resolution of 2 meters was selected to demonstrate Set Line Spacing coverage, per Section *5.2.2.3 Set Line Spacing* of the HSSDM.

In addition to Set Line Spacing coverage surfaces, fifteen (15) small field sheets were generated over features that required Object Detection Coverage. To demonstrate object detection coverage, CUBE BASE Surfaces were created with resolutions of 0.5 meters, per Section *5.2.2.1 Object Detection Coverage* of the HSSDM. In the event that no feature was located following item investigation with MBES development, an object detection surface was not generated over that investigation area.

The Set Line Spacing and Object Detection Coverage surfaces were generated in CARIS HIPS using the CubeParams_NOAA.xml template file for the CUBE gridding and disambiguation process. The selected CUBE parameters were dependent upon the surface resolution. See the DAPR for additional information regarding methods and parameters used for final surface generation.

A 1-meter resolution coverage mosaic field sheet was created for each 100% SSS coverage.

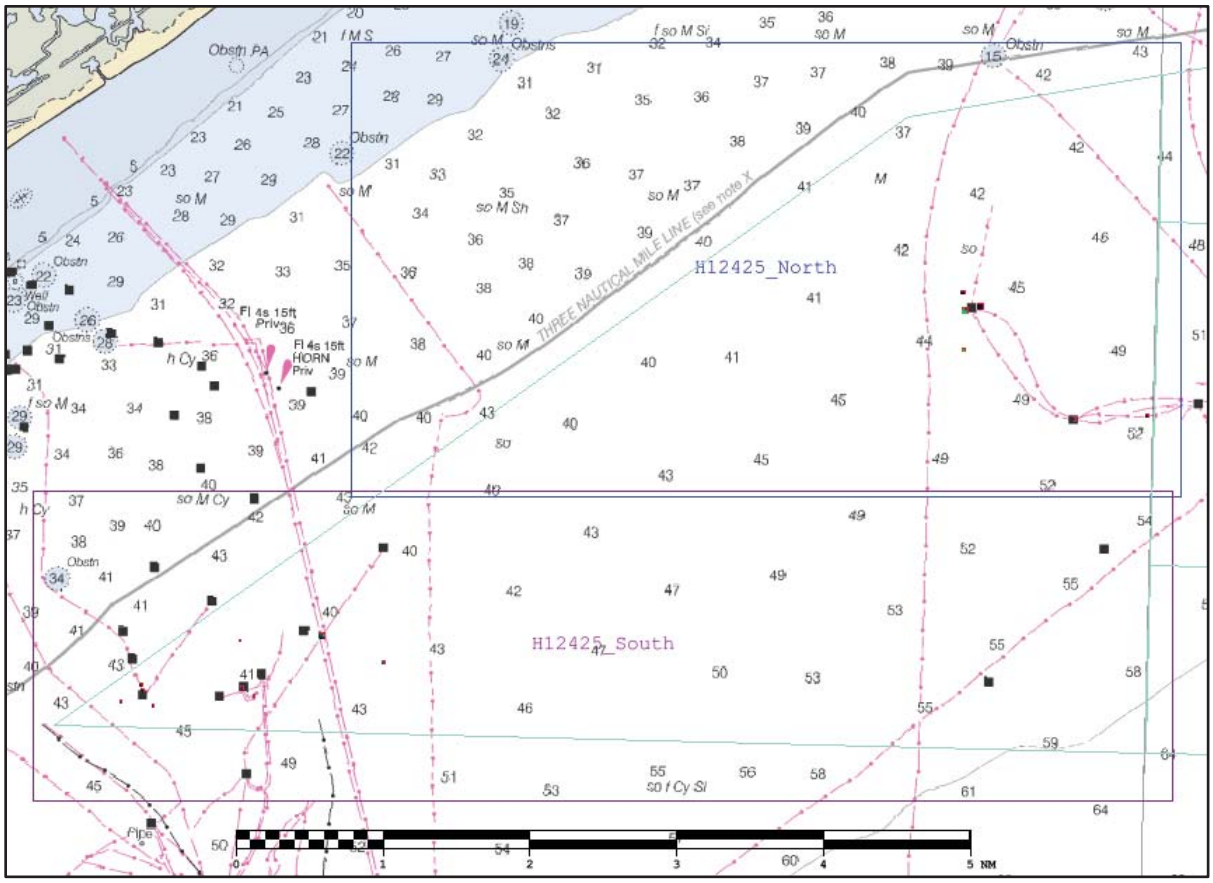


Figure 29. Final sub-area sounding field sheet layout for Survey H12425. RNC 11358 is in the background. Survey limits are in green.

C. VERTICAL AND HORIZONTAL CONTROL

C.1 Vertical Control

Additional information concerning the vertical and horizontal control for this survey can be found in the accompanying Horizontal and Vertical Control Report (HVCR) for Project OPR-K339-KR-12.

The vertical datum for this project is Mean Lower Low Water (MLLW). The NOS/NOAA tide station at Port Fourchon, LA (8762075) serves as datum control for Survey H12425 (Table 12). A final verified tide file was created from verified tide data obtained from the CO-OPS website upon completion of survey operations (Table 13).

Table 12
H12425 NOS Tide Station used for Vertical Control

Station Name	Station ID
8762075	Port Fourchon

Table 13
H12425 Water Level File

File Name	Status
8762075.tid	Verified

Discrete zoning methods were utilized to apply tide correctors in CARIS HIPS and SIPS. The survey area is located within Zones CGM364, CGM369 and CGM389 as provided in the preliminary tidal zoning scheme included with the project SOW. Based on the results of cross line analysis, the time and range factors as provided in the preliminary zoning scheme were adequate. Preliminary zoning was accepted as the final zoning for Project OPR-K339-KR-12 (Table 14).

Table 14
H12425 Tide Correctors

Zoning Corrector File	Status
OPRK339KR12.zdf	Final

OSI home office and field personnel monitored preliminary tide data available on the NOAA CO-OPS website. The NOAA Port Fourchon (8762075) gauge experienced a preliminary tide gap between July 3 and 4, 2012 (DNs 185 and 186) of approximately 3 hours. The gap

did not coincide with data acquisition and was filled by CO-OPS prior to issuance of verified tide data.

C.2 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). All data products, except the S57 Final Feature File, are referenced to Latitude/Longitude, UTM Zone 16 North. The S-57 Final Feature File, H12427.FFF.000, is referenced to the World Geodetic System Datum of 1984 (WGS 84) as specified in Section *8.2 S-57 Soundings and Features Deliverables* of the HSSDM.

All mainscheme line and item investigation position data were acquired using an Applanix POS-MV operating in Differential GPS (DGPS) mode. The unit was configured to receive USCG Differential beacon correctors from English Turn, LA. Differential beacon correctors from Eglin Air Force Base were used by the secondary navigation system to facilitate real-time horizontal control confidence checks (Table 15).

Table 15
H12425 USCG DGPS Stations used for Horizontal Control

DGPS Station Frequency	Station ID
293 kHz	English Turn (Primary)
295 kHz	Eglin Air Force Base (Secondary)

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 project horizontal control point established at the vessel's berth. The project horizontal control points were established using the National Geodetic Survey's Online Positioning Users Service (OPUS). Position confidence checks were accomplished at least bi-weekly, during fuel or weather stops. Refer to the DAPR and HVCR for additional details.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

Chart comparisons were performed in CARIS HIPS/SIPS and Notebook using finalized BASE surfaces and contours and soundings generated from a combined final BASE surface. The latest editions of the NOAA NOS Raster Nautical Charts (RNC) and Electronic Nautical Charts (ENC) were downloaded from the NOAA Office of Coast Survey website (http://www.nauticalcharts.noaa.gov/) weekly during survey operations, and when the survey was completed for final comparisons. The RNCs and ENCs used for final comparisons, summarized in Table 16 and Table 17, were downloaded on August 4, 2012 and are submitted with the survey deliverables.

The Local Notice to Mariners (LNM) and Notice to Mariners (NM) issued during the survey period (May 25, 2012 to July 9, 2012) were reviewed for significant updates. Coast Guard District 8 LNM 32/2012 (August 8, 2012) was the final notice reviewed for this project.

The following sections adhere to the Descriptive Report sounding rounding system as described in Section *5.1.2* of the HSSDM. Specifically, features described below having "precision" depths are presented in the following manner: ff feet (mm.mm meters, ±t.tt TPU) where

- ff = depth expressed in feet (chart units) having been rounded based on the precise meters expression of the depth and rounded using the 0.75 round value rule.
- mm.mm = depth expressed in meters
- ±t.tt = Total Propagated Uncertainty (TPU) expressed in meters

An example of this notation follows: 80 feet (24.58 meters, ±0.24 TPU)

D.1.1 Raster Charts

The following table lists the RNCs that cover the H12425 survey area.

Table 16
H12425 Affected RNCs

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
11346	1:40,000	4	5/2012	4/24/2012	8/4/2012
11358	1:80,000	57	7/2012	6/26/2012	8/4/2012

11346

Surveyed depths were approximately 1 to 7 feet (0.3 to 2.1 meters) deeper than charted soundings. The greatest difference of 7 feet (2.1 meters) was observed at approximate location 29-03-51.36 N, 90-07-42.80 W where surveyed depths of 45 feet (13.7 meters) were developed over a charted 38-foot depth (Figure 30).

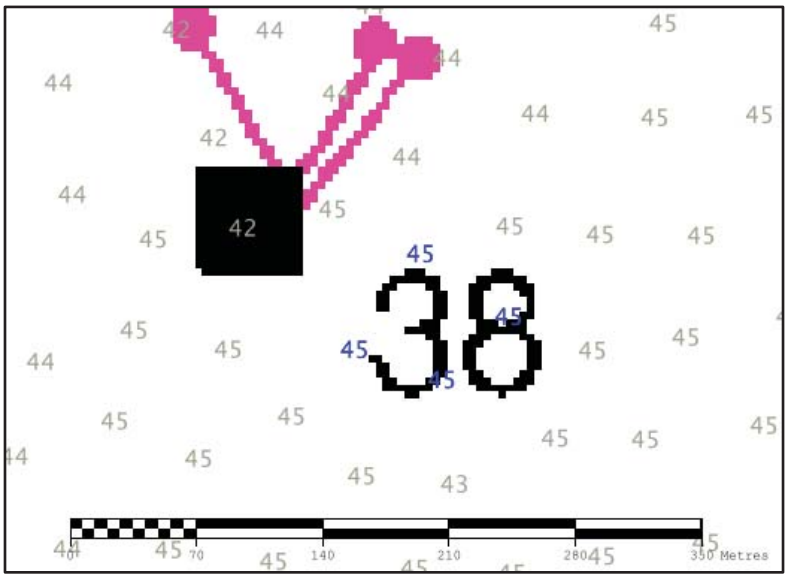


Figure 30. Surveyed soundings are shown in blue and grey overlain on RNC 11346. All depths are in feet.

The 60-foot contour was charted approximately 1500 feet (457 meters) southeast (offshore) of the surveyed location, as shown in Figure 31.

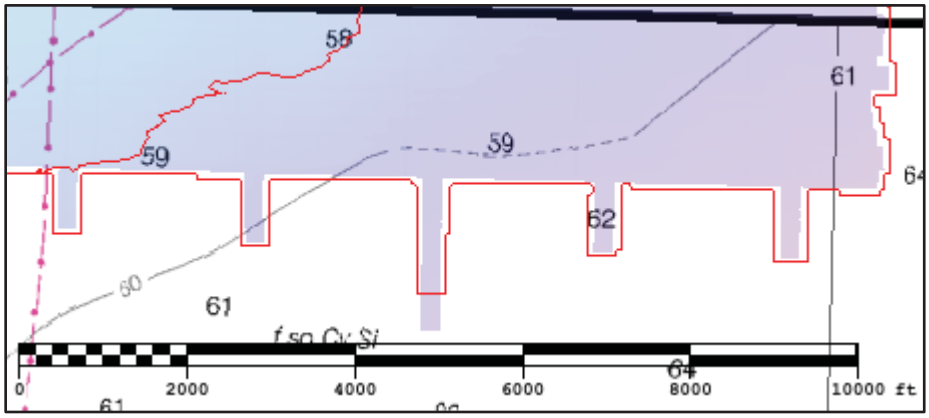


Figure 31. The surveyed 60-foot contour is displayed in red with the 2-meter BASE surface colored by depth overlain on RNC 11358. The charted 60-foot contour in grey is located approximately 1500 feet offshore from the surveyed location.

11358

Surveyed depths were approximately 3 to 6 feet (0.9 to 1.8 meters) deeper than charted depths except for along the western edge of the survey limits where surveyed depths agree within 1 foot (0.3 meters) of charted soundings. Table 17 lists the six instances where the difference between the charted depths and surveyed depths are around 6 feet.

Table 17
Differences in Surveyed and Charted (RNC 11358) Depths (Δ ~ 6 feet)

Charted Depth (ft)	Charted Depth Position		Surveyed Depths [ft (m)]
	Latitude (N)	Longitude (W)	
40	29-04-54.90	90-05-44.90	45-46 (13.8-14.0)
42	29-04-39.70	90-04-56.10	48-49 (14.7-14.9)
40	29-04-28.80	90-06-21.10	46 (14.0-14.1)
43	29-04-14.90	90-05-31.00	48-49 (14.8-14.9)
43	29-03-48.40	90-06-06.80	49 (14.9-15)
46	29-03-50.40	90-04-50.90	51-52 (15.7-15.8)

The 60-foot contour was charted approximately 1500 to 2800 feet (457 to 853 meters) southeast (offshore) of the surveyed location, as shown in Figure 32.

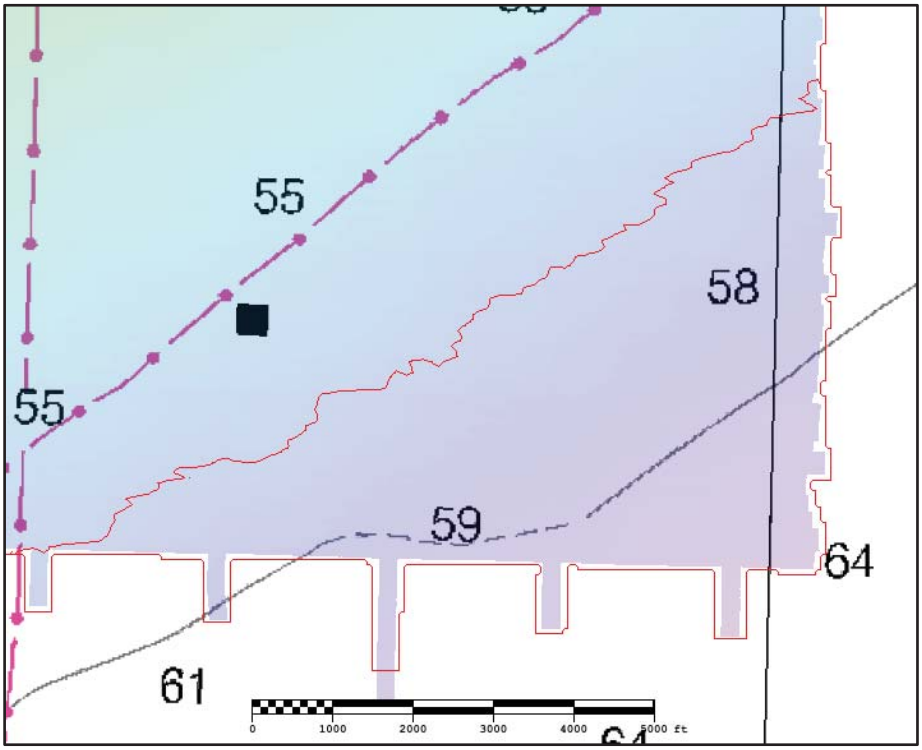


Figure 32. The surveyed 60-foot contour is displayed in red with the 2-meter BASE surface colored by depth overlain on RNC 11358. The charted 60-foot contour in grey is located approximately 1500 to 2800 feet offshore from the surveyed location.

D.1.2 Electronic Navigational Charts

The following table lists the ENCs that cover the H12425 survey area.

Table 18
H12425 Affected ENCs

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5LA26M	1:40,000	22	7/30/2012	7/30/2012	No
US5LA38M	1:40,000	7	6/27/2012	7/11/2012	No
US4LA32M	1:80,000	29	7/2/2012	7/26/2012	No

US5LA26M

Surveyed depths were 1 to 8 feet (0.3 to 2.4 meters) deeper than charted soundings. Table 19 lists instances where the difference between the charted depths and surveyed depths exceed or equal 6 feet. The location of the 60-foot contour in ENC US5LA26M essentially matches the 60-contour in RNCs 11346 and 11358; therefore, the same difference in position of the 60-foot contour is noted (as discussed above).

Table 19
Differences in Surveyed and Charted (ENC US5LA26M) Depths ≥ 6 feet

Charted Depth (feet)	Charted Depth Position		Surveyed Depths [ft (m)]
	Latitude (N)	Longitude (W)	
37	29-03-51.20	90-07-42.90	45 (13.8)
42	29-03-48.30	90-06-38.20	48 (14.6-14.7)
43	29-03-48.10	90-06-06.60	49 (15.0)

US5LA38M

Surveyed depths were 3 to 7 feet (0.9 to 2.1 meters) deeper than charted soundings. Table 20 lists instances where the difference between the charted depths and surveyed depths exceed or equal 6 feet.

Table 20
Differences in Surveyed and Charted (ENC US5LA38M) Depths ≥ 6 feet

Charted Depth (feet)	Charted Depth Position		Surveyed Depths [ft (m)]
	Latitude (N)	Longitude (W)	
36	29-06-01.10	90-04-45.50	43 (13.2)
36	29-06-37.30	90-03-57.00	42 (12.8)

US4LA32M

Surveyed depths tend to be 3 to 7 feet (0.9 to 2.1 meters) deeper than charted soundings. Table 21 lists instances where the difference between the charted depths and surveyed depths are around 6 feet. The location of the 60-foot contour in ENC US5LA26M matches the 60-contour in RNC 11358; therefore, the same difference in position of the 60-foot contour is noted (as discussed above).

Table 21
Differences in Surveyed and Charted (ENC US4LA32M) Depths (Δ ~ 6 feet)

Charted Depth (feet)	Charted Depth Position		Surveyed Depths [ft (m)]
	Latitude (N)	Longitude (W)	
40	29-04-01.90	90-06-59.45	46 (14.1)
39	29-04-28.50	90-06-21.50	46 (14.1)
43	29-04-14.80	90-05-30.90	48-49 (14.8-14.9)
42	29-04-39.10	90-04-56.11	48-49 (14.7-14.9)
39	29-04-54.40	90-05-45.00	45-46 (13.9-14.0)

D.1.3 AWOIS Items

There were no AWOIS investigations assigned for Survey H12425.

D.1.4 Charted Features

No charted features with the label *PA, ED, PD* or *Rep* were located within the survey limits of H12425. Charted platforms, pipelines and new features are discussed in the sections below.

D.1.5 Uncharted Features

A dome-like feature with a diameter of approximately 23 feet (7 meters) and a least depth of 44 feet (13.35 meters, ±0.24 TPU) was developed at 29-03-56.83 N, 90-07-01.55 W (Figure 33). The dome has an approximate height of 3 feet (0.9 meters) and is located over a

disproved charted (RNC 11358) oil production platform in the vicinity of a charted (RNC 11358) 41-foot depth. It is included as an obstruction in the S-57 Final Feature File.

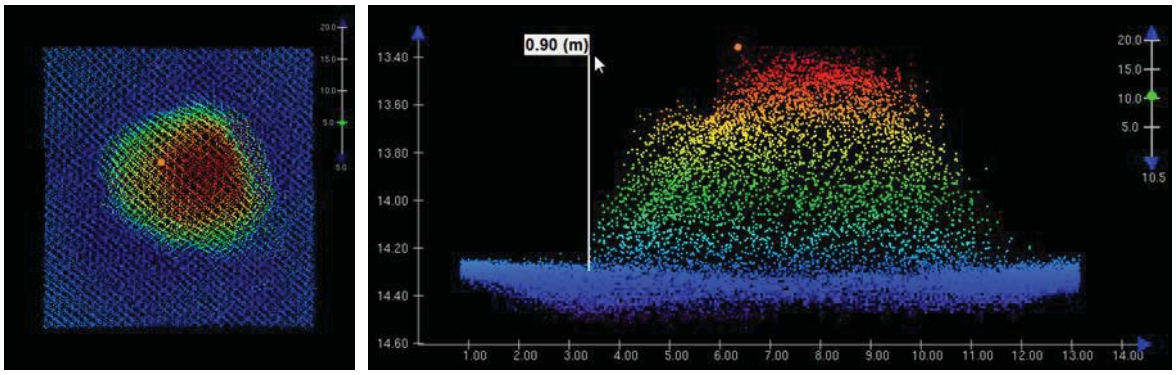


Figure 33. On the left, a plan view of the dome taken in CARIS Subset Editor's 3D View. On the right, an image of the dome in CARIS Subset Editor's 2D View. Soundings are colored by depth and all depths and distances are in meters.

Two 3-foot (0.9 meter) tall features were developed near the base of a charted oil production platform (Figure 34). One obstruction had a least depth of 42 feet (12.90 m, ±0.25 TPU) developed at 29-03-54.78 N, 90-07-47.78 W and the other had a least depth of 42 feet (12.89 m, ±0.25 TPU) developed at 29-03-53.16 N, 90-07-47.19 W. The 42-foot objects were positioned between charted (RNC 11358) depths of 43 and 45 feet. Both features are included as obstructions in the S-57 Final Feature File.

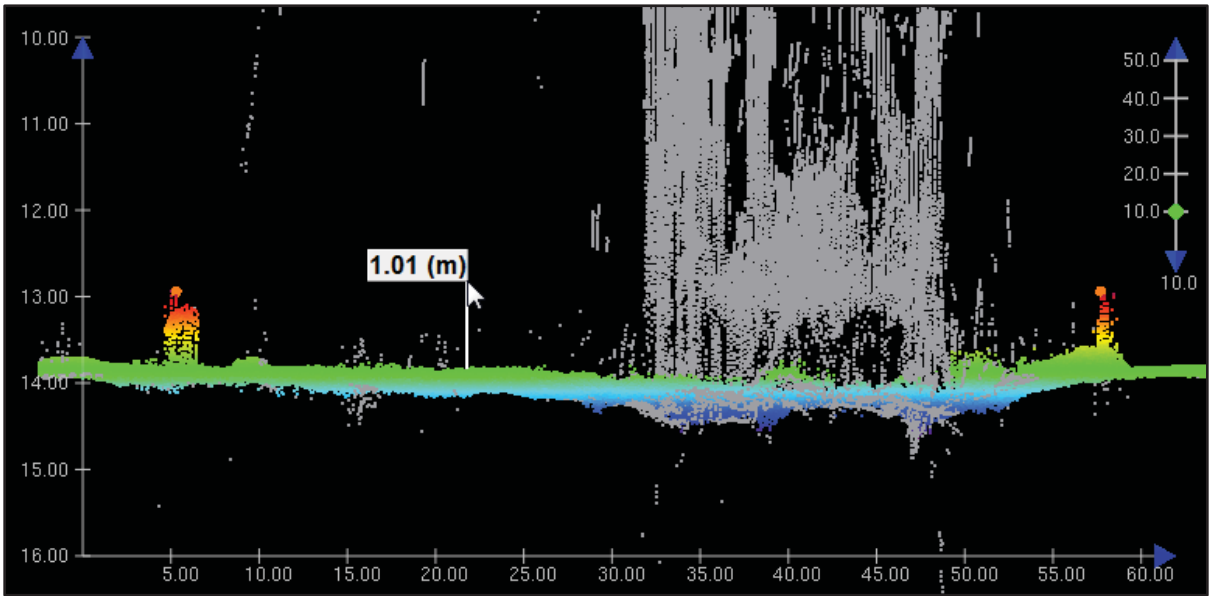


Figure 34. An image from CARIS Subset Editor 2D view shows the location of the 42-foot objects in relation to the base of a charted oil production platform. The rejected soundings that make up the platform base are colored grey, and all accepted soundings are colored by depth. Depths and distances are in meters.

A 3.3-foot (1 meter) tall feature with a least depth of 41 feet (12.50 meters, ±0.25 TPU) was developed at 29-03-49.66 N, 90-07-57.87 W (Figure 35). The 41-foot obstruction was located between charted (RNC 11358) depths of 43 and 45 feet. It is included in the S-57 Final Feature File.

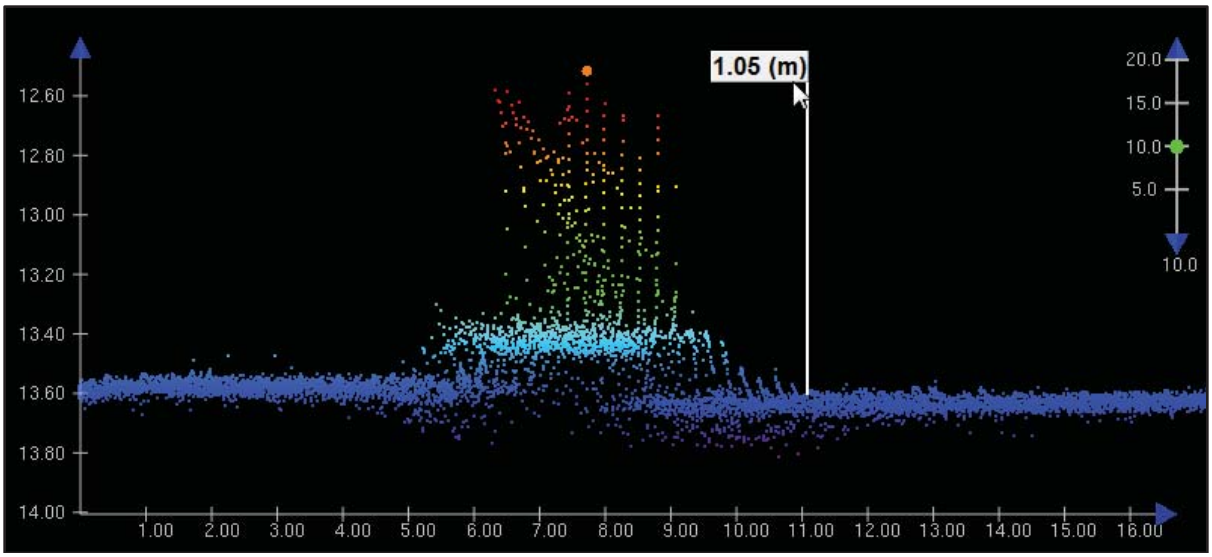


Figure 35. An image of the obstruction in CARIS Subset Editor's 2D View. Soundings are colored by depth and all depths and distances are in meters.

While the heights of the four objects discussed in this section are not substantial or navigationally significant, the features' least depths are the representative shoal soundings for the southern half of Survey H12425. Figure 36 shows the position of the least depths of the four obstructions included in the S-57 Final Feature File in reference to RNC 11358.

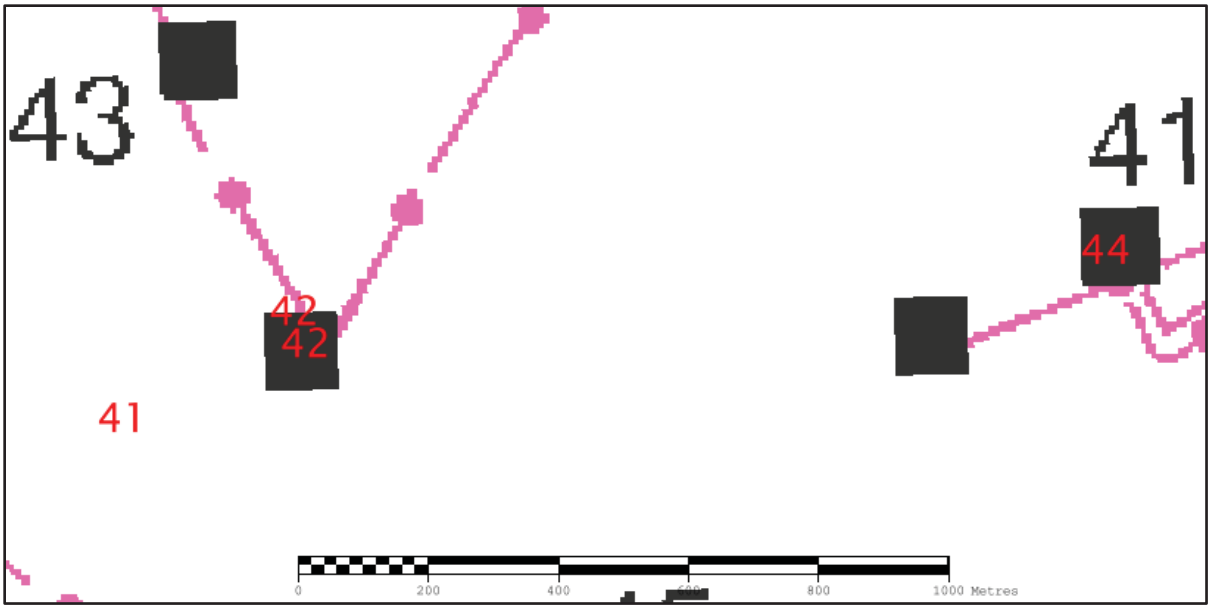


Figure 36. The position of the obstructions' least depths are highlighted in red shown relative to charted features and soundings from RNC 11358. Depths are in feet.

D.1.6 Dangers to Navigation

One (1) danger to navigation (DtoN), an uncharted oil production platform, was submitted to the Atlantic Hydrographic Branch (AHB) on June 27, 2012. The coordinates and a brief description of the DtoN are included in Table 22. The DtoN is included in the H12425 S-57 Final Feature File.

Table 22

H12425 Danger to Navigation

S-57 Object Class	Latitude (N)	Longitude (W)	Least Depth	Description	Status
OFSPLF	29-04-55.67	90-05-57.57	NA	Uncharted oil production platform, 'CHEVRON USA GI 26 NO. 5'	Added to Chart as an OFSPLF object

D.1.7 Shoal and Hazardous Features

No charted shoals were investigated for this survey.

D.1.8 Channels

No channels, anchorages, precautionary areas, safety fairways, traffic separation schemes, or pilot boarding areas exist for this survey.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned for this survey.

D.2.2 Prior Surveys

No Prior Survey Features were assigned for investigation.

D.2.3 Aids to Navigation (ATON)

No ATONs are located within the survey area.

D.2.4 Overhead Features

No overhead features are located within the survey.

D.2.5 Submarine Features

A large number of charted pipelines, leading to and from offshore oil production platforms, were located within the H12425 survey area. All pipelines within the survey area were charted in the color magenta. This symbology is indicative of a supply pipeline for oil, gas, chemicals, or water, according to Chart No. 1: Nautical Chart Symbols, Abbreviations and Terms downloaded from the Office of Coast Survey (OCS) website (Figure 37). None of the charted pipelines had a buried depth value (BURDEP). That said, the majority of the charted pipelines were not visible in the SSS or MBES data.

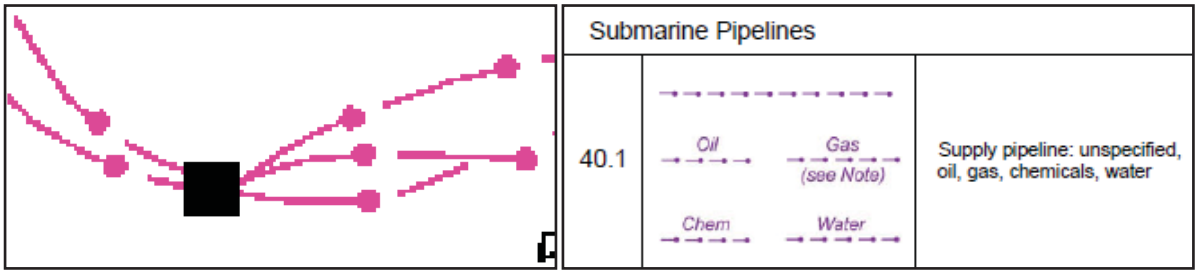


Figure 37. On the left, an example of a section of the charted pipeline from RNC 11358. On the right, a screen grab from Chart No. 1, Section L Offshore Installations, explains the NOAA chart symbology for the submarine pipeline encountered within Survey H12425.

Multiple linear contacts presumed to be exposed sections of charted pipelines were selected in the side scan records and confirmed with MBES coverage. Some sections of pipeline had a measurable height above the seafloor while others had little to no vertical relief. All pipelines visible in the SSS record, were digitized in CARIS SIPS Side Scan Editor as linear pipeline contacts whether buried in a trench or lying exposed on the surface. Table 23, below, lists the locations and a brief description of each section of exposed pipe. In situations where the exposed pipeline rose above the seafloor, a point contact was also selected at the location of the maximum height of the pipeline and used for contact correlation. Additional information on each pipeline discussed below is provided in the S-57 Final Feature File.

Table 23
H12425 Possible Exposed Pipelines

Start Latitude (N) Longitude (W)	End Latitude (N) Longitude (W)	Approximate Length [ft(m)]	Comments in reference to RNC 11358
29-03-39.57 90-08-30.89	29-03-40.30 90-08-32.28	147 (44.8)	The pipeline rises above the seafloor by approximately 2.6 feet (0.8 meters) and is located approximately 70 feet (21.3 meters) to the northeast of a charted pipeline.
29-03-37.30 90-08-02.00	29-03-51.60 90-08-20.65	2175 (663)	The pipeline appears to be at the surface of the seafloor with negligible height and approximately 190-250 feet (57.9-76.2 meters) southwest of a charted pipeline.
29-03-54.25 90-07-47.50	29-03-59.49 90-07-52.42	685 (209)	The pipeline extends off of an oil production platform. A portion of the pipeline is in a trench up to 2 feet (0.61 meter) deep, while the remaining observed portion has no vertical relief. It is located 30-165 feet (10-50 meters) southwest of a charted pipeline and junctions with another surveyed pipeline at its northwest terminus.
29-03-59-49 90-07-52.43	29-04-00.77 090-07-52.89	135 (41)	The pipeline rises above the seafloor by approximately 0.4 feet (0.12 meters) and is located approximately 130 feet (40 meters) to the southwest of a charted pipeline.

Start Latitude (N) Longitude (W)	End Latitude (N) Longitude (W)	Approximate Length [ft(m)]	Comments in reference to RNC 11358
29-03-53.50 90-07-46.88	29-04-09.37 90-07-55.14 (extends beyond survey boundary)	1771 (540)	The pipeline begins at a platform and extends beyond the extent of the survey boundary. The majority of the observed pipeline appears to be lying at the bottom of a trench approximately 1.2 feet (0.35 meters) deep with one portion rising above the seafloor by approximately 3 feet (0.91 meter). The charted pipeline adequately represents the surveyed pipeline.
29-04-00.14 90-07-53.33	29-04-06.37 90-07-53.71	630 (192)	The pipeline lies in a trench approximately 0.35 feet (0.1 meters) deep and junctions with a charted pipeline at its northern terminus. The pipeline extends beyond the extent of the survey boundary.
29-03-56.78 90-07-45.58	29-04-17.41 90-07-34.50	2300 (701)	The pipeline appears to be lying at the bottom of a trench approximately 0.3 feet (0.1 meters) deep. No portion of the pipeline is above the surface of the seafloor. The surveyed pipeline is approximately 250-475 feet (76.2-144 meters) northwest of the charted pipeline.
29-04-17.75 90-06-25.70	29-04-19.73 90-06-24.09	245 (75)	The pipeline is located over the crossing of three charted pipelines and appears to be covered by mats. The mats rise approximately 0.5 feet (0.15 meters) from the surrounding seafloor. A significant contact is also positioned near the end position of the pipeline and could possibly be a junction with another pipeline.
29-07-53.86 90-00-40.74	29-07-55.12 90-00-41.89	160 (49)	The exposed pipeline rises above the seafloor by approximately 0.75 feet (0.23 meters) and is located over a charted pipeline.

Start Latitude (N) Longitude (W)	End Latitude (N) Longitude (W)	Approximate Length [ft(m)]	Comments in reference to RNC 11358
29-06-39.60 90-01-25.55	29-06-39.50 90-01-23.44	184 (56)	The pipeline originates at a platform and appears to be lying at the bottom of a trench that is approximately 3 feet (0.91 meters) deep. The surveyed pipeline is approximately 35 feet (10.7 meters) north of the charted pipeline.
29-05-59.66 90-00-02.91	29-05-59.66 90-00-02.56	31 (9.4)	A short segment of pipeline was noticed in the side scan records and MBES data show a slight depression. The surveyed pipeline is approximately 55 feet (16.8 meters) south of the charted pipeline.

Three short lengths of pipeline appear to have been hooked off the seafloor, such that there is a significant arch to the pipeline. One pipeline arch with a least depth of 50 feet (15.41 meters, ±0.24 TPU) was developed at 29-05-55.37 N, 90-00-37.01 W and is located over a disproved charted (RNC 11358) oil production platform with multiple converging charted (RNC 11358) pipelines (Figure 38). The second pipeline arch had a least depth of 44 feet (13.47 meters, ±0.24 TPU) developed at 29-06-38.27 N, 90-01-29.16 W and was located 75 feet (23 meters) west of a verified charted (RNC 11358) oil production platform (Figure 39).

A third pipeline arch had a least depth of 44 feet (13.37 meters, ±0.24 TPU) developed at 29-06-46.45 N, 90-01-30.37 W, however, a shoaler least depth of 43 feet (13.23 meters, ±0.24 TPU) was developed on a narrow feature within 65 feet (20 meters) of the arched pipeline at 29-06-46.25 N, 90-01-30.84 W (Figure 40). It is unknown whether the features are connected. They are located approximately 490 feet (150 meters) west of a charted pipeline.

All three features are included as obstructions in the S-57 Final Feature File.

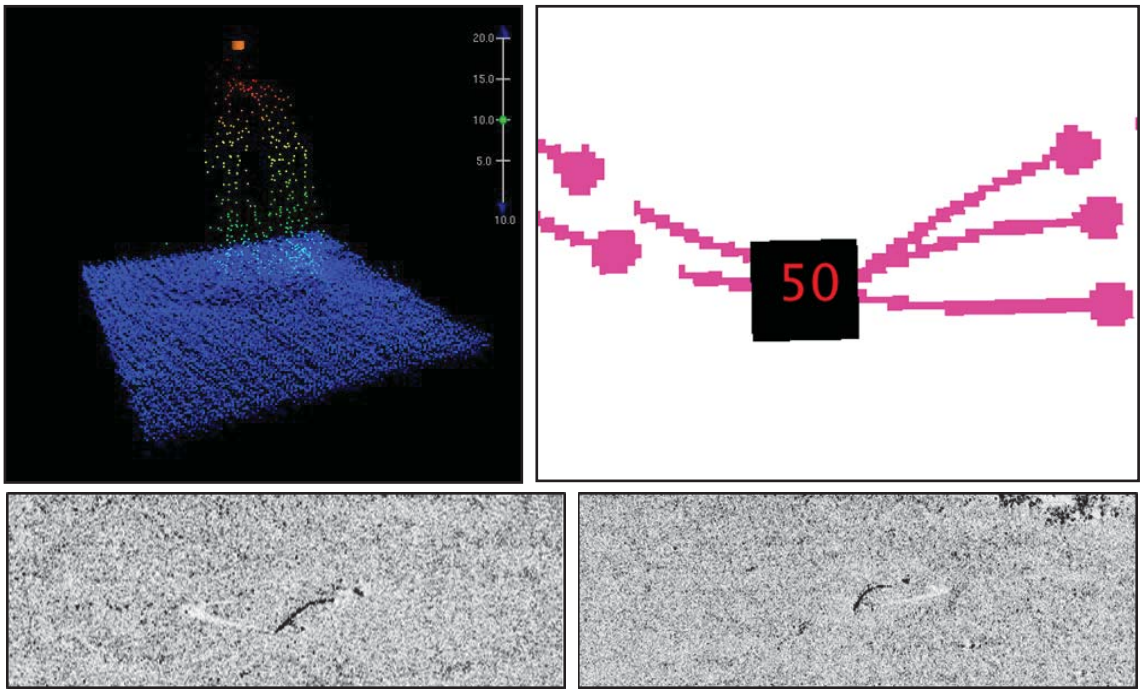


Figure 38. The top left image taken in CARIS Subset Editor 3D View shows the individual soundings colored by depth that comprise the obstruction. On the top right image, the position of the obstruction's least depth is highlighted in red shown relative to charted features from RNC 11358. The two bottom images show SSS imagery of the feature from both side scan coverages. Depths are in feet.

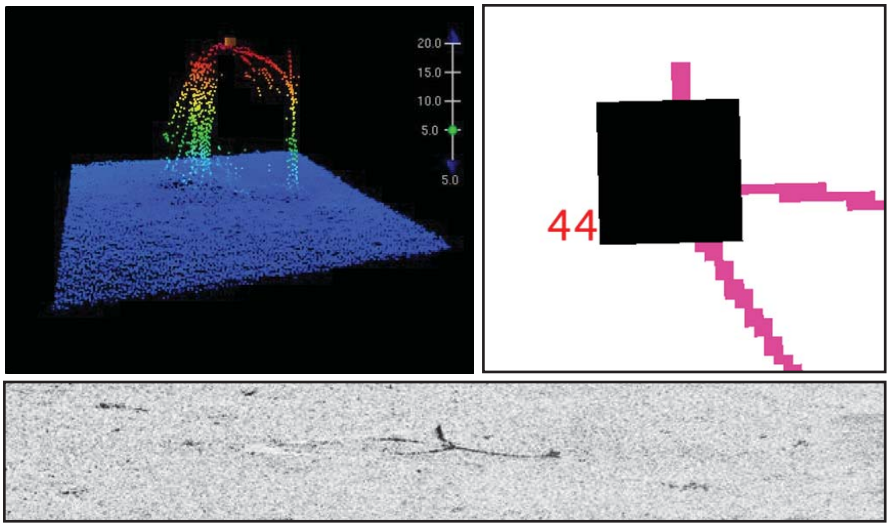


Figure 39. The top left image taken in CARIS Subset Editor 3D View shows the individual soundings colored by depth that comprise the obstruction. On the top right image, the position of the obstruction's least depth is highlighted in red shown relative to charted features from RNC 11358. The bottom image shows SSS imagery of the feature from one side scan coverage. Depths are in feet.

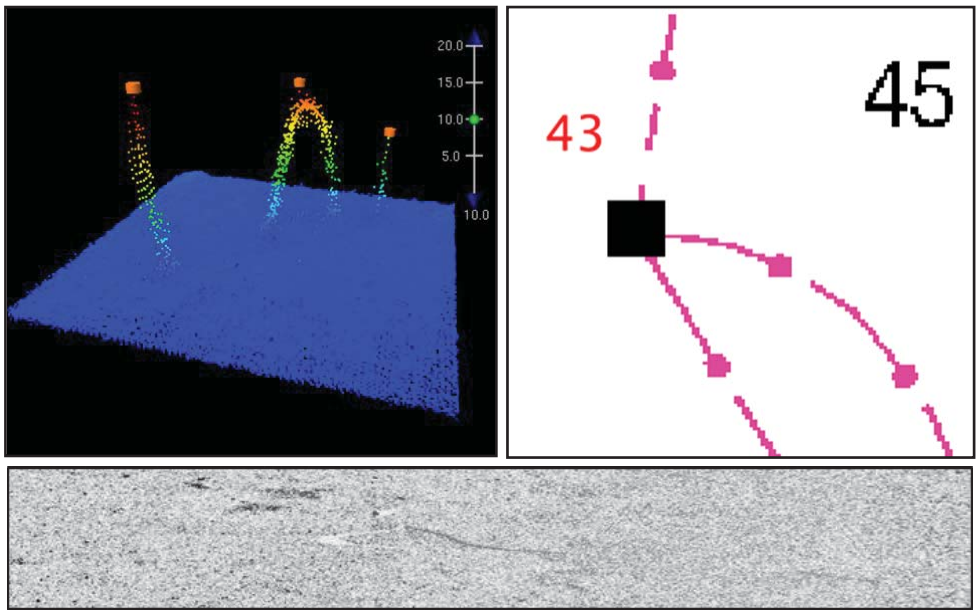


Figure 40. The top left image taken in CARIS Subset Editor 3D View shows the individual soundings colored by depth that comprise the obstructions. On the top right image, the position of the obstruction's least depth is highlighted in red shown relative to charted features from RNC 11358. The bottom image shows SSS imagery of the feature from one side scan coverage. Depths are in feet.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals are located within the survey.

D.2.7 Platforms

There were ten (10) charted platforms located within Survey H12425 at the time of the final chart comparison. One of the charted platforms had been submitted as a DtoN for Survey H12425 on June 27, 2012. Of the nine (9) charted platforms that were assigned for investigation, per the OCS provided Composite Source File (CSF), seven (7) were disproved with 200% SSS coverage and 100% MBES coverage. Updated positions for the two (2) verified platforms were digitized from the center of the coverage surfaces in CARIS Notebook and were included in the S-57 Final Feature File. Table 24 summarizes the results from the platform investigations.

Table 24
H12425 Charted Platform Investigation Results

Offshore Platform ID	Charted Position		Updated Survey Position		Distance between charted and surveyed positions [ft(m)]	Chart Action
	Latitude (N)	Longitude (W)	Latitude (N)	Longitude (W)		
8	29-03-53.42	90-07-47.51	29-03-53.64	90-07-47.74	29.5 (9.0)	Update
10	29-03-53.48	90-07-11.55	Disproved		NA	Remove
462	29-03-57.40	90-07-00.44	Disproved		NA	Remove
489	29-04-03.00	90-06-52.32	Disproved		NA	Remove
490	29-04-21.12	90-06-32.81	Disproved		NA	Remove
CHEVRON USA GI 26 NO. 5	29-04-55.67	90-05-57.57	Same as Charted		NA	New (Submitted DtoN)
482 – SONAT-181-1	29-04-07.50	90-01-13.60	Disproved		NA	Remove
472 – LLOG-109-1	29-05-02.80	90-00-21.42	Disproved		NA	Remove
492	29-05-55.76	90-00-37.10	Disproved		NA	Remove
465	29-06-40.28	90-01-26.05	29-06-39.87	90-01-26.80	77.4 (23.6)	Update

D.2.8 Significant Features

Three (3) seafloor seepages (assumed to be gas or liquid) were identified within the northeastern portion of the survey area. The locations of the seepages are listed in Table 25 and are shown in relation to RNC 11358 in Figure 40.

The seepage plumes were surveyed as dense clouds of bubbles detached from depressions in the seafloor that extended almost to the surface (Figure 41). All water column noise from the seepages was rejected from the sounding data set, leaving only the depressions and the surrounding natural seafloor to be represented in the final BASE surfaces.

Table 25
Seepage Positions

Seepage	Latitude (N)	Longitude (W)
1	29-08-14.14	90-00-31.29
2	29-07-46.44	90-00-04.11
3	29-07-41.45	90-00-07.35

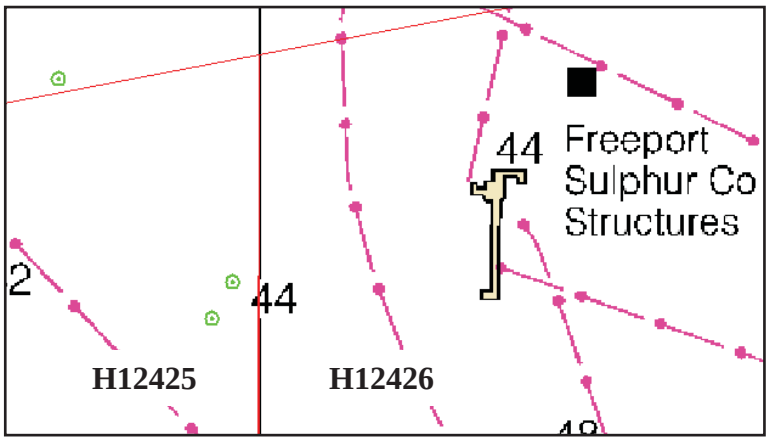


Figure 40. Overview showing the general locations of the seepages (green circles) in relation to RNC11358.

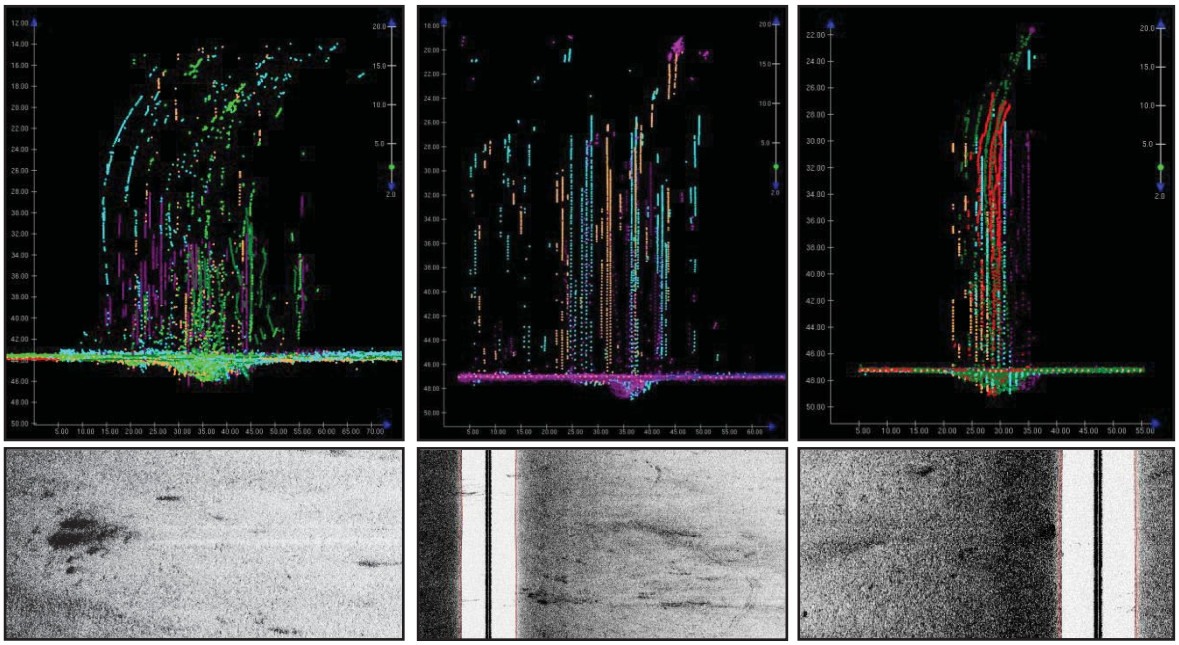


Figure 41. On the top: Soundings from each seepage acquired with MBES indicate gas or liquid in the water column emitted from depressions in the seafloor. The screen grabs were captured in CARIS HIPS Subset Editor with the soundings colored by survey trackline. All units are in feet. On the bottom: Images of the seepages acquired with SSS. Dark returns indicate depressions in the seafloor with either a faint shadow trailing to port or starboard and possible bubbles visible in the water column.

D.2.9 Construction and Dredging

Within the project area several temporary jack-up rigs were encountered on the surface during survey operations; the depressions left by their footprints were clearly evident on the seafloor. Examples of the impressions left by the jack-up rigs in the seafloor are shown in Figure 42. Several side scan contacts were selected on the base of a jack-up rig "*Trinity*" that served as the base of operations for the seismic prospect discussed in Section B.2.8 (Figure 43). The jack-up rig was not included as a platform in the S-57 feature file though it appears in the SSS imagery.

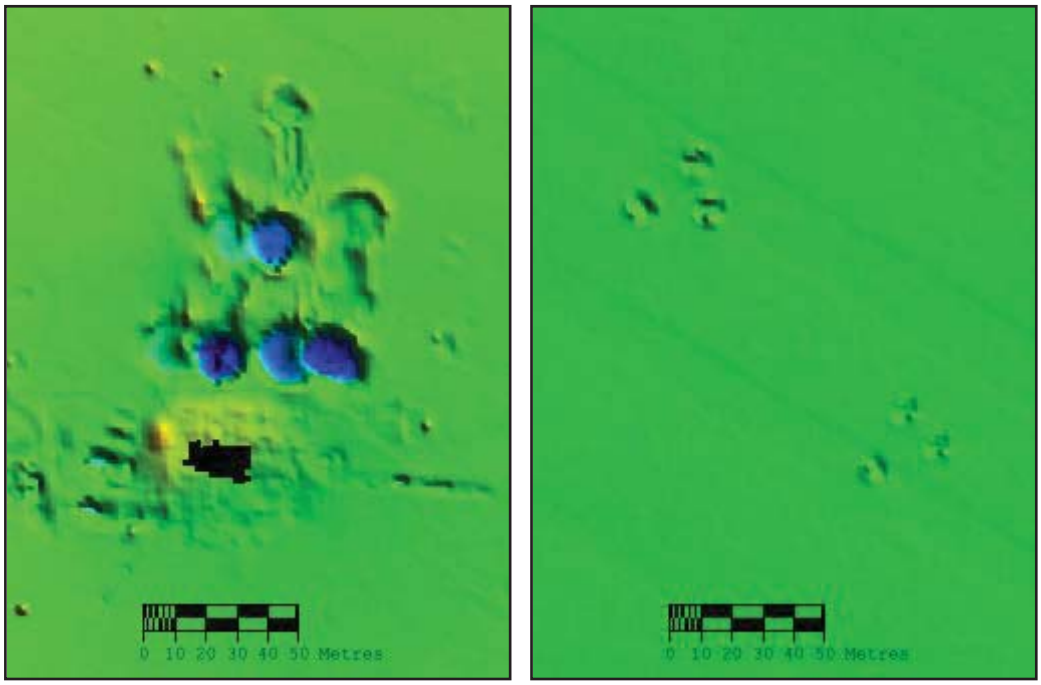


Figure 42. Examples of seafloor depressions left by the temporary jack-up rig utilized by the seismic survey operation shown in the depth layer of a 2-meter resolution BASE surface.

Figure 43. The jack-up rig *Trinity*.

D.2.10 New Survey Recommendation

It is recommended that additional information be gathered to determine the type and source of the seepages documented in Section D.2.8.

E. APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H12425

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of Survey H12425 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and associated data have been closely reviewed and are considered complete and adequate as per the Statement of Work.

Digitally signed by George G. Reynolds
DN: cn=George G. Reynolds, o=Ocean Surveys, Inc., ou, email=ggr@oceansurveys.com, c=US
Date: 2012.11.27 08:44:43 -05'00'

George G. Reynolds
Ocean Surveys, Inc.
Chief of Party – H12425
November 27, 2012

Appendix I

Tides and Water Levels

Abstract of Times of Hydrography

The following table, "Abstract of Times of Hydrography," summarizes the days in which data were collected that contribute to the final accepted data set.

Date	Day Number	Min. Time UTC	Max. Time UTC
5/27/2012	148	03:07:57	15:56:46
6/6/2012	158	05:14:34	05:27:18
6/9/2012	161	20:29:13	20:48:22
6/19/2012	171	15:20:07	16:04:35
6/20/2012	172	22:28:41	23:23:04
6/28/2012	180	03:19:55	23:41:34
6/29/2012	181	00:54:47	23:53:54
6/30/2012	182	00:37:11	23:42:02
7/1/2012	183	00:32:58	23:52:34
7/2/2012	184	00:32:39	15:34:56
7/6/2012	188	17:17:31	23:31:50
7/7/2012	189	00:38:29	23:31:52
7/8/2012	190	00:32:52	23:56:22
7/9/2012	191	00:32:17	03:19:49

Upon completion of field work and once available, verified tide data were downloaded from the CO-OPS website. Verified tides along with preliminary tidal zoning (provided with Tides SOW) were used to reduce soundings to chart datum (MLLW).

The COTR was notified via telephone communications that the OSI field team was ready to commence survey operations. The COTR subsequently instructed CO-OPS to begin providing OSI with verified tides. The COTR was notified via e-mail that field operations were completed. Email correspondence concerning tides follows.

From: Paul Turner [paul.turner@noaa.gov]
Sent: Tuesday, July 17, 2012 11:44 AM
To: George Reynolds
Subject: Re: OPR-K339-KR-12 Weekly Report July 13, 2012

Hi George-

Thank you for the update and I am glad to hear that the weather cooperated with you. Where you able to cover the entire area that was having the seismic testing?

Thanks,

Paul

On Mon, Jul 16, 2012 at 9:05 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Paul,

We had great weather after the storm passed through which allowed us to complete the field program. We have demobilized from the survey area and will turn our focus to data processing and reporting tasks.
We are looking forward to your visit this fall.

Please let me know if you have any questions or need additional information.

Thanks,
George

From: Kathleen Jamison [mailto:kathleen.jamison@noaa.gov]
Sent: Thursday, April 12, 2012 3:17 PM
To: George Reynolds
Subject: Re: Tide Component Error Estimate

It was indeed a typo (this highlights the advantage of xml forms!). Thanks for bringing this to our attention - we've made the correction. Attached is the revised SOW (just the one change you pointed out). We've saved the corrected version for our files as well.

On Thu, Apr 12, 2012 at 11:28 AM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Kathleen,

The quick response to the previous email was much appreciated. We have a follow-up question regarding the Tides SOW. A boiler plate error was located in Section 1.3.3. Tide Component Error Estimation, in which the value for the estimated tidal error contribution was referenced to Bar Harbor, ME not Barataria Bay. We wanted to confirm that the 0.11 meter error estimate is the correct value for the Barataria Bay zoning. Would it be better to address this question directly to Colleen Roche, the CO-OPS point of contact listed in the Tides SOW?

Thanks

George

--
Kathleen Jamison
Physical Scientist, Operations Branch
Hydrographic Surveys Division
Office of Coast Survey
NOAA National Ocean Service
Kathleen.Jamison@noaa.gov
301.713.2700 x126

STATEMENT OF WORK
OPR-K339-KR-2012 Approaches to Barataria Bay, LA
(02/27/2012 LH)

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated April 2011.

1.2. Vertical Datums

The tidal datums for this project are Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

1.2.1. The Hydro Hot List (HHL)

Please contact CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and CO-OPS' Operational Engineering Team (OET) at nos.coops.oetteam@noaa.gov at least three business days before survey operations begin, and within 1 business day after survey operations are completed so that the appropriate CO-OPS National Water Level Observation Network (NWLON) control water level station(s), as well as any required subordinate station(s), is/are added to or removed from the CO-OPS Hydro Hotlist (HHL) (http://tidesandcurrents.noaa.gov/hydro). Include start and end survey dates, full project number (e.g. OPR-K339-KR-12), and control and subordinate station numbers. The notification must be sent to both teams as OET is responsible for configuring the station in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Control or Subordinate	Type (e.g. NWLON, PORTS©, etc)	Comment
Port Fourchon	8762075	Control	PORTS©	

Table 1: All stations that need to be added to the HHL in support of K339-KR-2012

It is important to know that the addition of a water level station to the HHL ensures the station is monitored by CORMS and any problems are reported daily. However, platforms should view the HHL each morning of active survey operations and click on the eyeball icon to double check that there are not problems with the required stations on that day. If a platform notices problems with data on their survey day of operation, please contact HPT at nos.coops.hpt@noaa.gov, CORMS at CORMS@noaa.gov, and their respective headquarters point of contact at HSD or NSD. Stations on the HHL are given priority for maintenance should a station cease normal operation during scheduled times of hydrography. CO-OPS will notify a field unit within 1 business day if a HHL water level station ceases operation during scheduled times of hydrography. This is in addition to the daily CORMS report that CORMS sends to NOAA field units, if the field unit's e-mail address is added to the CORM's daily e-mail list. To be added to the CORMS daily HHL report, the platform should contact CO-OPS' Data Monitoring and Analysis Team (DMAT) at nos.co-ops.dmat@noaa.gov and request to be added.

If the stations are listed on HHL, then weekly priority processing will occur and, for those water level stations, verified 6-minute water level data will be made available every week on Monday or Tuesday. If Monday happens to be a federal holiday, then the 6-minute verified water level data will be made available on the following Tuesday or Wednesday.

1.3. Tide Reducer Stations

The operating water level station at Port Fourchon, LA (8762075) will provide water level reducers for this project. Therefore it is critical that it remains in operation during the survey.

1.3.1. CO-OPS Long Term Water Level Station Operation and Maintenance

During periods of hydrography, CO-OPS is only responsible for the operation and maintenance of NWLON control stations and the contractor is responsible for the maintenance and operations of all contractor installed (tertiary) stations. The contractor is required to monitor the NWLON control water level data via the CO-OPS website at http://tidesandcurrents.noaa.gov/hydro.shtml or through regular communications with the OCS COTR or the OCS COTR's CO-OPS authorized point of contact (Colleen Roche at 301-713-2900 x 137 or via email: nos.coops.oetteam@noaa.gov) before and during operations. The OCS COTR or the COTR's CO-OPS authorized point of contact (Colleen Roche) will serve as liaison between the contractor and NOS/CO-OPS to confirm operation of this station and to ensure the acquisition of NWLON control water level data during periods of hydrography. Problems or concerns regarding the acquisition of valid water level data identified by the contractor shall be communicated with the OCS COTR or the COTR's CO-OPS authorized point of contact (Colleen Roche) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations.

1.3.2. Subordinate Station Requirements

No subordinate water level stations are required for this project, however, supplemental and/or back-up water level stations may be necessary depending on the complexity of the hydrodynamics and/or the severity of the environmental conditions of the project area. The installation and continuous operation of water level measurement systems (tide gauges) at subordinate station locations is left to the discretion of the contractor, subject to the approval of the COTR. If the contractor decides to install additional water level stations, then a 30-day minimum of continuous data acquisition is required. For all subordinate stations, data must be collected throughout the entire survey period for which they are applicable, and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards.

1.3.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of Barataria Bay, LA is 0.11 meters at the 95% confidence level, and includes the estimated gauge measurement error, tidal datum computation error, and tidal zoning error. Based on this result, no subordinate stations are required. It should be noted that the tidal error component can be significantly greater than stated if a substantial meteorological event or condition should occur during time of hydrography.

1.3.4. Water Level Records: If subordinate water level stations are installed, submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD as specified in the latest version of the NOS Specifications and Deliverables document.

1.3.4.1. Tidal records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS
Chief, Engineering Division
N/OPS1 - SSMC4, Station 6531
1305 East-West Highway
Silver Spring, MD 20910

1.3.5. This section is not applicable to this project.

1.3.5.1. This section is not applicable to this project.

1.3.6. This section is not applicable to this project.

1.4. Zoning

1.4.1. The water level station at Port Fourchon, LA (8762075) is the reference station for predicted tides for hydrography Approaches to Barataria Bay, AL. The time and height correctors listed below for applicable zones should be applied to the predicted tides at the station indicated during the acquisition and preliminary processing phases of this project.
Predictions may be retrieved in one month increments over the Internet from CO-OPS SOAP web services at http://opendap.co-ops.nos.noaa.gov/axis/text.html. The contractor must notify the COTR or the COTR's authorized representative immediately of any problems concerning the predicted tides. Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the predicted tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

Zone	Time Corrector (min)	Range Ratio	Predicted Reference Station
CGM364	-12	x1.09	8762075
CGM369	-12	x1.09	8762075
CGM370	-24	x1.09	8762075
CGM372	-18	x1.09	8762075
CGM389	-6	x1.09	8762075
CGM390	-12	x1.09	8762075
CGM727	-18	x1.09	8762075

1.4.2. Polygon nodes and water level corrections referencing Port Fourchon, LA (8762075) are provided in ASCII format denoted by a *.zdf extension file name. Zoning diagrams, created in MapInfo, are provided in both digital and hard copy format to assist with the zoning. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo representation of West longitude.

"Preliminary" data for the control water level station, Port Fourchon, LA (8762075), are available in near real-time and verified data will be available on a weekly basis for the previous week. **These water level data may be obtained from CO-OPS SOAP web services at http://opendap.co-ops.nos.noaa.gov/axis/text.html.**

1.4.3 Zoning Diagram(s)

Zoning diagrams, created in MapInfo® and Adobe PDF, are provided in digital format to assist with the zoning in section 1.4.1.

1.5. Final Zoning

1.5.1. For final processing, apply tidal zoning correctors to "verified" observed data of the NOS control station and/or the final processed data of the subordinate stations.

Appendix II

Supplemental Survey Records and Correspondence

Correspondence

E-mail correspondence between OSI and the COTR/NOAA personnel follows.

From: Kathleen Jamison [mailto:kathleen.jamison@noaa.gov]
Sent: Wednesday, April 11, 2012 9:10 AM
To: George Reynolds
Cc: J. Corey Allen; Marc Moser; Turner, Paul
Subject: Re: FW: Additional Project Files

Hi George,

I'll address your questions in order:

1) We are expecting the 2012 Specs & Deliverables to be released early next week. They are currently in final review by the Board of Hydrographers.

2) Tidal zone files and tides statement of work - attached

3) For the 2012 field season only, you have permission from NOAA/HSD Ops to use your current version of Velocwin that uses Wilson's equation for computing sound velocity from CTD casts. Please document this waiver in each DR for this project and note that you are using the CTD as a backup in case of an MVP failure.

4) XML DR Schemas - Corey Allen is finalizing the schemas and will deliver to you by April 20.

-Kathleen

On Tue, Apr 10, 2012 at 10:34 AM, George Reynolds <ggr@oceansurveys.com> wrote:
Hi Kathleen,

Thank you for the updated Project Instructions and the Composite Source files. We don't foresee any trouble in implementing the Extended Attributes into our workflow. Is there an expected release date for the 2012 Specs?

Tide zoning was not included with the project instructions zip file. Preliminary tidal zoning has been provided by CO-OPS for our prior NOAA projects, will the preliminary discrete tidal zones with uncertainty values be available for this project as well?

I also wanted to obtain clarification on the use of Velocwin for the processing of CTD casts. The 2011 specs state in section 5.2.3.3 "Sound Speed values derived from Conductivity, Temperature, and Depth measurements shall be calculated using the Chen-Millero equation. Use

of Wilson's equation is no longer authorized." To our knowledge the latest version of Velocwin that we have (8.92) utilizes Wilson's equation for conversion of CTD casts taken with Seabird SBE 19 plus units. We intend to use the MVP's SV&P sensor to acquire all sound speed profiles that will be used for sounding correction; the SV&P sensor outputs sound speed versus depth directly. However, CTD units are used for comparison casts and would be our secondary method for sound speed profile acquisition should the MVP fail.

Can we use Velocwin to process CTD casts for use in DQA and in the event that the MVP fails to derive sound speed correctors from our Seabird 19 plus units for project OPR-K339-KR-12?

Lastly, we hope to deliver our DRs in the NOAA XML format. Is it possible to obtain the latest version of the XML schema, so that we can begin formating the DAPR?

Thanks for your assistance.

George

--
Kathleen Jamison
Physical Scientist, Operations Branch
Hydrographic Surveys Division
Office of Coast Survey
NOAA National Ocean Service
Kathleen.Jamison@noaa.gov
301.713.2700 x126

From: Paul Turner [mailto:paul.turner@noaa.gov]
Sent: Monday, June 04, 2012 2:47 PM
To: George Reynolds
Subject: Re: DTON question

Hi George,

I would recommend not submitting this as a DTON as it is only a temporary construction rig. I do recommend addressing this in the DR and noting if it prevent's the ship from surveying a portion of the assigned sheet(s), awois item(s), aton's,etc...

Thank you for bring this to my attention and please let me know if you have any additional questions.

Paul

On Mon, Jun 4, 2012 at 1:49 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Paul,

It is possible that we will encounter an uncharted jack up rig that is either involved with construction or drilling. The jack up installation may be temporary, i.e. servicing a pipe, or semi-permanent, i.e. drilling for months... The question is, should we consider a jack up rig a DTON if it is not charted or discussed in a notice to mariners?

Thanks
George

George Reynolds
Ocean Surveys, Inc.
129 Mill Rock Road East
Old Saybrook, CT 06475

860 388 4631 Ext 112
www.oceansurveys.com

From: George Reynolds [ggr@oceansurveys.com]
Sent: Thursday, June 21, 2012 2:36 PM
To: 'Paul Turner'
Cc: 'Castle E Parker'
Subject: RE: OPR-K339-KR-12 Weekly Report June 15, 2012

Hi Paul,

We have a MB topic that we would like discuss with you or Gene at the branch. If you are out this week should I try to contact Gene?

Thanks
George

From: Paul Turner [mailto:paul.turner@noaa.gov]
Sent: Thursday, June 21, 2012 9:44 AM
To: George Reynolds
Subject: Re: OPR-K339-KR-12 Weekly Report June 15, 2012

Hi George,

Thank you for the project update. I am currently out of the office and will be unavailable until this coming Monday (6/25/12) but would be happy to speak with you any time next week.

Are you available Monday at 2:00 (you are on Central time - correct).

Paul

On Wed, Jun 20, 2012 at 6:40 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Paul,

We have completed about 70 % of the H12428 main scheme lines and have developed several contacts. Weather conditions this week continue to cause SSS surface noise issues in the shallow water portions of H12425 and H12426. We will continue survey operations in deeper water of H12428 until weather conditions subside.

We discovered an issue with our Reson 7101 this week. The 7101 was removed from the vessel and a Reson 7125 was installed. We plan to employ the 7125 for the remainder of the survey.

I would like to discuss a few items with you when you have chance. Please let me know what time works for you.

Please let me know if you have any questions or need additional information.

Thanks,
George

From: Castle Parker [mailto:castle.e.parker@noaa.gov]
Sent: Thursday, June 21, 2012 12:29 PM
To: George Reynolds; Paul Turner
Subject: RE: OPR-K339-KR-12 MB artifact

George,

It looks like you are still getting a swath width of approximately 50m on the starboard side with ~22m on the port with combined swath width of ~ 70m or greater; that's good. I think that what you recommend with rejecting the outer swath regions ~45° to 70° is the way to handle the artifact from the Reson 7101 data. That way, you don't have to re-run and only filter the off angle and still get good usable data.

If you left the 40-70° in the bathy data, the fact that it dips down is less of a source for sounding selections. However, the grid would get pulled down as well and creating a grid artifact. Bearing in mind there is not sounding spacing interval spec, I concur with filtering the port outer beams and keep the good data.

If you wanted to decrease the MB gaps between the different lines would be to decrease line spacing but that would provide more SS overlap. Since this is an SS survey for Object Detection, and considering your sea state issue, I suggest to continue letting the SS range scale be the guide for the line spacing. Hey, even with the outer port beams filtered, you're still getting 70m+ MB swath width.

Thanks for your input and the opportunity for discussion.
Regards,

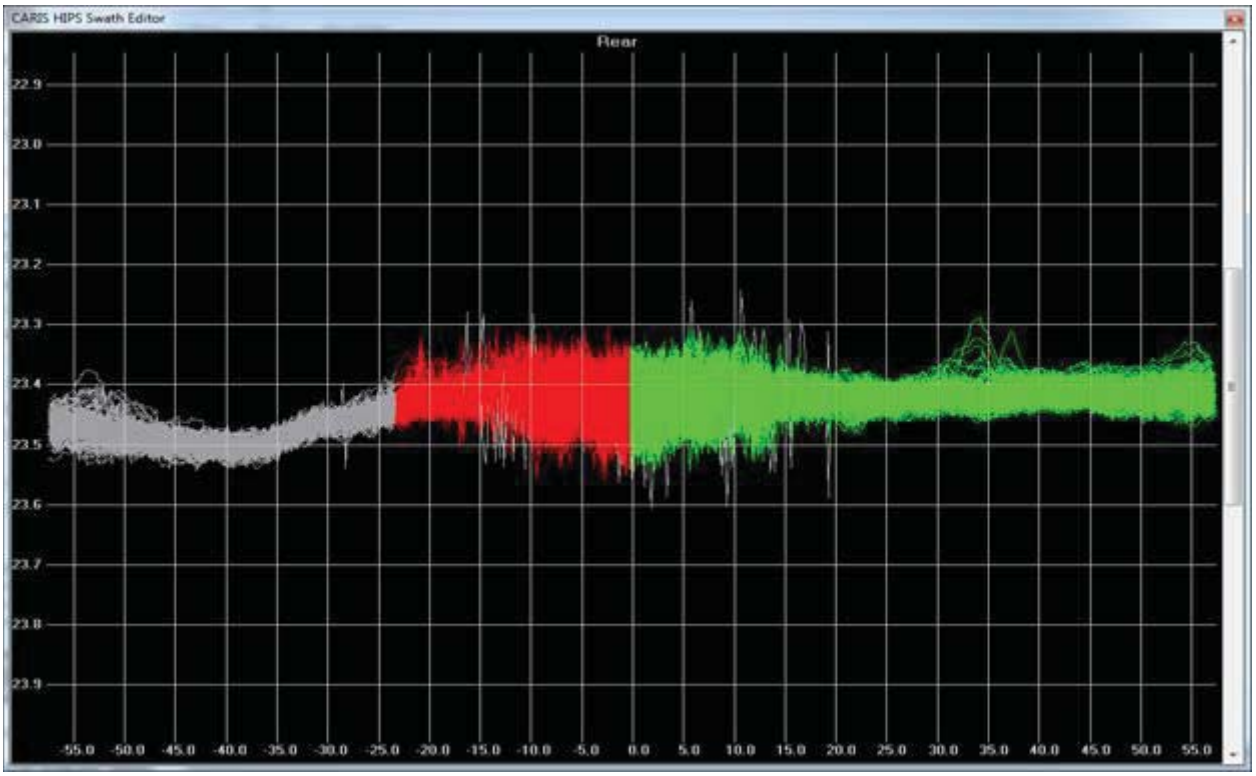
Gene

From: George Reynolds [mailto:ggr@oceansurveys.com]
Sent: Thursday, June 21, 2012 12:08 PM
To: 'Castle E Parker'; 'Paul Turner'
Subject: OPR-K339-KR-12 MB artifact

Hi Gene,
The following summarizes the Reson 7101 issue we discussed. Note: we have replaced this system with a Reson 7125 which we plan to use for the remainder of the survey. On review of the multibeam data acquired during the first leg of this survey, a constant systematic artifact was discovered. This feature is evident between roughly 45 degrees and 70 degrees on the port side. The "smile" shaped signature has a typical maximum downward deflection of about 10cm at about 60 degrees before trending upward to a deflection of 5cm at 70 degrees. The presence of this ? 10cm artifact exceeds the Reson stated vertical uncertainty of 5cm for this system.

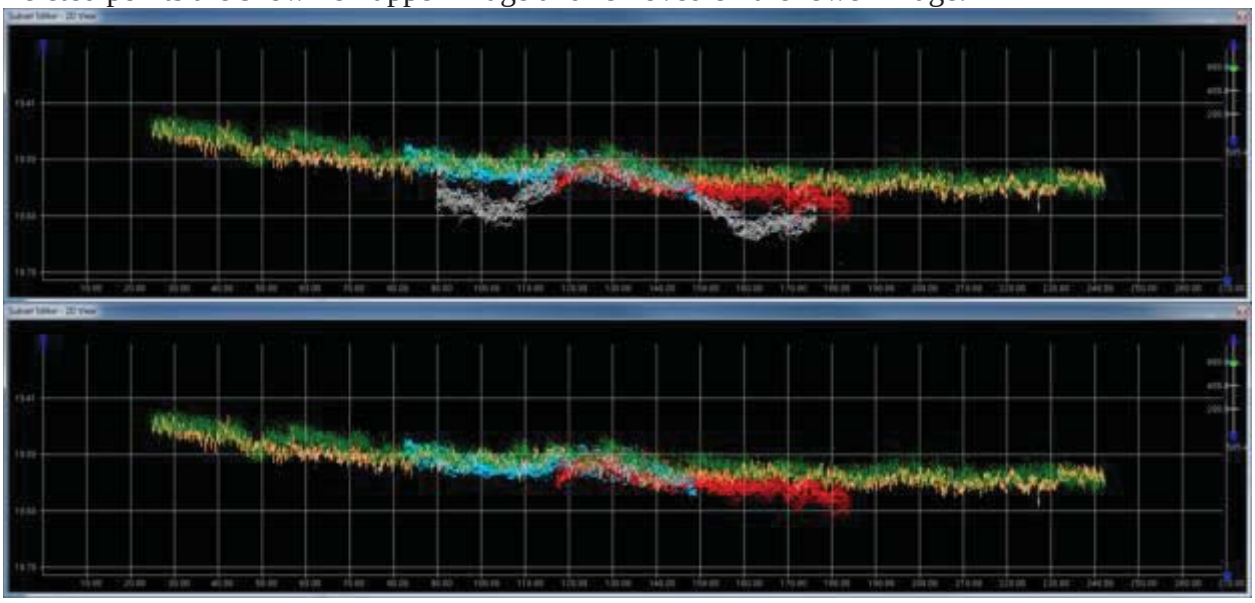
Preliminary data processing results indicate that the suspect data will still be within the TVU for this survey. However, it is our opinion that

soundings obtained within the suspect portion of the swath be rejected and only used when necessary to support contact identification/verification (i.e. not object detection).
The following examples are presented for reference. Caris files are available on our website should you wish to examine these data more closely. Example of the "smile" artifact in grey (50x vertical exaggeration)

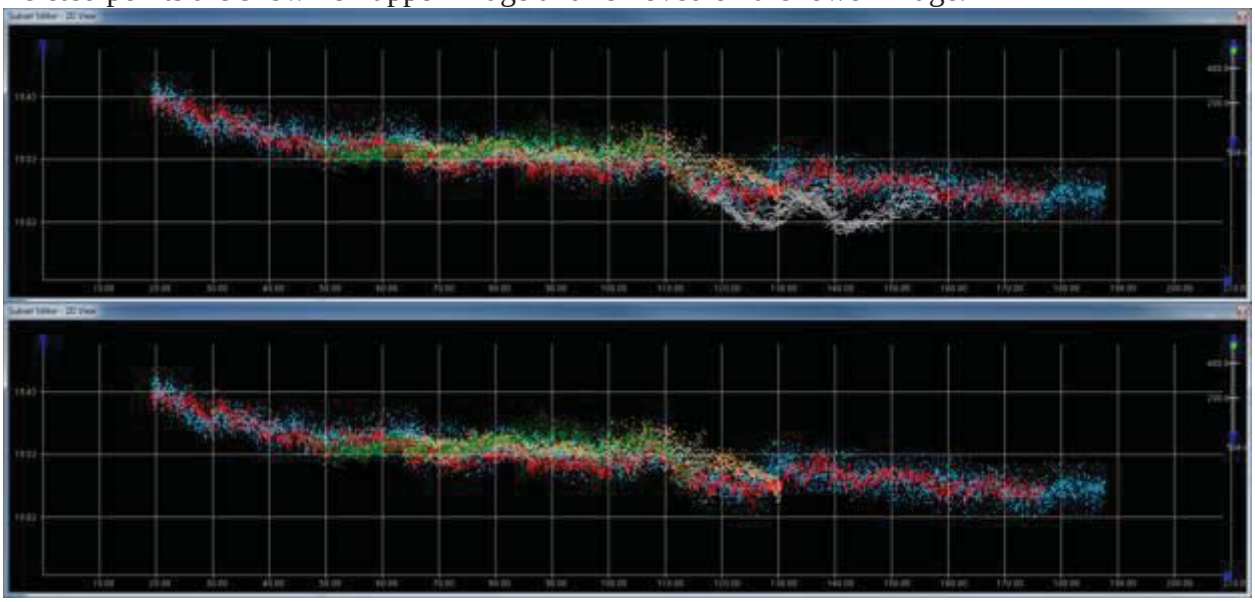


Below are figures showing four lines with two lines run perpendicular to the other two lines. Data have been filtered to 45 degrees on the port side; starboard side was not filtered and extends to 70 degrees.

Deleted points are shown on upper image and removed on the lower image.



Deleted points are shown on upper image and removed on the lower image.



Please contact me if you have any questions or need additional information.
Thanks
George

From: George Reynolds [mailto:ggr@oceansurveys.com]
Sent: Wednesday, June 27, 2012 12:33 PM
To: 'ahb.dton@noaa.gov'; 'Paul Turner'
Subject: H12425 & H12426 DTONs

Hi Paul,

Attached are two DTON reports. One for H12425 and another for H12426.

Per a request to include a time stamp in future DTON submittals we have populated the "obstim"
(Observed Time) attribute in the included S-57 files.

Please give me a call if you have any questions or need additional information.

Thanks
George

George Reynolds
Ocean Surveys, Inc.
129 Mill Rock Road East
Old Saybrook, CT 06475

860 388 4631 Ext 112
www.oceansurveys.com

From: Castle Parker [mailto:castle.e.parker@noaa.gov]
Sent: Monday, July 02, 2012 7:16 AM
To: George Reynolds; Paul Turner
Cc: Abigail Higgins
Subject: RE: H12425 Multibeam Sub bottom Penetration

Good day George,
I would have to agree with you. What else can you do? If you kept the nadir regions, the selected depths would be coming from the shoaler areas within the grid swath. By rejecting the nadir regions, and depending on the grid resolution, only quality data would be supporting the grid. This is simply a situation that one can't avoid. The GOM is great for this type of thing.

I concur.

Gene

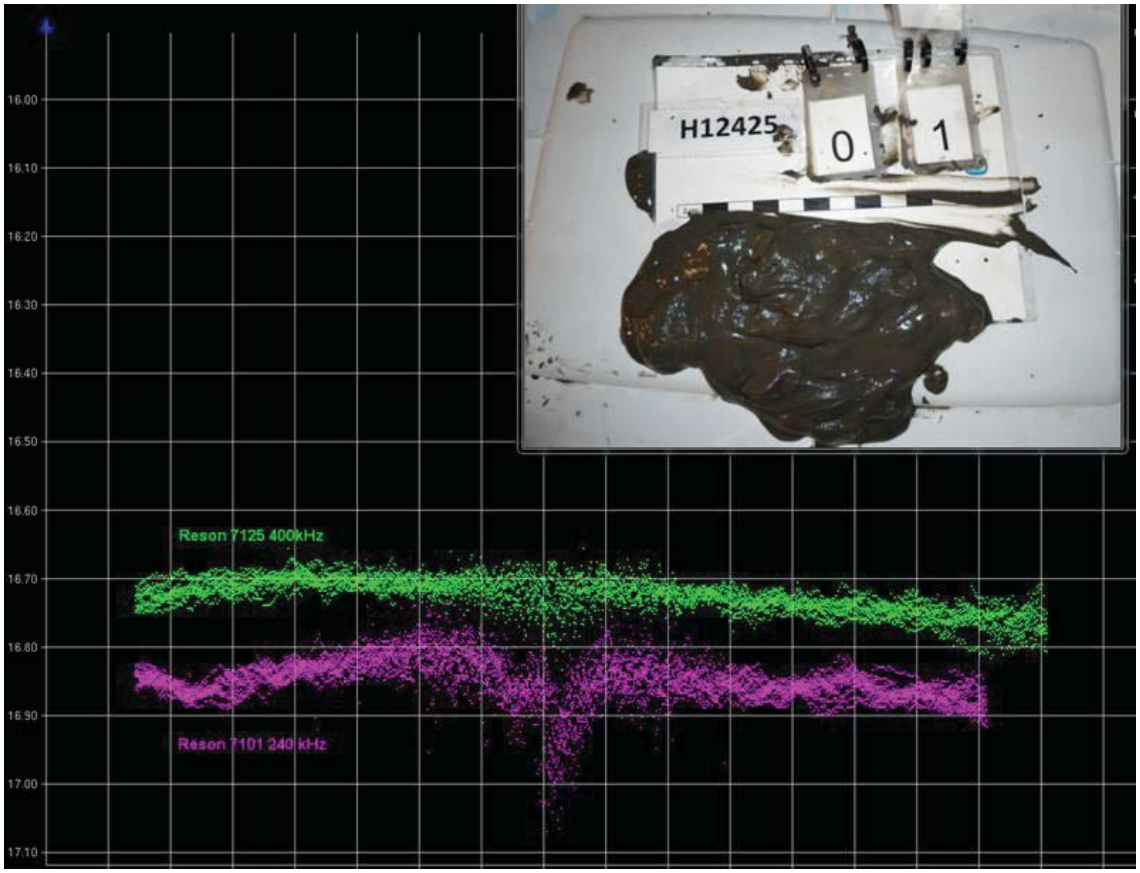
From: George Reynolds [mailto:ggr@oceansurveys.com]
Sent: Friday, June 29, 2012 4:29 PM
To: 'Castle Parker'; 'Paul Turner'
Subject: H12425 Multibeam Sub bottom Penetration

Hi Gene,

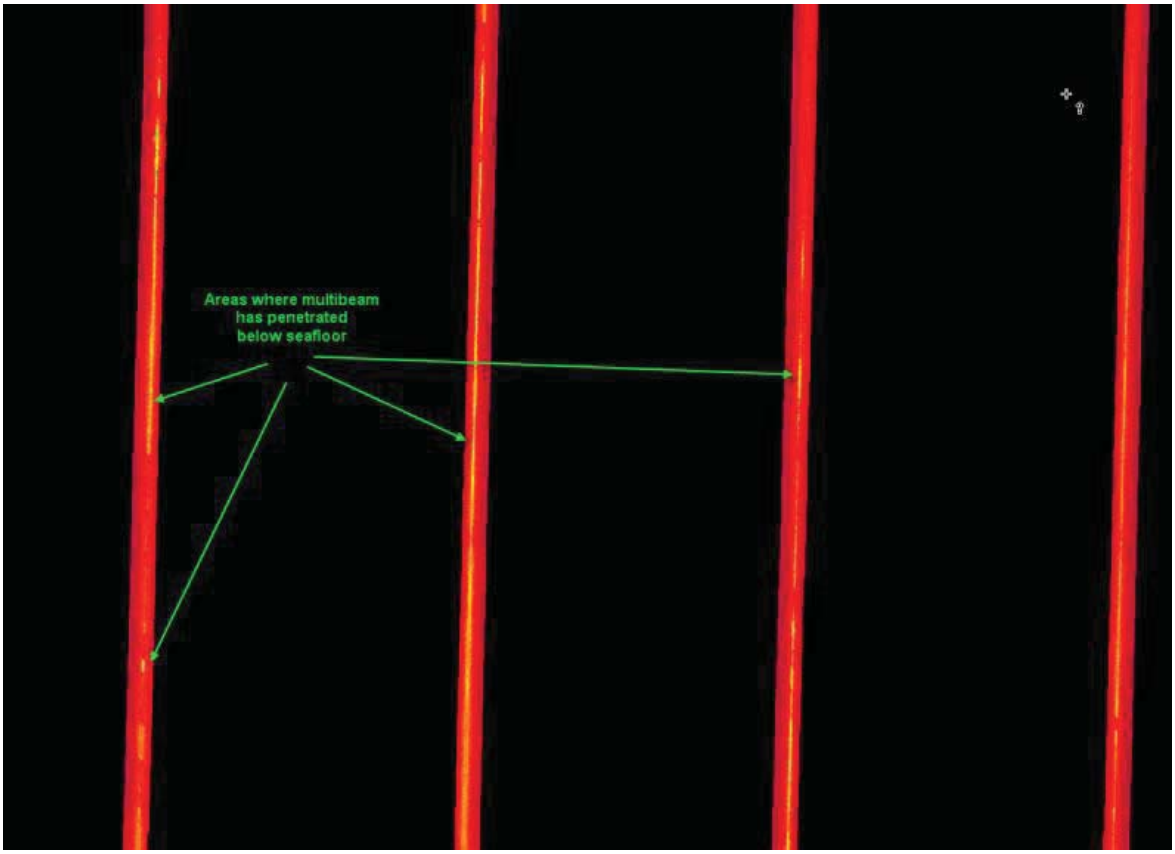
Following up on our phone conversation, we have encountered areas within H12425 where the Reson 7101 and 7125 multibeam systems have difficulty detecting a consistent bottom in the near nadir portion of the swath. The seabed in these areas is likely composed of very soft mud (see photo of a representative grab sample below). As shown on the following multibeam screen grab, near nadir energy appears to slightly penetrate the seabed. As you would expect, the penetration depth varies with frequency, 240kHz Reson 7101 signal penetrates on the order of 10-30cm, while Reson 7125 400kHz energy penetrates on the order of 5-15cm in the same areas.

In an effort to provide base surfaces that are not biased by this phenomenon, OSI recommends that near nadir soundings with a bottom signature below the apparent seafloor be rejected.

* Example of Reson 7101 and 7125 ”soft” bottom data and a representative grab sample.



* Example of seabed penetration observed on neighboring lines.



From: Paul Turner [mailto:paul.turner@noaa.gov]
Sent: Tuesday, July 03, 2012 2:11 PM
To: ggr@oceansurveys.com
Subject: Fwd: Visit / Required cross line miles

Hi George-

In response to our conversation regarding cross-line coverage (in the email string below), it will be acceptable for you to run your cross-lines on the original 100 m. range SSS line plans so long as the cross-lines are in agreement and within spec where they inter-sect with the main-scheme lines. If your cross-line coverage is under the 4% required coverage, you will need to explain this in the DR and describe the circumstances behind the deficiency. Please feel free to cite this email as documented permission from your COR in the DR.

I will be out of the office for the remainder of the day and be back in the office on Thursday. Please let me know if you have any additional questions.

Thank you,

Paul Turner

---------- Forwarded message ----------
From: George Reynolds <ggr@oceansurveys.com>
Date: Mon, Jul 2, 2012 at 2:46 PM
Subject: Visit / Required cross line miles
To: Paul Turner <paul.turner@noaa.gov>
Hi Paul,

Good talking with you today.

We are looking forward to your visit on the 26th of this month. There are a couple of crew boat companies that we can hire to take you out to the survey ship. Once we finalize the arrangements I will forward the meeting location and time. This info should be available on or about the 22nd of the month.

As we discussed, due to sea conditions and refraction issues we had to reduce the SSS range from the planned 100 meters to the 50-meter range for a significant portion of the deep water areas surveyed to date. The densified line plan associated with the reduced SSS range has resulted in doubling the planned line miles in portions of the study area. Regarding the cross line requirement, is it acceptable to compute the cross line mile percentage based only on the planned line miles or do we need to base the calculation on the actual main scheme miles run?

For your reference, the following is email correspondence with Kathleen regarding a similar issue that was raised during the Pensacola Survey.

Thanks
George

From: Paul Turner [paul.turner@noaa.gov]
Sent: Tuesday, July 17, 2012 11:44 AM
To: George Reynolds
Subject: Re: OPR-K339-KR-12 Weekly Report July 13, 2012

Hi George-

Thank you for the update and I am glad to hear that the weather cooperated with you. Where you able to cover the entire area that was having the seismic testing?

Thanks,

Paul

On Mon, Jul 16, 2012 at 9:05 PM, George Reynolds <ggr@oceansurveys.com> wrote:

Hi Paul,

We had great weather after the storm passed through which allowed us to complete the field program. We have demobilized from the survey area and will turn our focus to data processing and reporting tasks.
We are looking forward to your visit this fall.

Please let me know if you have any questions or need additional information.

Thanks,
George

From: George Reynolds [ggr@oceansurveys.com]
Sent: Monday, July 30, 2012 12:23 AM
To: 'Paul Turner'
Subject: OPR-K339-KR-12 Update

Hi Paul,
Just a quick note to let you know that all of our equipment is back in the office and we are processing data.

Please let me know if you have any questions or need additional information.

Thanks,
George

E-mail correspondence between OSI and Global Geophysical (seismic operation ongoing while OSI surveyed in H12425)

From: Tim Baldwin [Tim.Baldwin@GlobalGeophysical.com]
Sent: Monday, May 28, 2012 11:26 PM
To: Robert Wallace
Subject: RE: OSI survey area
Attachments:Battery locations swaths 1_5.xlsx

Here are the location battery coordinates. Each has a rope and buoy attached to the equipment on the bottom.

I would recommend working to the West of our position. It could take 10 to 14 days to get the equipment in the water rolled out of the area with good weather.

I would go ahead and run your lines with the hull mounted transducer. We monitor ch. 68. Let me know when you would be coming so I could notify my vessels and the 2 chase boats (shrimp boats),what you are doing.

Thanks, Tim B.

From: Robert Wallace [mailto:rmw@oceansurveys.com]
Sent: Monday, May 28, 2012 11:20 AM
To: Tim Baldwin
Subject: Re: OSI survey area

Tim,

We have planned lines running both N-S and E-W within our survey area. We are currently not towing any sensors, only a hull mounted transducer. Eventually we will deploy a towed side scan sonar. I would be happy to take your buoy positions and avoid the buoys while we are not towing a sensor. Seems like it may be prudent to avoid your buoy area when we deploy the sidescan however. For that reason, for now, we will wait to enter the exclusion zone with the side scan in the water.

I will be very interested to hear when it will be safe for us to enter the exclusion zone with our side scan sonar. Do you have an estimated date?

Please send along the buoy coordinates. With your permission we will run our lines within the exclusion zone using only our hull mounted transducer.

Thanks, Bob Wallace

From: Tim Baldwin <Tim.Baldwin@GlobalGeophysical.com>
To: Bob Wallace <rmw@oceansurveys.com>
Sent: Monday, May 28, 2012 10:08 AM
Subject: RE: OSI survey area

Mr. Wallace, are you towing an instrument behind the vessel and if so how long is the line. I
have cables on the bottom and buoys connected to the battery cans every 1.2 Km. I would be afraid that your equipment would get tangled in the buoy ropes pulling my equipment off line and possibly damaging yours. If you are not towing any equipment, I could give you our battery locations and you could run in-between the receiver lines. Our receiver lines run at 120° from the beach in the area I gave you yesterday.

Regards,

Tim Baldwin

PM Crew 888
Global Geophysical Services, Inc.

From: Bob Wallace [mailto:rmw@oceansurveys.com]
Sent: Sunday, May 27, 2012 1:58 PM
To: Tim Baldwin
Subject: OSI survey area

Tim,

Attached are two files; an image of your work area along with our work area superimposed on a chart of the area and a .DXF file (in the event that you have a CAD program out there with you.

I'll call in about an hour to see if you got the files.

Regards, Bob Wallace

****
Robert M. Wallace Jr.
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Ocean Surveys, Inc.
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Old Saybrook, CT 06475
www.oceansurveys.com

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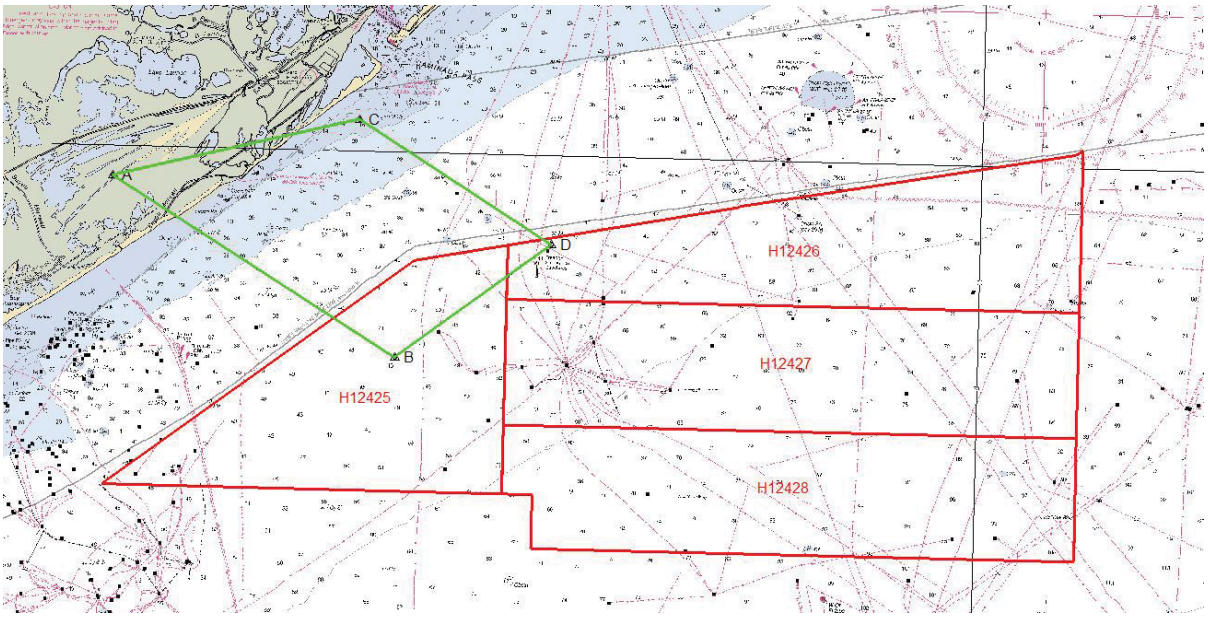
Fax: 860-388-5879
Cell: 860-227-3099
e-mail: rmw@oceansurveys.com


A
B
C
D
H12425
H12426
H12427
H12428

From: Tim Baldwin [Tim.Baldwin@GlobalGeophysical.com]
Sent: Saturday, June 09, 2012 4:12 PM
To: Bob Wallace
Subject: RE: Confirming our conversation of 6-9

Bob, if you can get the area directly west of us done first, we should be laying cables there either later today or tomorrow. Right now, I have nothing West of the Trinity I location in the water (the location of the batteries will give you the bearing of the equipment).

Regards,

Tim

Satellite system is not the best that I am using for e-mail and phone.

From: Bob Wallace [mailto:rmw@oceansurveys.com]
Sent: Saturday, June 09, 2012 10:29 AM
To: Tim Baldwin
Subject: Confirming our conversation of 6-9

Tim,

Since we can't seem to keep a phone line open for long enough to finish a conversation I am attempting to confirm our conversation at 10:20 on June 9. Within our survey area we have not observed any buoys west of the jackup rig. OSI will continue working west of the jackup rig until you tell us that the area east of the jackup rig is clear. From our other recent conversations I understand that the area east of the jackup will be clear in about a week.

Thanks, Bob

****
Robert M. Wallace Jr.
Hydrographer
Ocean Surveys, Inc.
129 Mill Rock Road East
Old Saybrook, CT 06475
www.oceansurveys.com

Office: 860-388-4631 ext. 129
Fax: 860-388-5879
Cell: 860-227-3099
e-mail: rmw@oceansurveys.com

From: Don Truly [Don.Truly@GlobalGeophysical.com]
Sent: Friday, June 29, 2012 4:17 PM
To: Bob Wallace
Cc: Tim Baldwin; Nick Spragg; Stephen Douglas
Subject: RE: Current Working locations for 28 June 2012
Attachments: Battery Locations Swath 7-10.xlsx

Mr. Wallace,
Sorry, it took so long, it takes time to transfer all of these over to Lat's and Long's. Will try and keep a better posting of our locations. I broke these down into the blocks.

Thanks,
Don

From: Bob Wallace [rmw@oceansurveys.com]
Sent: Friday, June 29, 2012 7:56 AM
To: Don Truly
Cc: Tim Baldwin
Subject: RE: Current Working locations for 28 June 2012
Don,

It would be very helpful for our operational planning if we could get the buoy positions today. We were operating south of the prospect early this morning and were told by the Prospector that we were in the path of cables that were soon to be laid. We have departed the area for the time being. However, with the good weather finally upon us we are poised to get to work ahead of/west of the seismic prospect.

Thanks, Bob

From: Don Truly [mailto:Don.Truly@GlobalGeophysical.com]
Sent: Thursday, June 28, 2012 5:47 PM
To: Bob Wallace
Subject: RE: Current Working locations for 28 June 2012

Will work on them and get them to you later.

Don

It takes a bit of time to do and this has been Monday for me

From: Bob Wallace [rmw@oceansurveys.com]
Sent: Thursday, June 28, 2012 11:51 AM
To: Don Truly; Tim Baldwin
Cc: Nick Spragg; Stephen Douglas
Subject: RE: Current Working locations for 28 June 2012
Don,

The .jpgs are helpful but if you send the coordinates then I can add the buoy locations to my navigation display. Please send them along if you have a chance. Thanks for the Trinity 1 position.

We appreciate your help.

Thanks, Bob

From: Don Truly [mailto:Don.Truly@GlobalGeophysical.com]
Sent: Thursday, June 28, 2012 3:45 PM
To: rmw@oceansurveys.com; Tim Baldwin
Cc: Nick Spragg; Stephen Douglas
Subject: Current Working locations for 28 June 2012

Mr. Wallace,this help
Sorry it has been a Monday today. I have taken a few screen shots of the differnet blocks that we are
currently working as you will notice they are problably twice as many buoy locations as there were the first
go around. Tried to use the block system to help you better understand instead of a group of numbers to
have to create your own waypoints. I will be more that happy to try and acquire them in waypoints if that is
what you really need, just let me know. The current location of the Trinity 1 is
029 05.858629'N
090 03.874024"W.

Any questions or concerns please let me know, hope that this helps.

thanks,
Don Truly
Navigation Dept. Global Geophysical services
Crew 888

From: Stephen Douglas [Stephen.Douglas@GlobalGeophysical.com]
Sent: Sunday, July 01, 2012 2:49 PM
To: rmw@oceansurveys.com
Cc: Tim Baldwin
Subject: Eastern Buoy Locaions
Attachments: BUOY LOCATIONS.TXT; BUOY LOCATIONS.xlsx

Hey Bob,
Here are the eastern buoy locations for our receiver lines. There are two sets of locations(2281 & 2301) and everything starting with 2281 will be out of the water by the end of today.

Regards,
Stephen Douglas

From: Stephen Douglas [Stephen.Douglas@GlobalGeophysical.com]
Sent: Thursday, July 05, 2012 10:57 PM
To: Bob Wallace
Cc: Tim Baldwin; Don Truly
Subject: RE: 7-4 buoy update

Unfortunately we have had some issues with the vessel being used to pick up this line so it is currently unknown when this will be complete. I will do my best to keep you informed on the progress.

Regards,
Stephen Douglas

From: Bob Wallace [rmw@oceansurveys.com]
Sent: Thursday, July 05, 2012 5:14 PM
To: Stephen Douglas
Cc: Tim Baldwin; Don Truly
Subject: RE: 7-4 buoy update
Stephen,

Is it still looking good for line 2321 to be out of the water by 6:00 tonight?

Thanks, Bob

From: Stephen Douglas [mailto:Stephen.Douglas@GlobalGeophysical.com]
Sent: Wednesday, July 04, 2012 6:49 PM
To: Bob Wallace
Cc: Tim Baldwin; Don Truly
Subject: RE: 7-4 buoy update

Hey Bob,
Today we will finish picking up the last 3 locations for line 2301 and will start picking up everything on line 2321. I predict they will have a majority of line 2321 out of the water by 6:00PM tomorrow. I also gave you the locations for line 2341. If there is anything else you need let me know.

Regards,
Stephen Douglas

From: Bob Wallace [rmw@oceansurveys.com]
Sent: Wednesday, July 04, 2012 12:12 PM
To: Tim Baldwin
Cc: Stephen Douglas; Don Truly
Subject: 7-4 buoy update
Tim,

Could you send a listing of buoy positions as of mid day today. Assuming that you have moved a few line from the east to the west we will head over to the area and catch up to your current eastern buoy boundary.

Thanks, Bob

From: Tim Baldwin [Tim.Baldwin@GlobalGeophysical.com]
Sent: Sunday, July 08, 2012 2:20 PM
To: Bob Wallace
Subject: RE: 7-7 buoy update

Line 2321 is out of the water except close to the beach. Will be working on 2341 later this morning.

Rgds,

Tim

From: Bob Wallace [mailto:rmw@oceansurveys.com]
Sent: Saturday, July 07, 2012 10:35 AM
To: Tim Baldwin
Subject: RE: 7-7 buoy update

Thanks. I'll check in later.

Bob

From: Tim Baldwin [mailto:Tim.Baldwin@GlobalGeophysical.com]
Sent: Saturday, July 07, 2012 2:54 PM
To: Bob Wallace; Stephen Douglas
Cc: Don Truly
Subject: RE: 7-7 buoy update

As of this time, all is still in the water. Just now getting back to shooting and will clear them up later
today.

Rgds,

Tim B.

From: Bob Wallace [mailto:rmw@oceansurveys.com]
Sent: Saturday, July 07, 2012 9:06 AM
To: Stephen Douglas
Cc: Tim Baldwin; Don Truly
Subject: 7-7 buoy update

Stephen,

Could you send the buoy positions as of this morning for buoys in the water or anticipated to be in the water for the next day. Is line 2321 still in the water; specifically buoys 5250, 5298, 5346, and 5394?

Thanks, Bob

Appendix III: Feature Report

AWOIS: 0

DtoNs: 1

Maritime Boundary: 0

Wrecks: 0

H12425_DtoN

Registry Number: H12425
State: Louisiana
Locality: Gulf of Mexico
Sub-locality: 6 NM South of Caminada Pass
Project Number: OPR-K339-KR-12
Survey Dates: 20120525 - 20120709

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11358	54th	02/01/2007	1:80,000 (11358_1)	[L]NTM: ?
11352	40th	05/01/2008	1:175,000 (11352_1)	[L]NTM: ?
11366	11th	01/01/2008	1:250,000 (11366_1)	[L]NTM: ?
11340	73rd	08/01/2008	1:458,596 (11340_1)	[L]NTM: ?
1116A	73rd	08/01/2008	1:458,596 (1116A_1)	[L]NTM: ?
411	52nd	09/01/2007	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - *source: last correction applied (last correction reviewed--"cleared date")*

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	DTON_1	GP	[None]	29° 04' 55.7" N	090° 05' 57.6" W	---

1.1) DTON_1

DANGER TO NAVIGATION

Survey Summary

Survey Position:	29° 04' 55.7" N, 090° 05' 57.6" W
Least Depth:	[None]
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2012-191.00:00:00.000 (07/09/2012)
Dataset:	H12425_CS.000
FOID:	US 0000226498 00001(0226000374C20001)
Charts Affected:	11358_1, 11352_1, 11366_1, 1116A_1, 11340_1, 411_1

Remarks:

OFSPLF/remrks: Uncharted production platform "satellite" located at the end of a charted (11358) pipeline. Platform Name: Chevron USA GI 26 No. 5.

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12425_CS.000	US 0000226498 00001	0.00	000.0	Primary

Hydrographer Recommendations

Chart production platform at surveyed position

S-57 Data

Geo object 1:	Offshore platform (OFSPLF)
Attributes:	CATOFP - 2:production platform
	CONRAD - 1:radar conspicuous
	CONVIS - 1:visual conspicuous
	NINFOM - Add offshore platform
	PRODCT - 1:oil
	SORDAT - 20120709
	SORIND - US,US,graph,H12425

Office Notes

Compile: Add offshore platform

Feature Images

Figure 1.1.1

Figure 1.1.2

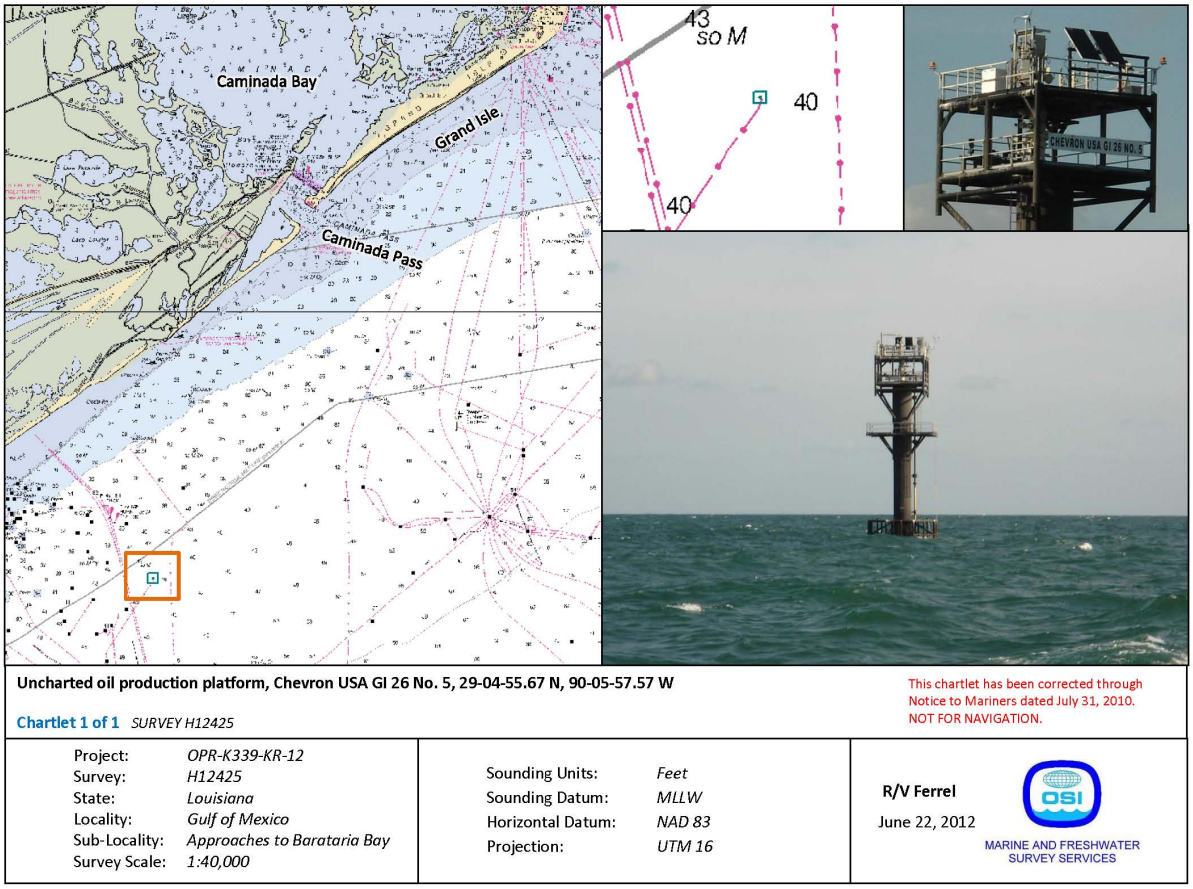

Caminada Bay
Grand Isle
Caminada Pass
43
so M
40
40
CHEVRON USA GI 26 NO. 5
Uncharted oil production platform, Chevron USA GI 26 No. 5, 29-04-55.67 N, 90-05-57.57 W
This chartlet has been corrected through Notice to Mariners dated July 31, 2010. NOT FOR NAVIGATION.
Chartlet 1 of 1 SURVEY H12425
Project: OPR-K339-KR-12
Survey: H12425
State: Louisiana
Locality: Gulf of Mexico
Sub-Locality: Approaches to Barataria Bay
Survey Scale: 1:40,000
Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Projection: UTM 16
R/V Ferrel
June 22, 2012
OSI
MARINE AND FRESHWATER SURVEY SERVICES

Figure 1.1.3

APPROVAL PAGE

H12425

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 NGDC for archive

- H12425_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12425_GeoImage.pdf

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

Digitally signed by HIGGINS.ABIGAIL.SARAH.1267671750
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=HIGGINS.ABIGAIL.SARAH.1267671750
Date: 2013.05.22 16:44:50 -04'00'

Approved: _____

LT Abigail Higgins, NOAA
Chief, Atlantic Hydrographic Branch