H12334

NOAA FORM 76-35A
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey: Hydrographic Multibeam & 200% Sidescan

Project No. : OPR-K354-KR-11

Registry No. : H12334

LOCALITY

State: Louisiana

General Locality: ~~Gulf of Mexico~~ ***Louisiana Coast, LA***

Sub-locality: 24 NM S of Pt Au Fer Island

2011

CHIEF OF PARTY
John Baker

LIBRARY & ARCHIVES

DATE:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY No: H12334

HYDROGRAPHIC TITLE SHEET

State:	Louisiana
General Locality:	~~Gulf of Mexico~~ ***Louisiana Coast, LA***
Locality:	24 NM S of Pt Au Fer Island
Scale:	1:40,000
Date of Survey:	July 2011 to September 2011
Instructions Dated:	June, 2011
Project Number:	OPR-K354-KR-11
Vessels:	M/V Inez McCall
Chief of Party:	John Baker
Surveyed by:	C&C Technologies Personnel
Soundings by echosounder:	Simrad EM3002 Multibeam Echo sounder
Verification by:	***Atlantic Hydrographic Branch***
Soundings in:	Feet: X Fathoms: ____ Meters: ____ at MLW: ____ MLLW: X

Remarks:

Hydrographic Survey of H12334 (Sheet 5)
Data collected in meters, referenced to MLLW, later converted into feet
200% side scan sonar, with concurrent multibeam coverage
UTC time was used exclusively
3 Grab samples were taken
Tidal Zones: CGM 716, WGM 266, 276, 265, 277, 264
Tidal Station: 8762075 (Port Fourchon, LA)

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 Rednotes were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. 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/.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

Appendix I	Danger to Navigation Reports
Appendix II	Survey Feature Report
Appendix III	Reserved
Appendix IV	Tides and Water Levels
Appendix V	Supplemental Survey Records and Correspondence

SEPARATES

Separates I	Acquisition and Processing Logs
Separates II	Sound Speed Data
Separates III	Hydrographic Survey Project Instructions and Statement of Work
Separates IV	Crossline Comparisons
Separates V	Side Scan Contact Listing and Images of Significant Contacts

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY H12334

INTRODUCTION

The purpose of this survey is to provide accurate hydrographic data to NOAA in order to update existing nautical charts in a high commercial traffic area in the Gulf of Mexico near the Louisiana coast.

A. AREA SURVEYED

The survey area is located approximately 24 nautical miles south of Pt. Au Fer Island, Louisiana, in the Gulf of Mexico. Illustrations No.1 and 2 show the layout of H12334 (Sheet 5) of Project OPR-K354-KR-11. Water depths in the survey area range from 6.1 m to 14.9 m Mean Lower Low Water. Survey statistics including the total survey line and crossline nautical miles, number of bottom samples and number of investigations are shown in Tables No. 1 and 2.

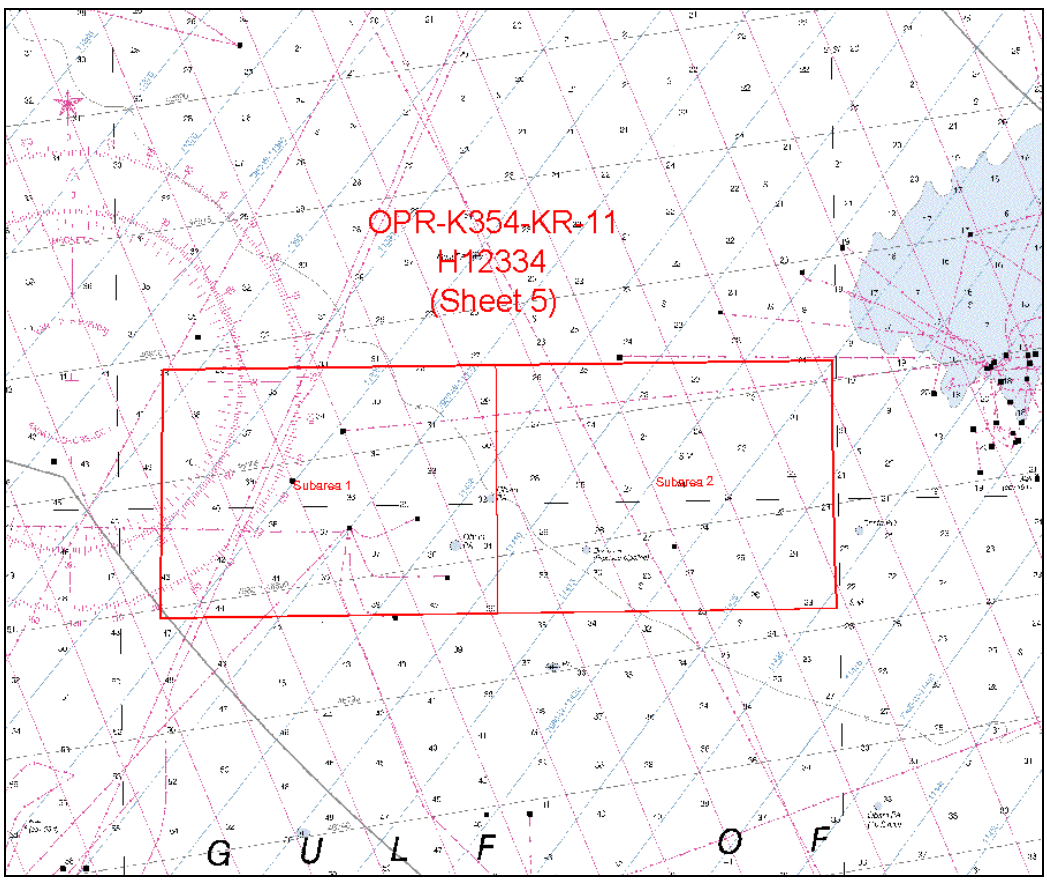


Illustration No. 1. Large Scale Survey Coverage Graphic

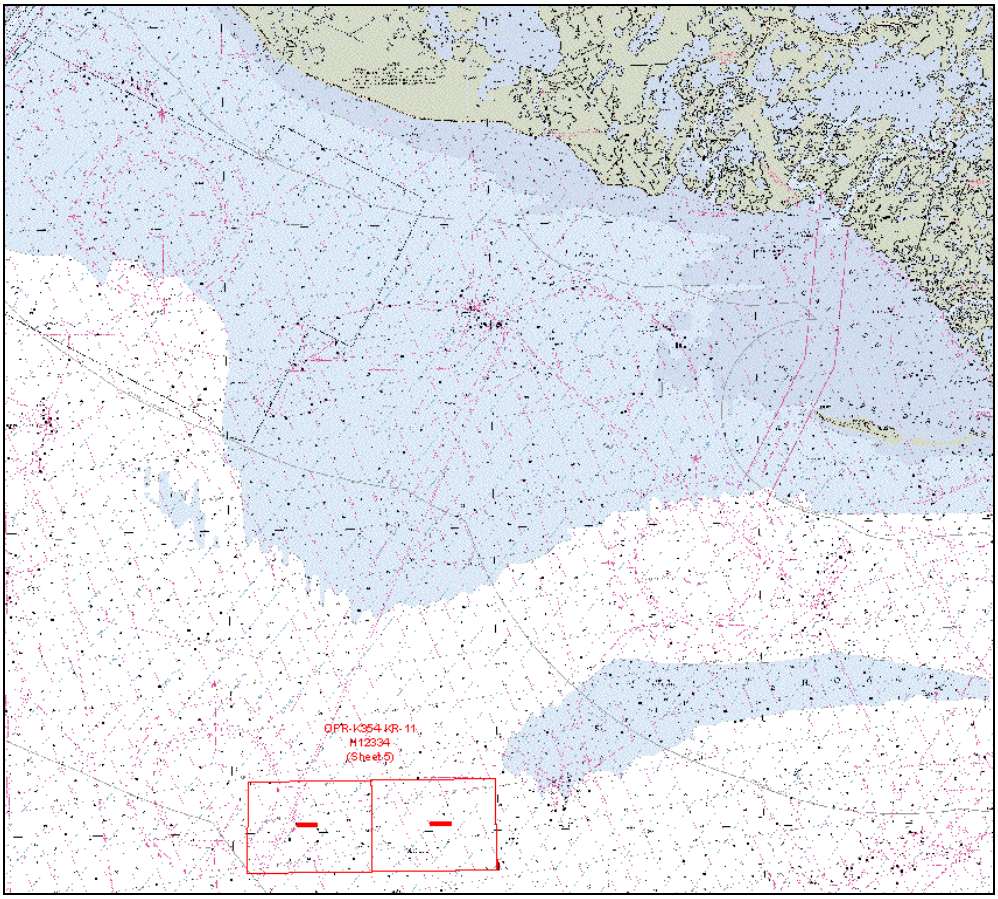


Illustration No. 2. Small Scale Survey Coverage Graphic

Table No. 1. Survey Line Statistics

	Inez McCall	Total
LNM Side Scan + Multibeam	860.93	860.93
LNM Crosslines	71.27	71.27
LNM Investigations	0.22	0.22

Table No. 2. Additional Survey Statistics

Total square nautical miles of survey area	25.86
Number of bottom samples collected	3
Number of items investigated	1

ACQUISITION DATES

July 18, 19, 22 –27 and 31, 2011
August 1, 2, 4 - 8, 10 – 12, 15, 16, 2011
September 27, 2011

B. DATA ACQUISITION AND PROCESSING

Refer to the OPR-K354-KR-11 Data Acquisition and Processing Report (DAPR) for additional information regarding survey systems, operational, processing and quality control procedures. Additional and supplemental information is included in this descriptive report.

B.1. Equipment

Survey operations were conducted from the *M/V Inez McCall*. The vessel is 108 ft (33 m) long and 24 ft (7.3 m) wide with an approximate draft of 8 ft (2.5 m). A central reference point was established prior to the survey from which all relevant offsets were measured. Primary systems and equipment utilized on the *M/V Inez McCall* are listed in Table No 3.

Table No. 3. Equipment List

System	Manufacturer	Model
Multibeam Echo Sounder	Simrad	EM3002
Side Scan Sonar	Klein	5000
Single Beam Echo Sounder	ODOM	Echotrac DF3200 MK II
Motion Sensor	Applanix	POS MV-320 V.3
Primary Positioning System	CNAV	2050
Secondary Positioning System	CNAV	2050
Tertiary Positioning System	Applanix	POS MV-320 V.3
Sound Speed at Transducer	YSI Electronics	600R
Sound Velocity Profiler	Seabird	SBE19
SSS acquisition	Chesapeake Technology Inc.	SonarWiz Map
Multibeam acquisition	C&C Technologies	Hydromap
SSS Cable Payout Indicator	Subsea Systems, Inc	PI-5600

B.2. Quality Control

B.2.1. Survey Methods

For management purposes, the survey area was divided into two subareas (labeled 1 and 2) with separate line-plans in order to conduct survey operations. The main survey lines were oriented east to west throughout both subareas. Two hundred percent (200%) side scan sonar (SSS) coverage and concurrent set line spacing multibeam echosounder (MBES) data were acquired in accordance with the coverage requirements as stated in the Project Instructions for this survey. Additional high-resolution multibeam developments were conducted over significant features (see section B.4.2 for more details).

The shallowest charted soundings determined survey line spacing and the side scan sonar range scale. In the northern portion of subarea 1 where charted water depths ranged from 29 to 40 feet the side scan sonar was operated with a range of 75 m per channel and a line spacing of 60 m. In the southern portion of the subarea where charted water depths exceed 35

feet the side scan sonar was operated with a range of 100 m per channel and a line spacing of 90 m. In the northern portion of subarea 2 charted water depths range from 21 to 28 feet and the side scan sonar was operated with a range of 50 m per channel and a line spacing of 40 m. In the southern section of subarea 2 where charted water depths range from 25 to 36 feet the side scan sonar was operated with a range of 75 m per channel and a line spacing of 60 m. The criteria of acquiring 200% SSS coverage for object detection was accomplished using the aforementioned parameters and Technique 1 as set forth in Section 6.1 of the HSSD (2011), in which a single survey was conducted with the tracklines separated by less than one-half the distance required for 100-percent coverage. The SSS tracklines used to generate coverage mosaics were identified by an odd/even numbering system.

B.2.2. Crosslines

Crosslines were run prior to the collection of main line data and perpendicular to the mainscheme lines so that quality control statistics could be performed after each main line was completed. Based on pre-plot calculations, the total crossline miles were 71.27 nm, while the total main line miles were 860.93 nm. The cross lines comprised 8.3 percent of the total data set as compared to the mainscheme lines, compliant with set line spacing crossline requirements of Section 5.2.4.3 of the HSSD (2011), which states that lineal mileage of crosslines will be at least 8% of mainscheme mileage in areas surveyed with set line spacing coverage. Rerun line miles are not included in these totals.

As can be seen in the sample statistics found in Separates V, the main lines and cross lines depth values showed very good agreement. Each main line was compared to all cross lines for which there was overlapping data. The graphs show the mean difference, RMS difference, and confidence interval for each beam.

Crossline comparisons were also performed in CARIS HIPS/SIPS 7.1 using the surface difference tool. Separate 1-m BASE surfaces of the mainscheme lines and crosslines were created for each subarea and a difference BASE surface computed. The difference surface was examined using a color range map in 0.2 m increments from –0.6 to 0.6 m. The majority of difference values for subarea 1 are within –0.2 to 0.2 m (Illustration No. 3) and the values do not exceed –0.44 and 0.4 m. The depth values of the mainlines and crosslines do not differ by more than the maximum allowable TVU (total vertical uncertainty) for water depths of 8 to 15 m, which ranges from ±0.51 to ±0.54.

The difference values for subarea 2 were more widely varied. The difference surface was evaluated using a color range map in 0.2 m increments from –0.6 m to 0.6 m, which showed that the majority of difference values ranged between –0.2 and 0.4 m (Illustration No. 4). These values are within the maximum allowable TVU in water depths of 6 to 12 m, which ranges from ±0.51 to ±0.52. However, the difference values between the crosslines and mainlines ranged from -0.57 and 0.60 m, the extreme values of which are greater than the maximum allowable TVU. For this reason, the difference surface was further examined with a separate color map to determine the amount of differences that fell between 0.5 and 0.6 m (Illustration No. 5). This value was found to be miniscule and occurred in localized areas on the edges of crossline and mainline data overlap. Therefore, the majority of the depth values

of the mainlines and crosslines do not differ by more than the maximum allowable TVU in subarea 2.

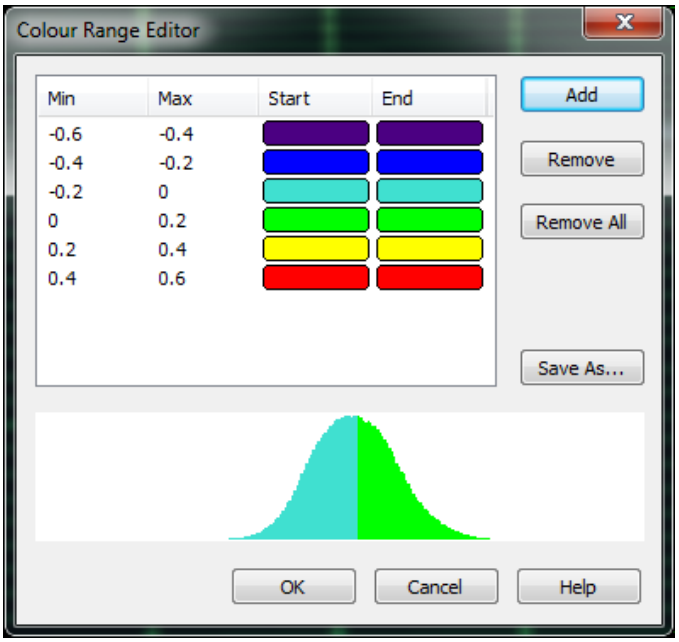


Illustration No. 3. Color range map and histogram used to evaluate the depth differences between mainlines can crosslines for Subarea 1.

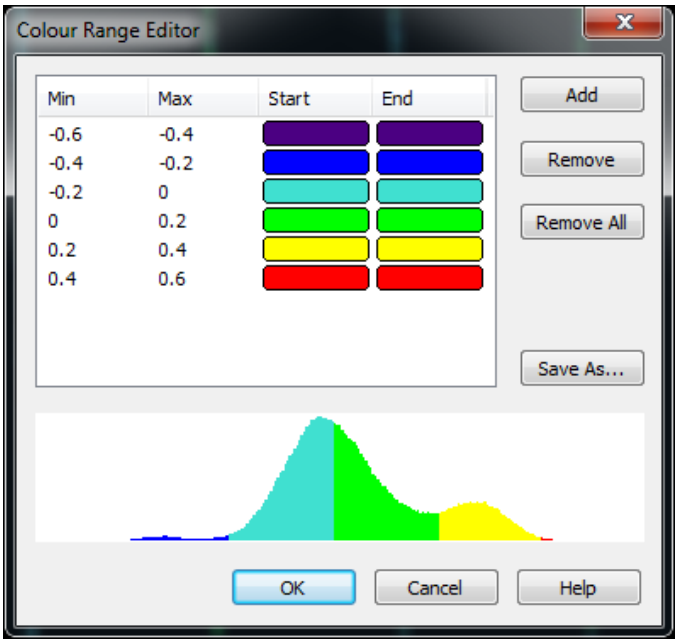


Illustration No. 4. Color range map and histogram used to evaluate the depth differences between mainlines and crosslines for Subarea 2.

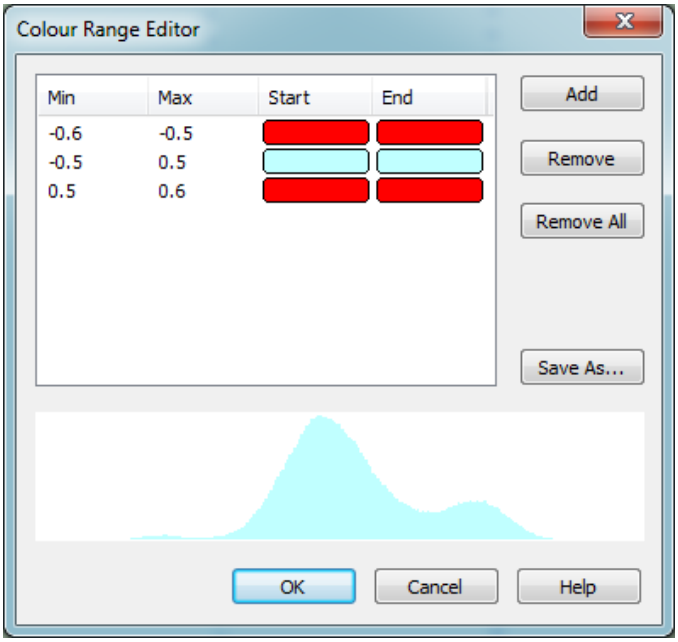


Illustration No. 5. Color range map used to evaluate the extreme depth differences between mainlines and crosslines in Subarea 2.

Further evaluation of crosslines and mainlines was conducted using the standard deviation layer of the 1-m BASE surfaces. This showed systematically greater standard deviation where crosslines overlap the mainscheme survey lines mainly for the days of July 22 – 25 and August 4, 2011 (JD 203 – 206 and 216); the majority of these survey lines were run in the southern portion of the survey area. The differences between the crosslines and mainlines in these regions, obtained from the CARIS HIPS/SIPS 7.1 surface difference tool, can exceed ±0.30 m. Although these values are within the maximum allowable TVU, because they appear to be systematic in the survey area, were examined further. For survey days JD 203 – 206, mainline data are consistently deeper than the crosslines, whereas on JD 216, mainline data are consistently shoaler. The crosslines were surveyed on JD 199 (July 18, 2011) and although there was a port stop on JD 201 (July 20, 2011), there is no indication from the DPR or acquisition logs that the vessel took on fuel, which might have accounted for the mainscheme survey lines being deeper. From the NOAA Tides and Currents website there was found to be a large difference between predicted and observed tides from July 20th through the 23rd and again around August 4th for Port Fourchon (Illustration No. 6). The data acquisition logs also indicate that the vessel was often waiting on weather and running weather patterns throughout July 22 – 26, 2011. This could possibly account for some of the difference seen between the crosslines and mainscheme survey lines.

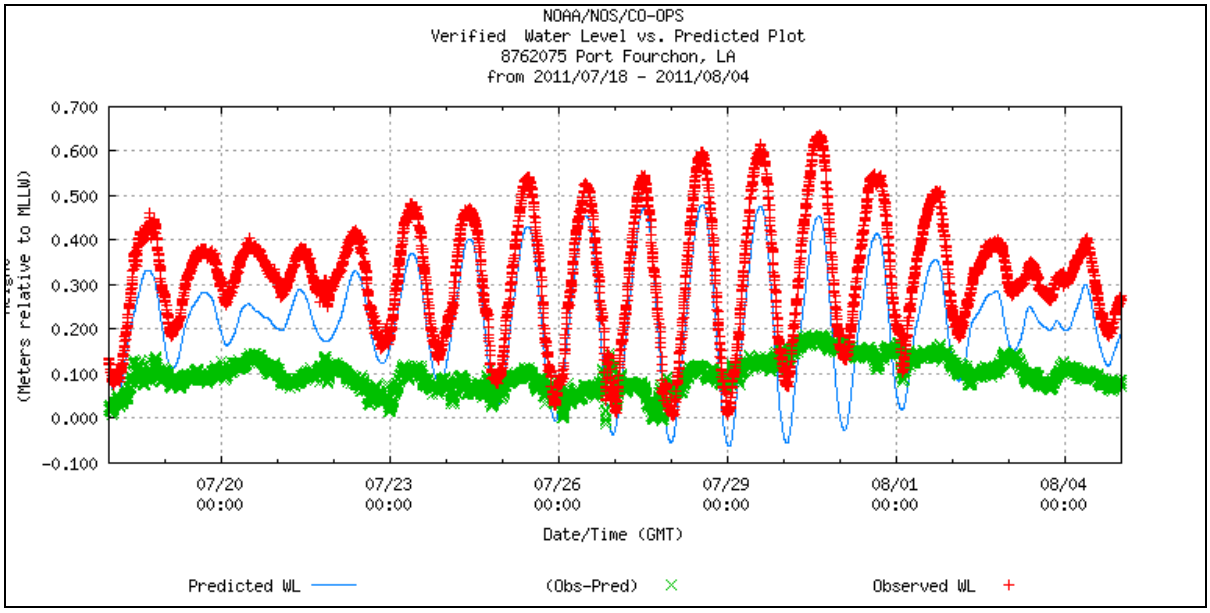


Illustration No. 6. Verified vs. predicted tides for Port Fourchon, LA; there are differences between predicted and observed tides from July 20th through the 23rd and again around August 2nd through the 4th.

Statistical crossline information was also generated by comparing each of the crosslines to the depth layer of the 1-m BASE surface of the main survey lines. In general, crossline comparisons showed very good agreement with the mainscheme lines. In general, >99% of crossline soundings were considered to meet IHO Order 1a standards. Crossline comparisons generated with the CARIS QC report utility are shown in Separate IV.

B.2.3. Uncertainty

CARIS HIPS was used to compute the Total Propagated Uncertainty (TPU) for each sounding. The measured tide uncertainty parameter was set to 0.009 m and the zoning parameter set to 0.102 m. The measured sound speed parameter was set to 2 m/s and the surface sound speed parameter to 0.800 m/s. All BASE surfaces were created based upon the IHO Order 1a standards.

B.2.4. Survey Junctions

This survey junctions with one survey on the eastern margin. Details of these surveys are shown in Table No. 4 and outlined in Illustration No. 7. ***This survey also junctions with H12335 (also part of OPR-K354-KR-11) on its northern margin.***

Table No. 4. H12334 Survey Junction

Registry Number	Scale	Year	Platform	Relative Location
H12253	20000	2010	C&C Technologies, Inc.	E
H12335	***40000***	***2011***	***C&C Technologies, Inc.***	***N***

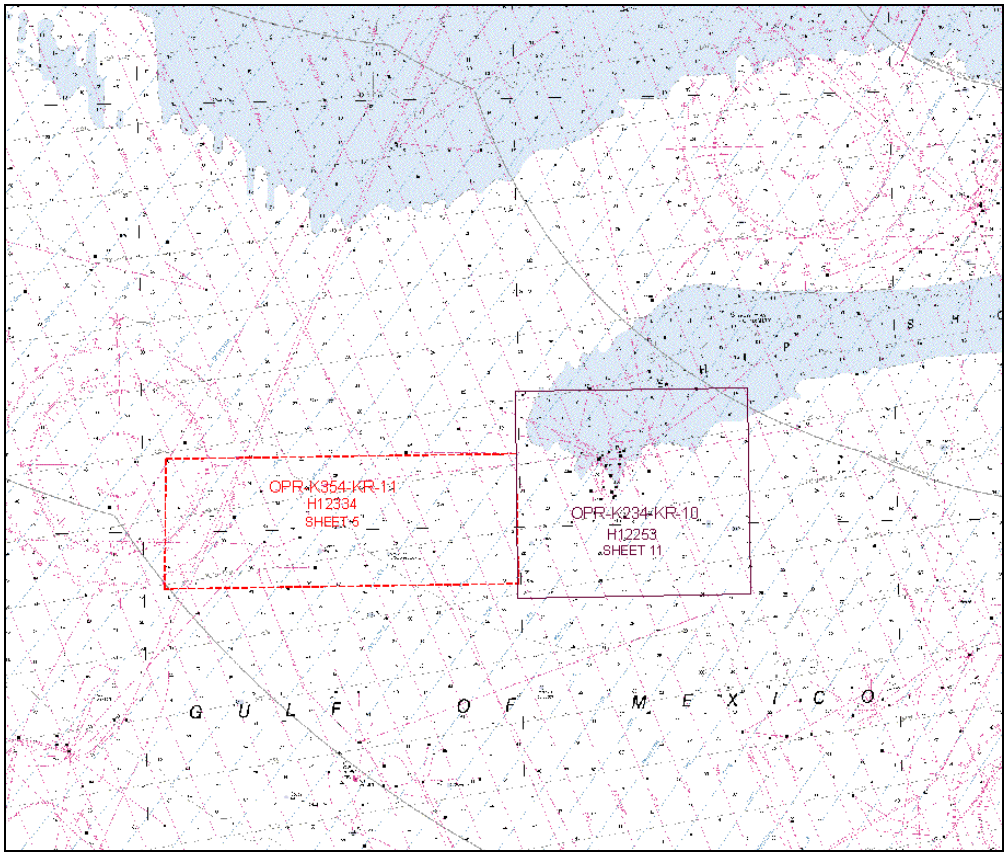


Illustration No. 7. H12334 Survey Junction with H12253.

Although continuous multibeam coverage is not obtained within a survey or between surveys due to the set-line spacing criteria, a CARIS difference surface between the junction survey (H12253) and survey H12334 was computed to ensure general agreement of depths where overlap of sounding data occurred. The difference surfaces were evaluated with a user-defined color range map in 0.2 m increments from –0.6 to 0.6 m. The depth difference values between H12334 and H12253 ranges between –0.59 and 0.44 m. However, the majority of the values are between –0.4 and 0.4 m (Illustration No. 8). The most extreme difference values, greater than -0.5 m, appear to be associated with overlap of swath edges in the very northern and southern sections of the junction area. These regions also tend to have larger and more negative difference values than the central portion of overlap between the surveys. This indicates that the surveyed depths of H12334 are deeper than those of H12253 in these regions whereas the depths are more similar in the central region of overlap. ***The depth differences between H12334 and H12335 range from -0.20 to 0.47 m.***

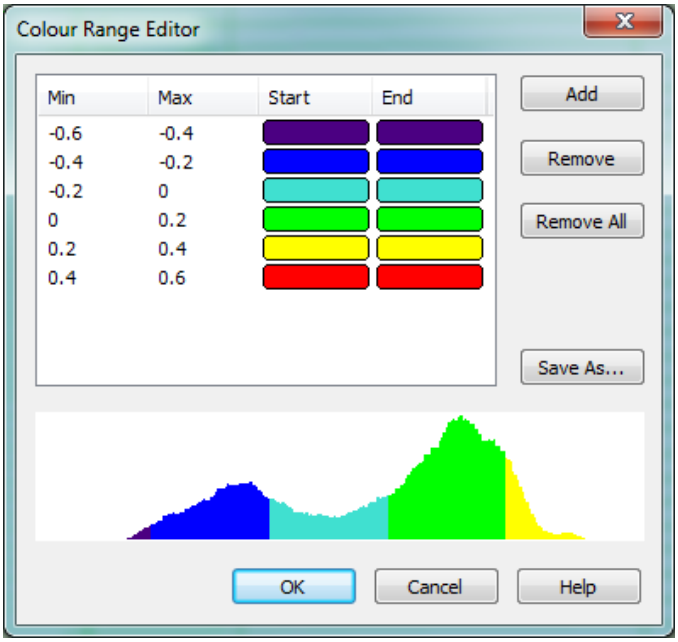


Illustration No. 8. Color range map and histogram used to evaluate the depth differences between H12334 and H12253.

B.2.5. Sonar System Quality Control

Prior to the survey, a standard patch test was performed to determine correctors for latency, pitch, roll, and heading. Two patch tests were done, the first outside of Port Fourchon, LA on the 14th of June 2011, and a second south of Cameron, LA on July 30th. The second test was done as a check on quality of the first calibration. The multibeam transducer and cable was replaced and a new patch test performed on September 22th, 2011. An additional patch test was conducted on November 11, 2011. The CARIS vessel file was updated and correctors applied for data between September 22 and November 11, 2011; these correctors only affect the investigation done for this survey. Refer to the Data Acquisition and Processing Report for detailed patch test results.

Draft corrections were verified generally on a daily basis, mainly in conjunction with the sound speed casts, and entered into the multibeam collection software to be applied in real-time.

An Odom Echotrac MKII single beam echosounder was continuously operated and monitored during the survey as an independent check on the multibeam bottom-detect. In addition, lead line comparisons were conducted periodically throughout the survey as an independent check on the multibeam bottom-detect. The lead line logs are included in Separate I – Data Acquisition and Processing Logs.

Sea Bird Electronics SBE19 CTDs were used for speed of sound measurements. Casts were performed at least once daily and more often as needed. The multibeam data was corrected for the water column sound speed in real-time. An Endeco YSI sound speed profiler was used to determine the sound speed at the transducer. Refer to the Data Acquisition and

Processing Report for a description of sound speed corrections and to Separates II – Sound Speed Data for additional information.

B.2.6. Unusual Conditions/Factors Affecting Soundings/Imagery

Schools of fish were often noted in the acquisition logs, as was the presence of seaweed. Additional factors in the area also had the potential to impact the side scan imagery, including shallow and warm water, the presence of thermoclines, and a soft bottom. The quality of the side scan sonar was monitored closely and the height of the fish manually adjusted to obtain the best possible data.

B.3. Corrections to Echo Soundings

No additional deviations from the Correction to Echo Soundings section in the Data Acquisition and Processing Report occurred.

B.4. Data Processing

B.4.1. Coverage BASE Surfaces and Mosaics

Multibeam data processing was conducted using CARIS HIPS/SIPS 7.0.2 SP2 on the vessel and CARIS HIPS/SIPS 7.1.0 with Hot Fixes 1, 2 and 3 in the office. One BASE surface was created for each subarea at a scale of 1:40000 with a resolution of 1 m, in accordance with Section 5.2.2.2 and 5.2.2.3 of the HSSD (2011), which states that a 1-m BASE surface will be created for 0 – 20 m water depths. One BASE surface was created for the investigation at a scale of 1:40000 and a resolution of 0.5 m.

Side scan sonar data was processed using Chesapeake Technologies SonarWiz5 V.5.01.0026 software in the field and SonarWiz5 V.5.03.0027 software in the office. All of the side-scan sonar data collected for this project has been layback corrected. 1-m resolution mosaics were created for each 100% SSS coverage mosaics.

B.4.2. SSS Imagery and Contacts

Side scan sonar data was evaluated twice and all contacts with a shadow identified on each 100% SSS coverage. These contacts were correlated and evaluated in either the CARIS HIPS/SIPS or CARIS Notebook map window with respect to BASE surfaces and charted information. In accordance with Section 6.3.2 of the HSSD (2011), in water depths of less than or equal to 20 m, contacts with heights computed from the shadow length of 1 m or more were considered significant. All significant contacts not fully developed with mainscheme MBES coverage were investigated with additional MBES coverage. A sounding that represented the least depth of each significant contact was designated using CARIS HIPS/SIPS. A list of all side scan sonar contacts is contained in Separate V and significant features are represented and attributed in the S-57 feature file. Refer to the Data Acquisition and Processing Report for details on the side scan sonar contact processing and correlation workflow.

C. VERTICAL AND HORIZONTAL CONTROL

The vertical datum for the soundings is Mean Lower Low Water (MLLW). Tide and water level corrections were determined and applied in accordance with the CO-OPS Statement of Work. Data from Port Fourchon, LA (8762075) was used as the source of tides. Verified tides with final tide zoning were applied to the data. ***Subordinate gauge installed at Texas Gas Platform was not included in final zoning (see Appendix V).***

The horizontal datum for the survey is the North American Datum of 1983 (NAD 83) and the projection is Universal Transverse Mercator (UTM) Zone 15 North.

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.1. Charts and Notices to Mariners

Chart comparisons were performed in CARIS HIPS/SIPS 7.1 using the final BASE surfaces of mainscheme and investigation lines, colored depth ranges, and sounding layers. The data was compared to the largest scale chart in this area, summarized in Tables No. 5 and 6.

Table No. 5. Nautical Charts used for Comparison

Chart Number	Scale	Edition	Edition Date
11356	1:80,000	38	Jun 08

Table No. 6. Nautical Chart Correction Dates

Chart Number	Corrected Through	
	NM	LNM
11356	Jun 14/08	Jun 03/08

The Local Notices to Mariners (LNM) were reviewed for the duration of the survey. District 8 LNM 39/11 (October 4, 2011) was the last notice reviewed for this project. One notice to mariners (District 8 LNM 32/08 – October 2, 2008) was issued within the survey bounds prior to survey operations. This LNM was to delete a submerged obstruction buoy at 28° 49' 30.00"N, 91° 15' 20.00" W. This corresponds to AWOIS item 12792 required for full investigation within this survey. This item is discussed further in Section D.1.3.1 – AWOIS.

D.1.2. Charted Soundings

Charted soundings were compared to a sounding layer as well as color range maps. The sounding layers were generated from a 5-m BASE surface with a 300-ft single-defined radius for both subareas. (Refer to the Data Acquisition and Processing Report for sounding selection criteria). In the western half of the survey area (mainly Subarea 1) there is a general deepening from 27 ft in the northeast corner to 49 ft in the southwest corner (Illustration No. 9). The eastern half of the survey area (mainly subarea 2) is generally shoaler, with depths ranging between 20 and 40 ft. The depth transitions are more irregular than in the western

portion of the survey area, however, there is still a general deepening from the northeast to the southwest (Illustration No. 9).

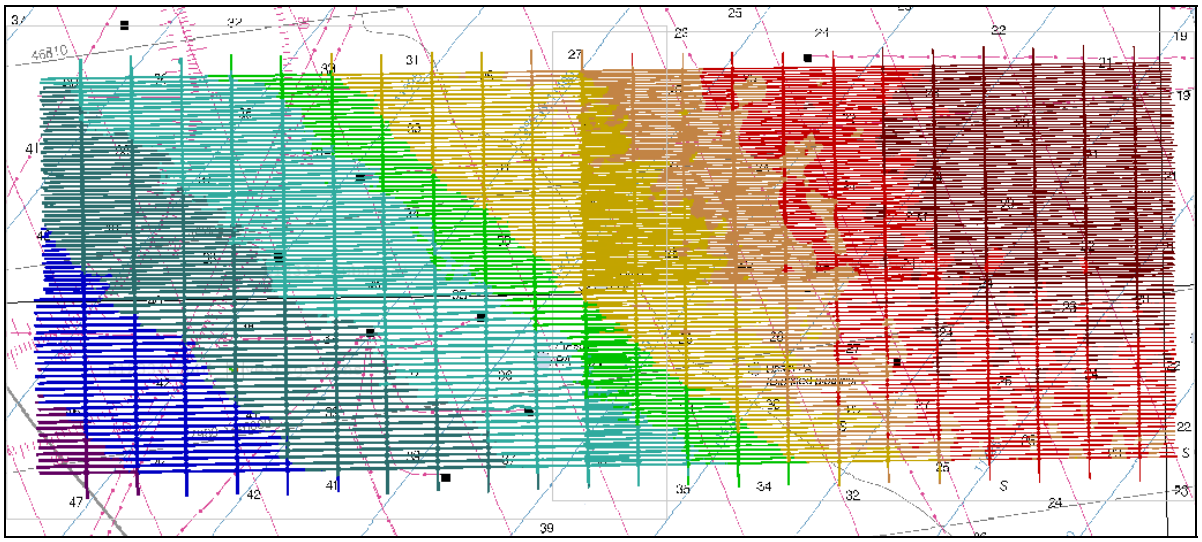


Illustration No. 9. H12334 Survey area with colored depth ranges shown in Illustration No 10.

Min	Max	Start	End
6	7		
7	8		
8	9		
9	10		
10	11		
11	12		
12	13		
13	14		
14	15		

Illustration No. 10. CARIS color range map (in meters) used for Illustration No. 9.

In the western half of the survey area (mainly Subarea 1), surveyed soundings are generally 1 to 2 feet deeper than charted soundings. However, there is one small area in the northeastern section where the 33-ft charted sounding is 1 to 2 feet deeper than the surveyed soundings (Illustration No.11). In addition, there is one area in the south central portion of Subarea 1 where the surveyed soundings are up to 3-ft deeper than charted soundings of 38 and 37 feet (Illustration No. 12).

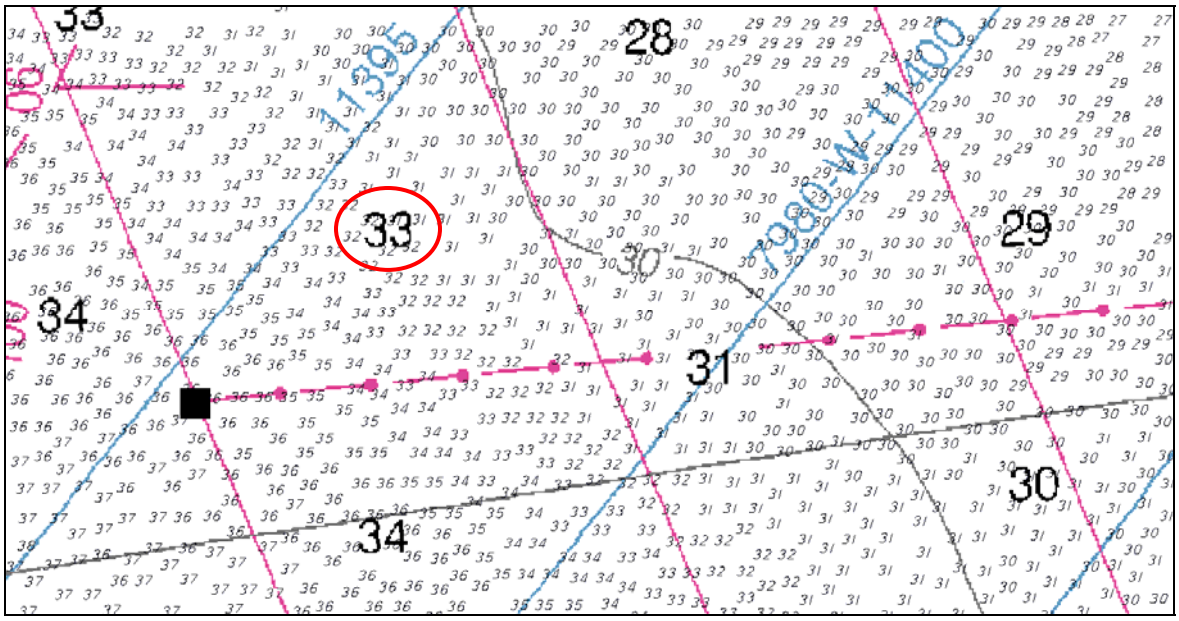


Illustration No.11. Small area in the northeast portion of the survey area where the charted 33-ft sounding (in the red circle) is 1 to 2 feet deeper than the surveyed soundings

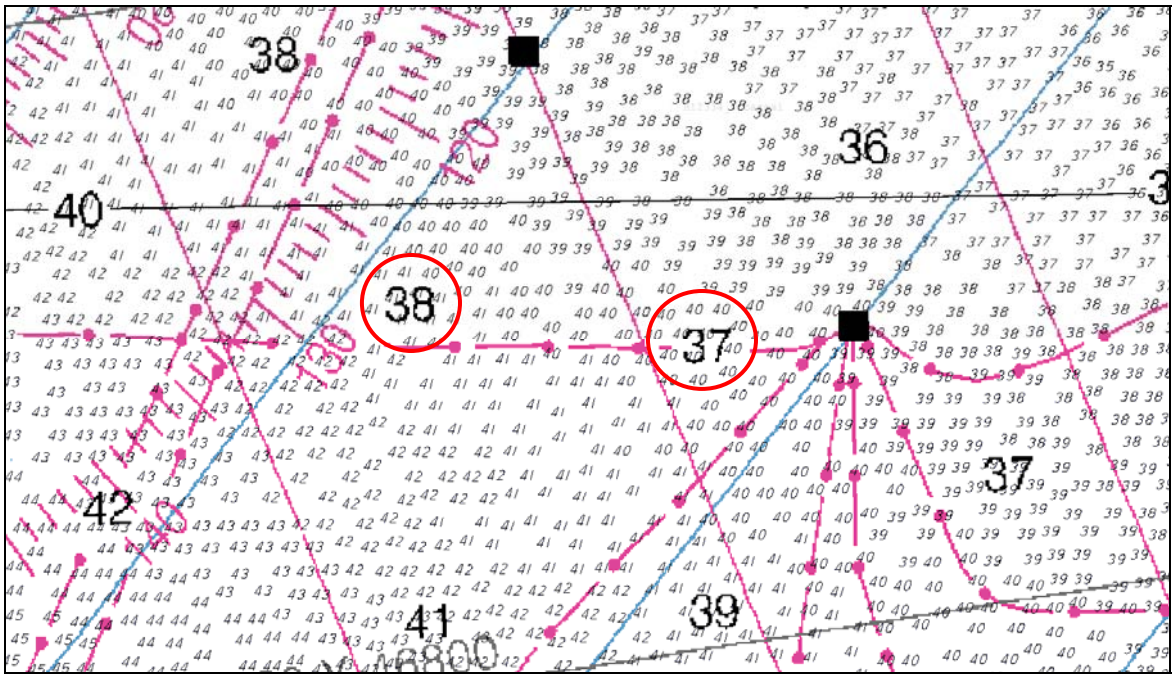


Illustration No. 12. Area where surveyed soundings are up to 3 feet deeper than charted soundings of 38 and 37 feet (in red circles).

In the western portion of subarea 2, surveyed and charted soundings are generally within 1 to 3 feet of each other, and the charted soundings are generally shoaler. In contrast, charted soundings are generally deeper than surveyed soundings by 1 to 2 ft in the eastern portion of subarea 2. The most extreme differences between charted and surveyed soundings are found in the south-central region of the subarea (Illustration No. 13). In the vicinity of the 25-ft charted soundings, surveyed soundings are up to 6 feet deeper than charted soundings, and in

the vicinity of the 27-ft charted soundings, surveyed soundings are up to 3 feet shoaler. An additional extreme value occurs in the very southeastern portion of the survey area, where in one instance around the charted 23-ft depth where surveyed soundings are up to 5 feet deeper (Illustration No. 14).

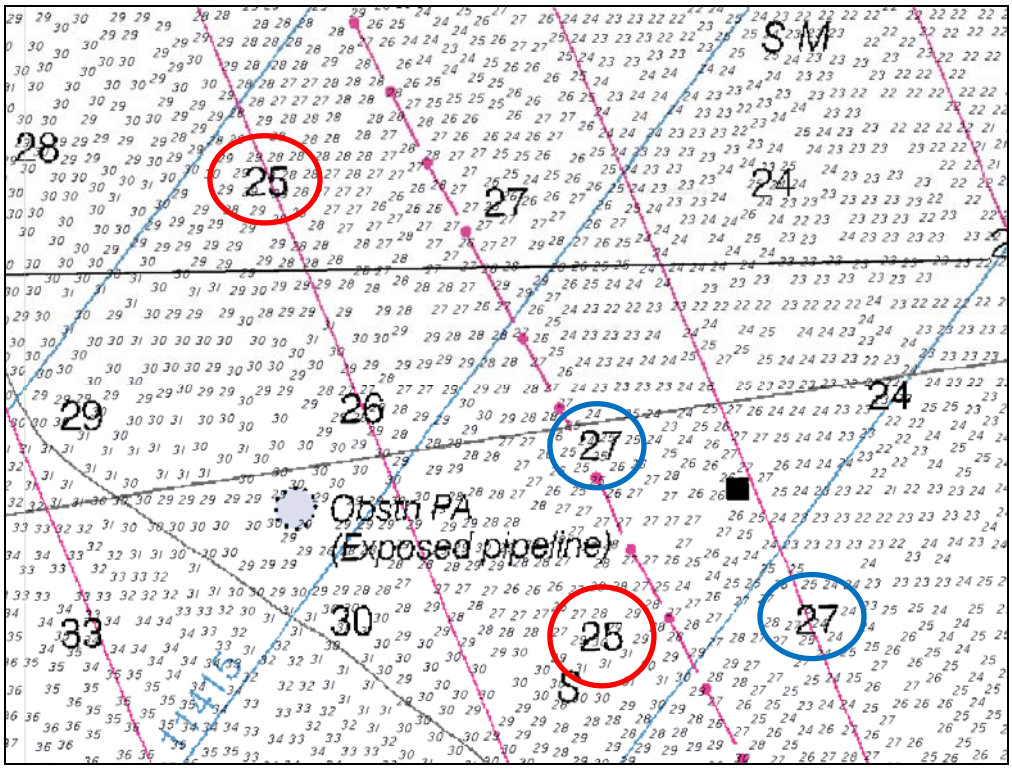


Illustration No. 13. Surveyed soundings in the vicinity of the 25-ft charted depths are up to 6 feet deeper (red circles), and surveyed soundings in the vicinity of the 27-ft charted depths are up to 3 feet shoaler (blue circles).

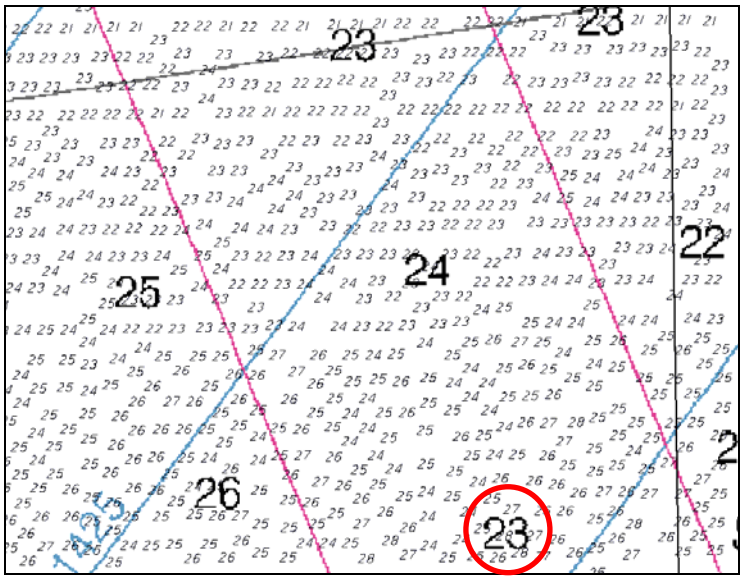


Illustration No. 14. Region in the very southeastern portion of Subarea 2 where the surveyed depths in the vicinity of the 23-ft charted depth are up to 5 feet deeper.

The 30-ft contour is charted from northwest to southeast through the central portion of the survey area. In order to evaluate any differences between the contour and surveyed soundings, a color range chart was created in CARIS with soundings of 0 to 9.144 m in red and soundings greater than 9.144 m in blue; 9.144 m represents ~30 ft (Illustration No. 15). It is evident that there is no smooth transition between the 29 and 30 ft surveyed depths. However, the charted 30-ft contour is situated beyond the majority of the 29-ft surveyed soundings. Examination of the sounding layer confirms this trend.

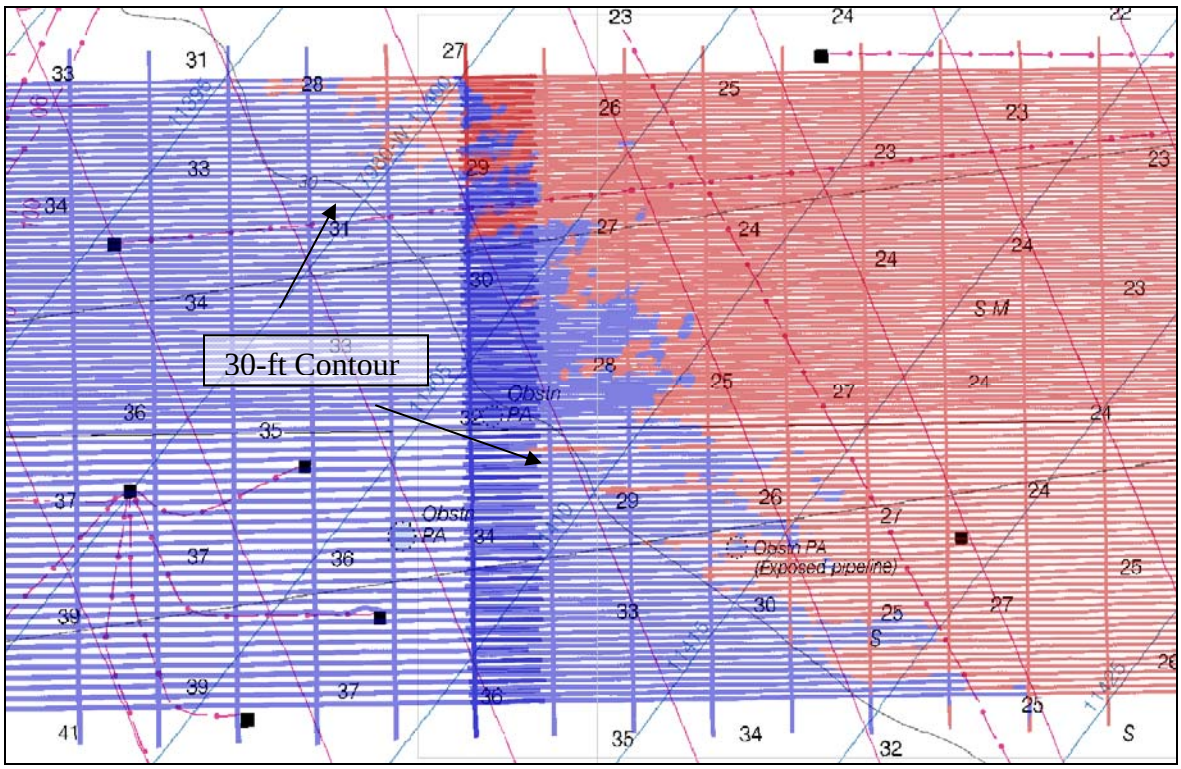


Illustration No. 15. Comparison of charted 30-ft contour and surveyed soundings. Soundings of 0 to 9.144 m are in red and soundings greater than 9.144 m in blue; 9.144 m represents ~30 ft.

D.1.3. Charted Features

D.1.3.1. AWOIS

Three AWOIS items were assigned for full investigation within the survey area (Table No. 7). No significant contact was found within any of the AWOIS radius areas and the hydrographer recommends that the three AWOIS be removed from chart 11356. AWOIS item 12792 corresponds to a LNM (District 8 LNM 32/08 – October 2, 2008), which was issued to delete a submerged obstruction buoy at 28° 49' 30.00"N, 91° 15' 20.00" W; H12334 survey data supports the LNM.

Table No. 7. AWOIS items assigned for full investigation.

AWOIS Record	Chart Latitude	Chart Longitude	Chart Action/Comments
14811	28°49'24.965" N	91°13'30.971" W	Remove from Chart 11356
12792	28°49'29.763" N	91°15'19.875" W	Remove from Chart 11356
12810	28°50'03.983" N	91°14'49.935" W	Remove from Chart 11356

D.1.3.2. Investigation Items

One investigation was conducted in the survey area (Table No. 8). A potential linear target was located in the multibeam data on crossline H12334-TIE-104-1. The sidescan data showed two linear features in the vicinity (SSS contacts 217-202151S and 217-205838S), however, these possible contacts lacked shadows. Further multibeam investigation was conducted on September 27, 2011 (JD 270). These data did not show anything that resembled a contact, and the original crossline data was further cleaned.

Table No. 8. Significant features that required further investigation.

SSS Contact Number	Subarea	Least Depth (m)	Survey Latitude	Survey Longitude	Remarks
217-202151S	1	N/A	N/A	N/A	Disproved by MB investigation
217-205838S	1	N/A	N/A	N/A	Disproved by MB investigation

D.1.3.3. Danger to Navigation Reports

No Danger to Navigation Reports were submitted for this survey.

D.1.3.4. Existing Infrastructure

The platforms in Table No. 9 were found as charted. The position of each platform was calculated from the layback corrected primary sidescan sonar contact. Refer to the Data Acquisition and Processing Report for details on primary and secondary contacts. No previously uncharted platforms were observed during the present survey. Table No 10 shows a list of structures that are currently charted, but were no longer present at the time of the survey. The positions of these platforms were obtained from Chart 11356.

Table No. 9. Platforms found as charted

Surveyed Position			
Latitude	Longitude	Platform Name	Chart Action/Comments
28°49'45.139 N	91°16'48.414 W	SS105A	Remain as charted
28°49'50.809 N	91°15'51.844 W	SS105B	Remain as charted
28°49'08.088 N	91°15'28.321 W	OCS-G-12940 SS 126-B	Remain as charted
28°48'39.473 N	91°16'10.996 W	SS –126C	Although observed in this survey, is addressed in the appropriate registry (H12333) deliverables

Table No. 10. Charted platforms not present at time of survey

Charted Position		
Latitude	Longitude	Chart Action
28°50'55.368" N	91°16'51.346" W	Remove from chart
28°50'19.429" N	91°17'35.049" W	Remove from chart
28°49'27.298" N	91°12'17.253" W	Remove from chart

D.1.3.5. Feature Report

A Final Feature File for obstructions, oil and gas infrastructure, and bottom samples has been submitted as a CARIS .hob file in a CARIS Notebook project.

D.2. Additional Results

D.2.1. Prior Surveys

Refer to Section B.2.4 for information on survey junctions and Section D.1 for comparison to nautical chart 11356.

D.2.2. Aids to Navigation

No aids to navigation are charted within the survey area, and none were found during survey operations.

D.2.3. Additional Infrastructure

Several submarine pipelines are charted within the survey area, but no evidence of these are apparent in the multibeam or sidescan data.

E. APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NUMBER H12334

This report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of the survey H12334 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and CARIS project have been closely reviewed and are considered complete and adequate as per the Statement of Work.

This report is accompanied by the Data Acquisition and Processing Report for project OPR-K354-KR-11.

John Baker
Chief of Party
C&C Technologies
November 2011

APPENDIX I

Tides and Water Levels

JOA Surveys, LLC
SURVEYING GPS TIDES HYDROGRAPHY

2000 E. Dowling Road, Suite 10
Anchorage, AK 99507
(907) 561-0136 Phone
(907) 561-0143 Fax
www.joasurveys.com

Tidal Zoning Report for OPR-K354-KR2011

5/1/2012

JOA Surveys, LLC
Mike Zieserl
mike@joasurveys.com

C & C Technologies (C & C) requested that JOA Surveys, LLC (JOA) revise the preliminary tidal zoning provided by CO-OPS for hydrographic survey OPR-K354-KR2011. CO-OPS provided preliminary tidal zoning using MLLW water level data from NOAA NWLON 876-2075 Port Fourchon, LA. JOA revised the tidal zoning to use MLLW water level data from the tertiary station 876-3535 Texas Gas Platform, Caillou Bay, LA. The tidal zoning geometry was not edited.

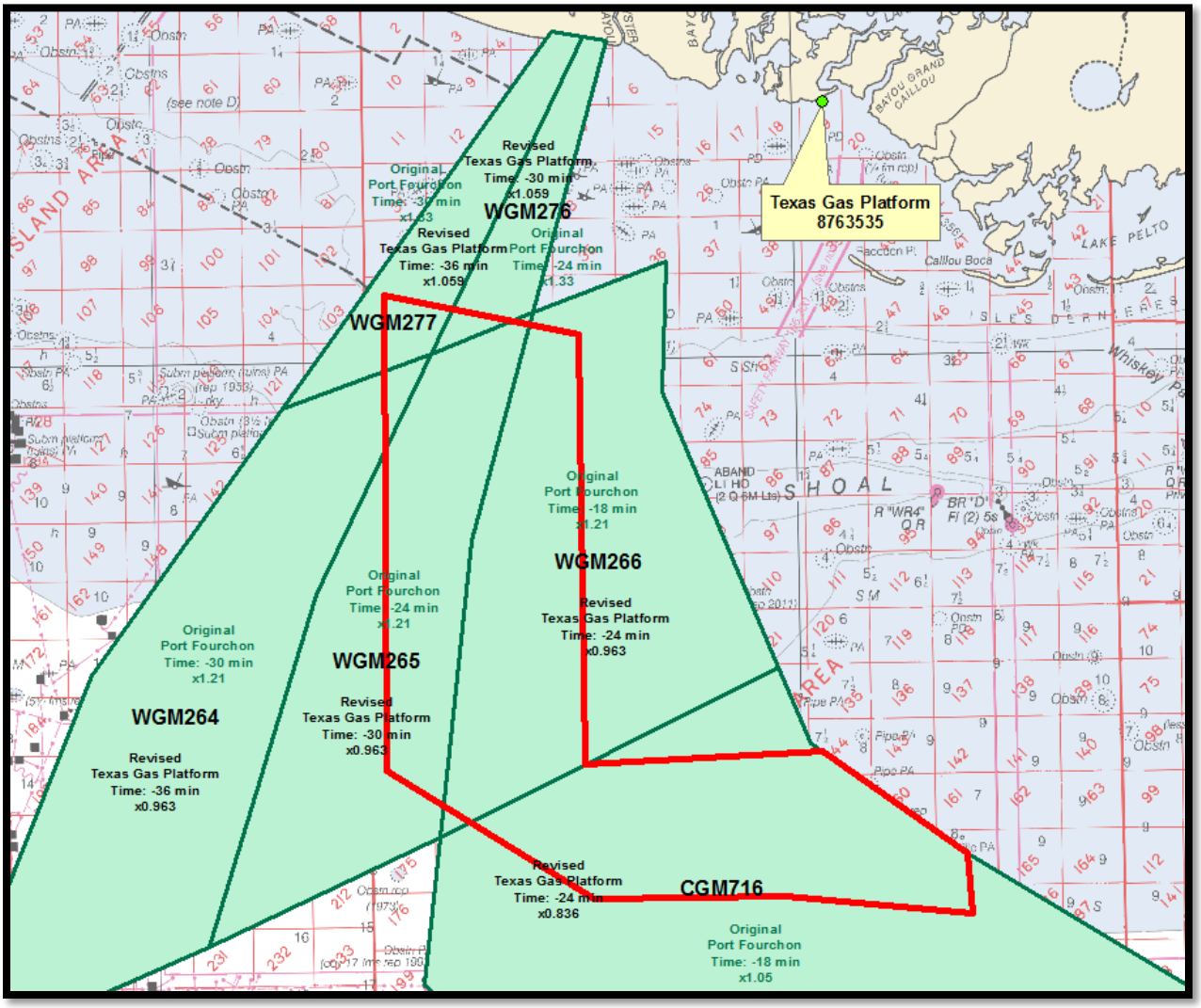
To create the revised zoning factors, one year of MLLW water level data from Texas Gas Platform and Port Fourchon were compared using a least squares best fit algorithm. The range ratio and time offset determined from this comparison were used to convert the preliminary CO-OPS tidal zoning from Port Fourchon to Texas Gas Platform. The results of the least squares comparison are listed below:

```
LSQ ZONING RESULTS
Best fit Texas Gas Platform data to Port Fourchon
Range Ratio:        0.796
Time Offset:        -6.0 minutes
Mean:               0.000 m
1 sigma:            0.067 m
2 sigma:            0.132 m
```

To convert the preliminary CO-OPS zoning from Port Fourchon to Texas Gas Platform, the preliminary tidal zoning range ratio was multiplied by 0.796 and 6 minutes was subtracted from the time offset. The original and revised zoning factors are listed in the table below. In addition, one year of original and revised zoned MLLW data were differenced to determine the 2 sigma of the difference.

	Port Fourchon		Texas Gas Platform		
Zone Name	**Original Range Ratio**	**Original Time Offset**	**Revised Range Ratio**	**Revised Time Offset**	**2 sigma of difference**
WGM265	1.21	-24 min	0.963	-30 min	0.159 m
WGM266	1.21	-18 min	0.963	-24 min	0.159 m
CGM716	1.05	-18 min	0.836	-24 min	0.138 m

A map of the preliminary (green font) and revised (black font) tidal zoning is shown below. The preliminary survey area is shown in red, this survey area is approximate.



APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

Castle Parker

From: Kathleen Jamison
Sent: Friday, April 20, 2012 12:29 PM
To: Tara Levy
Cc: Nicole Kuenzel; Carolyn Lindley; Castle Parker; Sarah Eggleston
Subject: Texas Gas Platform and zoning for OPR-K354-KR-11

Hi Tara,

I just spoke with Carolyn Lindley in co-ops to clarify what we are requesting with zoning for OPR-K354-KR-11. CO-OPS has not received a zoning package from JOA since they were not subcontracted to do zoning for Texas Gas Platform subordinate gauge. What they need from C&C is either 1) a new zoning package to include zoning that uses the Texas Gas Platform gauge and the Port Fourchon (8762075) NWLON station; or
2) a justification of why the addition of the Texas Gas Platform gauge was not needed to achieve vertical accuracy standards for the survey.
This justification should include your methods for determining the difference in vertical accuracy between the use of just the Port Fourchon gauge vs. the use of both gauges. An example of methods could be a difference surface of your data reduced with one gauge vs.
both.

If you have any questions regarding zoning or need more specifics you may contact Carolyn Lindley directly, but be sure to cc me on any emails sent back and forth between C&C and co-ops.

As for documentation, please include a copy of this email (and any subsequent emails that might provide further clarification) in Appendix V. of the DR for the remaining OPR-K354-KR-11 surveys that you have not yet submitted to AHB (H12330, H12331, H12332, and H12333). For the surveys you have already submitted to the branch (H12334 and H12335), AHB will include a copy of this email in Appendix V (so no need to resubmit any DRs or the DAPR if it is determined that the zoning difference is acceptable).

-Kathleen

--
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

APPENDIX III

Features

Appendix III - Features

Registry Number: H12334
State: Louisiana
Locality: Louisiana Coast
Sub-locality: 24 NM S of Pt Au Fer Island
Project Number: OPR-K354-KR-11
Survey Dates: 20110718 - 20110927

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11356	38th	06/01/2008	1:80,000 (11356_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	NEIGHBORS DOLPHINS 1	AWOIS	[no data]	[no data]	[no data]	---
1.2	NEIGHBORS DOLPHINS 1	AWOIS	[no data]	[no data]	[no data]	---
1.3	UNKNOWN	AWOIS	[no data]	[no data]	[no data]	---

1 - DR_AWOIS

1.1) AWOIS #12792 - NEIGHBORS DOLPHINS 1

No Primary Survey Feature for this AWOIS Item

Search Position: 28° 49' 30.0" N, 091° 15' 20.0" W

Historical Depth: [None]

Search Radius: 1000

Search Technique: S2, MB, SD

Technique Notes: [None]

History Notes:

CGD8 LNM 11/03; REPORTS The Jack-up Rig Neighbors Dolphins 105, was previously reportedly capsized and sunk in the Gulf of Mexico. The rig had reportedly broken in two sections. One section is in approximate position LAT. 28-49-30.0N 091-15-20.0W (NAD83) and currently unmarked. The other section is partially submerged in approximate position 28-50-04.0N 091-14-50.0W (NAD83) and marked with an unlighted red and white striped buoy.

Survey Summary

Charts Affected: 11356_1, 1116A_1, 11340_1, 411_1

Remarks:

AWOIS 12792 not observed during survey, either visually or within survey data. Feature corresponds to LNM (District 8 LNM 32/08 October 2, 2008). This LNM was issued to delete a submerged obstruction buoy at 28Â° 49' 30.00"N, 91Â° 15' 20.00" W; survey data agrees with LNM.

Feature Correlation

Source	Feature	Range	Azimuth	Status
AWOIS_EXPORT	AWOIS # 12792	0.00	000.0	Primary

Hydrographer Recommendations

Remove from chart

S-57 Data

[None]

Office Notes

SAR: AWOIS search radius met and feature disproved by 200% SSS.

Compile: Delete charted obstruction

1.2) AWOIS #12810 - NEIGHBORS DOLPHINS 1

No Primary Survey Feature for this AWOIS Item

Search Position: 28° 50' 04.0" N, 091° 14' 50.0" W

Historical Depth: [None]

Search Radius: 1000

Search Technique: S2, MB, SD, VS

Technique Notes: [None]

History Notes:

CGD8 LNM 11/03; REPORTS The Jack-up Rig Neighbors Dolphins 105, was previously reportedly capsized and sunk in the Gulf of Mexico. The rig had reportedly broken in two sections. One section is in approximate position LAT. 28-49-30.0N 091-15-20.0W (NAD83) and currently unmarked. The other section is partially submerged in approximate position 28-50-04.0N 091-14-50.0W (NAD83) and marked with an unlighted red and white striped buoy.

Survey Summary

Charts Affected: 11356_1, 1116A_1, 11340_1, 411_1

Remarks:

AWOIS 12810 not observed during survey, either visually or within survey data

Feature Correlation

Source	Feature	Range	Azimuth	Status
AWOIS_EXPORT	AWOIS # 12810	0.00	000.0	Primary

Hydrographer Recommendations

Remove from chart

S-57 Data

[None]

Office Notes

SAR: AWOIS search radius met and feature disproved by 200% SSS.

Compile: Delete charted obstruction

1.3) AWOIS #14811 - UNKNOWN

No Primary Survey Feature for this AWOIS Item

Search Position: 28° 49' 25.0" N, 091° 13' 31.0" W

Historical Depth: [None]

Search Radius: 500

Search Technique: S2, MB

Technique Notes: [None]

History Notes:

LNM50/05--8th CGD, 12/14/05; An exposed pipeline has been reported in the Gulf of Mexico in approximate position 28-49-25.0N 091-13-31.0W. The obstruction is reportedly not marked. (KSJ 7/19/10)

Survey Summary

Charts Affected: 11356_1, 1116A_1, 11340_1, 411_1

Remarks:

AWOIS 14811 not observed during survey, either visually or within survey data

Feature Correlation

Source	Feature	Range	Azimuth	Status
AWOIS_EXPORT	AWOIS # 14811	0.00	000.0	Primary

Hydrographer Recommendations

Remove from chart

S-57 Data

[None]

Office Notes

SAR: AWOIS search radius met and feature disproved by 200% SSS.

Compile: Delete charted obstruction

APPROVAL PAGE

H12334

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

- H12334_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12334_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.

Approved:_____

Digitally signed by Abigail Higgins
DN: cn=Abigail Higgins, o=NOAA, ou=Office of Coast Survey, email=abigail.higgins@noaa.gov, c=US
Date: 2012.07.20 12:27:38 -04'00'

LT Abigail Higgins, NOAA
Chief, Atlantic Hydrographic Branch