

H12557

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey*   Navigable Area  

*Project No.*   OPR-K354-KR-13  

*Registry No.*   H12557  

### LOCALITY

*State*   Louisiana  

*General Locality*   Louisiana Coast, LA  

*Sub-locality*   30 NM South of Atchafalaya Bay  

  2014  

CHIEF OF PARTY  
  Tara Levy  

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

REGISTRY No:

**HYDROGRAPHIC TITLE SHEET**

**H12557**

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible when the sheet is forwarded to the Office

State: Louisiana

General Locality: Louisiana Coast, LA

Locality: 30 NM South of Atchafalaya Bay

Scale: 1: 40000

Date of Survey: 12/18/2013 - 02/08/2014

Instructions Dated: April 2013

Project Number: OPR-K354-KR-13

Vessels: R/V Sea Scout

Chiefs of Party: Tara Levy

Surveyed by: C&C Technologies Personnel

Soundings by echosounder: Kongsberg EM2040 Multibeam Echo Sounder

Verification by: Atlantic Hydrographic Branch

Soundings in: Feet:  X  Fathoms:   Meters:   at MLW:   MLLW:  X

**Remarks:**

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

# Descriptive Report to Accompany Survey H12557

Project: OPR-K354-KR-13

Locality: Louisiana Coast, LA

Sublocality: 30 NM South of Atchafalaya Bay

Scale: 1:40000

December 2013 – February 2014

**R/V Sea Scout**

Chief of Party: Tara Levy

## A. Area Surveyed

The survey area is located 30 NM South of Atchafalaya Bay off the coast of Louisiana, USA.

### A.1. Survey Limits

Data was acquired within the following survey limits:

Northeast Limit	Southwest Limit
29.005 N	28.909 N
91.497 W	91.608 W

*Table 1: Survey Limits*

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

### A.2. Survey Purpose

The purpose of this survey, which covers 24.08 square nautical miles (SNM), is to provide a contemporary survey to update National Ocean Service (NOS) nautical charting products in a high commercial traffic area in the Gulf of Mexico. A significant portion of the SNM for this project is considered critical survey area as designated in the NOAA Hydrographic Survey Priorities, 2012 edition and contains potentially unreliable depths from 1934 – 1936 surveys.

### A.3. Survey Quality

The entire survey is adequate to supersede previous data.

## A.4. Survey Coverage

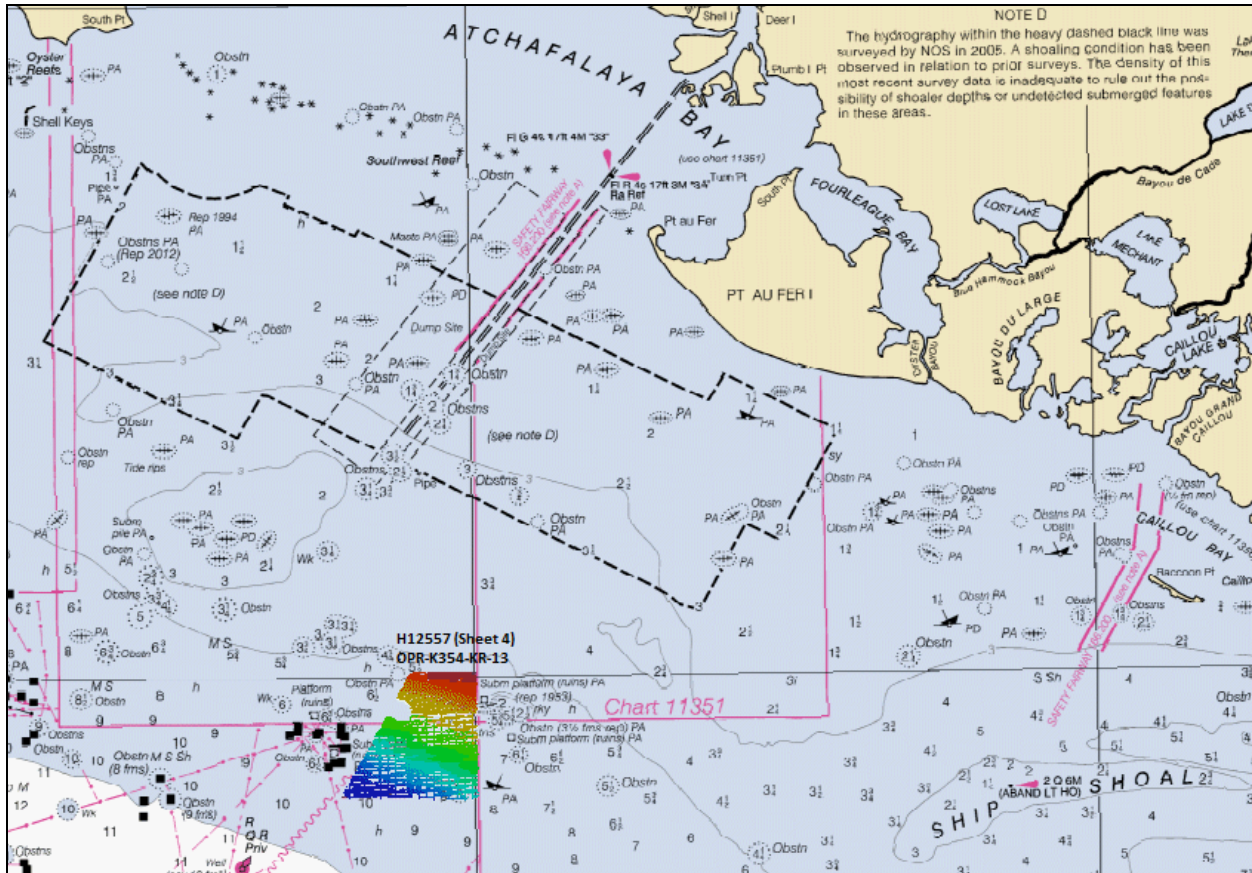


Figure 1. H12557 Survey Coverage

Survey coverage for H12557 (Figure 1) was in accordance with the requirements of the Project Instructions and HSSD. 200% SSS with concurrent MBES data was acquired in the survey area. The line plan was modified in the field as needed and the SSS line spacing updated to accommodate changes in data quality and to expedite data collection.



## A.5. Survey Statistics

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

	<b>Hull ID</b>	1237094	Total
<b>LNM</b>	<b>SBES Mainscheme</b>	0	0
	<b>MBES Mainscheme</b>	0	0
	<b>SSS Mainscheme</b>	0	0
	<b>SBES/MBES Combo Mainscheme</b>	0	0
	<b>SBES/SSS Combo Mainscheme</b>	0	0
	<b>MBES/SSS Combo Mainscheme</b>	681.47	681.47
	<b>SBES/MBES Combo Crosslines</b>	0	0
	<b>Lidar Crosslines</b>	0	0
<b>Number of Bottom Samples</b>		5	5
<b>Number of DPs</b>		30	30
<b>Number of Items Investigated by Dive OPs</b>		0	0
<b>Total Number of SNM</b>		24.08	24.08

*Table 2: Hydrographic Survey Statistics*

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

<i>Survey Dates</i>
12/18/2013
12/19/2013
12/20/2013
12/31/2013
01/01/2014
01/02/2014
01/05/2014
01/11/2014
01/12/2014
02/01/2014
02/02/2014
02/03/2014
02/07/2014
02/08/2014

*Table 3: Dates of Hydrography*



## A.6. Shoreline

Shoreline does not exist for this survey.

## A.7. Bottom Samples

Five (5) bottom samples were collected within the limits of H12557.

## B. Data Acquisition and Processing

### B.1. Equipment and Vessels

Refer to the OPR-K354-KR-13 Data Acquisition and Processing Report (DAPR) for additional information regarding survey systems as well as operational, processing and quality control procedures. Additional and supplemental information is included in this descriptive report.

#### B.1.1. Vessels

The following vessel was used for data acquisition during this survey:

Hull ID	1237094
LOA	40.84 meters
Draft	2.01 meters

*Table 4: Vessels Used*

#### B.1.2. Equipment

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

Manufacturer	Model	Type
Kongsberg	EM2040	MBES
Klein	5000 V2	SSS
Coda Octopus	F180	Attitude and Positioning System
C-Nav	3050	Positioning System
YSI Electronics	600R-BCR-C-T	Sound Speed System
Sea-Bird Electronics, Inc.	SBE 19 and SBE 19 Plus	Sound Speed System

*Table 5: Major Systems Used*

## B.2. Quality Control

### B.2.1. Crosslines

Crosslines were run perpendicular to mainscheme lines so that quality control statistics could be performed on the data after completion of mainscheme survey lines. The total crossline miles

were 56.43 nm and the total mainline miles were 681.47 nm; investigation lines and fill-ins were not included in mainlines totals. The crosslines comprise 8.28 percent of the total main line miles.

Mainlines were compared to crosslines for which there was overlapping data using C & C's proprietary Hydromap software. The graphs generated from the comparison show the mean difference, RMS difference and confidence interval for each beam. Refer to the DAPR for additional information and Separates II Digital Data for sample graphical documentation.

The surface difference tool in CARIS HIPS was used to evaluate crossline and mainscheme line agreement; fill-ins and investigations were not included in the comparisons. The mainline BASE surface was used as Surface 1 and the crossline BASE surface as Surface 2. Statistical information about the difference surface was generated using the compute statistics tool (Figure 2). The analysis shows that 96% of depth difference values are between -0.349 and 0.351 m. This is well within the maximum allowable TVU for the depths of the comparison area (10.46 – 18.33 m) which ranges from  $\pm 0.518$  –  $\pm 0.557$  m. Depth difference values greater than the maximum allowable TVU were small in number and found to be located where crossline H12557-TIE-111-2 overlaps mainline data.

Statistical crossline information was also generated by comparing each of the crosslines to the depth layer of a 1-m BASE surface of the mainscheme survey lines using the CARIS QC report utility. In general, greater than 99% of crossline soundings were considered to meet IHO Order 1a standards. Crossline comparisons generated with the CARIS QC report utility as well as the difference BASE surface are shown in the Separates II Digital Data\Checkpoint Summary & Crossline Comparisons folder.

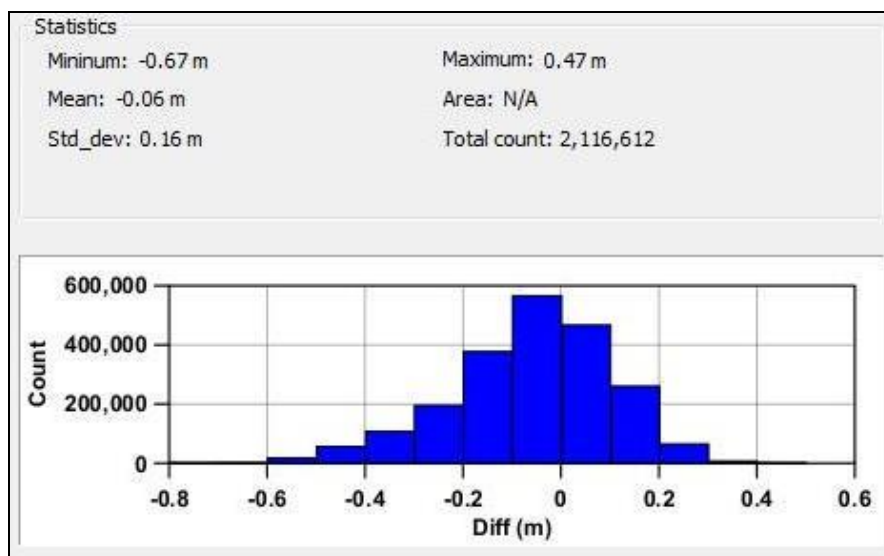


Figure 2. Crossline comparison statistical information and histogram output from CARIS compute statistics tool.





**B.2.2. Uncertainty**

Uncertainty of all components of the sounding measurement are included in the CARIS vessel file and detailed in the DAPR.

The following survey specific parameters were used for this survey

Measured	Zoning
0.009 m	0.102 m

*Table 6: Survey specific tide TPU values*

Hull ID	Measured - CTD	Measured - MVP	Surface
1237094	2.00 m/s	n/a	0.8 m/s

*Table 7: Survey specific sound speed TPU values*

**B.2.3. Junctions**

Registry Number	Scale	Year	Field Unit	Relative Location
H11475	40000	2005	R/V DAVIDSON	W
H12556	40000	2012	C&C Technologies	E
H12555	40000	2013	C&C Technologies	S
H12558	40000	2013	C&C Technologies	S

*Table 8. Junctioning Surveys*

H11475

The areas of overlap between sheets were evaluated using the CARIS Difference Tool to ensure general agreement of depths. If necessary, data was further reviewed in Subset Editor. Junction analyses were conducted between contemporary Sheets using 1 meter BASE surfaces of all the Sheets. A 2-m BASE surface was generated in order to compare to H11475. The western margin of H12557 borders the eastern margin of H11475 and grids H11475\_2m\_MLLW\_12of16 through H11475\_2m\_MLLW\_16of16 were used for analysis. The differences were exported from CARIS using the BASE Surface to ASCII option and combined in Excel. 94% of depth difference values range from -0.3 to 0.5 m and it is evident from the histogram (Figure 4) and viewing the data in the 3D display window in CARIS that data from the contemporary H12557 survey is consistently deeper than the data from the H11475 survey, although it appears that there is slightly better agreement in the southern portion of overlap. Depth differences do not exceed 0.82 meters, and differences would not be unexpected between the H11475 survey, conducted in 2005, and the contemporary survey, conducted in 2013/2014, nearly a decade later.

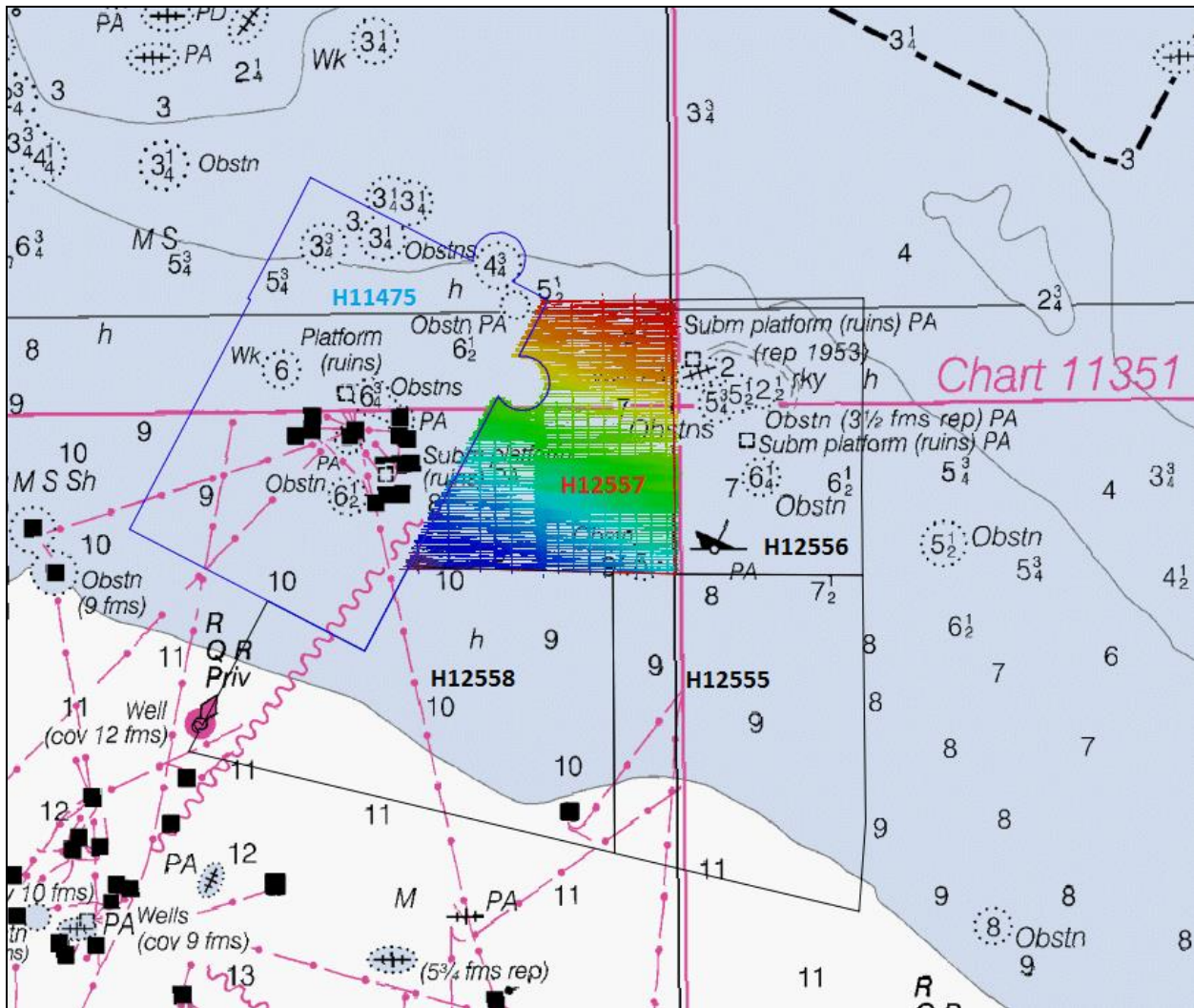


Figure 3. H12557 Junctions.

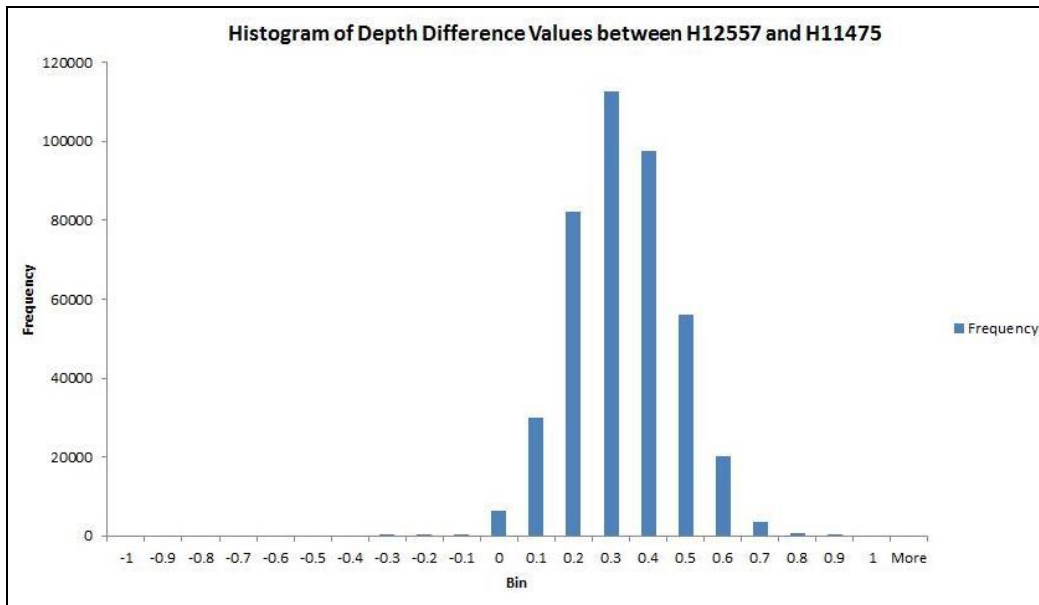


Figure 4. Histogram of difference surfaces generated between H12557 and H11475.

### H12556

The eastern margin of H12557 borders the western margin of H12556. Figure 5 shows statistical information for the junction generated with the CARIS compute statistics tool. The depth differences show good agreement with 96% of depth difference values between -0.343 and 0.357 m. Large depth difference values are small in number and generally occur where the outer edges of H12556 data overlaps H12557 data.

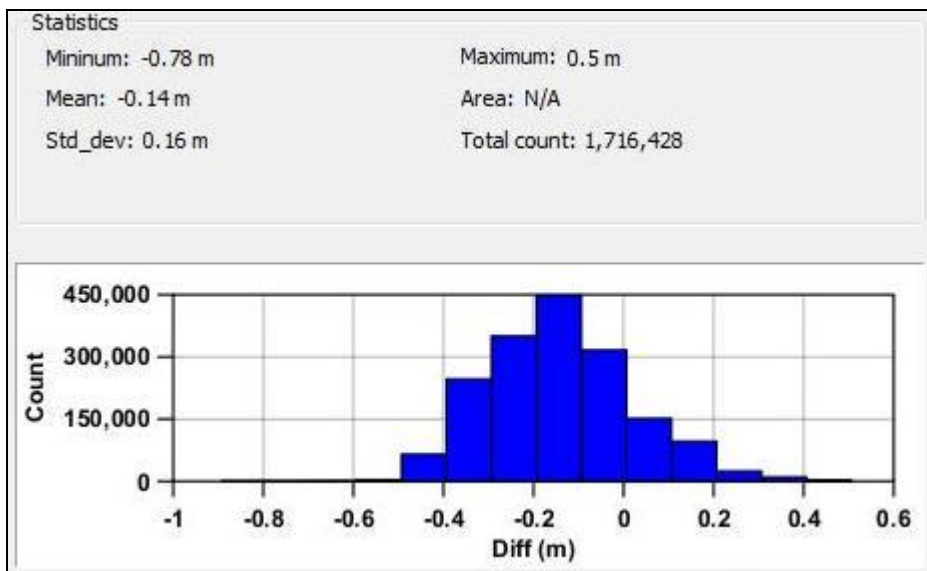


Figure 5. Statistical information and histogram output from CARIS Compute Statistics tool for the difference surface generated between H12557 and H12556.

## H12555

There is limited overlap where the southern margin of H12557 borders the northern margin of H12555. Data from H12555 is generally slightly shallower than data from H12557. Depth difference values range from -0.19 to 0.41 m with 99% of depth difference values between -0.087 and 0.313 m. Figure 6 shows statistical information for the junction generated with the CARIS compute statistics tool.

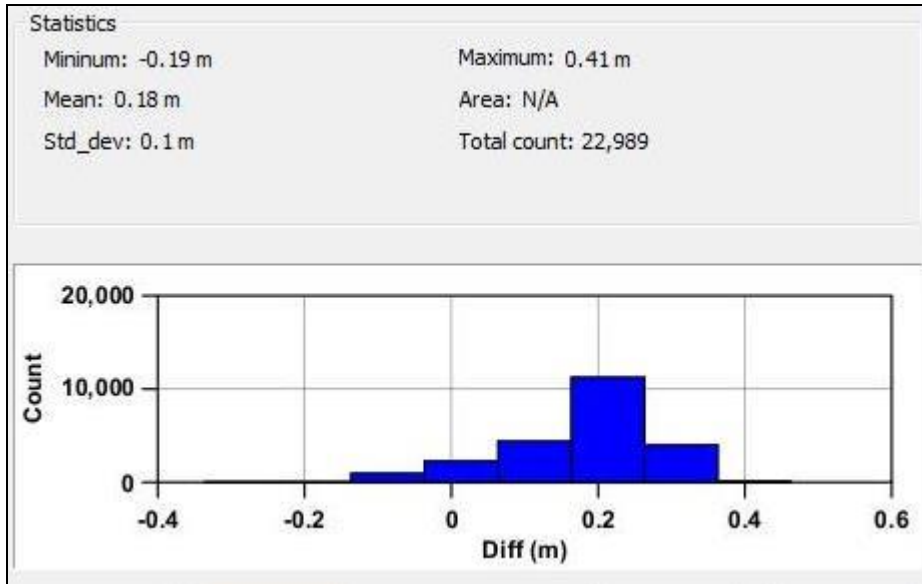


Figure 6. Statistical information and histogram output from CARIS Compute Statistics tool for the difference surface generated between H12557 and H12555.

## H12558

The southern margin of H12557 borders the northern margin of H12558. Depth difference values range from -0.24 to 0.45 m with 99% of depth difference values between -0.193 and 0.207 m. Figure 7 shows statistical information for the junction generated with the CARIS compute statistics tool.

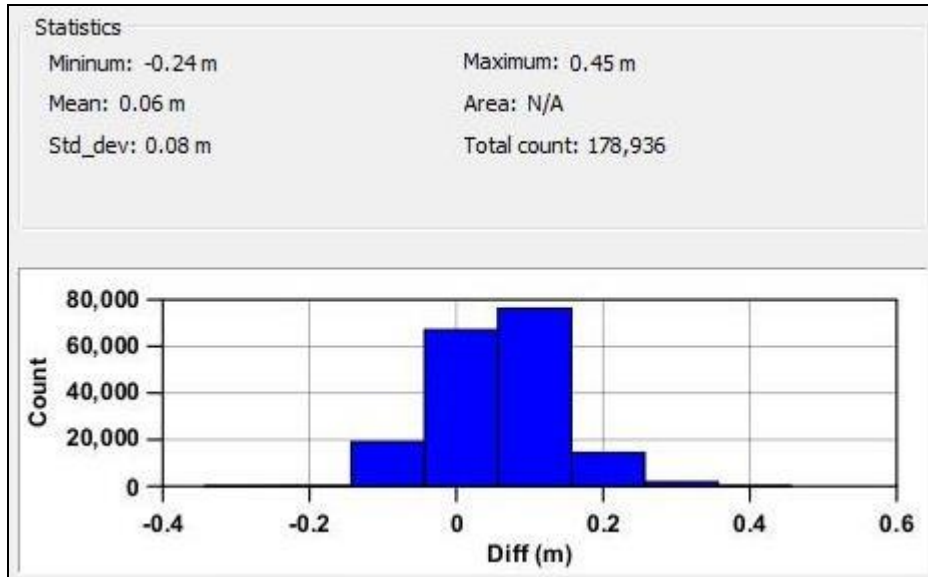


Figure 7 Statistical information and histogram output from CARIS Compute Statistics tool for the difference surface generated between H12557 and H12558.

### B.2.4. Sonar QC Checks

An Odom Echotrac MK III single beam echosounder was continuously operated and monitored during the survey as an independent check on the multibeam bottom-detect.

### B.2.5. Equipment Effectiveness

The angle of the multibeam sonars could be modified in order to moderate the effects of factors such as increased sea state or to increase coverage; any changes are documented in the acquisition logs. In addition, the line plan was periodically modified in the field as needed and the SSS line spacing updated to accommodate changes in data quality and expedite data collection.

### B.2.6. Factors Affecting Soundings

Weather, sea state, water column sound speed, thermoclines, and fish were all temporary factors that affected the data periodically throughout the duration of the survey; these are noted in the acquisition and processing logs. In addition, the data was sound velocity corrected in post processing to account for an improper Z-value for the MBES. Although this corrected the depths, it appears that there are some residual artifacts scattered throughout the data that were not

present prior to SVC (Figure 8). These were cleaned from the data as much as possible, but some residual noise may be present. CARIS indicates that the SVC process has been updated in current versions and there should be no further issues moving forward.

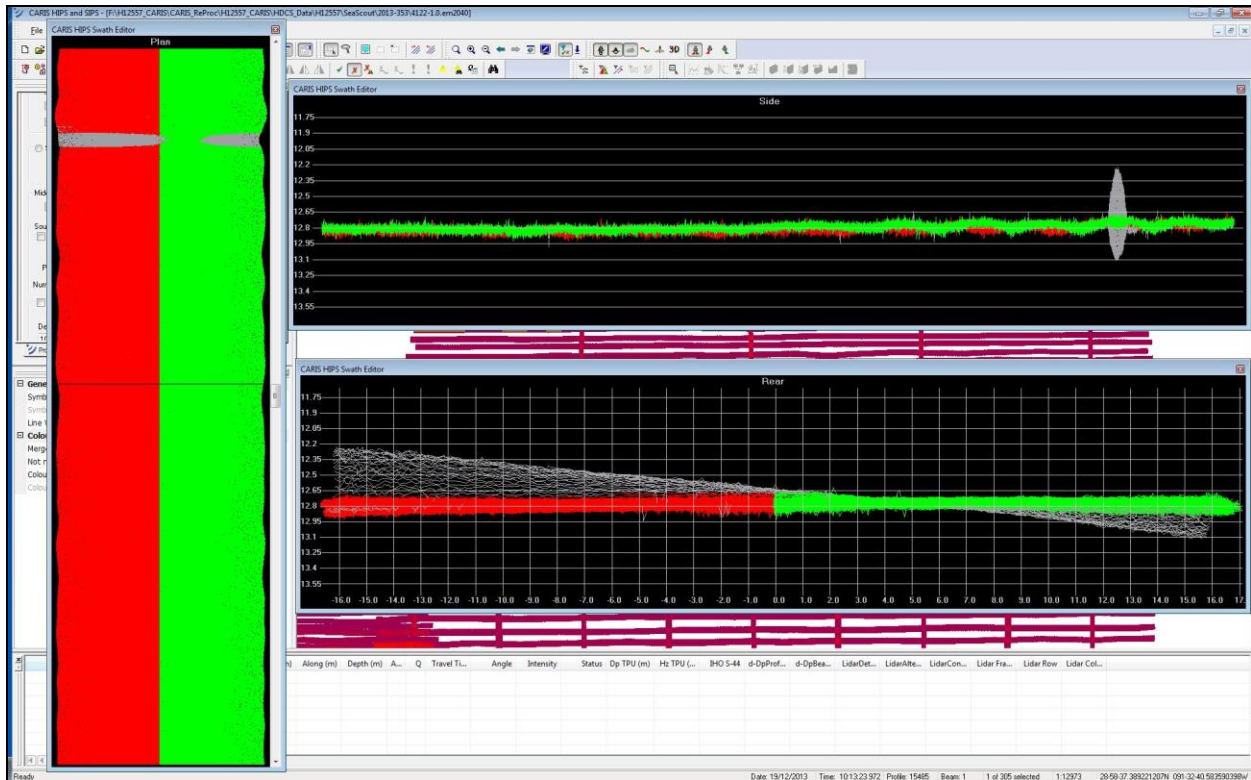


Figure 8. Data artifact present after SVC.

### B.2.7. Sound Speed Methods

Sea Bird Electronics SBE19 CTDs were used for speed of sound measurements. Casts were conducted at least twice daily and more often as needed. The multibeam data was corrected for the water column sound speed in real-time using the SIS control software. Endeco YSI sondes were used on both vessels to determine the sound speed at the transducers. The sound speed data and confidence checks are located in Separates II Digital Data\Sound Speed Data Summary.

### B.2.8. Coverage Equipment and Methods

Main survey lines were oriented east/west throughout the survey area. 200% SSS with concurrent MBES was acquired in the survey area in accordance with the requirements stated in the project instructions for this survey. SSS data were acquired with a Klein 5000 V2 towfish and MBES data were acquired with a Kongsberg EM2040 echosounder.

### B.2.9. Density

According to section 5.2.2.3 of the HSSD (2013) at least 95% of all nodes on the surface shall be populated with at least 3 soundings for Set Line Spacing multibeam coverage. The Compute Statistics tool in CARIS HIPS was used to generate statistics about the Density child layer of the H12557\_MB\_4m\_MLLW\_Final surface (Figure 9). A bin size of 1 was used and the data exported in ASCII format. The number of nodes in the first 2 bins were added together to determine the number of nodes that contain less than 3 soundings. 3,430,473 nodes contain at least 3 soundings and the total number of nodes in the surface is 3,435,475. Therefore, greater than 99% of all nodes on the surface contain at least 3 soundings.

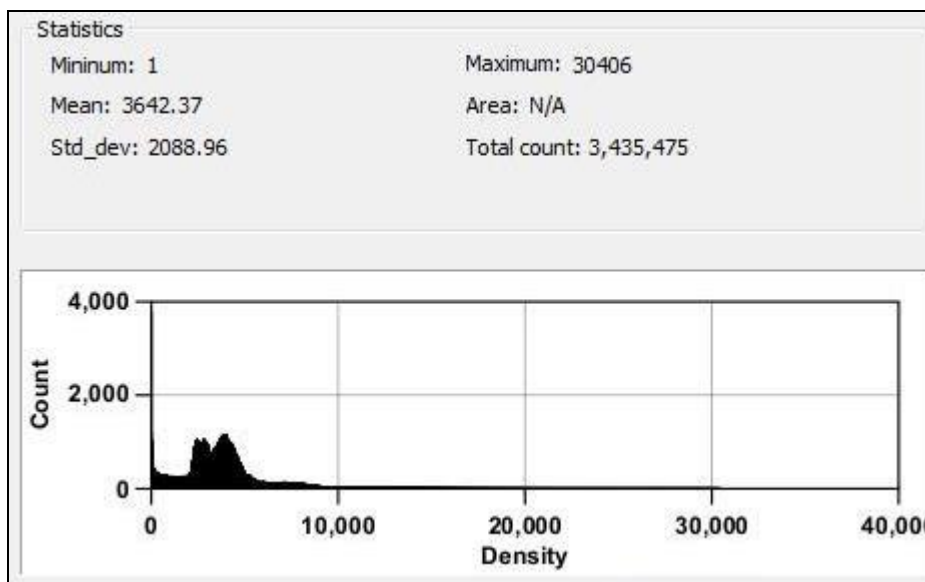


Figure 9. Statistical information about the density child layer of the H12557\_MB\_4m\_MLLW\_Final BASE surface, generated from CARIS Compute Statistics tool.

## B.3. Echo Sounding Corrections

### B.3.1. Corrections to Echo Soundings

All corrections to echo sounding (instrument corrections, static and dynamic draft, speed of sound, and attitude corrections) follow the procedures outlined in the DAPR.

### B.3.2. Calibrations

Prior to initiating survey operations, a standard patch test was performed to determine correctors for pitch, roll, and heading; additional calibrations were performed as necessary. A squat and settlement test was also conducted. Refer to the Data Acquisition and Processing Report for additional information.



## B.4. Backscatter

Backscatter was logged within each raw Kongsberg EM file. This data was imported during CARIS conversion and reviewed when necessary.

## B.5. Data Processing

### B.5.1. Software updates

Software updates are detailed in the DAPR. No further software updates occurred after the submission of the DAPR.

The following Feature Object Catalog was used: NOAA Extended Attribute Files V5\_3\_2.

### B.5.2. Surfaces

The following CARIS surfaces were submitted. A 4-m BASE surface of all the lines was generated to fulfill the requirement for Set Line Spacing MB coverage, specified in section 5.2.2.3 in the HSSD (2013). A 50-cm BASE surface of all the investigation lines generated to fulfill the requirement for Object Detection MB coverage, specified in section 5.2.2.1 in the HSSD (2013). In addition, a 1-m BASE surface of all the lines was generated for QC purposes as well as for junctions. A 2-m BASE surface was also generated for junction analysis. Individual 1-m BASE surfaces of the crosslines and mainlines were generated separately in order to conduct the crossline comparison analysis.

Surface Name	Surface Type	Resolution	Depth Range (m)	Purpose
H12557_MB_4m_MLLW	Uncertainty	4 m	10.46 m – 18.32 m	Set Line Spacing MBES
H12557_MB_4m_MLLW_Final	Uncertainty	4 m	9.57 m – 18.32 m	Set Line Spacing MBES
H12557_MB_Investigations_50cm_MLLW	Uncertainty	50 cm	10.90 m – 16.92 m	Object Detection
H12557_MB_Investigations_50cm_MLLW_Final	Uncertainty	50 cm	10.90 m – 16.92 m	Object Detection
H12557_MB_1m_MLLW	Uncertainty	1 m	10.46 m – 18.33 m	QC/Junction
H12557_MB_2m_MLLW	Uncertainty	2 m	10.46 m – 18.34 m	Junction
H12557_MB_Mainlines_1m_MLLW	Uncertainty	1 m	10.46 m – 18.33 m	QC
H12557_MB_Crosslines_1m_MLLW	Uncertainty	1 m	10.56 m – 18.32 m	QC

*Table 9: CARIS surfaces*

After initial data cleaning, the surfaces were reviewed a second time for fliers using the standard deviation layer and the 3D display window. Higher standard deviation is generally associated with bathymetric features, contacts and/or areas of bathymetric change; noisy MB data, although





cleaned, also shows higher standard deviation. The maximum standard deviation of the H12256\_MB\_4m\_MLLW\_Final BASE surface is 2.09 m located at 28-54-45.858 N, 91-30-45.172 W, which corresponds to a feature submitted as a DtoN for this survey.

## C. Vertical and Horizontal Control

### C.1. Vertical Control

The vertical datum for this survey is Mean lower low water (MLLW).

#### Standard Vertical Control Methods Used:

Discrete Zoning

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

Station Name	Station ID
LAWMA, Amerada Pass, LA	8764227

*Table 10. Tide Stations*

File Name	Status
8764227.tid	Verified

*Table 11. Water Level Files (.tid)*

File Name	Status
K354KR2013CORP.zdf	Final

*Table 12: Tide Correctors (.zdf)*

Preliminary zoning is accepted as the final zoning for project OPR-K354-KR-13 as outlined in the Tides and Water Levels Statement of Work section 1.5.1.

### C.2. Horizontal Control

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



## D. Results and Recommendations

### D.1. Chart Comparison

#### D.1.1. Raster Charts

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

Chart	Scale	Edition	Edition Date	LNLM Date	NM Date
11351	80000	43	03/2012	11/04/2014	11/15/2014
11340	458596	78	08/2014	11/04/2014	11/15/2014

*Table 13. Largest Scale Raster Charts*

#### 11351

There were no Local Notices to Mariners issued within the survey bounds subsequent to the date of the project instructions (04/16/2013) and before the end of the survey (02/08/2014). Surveyed water depths range from 31.39 to 60.11 feet based on the H12556\_MB\_4m\_MLLW\_Final BASE surface that takes into account designated soundings. A shoal biased selected sounding layer for the H12557\_MB\_1m\_MLLW BASE surface was generated in CARIS with a single-defined radius of 125 meters. Chart 11351 covers the northern third of the survey area. Surveyed soundings are generally 1 – 3 feet deeper than charted depths.

#### 11340

One (1) Local Notice to Mariners was issued within the survey bounds subsequent to the date of the project instructions (04/16/2013) and before the end of the survey (02/08/2014). This feature corresponds to a DtoN submitted for this survey. Charted depths generally match those on ENC US3GCO3M, and comparisons for the ENC are valid for the RNC (refer to section D.1.2).

#### D.1.2. Electronic Navigational Charts

ENC Name	Scale	Edition	Update Application Date	Issue Date	Preliminary
US4LA21M	80000	26	2013/11/12	2014/11/10	NO
US3GC03M	458596	46	2013/08/27	2014/11/06	NO

*Table 14. Largest Scale ENCs*

#### US4LA21M

ENC US4LA21M covers the northern third of the survey area and depths generally match the charted depths of 11351 within 1 foot. Comparisons for the RNC are generally valid for the ENC. However, in one location surveyed soundings are 4 feet deeper than charted depths (Figure 10).

Descriptive Report to Accompany Survey H12557  
OPR-K354-KR-13

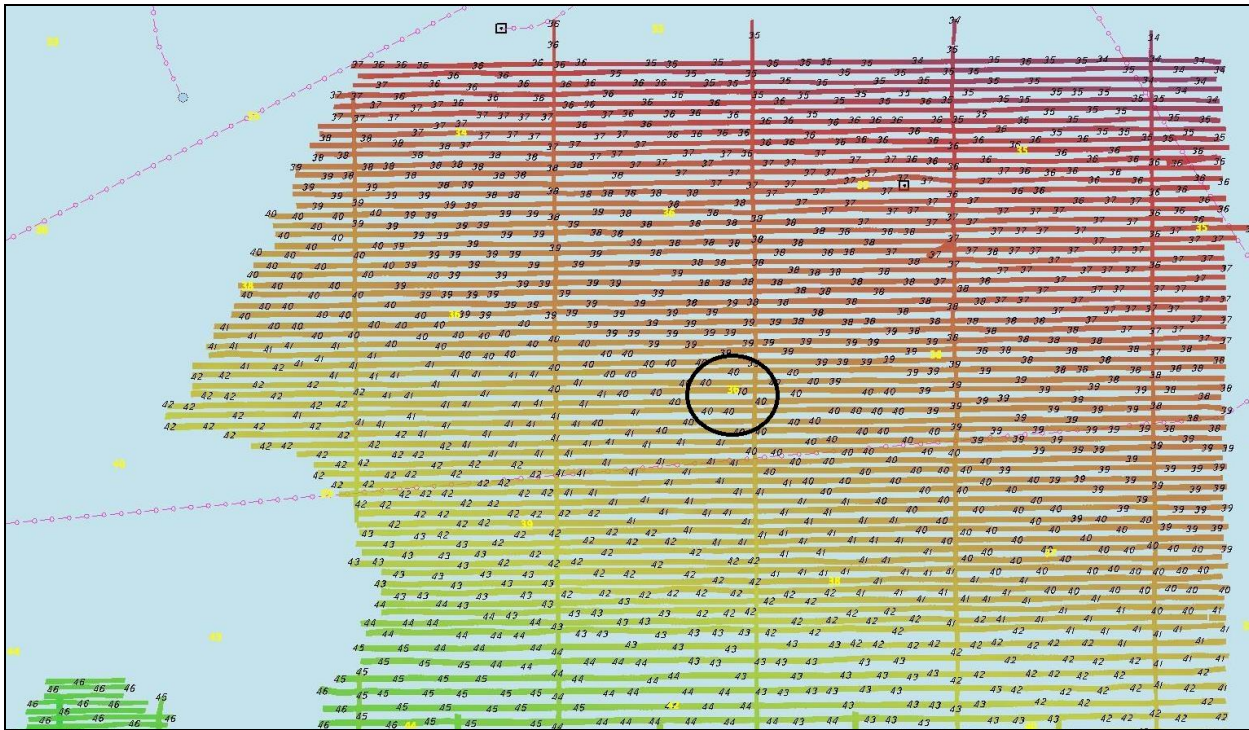


Figure 10. Comparison of surveyed soundings to charted depths on ENC US4LA21M. Black circle shows area where surveyed soundings are up to 4 feet deeper than charted depths.

US3GC03M

ENC US3GC03M covers the entire survey area though charted depths are limited due to the scale of the chart. For ease of comparison, the units were changed to feet. In the northern portion of the survey area surveyed soundings are 3 – 4 feet deeper than the charted depth. In the central and southwest portions of the survey area surveyed soundings are 1 – 2 feet deeper than the charted depths and in the southeast section surveyed soundings show good agreement with the charted depth. Along the southern portion of the western margin there is a charted depth on the edge of the surveyed soundings; surveyed soundings indicate that depths in this area may be as much as 7 feet deeper than the charted depth.

**D.1.3. AWOIS Items**

No AWOIS items exist within the survey area.

**D.1.4. Charted Features**

Chart 11351

Chart 11351 covers the northern third of the survey area. There are two charted pipelines within the survey area. One charted pipeline extends east-west though the survey area and one extends

northwest-southeast through the very upper northeast corner of the survey area. There is also one charted platform. For additional information refer to sections D.2.5 and D.2.7, respectively.

### Chart 11340

Chart 11340 (depths in fathoms) covers the whole survey area of H12557 but the chart is a much smaller scale than 11351 and contains less detail. No individual pipelines or platforms are charted but the chart has been updated with one obstruction submitted as a DtoN for this survey.

#### **D.1.5. Uncharted Features**

One (1) uncharted obstruction was observed and submitted as a DtoN (refer to section D.1.6 and the FFF for additional information).

#### **D.1.6. Dangers to Navigation**

One (1) Danger to Navigation was submitted for this survey. Details are located: Descriptive\_Report\Appendices\II\_Supplemental\_Survey\_Records \_&\_Correspondence and in the Final Feature File.

#### **D.1.7. Shoal and Hazardous Features**

No shoal areas were observed within the survey area. Refer to section D.1.6 for information on hazardous features that were submitted as DtoNs.

#### **D.1.8. Channels**

No channels are currently charted within the survey limits, and none were observed during survey operations.

### **D.2. Additional Results**

#### **D.2.1. Shoreline**

Shoreline does not exist within the survey area.

#### **D.2.2. Prior Surveys**

Prior survey data was not required to be evaluated for this survey.

#### **D.2.3. Aids to Navigation**

No Aids to Navigation are currently charted within the survey area limits and none were observed during survey operations.

#### **D.2.4. Overhead Features**

Overhead features do not exist for this survey.

#### **D.2.5. Submarine Features**

Two (2) pipelines are currently charted on chart 11351 within the northern portion of the survey area. A feature potentially representative of exposed pipeline was observed in the SSS and MBES data and an investigation was conducted. Refer to the Final Feature File for additional information.

#### **D.2.6. Ferry Routes and Terminals**

No ferry routes or terminals are currently charted within the survey limits, and none were observed during survey operations.

#### **D.2.7. Platforms**

One (1) platform (charted on 11351) was observed within the survey area at the charted location. Refer to the Final Feature File for additional information.

#### **D.2.8. Significant Features**

No anomalous environmental conditions were observed during the survey.

#### **D.2.9. Construction and Dredging**

No active dredging or construction was observed during survey operations.

### **D.3. Recommendations**

#### **D.3.1. New Survey Recommendations**

No new surveys or investigations are recommended for this area.

#### **D.3.2. Inset Recommendations**

No new insets are recommended for this area.

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## E. Approval Sheet

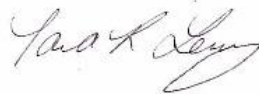
### LETTER OF APPROVAL

REGISTRY NUMBER H12557

This report is respectfully submitted.

Field operations contributing to the accomplishment of the survey H12557 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-13.



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Tara Levy  
Chief of Party  
C & C Technologies  
November 2014



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Nicole Galloway  
Geoscientist  
C & C Technologies  
November 2014



## F. Table of Acronyms

AWOIS	Automated Wreck and Obstruction Information System
C/I	Cable in
C/O	Cable out
CTD	Conductivity Temperature Depth
EOL	End of line
HM	Harmonic mean
HSSD	Hydrographic Survey Specifications and Deliverables Manual (2012)
HVF	HIPS Vessel File
LL	Lead line
MB	Multibeam
MLLW	Mean Lower Low Water
P/L	Pipeline
P/F	Platform
RR	Re-run
SB	Singlebeam
SOL	Start of line
SS	Ship Shoal (block name)
SSS	Side scan sonar
SSP	Sound Speed Profile
SWMB	Shallow Water Multibeam
TPU	Total Propagated Uncertainty
WD	Water depth
WOW	Wait on weather
Wpt	Waypoint
ZDF	Tide Zone Definition File

APPENDIX I  
TIDES AND WATERLEVELS



# FINAL TIDE NOTE and FINAL TIDE ZONING CHART

**DATE:** November 2014

**HYDROGRAPHIC BRANCH:** Atlantic

**HYDROGRAPHIC PROJECT:** OPR-K354-KR-13

**HYDROGRAPHIC SHEET:** H12557

**LOCALITY:** 30 NM South of Atchafalaya Bay

**TIME PERIOD:** December 18, 2013 – February 8, 2014

**TIDE STATION USED:** 8764227 LAWMA, Amerada Pass, LA

Lat. 29° 27.0' N Lon. 91° 20.3' W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.00 m

**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 0.708 m

## REMARKS: RECOMMENDED ZONING

Use zones identified as: WGM279, WGM 289, WGM278, and WGM263

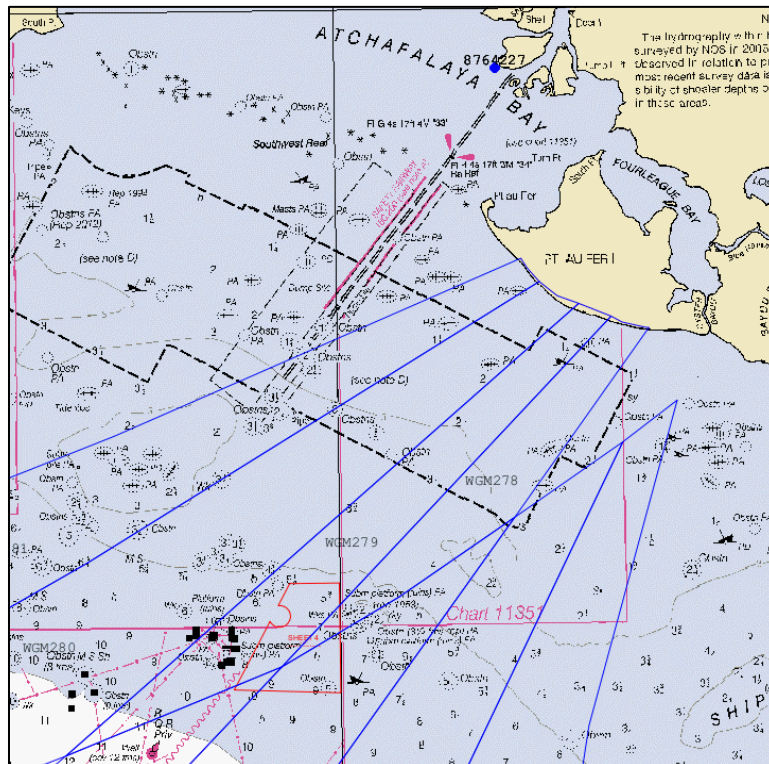


Figure 1. Final Tidal Zoning Chart

Note 1: Provided time series data are six minute time series data in meters, relative to MLLW and Greenwich Mean Time (GMT).

Note 2: For final processing, tidal zoning correctors were applied to verified observed data, acquired from the NOAA Tides and Currents website.

### ABSTRACT OF TIMES OF HYDROGRAPHY

Project: OPR-K354-KR-13 Registry No.: H12557

Contractor Name: C & C Technologies, Inc.

Date: November 2014

Sheet Number: 4

Inclusive Dates: December 18, 2013 - February 8, 2014

Field Work is Complete

Time (UTC)

Day (yy/mm/dd)	Julian Day	Start	End	Year
13/12/18	352	1015	2400	2013
13/12/19	353	0000	2400	2013
13/12/20	354	0000	1430	2013
13/12/20	354	1516	1724	2013
13/12/31	365	1239	1303	2013
13/12/31	365	1347	2400	2013
14/01/01	001	0000	2400	2014
14/01/02	002	0000	0636	2014
14/01/05	005	0659	2004	2014
14/01/11	011	1019	2209	2014
14/01/11	011	2317	2400	2014
14/01/12	012	0000	0304	2014
14/01/12	012	0359	1308	2014
14/01/12	012	1416	1538	2014
14/02/01	032	1123	1635	2014
14/02/01	032	1650	2400	2014
14/02/02	033	0000	2342	2014
14/02/03	034	0020	0214	2014
14/02/03	034	0250	0315	2014
14/02/03	034	0422	0520	2014
14/02/03	034	0547	0615	2014
14/02/07	035	0942	1009	2014
14/02/07	035	1036	1053	2014
14/02/07	035	1157	1240	2014
14/02/07	035	1259	1302	2014
14/02/07	035	1405	1422	2014
14/02/08	039	0521	0558	2014
14/02/08	039	1246	1632	2014

## APPENDIX II

### NO SUPPLEMENTAL SURVEY RECORDS AND COORESPONDENCE

APPROVAL PAGE

H12557

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

- H12557\_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12557\_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: \_\_\_\_\_  
**Lieutenant Commander Matthew Jaskoski,**  
NOAA Chief, Atlantic Hydrographic Branch