

H12921

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

DESCRIPTIVE REPORT

Type of Survey: Basic Hydrographic Survey

Registry Number: H12921

LOCALITY

State(s): Mississippi

General Locality: Southeastern Vicinity of the
Chandeleur Islands

Sub-locality: 25 NM S of Chandeleur Islands

2016

CHIEF OF PARTY
Jonathan L. Dasler, PE, PLS, CH

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12921

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

State(s): **Mississippi**

General Locality: **Southeastern Vicinity of the Chandeleur Islands**

Sub-Locality: **25 NM S of Chandeleur Islands**

Scale: **40000**

Dates of Survey: **07/30/2016 to 08/19/2016**

Instructions Dated: **07/15/2016**

Project Number: **OPR-J311-KR-16**

Field Unit: **David Evans & Associates, Inc.**

Chief of Party: **Jonathan L. Dasler, PE, PLS, CH**

Soundings by: **Reson 7125 SV2**

Imagery by: **EdgeTech 4200-HF**

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

NAD83, UTM Zone 16 North, Meters, Times are UTC. The purpose of this contract is to provide NOAA with modern, accurate hydrographic survey data with which to update nautical charts of the assigned area.

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

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Descriptive Report to Accompany Survey H12921

Project: OPR-J311-KR-16

Locality: Southeastern Vicinity of the Chandeleur Islands

Sublocality: 25 NM S of Chandeleur Islands

Scale: 1:40000

July 2016 - August 2016

David Evans & Associates, Inc.

Chief of Party: Jonathan L. Dasler, PE, PLS, CH

A. Area Surveyed

David Evans and Associates, Inc. (DEA) conducted a hydrographic survey of the assigned area in the Gulf of Mexico, south of the Chandeleur Islands. Survey H12921 was conducted in accordance with the Statement of Work (July 7, 2016) and Hydrographic Survey Project Instructions (July 15, 2016).

The Hydrographic Survey Project Instructions reference the National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables Manual (HSSD), 2016 as the technical requirements for this project.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 31' 8.74" N 88° 56' 5.78" W	29° 26' 19.39" N 88° 51' 34.16" W

Table 1: Survey Limits

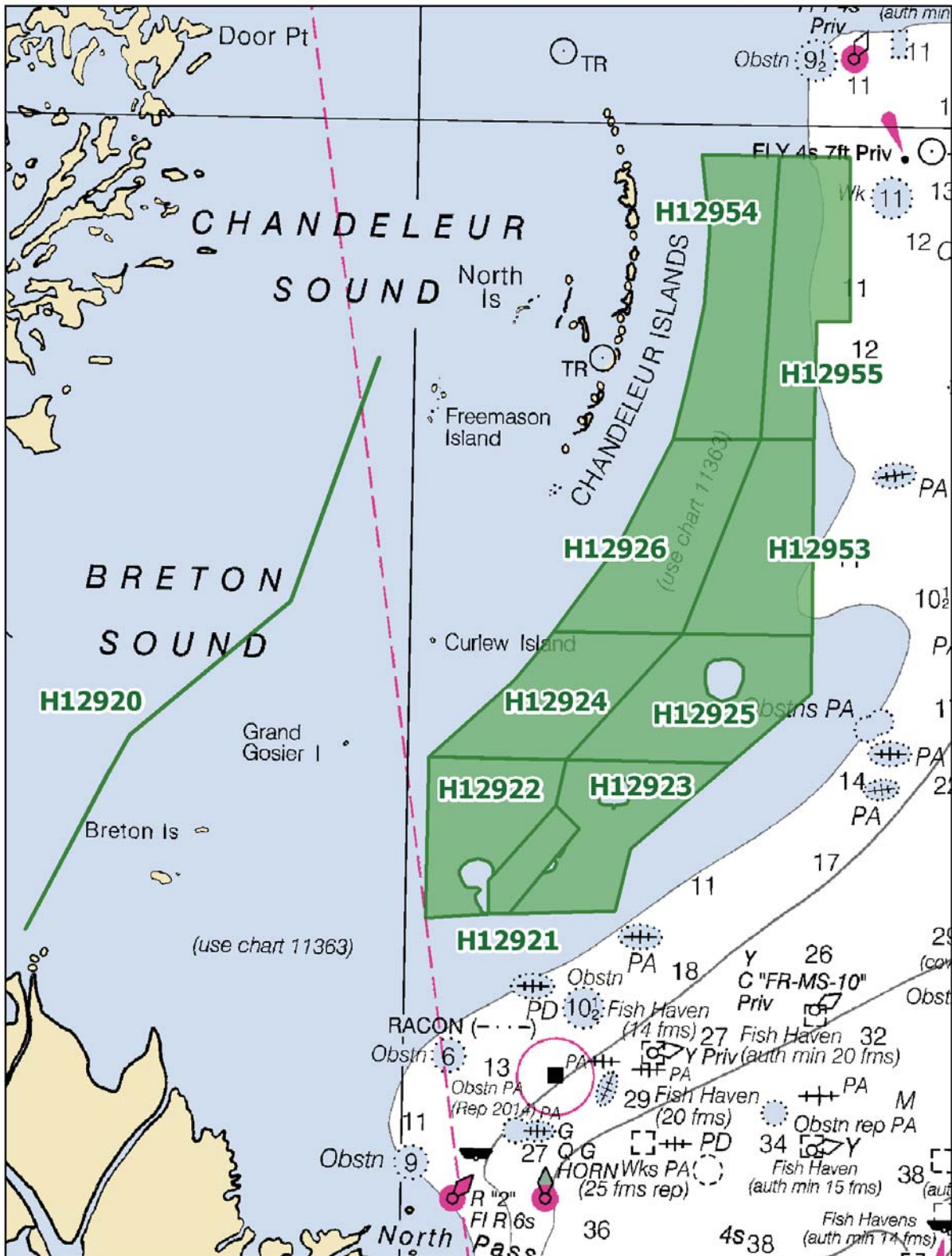


Figure 1: OPR-J377-KR2-15 Assigned Survey Areas

Survey Limits were surveyed in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. This project includes two survey areas totaling 263 SNM of which 226 SNM are classified as emerging critical areas, 32 SNM as priority two areas and 2 SNM as priority three as identified in the 2012 NOAA Hydrographic Survey Priorities. The first area is a narrow corridor located to the west of the Chandeleur Islands and extends from Baptiste Collette, LA towards Gulfport, MS. This corridor will serve as an alternate traffic route during the August 2016 closure of the INHC Lock in New Orleans. The second area, located to the east of the Chandeleur Islands, is a heavily trafficked area and encompasses approximately 125 SNM with multiple oil platforms and well heads.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

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

Water Depth	Coverage Required
All Sheet Numbers	All MBES acquisition requires backscatter acquisition (refer to HSSD Section 6.2)
Sheet Number 2	Object Detection Coverage (refer to HSSD Section 5.2.2.2)

Object detection survey coverage was obtained over the survey area using 200 percent side scan sonar coverage with concurrent multibeam echosounder (MBES) and backscatter. This coverage type follows Option B of the Object Detection Coverage requirement specified in Section 5.2.2 of the 2016 HSSD. Significant side scan sonar contacts were developed with multibeam sonar at object detection resolution as required by the coverage classification. Survey coverage was obtained within the survey area depicted in the Project Reference File (PRF) OPR-J311-KR-16_PRF.000.

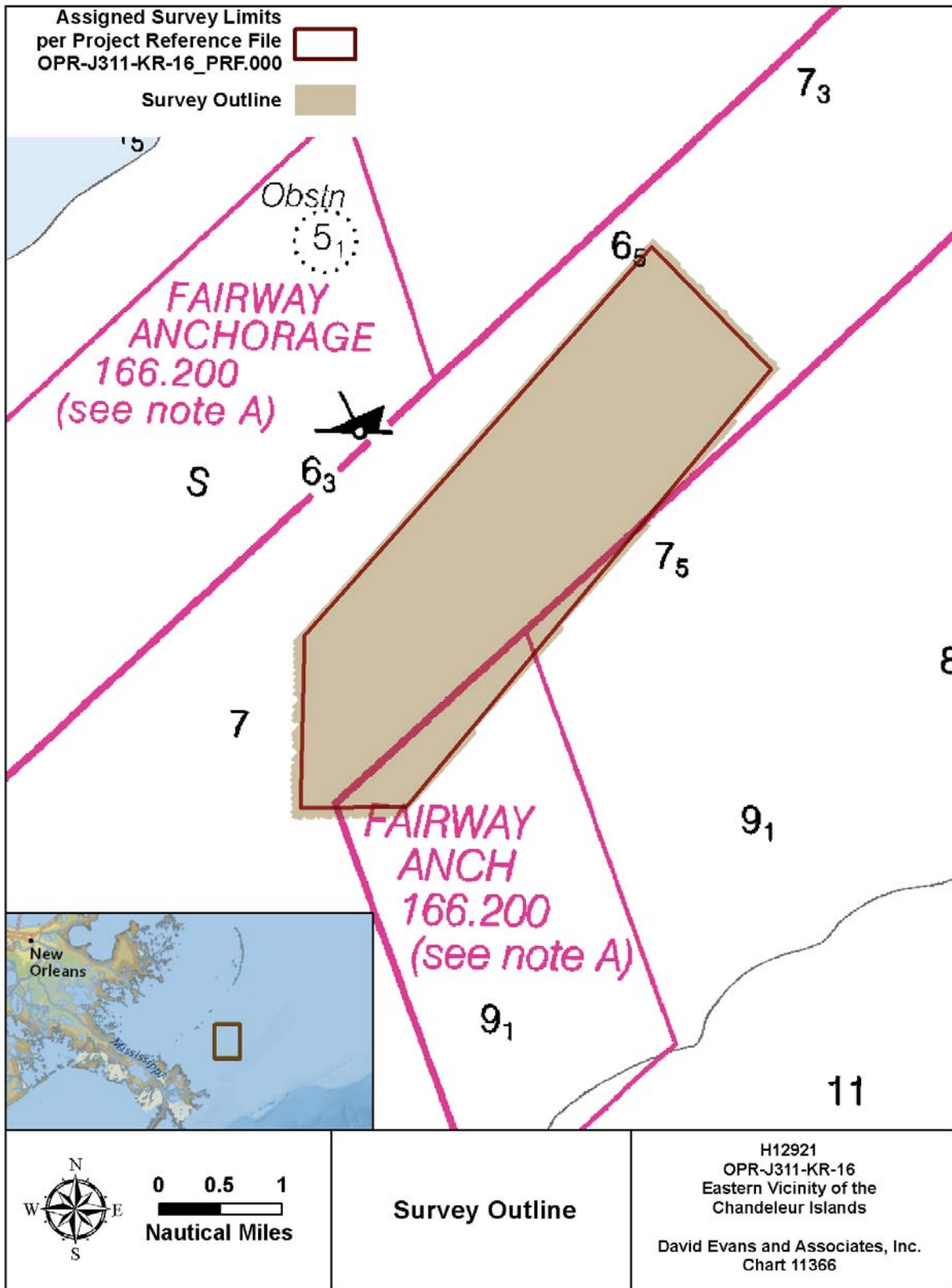


Figure 2: H12921 Survey Outline

A.5 Survey Statistics

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

	HULL ID	<i>S/V Blake</i>	<i>Total</i>
LNM	SBES Mainscheme	0.0	0
	MBES Mainscheme	0	0
	Lidar Mainscheme	0.0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0.0	0
	MBES/SSS Mainscheme	239.25	239.25
	SBES/MBES Crosslines	13.63	13.63
	Lidar Crosslines	0.0	0
Number of Bottom Samples			3
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			7.80

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
07/30/2016	212
07/31/2016	213
08/02/2016	215
08/13/2016	226
08/19/2016	232

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

The OPR-J311-KR-16 Data Acquisition and Processing Report (DAPR), previously submitted with survey H12920, details equipment and vessel information as well as data acquisition and processing procedures. There were no vessel or equipment configurations used during data acquisition that deviated from those described in the DAPR.

B.1.1 Vessels

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

Hull ID	<i>S/V Blake</i>
LOA	83 feet
Draft	4.5 feet

Table 4: Vessels Used



Figure 3: S/V Blake

B.1.2 Equipment

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

Manufacturer	Model	Type
Reson	7125 SV2	MBES
Edgetech	4200-HF	SSS
Applanix	POS/MV 320 v5	Positioning & Attitude
Rolls Royce	MVP30-350 with AML Micro SV&P	Primary Sound Speed Profiler
AML	Micro SV Xchange	Surface Sound Speed
Sea-Bird Electronics	SEACAT SBE 19-03 CTD	Secondary Sound Speed Profiler

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

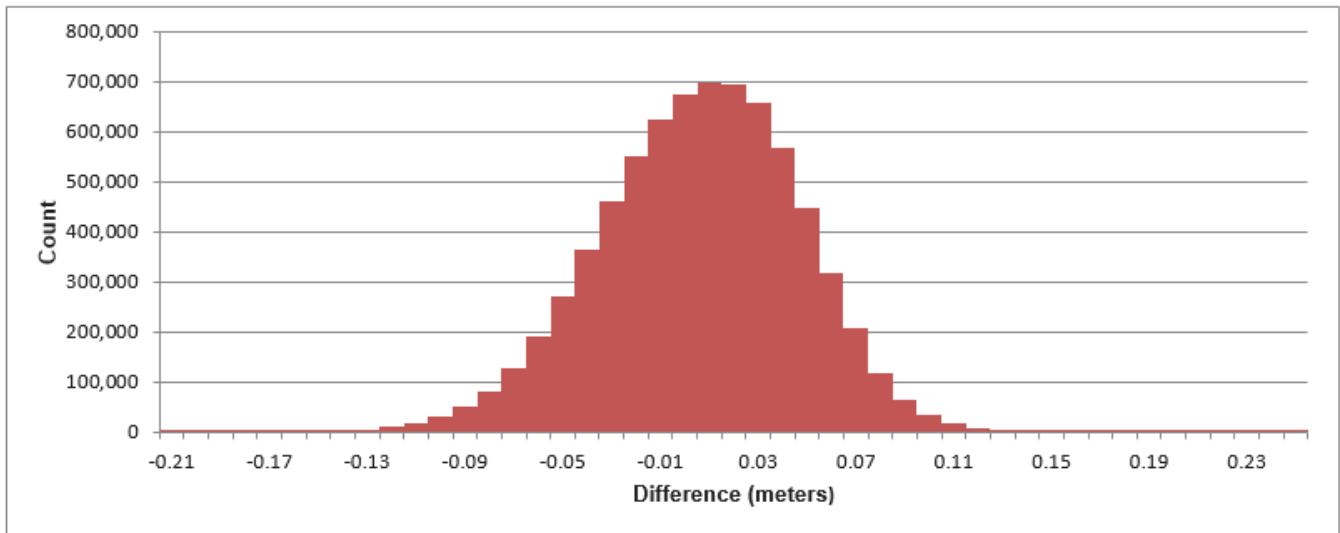
Crosslines acquired for this survey totaled 5.70% of mainscheme acquisition.

Crosslines were run across the entire survey area in order to provide a varied spatial and temporal distribution for analysis of internal consistency within the survey data.

Crossline analysis was performed using the CARIS Hydrographic Information Processing System (HIPS) Quality Control (QC) Report tool, which compares crossline data to a gridded surface and reports results by beam number. Crosslines were compared to a 50-centimeter CUBE surface encompassing mainscheme data for the entire survey area. The QC Report tabular output and plot are included in Separate II. The results of the analysis meet the requirements as stated in the 2016 HSSD.

Additional crossline analysis was performed by computing a 50-centimeter CUBE surface from the crossline data. The surface was then differenced from a 50-centimeter surface comprised of all mainscheme, fill, and investigation data. The resultant difference surface was exported using the Base Surface to ASCII function and statistics were compiled on the ASCII data.

Results from the crossline to mainscheme difference analysis are depicted in Figure 4. Outliers from the difference analysis were reviewed in HIPS subset editor and found to result from a combination of sound speed and tide artifacts.



Mean:	0.002 m	Standard Deviation:	0.040 m
Minimum:	-0.215 m	Bin size:	0.01 m
Maximum:	0.248 m	Number of Nodes:	7,303,526

Figure 4: H12921 Crossline Differences

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning	Method
0.00 meters	0.112 meters	Discrete

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S/V Blake	n/a meters/second	1.0 meters/second	0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Additional discussion of these parameters is included in the DAPR.

During surface finalization in HIPS, the "greater of the two" option was selected, where the calculated uncertainty from total propagated uncertainty (TPU) is compared to the standard deviation of the soundings influencing the node, and where the greater value is assigned as the final uncertainty of the node. The

uncertainty of the finalized surfaces increased for nodes where the standard deviation of the node was greater than the total propagated uncertainty.

The resulting calculated uncertainty values of all nodes in the finalized 50-centimeter Object Detection Coverage multibeam surface range from 0.235 meters to 0.323 meters with a standard deviation of 0.008 meters.

To determine if surface grid nodes met International Hydrographic Organization (IHO) Order 1 specification, a ratio of the final node uncertainty to the allowable uncertainty at that depth was determined. As a percentage, this value represents the amount of error budget utilized by the uncertainty value at each node. Values greater than 100% indicate nodes exceeding the allowable IHO uncertainty.

For the 50-centimeter Object Detection Coverage multibeam surface, the allowable uncertainty utilized ranges from 43% to 61%. The mean allowable uncertainty for the surface is 46% with a standard deviation of 0.016.

B.2.3 Junctions

Survey H12921 junctions with surveys F00546, H12735, H12736, H12922, and H12923.

The Bathymetric Attributed Grids (BAGs) for surveys F00546, H12735, and H12736 were downloaded from NOAA's National Centers for Environmental Information (NCEI) website for comparison with H12921. The finalized H12921 surface was compared to each junction survey by generating a difference surface with CARIS HIPS. At the time of writing, data from surveys H12922 and H12923 were still being processed. The Descriptive Reports for these respective surveys will include the junction analysis with H12921.

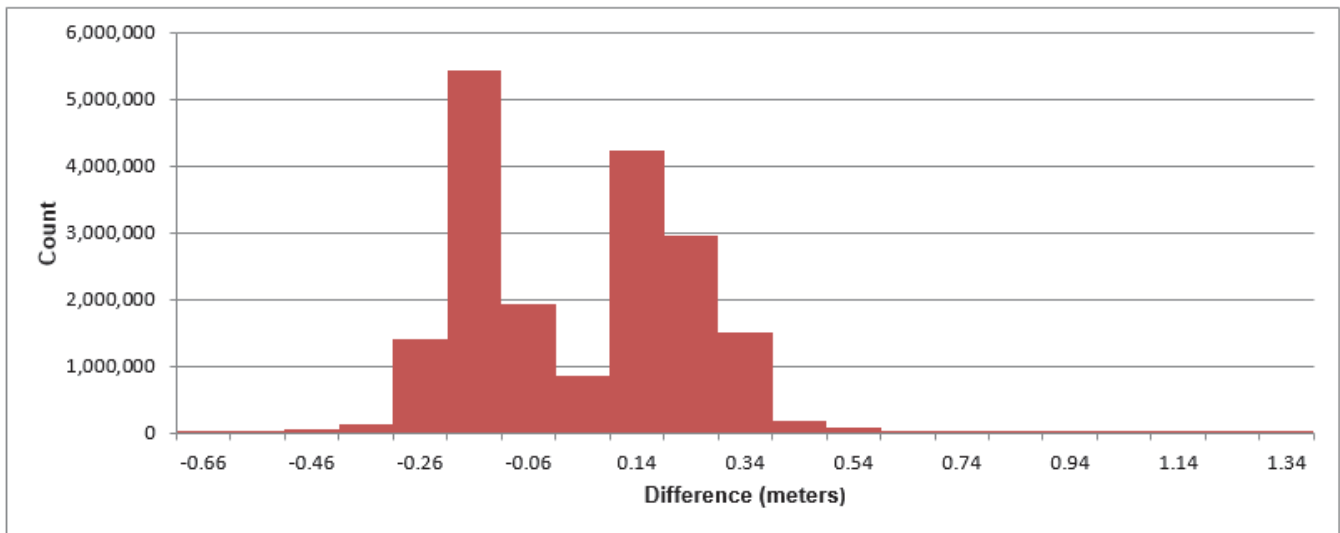
The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
F00546	1:40000	2007	C & C Technologies, Inc.	N
H12735	1:20000	2015	Oceans Surveys, Inc.	S
H12736	1:40000	2015	Oceans Surveys, Inc.	S
H12922	1:40000	2016	David Evans and Associates, Inc.	W
H12923	1:40000	2016	David Evans and Associates, Inc.	E

Table 8: Junctioning Surveys

F00546

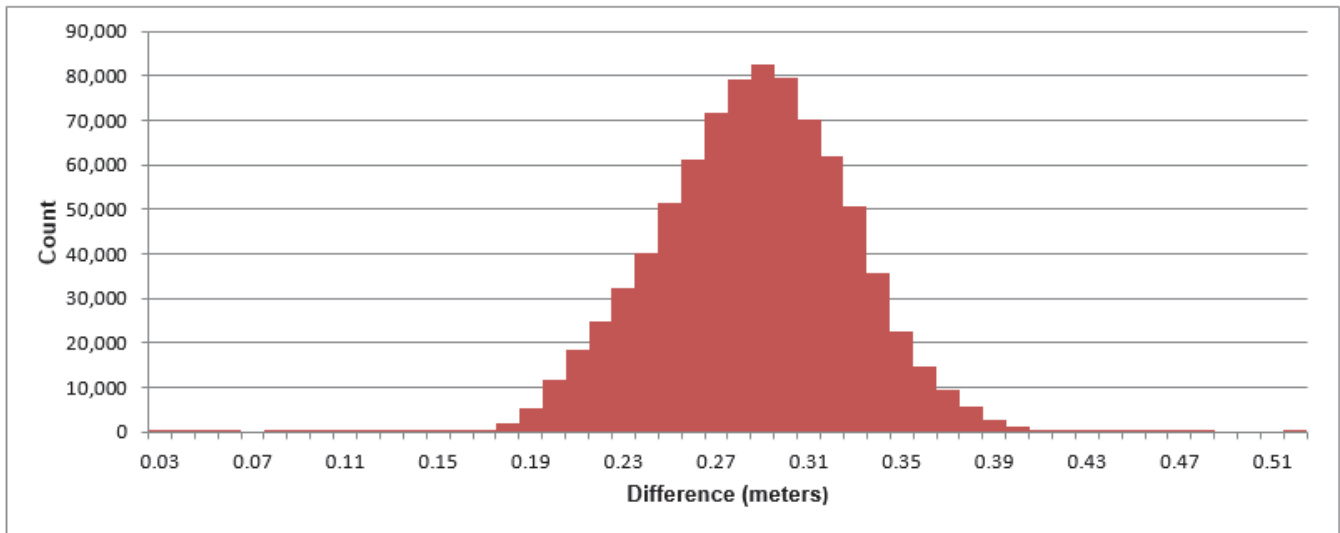
H12921 survey depths generally range from 25 centimeters deeper than F00546 to 25 centimeters shoaler than F00546. The bimodal distribution, observed in the histogram of differences appears to be caused by systematic errors in the F00546 survey where soundings from adjacent survey lines from the prior survey are alternately shoaler than and deeper than H12921 survey depths. The minimum (H12921 up to 69 centimeters shoaler than F00546) and maximum (H12921 up to 1.37 meters deeper than F00546) reported differences appear to result from a combination of natural seafloor change, which has occurred since the prior survey, and systematic artifacts observed in the prior survey. Without access to the prior survey's processed data the hydrographer is unable to determine the cause of the systematic offset.



Mean:	0.034 m	Standard Deviation:	0.210 m
Minimum:	-0.689 m	Bin size:	0.1 m
Maximum:	1.366 m	Number of Nodes:	18,924,410

Figure 5: Junction results between H12921 50-centimeter and F00546 2-meter bathy grids
H12735

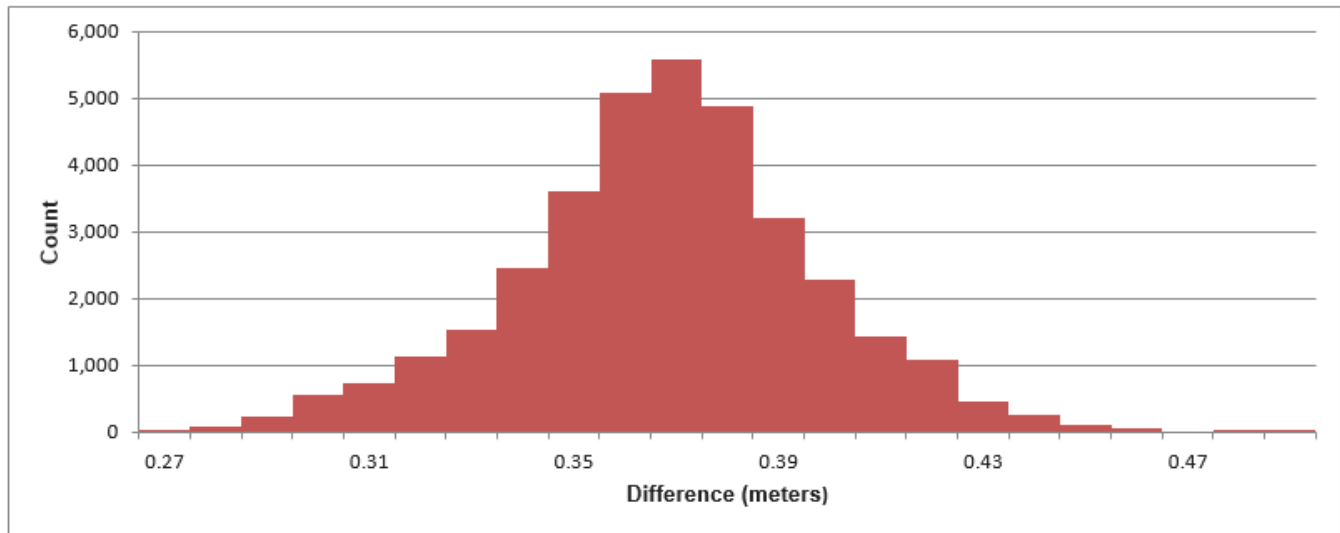
The mean difference between H12921 and H12735 survey depths is 29 centimeters (H12921 deeper than H12735). It appears that the bias between the two surveys results from the use of disparate tide zoning schemes. Prior survey H12735 used zoning correctors from the NWLON gauge Pilots Station East, SW Pass, LA (8760922) while survey H12921 was controlled from the NWLON gauge Dauphin Island (8735180).



Mean:	0.289 m	Standard Deviation:	0.041 m
Minimum:	0.030 m	Bin size:	0.01 m
Maximum:	0.526 m	Number of Nodes:	838,654

Figure 6: Junction results between H12921 50-centimeter and H12735 4-meter bathy grids H12736

The mean difference between H12921 and H12736 survey depths is 37 centimeters (H12921 deeper than H12735). Survey H12736 used the same zoning corrections as survey H12735. It appears that the bias between the surveys is related to the zoning schemes used to correct the surveys.



Mean:	0.368 m	Standard Deviation:	0.029 m
Minimum:	0.270 m	Bin size:	0.01 m
Maximum:	0.490 m	Number of Nodes:	34,751

Figure 7: Junction results between H12921 50-centimeter and H12736 4-meter bathy grids
H12922

The junction analysis between H12922 and H12921 will be included in the H12922 DR.

H12923

The junction analysis between H12923 and H12921 will be included in the H12923 DR.

B.2.4 Sonar QC Checks

Quality control is discussed in detail in Section B of the DAPR. Results from weekly position checks and weekly multibeam bar checks are included in Separate I Acquisition and Processing Logs of this report. Sound speed checks can be found in Separate II Sound Speed Data Summary of this report.

Multibeam data were reviewed at multiple levels of data processing including: CARIS HIPS conversion, subset editing, and analysis of anomalies revealed in CUBE surfaces.

B.2.5 Equipment Effectiveness

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

B.2.6 Factors Affecting Soundings

Sound Speed Artifacts

Occasional artifacts are visible in the outer swath of the multibeam data and final CUBE surface. When present, the magnitude of the artifact correlates to the presence and severity of a sharp change in sound speed in the upper water column near the depth of the sonar head. While artifacts of up to 25 centimeters are occasionally visible in the sounding data, they are less pronounced in the bathymetric grids submitted with this survey.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Approximately 15-minute intervals.

A Rolls Royce Moving Vessel Profiler (MVP) was the primary instrument used to acquire sound speed readings during multibeam operations. MVP sound speed readings were measured at approximately 15-minute intervals during survey operations. Additional discussion of sound speed methods can be found in the DAPR.

Sound speed profiles acquired on 08/02/2016 (DN 215) were processed using the down cast portion of the profile instead of the upcast, which is the typical method reported in the DAPR. The downcast was used in order to provide a better representation of the water column sound speed.

B.2.8 Coverage Equipment and Methods

Survey speeds were maintained to meet or exceed along-track sounding density and side scan sonar ensonification requirements.

Side scan mosaics were thoroughly reviewed for holidays and areas of poor quality coverage due to biomass, vessel wakes, or other factors. A fill plan was created in order to acquire side scan data where holidays and significant poor quality coverage existed. Side scan sonar contacts were developed with multibeam sonar to obtain a least depth of the contact using Object Detection Coverage requirements.

B.2.9 Density

The sounding density requirement of 80% of all nodes, populated with at least five soundings per node, was verified by exporting the density child layer of the finalized CUBE surface to an ASCII text file and

compiling statistics on the density values. More than 83% of all final CUBE surface nodes contained five or more soundings.

DEA received a waiver from HSD removing the density requirement for this survey. At the time the waiver was granted, the sounding density requirement had not been met. The waiver was requested due to the new requirement (2016 HSSD) to grid skunk stripe data at Object Detection resolution. This is difficult to achieve at 50 centimeter grid resolution (Object Detection) when outer swaths do not overlap, which is typical for skunk stripe acquisition. Additional MBES data acquisition in the survey area increased the node density beyond the minimum threshold after the waiver was granted.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Data reduction procedures for survey H12921 are detailed in the DAPR. A summary multibeam processing log is included in Separate I of this report.

B.3.2 Calibrations

No additional calibration tests were conducted beyond those discussed in the DAPR.

B.4 Backscatter

Multibeam backscatter was logged in Hypack 7K format and included with the H12921 digital deliverables. Data were processed periodically in CARIS HIPS to evaluate backscatter quality but the processed data is not included with the deliverables.

For data management purposes, the names of multibeam crosslines have been appended with the suffix `_XL`. This change was made to HIPS files only. The original file names of raw data files (Hypack HSX and 7k) have been retained.

B.5 Data Processing

B.5.1 Primary Data Processing Software

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

Manufacturer	Name	Version
CARIS	HIPS	9.1.6

Table 9: Primary bathymetric data processing software

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

Manufacturer	Name	Version
Chesapeake Technology, Inc.	SonarWiz	6.004.0006 and 6.004.0009

Table 10: Primary imagery data processing software

The following Feature Object Catalog was used: 5.3.4. A detailed listing of all data processing software is included in the OPR-J311-KR-16 DAPR.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12921_MB_50cm_MLLW	CUBE	50 centimeters	12.27 meters - 16.27 meters	NOAA_0.5m	Object Detection Coverage
H12921_MB_50cm_MLLW_Final	CUBE	50 centimeters	12.27 meters - 16.27 meters	NOAA_0.5m	Finalized Object Detection Coverage
H12921_SSS_1m_100	Mosaic	1 meters	0 meters - 0 meters	N/A	100- percent coverage
H12921_SSS_1m_200	Mosaic	1 meters	0 meters - 0 meters	N/A	200- percent coverage

Table 11: Submitted Surfaces

Bathymetric grids were created relative to Mean Lower Low Water (MLLW) in CUBE format using Object Detection Coverage resolution requirements as described in the HSSD.

C. Vertical and Horizontal Control

A complete description of the horizontal and vertical control for survey H12921 can be found in the OPR-J311-KR-16 Horizontal and Vertical Control Report (HVCR), submitted under a separate cover. A summary of horizontal and vertical control for this survey follows.

The horizontal datum for the project was the North American Datum of 1983 (NAD 83) as specified by Hydrographic Technical Directive (HTD) 2016-3: Revision of Horizontal Datum in 2016 HSSD. A copy of this HTD is included in the OPR-J311-KR-16 Project Correspondence.

C.1 Vertical Control

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

Standard Vertical Control Methods Used:

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

Station Name	Station ID
Dauphin Island	8735180

Table 12: NWLON Tide Stations

File Name	Status
8735180.tid	Verified Observed

Table 13: Water Level Files (.tid)

File Name	Status
J311KR2016RevCORP.zdf	Final

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

Tide zoning file J311KR2016RevCORP.zdf was provided with the project instructions and used for sounding correction within the assigned survey area.

C.2 Horizontal Control

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

The projection used for this project is NAD83 UTM Zone 16 North.

The following DGPS Stations were used for horizontal control:

DGPS Stations
English Turn, LA (293 kHz)

Table 15: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

The majority of the chart comparison was performed by comparing H12921 depths to a digital surface generated from electronic navigational charts (ENCs) covering the survey area. A 5-meter product surface was generated from a triangular irregular network (TIN) created from the soundings, depth contours, and depth features for each ENC scale. An additional 5-meter HIPS product surface of the entire survey area was generated from the finalized MBES CUBE surfaces. The chart comparison was conducted by creating and reviewing the resultant difference surface. The chart comparison also included a review of all assigned charted features within the survey area.

The raster navigational chart (RNC) comparison was performed by manually comparing the RNC covering the survey area to the corresponding ENC and identifying discrepancies between the two chart formats.

The electronic and raster versions of the relevant charts used during the comparison were reviewed to check that all US Coast Guard (USCG) Local Notice to Mariners (LNMs) issued during survey acquisition and impacting the survey area were applied and addressed by this survey.

D.1.1 Raster Charts

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

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
11363	1:80000	44	02/2013	10/11/2016	10/22/2016
11366	1:250000	16	06/2015	10/11/2016	10/22/2016

Table 16: Largest Scale Raster Charts

11363

Approach chart 11363 was compared to US4LA34M within the H12921 survey area. No differences were observed between the charts.

11366

General Chart was compared to US3GC04M within the H12921 survey area. There are no soundings, contours or other feature types charted within the survey area.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4LA34M	1:80000	29	01/06/2015	10/24/2016	NO
US3GC04M	1:250000	52	11/05/2014	11/03/2016	NO

Table 17: Largest Scale ENC's

US4LA34M

In general, surveyed depths range from two feet deeper to two feet shoaler than charted on ENC US4LA34M. Some areas are as much as six feet deeper than charted.

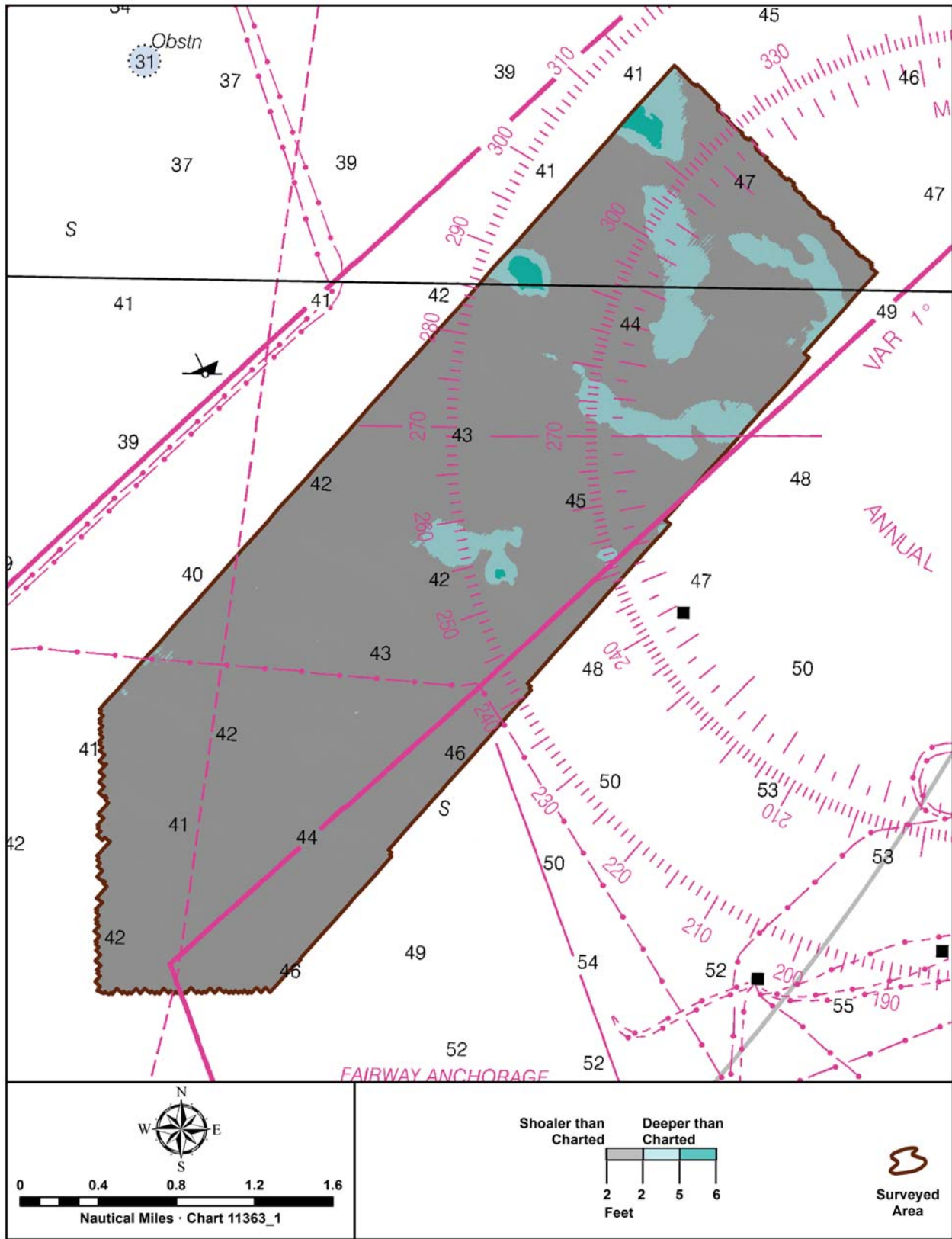


Figure 8: Depth Difference between H12921 and chart US4LA34M

US3GC04M

In general, surveyed depths range from five feet deeper to three feet shoaler than charted on ENC US3GC04M. There are no charted soundings located within the survey area for direct comparison.

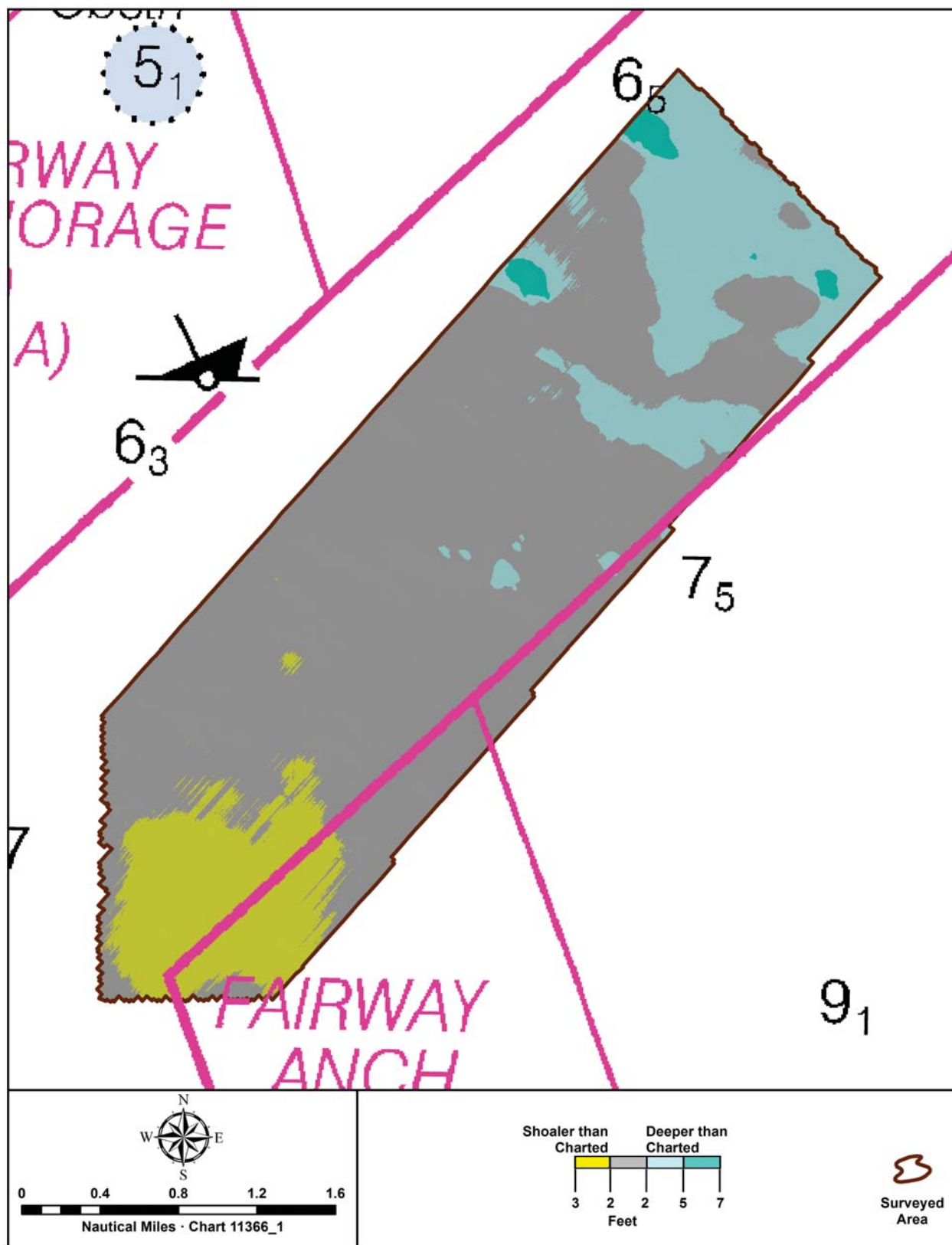


Figure 9: Depth Difference between H12921 and chart US3GC04M

D.1.3 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.4 Charted Features

The survey area does not contain any charted features labeled as Position Approximate (PA), Reported, Position Doubtful (PD), or Existence Doubtful (ED).

D.1.5 Uncharted Features

There were no uncharted features located by the survey.

D.1.6 Dangers to Navigation

No Dangers to Navigation (Dtons) were reported for this survey.

D.1.7 Shoal and Hazardous Features

No shoal or hazardous features were charted or located within the H12921 survey area.

D.1.8 Channels

The H12921 survey area encompasses portions of a charted safety fairway (33 CFR 166.200) and a charted fairway anchorage (33 CFR 166.200). There are no maintained navigation channels or channel lines within the survey area.

D.1.9 Bottom Samples

Three bottom samples were acquired on August 19, 2016 (DN232). The sampling plan followed suggested sample locations included in the PRF provided by the Hydrographic Surveys Division.

D.2 Additional Results

D.2.1 Shoreline

Shoreline investigation was not assigned for this survey.

D.2.2 Prior Surveys

Other than the previously mentioned junction analysis, no other comparisons with prior surveys were conducted.

D.2.3 Aids to Navigation

No Aids to Navigation (AtoNs) were charted or located within the H12921 survey area.

D.2.4 Overhead Features

There were no overhead bridges, cables, or other structures which would impact overhead clearance in the survey area.

D.2.5 Submarine Features

Several pipelines are charted within the survey area. No evidence of these pipelines was observed in the survey data.

D.2.6 Ferry Routes and Terminals

There were no ferry routes or terminals within the survey area.

D.2.7 Platforms

No platforms were observed during the survey area.

D.2.8 Significant Features

There was no other information of scientific or practical value observed during the survey.

D.2.9 Construction and Dredging

No construction or dredging activities were observed during survey operations.

D.2.10 New Survey Recommendation

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

D.2.11 Inset Recommendation

No new insets are recommended for this area.


E. Approval Sheet

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

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

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Statement of Work, and Hydrographic Survey Project Instructions. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required.

Report Name	Report Date Sent
OPR-J311-KR-16 Data Acquisition and Processing Report	2016-11-03

Approver Name	Approver Title	Approval Date	Signature
Jonathan L. Dasler, PE, PLS, CH	NSPS/THSOA Certified Hydrographer, Chief of Party	12/07/2016	 Digitally signed by Jon Dasler DN: cn=Jon Dasler, o=David Evans and Associates, Inc., ou=Marine Services Division, email=jld@deainc.com, c=US Date: 2016.12.08 08:27:01 -08'00'
Jason Creech, CH	NSPS/THSOA Certified Hydrographer, Charting Manager / Project Manager	12/07/2016	 Digitally signed by Jason Creech DN: cn=Jason Creech, o=David Evans and Associates, Inc., ou, ou=Marine Services Division, email=jasc@deainc.com, c=US Date: 2016.12.08 08:28:14 -08'00'
Kathleen Schacht	MBES Data Processing Manager	12/07/2016	 Digitally signed by Kathleen Schacht DN: cn=Kathleen Schacht, o=David Evans and Associates, Inc., ou, email=kmsc@deainc.com, c=US Date: 2016.12.08 08:31:48 -08'00'
John Staly	Lead Hydrographer	12/07/2016	 Digitally signed by John Staly DN: cn=John Staly, o=David Evans and Associates, Inc., ou=Marine Services Division, email=jstaly@deainc.com, c=US Date: 2016.12.08 08:33:05 -08'00'

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
ASCII	American Standard Code for Information Interchange
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
CH	Certified Hydrographer
CSF	Composite Source File
CTD	Conductivity Temperature Depth
DAPR	Data Acquisition and Processing Report
DEA	David Evans and Associates, Inc
DGPS	Differential Global Positioning System
DN	Day Number
DtoN	Danger to Navigation
ED	Existence Doubtful
ENC	Electronic Navigational Chart
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Surveys Specifications and Deliverables
HVCR	Horizontal and Vertical Control Report
IHO	International Hydrographic Organization
LNM	Local Notice to Mariners
MBES	Multibeam Echo Sounder
MLLW	Mean Lower Low Water
MVP	Moving Vessel Profiler
NOAA	National Oceanic and Atmospheric Administration
NSPS	National Society of Professional Surveyors
NWLON	National Water Level Observation Network
PA	Position Approximate
PD	Position Doubtful
PE	Professional Engineer
PLS	Professional Land Surveyor

Acronym	Definition
PRF	Project Reference File
QC	Quality Control
RNC	Raster Navigational Chart
SBES	Single Beam Echo Sounder
SSS	Side Scan Sonar
TIN	Triangular Irregular Network
TPU	Total Propagated Uncertainty
USCG	United States Coast Guard

APPENDIX I
TIDES AND WATER LEVELS

H12921

TIMES OF HYDROGRAPHY

Project: OPR-J311-KR-16

Contractor Name: David Evans and Associates, Inc.

Date: August 13, 2016

Inclusive Dates: July 30, 2016 - August 13, 2016

Field work is complete

Time (UTC)

Day Number	Date	Start Time	End Time
212	07/30/2016	5:40:25	23:51:34
213	07/31/2016	0:11:13	20:13:25
215	08/02/2016	2:56:18	6:59:26
226	08/13/2016	3:30:00	6:10:13

H12921

FINAL TIDE NOTE AND ZONING

DATE: August 13, 2016

HYDROGRAPHIC BRANCH: Atlantic Hydrographic Branch

HYDROGRAPHIC PROJECT: OPR-J311-KR-16

HYDROGRAPHIC SURVEY: H12921

LOCALITY: Southeastern Vicinity of the Chandeleur Islands

SUB-LOCALITY: 25 NM S of Chandeleur Islands

TIME PERIOD¹ : July 30, 2016 - August 13, 2016

TIDE STATIONS USED:

<u>Station Name</u>	<u>Station ID</u>	<u>Type</u>	<u>Latitude</u>	<u>Longitude</u>
Dauphin Island, AL	8735180	Control	30° 15.0' N	88° 4.5' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER) :

8735180 0.000m

HEIGHT OF MEAN HIGH WATER ABOVE PLANE OF REFERENCE:

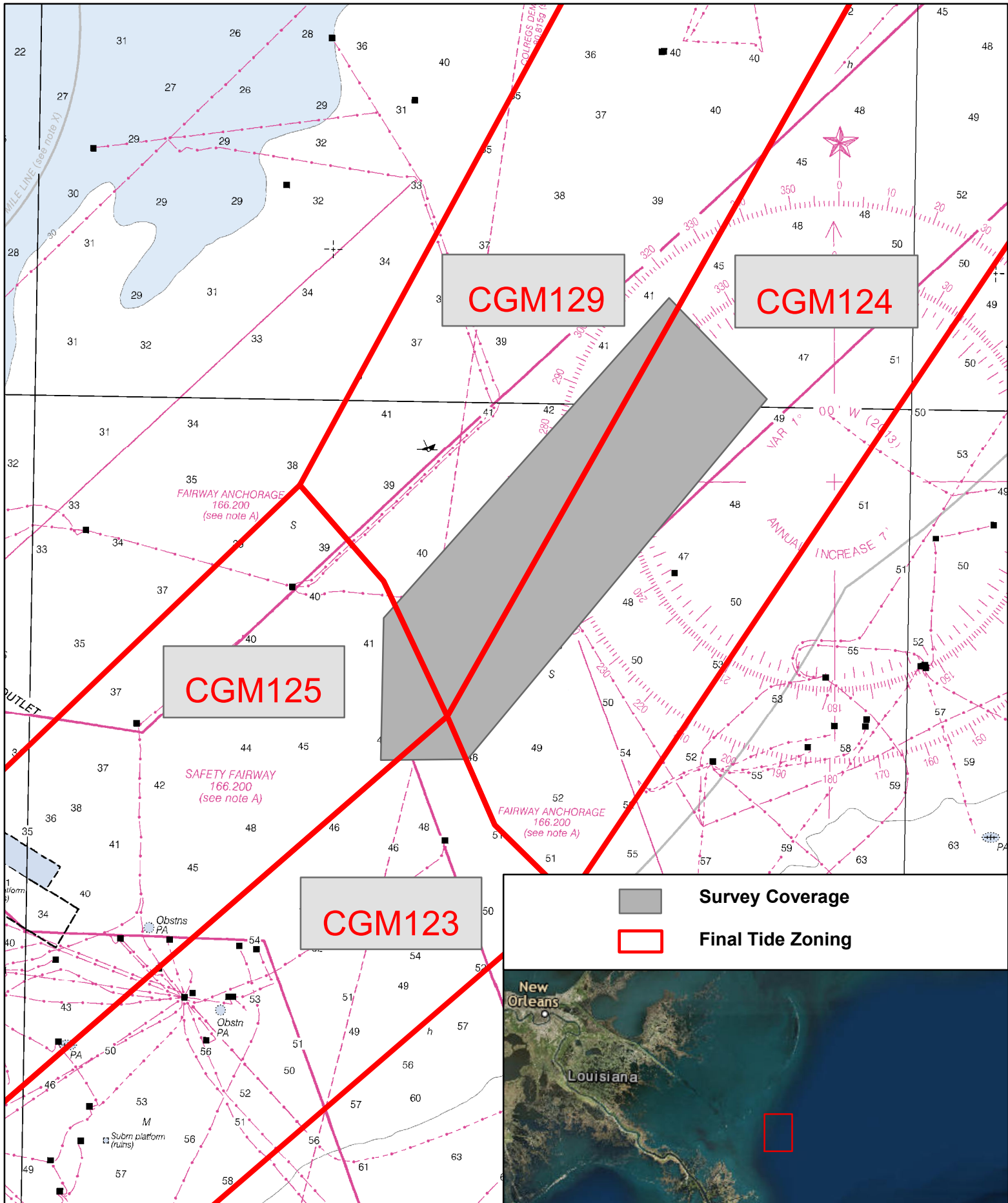
8735180 0.361m



FINAL ZONING AND TIDAL REDUCERS TO CHART DATUMN:

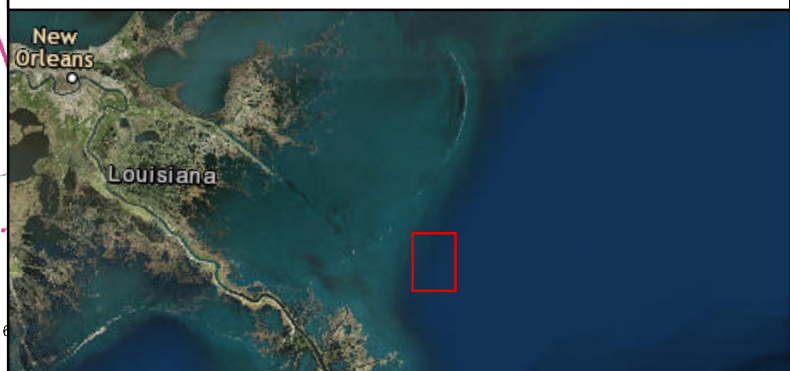
<u>Zone</u>	<u>(Mins)</u>	<u>Range Ratio</u>	<u>Station</u>
CGM123	-72	1.00	8735180
CGM124	-72	1.08	8735180
CGM125	-60	1.00	8735180
CGM129	-60	1.08	8735180

¹ Please refer to the comprehensive list in attached Times of Hydrography.

<http://tidesandcurrents.noaa.gov/benchmarks.html?id=8735180>

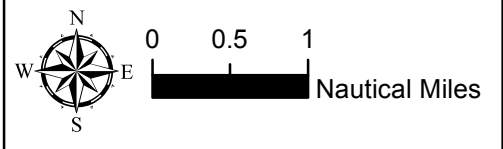


 **Survey Coverage**
 **Final Tide Zoning**



OPR-J311-KR-16
Eastern Vicinity of the Chandeleur Islands
David Evans and Associates, Inc.
Chart 11363

H12921
Final Tide Zoning



APPENDIX II
SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

From: Christina Fandel - NOAA Federal <christina.fandel@noaa.gov>
Sent: Thursday, August 25, 2016 11:10 AM
To: Jon Dasler; Jason Creech
Subject: Fwd: EA-133C-14-CQ-0037 T-0003 H12921 MBES Density Requirement Waiver
Attachments: Waiver MEMO.pdf

Jon,

Understanding Jason is out of the office, I wanted to forward you this waiver. Following correspondence with Jason, it was brought to my attention that there was some difficulty in meeting the MBES density requirement for H12921 which requires 80% of all nodes on the surface to be populated with 5 or more soundings. Given 200% SSS coverage was achieved, and 72% of all nodes meet the density requirement of 5 or more soundings, we agreed to waive this requirement for H12921.

Referencing the attached document, please include this waiver in your supplemental correspondence folder upon submission to AHB.

Thank you,

Christy

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

From: Emily Clark - NOAA Federal <emily.clark@noaa.gov>
Date: Thu, Aug 25, 2016 at 1:52 PM
Subject: EA-133C-14-CQ-0037 T-0003 H12921 MBES Density Requirement Waiver
To: Jason Creech <jasc@deainc.com>
Cc: Christina Fandel - NOAA Federal <christina.fandel@noaa.gov>

Jason,

Please find attached for your records waiver approval for the subject task order.

If you have any questions let me know.

Thanks

--

v/r,

Emily Clark

Contracting Officer
NOAA Eastern Region Acquisition Division
Norfolk Federal Building
200 Granby Street, Suite 815
Norfolk, VA 23510

☎: [\(757\) 441-6875](tel:(757)441-6875) | ✉: Emily.Clark@NOAA.gov | 📞: [\(757\) 440-3687](tel:(757)440-3687)

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Physical Scientist
Hydrographic Surveys Division
Office of Coast Survey, NOAA
Christina.Fandel@noaa.gov
(301) 713 - 2702 x 133

National Oceanic and Atmospheric Administration
Host Agency Serving:

Bureau of Industry and Security
Economic Development Administration
International Trade Administration
Minority Business Development Agency



U.S. DEPARTMENT OF COMMERCE
Eastern Region Acquisition Division
Norfolk Federal Building
200 Granby Street, Room 815
Norfolk, VA 23510

August 11, 2014

MEMORANDUM FOR: Jason Creech
Lead Hydrographer
David Evans and Associates

FROM: Emily Clark
Contracting Officer

A handwritten signature in black ink, appearing to read "Emily Clark".

SUBJECT: EA-133C-14-CQ-0037 T-0003 H12921 MBES Density
Requirement Waiver

A waiver has been approved to waive the multibeam data density requirement for which 80% of all nodes on the surface shall be populated with at least 5 soundings for H12921 (HSSD Section 5.2.2.2 Option B). At this time, 72% of all nodes for H12921 are populated with 5 or more soundings. The acquired 72% of all nodes populated with 5 or more soundings is sufficient.

This waiver is applicable only to the specified task order and sheet number. Please include this email in this supplemental correspondence folder (DR Appendix 2).

APPROVAL PAGE

H12921

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- H12921_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12921_GeoImage.pdf

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

Approved: _____

Lieutenant Commander Briana Welton, NOAA
Chief, Atlantic Hydrographic Branch