H12721

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

# DESCRIPTIVE REPORT

| | |
|---|---|
| Type of Survey: | Basic Hydrographic Survey |
| Registry Number: | H12721 |

## LOCALITY

| | |
|---|---|
| State(s): | Louisiana |
| General Locality: | Western Vicinity of Lake Borgne |
| Sub-locality: | 7NM Northwest of Shoalwater Bay |

**2015**

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

LIBRARY & ARCHIVES

Date:

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

REGISTRY NUMBER:

# HYDROGRAPHIC TITLE SHEET

**H12721**

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

| | |
|---|---|
| State(s): | **Louisiana** |
| General Locality: | **Western Vicinity of Lake Borgne** |
| Sub-Locality: | **7NM Northwest of Shoalwater Bay** |
| Scale: | **40000** |
| Dates of Survey: | **01/21/2015 to 06/02/2015** |
| Instructions Dated: | **08/29/2014** |
| Project Number: | **OPR-J311-KR-14** |
| Field Unit: | **David Evans and 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, 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 Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.***

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# Descriptive Report to Accompany Survey H12721

Project: OPR-J311-KR-14

Locality: Western Vicinity of Lake Borgne

Sublocality: 7NM Northwest of Shoalwater Bay

Scale: 1:40000

January 2015 - June 2015

**David Evans and Associates, Inc.**

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

# A. Area Surveyed

David Evans and Associates, Inc. (DEA) conducted hydrographic survey operations in Chandeleur Sound approximately seven nautical miles northwest of Shoalwater Bay. Survey H12721 was conducted in accordance with the Statement of Work (July 9, 2014) and Hydrographic Survey Project Instructions (August 29, 2014).

The Hydrographic Survey Project Instructions reference the National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2014 as the technical requirements for this project.

## A.1 Survey Limits

Data were acquired within the following survey limits:

| Northwest Limit | Southeast Limit |
|---|---|
| 29° 59' 5.57" N<br>89° 1' 38.94" W | 29° 53' 6.01" N<br>88° 55' 43.7" W |

*Table 1: Survey Limits*

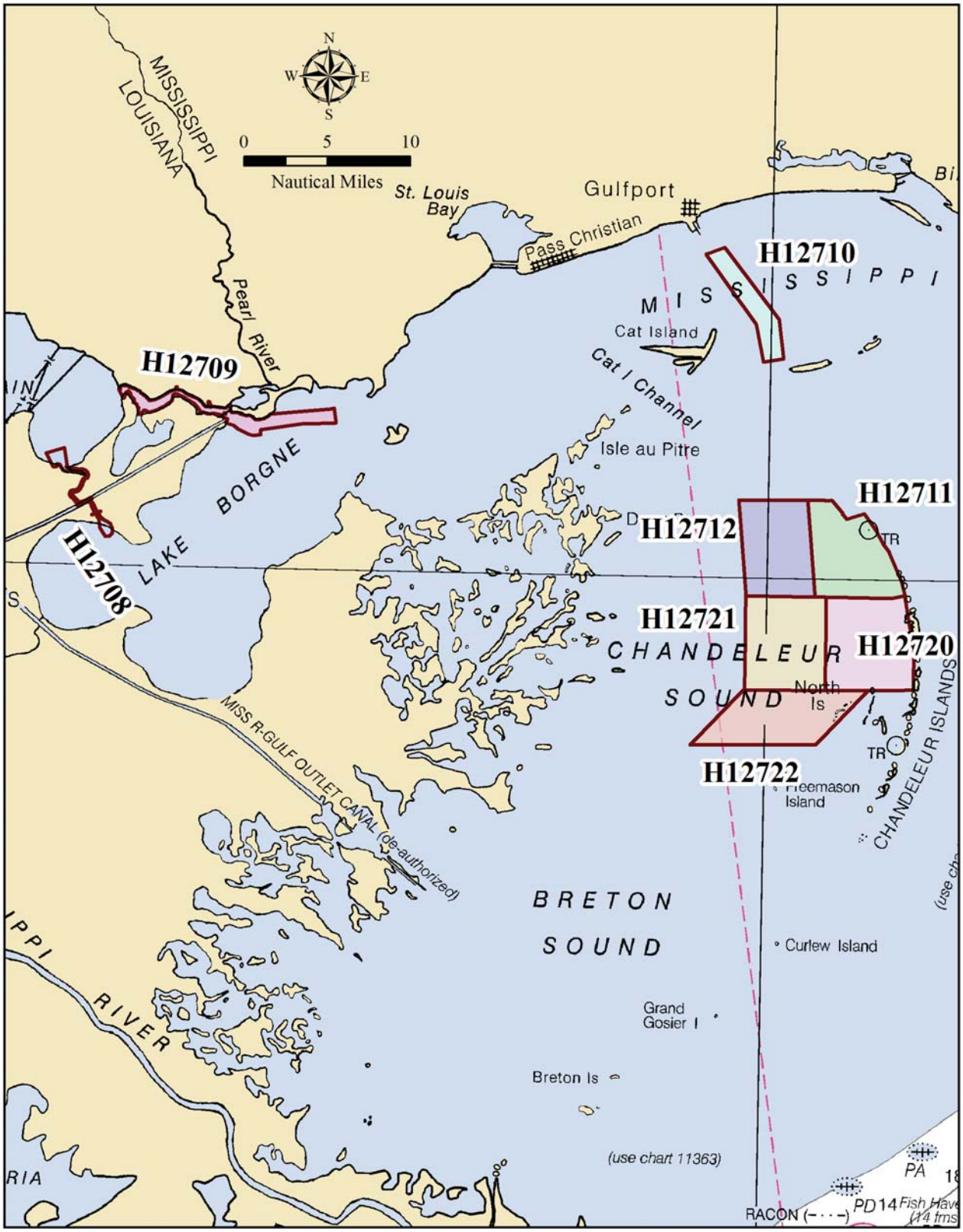



*Figure 1: OPR-J311-KR-14 Assigned Survey Areas*

Survey Limits were acquired 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 is located in an area subject to the influence of hurricanes on an annual basis, thus producing a very dynamic environment requiring frequent re-surveying. In addition, the tug and tow industry will be re-routed to the west of the Chandeleur Islands due to a Gulf Intracoastal Waterway West (GIWW) closure in the Summer of 2015. A large portion of the proposed alternative route for the tug and tow industry lies within the southern portion of this project area. This project will cover approximately 129 SNM of emerging critical areas and 4.5 SNM of priority 2 areas as identified in the 2012 NOAA Hydrographic Survey Priorities (NHSP). The project area is located in the vicinity of Lake Borgne, the Gulfport Sound Channel, and west of the Chandeleur Islands.

## A.3 Survey Quality

The entire survey is adequate to supersede previous data.

## A.4 Survey Coverage

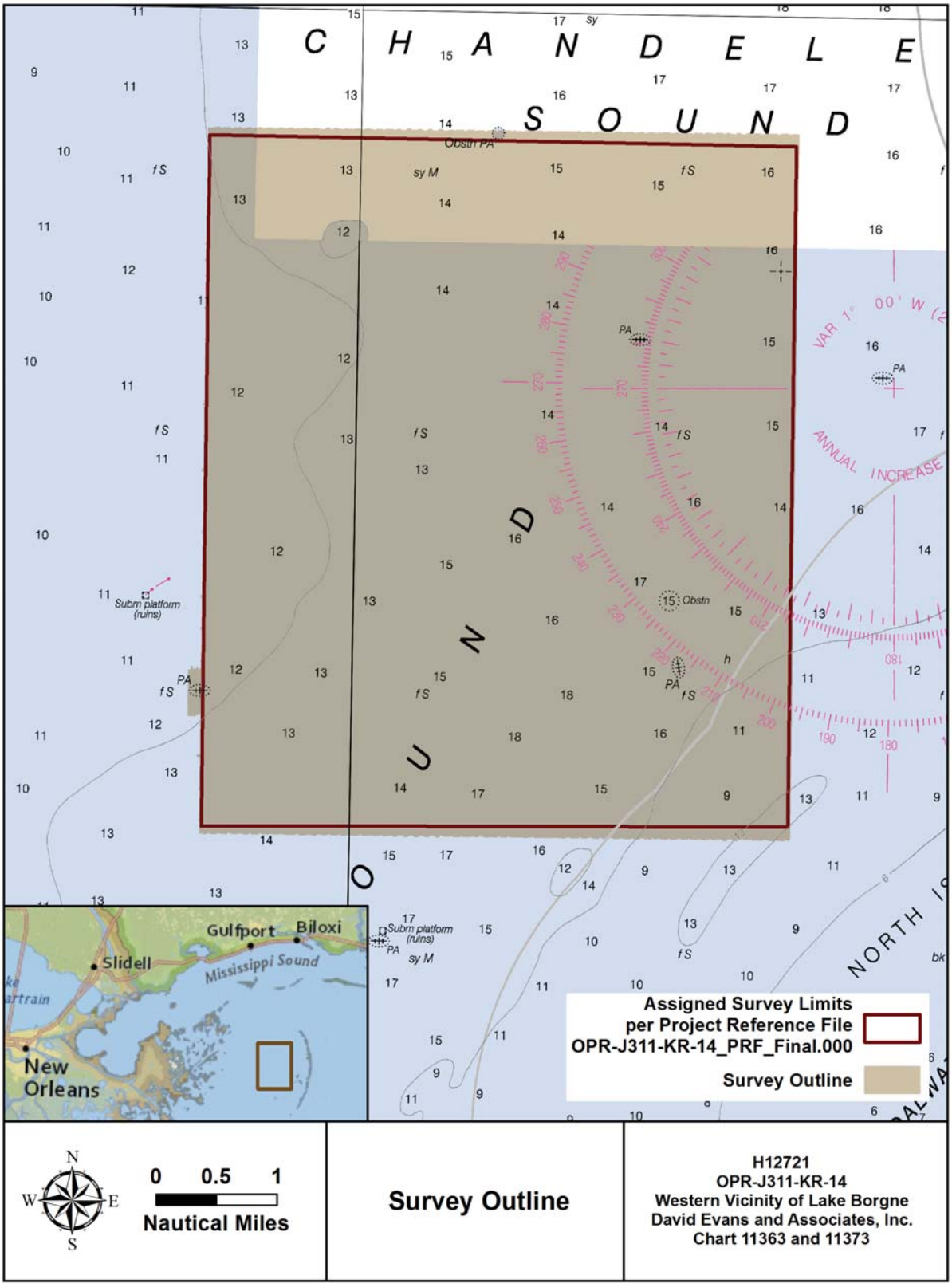





*Figure 2: H12721 Survey Outline*

The survey consisted of 200% side scan sonar coverage with concurrent multibeam echosounder (MBES) and backscatter using the Set Line Spacing coverage technique. Significant side scan sonar contacts were developed with multibeam sonar to meet Object Detection coverage requirements for multibeam surveys. This inshore limit of the survey was defined as the farthest offshore of either the surveyed 4-meter depth contour or the Navigable Area Limit Line (NALL) defined in the OPR-J311-KR-14 Project Reference File (PRF).

DEA received a waiver to use the full sonar range when the towfish altitude was less than 8% of the range scale when operating at the 50-meter range scale. This waiver removed the minimum towfish height requirement at the 50-meter range scale as specified in Section 6.1.2.3 of the HSSD. A copy of the email correspondence granting this waiver is included in OPR-J311-KR-14 Project Correspondence.

## A.5 Survey Statistics

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

| | HULL ID | *S/V Blake* | *Total* |
|---|---|---|---|
| **LNM** | **SBES Mainscheme** | 0 | 0 |
| | **MBES Mainscheme** | 4.11 | 4.11 |
| | **Lidar Mainscheme** | 0 | 0 |
| | **SSS Mainscheme** | 51.92 | 51.92 |
| | **SBES/SSS Mainscheme** | 0 | 0 |
| | **MBES/SSS Mainscheme** | 1318.37 | 1318.37 |
| | **SBES/MBES Crosslines** | 112.62 | 112.62 |
| | **Lidar Crosslines** | 0 | 0 |
| **Number of Bottom Samples** | | | 6 |
| **Number of AWOIS Items Investigated** | | | 0 |
| **Number Maritime Boundary Points Investigated** | | | 0 |
| **Number of DPs** | | | 0 |
| **Number of Items Investigated by Dive Ops** | | | 0 |
| **Total SNM** | | | 28.42 |

*Table 2: Hydrographic Survey Statistics*

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

| Survey Dates | Day of the Year |
|---|---|
| 01/21/2015 | 21 |
| 01/22/2015 | 22 |
| 01/24/2015 | 24 |
| 01/25/2015 | 25 |
| 01/28/2015 | 28 |
| 01/29/2015 | 29 |
| 01/30/2015 | 30 |
| 02/01/2015 | 32 |
| 02/02/2015 | 33 |
| 02/04/2015 | 35 |
| 02/06/2015 | 37 |
| 02/07/2015 | 38 |
| 02/08/2015 | 39 |
| 02/09/2015 | 40 |
| 02/10/2015 | 41 |
| 02/11/2015 | 42 |
| 02/12/2015 | 43 |
| 02/13/2015 | 44 |
| 02/14/2015 | 45 |
| 02/15/2015 | 46 |
| 02/16/2015 | 47 |
| 03/11/2015 | 70 |
| 04/09/2015 | 99 |
| 04/10/2015 | 100 |
| 06/02/2015 | 153 |

*Table 3: Dates of Hydrography*

# B. Data Acquisition and Processing

## B.1 Equipment and Vessels

The OPR-J311-KR-14 Data Acquisition and Processing Report (DAPR), previously submitted with survey H12708, details equipment and vessel information as well as data acquisition and processing procedures used during this survey. 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** | ***S/V Blake*** |
|---|---|
| **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 v4 | Positioning & Attitude |
| Rolls Royce | MVP30-350 with AML Micro SVP&T | Primary Sound Speed Profiler |
| AML | Micro SV Exchange | Surface Sound Speed |
| Sea-Bird Electronics | SEACAT SBE 19-03 CTD | Secondary Sound Speed Profiler |
| AML | SV Plus V2 | Secondary Sound Speed Profiler |

*Table 5: Major Systems Used*

## B.2 Quality Control

### B.2.1 Crosslines

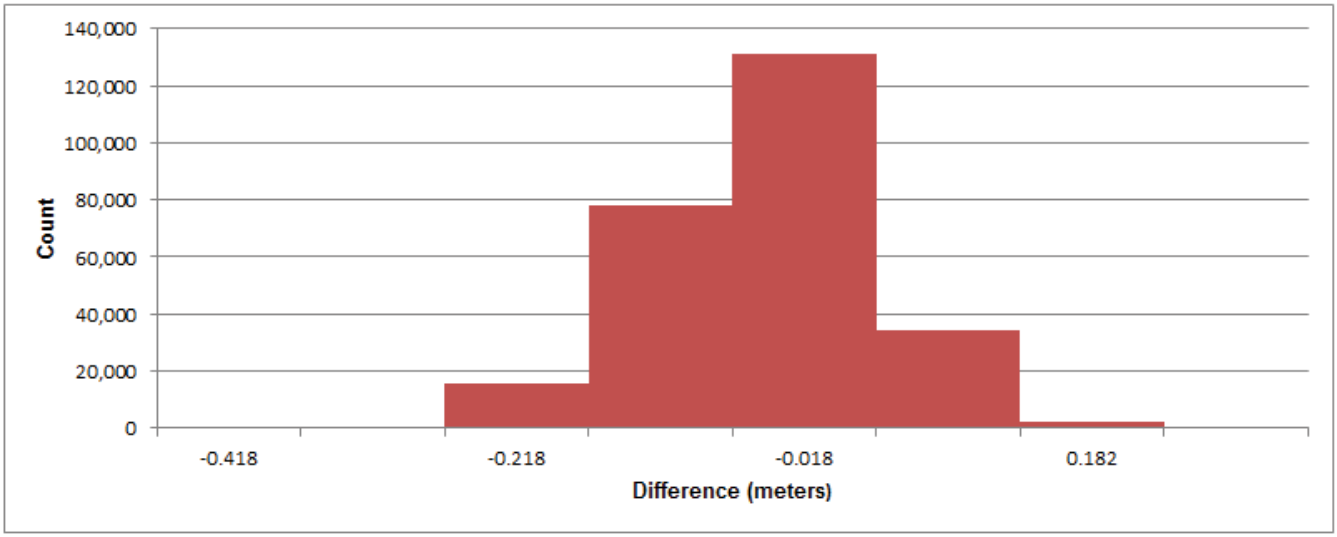
Crosslines acquired for this survey totaled 9% of mainscheme acquisition.

Crosslines were run in a direction perpendicular to main scheme lines across the entire surveyed area, providing a good representation for analysis of consistency. All crosslines were used for crossline comparisons.

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 4-meter CUBE surface encompassing mainscheme data for the entire survey area. The QC Report tabular output and plot are included in Separate II Digital Data. The results of the analysis meet the requirements as stated in the 2014 HSSD.

Additional crossline analysis was performed by computing a 4-meter CUBE surface from the crossline data. The surface was then differenced from a 4-meter 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. All outliers from the difference analysis were reviewed in HIPS subset editor and found to result from a combination of sound speed artifacts in the outer beams and tide zoning errors.




| | | | |
|---|---|---|---|
| Mean: | -0.05 m | Standard Deviation: | 0.075 m |
| Minimum: | -0.359 m | Bin size: | 0.1 m |
| Maximum: | 0.223 m | Number of Nodes: | 261,214 |

*Figure 4: H12721 Crossline Differences*

### B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

| Measured | Zoning |
|---|---|
| 0.000 meters | 0.102 meters |

*Table 6: Survey Specific Tide TPU Values*

| Hull ID | Measured - CTD | Measured - MVP | Surface |
|---|---|---|---|
| S/V Blake | n/a meters/second | 1 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 4-meter Set Line Spacing multibeam surface range from 0.209 meters to 0.334 meters with a standard deviation of 0.002 meters.

The uncertainty values of all nodes in the finalized 50-centimeter Object Detection multibeam surface range from 0.209 meters to 0.994 meters with a standard deviation of 0.012 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 4-meter Set Line Spacing multibeam surface, the allowable uncertainty utilized ranges from 41% to 66%. The mean allowable uncertainty for the surface is 42% with a standard deviation of 0.004.

For the 50-centimeter Object Detection multibeam surface, the allowable uncertainty utilized ranges from 41% to 193%. The mean allowable uncertainty for the surface is 42% with a standard deviation of 0.024. In total 101 nodes out of 176,973 fail to meet specification.

Nodes that were reported out of specification were coincident with areas of high depth standard deviation over significant features with steep slopes. All uncertainty values were within allowable specification prior to surface finalization when standard deviation was incorporated into the solution when it was greater than the node uncertainty.

### B.2.3 Junctions

Survey H12721 junctions with surveys H12711, H12712, H12720, H12722 and D00140. Surveys H12711, H12712, H12720, and H12722 were also performed by DEA as part of project OPR-J311-KR-14. Prior survey D00140 was a hydrographic reconnaissance survey which used a vertical beam echosounder with 1,000-meter line spacing to evaluate chart adequacy.

The Bathymetric Attributed Grid (BAG) for survey D00140 was downloaded from NOAA's National Geophysical Data Center (NGDC) website for comparison with H12721. The 4-meter finalized H12721 surface was compared to each junction survey by generating a difference surface with CARIS Base Editor.

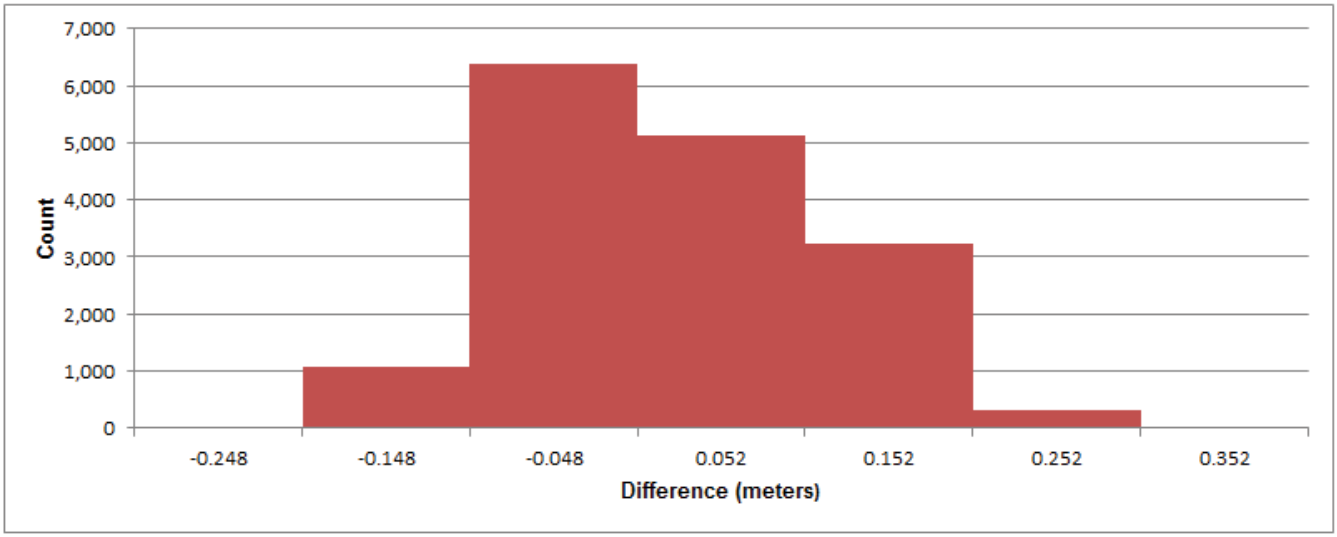
The following junctions were made with this survey:

| Registry Number | Scale | Year | Field Unit | Relative Location |
|---|---|---|---|---|
| H12711 | 1:40000 | 2014 | David Evans and Associates, Inc. | NE |
| H12712 | 1:40000 | 2014 | David Evans and Associates, Inc. | N |
| H12720 | 1:40000 | 2014 | David Evans and Associates, Inc. | E |
| H12722 | 1:40000 | 2015 | David Evans and Associates, Inc. | S |
| D00140 | 1:20000 | 2008 | Terrasond, Ltd. | S |

*Table 8: Junctioning Surveys*

H12711

Results from the junction analysis are shown in Figure 5. The minimum and maximum differences are associated with sound speed and tide zoning artifacts.

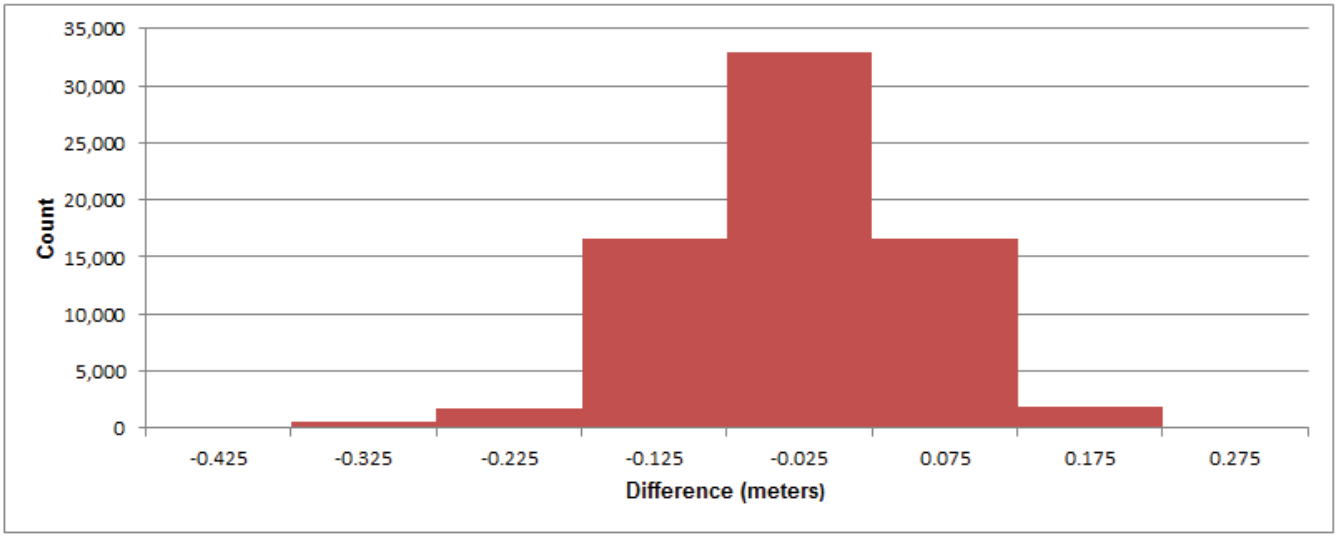



| | | | |
|---|---|---|---|
| Mean: | 0.02 m | Standard Deviation: | 0.090 m |
| Minimum: | -0.178 m | Bin size: | 0.1 m |
| Maximum: | 0.282 m | Number of Nodes: | 16,165 |

*Figure 5: Junction results between H12721 and H12711 4-meter bathy grids*

H12712

Results from the junction analysis are shown in Figure 6. The minimum and maximum differences are associated with sound speed and tide zoning artifacts.

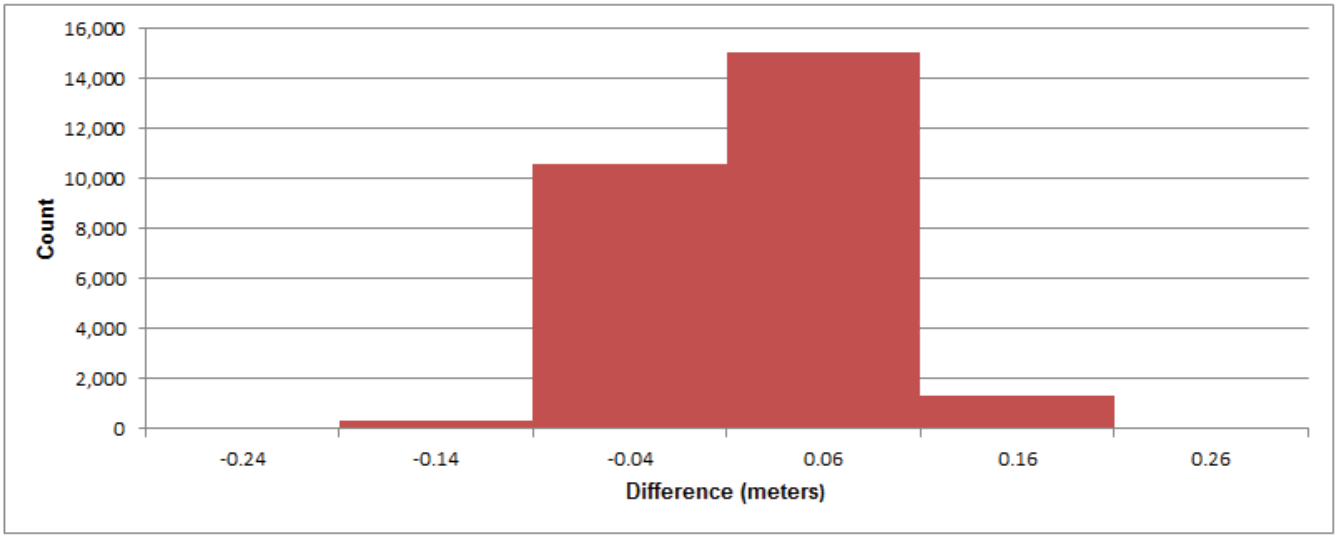



| | | | |
|---|---|---|---|
| Mean: | -0.03 m | Standard Deviation: | 0.082 m |
| Minimum: | -0.351 m | Bin size: | 0.1 m |
| Maximum: | 0.300 m | Number of Nodes: | 70,449 |

*Figure 6: Junction results between H12721 and H12712 4-meter bathy grids*

H12720

Results from the junction analysis are shown in Figure 7. The minimum and maximum differences are associated with sound speed and tide zoning artifacts.




| | | | |
|---|---|---|---|
| Mean: | 0.02 m | Standard Deviation: | 0.053 m |
| Minimum: | -0.162 m | Bin size: | 0.1 m |
| Maximum: | 0.183 m | Number of Nodes: | 27,305 |

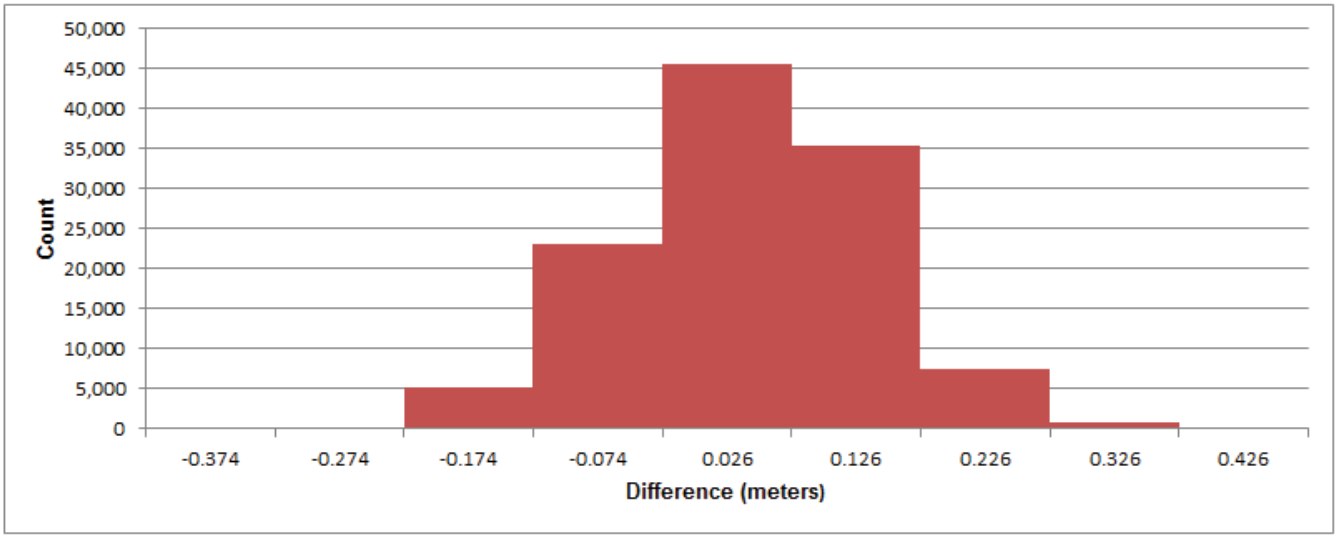
*Figure 7: Junction results between H12721 and H12720 4-meter bathy grids*

H12722

The junction analysis between H12721 and H12722 will be included in the H12722 DR.

D00140

The entire H12721 survey area junctions with prior hydrographic reconnaissance survey D00140. The maximum and minimum reported differences appear to be related to a combination of sound speed and tide zoning artifacts in areas where sediment migration has occurred since the prior survey. Results from this analysis are shown in Figure 8.




| | | | |
|---|---|---|---|
| Mean: | 0.04 m | Standard Deviation: | 0.095 m |
| Minimum: | -0.319 m | Bin size: | 0.1 m |
| Maximum: | 0.472 m | Number of Nodes: | 117,792 |

*Figure 8: Junction results between H12721 4-meter and D00140 5-meter bathy grids*

### 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

Tide Zoning Artifacts

The survey area, which lies in the Chandeleur Sound and is protected by the Chandeleur Islands, is 50 to 60 nautical miles from the controlling NWLON (National Water Level Observation Network) stations at Bay Waveland Yacht Club and Pascagoula NOAA Lab. Vertical errors resulting from the limitations of tide zoning are visible in the data. These errors generally range from 10 to 15 centimeters, but in some extreme cases exceed 30 centimeters. This vertical offset is within the typical error contribution of 20 to 45 centimeters for tides and water levels. The largest contributing factor to water level errors in the Chandeleur Sound is meteorological influences which cannot be accounted for by zoning.

Recommendations were made in the Descriptive Report for Tidal Zoning submitted with prior survey D00140 that future surveys in this area use a subordinate gauge near the Chandeleur Islands. The hydrographer also recommends that future surveys in this area use water level corrections from local subordinate gauges or rely on ellipsoidally referenced survey (ERS) methodology for vertical control.

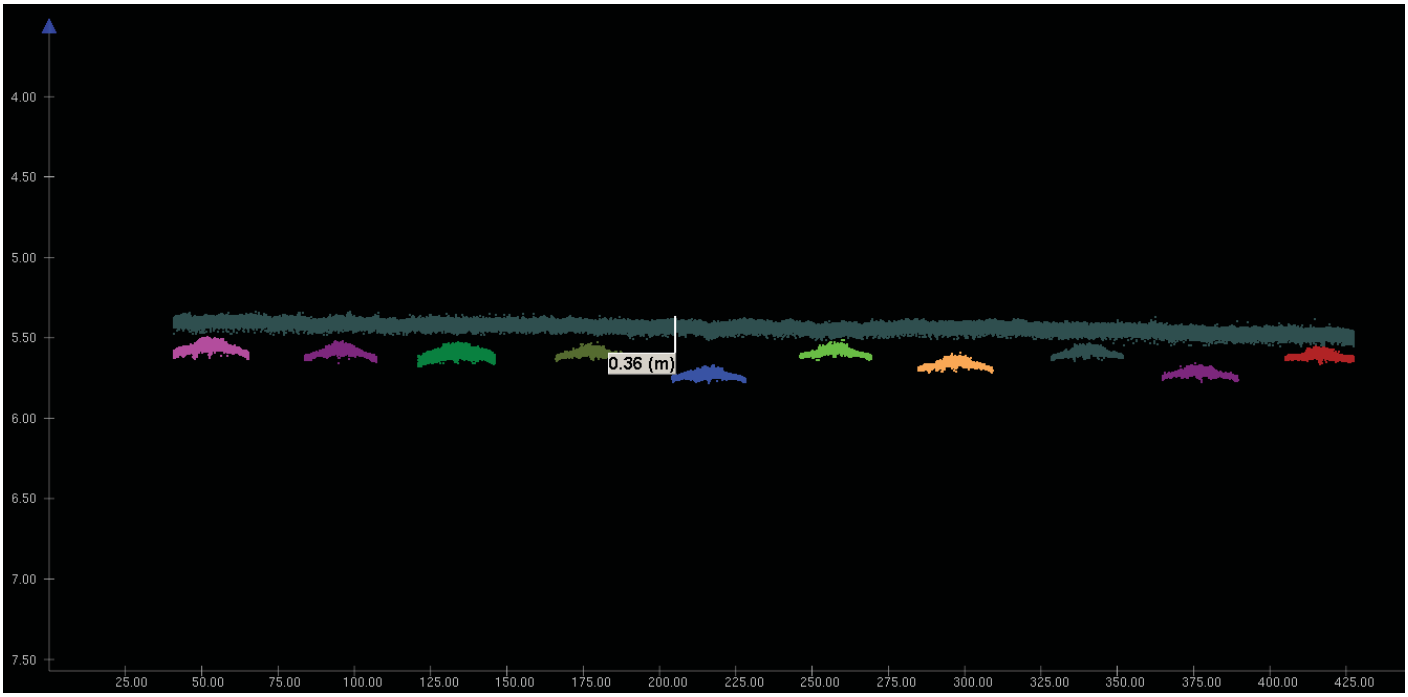



*Figure 9: Example of tide zoning artifact seen within H12721*

Side Scan Sonar Data Gaps

Additional side scan sonar acquisition occurred on June 2, 2015 (DN153) to fill previously unknown coverage holidays. This data acquisition occurred after the survey had been reported as complete. Data holidays were caused by missing ping datagrams in the XTF files and masked by default settings in the side scan sonar processing software. The missing sonar pings may have been caused by a bad solder on one of the SSS topside unit boards. SonarWiz is set to move pings and navigation points when it detects a gap

in coverage in order to prevent an along-track holiday. This issue impacted survey line 2015BL0390103. The Project Contracting Officer's Representative and Contracting Officer's Technical Representative were notified about this issue.

### 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.

There are six sound speed profiles which are more than 250 meters outside of the survey area. These profiles were acquired with the survey vessel's MVP at the ends of survey lines prior to or after a line turn. Casts are valid and have been applied to hydrography. Profile names: 1/22/2015 6:26, 1/29/2015 22:58, 2/1/2015 14:38, 2/4/2015 12:06, 2/15/2015 23:06 and 3/11/2015 13:13.

### 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.

Where 200% side scan coverage was required, demonstration of 200% coverage was achieved by producing two separate 100% 1 meter resolution mosaics. 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. Significant side scan sonar contacts were developed with multibeam sonar to obtain a least depth of the contact using multibeam Object Detection coverage requirements.

### B.2.9 Density

The multibeam sonar Set Line Spacing sounding density requirement of 95% of all nodes populated with at least three soundings 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 99.8% of all final CUBE surface nodes contained three or more soundings. Density statistics for all individual item investigation surfaces was reviewed and surpassed the requirement 95% of all nodes populated with at least five soundings.

## B.3 Echo Sounding Corrections

### B.3.1 Corrections to Echo Soundings

Data reduction procedures for survey H12721 are detailed in the DAPR. Since submitting the DAPR the S/V Blake's MRU Alignment values, which are used in TPU computations, have been updated. These values are reported in Table 6 of the DAPR and DAPR Appendix II and have been included in Figure 10 of this report. A summary of the multibeam processing logs is included Separate I Acquisition and Processing Logs of this report.

| Total Propagated Uncertainty | | |
|---|---|---|
| **Field** | **Final Values** | **Source** |
| MRU Align StdDev Gyro | 0.179 | Standard Deviation of OPR-J311-KR-14 patch test values for project |
| MRU Align StdDev Roll/Pitch | 0.094 | Standard Deviation of OPR-J311-KR-14 patch test values for project |

*Figure 10: Revised S/V Blake MRU Alignment Values*

### 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 H12721 digital deliverables. Data were processed periodically in CARIS HIPS to evaluate backscatter quality but the processed data is not included with the deliverables.

## B.5 Data Processing

### B.5.1 Software Updates

The following software updates occurred after the submission of the DAPR:

| Manufacturer | Name | Version | Service Pack | Hotfix | Installation Date | Use |
|---|---|---|---|---|---|---|
| CARIS | HIPS | 8.1 | 0 | 13 | 06/07/2015 | Processing |

*Table 9: Software Updates*

The following Feature Object Catalog was used: 5.3.2

### 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 |
|---|---|---|---|---|---|
| H12721_MB_4m_MLLW | CUBE | 4.0 meters | 3.95 meters - 6.23 meters | NOAA_4m | Multibeam sonar Set Line Spacing Coverage |
| H12721_MB_4m_MLLW_Final | CUBE | 4.0 meters | 3.70 meters - 6.23 meters | NOAA_4m | Finalized Multibeam sonar Set Line Spacing coverage |
| H12721_MB_50cm_MLLW_combined | CUBE | 50 centimeters | 4.28 meters - 5.97 meters | NOAA_0.5m | Object Detection Coverage |
| H12721_MB_50cm_MLLW_combined_Final | CUBE | 50 centimeters | 3.70 meters - 5.97 meters | NOAA_0.5m | Finalized Object Detection Coverage |
| H12721_100Percent | Mosaic | 1.0 meters | - | N/A | First 100-percent coverage |
| H12721_200Percent | Mosaic | 1.0 meters | - | N/A | Second 100- percent coverage |

*Table 10: Submitted Surfaces*

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

The 50-centimeter combined surface includes all investigation data at object detection resolution. Field sheets and surfaces were also submitted for all significant individual investigations. The name of the investigation field sheets correspond to the primary side scan sonar contact name. Least depths for all significant contact investigations were added to the final surface with a designated sounding.

Additional designated soundings were added to depth surfaces as necessary in order to accurately represent the seafloor in accordance with the NOS HSSD.

# C. Vertical and Horizontal Control

A complete description of the horizontal and vertical control for survey H12721 can be found in the OPR-J311-KR-14 Horizontal and Vertical Control Report (HVCR), submitted under a separate cover. A summary of horizontal and vertical control for this survey follows.

## 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 |
|---|---|
| Pascagoula NOAA Lab, MS | 8741533 |
| Bay Waveland Yacht Club, MS | 8747437 |

*Table 11: NWLON Tide Stations*

| File Name | Status |
|---|---|
| 8741533.tid | Verified Observed |
| 8747437.tid | Verified Observed |

*Table 12: Water Level Files (.tid)*

| File Name | Status |
|---|---|
| J311KR2014CORP_rev2.zdf | Final |

*Table 13: Tide Correctors (.zdf or .tc)*

## 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.

During survey operations, some Differential Global Positioning System (DGPS) outages from the primary beacon (293 kHz) occurred. The system was manually switched to the secondary beacon (295 kHz) when the primary signal was lost. No data was acquired during DGPS beacon outages.

The following DGPS Stations were used for horizontal control:

| DGPS Stations |
|---|
| English Turn, LA (293 kHz) |
| Eglin Air Force Base, FL (295 kHz) |

*Table 14: USCG DGPS Stations*

# D. Results and Recommendations

## D.1 Chart Comparison

The majority of the chart comparison was performed by comparing H12721 depths to a digital surface generated from electronic navigational charts (ENCs) covering the survey area. A 50-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 50-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 RNCs covering the survey area to the corresponding ENCs 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 | 04/28/2015 | 05/02/2015 |
| 11373 | 1:80000 | 52 | 05/2015 | 05/01/2015 | 05/01/2015 |

*Table 15: Largest Scale Raster Charts*

11363

Coastal chart 11363 was compared to US4LA34M within the H12721 survey area. No differences were observed between the charts.

11373

A section of coastal chart 11373 overlaps with charts US4LA34M and 11363 at the northern end of the survey area. The only difference observed was a minor discrepancy in the portrayal of a 12-foot sounding and 12-foot contour at the southern border of 11373.

### D.1.2 Electronic Navigational Charts

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

| ENC | Scale | Edition | Update Application Date | Issue Date | Preliminary? |
|---|---|---|---|---|---|
| US4LA34M | 1:80000 | 29 | 01/06/2015 | 05/11/2015 | NO |

*Table 16: Largest Scale ENCs*

US4LA34M

In general, surveyed depths are between 0 to 5 feet deeper than charted.

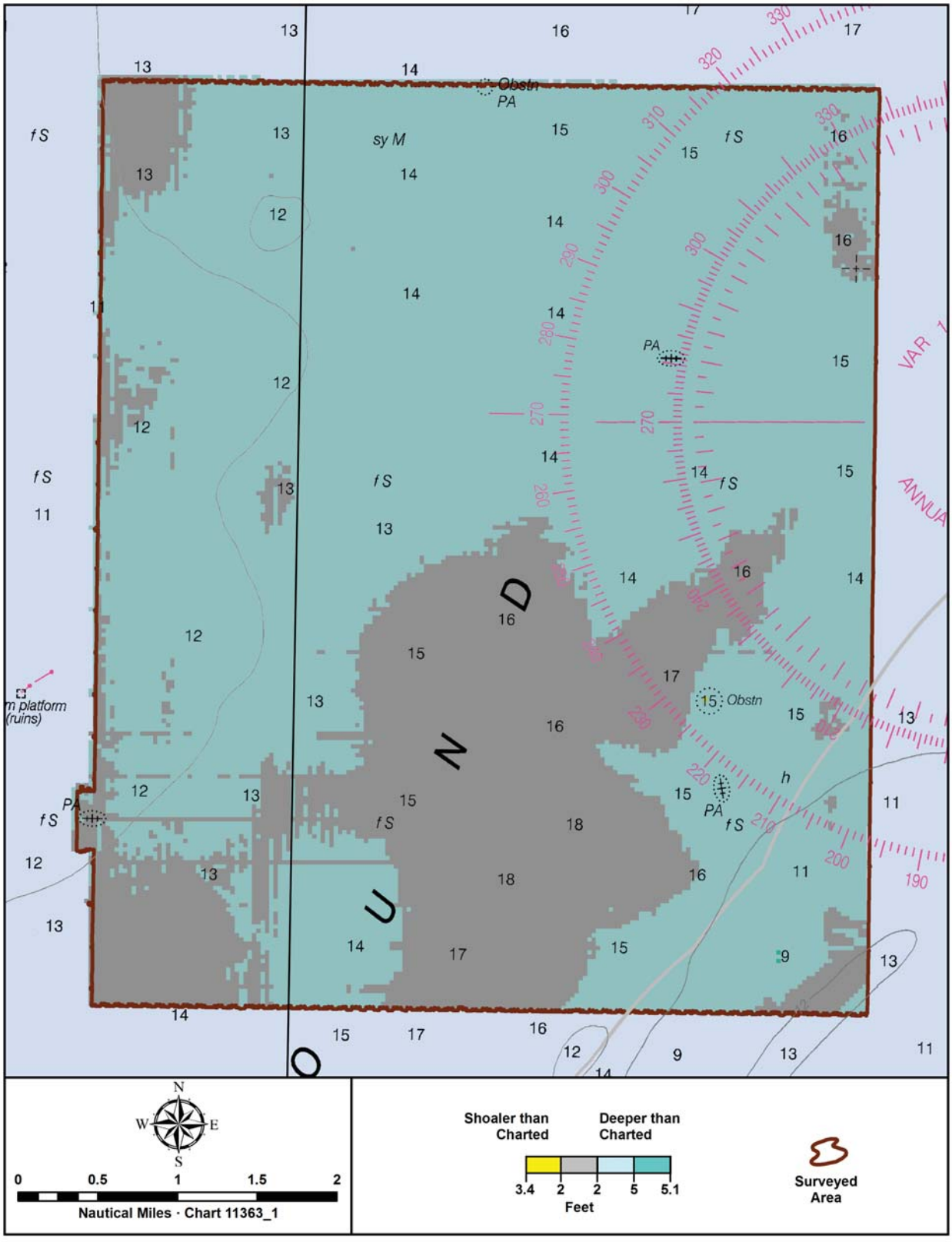



*Figure 11: Depth Difference between H12721 and chart US4LA34M*

### D.1.3 AWOIS Items

No AWOIS Items were assigned for this survey.

### D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

### D.1.5 Charted Features

The Obstruction PA (Position Approximate) charted at the northern end of the survey area has been disproved by the survey. The feature has been included in the Final Feature File (FFF) with a description of 'Delete'. The Obstruction PA has been included in the FFF with a description of 'Delete'. This feature was also disproved by survey H12712 (Project OPR-J311-KR-14) and included in the H12712 FFF.

The Wreck showing Masts PA charted in the northeast corner of the survey area has been disproved by the survey. The Wreck showing Masts PA has been included in the FFF with a description of 'Delete'.

The Wreck showing Masts PA charted in the southeast corner of the survey area has been disproved by the survey. The Wreck showing Masts PA has been included in the FFF with a description of 'Delete'.

The Wreck showing Masts PA charted along the western edge of the survey area has been disproved by the survey. Survey acquisition was extended to the west of the assigned limits to include coverage over this charted feature. The Wreck showing Masts PA has been included in the FFF with a description of 'Delete'.

### D.1.6 Uncharted Features

All uncharted features are portrayed in the FFF as surveyed and attributed with the description of 'New'.

### D.1.7 Dangers to Navigation

One Danger to Navigation (DtoN) was submitted for this survey. This DtoN was added to the charts using preliminary survey data, including the use of predicted tides.

### D.1.8 Shoal and Hazardous Features

Shoals depicted by the 12-foot contour are charted along the western edge and the northeastern corner of the survey area. Surveyed depths in these areas are deeper than charted with no soundings of 12 feet or shoaler located by the survey.

### D.1.9 Channels

The H12721 survey area does not contain any anchorage areas, maintained navigation channels or channel lines.

### D.1.10 Bottom Samples

Six bottom samples were acquired on April 9, 2015 (DN099) and April 10, 2015 (DN100). 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

A shoreline investigation was not performed for this survey. The OPR-J311-KR-14 Project Instructions required a limited shoreline verification but the H12721 survey area does not junction with shoreline.

### 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 H12721 survey area.

The position of the Mobil St. Benard Mooring Dolphin Lights (No. 13760) published in the USCG Light List (Volume IV - Gulf of Mexico) falls within the H12721 survey area. No feature was observed during survey operations in this location. The position published for this light is suspect and should be verified by the USCG. According to the Light List, this feature falls between Head of Passes and New Orleans and is charted on Chart 11364. It appears that the published latitude for these lights should be 089-58-30.000W instead of 088-58-30.000W.

Light List corrected through LNM week: 26/15

| (1) No. | (2) Name and Location | (3) Position | (4) Characteristic | (5) Height | (6) Range | (7) Structure | (8) Remarks |
|---|---|---|---|---|---|---|---|
| | **MISSISSIPPI RIVER (Louisiana) - Eighth District** | | | | | | |
| | **MISSISSIPPI RIVER - Venice to New Orleans (Chart 11364)** | | | | | | |
| | **Head of Passes to New Orleans** *Designations left descending bank (LDB) and right descending bank (RDB) are as seen from a vessel going dowstream. Mileage given indicates the number of miles above Head of Passes Junction Light.* | | | | | | |
| 13760 34890 | MOBIL ST. BENARD MOORING DOLPHIN LIGHTS (4) LDB mile 89.1 | 29-55-42.000N 088-58-30.000W | Fl R 2.5s | | | On dolphins. | Private aid. |
| 13765 34885 | TENNECO COKE WHARF LIGHT LDB mile 89.1. | 29-55-49.000N 089-58-44.000W | Fl R 2.5s | | | On dolphin. | Private aid. |
| 13770 34880 | KAISER UPPER LIGHT LDB mile 89.3. | 29-55-48.000N 089-58-48.000W | F R | | | On multi-pile structure. | Private aid. |
| 13780 34870 | NORFOLK SOUTHERN CORPORATION LIGHT LDB mile 89.8 | 29-56-23.000N 089-59-42.000W | Fl R 2.5s | | | On wall. | Private aid. |
| 13785 34865 | CHALMETTE OBSTRUCTION LIGHT LDB mile 89.9. | 29-56-00.000N 089-59-12.000W | Q R | | | On multi-pile structure. | Private aid. |

*Figure 12: Mobil St. Benard Mooring Dolphin Lights in the USCG Light List*

### 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

No submarine cables or tunnels were charted or located within the H12721 survey area. A section of an uncharted submarine pipeline was discovered during survey operations and reported to AHB and the NOAA Central Gulf Coast Navigation Manager. While not charted, the Louisiana Department of Natural Resource's Strategic Online Natural Resources Information System (SONRIS) depicts a pipeline in this location which extends through the southwest corner of the H12721 survey area. The pipeline owner, who was contacted by the Navigation Manager, reported that the pipeline was in the process of being removed. Correspondence related to this issue is included in Appendix II of this report. The section of pipeline that was visible in the survey has been portrayed in the FFF as a pipeline feature. The feature was included to facilitate data review and is not recommended for charting.

### 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 charted or located within the H12721 survey area.

### D.2.8 Significant Features

There was no additional information of scientific or practical value observed during the survey. There were no unusual submarine features or anomalous tidal or environmental conditions observed during the survey that impacted the quality of the survey or worthy of charting.

### D.2.9 Construction and Dredging

No construction or dredging activities were observed during survey operations.

### D.2.10 New Survey Recommendation

The hydrographer recommends that future surveys in Chandeleur Sound extend to the 2-meter contour. Vessels transiting through Chandeleur Sound do so in waters shallower than this survey's inshore depth limit.

### D.2.11 Inset Recommendation

No new insets are recommended for this area.

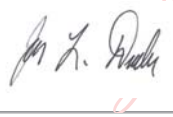
# E. Approval Sheet

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 |
|---|---|
| Data Acquisition and Processing Report | 2015-04-24 |

| Approver Name | Approver Title | Approval Date | Signature |
|---|---|---|---|
| Jonathan L. Dasler, PE, PLS, CH | NSPS/THSOA Certified Hydrographer, Chief of Party | 07/13/2015 |  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: 2015.07.13 14:19:28 -07'00' |
| Jason Creech, CH | NSPS/THSOA Certified Hydrographer, Lead Hydrographer | 07/13/2015 |  Digitally signed by Jason Creech DN: cn=Jason Creech, o=David Evans and Associates, Inc., ou=Marine Services Division, email=jasc@deainc.com, c=US Date: 2015.07.13 14:19:56 -07'00' |

# APPENDIX I

# TIDE NOTE AND GRAPHICS

# H12721
# TIMES OF HYDROGRAPHY

**Project:** OPR-J311-KR-14
**Contractor Name:** David Evans and Associates, Inc.
**Date:** April 10, 2015
**Inclusive Dates:** January 21, 2015 - April 10, 2015
Field work is complete
Time (UTC)

| Day Number | Date | Start Time | End Time |
|---|---|---|---|
| 21 | 01/21/2015 | 5:18:33 | 14:37:32 |
| 22 | 01/22/2015 | 0:08:09 | 10:43:13 |
| 24 | 01/24/2015 | 22:08:04 | 23:57:47 |
| 25 | 01/25/2015 | 0:10:16 | 5:41:50 |
| 28 | 01/28/2015 | 3:29:45 | 23:59:23 |
| 29 | 01/29/2015 | 0:10:55 | 23:52:03 |
| 30 | 01/30/2015 | 0:10:02 | 11:58:52 |
| 32 | 02/01/2015 | 0:28:43 | 18:33:47 |
| 33 | 02/02/2015 | 0:25:40 | 6:02:00 |
| 35 | 02/04/2015 | 2:18:46 | 13:12:13 |
| 37 | 02/06/2015 | 2:52:21 | 4:42:39 |
| 38 | 02/07/2015 | 0:24:46 | 13:56:13 |
| 39 | 02/08/2015 | 1:03:42 | 11:27:36 |
| 40 | 02/09/2015 | 4:42:16 | 13:02:41 |
| 41 | 02/10/2015 | 1:05:48 | 23:54:20 |
| 42 | 02/11/2015 | 0:16:28 | 14:13:38 |
| 43 | 02/12/2015 | 0:59:09 | 14:01:47 |
| 44 | 02/13/2015 | 23:18:30 | 23:52:45 |
| 45 | 02/14/2015 | 0:06:28 | 18:53:38 |
| 46 | 02/15/2015 | 23:18:06 | 23:55:24 |
| 47 | 02/16/2015 | 0:04:59 | 9:33:07 |
| 70 | 03/11/2015 | 12:31:27 | 20:35:34 |
| 99 | 04/09/2015 | 8:40:04 | 23:46:40 |
| 100 | 04/10/2015 | 0:26:40 | 14:14:43 |

# H12721
# FINAL TIDE NOTE

**DATE:** April 10, 2015

**HYDROGRAPHIC BRANCH:** Atlantic Hydrographic Branch
**HYDROGRAPHIC PROJECT:** OPR-J311-KR-14
**HYDROGRAPHIC SURVEY:** H12721

**LOCALITY:** Western Vicinity of Lake Borgne, LA
**SUB-LOCALITY:** 7NM Northwest of Shoalwater Bay

**TIME PERIOD [1] :** January 21, 2015 - April 10, 2015

## TIDE STATIONS USED:

| Station Name | Station ID | Type | Latitude | Longitude |
|---|---|---|---|---|
| Pascagoula NOAA Lab, MS | 8741533 | Control | 30° 22.1' N | 88° 33.8' W |
| Bay Waveland Yacht Club, MS | 8747437 | Control | 30° 19.6' N | 89° 19.5' W |

## PLANE OF REFERENCE (MEAN LOWER LOW WATER) :

| | |
|---|---|
| 8741533 | 0.000m |
| 8747437 | 0.000m |

## HEIGHT OF MEAN HIGH WATER ABOVE PLANE OF REFERENCE:

| | |
|---|---|
| 8741533 | 0.440m |
| 8747437 | 0.497m |

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

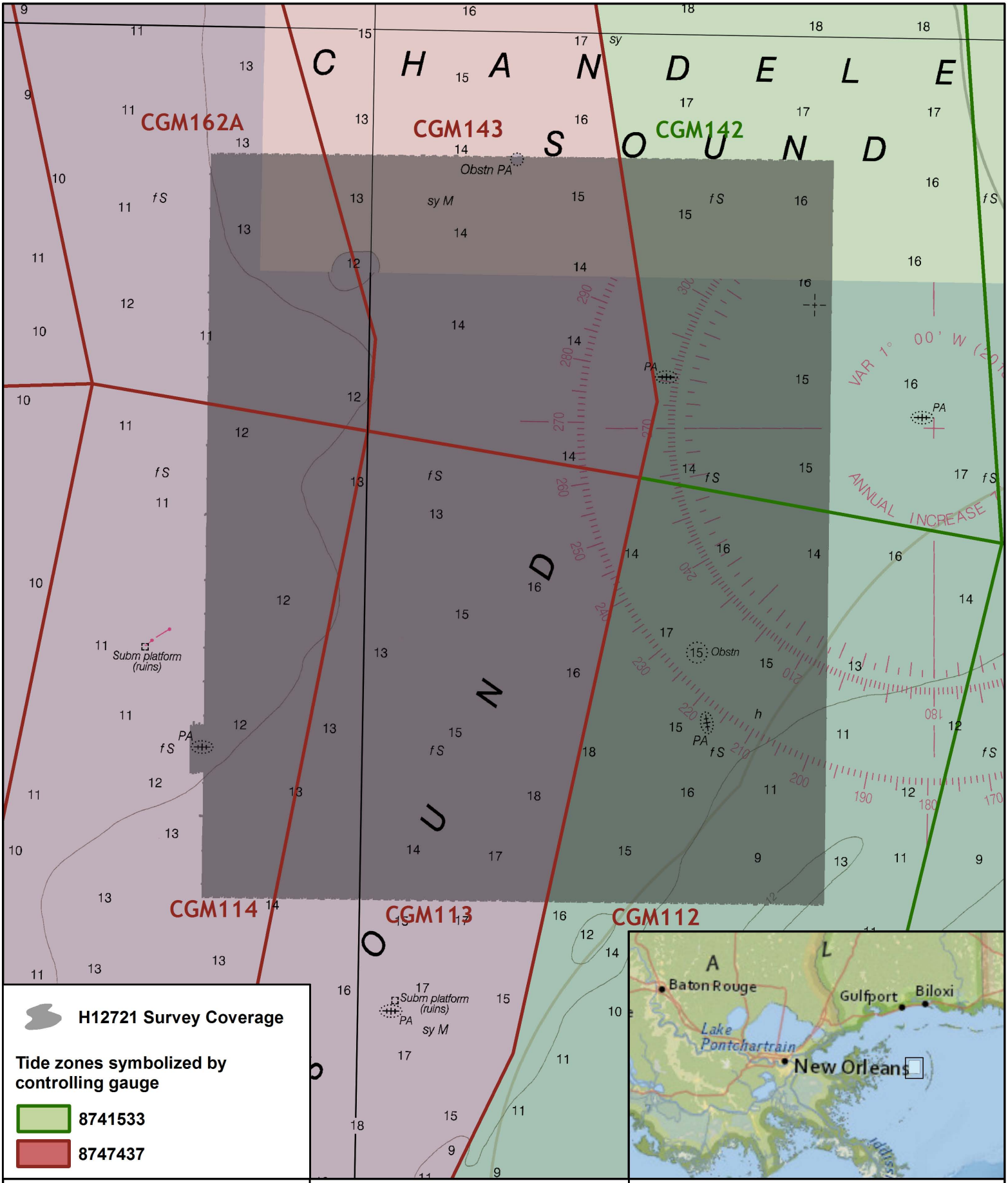
http://tidesandcurrents.noaa.gov/benchmarks.html?id=8741533

http://tidesandcurrents.noaa.gov/benchmarks.html?id=8747437

# H12721
# FINAL TIDE NOTE ZONING

| Zone | Time Corrector (Mins) | Range Ratio | Reference Station |
|---|---|---|---|
| CGM112 | 30 | 0.91 | 8741533 |
| CGM113 | -48 | 0.84 | 8747437 |
| CGM114 | -42 | 0.87 | 8747437 |
| CGM142 | 36 | 1.04 | 8741533 |
| CGM143 | -48 | 0.92 | 8747437 |
| CGM162A | -36 | 0.92 | 8747437 |

NOTE: Final soundings were reduced to chart datum using a revised version of the zoning scheme that was originally provided with the tides project instructions. The revision did not impact the zoning scheme covering the survey area.




# H12721
# Final Tide Zoning Chartlet

**OPR-J311-KR-14**
**Western Vicinity of Lake Borgne, LA**
**David Evans and Associates, Inc.**
**Chart 11363, 11373**

# APPENDIX II

# SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

## Jason Creech

**From:** Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>
**Sent:** Monday, February 16, 2015 9:03 AM
**To:** Boudreaux, Holly
**Cc:** Jason Creech
**Subject:** Re: Separated pipeline within H12721

Holly

Thanks. This is very helpful.

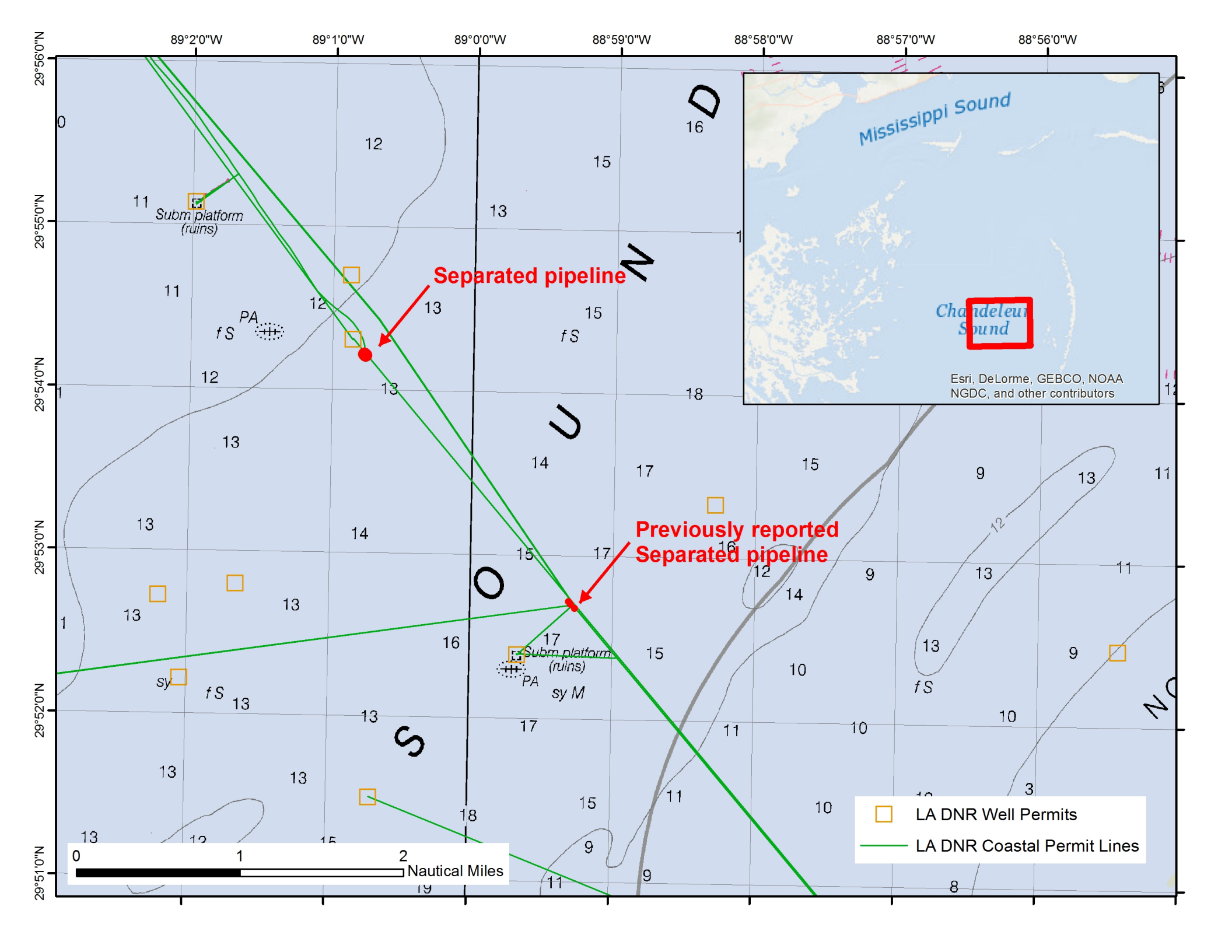
Tim

On Feb 16, 2015, at 10:10 AM, "Boudreaux, Holly" <HBoudreaux@fugro.com> wrote:

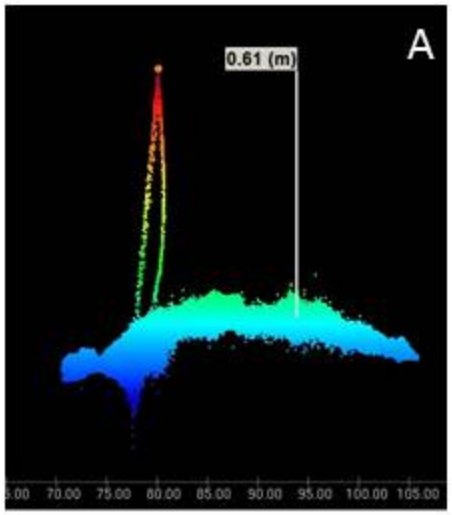
> Hi Tim,
>
> Yes, please see attached permit plats.
>
> ---
>
> **From:** Tim Osborn - NOAA Federal [mailto:tim.osborn@noaa.gov]
> **Sent:** Monday, February 16, 2015 9:53 AM
> **To:** Boudreaux, Holly
> **Cc:** Jason Creech
> **Subject:** Fwd: Separated pipeline within H12721
>
> Holly
>
> Is this also in your removal plans?
>
> Tim Osborn
> NOAA
> <image002.jpg>
>
> On Feb 16, 2015, at 9:13 AM, Jason Creech <Jasc@deainc.com> wrote:
> Hi Tim
>
> We've located another separated pipeline in Chandeleur Sound (OPR-J311-KR-14). This time within the H12721 survey area. This is on the same pipeline we reported on 2/3/15 and falls approximately 2 nm N W of that area. The least depths on the two new sections of separated pipeline are in line with the chart s so I have not prepared a DtoN.
>
> Please let me know if you have any questions or require any additional information.

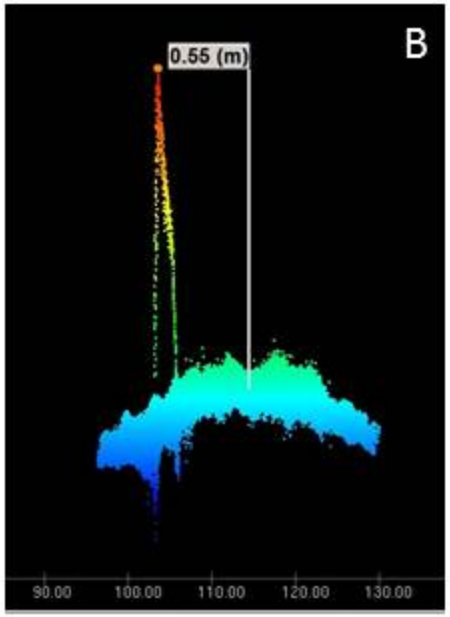
Thanks,
Jason

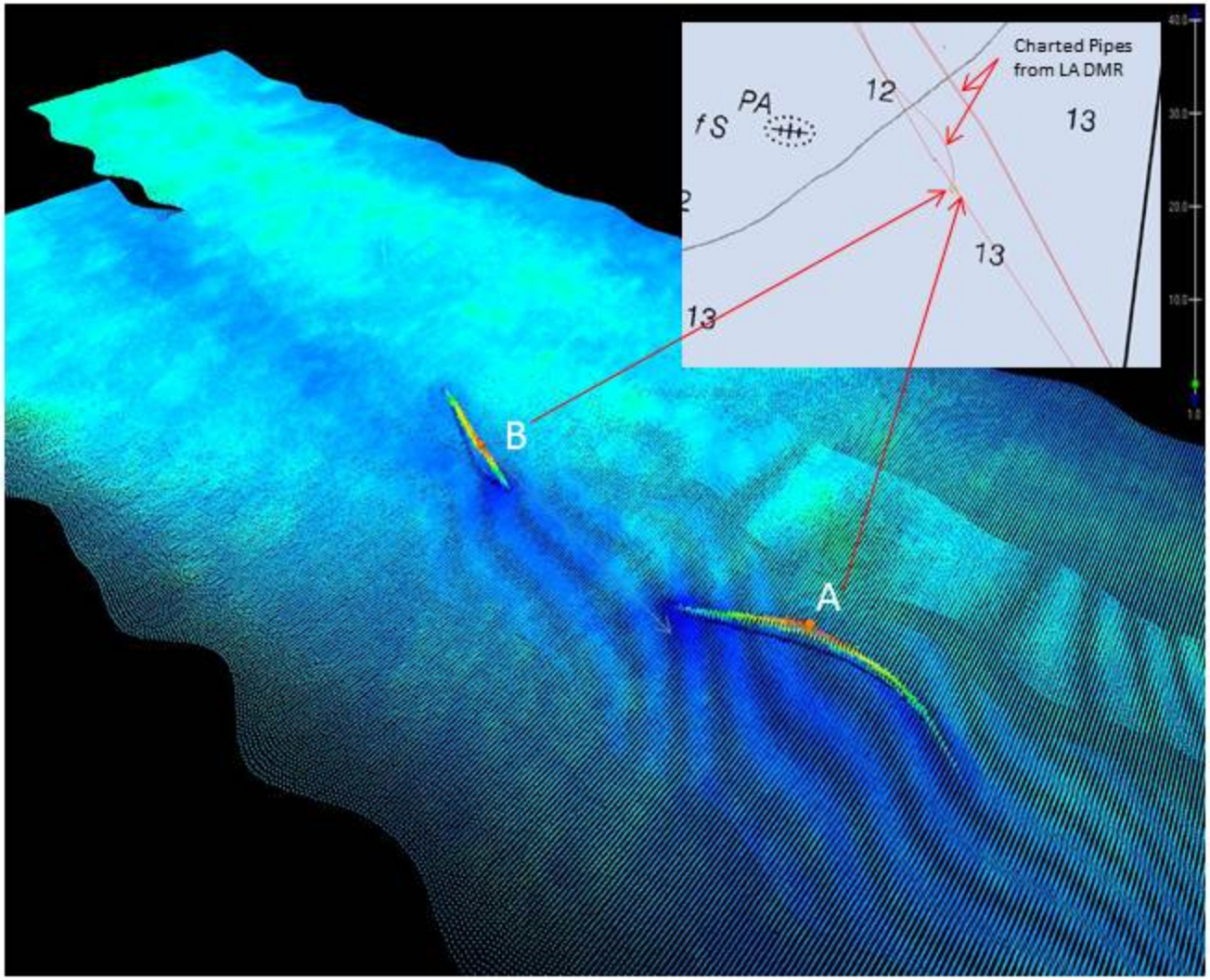
<C130488C_11-19-13.pdf>


89°2'0"W
89°1'0"W
89°0'0"W
88°59'0"W
88°58'0"W
88°57'0"W
88°56'0"W
29°56'0"N
29°55'0"N
29°54'0"N
29°53'0"N
29°52'0"N
29°51'0"N
Separated pipeline
Previously reported
Separated pipeline
Subm platform
(ruins)
Subm platform
(ruins)
PA
fS
sy
sy M
SOUND
Mississippi Sound
Chandeleur
Sound
Esri, DeLorme, GEBCO, NOAA
NGDC, and other contributors
LA DNR Well Permits
LA DNR Coastal Permit Lines
0
1
2
Nautical Miles

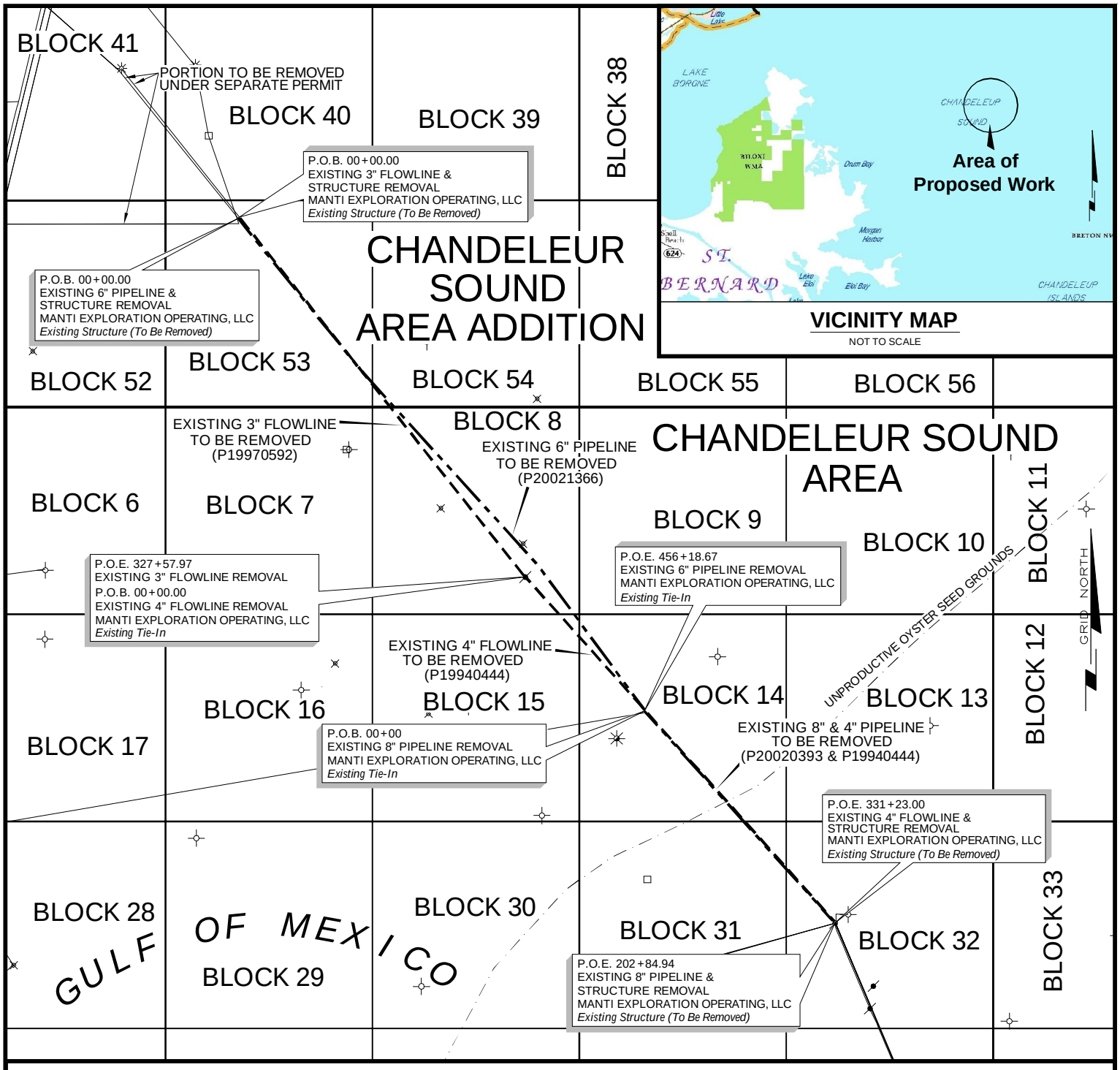
# Exposed Pipeline - Estimate 18” diameter




| | Lat (DM)* | Lon (DM)* | Depth (m) | Depth (ft) | Chart depth (ft) | Free Span length (m) | Free Span Height (m) |
|---|---|---|---|---|---|---|---|
| Pipe A | 29-54.21178N | 089-00.76078W | 4.11 | 13.49 | 13 | 13.6 | 0.61 |
| Pipe B | 29-54.21869N | 089-00.76946W | 4.18 | 13.70 | 13 | 9.1 | 0.55 |
| | *Coordinate system NAD83 | | | | | | |




## VICINITY MAP

NOT TO SCALE

## LOCATION MAP

LOCATED APPROXIMATELY 37.0 MILES NORTHEASTERLY OF SHELL BEACH, LA.

NOTES:

NO FIELD SURVEY DATA COLLECTED IN THE PREPARATION OF THESE PLANS. INFORMATION USED TO PREPARE THESE PLANS WAS GATHERED FROM THE FOLLOWING SOURCES, EXISTING SURVEY/DATABASE DATA, CLIENT INFORMATION, INTERNET OR GOVERNMENT WEBSITE DATA.

THESE PLANS WERE PREPARED EXCLUSIVELY FOR OBTAINING REGULATORY CLEARANCES, AND DO NOT PURPORT TO BE ENGINEERING DRAWINGS, OR SPECIFICATIONS. THESE PLANS DO NOT PURPORT TO ACCURATELY PORTRAY PROPERTY BOUNDARIES.

MANTI EXPLORATION OPERATING, LLC

# EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION

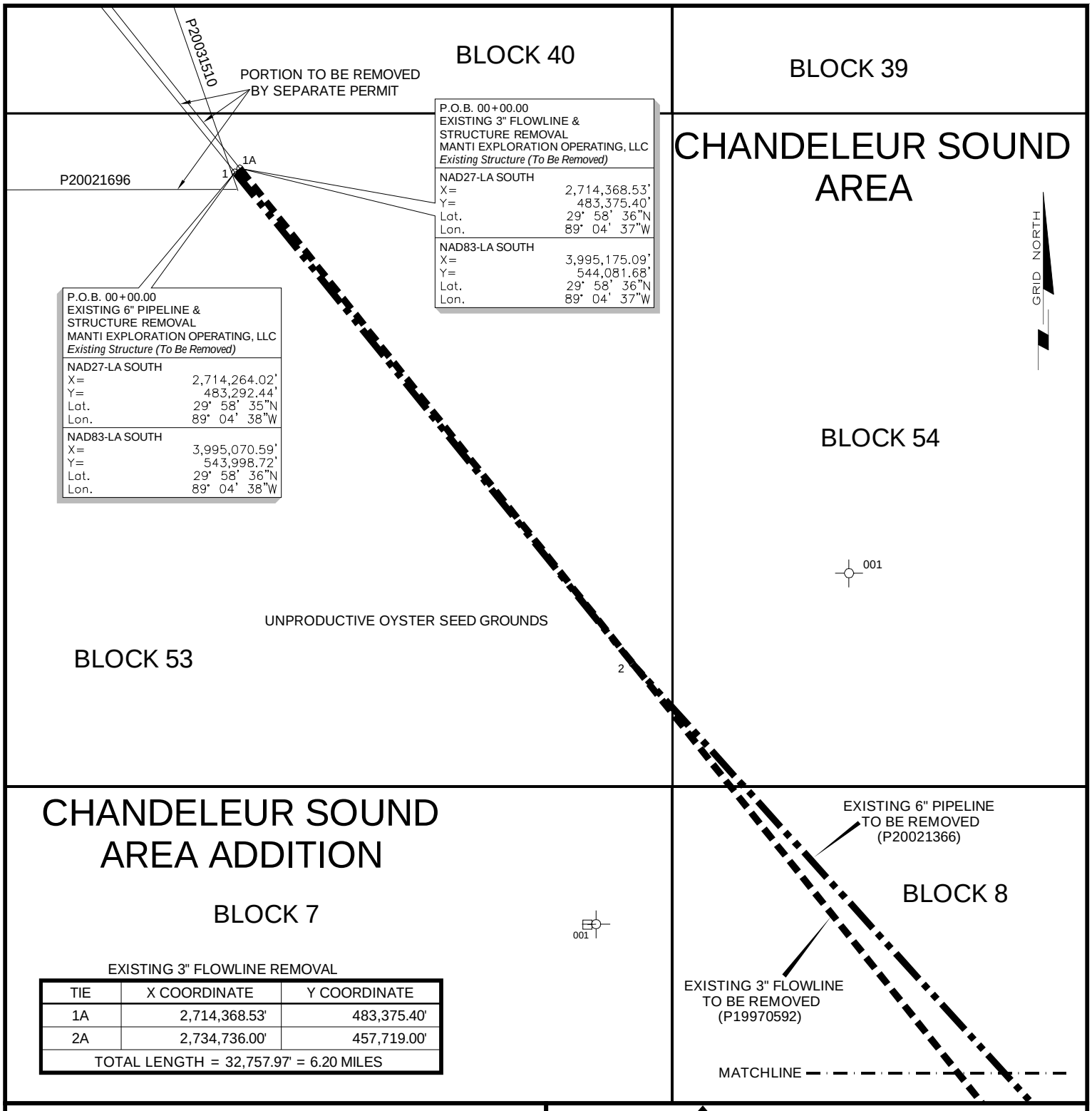
ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE LAND SURVEYS, INC.

UGRO

| | | | |
|---|---|---|---|
| GEODETIC DATUM: NAD27 & NAD83<br>ZONE: LOUISIANA SOUTH<br>GRID UNITS: US SURVEY FEET | | SCALE IN FEET 0 10,000' | |
| Job No.: 13-0488 | Date: 11/18/13 | Drwn: JDD/ECD/JDD | Chart: 1 Of: 8 |
| Dwgfile: L:\2013\130488\CAD\C130488 | | | |

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13




EXISTING 3" FLOWLINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1A | 2,714,368.53' | 483,375.40' |
| 2A | 2,734,736.00' | 457,719.00' |
| TOTAL LENGTH = 32,757.97' = 6.20 MILES | | |

EXISTING 6" PIPELINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1 | 2,714,264.02' | 483,292.44' |
| 2 | 2,722,971.92' | 472,524.72' |
| 3 | 2,735,707.05' | 458,504.74' |
| 4 | 2,743,276.88' | 448,212.13' |
| 5 | 2,743,233.48' | 448,180.93' |
| TOTAL LENGTH = 45,618.67' = 8.64 MILES | | |

DENOTES EXISTING PIPELINE

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

MANTI EXPLORATION OPERATING, LLC

# EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION

ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE LAND SURVEYS, INC.

FUGRO

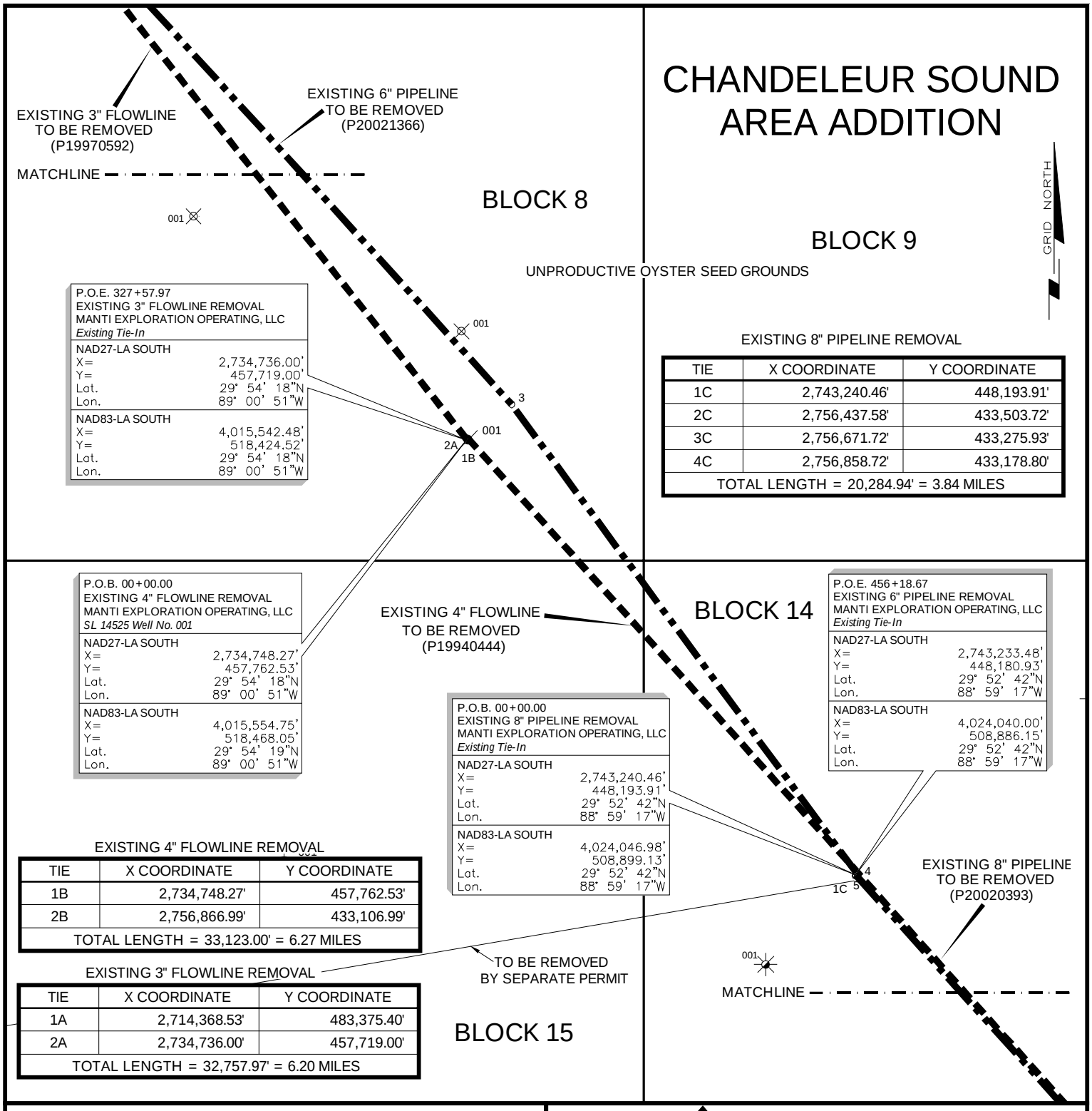
GEODETIC DATUM: NAD27 & NAD83
ZONE: LOUISIANA SOUTH
GRID UNITS: US SURVEY FEET

SCALE IN FEET 0 3,000'

Job No.: 13-0488 | Date: 11/14/13 | Drwn: JDD/ECD/JDD | Chart: 2 Of: 8

Dwgfile: L:\2013\130488\CAD\C130488A

# CHANDELEUR SOUND AREA ADDITION




P.O.E. 327+57.97
EXISTING 3" FLOWLINE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*Existing Tie-In*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,734,736.00' |
| Y= | 457,719.00' |
| Lat. | 29° 54' 18"N |
| Lon. | 89° 00' 51"W |
| NAD83-LA SOUTH | |
| X= | 4,015,542.48' |
| Y= | 518,424.52' |
| Lat. | 29° 54' 18"N |
| Lon. | 89° 00' 51"W |

EXISTING 8" PIPELINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1C | 2,743,240.46' | 448,193.91' |
| 2C | 2,756,437.58' | 433,503.72' |
| 3C | 2,756,671.72' | 433,275.93' |
| 4C | 2,756,858.72' | 433,178.80' |
| TOTAL LENGTH = 20,284.94' = 3.84 MILES | | |

P.O.B. 00+00.00
EXISTING 4" FLOWLINE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*SL 14525 Well No. 001*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,734,748.27' |
| Y= | 457,762.53' |
| Lat. | 29° 54' 18"N |
| Lon. | 89° 00' 51"W |
| NAD83-LA SOUTH | |
| X= | 4,015,554.75' |
| Y= | 518,468.05' |
| Lat. | 29° 54' 19"N |
| Lon. | 89° 00' 51"W |

P.O.B. 00+00.00
EXISTING 8" PIPELINE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*Existing Tie-In*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,743,240.46' |
| Y= | 448,193.91' |
| Lat. | 29° 52' 42"N |
| Lon. | 88° 59' 17"W |
| NAD83-LA SOUTH | |
| X= | 4,024,046.98' |
| Y= | 508,899.13' |
| Lat. | 29° 52' 42"N |
| Lon. | 88° 59' 17"W |

P.O.E. 456+18.67
EXISTING 6" PIPELINE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*Existing Tie-In*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,743,233.48' |
| Y= | 448,180.93' |
| Lat. | 29° 52' 42"N |
| Lon. | 88° 59' 17"W |
| NAD83-LA SOUTH | |
| X= | 4,024,040.00' |
| Y= | 508,886.15' |
| Lat. | 29° 52' 42"N |
| Lon. | 88° 59' 17"W |

EXISTING 4" FLOWLINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1B | 2,734,748.27' | 457,762.53' |
| 2B | 2,756,866.99' | 433,106.99' |
| TOTAL LENGTH = 33,123.00' = 6.27 MILES | | |

EXISTING 3" FLOWLINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1A | 2,714,368.53' | 483,375.40' |
| 2A | 2,734,736.00' | 457,719.00' |
| TOTAL LENGTH = 32,757.97' = 6.20 MILES | | |

EXISTING 6" PIPELINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1 | 2,714,264.02' | 483,292.44' |
| 2 | 2,722,971.92' | 472,524.72' |
| 3 | 2,735,707.05' | 458,504.74' |
| 4 | 2,743,276.88' | 448,212.13' |
| 5 | 2,743,233.48' | 448,180.93' |
| TOTAL LENGTH = 45,618.67' = 8.64 MILES | | |

DENOTES EXISTING PIPELINE

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

MANTI EXPLORATION OPERATING, LLC

## EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION

ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE LAND SURVEYS, INC.

FUGRO

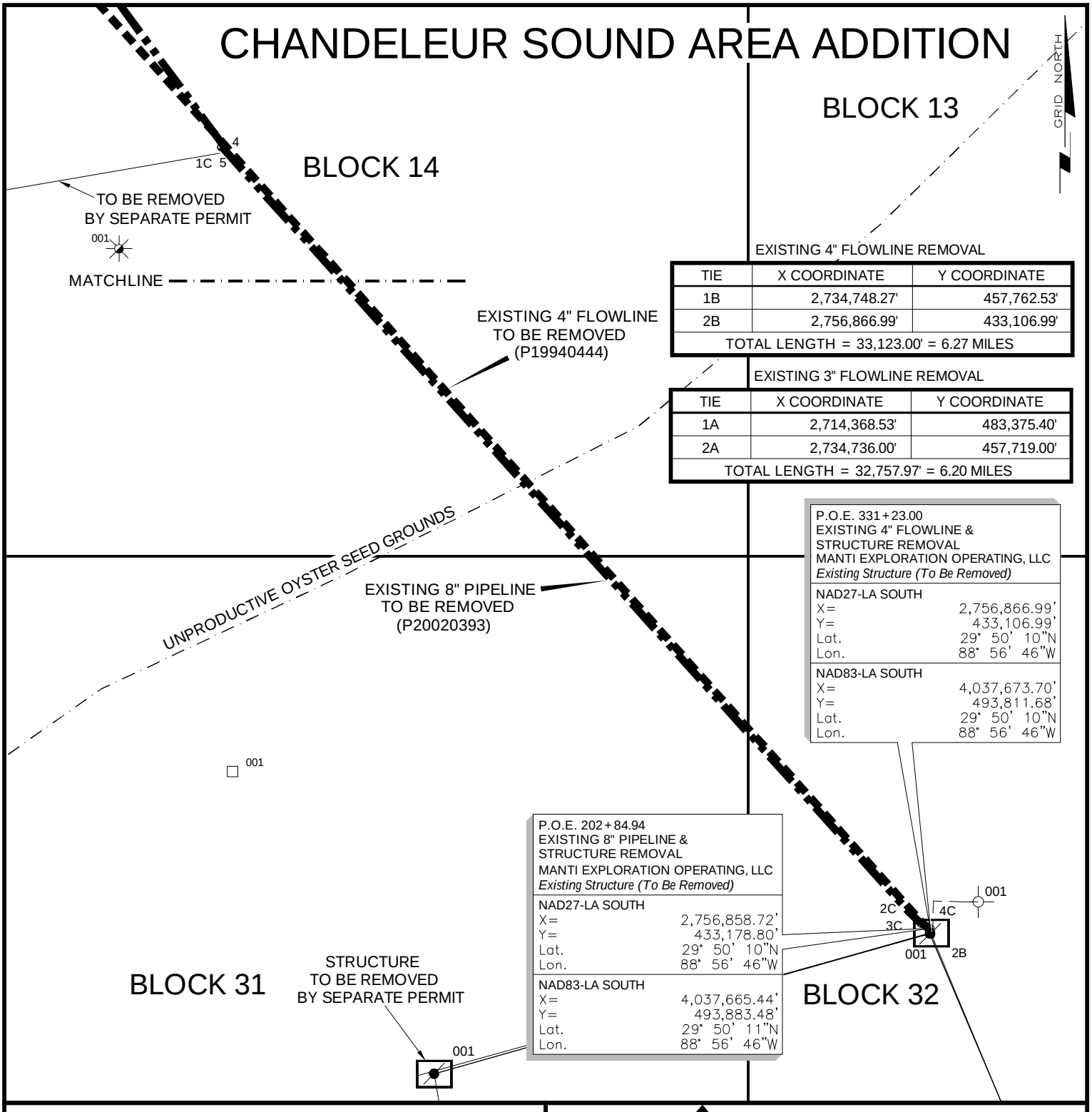
GEODETIC DATUM: NAD27 & NAD83
ZONE: LOUISIANA SOUTH
GRID UNITS: US SURVEY FEET

SCALE IN FEET 0 3,000'

Job No.: 13-0488 | Date: 11/18/13 | Drwn: JDD/ECD/JDD | Chart: 3 Of: 8

Dwgfile: L:\2013\130488\CAD\C130488B

# CHANDELEUR SOUND AREA ADDITION




EXISTING 4" FLOWLINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1B | 2,734,748.27' | 457,762.53' |
| 2B | 2,756,866.99' | 433,106.99' |
| TOTAL LENGTH = 33,123.00' = 6.27 MILES | | |

EXISTING 3" FLOWLINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1A | 2,714,368.53' | 483,375.40' |
| 2A | 2,734,736.00' | 457,719.00' |
| TOTAL LENGTH = 32,757.97' = 6.20 MILES | | |

P.O.E. 331+23.00
EXISTING 4" FLOWLINE &
STRUCTURE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*Existing Structure (To Be Removed)*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,756,866.99' |
| Y= | 433,106.99' |
| Lat. | 29° 50' 10"N |
| Lon. | 88° 56' 46"W |
| NAD83-LA SOUTH | |
| X= | 4,037,673.70' |
| Y= | 493,811.68' |
| Lat. | 29° 50' 10"N |
| Lon. | 88° 56' 46"W |

P.O.E. 202+84.94
EXISTING 8" PIPELINE &
STRUCTURE REMOVAL
MANTI EXPLORATION OPERATING, LLC
*Existing Structure (To Be Removed)*

| | |
|---|---|
| NAD27-LA SOUTH | |
| X= | 2,756,858.72' |
| Y= | 433,178.80' |
| Lat. | 29° 50' 10"N |
| Lon. | 88° 56' 46"W |
| NAD83-LA SOUTH | |
| X= | 4,037,665.44' |
| Y= | 493,883.48' |
| Lat. | 29° 50' 11"N |
| Lon. | 88° 56' 46"W |

EXISTING 8" PIPELINE REMOVAL

| TIE | X COORDINATE | Y COORDINATE |
|---|---|---|
| 1C | 2,743,240.46' | 448,193.91' |
| 2C | 2,756,437.58' | 433,503.72' |
| 3C | 2,756,671.72' | 433,275.93' |
| 4C | 2,756,858.72' | 433,178.80' |
| TOTAL LENGTH = 20,284.94' = 3.84 MILES | | |

DENOTES EXISTING PIPELINE

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

MANTI
EXPLORATION OPERATING, LLC

## EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

**BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION**

ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE
LAND SURVEYS, INC.

FUGRO

GEODETIC DATUM: NAD27 & NAD83
ZONE: LOUISIANA SOUTH
GRID UNITS: US SURVEY FEET

SCALE IN FEET 0 3,000'

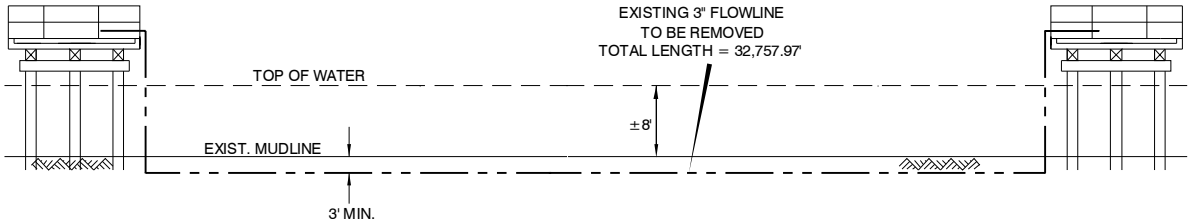
Job No.: 13-0488 | Date: 11/14/13 | Drwn: JDD/ECD/JDD | Chart: | Of: 4 8

Dwgfile: L:\2013\130488\CAD\C130488C

* MHW = +4.1' NGVD
* MLW = +2.6' NGVD

**P.O.B. 00+00.00**
**EXISTING 3" FLOWLINE & STRUCTURE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Structure (To Be Removed)*

**P.O.E. 327+57.97**
**EXISTING 3" FLOWLINE & STRUCTURE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Tie-In*

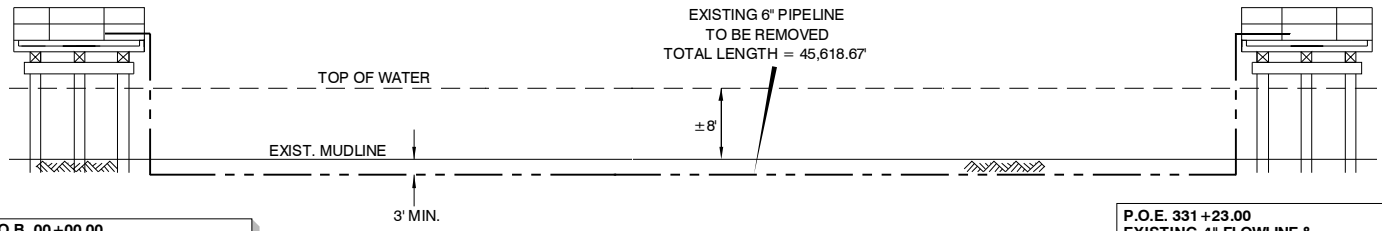



## TYPICAL PROFILE FOR EXISTING FLOWLINE REMOVAL (P19970592)

NOT TO SCALE

**P.O.B. 00+00.00**
**EXISTING 6" PIPELINE & STRUCTURE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Structure (To Be Removed)*

**P.O.E. 456+18.67**
**EXISTING 6" PIPELINE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Tie-In*

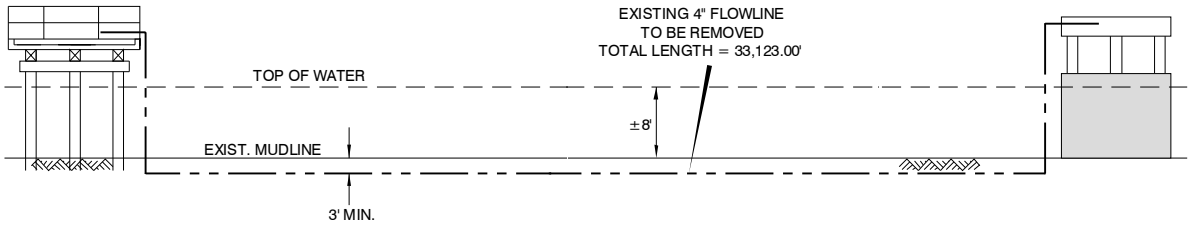



## TYPICAL PROFILE FOR EXISTING PIPELINE REMOVAL (P20021366)

NOT TO SCALE

**P.O.B. 00+00.00**
**EXISTING 4" FLOWLINE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*SL 14525 Well No. 001*

**P.O.E. 331+23.00**
**EXISTING 4" FLOWLINE & STRUCTURE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Structure (To Be Removed)*

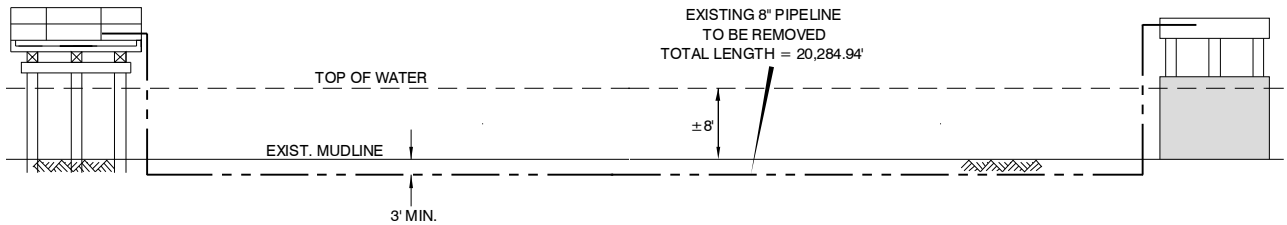



## TYPICAL PROFILE FOR EXISTING FLOWLINE REMOVAL (P19940444)

NOT TO SCALE

**P.O.B. 00+00.00**
**EXISTING 8" PIPELINE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Tie-In*

**P.O.E. 202+84.94**
**EXISTING 8" PIPELINE & STRUCTURE REMOVAL**
**MANTI EXPLORATION OPERATING, LLC**
*Existing Structure (To Be Removed)*




## TYPICAL PROFILE FOR EXISTING PIPELINE REMOVAL (P20020393)

NOT TO SCALE

* Mean Water Level taken from Mississippi River at Empire, LA. (Sta. 0144004).
Permittee shall contact the Louisiana One Call at 1-800-272-3020 forty-eight hours prior to excavation or demolition.

MANTI EXPLORATION OPERATING, LLC

# EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION
ST. BERNARD PARISH, LOUISIANA

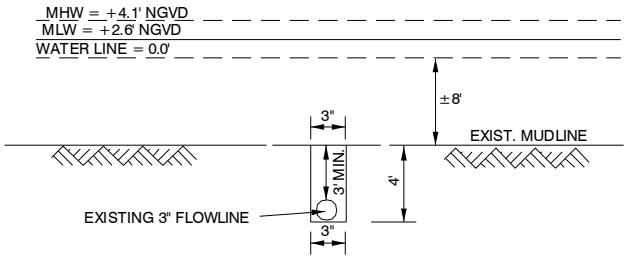
JOHN CHANCE LAND SURVEYS, INC.

| | |
|---|---|
| GEODETIC DATUM: NAD27 & NAD83<br>ZONE: LOUISIANA SOUTH<br>GRID UNITS: US SURVEY FEET | NOT TO SCALE |

| | | | |
|---|---|---|---|
| Job No.: 13-0488 | Date: 11/19/13 | Drwn: JDDJ/ECD/JDD | Chart: Of: 5 8 |
| Dwgfile: L:\2013\130488\CAD\C130488D | | | |

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

* MHW = +4.1' NGVD
MLW = +2.6' NGVD



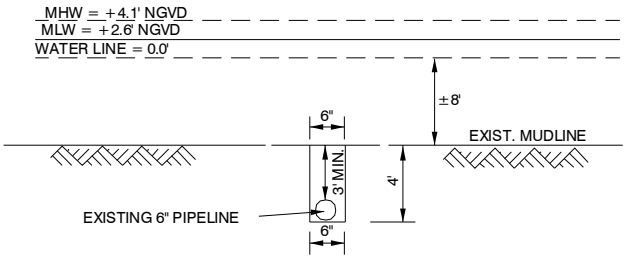

## TYPICAL IN OPEN WATER X-SECTION

NOT TO SCALE

NOTE:

32,758 OF EXISTING 3" FLOWLINE TO BE PULLED FROM 3' MIN. BELOW EXISTING MUDLINE.

APPROX. 1,213 CU. YDS. (0.2 ACRES) OF MATERIAL TO BE DISPLACED.



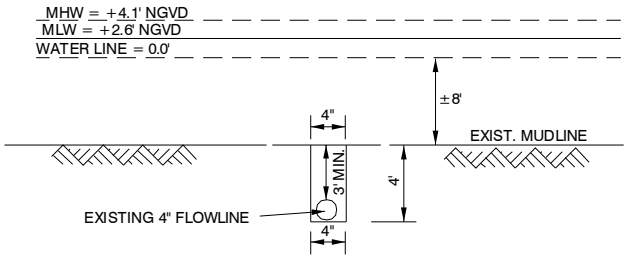

## TYPICAL IN OPEN WATER X-SECTION

NOT TO SCALE

NOTE:

45,619' OF EXISTING 6" PIPELINE TO BE PULLED FROM 3' MIN. BELOW EXISTING MUDLINE.

APPROX. 3,379 CU. YDS. (0.5 ACRES) OF MATERIAL TO BE DISPLACED.



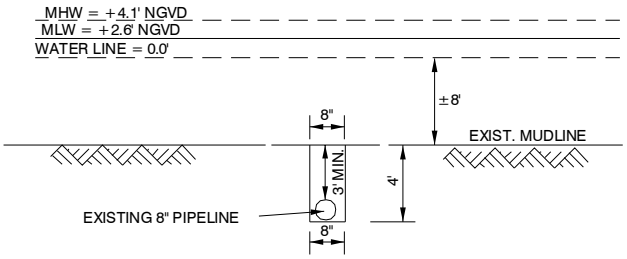

## TYPICAL IN OPEN WATER X-SECTION

NOT TO SCALE

NOTE:

33,123' OF EXISTING 4" FLOWLINE TO BE PULLED FROM 3' MIN. BELOW EXISTING MUDLINE.

APPROX. 1,634 CU. YDS. (0.3 ACRES) OF MATERIAL TO BE DISPLACED.



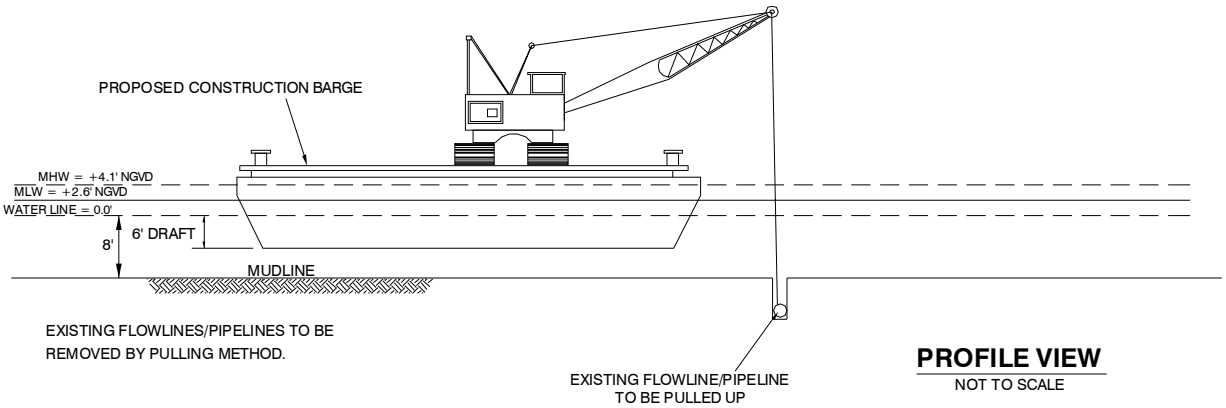

## TYPICAL IN OPEN WATER X-SECTION

NOT TO SCALE

NOTE:

20,285' OF EXISTING 8" PIPELINE TO BE PULLED FROM 3' MIN. BELOW EXISTING MUDLINE.

APPROX. 2,013 CU. YDS. (0.3 ACRES) OF MATERIAL TO BE DISPLACED.




## PROFILE VIEW

NOT TO SCALE

* Mean Water Level taken from Mississippi River at Empire, LA. (Sta. 0144004).

Permittee shall contact the Louisiana One Call at 1-800-272-3020 forty-eight hours prior to excavation or demolition.

MANTI EXPLORATION OPERATING, LLC

# EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION

ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE LAND SURVEYS, INC.

FUGRO

GEODETIC DATUM: NAD27 & NAD83
ZONE: LOUISIANA SOUTH
GRID UNITS: US SURVEY FEET

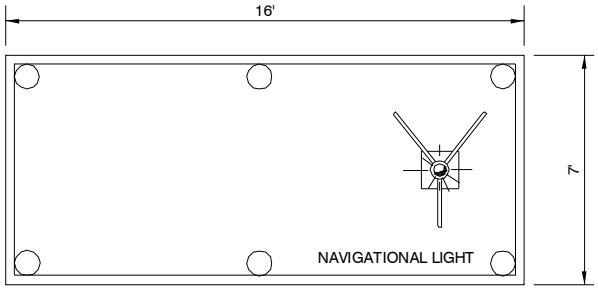
NOT TO SCALE

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

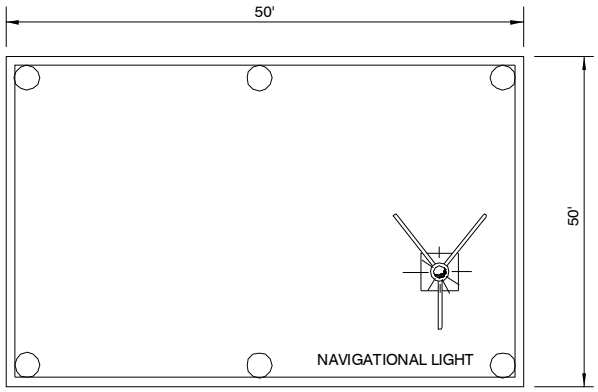
Job No.: 13-0488 | Date: 11/14/13 | Drwn: JDD/ECD/JDD | Chart: 6 Of: 8

Dwgfile: L:\2013\130488\CAD\C130488E

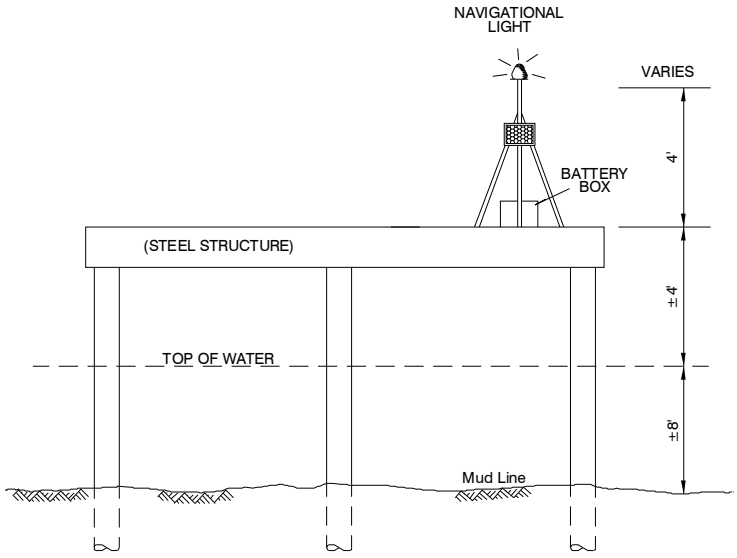
* MHW = +4.1' NGVD
MLW = +2.6' NGVD



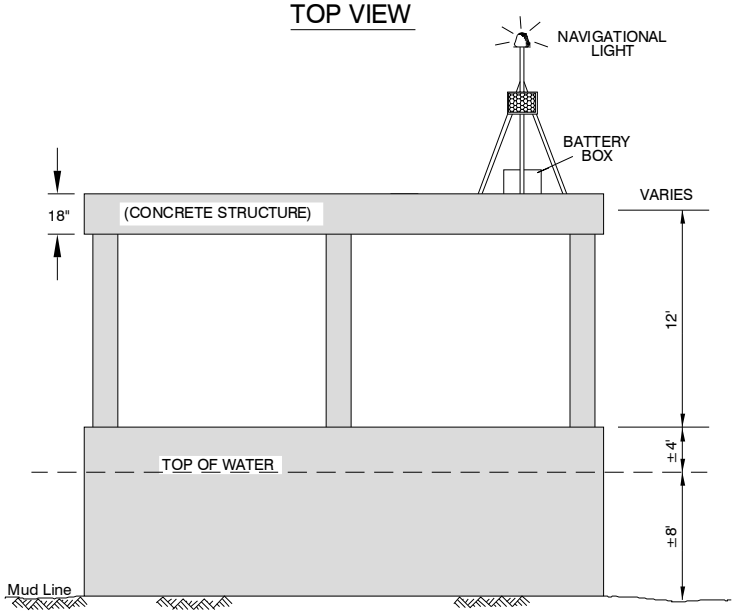

TOP VIEW




TOP VIEW




SIDE VIEW




SIDE VIEW

## EXISTING
## STRUCTURE REMOVAL

* Mean Water Level taken from Mississippi River at Empire, LA. (Sta. 0144004).
Permittee shall contact the Louisiana One Call at 1-800-272-3020 forty-eight hours prior to excavation or demolition.

MANTI
EXPLORATION OPERATING, LLC

# EXISTING 3" & 4" FLOWLINES, 6" & 8" PIPELINES & STRUCTURE REMOVAL

BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION
ST. BERNARD PARISH, LOUISIANA

JOHN CHANCE
LAND SURVEYS, INC.

fugro

| | | | |
|---|---|---|---|
| GEODETIC DATUM: NAD27 & NAD83<br>ZONE: LOUISIANA SOUTH<br>GRID UNITS: US SURVEY FEET | | NOT TO SCALE | |
| Job No.: 13-0488 | Date: 11/18/13 | Drwn: JDD/ECD/JDD | Chart: Of: 7 8 |
| Dwgfile: L:\2013\130488\CAD\C130488F | | | |

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

## Standard LDWF Provisions for Coastal Use Permits (CUPs) in Currently Productive and Unproductive Public Oyster Seed Grounds

(LDWF retains the right to amend permit provisions as needed)

1. Applicant shall be liable for, and shall compensate the state for, any damages to the oyster grounds caused by Applicant or Applicant's contractors during any work done under this permit. Prior to commencement of the permitted activity, applicant will also provide Louisiana Department of Wildlife and Fisheries with the name of an individual in authority who can be contacted regarding any work done under the permit.

2. Compensation for impacts to the public oyster seed grounds shall be in the form of the planting cultch material (i.e. crushed concrete, limestone, oyster shell, etc) at the rate of 1 cubic yard per acre of impacted area for barren, non-supportive areas of the seed grounds, 50 cubic yards per acre of impacted area for supportive areas, and 187 cubic yards per acre of impacted area for reef areas plus the value of any living oyster resources destroyed. Applicant shall bear the expense of acquisition and deposition of cultch. The cultch shall be deposited by the Applicant, its contractor or subcontractor, under the direct supervision of the Louisiana Department of Wildlife and Fisheries, and shall be deposited at a time, place, and in a manner prescribed by the Department. In lieu of planting cultch material, the Applicant may make payment directly to the Public Oyster Seed Ground Development Account.

3. Applicant shall not discharge any drilling and/or workover effluent except for flocculated filtered water into the waters in the areas of the proposed activity. Discharge rate of water shall not exceed the rate of filtering.

4. Applicant shall not discharge any produced waters into the waters in the areas of proposed activity.

5. Applicant, Applicant's contractors and sub-contractors shall not discharge any human waste from any vessel that does not meet or exceed the requirements of the Department of Health and Hospitals.

6. If access route traverses a currently productive public oyster area, the Applicant shall secure approval of the access route from LDWF and shall ingress and egress to the project location only along the approved route.

7. Applicant shall establish and maintain, until the permitted activity is complete, along the access route appropriate access route markings for vessels traveling to and from the project location. These markings may be subject to applicable local, state, and federal night operations as well as in any climatic and sea condition which may occur during permitted activities.

8. Applicant shall provide legal representation and indemnification to the Louisiana Department of Wildlife and Fisheries for any and all lawsuits and legal claims that may be filed or made against the Department of Wildlife and Fisheries as a result of activities by Applicant.

9. This permit specifically does not authorize prop washing, wheel washing, dredging, or jetting beyond what is shown in the application and drawings. Any changes or variances in the location, access route, volume of material moved and/or magnitude of the area of impact shall require formal application to, and prior written authorization from, the Department of Natural Resources (DNR). The decision by DNR with the Louisiana Department of Wildlife and Fisheries in strict adherence to all applicable provisions of the February 3, 2005 Memorandum of Agreement between those two agencies.

10. Applicant shall have at the project location float booms for containing any spills.

11. At the discretion of the Secretary or Assistant Secretary of the Louisiana Department of Wildlife and Fisheries, any activities may be suspended until more favorable conditions prevail.

12. Applicant shall provide a letter of completion and as-built drawings of the completed project to the Department of Wildlife and Fisheries no later than 60 days following completion of the permitted activity.

13. At the discretion of the Louisiana Department of Wildlife and Fisheries, a post project bottom contour and side-scan survey may be required. The results of these surveys will be made available to the Department.

14. Applicant shall remove or spread any dredged material which is greater than 0.5 feet above original bottom contours.

15. At the discretion of the Louisiana Department of Wildlife and Fisheries, the Applicant may be required to return all or part of water bottoms to pre-project conditions.

16. Applicant will provide to the Louisiana Department of Wildlife and Fisheries a water bottom assessment (unless waived by DWF) that meets DWF protocol prior to commencement of the activity.

17. All vessels utilized under this permit shall be such size and loaded in such a manner as to not impact the water bottoms over which they pass.

MANTI
EXPLORATION OPERATING, LLC

**EXISTING 3" & 4" FLOWLINES,**
**6" & 8" PIPELINES & STRUCTURE REMOVAL**
**BLOCKS 8, 14, 15, 31, 32, 53 & 54, CHANDELEUR SOUND AREA & ADDITION**
ST. BERNARD PARISH, LOUISIANA

**JOHN CHANCE**
LAND SURVEYS, INC.

| | | | |
|---|---|---|---|
| GEODETIC DATUM: NAD27 & NAD83<br>ZONE: LOUISIANA SOUTH<br>GRID UNITS: US SURVEY FEET | | NOT TO SCALE | |
| Job No.: 13-0488 | Date: 11/18/13 | Drwn: JDD/ECD/JDD | Chart: 8 Of: 8 |
| Dwgfile: L:\2013\130488\CAD\C130488G | | | |

Proj. Mgr.: RHC
Revised:
Printed: 11/19/13

**From:** Jason Creech
**Sent:** Tuesday, February 10, 2015 1:17 PM
**To:** 'ahb.dton@noaa.gov' (ahb.dton@noaa.gov)
**Cc:** 'castle.e.parker@noaa.gov'; 'Lori. Knell (lori.powdrell@noaa.gov)'; Jon Dasler; 'Christina Fandel - NOAA Federal'; 'Tim Osborn (Tim.Osborn@noaa.gov)'; 'Tiffany Squyres - NOAA Federal'
**Subject:** H12721 DtoN 1
**Attachments:** H12721_DtoN_01.000; H12721_DtoN_01_Overview_Chart_11363_1.jpg; 38-080552-S.jpg; H12721_DtoN_01_2D.jpg; H12721_DtoN_01_3D.JPG

Good Afternoon

Attached is Danger to Navigation H12721 DtoN 1 in .000 format.

This danger depicts an uncharted obstruction located in Chandeleur Sound. The sounding is preliminary and reduced to MLLW using predicted zoned tides from 8741533 Pascagoula NOAA Lab, MS.

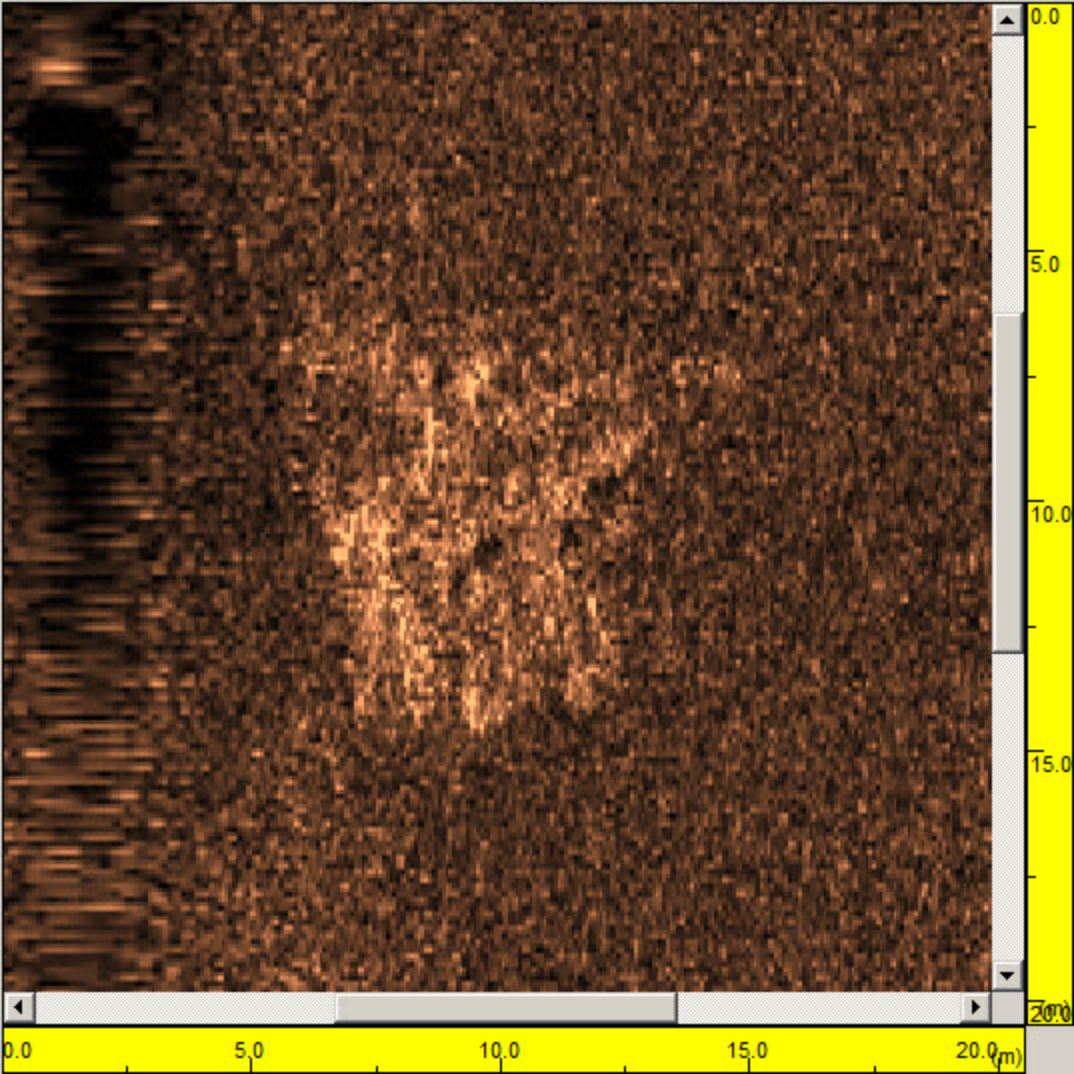
Please let me know if you have any questions or require additional information on this danger to navigation.

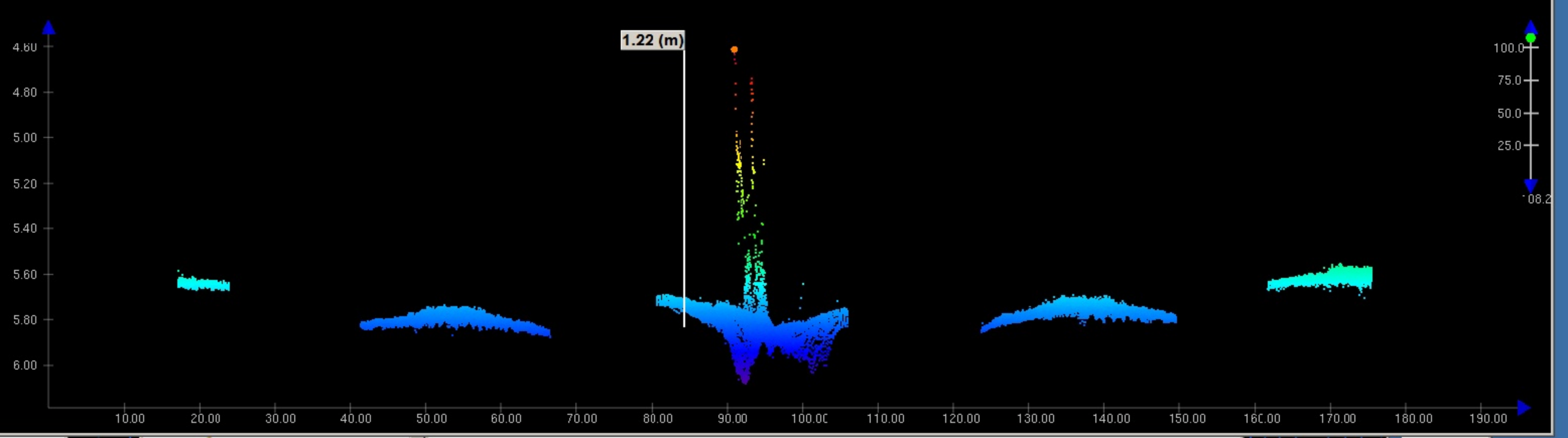
Thanks,
Jason

**Jason Creech, CH** | Senior Associate, Nautical Charting Program Manager
David Evans and Associates, Inc. | Marine Services Division | www.deamarine.com
t: 360.314.3200 | c: 804.516.7829 | jasc@deainc.com

DAVID EVANS AND ASSOCIATES INC. MARINE SERVICES

Follow us on LinkedIn | Twitter | Facebook | YouTube


0.0
5.0
10.0
15.0
20.0
0.0
5.0
10.0
15.0
20.0
(m)


1.22 (m)
4.60
4.80
5.00
5.20
5.40
5.60
5.80
6.00
10.00
20.00
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40.00
50.00
60.00
70.00
80.00
90.00
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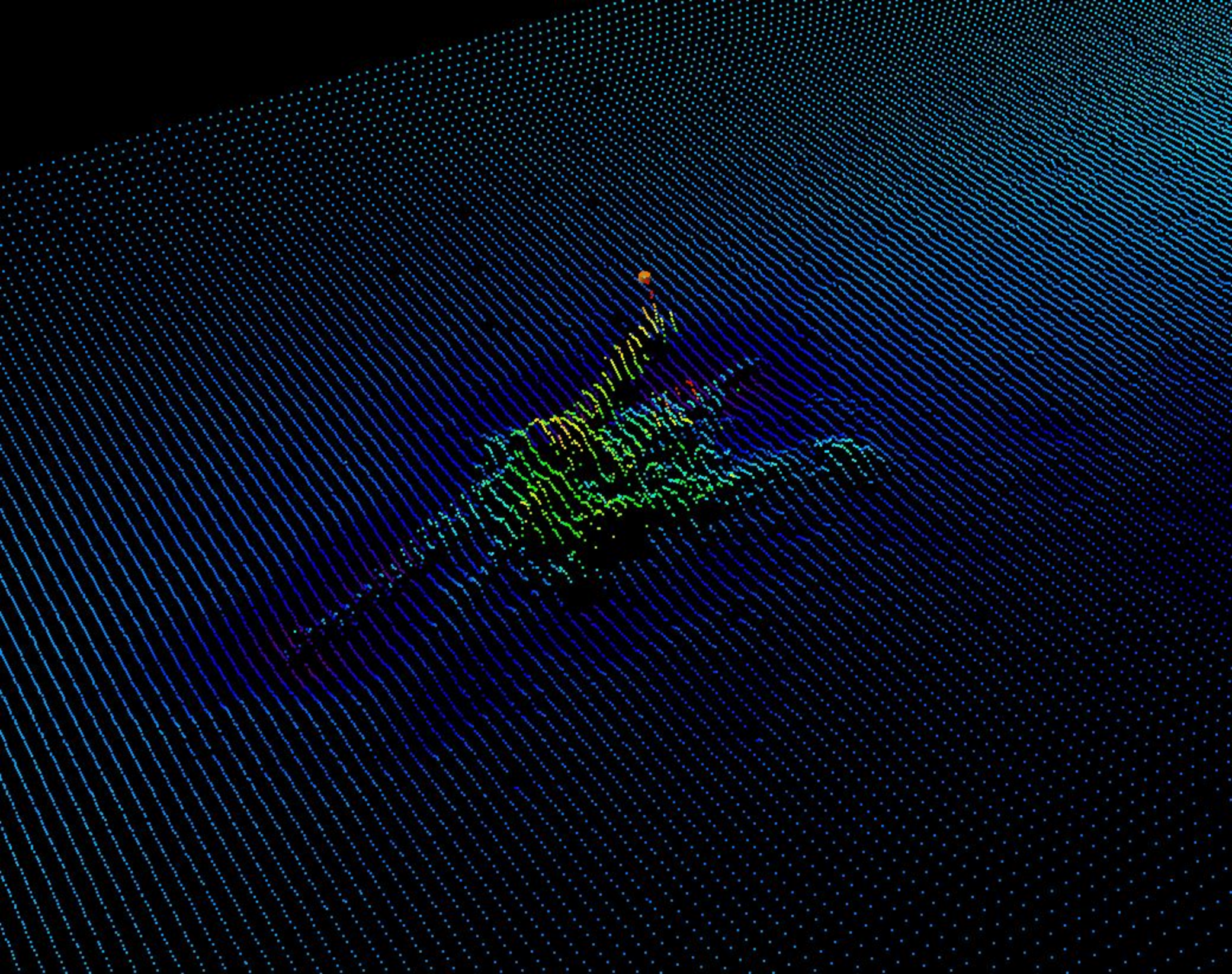

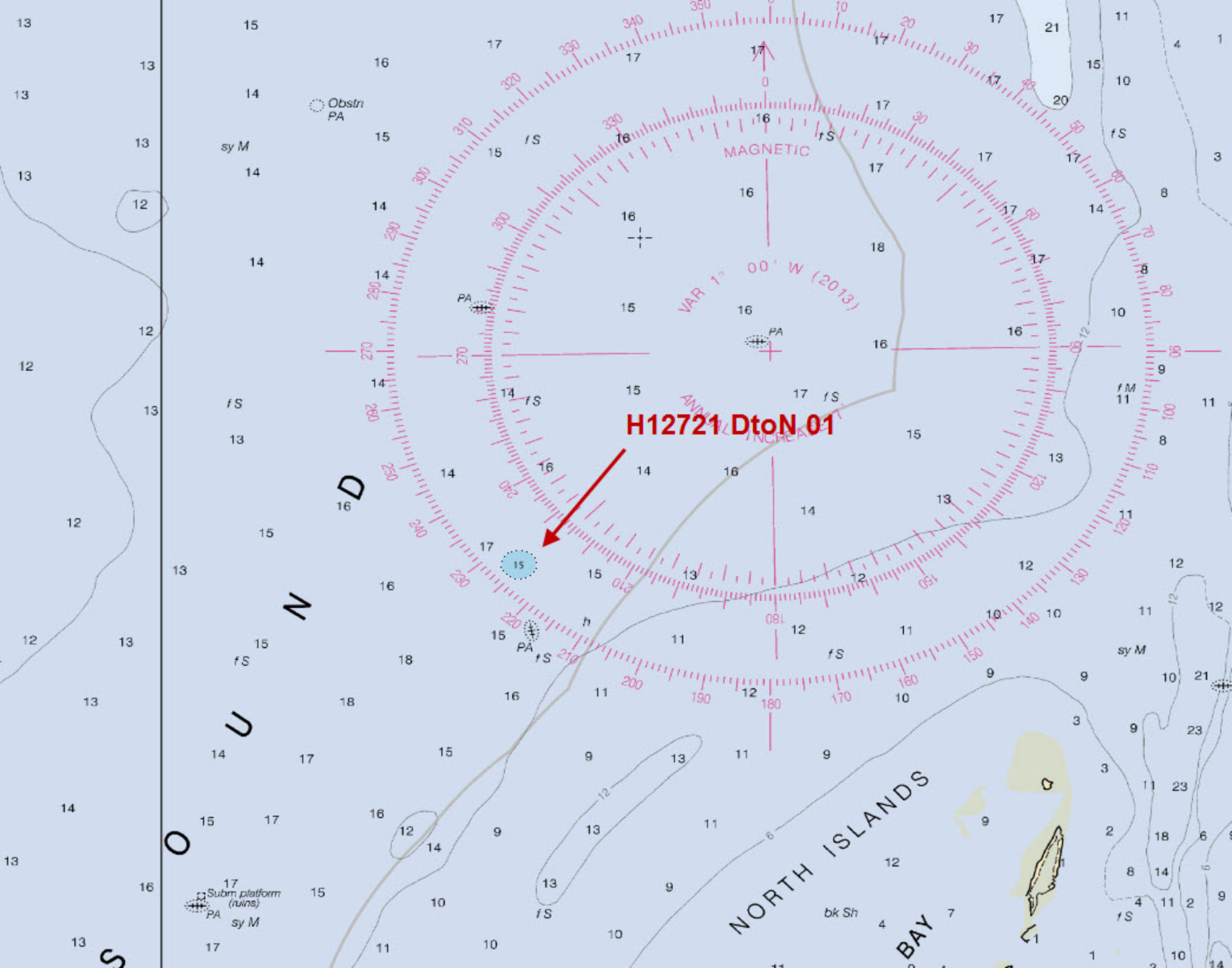
H12721 DtoN 01
MAGNETIC
VAR 1° 00' W (2013)
ANNUAL INCREASE
Obstn
PA
sy M
fS
PA
Subm platform (ruins)
PA
sy M
NORTH ISLANDS
BAY
bk Sh
fS
fM

**From:** Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>
**Sent:** Wednesday, February 11, 2015 6:05 AM
**To:** OCS NDB - NOAA Service Account
**Cc:** Matthew Jaskoski - NOAA Federal; Michael Gonsalves - NOAA Federal; Lori Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Tim Osborn - NOAA Federal; Tiffany Squyres - NOAA Federal; Jason Creech
**Subject:** H12721 DtoN #1: 15ft Obstruction submission to NDB
**Attachments:** H12721 DtoN #1.zip

Good day,

Please find attached a zip file for survey H12721 DtoN #1 for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD). This danger submission contains an uncharted 15ft Obstruction.

The information originates from NOAA contract field unit David Evans and Associates, Inc., and was submitted to the Atlantic Hydrographic Branch (AHB) for review and processing. The contents of the attached WinZip file were generated at AHB. The attached zip file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please direct them back to me via email or phone 757-441-6746 x115.

Thank you for your assistance with this matter.

Regards,
Gene Parker

*Castle Eugene Parker*
*NOAA Office of Coast Survey*
*Atlantic Hydrographic Branch*
*Hydrographic Team Lead / Physical Scientist*
*castle.e.parker@noaa.gov*
*office (757) 441-6746 x115*

APPROVAL PAGE

H12721

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

- H12721_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12711_H12712_H12720_H12721_H12722_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