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

DESCRIPTIVE REPORT

Type of Survey:	Basic Hydrographic Survey
Registry Number:	H12711
	LOCALITY
State(s):	Louisiana
General Locality:	Western Vicinity of Lake Borgne
Sub-locality:	3NM West of Chandeleur Islands
	2014
	CHIEF OF PARTY an L. Dasler, PE, PLS, CH
LIB	RARY & ARCHIVES
Date:	

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER: H12711	
HYDROGRAPHIC TITLE SHEET		
INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form filled in as completely as possible	le when the cheet is forwarded to the Office	

State(s): Louisiana

General Locality: Western Vicinity of Lake Borgne

Sub-Locality: 3NM West of Chandeleur Islands

Scale: 40000

Dates of Survey: 12/06/2014 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 H12711

Project: OPR-J311-KR-14

Locality: Western Vicinity of Lake Borgne

Sublocality: 3NM West of Chandeleur Islands

Scale: 1:40000

December 2014 - 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 three nautical miles west of the Chandeleur Islands. Survey H12711 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	
30° 4' 54.84" N	29° 58' 46.66" N	
88° 57' 15.8" W	88° 51' 53.87" 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: H12711 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
	SBES Mainscheme	0	0
	MBES Mainscheme	11.70	11.7
	Lidar Mainscheme	0	0
LNM	SSS Mainscheme	14.01	14.01
LINIVI	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	1000.19	1000.19
	SBES/MBES Crosslines	81.20	81.2
	Lidar Crosslines	0	0
- \ 02===10	Number of Bottom Samples		7
	Number of AWOIS Items Investigated		0
Number Maritime Boundary Points Investigated Number of DPs Number of Items Investigated by Dive Ops Total SNM			0
			0
			0
			21.40

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year	
12/06/2014	340	
12/07/2014	341	
12/09/2014	343	
12/10/2014	344	
12/11/2014	345	
12/12/2014	346	
12/13/2014	347	
12/14/2014	348	
12/15/2014	349	
12/16/2014	350	
03/11/2015	70	
03/12/2015	71	
03/13/2015	72	
04/07/2015	97	
04/08/2015	98	
04/10/2015	100 104	
04/14/2015		
04/15/2015	105	
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	Туре
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 8% 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. Maximum differences greater than 30 centimeters occurred in an area of high relief on the eastern side of the survey area. These differences were artifacts of producing a course resolution gridded bathymetric surface over steep slopes. Less extreme differences which were distributed throughout northern and western sides of the survey area resulted from a combination of sound speed artifacts in the outer beams and tide zoning errors.

Figure 4: H12711 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 0.329 meters with a standard deviation of 0.004 meters.

The uncertainty values of all nodes in the finalized 50-centimeter Object Detection multibeam surface range from 0.209 meters to 1.522 meters with a standard deviation of 0.029 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 40% to 65%. The mean allowable uncertainty for the surface is 42% with a standard deviation of 0.008.

For the 50-centimeter Object Detection multibeam surface, the allowable uncertainty utilized ranges from 40% to 295%. The mean allowable uncertainty for the surface is 42% with a standard deviation of 0.057. In total 973 nodes out of 445,765 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 H12711 junctions with surveys H12712, H12720, H12721, H12528 and D00140. Surveys H12712, H12720, and H12721 were also performed by DEA as part of project OPR-J311-KR-14. Survey H12528 was performed by DEA during project OPR-J348-KR-13. 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 H12711. The BAG for survey H12528 was not available for download. As a result, the final bathymetric surface delivered by DEA to AHB was used for the junction comparison with H12711. The 4-meter finalized H12711 surface was compared to each junction survey by generating a difference surface with CARIS Base Editor.

At the time of writing, data from H12721 was still being processed. The Descriptive Report for H12721 will include a junction analysis with H12711.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12712	1:40000	2014	David Evans and Associates, Inc.	W
H12720	1:40000	2014	David Evans and Associates, Inc.	S
H12721	1:40000	2014	David Evans and Associates, Inc.	SW
H12528	1:40000	2013	David Evans and Associates, Inc.	NE
D00140	1:20000	2008	Terrasond, Ltd.	S

Table 8: Junctioning Surveys

H12712

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

Figure 5: Junction results between H12711 and H12712 4-meter bathy grids

H12720

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

Figure 6: Junction results between H12711 and H12720 4-meter bathy grids

H12721

The junction analysis between H12711 and H12721 will be included in the H12721 DR.

H12528

The H12711 survey area junctions with contemporary survey H12528 in the northeast corner of the survey area. Results from the junction analysis are shown in Figure 7. The minimum and maximum differences,

which are located in the vicinity of the shoal at the north end of the Chandeleur Islands, appears to be associated with natural bottom change that has occurred since the junction survey was acquired in 2013.

Figure 7: Junction results between H12711 and H12528 4-meter bathy grids

D00140

The H12711 survey area junctions with prior hydrographic reconnaissance survey D00140. The maximum and minimum reported differences appear to be related to sediment migration since the prior survey with deviations occurring at the edges of sediment waves visible in the H12711 survey data. Results from this analysis are shown in Figure 8.

Figure 8: Junction results between H12711 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 25 to 30 nautical miles from the controlling NWLON (National Water Level Observation Network) station at 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 ERS methodology for vertical control.

Figure 9: Example of tide zoning artifact seen within H12711

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.

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 99.9% 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 H12711 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.

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 H12711 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
H12711_MB_4m_MLLW	CUBE	4.0 meters	1.96 meters - 12.44 meters	NOAA_4m	Multibeam sonar Set Line Spacing Coverage
H12711_MB_4m_MLLW_Final	CUBE	4.0 meters	1.66 meters - 12.44 meters	NOAA_4m	Finalized Multibeam sonar Set Line Spacing coverage
H12711_MB_50cm_MLLW_combined	CUBE	50 centimeters	1.85 meters - 10.76 meters	NOAA_0.5m	Object Detection Coverage
H12711_MB_50cm_MLLW_combined_Final	CUBE	50 centimeters	1.66 meters - 10.76 meters	NOAA_0.5m	Finalized Object Detection Coverage
H12711_100Percent	Mosaic	1.0 meters	-	N/A	First 100- percent coverage
H12711_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 H12711 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

Table 11: NWLON Tide Stations

File Name	Status
8741533.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 H12711 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 H12711 survey area. There is a minor inconsistency in the way H12711 Danger to Navigation (DtoN) 3 was applied to the two chart products. The DtoN was applied as a 5-foot sounding on both charts but on the ENC, the sounding is circled by an isolated 6-foot depth contour while on the RNC the 6-foot depth contour running parallel to the shoreline has been bumped out to encompass the 5-foot sounding.

No other differences were observed between the charts.

11373

Coastal chart 11373 overlaps with US4LA34M and 11363 within the survey area. There are numerous differences between the charts both within and to the north of the H12711 survey area. Chart updates from prior survey H12528 have been applied to 11373, but not 11363, US4LA34M, or US4MS12M. Charts 11363 and US4LA34M depict a platform and a ruined platform along the eastern edge of the survey area near the Chandeleur Islands. The ruined platform is not depicted on chart 11373.

No other differences were observed between the charts.

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
US4MS12M	1:80000	22	12/17/2014	05/06/2015	NO

Table 16: Largest Scale ENCs

US4LA34M

In general, surveyed depths are between 0 to 5 feet deeper than charted. Surveyed depths over the shoals at the north end of the Chandeleur Islands are significantly shoaler than charted on US4LA34M. These differences result from the depiction of outdated soundings and contours on US4LA34M. This chart has not yet been updated with results from survey H12528.

Figure 11: Depth Difference between H12711 and charts US4LA34M and US4MS12M US4MS12M

ENC US5MS12M overlaps with H12711 at the northern end of the survey area. In general, surveyed depths are between 0 to 5 feet deeper than charted.

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 Wreck showing Masts PA charted near the north end of the Chandeleur Islands has been disproved by the survey. The survey found an uncharted submerged wreck approximately 120 meters to the north of

the disproved wreck. The Wreck PA has been included in the FFF with a description of 'Delete'. A wreck depicting the surveyed wreck is included in the FFF with a description of 'New'.

The Wreck showing hull or superstructure PA charted near the north end of the Chandeleur Islands has been disproved by the survey. The survey found an uncharted submerged wreck approximately 500 meters to the west of the disproved wreck. This item was submitted as H12711 DtoN 01. The Wreck PA has been included in the FFF with a description of 'Delete'. A wreck depicting the surveyed wreck is included in the FFF with a description of 'New'.

The Pipe PA charted along the eastern side 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'.

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

Three Dangers to Navigation (DtoNs) were submitted for this survey. All DtoNs were added to the charts using preliminary survey data, including the use of predicted tides.

D.1.8 Shoal and Hazardous Features

A shoal depicted by the 12-foot and 18-foot contours is charted seaward of the Chandeleur Islands. This shoal is accurately depicted on RNC 11373 which has been updated to include the results of prior survey H12528. When compared to RNC 11363 and ENCs US4LA34M and US4MS12M the shoal has accreted westward into Chandeleur Sound.

D.1.9 Channels

The H12711 survey area does not contain any anchorage areas, maintained navigation channels or channel lines.

D.1.10 Bottom Samples

Seven bottom samples were acquired on April 7, 2015 (DN097) and April 8, 2015 (DN098). 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 shoreline of the Chandeleur Islands lies more than one nautical mile to the east of the 4-meter inshore limit in waters too shallow and hazardous for safe navigation of the survey vessel.

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 H12711 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

No submarine cables, submarine pipelines, or tunnels were charted or located within the H12711 survey area.

D.2.6 Ferry Routes and Terminals

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

D.2.7 Platforms

Two platforms are charted along the eastern edge of the survey area near the Chandeleur Islands. Charts 11363 and US4LA34M depict a platform and a ruined platform along the eastern edge of the survey area near the Chandeleur Islands. The ruined platform, which is not included on Chart 11373, has been disproved by the survey. This feature has been included in the FFF with a description of 'Delete'. The platform was surveyed approximately 100 meters to the north of its charted positon. The charted platform has been

included in the FFF with a description of 'Delete'. A feature depicting the platform in its surveyed position is included in the FFF with a description of 'New'.

D.2.8 Significant Features

Refraction artifacts were visible in the side scan and multibeam data acquired along the Northern Chandeleur Islands. These artifacts appear to have resulted from flood events on the Mississippi and Pearl Rivers which released fresh water into Chandeleur Sound. Evidence of this issue was apparent in the sound speed profiles collected during acquisition. This issue did not cause the H12711 survey data to exceed specification.

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	07/07/2015	
Jason Creech, CH	NSPS/THSOA Certified Hydrographer, Lead Hydrographer	07/07/2015	

APPENDIX I TIDE NOTE AND GRAPHICS

H12711 TIMES OF HYDROGRAPHY

Project: OPR-J311-KR-14

Contractor Name: David Evans and Associates, Inc.

Date: April 15, 2015

Inclusive Dates: December 6, 2014 - April 15, 2015

Field work is complete

Time (UTC)

Day Number	Date	Start Time	End Time
340	12/06/2014	4:46:13	23:51:58
341	12/07/2014	0:13:26	3:17:48
343	12/09/2014	0:59:33	23:57:36
344	12/10/2014	0:19:54	23:58:26
345	12/11/2014	0:13:33	11:43:11
346	12/12/2014	5:13:38	23:56:03
347	12/13/2014	0:14:19	23:55:26
348	12/14/2014	0:12:55	23:49:23
349	12/15/2014	0:09:20	23:55:27
350	12/16/2014	0:15:03	2:21:36
70	03/11/2015	3:40:48	23:55:19
71	03/12/2015	0:27:06	21:07:36
72	03/13/2015	0:41:48	5:05:53
98	04/08/2015	16:28:36	22:42:04
100	04/10/2015	17:26:32	20:46:09
104	04/14/2015	16:54:17	17:32:38
105	04/15/2015	4:46:02	6:16:09

H12711 FINAL TIDE NOTE

DATE: April 15, 2015

HYDROGRAPHIC BRANCH: Atlantic Hydrographic Branch

HYDROGRAPHIC PROJECT: OPR-J311-KR-14

HYDROGRAPHIC SURVEY: H12711

LOCALITY: Western Vicinity of Lake Borgne, LA SUB-LOCALITY: 3NM West of Chandeleur Islands

TIME PERIOD 1: December 6, 2014 - April 15, 2015

TIDE STATIONS USED:

Station Name	Station ID	<u>Type</u>	<u>Latitude</u>	<u>Longitude</u>
Pascagoula NOAA Lab, MS	8741533	Control	30° 22.1' N	88° 33.8' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER):

0.000m

HEIGHT OF MEAN HIGH WATER ABOVE PLANE OF REFERENCE:

0.440m

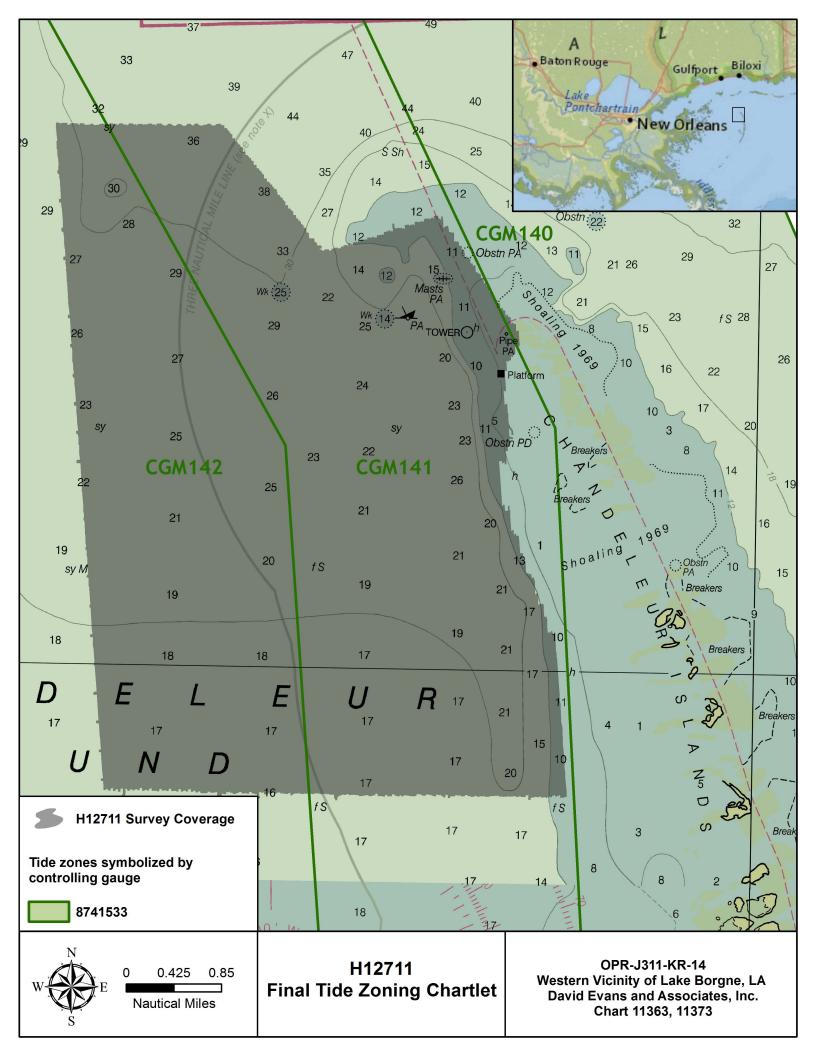
http://tidesandcurrents.noaa.gov/benchmarks.html?id=8741533

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

H12711 FINAL TIDE NOTE ZONING

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM140	12	1.01	8741533
CGM141	24	1.01	8741533
CGM142	36	1.04	8741533

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.



APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

OPR-J311-KR-14 PROJECT CORRESPONDENCE



UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE Office of Coast Survey

Silver Spring, Maryland 20910-3282

September 23, 2014

MEMORANDUM FOR: Jason Creech

Lead Hydrographer

David Evans and Associates

FROM: Lori Powdrell

Contracting Officer Representative

Operations Branch, Hydrographic Surveys Division

SUBJECT: Revision to Project: OPR-J311-KR-14

Please use this memo as supplemental correspondence and record to note the following revisions to the Tides Statement of Work for OPR-J311-KR-14, Western Vicinity of Lake Borgne.

The subordinate tide gauge installation site for station 8461385 will be moved from $30^{\circ}5.7'N$, $89^{\circ}48.5'$ W to $30^{\circ}04.1'$ N, $89^{\circ}45.1'$ W.

From: Christina Fandel - NOAA Federal <christina.fandel@noaa.gov> Sent: Monday, February 02, 2015 9:06 AM To: Jason Creech Subject: Re: OPR-J311-KR-14 Tide Uncertainy Request Hi Jason, I talked with CO-OPS, and you are correct, the uncertainty values reported for sheets 3, 4-7, and 8 are at the 95% confidence interval. With the understanding that the updated tidal uncertainty values provided by CO-OPS are strictly estimates and the actual values will fluctuate with changing conditions, HSD approves use of these values when computing total propagated uncertainty for this project area. Please submit this email as correspondence upon final delivery of survey products. Thank you, Christy On Wed, Jan 21, 2015 at 4:25 PM, Jason Creech < Jasc@deainc.com > wrote: Thanks Christy I assume these are values at the 95% confidence level? I also want to make sure that we have approval from HSD to use these values when computing total propagated uncertainty. On previous surveys Corey has signed off on these. Not sure if this is required but trying to avoid having to redo any work after we complete data processing. Thanks again for getting these values for us. I'm looking forward to catching up next week in Norfolk.

Jason

From: Christina Fandel - NOAA Federal [mailto:<u>christina.fandel@noaa.gov</u>]

Sent: Tuesday, January 20, 2015 7:11 AM

To: Jason Creech

Subject: Re: OPR-J311-KR-14 Tide Uncertainy Request

Hi Jason,

CO-OPs has re-examined the tide uncertainty values for the OPR-J311-KR-14 project area, specifically for sheets 3, 4-7, and 8. They caution that these uncertainty values are strictly estimates and the actual values will fluctuate with changing conditions. Below you will find CO-OPS updated tide uncertainty estimates for Sheets 3, 4-7, and 8 for OPR-J311-KR-14.

Sheet 3: 0.16m

Sheet 4-7: 0.15-0.20m

Sheet 8: 0.15m

I hope this is helpful, and please let me know if you have any questions. Thank you,

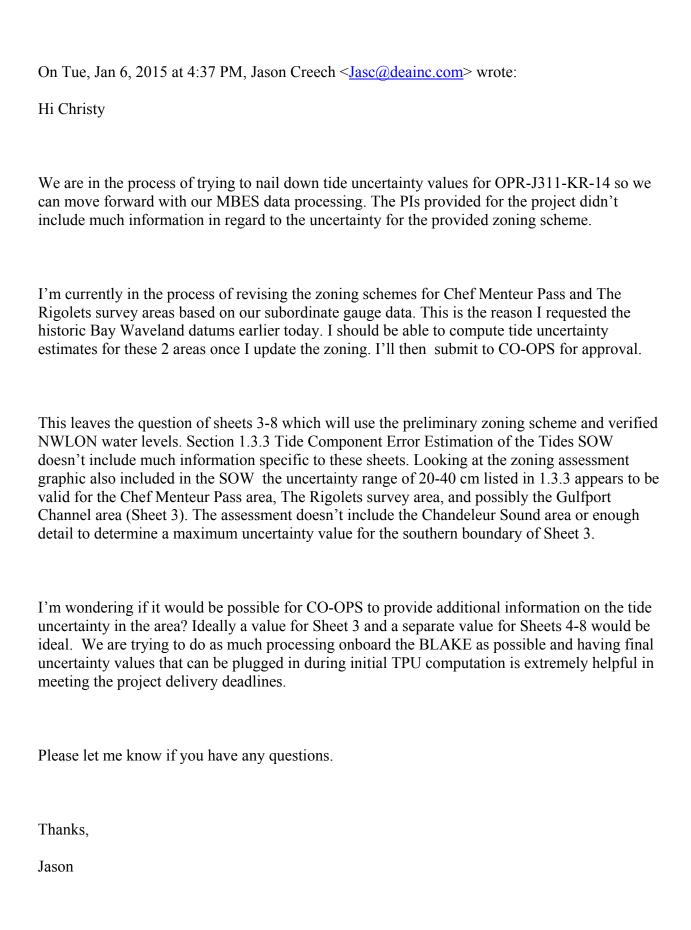
Christy

On Wed, Jan 7, 2015 at 2:36 PM, Christina Fandel - NOAA Federal christina.fandel@noaa.gov wrote:

Hi Jason,

I've requested more information regarding the estimated tidal uncertainty within the vicinity of Sheets 3-8 from CO-OPS. I will be sure to let you know when I receive information regarding this request. Thank you,

Christy



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



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__

Christy Fandel

Physical Scientist

Hydrographic Survey Division

Office of Coast Survey, NOAA

Christina.Fandel@noaa.gov

(301) 713-2702 x178

From: Tiffany Squyres - NOAA Federal <tiffany.squyres@noaa.gov>

Sent: Thursday, March 26, 2015 6:30 AM

To: Jason Creech

Cc: Lucy Hick - NOAA Federal; Lori Powdrell - NOAA Federal; Corey Allen -

NOAA Federal; Michael Gonsalves - NOAA Federal; Christina Fandel -

NOAA Federal

Subject: Re: OPR-J311-KR-14 Request for Waiver

Good morning Jason,

Referencing Task Order 1, Survey OPR-J311-KR-14, a waiver has been approved to conduct side scan sonar operations at less that 8% range scale when operating at the 50 m range scale setting. This removes the minimum towfish altitude requirement at the 50 m ranges scale as specified in the Hydrographic Surveys Specifications and Deliverables document.

This waiver is applicable only to the specified Task Order. Please note that in the future, the waiver needs to be acquired prior to commencing data acquisition.

v/r, Tiffany From: Jason Creech

Sent: Monday, December 15, 2014 12:52 PM
To: 'ahb.dton@noaa.gov' (ahb.dton@noaa.gov)

Cc: 'castle.e.parker@noaa.gov'; 'Lori. Knell (lori.powdrell@noaa.gov)'; 'Jon Dasler

(Jid@deainc.com)'; Christina Fandel - NOAA Federal; Tim Osborn

(Tim.Osborn@noaa.gov); 'Tiffany Squyres - NOAA Federal'

Subject: H12711 DtoN 1

Attachments: H12711 DtoN 01.000; 347-122152S.JPG; H12711 DtoN 01 2D.JPG;

H12711_DtoN_01_3D.JPG;

H12711_DtoN_01_Overview_Chart_11373_1.JPG.JPG

Good Afternoon

Attached is Danger to Navigation H12711 DtoN 1 in .000 format.

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

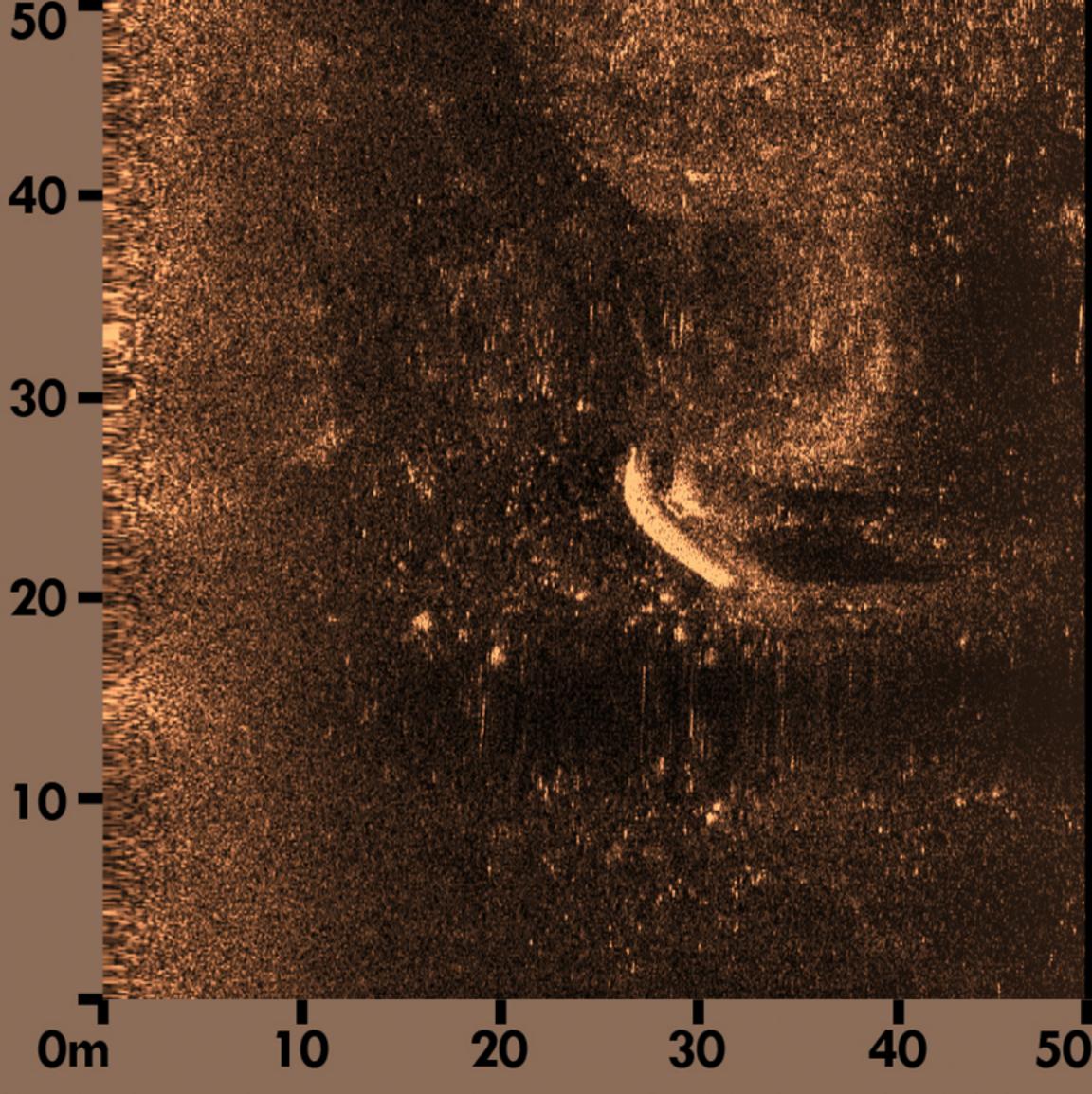
Please let me know if you have any questions or require additional information on this danger to navigation.

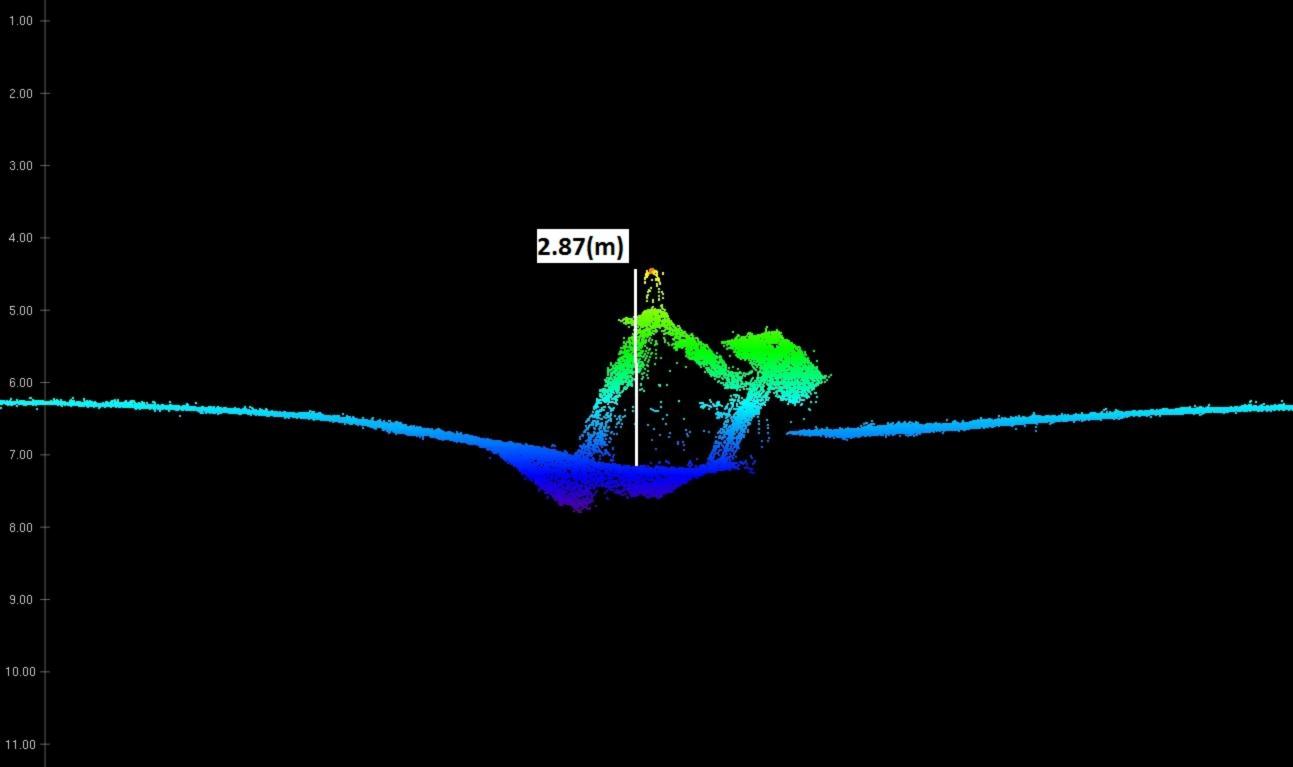
Thanks, Jason

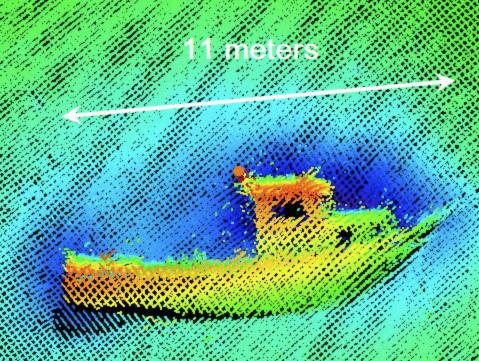
Jason Creech, CH | Senior Associate, Nautical Charting Program Manager David Evans and Associates, Inc. | Marine Services Division | www.deamarine.com t: 360.314.3200 | c: 804.516.7829 | jasc@deainc.com

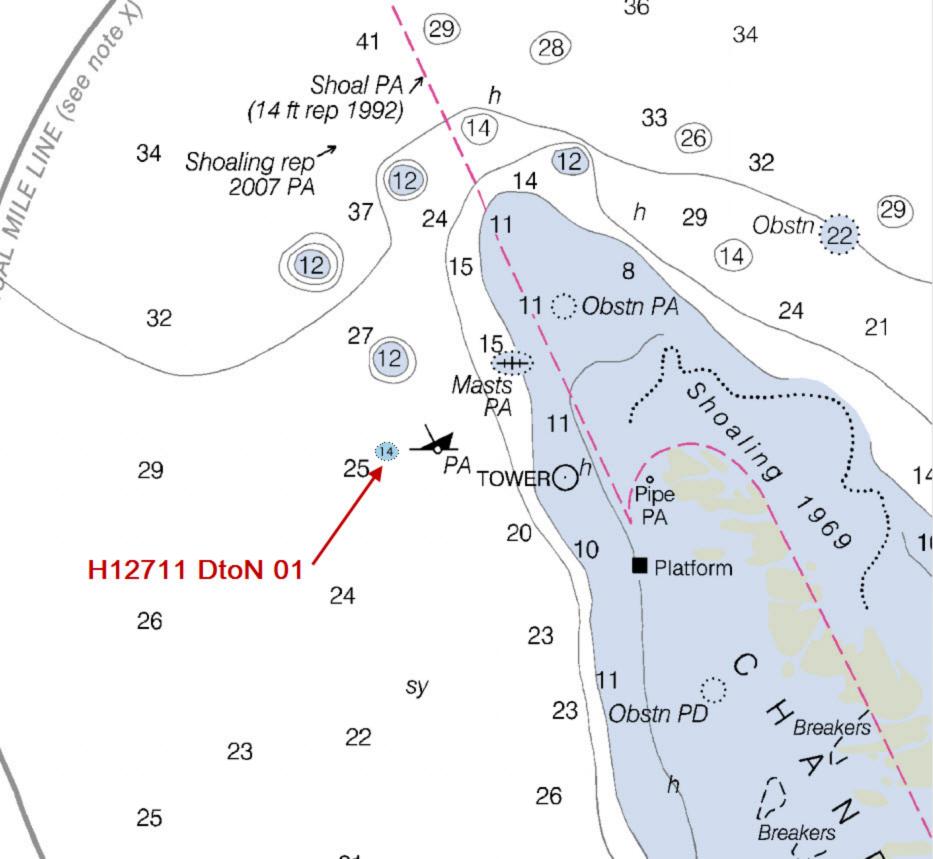


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From: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>

Sent: Tuesday, December 16, 2014 8:55 AM **To:** OCS NDB - NOAA Service Account

Cc: Matthew Jaskoski - NOAA Federal; michael.gonsalves@noaa.gov; Lori

Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Jason Creech; Tim Osborn - NOAA Federal; Tiffany Squyres - NOAA Federal

Subject: H12711 DtoN #1 Uncharted Wreck Submission to NDB

Attachments: H12711 DtoN 1 uncharted 14ft Wk.zip

Good day,

Please find attached a zip file for survey H12711 DtoN #1 for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD). This danger submission contains one feature, an uncharted sunken 14ft Wreck.

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

From: Sent: To:	NDB E-Mail Account <ocs.ndb@noaa.gov> Tuesday, December 16, 2014 1:36 PM _NOS OCS NSD Coast Pilot; _NOS OCS PBA Branch; _NOS OCS PBB Branch; _NOS OCS PBC Branch; _NOS OCS PBD Branch; _NOS OCS PBE Branch; _NOS OCS PBG Branch; Benjamin K Evans; Castle E Parker; Don Lipscomb; James M Crocker; 'Matthew.Kroll'; OCS NDB; Tara Wallace</ocs.ndb@noaa.gov>
Cc:	Matthew Jaskoski; 'Michael Gonsalves - NOAA Federal'; Lori Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Jason Creech; Tim Osborn; Tiffany Squyres - NOAA Federal
Subject: Attachments:	FW: H12711 DtoN #1 Uncharted Wreck Submission to NDB H12711 DtoN 1 uncharted 14ft Wk.zip
Follow Up Flag: Flag Status:	Follow up Flagged
L-2446/14 and DD-25686 have been registered by the Nautical Data Branch and directed to PBG for processing.	
The DtoN reported is a wreck northwest of the Chandeleur Islands, LA.	
The following charts are affected:	
11363 kapp 55	
11373 kapp 52	
11366 kapp 2886	
The following ENCs are affected:	
US4LA34M	
US3GC04M	
References:	
H12711	
OPR-J311-KR-14	

This information was discovered by a NOAA contractor and was submitted by AHB.

From: Castle Parker - NOAA Federal [mailto:castle.e.parker@noaa.gov]

Sent: Tuesday, December 16, 2014 11:55 AM

To: OCS NDB - NOAA Service Account

Cc: Matthew Jaskoski - NOAA Federal; michael.gonsalves@noaa.gov; Lori Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Jason Creech; Tim Osborn - NOAA Federal; Tiffany Squyres - NOAA

Federal

Subject: H12711 DtoN #1 Uncharted Wreck Submission to NDB

Good day,

Please find attached a zip file for survey H12711 DtoN #1 for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD). This danger submission contains one feature, an uncharted sunken 14ft Wreck.

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 From: Jason Creech

Sent: Tuesday, April 21, 2015 5:13 AM

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: H12711 DtoN 2

Attachments: H12711_DtoN_02.000;

H12711_DtoN_02_Overview_Chart_11373_1.JPG.JPG; 071-035951P.jpg;

H12711_DtoN_02_2D.JPG; H12711_DtoN_02_3D.JPG

Good Morning

Attached is Danger to Navigation H12711 DtoN 2 in .000 format.

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

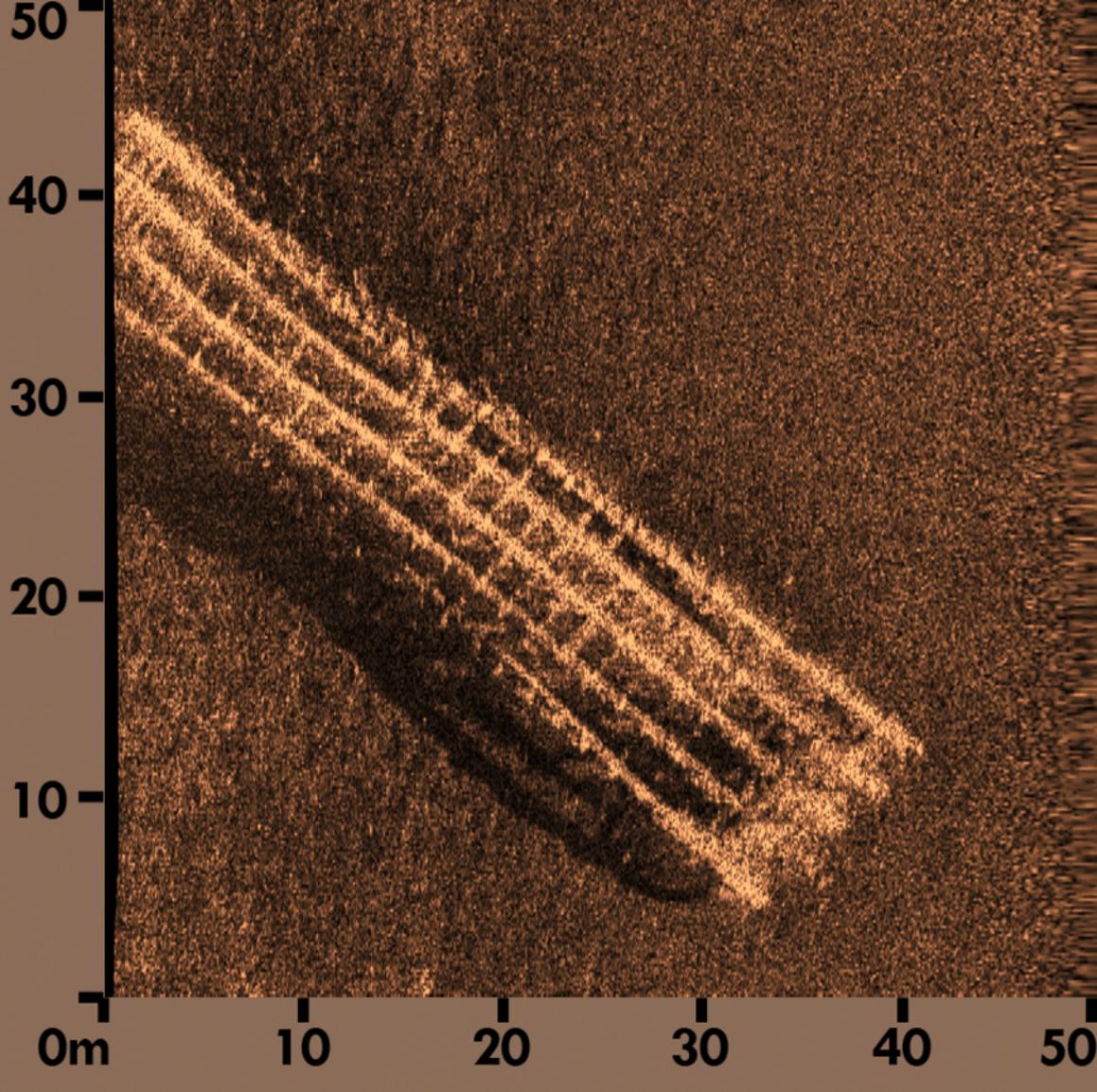
Please let me know if you have any questions or require additional information on this danger to navigation.

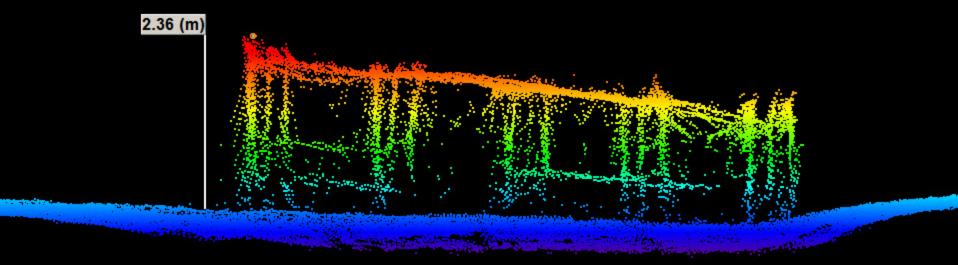
Thanks, Jason

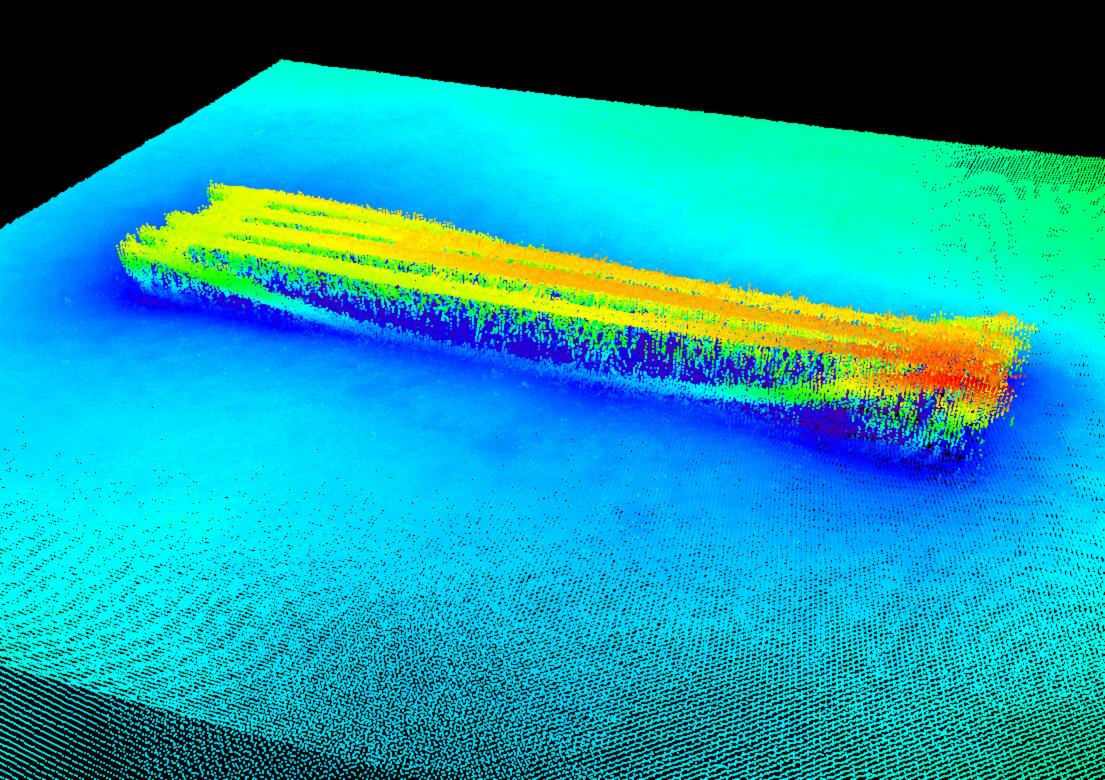
Jason Creech, CH | Senior Associate, Nautical Charting Program Manager David Evans and Associates, Inc. | Marine Services Division | www.deamarine.com t: 360.314.3200 | c: 804.516.7829 | jasc@deainc.com

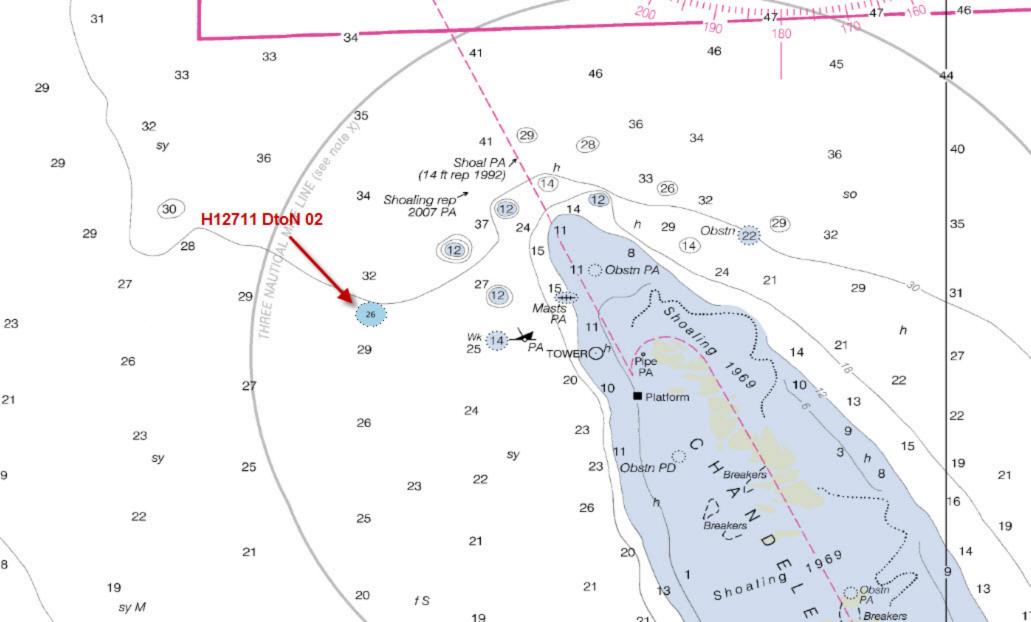


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From: Jason Creech

Sent: Tuesday, April 21, 2015 5:17 AM

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: H12711 DtoN 3

Attachments: H12711 DtoN 03.000; H12711 DtoN 03 3D.JPG;

H12711_DtoN_03_Overview_Chart_11373_1.JPG.JPG; 347-150542S.jpg;

H12711_DtoN_03_2D.JPG

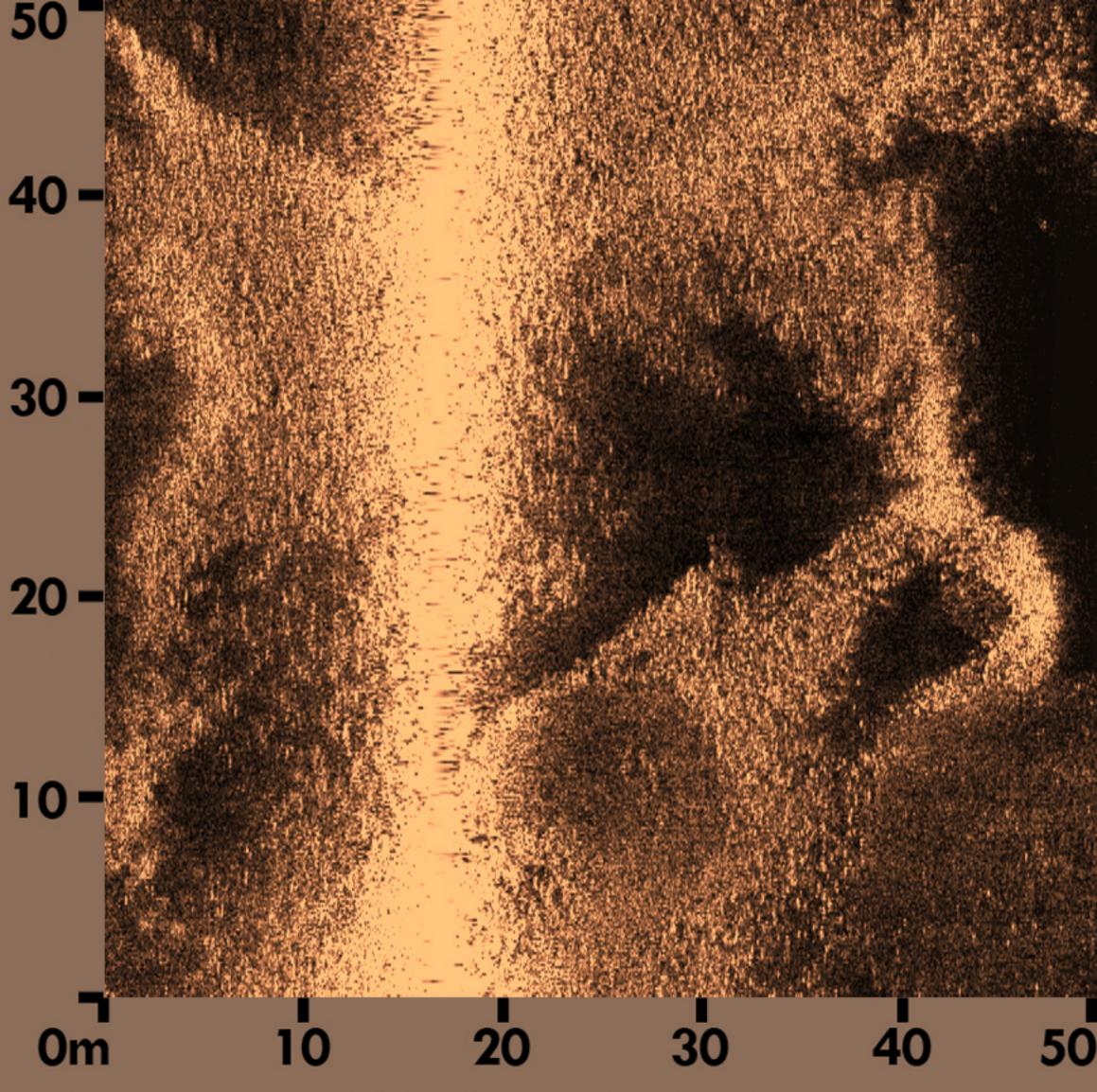
Good Morning

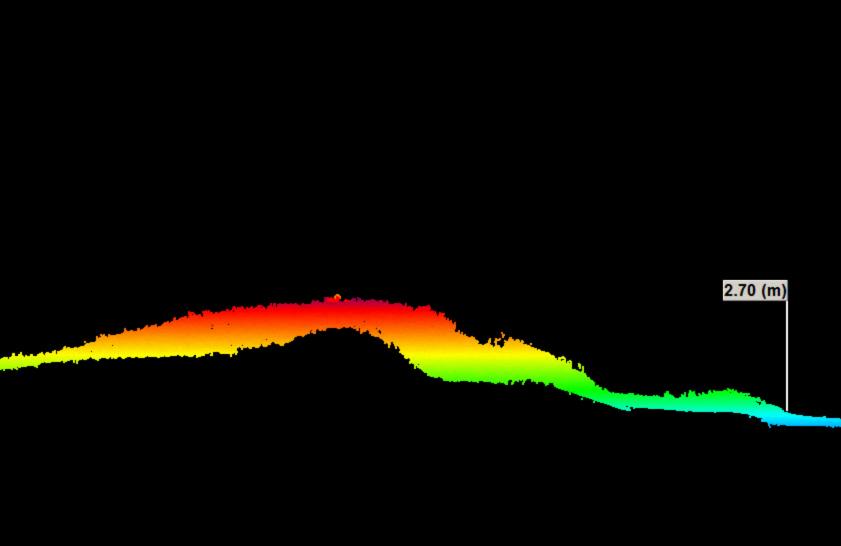
Attached is Danger to Navigation H12711 DtoN 3 in .000 format.

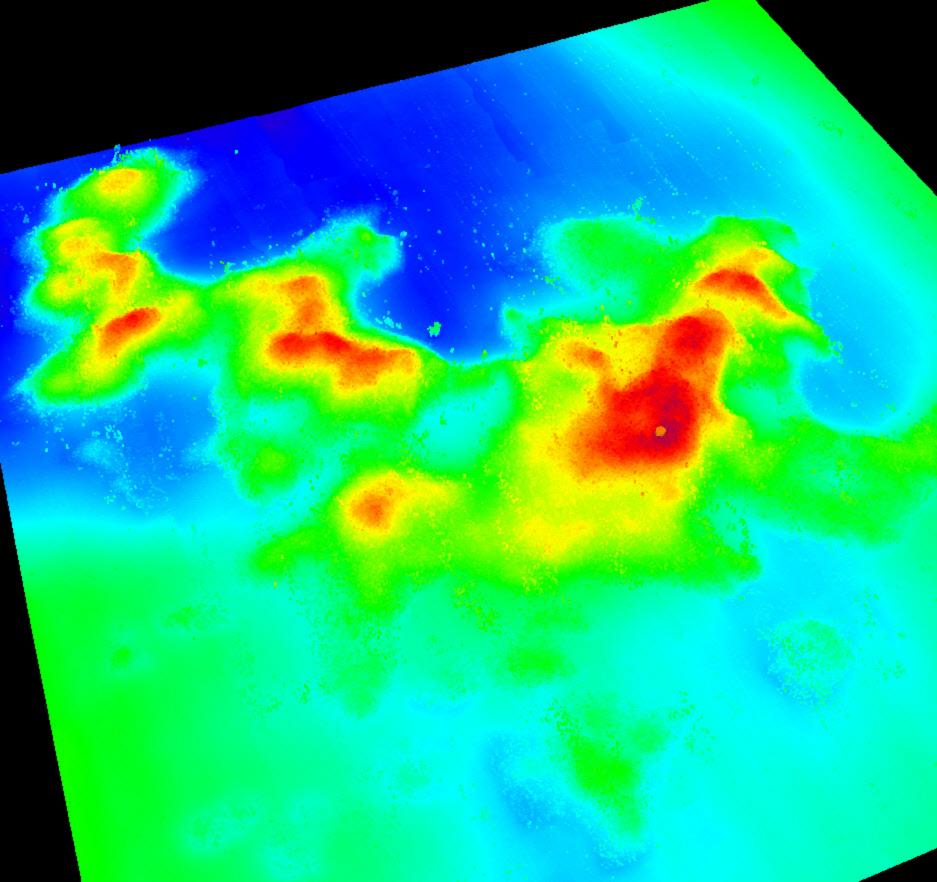
This danger depicts an uncharted obstruction in Chandeleur Sound. The sounding is preliminary and reduced to MLLW using verified zoned tides from 8741533 Pascagoula NOAA Lab, MS.

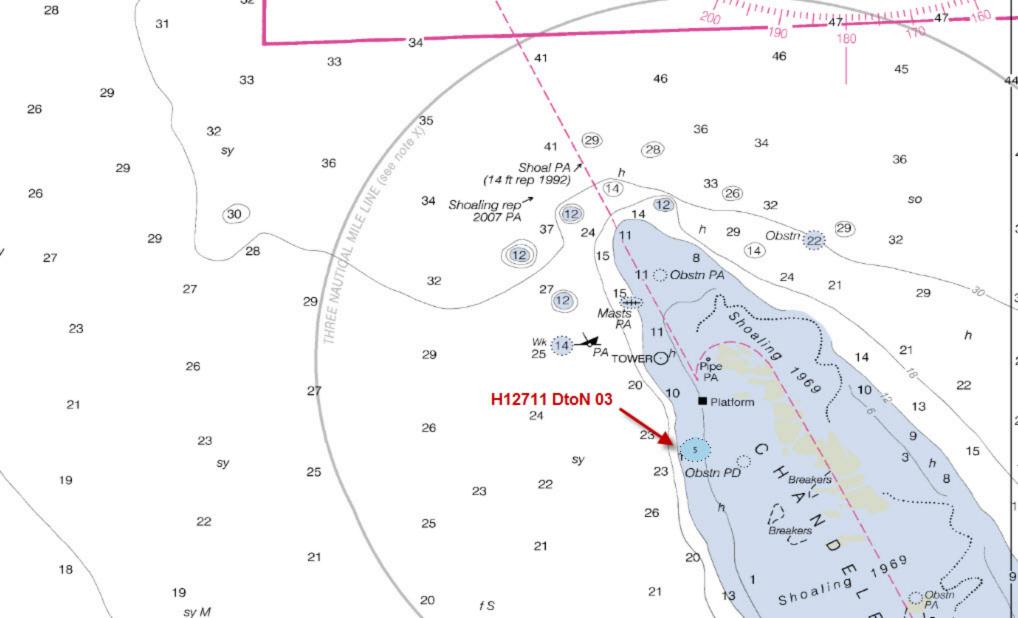
Please let me know if you have any questions or require additional information on this danger to navigation.

Thanks, Jason









From: Castle Parker - NOAA Federal <castle.e.parker@noaa.gov>

Sent: Wednesday, April 22, 2015 7:00 AM **To:** OCS NDB - NOAA Service Account

Cc: Matthew Jaskoski - NOAA Federal; Michael Gonsalves - NOAA Federal;

Lori Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Jason Creech; Tim Osborn - NOAA Federal; Tiffany Squyres - NOAA Federal

Subject: H12711 DtoN #2 & #3 Submission to NDB

Attachments: H12711 DtoN 2&3.zip

Good day,

Please find attached a zip file for survey H12711 DtoN #2 and #3 for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD). This danger submission contains two features, an uncharted sunken 25ft Wreck and a 5ft Sounding.

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

From: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Sent: Thursday, April 23, 2015 4:58 AM **To:** Castle Parker - NOAA Federal

Cc: Matthew Jaskoski - NOAA Federal; Michael Gonsalves - NOAA Federal;

Lori Powdrell - NOAA Federal; Christina Fandel - NOAA Federal; Jason Creech; Tim Osborn - NOAA Federal; Tiffany Squyres - NOAA Federal; NSD Coast Pilot; Benjamin K Evans - NOAA Federal; James Crocker - NOAA Federal; Matt Kroll - NOAA Federal; Nautical Data Branch; Tara Wallace - NOAA Federal; Pearce Hunt - NOAA Federal; _NOS OCS PBA Branch; NOS OCS PBB Branch; NOS OCS PBC Branch; NOS OCS PBD

Branch; NOS OCS PBE Branch; NOS OCS PBG Branch

Subject: Re: H12711 DtoN #2 & #3 Submission to NDB

Attachments: H12711 DtoN 2&3.zip

L-747/15 and DD-26102 have been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The DtoNs reported are a sunken 25ft wreck and a 5ft shoal sounding in Chandeleur Sound, located approximately 3 NM northwest of the Chandeleur Islands, LA.

The following charts are affected: 11363 kapp 55

11373 kapp 52

11366 kapp 2886

The following ENCs are affected: US4LA34M

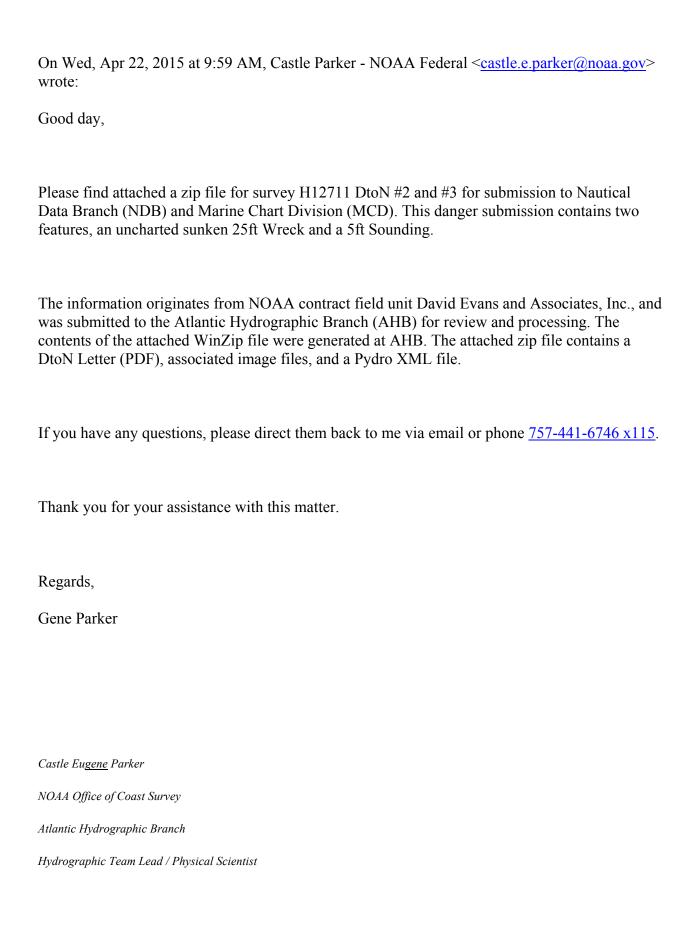
US3GC04M

References: H12711 OPR-J311-KR-14

This information was discovered by a NOAA contractor and was submitted by AHB.

Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
Contact: ocs.ndb@noaa.gov

NOAA NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION



castle.e.parker@noaa.gov

office <u>(757) 441-6746 x115</u>

APPROVAL PAGE

H12711

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

- H12711_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