NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey:

Navigable Area

Registry Number:

H12187

LOCALITY

State:

2187

General Locality: Northern Gulf of Mexico

Louisiana

Sub-locality: 35 NM Southeast of Sabine, TX

2010

CHIEF OF PARTY CDR Shepard M.Smith NOAA

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DATE

NOAA FORM 77-28 (11-72)

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

REGISTRY NUMBER:

H12187

HYDROGRAPHIC TITLE SHEET

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

State:	Louisiana		
General Locality:	Northern Gulf of Mexico		
Sub-Locality:	35 NM Southeast of Sabine, TX		
Scale:	1:40,000	Date of Survey:	15 April to 5 May 2010
Instructions Dated:	12 March 2010	Project	Number: OPR-K371-TJ-10
Vessel:	NOAA Ship Th	omas Jefferson	
Chief of Party:	CDR Shepard	M. Smith, NOAA	A Contraction of the second seco
Surveyed by:	Thomas Jefferso	on Personnel	
Soundings by:	Reson 7125 mu	ltibeam echosour	nder
Graphic record scaled by:	N/A		
Graphic record checked by:	N/A		
Protracted by:	N/A	Automated Plot:	: N/A
Verification by:	Atlantic Hydrog	raphic Branch	
Soundings in:	Meters at MLL	W	
H-cell Compilation Units	Feet at MLLW		
Remarks: 1) All Times are in UTC. 2) This is a Navigable Area Hydrographic Survey. 3) Projection is NAD83, UTM Zone 15.			
Red, Bold, Italic notes were made during office processing			

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Descriptive Report to Accompany Hydrographic Survey H12187

Project OPR-K371-TJ-10 Northern Gulf of Mexico 35 NM Southeast of Sabine, TX Scale 1:40,000 15 April – 5 May 2010 NOAA Ship Thomas Jefferson

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-K371-TJ-10, dated 12 March 2010.

Northern Limit	Southern Limit	Western Limit	Eastern Limit
29° 08' 17" N	28° 57' 21" N	29° 05'53" N	28° 59' 41" N
093° 39' 03" W	093° 33 '46" W	093° 41' 08" W	093° 30' 14" W

Data acquisition was conducted from 15 April – 5 May 2010

The purpose of this project is to provide accurate depths and object detection of the Safety Fairway and approaches to Sabine, LA to support safe and efficient marine transportation in the region. *Concur.*

	Linear Nautical Miles
LNM Single beam mainscheme only	n/a
LNM Multibeam mainscheme only	n/a
LNM Lidar mainscheme only	n/a
LNM Side Scan Sonar mainscheme only	n/a
Lineal nautical miles of any combination of the above techniques (SSS 200%, MBES)	995.20
LNM Crosslines singlebeam and multibeam combined	45.72
LNM Lidar Crosslines	n/a
LNM development lines non mainscheme	9.37
LNM shoreline/nearshore investigations	n/a
Number of Bottom Samples	7
Number of items investigated that required additional time/effort in the field beyond the above survey	n/a
Total number of square nautical miles	45

Table 1: Hydrographic Survey Statistics

Survey limits of H12187 (Figure 1) are shown on the following page.



Figure 1: Survey Limits

Calendar Date	Julian Day
15 April 2010	105
16 April 2010	106
20 April 2010	110
21 April 2010	111
22 April 2010	112
23 April 2010	113
25 April 2010	115
26 April 2010	116
27 April 2010	117
5 May 2010	125

Table 2: Dates of Acquisition in Calendar and Julian Day

B. DATA ACQUISTION AND PROCESSING See also H-Cell report.

Refer to *OPR-K370-TJ-10 Data Acquisition and Processing Report (DAPR)** for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR* are included in this descriptive report. *Concur.*

B 1. EQUIPMENT AND VESSELS

Data were acquired by NOAA Ship *Thomas Jefferson* and Hydrographic Survey Launches 3101 and 3102. NOAA Ship *Thomas Jefferson* acquired Reson 7125 multibeam echosounder soundings, Klein 5000 Side Scan Sonar, and sound velocity profiles. Launch 3101 acquired Reson 7125 multibeam echosounder soundings and sound velocity profiles. Launch 3102 acquired Reson 7125 multibeam echosounder soundings, sound velocity profiles, and bottom samples. Vessel configurations, equipment operation, and data acquisition and processing were consistent with specifications described in OPR-K371-TJ-10_DAPR.pdf * submitted with this survey. Concur.

B 2. QUALITY CONTROL See also H-Cell report.

B 2.1 System Certification and Calibration

Refer to NOAA Ship *Thomas Jefferson* DAPR* and Hydrographic Systems Readiness Report (HSRR) for a complete description of system integration and initial calibration results for equipment and sensors used for this survey. *Concur.* * *Data submitted with H-Cell deliverables.*

B.2.2 Sounding Coverage

As per the Letter Instructions*, this survey was conducted using 200% SSS coverage with concurrent MBES bathymetry with object detection MBES development over navigationally significant features. *Concur.*

Launch 3101 acquired complete multibeam around the oil platform on the east side. The survey limits were modified to include the search radius of AWOIS #14760. *Concur.*

B 2.3 Crosslines

Multibeam echosounder cross-lines totaling 45.72 lineal nautical miles, comprising 4.6% of hydrography, were acquired during the course of the survey. As per the email dated 10 September 2009 from AHB, the quality control check was performed using the standard deviation layer of the survey's CUBE surface (See Appendix 5 Supplemental Survey Records and Correspondence for further details)*. Areas of unusually high standard deviation were investigated and resolved in processing, except where caused by areas of high bathymetric relief or as described in Section 2.5 Systematic Errors. *Concur.*

B 2.4 Junctions and Prior Surveys See also H-Cell report.

The following surveys junction with H12187, see figure 2.

Registry #	Scale	Date	Field Party	Junction side
H10948	1:20,000	2000	Fugro Pelagos	North
H12188	1:40,000	2010	Thomas Jefferson	South

Survey H10948 junctions with H12187 in the North. As this survey is older than five years, it will be considered a prior survey, and not a contemporary survey. *Concur.*

Survey H12188 junctions with H12187 in the South. The difference in soundings between the two surveys is no greater than one foot. *Concur.*



Figure 2: Junction Surveys.

B 2.5 Systematic Errors

There was up to a 0.6 meter difference in tides on the west side of the survey and on line 230_1035, with the approved water levels applied. The largest differences corresponded to long time periods between adjacent lines due to successive acquisition of the first and second 100% SSS data. There is an eleven day difference between when the lines were acquired on the west side. Upon discovery of the problem, Thomas Jefferson initiated a discussion with CO-OPS and requested new tides, either zoning based on Sabine or a TCARI model, constrained by both the coastal stations and an open ocean model. Consult appendix V* for copies of the correspondence. After some discussion, CO-OPS reiterated their recommendation that Galveston Pleasure Pier, TX (8771510) tide station be used as the source of tides for this project and no additional stations were added. *Concur.*

Examination of the data and comparisons to days of severe weather led to a theory that the offsets noticed in the data could be caused by the propagation of tidal residuals observed at the station. These residuals were likely the result of localized meteorological effects observed at the station that did not affect the survey area. To test this theory, predicted tides were applied to a sample set of data. With predicted tides applied, most survey lines agreed to within 10cm of the adjacent lines regardless of the dates of acquisition. *Do not concur. Regardless of the tide correctors applied to the data 0.4-0.6m offsets were found between lines of data collected on different days of survey.*



The comparisons below illustrate the effect of applying predicted tides. In each figure, the graphic on top is from verified tides and the graphic under it is from predicted tides.

Figure 3: Tide Comparison



Figure 4: Standard Deviation Layer

The hydrographer does not concur with CO-OPS recommendation for use of the zoned tides from Galveston. The non-astronomic anomalies at the station are unrelated to the water levels on the survey, and significantly degrade the quality of the soundings. The hydrographer recommends that a TCARI model with open ocean boundary conditions be developed and applied to this survey. If this cannot be done, the hydrographer recommends retaining the predicted tides as submitted with the survey. *Do not concur. Offsets of 0.4-0.6m were found between lines of data from different surveys regardless of the tide correctors applied to the data. Verified tides were reapplied during office processing and were used for the final products for this survey.*

B 3. CORRECTIONS TO ECHO SOUNDING

HDCS sounding data were reduced to mean lower-low water (MLLW) using predicted *verified* water levels from Galveston Pleasure Pier, TX (8771510) and applied using final approved discrete zoning provided by CO-OPS and illustrated in figure 5. *Concur.*



Figure 5: Final Tide Zoning

All other datum reduction procedures conform to those outlined in the DAPR*. Concur.

All methods and instruments used for sound velocity correction were as described in the DAPR*. A table detailing all sound velocity casts is located in Separate II** of this Descriptive Report. *Concur.*

B 4. DATA PROCESSING See also H-Cell report.

SVP casts were loaded using nearest in time with the exception of lines 218_2337, 219_2226, and 223_1724 which used nearest in distance. By applying nearest in distance to these selected lines, the sound velocity profile applied to the data more accurately represented the water column in the area at the time of acquisition, and therefore, reduced the refraction artifacts present in the data. *Do not concur. All lines have SVP applied using the nearest in time option.*

B 4.1 Total Propagated Error

For the 2010 field season, Total Propagated Error (TPE) parameters for sound speed and tides are calculated separately for each project. As per the WATER LEVEL INSTRUCTIONS (Appendix 4***) provided by Co-Ops: *Data submitted with H-Cell deliverables. **Data filed with original field records. ***Data attached to this report.

Tide Component Error Estimation

As per the Water Level Instructions provided by Co-Ops on 03/02/2010 and included in Appendix 4*:

"The estimated tidal error contribution to the total survey error budget in the vicinity of Cameron, LA to Sabine, TX cannot be computed due to a lack of available water level time series data." *Concur.*

Given past TPE errors from previous offshore tide zones, we would expect to see total *combined* value of 0.2m for measured and zoning at the 95% confidence interval. The estimated TPE values in table 3 below were applied to Survey H12187:

Vaccal	Tide Values		Sound Speed Values	
v essei	Measured	Zoning	Measured	Surface
S222	0.00	0.2m	1m/s	0.242m/s
3101	0.00	0.2m	4m/s	0.20m/s
3102	0.00	0.2m	4m/s	0.20m/s

Table 3: TPE Parameters

These values were used as inputs to the TPE calculation for all MBES data immediately following CARIS Merge. *Concur.*

B 4.2 BASE Surfaces and Mosaics

Name of Surfaces and /or Mosaics	Resolution	Туре	Purpose
H12187_CUBE_NOAA_1m_Final	1m	CUBE	Sounding Coverage
H12187_CUBE_NOAA_2m_Final	2m	CUBE	Sounding Coverage
H12187_CUBE_NOAA_50cm_Final	0.5m	CUBE	Object Detection Around Oil Platform
H12187_SSS_100_1m	1m	SSS Mosaic	100% Side Scan Coverage
H12187_SSS_200_1m	1m	SSS Mosaic	200% Side Scan Coverage

The following table describes all BASE Surfaces submitted as part of Survey H12187:

Table 4: Field Sheets

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configurations were set to NOAA_0.5m, NOAA _1m, and NOAA_2m, as required for each of the various surface resolutions. The finalized surfaces were depth thresholded using values of 0.00 to 20.0 meters for the 1.0 meter grid and 19.0 to 40.0 meters for ***Data attached to this report.**

the 2 meter grid. Refer to the 2010 Data Acquisition and Processing Report*, 2010 Field Procedures Manual, and CARIS HIPS and SIPS 7.0 manual for further discussion. *Concur.*

B 4.3 Data Cleaning

The survey data were cleaned using the swath and subset editor tools in CARIS. All areas of the BASE surface that indicated a high standard deviation were examined and cleaned as required such that no residual errors exist in the surface that exceed the IHO order 1 depth accuracy requirements. *Concur.*

C. HORIZONTAL AND VERTICAL CONTROL See also H-Cell report.

As per FPM section 5.2.3.2.3 a HVCR report was not filed as no horizontal and vertical control stations were established by the field party for this survey. A summary of horizontal and vertical control for this survey follows. *Concur.*

C 1.1 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Angleton, TX (301 kHz), and English Turn, LA (293 kHz), were used during this survey. *Concur.*

No horizontal control stations were established by the field party for this survey. Concur.

C 1.2 Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at Galveston Pleasure Pier (8771510) will serve as datum control for H12187. A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 6 May 2010 in accordance with the FPM and project letter instructions. Final smooth tide letter was received 25 May 2010, and states preliminary zoning is accepted as the final zoning. *Concur.*

D. RESULTS AND RECOMMENDATIONS See also H-Cell report.

D.1 Chart Comparison

Survey H12187 was compared to Chart 11330, (20th Ed., 11/01/2009, 1:250,000) and ENC US3GC02M. *Concur.*

D 1.1 Chart 11330 Comparison

`In general the soundings agree within 2 feet. Where there are differences, survey depths are deeper. In some cases there is a 3 foot difference. *Concur.*

D 1.2 ENC US3GC02M Comparison

In general the soundings agree within 1 meter. Where there are differences surveyed depths tend to be deeper. *Concur.*

D.2 Additional Results

D.2.1 Automated Wreck and Obstruction Information Service (AWOIS) Items

One AWOIS item was investigated for this survey. The investigated AWOIS item is described in detail in Appendix II* of this report. *Concur.*

D.2.4 Shoreline

There is no shoreline within the sheet limits of survey H12187. *Concur.*

D.2.5 Charted Features

D.2.6 Charted Pipelines and Cables

There are no charted cables within survey area. *Concur.*

Eight charted pipelines cross the survey area. Some of these are present in the side scan mosaics. The blue lines in the image below show where they can be seen. The rest are assumed to be buried. *Concur.*



Figure 6: Charted Pipelines

D.2.7 Bridges, Ferry Routes, and Overhead Cables

There are no ferry routes, bridges, or overhead cable crossings within the limits of the survey. *Concur.*

D 2.8 Platform Structures

There were two charted platforms within the survey limits. The northern most structure was present in the survey area. The immediate area surrounding this platform was developed using MB. The charted structure in the eastern corner of the survey area was not present.

The Hydrographer recommends removing the charted platform in the surveys eastern corner from the charts. *See Appendix II of this report.*

D.3 Dangers to Navigation and Shoals

D 3.1 Dangers to Navigation

There are no dangers to navigation within the survey limits of H12187. Concur.

D 3.2 Shoals

There are no shoals within the survey limits of H12187. *Do not concur. A charted shoal was investigated by present survey. Chart present survey soundings.*

D.4 Aid10s to Navigation

There are no charted Aids to Navigation (ATON) within the limits of H12187. Concur.

D.5 Coast Pilot Information

The relevant Coast Pilot sections were reviewed and no changes were noted. A memo detailing this finding was submitted to NSD's Coast Pilot Branch via email on $7\14\2010$ in accordance with FPM Section 5.2.3.2.5. See Appendix V* for correspondence. *Concur.*

D.6 Miscellaneous

Bottom Samples

Bottom samples were collected throughout the survey area. A total of 7 bottom samples were acquired. A list of bottom samples is contained in Appendix V*. *Concur. See also H-Cell report.*

Environmental Conditions and Notes

On rough days some heave or pitch artifacts are present in the data. It is most noticeable in the deeper areas. *Concur.*

D.7 Adequacy of Survey See also the H-Cell report.

This survey is considered complete and adequate to supersede charted depths and features within the common area except as noted in this report. *Concur.*

Summary and Recommendations for Additional Work

No additional work is needed to complete this survey. No changes significant to navigation have been noted and it is recommended that this survey receive normal processing priority. *Concur.*

E.APPROVAL

As Lead Hydrographer, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Office of Coast Survey Hydrographic Surveys Division's *Field Procedures Manual*, and NOS *Hydrographic Surveys Specifications and Deliverables*. Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to N/CS33, Atlantic Hydrographic Branch.

The Data Acquisition and Processing Report for OPR-K371-TJ-10 is submitted separately and contains additional information relevant to this survey.

Approved and Forwarded:

Mark Blankenship 2010.07.27 12:24:52 -04'00'

LT Mark A. Blankenship, NOAA Field Operations Officer CDR Shepard M. Smith, NOAA Commanding Officer

Smith

-04'00'

Digitally signed by Shepard

Date: 2010.07.27 13:49:13

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Managers:

	Michael C. Davidson
MOCDI Jun	2010.07.27 17:45:57
	Z

ENS Ryan Wartick, NOAA Acquisition Manager Kim Glomb 2010.09.27 12:38:56 -04'00'

ST Kimberly Glomb Deliverables Manager

Appendix I

Dangers to Navigation

-None reported

Appendix II

Survey Features Report

1. Charted Features

-two

2. Uncharted Features

/'| gt q

3. AWOIS Items

-one

H12187 AWOIS Item

Registry Number:	H12187
State:	Louisiana
Locality:	Northern Gulf of Mexico
Sub-locality:	35 NM Southeast of Sabine, TX
Project Number:	OPR-K371-TJ-10
Survey Dates:	15 April 2010 - 5 May 2010

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
				USCG LNM: 5/10/2011 (5/17/2011)
11330	21st	02/01/2011	1:250,000 (11330_1)	NGA NTM: 11/27/2010 (5/28/2011)
11340	73rd	08/01/2008	1:458,596 (11340_1)	[L]NTM: ?
1116A	73rd	08/01/2008	1:458,596 (1116A_1)	[L]NTM: ?
411	52nd	09/01/2007	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS #14760	Shoal	19.50 m	29° 07' 53.8" N	093° 38' 47.7" W	14760

1 - DR_AWOIS

1.1) AWOIS #14760

Primary Feature for AWOIS Item #14760

Search Position:	29° 07' 49.0" N, 093° 38' 41.9" W
Historical Depth:	18.29 m
Search Radius:	500
Search Technique:	SSS, SB, MB
Technique Notes:	[None]

History Notes:

Submerged obstruction reported in approxiamte position: 93-38-42 / 29-07-49 in roughly 60 ft of water on the inside edge of Sabine Safety Fairway. LNM-0849 DATED 12/7/05. Develop with multibeam and confirm position.(PTT 2/19/10)

Survey Summary

Survey Position:	29° 07' 53.8" N, 093° 38' 47.7" W
Least Depth:	19.50 m (= 63.96 ft = 10.661 fm = 10 fm 3.96 ft)
TPU (±1.96 5):	THU (TPEh) ±1.011 m ; TVU (TPEv) ±0.457 m
Timestamp:	2010-125.18:10:34.499 (05/05/2010)
Survey Line:	hdcs_data / tj_3102_reson7125_400khz / 2010-125 / 026_1808
Profile/Beam:	902/457
Charts Affected:	11330_1, 1116A_1, 11340_1, 411_1

Remarks:

AWOIS #14760 was investigated with 200% Klein 5000 side scan sonar. The only contact in the radius has a height of about 0.26 meters.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/tj_3102_reson7125_400khz/2010-125/026_1808	902/457	0.00	000.0	Primary
OPR-K371-TJ-10 AWOIS	AWOIS # 14760	214.51	314.0	Secondary

Hydrographer Recommendations

Remove charted obstruction.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB) Attributes: SORDAT - 20100505 SORIND - US,US,graph,H12187

Office Notes

Concur with clraification - Feature is AWOIS Item #14670. Delete charted dangerous obstruction, PA.

H12187 Charted Items

Registry Number:	H12187
State:	Louisiana
Locality:	Northern Gulf of Mexico
Sub-locality:	35 NM Southeast of Sabine, TX
Project Number:	OPR-K371-TJ-10
Survey Dates:	15 April 2010 - 5 May 2010

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11330	21st	02/01/2011	1:250,000 (11330_1)	USCG LNM: 5/10/2011 (5/17/2011) NGA NTM: 11/27/2010 (5/28/2011)
11340	73rd	08/01/2008	1:458,596 (11340_1)	[L]NTM: ?
1116A	73rd	08/01/2008	1:458,596 (1116A_1)	[L]NTM: ?
411	52nd	09/01/2007	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Charted Oil Platform	Platform (oil or gas)	[None]	29° 01' 34.1" N	093° 32' 11.4" W	
1.2	Charted Oil Platform	GP	[None]	28° 59' 40.1" N	093° 30' 16.2" W	

1 - DR_Charted

1.1) Charted Oil Platform

Survey Summary

Survey Position:	29° 01' 34.1" N, 093° 32' 11.4" W
Least Depth:	[None]
TPU (±1.96σ):	THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp:	2010-133.13:24:23 (05/13/2010)
GP Dataset:	ChartGPs - Digitized
GP No.:	1
Charts Affected:	11330_1, 1116A_1, 11340_1, 411_1

Remarks:

Oil platform positioned as charted.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

Retain as charted.

S-57 Data

Geo object 1: Offshore platform (OFSPLF)

Attributes: SORDAT - 20100505

SORIND - US,US,graph,H12187

Office Notes

Concur with clarification- Delete charted platform. Add platform at the survey position.

1.2) Charted Oil Platform

Survey Summary

Survey Position:	28° 59' 40.1" N, 093° 30' 16.2" W
Least Depth:	[None]
TPU (±1.96σ):	THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp:	2010-133.13:34:37 (05/13/2010)
GP Dataset:	ChartGPs - Digitized
GP No.:	2
Charts Affected:	11330_1, 1116A_1, 11340_1, 411_1

Remarks:

Charted oil platform not seen visually. No remains found with MB sonar.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	2	0.00	000.0	Primary

Hydrographer Recommendations

Remove charted platform.

S-57 Data

Geo object 1: Offshore platform (OFSPLF)

Attributes: SORDAT - 20100505

SORIND - US,US,graph,H12187

Office Notes

This dangerous obstruction feature originated from junction survey H12188. The following statements were made in the feature report of H12188 "Field unit disproved the charted offshore production platform by visual examination at the ocean surface. However, the multibeam and sidescan coverage of the seafloor at this site is incomplete. The sidescan and multibeam data suggest that the debris associated with the former platform may continue outside of survey coverage. Recommend adding Obstruction (snag/stump, depth unknown) to the chart at the survey position."

Recommend retaining dangerous obstruction, least depth unknown as charted.

Appendix III

Progress Sketch



Appendix IV

Tides and Water Levels

- **1. Request for Approved Tides**
- 2. Final Tide Notes



UNITED STATES DEPARMENT OF COMMERCE National Oceanic and Atmospheric Administration National Ocean Service Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : May 25, 2010

HYDROGRAPHIC BRANCH: Atlantic HYDROGRAPHIC PROJECT: OPR-K371-TJ-2010 HYDROGRAPHIC SHEET: H12187

LOCALITY: Northern Gulf of Mexico 35 NM Southeast of Sabine, Tx TIME PERIOD: April 15 - May 5, 2010

TIDE STATION USED: 877-1510 Galveston Pleasure Pier, Tx Lat. 29° 17.12' Long. 94° 47.37' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.563 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-K371-TJ-2010, H12187, during the time period between April 15 to May 5, 2010.

Please use the zoning file "K371TJ2010CORP" submitted with the project instructions for Cameron, LA to Sabine, TX. Zones WGM392, WGM393 and WGM399 are the applicable zones for H12187.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).



CHIEF, OCEANOGRAPHIC DIVISION





Appendix V

Supplemental Survey Records & Correspondence



UNITED STATES DEPARTMENT COMMERCE National Oceanic and Atmospheric Administration Office of Marine and Aviation Operations NOAA Ship *Thomas Jefferson* S-222 439 West York Street Norfolk, VA 23510-1114

July 22, 2010

Memorandum For:	Nautical Data Branch
From:	CDR Shepard M. Smith, NOAA Commanding Officer, NOAA Ship <i>Thomas Jefferson</i>
Subject:	Coast Pilot Report, H12187

The relevant Coast Pilot sections for this survey have been reviewed, and no additions or corrections have been noted.

Subject: Re: Addition of 877-1510, Galveston Pleasure Pier, TX
From: Carolyn Lindley
Carolyn.Lindley@noaa.gov>
Date: Mon, 24 May 2010 13:41:20 -0400
To: "ops.thomas.jefferson"
OPS.Thomas.Jefferson@noaa.gov>
CC: _NMAO MOA ChiefST Thomas Jefferson@noaa.gov>,
"_NOS.CO-OPS.HTP"
NOS.COOPS.HPT@noaa.gov>, "kimberly.glomb"
Kimberly.Glomb@noaa.gov>, James M Crocker
James.M.Crocker@noaa.gov>, Manoj Samant
Manoj.Samant@noaa.gov>, Peter Stone
<Peter.Stone@noaa.gov>

Hi Mark,

I did a pretty thorough analysis in preparation for the PIs for this project. Geographic proximity is only one consideration we look at. Based on the location of the survey area combined with our co-tidal and zoning anlayses, the station at Galveston Pleasure Pier is more tidally similar to the location of the survey area. Because the survey area is offshore, there is substantial limitation to how well observed data from the shoreline translates to the survey area. We will look into this further but please keep in mind that HPT has competing priorities that may be more urgent than providing revised zoning on a project that has already received an extensive anlaysis.

Thanks, Carolyn

ops.thomas.jefferson wrote: David, After looking at the survey data using the tides and zoning from 877-1510 - Galveston Pleasure Pier, TX we see a predictable staggering of the depths of the lines we've surveyed. Could COOPS please provide zoning for this project from the Sabine Pass gauge. This gauge is some 20 miles closer to the project area. Thank you, Mark

David Wolcott wrote: Hi Mark,

It sounds like there is, in fact, an issue with the data and our engineering and data processing teams are looking into it. The gauge is running and it sounds like the biggest issue is a question of leveling and/or stability. The station is listed for priority processing so we're just waiting to hear what the final word is as far as the station's reliability. If for some reason the data from this time period is decided to be inaccurate, we should have no problems giving you zoning off of Calcasieu or Sabine Pass. We will try to keep you posted as we have a couple of projects to consider that rely on this data.

HPT, feel free to add anything.

Thanks, David

mark blankenship wrote: thanks David, mark

David Wolcott wrote:

Hi Mark,

All April data has been processed and is currently being verified. The first week of May will be processed on Monday and should be verified soon after that. The station is on the Hydro Hot List as a priority, so it's possible that any delay in processing is due to an issue with the data. I will check with the Data Processing Team to find out if anything is causing problems and

let you know. If you don't mind, it really helps us keep track of things if all emails of this sort are sent to the HPT address, as well. Our email is nos.co-ops.htp@noaa.gov. This way we can stay on track even if one person is out of the office. Thanks, David mark blankenship wrote: David, Has there been any work on the verified tides for the Galveston Pleasure Pier? Just a check from the email from two weeks ago. thanks Mark David Wolcott wrote: Great! Thanks for the information. mark blankenship wrote: COOPS HPT, Thomas Jefferson has ceased acquisition on OPR-E350_TJ-10 for a few months, please remove tide station 863-8863 - CBBT, VA from the hydro hot list. We are now on station to begin surveying on OPR-K371-TJ-10, plese add station 877-1510 - Galveston Pleasure Pier, TX to the Hydro Hot list to support these surveys. Once acquisition has been completed, we will send email notification that the station can be removed from the hydro hot list. Thank you for your time. V/R, Mike

Carolyn Lindley <<u>Carolyn.Lindley@noaa.gov</u>> Oceanographer National Ocean Service Center for Operational Oceanographic Products and Services Subject: Re: Crossline comparison

From: Chris van Westendorp < Christiaan. Van Westendorp@noaa.gov>

Date: Thu, 10 Sep 2009 13:00:35 -0400

To: "mark.blankenship" <Mark.Blankenship@noaa.gov>

CC: LCDR Rick Brennan <Richard.T.Brennan@noaa.gov>, Castle Parker <Castle.E.Parker@noaa.gov>, Edward Owens <Edward.Owens@noaa.gov>, LT Jasper Schaer <jasper.schaer@noaa.gov>, CDR Shep Smith <Shep.Smith@noaa.gov>, Daniel Wright <Daniel.Wright@noaa.gov>

Mark,

Per 5.1.4.3 of the HSSD, AHB authorizes TJ to use the Standard Deviation layer to conduct surface difference comparison and analysis on future survey submissions of multibeam data. This meets the crossline comparison requirement laid out in HSSD.

Please let me know if you have any questions or need for further clarification.

R/

LCDR Chris van Westendorp, NOAA

mark.blankenship wrote:

Chris,

You mentioned in the meeting today that AHB was not going to require the multiple CUBE surface comparison, instead allowing us to use a single surface standard deviation layer to do our checks with. Is there any memo coming out for that? Mark

LCDR Chris van Westendorp <<u>christiaan.vanwestendorp@noaa.gov</u>>

Atlantic Hydrographic Branch NOAA OCS

1 of 1

U.S. DEPARTMENT OF COMMERCE (10-95)NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OCEANOGRAPHIC LOG SHEET - M BOTTOM SEDIMENT DATA										
VESSEL	PROJEC	T NO. OPR- K3	371- TJ-10	YEAR SURVEY TITLE:				SURVEY NO:	CHECKED BY:	DATE CHECKED:
3102	FIELD I SHEET	NO. N/A LETTER:	4 "N/A"	2010	OPR-K5/1-1	IJ-10		H12187		
POSITION	DAY	SAMP	LE POSITION	SITION DEPTHS TYPE APPROXIMATE LENGTH FIELD DESCRIPTION SIZE OF		FIELD DESCRIPTION SIZE OR	REMARKS			
NUMBERS	THE YEAR	LATITUDE (o'") North	LONGITUDE (o ' ") West	(METERS)	SAMPLER	(CENTIMETERS)	CORE	(USE STANDARD ABBREVIATIONS)	dented cutter, stat.no .i.e slope plair	o.,type of bottom, relief 1 disposition etc.)
1	125	29°00'29.967"	093°32'30.682"					dk gy M brk Sh	NATQUA broken	NATSUR shells, mud
2	125	29°06'13.182"	093°36'55.249"					dk gy M	NATS	SUR mud
3	125	29°04'51.633"	093°39'44.928"					dk gy M	NATS	SUR mud
4	125	29°03'53.903"	093°36'46.057"					dk gy M	NATS	SUR mud
5	125	29°02'17.006"	093°36'19.925"					dk gy M	NATS	SUR mud
6	125	29°01'06.031"	093°35'44.246"					S brk Sh	NATQUA brok	en NATSUR shells
7	125	29°00'10.190"	093°35'19.366"					Sh brk Sh	NATQUA brok	en NATSUR shells
			ļ							

U.S. DEPARTMENT OF COMMERCE (10-95)NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OCEANOGRAPHIC LOG SHEET - M BOTTOM SEDIMENT DATA										
VESSEL No. 3102	VESSEL PROJECT NO. OPR- K371- TJ-10 YEAR SURVEY TITLI No. 3102 FIELD NO. N/A SHEET LETTER: "N/A" 2010			TLE: 1J-10	-	SURVEY NO: H12187	CHECKED BY:	DATE CHECKED:		
POSITION NUMBERS	DAY OF THE YEAR	SAMPI LATITUDE (o ' ") North	LE POSITION LONGITUDE (o ' ") West	DEPTHS (METERS)	TYPE OF SAMPLER	APPROXIMATE PENETRATION (CENTIMETERS)	LENGTH OF CORE	FIELD DESCRIPTION SIZE OR CONSISTENCY COLOR-NOUN (USE STANDARD ABBREVIATIONS)	REM (Unusual condit dented cutter, stat.n .i.e slope plait	MARKS tions ,cohesiveness, o.,type of bottom, relief n disposition etc.)

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H12187 AHB COMPILATION LOG

General Survey Information			
REGISTRY No.	<i>H12187</i>		
PROJECT No.	OPR-K371-TJ-10		
FIELD UNIT			
DATE OF SURVEY	15 APRIL TO 5 MAY 2010		
LARGEST SCALE CHART	11330, edition21, 20110201, 1:250000		
ADDITIONAL CHARTS	NA		
SOUNDING UNITS	Feet		
COMPILER	Africa Norris		

Source Grids	File Name
	H12187_CUBE_NOAA_1m_Final.csar
	H12187_CUBE_NOAA_2m_Final.csar
	H12187_CUBE_NOAA_50cm_Final.csar
Surfaces	File Name
Combined	H12187_4m_Combined.hns
Interpolated TIN	\Interpolated TIN\H12187_4m_InterpTIN.hns
Shifted Interpolated TIN	\Shifted Surface\H12187_12m_InterpTIN_Shifted.hns
Final HOBs	File Name
Survey Scale Soundings	H12187_SS_Soundings.hob
Chart Scale Soundings	H12187_CS_Soundings.hob
Contour Layer	H12187_Contours.hob
Feature Layer	H12187_Features.hob
Meta-Objects Layer	H12187_MetaObjects.hob
Blue Notes	H12187_BlueNotes.hob
Bottom Samples	H12187_Bottomsamples.hob

Meta-Objects Attribution				
Acronym Value				
M_COVR				
CATCOV	Coverage available			
SORDAT	20100505			
SORIND	US,US,graph,H12187			
M_QUAL				
CATZOC	6			
INFORM	NOAA Ship Thomas Jefferson			
POSACC	10			
SORDAT	2010505			
SORIND	US,US,graph,H12187			
SUREND	20100505			
SURSTA	20100505			
DEPARE				
DRVALV 1	56,000 ft			
DRVALV2	80,000 ft			
SORDAT	20100505			
SORIND	US,US,graph,H12187			

[Type text]

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SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. Number of ESAR Final Grids: **3**
 - b. Resolution of Combined (m): 4m
- II. SURVEY SCALE SOUNDINGS (SS):
 - a. <u>Radius</u>
 - b. Shoal biased
 - c. Use Single-Defined Radius (mm at Map Scale): ; Radius Value = 1
 - d. Queried Depth of All Soundings
 - i. Minimum: **58.840** *ft*
 - *ii.* Maximum: 78.463 ft
- III. INTERPOLATED TIN SURFACE:
 - a. Resolution (m): 12m
 - b. <u>Linear</u>
 - c. Shifted value: -0.229m
- IV. Contours:
 - a. Use a Depth List: *H12187_NOAA_depth_curves_list.txt*
 - b. Line Object: DEPCNT
 - c. Value Attribute: <u>VALDCO</u>
- V. FEATURES:
 - a. Total Number of Features: 2
 - b. Number of Insignificant Features: 0
- VI. CHART SURVEY SOUNDINGS (CS):
 - a. Number of ENC CS Soundings: 7
 - b. Radius
 - c. Shoal biased
 - d. Use Single-Defined Radius: <u>m on the ground</u>
 - i. Radius Value (m): 5000
 - e. Or use a Sounding Space Range Table (if applicable): N/A
 - f. Filter: Interpolated != 1
 - g. Number Survey CS Soundings: 10
- VII. Notes:

ATLANTIC HYDROGRAPHIC BRANCH H-CELL REPORT to ACCOMPANY SURVEY H12187 (2010)

This H-Cell Report has been written to supplement and/or clarify the original Descriptive Report (DR) and pass critical compilation information to the cartographers in the Marine Chart Division. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.2 QUALITY CONTROL

The AHB source depth grids for the survey's nautical chart update were 1m, 2m, and 50cm, resolution BASE surfaces (*.CSAR), which were combined at 4m resolution. The survey scale soundings were created from the combined surface at a single defined radius of 1mm at the largest scale chart covering the respective area of the survey (Chart 11330 ~ 1:250,000). A TIN was created from the survey scale soundings, from which an interpolated surface of 12m resolution was generated. The chart scale soundings were derived from only the non-interpolated nodes of this surface to preserve absolute continuity between the charted depths, the survey scale soundings, and the original source grid. The chart scale soundings were selected using a single defined radius of 5000m (on the ground). The chart scale soundings are a subset of the survey scale soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portray the bathymetry within the common area.

The interpolated TIN surface of 12m resolution was shifted by the NOAA sounding rounding value of -0.75 feet. The shifted interpolated TIN was used to generate a depth contour in feet (60 ft.). The depth contours are forwarded to MCD for reference only. The contour was utilized during chart scale sounding selection and quality assurance efforts at AHB. The depth contour is incorporated into the SS H-Cell product as per 2010 H-Cell Specifications.

The compilation products (Final *.HOB files) for this survey are detailed in the H12187 AHB Compilation Log contained within this document. The Final HOB files include depth areas (DEPARE), depth contours (DEPCNT), soundings (SOUNDG), meta-objects (M_COVR and M_QUAL) cartographic Blue Notes (\$CSYMB) and features (SBDARE, OFSPLF).

As dictated by Hydrographic Technical Directive 2008-8, the Final HOB files were combined into two separate H-Cell files in S-57 format. Both S-57 files were exported from CARIS composer 2.2 in feet. Quality assurance and topology checks were conducted using CARIS S-57 Composer 2.2 and DKART Inspector 5.1 validation tests.

The final H-Cell products are two S-57 files, in Lat/Long NAD-83. The contents of these two H-Cell deliverables are listed in the table below:

TABLE 1 - Contents of H-Cell Files					
H12187_CS.0	D O	Scale	e 1:250,000		
Object Class Types	Geographic	ographic Cartographic M			
S-57 Object Acronyms	DEPARE	\$CSYMB	M_COVR		
	SBDARE		M_QUAL		
	OFSPLF				
	SOUNDG				
H12187_SS.000 Scale 1:40,000					
Object Class Types	Geographic				
S-57 Object Acronyms	DEPCNT				
	SOUNDG				

B.2.4 Junctions and Prior Surveys

H12187 junctions with survey H12188, of the same project, to the South. The difference in the soundings between the two surveys is no greater than one foot. Survey H12187 junctions with survey H10948 to the North. As this survey is older than five years, it will be considered a prior survey.

Most present survey depths compare within 1-2 feet of the charted hydrography to the north, east, and west.

B.4 DATA PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

CARIS Bathy DataBASE version 3.0/HF1,3,5,8-10 CARIS HIPS/SIPS version 7.0/SP2/HF1-8 CARIS S-57 Composer version 2.2/HF1-4 DKART Inspector version 5.1 HSTP Pydro version 11.3 (r3347) CARIS Bathy DataBASE version 2.3/HF 1-18

C. HORIZONTAL AND VERTICAL CONTROL

The hydrographer makes adequate mention of horizontal and vertical control used for this survey in section C of the DR. The sounding datum for this survey is Mean Lower Low Water (MLLW), and the vertical datum is Mean High Water (MHW). Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 16 North.

D. RESULTS AND RECOMMENDATIONS

D.1 <u>CHART COMPARISON</u>	11330 (21st Edition, Jan/2011)
	Mermentau River to Freeport LA-TX
	Corrected through NM 05/28/2011
	Corrected through LNM 05/17/2011
	Scale 1:250,000
ENC COMPADISON	LIS2CC02M
ENC COMPARISON	
	Mermentau River to Freeport LA-TX
	Edition 27
	Application Date 2011/05/13

D.2 ADDITIONAL RESULTS

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D and Appendix I and II of the DR. The hydrographer recommends that any charted features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted. The following exceptions are noted:

Chart 11330

Issue Date 2011/05/13

The field unit collected a total of 7 bottom samples. One seabed characteristics was used for charting and the remaining 6 seabed characteristics are filed with this report.

D.6 MISCELLANEOUS

Chart compilation was completed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division in Silver Spring, Maryland. See section D.1 of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

D.7 ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Refer to section D and Appendix I and II of the DR for further recommendations by the hydrographer.

APPROVAL SHEET H12187

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth contours, and disposition of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the H-Cell Report.

All final products have undergone a comprehensive review per the Hydrographic Surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Africa Norris Physical Scientist Aid Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: _

CDR Richard T. Brennan, NOAA Chief, Atlantic Hydrographic Branch