H12189

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: H12189

## LOCALITY

State: Louisiana

General Locality: Northern Gulf of Mexico

Sub-locality: 55 NM Southeast of Sabine, TX

**2010**

CHIEF OF PARTY
CDR Shepard M.Smith
NOAA

LIBRARY & ARCHIVES

DATE

| NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTRY NUMBER: |
|---|---|
| **HYDROGRAPHIC TITLE SHEET** | **H12189** |

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: | **55 NM Southeast of Sabine, TX** | | |
| Scale: | **1:40,000** | Date of Survey: | **05/06/10 to 06/11/10** |
| Instructions Dated: | **12 March 2010** | Project Number: | **OPR-K371-TJ-10** |
| Vessel: | **NOAA Ship *Thomas Jefferson*** | | |
| Chief of Party: | **CDR Shepard M. Smith , NOAA** | | |
| Surveyed by: | ***Thomas Jefferson* Personnel** | | |
| Soundings by: | **Reson 7125 multibeam echosounders** | | |
| Graphic record scaled by: | **N/A** | | |
| Graphic record checked by: | **N/A** | | |
| Protracted by: | **N/A** | Automated Plot: | **N/A** |
| Verification by: | ***Atlantic Hydrographic Branch*** | | |

Remarks:
***1) All Times are in UTC.***
***2) This is a Navigable Area Hydrographic Survey.***
***3) Projection is NAD83, UTM Zone 15.***

***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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List of Tables



List of Figures

**Descriptive Report to Accompany Hydrographic Survey H12189**

Project OPR-K371-TJ-10
Cameron, LA to Sabine, TX
55 NM Southeast of Sabine, TX
Scale 1:40,000
May 6th – June 11th, 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 12th March, 2010.

| Northern limit | Southern limit | Eastern limit | Western limit |
|---|---|---|---|
| 28°51'16.05" N<br>093°22'45.64" W | 28°43'00.49” N<br>093°18'10.71" W | 28°43'55.84” N<br>093°16'19.17" W | 28°50'12.53” N<br>093°24'21.88" W |

Data acquisition was conducted from May 6th – June 11th, 2010.

The purpose of the project is to provide accurate depths and object detection of the Safety Fairways and approaches to Sabine, LA to support safe and efficient marine transportation in the region. This project covers approximately 173snm of critical survey area as designated in the NOAA Hydrographic Survey Priorities, 2009 edition.

| | Linear Nautical Miles |
|---|---|
| LNM Single beam mainscheme only | N/A |
| LNM Multibeam mainscheme only | 473.1 |
| LNM Lidar mainscheme only | N/A |
| LNM Side Scan Sonar mainscheme only | N/A |
| Lineal nautical miles of any combination of the above techniques (MBES) | 473.1 |
| LNM Crosslines singlebeam and multibeam combined | 57.8 |
| LNM Lidar Crosslines | N/A |
| LNM development lines non mainscheme | N/A |
| LNM shoreline/nearshore investigations | N/A |
| Number of Bottom Samples | 0 |
| Number of items investigated that required additional time/effort in the field beyond the above survey operations | N/A |
| Total number of square nautical miles | 35 |

**Table 1: Hydrographic Survey Statistics**

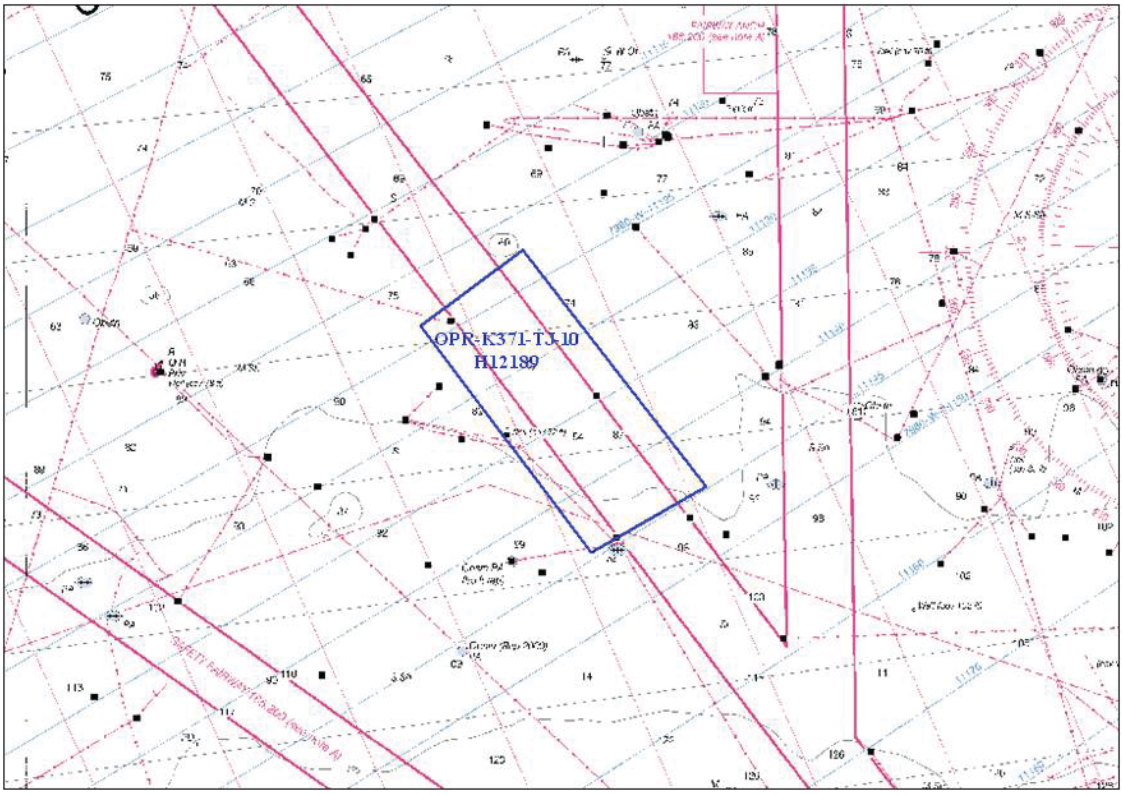


**Fig. 1. H12189 Survey Area.**

| Calendar Date | Julian Day |
|---|---|
| 6-May-10 | 126 |
| 7-May-10 | 127 |
| 8-May-10 | 128 |
| 10-May-10 | 130 |
| 11-May-10 | 131 |
| 10-Jun-10 | 161 |
| 11-Jun-10 | 162 |

**Table 2: MBES Acquisition Dates**

## B. DATA ACQUISTION AND PROCESSING

Refer to ***OPR-K371-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.

## B 1. EQUIPMENT AND VESSELS

Data were acquired by NOAA Ship *Thomas Jefferson.* NOAA Ship *Thomas Jefferson* acquired Reson 7125 multibeam echo sounder (MBES) soundings and sound velocity profiles. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the *DAPR*.

## B 2. QUALITY CONTROL

### B 2.1 System Certification and Calibration

Refer to NOAA Ship *Thomas Jefferson's 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.

### B.2.2 Sounding Coverage

As per the Letter Instructions, this survey was conducted using complete MBES bathymetry for water depths greater than 20 meters. Object detection MBES was acquired over areas less than 20 meters.

The western ½ of the survey area as specified in the project instructions was not acquired due to a reallocation of ship time (see figure 3). Gaps exist at the northern extent of the project area, but these are covered by the adjoining survey H12188.

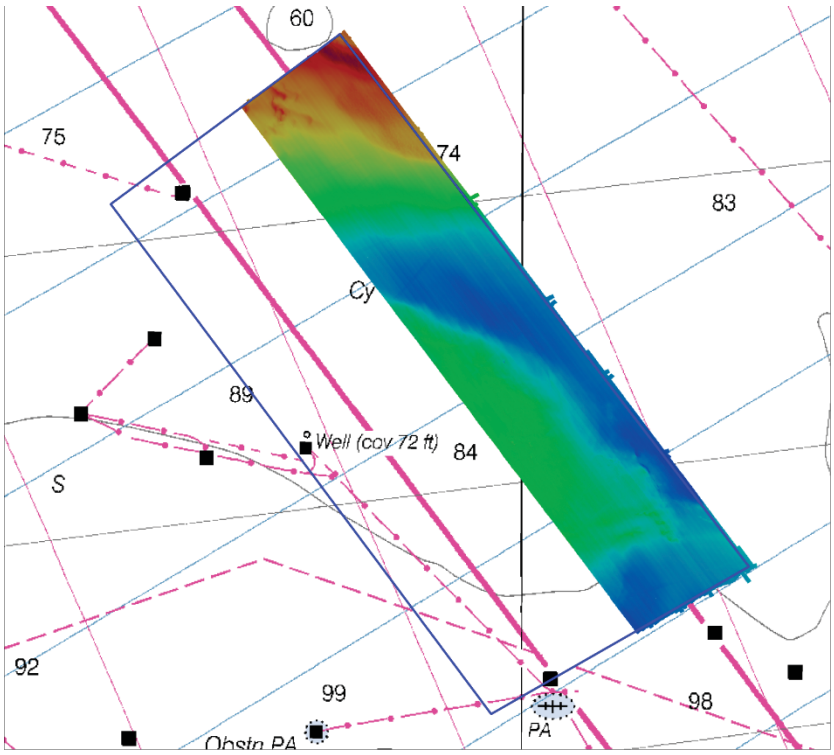


**Fig. 2. H12189 Sounding coverage.**

## B 2.3 Crosslines

Multibeam echosounder cross-lines totaling 57.8 LNM, approximately 10.9% of the total multibeam hydrography, were acquired during the course of the survey. These lines were subsequently trimmed to cover only the acquired area, resulting in 26.2 LNM of applicable crosslines, approximately 5.5% of total multibeam hydrography.

As per email dated 10 Sept 2009 from AHB located in the Descriptive Report, Appendix 5, quality control was performed using the standard deviation layer of the survey's CUBE surface (See Appendix 5). 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.

## B 2.4 Junctions and Prior Surveys

The following survey junctions with H12189, see Figure 4.

| Registry # | Scale | Date | Field Party | Junction side |
|---|---|---|---|---|
| H12188 | 1:40,000 | 2010 | *Thomas Jefferson* | Northwest |

Survey H12188 junctions with H12189 in the Northwest. The difference in soundings between the two surveys is approximately 0.2 meter.

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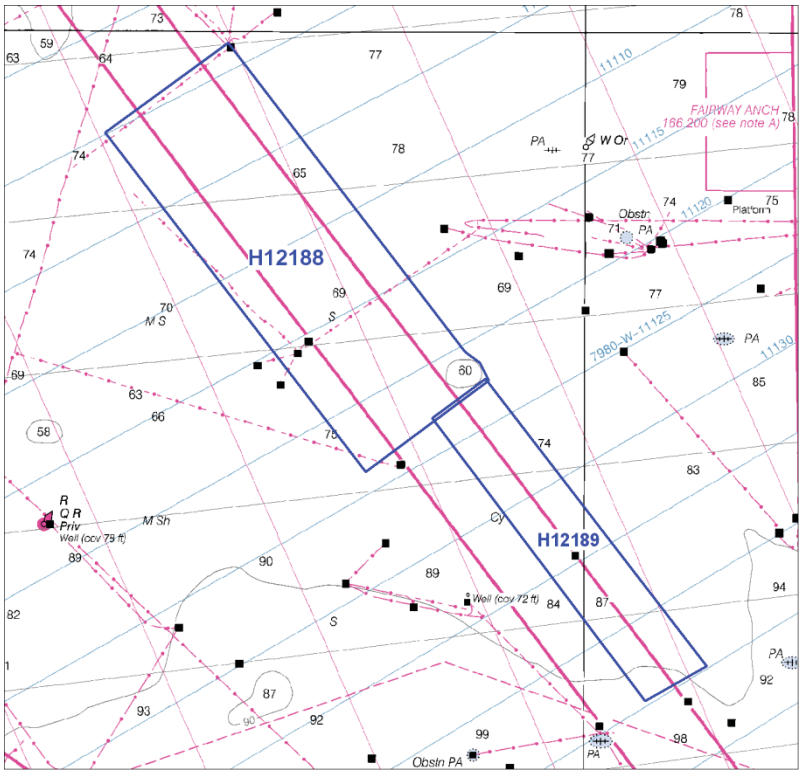



**Fig. 3: Junction Surveys.**

## B 2.5 Systematic Errors

An area of higher standard deviation exists in the BASE surface as seen in Figure 3. While there are adequate SVP casts throughout the survey area, the problem may be a result of the extrapolation of the SVP casts down to the remaining few meters in the deeper areas. The areas of higher standard deviation typically coincide to the areas in depth greater than 90 feet. This being past the deepest actual .svp measurement and into the projected last few feet of the sound velocity profiles. This results in the exterior beams “smiling” as a typical .svp issue.

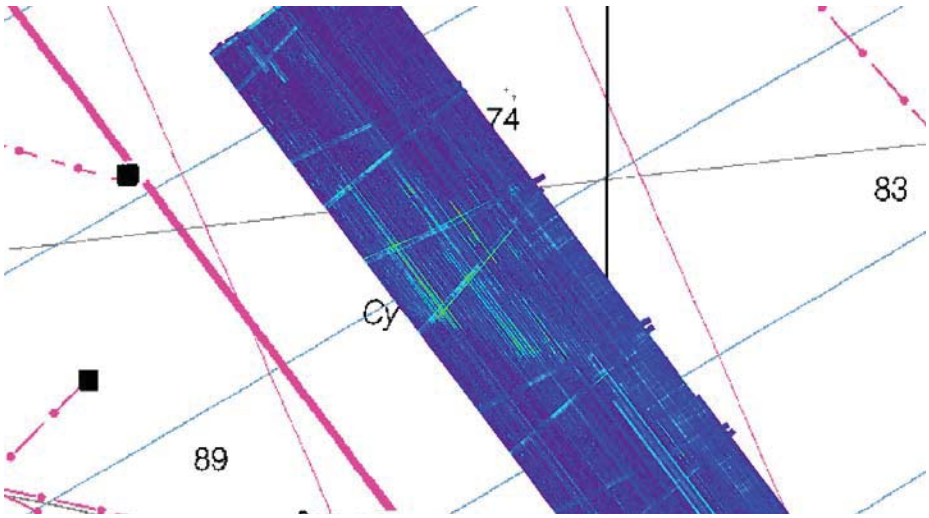



**Fig. 4: Standard Deviation**

Lines collected during days 161 and 162 have what appears to be a tidal artifact. (Figure 5). This artifact does not exceed 0.2 meters and is accounted for in the TPU calculation.

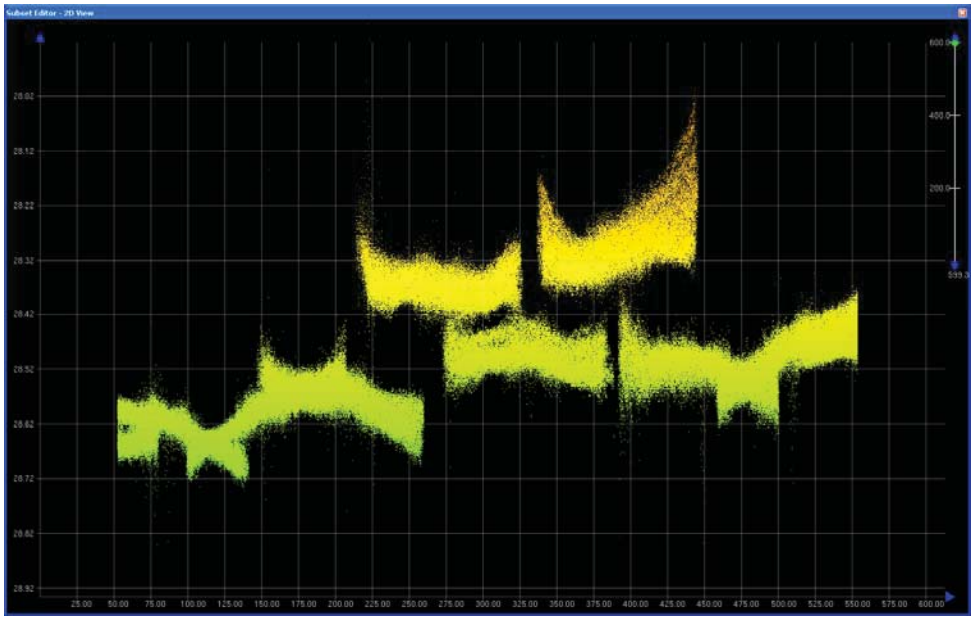


**Figure 5: Tide Artifact.**

## B 3. CORRECTIONS TO ECHO SOUNDING

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified water levels from the Galveston Pleasure Pier (8771510) using preliminary zoning accepted as final zoning and illustrated in Figure 6.

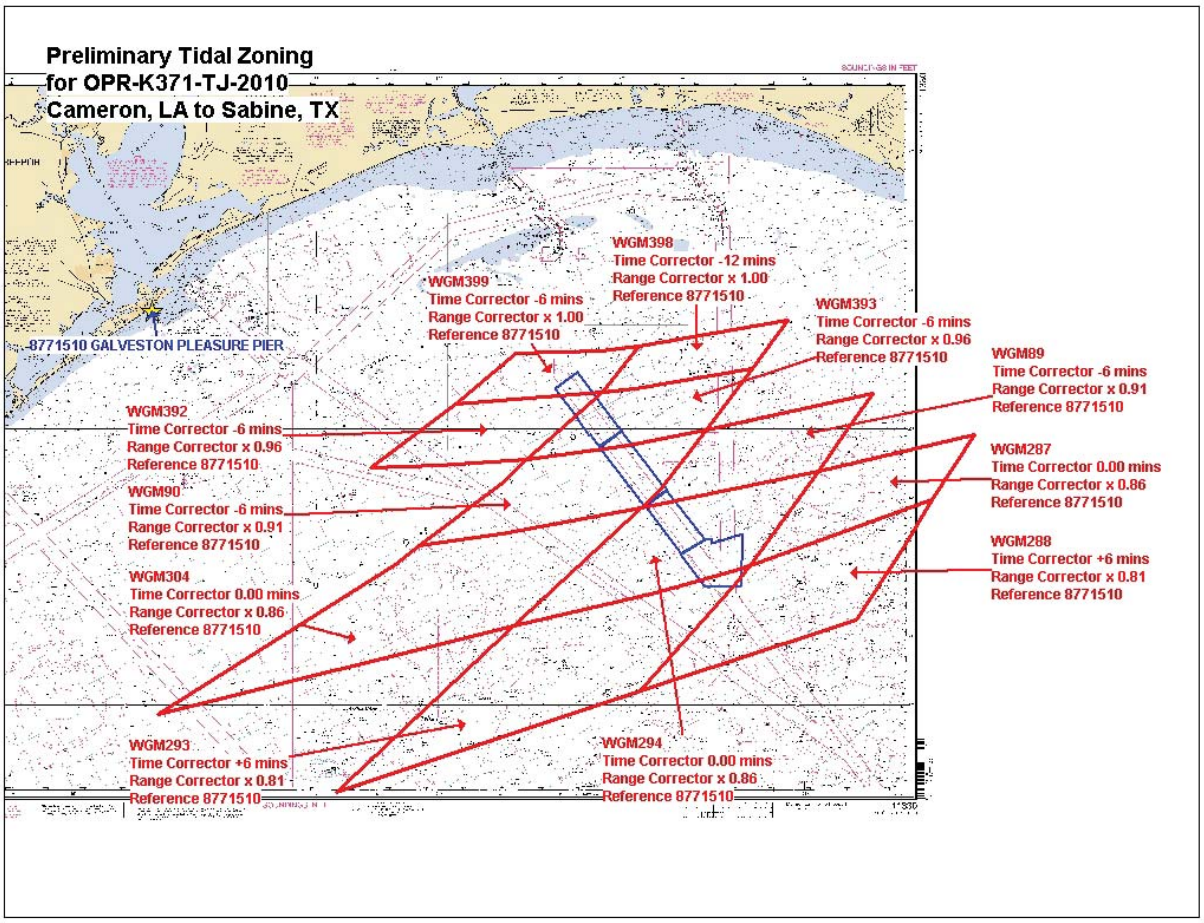



**Fig 6: Final Tide Zoning**

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

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.

Sound velocity corrections for this survey were applied using the ship's Moving Vessel Profiler (MVP) and Conductivity, Temperature and Depth (CTD) profiler. All SVP casts were applied in CARIS using Nearest in Distance within 6 hours.

## B 4. DATA PROCESSING

### B 4.1 Total Propagated Uncertainty

For the 2010 field season, Total Propagated Uncertainty (TPU) parameters for sound, speed, and tides are calculated separately for each project. The project-specific parameters for OPR-K371-TJ-10, Survey H12189 are as follows:

| Project | Vessel | Tide Values Combined Measured & Zoning | Sound Velocity Values | | |
|---|---|---|---|---|---|
| | | | CTD | MVP | Surface |
| H12189 | S222 | 0.2 | 4 | 1 | 0.242 |

**Table 3: TPE Parameters**

These values were used as inputs to the TPU calculation in CARIS for all MBES data immediately following merge. Tide Values Combined Measured & Zoning and Sound Velocity Values for CTD and MVP were determined from the project instructions, FPM and latest HSD guidance. The Surface Sound Velocity Value was determined during testing and is described in the project DAPR, section B.4.

### B 4.2 BASE Surfaces and Mosaics

The following table describes all BASE Surfaces submitted as part of Survey H12189:

| ***Name of Surface*** | ***Resolution*** | ***Type*** | ***Purpose*** |
|---|---|---|---|
| H12189_S222_CUBE_NOAA_2m_Final | 2m | CUBE | H12189 DTM |
| H12189_S222_CUBE_NOAA_50cm_Final | 50cm | CUBE | H12189 DTM |

**Table 4: BASE Surfaces**

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to NOAA_50cm and NOAA_2m for all main scheme surfaces. The finalized surfaces were depth thresholded using values of 0.00m to 20.0m and 19.0m to 40.0m for the 50cm and 2m grids, respectively. Refer to the *2010 Data Acquisition and Processing Report, 2010 Field Procedures Manual*, and *CARIS HIPS and SIPS User Guide* for further discussion.

### B 4.3 Data Cleaning

The survey data was 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.

## C. HORIZONTAL AND VERTICAL CONTROL

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.

### 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 (301Khz) and English Turn, LA (293Khz) were used during this survey.

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

### 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 the Galveston Pleasure Pier, TX (8771510) will serve as datum control for H12189. A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 30 June 2010 in accordance with the FPM and project letter instructions. Final smooth tide letter was received 7 July 2010, and states preliminary zoning is accepted as the final zoning.

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

#### D 1.1 Chart 11330 Comparison

Survey H12189 was compared to Chart 11330, (20$^{th}$ Ed., 11/01/2009, 1:250,000), the largest scale chart covering the survey area. Generally soundings agreed with the chart to within 1 foot throughout the survey area. Current survey depths were slightly deep of the charted depths.

#### D 1.2 ENC US3GC02M Comparison

Soundings are generally comparable with charted depths, with differences in charted and survey soundings 0.2 meters or less.

### D.2 Additional Results

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

There are no AWOIS items within the sheet limits of survey H12189.

### D.2.4 Shoreline

There is no shoreline within the sheet limits of survey H12189.

### D.2.5 Charted Features

There is one charted platform which is discussed in detail in the feature report, Appendix 2.

### D.2.6 Charted Pipelines and Cables

There are no charted pipelines or cables within the limits of the survey.

### 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.

### D 2.8 Platform Structures

There is one charted platform within the survey limits, located at 28°46'44.40" N 093°20'13.62" W. The charted structure was not present within the survey area. The Hydrographer recommends removing the charted platform from the charts.

## D.3 Dangers to Navigation and Shoals

### D 3.1 Dangers to Navigation

No dangers to navigation were found or reported to the NOAA’s Office of Coast Survey.

### D 3.2 Shoals

There were no significant uncharted shoals discovered during this survey.

## D.4 Aids to Navigation

There are no charted Aids to Navigation (ATON) within the limits of H12189.

## D.5 Coast Pilot Information

The Hydrographer has no recommendations for changes or addenda to the Coast Pilot.

## D.6 Miscellaneous

### Bottom Samples

No bottom samples were taken for survey H12189

### Environmental Conditions and Notes

No significant environmental conditions occurred during the survey.

## D.8 Adequacy of Survey

This survey is considered complete and adequate to supersede charted depths and features within the area defined in the file H12189_outline.hob, located in Appendix 3, Final Progress Survey Outline, except as noted in this report.

## 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.

## 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
2010.08.09
11:39:21 -04'00'

LT Mark A. Blankenship, NOAA
Field Operations Officer

Digitally signed by
Shepard Smith
Date: 2010.08.09 12:18:21
-04'00'

CDR Shepard M. Smith, NOAA
Commanding Officer

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

Survey Manager:

Matt Van Hoy
2010.08.09 11:38:33 -04'00'

AST Matthew Van Hoy

Deliverables Manager:

ERT Colleen McKenzie

# APPENDIX I

# TIDES AND WATER LEVELS

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

# TIDE NOTE FOR HYDROGRAPHIC SURVEY

**DATE :** July 7, 2010

**HYDROGRAPHIC BRANCH:** Atlantic
**HYDROGRAPHIC PROJECT:** OPR-K371-TJ-2010
**HYDROGRAPHIC SHEET:** H12189

**LOCALITY:** Gulf Of Mexico, 55 NM Southeast of Sabine, Tx
**TIME PERIOD:** May 6 - June 11, 2010

**TIDE STATION USED:** 877-1510 Galveston Pleasure Pier
Lat. 29° 17.1'N Long. 94° 47.4' 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, H12189, during the time period between May 6 to June 11, 2010.

Please use the zoning file "K371TJ2010CORP" submitted with the project instructions for Cameron, LA to Sabine, TX. Zones WGM89 and WGM294 are the applicable zones for H12189.

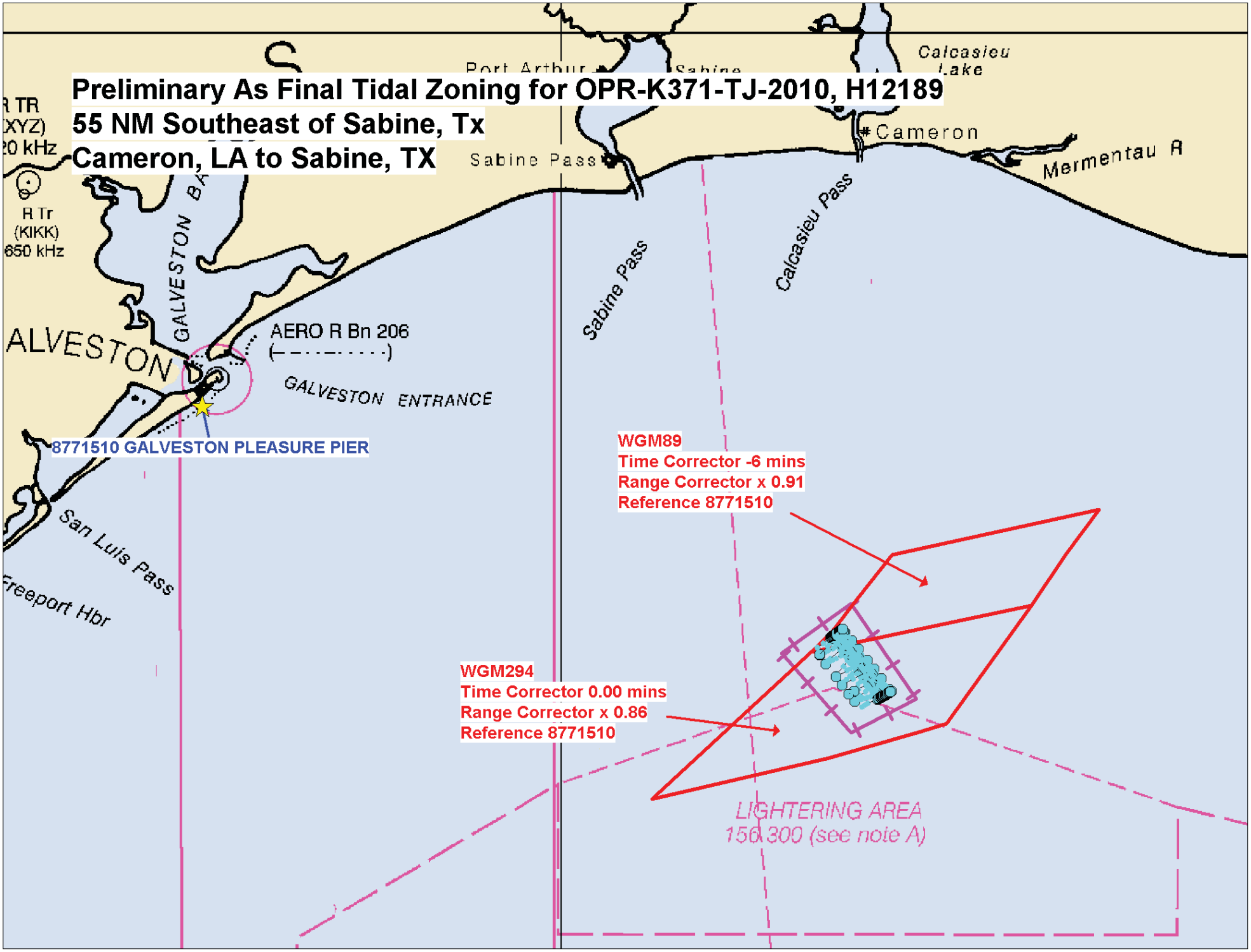
**Refer to attachments for zoning information.**

**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).

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/NOS, email=peter.stone@noaa.gov, c=US
Date: 2010.07.07 07:09:33 -04'00'

CHIEF, OCEANOGRAPHIC DIVISION


Preliminary As Final Tidal Zoning for OPR-K371-TJ-2010, H12189
55 NM Southeast of Sabine, Tx
Cameron, LA to Sabine, TX
Port Arthur
Sabine
Calcasieu Lake
Cameron
Sabine Pass
Mermentau R
Calcasieu Pass
Sabine Pass
GALVESTON BAY
ALVESTON
AERO R Bn 206
GALVESTON ENTRANCE
8771510 GALVESTON PLEASURE PIER
San Luis Pass
Freeport Hbr
R TR
(XYZ)
20 kHz
R Tr
(KIKK)
650 kHz
WGM89
Time Corrector -6 mins
Range Corrector x 0.91
Reference 8771510
WGM294
Time Corrector 0.00 mins
Range Corrector x 0.86
Reference 8771510
LIGHTERING AREA
156.300 (see note A)

# APPENDIX II

# SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

**Subject:** Re: Crossline comparison
**From:** Chris van Westendorp <Christiaan.VanWestendorp@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 <christiaan.vanwestendorp@noaa.gov>
Atlantic Hydrographic Branch
NOAA OCS

| | |
|---|---|
| From | Cristina Urizar <Cristina.Urizar@noaa.gov> |
| Sent | Wednesday, July 7, 2010 9:11 pm |
| To | Norris A Wike <Norris.A.Wike@noaa.gov> , OPS.Thomas.Jefferson@noaa.gov |
| Cc | "_NOS.CO-OPS.HPT" <NOS.COOPS.HPT@noaa.gov> , "Kyle.Ward" <Kyle.Ward@noaa.gov> |
| Bcc | |
| Subject | Final Tides for OPR-A371-TJ-2010 H12189 |
| Attachments | Prjt Ins Final Tides.png 39K; H12189.pdf 356K; vCard(Cristina_Urizar) 1K |

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

DATE: 07/07/2010

MEMORANDUM FOR: LCDR Rick Brennan
Chief, Atlantic Hydrographic Branch

FROM: Gerald Hovis
Oceanographic Division, N/OPS1

SUBJECT: Delivery of Tide Requirements for Hydrographic Surveys

This is notification that the preliminary zoning is accepted as the final zoning for survey project OPR-K371-TJ-2010, H12189 during the time period between May 6, 2010 - June 11, 2010. The accepted reference station for registry No.H12189 is Galveston Pleasure Pier, Tx (877-1510). Included with this memo is a Tide Note in .PDF format, stating the preliminary zoning has been accepted as the final zoning.

# APPENDIX III

# SURVEY FEATURES REPORT

AWOIS: none
Dangers to Navigation: none
Maritime Boundaries: none
Wrecks: none

APPROVAL PAGE

H12189

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

- H12189_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12189_GeoImage.pdf

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

Approved:_____ For: _____

**LT Abigail Higgins, NOAA**
Chief, Atlantic Hydrographic Branch