

F00781

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: F00781

LOCALITY

State(s): Mississippi

General Locality: Mississippi Sound

Sub-locality: Gulfport to Bay St Louis

2019

CHIEF OF PARTY
LT John Kidd

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

F00781

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

State(s): **Mississippi**

General Locality: **Mississippi Sound**

Sub-Locality: **Gulfport to Bay St Louis**

Scale: **10000**

Dates of Survey: **09/23/2019 to 10/01/2019**

Instructions Dated: **09/18/2019**

Project Number: **S-J908-NRT1-19**

Field Unit: **NOAA Navigation Response Team 1**

Chief of Party: **LT John Kidd**

Soundings by: **Kongsberg Maritime EM 2040C (MBES)**

Imagery by: **EdgeTech 4125 (SSS)**

Verification by: **Pacific Hydrographic Branch**

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

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 16N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instruction S-J908-NRT1-19, signed 08/19/2019. This submission investigates 11 of 165 assigned unverified chart features (UCFs) for F00781. NRB intended that this survey be completed as time allows in the NRT1 survey season. The 2019 survey season only allowed for the investigation of 11 assigned UCFs. The remaining UCFs will be assigned in the new 2020 survey project instructions.

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
30° 25' 13.89" N 89° 24' 26.99" W	30° 14' 31.93" N 88° 45' 59.73" W

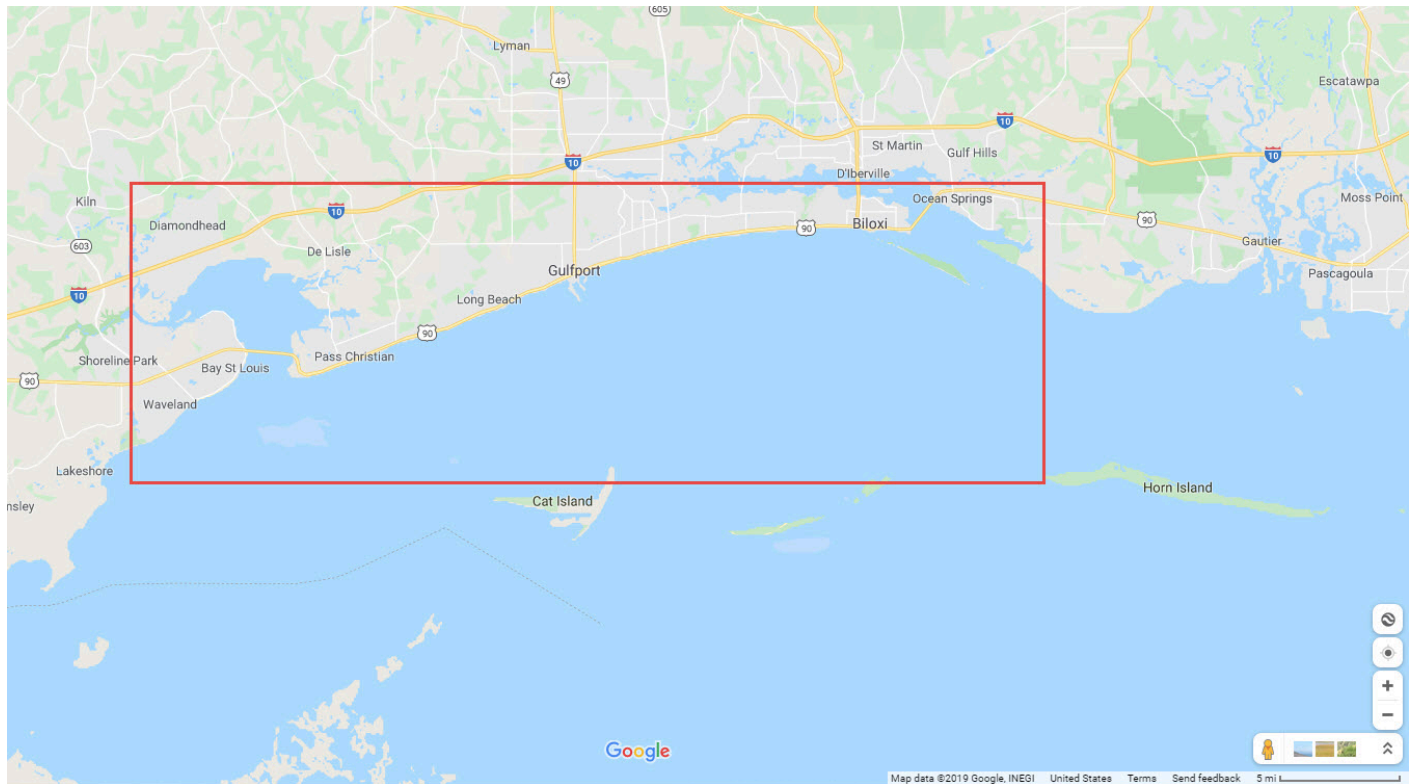


Figure 1: F00781 Survey Limits

B. Survey Purpose

NRT1 was assigned to investigate 165 unverified chart features in the Mississippi Sound by confirming or disproving these assigned features within a set radius of investigation. The results from this investigation will update National Ocean Service nautical charting products, reducing the risk and uncertainty to navigation.

C. Intended Use of Survey

The entire survey is adequate to supersede previous data.

Survey data from this project is adequate to supersede all prior survey data in the common area and is intended for chart compilation.

D. Data Acquisition and Processing

Please reference Data Acquisition and Processing Report F00781_DAPR for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods.

E. Uncertainty

The uncertainty statistics were calculated using Pydro Explorer's QC Tool's Finalized CSAR QA application. Total Propagated Uncertainty (TPU) values for F00781 were derived from a combination of fixed values for equipment and vessel characteristics, as well as field assigned values for sound speed uncertainties. The uncertainty for the VDatum model was provided to the field unit. A visual inspection of the Uncertainty layer revealed the areas of higher uncertainty occurred in the outer beams of survey lines, over areas of active sediment transport, and in areas of a muddy bottom with several distinct density layers.

In addition to the usual a priori estimates of uncertainty, some real time and post processed uncertainty sources were also incorporated into the depth estimates of the survey. Real-time uncertainties from the Kongsberg MBES sonars were incorporated and applied during post processing. Uncertainties associated with vessel roll, gyro, and navigation were applied real-time. This survey is an ellipsoidally referenced survey (ERS) and the tidal component was accomplished via VDATUM separation model. The surface was analyzed using the HydrOffice QC Tools Grid QA feature to determine compliance with specifications. Overall, 99.5% of nodes within the surface meet NOAA Allowable Uncertainty specifications for F00781.

A crossline comparison revealed acceptable agreement in 100% of coincident nodes.

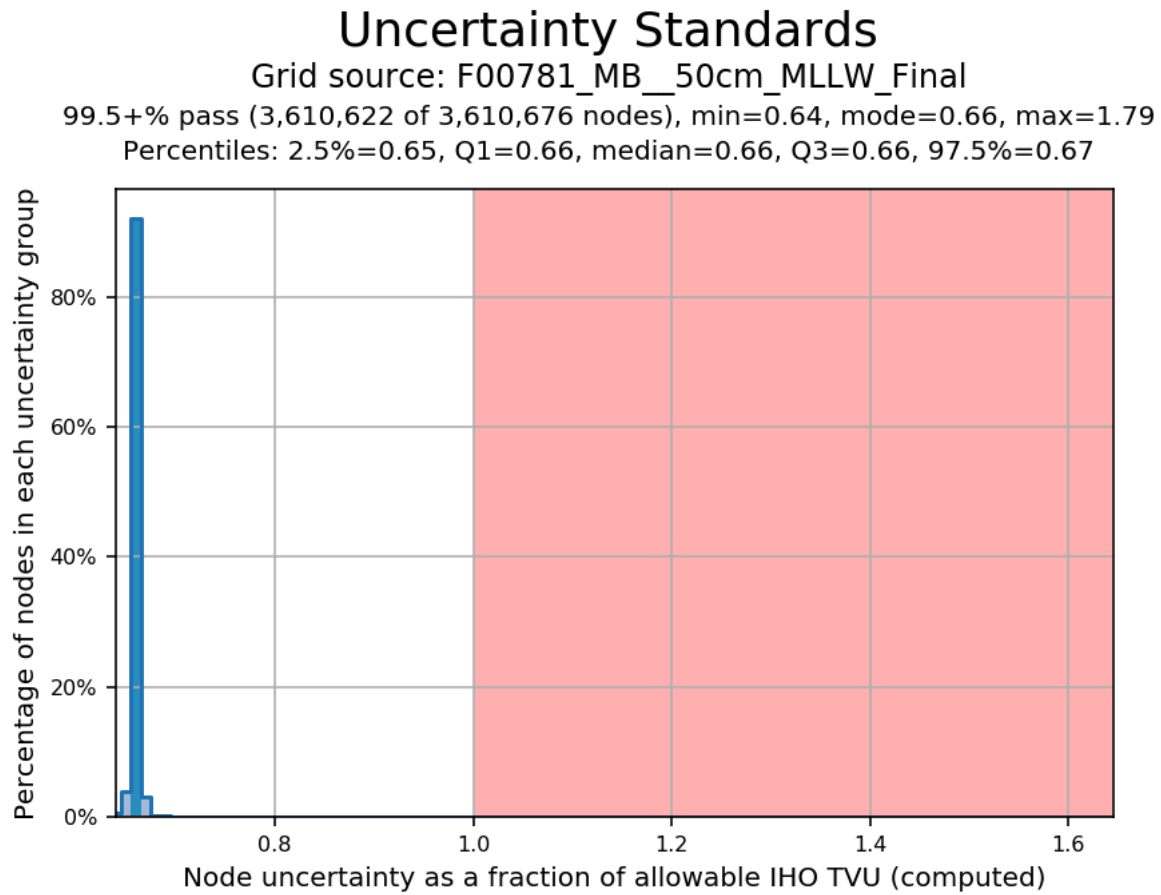


Figure 2: Pydro derived plot showing percent of nodes in compliance with HSSD uncertainty standards. Percentages of nodes with TVU QC greater than 1.0 (indicating that the allowable error has been exceeded) fall in the red shaded region of the plot, and together must be less than 5% of all nodes in order to “pass”

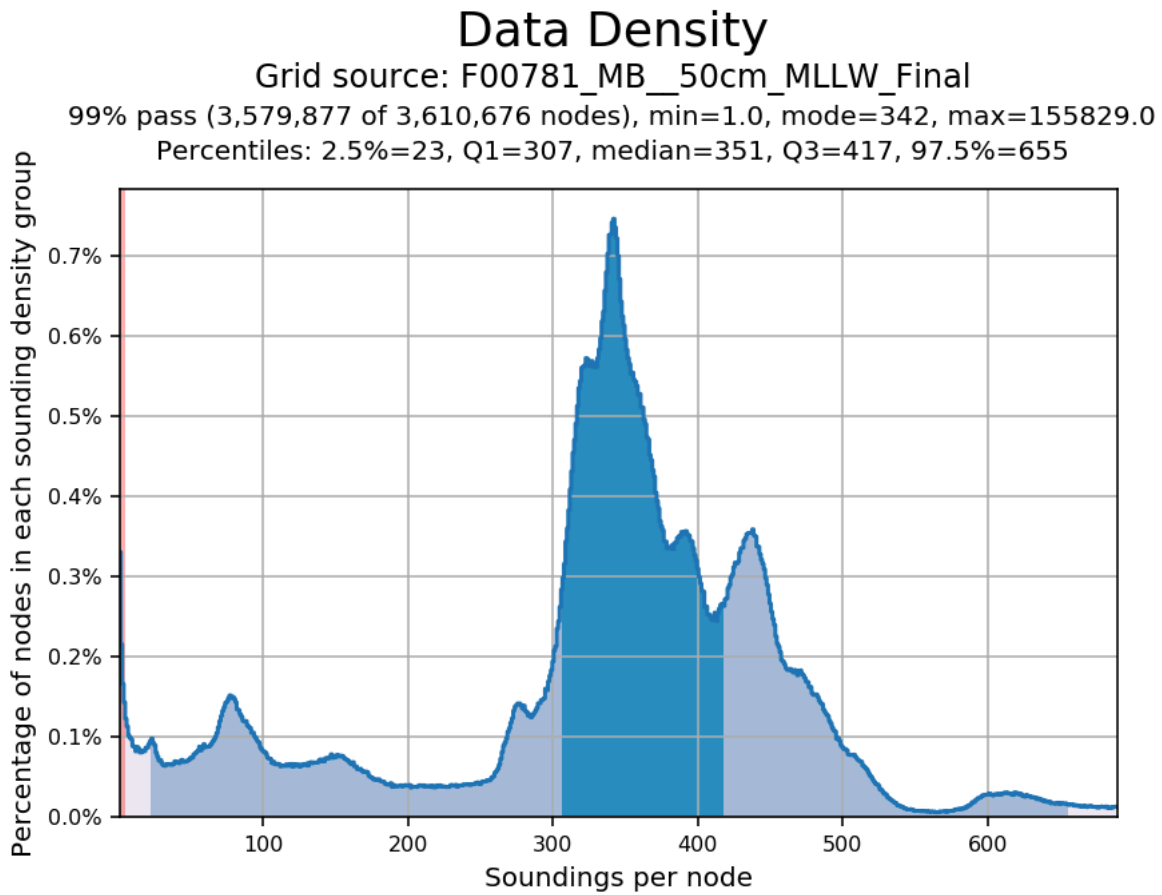


Figure 3: Pydro derived plot showing percent of nodes in compliance with HSSD density standards. Percentages of nodes less than 5 soundings per node fall in the red shaded region of the plot and together must be less than 5% of all nodes in order to “pass”.

Comparison Distribution

Per Grid: F00781_MB_50cm_MLLW_MSL-F00781_MB_50cm_MLLW_XL_fracAllowErr.csar

100% nodes pass (288583), min=0.0, mode=0.1 mean=0.1 max=0.9

Percentiles: 2.5%=0.0, Q1=0.0, median=0.1, Q3=0.1, 97.5%=0.2

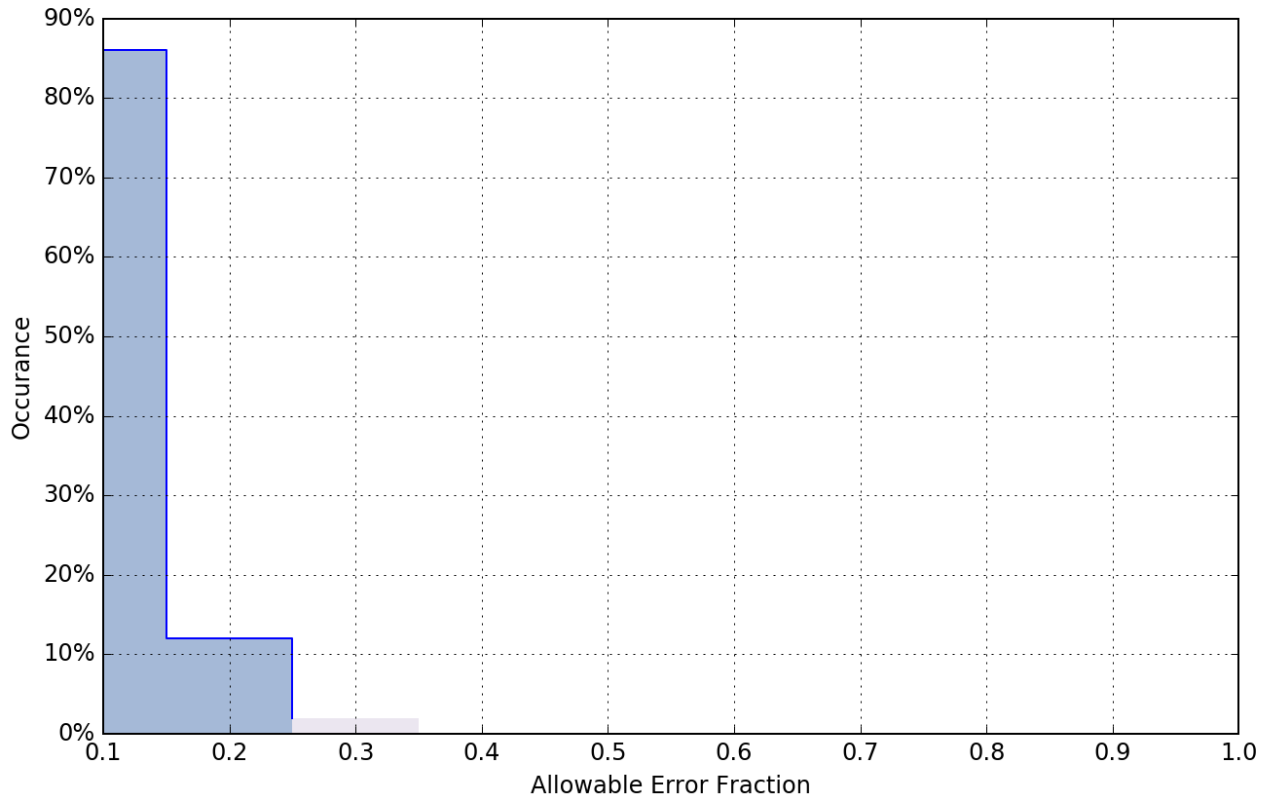


Figure 4: Cross line comparison using Pydro Compare Grids. The Allowable Error Fraction is computed by dividing the observed difference between the Mainscheme surface and the Crossline surface by the IHO-based HSD maximum allowable error for soundings (TVUmax) scaled according to the variance sum law, assuming independent, identically distributed observations. This histogram plot uses the magnitude (absolute value) of the Allowable Error Fraction to show a simple indication of what percentage of the total number of comparisons pass the TVUmax test.

F. Results and Recommendations

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

ENC	Scale	Edition	Update Application Date	Issue Date
US5MS11M	1:40000	57	08/09/2018	06/10/2019

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00781_MB_50cm_MLLW	CARIS Raster Surface (CUBE)	0.5 m	2.7 m - 11.5 m	NOAA_0.5m	Object Detection
F00781_MB_50cm_MLLW_Final	CARIS Raster Surface (CUBE)	0.5 m	2.7 m - 11.5 m	NOAA_0.5m	Object Detection
F00781_SSSAB_0.5m_400kHz_1of2	SSS Mosaic	0.5 m	N/A	N/A	100% SSS
F00781_SSSAB_0.5m_400kHz_2of2	SSS Mosaic	0.5 m	N/A	N/A	200% SSS

The survey was carried out to meet the Object Detection MBES Coverage requirements as defined by Section 5.2.2 of the 2019 Hydrographic Survey Specifications and Deliverables. Although depths within the survey area were generally deeper than the charted depths, a comparison using Pydro CA tools of a sounding set produced from the survey and the assigned ENC revealed no significant differences in depth within the surveyed areas. Assigned charted feature recommendations are detailed in the Final Feature File.

G. Vertical and Horizontal Control

The vertical datum for this project is Mean Lower Low Water. The vertical control method used was VDatum.

Sounding elevations relative to the ellipsoid were collected through Ellipsoidal Referenced Survey (ERS) with post-processing of the daily logged POSPac data to create a statistical best estimate of trajectory (SBET) file, as detailed in the DAPR. All of F00781 meets HSSD vertical accuracy requirements.

The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 16.

The following PPK methods were used for horizontal control:

- RTX

Precise Positioning-Real Time Extended (PP-RTX) processing methods were used in Applanix POSPac MMS 8.3 software to produce SBETs for post-processing horizontal correction. All of F00741 meets HSSD horizontal accuracy requirements.

WAAS

The Wide Area Augmentation System (WAAS) was used for real-time horizontal control during data acquisition.

H. Additional Results


There are no additional results for this survey.

I. Approval

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 Survey Summary 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 Specifications and Deliverables, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Survey Summary Report.

Approver Name	Title	Date	Signature
Joshua Bergeron	Sheet Manager	02/25/2020	BERGERON.JOSHUA.S TEPHAN.1239796180 Digitally signed by BERGERON.JOSHUA.STEPHAN.12 39796180 Date: 2020.02.26 08:53:58 -06'00'
LT John Kidd	Chief of Party	02/25/2020	 Digitally signed by KIDD.JOHN.RYAN.1401688524 Date: 2020.02.26 08:57:10 -06'00'

APPROVAL PAGE

F00781

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

The following products will be sent to NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- GeoPDF of survey products

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: _____

CDR Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch