

**F00793**

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

**DESCRIPTIVE REPORT**

Type of Survey: Navigable Area

Registry Number: F00793

**LOCALITY**

State(s): Florida

General Locality: St. Marys River

Sub-locality: St. Marys River

**2021**

CHIEF OF PARTY  
James L. Kirkpatrick

LIBRARY & ARCHIVES

Date:

**HYDROGRAPHIC TITLE SHEET**

**F00793**

**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): **Florida**

General Locality: **St. Marys River**

Sub-Locality: **St. Marys River**

Scale: **10000**

Dates of Survey: **05/24/2021 to 06/02/2021**

Instructions Dated: **04/29/2021**

Project Number: **S-G901-NRTFB-21**

Field Unit: **NOAA Navigation Response Team - Fernandina**

Chief of Party: **James L. Kirkpatrick**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Side Scan Sonar**

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 17N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.*

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## Descriptive Report to Accompany Survey F00793

Project: S-G901-NRTFB-21

Locality: St. Marys River

Sublocality: St. Marys River

Scale: 1:10000

May 2021 - June 2021

**NOAA Navigation Response Team - Fernandina**

Chief of Party: James L. Kirkpatrick

### A. Area Surveyed

Survey area includes portions of the Amelia River and the St. Marys Entrance between Fernandina Beach, FL, Tiger Island, FL and Cumberland Island, GA.

#### A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
30° 43' 15.46" N	30° 40' 39.33" N
81° 28' 57.86" W	81° 27' 52.56" W

*Table 1: Survey Limits*

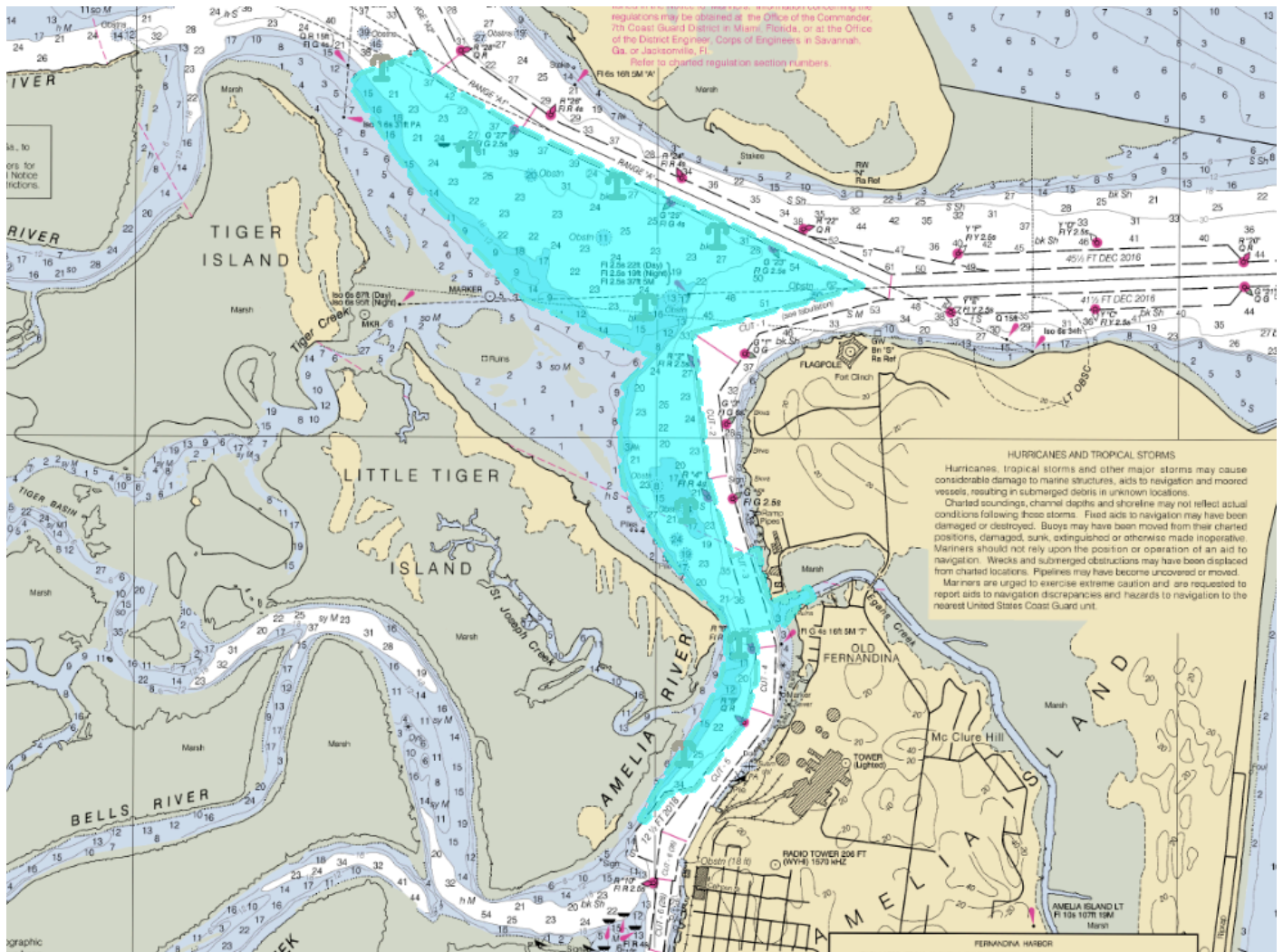


Figure 1: F00793 Survey Limits.

Entire assigned survey area within the NALL ensounded with 200% side scan sonar.

### A.2 Survey Purpose

The Fernandina Pilots have requested a need for a hydrographic survey to find and verify any hazards to navigation in an area of potential placement of mooring balls. Survey data from this project is intended to supersede all prior survey data in the common area.

### A.3 Survey Quality

The entire survey is adequate to supersede previous data.

## A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

<b>Water Depth</b>	<b>Coverage Required</b>
All waters in survey area	Object Detection Coverage (Refer to HSSD Section 5.2.2.2)
All waters in survey area	Acquire backscatter data during all multibeam data acquisition (Refer to HSSD Section 6.2)

*Table 2: Survey Coverage*

Backscatter was collected but not processed.

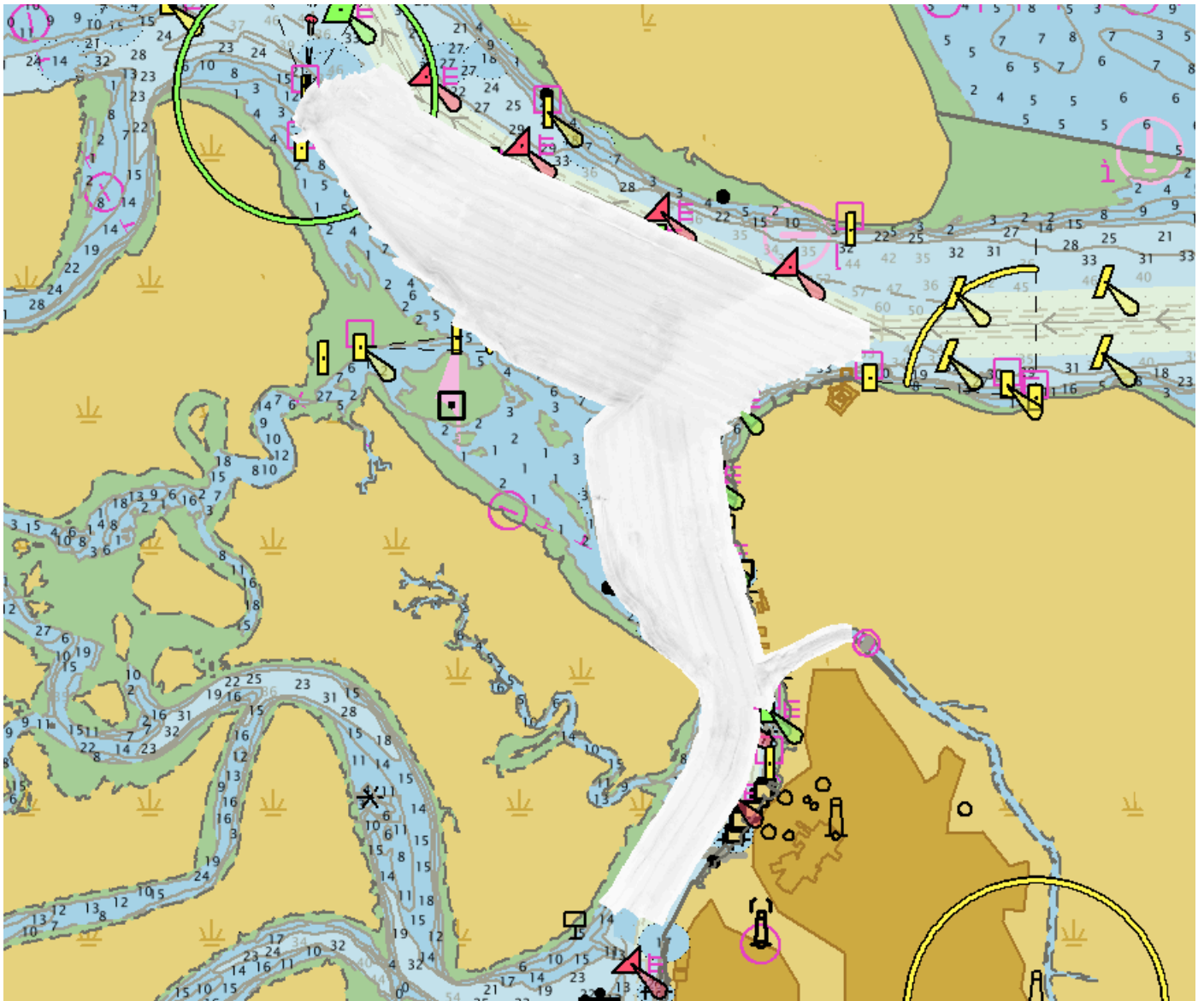


Figure 2: F00793 Survey Coverage

### A.6 Survey Statistics

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



	<b>HULL ID</b>	<i>S3009</i>	<i>Total</i>
<b>LNM</b>	<b>SBES Mainscheme</b>	0.0	0.0
	<b>MBES Mainscheme</b>	0.0	0.0
	<b>Lidar Mainscheme</b>	0.0	0.0
	<b>SSS Mainscheme</b>	0.0	0.0
	<b>SBES/SSS Mainscheme</b>	0.0	0.0
	<b>MBES/SSS Mainscheme</b>	65.532	65.532
	<b>SBES/MBES Crosslines</b>	5.089	5.089
	<b>Lidar Crosslines</b>	0.0	0.0
<b>Number of Bottom Samples</b>			8
<b>Number Maritime Boundary Points Investigated</b>			0
<b>Number of DPs</b>			0
<b>Number of Items Investigated by Dive Ops</b>			0
<b>Total SNM</b>			1.0

*Table 3: Hydrographic Survey Statistics*

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

<b>Survey Dates</b>	<b>Day of the Year</b>
05/24/2021	144
05/25/2021	145

<b>Survey Dates</b>	<b>Day of the Year</b>
05/26/2021	146
05/27/2021	147
05/28/2021	148
06/02/2021	153

*Table 4: Dates of Hydrography*

Acquisition spanned a total of 6 survey days.

## **B. Data Acquisition and Processing**

### **B.1 Equipment and Vessels**

Refer to the 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 discussed in the following sections.

#### **B.1.1 Vessels**

The following vessels were used for data acquisition during this survey:

<b>Hull ID</b>	<i>S3009</i>
<b>LOA</b>	10.0 meters
<b>Draft</b>	1.0 meters

*Table 5: Vessels Used*



*Figure 3: S3009*

### B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

<b>Manufacturer</b>	<b>Model</b>	<b>Type</b>
Kongsberg Maritime	EM 2040C	MBES
EdgeTech	4125	SSS
Applanix	POS MV 320 v5	Positioning and Attitude System
AML Oceanographic	MicroX SV	Sound Speed System
YSI	CastAway-CTD	Conductivity, Temperature, and Depth Sensor

*Table 6: Major Systems Used*

## B.2 Quality Control

### B.2.1 Crosslines

Crosslines accounted for 7.7% of the mainscheme MBES. Crosslines are in good agreement with mainscheme across the survey area with a mean difference of 0.0 meters and standard deviation of 0.1 meters comparing 788,037 data points.

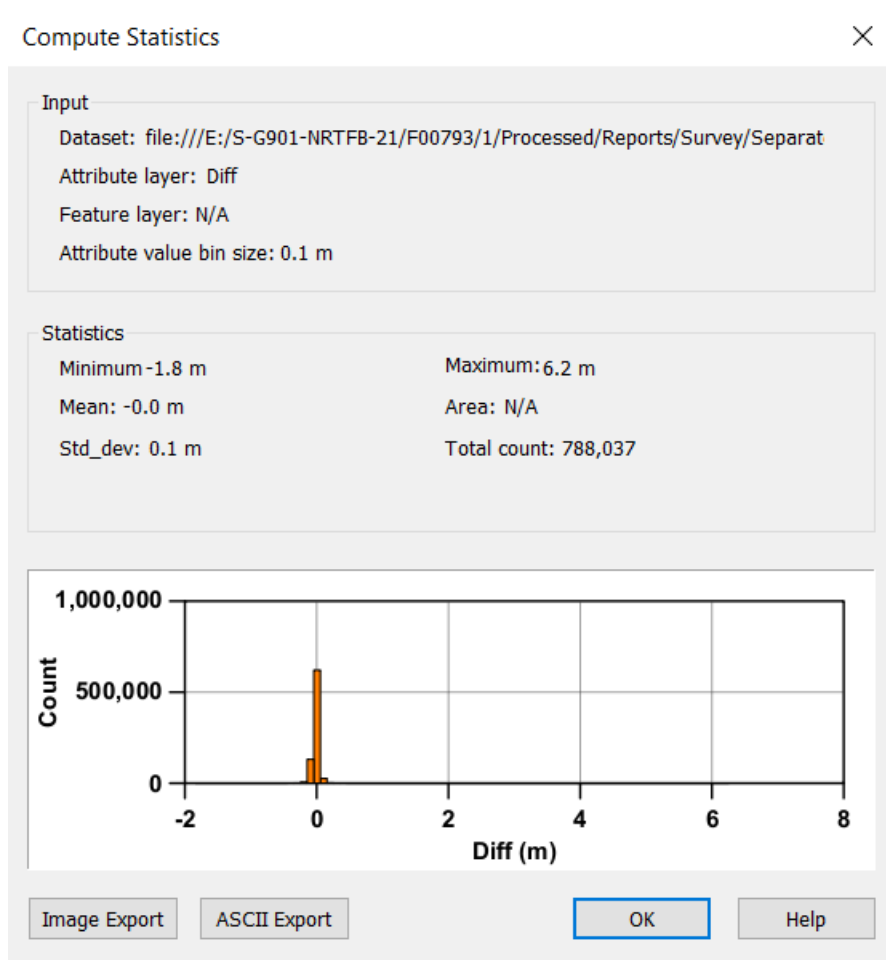


Figure 4: F00793 Crossline Statistics

**B.2.2 Uncertainty**

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.0 centimeters	10.9 centimeters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Measured - XBT	Surface
S3009	2.0 meters/second	0 meters/second	0 meters/second	0.5 meters/second

*Table 8: Survey Specific Sound Speed TPU Values.*

Tide uncertainty values derived from project instructions. Sound speed uncertainty values derived from manufacturers recommendations.

### **B.2.3 Junctions**

No junctions assigned.

There are no contemporary surveys that junction with this survey.

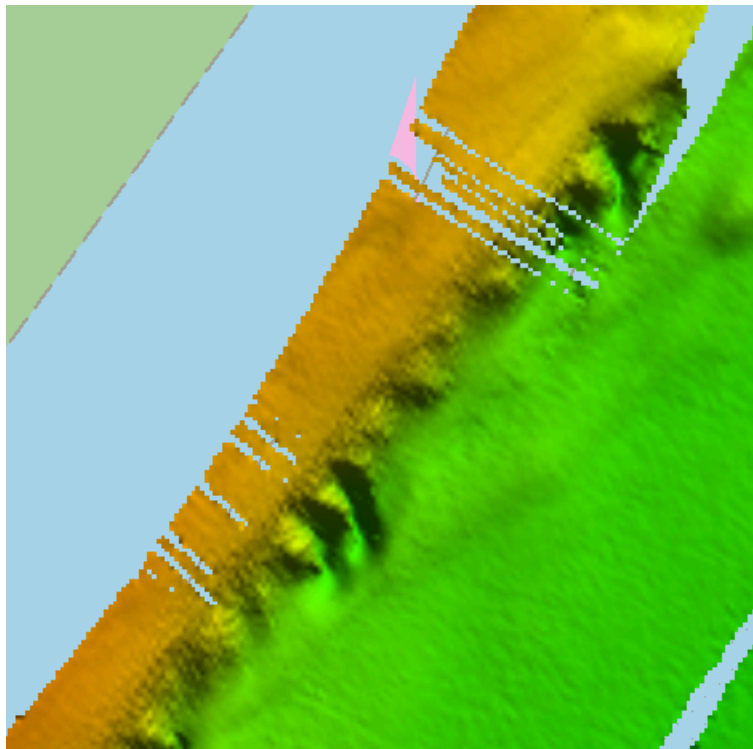
### **B.2.4 Sonar QC Checks**

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

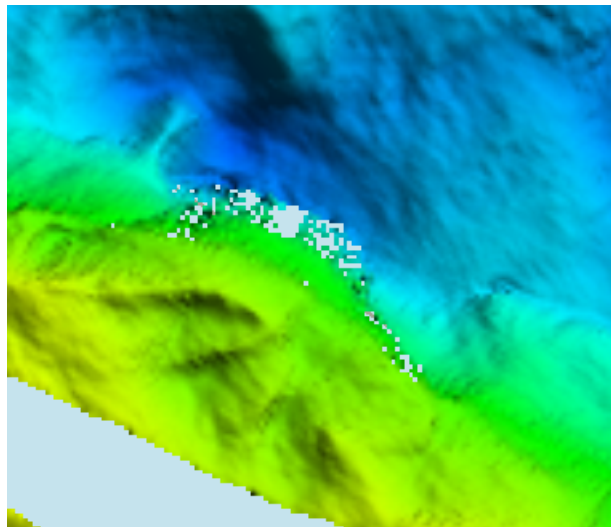
### **B.2.5 Equipment Effectiveness**

#### MBES data quality.

A few shallow areas experienced blow outs in the MBES data similar to what you would see when crossing a boat wake. Some data quality on steep slopes was also degraded. This is typical of our system despite efforts to improve the data quality.



*Figure 5: Shallow blow out.*



*Figure 6: Steep Slope.*

## **B.2.6 Factors Affecting Soundings**

There were no other factors that affected corrections to soundings.

## **B.2.7 Sound Speed Methods**

Sound Speed Cast Frequency: Casts were taken as close to every 2 hours as possible.

A total of 20 SVP casts were collected over 6 days during F00793. Real time sound speed is collected continuously at the MBES transducer.

## **B.2.8 Coverage Equipment and Methods**

Set line spacing MBES with concurrent 200% was used to realize object detection coverage for the entire survey. In the deepest areas 100% MBES was achieved.

## **B.3 Echo Sounding Corrections**

### **B.3.1 Corrections to Echo Soundings**

All data reduction procedures conform to those detailed in the DAPR.

### **B.3.2 Calibrations**

All sounding systems were calibrated as detailed in the DAPR.

## **B.4 Backscatter**

Backscatter was not acquired for this survey.

*Backscatter was acquired by the field unit and processed at the branch during the HDR.*



## B.5 Data Processing

### B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

<b>Manufacturer</b>	<b>Name</b>	<b>Version</b>
N/A	N/A	N/A

*Table 9: Primary bathymetric data processing software*

The following software program was the primary program used for imagery data processing:

<b>Manufacturer</b>	<b>Name</b>	<b>Version</b>
N/A	N/A	N/A

*Table 10: Primary imagery data processing software*

The following Feature Object Catalog was used: NOAA Profile Version 2021.

### B.5.2 Surfaces

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

<b>Surface Name</b>	<b>Surface Type</b>	<b>Resolution</b>	<b>Depth Range</b>	<b>Surface Parameter</b>	<b>Purpose</b>
F00793_MB_50cm_MLLW_Final	CARIS Raster Surface (CUBE)	0.5 meters	0.1 meters - 21.4 meters	NOAA_0.5m	Object Detection
F00793_SSSAB_1m_400kHz_1of2	SSS Mosaic	1 meters	-	N/A	100% SSS
F00793_SSSAB_1m_400kHz_2of2	SSS Mosaic	1 meters	-	N/A	200% SSS

*Table 11: Submitted Surfaces*

## C. Vertical and Horizontal Control

Per FPM section 5.2.3.2.3 a HVCR report was not filed as horizontal and vertical control stations were not established by the field party for this survey. A summary of horizontal and vertical control for this survey follows. POSPAC Smoothed Best Estimate Trajectory (SBET) files were processed and applied to survey lines to improve the horizontal positioning. Vertical control was established with ERS via VDatum.

### C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

#### ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	S-G901_VDatum Limits_100m_NAD83-MLLW_geoid12b

*Table 12: ERS method and SEP file*

### C.2 Horizontal Control

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 17.

The following PPK methods were used for horizontal control:

- RTX

#### WAAS

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

## D. Results and Recommendations

### D.1 Chart Comparison

In general F00793 agreed well with ENC US5GA18M. Recommend minor contour updates in the areas listed below.

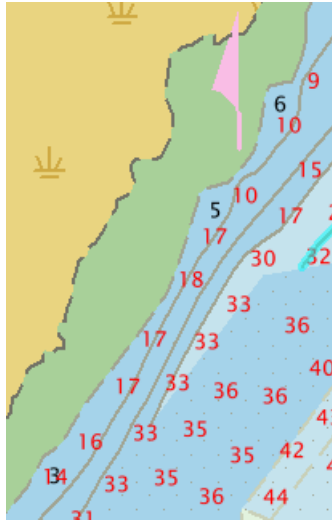


Figure 7: SW corner contours and soundings.

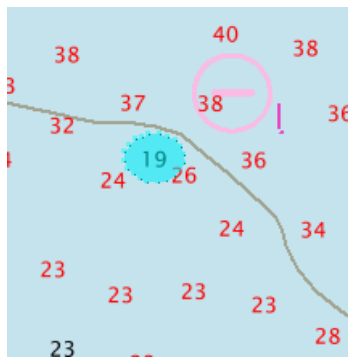


Figure 8: Delete obstruction and update contour.

### D.1.1 Electronic Navigational Charts

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

ENC	Scale	Edition	Update Application Date	Issue Date
US5GA18M	1:25000	36	06/14/2021	06/14/2021

Table 13: Largest Scale ENC's

### D.1.2 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey. Several new obstructions were found but not considered a danger to navigation due to their location and typical vessel traffic patterns. Several obstructions with minimal relief off of the seafloor are recommended to be charted due to potential anchorage areas.

### D.1.3 Charted Features

All assigned charted features are addressed in the Final Feature File.

### D.1.4 Uncharted Features

All new features are addressed in the Final Feature File.

### D.1.5 Channels

Some areas of the federally maintained channel were included in F00793 survey area. One sounding was found to be shoaler than charted by 10 cm in the Fernandina Harbor Cut 2 LOQ. This minor discrepancy falls within allowable TVU and has not been reported to USACOE.

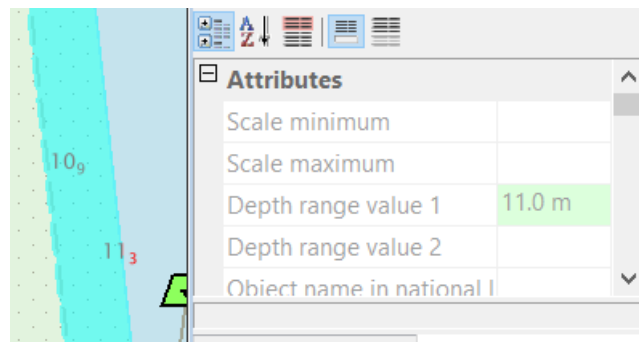


Figure 9: 10 cm Shoal in Cut 2 LOQ.

## D.2 Additional Results

### D.2.1 Aids to Navigation

All ATONs are on station and serving their intended purpose. One uncharted private sign is included in the Final Feature File and reported in Assist. As of submission Assist has not confirmed receipt.

**D.2.2 Maritime Boundary Points**

No Maritime Boundary Points were assigned for this survey.

**D.2.3 Bottom Samples**

All bottom samples are included in the Final Feature File.

**D.2.4 Overhead Features**

No overhead features exist for this survey.

**D.2.5 Submarine Features**

No submarine features exist for this survey.

**D.2.6 Platforms**

No platforms exist for this survey.

**D.2.7 Ferry Routes and Terminals**

No ferry routes or terminals exist for this survey.

**D.2.8 Abnormal Seafloor or Environmental Conditions**

No abnormal seafloor or environmental conditions exist for this survey.

**D.2.9 Construction and Dredging**

An unofficial staging area for dredge pipes exists within the survey area. Communication with USCG and USACOE is ongoing at this time to determine the best approach. Correspondence included in this submission.





*Figure 11: Dredge pipes.*

#### **D.2.10 New Survey Recommendations**

No new surveys or further investigations are recommended for this area.

#### **D.2.11 ENC Scale Recommendations**

No new ENC scales 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 Specifications and Deliverables, Field Procedures Manual, 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 Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
James L. Kirkpatrick	Chief of Party	07/01/2021	KIRKPATRICK.JAMES.LEROY.IV.1 Digitally signed by KIRKPATRICK.JAMES.LEROY .IV.1400487398 Date: 2021.07.01 21:50:34 -04'00' 400487398



## F. Table of Acronyms

<b>Acronym</b>	<b>Definition</b>
<b>AHB</b>	Atlantic Hydrographic Branch
<b>AST</b>	Assistant Survey Technician
<b>ATON</b>	Aid to Navigation
<b>AWOIS</b>	Automated Wreck and Obstruction Information System
<b>BAG</b>	Bathymetric Attributed Grid
<b>BASE</b>	Bathymetry Associated with Statistical Error
<b>CO</b>	Commanding Officer
<b>CO-OPS</b>	Center for Operational Products and Services
<b>CORS</b>	Continuously Operating Reference Station
<b>CTD</b>	Conductivity Temperature Depth
<b>CEF</b>	Chart Evaluation File
<b>CSF</b>	Composite Source File
<b>CST</b>	Chief Survey Technician
<b>CUBE</b>	Combined Uncertainty and Bathymetry Estimator
<b>DAPR</b>	Data Acquisition and Processing Report
<b>DGPS</b>	Differential Global Positioning System
<b>DP</b>	Detached Position
<b>DR</b>	Descriptive Report
<b>DTON</b>	Danger to Navigation
<b>ENC</b>	Electronic Navigational Chart
<b>ERS</b>	Ellipsoidal Referenced Survey
<b>ERTDM</b>	Ellipsoidally Referenced Tidal Datum Model
<b>ERZT</b>	Ellipsoidally Referenced Zoned Tides
<b>FFF</b>	Final Feature File
<b>FOO</b>	Field Operations Officer
<b>FPM</b>	Field Procedures Manual
<b>GAMS</b>	GPS Azimuth Measurement Subsystem
<b>GC</b>	Geographic Cell
<b>GPS</b>	Global Positioning System
<b>HIPS</b>	Hydrographic Information Processing System
<b>HSD</b>	Hydrographic Surveys Division

<b>Acronym</b>	<b>Definition</b>
<b>HSSD</b>	Hydrographic Survey Specifications and Deliverables
<b>HSTB</b>	Hydrographic Systems Technology Branch
<b>HSX</b>	Hypack Hysweep File Format
<b>HTD</b>	Hydrographic Surveys Technical Directive
<b>HVCR</b>	Horizontal and Vertical Control Report
<b>HVF</b>	HIPS Vessel File
<b>IHO</b>	International Hydrographic Organization
<b>IMU</b>	Inertial Motion Unit
<b>ITRF</b>	International Terrestrial Reference Frame
<b>LNM</b>	Linear Nautical Miles
<b>MBAB</b>	Multibeam Echosounder Acoustic Backscatter
<b>MCD</b>	Marine Chart Division
<b>MHW</b>	Mean High Water
<b>MLLW</b>	Mean Lower Low Water
<b>NAD 83</b>	North American Datum of 1983
<b>NALL</b>	Navigable Area Limit Line
<b>NTM</b>	Notice to Mariners
<b>NMEA</b>	National Marine Electronics Association
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NOS</b>	National Ocean Service
<b>NRT</b>	Navigation Response Team
<b>NSD</b>	Navigation Services Division
<b>OCS</b>	Office of Coast Survey
<b>OMAO</b>	Office of Marine and Aviation Operations (NOAA)
<b>OPS</b>	Operations Branch
<b>MBES</b>	Multibeam Echosounder
<b>NWLON</b>	National Water Level Observation Network
<b>PDBS</b>	Phase Differencing Bathymetric Sonar
<b>PHB</b>	Pacific Hydrographic Branch
<b>POS/MV</b>	Position and Orientation System for Marine Vessels
<b>PPK</b>	Post Processed Kinematic
<b>PPP</b>	Precise Point Positioning
<b>PPS</b>	Pulse per second

<b>Acronym</b>	<b>Definition</b>
<b>PRF</b>	Project Reference File
<b>PS</b>	Physical Scientist
<b>RNC</b>	Raster Navigational Chart
<b>RTK</b>	Real Time Kinematic
<b>RTX</b>	Real Time Extended
<b>SBES</b>	Singlebeam Echosounder
<b>SBET</b>	Smooth Best Estimate and Trajectory
<b>SNM</b>	Square Nautical Miles
<b>SSS</b>	Side Scan Sonar
<b>SSSAB</b>	Side Scan Sonar Acoustic Backscatter
<b>ST</b>	Survey Technician
<b>SVP</b>	Sound Velocity Profiler
<b>TCARI</b>	Tidal Constituent And Residual Interpolation
<b>TPU</b>	Total Propagated Uncertainty
<b>USACE</b>	United States Army Corps of Engineers
<b>USCG</b>	United States Coast Guard
<b>UTM</b>	Universal Transverse Mercator
<b>XO</b>	Executive Officer
<b>ZDF</b>	Zone Definition File