NOAA Coast Survey

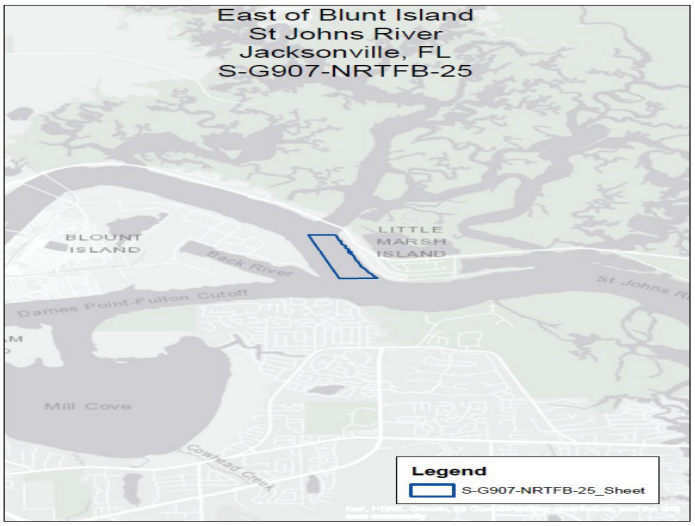
F00916

Blount Island

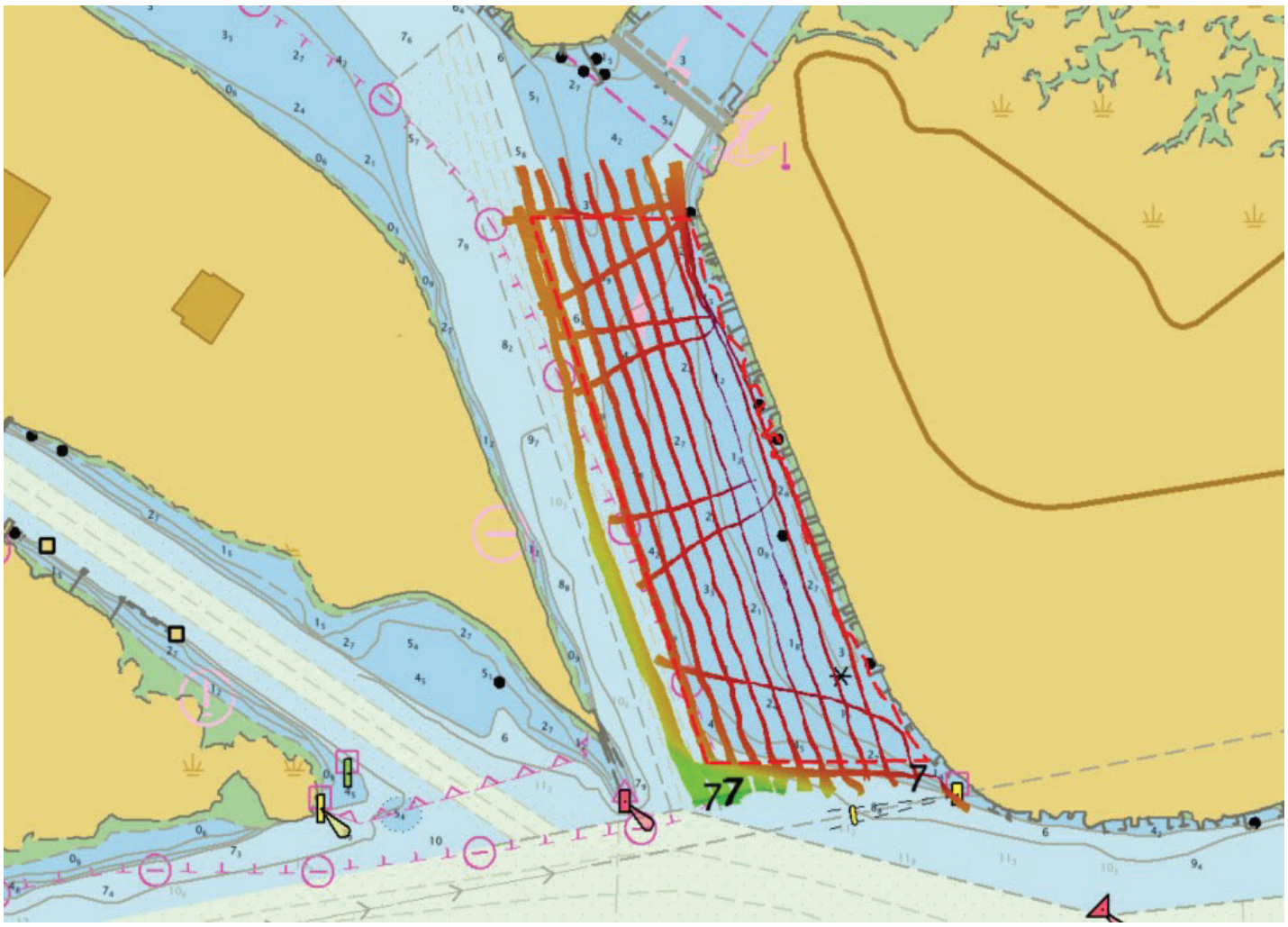
S-G907-NRTFB-25
Blount Island
Florida

Responsible Party
DOC/NOAA/NOS/OCS -- Office of Coast Survey
Contact Information
James Kirkpatrick
Field Unit
NOAA NRT-Fernandina
Survey Dates
March 06, 2025 - March 06, 2025
License Information
CC0-1.0
Approver
James L. Kirkpatrick

Overview



Survey Area



Platform and Sonar Equipment

NRTFB (S3009)

Kongsberg Maritime EM 2040C
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EdgeTech 4125
EdgeTech 4125

Bathymetry Grid

F00916_MB_1m_MLLW_1of1 Sounding Technique: ***Multibeam***

North American Datum 1983 (2011)
Projected UTM 17, Unit: meters
Mean Lower Low Water
Unit: meters

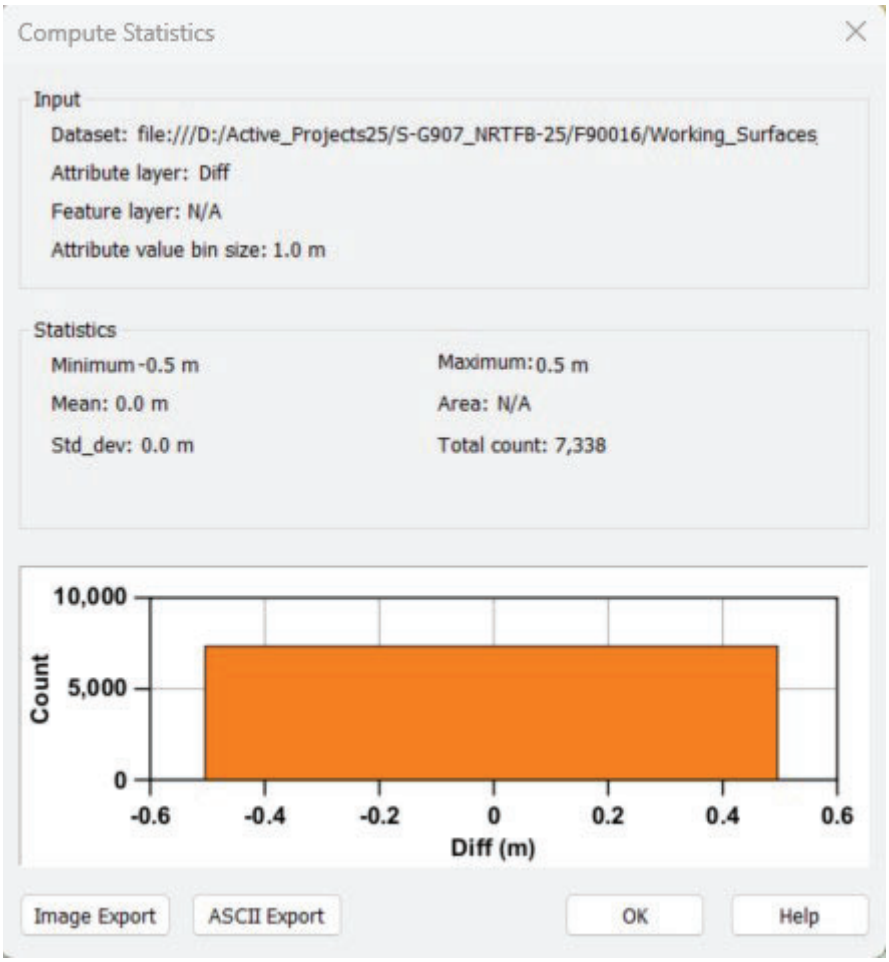
Features Detected:	***Yes***
Least Depth Detected:	***Yes***
Full Seafloor Coverage:	***Yes***
Bathymetric Coverage:	***No***
Interpolated:	***No***

	Fixed	Variable
Feature Detection Size:	***2.0m***	***10%***
Uncertainty Horizontal:	***5m***	***5%***
Uncertainty Vertical:	***0.25m***	***0.75%***

Quality Control Procedure

Crosslines

Crosslines totaled 20% of the mainscheme for F00916. A Caris Hips and Sips difference surface compared 7,338 soundings with a mean difference of 0.0m and standard deviation of 0.0m.



F00916 Crossline Statistics

Junction Overlap

Junction analysis was not performed for this survey

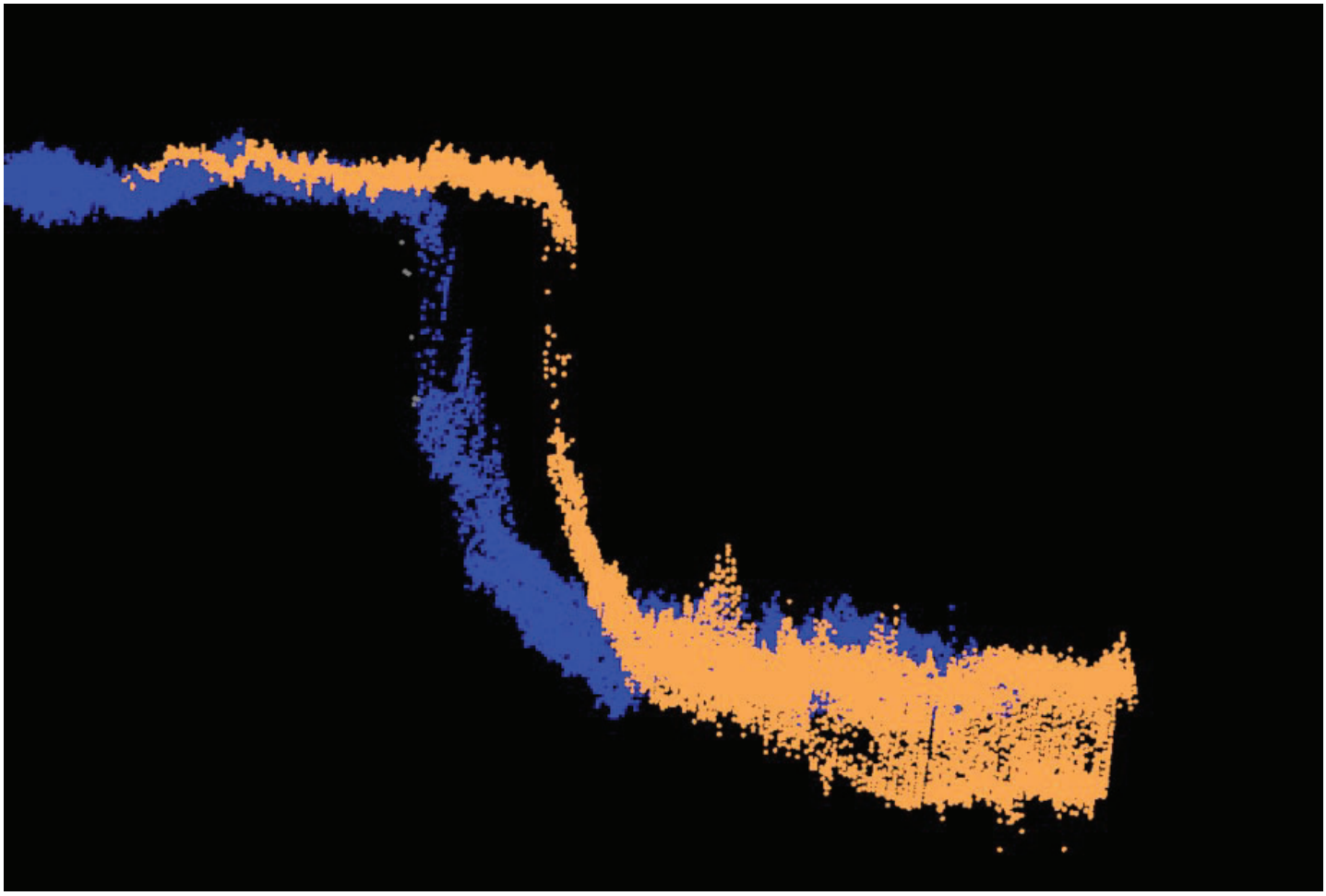
Statistical Analysis

NRTFB uses the CARIS CUBE BASE surface algorithms for the generation of all surfaces generated for final submission. The exact behavior of CUBE is determined by the values set in the CUBE parameters file, a xml file which can be selected by the user in the CARIS Tools --> Options --> Environment tab. The NOAA Office of Coast Survey (OCS) has created and provided a customized CUBE parameters file (CubeParams_NOAA.xml) with new CUBE parameters that are required for each grid resolution. During the creation of CUBE surfaces, the user is given the option to select parameter configurations based upon surface resolution which have been tuned to optimize the performance of the CUBE algorithm. The advanced options configuration is manipulated based on the grid resolution of the CUBE surface being generated. Charlene now creates the "working surfaces", which are then reviewed and finalized manually. QCTools 4 is used to further analyze submitted bathymetric surfaces by using FlierFinder to identify potentially erroneous soundings, Holiday Finder to locate gaps in coverage, and Grid QA to determine sounding density and TVU.

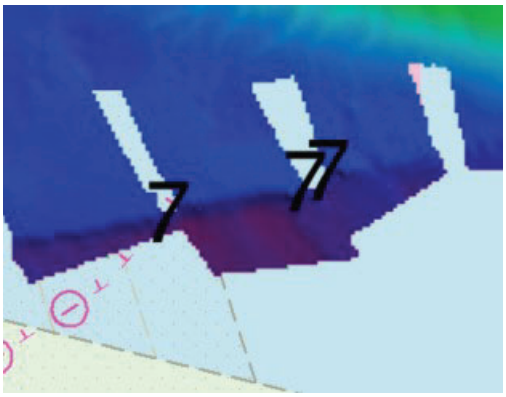
Directed Editing

The CUBE surface child layers: uncertainty, standard deviation, and node standard deviation were primarily used to help focus directed editing to soundings that were negatively affecting the BASE surface. Another

method to check the quality of sounding data prior to submission is the Pydro QC Tools “Flier Finder”. This software scans the CUBE surface for potential anomalous grid data. Lowering the flier height value will increase the sensitivity of the flier finder, resulting in more nodes being flagged. Fliers are then exported as .000 S-57 files that can be imported into CARIS HIPS and SIPS to aid in further cleaning. If desired, the user can set a new tolerance (“Flier height”) and rerun Flier finder. On occasion, the resolution of the CUBE surface may not be sufficient to capture the high point of a feature. In less than 20m of water, any feature where the most probable accurate sounding is shoaler than the CUBE surface by greater than one half the allowable error OCS Quality Metrics for Uncertainty is considered inadequately captured by the CUBE surface. In greater than 20m of water, this allowable error is expanded to the full OCS QualityMetric error allowance at that depth. Although missed shoal points may occur on irregular shoals or rock pinnacles, man-made features such as piles and wrecks are of particular concern. These features have very slender high points that extend far above the surrounding seafloor as well as the CUBE surface. To ensure that these features are properly represented, the shoalest point is flagged “designated” in CARIS. During the “finalization” process, the CUBE surface is forced to honor all soundings which have been flagged “designated”. In the case of a survey where the high points of many features (i.e. a boulder field) are not being captured by the CUBE surface, the hydrographer may decide to produce higher resolution CUBE surfaces to ensure that these features are being honored.



Sudden change in depth resulting in fliers.



Noisy margin fliers caused by the sudden change in depth.

Holiday Identification

Holiday identification was not performed for this survey

Survey Adequacy

F00916 is adequate to supersede all previous survey data.

Imagery Coverage

All side scan sonar imagery is converted from JSF or HSX formats to CARIS format using Charlene. After conversion the data is opened in CARIS Navigation Editor, Attitude Editor, and Side Scan Editor. Survey personnel then check vessel attitude, cable out, gyro, and sonar height.Side scan sonar data is examined in CARIS Side Scan Editor. Survey personnel correct errors in bottom tracking, slant range correction is done automatically in Caris. Data is examined for significant contacts. A 1m mosaic is created for evaluation of coverage gaps for 100% and 200% coverages. A single 2 meter Acoustic Backscatter mosaic was created to visualize imagery coverage for F00916.

Data Interpolation

Data interpolation was not performed for this survey

Backscatter

Calibration Method

N/A

Dynamic Range

The Kongsberg 2040C settings were adjusted during F00916.

Acquisition Configuration

Configuration did not result in saturation.

Environmental Variable(s)

No environmental variables influenced backscatter measurements.

Acquisition Output

Backscatter was post-processed in FMGT.

Report of Survey

Uncertainty Source

Total Propagated Uncertainty (TPU) values 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 units. 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, pitch, gyro, navigation, and heave were applied during post-processing. All of the aforementioned uncertainties were applied in CARIS. This is an ellipsoidally referenced survey (ERS) and the tidal component was accomplished with a separation model.

There are two places in CARIS where the user directly defines uncertainty values for use in CARIS to calculate TPU values, in the HVF and the direct input of SV and GPS model values during the TPU computation.

TPU values for all motion, navigation position and timing values are taken directly from Appendix IV (Uncertainty values for use in CARIS with vessels equipped WITH an attitude sensor) of the FPM. All timing values were set to 0.001 seconds as outlined for setups with Ethernet connections and precise timing. All offset values were chosen to be 0.02 meters based on the accuracy provided by professional surveys. All MRU alignment values are derived from the patch test. The gyro value is taken directly from the standard deviation of the yaw values. The pitch/roll value is combined as one in the HVF.

Supplementals

- Coast Pilot Report *(Mar 27, 2025)*
- NCEI Sound Speed Data *(Mar 31, 2025)*
- Trained Marine Mammal Observers list *(Aug 29, 2024)*
- Final Survey Outline *(Mar 31, 2025)*

Approval Statement

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 and approved all data and metadata. The survey meets or exceeds requirements as set forth in the Project Instructions and NOS Hydrographic Surveys Specifications and Deliverables. The survey is complete and no additional work is required with the exception of any deficiencies noted in the Report of Survey.

Approver Name	Approver Title	Approver Certification
James L. Kirkpatrick	Chief of Party	KIRKPATRICK.JAMES.LEROY.IV.1400487398 Digitally signed by KIRKPATRICK.JAMES.LEROY.IV.1400487398 Date: 2025.04.03 12:45:45 -04'00'

Personnel

Name	Title	Certification
Howard Meyers	Survey Technician	MEYERS.HOWARD.GEORGE.1541040095 Digitally signed by MEYERS.HOWARD.GEORGE.1541040095 Date: 2025.04.03 12:51:19 -04'00'

Full Equipment List

Equipment Type	Manufacturer and System	Model Number	Serial Number	Calibration Date	Frequency	Accuracy Check Date
NRTFB (S3009)						
Positioning and Attitude System	Applanix POS MV 320 v5	IMU-89	2436	2025-03-05	NA	NA
Positioning and Attitude System	Applanix POS MV 320 v5	TPU	5805	2025-03-05	NA	NA
Multibeam	Kongsberg Maritime EM 2040C	Transducer	1433	2025-03-05	300kHz	2025-03-05
Multibeam	Kongsberg Maritime EM 2040C	EM HWS	2111	2025-03-05	NA	2025-03-05
Side-scan sonar	EdgeTech 4125	Towfish	40425	2025-03-05	400-900kHz	2025-03-05
Side-scan sonar	EdgeTech 4125	TPU	40256	2025-03-05	NA	2025-03-05
CTD	SonTek CastAway-CTD	Castaway	CC1433010	2025-03-05	NA	2025-03-05
Sound Speed System	AML Oceanographic MicroX SV	MicroX	203523	2025-03-05	NA	2025-03-05