

**F00832**

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

**DESCRIPTIVE REPORT**

Type of Survey: Navigable Area

Registry Number: F00832

**LOCALITY**

State(s): Alaska

General Locality: West Prince of Wales Island, AK

Sub-locality: Skagway Harbor

**2021**

CHIEF OF PARTY  
Olivia A. Hauser, CDR\NOAA

**LIBRARY & ARCHIVES**

Date:

**HYDROGRAPHIC TITLE SHEET**

**F00832**

**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): **Alaska**

General Locality: **West Prince of Wales Island, AK**

Sub-Locality: **Skagway Harbor**

Scale: **5000**

Dates of Survey: **07/18/2021 to 07/18/2021**

Instructions Dated: **07/01/2021**

Project Number: **OPR-O190-RA-21**

Field Unit: **NOAA Ship *Rainier***

Chief of Party: **Olivia A. Hauser, CDR\NOAA**

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

Imagery by: **Kongsberg Maritime EM 2040 (MBES Backscatter)**

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 08N, 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

The survey area is referred to as F00832, "Skagway Harbor" in the project instructions. The survey area is approximately 0.28 square nautical miles and is located on the northern end of Taiya Inlet, AK.

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instruction OPR-O190-RA-21, dated July 1, 2021.

Data were acquired within the following survey limits:

<b>Northwest Limit</b>	<b>Southeast Limit</b>
59° 27' 10.81" N 135° 20' 45.23" W	59° 26' 27" N 135° 19' 18.7" W

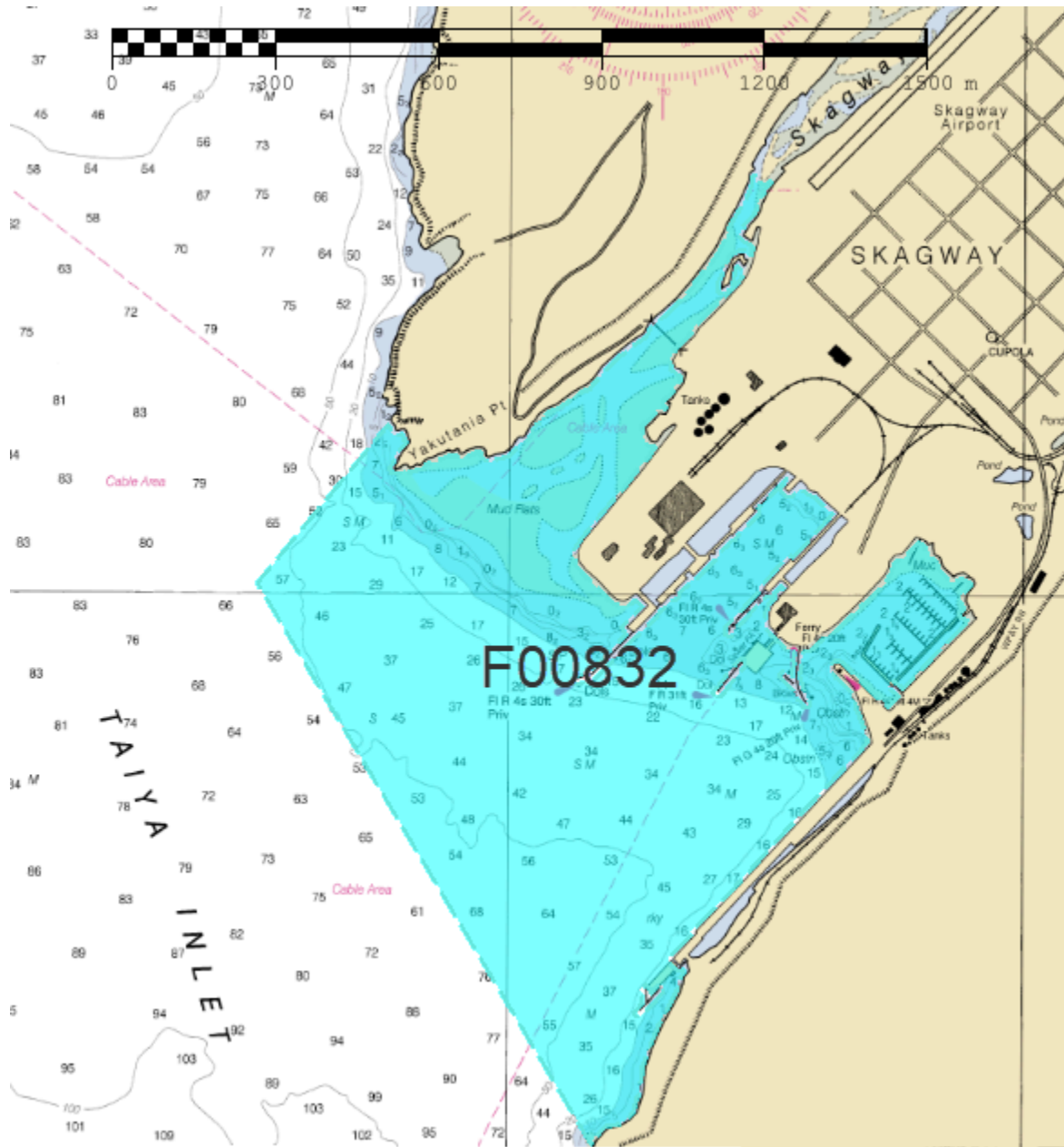


Figure 1: F00832 assigned survey area (Chart 17317\_2)

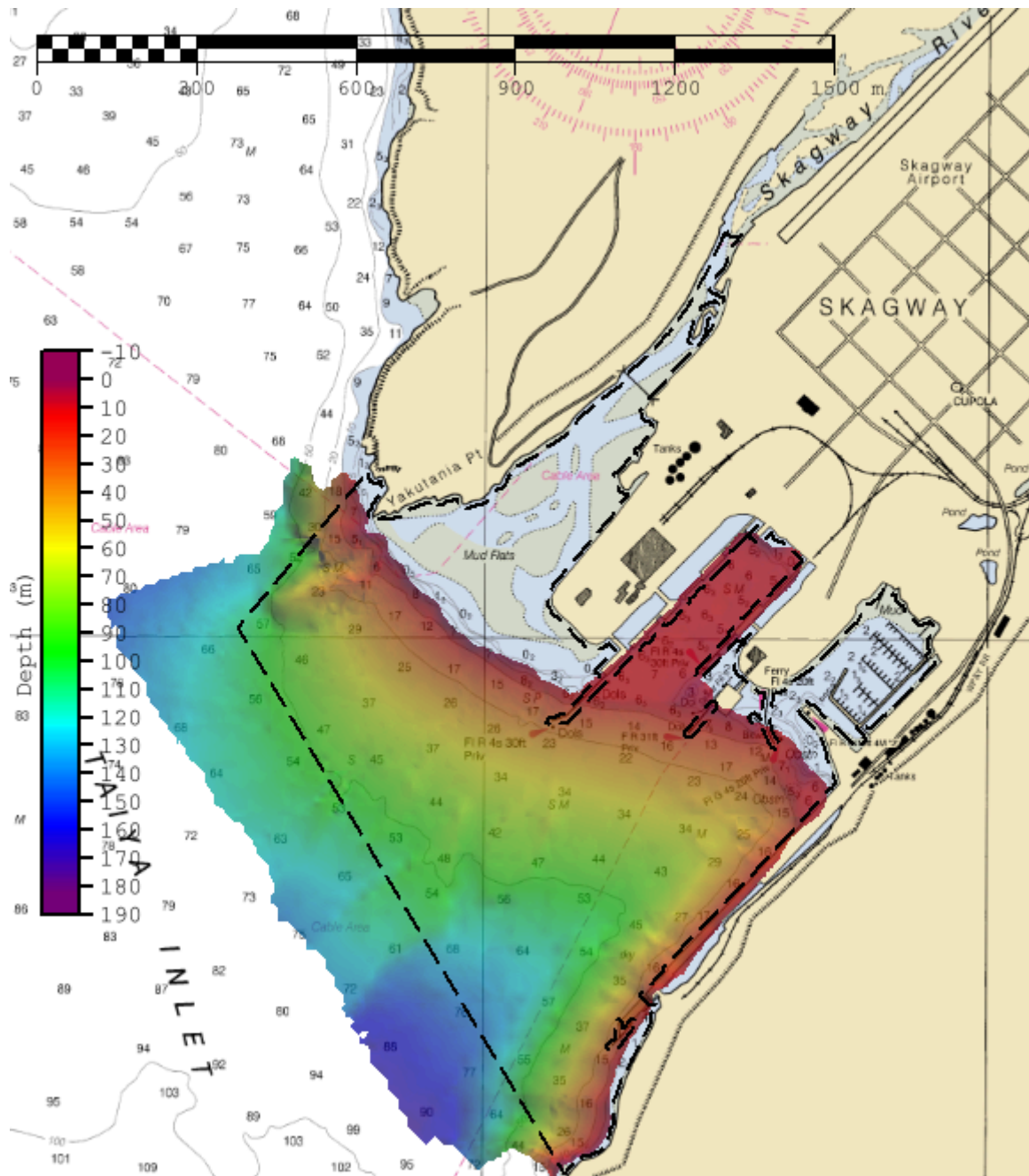


Figure 2: F00832 MBES coverage and assigned survey limits (Chart 17317\_2)

## B. Survey Purpose

Skagway Harbor is a popular destination for cruise ships. Skagway receives approximately 1 million cruise ship passengers each year. As the cruise ships coming into port are increasing in number and size each year, the Southeast Marine Pilots have requested updated data for the area.

This project will provide contemporary data to update National Ocean Service (NOS) nautical charting products and services, improving the safety of the maritime traffic and services available to these communities by reducing the current risk that is present due to unknown bathymetry.



*Figure 3: Skagway Harbor in survey area of F00832.*

### **C. Intended Use of Survey**

The entire survey is adequate to supersede previous data.

### **D. Data Acquisition and Processing**

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 below.

All data for survey F00832 was acquired by NOAA Ship RAINIER launches 2802 and 2803. The vessels acquired MBES bathymetry, backscatter, and sound velocity profiles.

A total of 7 sound speed profiles were acquired for this survey at discrete locations within the survey area at least once every four hours, when significant changes in surface sound speed were observed, or when operating in a new area. Sound speed profiles were obtained using Sea-Bird 19plus SEACAT Profilers. All casts were concatenated into a master file and applied to MBES data using the "Nearest distance within time" (4 hours) profile selection method.



*Figure 4: RAINIER survey launch 2802.*

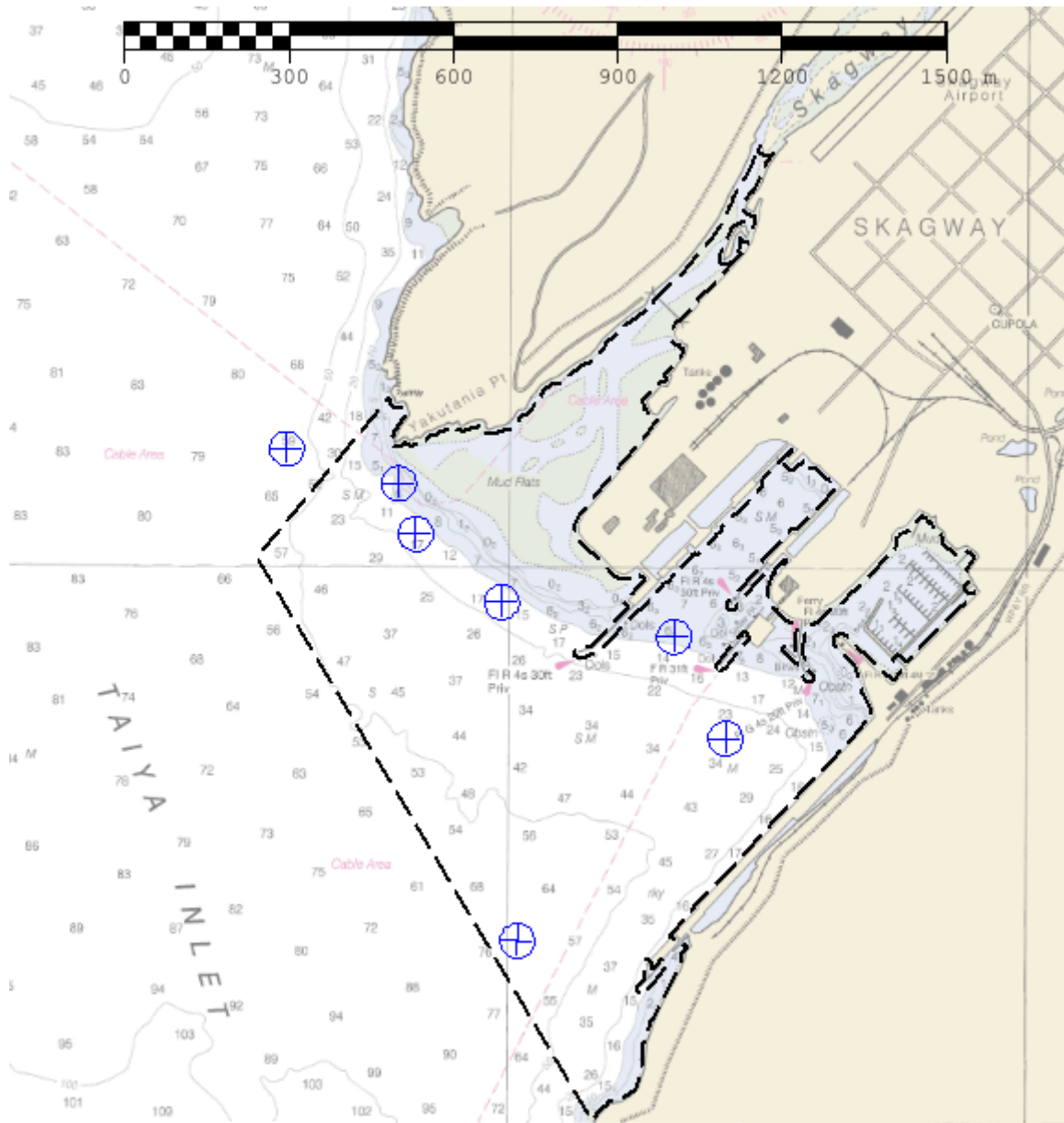


Figure 5: F00832 sound speed cast locations.

## E. Uncertainty

Total Propagated Uncertainty (TPU) values for survey F00832 were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Tidal uncertainty was provided in the project instructions for NOAA vertical datum transformation model used in this survey.

In addition to the usual a priori estimates of uncertainty, real-time and post-processed uncertainty sources were also incorporated into the depth estimates of this survey. Real-time uncertainties for position,



navigation, attitude, and vessel motion data from Applanix POS MV were applied during acquisition and initially in post-processing. POSpac SBET and RMS files were later applied in CARIS HIPS to supersede POS MV uncertainties associated with GPS height and position.

Uncertainty values of the submitted finalized grids were calculated in Caris using "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). Grid QA v5 within Pydro QC Tools was used to analyze F00832 TVU compliance. F00832 met HSSD requirements in over 99.5 percent of grid nodes, which is shown in the histogram plot below.

Pydro QC Tools 2 Grid QA was used to analyze F00832 multibeam echosounder (MBES) data density. The submitted F00832 variable-resolution (VR) surface met HSSD density requirements shown in the histograms below.

RAINIER launch 2802 and 2803 acquired 0.95 lnm of crosslines across most depth ranges on the day of data collection. Pydro's Compare Grids results 99.5 percent of nodes met allowable uncertainties between finalized variable-resolution surfaces of F00832 mainscheme only and crossline only data. Refer to plots below for additional information.

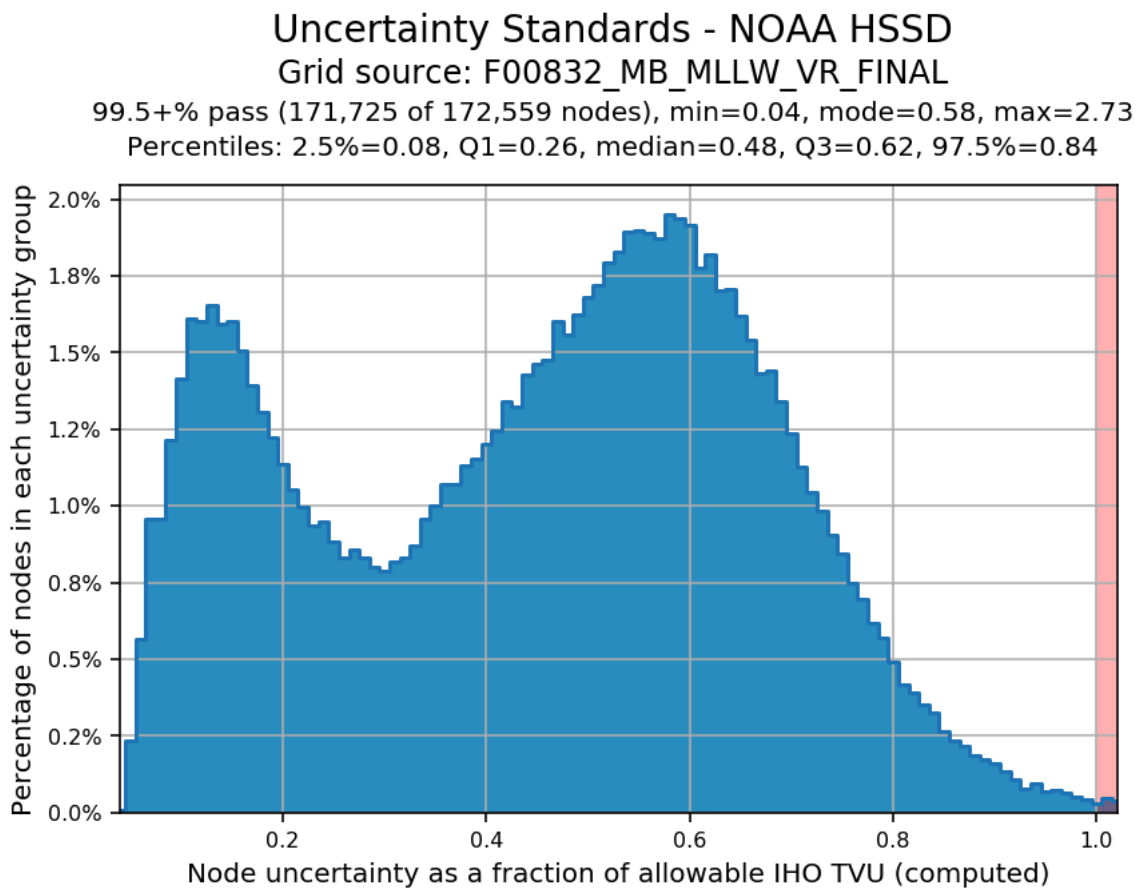
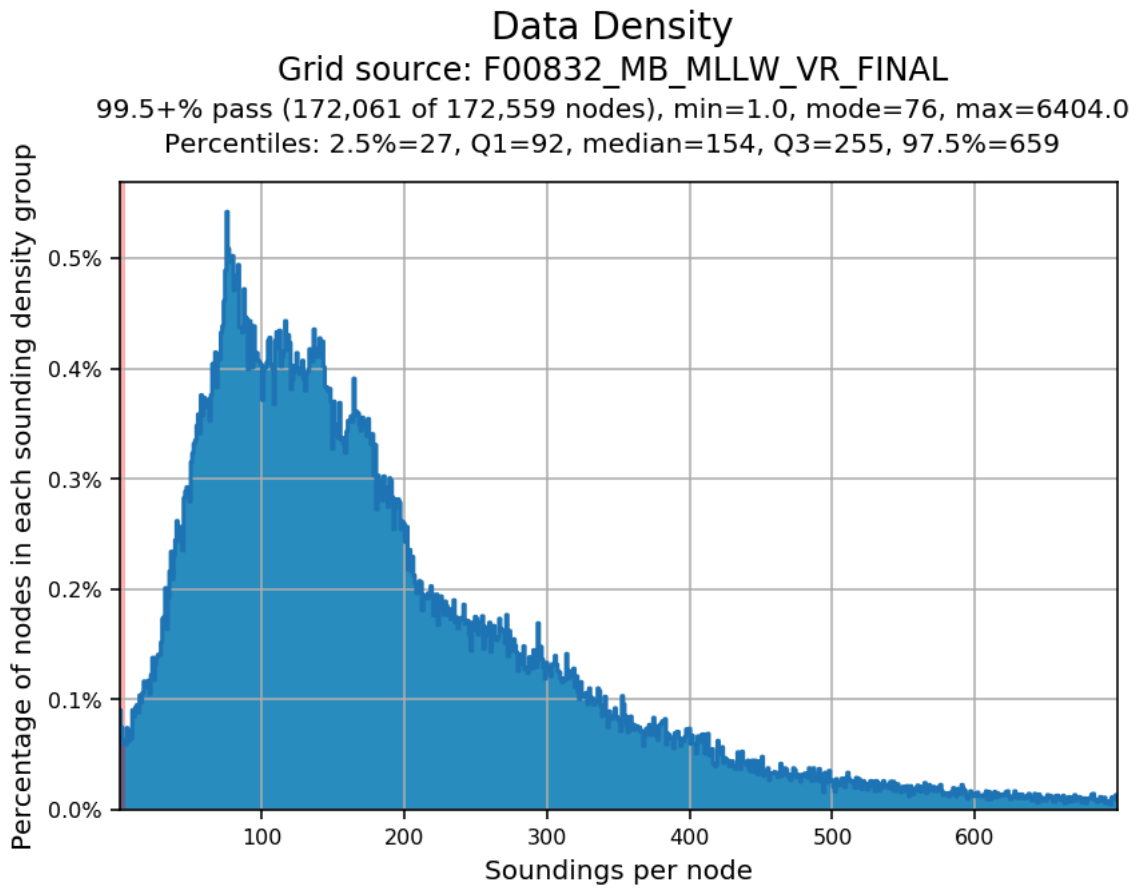


Figure 6: Pydro derived plot showing TVU compliance of F00832 finalized multi-resolution MBES data.



*Figure 7: Pydro derived histogram plot showing HSSD density compliance of F00832 finalized variable-resolution MBES data.*

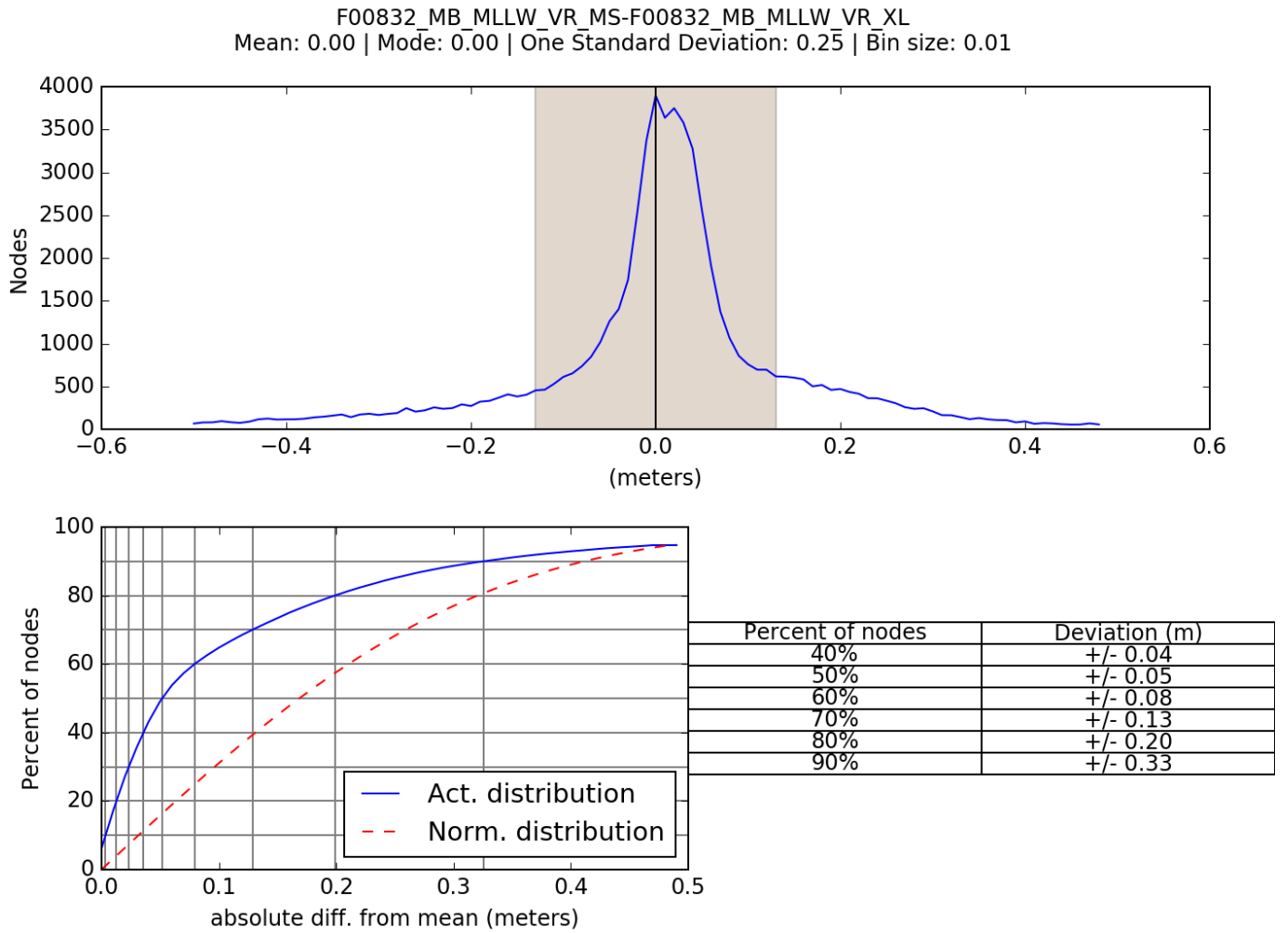


Figure 8: Pydro derived plot showing absolute difference statistics of F00832 mainscheme to crossline data.

### Comparison Distribution

Per Grid: F00832\_MB\_MLLW\_VR\_MS-F00832\_MB\_MLLW\_VR\_XL\_fracAllowErr.csar

99.5+% nodes pass (62863), min=0.0, mode=0.1 mean=0.1 max=4.3

Percentiles: 2.5%=0.0, Q1=0.0, median=0.1, Q3=0.2, 97.5%=0.5

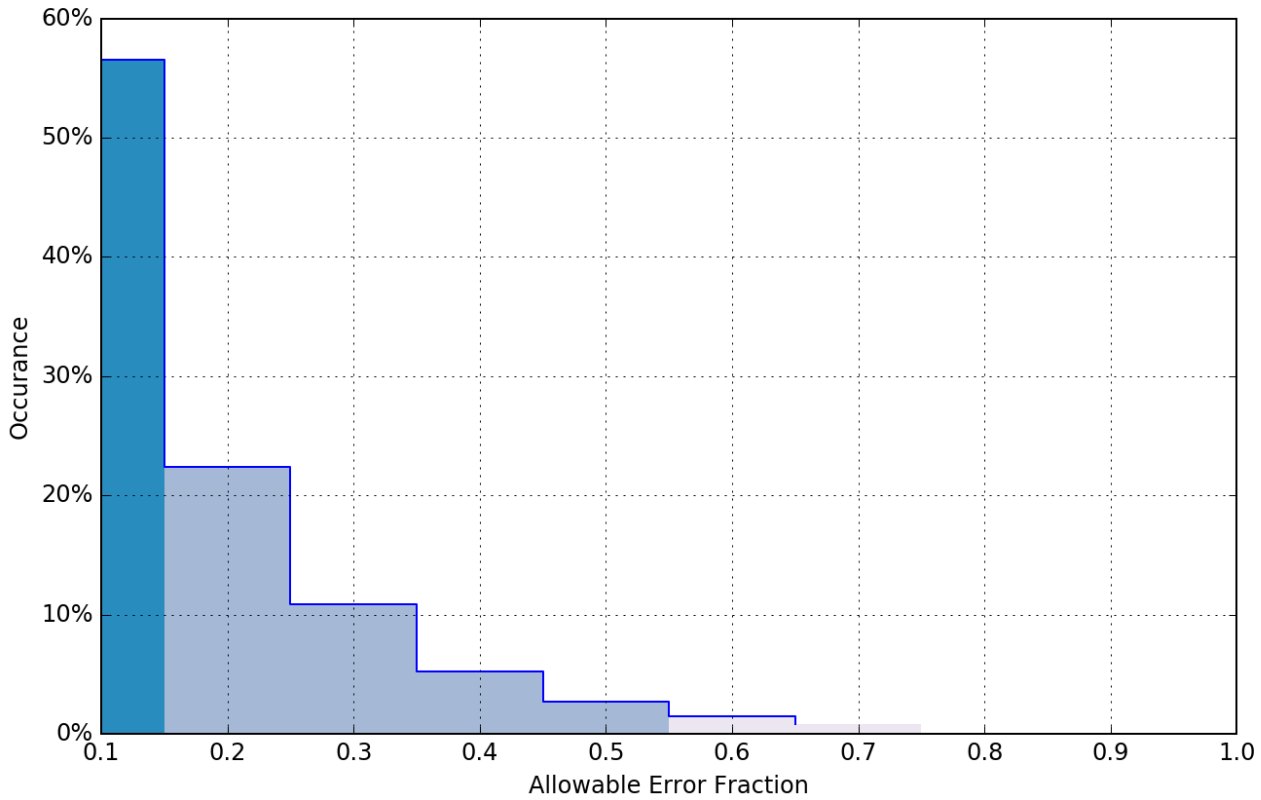


Figure 9: Pydro derived plot showing percentage-pass value of F00832 mainscheme to crossline data.

### 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
US5AK33M	1:20000	4	06/11/2020	06/11/2020



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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00832_MB_MLLW_VR	CARIS VR Surface (CUBE)	Variable Resolution m	-0.11 m - 182.85 m	NOAA_VR	Complete MBES
F00832_MB_MLLW_VR_FINAL	CARIS VR Surface (CUBE)	Variable Resolution m	-0.11 m - 182.85 m	NOAA_VR	Complete MBES

Submitted surfaces were generated using the recommended parameters for depth-based (Ranges) Caris variable resolution bathymetric grids specified in the 2021 HSSD.

Pydro QC Tools Detect Fliers was used with default settings to find fliers in the finalized VR surface. Obvious noise was rejected by the hydrographer in Caris Subset Editor. After data cleaning, Detect Fliers was run again and found 1 potential flier in the Complete Coverage surface. These were investigated and found to be false.

Pydro QC Tools Holiday Finder was used with default settings to find holidays in the finalized VR surface. Holiday Finder did not detect an holidays.

The NALL was achieved in areas where it was navigationally safe.

*After office processing, F00832\_MB\_MLLW\_VR\_Final.csar has a depth range of -0.11m - 170.43m.*

## G. Vertical and Horizontal Control

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

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

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

ERS via VDATUM

OPR-O190-RA-21\_VDatum\_NAD83(2011)-MLLW.csar

Ellipsoid referenced GNSS derived heights were used and a separation model was applied to reduce soundings to chart datum.

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 8.

Post Processed-Real Time Extended (PP-RTX) processing methods were used in Applanix POSPac MMS 8.5 SP2 software to produce SBETs for post-processing horizontal correction.

## H. Additional Results

### Shoreline Investigation

During data acquisition, the majority of assigned features from the Composite Source File (CSF) were investigated. Several features have been updated with corrected depths and locations based on MBES data collected. See Final Feature File provided with this report for more information.

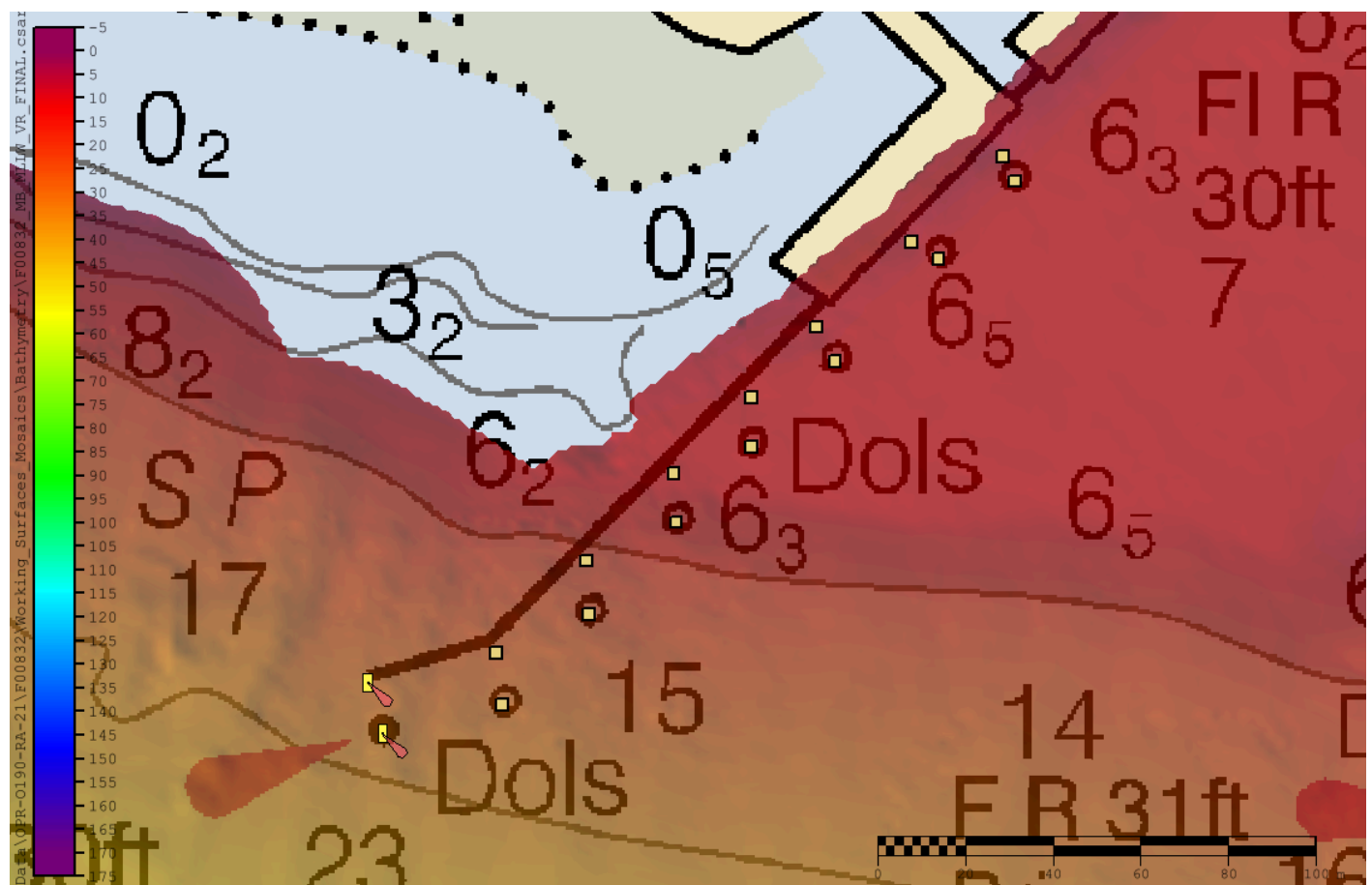


Figure 10: Example of Mooring locations that have been updated based on MBES.

### Bottom Samples

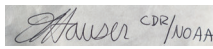

Three bottom samples were acquired during survey acquisition of F00832. The results of the acquired bottom samples are included in the F00832 Final Feature File submitted with this report.

## 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
Olivia A. Hauser, CDR\NOAA	Chief of Party	08/11/2021	 HAUSER.OLIVIA.ANN.12756 36009 2021.08.11 13:04:08 -08'00'
Dylan A. Kosten, LT\NOAA	Field Operations Officer	08/11/2021	KOSTEN.DYLAN.ANDREW.1504527405 DREW.1504527405 Digitally signed by KOSTEN.DYLAN.ANDREW.150452 7405 Date: 2021.08.11 13:08:48 -08'00'
Barry D. Jackson	Acting Chief Survey Technician	08/11/2021	JACKSON.BARRY.DONALD.1288316631 NALD.1288316631 Digitally signed by JACKSON.BARRY.DONALD.12883 16631 Date: 2021.08.11 11:24:17 -08'00'
Melissa A. Weber	Sheet Manager	08/11/2021	 Digitally signed by WEBER.MELISSA.ANNE.15549784 83 Date: 2021.08.11 09:44:34 -08'00'