

F00752

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

DESCRIPTIVE REPORT

Type of Survey: Natural Disaster Response

Registry Number: F00752

LOCALITY

State(s): North Carolina

General Locality: Approaches to Wilmington

Sub-locality: Approaches to Wilmington

2018

CHIEF OF PARTY
LCDR Megan R. Guberski

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

F00752

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): **North Carolina**

General Locality: **Approaches to Wilmington**

Sub-Locality: **Approaches to Wilmington**

Scale: **20000**

Dates of Survey: **09/16/2018 to 09/16/2018**

Instructions Dated: **09/17/2018**

Project Number: **S-G941-FH-18**

Field Unit: **NOAA Ship *Ferdinand R. Hassler***

Chief of Party: **LCDR Megan R. Guberski**

Soundings by: **Teledyne RESON SeaBat 7125 SV (MBES)**

Imagery by: **Teledyne RESON SeaBat 7125 SV (MBES Backscatter)**

Verification by: **Atlantic 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.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instruction S-G941-FH-18.

The Port of Wilmington is strategically located on the East Coast of the United States within 700 miles of more than 70% of the U.S. industrial base. It is one of the few Southern ports with readily available berths and storage areas for containers and cargo. Specifically, it offers terminal facilities serving container, bulk, breakbulk, and ro-ro operations. It offers a deep 42-foot navigational channel, nine berths with 6,768 feet of wharf frontage, four post-Panamax container cranes and three neo-Panamax container cranes.

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
33° 53' 6" N 78° 0' 25.2" W	33° 47' 6" N 78° 2' 42" W

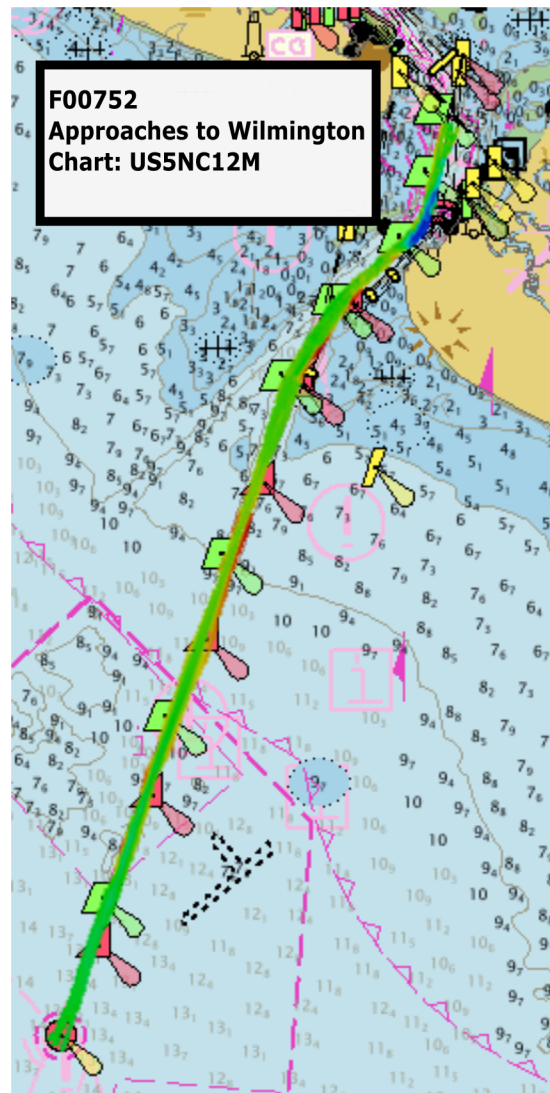


Figure 1: Survey Overview Approaches to Wilmington, NC chart US5NC12M

S-G941-FH-18 (F00752)

Wilmington Florence Response, NC

Survey Outline, 2 SNM

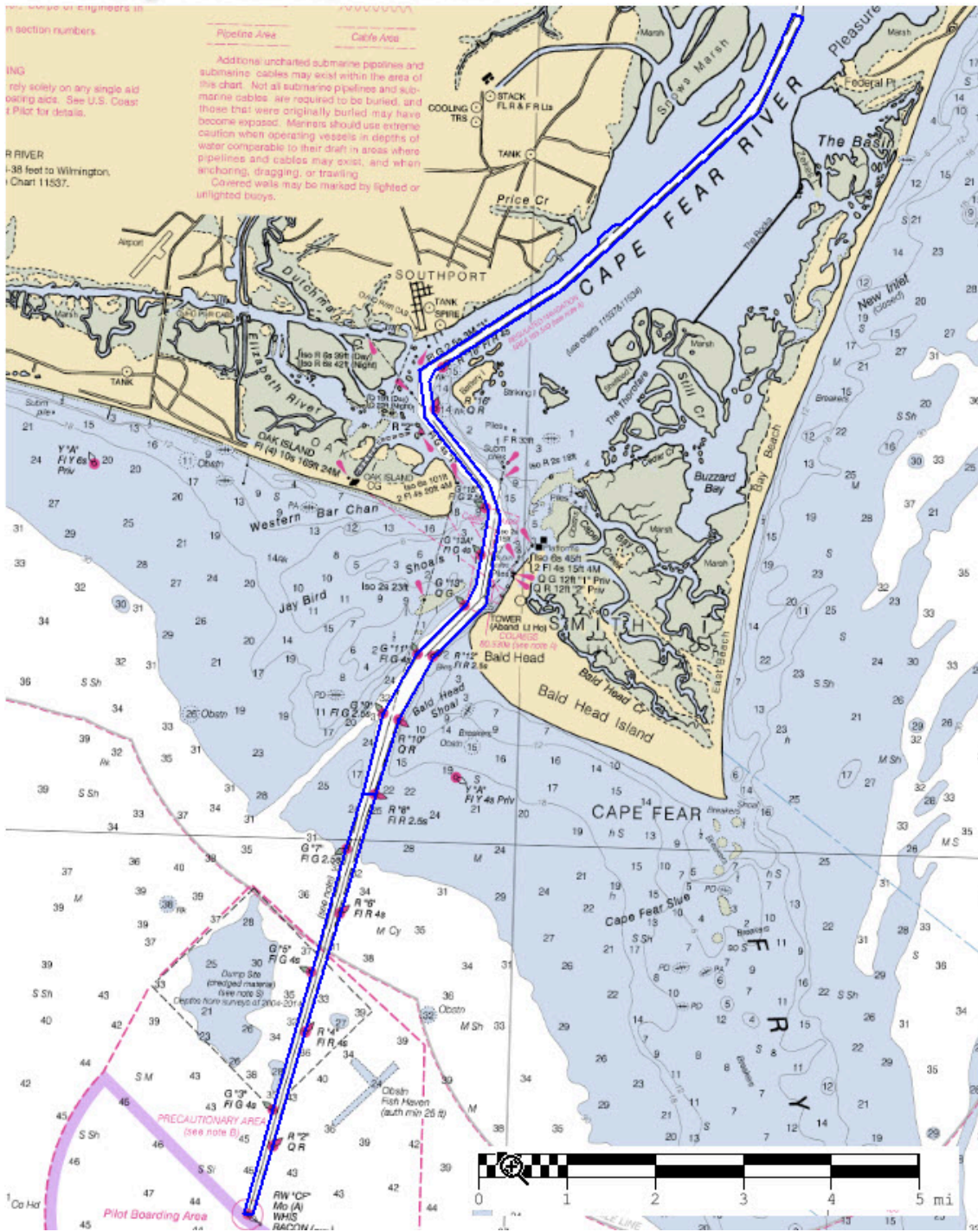


Figure 2: Survey outline as assigned by the Project Instructions

B. Survey Purpose

The purpose of this survey is to support post-storm recovery following Hurricane Florence by identifying shoaling and hazards per requests from local stakeholders.

C. Intended Use of Survey

The survey is NOT adequate to supersede previous data.

This survey is for informational purposes only and is not adequate to supersede prior data. The hydrographer recommends that these data and the accompanying documentation be archived without further action. Survey is in response to Hurricane Florence and is for hazard investigation for approaches to Wilmington, NC.

D. Data Acquisition and Processing

Please reference Data Acquisition and Processing Report S-G941-FH_DAPR_1.2.co for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods.

E. Uncertainty

For surface F00752_MB_0.5M_MLLW_Final, more than 99.5% of all nodes were within the acceptable IHO Order 1 uncertainty standards (Figure 3). Additionally, more than 99.5% of all nodes passed data density standards for complete coverage surveys per section 5.2.2.2 of the 2020 HSSD. (Figure 5). Despite the survey passing IHO Order 1 uncertainty standers additional issues within the data (see H. Additional Results) make the data inadequate to supersede previous data.

A total of 310 holidays were found in the finalized surface using the Holiday Finder tool included in Pydro 19.4 QC Tools. Due to time limitations and the inability of the vessel to return to the survey area to address gaps in coverage, the holidays are submitted with the finalized surface. Holidays are present throughout survey and are a result of lack of coverage. Holiday distribution can be seen in Figure 6.

Backscatter data were collected, as specified in the coverage requirements of the Project Instructions. However, backscatter data were not processed and thus are not submitted as a deliverable for this survey.

A chart comparison was accomplished using CA Tools, which is included in Pydro 19.4. CA Tools ingests an ENC and a sounding selection to identify differences between the chart and the survey data. The ENC US5NC12M, which is listed in the table above, was used for this chart comparison. Generally, agreement was found between survey soundings and charted soundings.

Shoaling discrepancy was reported by CA Tools located on the western side of the Cape Fear Entrance Channel, south of red buoy 8. As seen in Figure 7. The edge of the channel is charted at ~10.1m with the

shallowest sounding shown at ~9.8 m. However, the soundings are outside the channel adjacent to a ~9.1m contour.

No DtoN Reports were submitted for this survey.

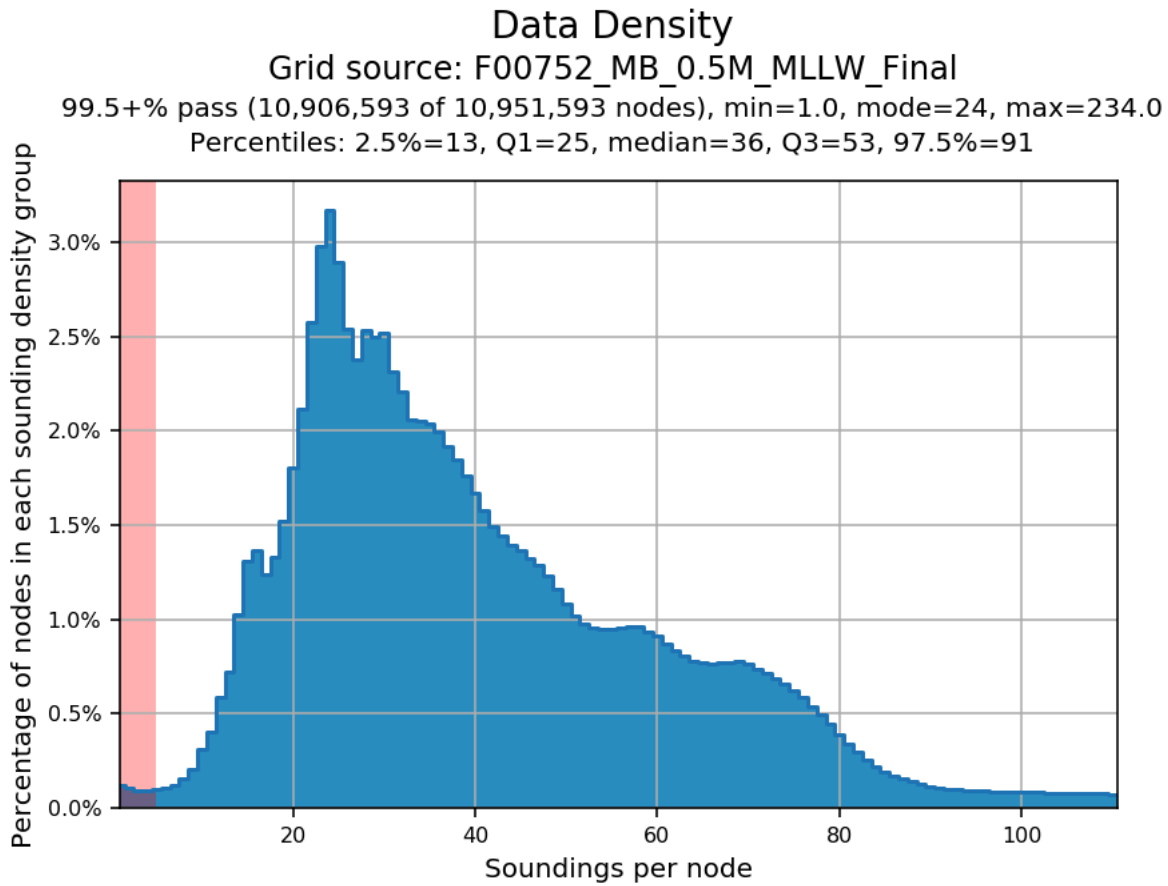


Figure 3: F00752 Complete Coverage Density Statistics from QC Tools v.3.0.13

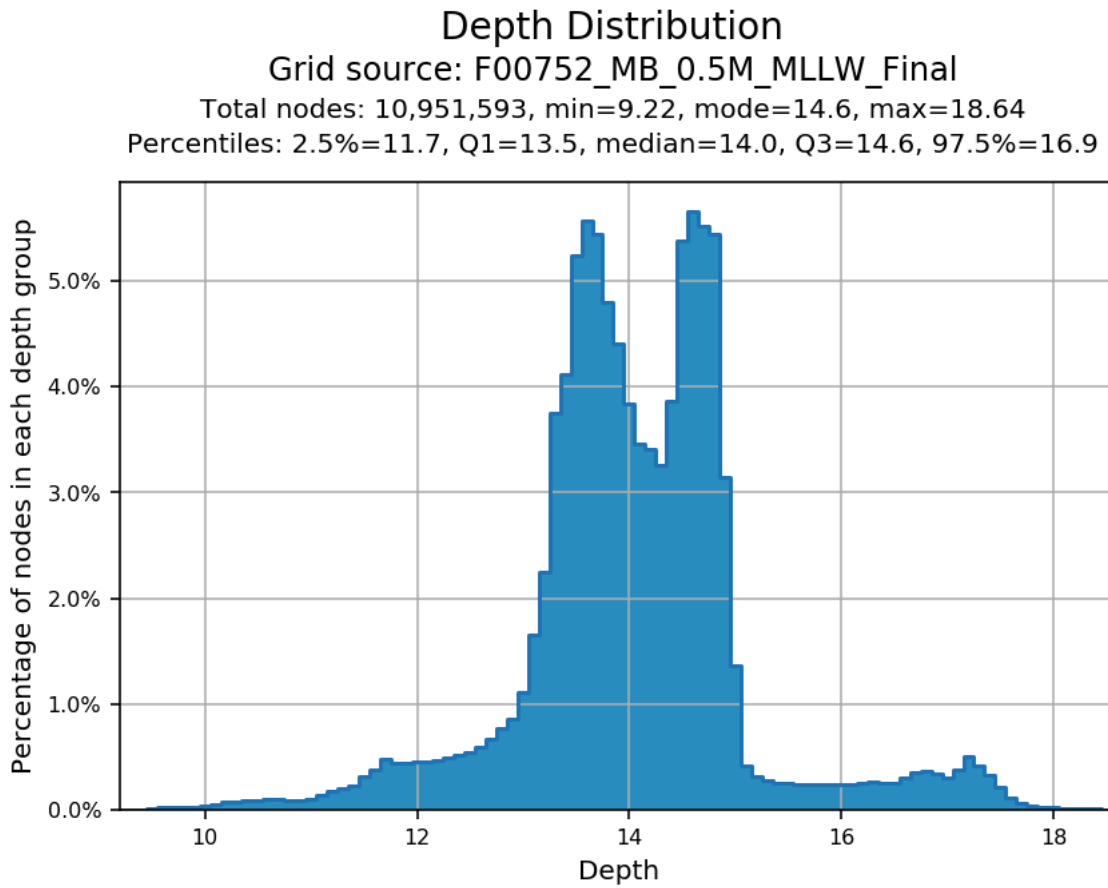


Figure 4: F00752 depth distribution from QC Tools v.3.0.13

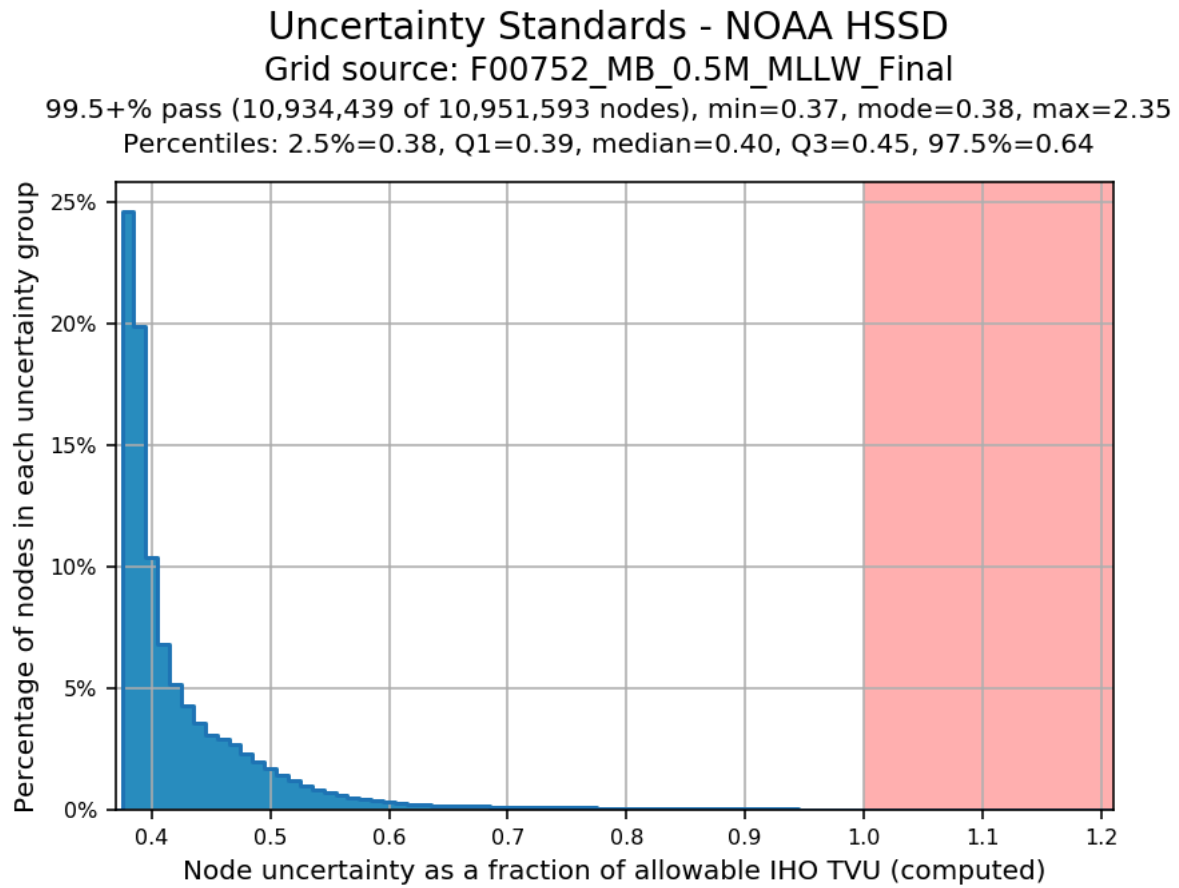


Figure 5: F00752 IHO Order 1 Uncertainty Standards from QC Tools v3.0.13

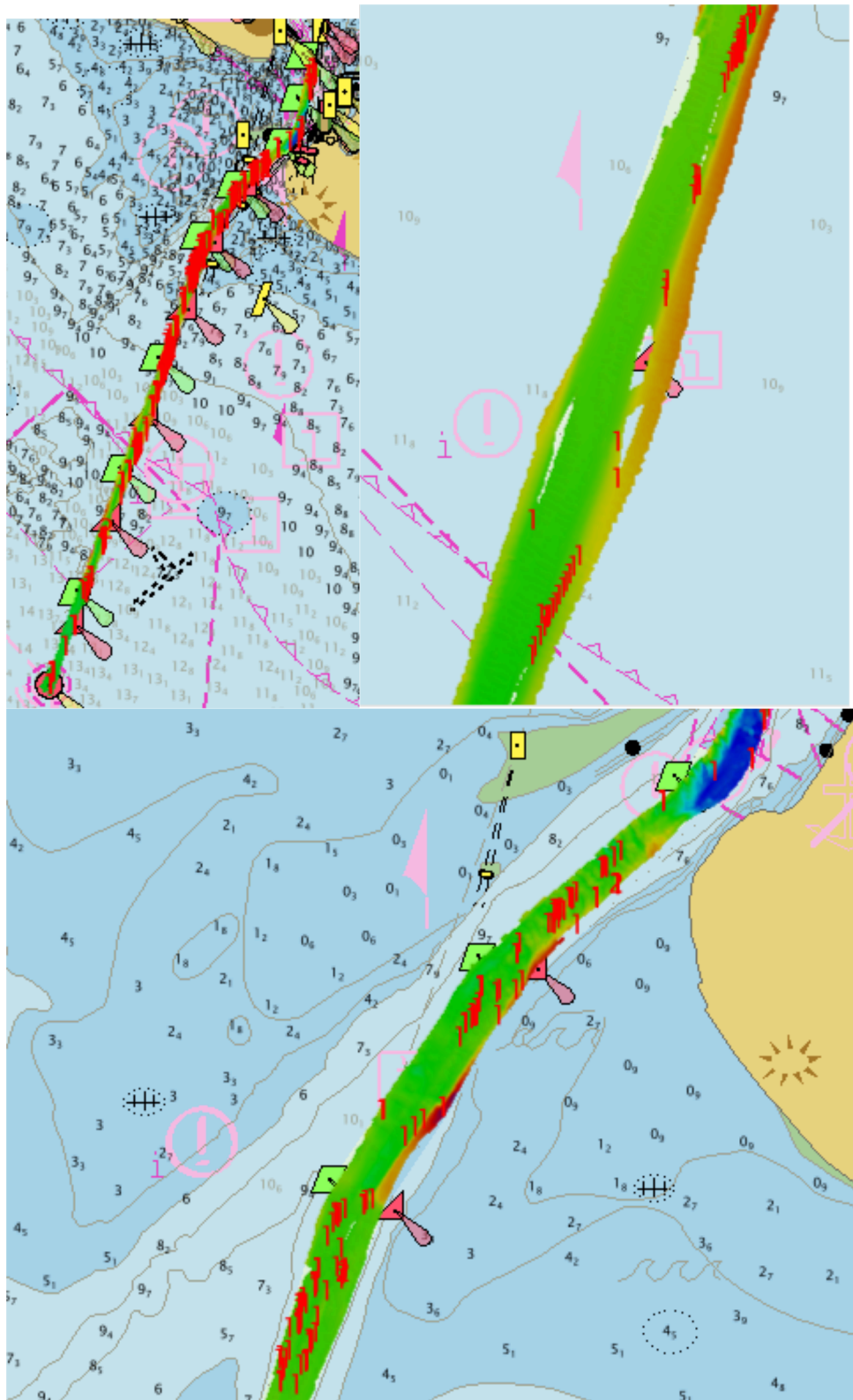


Figure 6: Holiday distribution. Holidays shown with a red 1. (Top Right) Holiday distribution through the survey. (Top Left) Example distribution through midsection of survey. (Bottom) Distribution of Holidays through northern section of survey

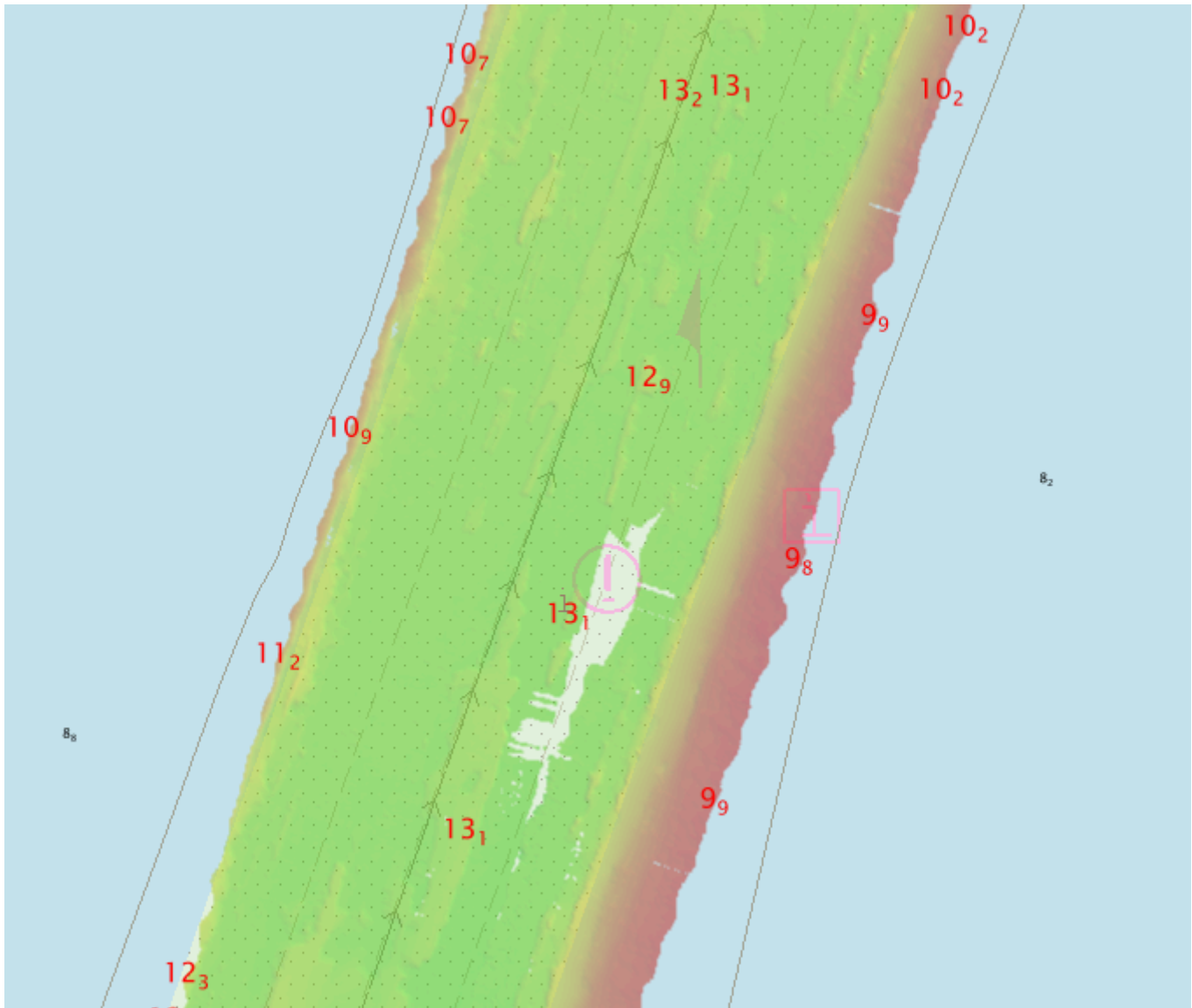


Figure 7: In red are the surveyed soundings. In black are the charted soundings. Soundings of concern are the 9.8 m, 9.9 m, and 9.9 m soundings. Soundings are outside the channel adjacent to a 9.1 m contour.

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
US5NC12M	1:20000	54	07/16/2020	06/20/2020

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00752_MB_0.5M_MLLW_final	CARIS Raster Surface (CUBE)	0.5 m	8.0 m - 18.7 m	NOAA_0.5m	Object Detection
F00752_MB_0.5M_MLLW	CARIS Raster Surface (CUBE)	0.5 m	8.0 m - 18.7 m	NOAA_0.5m	Object Detection

Due to the response posture and nature of the survey, coupled with these are 2018 data, the hydrographer recommend these data be used for informational purposes only.

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 datum for this project is Mean Lower Low Water (MLLW). All data have been reduced from the ellipsoid to MLLW using the VDatum Separation Model provided in the files associated with the Project Instructions.

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 horizontal datum for this project is the North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 17.

The 'Ferdinand R. Hassler' is equipped with Applanix POS/MV position and orientation systems on the port and starboard hulls. Correctors are derived using a Precise Point Positioning (PPP) approach. The POS/MV data was post-processed in Applanix POSpac MMS using the Applanix RTX service to produce Smoothed Best Estimates of Trajectory (SBETs) and RMS uncertainty files using the method of Post Processed Precise Point Positioning (5P).

No DGPS stations were used for this survey.

Additional information discussing the vertical and horizontal control for this survey can be found in the DAPR for the 2018 field season.

H. Additional Results

Data quality

The overall data quality of the survey is poor. The primary factor of the poor data quality is inadequate amount of sound speed measurements due to high work tempo and limitation of field unit . Example of the poor data quality can be seen in Figure 8 and 9. A 2 to 3 meter sound velocity artifact is seen in throughout the survey, particularly in the norther channel.

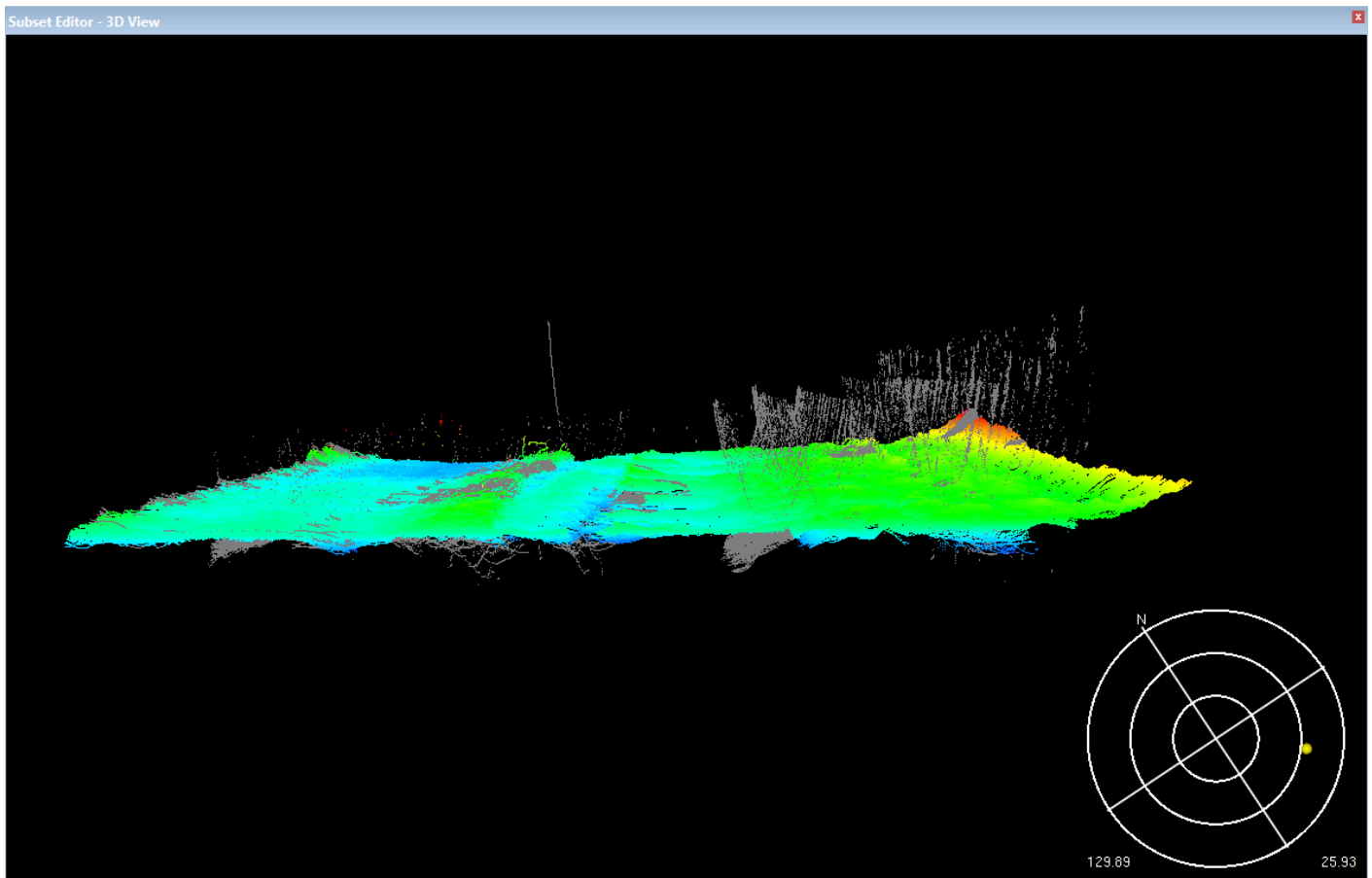


Figure 8: Example of the poor quality of survey data collected. Seen in this 3D view are several blow out and sound velocity issues. These same issues can be seen throughout the survey.

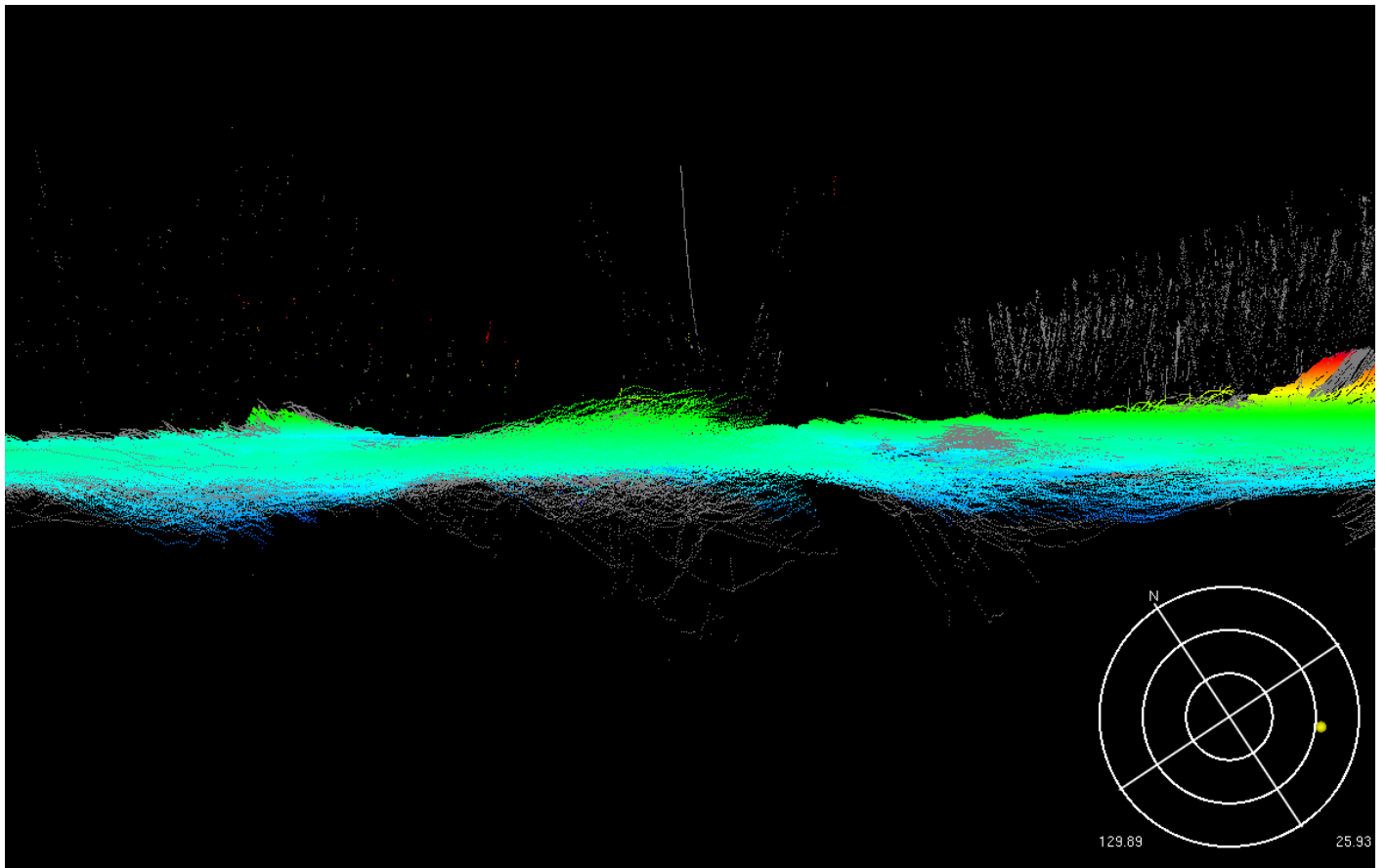


Figure 9: Example of the poor quality of survey data collected. Seen in this 3D view are the sound velocity issues, resulting in the edge of the surface being pushed down on some lines and pulled up on others. These same issues can be seen throughout the survey.

Data offset

An offset of ~1.0m between lines is observed in the data. The offset raises the surface up by ~1.0 m from the CUBE surface (Figure 10). The lines affected by the offset are, 20180917_144640 and 20180917_131021. The offset is attributable to a sound velocity artifact, due to the limited number of sound speed cast taken by the field party. The offset is not within HSSD 2020 5.2.2.2 object detection resolution and produces ~36 fliers. The area affected can be seen in Figure 10.

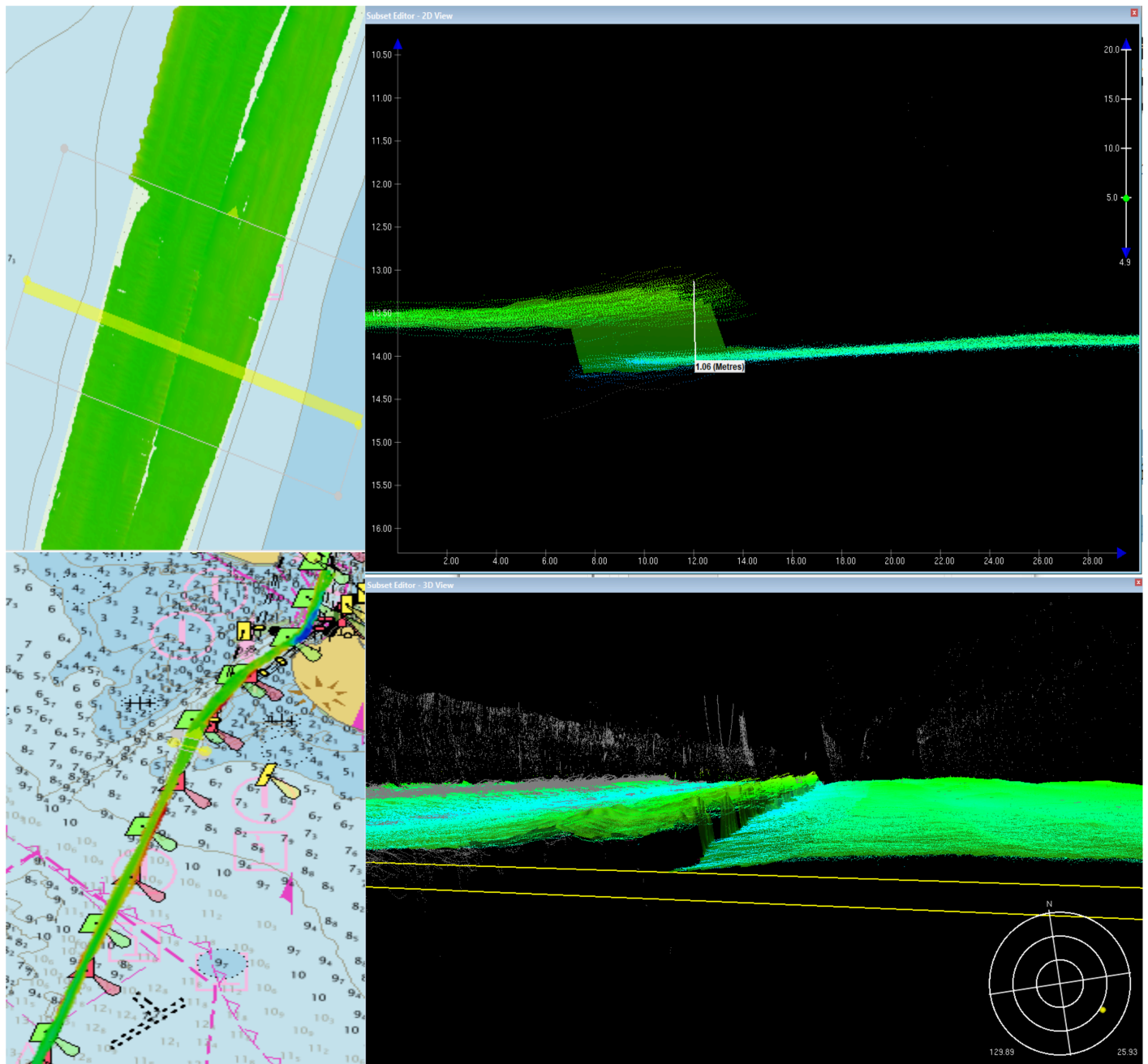



Figure 10: Offset between lines 20180917_144640 and 20180917_131021. (Right Top) location of offset and effect on surface (Left top) 2D example of offset and measurement of offset. (Right bottom) Location of offset relative to entire survey. (Left Bottom) 3D offset and effect of surface

I. Approval

As Chief of Party, a review of 2018 field operations for this hydrographic survey and post processing of the deliverable 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 is of poor quality and does not meet 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 not 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
LCDR Megan R. Guberski	Commanding Officer	09/10/2020	GUBERSKI.MEGAN.REBECCA.1283261189 Digitally signed by GUBERSKI.MEGAN.REBECCA.1283261189 Date: 2020.09.10 12:22:49 -04'00'
LT Steven Wall	Operations Officer	09/10/2020	WALL.STEVEN.JAMES.1459978298 Digitally signed by WALL.STEVEN.JAMES.1459978298 Date: 2020.09.10 12:20:34 -04'00'
LTJG Taylor Krabel	Sheet Manager	09/10/2020	 LTJG NOAA