H13607

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H13607

LOCALITY

State(s):	Ohio
General Locality:	Lake Erie
Sub-locality:	Cleveland Entrance

2022

CHIEF OF PARTY
Matthew J. Jaskoski, CDR/NOAA

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Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H13607**

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):	**Ohio**
General Locality:	**Lake Erie**
Sub-Locality:	**Cleveland Entrance**
Scale:	**5000**
Dates of Survey:	**05/02/2022 to 08/18/2022**
Instructions Dated:	**04/13/2022**
Project Number:	**OPR-W386-TJ-22**
Field Unit:	**NOAA Ship *Thomas Jefferson***
Chief of Party:	**Matthew J. Jaskoski, CDR/NOAA**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter**
Verification by:	**Atlantic Hydrographic Branch**
Soundings Acquired in:	**meters at Low Water Datum IGLD-1985**

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, IGLD-1985. 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 H13607

Project: OPR-W386-TJ-22

Locality: Lake Erie

Sublocality: Cleveland Entrance

Scale: 1:5000

May 2022 - August 2022

NOAA Ship *Thomas Jefferson*

Chief of Party: Matthew J. Jaskoski, CDR/NOAA

A. Area Surveyed

Survey H13607, located in southern Lake Erie at the approaches to Cleveland, was conducted in accordance with coverage requirements set forth in the Project Instructions (PIs) OPR-W386-TJ-22.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
41° 31' 42.05" N 81° 46' 27.17" W	41° 31' 42.05" N 81° 40' 40.22" W

Table 1: Survey Limits

Survey data were acquired in accordance with the requirements set forth by the PIs and the 2022 Hydrographic Surveys Specifications and Deliverables (HSSD) (Figure 1).

Additionally, within the survey limits set forth in the PIs, a deprioritized S-57 CRANES area was provided. No data was collected in this area due to operational time constraints with the exception of the basin near the Cleveland Harbor USCG station upon their request (Figure 2). Refer to Appendix II for further information.

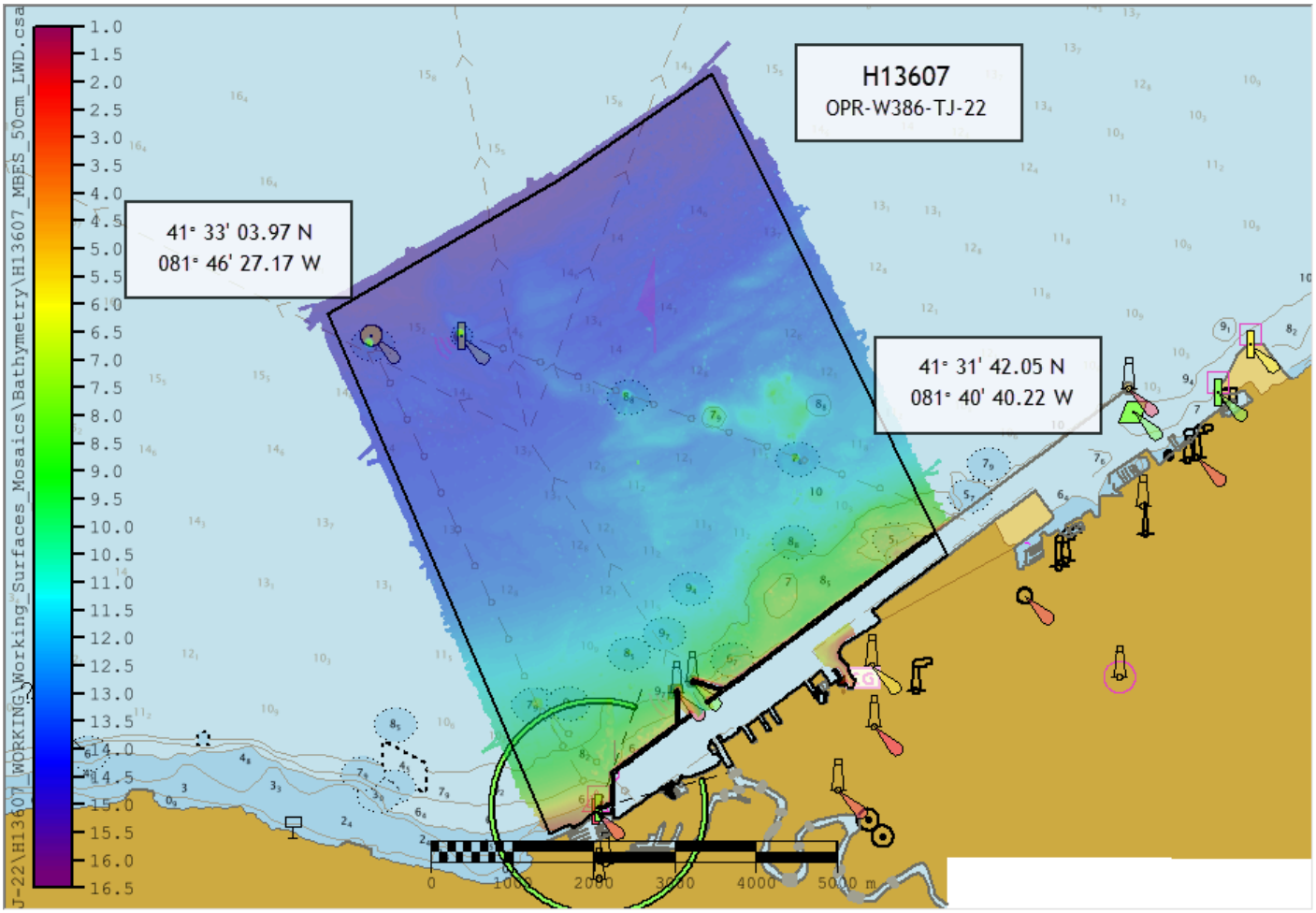


Figure 1: Survey layout for H13607, plotted over ENC US4OH01M. Black Outline represents the survey limits set forth by the Project Instructions and MBES coverage in color.

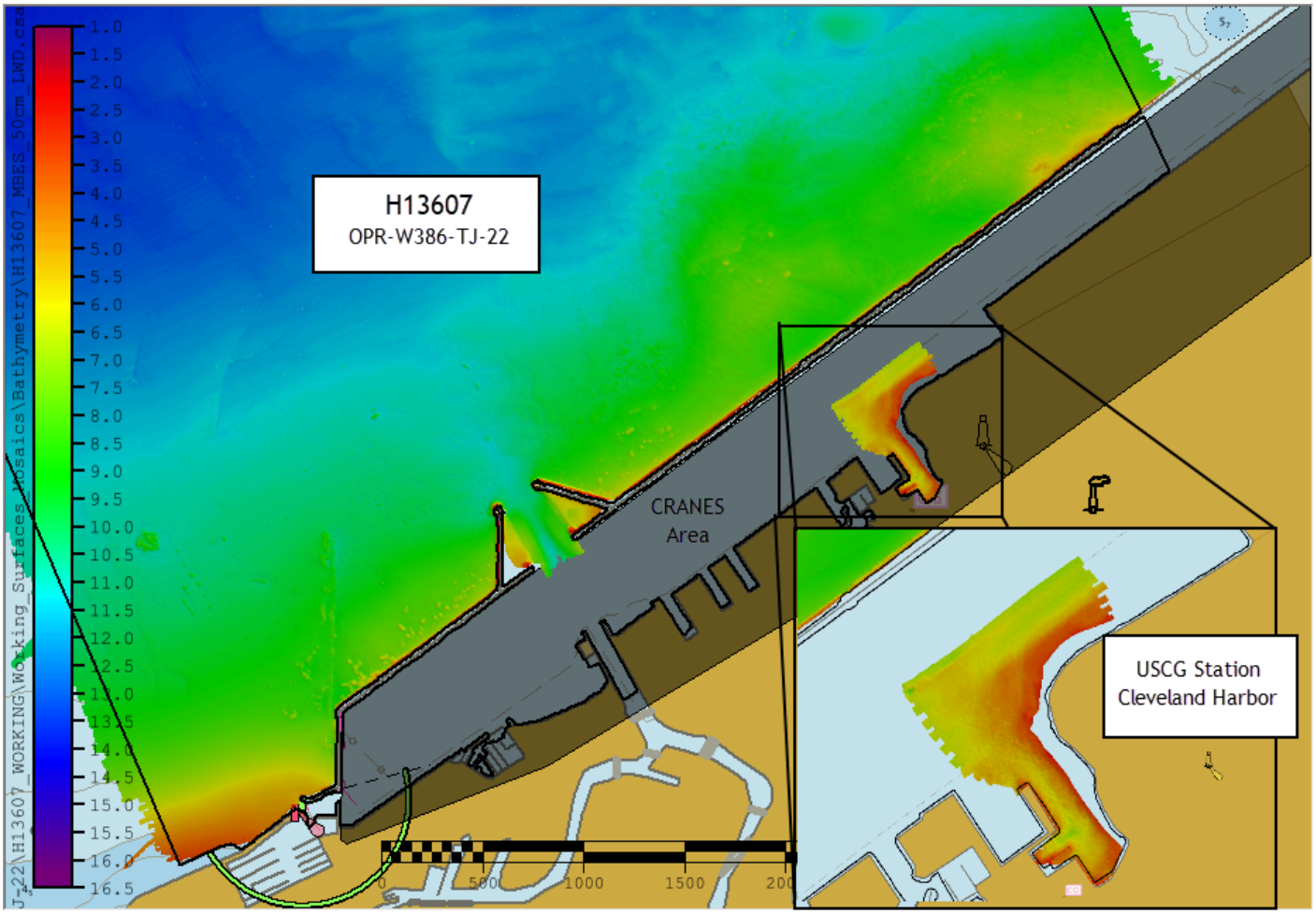


Figure 2: Deprioritized CRANES area (shown in black) and coverage of requested area near the Cleveland Harbor USCG station.

A.2 Survey Purpose

The Port of Cleveland is one of the largest ports in the Great Lakes and ranks within the top 50 ports in the United States. Roughly 13 million tons of cargo are transported through Cleveland Harbor each year supporting over 20,000 jobs and $3.5 billion in annual economic activity (1) . This project will provide modern bathymetric data for the Cleveland area as well as the vicinity of South Bass Island and Presque Isle. The project area was identified as a statistically significant hot spot within the 2018 Hydrographic Health model, a risk model that Coast Survey uses for evaluating priorities based upon navigational risks and the necessary quality of data to support modern traffic. Most of this area has not been surveyed since the 1940s, and experiences significant vessel traffic.

A modern bathymetric survey in this area will identify hazards and changes to the seafloor, provide critical data for updating National Ocean Service (NOS) nautical charting products and improve maritime safety. Survey data from this project is intended to supersede all prior survey data in the common area.

1. https://www.portofcleveland.com/

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data acquired in H13607 meet 100% multibeam echo sounder (MBES) coverage requirements for object detection, as specified in the 2022 HSSD. This includes crosslines (see Section B.2.1), NOAA allowable uncertainty (See Section B.2.2), and density requirements (see Section B.5.2).

A.4 Survey Coverage

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

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

Table 2: Survey Coverage

Survey coverage is in accordance with requirements listed in Table 2 and the 2022 HSSD. Coverage requirements were met with 100% object detection MBES coverage (Figure 1).

Coverage was acquired to the inshore limit of hydrography, the Navigable Area Limit Line (NALL). Areas where survey coverage did not reach the 3.5-meter depth contour, nor the assigned sheet limits, were due to the survey vessel reaching the extent of safe navigation (Figure 3).

A total of 13 holidays exist within sheet H13607 (Figure 4). Of the 13 holidays, seven are along the rocky breakwater, three are within the USCG basin coverage, and one holiday is located on the water pump station (Figure 5). The final two holidays are outside of the sheet limits in the south west. These holidays are covered by junctioning sheet H13609 from the same project.

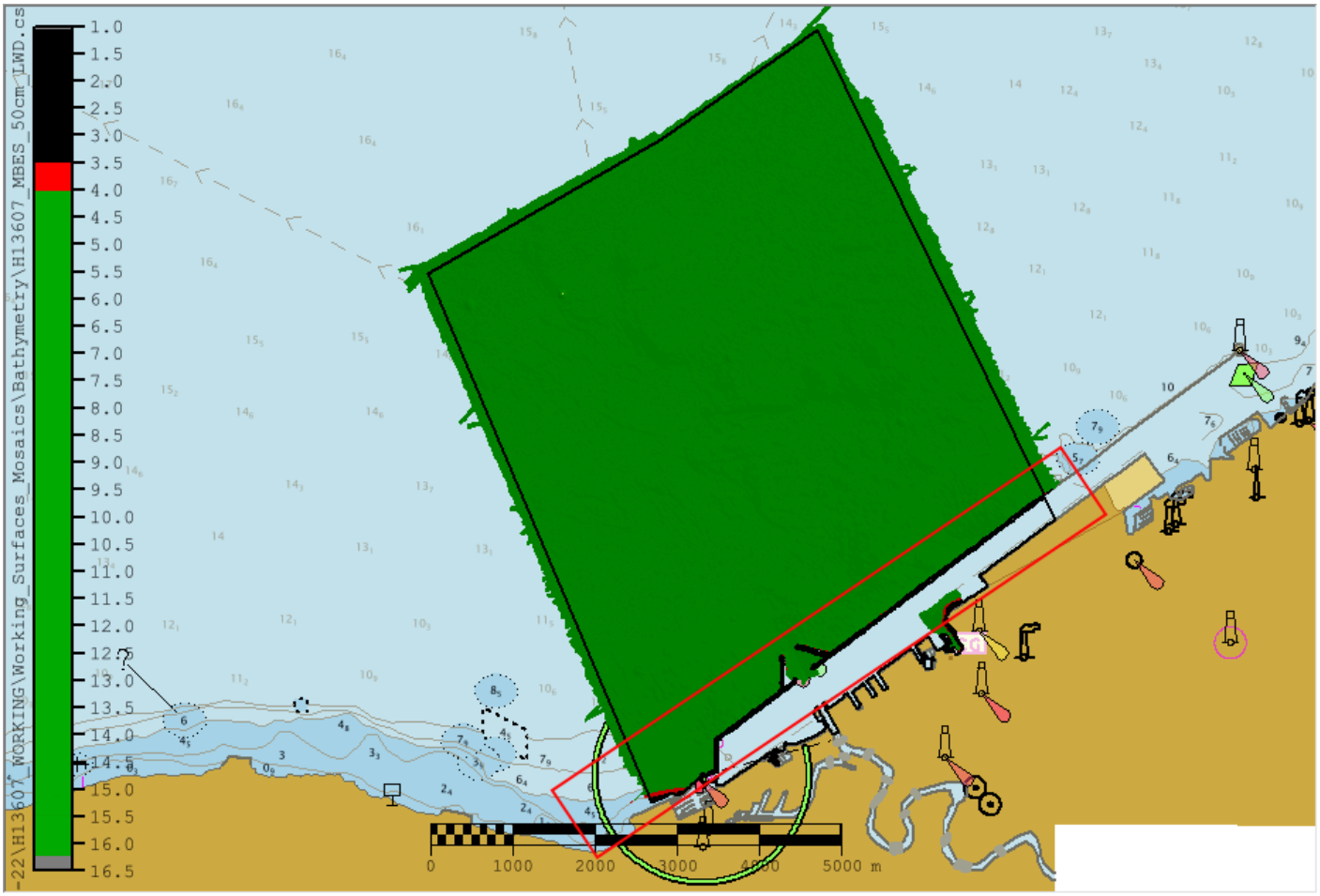


Figure 3: Areas where coverage did not meet 3.5m depth contour for the assigned sheet limits was mostly along the breakwater outlined in red.

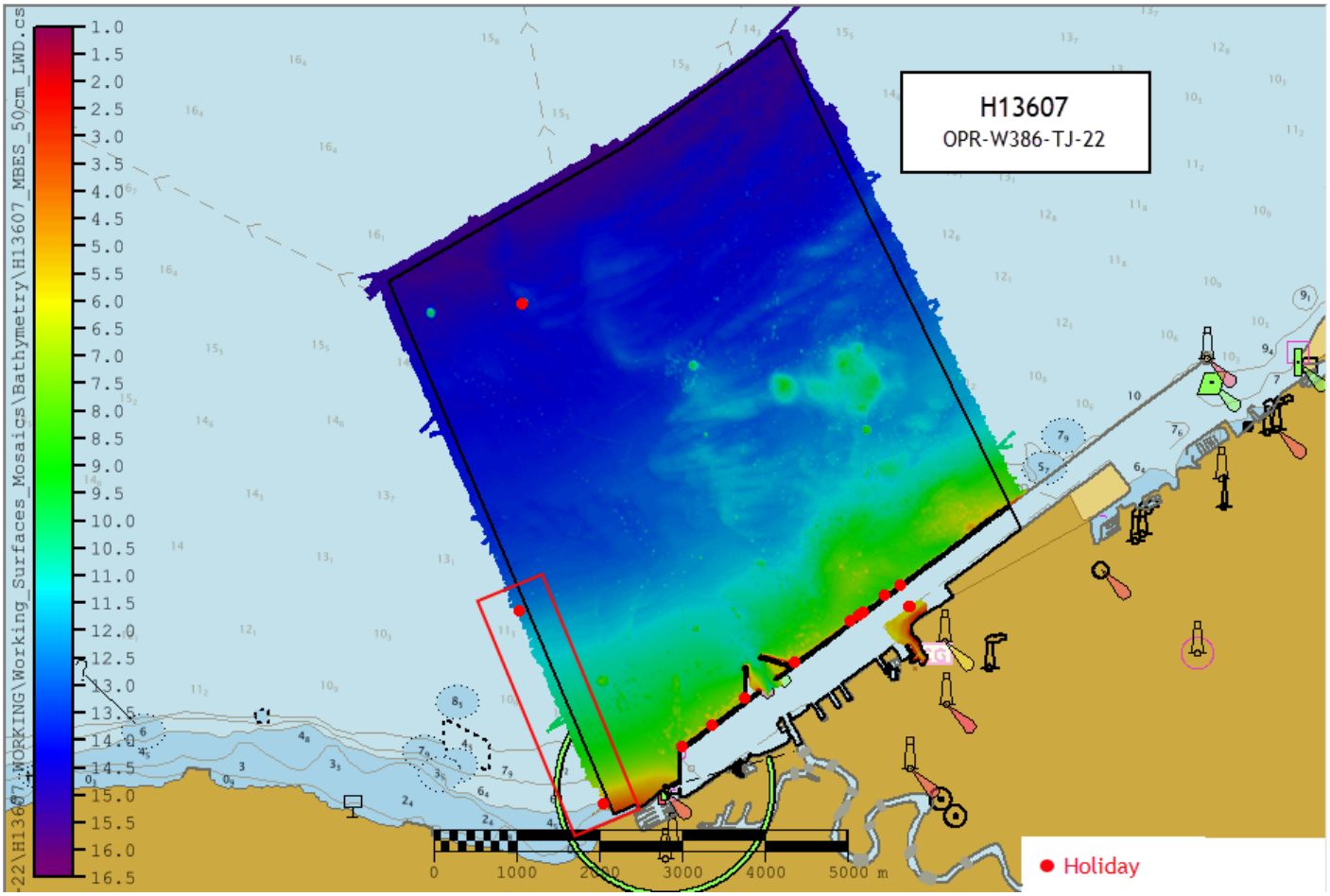


Figure 4: Location of holidays in sheet H13607. Holidays in the red rectangle are covered by contemporary survey H13609.

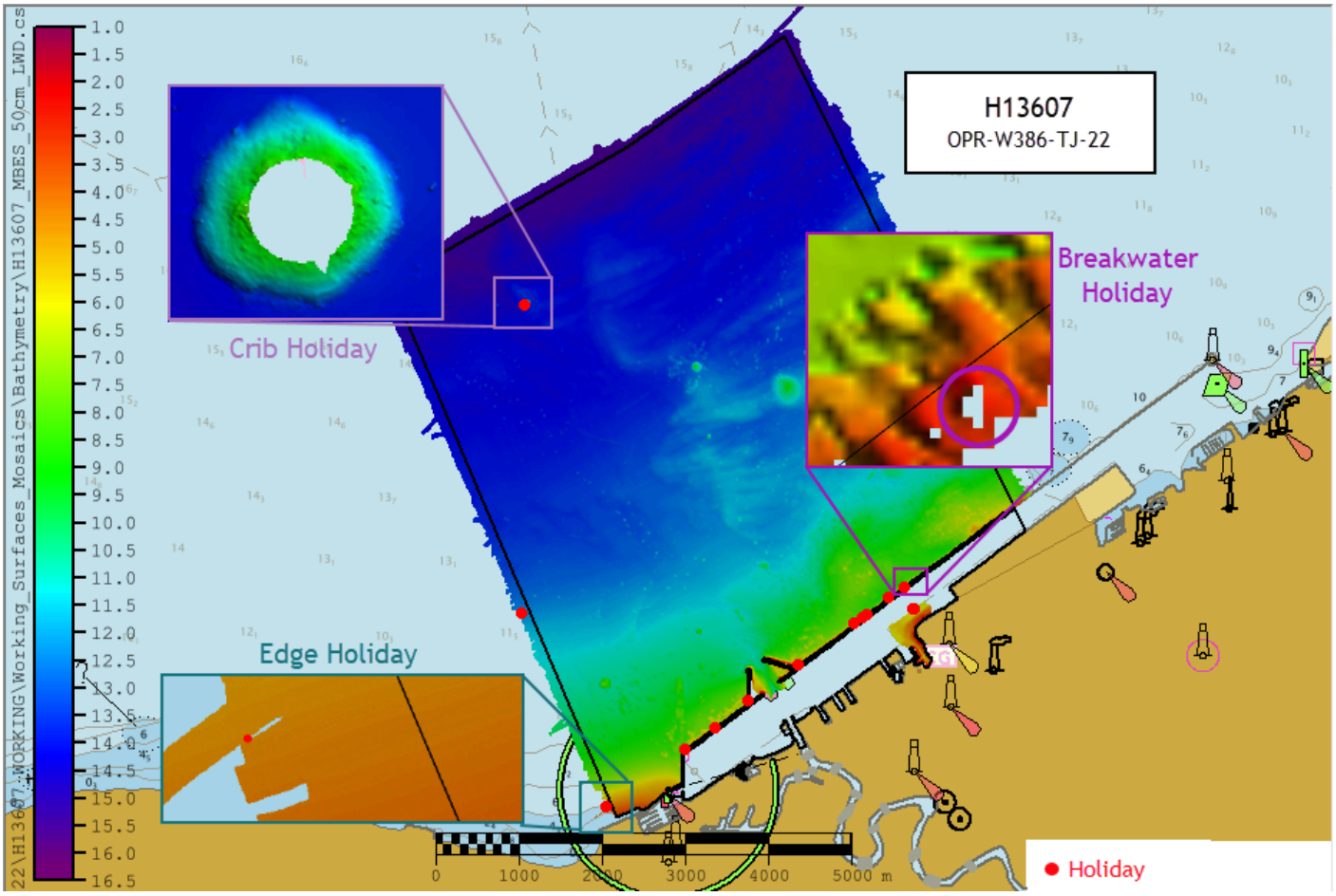


Figure 5: Types of holidays within sheet H13607.

A.6 Survey Statistics

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

	HULL ID	*2903*	*2904*	*Total*
LNM	SBES Mainscheme	0.0	0.0	0.0
	MBES Mainscheme	180.69	434.06	648.3
	Lidar Mainscheme	0.0	0.0	0.0
	SSS Mainscheme	0.0	0.0	0.0
	SBES/SSS Mainscheme	0.0	0.0	0.0
	MBES/SSS Mainscheme	0.0	0.0	0.0
	SBES/MBES Crosslines	33.54	0.0	33.54
	Lidar Crosslines	0.0	0.0	0.0
Number of Bottom Samples				6
Number Maritime Boundary Points Investigated				0
Number of DPs				0
Number of Items Investigated by Dive Ops				0
Total SNM				2.86

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
05/02/2022	122
05/04/2022	124

Survey Dates	Day of the Year
05/05/2022	125
05/09/2022	129
06/02/2022	153
06/03/2022	154
06/04/2022	155
06/05/2022	156
06/28/2022	179
06/29/2022	180
06/30/2022	181
07/22/2022	203
08/18/2022	230

Table 4: Dates of Hydrography

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:

Hull ID	*2903*	*2904*
LOA	8.5 meters	8.5 meters
Draft	1.2 meters	1.2 meters

Table 5: Vessels Used

Figure 6: Thomas Jefferson Launch 2903

Figure 7: Thomas Jefferson Launch 2904

B.1.2 Equipment

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

Manufacturer	Model	Type
Kongsberg Maritime	EM 2040	MBES
Kongsberg Maritime	EM 2040	MBES Backscatter
Sea-Bird Scientific	SBE 19plus V2	Conductivity, Temperature, and Depth Sensor
Teledyne RESON	SVP 70	Sound Speed System
Applanix	POS MV 320 v5	Positioning and Attitude System

Table 6: Major Systems Used

Vessel configurations, equipment operations, data acquisition, and processing are consistent with specifications described in the DAPR.

B.2 Quality Control

B.2.1 Crosslines

Hydrographic Survey Launch (HSL) 2903 collected 33.54 linear nautical miles of MBES crosslines or 5.17% of mainscheme MBES data. The crosslines acquired represent good spatial and depth diversity for this survey area (Figure 8). A Single Resolution (SR) 50cm Combined Uncertainty and Bathymetry Estimator (CUBE) surface of mainscheme data and a SR 50cm CUBE surface of crossline data were differenced - the resulting mean was 0.01m with a standard deviation of 0.04m (Figure 9). Though the fractional allowable error has a large range, more than 99.5% of nodes are within the allowable error fraction (Figure 10). Visual inspection of the difference surface indicated no systematic issues.

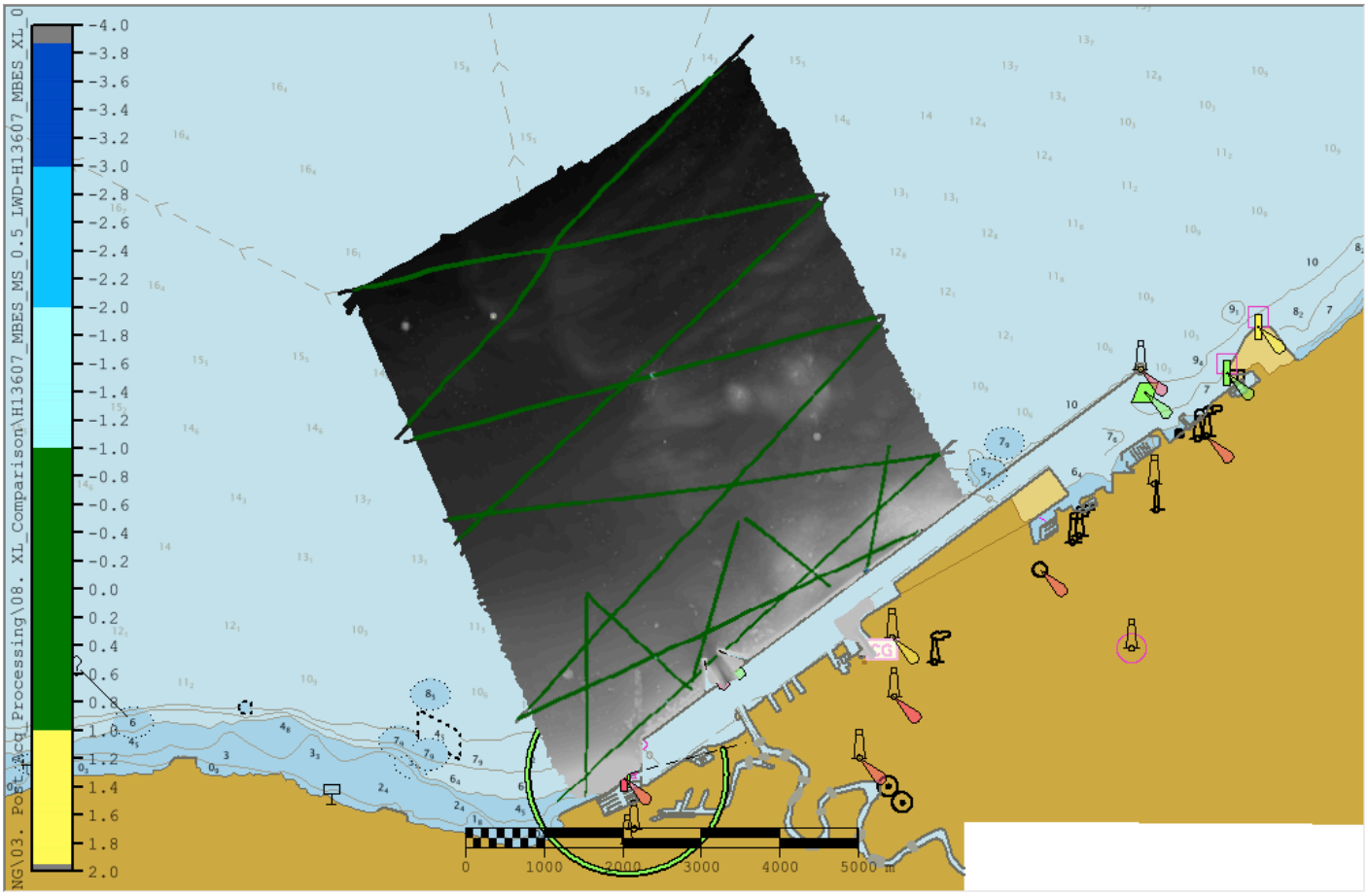
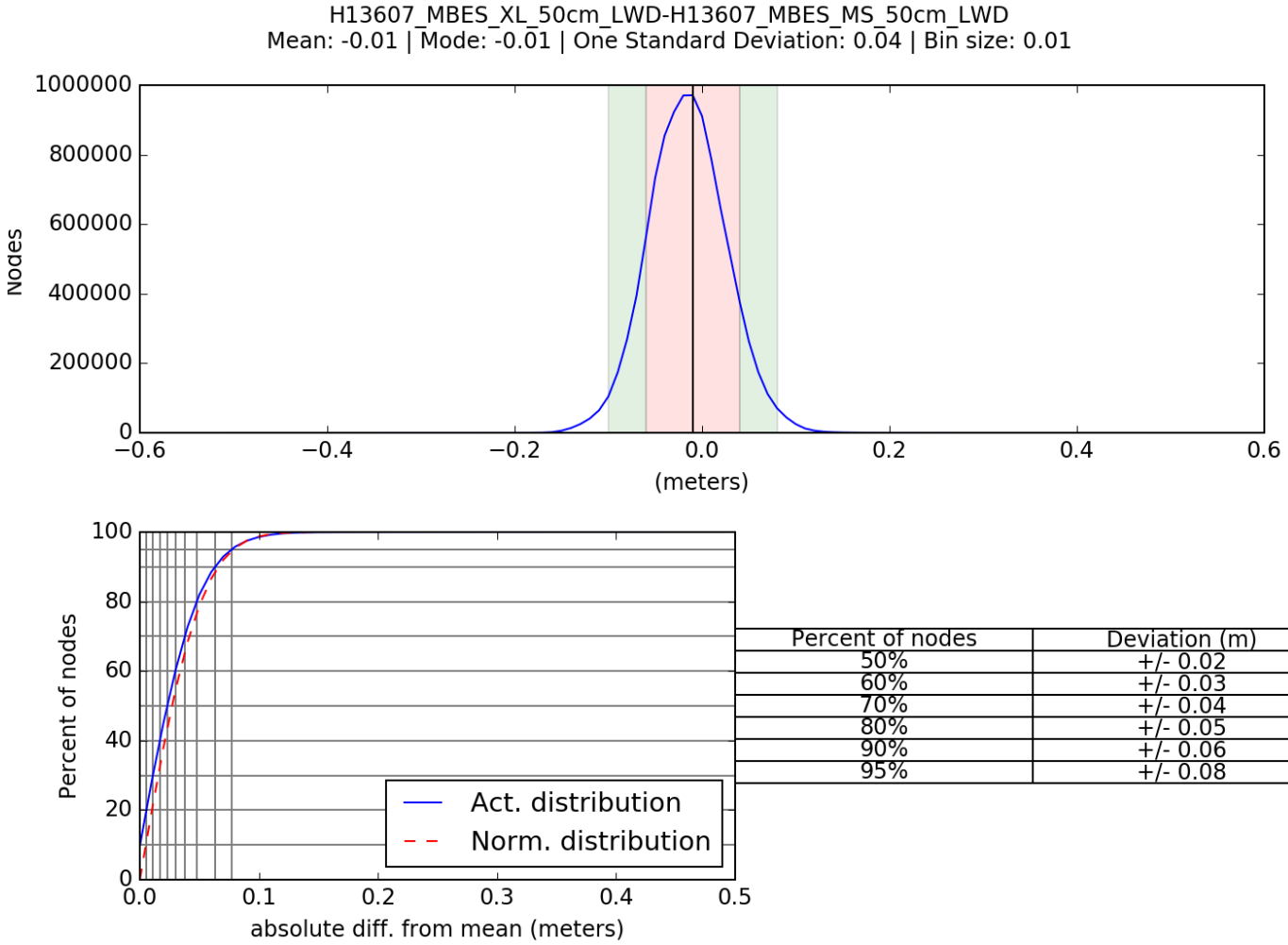


Figure 8: H13607 crossline fractional allowable error shown in color, overlaid onto survey data shown in greyscale.



Percent of nodes	Deviation (m)
50%	+/- 0.02
60%	+/- 0.03
70%	+/- 0.04
80%	+/- 0.05
90%	+/- 0.06
95%	+/- 0.08

Figure 9: H13607 crossline/mainscheme comparison statistics.

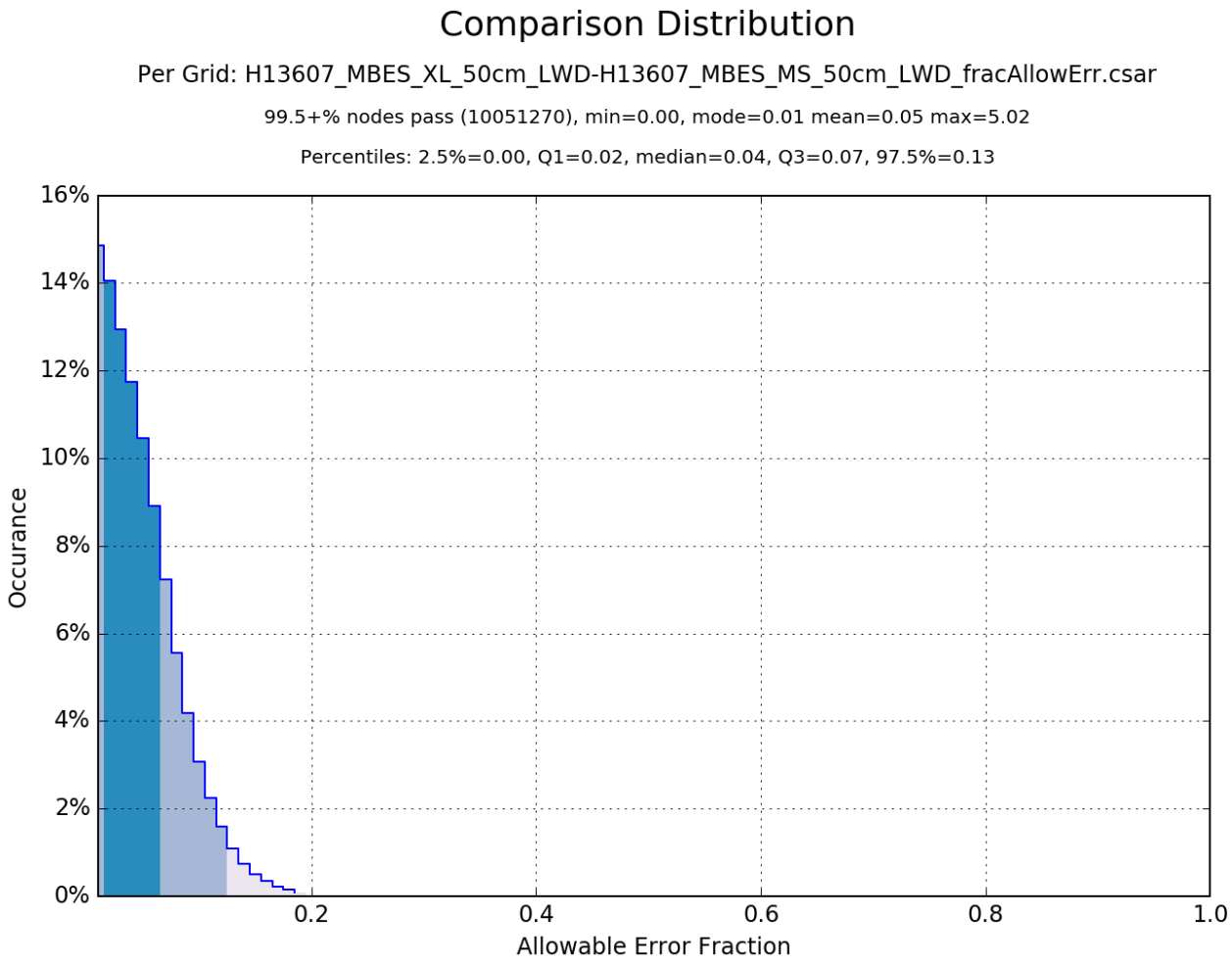


Figure 10: H13607 crossline fraction of allowable error statistics.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.0 meters	0.045 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Measured - XBT	Surface
2903	4 meters/second	N/A	N/A	0.2 meters/second
2904	4 meters/second	N/A	N/A	0.2 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

The bathymetric surface's uncertainty layer is compliant with 2022 HSSD uncertainty standards. Over 99.5% of all nodes pass uncertainty standards (Figure 11).

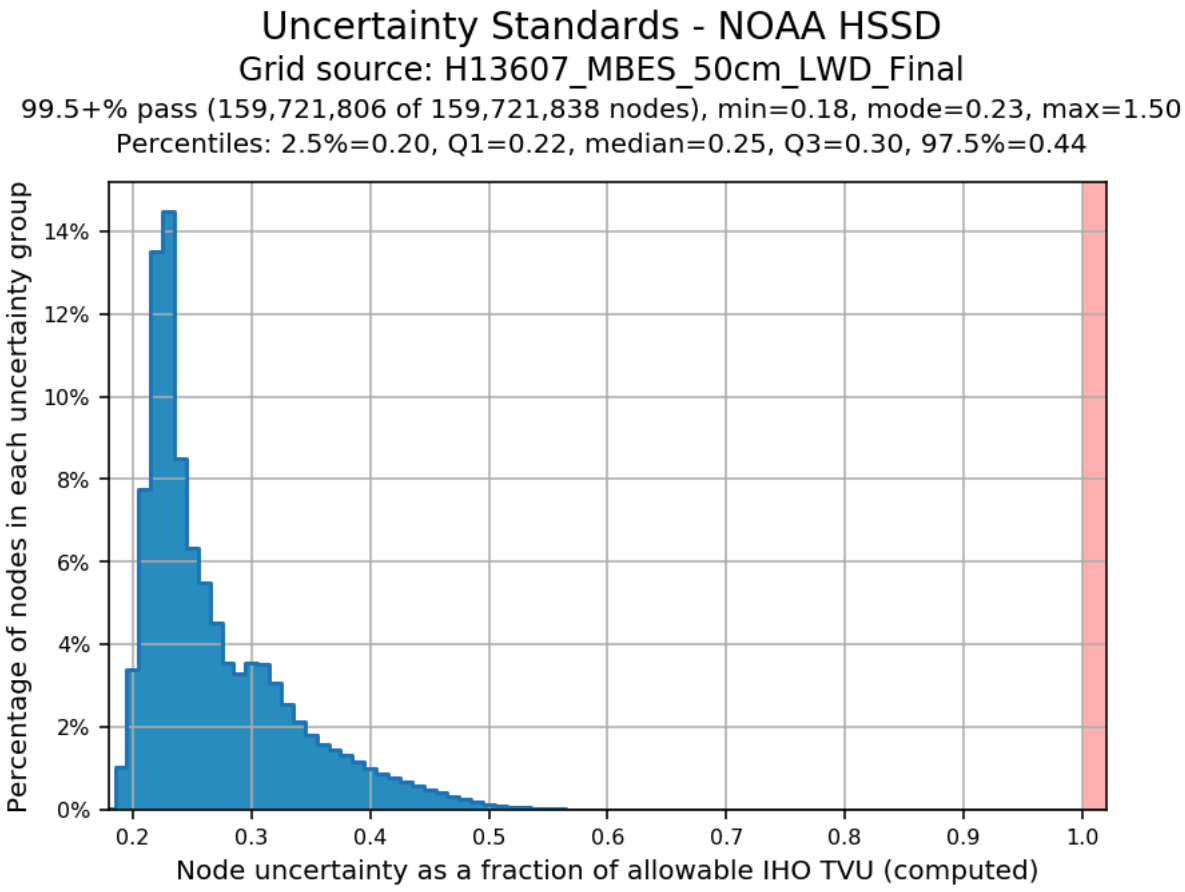


Figure 11: H13607 uncertainty standards.

B.2.3 Junctions

Survey H13607 junctions with contemporary surveys H13608, H13615, and H13609 within the OPR-W386-TJ-22 project. H13609 junction comparison is below. Reference H13608 and H13615's Descriptive Reports for further information on junction comparisons.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13609	1:5000	2022	Thomas Jefferson	W

Table 9: Junctioning Surveys

H13609

The western edge of sheet H13607 junctions with sheet H13609. A 50m SR CUBE surface of H13607 data and a 50cm SR CUBE surface of H13609 data were differenced (Figure 12). The mean difference between bathymetric surface nodes was 0.01m with s standard deviation of 0.04m (Figure 13). Statistics and visual inspection indicate that surveys H13607 and H13609 are in general agreement.

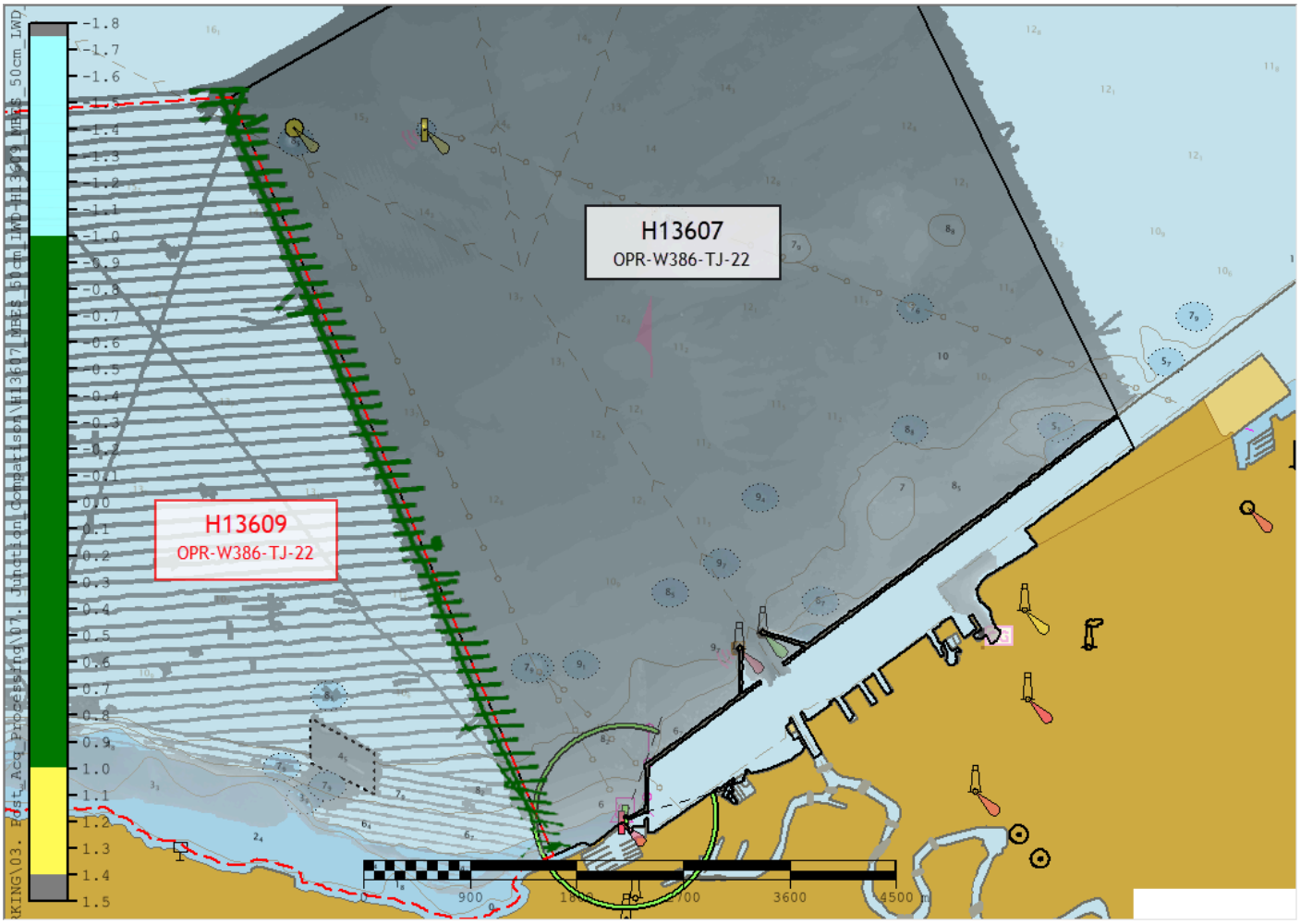
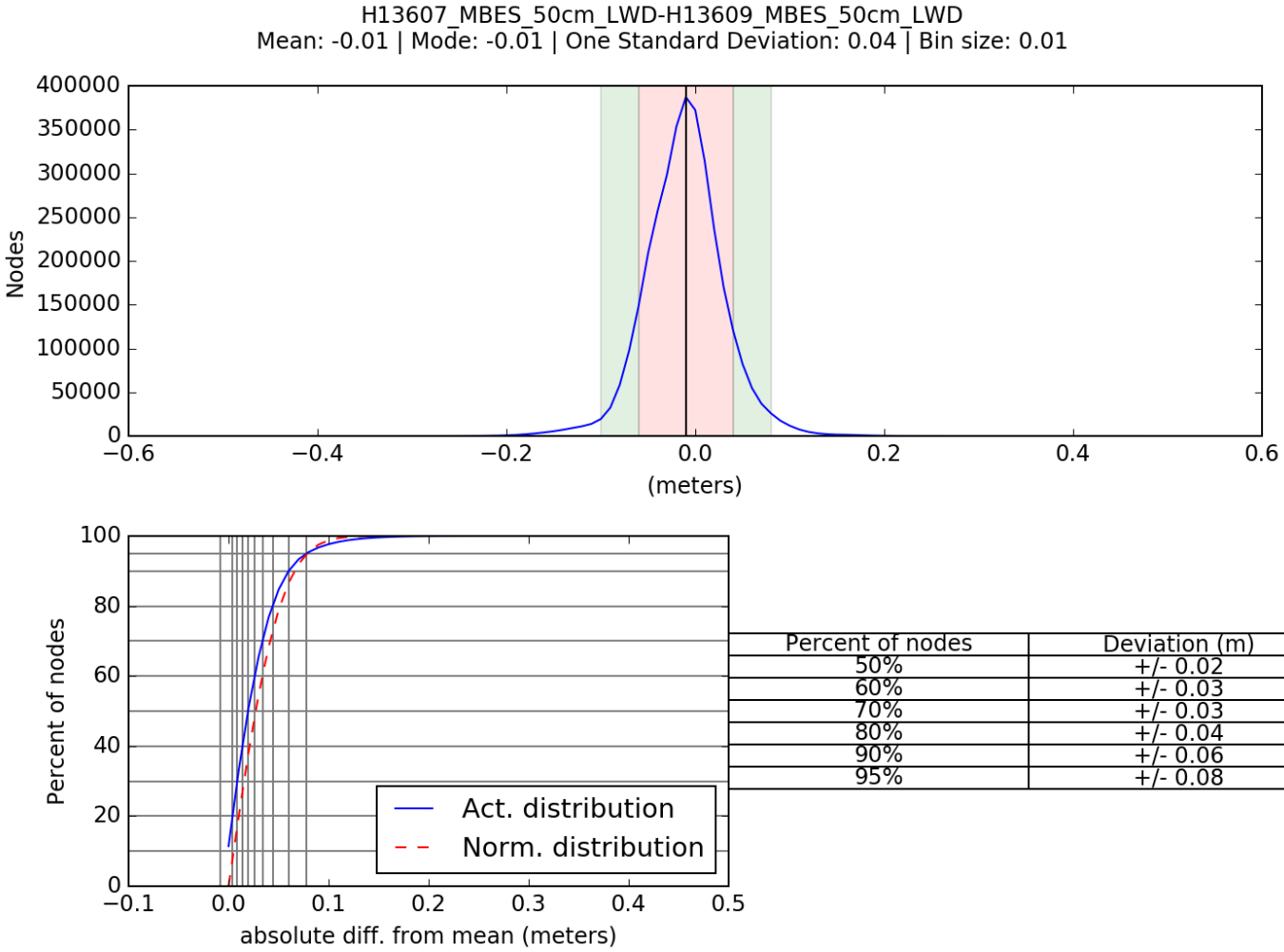


Figure 12: Fraction of allowable error surface difference comparison in color between H13607 and H13609.



Percent of nodes	Deviation (m)
50%	+/- 0.02
60%	+/- 0.03
70%	+/- 0.03
80%	+/- 0.04
90%	+/- 0.06
95%	+/- 0.08

Figure 13: H13607 and H13609 surface difference comparison statistics.

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

There were no conditions or deficiencies that affected equipment operational effectiveness.

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: Static casts were conducted at the start of acquisition each day and at a minimum of one every four hours during launch acquisition. Static cast frequency was increased in areas where a change in surface sound speed greater than two meters per second existed. All sound speed methods were used as detailed in the DAPR.

A total of 48 sound speed profiles were collected within the survey limits of H13607 and display good spatial diversity. Fifteen of these casts were located outside of the sheet limits, not more than 365m away, and display profiles representative of the area (Figure 14). All sound speed profile data were concatenated into a master file for the sheet. MBES data were corrected by applying profiles nearest in distance in time (4 hours) using this master file.

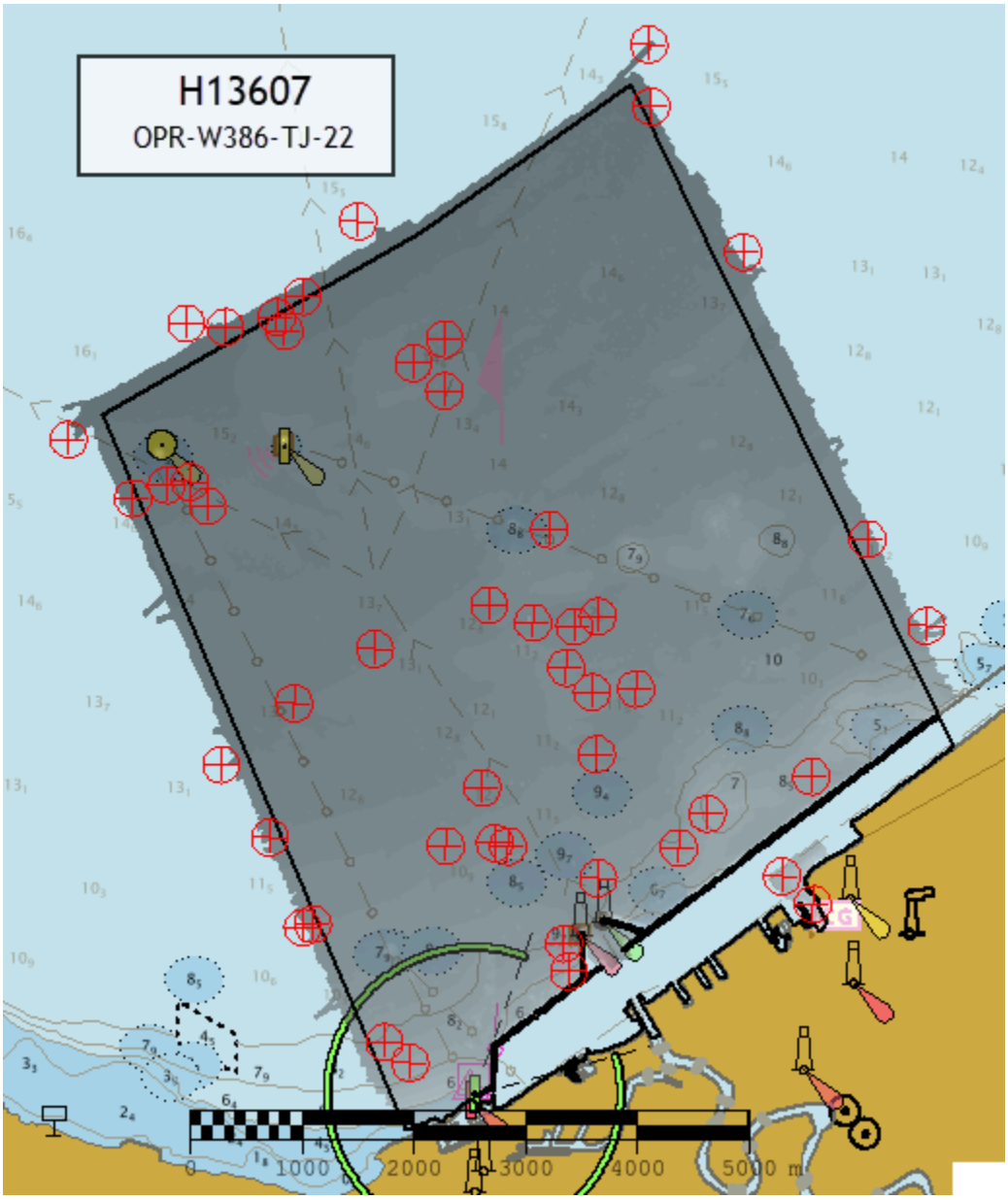


Figure 14: Overview of all SVP casts, shown as red targets, taken on H13607.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

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

All equipment and survey methods were used as detailed in the DAPR. Raw MBES backscatter was flagged as part of the .all file from the Kongsberg EM2040 systems. Backscatter was processed in the QPS Fledermaus GeoCoder Toolbox (FMGT) software, and the exported geotiffs are included in the final processed data submission package (Figures 15, 16 and 17).

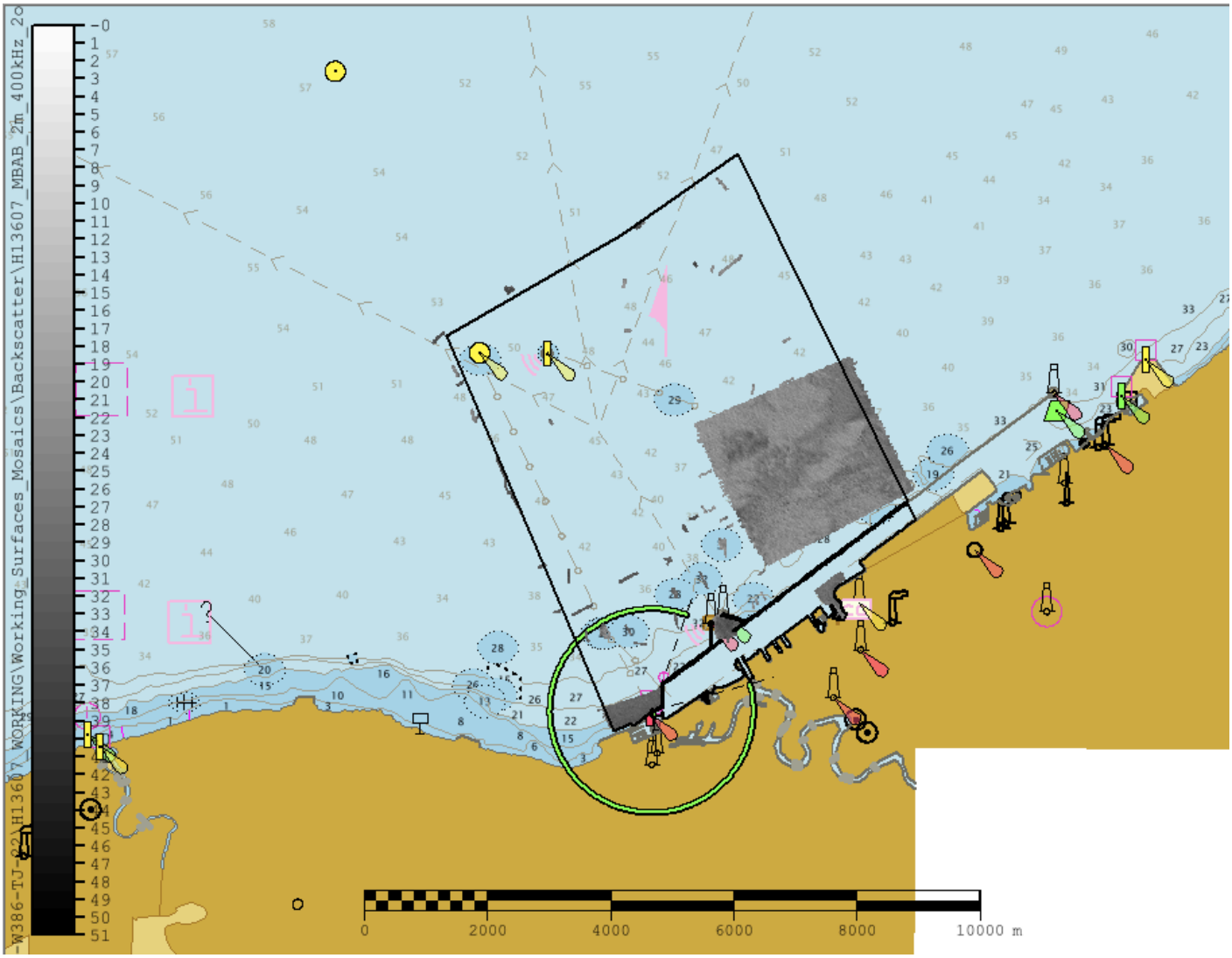


Figure 15: 300kHz backscatter mosaic from data acquired by 2903.

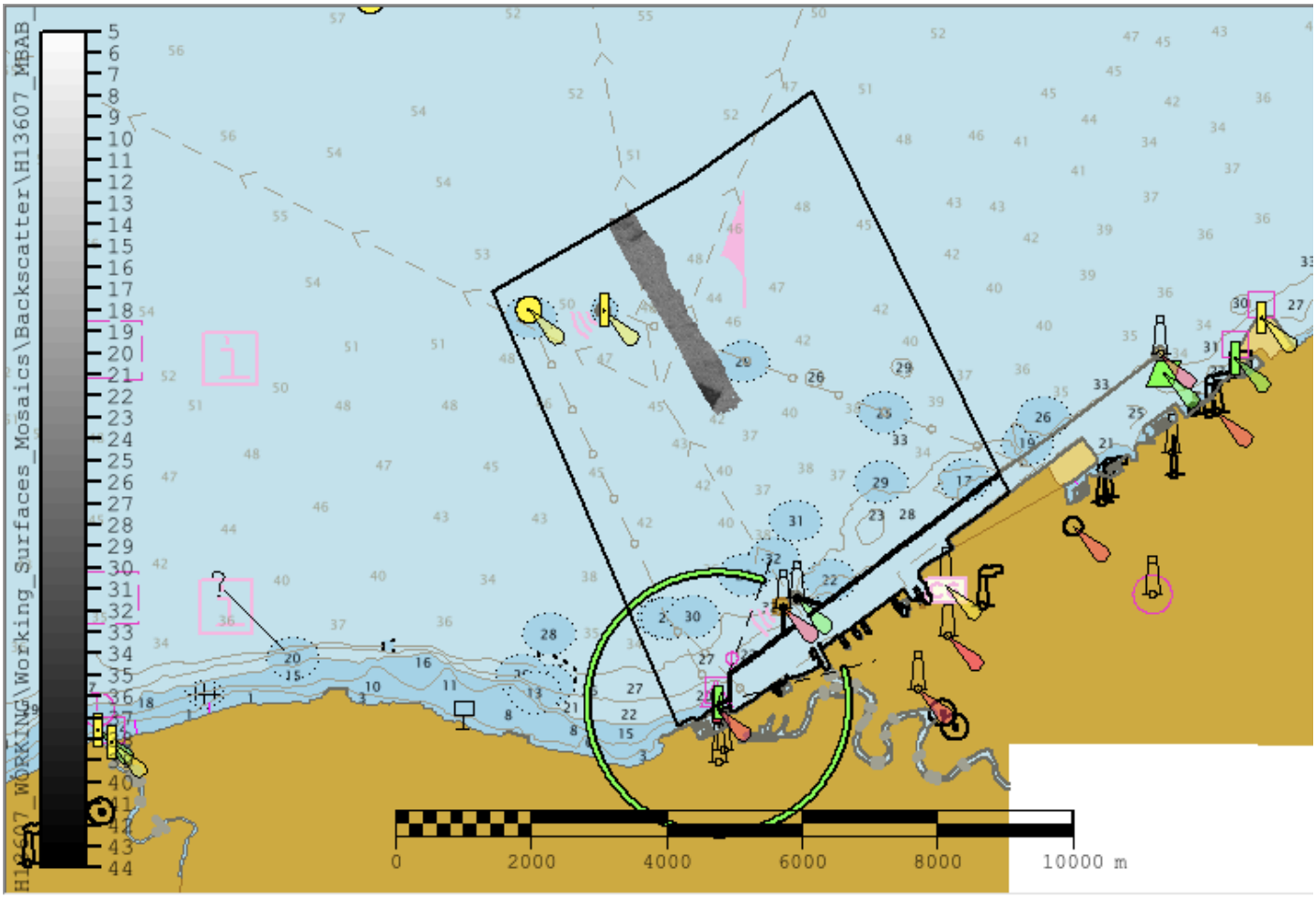


Figure 16: 400kHz backscatter mosaic from data acquired by 2903.

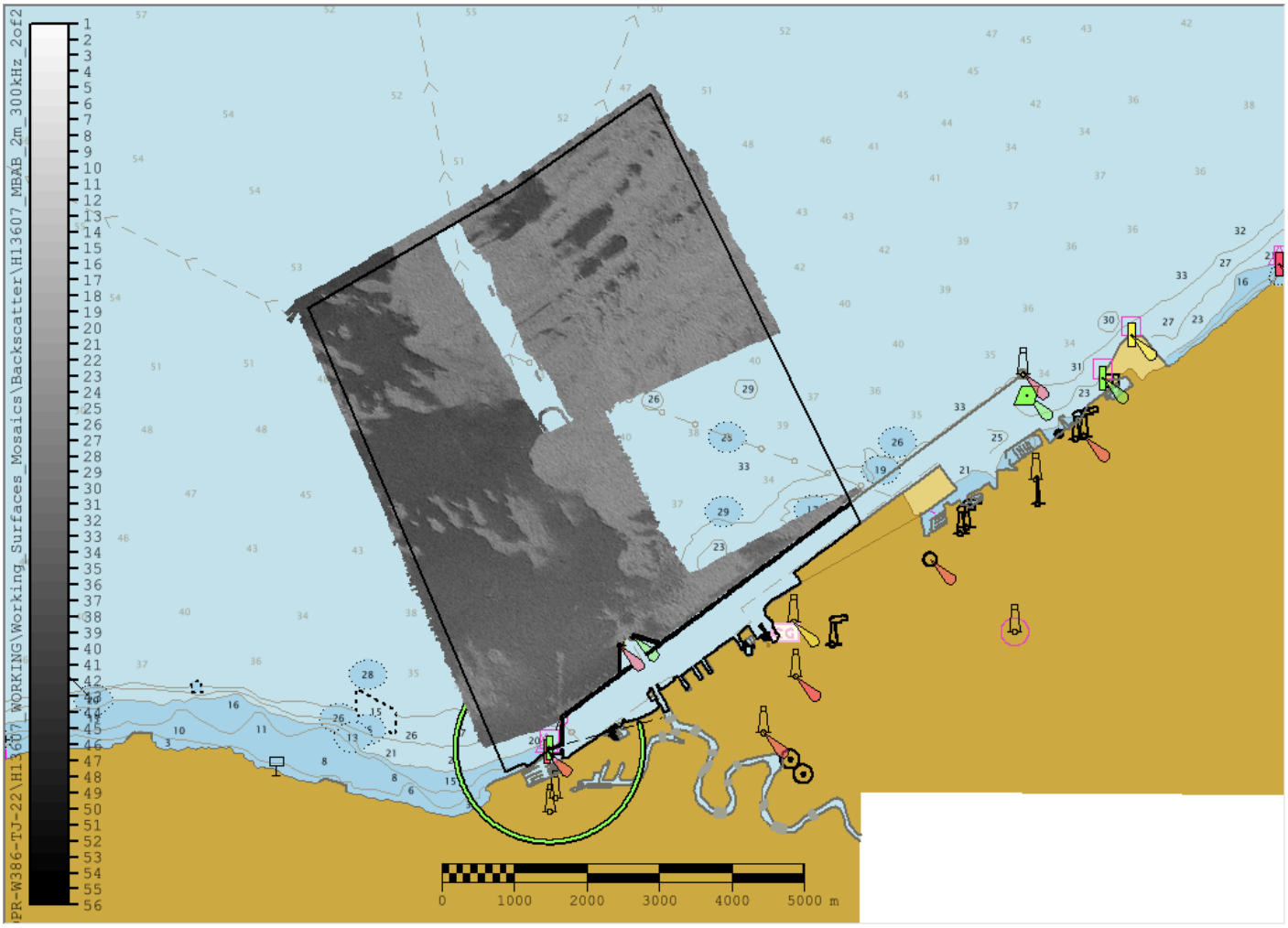


Figure 17: 300kHz backscatter mosaic from data acquired by 2904.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile Version 2022.

B.5.2 Surfaces

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13607_MBES_50cm_LWD_Final	CARIS Raster Surface (CUBE)	50 centimeters	1.04 meters - 16.25 meters	NOAA_0.5m	Object Detection
H13607_MBES_50cm_LWD	CARIS Raster Surface (CUBE)	50 centimeters	1.04 meters - 16.25 meters	NOAA_0.5m	Object Detection
H13607_MBAB_2m_300kHz_1of3	MB Backscatter Mosaic	2 meters	-	N/A	Object Detection
H13607_MBAB_2m_400kHz_2of3	MB Backscatter Mosaic	2 meters	-	N/A	Object Detection
H13607_MBAB_2m_300kHz_3of3	MB Backscatter Mosaic	2 meters	-	N/A	Object Detection

Table 10: Submitted Surfaces

Object detection requirements were met with 100% object detection MBES coverage as specified under section 5.2.2.2 of the 2022 HSSD. All bathymetric grids for H13607 meet density requirements per the 2022 HSSD (Figure 18).

A total of 13 holidays exist within survey H13607. See section A.4 for further information.

Additionally, after multiple rounds of surface cleaning, a total of 1335 fliers remain as detected by NOAA's QC Tool Flier Finder available in the Pydro XL-19 suite. Of the 1335 filers: 1319 are along the rocky breakwater, three are long the walls of the USCG basin, seven are on cribs, and the final six are nodes on features that accurately represent the lake floor (Figures 19 and 20). After careful review of the flagged grid nodes, the hydrographer considers them to be accurate representations of the lake bed, and has retained them in the final delivered surfaces.

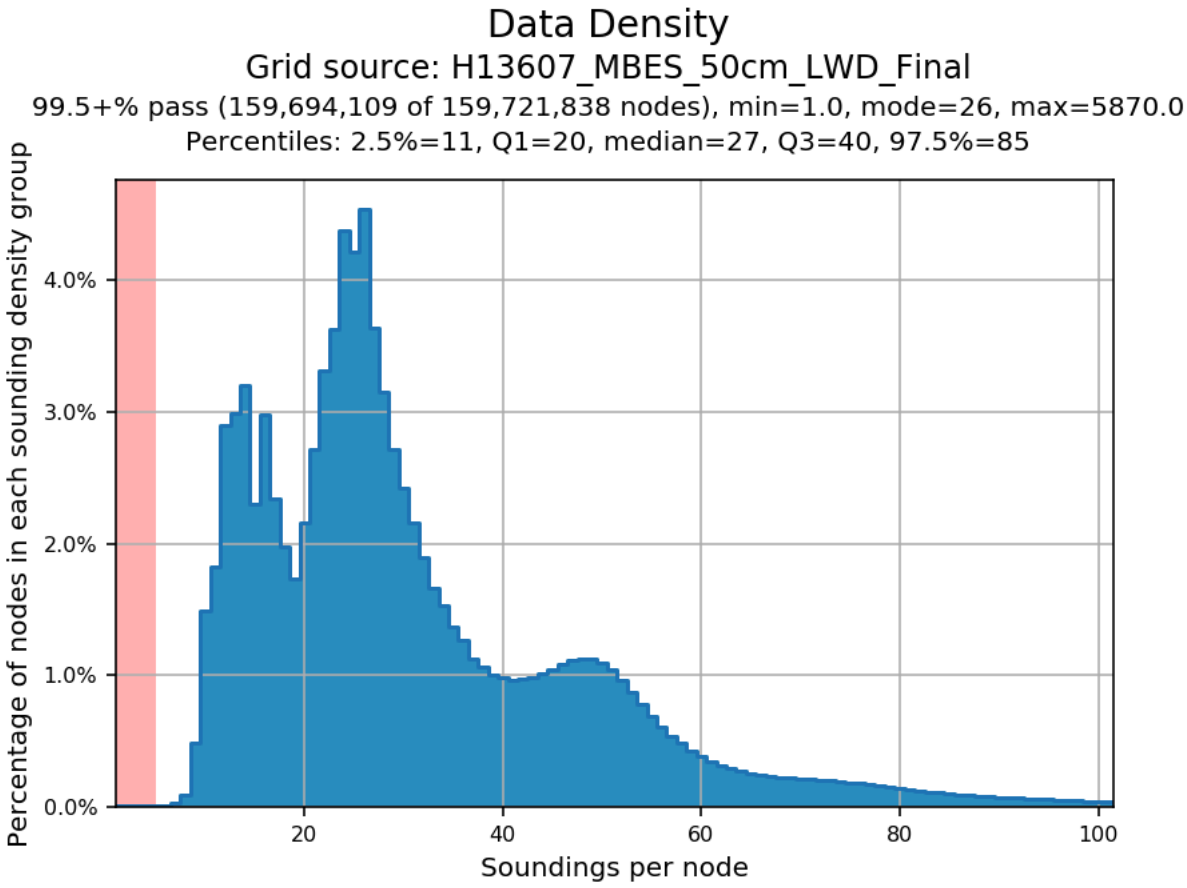


Figure 18: H13607 data density.

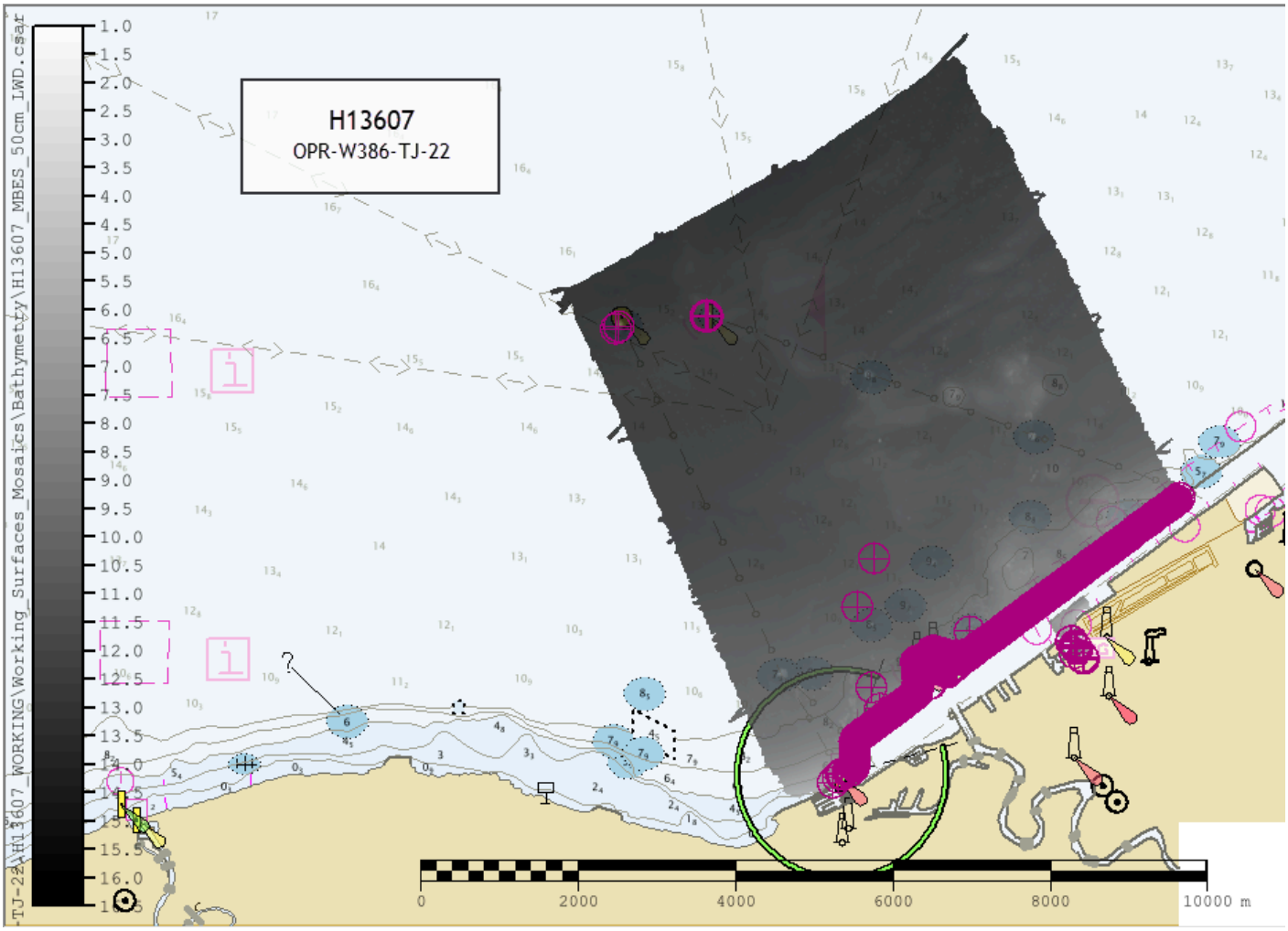


Figure 19: General location of all 1335 remaining fliers on H13607.

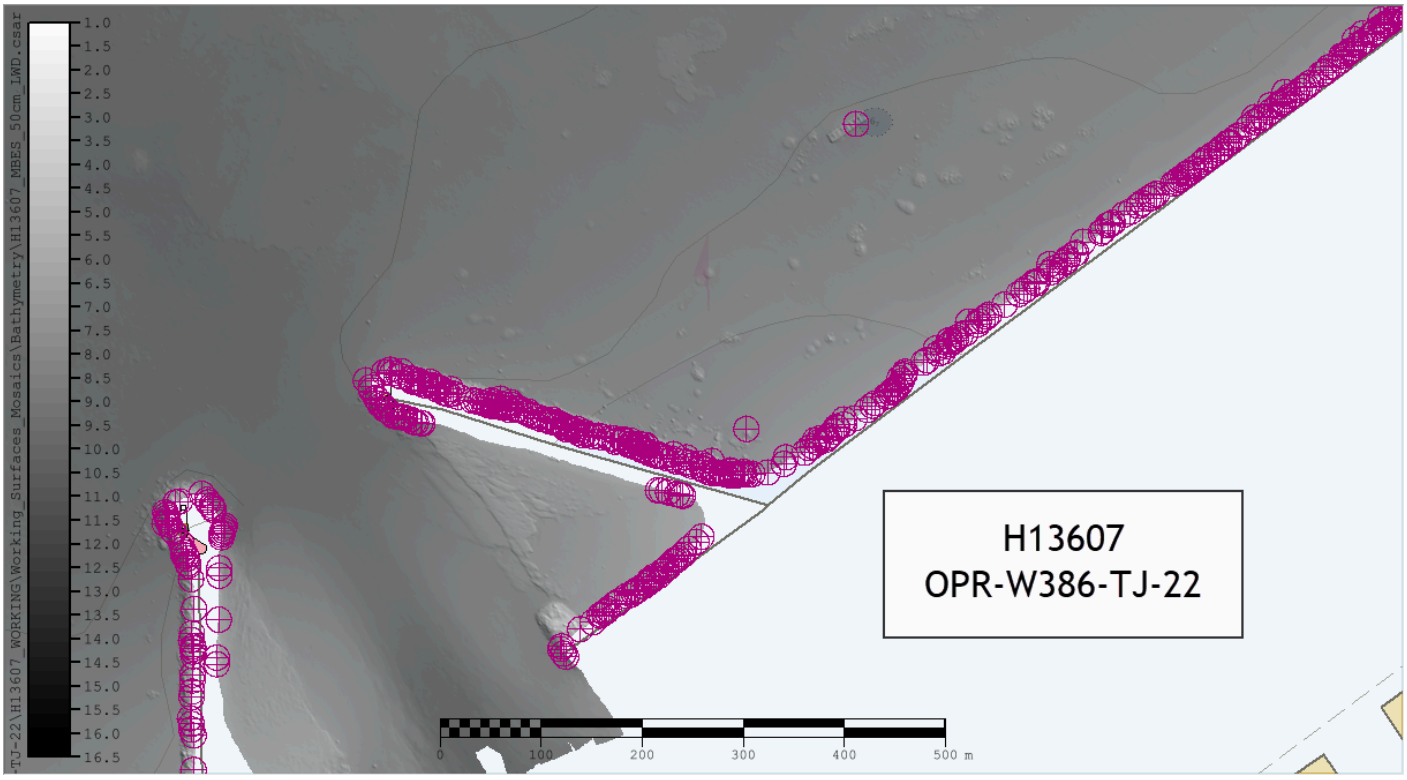


Figure 20: A detailed view of fliers along the breakwater.

C. Vertical and Horizontal Control

Field installed tide and GPS stations were not utilized for this survey. There is no HVCR report included with the submission of H13607.

C.1 Vertical Control

The vertical datum for this project is Low Water Datum IGLD-1985.

ERS Datum Transformation

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

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR-W386-TJ-22_NAD83_2011_VDatum_LWD_IGLD85

Table 11: 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

Trimble PP-RTX service was used with an Applanix POS MV v5 system and POSPac MMS software for ERS control in accordance with the HSSD for H13607 MBES data from vessels 2903 and 2904.

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

D.1.1 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

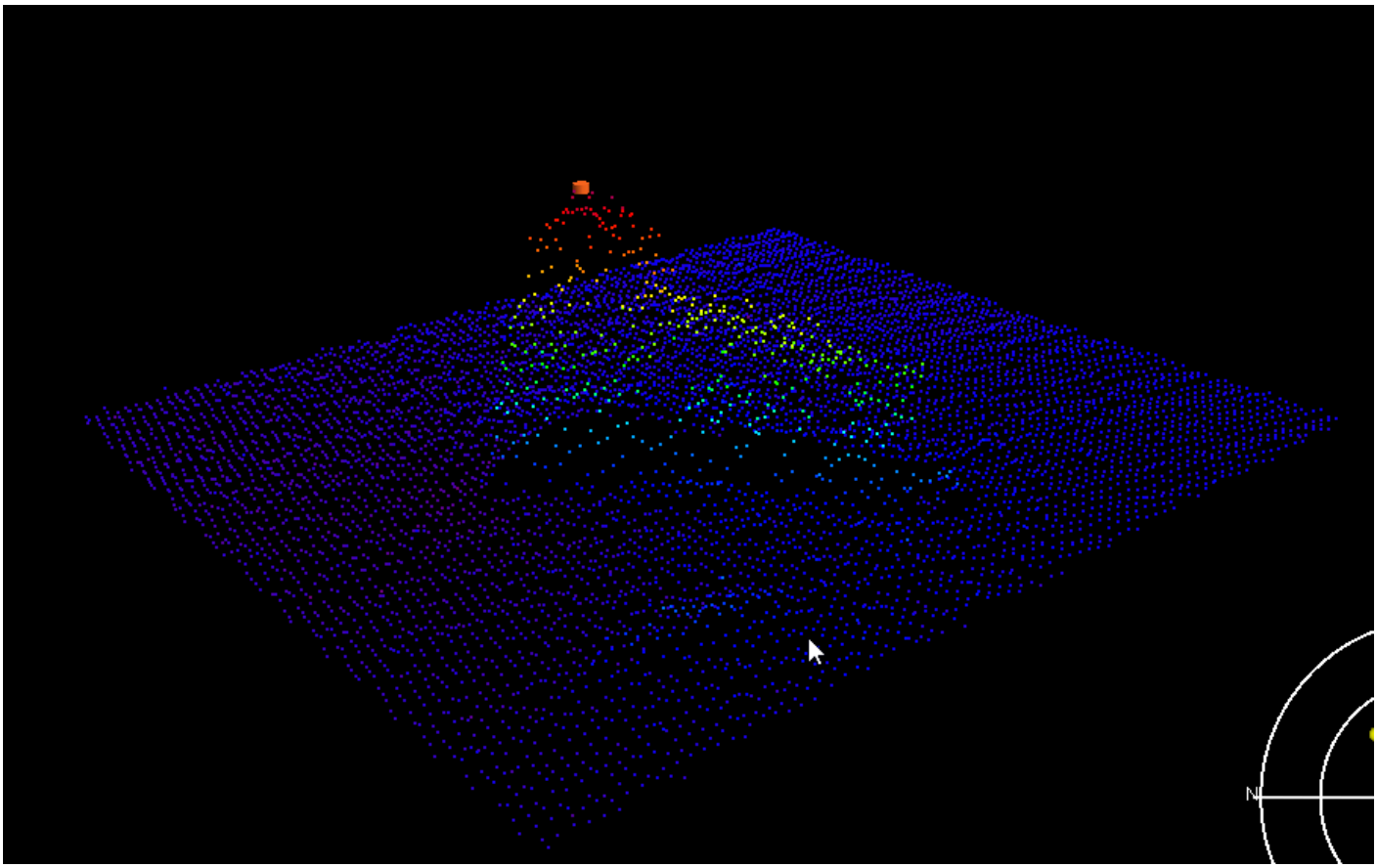
ENC	Scale	Edition	Update Application Date	Issue Date
US4OH01M	1:80000	16	04/27/2018	07/13/2022
US5OH11M	1:10000	22	04/14/2022	04/14/2022

Table 12: Largest Scale ENCs

D.1.2 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

One Danger to Navigation was submitted during the survey review at the Branch.



H13607 12.3m obstruction DTON

D.1.3 Charted Features

A total of 49 features were assigned for investigation. Based on the H13607 data, 22 were deemed appropriate for deletion, 18 were deemed appropriate to be retained as charted, and no features were deemed appropriate for update. A total of nine features were not addressed due to being located within the deprioritized survey area. Reference the Final Feature File included with the submission of this project for further information.

D.1.4 Uncharted Features

A total of 16 uncharted features were identified and investigated using 100% object detection MBES coverage. Zero of these features were considered dangerous to navigation. Reference the Final Feature File included with the submission of this project for further information.

D.1.5 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.2 Additional Results

D.2.1 Aids to Navigation

Twenty-four charted AtoNs exist within the assigned sheet limits. Twenty-two AtoNs were investigated and confirmed to be on station. Two fog signals were not addressed during survey operations. No AtoN reports were filed with the U.S Coast Guard.

D.2.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.2.3 Bottom Samples

Nine bottom samples were assigned for investigation. However, the hydrographer chose to collect six samples in alternate locations guided by differences observed in the backscatter intensity indicating different bottom substrate types (Figure 21).

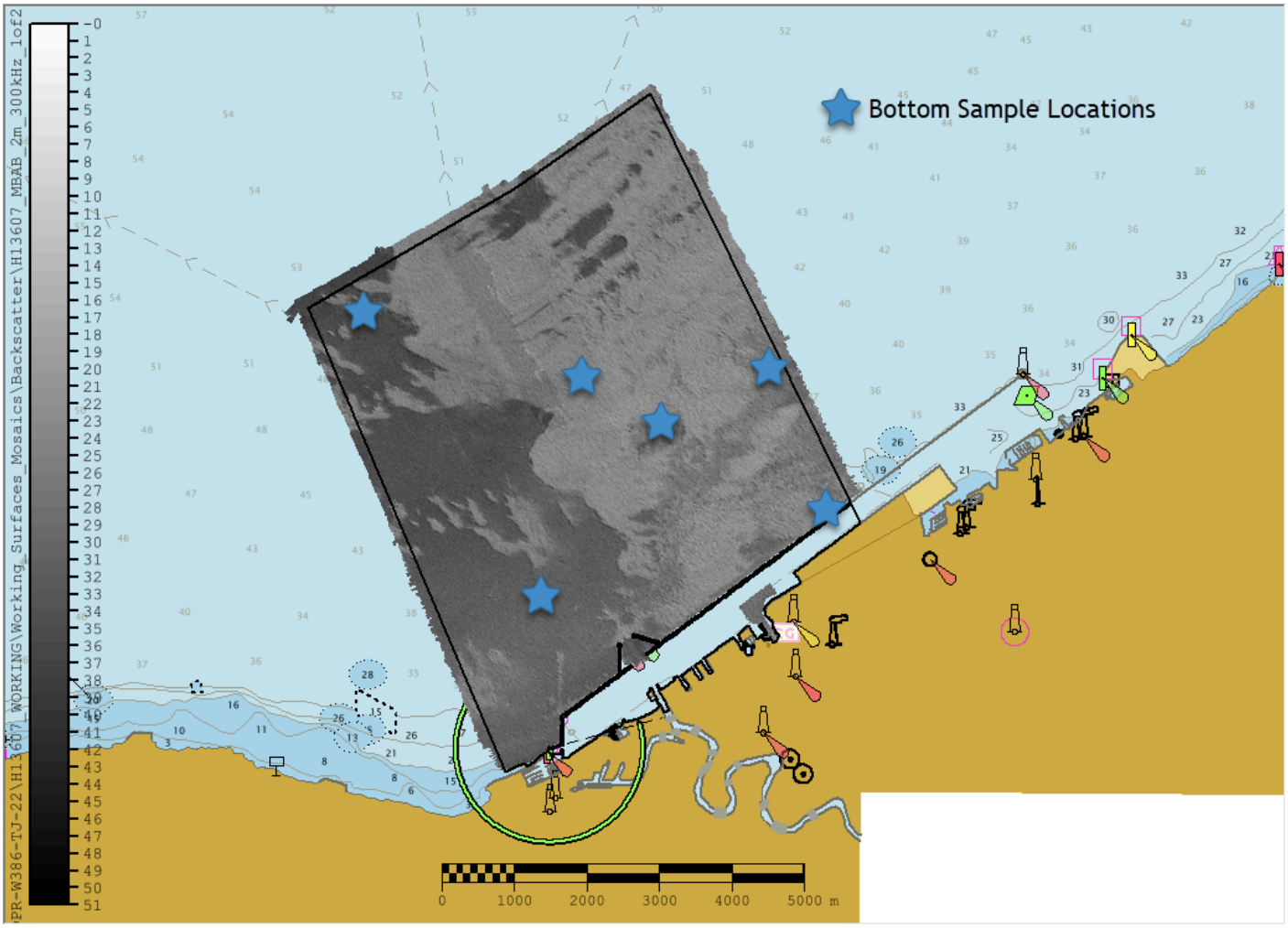


Figure 21: Overview of locations of bottom samples collected on H13607 shown as blue stars overlaid on MBES backscatter mosaic.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

Nine pipelines were assigned and investigated within H13607. Reference the Final Feature File included with the submission of this project for further information.

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

No present or planned construction or dredging exist within the survey limits.

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
Matthew J. Jaskoski, CDR/NOAA	Chief of Party	09/26/2022	JASKOSKI.MATTHEW.JACOB.1275636262 2022.09.27 11:06:19 -04'00'
Michelle M. Levano, LT/NOAA	Field Operations Officer	09/26/2022	Digitally signed by LEVANO.MICHELLE.MARIE.1516645888 Date: 2022.09.27 11:26:39 -04'00'
Erin K. Cziraki	Chief Survey Technician	09/26/2022	CZIRAKI.ERIN.KAYE.1550015338 Digitally signed by CZIRAKI.ERIN.KAYE.1550015338 Date: 2022.09.27 12:23:37 -04'00'
Chloe B. Arboleda	Sheet Manager	09/26/2022	ARBOLEDA.CHLOE ELIZABETH.B.1550062760 Digitally signed by ARBOLEDA.CHLOE ELIZABETH.B.1550062760 Date: 2022.09.27 17:03:03 -04'00'

F. Table of Acronyms

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

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

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