H13379

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

DESCRIPTIVE REPORT

Type of Survey:	Basic Hydrographic Survey
Registry Number:	H13379

LOCALITY

State(s):	Alaska
General Locality:	North Side Alaska Peninsula
Sub-locality:	Port Moller

2020

CHIEF OF PARTY
David Neff

LIBRARY & ARCHIVES

Date:

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H13379

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:	**North Side Alaska Peninsula**
Sub-Locality:	**Port Moller**
Scale:	**40000**
Dates of Survey:	**06/15/2020 to 08/12/2020**
Instructions Dated:	**05/11/2020**
Project Number:	**OPR-R355-KR-20**
Field Unit:	**eTrac**
Chief of Party:	**David Neff**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter**
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**

Remarks:

All times are UTC. The purpose of this survey is to update existing NOS nautical charts. H13379 covers approximately 19 square nautical miles in Port Moller, Alaska.

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 4N, 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 H13379

Project: OPR-R355-KR-20

Locality: North Side Alaska Peninsula

Sublocality: Port Moller

Scale: 1:40000

June 2020 - August 2020

eTrac

Chief of Party: David Neff

A. Area Surveyed

eTrac conducted hydrographic survey operations in the North Side Alaska Peninsula. H13379 covers approximately 19 square nautical miles of survey area. 1,084 linear nautical miles were acquired during the survey. H13379 is located in Port Moller, Alaska.

Survey was conducted within these limits between June 15, 2020 (DN167) and August 12, 2020 (DN225).

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
55° 57' 16.76" N 160° 37' 32.84" W	55° 47' 57.82" N 160° 17' 12.69" W

Table 1: Survey Limits

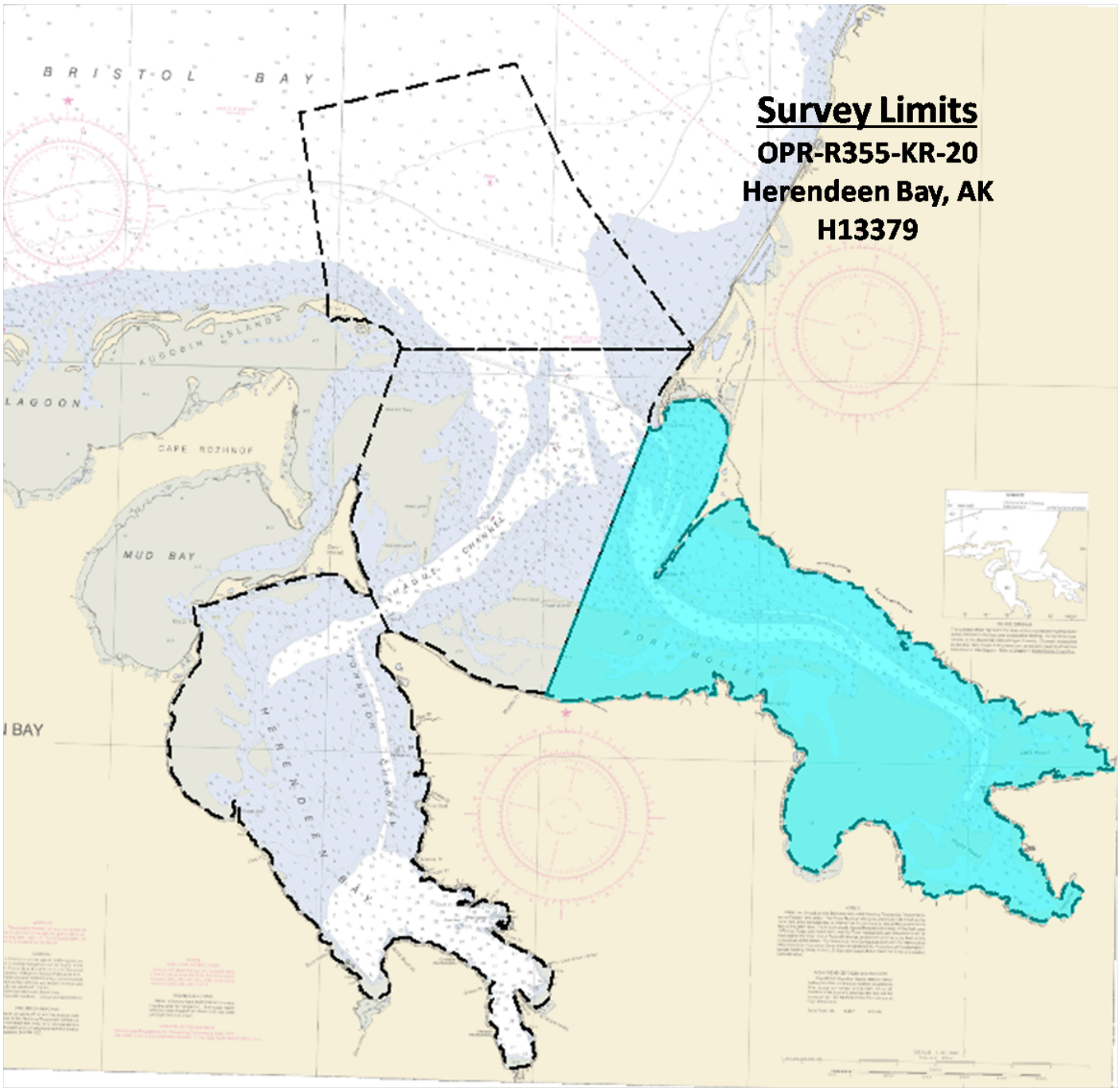

Figure 1: Survey Limits Overview (light blue area)

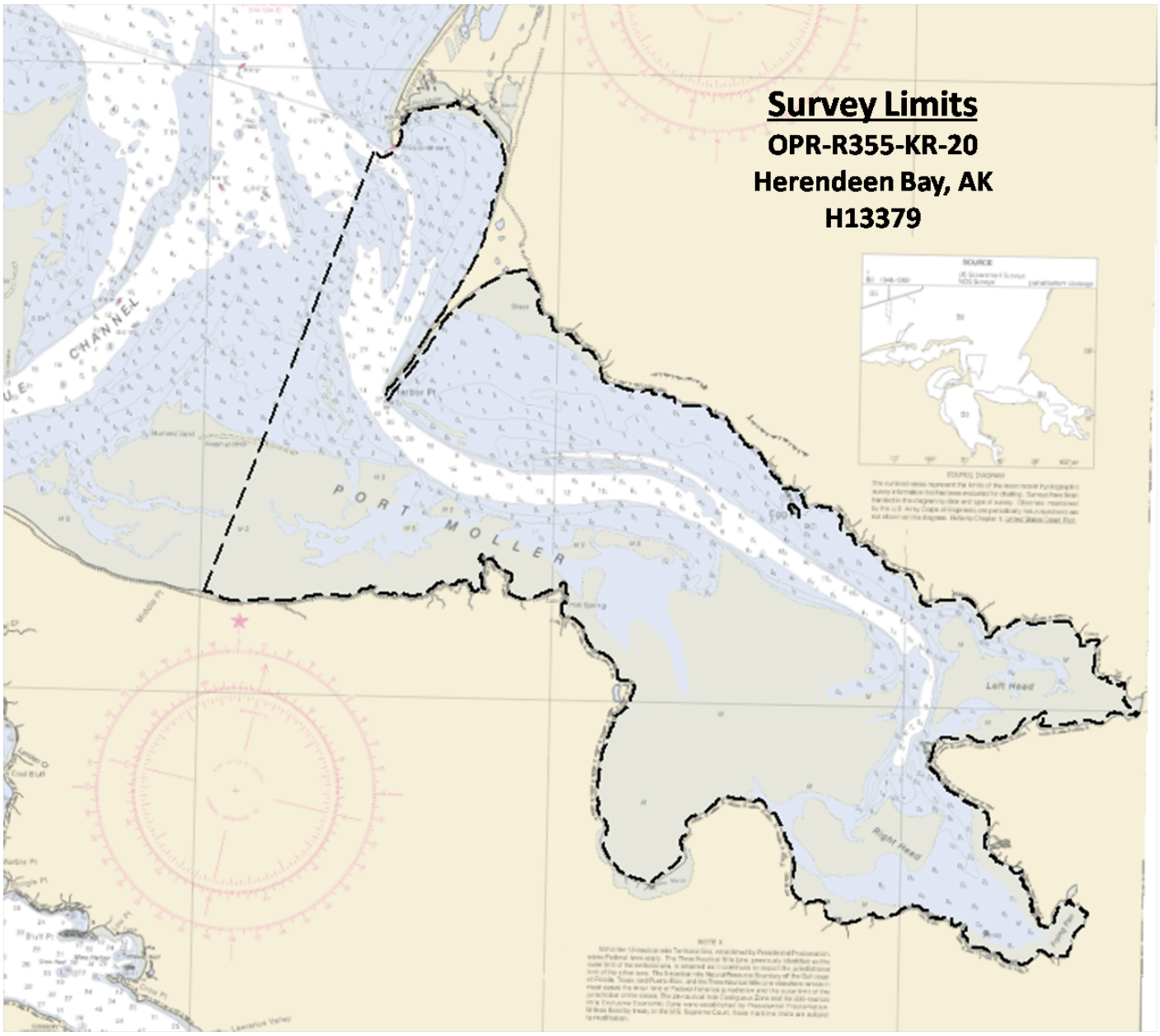

Figure 2: Survey Limits (black line)

All data were acquired in accordance with the requirements in the Project Instructions and specifications set forth in the Hydrographic Survey Specifications and Deliverables 2020 Edition (HSSD 2020).

A.2 Survey Purpose

The purpose of this survey is to update existing National Ocean Service (NOS) nautical charts.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Survey H13379 is accurate to International Hydrographic Organization (IHO) Order 1a as required per the HSSD 2020.

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	Complete 5795 LNM. Transit mileage, system calibration mileage and data which do not meet HSSDD specifications shall not count towards the completion of the LNM requiremnt. Notify the COR/ Project Manager upon nearing completion of LNM requirement. The final survey area shll be squared off and ensure the full investigation of any features within the surveyed extent.
Sheet 1 through Sheet 4 greater than 5 meters water depth	Complete Coverage
Sheet 1 through Sheet 4 shoaler than 5 meters water depth	Set Line Spacing MBES at 400-meter, perpendicular to contours. Complete Coverage on all features.

Table 2: Survey Coverage

Survey coverage was in accordance with the requirements listed above and in the HSSD.

Note: Survey coverage did not extend to the entire assigned survey boundary as the Navigable Area Limit Line (NALL) was reached. In some instances the NALL was not 100% met due to safety.

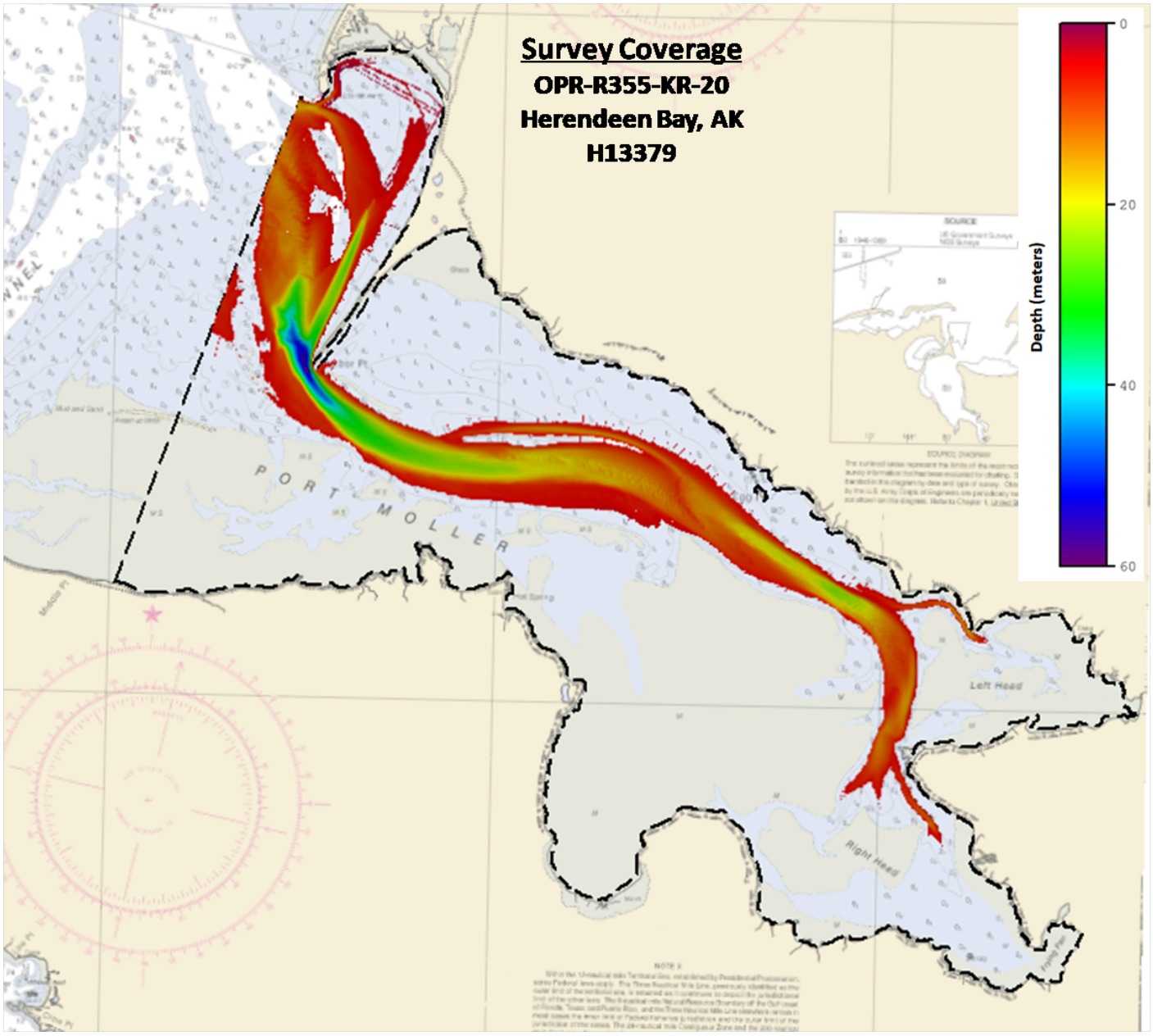

Figure 3: Survey Coverage

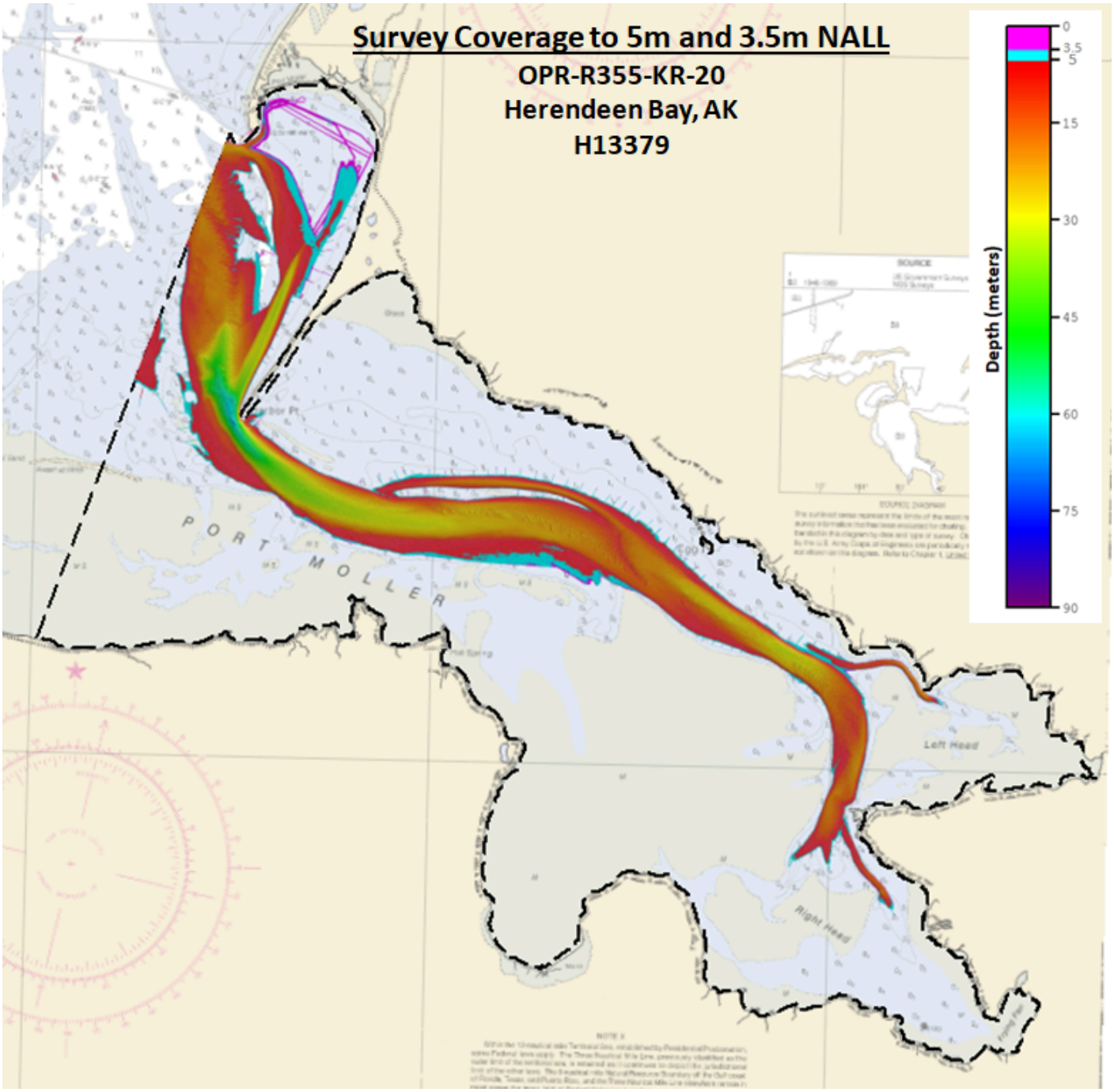

Figure 4: Survey Coverage with 3.5m and 5m NALL displayed

A.6 Survey Statistics

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

	HULL ID	*R/V 505*	*R/V Rapid*	*R/V Spectrum*	*Total*
LNM	**SBES Mainscheme**	0	0	0	0
	MBES Mainscheme	324.16	387.59	330.43	1042.18
	Lidar Mainscheme	0	0	0	0
	SSS Mainscheme	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0
	SBES/MBES Crosslines	17.83	8.51	15.73	42.07
	Lidar Crosslines	0	0	0	0
Number of Bottom Samples					5
Number Maritime Boundary Points Investigated					0
Number of DPs					0
Number of Items Investigated by Dive Ops					0
Total SNM					19

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
06/15/2020	167

Survey Dates	Day of the Year
06/17/2020	169
06/18/2020	170
06/19/2020	171
06/22/2020	174
06/23/2020	175
06/24/2020	176
06/30/2020	182
07/14/2020	196
07/15/2020	197
07/16/2020	198
07/17/2020	199
07/18/2020	200
07/19/2020	201
07/20/2020	202
07/22/2020	204
07/24/2020	206
07/25/2020	207
07/26/2020	208
07/27/2020	209
07/28/2020	210
07/31/2020	213
08/02/2020	215
08/03/2020	216
08/08/2020	221
08/09/2020	222
08/10/2020	223
08/12/2020	225

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	***R/V 505***	***R/V Rapid***	***R/V Spectrum***
LOA	10 meters	8.5 meters	6.7 meters
Draft	0.6 meters	0.6 meters	0.6 meters

Table 5: Vessels Used

The R/V 505 is a 10 meter aluminum catamaran equipped with a Universal Sonar Mount (USM) starboard multibeam pole mount.

The R/V Rapid is a 8.5 aluminum monohull equipped with both a Universal Sonar Mount (USM) starboard and port multibeam pole mount.

The R/V Spectrum is a 6.7 meter aluminum monohull equipped with a Universal Sonar Mount (USM) starboard multibeam pole mount.

B.1.2 Equipment

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

Manufacturer	Model	Type
R2Sonic	2022	MBES
R2Sonic	2024	MBES
AML Oceanographic	BaseX2	Sound Speed System
AML Oceanographic	MicroX SV	Sound Speed System
AML Oceanographic	SmartX	Sound Speed System
R2Sonic	I2NS	Positioning and Attitude System

Table 6: Major Systems Used

Note: R/V 505 utilized a dualhead R2Sonic 2022 multibeam echosounder system, an AML Base.X2 for the sound speed system, an AML Micro.X for the surface sound speed system, an AML Smart.X as a spare for the sound speed system, and a R2Sonic I2NS for the positioning system. R/V Rapid utilized a dualhead R2Sonic 2024 multibeam echosounder system, an AML Base.X2 for the sound speed system, an AML Micro.X for the surface sound speed system, an AML Smart.X as a spare for the sound speed system, and a R2Sonic I2NS for the positioning system. R/V Spectrum utilized a R2Sonic 2024 multibeam echosounder system, an AML Base.X2 for the sound speed system, an AML Micro.X for the surface sound speed system, and a R2Sonic I2NS for the positioning system.

B.2 Quality Control

B.2.1 Crosslines

A beam-to-beam statistical analysis was performed using the Cross Check tool in Qimera. A 1 meter Combined Uncertainty and Bathymetric Estimator (CUBE) weighted dynamic surface was created incorporating only the mainscheme lines and excluded crosslines. The Cross Check tool was used to perform the beam-by-beam comparison of the crossline data to the mainscheme surface. Comparisons showed excellent agreement, well above 95% of the allowable TVU.

Note: This surface was created for QC only and is not submitted as a surface deliverable.

The beam-to-beam crossline comparison report generated through the Qimera Cross Check tool is included in Separates II.

Below is a histogram of the crossline comparison statistics showing IHO Order 1a compliance per beam.

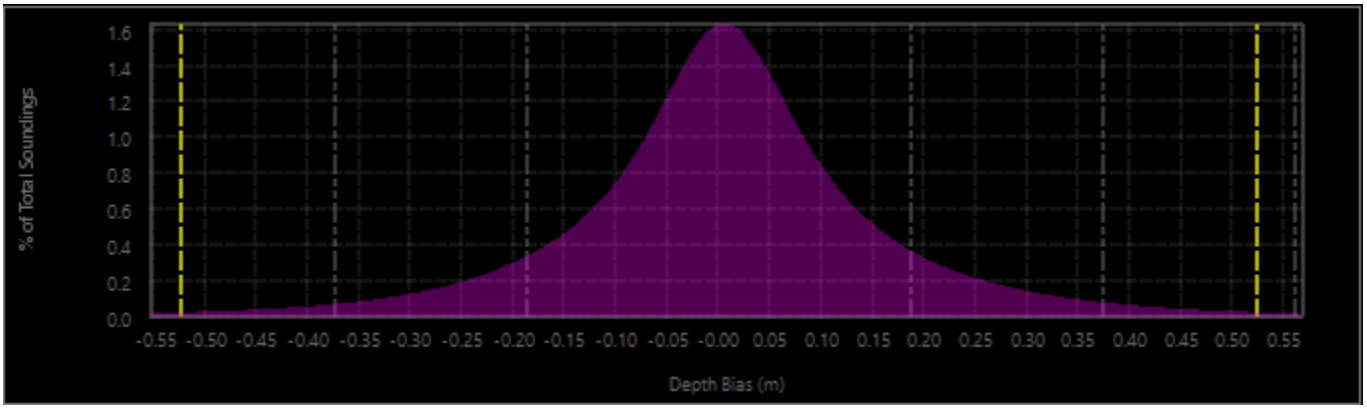

Figure 5: H13379 Crossline Comparison

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via ERTDM	0.22 meters	0 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Measured - XBT	Surface
R/V 505	0.05 meters/second	0 meters/second	0 meters/second	0.2 meters/second
R/V Rapid	0.05 meters/second	0 meters/second	0 meters/second	0.2 meters/second
R/V Spectrum	0.05 meters/second	0 meters/second	0 meters/second	0.2 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Standard deviation and uncertainty layers of the Dynamic Surface were utilized during data processing to search for features, water column noise, and systematic errors.

IHO Order 1a uncertainty specification was met by 100% of the nodes.

The final Bathymetric Attributed Grid (BAG) surface's uncertainty was generated through the NOAA QC Tools and an image of the results is located below.

For H13379 the following percentages represent the results of the TPU calculation:

Complete Coverage MBES (Finalized 1m CUBE weighted Dynamic Surface in NOAA QC Tools) = 99.5+% of nodes are within the allowable TVU.

Complete Coverage MBES (Finalized 2m CUBE weighted Dynamic Surface in NOAA QC Tools) = 99.5+% of nodes are within the allowable TVU.

Complete Coverage MBES (Finalized 4m CUBE weighted Dynamic Surface in NOAA QC Tools) = 99.5+% of nodes are within the allowable TVU.

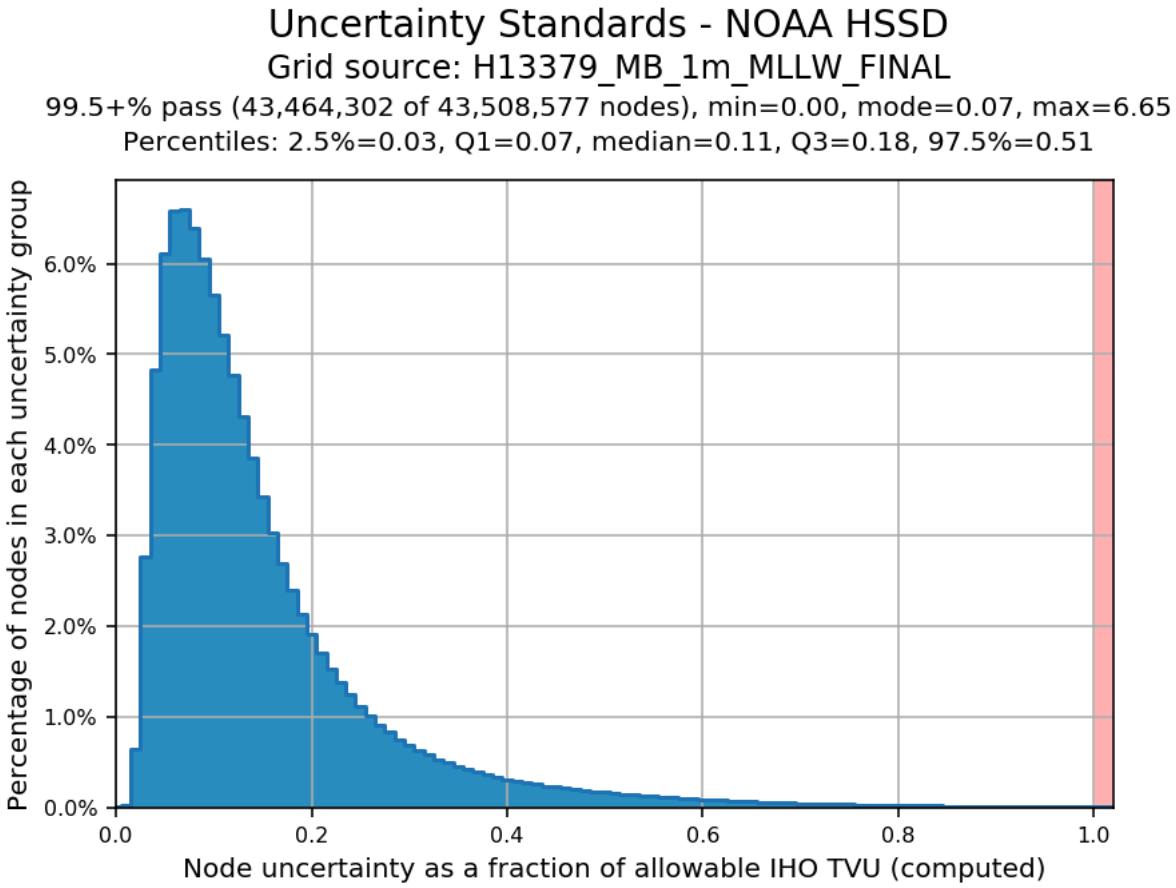

Figure 6: H13379 Finalized 1m Complete Coverage MBES TVU Statistics

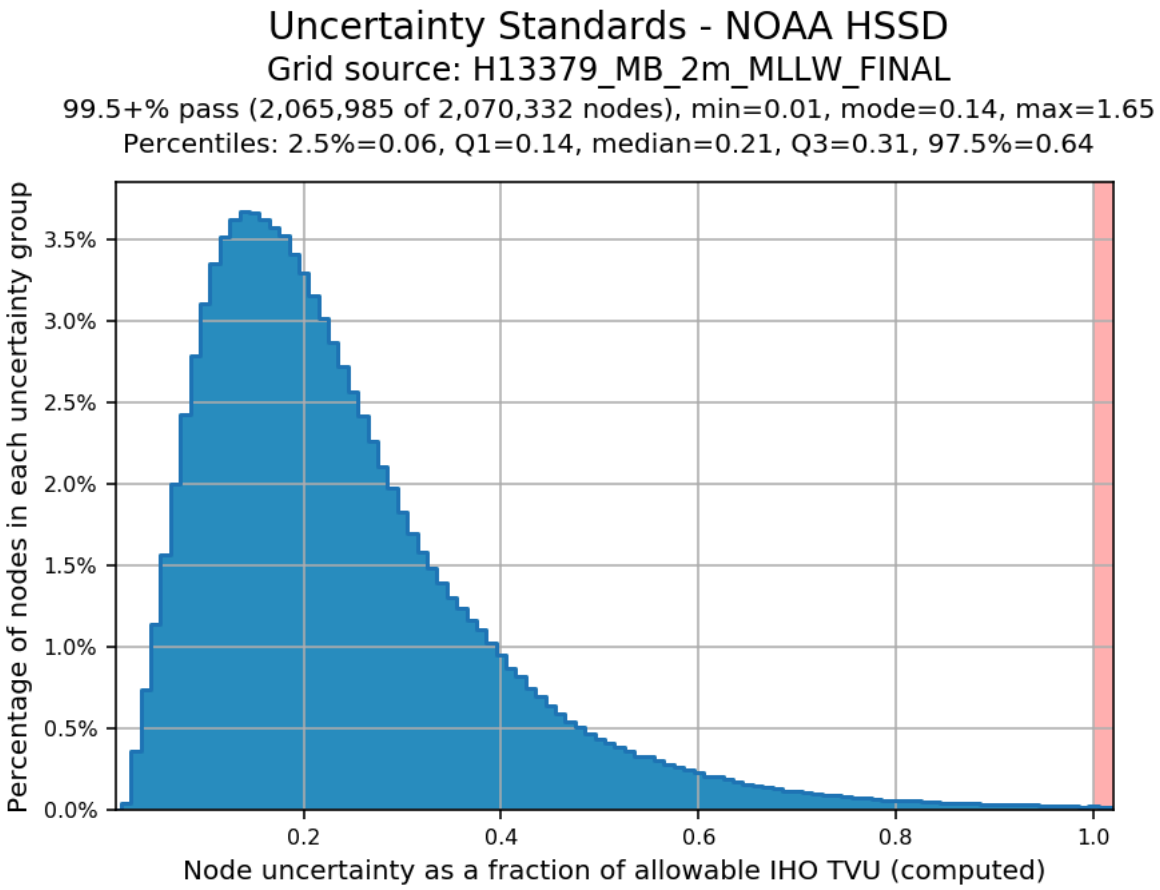

Figure 7: H13379 Finalized 2m Complete Coverage MBES TVU Statistics

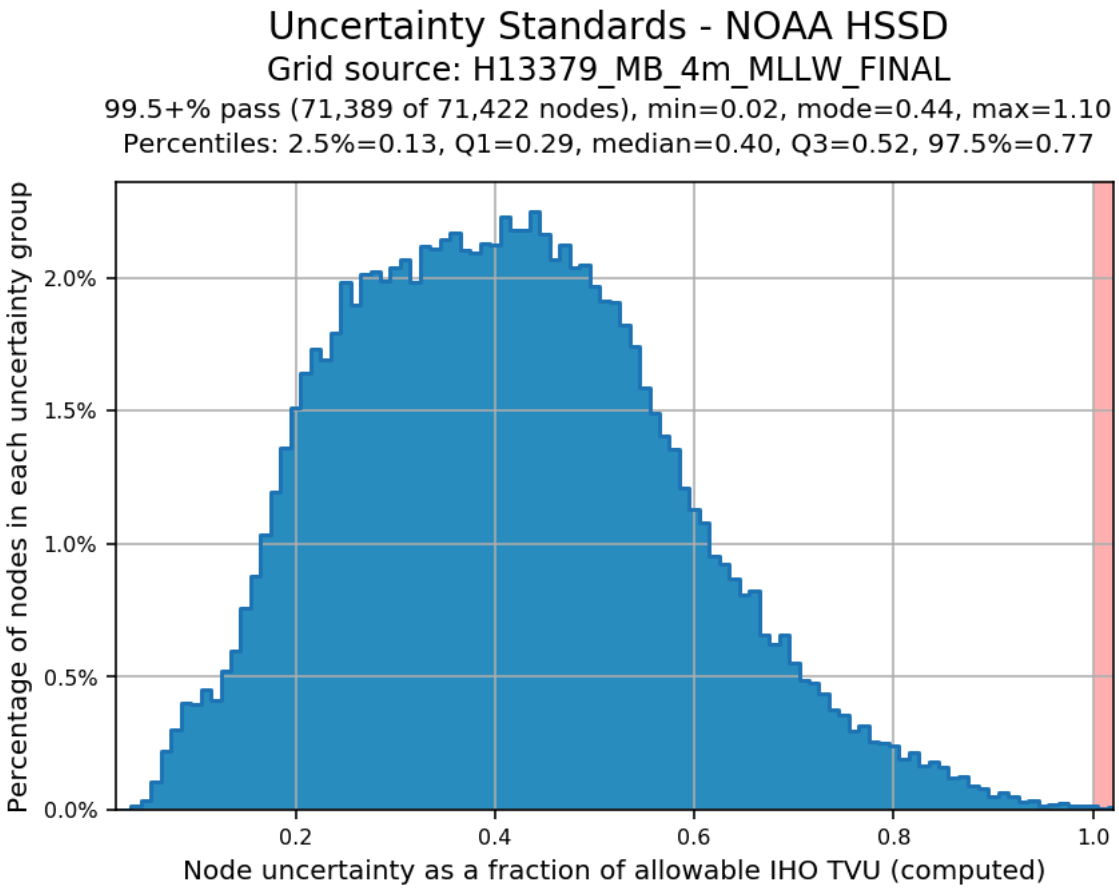

Figure 8: H13379 Finalized 4m Complete Coverage MBES TVU Statistics

B.2.3 Junctions

Depth differences between junctioning surveys were evaluated using the JunctionTrac program, developed in-house by eTrac. For each junction, each CUBE weighted dynamic surface's nodes were exported to an ASCII CSV file where the fields were (Easting, Northing, Depth) for each node. A 1 meter difference surface between the junctioning datasets was also created and exported to an ASCII CSV file where the fields were (Easting, Northing, Diff) for each node. The three ASCII CSV files were then loaded into the JunctionTrac program and junction statistics were computed. A file was also created in this process to locate any nodes from the difference surface that exceed the allowable TVU, which was imported into Qimera and any identified points from JunctionTrac were analyzed. Note: the difference surfaces were created for comparison efforts only and are not submitted as surface deliverables.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13378	1:40000	2020	eTrac	NW

Table 9: Junctioning Surveys

H13378

The junction comparison was performed using all overlapping data between H13379 and H13378. Below is a histogram of junction comparison statistics showing the difference between the junctioning surfaces and allowable TVU as well as difference statistics. 94.5851% of nodes were within allowable TVU.

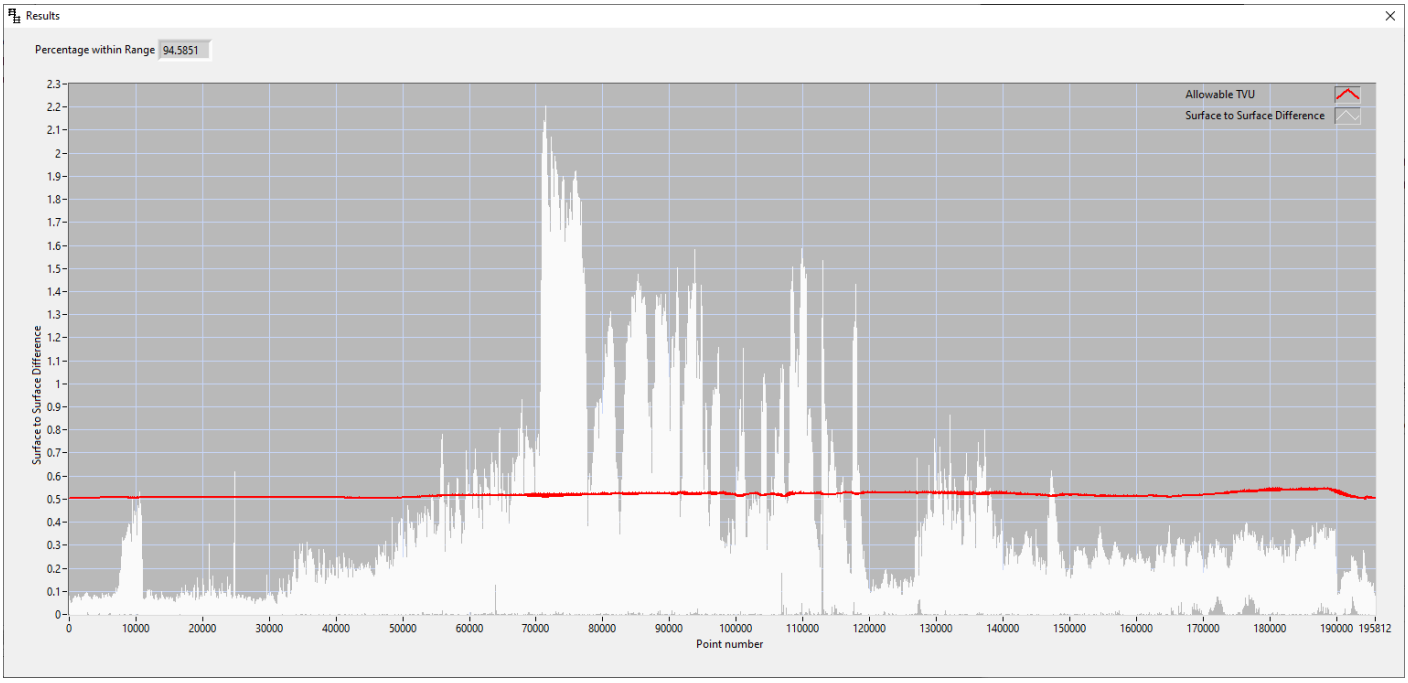

Figure 9: H13379 - H13378 Junction Comparison

Criteria	Number of Nodes	Resulting %
DIFF < 10cm	107873	55.09%
10cm < DIFF < 20cm	46755	23.88%
20cm < DIFF < 30cm	17765	9.07%
DIFF > 30cm	23420	11.96%
Total	195813	100.00%

Figure 10: H13379 - H13378 Difference 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: SVP casts were generally taken every 2 hours. Occasionally casts would exceed a 2 hour frequency, however would never exceed a 4 hour frequency.

On R/V 505, R/V Rapid, and R/V Spectrum casts were applied in QPS Qinsy acquisition software at the time of the cast. Surface SVP measured at 1Hz was compared to surface speed from the current profile in realtime. If the surface velocity comparison was in excess of 2m/s at any time during survey operations, a new cast was taken.

Surface sound speeds were compared in realtime and profile to profile for each cast on the vessel. Additionally, the processor reviewed profiles in Qimera to remove spurious readings within a cast, compare day-to-day casts, and to check distribution over the surveyed area, in order to better understand trends for efficient acquisition planning.

B.2.8 Coverage Equipment and Methods

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

B.2.9 Data Density Evaluation

In order to determine if the density of the data met the specified 5 soundings per node, data density was evaluated using DensityTrac in the AmiTrac program, developed in-house by eTrac. Each finalized CUBE weighted dynamic surface's nodes were exported to a BBH file. The BBH file was then loaded into the DensityTrac program and density statistics were computed.

For H13379 the following percentages represent the results of the density query:

Complete Coverage MBES (Finalized 1m CUBE weighted Dynamic Surface) = 99.926% of nodes are composed from at least 5 soundings.

Complete Coverage MBES (Finalized 2m CUBE weighted Dynamic Surface) = 99.995% of nodes are composed from at least 5 soundings.

Complete Coverage MBES (Finalized 4m CUBE weighted Dynamic Surface) = 100% of nodes are composed from at least 5 soundings.

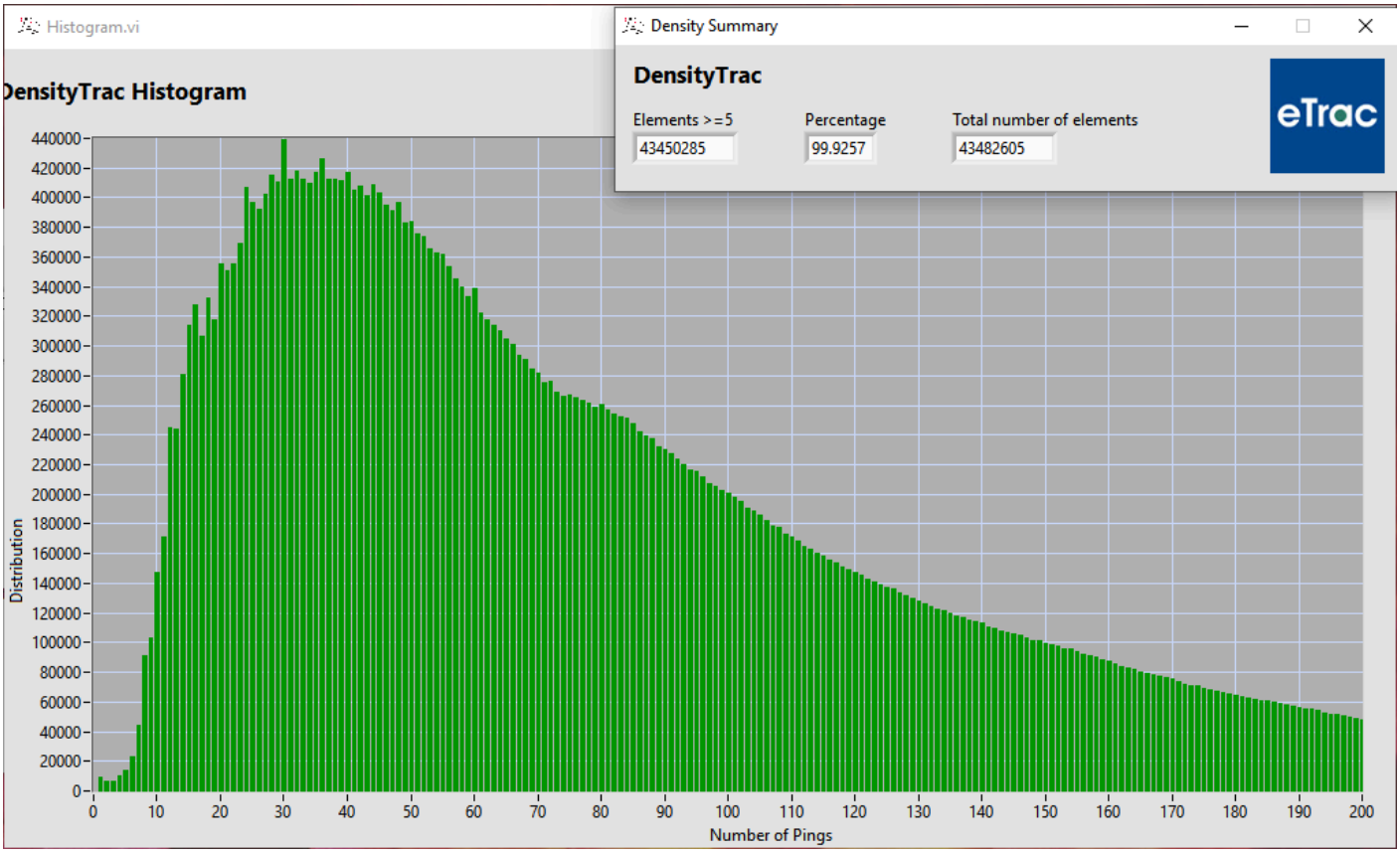

Figure 11: H13379 Finalized 1m Complete Coverage MBES Density Distribution

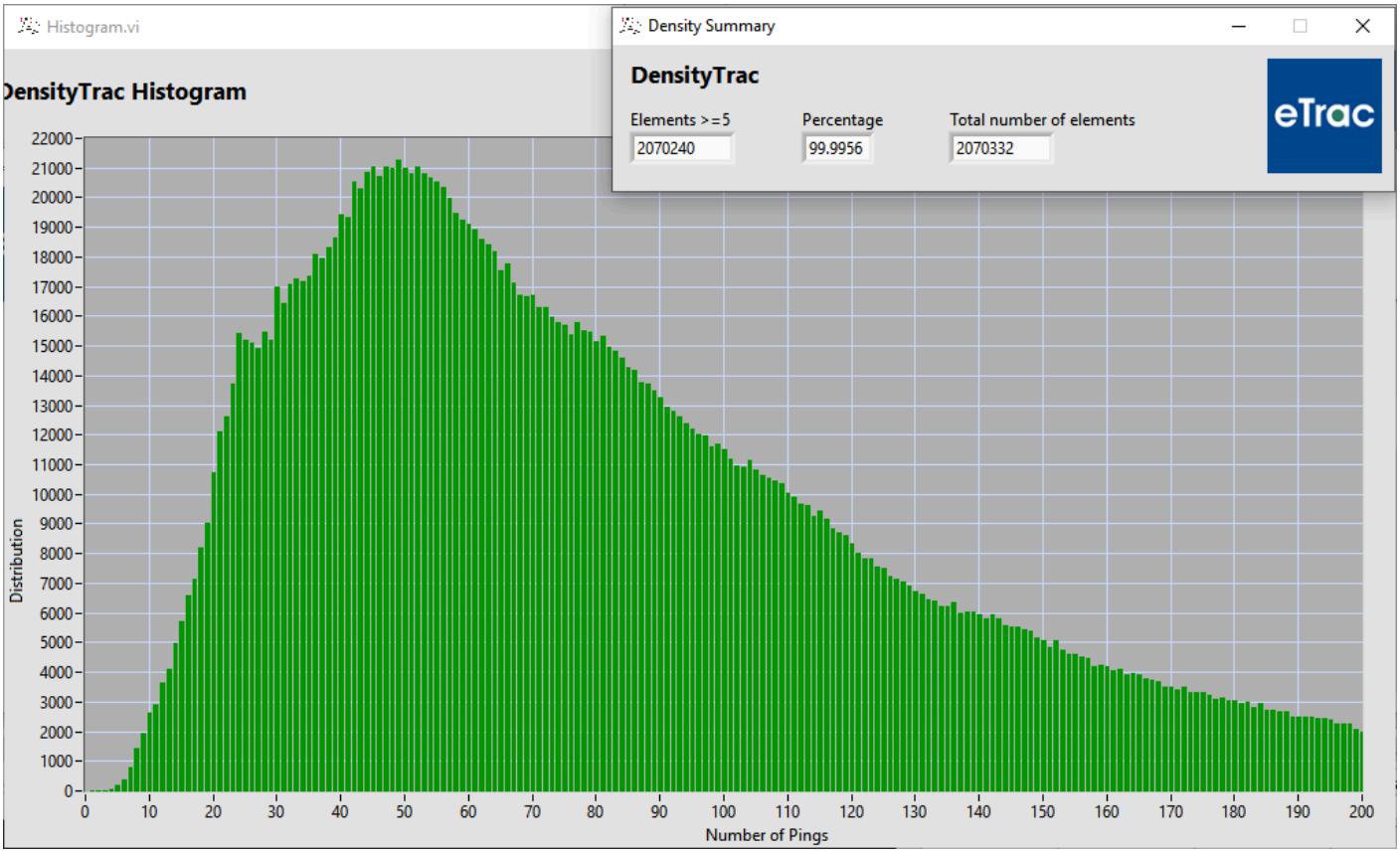

Figure 12: H13379 Finalized 2m Complete Coverage MBES Density Distribution

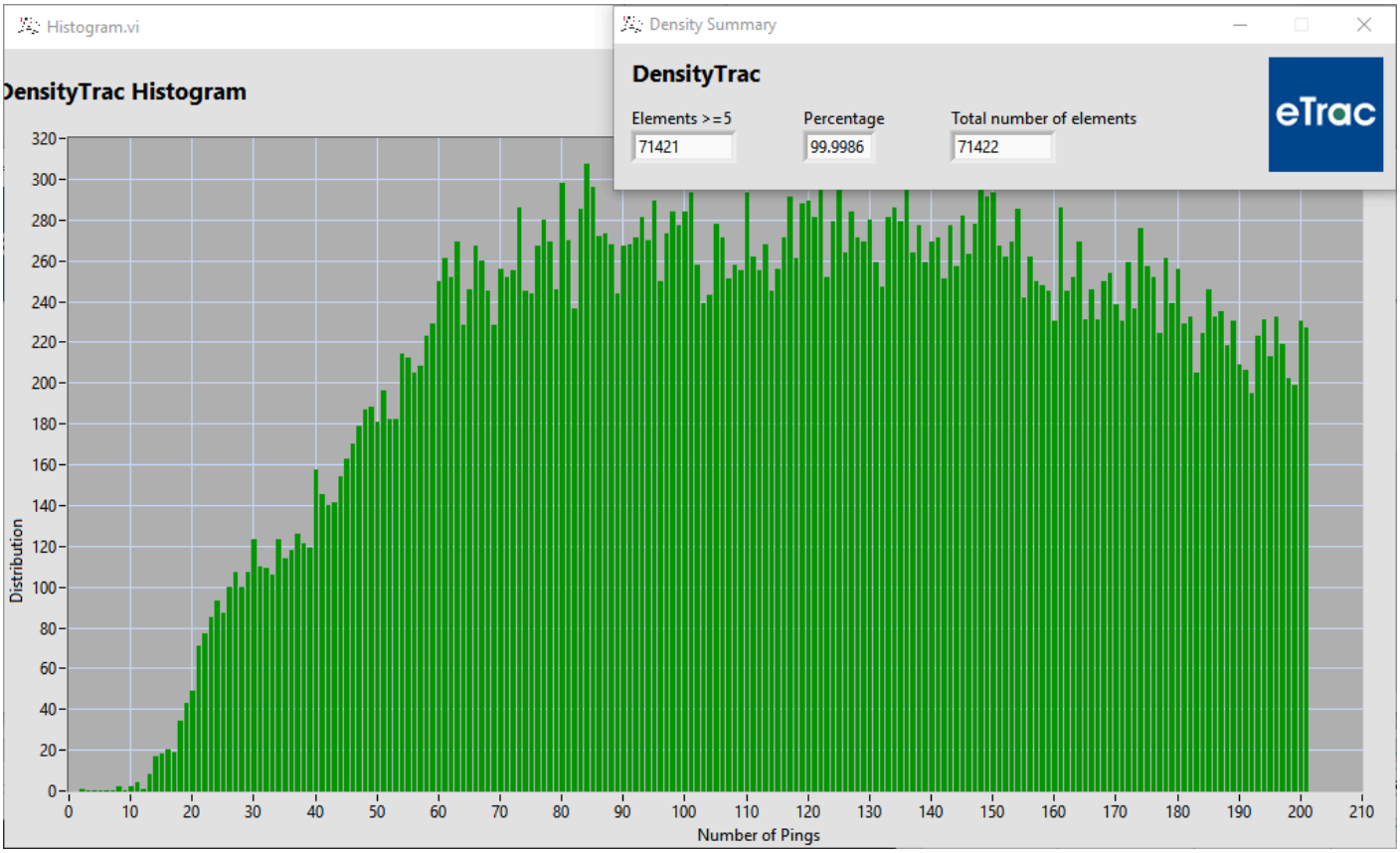

Figure 13: H13379 Finalized 4m Complete Coverage MBES Density Distribution

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 data were collected throughout the survey and are retained in the raw DB files. Every effort was made in the field to collect quality backscatter data while maintaining the primary mandate of high quality bathymetric data. While no processing or analysis of backscatter was required, eTrac verified coverage and general quality of the backscatter data collected. A beam intensity window was monitored in Qinsy during acquisition to ensure backscatter data collection. Raw backscatter data were viewed in QPS FMGeocoder to further confirm collection criteria had been met. Shown below is an example of the unprocessed backscatter mosaic from H13379 DN182 (R/V Rapid).

Figure 14: Raw Backscatter from R/V Rapid (DN182)

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile Version 2020.

Feature Object Catalog, NOAA Profile Version 2020 was used only in CARIS. Qimera was used as the primary processing software.

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
H13379_MB_1m_MLLW_Final	BAG	1 meters	0 meters - 20 meters	NOAA_1m	Complete MBES
H13379_MB_2m_MLLW_Final	BAG	2 meters	18 meters - 40 meters	NOAA_2m	Complete MBES
H13379_MB_4m_MLLW_Final	BAG	4 meters	36 meters - 62.76 meters	NOAA_4m	Complete MBES

Table 10: Submitted Surfaces

A 1m, 2m and 4m surface are provided meeting complete coverage MBES with backscatter specifications for H13379.

A parent surface of the 1m surface is also provided in the Surfaces_Mosaics Folder in this delivery drive package.

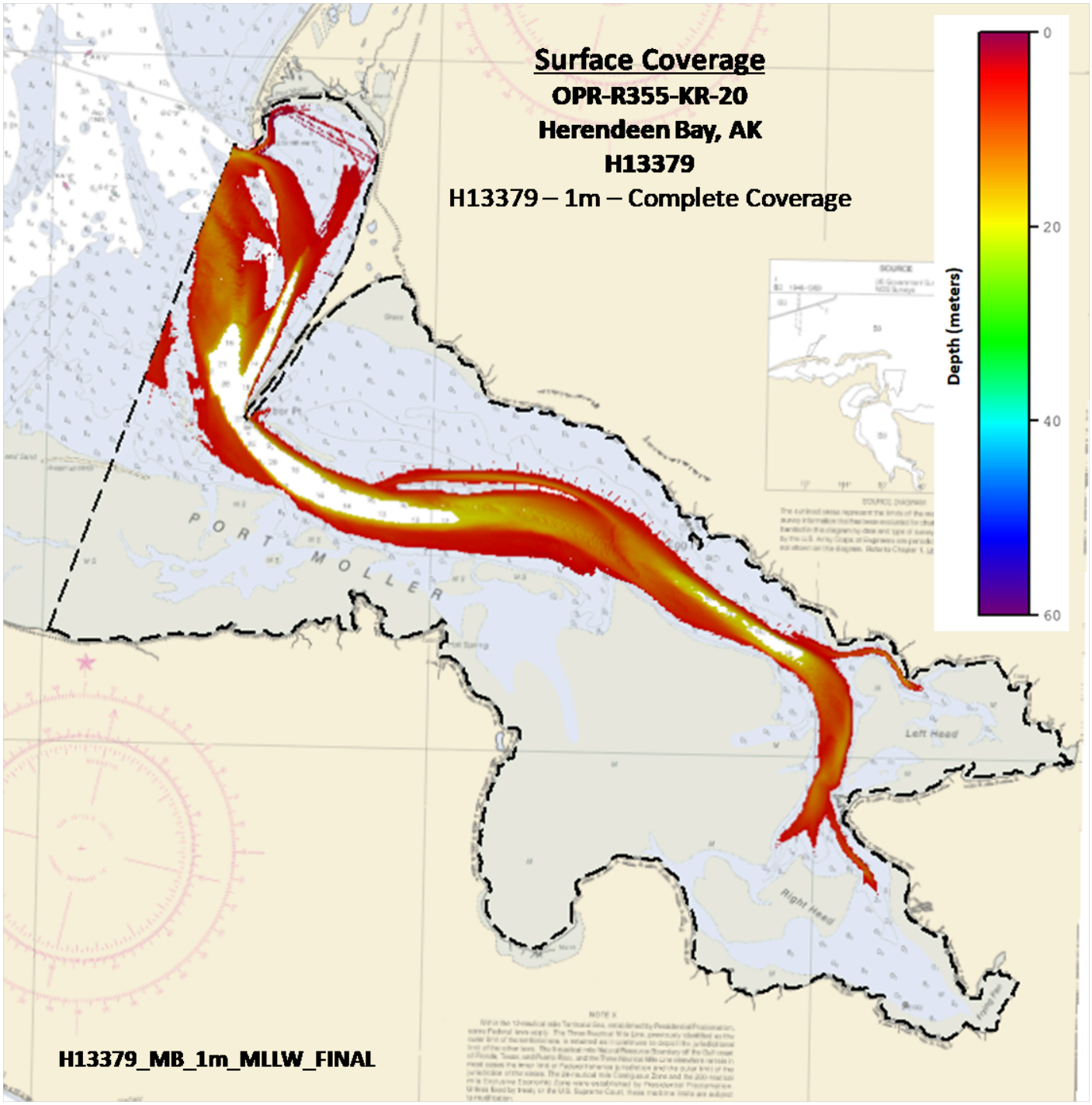

Figure 15: H13379 Finalized 1m CUBE weighted Dynamic Surface Coverage

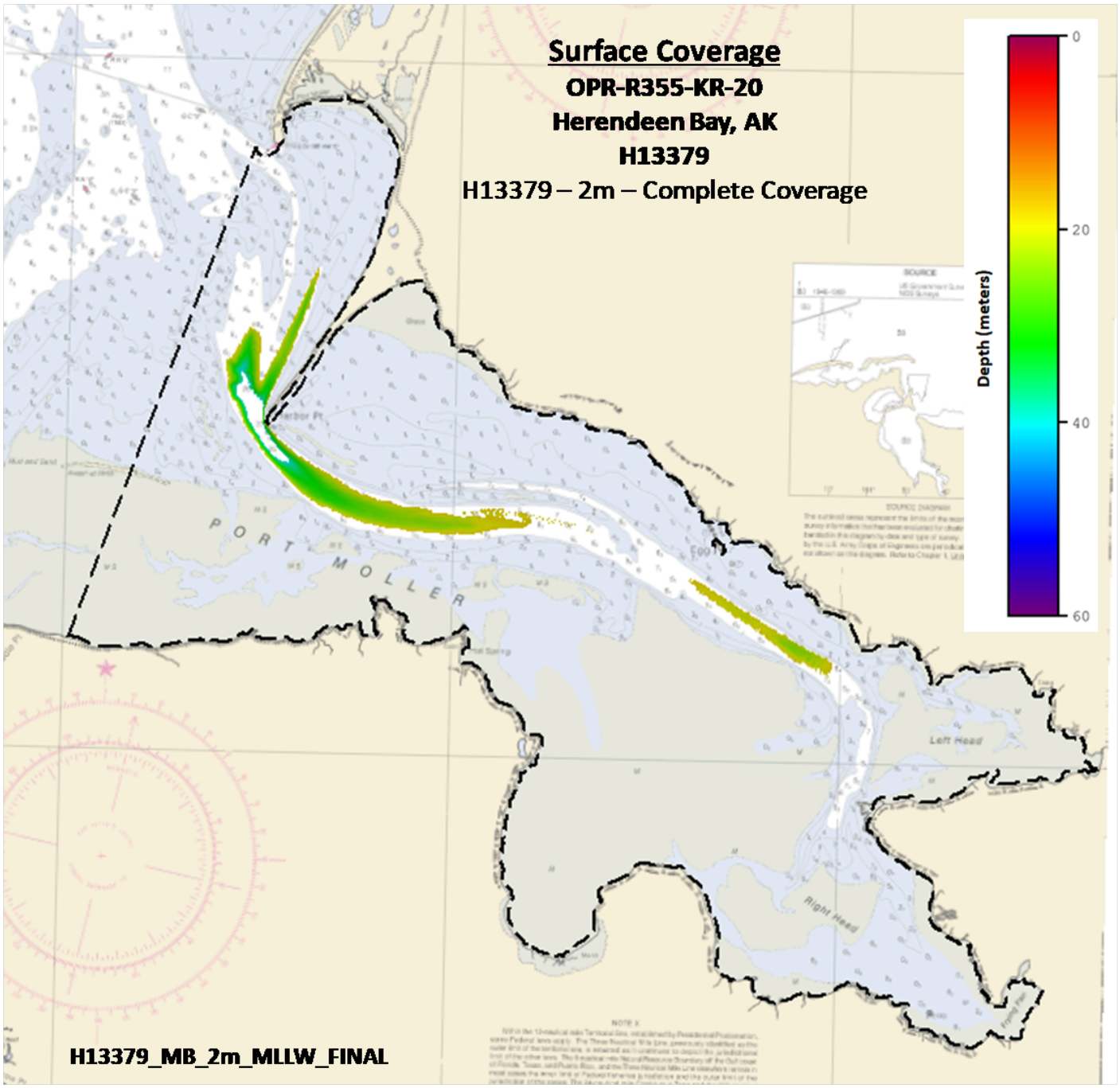

Figure 16: H13379 Finalized 2m CUBE weighted Dynamic Surface Coverage

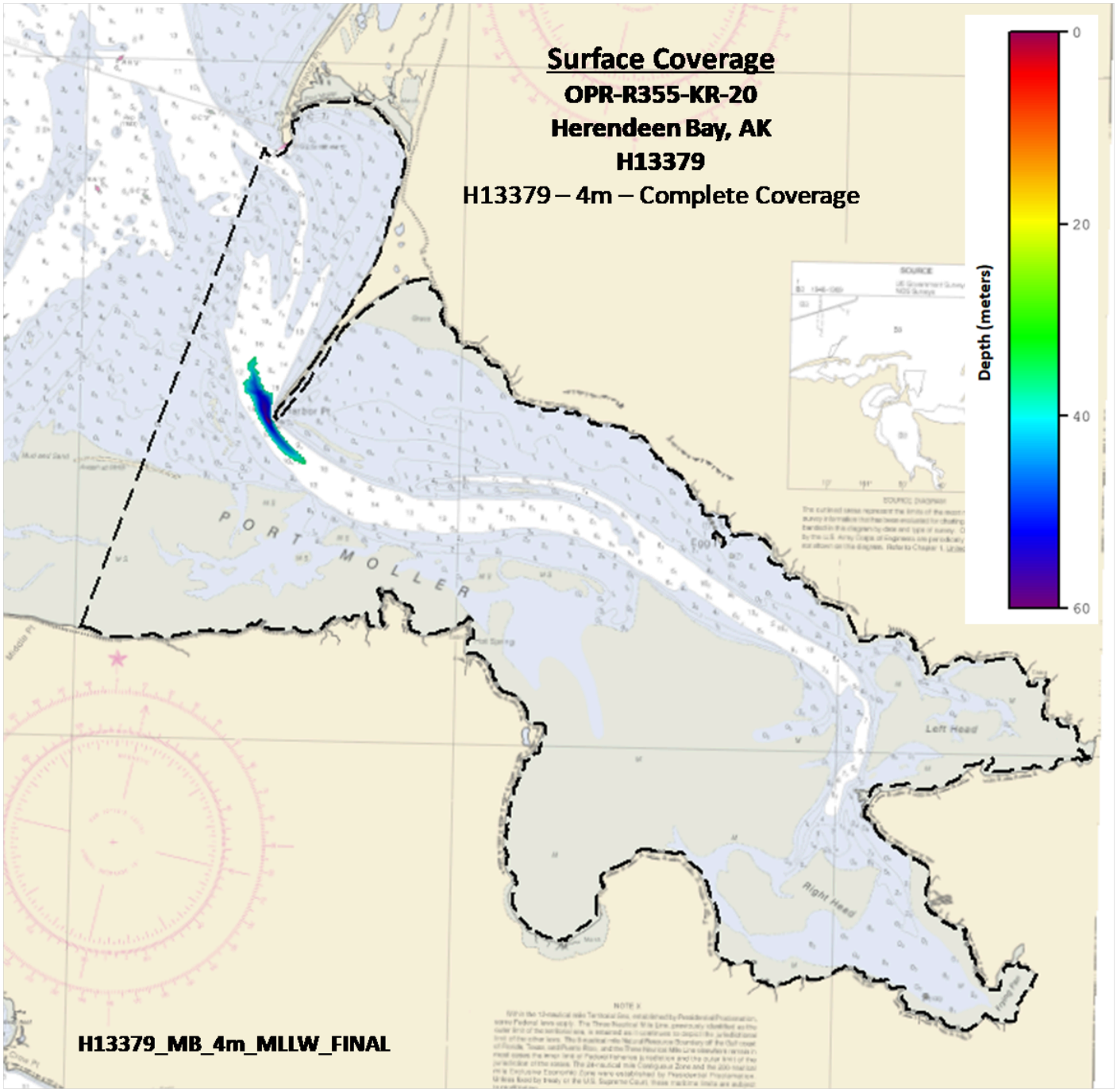

Figure 17: H13379 Finalized 4m CUBE weighted Dynamic Surface Coverage

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

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	OPR-R355-KR-20_ERTDM_WGS84-MLLW_04142020.qgfvom

Table 11: ERS method and SEP file

In order to reference soundings to Mean Low Low Water Datum, a VDatum separation model was applied to the Qinsy DB files via a separation file in the acquisition software.

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 4.

The following PPK methods were used for horizontal control:

- RTX

Applanix PosPac MMS was utilized to post process realtime positioning data utilizing Trimble's PP-RTX implementation of Trimble CenterPoint RTX to create a Smoothed Best Estimate of Trajectory (SBET).

RTK

GNSS satellite corrections were received on each vessel using the G2+ carrier signal from the Marinestar Global Correction System maintained by Fugro.

D. Results and Recommendations

D.1 Chart Comparison

A chart comparison was conducted for H13379 using Qimera and CARIS HIPS and SIPS. Survey data were compared against the largest scale ENC to accomplish the chart comparison. Details of the ENC used are listed below.

US4AK5GM, scale: 80000, edition: 6.2, update application date: 12/27/2017, issue date: 07/24/2020

The results of the chart comparison are listed below.

Shoal and Hazardous Features: Throughout survey operations sounding comparisons between the charted depths and the surveyed depths were analyzed to identify depth discrepancies. Using the 1 meter CUBE weighted Dynamic surface, soundings were generated in CARIS HIPS and SIPS. Soundings were displayed against the charted soundings and a visual comparison was made. An example image of the generated soundings overlaid on the chart is included below. From this methodology, two DtoNs were submitted for this survey. The DtoNs were regions where the surveyed data were signficantly shoaler than the charted soundings.

Charted Features: For features that were addressed, the surveyed features generally agreed with the charted features. Additional details can be found in the FFF.

Uncharted Features: There were no additional uncharted features.

Channels: There were no charted maintained channels within the survey boundary. The unnmaed charted channel in H13379 is not a maintained channel and does not have a controlled depth.

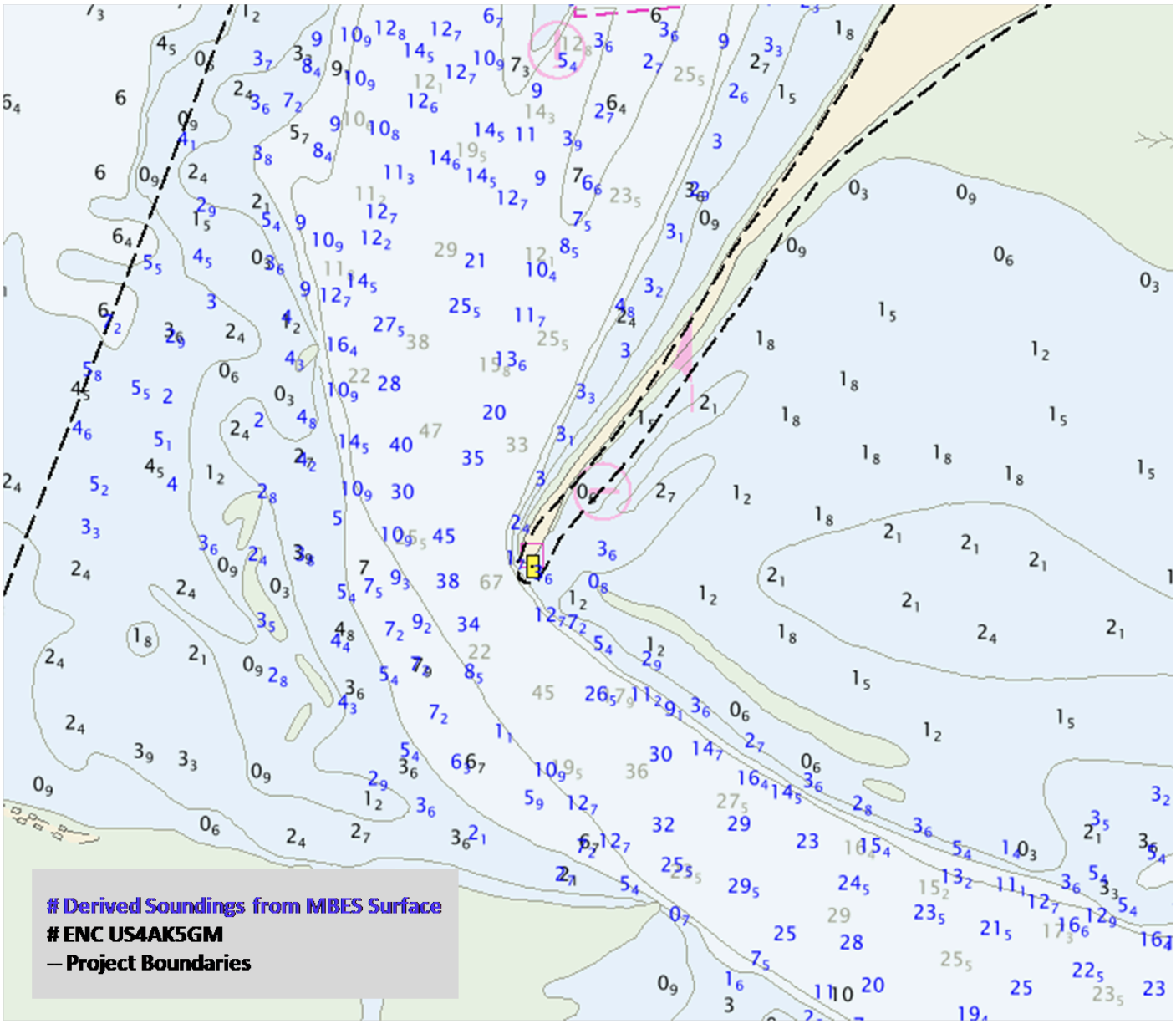

Figure 18: Generated Soundings used for Chart Comparison

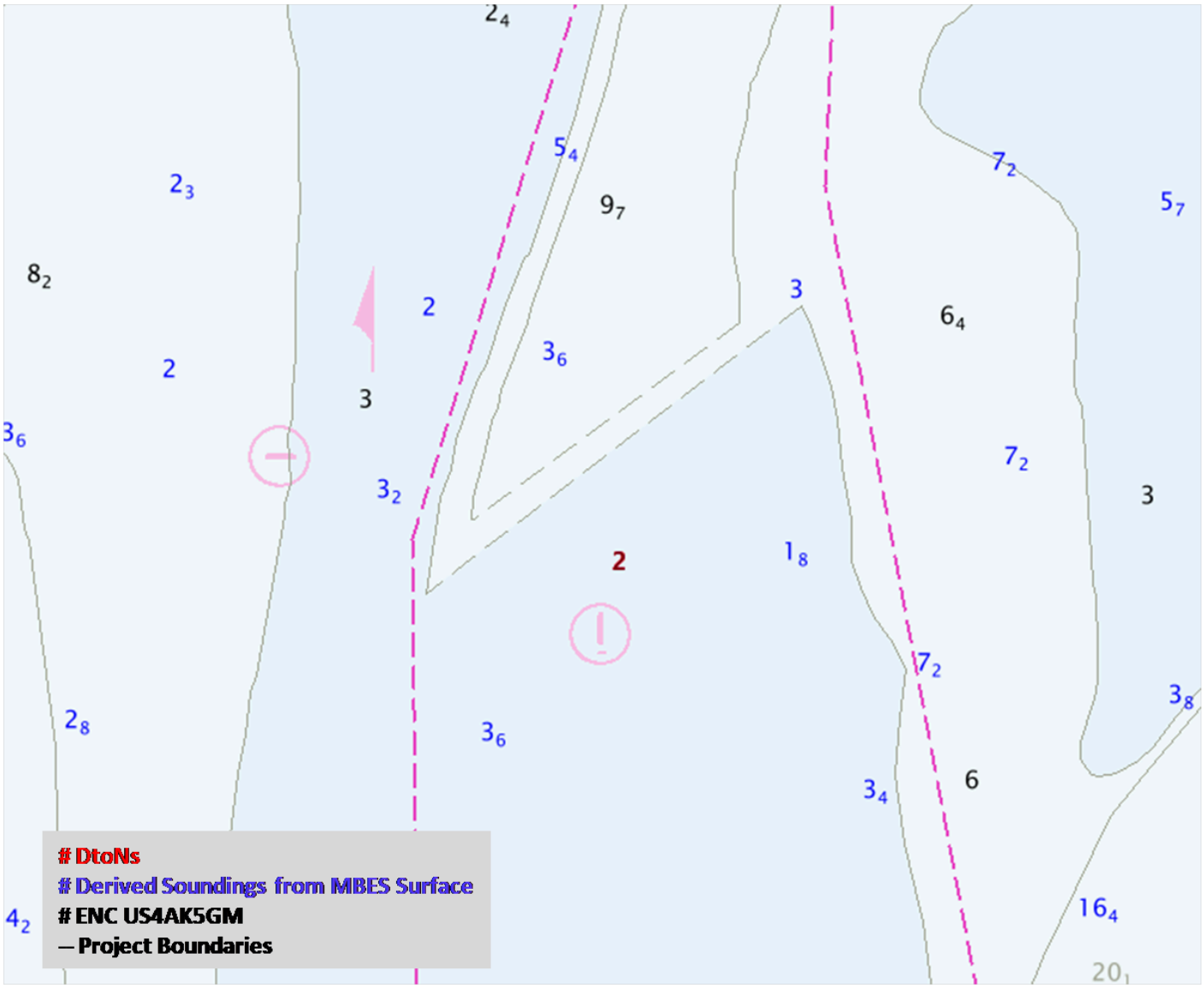

Figure 19: Generated Soundings Submitted as Dangers (example 1)

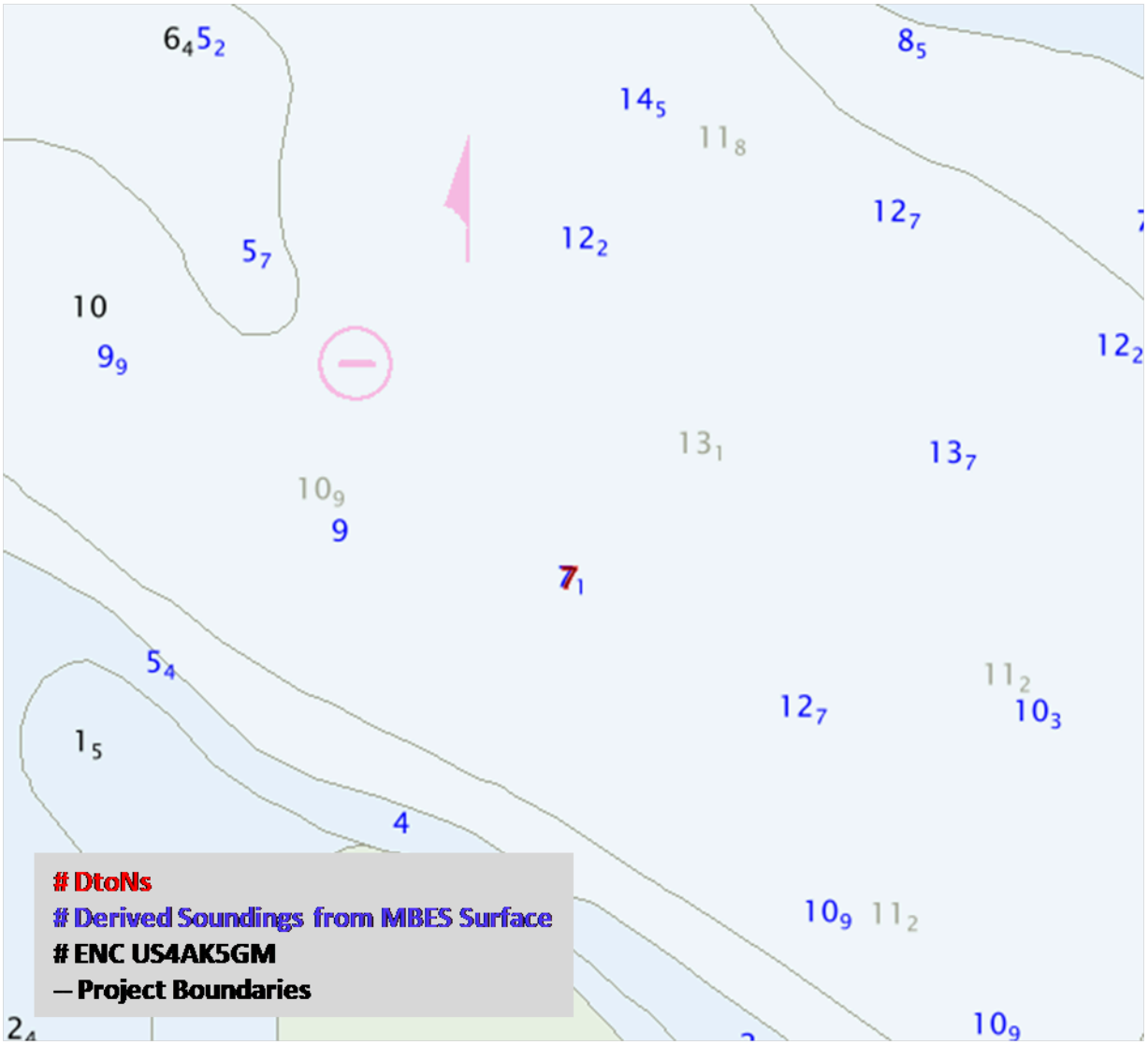

Figure 20: Generated Soundings Submitted as Dangers (example 2)

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
US4AK5GM	1:80000	6	12/27/2017	07/24/2020

Table 12: Largest Scale ENCs

D.1.2 Shoal and Hazardous Features

There were 2 DtoNs found in H13379, and added to the Final Feature File (FFF). Each feature in the FFF has been given a unique identifier in the "userid" field of the .000 S-57 file (format 79XXX). Refer to the FFF for determinations and recommendations of each feature. The DtoNs were submitted in the following Danger to navigation reports: H13379_DtoN_Report, H13379_DtoN

D.1.3 Charted Features

There were 60 charted features assigned to H13379. The assigned features are retained in the Final Feature File (FFF). Each feature in the FFF has been given a unique identifier in the "userid" field of the .000 S-57 file (format 79XXX). Refer to the FFF for determinations and recommendations of each feature.

D.1.4 Uncharted Features

No new features were found in H13379. Note: DtoNs are not included in the number of new features in this section. DtoNs can be found separately in section D.1.2.

D.1.5 Channels

The unnamed charted channel in H13379 is not a maintained channel and does not have a controlled depth. Charted soundings in the channel were compared against soundings derived from our 1m surface as described in section D.1. In discussion with many local fisherman and operators at Peter Pan Seafoods in Port Moller, the channel shifts regularly and caution should be taken.

D.2 Additional Results

D.2.1 Aids to Navigation

No AtoNs were assigned in H13379.

D.2.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.2.3 Bottom Samples

5 bottom samples were obtained in accordance with section 7.1 of the HSSD 2020 in areas designated by the field through discussions with our COR. Detailed information and images of the bottom samples are located

in the Final Feature FIle (FFF). Each bottom sample has been given a unique identifier in the "userid" field of the .000 S-57 file (format CX).

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

Dynamic sandwaves and sediment movement was observed in H13379. Examples of the observed movement are shown in the image below. Note: In some instances, flier finder occasionally flags areas where sediment movement was observed.

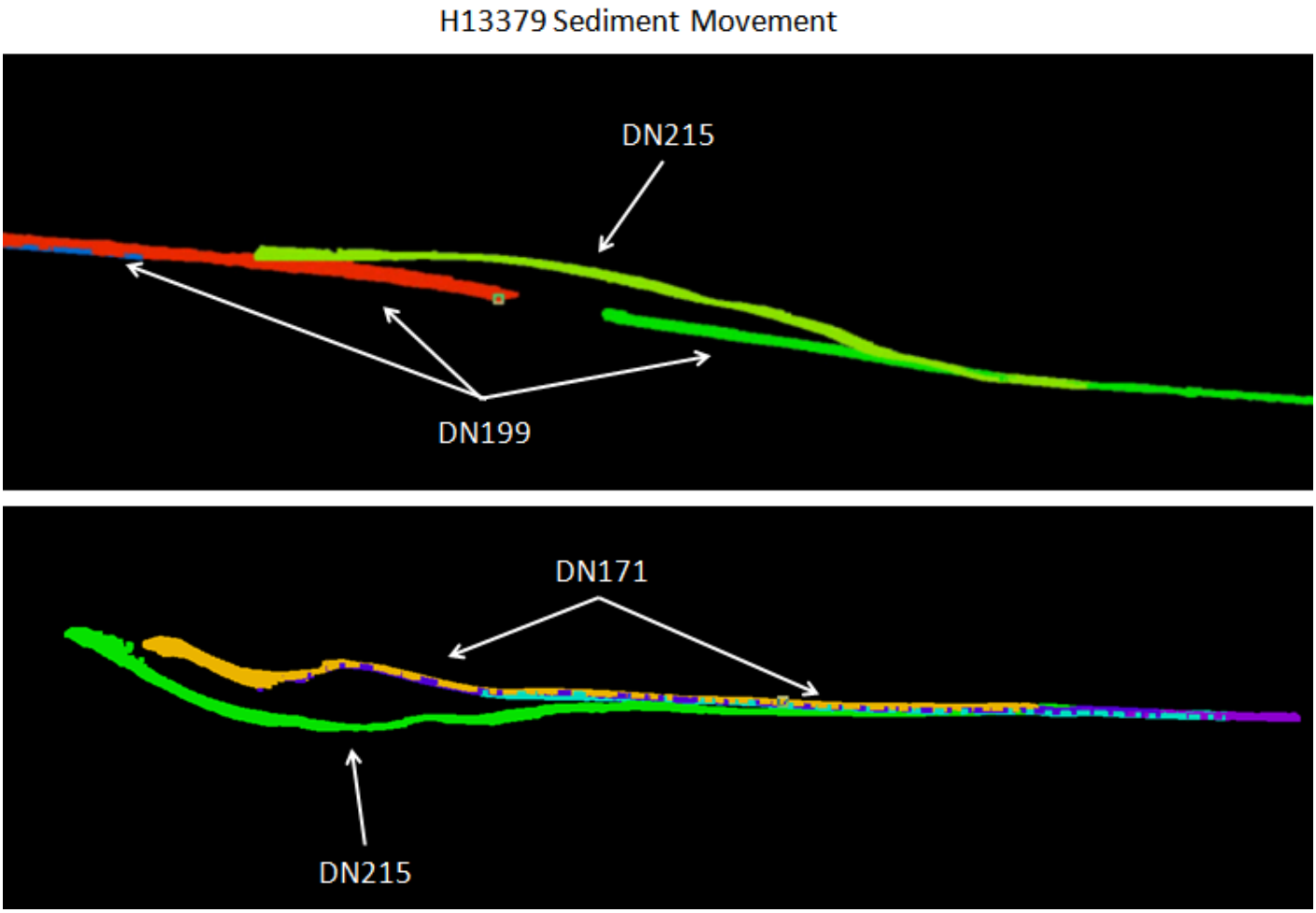

Figure 21: Dynamic Sediment Movement

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
David Neff	Chief of Party	10/20/2020	David Neff Digitally signed by David Neff DN: C=US, E=david@etracinc.com, O=eTrac Inc., CN=David Neff Date: 2020.10.20 15:08:22-07'00'

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