H13024

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H13024

LOCALITY

State(s):	Alaska
General Locality:	Cold Bay
Sub-locality:	King Cove

2017

CHIEF OF PARTY
Benjamin Evans, CDR/NOAA

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Date:

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H13024

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:	**Cold Bay**
Sub-Locality:	**King Cove**
Scale:	**40000**
Dates of Survey:	**07/16/2017 to 08/28/2017**
Instructions Dated:	**06/07/2017**
Project Number:	**OPR-P377-RA-17**
Field Unit:	**NOAA Ship *Rainier***
Chief of Party:	**Benjamin Evans, CDR/NOAA**
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:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via http://www.ncei.noaa.gov/.

Table of Contents

List of Tables

List of Figures

Descriptive Report to Accompany Survey H13024

Project: OPR-P377-RA-17

Locality: Cold Bay

Sublocality: King Cove

Scale: 1:40000

July 2017 - August 2017

NOAA Ship *Rainier*

Chief of Party: Benjamin Evans, CDR/NOAA

A. Area Surveyed

The survey area is referred to as "King Cove" (sheet 1) within the Project Instructions. The area encompasses approximately 22 square nautical miles extending from Vodapoini Pt through King Cove Harbor and east past Bold Cape. Included within the survey is an area that requires object detection coverage as shown in the figure below; it coincides with the extents of ENC US5AK55M.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
55° 3' 39.94" N 162° 25' 20.89" W	54° 59' 32.5" N 162° 7' 12.72" W

Table 1: Survey Limits

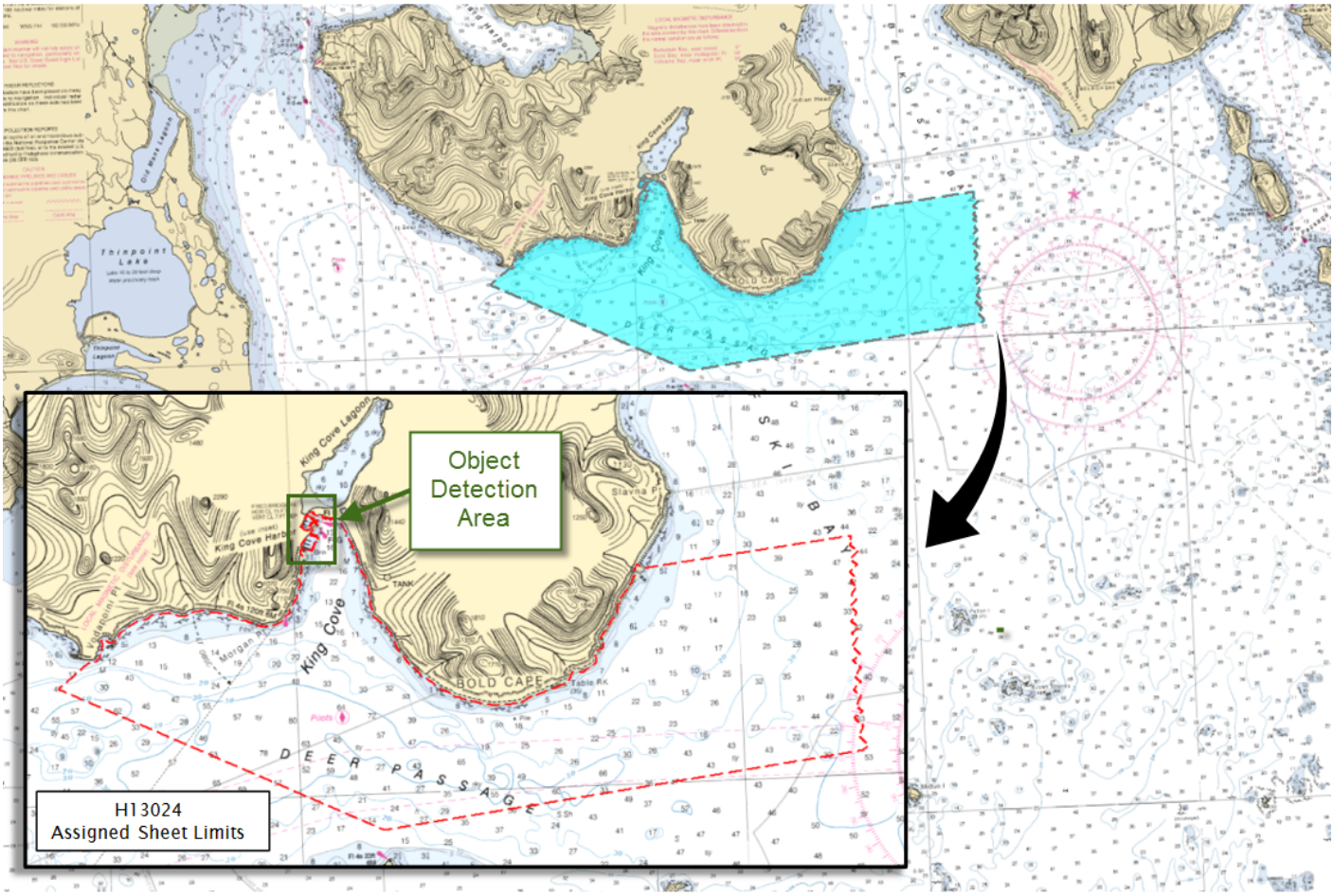


Figure 1: H13024 assigned survey area including object detection coverage area.

Survey limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

This navigationally significant area from Unga Strait to the northeast and the north side of Sanak Island to the southwest provides the much needed and only protected waters for vessels transiting from areas to the east in the Gulf of Alaska and Shelikof Strait to the very busy Unimak Passage which is the gateway to the Bering Strait utilized by cargo, fishing, and trans-pacific vessels. This passage and area is specifically utilized by the fishing fleet in Bristol Bay and the Bering Sea and the tug and tow traffic delivering goods to the Aleutian Islands, western Alaska, and the Arctic.The village of King Cove is the site of one of the largest operating canneries in North America, owned by Peter Pan Seafoods, Inc., and processes a variety of catch year round. This project area was last surveyed between 1911 and 1941. Survey data from this project is intended to supersede all prior survey data in the common area.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data were acquired within assigned survey limits as required in the Project Instructions and HSSD unless otherwise noted in this report.

Pydro QC Tools 2 Grid QA was used to analyze H13024 multibeam echosounder (MBES) data density. The submitted H13024 variable-resolution (VR) surfaces met 2017 HSSD density requirements.

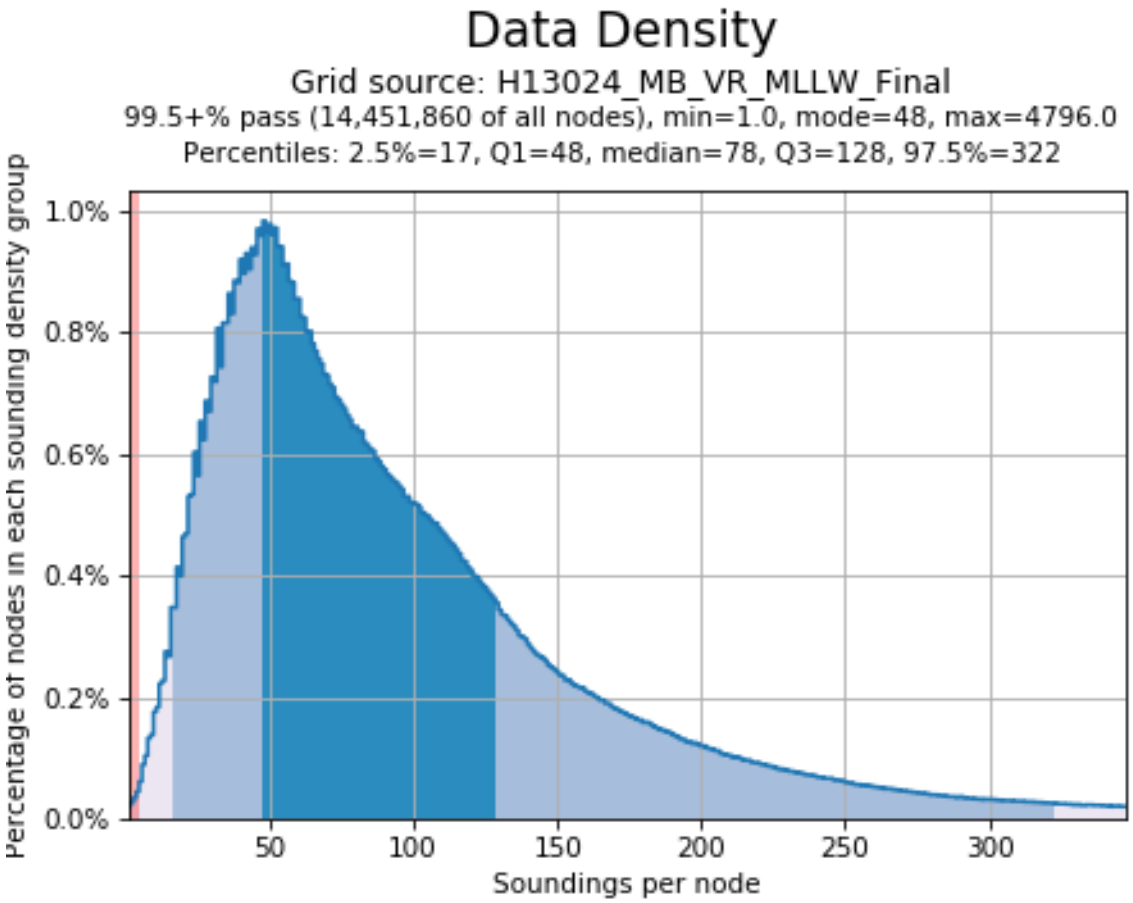


Figure 2: Pydro derived histogram plot showing HSSD density compliance of H13024 finalized variable-resolution complete coverage MBES data.

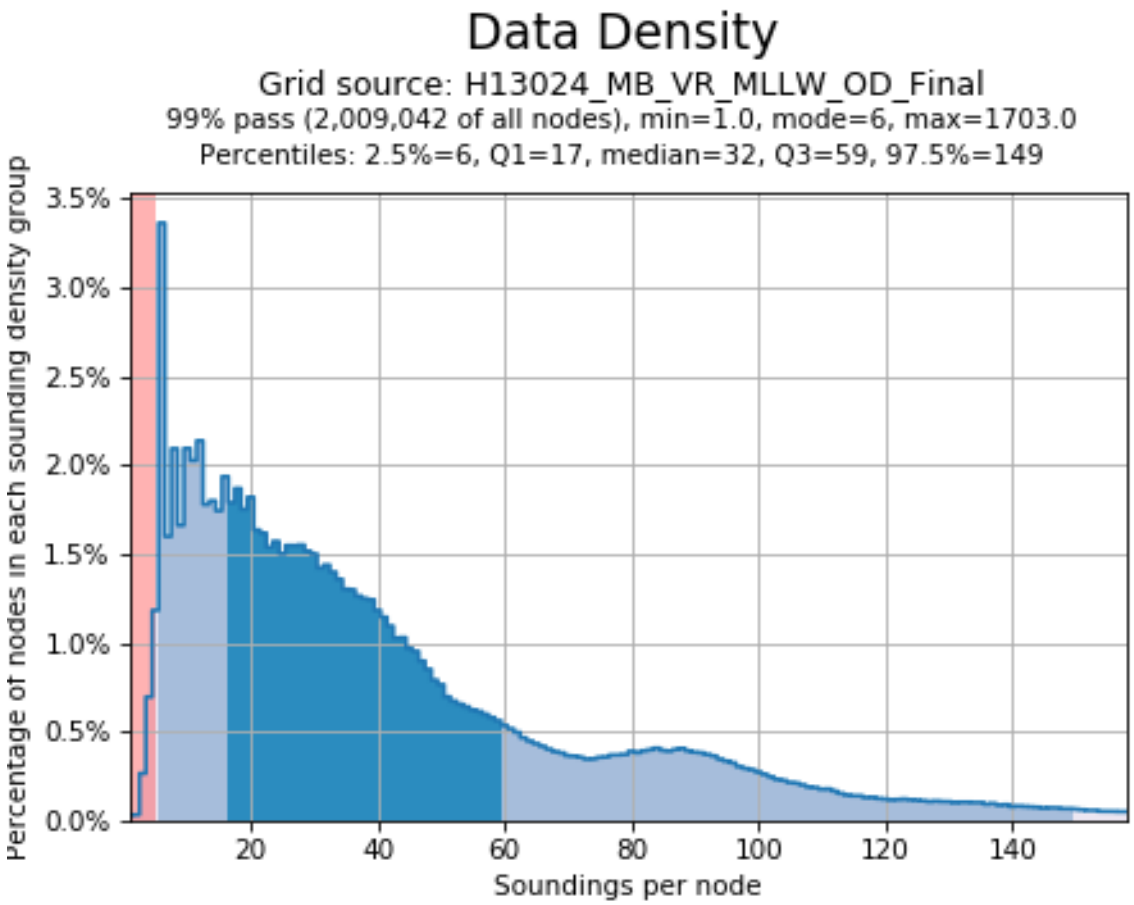


Figure 3: Pydro derived histogram plot showing HSSD density compliance of H13024 finalized variable-resolution object detection MBES data.

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 Coverage (refer to HSSD Section 5.2.2.3)
Extents of 1:2500 US5AK55M within H13024 King Cove	Object Detection Coverage (refer to HSSD Section 5.2.2.2)

Table 2: Survey Coverage

Complete multibeam echosounder (MBES) coverage was acquired to the inshore limit of hydrography, the Navigable Area Limit Line (NALL). In areas where survey coverage did not reach the 4-meter depth contour nor the assigned sheet limits, it was due to the survey vessel reaching the inshore extent of safe navigation as shown in the figure below. These areas were generally located very near shore, were subject to

dangerous wave action and other hazards.

Despite a thorough cleaning of the MBES data, QC Tools Flier Finder identified 11 fliers in the finalized VR grid. All 11 remaining fliers have been determined to be legitimate data in areas of high relief.

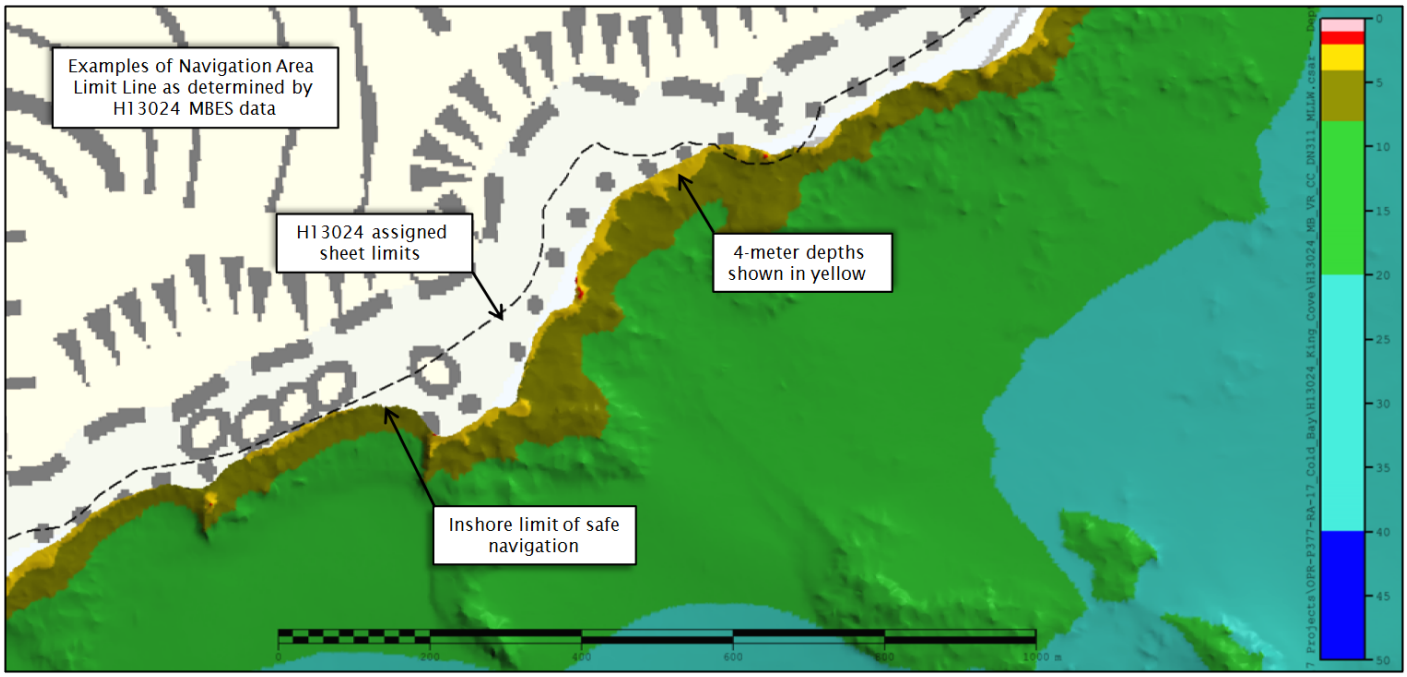


Figure 4: Examples of H13024 NALL determination.

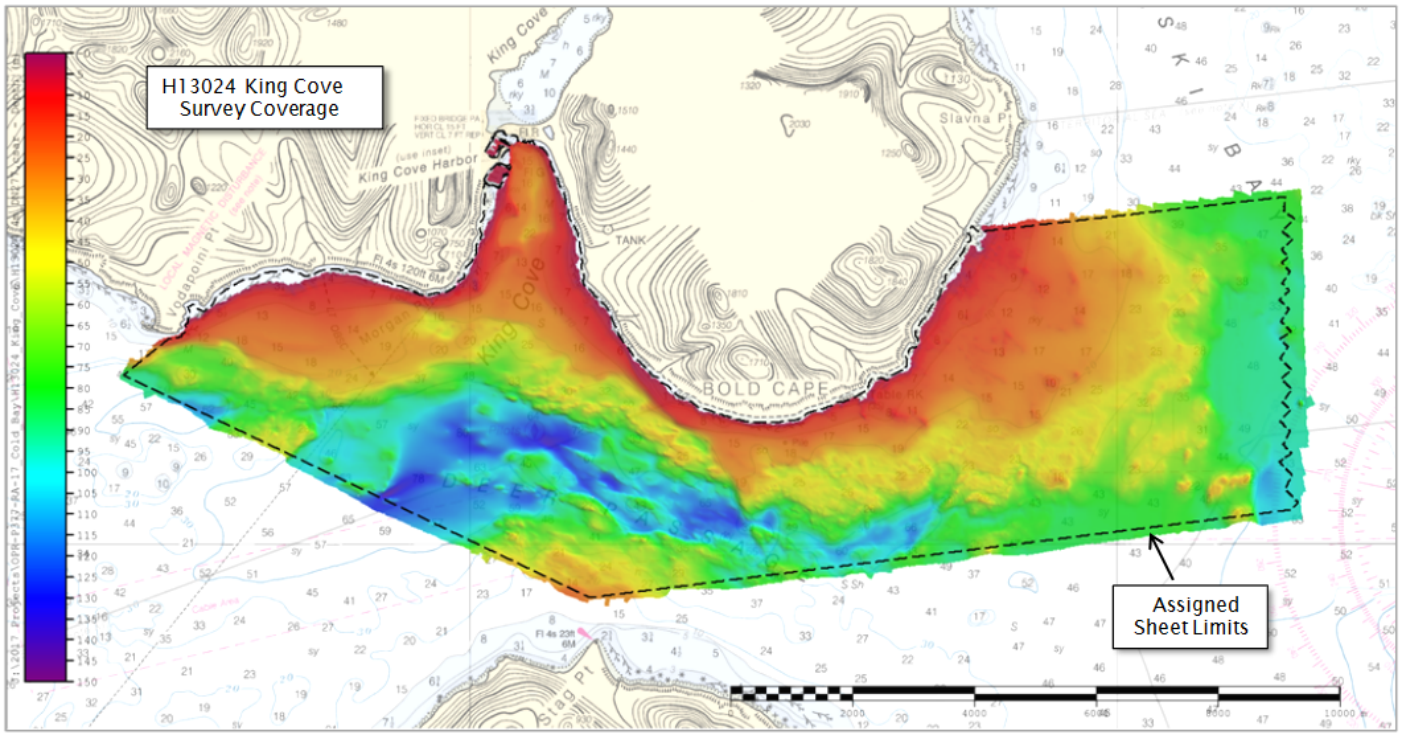


Figure 5: H13024 MBES coverage and assigned survey limits (Chart 16549).

A.6 Survey Statistics

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

	HULL ID	*2801*	*2802*	*2803*	*2804*	*S221*	*Total*
LNM	SBES Mainscheme	0	0	0	0	0	0
	MBES Mainscheme	112.2	119.5	5.3	109.6	111.3	457.9
	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	0	0	31.8	0	0	31.8
	Lidar Crosslines	0	0	0	0	0	0
Number of Bottom Samples							4
Number Maritime Boundary Points Investigated							0
Number of DPs							39
Number of Items Investigated by Dive Ops							0
Total SNM							23.19

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
07/15/2017	196
07/16/2017	197

Survey Dates	Day of the Year
07/17/2017	198
07/18/2017	199
08/16/2017	228
08/17/2017	229
08/18/2017	230
08/19/2017	231
08/20/2017	232
08/22/2017	234
08/25/2017	237
08/29/2017	241

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	*S221*	*2801*	*2802*	*2803*	*2804*	*1905*	*1907*
LOA	70.4 meters	8.8 meters	8.8 meters	8.8 meters	8.8 meters	5.7 meters	5.7 meters
Draft	4.7 meters	1.1 meters	1.1 meters	1.1 meters	1.1 meters	0.35 meters	0.35 meters

Table 5: Vessels Used

Figure 6: NOAA Ship RAINIER near King Cove with survey launches 2801 and 2804 in view.

All data for H13024 were acquired by NOAA Ship RAINIER and survey launches 2801, 2802, 2803 and 2804. The vessels acquired depth soundings, backscatter imagery and sound speed profiles. Shoreline feature verification was conducted from RAINIER skiffs 1905 and 1907.

B.1.2 Equipment

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

Manufacturer	Model	Type
Kongsberg	EM710	MBES
Reson	SeaBat 7125 SV2	MBES
Reson	SeaBat 7125-B	MBES
Reson	SVP70 / SVP71	Surface Sound Speed Probes
Applanix	POS-MV V5	Positioning and Attitude System
Sea-Bird Electronics, Inc.	SBE 19plus SEACAT Profiler	Conductivity, Temperature, and Depth Sensor
Odim Brooke Ocean	MVP 200 Moving Vessel Profiler/AML Micro CTD	Sound Speed System

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 6.94% of mainscheme acquisition.

Multibeam crosslines were acquired using Rainier launch 2803 across all depth ranges, water masses and boat days that were practical; they are adequate for verifying and evaluating the internal consistency of survey data. A 2-meter CUBE surface was created using only H13024 mainscheme lines, and a second 2-meter surface was created using only crosslines. A difference surface was then generated in Caris from which statistics were derived. For its respective depths, the difference surface was compared to IHO allowable Total Vertical Uncertainty (TVU) standards. In total, 99.5% of the total number of nodes pass the TVUmax test between H13024 mainscheme and crossline data (Figure 7). The analysis was performed on H13024 MBES data reduced to Mean Lower-Low Water (MLLW) using Ellipsoidally Referenced Zone Tides (ERZT) methods.

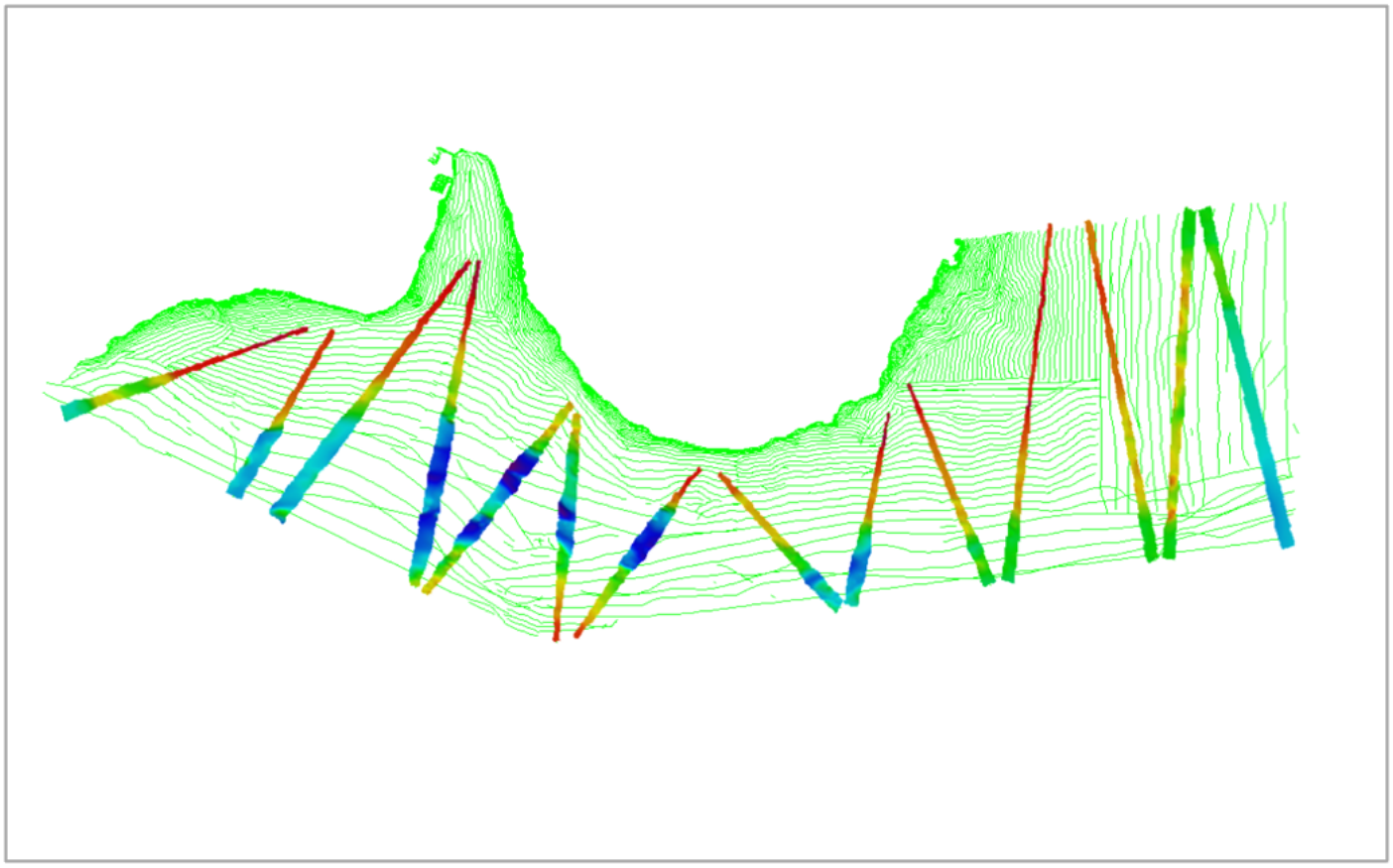


Figure 7: H13024 crossline surface overlaid on mainscheme tracklines showing good temporal and geographic distribution.

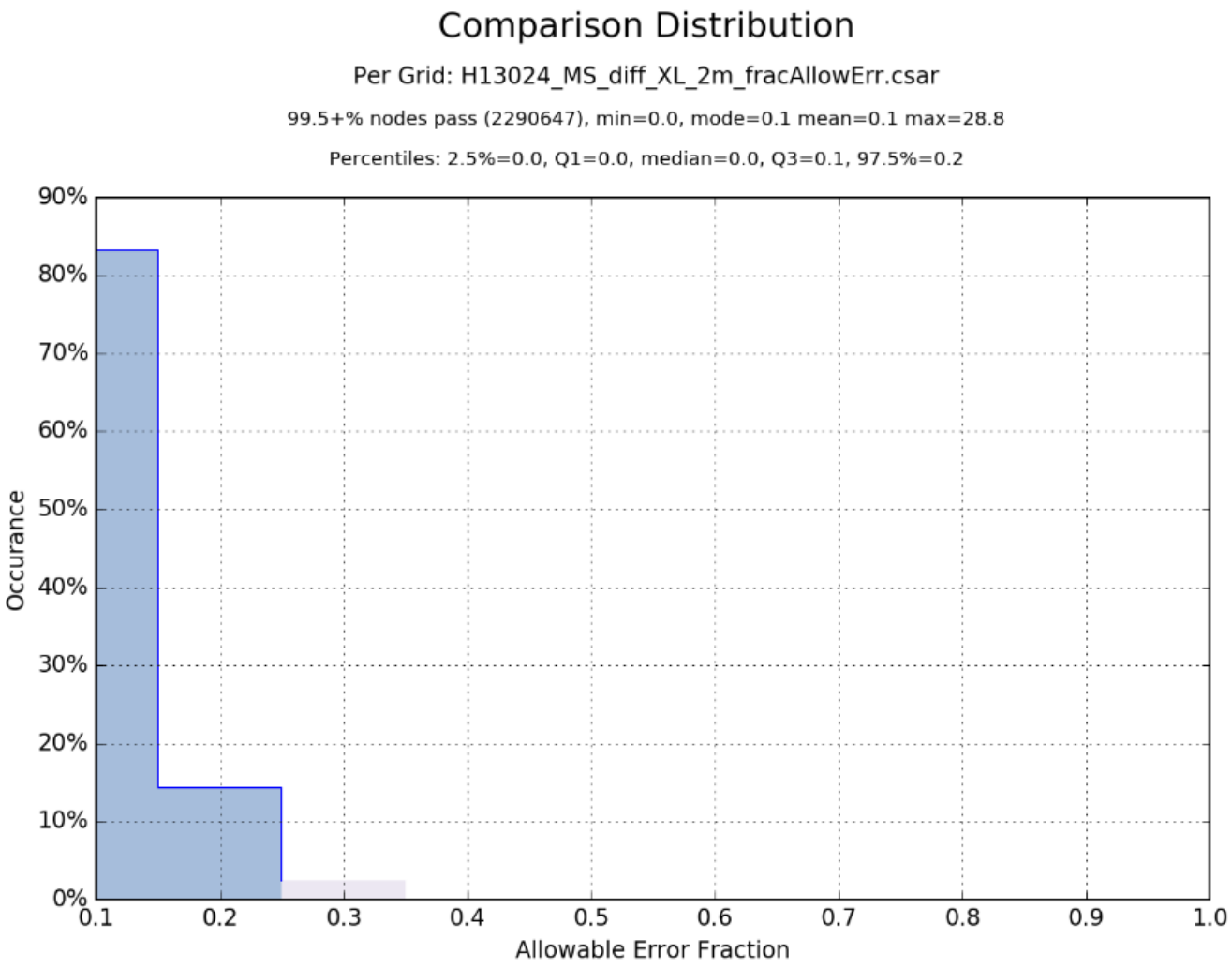


Figure 8: Histogram plot utilizing the magnitude (absolute value) of the Allowable Error Fraction to show the indication of what percentage of the total number of comparisons pass the TVUmax test.

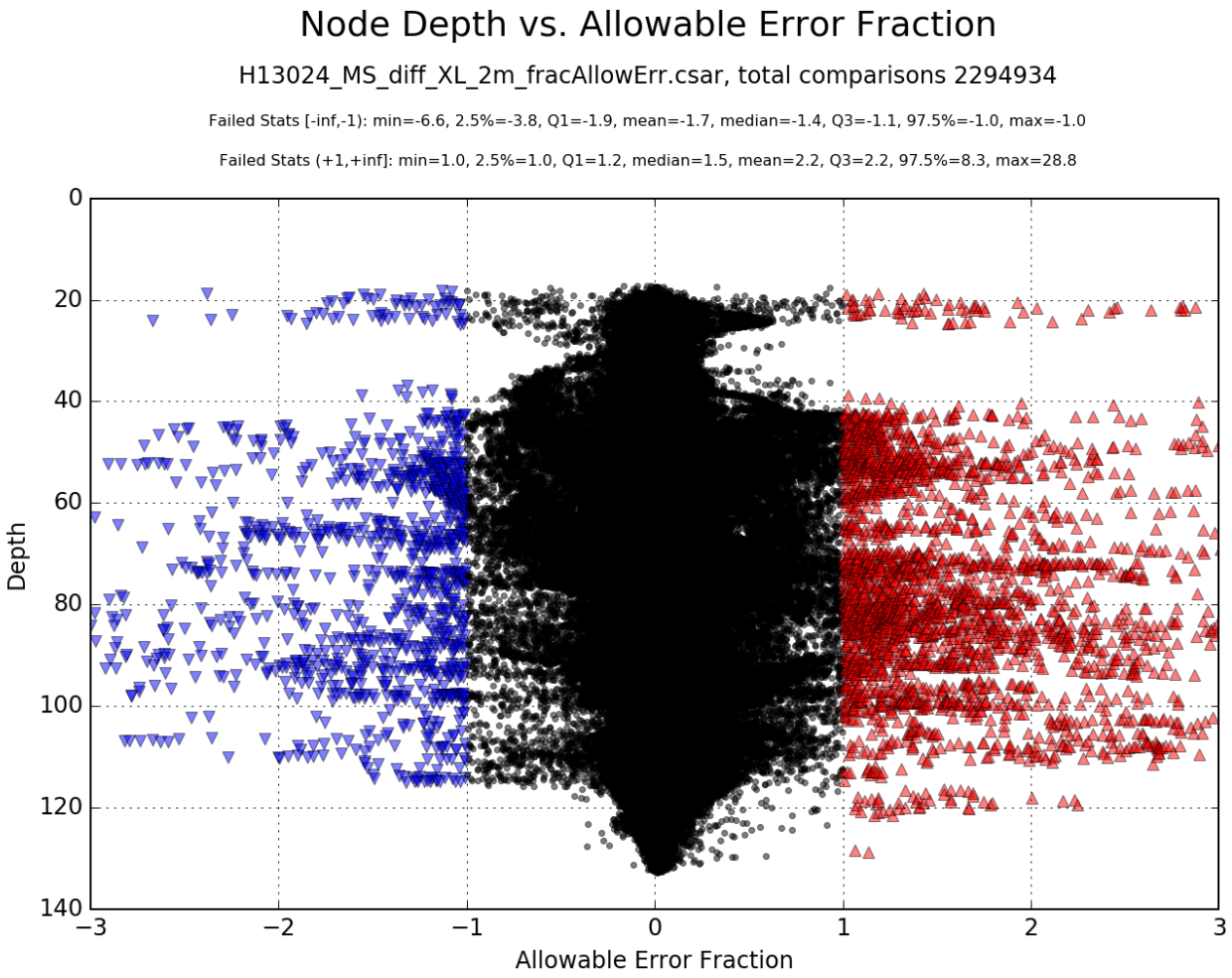


Figure 9: Pydro derived plot showing node depth vs. allowable error fraction of H13024 mainscheme to crossline data.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via ERZT	0 meters	0.0034725 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
S221		1 meters/second	.05 meters/second
2801, 2802, 2803, 2804	3 meters/second		.15 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Total Propagated Uncertainty (TPU) values for survey H13024 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 accounted for by examining the field generated one hundred-meter resolution separation model and statistically determining a measured value. A measured uncertainty of 0.0034725 meters was entered to account for ERZT processing methods. See the 2017 DAPR for further information.

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 this survey. Real-time uncertainties from Reson MBES sonars were recorded and applied during post-processing. Applanix TrueHeave (POS) files, which record estimates of heave uncertainty, were also applied during post-processing. Finally, the post-processed uncertainties associated with vessel roll, pitch, yaw and position were applied in CARIS using SBET / RMS files generated using POSPac software.

Uncertainty values of submitted finalized grids were calculated in CARIS using "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). Pydro QC tools 2 were used to analyze H13024 TVU compliance; histogram plots of the results are shown below.

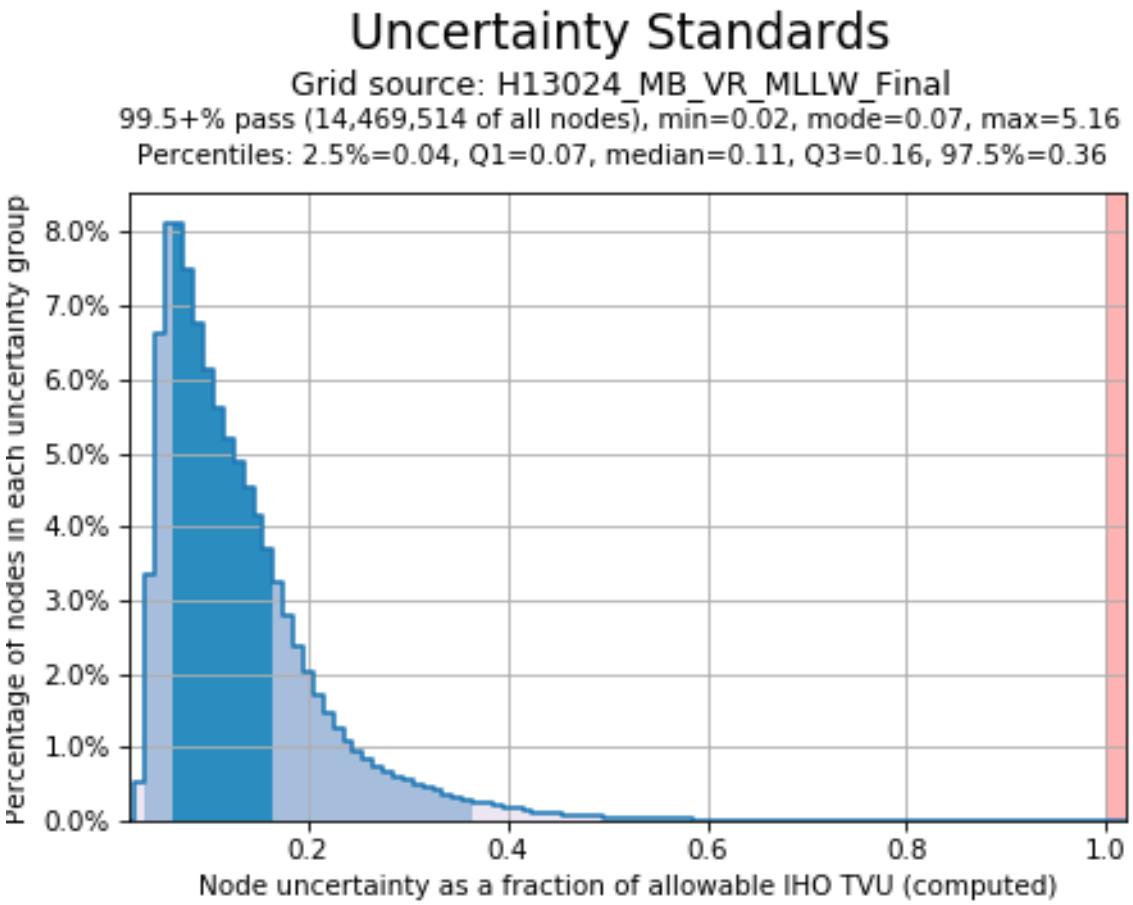


Figure 10: Pydro derived histogram plot showing TVU compliance of H13024 finalized multi-resolution complete coverage MBES data.

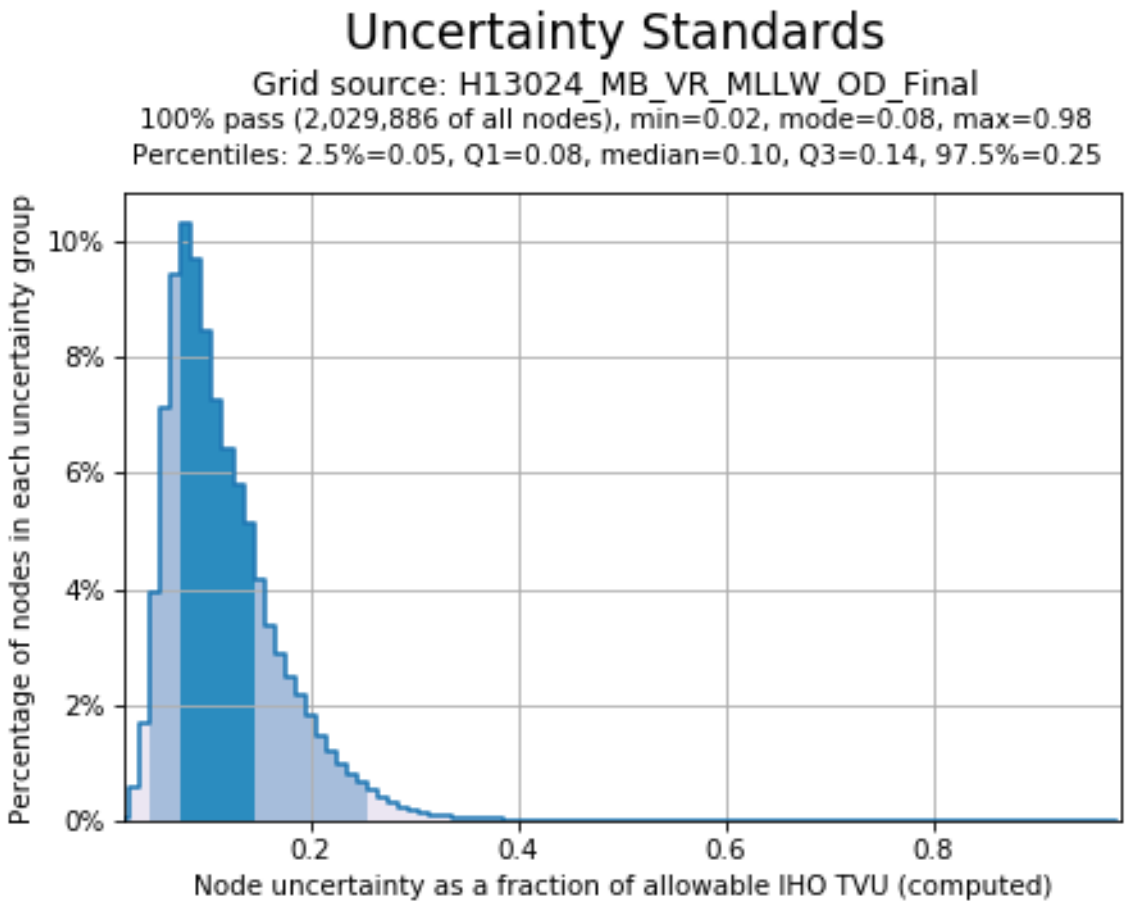


Figure 11: Pydro derived histogram plot showing TVU compliance of H13024 finalized multi-resolution object detection MBES data.

B.2.3 Junctions

Three surveys junction with H13024, two are contemporary and part of project OPR-P377-RA-17. The third was conducted by NOAA ship RAINIER in 2008.

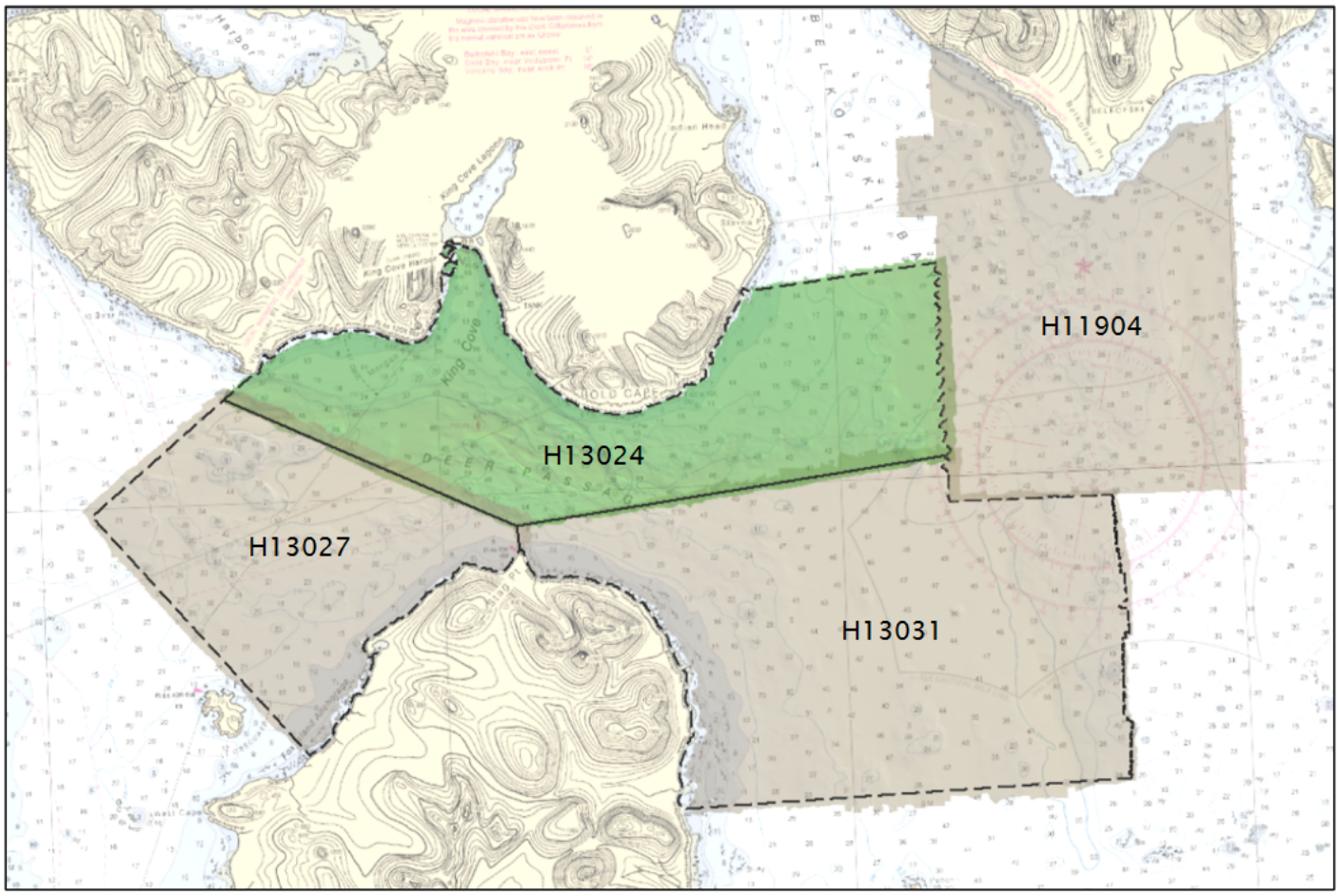


Figure 12: H13024 junction surveys.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13027	1:40000	2017	NOAA Ship RAINIER	SW
H13031	1:40000	2017	NOAA Ship RAINIER	SE
H11904	1:10000	2008	NOAA Ship RAINIER	E

Table 9: Junctioning Surveys

H13027

See the detailed report from survey H13027 for junction analysis.

H13031

See the detailed report from survey H13031 for junction analysis.

H11904

The junction with survey H11904 encompassed 0.46 square nautical miles along the eastern boundary of H13024. A comparison was made using a difference surface derived from the 4-meter CUBE surfaces of each survey using Pydro Surfaces Compare Grids tool. Analysis of the difference surface indicated that H13024 is 0.11 meters shoaler than H11094 with a standard deviation of 0.13 meters.

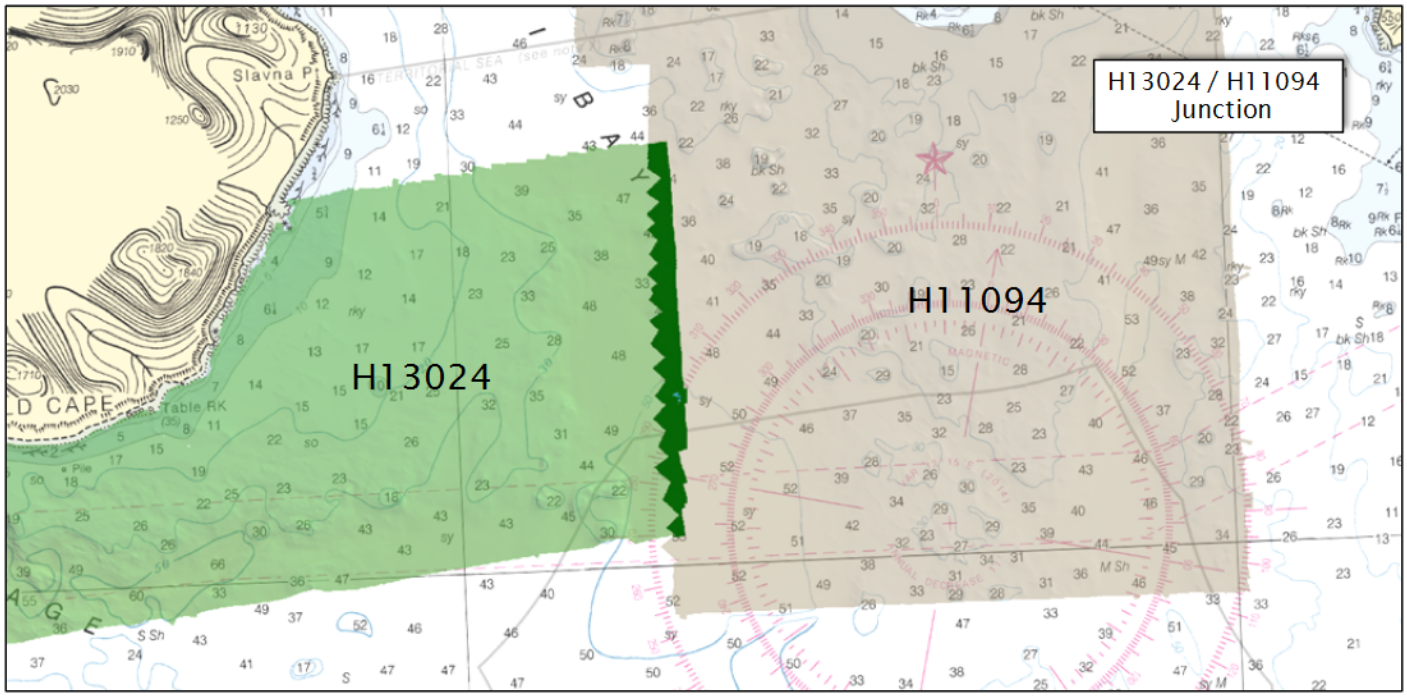


Figure 13: H13024 and H11094 junction showing TVU compliance.

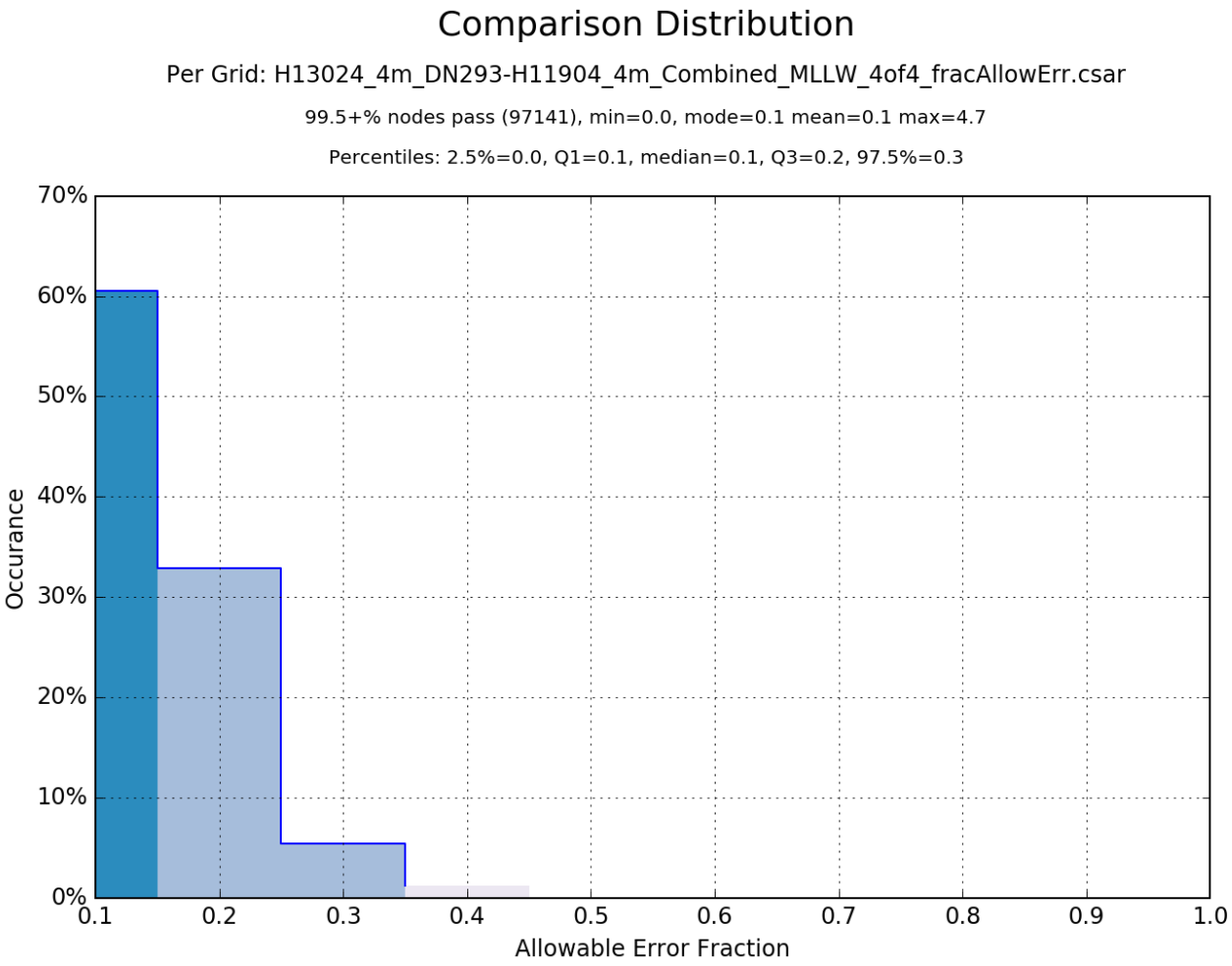


Figure 14: Histogram plot utilizing the magnitude of the Allowable Error Fraction indicate that 99.5% of the nodes pass the TVU test.

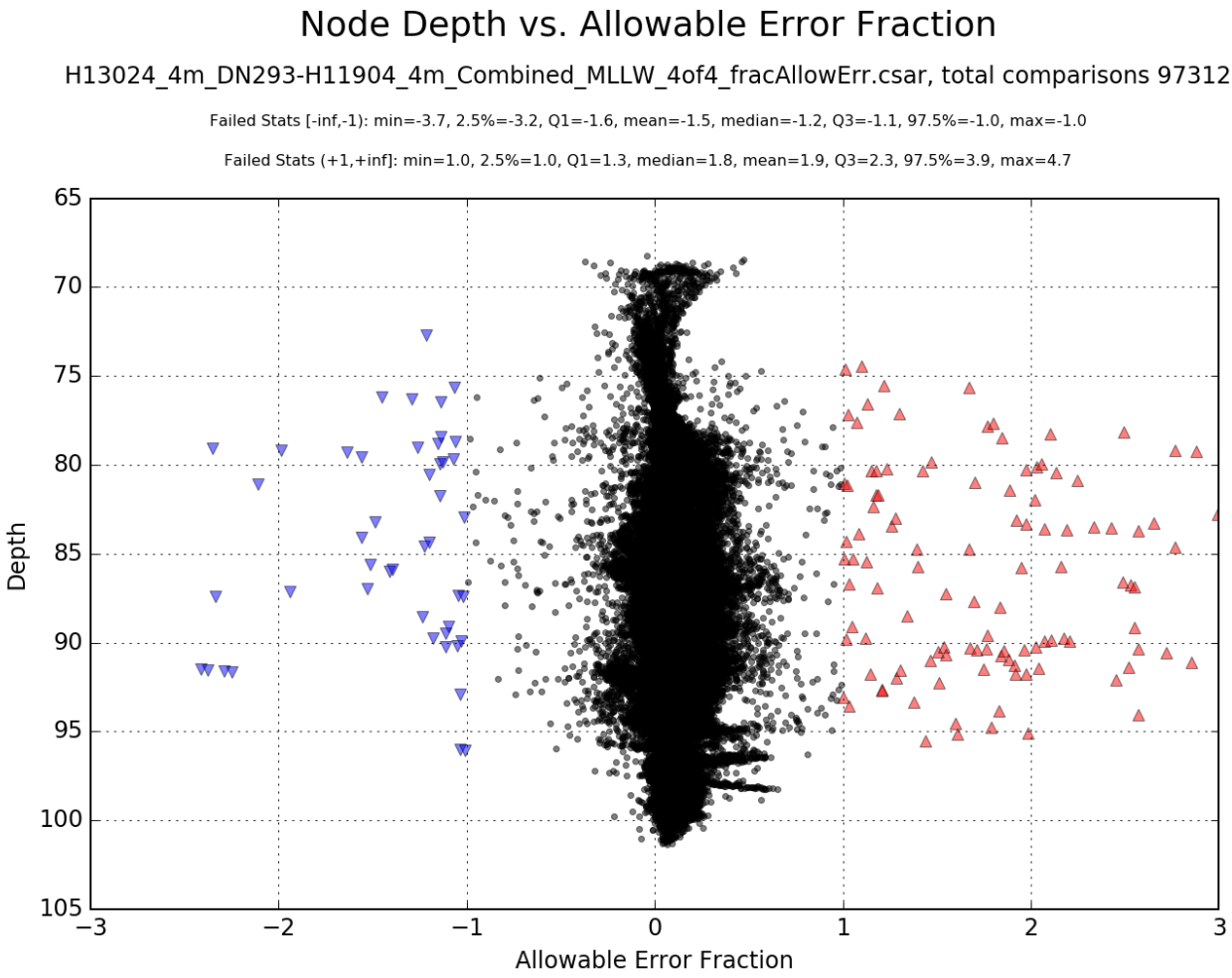
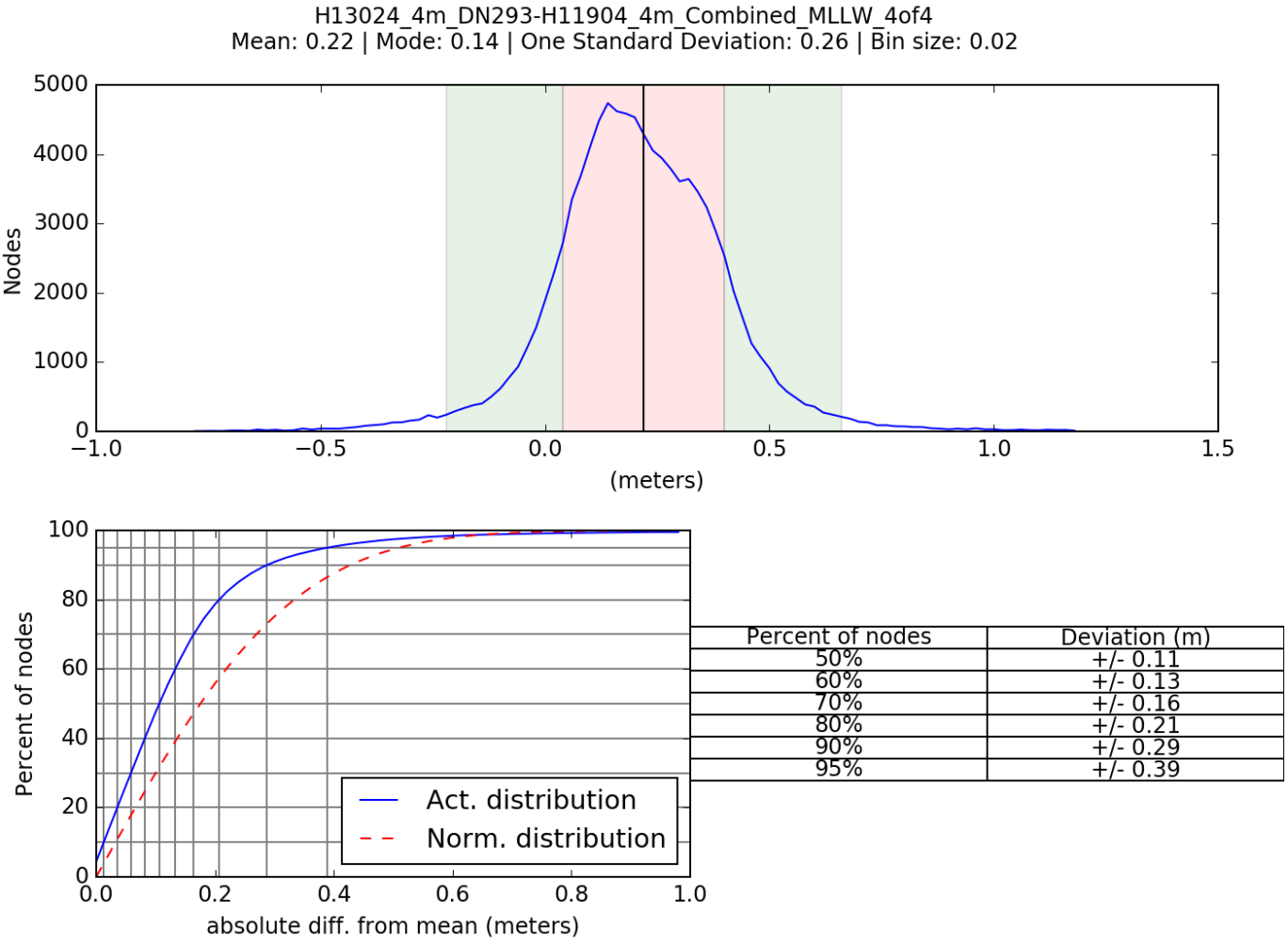


Figure 15: A depth-dependent plot detailing the Allowable Error Fraction, where values between- and- including +/- 1 represent "passing comparisons" for the H13024 and H11094 junction analysis.



Percent of nodes	Deviation (m)
50%	+/- 0.11
60%	+/- 0.13
70%	+/- 0.16
80%	+/- 0.21
90%	+/- 0.29
95%	+/- 0.39

Figure 16: Pydro derived plot showing H13024 / H11904 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: Every 4 hours

Sound Speed Cast Frequency: Fifty-eight 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 acquired using Sea-Bird 19plus SEACAT Profilers and MVP 200 Moving Vessel Profiler/ AML Micro CTD. All casts were concatenated into a master file and applied to MBES data using the "Nearest distance within time" (4 hours) profile selection method.

MBES data from two lines, 0007_20170817_212116_Rainier, 0004_20170818_003042_Rainier, received sound speed data from a method other than "nearest in distance within time (4 hours)." In each case, a more appropriate cast was selected after noticing sound speed artifacts in the generated surface. It was determined that the more appropriate casts were not the nearest, but rather the closest in time.

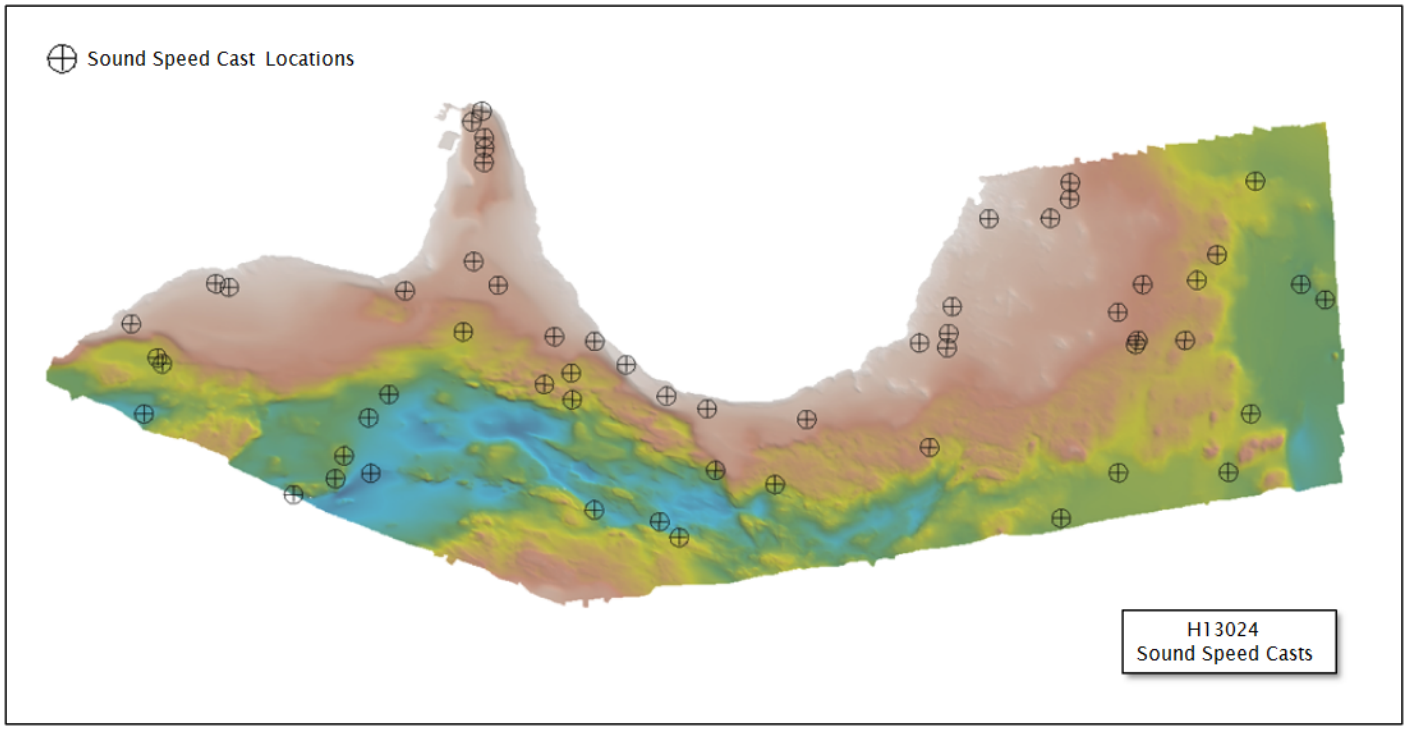


Figure 17: H13024 sound speed cast locations.

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

Raw Backscatter was acquired as .7k files logged during MBES operations and subsequently processed by RAINIER personnel. One mosaic per vessel per frequency was created; backscatter processing procedures are detailed in the DAPR.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile V_5_6.

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
H13024_MB_VR_MLLW	CUBE	999 meters	0.17 meters - 141.04 meters	VR	Complete MBES
H13024_MB_VR_MLLW_Final	CUBE	999 meters	0.17 meters - 141.04 meters	VR	Complete MBES

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13024_MB_VR_MLLW_OD	CUBE	999 meters	1.06 meters - 37.35 meters	VR	Object Detection
H13024_MB_VR_MLLW_OD_Final	CUBE	999 meters	1.06 meters - 37.35 meters	VR	Object Detection

Table 10: Submitted Surfaces

Submitted surfaces were generated using the recommended parameters for depth-based (Ranges) Caris variable-resolution bathymetric grids as specified in HSTD 2017-2. "H13024_MB_VR_MLLW.csar" represents the entire H13024 survey area using complete coverage guidelines, whereas "H13024_MB_VR_MLLW_OD.csar" includes only the Object Detection coverage area specified in the Project Instructions.

The resolution values indicated in the table above are not accurate: the XML-DR schema used to generate this report did not accommodate variable-resolution grids. The "999" value was entered merely as a place holder.

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.

Traditional Methods Used:

TCARI

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
King Cove, AK	9459881

Table 11: NWLON Tide Stations

File Name	Status
H13024_TCARI_Features.tid	Final Approved

Table 12: Water Level Files (.tid)

File Name	Status
P377RA2017.tc	Final

Table 13: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 08/26/2017. The final tide note was received on 09/13/2017.

H13024 shoreline features were tide corrected using a .tid file created in Pydro utilizing the "TCARI TID file via S-57" function then loaded in Caris Notebook. H13024 MBES data were reduced to MLLW using ERZT processing methods.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 3 North.

The following PPK methods were used for horizontal control:

Single Base

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
9715	Foxy

Table 14: CORS Base Stations

The following WAAS Stations were used for horizontal control:

DGPS Stations
PACD Cold Bay Alaska

Table 15: FAA WAAS Stations

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between H13024 survey data and Electronic Navigation Charts (ENC) US4AK55M and US5AK55M using Cube surfaces, selected soundings and contours created in Caris.

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	Preliminary?
US5AK55M	1:5000	2	12/07/2016	12/07/2016	NO
US4AK55M	1:80000	19	01/10/2017	01/10/2017	NO

Table 16: Largest Scale ENCs

US5AK55M

No significant discrepancies were identified between US5AK55M and the H13024 derived contours and soundings.

US4AK55M

H13024 survey data coincided with sections of ENC US5AK55M and US4AK55M. The H13024 3-fathom contour was in general agreement with the ENC with the exception of the western most area being significantly offshore (Figure 18). The H13024 10-fathom contour was found to be generally inshore of the ENC with some larger discrepancies on the northeast portion of ENC US4AK55M (Figure 19). H13024 data

identified many inconsistencies with the 30-fathom and 50-fathom contours (Figure 20) when compared to the ENC.

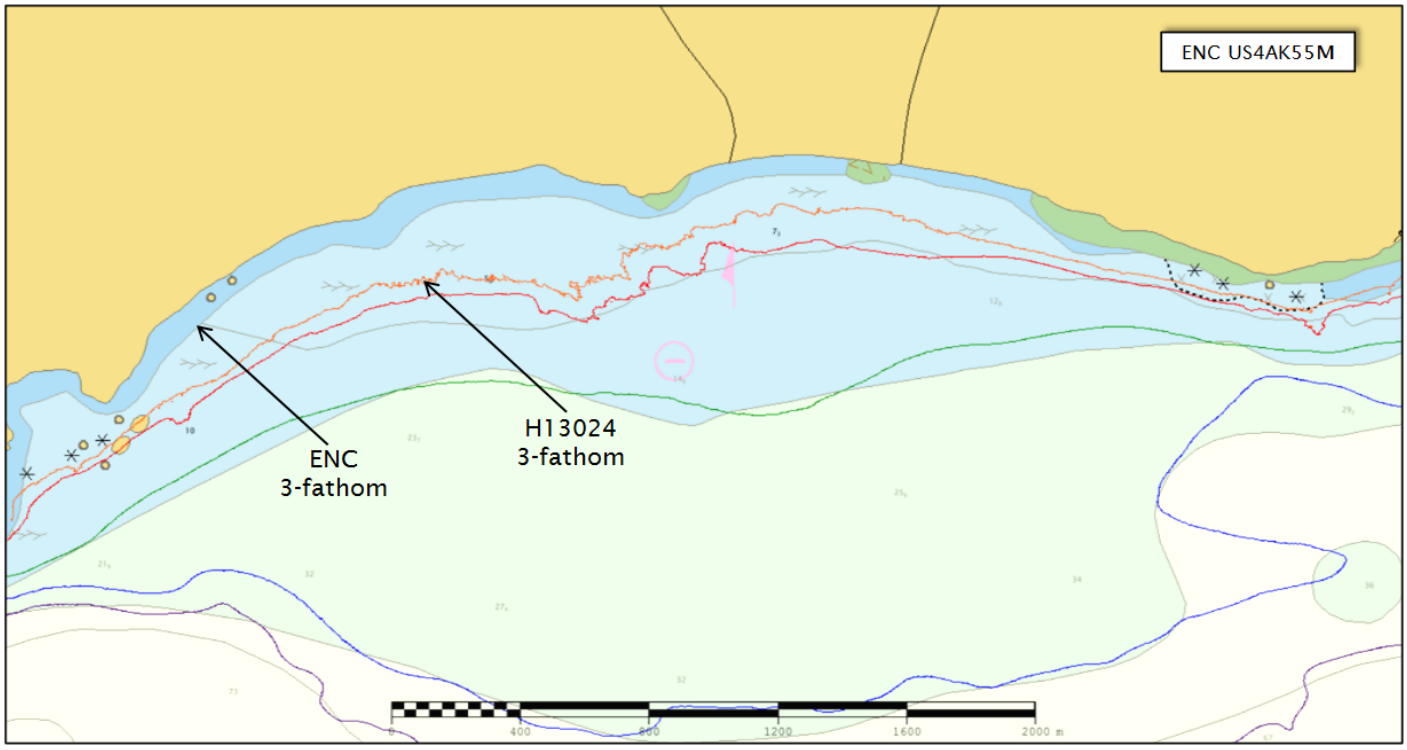


Figure 18: ENC US5A55M overlaid with H13024 derived contours.
H13024 3-fathom contour showing significant difference.

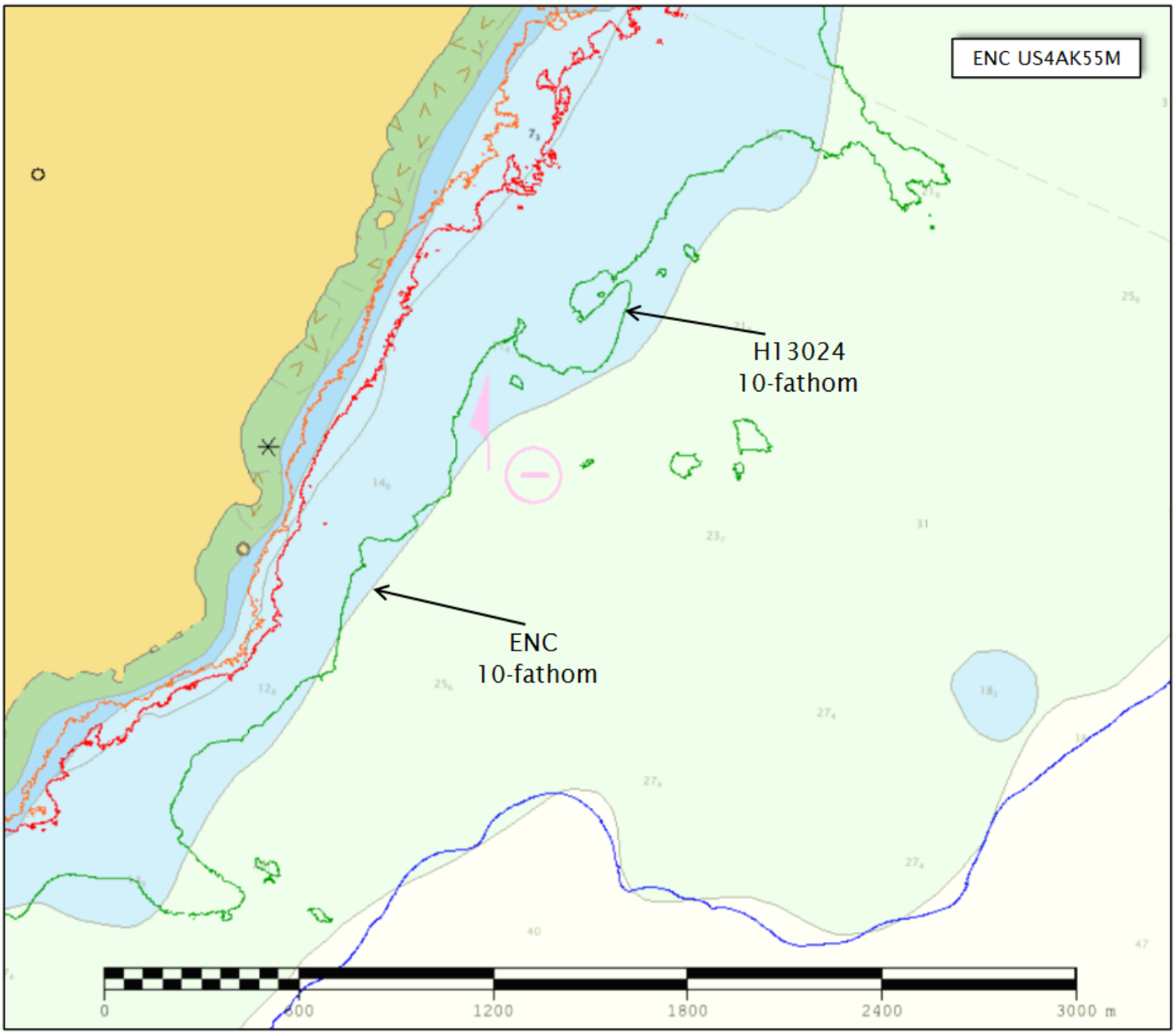


Figure 19: H13024 10-fathom contour showing several discrepancies with ENC US4AK55M.

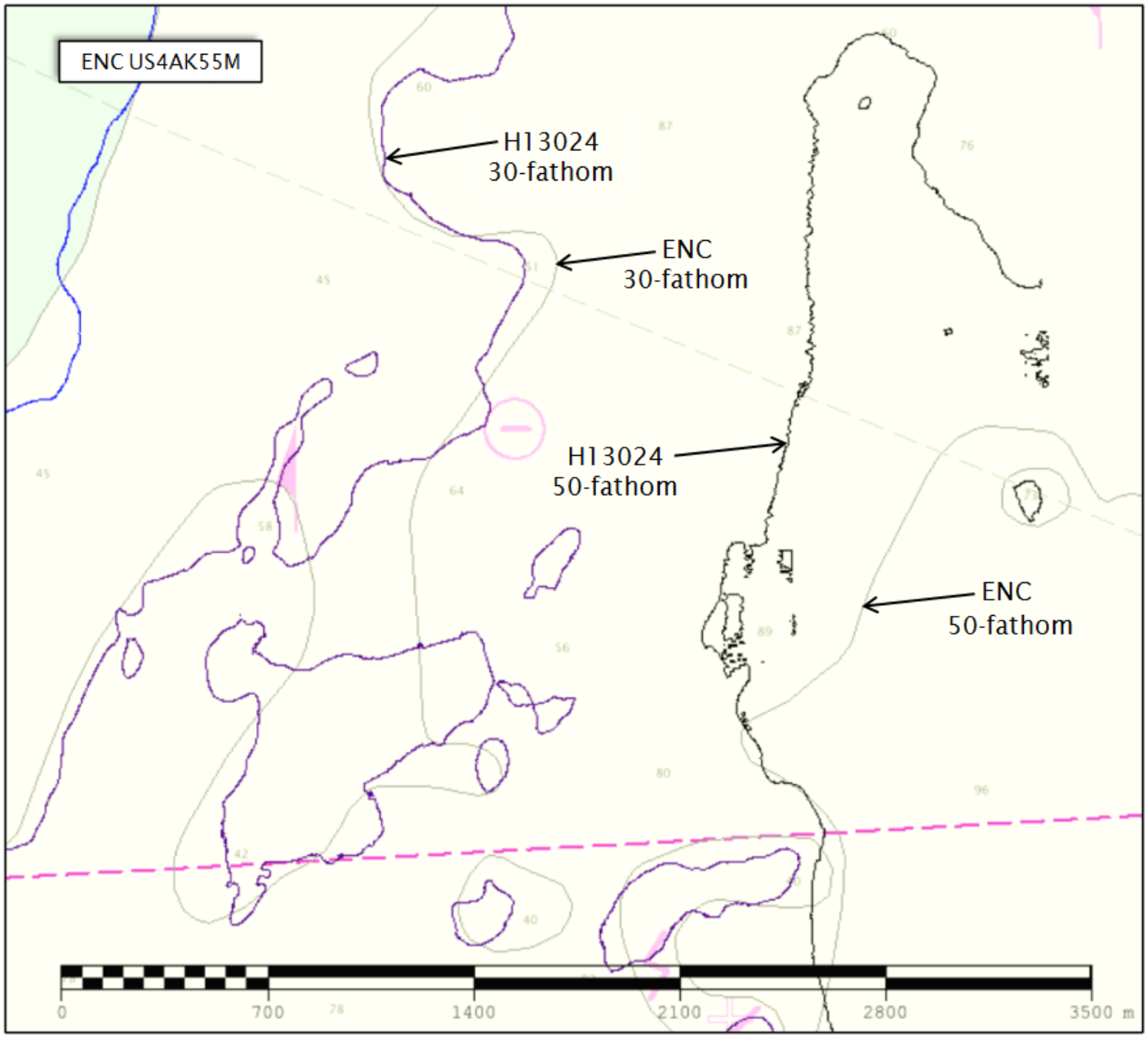


Figure 20: H13024 derived 30-fathom and 50-fathom contours identifying inconsistencies with ENC US4AK55M.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

No charted features exist for this survey.

D.1.4 Uncharted Features

No uncharted features exist for this survey.

D.1.5 Shoal and Hazardous Features

Features of navigational significance are discussed in the chart comparison sections above or are included in the H13024 Final Feature File submitted with this report.

D.1.6 Channels

King Cove Harbor is charted to have a controlling depth of 14 feet (2010). According to the Coast Pilot, King Cove's South Harbor has a dredged entrance channel with a controlling depth of 16 feet (2001). H13024 survey soundings in both harbors were found to be as charted.

D.1.7 Bottom Samples

Four bottom samples were acquired for this survey; the results are included in the H13024 Final Feature File submitted with this report.

D.2 Additional Results

D.2.1 Shoreline

Limited shoreline verification was conducted in accordance with applicable sections of NOAA 2017 HSSD and FPM using the Project Reference File (PRF) and Composite Source File (CSF) provided with the Project Instructions. In the field, all assigned features that were safe to approach, were addressed as required with S-57 attribution and recorded in the H13024_Final_Feature_File (FFF) to best represent the features at chart scale. This file also includes new features found in the field as well as recommendations to update, retain or delete assigned features.

D.2.2 Prior Surveys

Prior surveys exist for this area, but comparisons were not performed.

D.2.3 Aids to Navigation

No ATONs were specifically assigned for this survey in the Project Instructions. Morgan Point Light, on the west side of the entrance to King Cove, was observed to be serving its intended purpose. Five private ATONs located in King Cove Harbor were also noted and appeared to be serving their intended purpose with the exception of the southern King Cove deepwater dock light, which was not seen.

D.2.4 Overhead Features

A fixed bridge crosses the entrance channel in the northwest corner of King Cove to King Cove Lagoon. Bridge extents were not further investigated.

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 are charted in this survey area, however a ferry does service King Cove twice a month from May through September.

D.2.8 Abnormal Seafloor and/or Environmental Conditions

No Significant Features exist for this survey.

D.2.9 Construction and Dredging

No construction or dredging was present at the time of the survey.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation

No new insets 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 and Specifications Deliverables Manual, 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
Benjamin Evans, CDR/NOAA	Commanding Officer. NOAA Ship RAINIER	01/10/2018	EVANS.BENJAMIN.K.1237217094 2018.01.09 17:30:29 -08'00'
Scott Broo, LT/NOAA	Field Operations Officer, NOAA Ship RAINIER	01/10/2018	BROO.SCOTT.EDWARD.1396599976 2018.01.23 10:43:16 -08'00'
James Jacobson	Chief Survey Technician, NOAA Ship RAINIER	01/10/2018	JACOBSON.JAMES.BRYAN.1269664017 I have reviewed this document 2018.01.12 14:26:13 -08'00'
Timothy Wilkinson	Physical Science Technician, NRT3	01/10/2018	WILKINSON.TIMOTHY.DAVID.1383074440 Digitally signed by WILKINSON.TIMOTHY.DAVID.1383074440 Date: 2018.01.23 08:22:57 -08'00'

UNITED STATES DEPARMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 14, 2017

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P377-RA-17
HYDROGRAPHIC SHEET: H13024

LOCALITY: King Cove,Cold Bay,AK
TIME PERIOD: July 16 - August 29, 2017

TIDE STATION USED: 9459881 King Cove,AK
Lat. 55° 03.6'N Long. 162° 19.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.875 meters

REMARKS: RECOMMENDED GRID

Please use the TCARI grid "P377RA2017.tc" as the final grid for project OPR-P377-RA-17, H13024, during the time period between July 16 and August 29, 2017

Refer to attachments for grid information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

_____
CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final TCARI Grid for
OPR-P377-RA-17, H13024
King Cove, Cold Bay, AK
9459881 KING COVE
0
10
nautical miles
bing
Earthstar Geographics SIO © 2017 Microsoft Corporation

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	Continually Operating Reference Staiton
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
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
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
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
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	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
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
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
TPE	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

APPROVAL PAGE

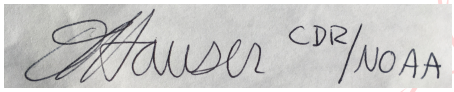
H13024

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- H13024_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H13024_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Approved: 

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CDR Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch