H13009

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H13009

LOCALITY

State(s):	Alaska
General Locality:	Southeast Alaska
Sub-locality:	Lisianski Inlet Northwest

2018

CHIEF OF PARTY
David J. Zezula CAPT/NOAA

LIBRARY & ARCHIVES

Date:

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H13009

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:	**Southeast Alaska**
Sub-Locality:	**Lisianski Inlet Northwest**
Scale:	**20000**
Dates of Survey:	**06/26/2018 to 07/04/2018**
Instructions Dated:	**06/08/2018**
Project Number:	**OPR-O375-RA-18**
Field Unit:	**NOAA Ship *Rainier***
Chief of Party:	**David J. Zezula CAPT/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/.

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Descriptive Report to Accompany Survey H13009

Project: OPR-O375-RA-18

Locality: Southeast Alaska

Sublocality: Lisianski Inlet Northwest

Scale: 1:20000

June 2018 - July 2018

NOAA Ship *Rainier*

Chief of Party: David J. Zezula CAPT/NOAA

A. Area Surveyed

The survey area is referred to as H13009, "Lisianski Inlet Northwest" (sheet 2) in the Project Instructions. The The assigned survey area is approximately 11.76. Rainier extended the survey area north of the original assigned area, increasing the total area surveyed to 19.02 square NM.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
58° 10' 2" N 136° 36' 55" W	58° 0' 57" N 136° 18' 19" W

Table 1: Survey Limits

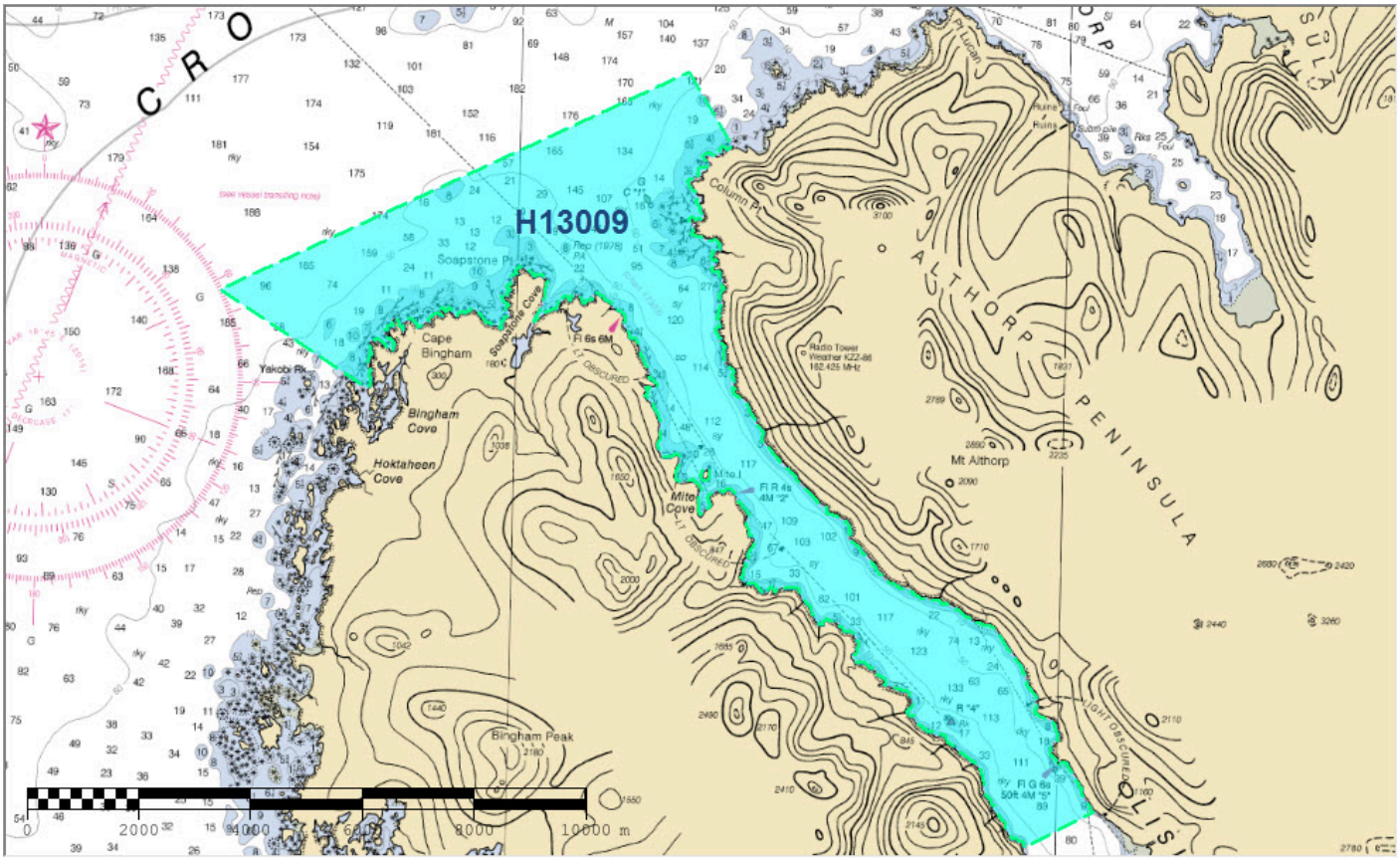


Figure 1: H13009 assigned survey area (chart 17302_1).

Data were acquired within the assigned survey limits as requested in the project instructions and the HSSD.

A.2 Survey Purpose

The navigationally complex Lisianski Strait and Inlet are heavily trafficked by recreational boaters, yachts, and smaller tug and tow traffic, as well as being an important route of the Alaska Marine Highway ferry system. Despite the volume of marine traffic in the region, the vast majority of Lisianski Inlet was last surveyed in 1917, when data were acquired using lead line instrumentation. This project will provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. 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.

Pydro QC Tools 2 Grid QA was used to analyze H13009 multibeam echosounder (MBES) data density. The submitted H13009 variable-resolution (VR) surface met HSSD density requirements as shown in the histograms below.

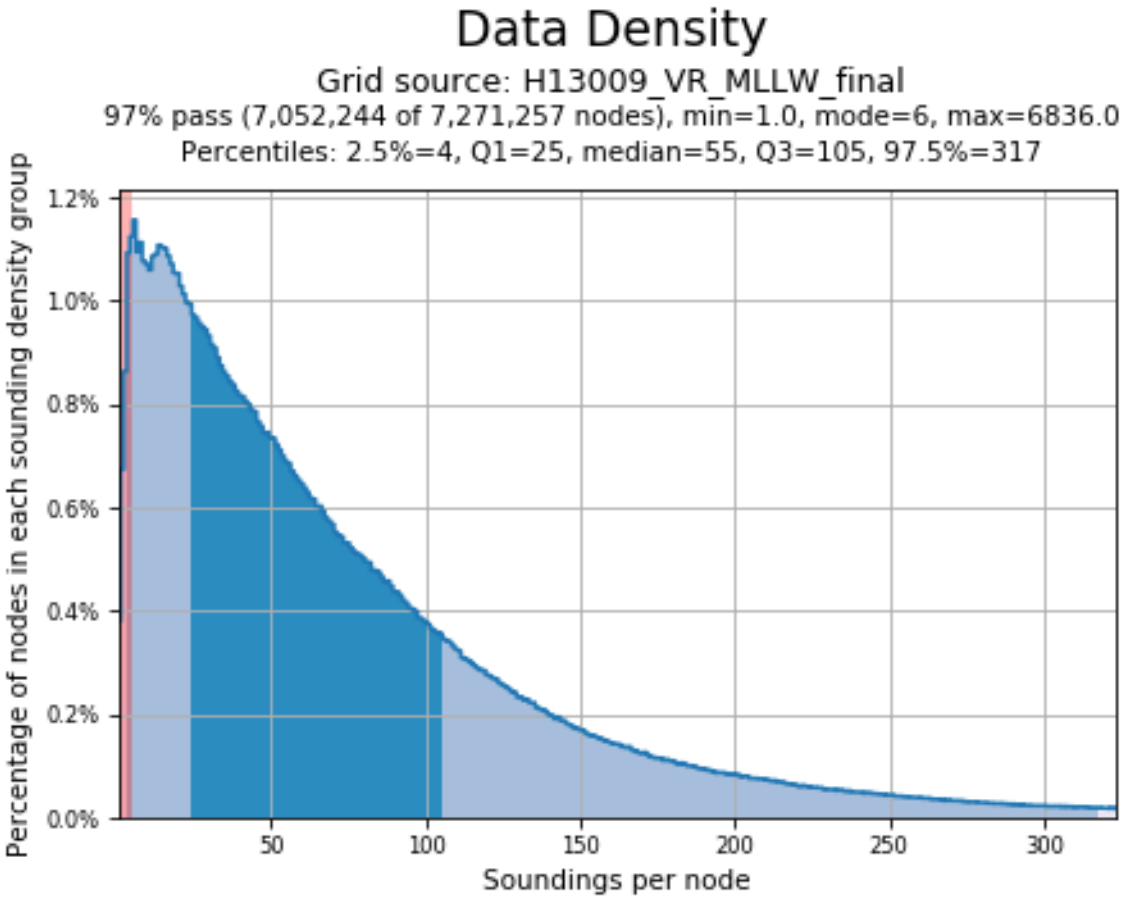


Figure 2: Pydro derived histogram plot showing HSSD density compliance of H13009 finalized variable-resolution MBES data.

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

Table 2: Survey Coverage

Survey coverage was extended beyond the assigned sheet limits as per request of the commanding officer as a training opportunity for the ship's bridge team; see figure below for more detail.

Complete multibeam echosounder (MBES) 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 as shown in the figures below. These areas are characterized as being near shore, subject to dangerous wave action or other hazards such as rocks or thick kelp.

Due to time constraints, less than ideal weather conditions and a severe staffing shortage in the deck department, exhaustive holiday collection was not possible during survey acquisition. As a result, there were 19 total identified holidays, the majority of which occur at the edge of coverage along the northern shore of Yakobi Island. These holidays are characterized as being in very nearshore rocky areas subject to heavy wave action.

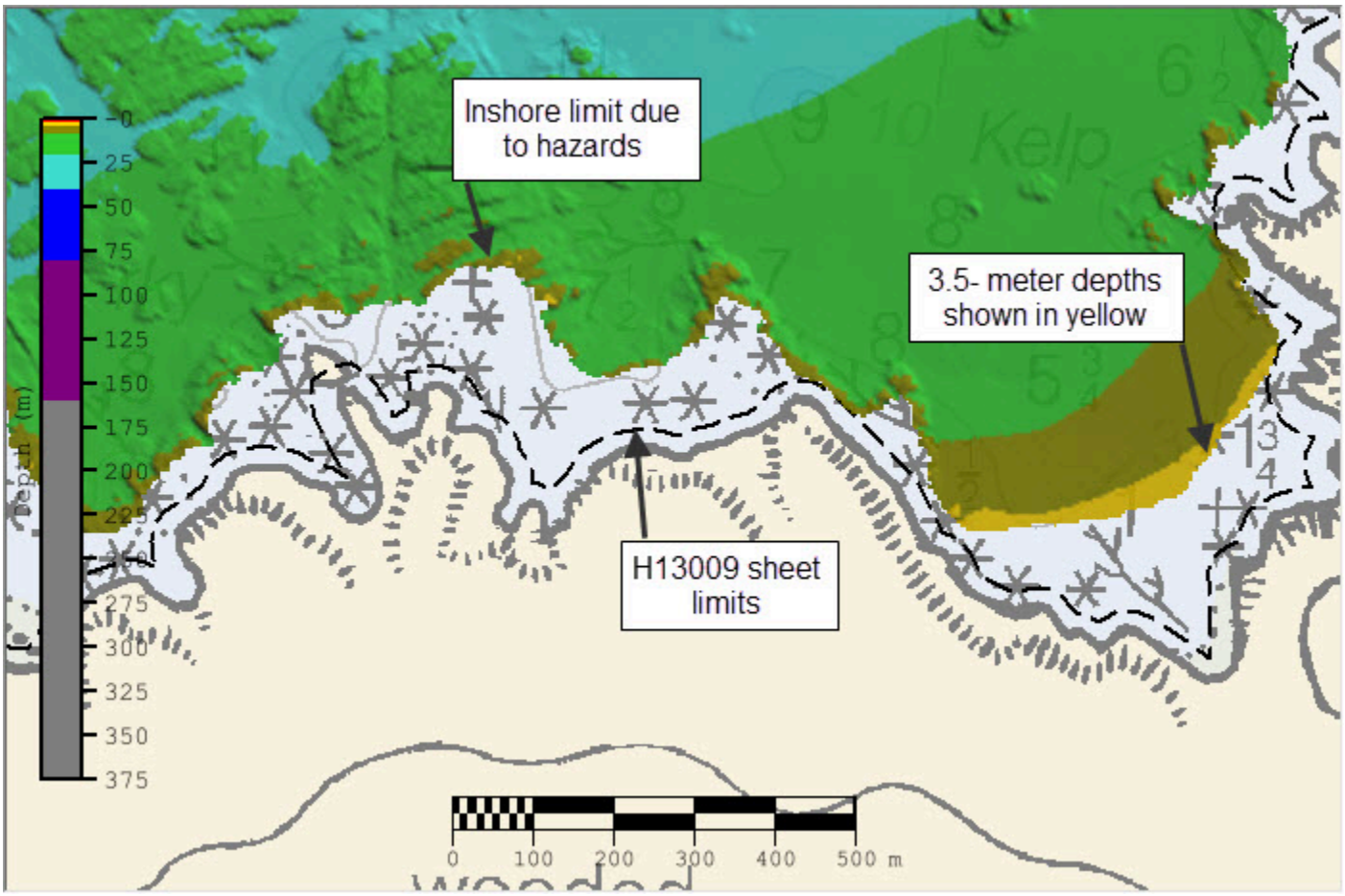


Figure 3: Examples of H13009 NALL determination: the black dashed line indicates sheet limits and the yellow area indicates where the 3.5-meter contour was reached.

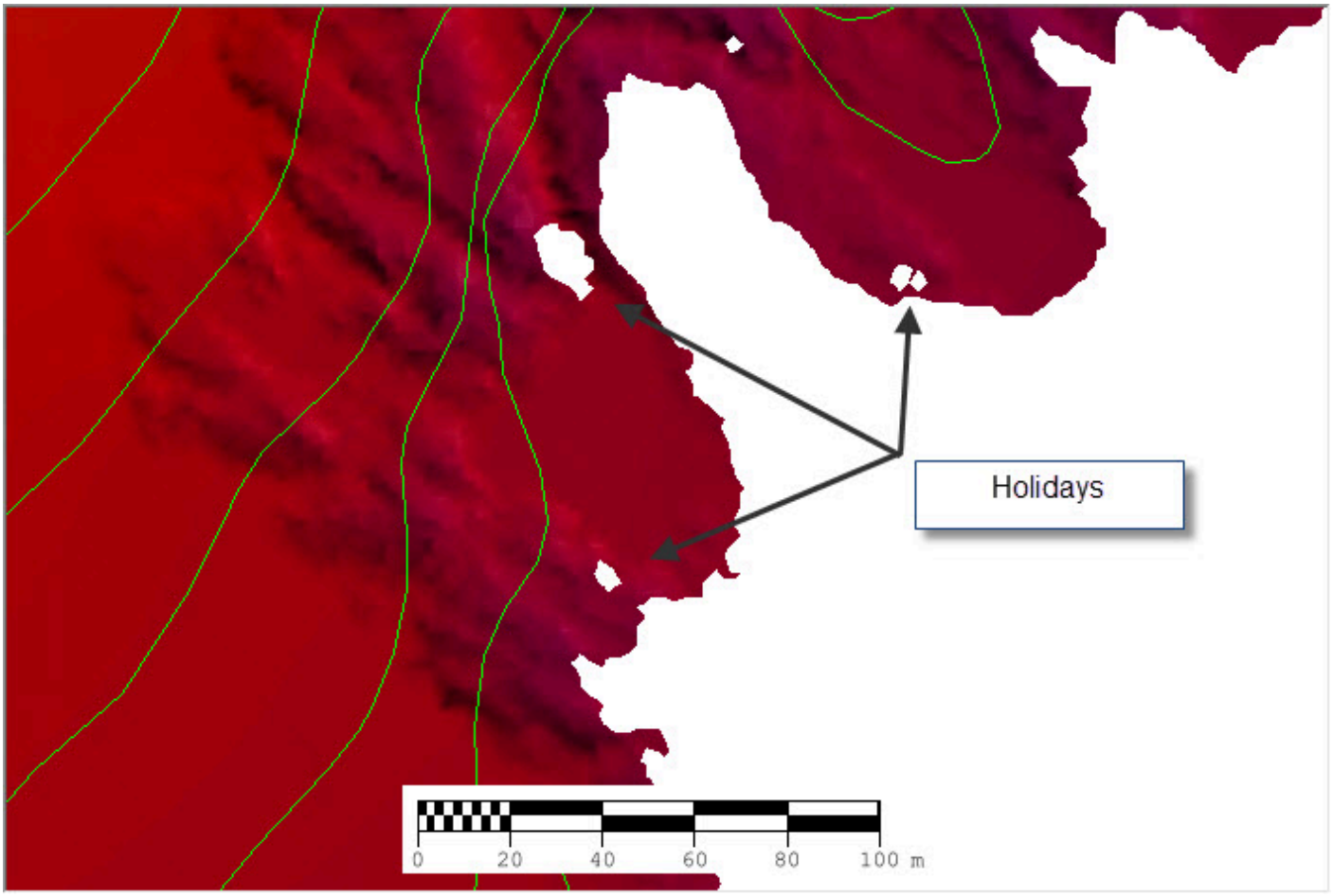


Figure 4: Example of typical H13009 nearshore holidays. Vessel track line in green.

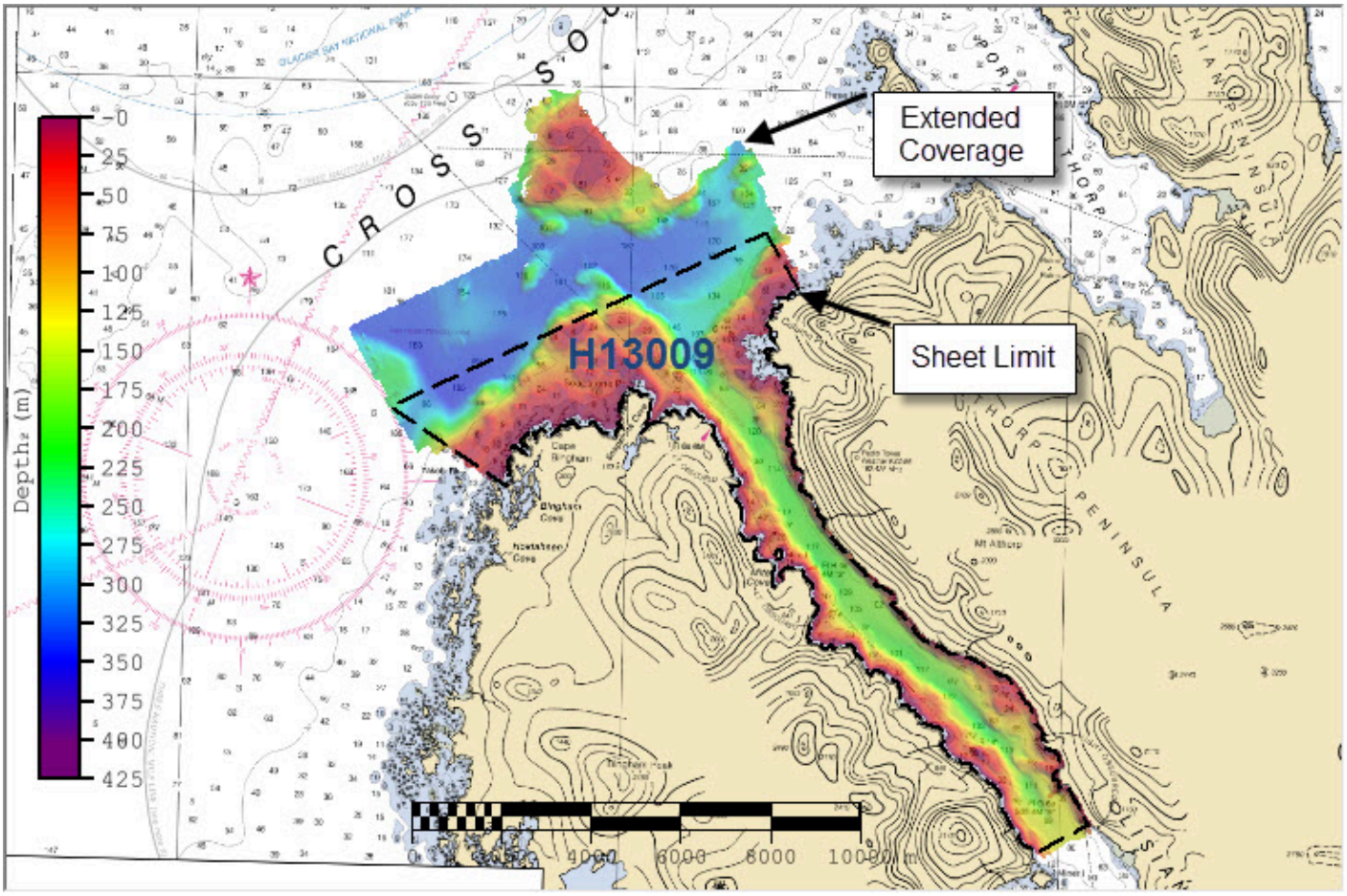


Figure 5: H13009 MBES coverage and assigned survey limits (chart 17302_1). Note areas where survey coverage was extended beyond sheet limits.

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	50.5	20.1	77.3	24.9	97.0	269.8
	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	13.1	0	0	0	13.1
	Lidar Crosslines	0	0	0	0	0	0
Number of Bottom Samples							6
Number Maritime Boundary Points Investigated							0
Number of DPs							126
Number of Items Investigated by Dive Ops							0
Total SNM							19.02

Table 3: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
06/26/2018	177
06/29/2018	180

Survey Dates	Day of the Year
06/30/2018	181
07/01/2018	182
07/02/2018	183
07/03/2018	184
07/04/2018	185

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*	*2701*	*1907*
LOA	70.4 meters	8.8 meters	8.8 meters	8.8 meters	8.8 meters	7.6 meters	5.7 meters
Draft	4.7 meters	1.1 meters	1.1 meters	1.1 meters	1.1 meters	0.47 meters	0.35 meters

Table 5: Vessels Used

All data for survey H13009 was acquired by NOAA Ship RAINIER and her survey launches 2801, 2802, 2803 and 2804. The vessels acquired MBES bathymetry, backscatter, and sound velocity profiles. Shoreline verification was conducted from RAINIER skiff 1907 and Rainier Jetboat 2701.

B.1.2 Equipment

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

Manufacturer	Model	Type
ODIM Brooke Ocean	MVP200	Sound Speed System
AML Oceanographic	Micro-CTD	Conductivity, Temperature, and Depth Sensor
Sea-Bird Scientific	SBE 19plus	Conductivity, Temperature, and Depth Sensor
Teledyne RESON	SVP 70	Conductivity, Temperature, and Depth Sensor
Applanix	POS MV 320 v5	Positioning and Attitude System
Kongsberg Maritime	EM 710	MBES
Kongsberg Maritime	EM 2040	MBES

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 4.86% of mainscheme acquisition.

13.2 nautical miles of multibeam crosslines were acquired by RAINIER launch 2802 across most depth ranges and multiple boat days. The hydrographer deems them adequate for verifying and evaluating the internal consistency of H13009 survey data. Analysis was performed using the Compare Grids function in Pydro Explorer on finalized VR surfaces of H13009 mainscheme only and crossline only data. 96% of nodes met allowable uncertainties. For additional results, see plots below.

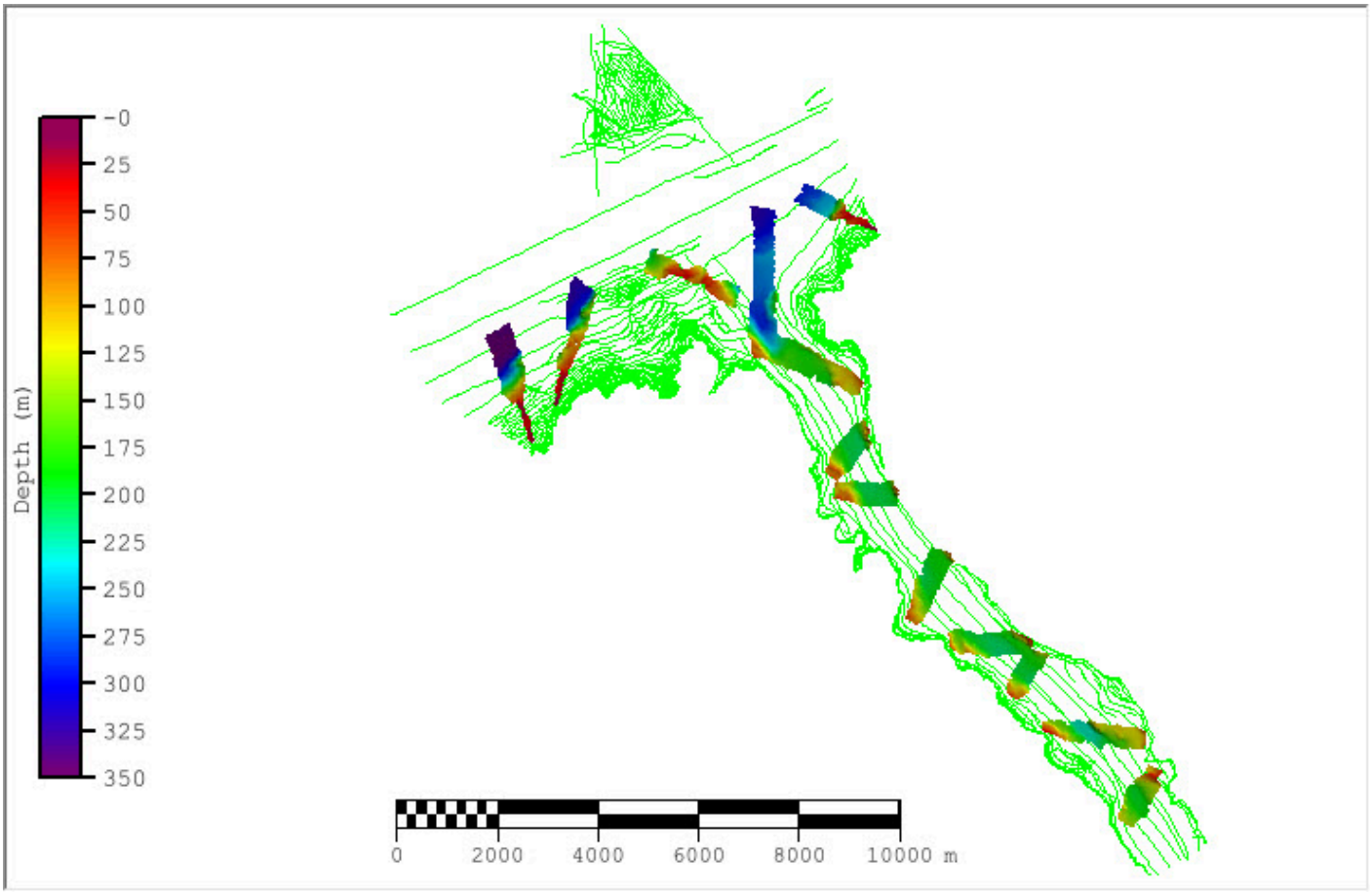


Figure 6: H13009 crossline surface overlaid on mainscheme tracklines.

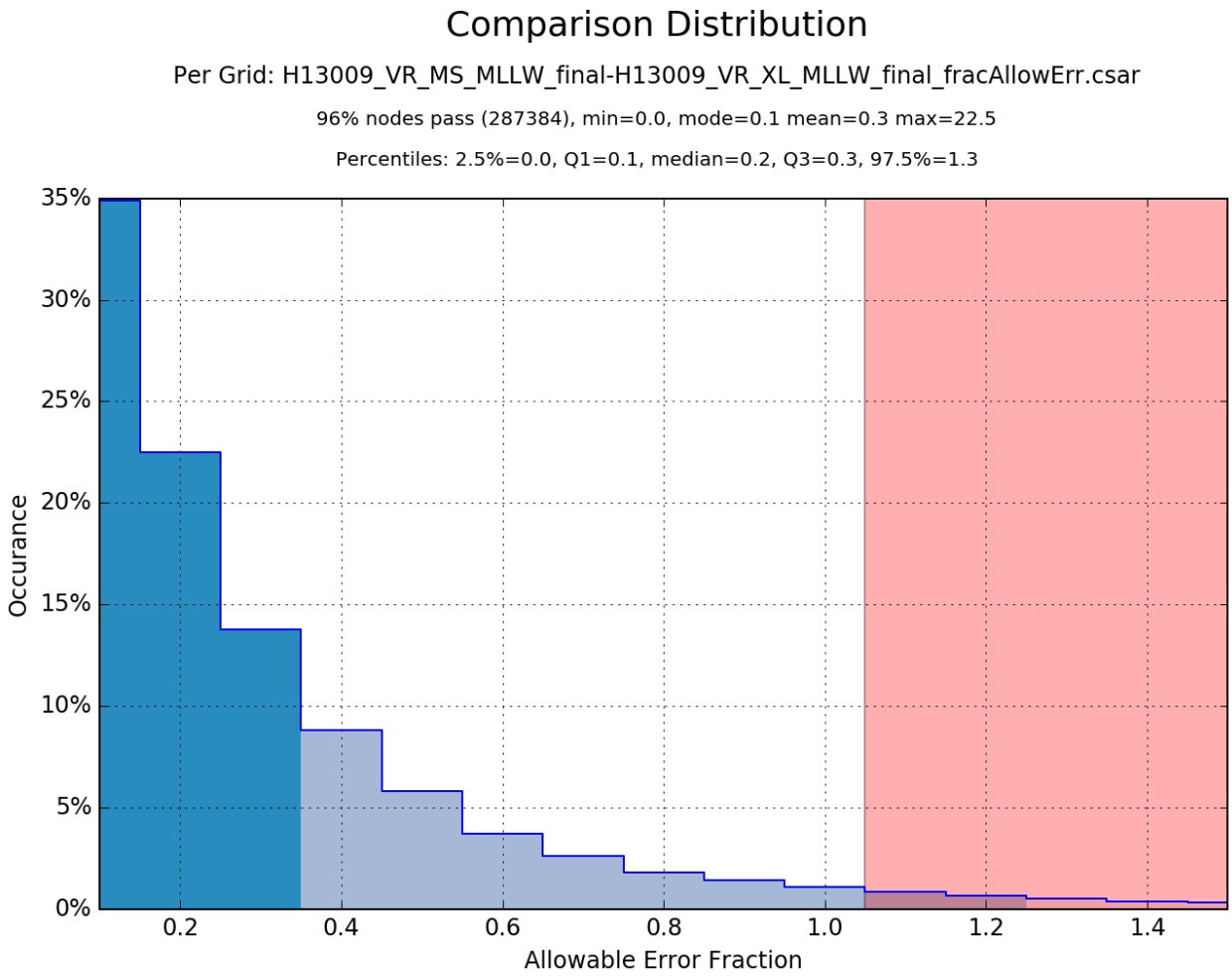
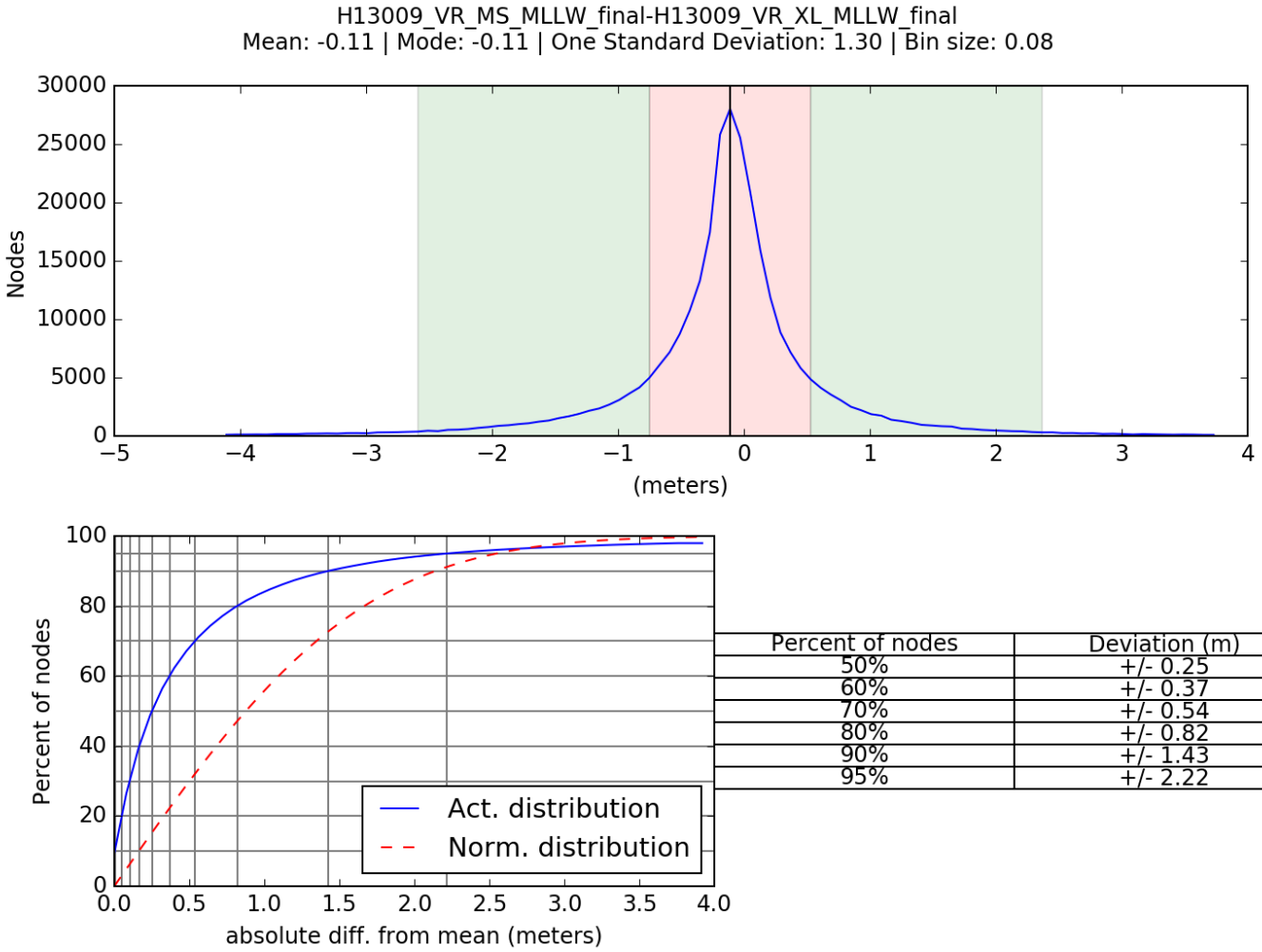


Figure 7: Pydro derived plot showing percentage-pass value of H13009 mainscheme to crossline data.



Percent of nodes	Deviation (m)
50%	+/- 0.25
60%	+/- 0.37
70%	+/- 0.54
80%	+/- 0.82
90%	+/- 1.43
95%	+/- 2.22

Figure 8: Pydro derived plot showing absolute difference statistics of H13009 mainscheme to crossline data.

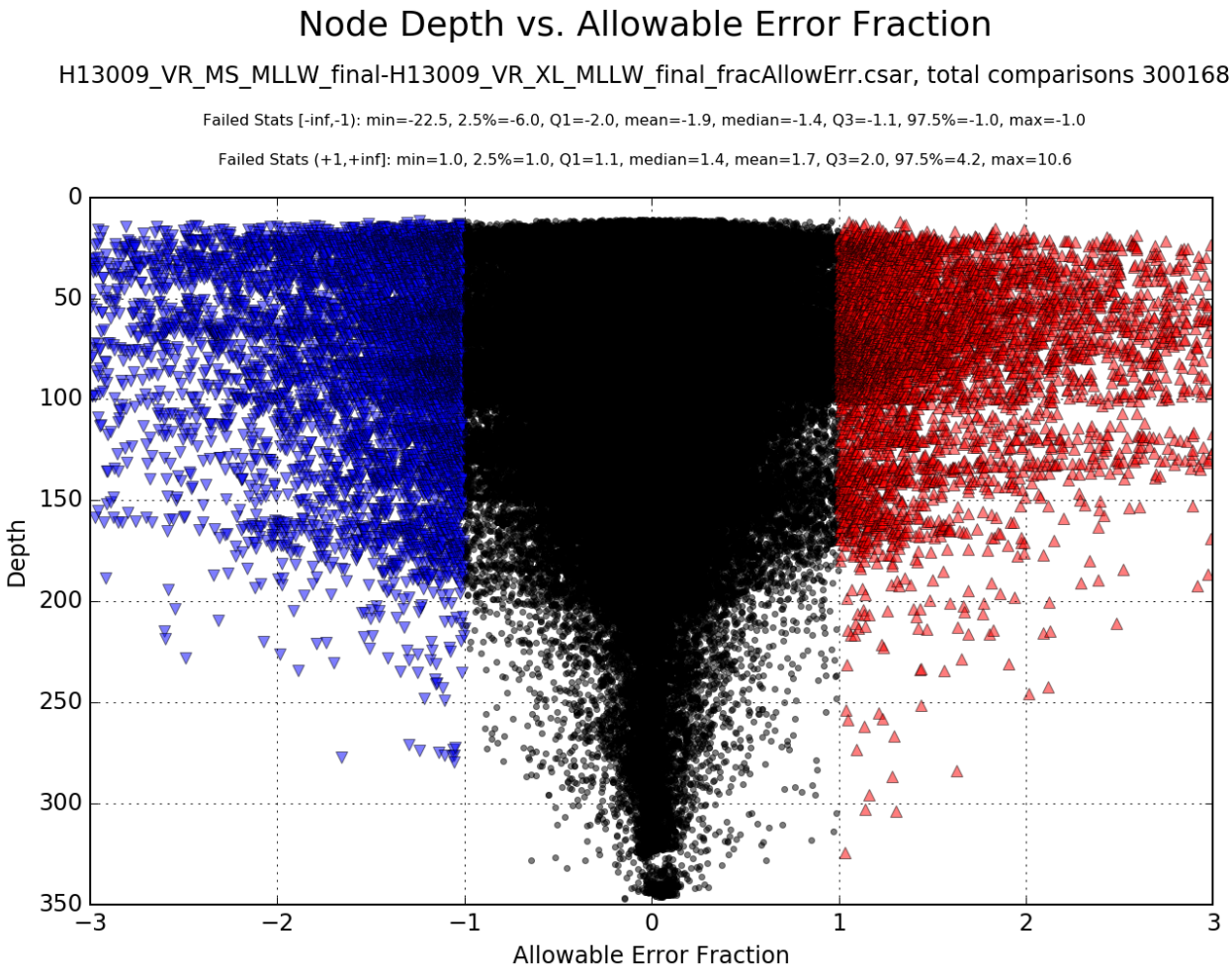


Figure 9: Pydro derived plot showing node depth vs. allowable error fraction of H13009 mainscheme to crossline data.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via ERTDM	0 meters	0.09 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
S221	N/A meters/second	1 meters/second	0.05 meters/second
2801, 2802, 2803, 2804	3 meters/second	N/A meters/second	0.05 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Total Propagated Uncertainty (TPU) values for survey H13009 were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Tidal uncertainty was provided in the metadata accompanying the NOAA vertical datum transformation model used for this survey. The local PMVD model uncertainty of 0.09 meters was entered as the tide zoning value for TPU calculation.

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 Kongsberg MBES sonars were recorded and applied in post-processing. Applanix TrueHeave (POS) files, which record estimates of heave uncertainty, were applied during post-processing. Finally, the postprocessed uncertainties associated with vessel roll, pitch, yaw and position were applied in Caris HIPS using SBET and RMS files generated using POSPac MMS software.

Uncertainty values of the submitted finalized grid was calculated in Caris using "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). Grid QA v5 within Pydro QC Tools 2 was used to analyze H13009 TVU compliance, a histogram plot of the results is shown below.

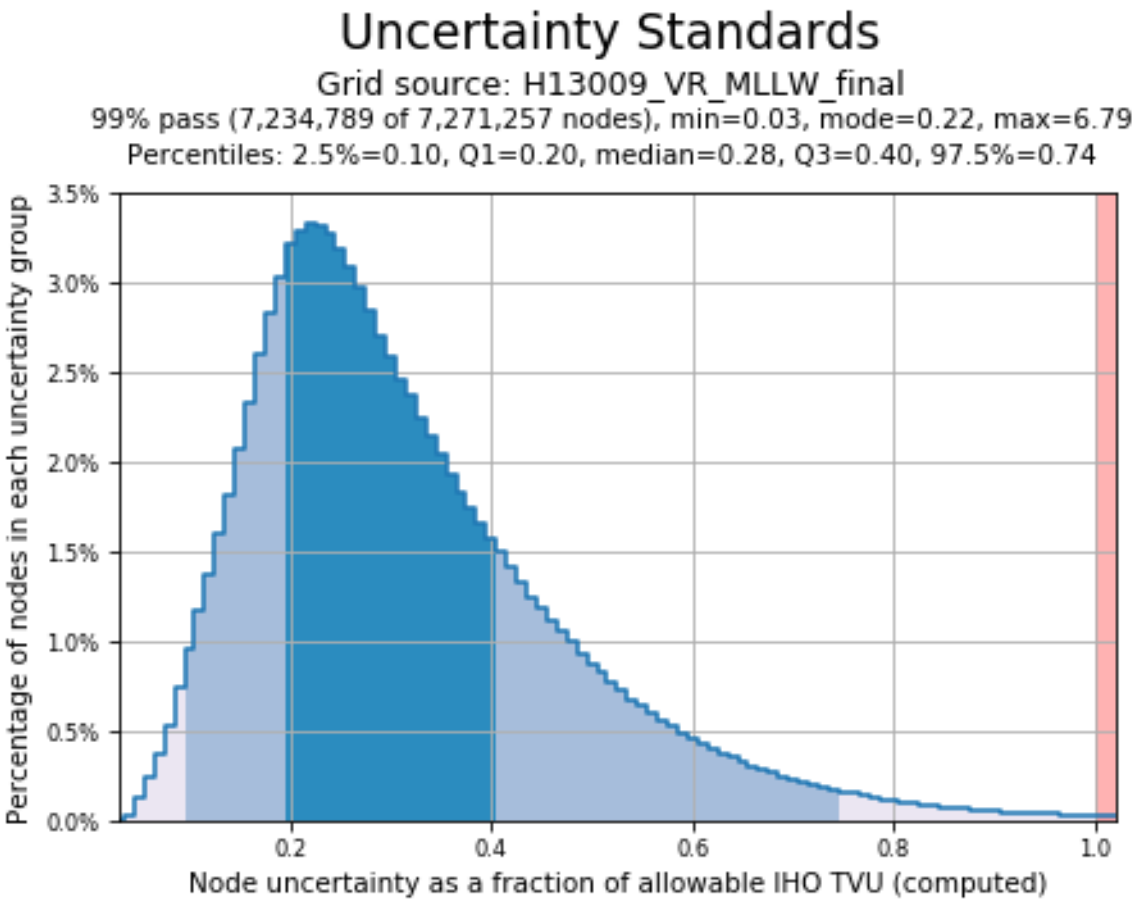


Figure 10: Pydro derived plot showing TVU compliance of H13009 finalized multi-resolution MBES data.

The uncertainty used for the sound speed surface uncertainty for vessels 2801, 2802, 2803, and 2804 are less than the manufacturer's specifications for accuracy of the SVP71. The value applied to these data was 0.15 m/s which correspond with the DAPR and the manufacturer's specifications.

B.2.3 Junctions

Survey H13009 Junctions with one other survey

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
F00736	1:20000	2018	NOAA Ship RAINIER	S

Table 9: Junctioning Surveys

F00736

The junction with survey F00736 covers an area of 0.11 square nautical miles along the southeastern boundary of the survey. A comparison was made with the Compare Grids function of Pydro Explorer using a difference surface derived from a finalized VR .csar of each survey. Analysis of the difference surface indicated that F00736 is an average of 0.1 meters deeper than H13009 with a standard deviation of 0.57 meters. See below graphs for more information.

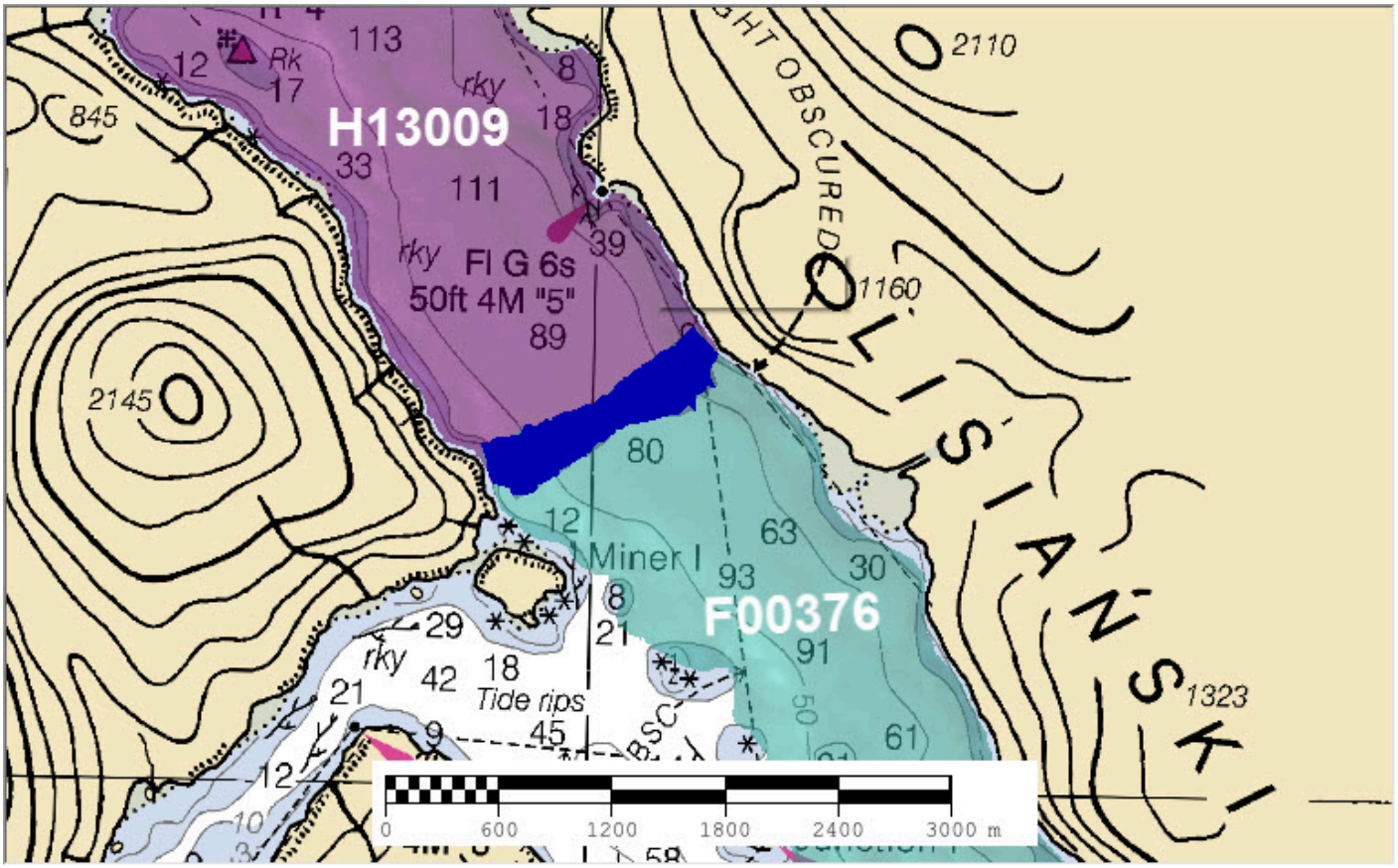


Figure 11: Overview of survey junction between H13009 and F00736.

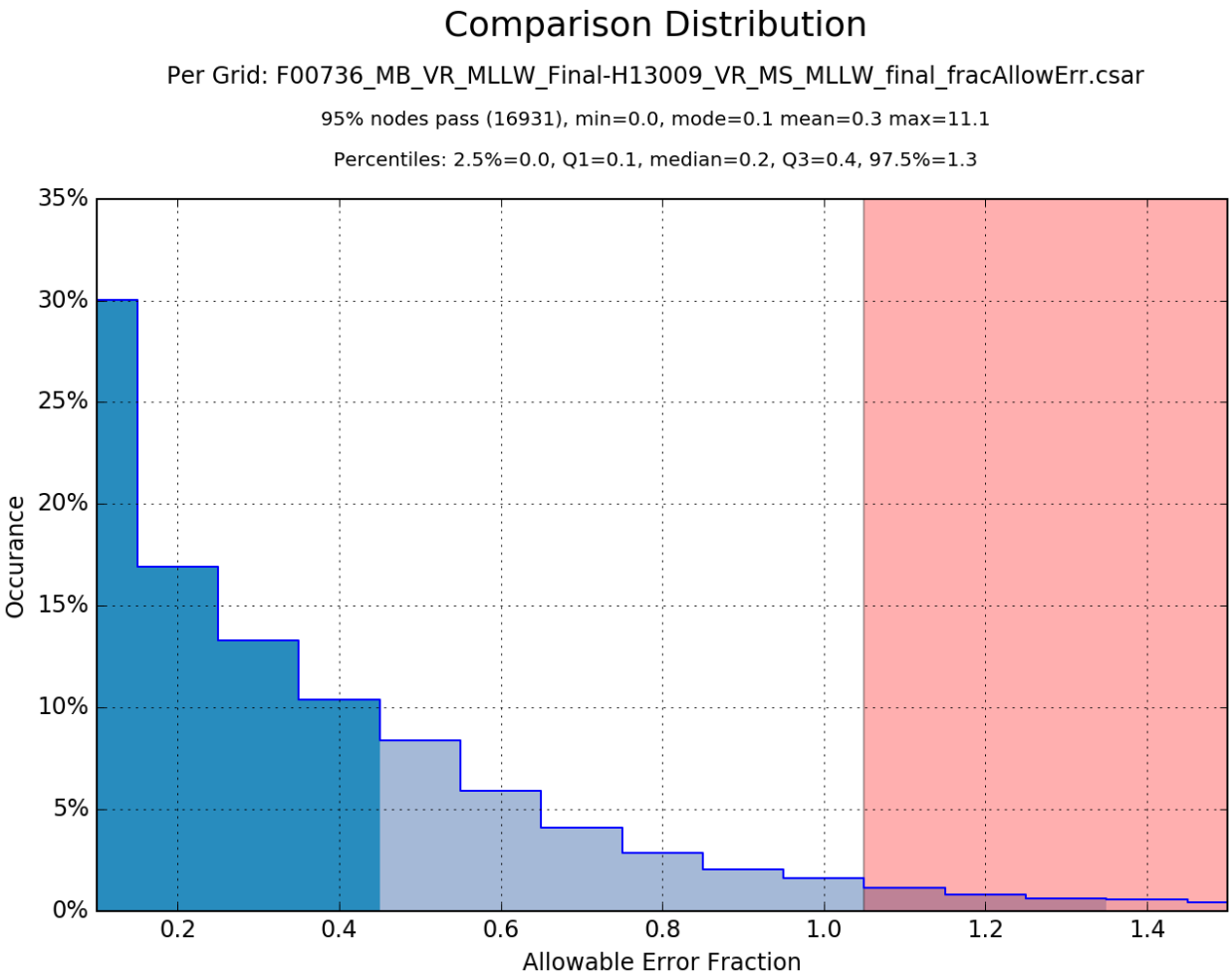
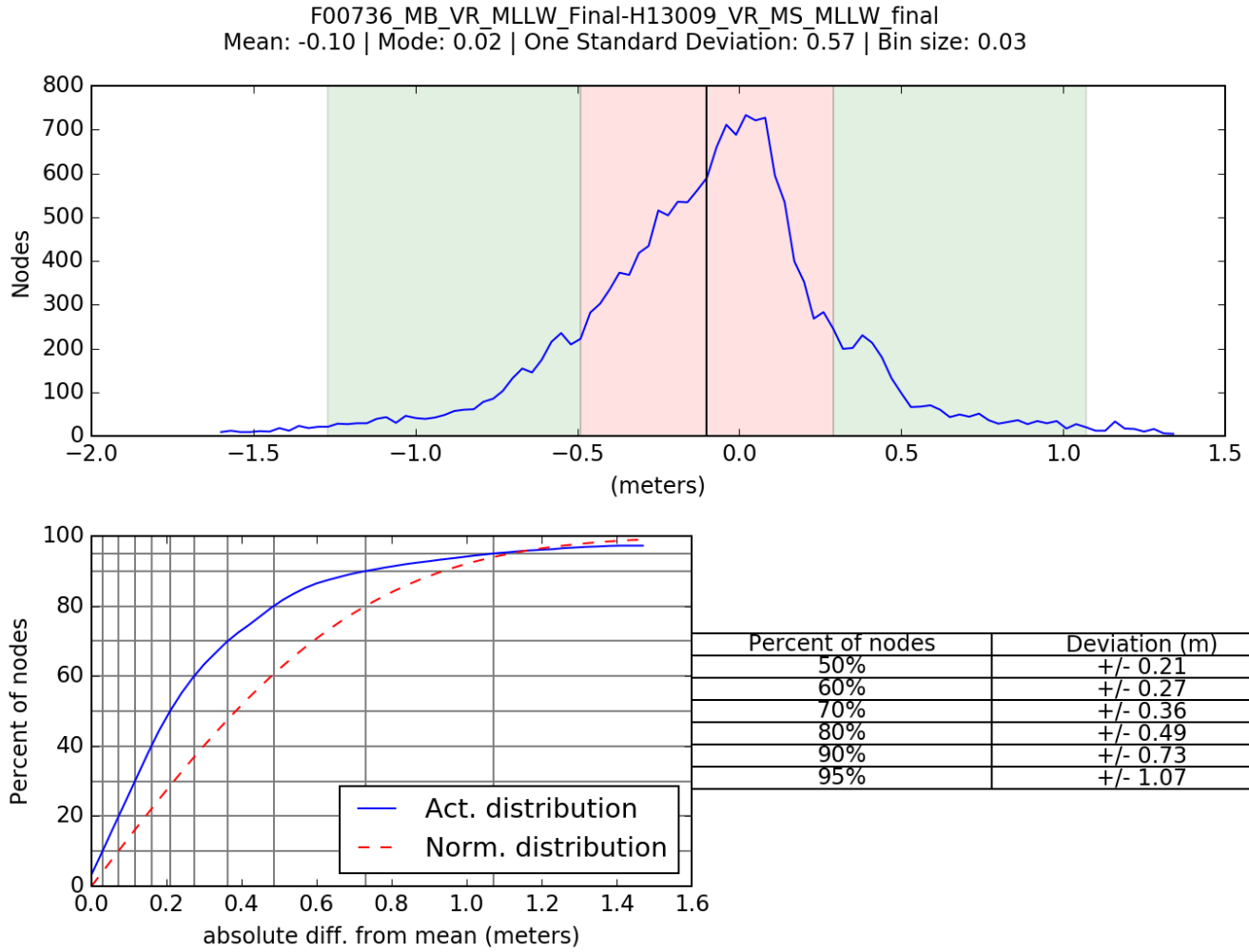


Figure 12: Pydro derived plot showing allowable error between H13009 and F00736.



Percent of nodes	Deviation (m)
50%	+/- 0.21
60%	+/- 0.27
70%	+/- 0.36
80%	+/- 0.49
90%	+/- 0.73
95%	+/- 1.07

Figure 13: Pydro derived plot showing H13009 and F00736 comparison statistics.

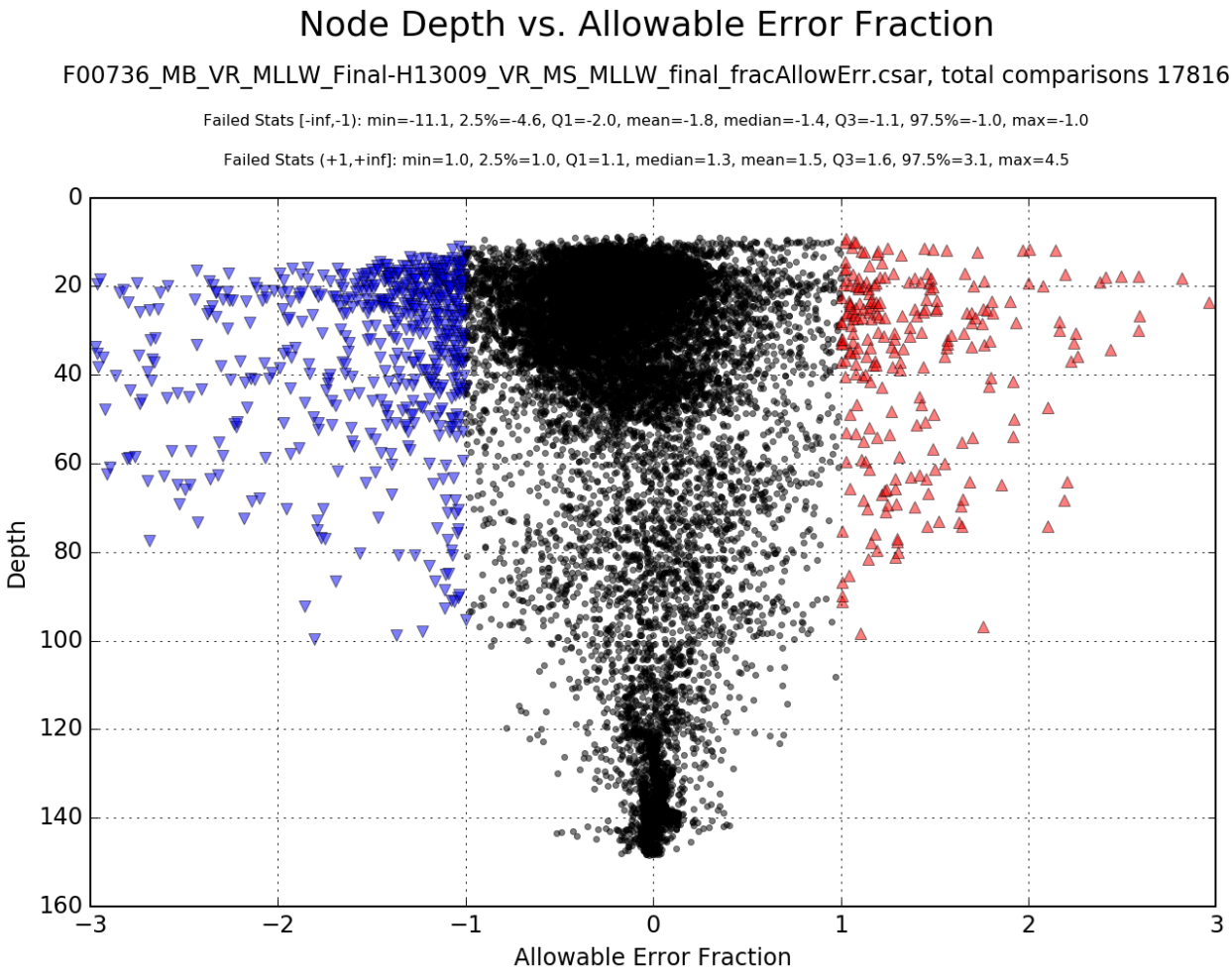


Figure 14: Pydro derived plot showing node depth vs allowable error fraction H13009 and F00736.

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: Sound Speed Cast Frequency: 38 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. For MBES operations from S221, sound speed profiles were acquired using the Odim Brooke Ocean MVP200. Launch sound speed profiles were acquired using Sea-Bird 19plus SEACAT Profilers. All casts were concatenated into a master file and applied to MBES data using the "Nearest distance within time" (4 hours) profile selection method.

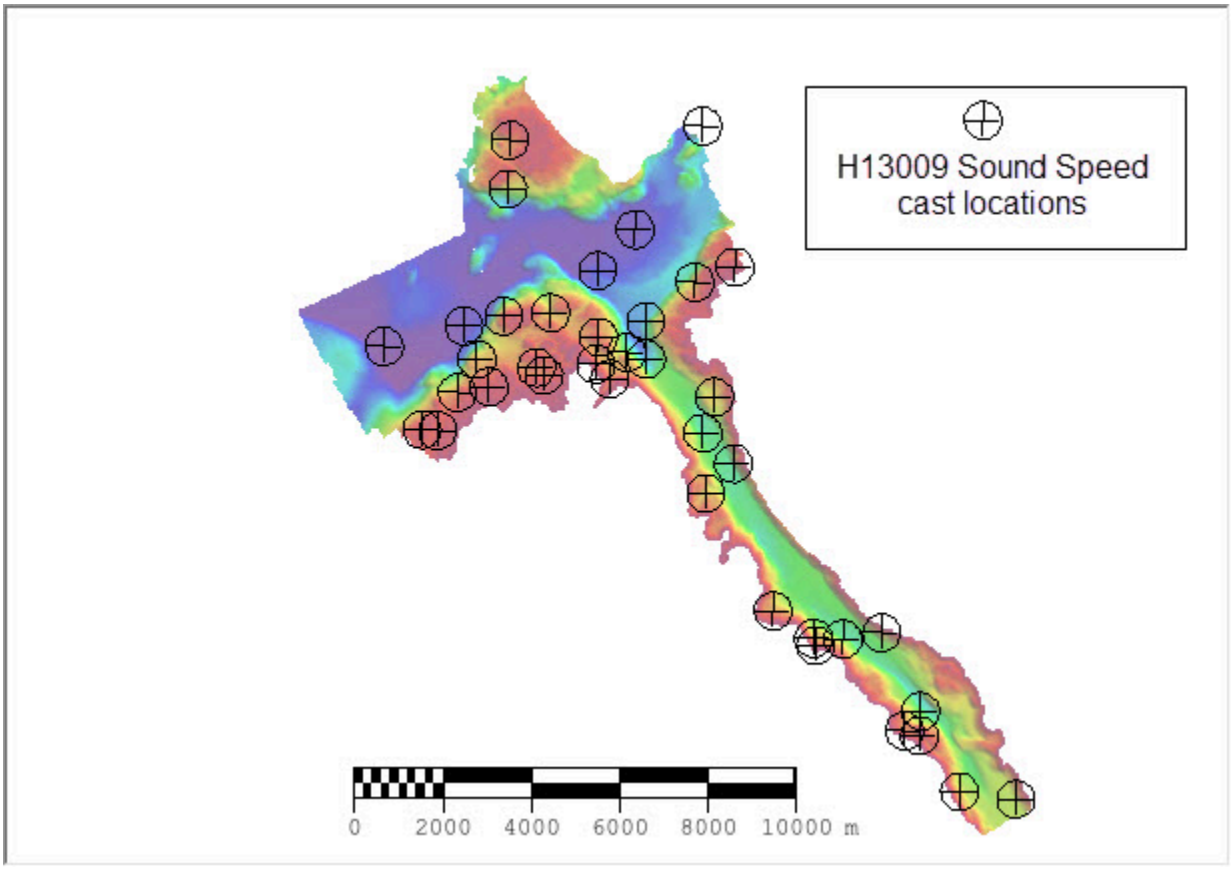


Figure 15: H13009 sound speed cast locations.

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 data were acquired as .all files logged as .all files for delivery to NOAA's Pacific Hydrographic Branch. Backscatter data were processed by the field unit and mosaics generated. One mosaic per vessel per frequency has been delivered with this report. All backscatter processing procedures utilized follow those detailed in the DAPR. Software used to process and produce backscatter mosaics were Fledermaus Geocoder Toolbox version 7.8.1.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile V_5_7.

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
H13009_MB_VR_MLLW	CARIS VR Surface (CUBE)	Variable Resolution	0.5 meters - 347.3 meters	NOAA_VR	Complete MBES
H13009_MB_VR_MLLW_Final	CARIS VR Surface (CUBE)	Variable Resolution	0.5 meters - 347.3 meters	NOAA_VR	Complete MBES

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.

Pydro QC Tools 2 Detect Fliers was used with default settings to find fliers in a finalized VR surface. Obvious noise was rejected by the hydrographer in Caris Subset Editor. After data cleaning, Detect Fliers was run again and found 54 certain fliers; these were investigated and found to be false positives. The results of the Detect Fliers tool are included as a .000 files in the Separates section of this report.

Five critical soundings were created for this survey all were identified as Dangers to Navigation. Additional information about these DTONS are included in the Danger to Navigation Report. The Danger to Navigation Report is included in Appendix 2 of this Report.

C. Vertical and Horizontal Control

Shoreline features were reduced to MLLW using traditional tide methods via TCARI. All MBES bathymetry were acquired relative to the ellipsoid and reduced to MLLW via VDATUM.

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
Elfin Cove	9452634

Table 11: NWLON Tide Stations

There was no Water Level file associated with this survey.

File Name	Status
O190_O360_O375_O392_RA2018.tc	Final

Table 12: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 08/03/2018. The final tide note was received on 08/16/2018.

ERS Datum Transformation

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

Method	Ellipsoid to Chart Datum Separation File
ERS via ERTDM	

Table 13: 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 8.

WAAS

WAAS was used for real-time data acquisition.

C.3 Additional Horizontal or Vertical Control Issues

C.3.1 SBET Processing Method

Precise Positioning-Real Time Extended (PP-RTX) processing methods were used in Applanix POSPac MMS 8.1 software to produce SBETs for post-processing horizontal correction.

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between H13009 survey data and Electronic Navigation Chart (ENC) US4AK36M and US5AK02M using CUBE finalized VR surfaces, selected soundings and contours created in Caris HIPS.

Six Dangers to Navigations (DTON) were identified in the H13009 survey area and submitted to Marine Chart Division's (MCD) Nautical Data Branch. Refer to H13009_DTON.pdf for location and descriptions.

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?
US5AK02M	1:40000	4	02/14/2018	10/04/2016	NO
US4AK36M	1:80000	5	07/27/2018	02/14/2018	NO

Table 14: Largest Scale ENCs

US5AK02M

ENC US5AK02M covers all of survey H13009 with the exception of a portion of the extended coverage, an area approximately 3400 x 6400 meters at the northern edge of coverage.

A comparison between H13009 derived contours and ENC US5AK02M revealed the following: H13009 3-fathom survey depth curve is incomplete, however where comparison was possible the agreement was generally good. The 10-fathom and 20-fathom survey contour lines are in in general agreement with the ENC

depth curves at the mouth of Lisianski Inlet. Inside Lisianski Inlet the 10 and 20-fathom survey contours were found to be generally 100 to 300 meters farther inshore of the charted depth curves. H13009 data revealed several uncharted 20-fathom shoals depicted in the images below.

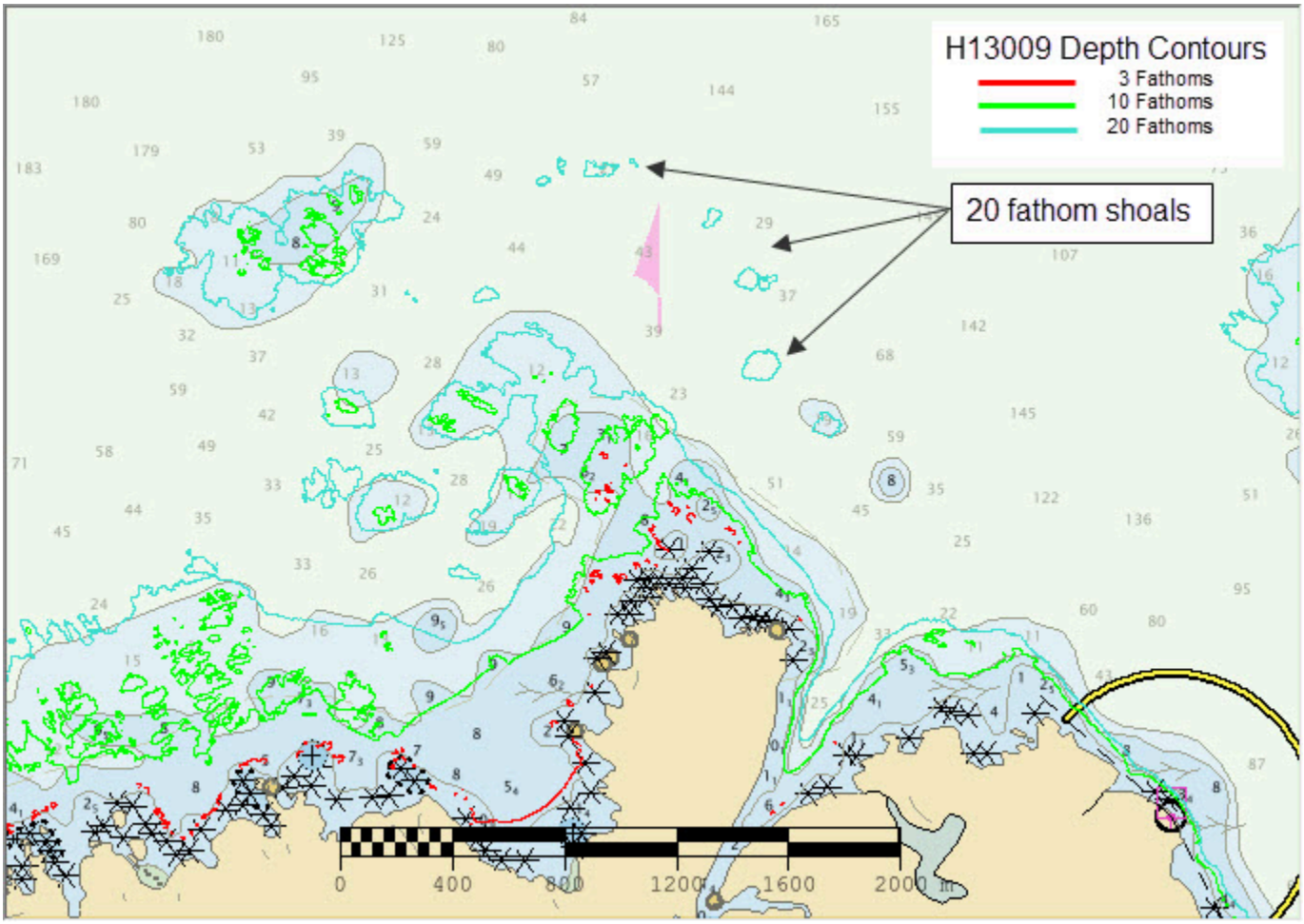


Figure 16: Section of ENC US5AK02M overlaid with 3, 10 and 20-fathom survey contours derived from H13009. Note uncharted 20-fathom shoals.

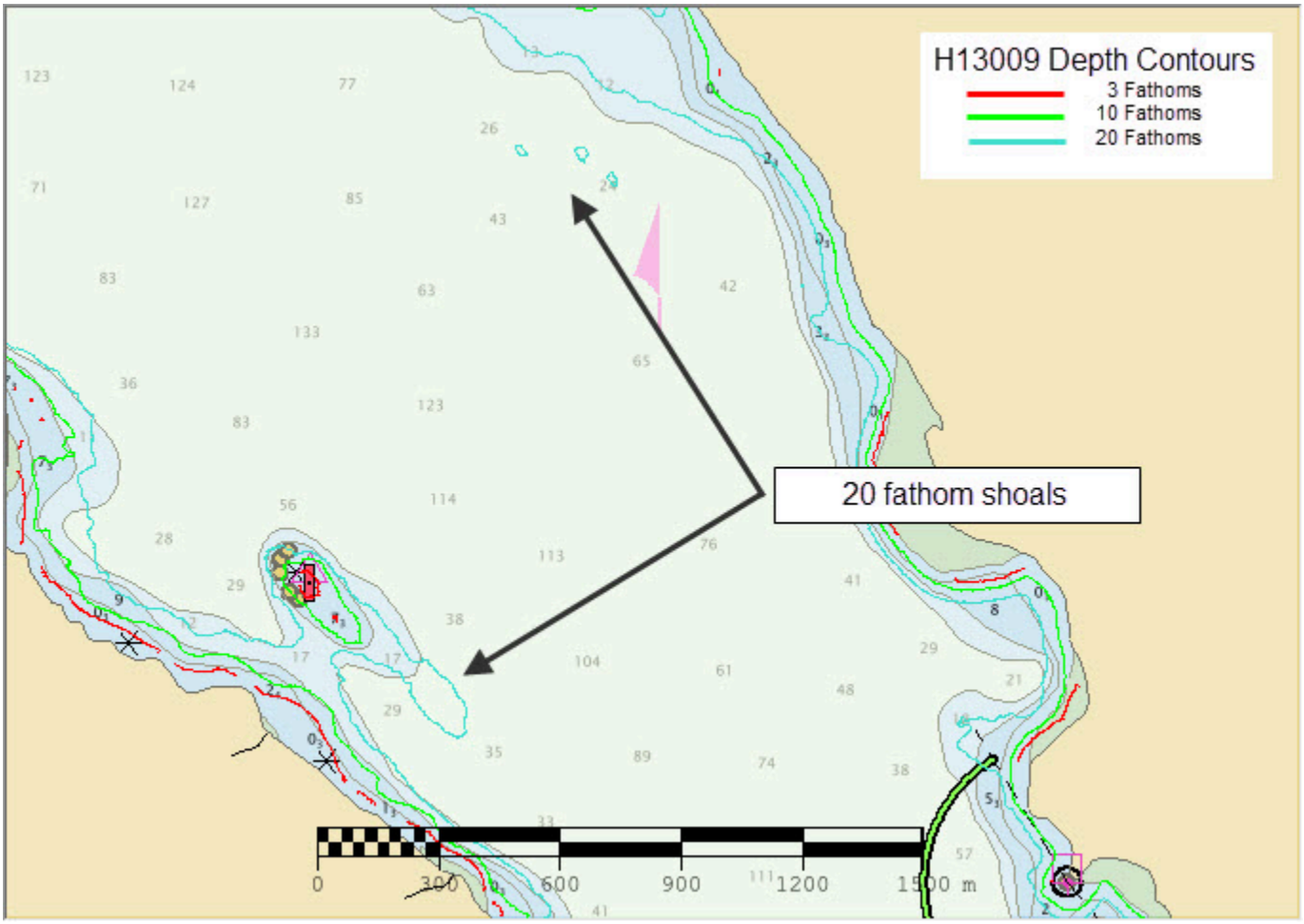


Figure 17: Section of ENC US5AK02M overlaid with 3, 10 and 20-fathom survey contours derived from H13009. Note uncharted 20-fathom shoals.

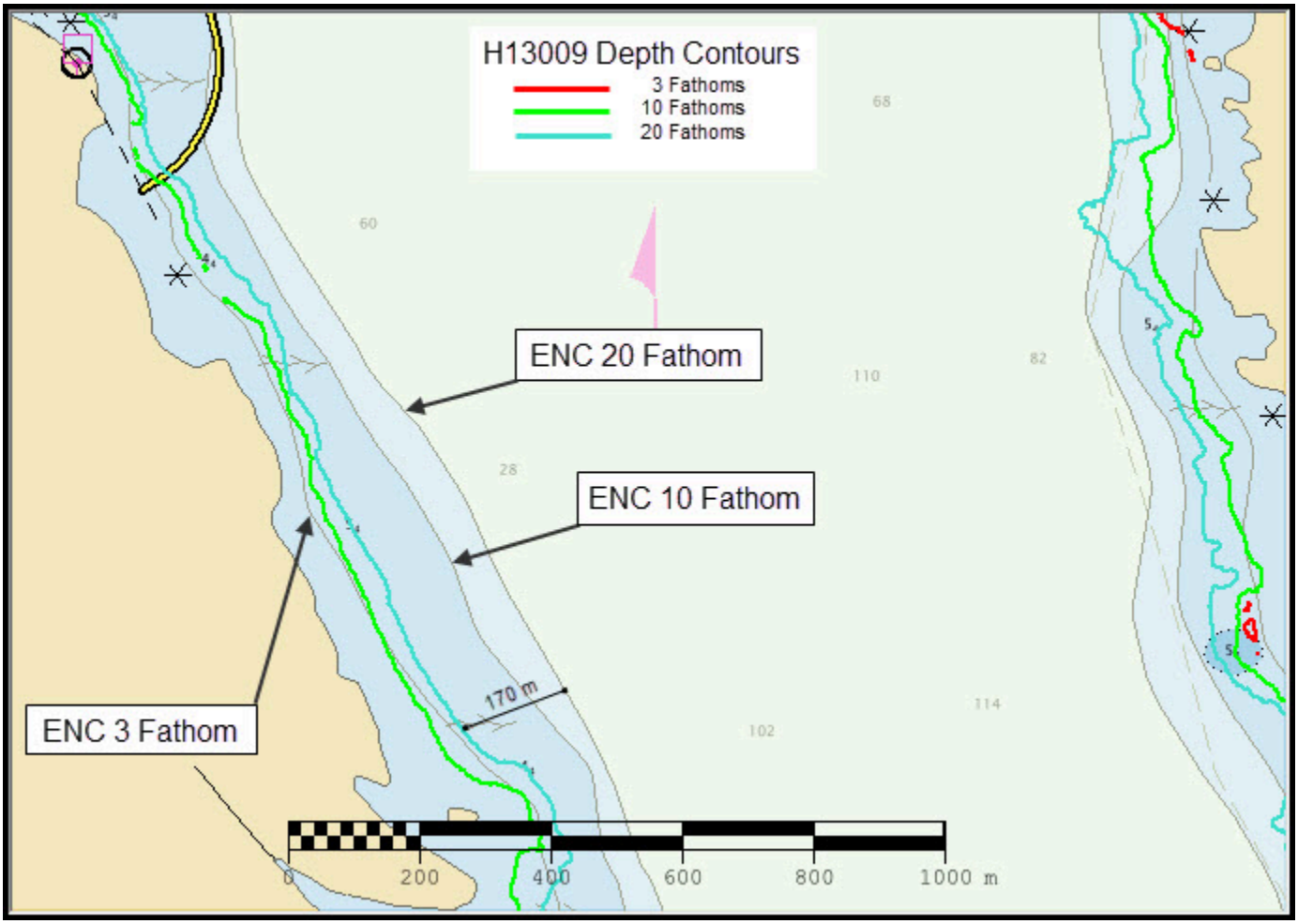


Figure 18: Section of ENC US5AK02M overlaid with 3, 10 and 20-fathom survey contours derived from H13009.

US4AK36M

A comparison between H13009 derived survey contour and ENC US4AK36M revealed the following: The 10-fathom and 50 fathom survey contour lines are in general agreement with the ENC depth curves. H13009 survey soundings were also found to be within approximately 1 fathom of those charted. See figure below for more detail.

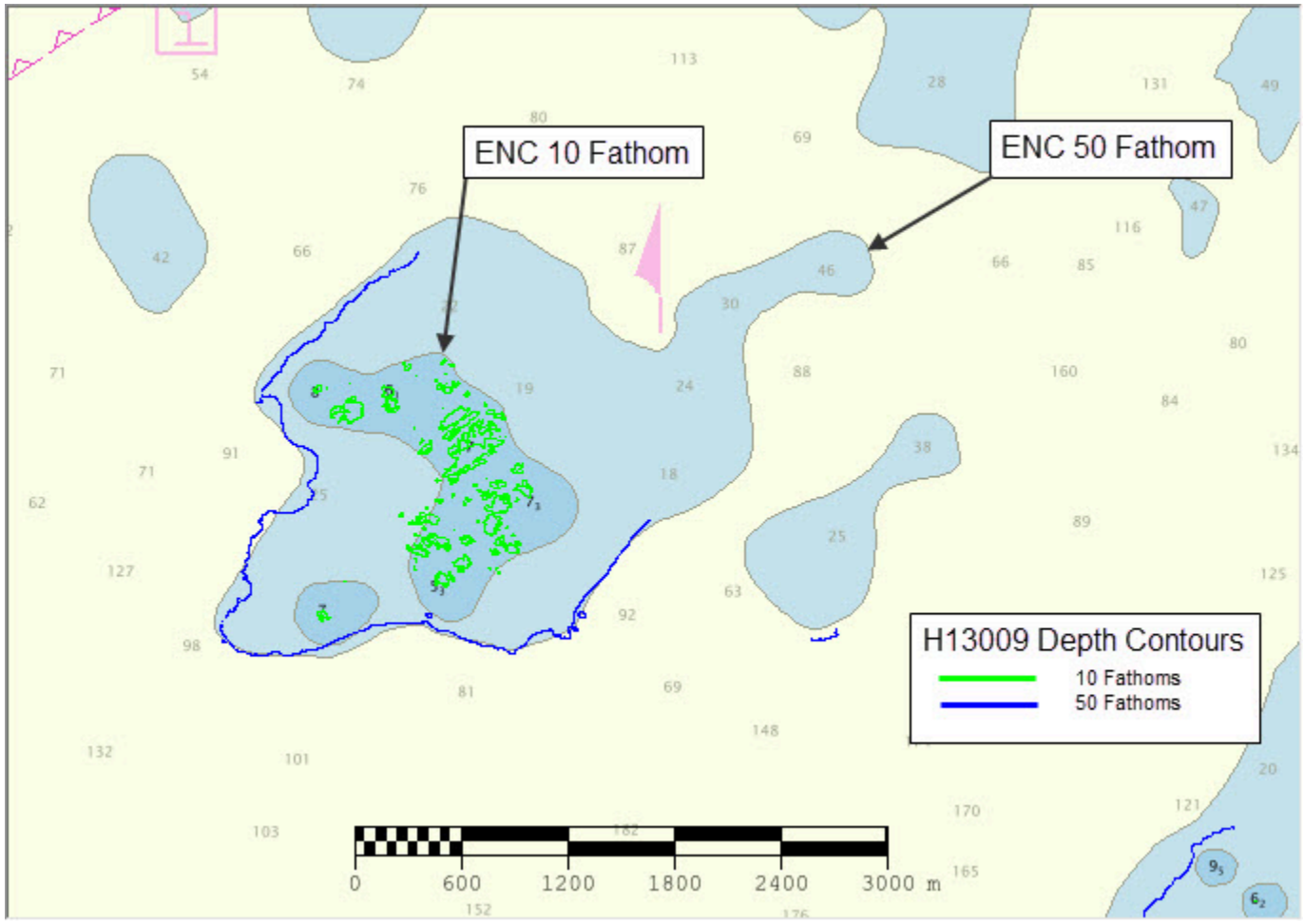


Figure 19: Section of ENC US4AK36M overlaid with 10 and 50-fathom survey contours derived from H13009.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

H13009 MBES data was able to disprove a reported 8 fathom shoal PA.

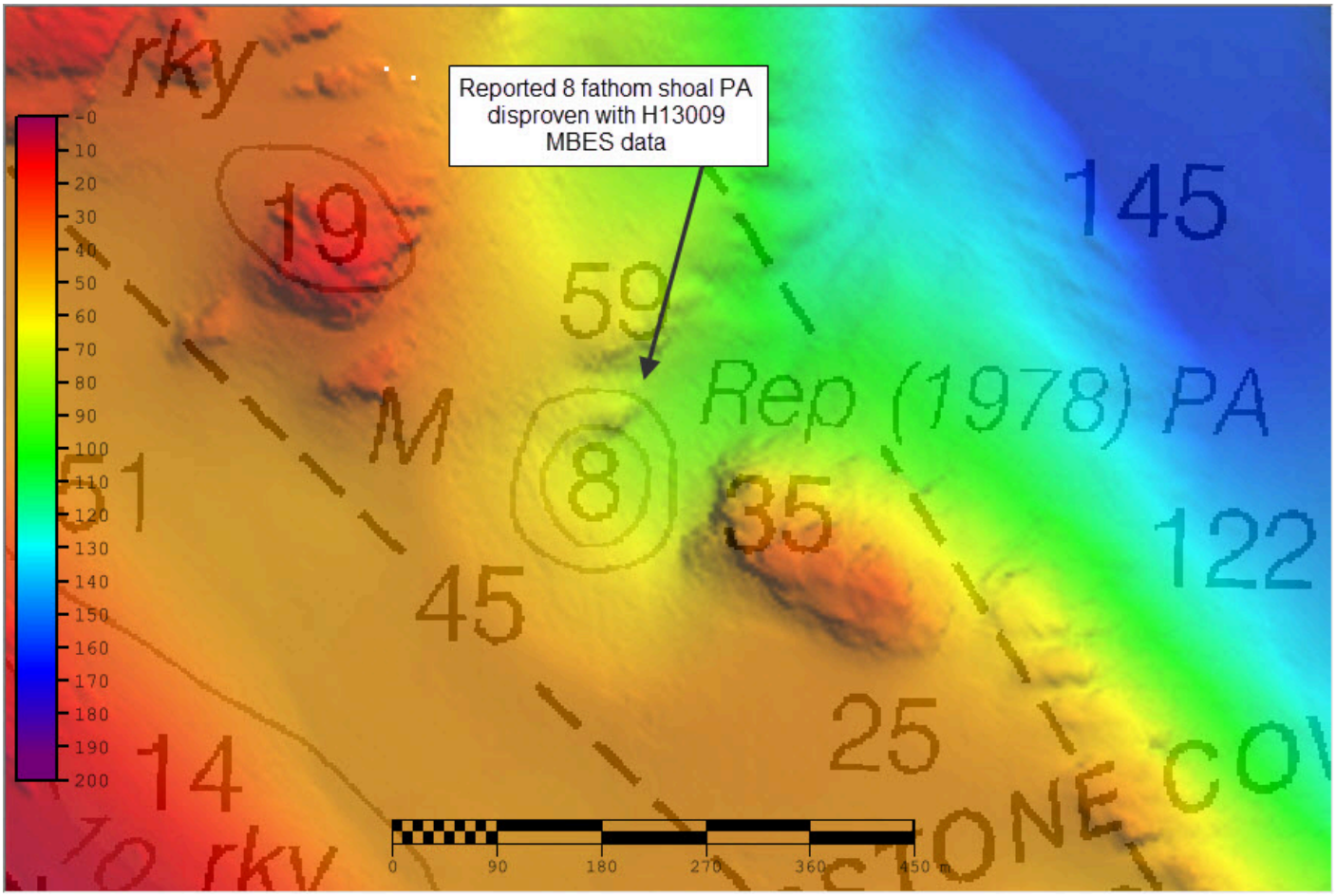


Figure 20: H13009 MBES data overlaid on Chart 17303 showing least depth on shoal reported in 1978.

D.1.4 Uncharted Features

H13009 MBES data revealed a submarine channel in the southern portion of the survey area.

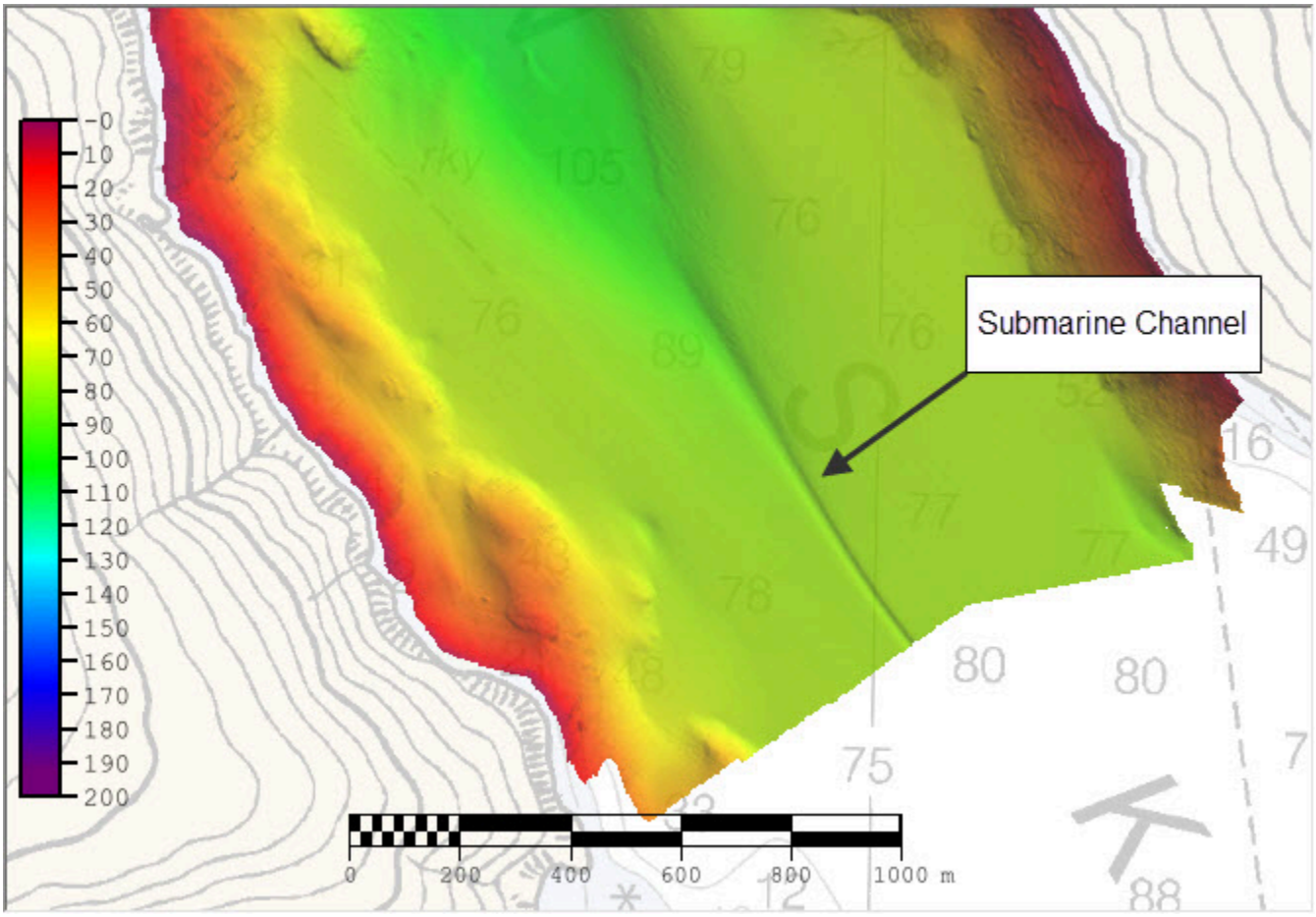


Figure 21: H13009 MBES data overlaid on Chart 17303 showing submarine channel at southern end of survey area.

D.1.5 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.6 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.1.7 Bottom Samples

Seventeen bottom sample locations were assigned for H13009 after their positions were revised at the request of the Hydrographer; see supplemental correspondence for further details. Fourteen of the assigned seventeen samples were acquired; three sample sites were unsafe to approach due to hazardous wave action. In-situ bottom sample photographs were not acquired during this survey due to the "catastrophic failure" of

the flashlights used in the Imaging Grab Sampler equipment and a subsequent "stop use" order from NOAA's Hydrographic Surveys Division. See flashlight warning and waver in the Supplemental Correspondence section submitted with this report.

Six bottom samples were collected for this survey.

D.2 Additional Results

D.2.1 Shoreline

Limited shoreline verification was conducted in accordance with applicable sections of NOAA 2018 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 H13009_FFF (final feature file) to represent the features at chart scale. This file also includes new features found in the filed as well as recommendations to update, retain or delete assigned features.

D.2.2 Aids to Navigation

Five ATONS are located within the assigned limits of survey H13009 and were confirmed to be on station and serving their intended purpose.

D.2.3 Overhead Features

No overhead features exist for this survey.

D.2.4 Submarine Features

No submarine features exist for this survey.

D.2.5 Platforms

No platforms exist for this survey.

D.2.6 Ferry Routes and Terminals

Though not a charted route, Alaska state ferry regularly transits through the survey area on service to the town of Pelican.

D.2.7 Abnormal Seafloor and/or Environmental Conditions

No abnormal seafloor and/or environmental conditions exist for this survey.

D.2.8 Construction and Dredging

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

D.2.9 New Survey Recommendation

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

D.2.10 Suspected Chart Digitization Error

Shoreline acquisition and processing relieved a suspected chart error likely created during digitization. ENC chart US5AK02M attributes the 5.4 fm sounding approximately 130 m from shore as Dace rock. The hydrographer believes the actual Dace rock is the charted land area approximately 30 m from shore.

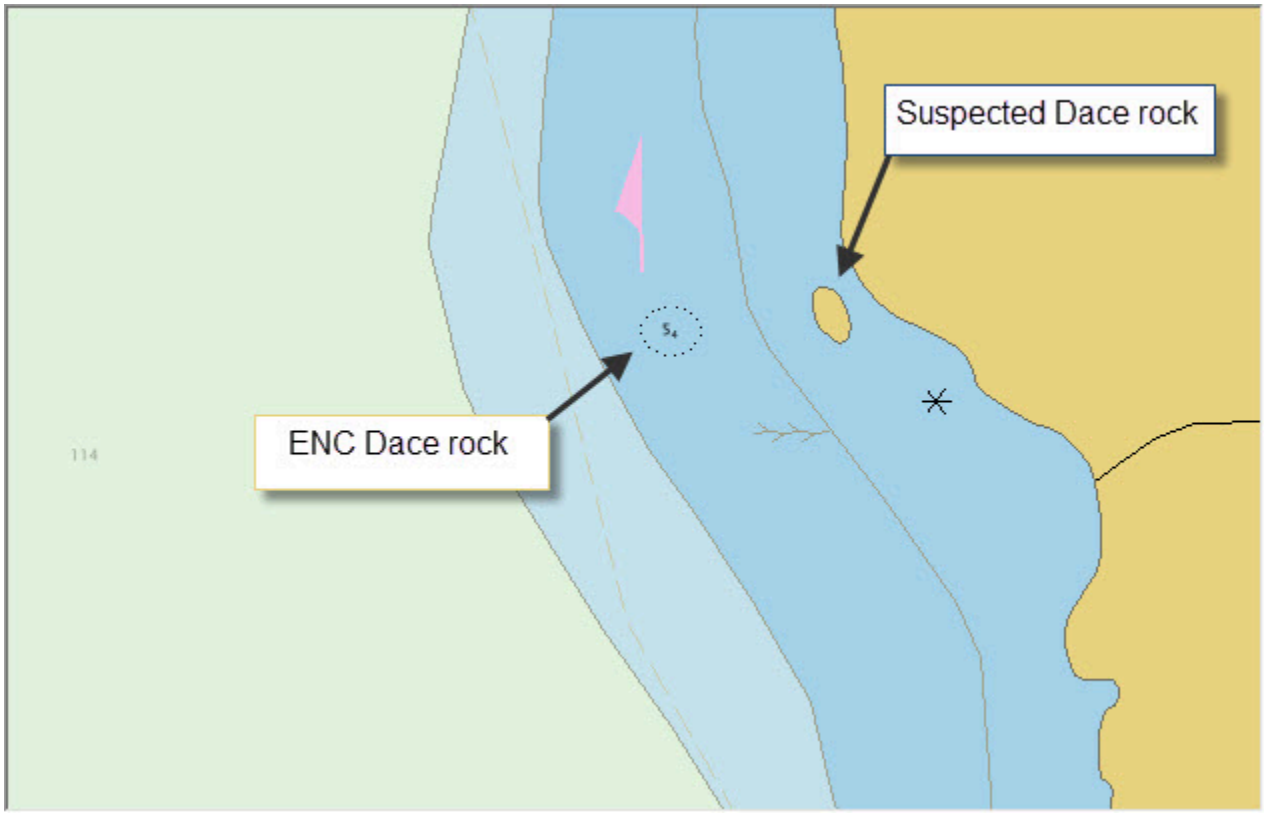


Figure 22: Section of ENC US5AK02M with ENC and suspected Dace rock indicated.

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, 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 J. Zezula, CAPT/NOAA	Commanding Officer	11/06/2018	Digitally signed by EVANS.BENJAMIN.K.1237217094 Date: 2018.11.07 14:25:45 -08'00'
Andrew R. Clos, LT/NOAA	Field Operations Officer	11/06/2018	
James B. Jacobson	Chief Survey Technician	11/06/2018	JACOBSON.JAMES.BRYAN.1269664017 I have reviewed this document 2018.11.06 14:12:37 -08'00'
Audrey E. Jerauld	Survey Technician	11/06/2018	JERAULD.AUDREY.ELIZABETH.1170496260 Digitally signed by JERAULD.AUDREY.ELIZABETH.1170496260 Date: 2018.11.06 13:58:59 -08'00'

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	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

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

PROVISIONAL TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 13, 2018

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-O375-RA-2018
HYDROGRAPHIC SHEET: H13009

LOCALITY: Lisianski Inlet Northwest
Southeast Alaska
TIME PERIOD: June 14 - July 04, 2018

TIDE STATION USED: Ketchikan, AK (9450460)
Lat. 55° 19.9' N Long. 131° 37.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.433 meters

TIDE STATION USED: Port Alexander, AK (9451054)
Lat. 56° 14.8' N Long. 134° 38.8' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.070 meters

TIDE STATION USED: Sitka, AK (9451600)
Lat. 57° 3.1' N Long. 135° 20.5' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.791 meters

TIDE STATION USED: Juneau, AK (9452210)
Lat. 58° 17.9' N Long. 134° 24.7' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.676 meters

TIDE STATION USED: Skagway, AK (9452400)
Lat. 59° 27.0' N Long. 135° 19.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.795 meters

TIDE STATION USED: Elfin Cove, AK (9452634)
Lat. 58° 11.7' N Long. 136° 20.8' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.088 meters

REMARKS: RECOMMENDED Grid

Please use the TCARI grid "O190_O360_O375_O392_FA2018.tc" as the final grid for project OPR-O375-RA-2018, H13009, during the time period between June 26 and July 04, 2018.

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).

Note 2: Annual leveling for Ketchikan (9450460), Port Alexander (9451054), Sitka (9451600), Juneau (9452210) and Elfin Cove (9452634) was not completed in FY18. A review of the verified leveling records from October 2007 - 2017 shows the tide station benchmark networks to be stable within an allowable 0.009 m tolerance. This Tide Note may be used as final stability verification for survey OPR-O375-RA-2018, H13009. CO-OPS will immediately provide a revised Tide Note should subsequent leveling records indicate any benchmark network stability movement beyond the allowable 0.009 m tolerance.

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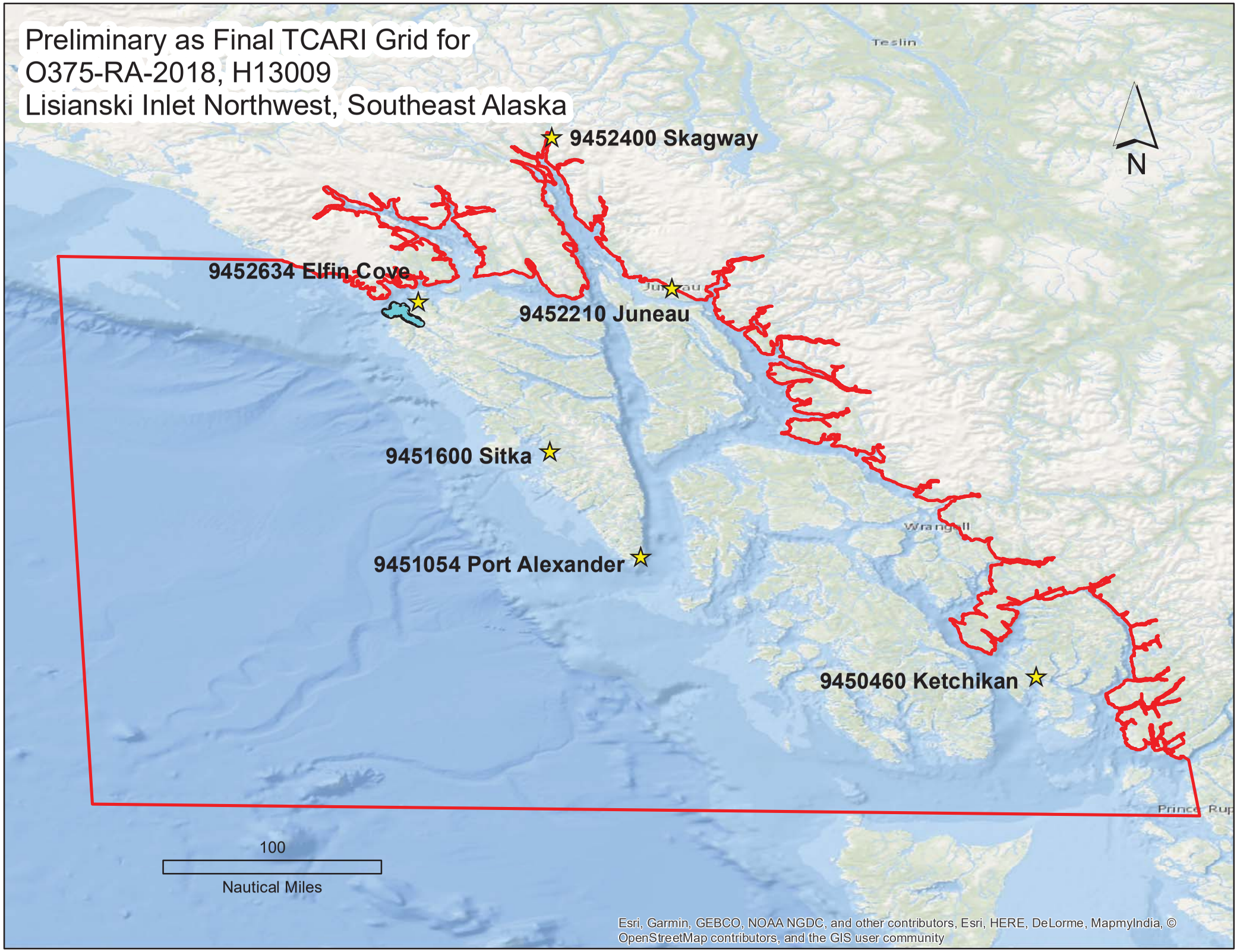

Preliminary as Final TCARI Grid for
O375-RA-2018, H13009
Lisianski Inlet Northwest, Southeast Alaska
9452400 Skagway
9452634 Elfin Cove
9452210 Juneau
9451600 Sitka
9451054 Port Alexander
9450460 Ketchikan
N
100
Nautical Miles
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Subject: IMPORTANT: Stop Use of IGS Flashlights
From: Matthew Forrest - NOAA Federal <matthew.r.forrest@noaa.gov>
Date: 5/30/2018 11:36
To: _OMAO MOA OPS Thomas Jefferson <ops.thomas.jefferson@noaa.gov>, "OPS.Ferdinand Hassler - NOAA Service Account" <ops.ferdinand.hassler@noaa.gov>, _OMAO MOP OPS Rainier <ops.rainier@noaa.gov>, "ops.fairweather" <ops.fairweather@noaa.gov>, _OMAO MOA ChiefST Thomas Jefferson <chiefst.thomas.jefferson@noaa.gov>, _OMAO MOP ChiefST RAINIER <chiefst.rainier@noaa.gov>, _OMAO MOP ChiefST Fairweather <chiefst.fairweather@noaa.gov>
CC: CDR Rick Brennan <richard.t.brennan@noaa.gov>, _NOS OCS HSD OPS <hsd.ops@noaa.gov>, Corey Allen - NOAA Federal <corey.allen@noaa.gov>

Good afternoon all,

This afternoon, *Thomas Jefferson* reported a catastrophic failure of one of the Goldengulf 4000LM flashlights on their Imaging Grab Sampler. The flashlight exploded on the deck of the launch, fortunately with no injuries or damage to anything other than itself.

HSD is therefore directing all field units to stop use of the flashlights supplied. At this time we are working to find a solution to the water intrusion problem, as well as to source another type of light. We are, however, requesting that you continue using the IGS rig without flashlights to try to acquire imagery of the seafloor and any samples acquired during sampling operations.

More information to come as soon as we have it. Please let me know if you have any questions. Thank you!

V/r,

Forrest

--
LT Matthew Forrest, NOAA
Hydrographic Training and Doctrine Coordinator
NOAA Office of Coast Survey, Hydrographic Surveys Division
1315 East-West Highway, SSMC3, 6112
Silver Spring, MD 20910
Office: (240) 847-8240
Cell: (757) 650-3086

APPROVAL PAGE

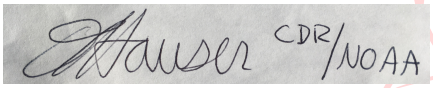
H13009

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

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- Bottom samples
- GeoPDF of survey products

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.



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Approved: _____

Commander Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch