

H12781

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

**DESCRIPTIVE REPORT**

Type of Survey: Navigable Area

Registry Number: H12781

**LOCALITY**

State(s): Alaska

General Locality: Shumagin Islands

Sub-locality: 13 NM Southeast of Simeonof Island

**2015**

CHIEF OF PARTY  
Edward J. Van Den Ameele, CDR/NOAA

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Date:

**HYDROGRAPHIC TITLE SHEET**

**H12781**

**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: **Shumagin Islands**

Sub-Locality: **13 NM Southeast of Simeonof Island**

Scale: **40000**

Dates of Survey: **05/29/2015 to 06/01/2015**

Instructions Dated: **04/06/2015**

Project Number: **OPR-P183-RA-15**

Field Unit: **NOAA Ship *Rainier***

Chief of Party: **Edward J. Van Den Ameele, 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. Notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Centers for Environmental Information (NCEI): <https://www.ncei.noaa.gov/>*

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## Descriptive Report to Accompany Survey H12781

Project: OPR-P183-RA-15

Locality: Shumagin Islands

Sublocality: 13 NM Southeast of Simeonof Island

Scale: 1:40000

May 2015 - June 2015

**NOAA Ship *Rainier***

Chief of Party: Edward J. Van Den Ameele, CDR/NOAA

### A. Area Surveyed

The survey area is referred to as Sheet 5 within the Project Instructions. The area encompasses approximately 71.4 square nautical miles.

#### A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
54° 48' 46.42" N 159° 7' 13.4" W	54° 35' 44.73" N 158° 55' 21.8" W

*Table 1: Survey Limits*

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

#### A.2 Survey Purpose

The purpose of this survey is to provide contemporary data to update National Ocean Service (NOS) nautical charting products. This area is considered navigationally significant and of critical survey priority. In addition, soundings will support a new larger scale navigation chart.

#### A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data acquired for survey H12781 met complete multibeam echosounder (MBES) coverage requirements, including the 5 soundings per node data density requirements in at least 95% of all nodes. In order to extract statistics of the data density achieved, the density layer of each finalized surface was queried within Caris then examined in Excel. Overall, the required data density was achieved in 99.973% of nodes.

#### **A.4 Survey Coverage**

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

<b>Water Depth</b>	<b>Coverage Required</b>
All waters in survey area	Either: A) Complete MBES with backscatter OR B) 100% SSS with concurrent line spacing MBES with backscatter.

Survey coverage was in accordance with the requirements in the Project Instructions and the HSSD.

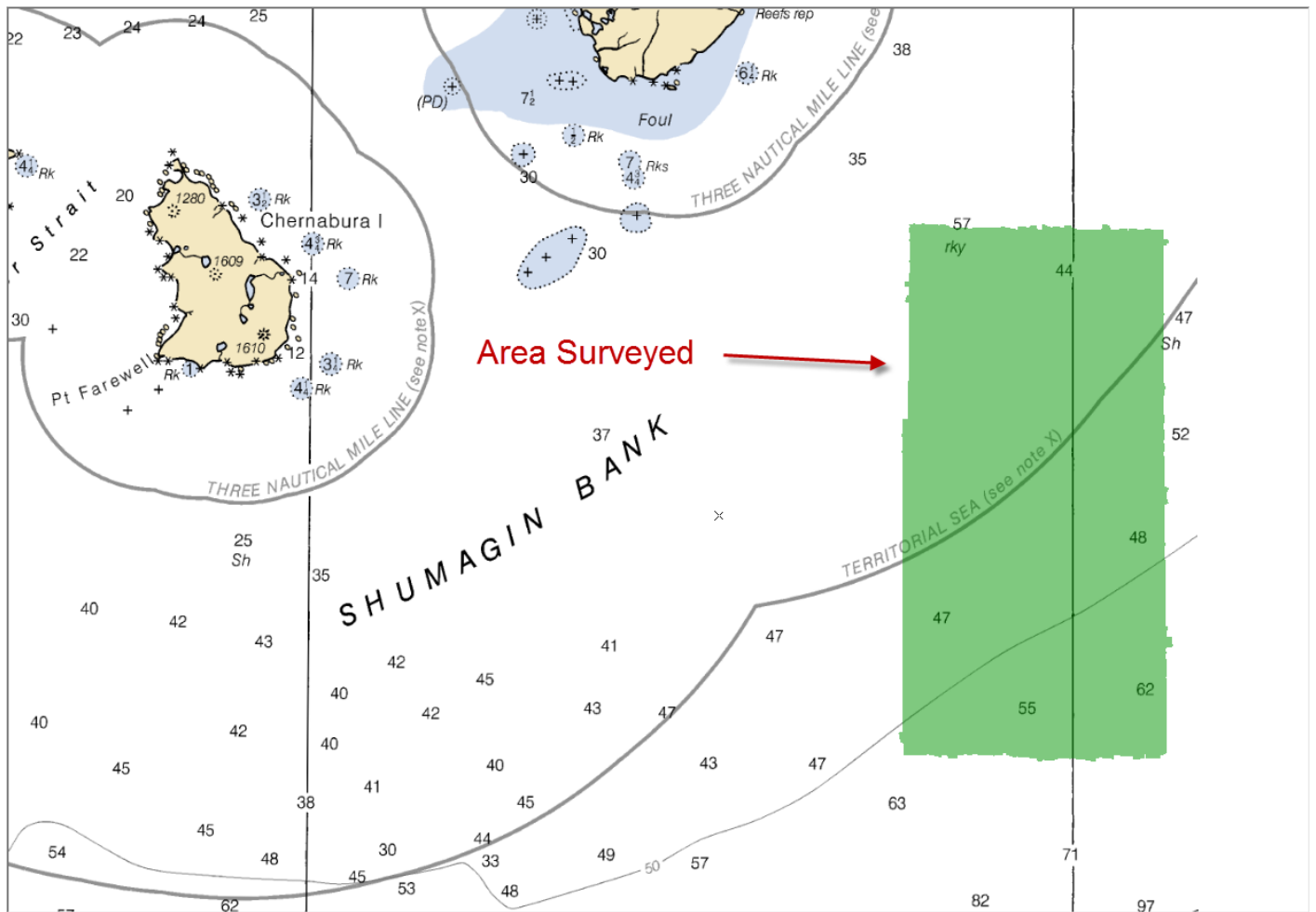


Figure 1: H12781 coverage overlay on Chart 16540



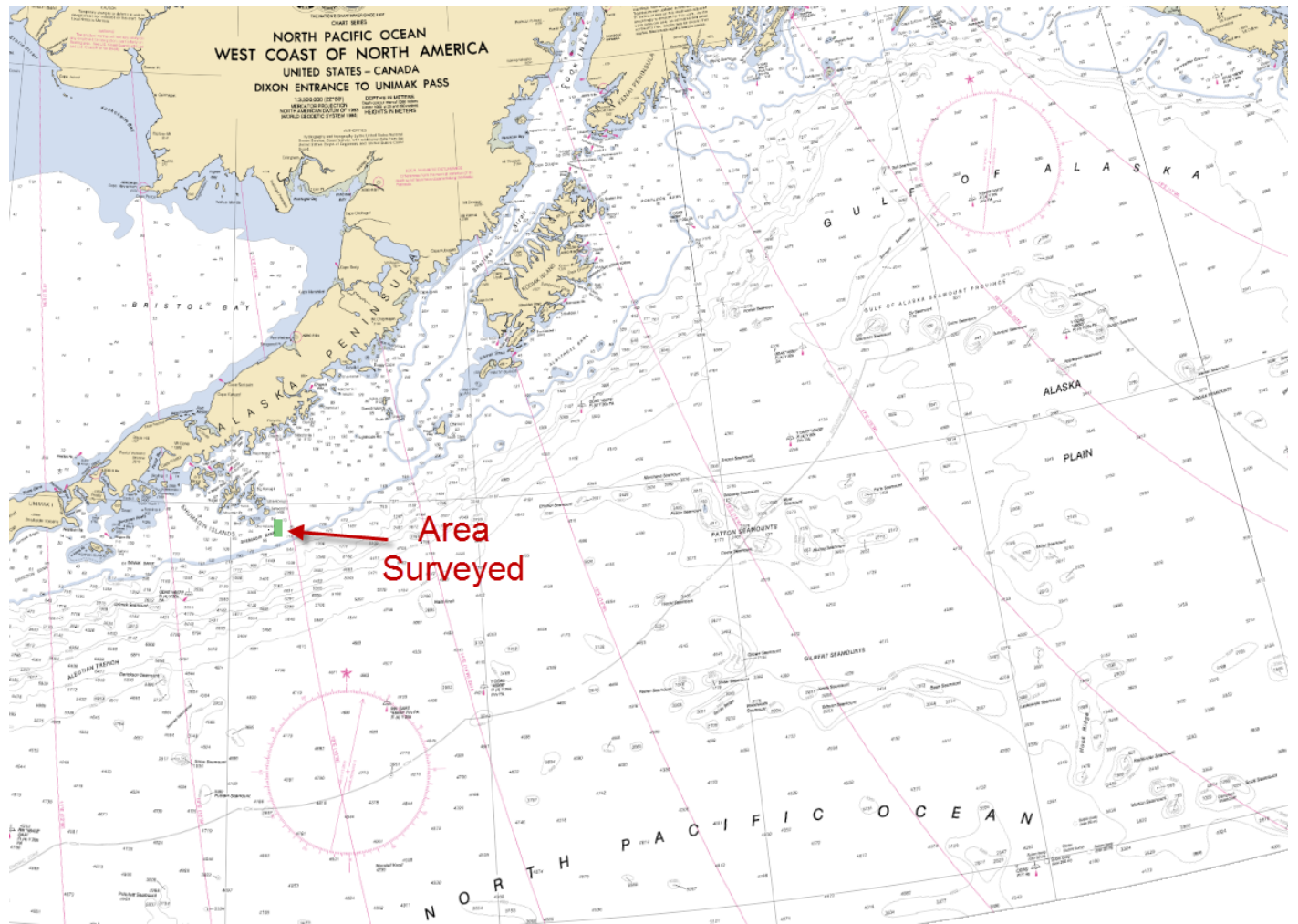


Figure 2: H12781 coverage overlay on Chart 500

## A.5 Survey Statistics

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

	<b>HULL ID</b>	<i>S-221</i>	<i>2803</i>	<b><i>Total</i></b>
<b>LNM</b>	<b>SBES Mainscheme</b>	0	0	0
	<b>MBES Mainscheme</b>	518.197	0	518.197
	<b>Lidar Mainscheme</b>	0	0	0
	<b>SSS Mainscheme</b>	0	0	0
	<b>SBES/SSS Mainscheme</b>	0	0	0
	<b>MBES/SSS Mainscheme</b>	0	0	0
	<b>SBES/MBES Crosslines</b>	31.856	12.246	44.102
	<b>Lidar Crosslines</b>	0	0	0
<b>Number of Bottom Samples</b>				3
<b>Number Maritime Boundary Points Investigated</b>				0
<b>Number of DPs</b>				0
<b>Number of Items Investigated by Dive Ops</b>				0
<b>Total SNM</b>				71.4

*Table 2: Hydrographic Survey Statistics*

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

<b>Survey Dates</b>	<b>Day of the Year</b>
05/29/2015	149
05/30/2015	150

<b>Survey Dates</b>	<b>Day of the Year</b>
05/31/2015	151
06/01/2015	152

*Table 3: 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:

<b>Hull ID</b>	<i>S-221</i>	<i>2803</i>
<b>LOA</b>	70.4 meters	8.8 meters
<b>Draft</b>	4.7 meters	1.1 meters

*Table 4: Vessels Used*

## B.1.2 Equipment

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

<b>Manufacturer</b>	<b>Model</b>	<b>Type</b>
Applanix	POS MV v4	Positioning and Attitude System
Kongsberg	EM710	MBES
Reson	SVP70	Sound Speed System
Odim Brooke Ocean (Rolls Royce Group)	Moving Vessel Profiler 200	Conductivity, Temperature, and Depth Sensor
Reson	SeaBat 7125-B	MBES
Reson	SVP71	Sound Speed System

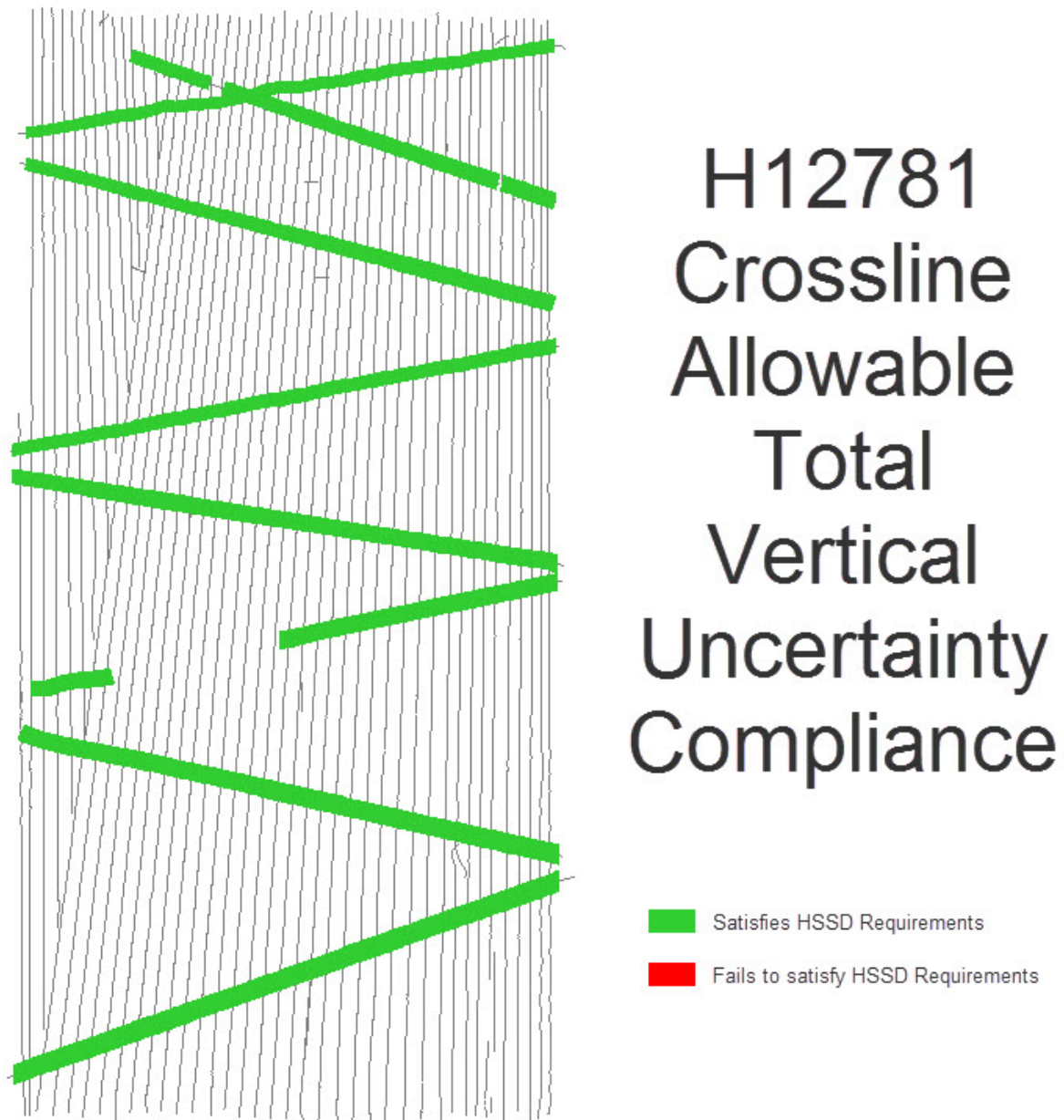
*Table 5: Major Systems Used*

## B.2 Quality Control

### B.2.1 Crosslines

Crosslines acquired for this survey totaled 8.51% of mainscheme acquisition.

Multibeam crosslines were acquired using Rainer (S-221) and Rainier launch 2803 (RA-3). A 4-meter CUBE surface was created using only H12781 mainscheme lines, and a second 4-meter surface was created using only crosslines. A 4-meter difference surface was then generated in Caris from which statistics were derived. For its respective depths, the difference surface was compared to the IHO allowable total vertical uncertainty (TVU) standards. In total, 99.944% of the depth differences between H12781 mainscheme and crossline data met HSSD TVU standards.



*Figure 3: Depth differences between H12781 mainscheme and crossline data as compared to HSSD TVU accuracy standards for associated depths. Mainscheme lines shown in gray.*

Depth range	IHO Order	Number of nodes	Nodes satisfying HSSD	Percent nodes satisfying HSSD accuracy
Less than 100m	Order 1	1,684,931	1,684,396	100.0%
Greater than 100m	Order 2	415	415	100.0%
TOTAL:		1,685,346	1,684,811	<b>99.968%</b>

Figure 4: Summary table indicating percentage of difference surface nodes between H12781 mainscheme and crossline data that met HSSD allowable TVU standards for associated depths.

**Due to rounding, the percent of nodes satisfying HSSD accuracy for depths less than 100 meters is listed in the table as 100.0%, but the actual percentage is 99.968%.**

### B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

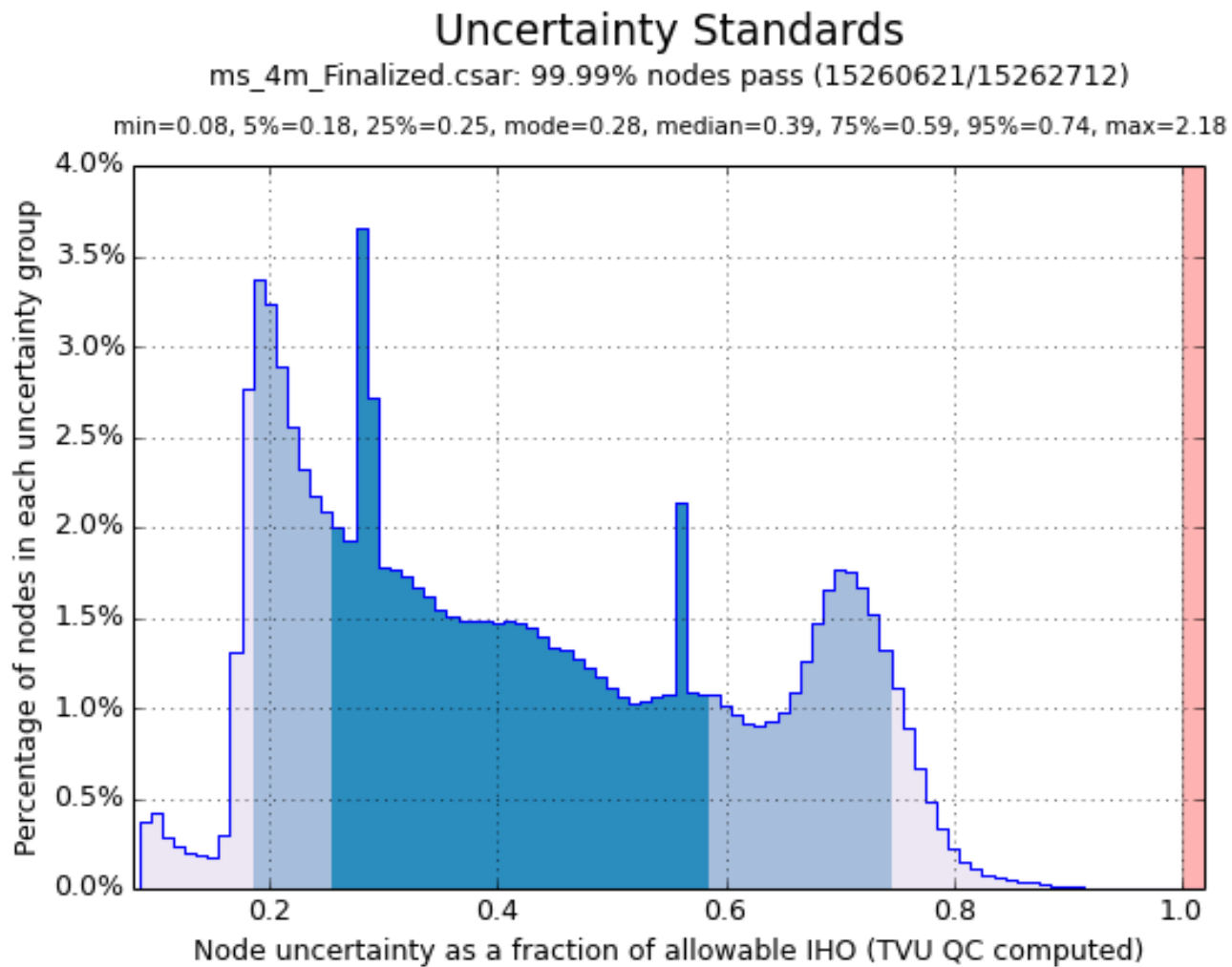
Measured	Zoning	Method
0 meters	0.0816 meters	

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S221 (Rainier)		1 meters/second	.05 meters/second
2803	3 meters/second		.15 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Uncertainty values of submitted finalized grids were calculated in Caris using the "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). To visualize where uncertainty requirements were met, for each surface a custom IHO Order 1 Uncertainty layer was created, based on the difference between the calculated uncertainty of the nodes and the allowable uncertainty defined in the HSSD. To quantify the extent to which requirements were met, the HSSD Compliance layers were queried within Caris and examined in Excel. Overall, 99.99% of survey H12781 nodes met the uncertainty requirements specified in the HSSD.



*Figure 5: Uncertainty Standards Generated by Pydro*

### B.2.3 Junctions

Three junction comparisons were completed for H12781. One survey (H12595) was acquired by NOAA Ship *Rainier* in 2013, and two surveys (H12780 and H12782) were completed in 2015 by NOAA Ship *Fairweather*. Depth comparisons were performed using Caris difference surfaces.

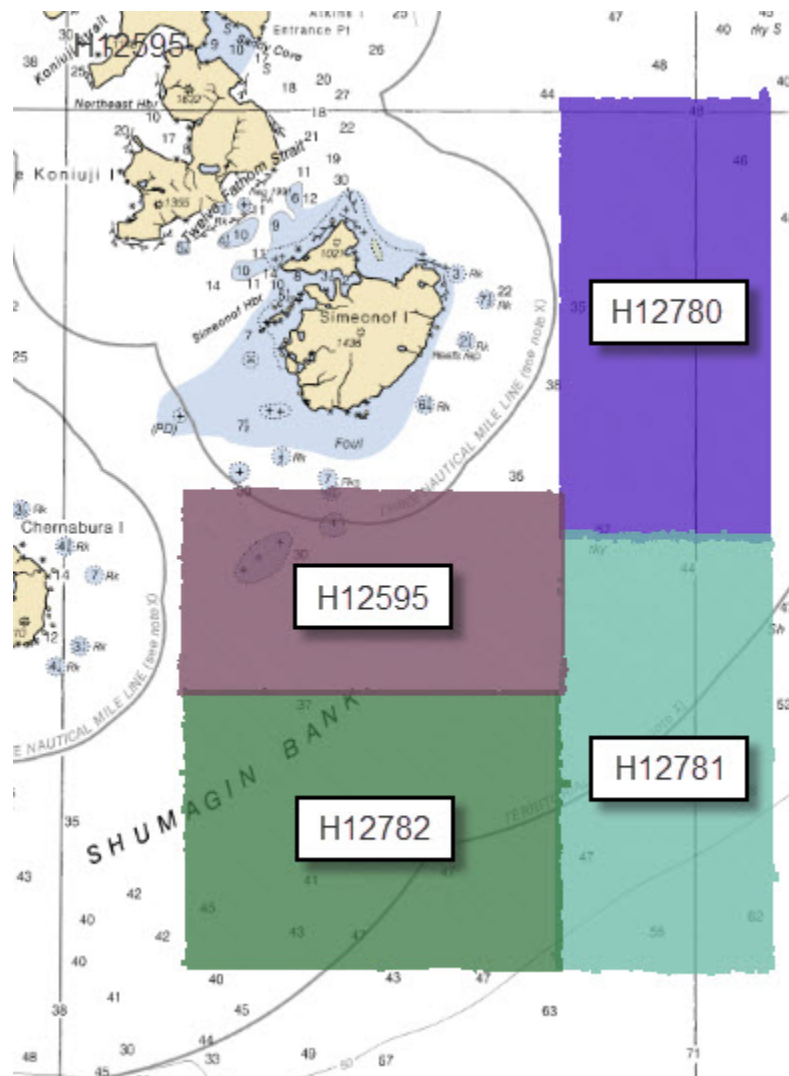


Figure 6: Overview of junctions with survey H12781.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12595	1:40000	2013	NOAA Ship RAINIER	NW
H12780	1:40000	2015	NOAA Ship FAIRWEATHER	N
H12782	1:40000	2015	NOAA Ship FAIRWEATHER	W

Table 8: Junctioning Surveys



### H12595

Overlap with survey H12595 was approximately 175 to 615 meters wide, covering an area of .65 square nautical miles along the northwestern boundary of H12781. Depths in the junction area range from approximately 63-75 meters. Surfaces with a 4-meter resolution were used for comparison. For the respective depths, the difference surface was compared to the allowable TVU standards specified in the HSSD. In total, 99.563% of the depth differences between H12781 and junction survey H12595 are within allowable uncertainties.

### H12780

Overlap with survey H12780 was approximately 250 to 600 meters wide, covering an area of 1.28 square nautical miles along the northern boundary of H12781. Depths in the junction area range from approximately 63-74 meters. Though the depths called for a 4-meter resolution surface, we were only provided with an 8-meter resolution surface, therefore comparison of 8-m surfaces was conducted. For the respective depths, the difference surface was compared to the allowable TVU standards specified in the HSSD. In total, 99.887% of the depth differences between H12781 and junction survey H12780 are within allowable uncertainties.

### H12782

Overlap with survey H12782 was approximately 275 to 845 meters wide, covering an area of 1.39 square nautical miles along the western boundary of H12781. Depths in the junction area range from approximately 75-98 meters, therefore 8-meter resolution surfaces were used. For the respective depths, the difference surface was compared to the allowable TVU standards specified in the HSSD. In total, 99.719% of the depth differences between H12781 and junction survey H12782 are within allowable uncertainties.

## **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**

### MVP Malfunction

On DN149 and DN150, the Moving Vessel Profiler 200 (MVP200) onboard S-221 (Rainier) was not fully functional and only capable of taking static casts. Because of this issue, the recommended cast frequency of four hours was not met. No adverse effects were seen in the data. Please see Sound Speed Methods for further information.

*There were sound speed errors identified in the data that are likely a result of the MVP issues noted above. The data has been reviewed and has been deemed adequate for charting despite the presence of the refraction errors.*

### **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: For MBES operations conducted on S221, sound speed profiles were acquired using the Rolls Royce MVP200 approximately every hour or as recommended by Seafloor Information System (SIS). Recommendations for casts are made by displaying a yellow or red background on the sound speed value within the SIS program. Yellow indicated 2m/s difference between the last cast and the real-time surface sound speed, while red indicated 5m/s difference. All casts were concatenated into a master file and applied to lines using the "Nearest in distance within time (4 hours)" profile selection method. Examination yielded little or no degradation of data quality.

Due to the MVP's limited functionality on DN149 and DN150, variations in sound speed application occurred for some lines. In Caris HIPS, the option "Nearest in Distance within 6 hours" was used for DN149 line 0008 and DN150 lines 0009-0010.

The intervals for casts taken on DN149 were approximately 8 hours apart and 5 hours apart. For the four casts taken on DN150, intervals between casts were approximately 1 hour apart, 5 hours apart, and 5 hours apart.

*Sound speed application option "Nearest in Distance within 6 hours" was also applied to DN 152 lines 0011 - 0018.*

### **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 logged as both .all and .7k files and has been sent to the National Centers for Environmental Information (NCEI). Backscatter was not processed by the field unit.

## B.5 Data Processing

### B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

Manufacturer	Name	Version
Caris	HIPS/SIPS	9.0.15

*Table 9: Primary bathymetric data processing software*

The following Feature Object Catalog was used: NOAA Profile V\_5\_3.

### 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
H12781_MB_4m_MLLW	CUBE	4 meters	55 meters - 112 meters	NOAA_4m	Complete MBES
H12781_MB_8m_MLLW	CUBE	8 meters	55 meters - 112 meters	NOAA_8m	Complete MBES
H12781_MB_4m_MLLW_Final	CUBE	4 meters	55 meters - 80 meters	NOAA_4m	Complete MBES
H12781_MB_8m_MLLW_Final	CUBE	8 meters	72 meters - 112 meters	NOAA_8m	Complete MBES

*Table 10: Submitted Surfaces*

## 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.

#### Standard Vertical Control Methods Used:

Discrete Zoning

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

Station Name	Station ID
Sand Point	9459450

*Table 11: NWLON Tide Stations*

File Name	Status
9459450.tid	Final Approved

*Table 12: Water Level Files (.tid)*

File Name	Status
P183FA2015CORP.zdf	Final

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

A request for final approved tides was sent to N/OPS1 on 06/10/2015. The final tide note was received on 06/24/2015.

## C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83) Zone 4.

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

The following PPK methods were used for horizontal control:

### Single Base

The base station used for this project was installed by NOAA Ship Fairweather and was named "Simeonof Island" and was installed on the northern shore of Simeonof Island. Refer to the HVCR for further information.

The following user installed stations were used for horizontal control:

HVCR Site ID	Base Station ID
Simeonof Island 9677	Simeonof Island

*Table 14: User Installed Base Stations*

The following DGPS Stations were used for horizontal control:

DGPS Stations
Cold Bay, Alaska (289kHz)

*Table 15: USCG DGPS Stations*

## C.3 Additional Horizontal or Vertical Control Issues

### 3.3.1 Missing POS/MV Data

During acquisition on DN151, the Uninterrupted Power Supply (UPS) on S-221 failed causing a loss of power to the ship's Applanix POS/MV system. As a result, the POS file for that day was not logged during

the entire time of acquisition. S-221 DN151 lines 0017 and 0018 do not have delayed heave applied, which precluded the ability for SBET / RMS data to be applied in post processing.

*POS/MV files were logged for DN 151, however, due to the UPS failure, there are two POS files for that day. According to the detailed line query, all DN 151 lines, including 0017 and 0018, have delayed heave applied, but SBET and RMS were not applied to 0017 and 0018, therefore, GPS tide was not computed for those lines.*

### **3.3.2 Lines without SBETs**

In addition to the lines with no POS data, SBETs and RMS would not apply to the following lines: DN152, lines 0045, 0046, 0047, 0048, 0049, 0050, 0051, and 0079. DGPS was used for positioning of these lines; all H12781 data meets HSSD horizontal accuracy requirements.

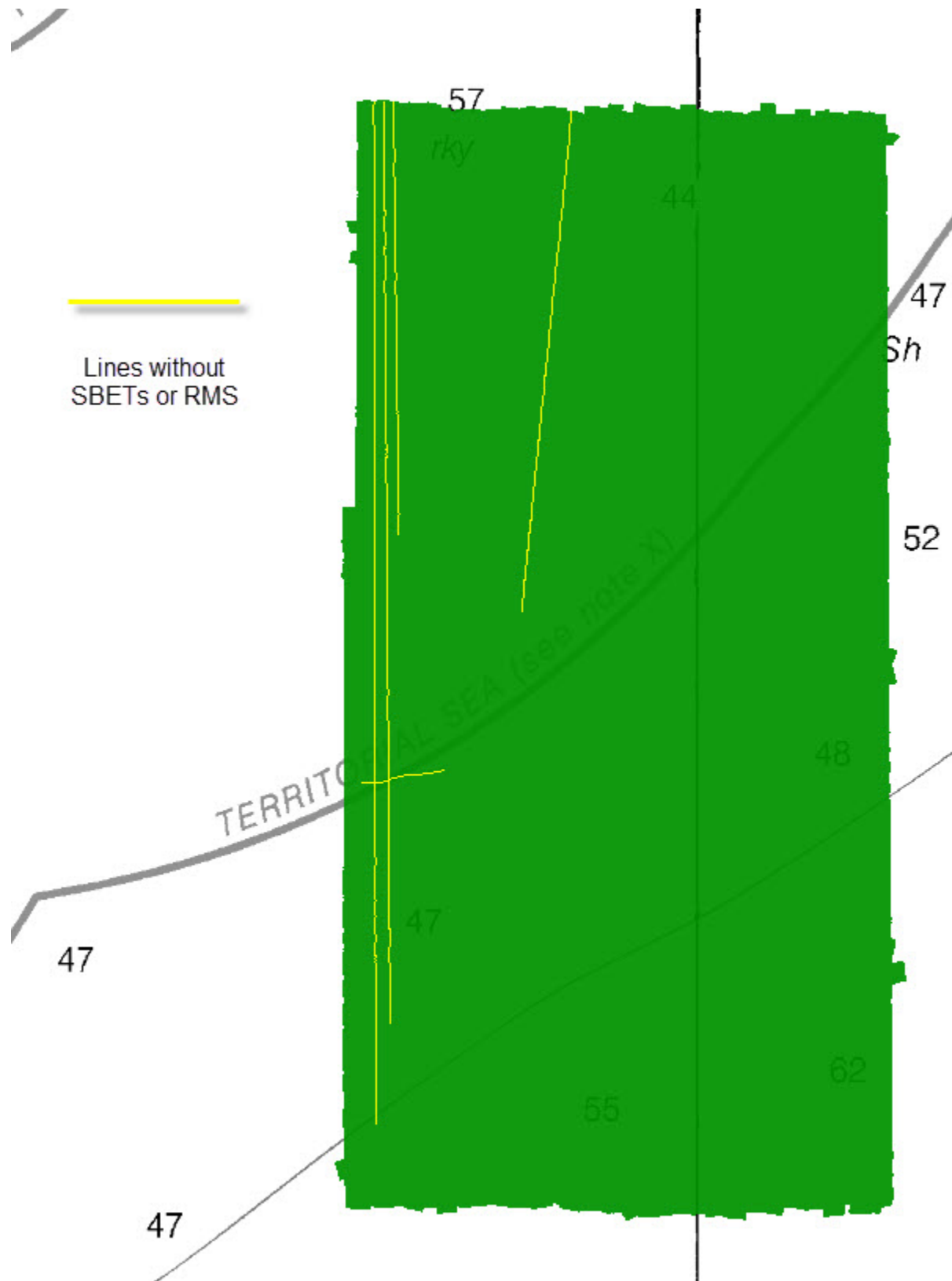


Figure 7: Lines without SBETs

*SBETs and RMS were also not applied to the DN 152 crosslines collected with the Reson. According to the line query, of the lines listed above, only DN 152 line 0079 does not have SBET and RMS applied.*

### **3.3.3 ERZT Issues**

The application of Ellipsoid Referenced Zoned Tides (ERZT) was attempted and unsuccessful. The attempt created vertical offsets throughout the survey and corrupted SBET data. As a result, data was completely reprocessed in Caris by creating a new project. Because of the issues with ERZT, all data have been referenced to MLLW using discrete tidal zoning.

## **D. Results and Recommendations**

### **D.1 Chart Comparison**

A chart comparison was performed using Caris sounding and contour layers. The contours and soundings were overlaid on the chart and compared for general agreement and to identify areas of significant change.



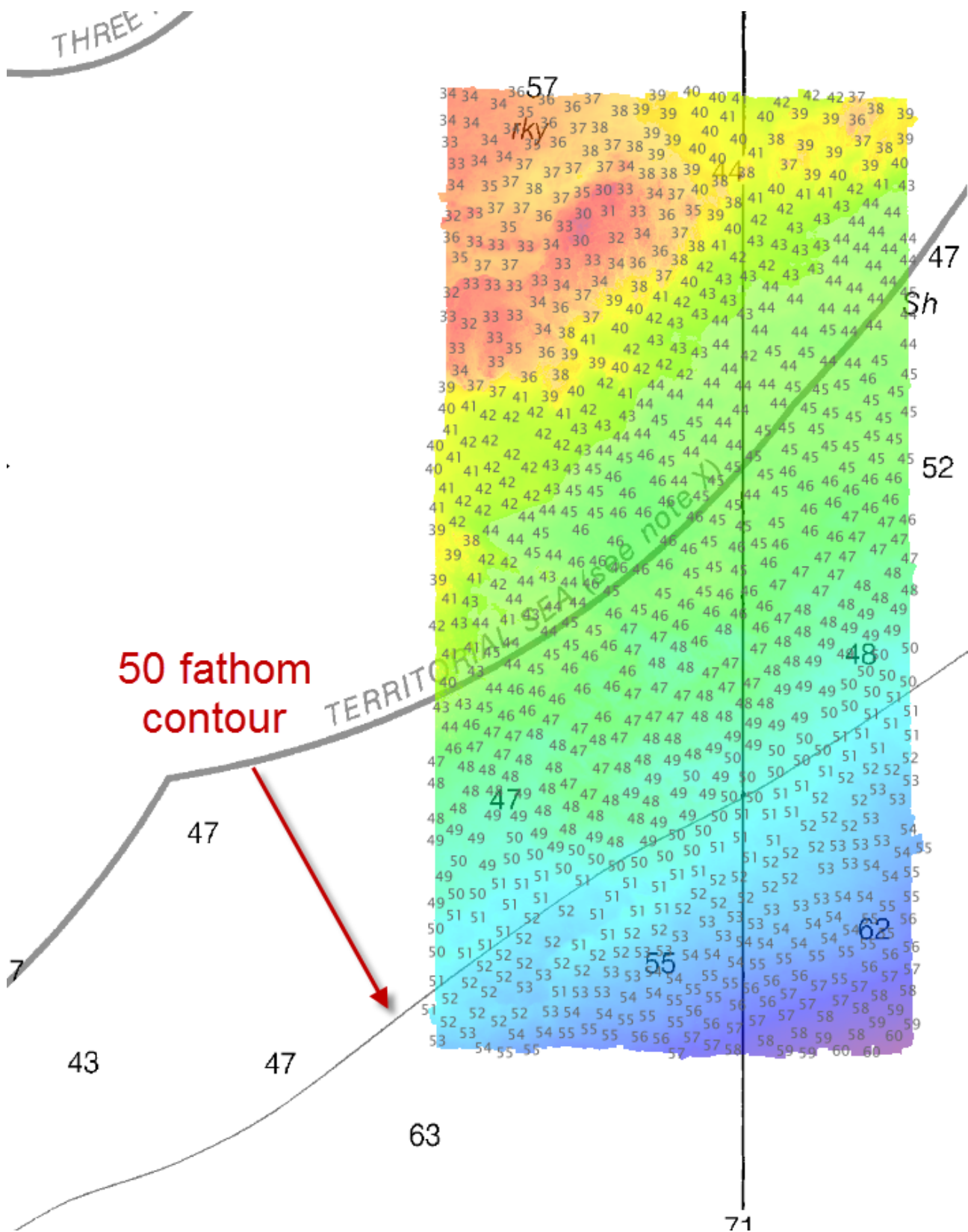


Figure 8: H12781 selected soundings overlaid on Chart 16540.

### D.1.1 Raster Charts

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

Chart	Scale	Edition	Edition Date	LNМ Date	NM Date
16540	1:300000	13	10/2010	03/03/2015	02/14/2015

Table 16: Largest Scale Raster Charts

#### 16540

Chart 16540 includes five depths in the H12781 survey area. Survey soundings agree to within 5 fathoms of the chart with one exception. In the southeast of the survey area, H12781 soundings of approximately 55 fathoms were acquired over the charted 62 fathom depth. In the northwest of the survey, an area of 30 fathom soundings was located approximately 1.5 nautical miles west southwest of a charted 44 fathom depth. The charted 50-fathom contour is in generally good agreement with H12781 soundings (Figure 8).

*Survey soundings agree to within 3 fathoms with three notable exceptions. In the southeast corner of the survey area, there are surveyed depths of 55 fathoms over a charted 62 fathom sounding. In the north central area of the survey area, there are surveyed 30 fathoms soundings 1.5 nautical miles west of a charted 44 fathom sounding. In the northwest corner of the survey area, there are surveyed 36 fathom soundings immediately adjacent to a charted 57 fathom sounding that is on the edge of survey coverage.*

### D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US3AK50M	1:300000	17	04/09/2014	04/09/2014	YES

Table 17: Largest Scale ENC's

#### US3AK50M

Results of the ENC chart comparison were the same as with chart 16540.

**D.1.3 Maritime Boundary Points**

No Maritime Boundary Points were assigned for this survey.

**D.1.4 Charted Features**

No charted features exist for this survey.

**D.1.5 Uncharted Features**

No uncharted features exist for this survey.

**D.1.6 Dangers to Navigation**

No Danger to Navigation Reports were submitted for this survey.

**D.1.7 Shoal and Hazardous Features**

No shoals or potentially hazardous features exist for this survey.

**D.1.8 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.1.9 Bottom Samples**

Bottom samples were addressed as required by the HSSD; for results refer to the H12781 Final Feature File submitted with this report.

*The Final Feature File was submitted with the survey data and is not appended to this report.*

**D.2 Additional Results****D.2.1 Shoreline**

As there was no shoreline within the survey limits, shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

**D.2.2 Prior Surveys**

No prior survey comparisons exist for this survey.

**D.2.3 Aids to Navigation**

No Aids to navigation (ATONs) exist for this survey.

**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 Ferry Routes and Terminals**

No ferry routes or terminals exist for this survey.

**D.2.7 Platforms**

No platforms exist for this survey.

**D.2.8 Significant Features**

No significant features exist for this survey.

**D.2.9 Construction and Dredging**

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

**D.2.10 New Survey Recommendation**

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

**D.2.11 Inset Recommendation**

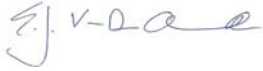



No new insets are recommended for this area.

## 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
Edward J. Van Den Ameele, CDR/NOAA	Commanding Officer, NOAA Ship Rainier	12/11/2015	
Adam Pfundt, LT/NOAA	Field Operations Officer, NOAA Ship Rainier	12/11/2015	 Adam Pfundt I have reviewed this document 2015.12.17 09:43:51 -08'00'
James B. Jacobson	Chief Survey Technician, NOAA Ship Rainier	12/11/2015	 James Jacobson I have reviewed this document 2015.12.11 08:58:51 -09'00'
Chris Palmer	Hydrographic Assistant Survey Technician, NOAA Ship Rainier	12/11/2015	 James Jacobson I am signing for Christopher Palmer 2015.12.11 09:56:13 -09'00'

## F. Table of Acronyms

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

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



<b>Acronym</b>	<b>Definition</b>
<b>PRF</b>	Project Reference File
<b>PS</b>	Physical Scientist
<b>PST</b>	Physical Science Technician
<b>RNC</b>	Raster Navigational Chart
<b>RTK</b>	Real Time Kinematic
<b>SBES</b>	Singlebeam Echosounder
<b>SBET</b>	Smooth Best Estimate and Trajectory
<b>SNM</b>	Square Nautical Miles
<b>SSS</b>	Side Scan Sonar
<b>ST</b>	Survey Technician
<b>SVP</b>	Sound Velocity Profiler
<b>TCARI</b>	Tidal Constituent And Residual Interpolation
<b>TPE</b>	Total Propagated Error
<b>TPU</b>	Topside Processing Unit
<b>USACE</b>	United States Army Corps of Engineers
<b>USCG</b>	United States Coast Guard
<b>UTM</b>	Universal Transverse Mercator
<b>XO</b>	Executive Officer
<b>ZDA</b>	Global Positioning System timing message
<b>ZDF</b>	Zone Definition File



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** June 17, 2015

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-P183-FA-2015  
**HYDROGRAPHIC SHEET:** H12781

**LOCALITY:** 13 NM Southeast of Simeonof Island, Shumagin Islands, AK  
**TIME PERIOD:** May 29 - June 01, 2015

**TIDE STATION USED:** 9459450 Sand Point, AK  
Lat. 55° 19.9'N Long. 160° 30.3' W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 1.988 meters

**REMARKS: RECOMMENDED ZONING**

Preliminary zoning is accepted as the final zoning for project OPR-P183-FA-2015, H12781, during the time period between May 29 - June 01, 2015.

Please use the zoning file P183FA2015CORP submitted with the project instructions for OPR-P183-FA-2015. Zones SWA204 and SWA206 are the applicable zones for H12781.

**Refer to attachments for zoning 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).

**HOVIS.GERALD.THOMAS.JR.1365860250**

Digitally signed by  
HOVIS.GERALD.THOMAS.JR.1365860250  
DN: c=US, o=U.S. Government, ou=DoD,  
ou=PKI, ou=OTHER,  
cn=HOVIS.GERALD.THOMAS.JR.1365860250  
Date: 2015.06.24 17:04:46 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH



Preliminary as Final Tidal Zoning for  
OPR-P183-FA-2015, H12781  
13 NM Southeast of Simeonof Island, Shumagin Islands, AK

★ 9459450 SAND POINT, AK

0 10  
nautical miles



SWA204  
Reference 9459450

SWA206  
Reference 9459450

APPROVAL PAGE

H12781

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 NGDC for archive

- H12781\_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12781\_GeoImage.pdf

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

Approved: \_\_\_\_\_

**Pete Holmberg**

Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: \_\_\_\_\_

**CDR Benjamin K. Evans, NOAA**

Chief, Pacific Hydrographic Branch