

H12119

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
<i>Type of Survey</i> Hydrographic	
<i>Field No.</i>	
<i>Registry No.</i> H12119	
LOCALITY	
<i>State</i> Alaska	
<i>General Locality</i> Shumagin Islands and Vicinity	
<i>Sublocality</i> SW Big Koniiji Island to	
SW Little Koniiji Island and vicinity.	
2009	
CHIEF OF PARTY	
Captain Douglas D. Baird, Jr., NOAA	
LIBRARY & ARCHIVES	
DATE	

<p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;">HYDROGRAPHIC TITLE SHEET</p>	<p>REGISTRY No</p> <p>H12119</p>
<p>INSTRUCTIONS — The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.</p>	
<p>State <u>Alaska</u></p> <p>General Locality <u>Shumagin Islands and Vicinity</u></p> <p>Sub-Locality <u>SW Big Koniugi Island to SW Little Koniugi Island and vicinity.</u></p> <p>Scale <u>1:40,000</u> Date of Survey <u>06/17/2009 to 08/12/2009</u></p> <p>Instructions dated <u>4/30/2009</u> Project No. <u>OPR-P183-FA-09</u></p> <p>Vessel <u>NOAA Ship Fairweather (S220), Launches 1010, 1018 and Amber 2302</u></p> <p>_____</p> <p>_____</p> <p>Chief of party <u>CAPT Douglas D. Baird, NOAA</u></p> <p>Surveyed by <u>FAIRWEATHER Personnel</u></p> <p>Soundings by <u>Reson 8101, 8125 and 8111</u></p> <p>SAR by <u>Tony Lukach</u> Compilation by <u>Fernando Ortiz</u></p> <p>Soundings compiled in <u>Fathoms</u></p> <p>_____</p> <p>REMARKS: All times are UTC. UTM Projection 4</p> <p>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. Revisions and end notes in red were generated during office processing.</p> <p>Page numbering may be interrupted or non sequential.</p> <p>_____</p> <p>All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.</p> <p>_____</p>	

Descriptive Report to Accompany Hydrographic Survey H12119

Project OPR-P183-FA-09
Shumagin Islands and Vicinity, Alaska
Scale 1:40,000
June to August 2009
NOAA Ship *Fairweather*
Chief of Party: Captain Douglas D. Baird, Jr., NOAA

A. AREA SURVEYED

The survey area was located off the Shumagin Islands, within the sub-locality of SW Big Koniiji Island to SW Little Koniiji Island and vicinity. This survey corresponds to Sheet J in the sheet layout provided with the Project Instructions, as shown in Figure 1 below.

Data acquisition was conducted from June 17 to August 12, 2009 (DN 168 to DN 224).

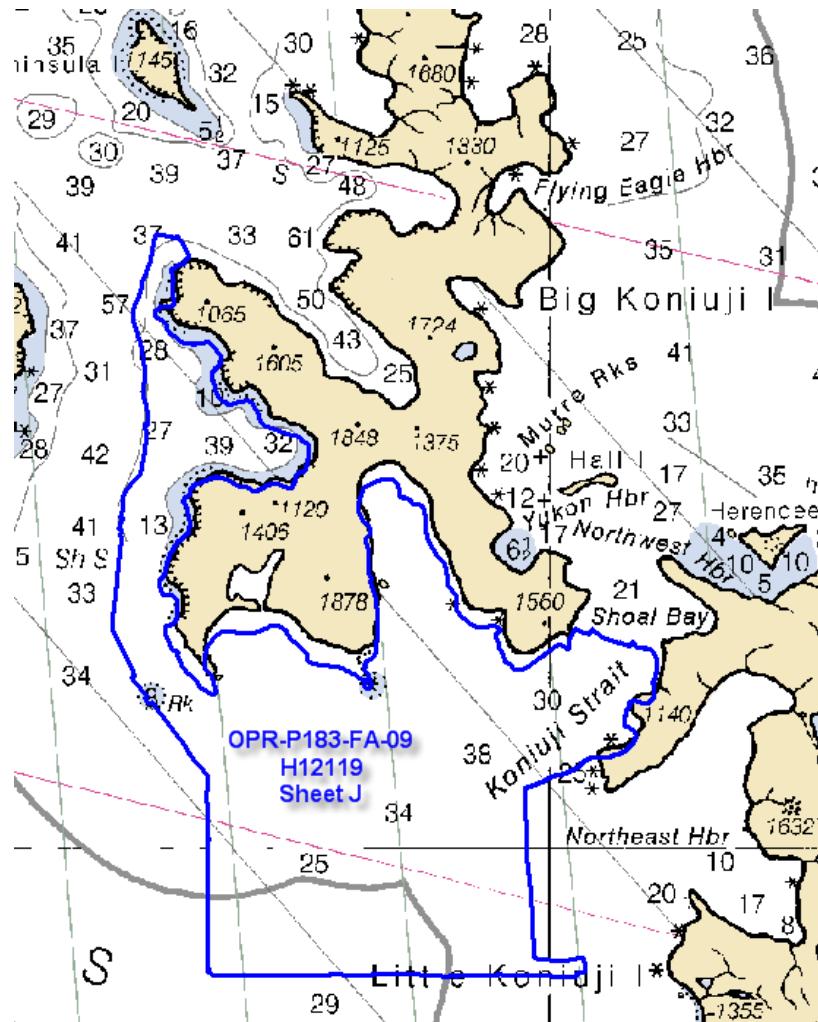


Figure 1: H12119 Survey Outline

One-hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area to the inshore limit of hydrography as defined by the Project Instructions with two exceptions:¹

- 1) In some areas, the inshore limit could not be reached because of dense kelp.
- 2) There are some holidays in the data that could not be addressed (see section *B.2.d.1 Coverage Assessment* below for details).

Limited shoreline verification was conducted to determine the inshore limit of hydrography and for feature verification, as per section 3.5.5.3 of the Field Procedures Manual April 2009 (FPM). Shoreline features were given S-57 attribution and included for submission in CARIS Notebook .hob files.

Main scheme and crossline mileage for MBES and shoreline acquisition were calculated and are displayed in Table 1 below.

MAIN SCHEME - Mileage	
0	Single Beam MS
811.87	Multibeam MS mileage
	246.83 FAIRWEATHER S-220
	314.15 Launch 1010
	250.89 Launch 1018
0	SideScan MS
811.87	Total MS
CROSSLINE - Mileage	
0	Single Beam XL
33.37	Multibeam XL
	23.37 FAIRWEATHER S-220
	10.00 Launch 1010
	0.00 Launch 1018
33.37	Total XL
OTHER	
0	Developments/AWOIS - Mileage
36.76	Shoreline/Nearshore Investigation - Mileage
26	Total # of Investigated Items
21	Total Bottom Samples
31.85	Total SNM
6/17-18/09, 6/22-24/09, 6/27/09, 7/11-16/09, 7/18-19/09, 8/11-12/09	Specific Dates of Acquisition
168, 169, 173, 174, 175, 178, 192, 193, 194, 195, 196, 197, 199, 200, 223, 224	Specific DN of Acquisition

Table 1: H12119 Survey Statistics

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition/processing systems and survey vessels along with quality control procedures and data processing methods are included and described in the *NOAA Ship Fairweather 2009 Data Acquisition and Processing Report* (DAPR) submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections. This hydrographic survey was completed as specified by Hydrographic Survey Project Instructions OPR-P183-FA-08 (dated April 30, 2009, with changes dated May 12 and June 16, 2009) with the exception that due to time constraints, Northeast Harbor on the west side of Little Koniuiji Island was not surveyed.²

B.1. Equipment and Vessels

Equipment and vessels used for data acquisition and survey operations during this survey are listed below in Table 2.

	<i>Fairweather</i>	Launch 1010	Launch 1018	Ambar 2302
Hull Registration Number	S220	1010	1018	2302
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	Marine Silverships, Inc
Length Overall	231 feet	28' 10"	28' 10"	23'
Beam	42 feet	10' 8"	10' 8"	9' 4"
Draft, Maximum	15' 6"	4' 0" DWL	4' 0" DWL	1' 4"
Cruising Speed	12.5 knots	24 knots	24 knots	22 knots
Max Survey Speed	6 knots	6 knots	6 knots	
Primary Echosounder	RESON 8111 & RESON 8160	RESON 8101	RESON 8125 & RESON 8101	
Sound Velocity Equipment	SBE 19plus & 45, MVP 200, SVP70	SBE 19plus	SBE19plus	
Attitude & Positioning Equipment	POS/MV V4	POS/MV V4	POS/MV V4	
Type of operations	MBES, Bottom Samples	MBES	MBES	Shoreline, Bottom Samples

Table 2: Vessel Inventory

No vessel configurations used during data acquisition deviated from the DAPR.

B.2. Quality Control

All data were examined in CARIS Subset Editor and found to be internally consistent from line-to-line, day-to-day, and vessel-to-vessel.

In order to facilitate the movement of the survey off the ship, it was decided that quality control analysis would be performed prior to receiving final (smooth) tides from the Center for Operational Oceanographic Products and Services (CO-OPS). Therefore, crosslines and junctions were analyzed and IHO accuracy standards were accessed with data reduced to mean lower low water (MLLW) using the verified water levels from Sand Point (station 945-9450) and time and height correctors from the preliminary TCARI grid file P183FA2009.tc. For information on the application of final tides, see section *C.2. Vertical Control*.

B.2.a. Crosslines

Multibeam crosslines for this survey totaled 33.37 linear nautical miles (lnm), comprising 4.11% of the 811.87 lnm of total main scheme hydrography. Main scheme and crossline mileage are summarized in Table 1 above.

Main scheme lines and crosslines were compared by surface differencing in Fledermaus. Crosslines were filtered to reject data beyond 45 degrees from nadir in order to remove outerbeam noise. An eight meter resolution Bathymetry Associated with Statistical Error (BASE) surface was then created from the crosslines and compared to an eight meter resolution BASE surface comprised of main scheme lines alone. It was found that crosslines agreed with main scheme lines within 0.02 meters on average with a standard deviation of 0.22 meters.³ A visual representation of the surface difference is shown in Figure 2 and is included in Separates IV.

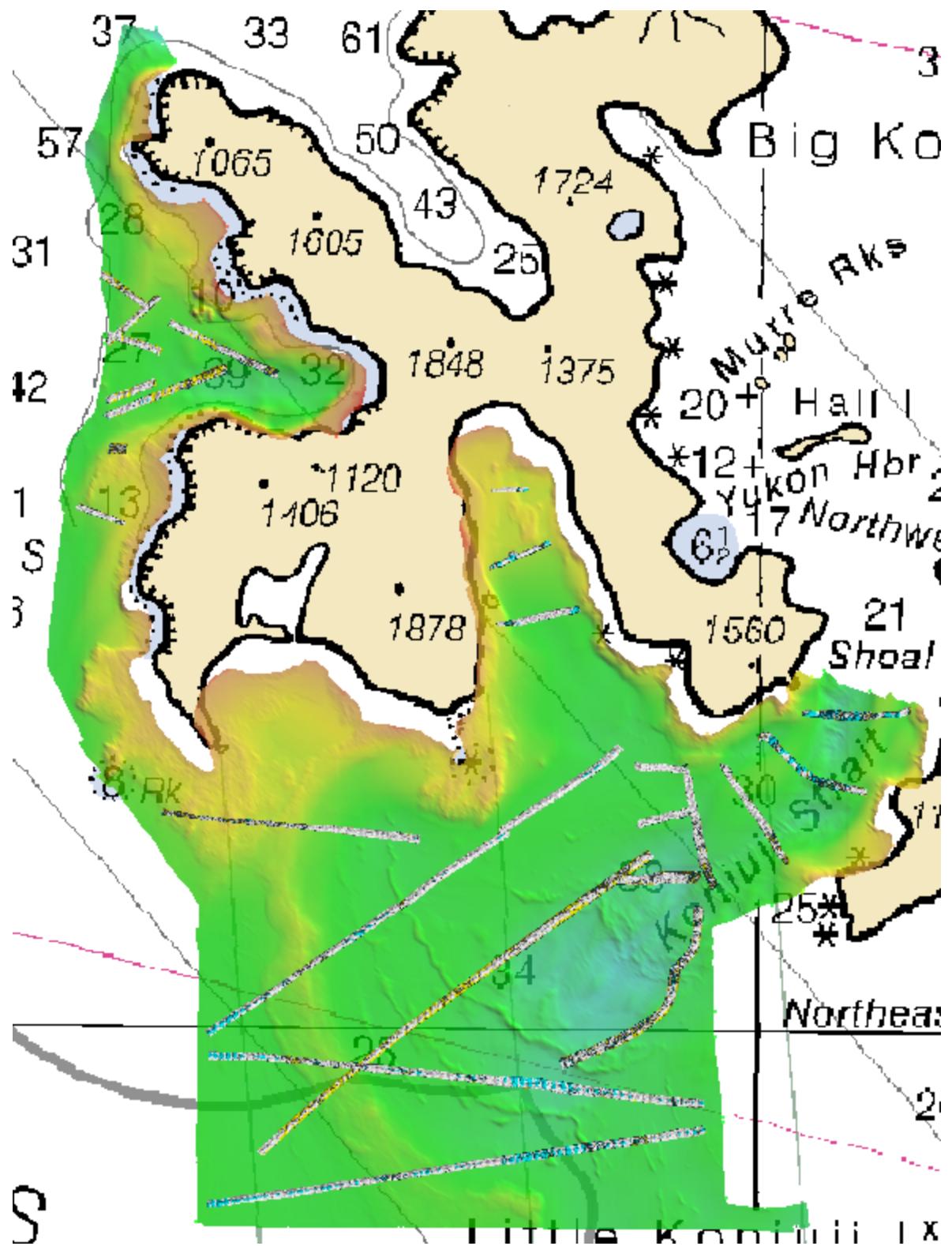


Figure 2: Crossline and main scheme differences (white indicates agreement, warm colors indicate crosslines are shoaler than main scheme, and cool colors indicate crosslines are deeper).

B.2.b. Junction ⁴

Survey H12119 junctions with H12072, which is Sheet L of the same project, as well as with H11676 and H11682 (see Table 3 below). The areas of overlap between the sheets were compared by surface differencing the final combined BASE surfaces for the surveys in Fledermaus. Data from H12119 and H12072 were found to be in agreement within 0.02 meters on average with a standard deviation of 0.66 meters. Data from H12119 and H11676 were found to be in agreement within 0.24 meters on average with a standard deviation of 1.25 meters. Data from H12119 and H11682 were found to be in agreement within 0.31 meters on average with a standard deviation of 0.54 meters in the southern part of the survey and in agreement within 0.49 meters on average with a standard deviation of 0.45 meters in the northern part of the survey. Sheet limits and areas of overlap are shown in Figure 3.

Junction Survey	Survey Scale	Date of Survey	Relative Location
H11676	1:20,000	2007	Northwest
H11682	1:20,000	2007	West
H12072	1:40,000	2009	Northeast

Table 3: Junction Surveys

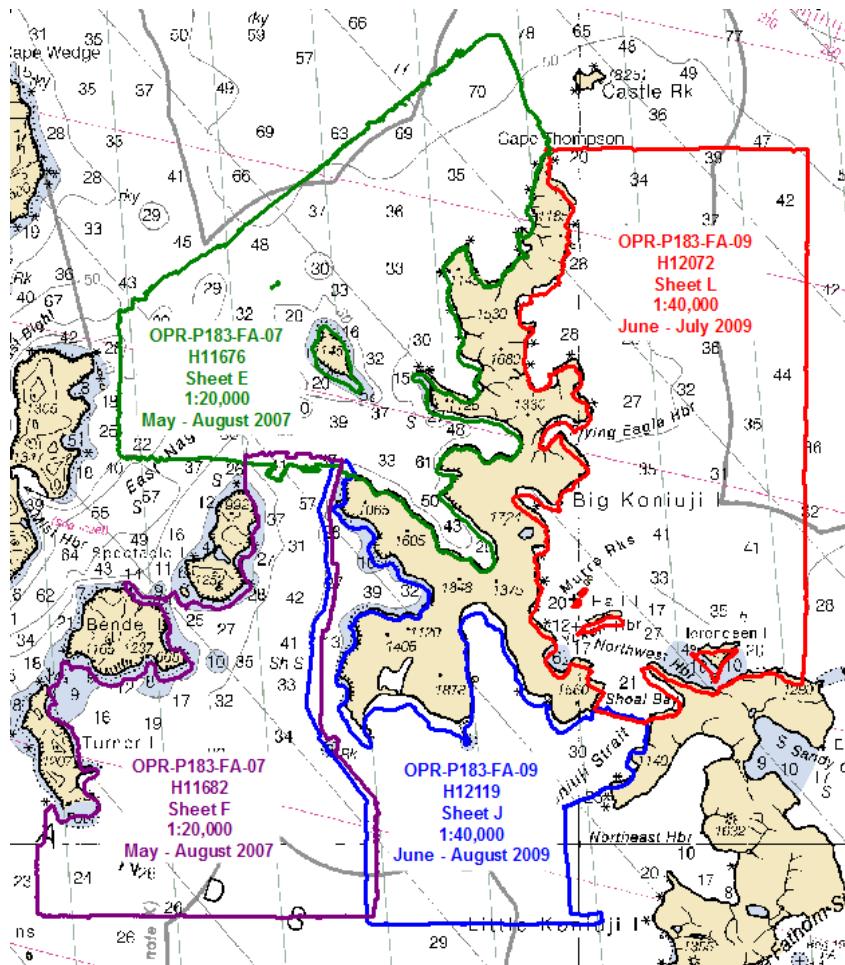


Figure 3: Junction Between H12119, H12072, H11676, and H11682

B.2.c. Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section B of the DAPR.

B.2.d. Data Quality Factors

B.2.d.1. COVERAGE ASSESSMENT

On DN 196 and 197 (July 15 and 16, 2009) a large number of holidays were created due to insufficient overlap between lines (see Figure 4 for an example). This error in line spacing was the result of launch operators learning a new MBES system. Additional holidays were also caused by blowouts in the Reson 8125 MBES data where debris clogged the digibar leading to erroneous surface sound speed readings (Figure 5). Holidays were identified in the field, but time constraints, vessel breakdowns, and foul weather combined to prevent them from being rectified. For each holiday the trend of the bathymetry and the corresponding pseudo-side scan were examined. Unfortunately the rocky nature of the seabed and a bug in the Hypack acquisition software that offset the time-stamp make the pseudo-side scan of little use. The Hydrographer cannot be certain that all least depths are represented.⁵

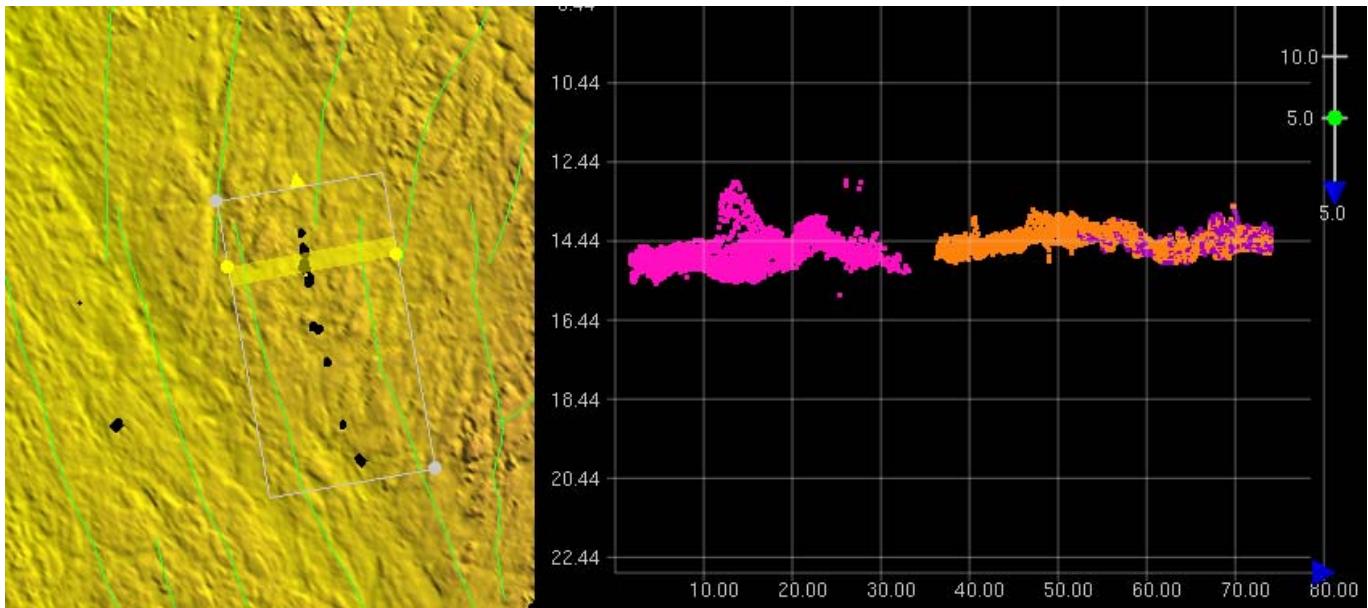


Figure 4: Holiday caused by insufficient overlap.

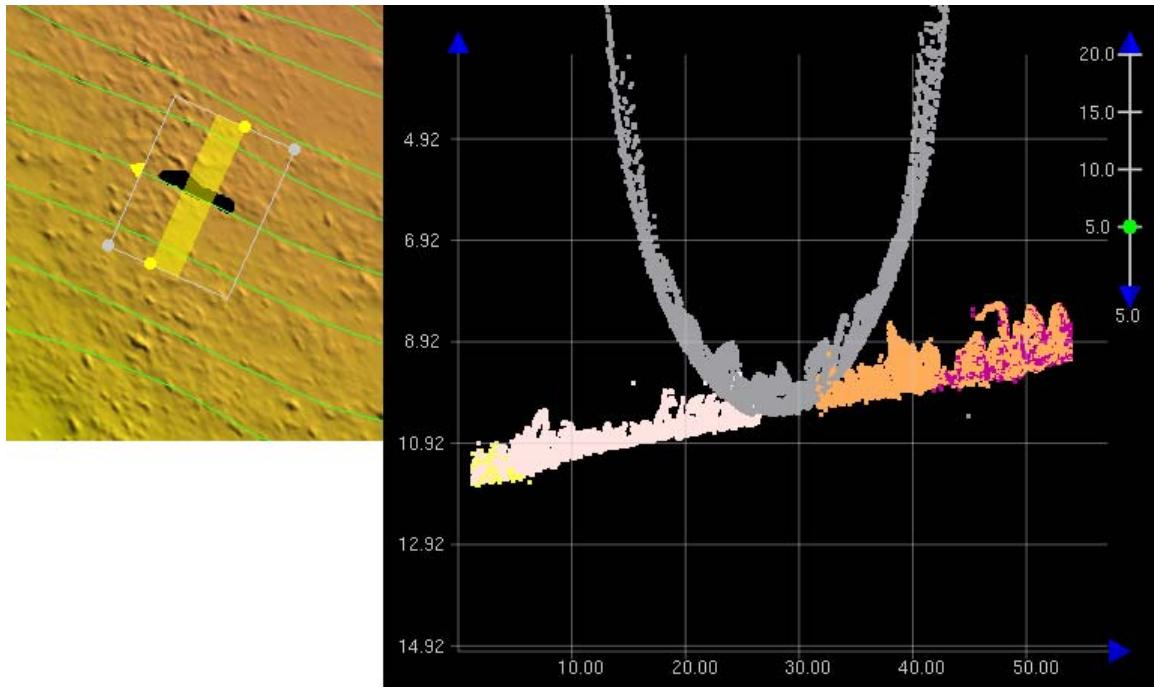


Figure 5: Holiday caused by debris blocking the Reson 8125 MBES digibar.

B.2.d.2. TRUEHEAVE

In order to apply TrueHeave to all survey lines, some POS/MV TrueHeave files needed to be “fixed” using the *fixTrueHeave.exe* utility from CARIS. Fixed files were assigned an additional “.fixed” suffix. This was performed for the following vessels and days: ⁶

- Launch 1010 - DN 174, 175, 195, 197, and 199 (June 23 and 24, 2009; July 14, 16, and 18, 2009).
- Launch 1018 - DN 173, 193, 194, 195, 196, 197, 199, and 200 (June 22, 2009; July 12-16, 18, and 19, 2009).

B.2.d.3. SOUND VELOCITY

Nearly all of the Reson 8111 MBES data and some of the Reson 8101 MBES data show “smiles” and “frowns” indicative of sound velocity error. These errors are mostly within the allowable maximum sound speed error of 0.30 meter plus 0.5% of the depth as stated in NOS Hydrographic Surveys Specifications and Deliverables (HSSDM), April 2009, but in some cases the errors exceed the maximum allowable sound speed error. To remove the worst of the sound velocity errors, Reson 8111 and 8101 MBES data was filtered in CARIS HIPS and SIPS to reject data beyond 70 degrees from nadir. Data were examined in CARIS Subset Editor and in no case was the BASE surface found to be adversely affected.⁷

B.2.d.4. DESIGNATED SOUNDINGS

Designation of soundings followed procedures as outlined in section 5.1.1.3 of the HSSDM. A total of 38 soundings were designated to preserve shoal depths. In some cases the shoalest sounding in an area was deemed to be outer-beam noise and was therefore not designated. The Hydrographer attempted to designate soundings from nadir or near-nadir beams.⁸

B.2.e. Accuracy Standards

Survey H12119 meets the data accuracy specifications as stated in the HSSDM.⁹

Based on statistics from Fledermaus, more than 95% of nodes in a combined eight meter grid meet or exceed IHO Order 1 specifications for all depths. See Figure 6 for a graphic representation of the surface and Figure 7 for statistics.

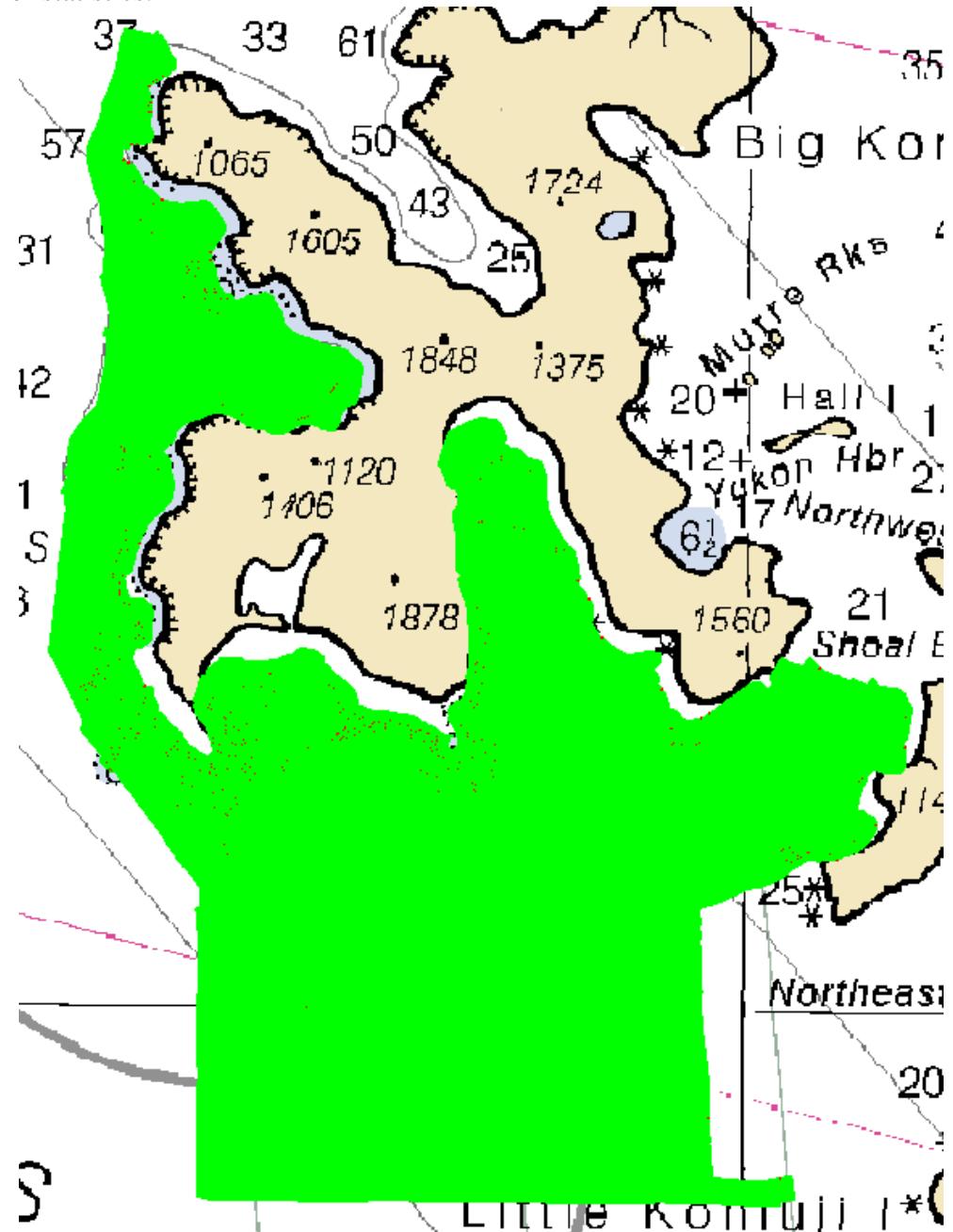


Figure 6: IHO Order 1 Pass (green) or Fail (red)

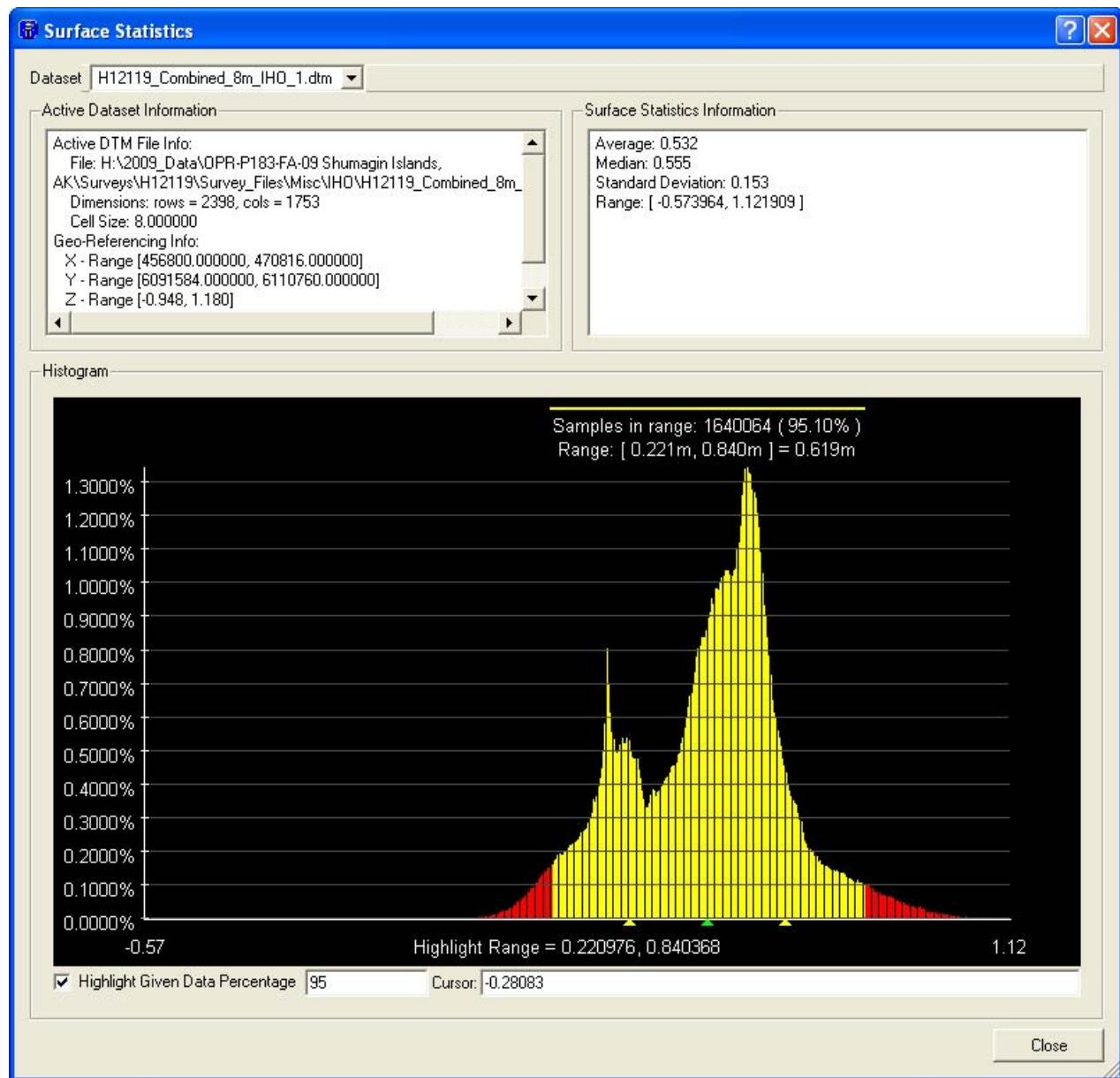


Figure 7: IHO 1 Surface Statistics

B3. Corrections to Echo Soundings

Data reduction procedures for survey H12119 conform to those detailed in the DAPR.

B4. Data Processing

Initial data acquisition and processing notes are included in the acquisition and processing logs. Additional processing, such as the application of final tides, is most accurately tracked in the survey wide query in the H12119_Data_Log spreadsheet. All of the logs are included with the digital Separates I.

Data processing procedures for survey H12119 conform to those detailed in the DAPR. Data were processed using CARIS HIPS and SIPS v6.1, Service Pack 2, Hotfix 7 or 8. Additional processing details regarding Total Propagated Uncertainty (TPU/TPE) and CUBE (Combined Uncertainty and Bathymetry Estimator) Surfaces and Parameters utilized are discussed below.

B.4.a. TPE Values

The survey specific parameters used to compute TPE in CARIS HIPS and SIPS for H12119 are listed in Table 4.

Tide values:	All systems	Measured	0.00 m	Zoning	0.00 m
Sound Speed Values:	Reson 8101	Measured	1.00 m/s	Surface	1.00 m/s
	Reson 8125	Measured	1.00 m/s	Surface	0.50 m/s
	Reson 8111	Measured	0.50 m/s	Surface	0.50 m/s

Table 4: Survey Specific CARIS HIPS and SIPS TPE Parameters

Tide values of 0.00 m were used because final water levels were determined by Tidal Constituent and Residual Interpolation (TCARI). When using TCARI, uncertainty values are automatically applied and no TPE values are manually entered in CARIS HIPS and SIPS.

B.4.b. CUBE Surfaces

The CARIS HIPS and SIPS BASE (Bathymetry Associated with Statistical Error) surfaces created and their associated resolutions are listed below in Table 5. Seven fieldsheets cover the survey area. Fieldsheets were sized such that no sheet exceeded 25 million nodes. The layout of the fieldsheets is shown in Figure 8 below.

Data were cleaned using the finalized surfaces at the resolution appropriate for the depth ranges as shown in Table 5. Note that any adjustment to these resolutions or depth ranges may cause the BASE surfaces to select hypotheses based on outliers in the data different than those in the submitted surfaces.¹⁰

Fieldsheet Name	Surface Name	Depth Ranges (m)	Resolution (m)	CUBE Parameters
H12119_QC	H12119_4m	All	4	NOAA_4m
	H12119_8m	All	8	NOAA_8m
	H12119_4m_Final_35to80m	35-80	4	NOAA_4m
	H12119_8m_Final_75to160m	75-160	8	NOAA_8m
	H12119_Combined_8m	All	8	
	H12119_2m_Final_18to40m_Combined_2m	18-40	2	NOAA_2m
	H12119_1m_Final_0to23m_Combined_1m	0-23	1	NOAA_1m
	H12119_1m_Final_0to23m_Combined_1m_Interp	0-23	1	NOAA_1m
H12119_A	H12119_A_1m	All	1	NOAA_1m
	H12119_A_2m	All	2	NOAA_2m
	H12119_A_1m_0to23m_Final	0-23	1	NOAA_1m
	H12119_A_2m_18to40m_Final	18-40	2	NOAA_2m
H12119_B	H12119_B_1m	All	1	NOAA_1m
	H12119_B_2m	All	2	NOAA_2m
	H12119_B_1m_0to23m_Final	0-23	1	NOAA_1m
	H12119_B_2m_18to40m_Final	18-40	2	NOAA_2m
H12119_C	H12119_C_1m	All	1	NOAA_1m
	H12119_C_2m	All	2	NOAA_2m
	H12119_C_1m_0to23m_Final	0-23	1	NOAA_1m
	H12119_C_2m_18to40m_Final	18-40	2	NOAA_2m
H12119_D	H12119_D_1m	All	1	NOAA_1m
	H12119_D_2m	All	2	NOAA_2m
	H12119_D_1m_0to23m_Final	0-23	1	NOAA_1m
	H12119_D_2m_18to40m_Final	18-40	2	NOAA_2m
H12119_E	H12119_E_1m	All	1	NOAA_1m
	H12119_E_2m	All	2	NOAA_2m
	H12119_E_1m_0to23m_Final	0-23	1	NOAA_1m
	H12119_E_2m_18to40m_Final	18-40	2	NOAA_2m
H12119_F	H12119_F_2m	All	2	NOAA_2m
	H12119_F_2m_18to40m_Final	18-40	2	NOAA_2m

Table 5: Depth Ranges, Resolutions, and CUBE Parameters

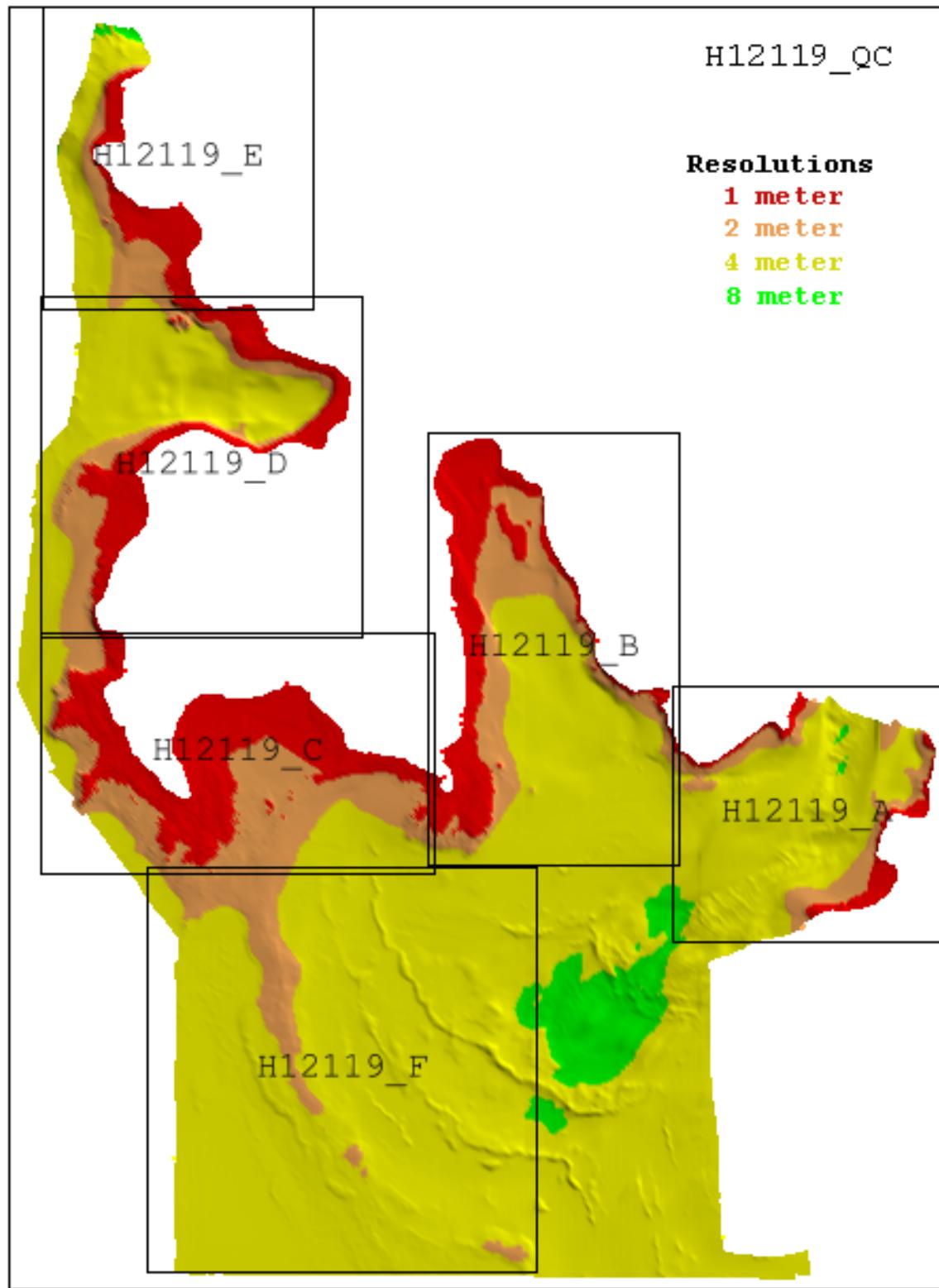


Figure 8: Layout of fieldsheets for the survey area. Sheets A to E are sized for one and two meter resolution surfaces. Sheet F is sized for a two meter resolution surface. Sheet QC covers the entire survey area and is sized for four and eight meter resolution surfaces.

B.4.c. CUBE Parameters

The parameters utilized for creating BASE surfaces are included in Table 6. The CUBE parameters Extensible Markup Language (XML) file is included with digital data in the vessel configuration folder.

Surface Resolutions	CUBE Parameters				
Grid Resolution	Profile Name	EOV	CDS	CDM	HES
1m	NOAA_1m	4.0	0.5	0.71	1.96
2m	NOAA_2m	4.0	0.5	1.41	1.96
4m	NOAA_4m	4.0	0.5	2.83	1.96
8m	NOAA_8m	4.0	0.5	5.66	1.96

Table 6: CUBE parameters used during this survey

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H12119 can be found in the *OPR-P183-FA-09 Horizontal and Vertical Control Report*, submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

C.1. Horizontal Control

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

The Post Processing Kinematic method (PPK) was the primary method of horizontal positioning for soundings during survey H12119. Correctors from a GPS base station established on horizontal control mark HERENDEEN on Herendeen Island were used from DN 169 (June 18, 2009) to DN 175 (June 24, 2009). A base station on horizontal control mark GROVER on Little Koniiji Island was used from DN 178 (June 27, 2009) to DN 200 (July 19, 2009). Smoothed Best Estimated Trajectory (SBET) files were applied to the data in CARIS HIPS and SIPS.

The Differential Global Positioning System (DGPS) was used for positioning soundings on DN 168 (June 17, 2009) and DN 223 (August 11, 2009). These were the first day of acquisition when the GPS base station had not yet been established and the last day of acquisition when the station had already been taken down. Differential correctors from the U.S. Coast Guard beacon at Cold Bay (289 kHz) were used on these days.

DGPS correctors from the U.S. Coast Guard beacon at Cold Bay (289 kHz) were also used for positioning detached positions (DP) and bottom samples as there is currently no technique for applying SBET files to these types data. Unfortunately the distance from the U.S. Coast Guard beacon combined with the steep cliffs of the Shumagin Islands created weak signal to noise ratios for the DGPS corrections within the project area. Occasionally the corrector signal from the beacon would be lost. As a result, the detached positions acquired on DN 174 and 175 (June 23 and 24, 2009) with the exception of DP numbers 117409 and 117408 do not have correctors applied. Likewise some of the bottom samples acquired on DN 197 (July 16, 2009) do not have correctors applied.¹¹

C.2. Vertical Control

The vertical datum for this project is Mean Lower Low Water (MLLW) as specified in the Project Instructions. The operating National Water Level Observation Network (NWLON) primary tide station at Sand Point, AK (945-9450) served as control for datum determination and as the primary source for water level correctors for survey H12119.

Fairweather personnel installed a Sutron 8210 “bubbler” tide gauge (Gauge #13, S/N 85220) at a tertiary station at Herendeen Island (see Table 7 below). The gauge was installed in order to provide information to the Center for Operational Oceanographic Products and Services (CO-OPS) for the determination of time and height correctors in accordance with the Project Instructions.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Herendeen Island	945-9163	Tertiary 30 Day	June 9, 2009	August 11, 2009

Table 7: Tide Gauge Information

Refer to the *OPR-P183-FA-09 Horizontal and Vertical Control Report* for further information about the tide stations.

A request for delivery of final approved (smooth) tides for survey H12119 was forwarded to CO-OPS on August 14, 2009, in accordance with the FPM. A copy of the request is included in Appendix IV.¹²

As per the Project Instructions, all data were reduced to MLLW using the final approved water levels (smooth tides) from the Sand Point station (945-9450) and the Herendeen Island station (945-9163) by applying the tide files 9459450.txt and 9459163.txt and time and height correctors from the final TCARI grid file P183FA2009-Final.tc. **It will not be necessary for the Hydrographic Branch to reapply the final approved water levels (smooth tides) to the survey data during final processing.**

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

Chart comparison procedures were followed as outlined in section 4.5 of the FPM and section 8.1.3-D.1 of the HSSDM, utilizing the CARIS HIPS and SIPS software program.

Survey H12119 was compared with the following charts listed in Table 8.

NOAA Chart Number	Chart Scale	Edition Number	Edition Date	Updated with Notice to Mariners through
16540	1:300,000	12 th Ed.	January 2005	May 9, 2009
16556	1:80,000	5 th Ed.	April 2006	May 9, 2009

Table 8: NOAA Charts compared with Survey H12119

D.1.a. Chart 16540

The coastline on chart 16540 is offset by as much as 400 m from the actual coastline (see Figure 9). The Geographic Cell (GC) coastline provided in the composite source file (CSF) from HSD's Operations Branch appears to be accurate. The Hydrographer recommends changing the charted coastline to reflect the GC coastline.¹³

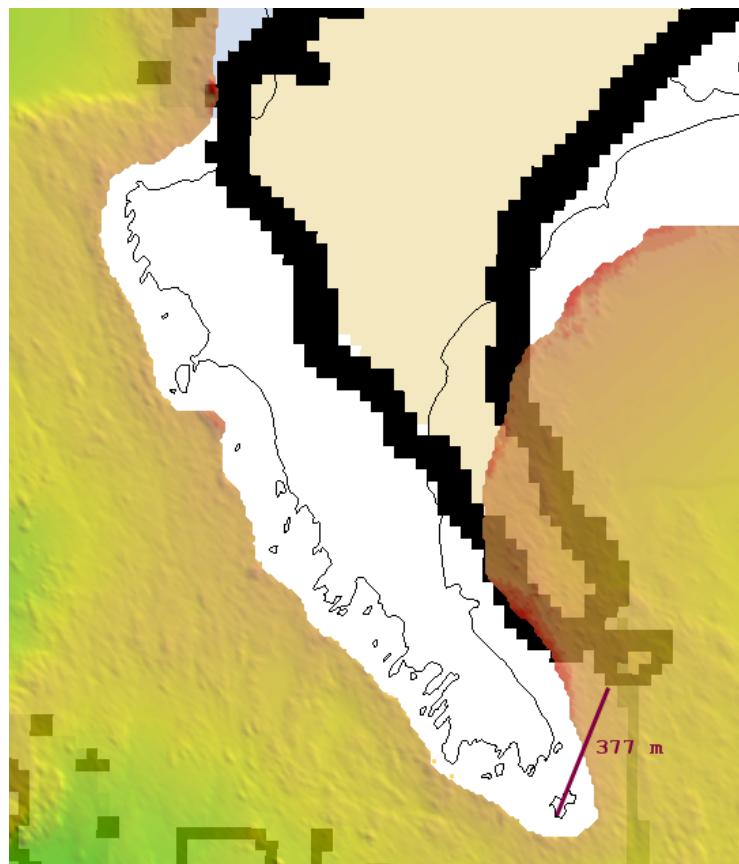


Figure 9: Offset of the charted coastline from the geographic cell coastline.

Depths on chart 16540 are sparse on the west side of Big Koniiji Island and nearly non-existent on the south side of the island. Most of the depths on the chart appear to be offset in the same manner as the charted coastline, but the small scale of the chart makes this difficult to judge. The one exception is the eight fathom rock off the southwest tip of Big Koniiji Island at latitude 55°02'05.6"N, longitude 159°39'37.0"W. This rock was added to the chart in 2007 and is accurately plotted (see Figure 10). It should be noted that this rock is in fact the seaward most extent of a rocky seabed area.¹⁴

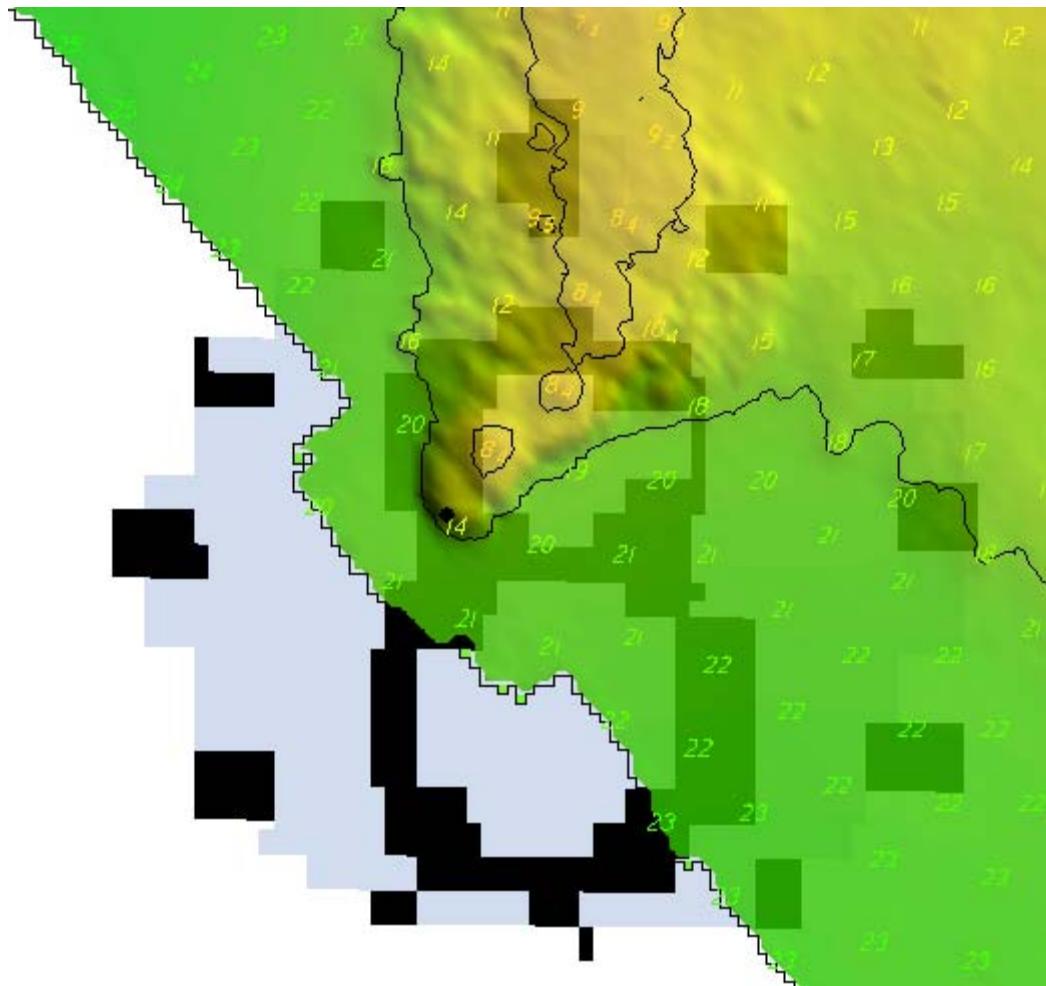


Figure 10: The only reliable sounding on the chart was added in 2007.

D.1.b. Chart 16556

Depths from survey H12119 agreed within two fathoms with the only plotted depth on chart 16556 that is within the survey area. The 10, 20, and 30 fathom contours on the chart are as much as 80 to 90 meters different from those from the survey (see Figure 11), but are fairly accurate within the scale of the chart.¹⁵

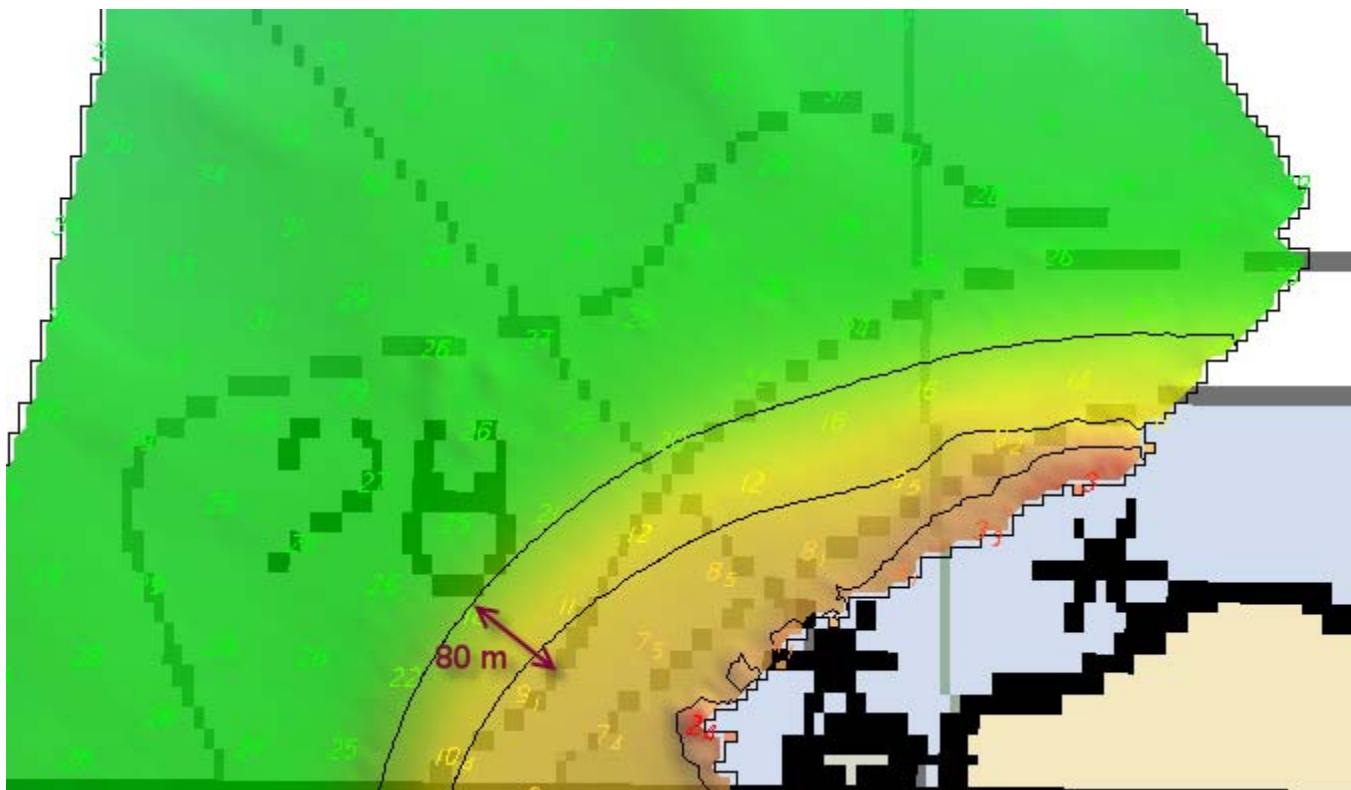


Figure 11: Contours on chart 16556 differ from those from survey H12119.

D.1.c. Chart Comparison Recommendations

The Hydrographer has determined that data accuracy meets requirements specified by the *HSSDM*. Unfortunately due to the holidays discussed above, bottom coverage requirements have not been fully met. Despite these small holidays, the current survey still far exceeds all previous knowledge of the area. **The surveyed soundings are adequate to supersede prior surveys in their common areas.**¹⁶

D.1.d. Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were six AWOIS items assigned to survey H12119 (see Table 9 below). Four AWOIS items were addressed and are included in the CARIS Notebook .hob file H12119_Final_Feature_File.hob. Two AWOIS items were not addressed because Northeast Harbor on the west side of Little Koniiji Island was not surveyed due to time constraints.¹⁷

AWOIS#	Latitude	Longitude	Remark	Recommendation
53597 ¹⁸	55° 02' 16.7"	159° 34' 17.0"	Maritime boundary claim based on the position of a charted (16540) rock. Charted rock is actually a GC (10647) islet.	Change to the position and height of the GC islet.
53599 ¹⁹	55° 02' 20.3"	159° 37' 58.9"	Maritime boundary claim based on a charted (16540) islet. This item is actually the seaward extent of a GC (10647) islet.	Change to the position and height of the GC islet.
53600 ²⁰	55° 02' 21.4"	159° 37' 54.8"	Maritime boundary claim based on a charted (16540) islet. This item is actually the high point of a GC (10647) islet.	Change to the position and height of the GC islet.
53601 ²¹	55° 02' 29.4"	159° 34' 31.5"	Maritime boundary claim based on a low water extension on chart (16540). This item is actually a GC (10647) islet.	Change to the position and height of the GC islet.
53602	55° 00' 49.8"	159° 28' 56.7"	Not addressed	None
53603	54° 58' 18.87"	159° 274' 22.49"	Not addressed	None

Table 9: AWOIS items.

D.1.e. Dangers to Navigation

Four dangers to navigation were found and reported to the Marine Chart Division for verification and final submission to the Seventeenth Coast Guard District on November 19, 2009. A copy of the preliminary Danger to Navigation Report is included in Appendix I.²² Table 10 lists the DTONs by the number of submission to MCD with their positions and depths.

DTON	Latitude	Longitude	Submitted Depth (m)	Final Tide Depth(m)
1.1	55° 01' 51.7" N	159° 38' 21.1" W	11.49	11.49
1.2	55° 02' 48.2" N	159° 39' 53.5" W	11.80	11.80
1.3	55° 04' 44.5" N	159° 39' 26.1" W	14.27	14.27
1.4	55° 06' 12.6" N	159° 38' 19.0" W	9.00	9.00

Table 10: DTONs according to their submitted number with the submitted depths and final depths.

D.2. Additional Results

D.2.a. Shoreline Source

A composite source file (CSF) in .000 format from HSD's Operations Branch was provided with the Project Instructions. Shoreline sources in the composite source file included Geographic Cell (GC), Digital Data (DD), and charted features from charts 16540 and 16556 (see Table 11). The original file was imported into CARIS Notebook, converted to a .hob file, clipped to the sheet limits, and named H12119_Original_Composite_Source.hob to be included with the deliverables. This file was copied and named H12119_Final_Feature_File.hob to be utilized during field verification.

An AWOIS feature Notebook .hob file separated out from the project reference file (PRF) was used in the field for investigation purposes during shoreline verification.

D.2.b. Shoreline Verification

Fairweather personnel conducted limited shoreline verification at times near predicted low water, in accordance with the Project Instructions and section 3.5.5.3 of the FPM. During shoreline verification, detached positions (DPs) were acquired and edits to the daily field H12119_Feature_File_TRX_DnXXX.hob were recorded in CARIS Notebook and on paper DP forms and boat sheets. Scanned copies of the DP forms and boat sheets with field annotations are included in the digital Separates I folder.

Chart 16556 (1:80,000) was the largest scale chart for the project area. A Mean High Water (MHW) Buffer line, offset 64 meters (0.8 mm at scale of 1:80,000) from the composite source MHW, was used during shoreline verification to determine the Navigable Area Limit Line (NALL). The NALL, which defines the inshore limit of multibeam acquisition, was determined in the field as the farthest off-shore of either the MHW buffer listed above, the 4-meter depth contour, or the inshore limit of safe navigation.

D.2.c. Shoreline Data Processing

Acquired and edited positions during shoreline verification operations were processed in CARIS Notebook. Features that required tide correction were processed using the Load Tide function in CARIS Notebook with final approved water levels from Sand Point station 945-9450 and Herendeen Island station 945-9163 (tide files 9459450.txt and 9459163.txt) and time and height correctors from the final TCARI grid file P183FA2009-Final. The height of MHW above the plane of reference used in distinguishing islets from rocks was determined using the Sand Point station (see the *Tide Note for Hydrographic Survey* in Appendix IV Tides_& Water_Levels).

New features and features requiring revision were given S57 attribution. As outlined in section 4.4.10 of the FPM, features were delineated, attributed, and placed on either the survey edited H12119_Final_Feature_File.hob (compiled from the daily field files) or H12119_Disprovals.hob.

Features collected or edited by the field have source indication (SORIND) and source date (SORDAT) attribute fields populated to reflect the survey number (US,US,survy,H12119) and final survey date 20090812. Unmodified source shoreline features were left with their original SORIND and SORDAT

values. The SORIND/SORDAT information for shoreline features included in the final Notebook .hob files is listed in Table 11.

Shoreline Source	SORIND	SORDAT
RSD	US,US,reprt,DD-8773	19991001
RSD	US,US,graph,GC10646	19991000
RSD	US,US,graph,GC10647	19991000
Chart	US,US,graph,Chart 16540	19890304
Chart	US,US,graph,Chart 16556	20021100
Survey	US,US,surve,H12119	20090812

Table 11: SORIND/SORDAT of Shoreline Features

D.2.d. Source Shoreline Changes, New Features, and Charted Features

In accordance with section 4.4.10 of the FPM, field notes made by the Hydrographer were included in the Remarks field for each feature and, when appropriate, recommendations to the cartographer were included in the Recommendations field.

Items disproved by the Hydrographer and deemed to not be included in the H12119_Final_Feature_File.hob file were moved to the H12119_Disprovals.hob file.

D.2.e. Shoreline Recommendations

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede and complement shoreline information compiled on the CSF and charts.²³

D.2.f. Aids to Navigation

There were no aids to navigation within the survey limits.²⁴

D.2.g. Bottom Samples

Bottom samples were collected on DN 197 (July 16, 2009) and DN 199 (July 18, 2009) and are included as seabed classifications along with the other S57 features in the CARIS Notebook H12119_Final_Feature_File.hob file.²⁵ As per the Hydrographic Manual, the distance between bottom samples in offshore areas shoaler than 100 fathoms should not exceed 12 cm at the scale of the survey. This equates to no more than 4,800 meters between samples on H12119 which has been designated by HSD a 1:40,000 scale survey.

E. SUPPLEMENTAL REPORTS

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Hydrographic Systems Readiness Review 2009	May 15, 2009	N/CS33
Data Acquisition and Processing Report 2009	Dec 21, 2009	N/CS33
Horizontal and Vertical Control Report for OPR-P183-FA-09	Dec 21, 2009	N/CS33
Tides and Water Levels Package for OPR- P183-FA-09	Aug 25, 2009	N/OPS1
Coast Pilot Report for OPR- P183-FA-09	TBD	N/CS26



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
NOAA Ship FAIRWEATHER S-220
1010 Stedman Street
Ketchikan, AK 99901

November 11, 2009

MEMORANDUM FOR: LCDR Richard T. Brennan, NOAA
Chief, Atlantic Hydrographic Branch

FROM: CAPT David O. Neander, NOAA
Commanding Officer

David O. Neander
2009.12.15
11:26:34 -08'00'

TITLE: Approval of Hydrographic Survey H12119,
OPR-P183-FA-09

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H12119 in accordance with the Hydrographic Manual, Fourth Edition; Field Procedures Manual, April 2009; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for April 2009. Additional guidance was provided by applicable Hydrographic Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS33, Atlantic Hydrographic Branch.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

In addition, the following individuals were responsible for oversight of acquisition and processing of this survey:

Mark B Andrews Mark Andrews
2009.11.11 14:33:42 Z

LTJG Mark Andrews, NOAA
Survey Manager

Matthew Ringel Matthew Ringel
2009.11.11 22:34:23 Z

LT Matthew Ringel, NOAA
Field Operations Officer

Lynn V. Morgan Digitally signed by Lynnette V.
Morgan
Date: 2009.12.15 10:16:01
-09'00'

CST Lynnette V. Morgan
Chief Survey Technician

Attachment



Revisions and corrections compiled during office processing and certification.

¹ Concur.

² Concur.

³ Concur.

⁴ H12119 junctions with survey H11682 to the W, H11676 to the N., and H12072 to the N. A common junction with good agreement was made with an adjoining portion of these surveys.

⁵ During SAR processing this issue was reviewed. See SAR checklist. Data is adequate to supersede charted data in the common area.

⁶ Concur. Data is adequate and within specifications despite of the failure of the TH data. It is recommended that the data from H12119 supersede the data currently on the chart within the common area.

⁷ Concur. Data is adequate and within specifications despite of the SV problems. It is recommended that the data from H12119 supersede the data currently on the chart within the common area.

⁸ Concur with clarification. Designated soundings were used as appropriate to the scale of the chart.

⁹ Concur.

¹⁰ Concur with clarification. During SAR processing a 4 meter base surface was created for compilation.

¹¹ Data is adequate for charting, despite not having correctors applied.

¹² Tide note is attached to this document.

¹³ Concur.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ Concur.

¹⁷ AWOIS Report is attached to this document.

¹⁸ Concur. See AWOIS report.

¹⁹ Do not concur. Although the GC islet investigated by the field was verified, the location of the AWOIS item is on a different charted (ENC) islet approximately 300 meters to the north which was disproved with 100% MB. Compiler recommends disproving AWOIS item 53599 and using the GC islet verified by the field for the maritime boundary claim.

²⁰ Do not concur. Although the GC islet investigated by the field was verified, the location of the AWOIS item is on a different charted (ENC) islet approximately 300 meters to the north which was disproved with 100% MB. Compiler recommends disproving AWOIS item 53600 and using the GC islet verified by the field for the maritime boundary claim.

²¹ Concur with the hydrographers recommendations.

²² DTONs report is attached to this document. All DTONs have been applied to the chart.

²³ Concur with clarification. The submitted hob files were used in the compilation of HCell H12119. During compilation, some modifications were made to accommodate chart scale. Chart features as depicted in the HCell.

²⁴ Concur.

²⁵ All twenty bottom samples collected by the field are included in the HCell to be charted. No bottom samples were imported from the ENC to be retained.

H12119 AWOIS REPORT

Registry Number: H12119
State: Alaska
Locality: Shumagin Islands
Sub-locality: SW Big Koniiji Island to SW Little Koniiji Island and Vicinity
Project Number: OPR-P183-FA-09
Survey Date:

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16540	13th	10/01/2010	1:300,000 (16540_1)	USCG LNM: 8/10/2010 (1/18/2011) CHS NTM: None (12/31/2010) NGA NTM: 1/21/2006 (1/29/2011)
16011	37th	11/01/2007	1:1,023,188 (16011_1)	[L]NTM: ?
16006	35th	04/01/2008	1:1,534,076 (16006_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

* Correction(s) - source: *last correction applied (last correction reviewed--"cleared date")*

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	MARITIME BOUNDARY CLAIM	AWOIS	[no data]	[no data]	[no data]	---
1.2	MARITIME BOUNDARY CLAIM	AWOIS	[no data]	[no data]	[no data]	---
1.3	MARITIME BOUNDARY CLAIM	AWOIS	[no data]	[no data]	[no data]	---
2.3	MARITIME BOUNDARY CLAIM	AWOIS	[no data]	[no data]	[no data]	---

2 - AWOIS Features

1.1) AWOIS #53597 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 02' 16.7" N, 159° 34' 17.0" W
Historical Depth: [None]
Search Radius: 100
Search Technique: [None]
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM.

History Notes:

OPR-O183-FA-08--NO PRIOR SURVEY HISTORY AVAILABLE BEYOND CHART--This OBSTRUCTIONIS IN THE VICINITY OF KONIJI STRAIT IN SCALED (CHART 16540) POSITION LAT. 55/02/16N LONG. 159/34/17W (NAD83) BASELINE POINT NEEDS TO BE REPOSITIONED FOR A MARITIME BOUNDARY CLAIM. THE SOURCE (CHART 16540) INDICATES THAT THE FEATURE IS AN OBSTRUCTION. ENTERED 4/08 BY RES

Survey Summary

Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DP for ht. AWOIS #53597 is a maritime boundary claim based on the position of charted (16540) rock. Charted rock is actually a GC (10647) islet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-FA-08_AWOIS	AWOIS # 53597	0.00	000.0	Primary

Hydrographer Recommendations

Change to the position and height of the GC islet. chart as islet

S-57 Data

Geo object 1: Land elevation (LNDELV)
Attributes: ELEVAT - 12.00 m
 SORDAT - 20090812
 SORIND - US,US,graph,H12119

VERDAT - 12:Mean lower low water

Office Notes

Concur. Chart per HCell 12119

1.2) AWOIS #53601 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 02' 29.4" N, 159° 34' 31.5" W
Historical Depth: [None]
Search Radius: 100
Search Technique: [None]
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM.

History Notes:

NO PRIOR SURVEY HISTORY AVAILABLE BEYOND CHART--THIS IS A LOW WATER EXTENSION FROM THE MAINLAND IN THE VICINITY OF KONIJI STRAIT IN SCALED (CHART 16540) POSITION LAT. 55/02/29.4N LONG. 159/34/31W (NAD83) BASELINE POINT NEEDS TO BE REPOSITIONED FOR A MARITIME BOUNDARY CLAIM. THE SOURCE (CHART 16540) INDICATES THAT THE FEATURE IS A LOW WATER EXTENSION FROM THE MAINLAND. ENTERED 4/08 BY RES.

Survey Summary

Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DP for ht. AWOIS #53601 is a maritime boundary claim based on the position of charted (16540) rock. Charted rock is actually a GC (10647) islet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-FA-08_AWOIS	AWOIS # 53601	0.00	000.0	Primary

Hydrographer Recommendations

Change to the position and height of the GC islet. chart as islet

S-57 Data

Geo object 1: Land elevation (LNDELV)
Attributes: ELEVAT - 11.30 m
 SORDAT - 20090812
 SORIND - US,US,graph,H12119

VERDAT - 12:Mean lower low water

Office Notes

Concur. Chart per HCell 12119

1.3) AWOIS #53600 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 02' 21.4" N, 159° 37' 54.8" W
Historical Depth: [None]
Search Radius: 100
Search Technique: [None]
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM.

History Notes:

NO PRIOR SURVEY HISTORY AVAILABLE BEYOND CHART--AN ISLET IN THE VICINITY OF KONIJI STRAIT IN SCALED (CHART 16540) POSITION LAT. 55/02/21N LONG. 159/37/54W (NAD83) BASELINE POINT NEEDS TO BE REPOSITIONED FOR A MARITIME BOUNDARY CLAIM. THE SOURCE (CHART 16540) INDICATES THAT THE FEATURE IS AN ISLET. ENTERED 4/08 BY RES.

Survey Summary

Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DP for ht. AWOIS #53600 is a maritime boundary claim based on the position of charted (16540) rock. Charted rock is actually a GC (10647) islet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-FA-08_AWOIS	AWOIS # 53600	0.00	000.0	Primary

Hydrographer Recommendations

Change to the position and height of the GC islet. chart as islet

S-57 Data

Geo object 1: Land elevation (LNDELV)
Attributes: ELEVAT - 2.40 m
 SORDAT - 20090812
 SORIND - US,US,graph,H12119

VERDAT - 12:Mean lower low water

Office Notes

Do not concur. Although the GC islet investigated by the field was verified, the location of the AWOIS item is on a different charted (ENC) islet approximately 300 meters to the north which was disproved with 100% MB. Compiler recommends disproving AWOIS item 53600 and using the GC islet verified by the field for the maritime boundary claim.

2.3) AWOIS #53599 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 02' 20.3" N, 159° 37' 58.9" W
Historical Depth: [None]
Search Radius: 100
Search Technique: [None]
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM.

History Notes:

NO PRIOR SURVEY HISTORY AVAILABLE BEYOND CHART--AN ISLET IN THE VICINITY OF KONIJI STRAIT IN SCALED (CHART 16540) POSITION LAT. 55/02/20N LONG. 159/37/58W (NAD83) BASELINE POINT NEEDS TO BE REPOSITIONED FOR A MARITIME BOUNDARY CLAIM. THE SOURCE (CHART 16540) INDICATES THAT THE FEATURE IS AN ISLET. ENTERED 4/08 BY RES.

Survey Summary

Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DP for ht. AWOIS #53599 is a maritime boundary claim based on the position of charted (16540) rock. Charted rock is actually a GC (10647) islet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-FA-08_AWOIS	AWOIS # 53599	0.00	000.0	Primary

Hydrographer Recommendations

Change to the position and height of the GC islet. chart as islet

S-57 Data

Geo object 1: Land elevation (LNDELV)
Attributes: ELEVAT - 1.40 m
 SORDAT - 20090812
 SORIND - US,US,graph,H12119

VERDAT - 12:Mean lower low water

Office Notes

Do not concur. Although the GC islet investigated by the field was verified, the location of the AWOIS item is on a different charted (ENC) islet approximately 300 meters to the north which was disproved with 100% MB. Compiler recommends disproving AWOIS item 53599 and using the GC islet verified by the field for the maritime boundary claim.

H12119 Danger to Navigation Report

Registry Number: H12119
State: Alaska
Locality: Shumagin Islands
Sub-locality: SW Big Koniiji Island to SW Little Koniiji Island and Vicinity
Project Number: OPR-P183-FA-09
Survey Dates: June 17, 2009 - August 12, 2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16540	12th	01/01/2005	1:300,000 (16540_1)	USCG LNM: 02/24/2009 (04/28/2009) CHS NTM: None (04/24/2009) NGA NTM: 01/21/2006 (05/09/2009)
16011	37th	11/01/2007	1:1,023,188 (16011_1)	[L]NTM: ?
16006	35th	04/01/2008	1:1,534,076 (16006_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

* Correction(s) - source: *last correction applied (last correction reviewed--"cleared date")*

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	11.49 m	55° 01' 51.7" N	159° 38' 21.1" W	---
1.2	Rock	11.80 m	55° 02' 48.2" N	159° 39' 53.5" W	---
1.3	Rock	14.27 m	55° 04' 44.5" N	159° 39' 26.1" W	---
1.4	Rock	9.00 m	55° 06' 12.6" N	159° 38' 19.0" W	---

1 - Danger To Navigation

1.1) GP No. - 1 from ChartGPs - Digitized

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 01' 51.7" N, 159° 38' 21.1" W
Least Depth: 11.49 m (= 37.70 ft = 6.283 fm = 6 fm 1.70 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-322.21:50:21 (11/18/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

The shoal point of an uncharted rocky seabed area was found using multi-beam echo-sounder.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

Add sounding to chart 16540.

Cartographically-Rounded Depth (Affected Charts):

6 1/4fm (16540_1, 16011_1, 16006_1, 530_1)

11.5m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes:
 SORDAT - 20090812
 SORIND - US,US,surve, H12119
 VALSOU - 11.49 m
 WATLEV - 3:always under water/submerged

Feature Images

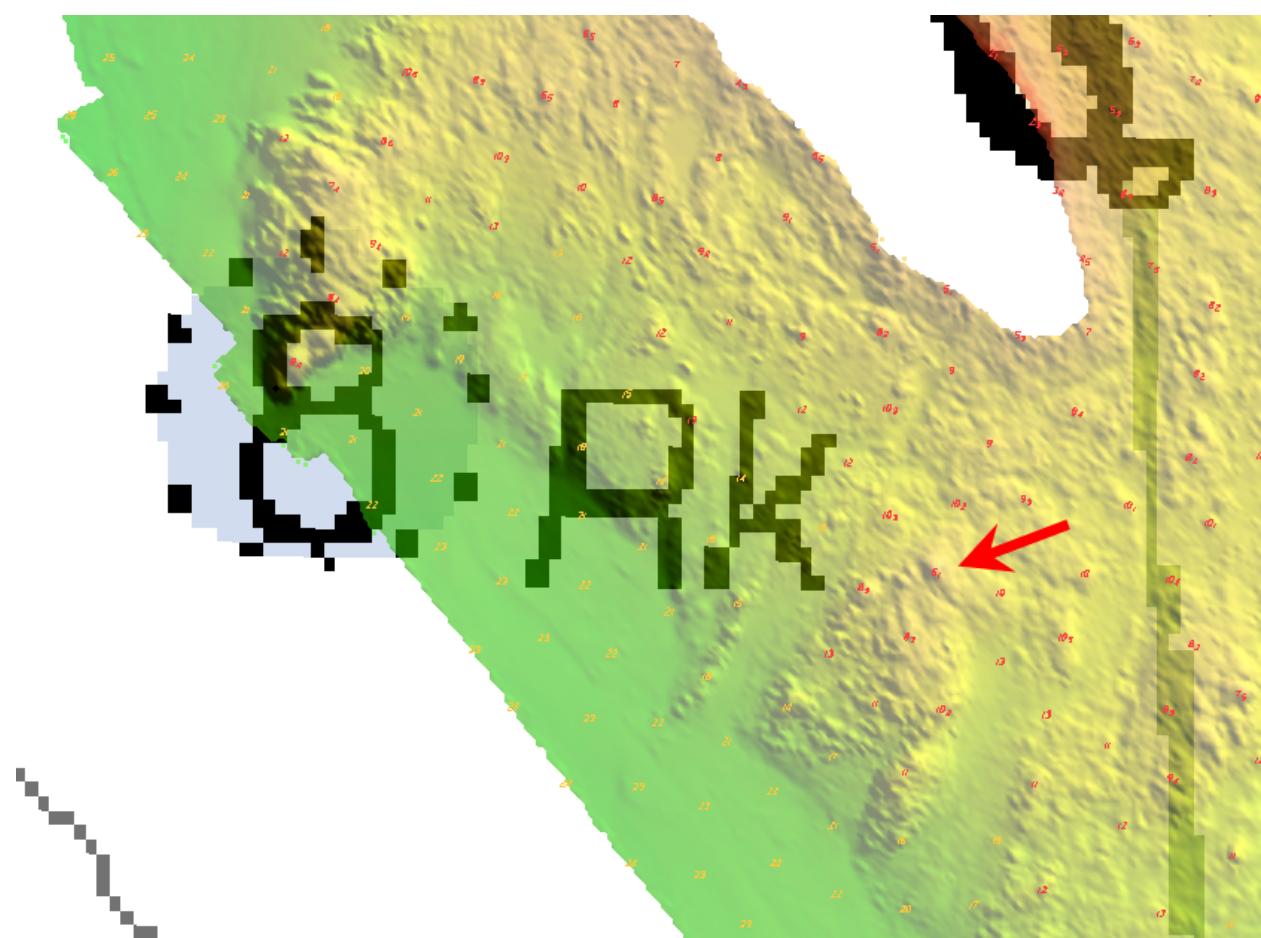


Figure 1.1.1

1.2) GP No. - 2 from ChartGPs - Digitized

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 02' 48.2" N, 159° 39' 53.5" W
Least Depth: 11.80 m (= 38.71 ft = 6.452 fm = 6 fm 2.71 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-322.22:09:16 (11/18/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 2
Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

The shoal point of an uncharted rocky seabed area was found using multi-beam echo-sounder.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	2	0.00	000.0	Primary

Hydrographer Recommendations

Add sounding to chart 16540.

Cartographically-Rounded Depth (Affected Charts):

6 1/2fm (16540_1, 16011_1, 16006_1, 530_1)

11.8m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes:
 SORDAT - 20090812
 SORIND - US,US,surve,H12119
 VALSOU - 11.80 m
 WATLEV - 3:always under water/submerged

Feature Images

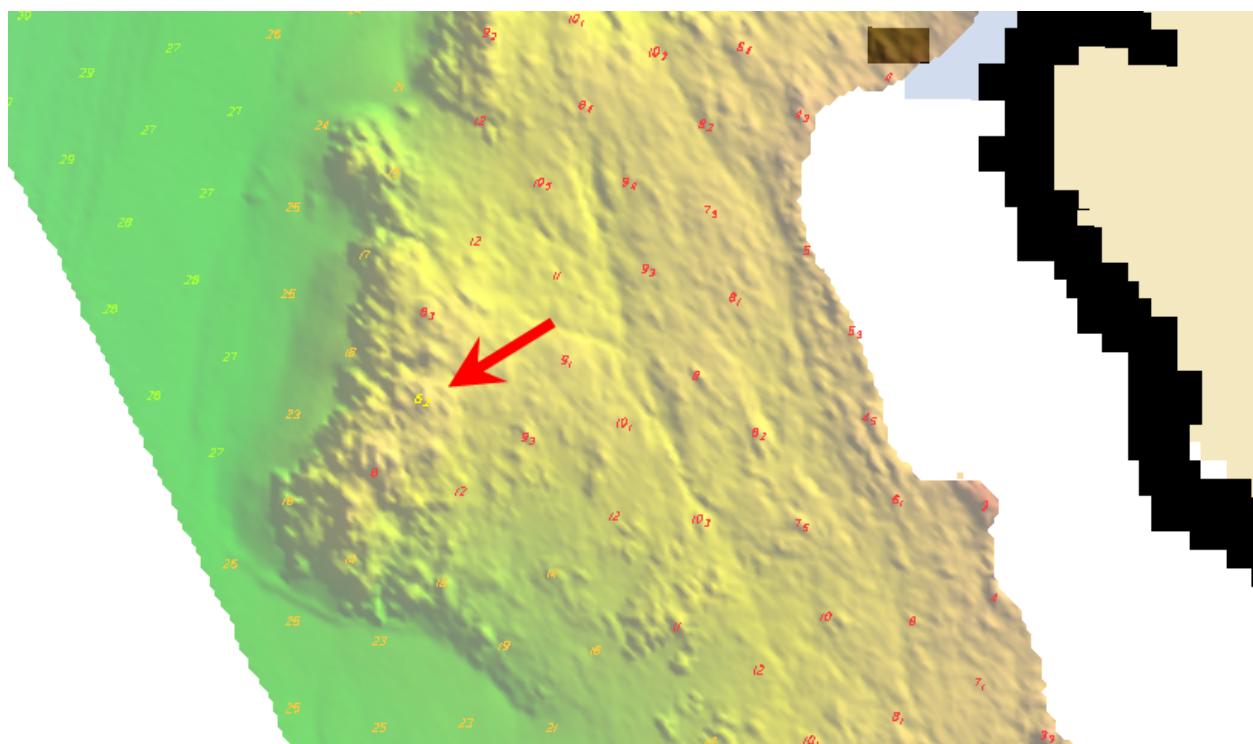


Figure 1.2.1

1.3) GP No. - 3 from ChartGPs - Digitized

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 04' 44.5" N, 159° 39' 26.1" W
Least Depth: 14.27 m (= 46.82 ft = 7.803 fm = 7 fm 4.82 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-322.22:18:45 (11/18/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 3
Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

The shoal point of an uncharted rocky seabed area was found using multi-beam echo-sounder.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	3	0.00	000.0	Primary

Hydrographer Recommendations

Add sounding to chart 16540.

Cartographically-Rounded Depth (Affected Charts):

7 ¾ fm (16540_1, 16011_1, 16006_1, 530_1)

14.3m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes:
 SORDAT - 20090812
 SORIND - US,US,surve, H12119
 VALSOU - 14.27 m
 WATLEV - 3:always under water/submerged

Feature Images

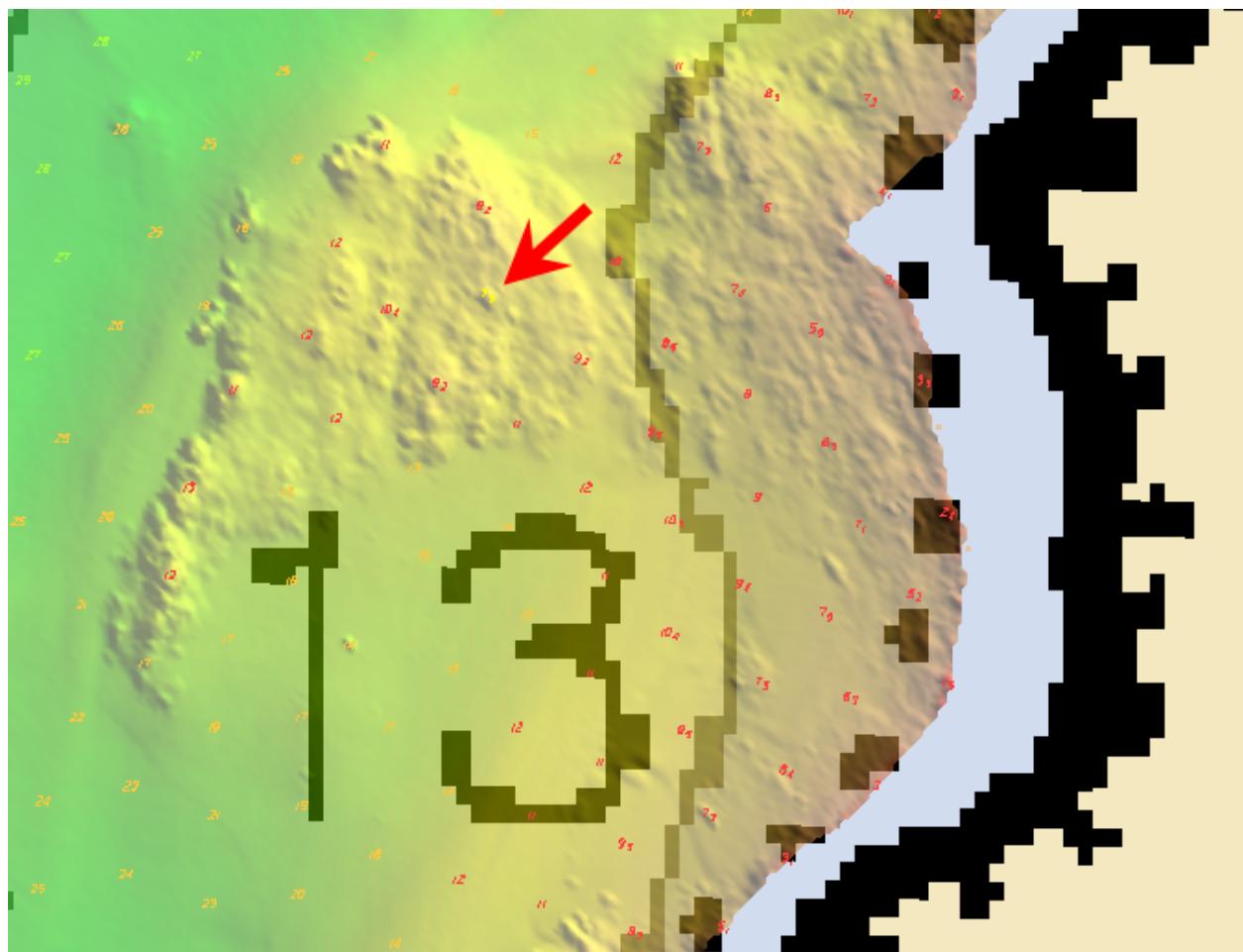


Figure 1.3.1

1.4) GP No. - 4 from ChartGPs - Digitized

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 06' 12.6" N, 159° 38' 19.0" W
Least Depth: 9.00 m (= 29.53 ft = 4.921 fm = 4 fm 5.53 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-322.22:26:00 (11/18/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 4
Charts Affected: 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

The seaward extent of an uncharted rock was found using multi-beam echo-sounder.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	4	0.00	000.0	Primary

Hydrographer Recommendations

Add sounding to chart 16540.

Cartographically-Rounded Depth (Affected Charts):

4 ¾ fm (16540_1, 16011_1, 16006_1, 530_1)

9.0m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes:
 SORDAT - 20090812
 SORIND - US,US,surve,H12119
 VALSOU - 9.00 m
 WATLEV - 3:always under water/submerged

Feature Images

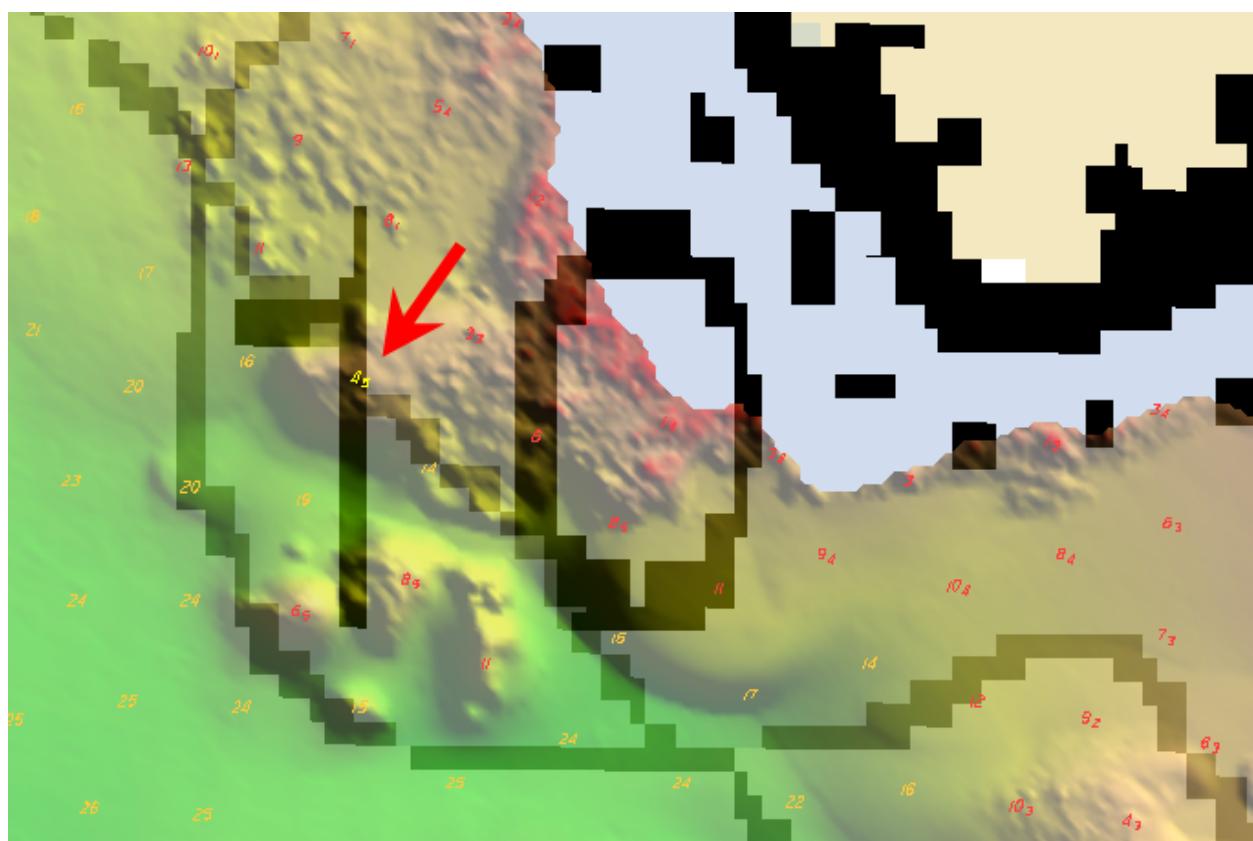


Figure 1.4.1



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 21, 2009

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P183-FA-2009

HYDROGRAPHIC SHEET: H12119

LOCALITY: SW Big Koniiji Island to SW Little Koniiji Island and Vicinity, AK

TIME PERIOD: June 17 - August 12, 2009

TIDE STATION USED: Sand Point, AK 945-9450

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

TIDE STATION USED: Herendeen Island, AK 945-9163

Lat. 55° 04.0' N Long. 159° 26.3' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.020 meters

REMARKS: RECOMMENDED GRID

Please use the TCARI grid "P183FA2009-Final" as the final grid for project OPR-P183-FA-2009, H12119, during the time period between June 17 - August 12, 2009.

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: Due to the missing data at Herendeen Island, AK (945-9163) from August 11 23:00 to August 12 01:12, Sand Point, AK (945-9450) is the only active station to provide residuals for the survey area during that period. As Herendeen Island was not initially required by CO-OPS, and data at Herendeen Island and Sand Point match within the acceptable accuracy limits of the hydrographic survey specifications, solve combinations are used within the TCARI grid to generate tide correctors during that period.

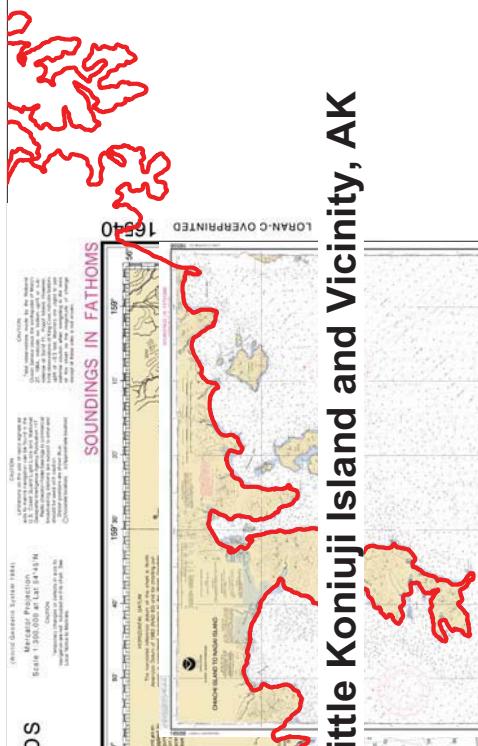
Peter J. Stone



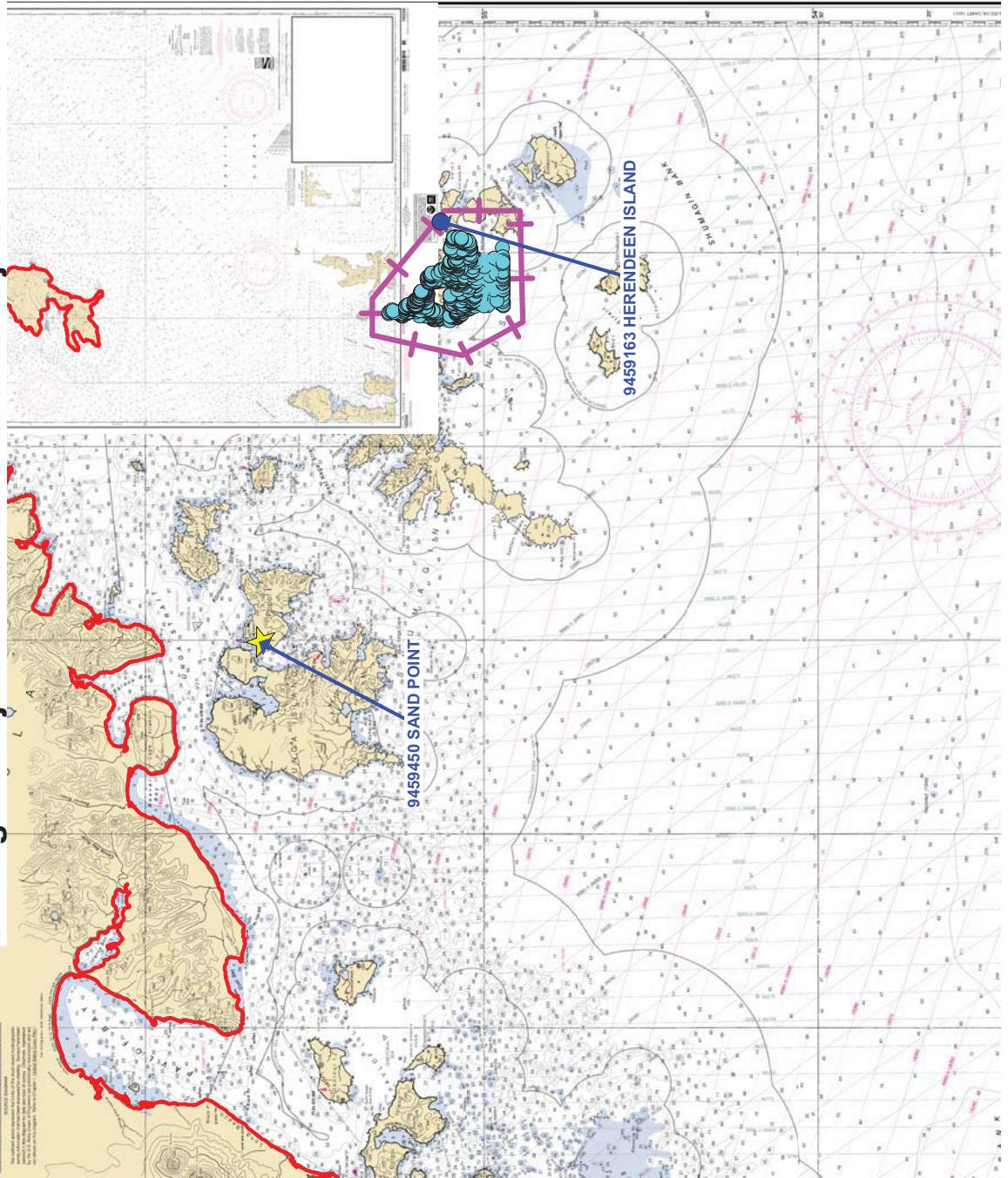
Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/NOS,
email=peter.stone@noaa.gov, c=US
Date: 2009.10.23 15:10:22 -04'00'

CHIEF, OCEANOGRAPHIC DIVISION





Final TCARI Grid for
OPR-P183-FA-2009, H12119
SW Big Koniuji Island to SW Little Koniuji Island and Vicinity, AK



H12119 HCell Report
Fernando Ortiz, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H12119 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March 2010.
HCell Reference Guide: Version 2.0, July 29, 2010.

2. Compilation Scale

Depths and features for HCell H12119 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16556	1:80,000	5 th	04/2006	2/8/2011

The following ENCs were also used during compilation:

Chart	Scale
US4AK58M	

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 8-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 for the 16556 chart at survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-5	10	2
10	20	3
20	50	3.5
50	500	4

In CARIS BASE Editor soundings were manually selected from the high density sounding layers (SS) and imported into a new layer (CS) created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that closely represents the seafloor morphology.

4. Depth Contours

Depth contours at the intervals on the largest scale chart are included in the *_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in fathoms from Chart 16556	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H12119_SS.000
0	0.2286	0	0	0
5	9.144	9.3726	5.125	5
10	18.288	18.5166	10.125	10
20	36.576	37.9476	20.75	20
30	54.864	56.2356	30.75	30
40	73.152	74.5236	40.75	40
50	91.44	92.8116	50.75	50

With the exception of the zero contours included in the *_CS file, contours have not been deconflicted against shoreline features, soundings and hydrography, as all other features in the *_CS file and soundings in the *_SS have been. This may result in conflicts between the *_SS file contours and HCell features at or near the survey limits. Conflicts with M_QUAL, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over *_SS.000 file contours in all cases where conflicts are found.

5. Meta Areas

The following Meta object area is included in HCell H12119:

M_QUAL

The Meta area object was constructed on the basis of the limits of the hydrography.

6. Features

Features addressed by the field units are delivered to PHB where they are deconflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base Surface, are included in the HCell. The geometry of these features may be modified to emulate chart scale per the HCell Reference Guide on compiling features to the chart scale HCell.

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue Notes-Notes to the MCD chart Compiler
COALNE	Coastline
DEPCNT	Zero Contours
LNDARE	Land Area
LNDELV	Land Elevation
M_QUAL	Data quality Meta object
OBSTRN	Obstruction
SBDARE	Bottom samples- rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rocks
WEDKLP	Kelp

The *_SS HCell contains the following Objects:

DEPCNT	Contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

8. Spatial Framework

8.1 Coordinate System

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

8.2 Horizontal and Vertical Units

DUNI, HUNI and PUNI are used to define units for depth, height and horizontal position in the chart units HCell, as shown below.

Chart Unit Base Cell Units:

Depth Units (DUNI):	Fathoms and Feet
Height Units (HUNI):	Feet
Positional Units (PUNI):	Meters

During creation of the HCell in CARIS BASE Editor and CARIS S-57 Composer, all soundings and features are maintained in metric units with as high precision as possible. Depth units for soundings measured with sonar maintain millimeter precision. Depths on rocks above MLLW and heights on islets above MHW are typically measured with range finder, so precision is less. Units and precision are shown below.

BASE Editor and S-57 Composer Units:

Sounding Units:	Meters rounded to the nearest millimeter
Spot Height Units:	Meters rounded to the nearest decimeter

See the HCell Reference Guide for details of conversion from metric to charting units, and application of NOAA rounding.

9. Data Processing Notes

There were no significant deviations from the standards and protocols given in the HCell Specification and HCell Reference Guide.

10. QA/QC and ENC Validation Checks

H12119 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

H12119_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:80,000
H12119_SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:20,000
H12119_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H12119_outline.gml	Survey outline
H12119_outline.xsd	

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 3.0	Creation of soundings and bathy-derived features, creation of the depth area, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.1	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

Inquiries regarding this HCell content or construction should be directed to:

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APPROVAL SHEET
H12119

The survey evaluation and verification has been conducted according to branch processing procedures and the HCell compiled per the latest OCS HCell Specifications.

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproval of charted data within the survey limits. The survey records and digital data comply with OCS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

I have reviewed the HCell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.