

H11923

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* ..... HYDROGRAPHIC

*Field No.* .....

*Registry No.* ..... H11923

### LOCALITY

*State* ..... Alaska

*General Locality* ..... Shumagin Islands

*Sublocality* ..... SE Nagai Island and Approaches

**2008**

### CHIEF OF PARTY

..... Commander Douglas D. Baird, Jr., NOAA

### LIBRARY & ARCHIVES

**DATE** .....



U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  <b>HYDROGRAPHIC TITLE SHEET</b>		REGISTRY No  <b>H11923</b>
<b>INSTRUCTIONS</b> – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.		FIELD No:  <b>NA</b>
State <u>Alaska</u>		
General Locality <u>Shumagin Islands</u>		
Sub-Locality <u>SE Nagai Island and Approaches</u>		
Scale <u>1:20,000</u>		Date of Survey <u>June 26, 2008 - August 15, 2008</u>
Instructions dated <u>6/21/2008</u>		Project No. <u>OPR-P183-FA-08</u>
Vessel(s) <u>NOAA Ship FAIRWEATHER S220, Launch 1010</u>		
Chief of party <u>CDR Douglas D. Baird, Jr., NOAA</u>		
Surveyed by <u>SST Brenna Campbell, CST Lynette Morgan, LT Matthew Ringle</u>		
Soundings by <u>Reson 8111, Reson 8101ER</u>		
SAR by <u>Anthony Lukach</u>		Compilation by <u>Katie Reser</u>
Soundings compiled in <u>Fathoms</u>		
<b>REMARKS:</b> <u>All times are UTC. UTM Projection 4N.</u>		
<u>The purpose of this survey is to provide contemporary surveys to update</u>		
<u>National Ocean Service (NOS) nautical charts.</u>		
<u>All separates are filed with the hydrographic data.</u>		
<u>Revisions and end notes in red were generated during office processing.</u>		
<u>Page numbering may be interrupted or non sequential.</u>		



# **Descriptive Report to Accompany Hydrographic Survey H11923**

Project OPR-P183-FA-08

Shumagin Islands, Alaska

Scale 1:20,000

June-August 2008

**NOAA Ship *Fairweather***

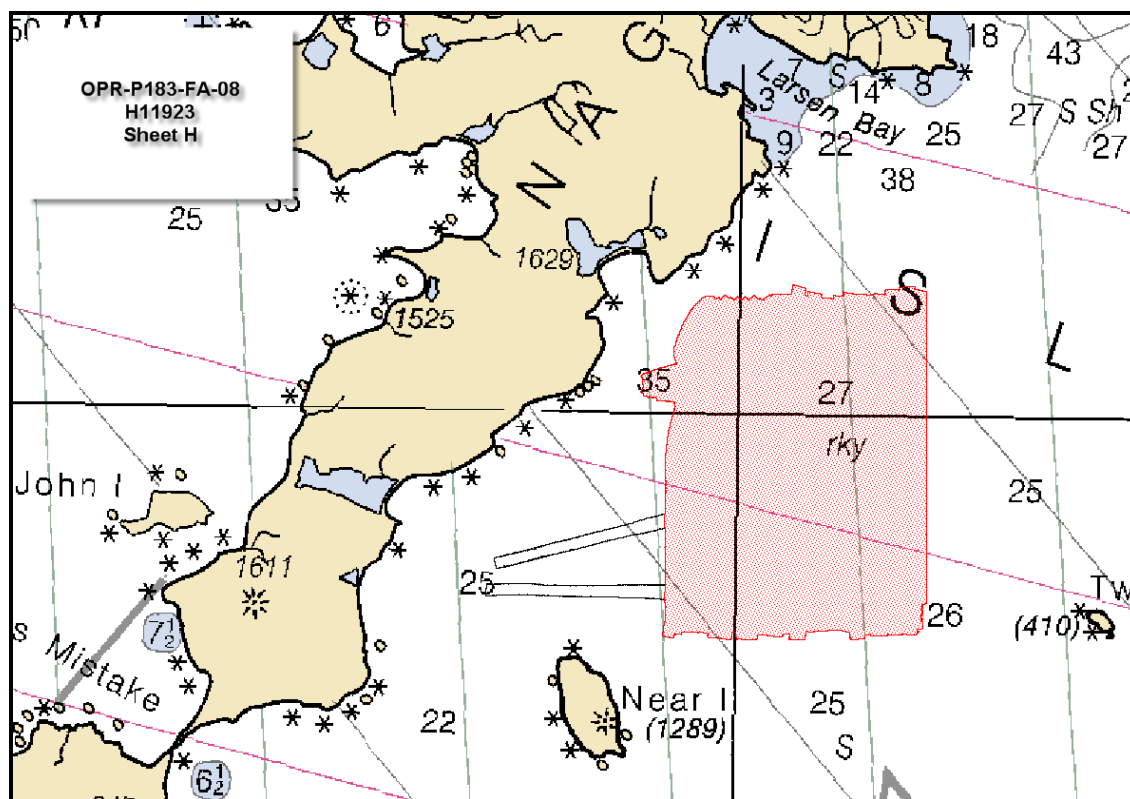
Chief of Party: Commander Douglas D. Baird, Jr., NOAA

## **A. AREA SURVEYED**

The survey area is located in the Shumagin Islands, within the sub-locality of SE Nagai Island and Approaches. This survey corresponds to Sheet H in the updated sheet layout provided on June 21, 2008 which further corresponds to the northwest portion of Sheet H in the sheet layout provided with the Letter Instructions dated April 21, 2008. An outline of the surveyed area is shown in Figure 1. It should be noted that due to time constraints the actual surveyed area does not cover Sheet H in its entirety. The actual surveyed area is bounded on the Southwest corner at 54°57'27.33"N, 160°01'28.09"W, and the Northeast corner at 55°01'27.72"N, 159°56'16.77"W. These boundaries include only the area outlined in red. The two crosslines extending to the west (in black) to be used for future junctioning of surveys only and not for survey coverage.

Data acquisition was conducted from June 26 to August 15, 2008 (DN 178 to DN 228). Actual time spent working on the project was limited, with most of this time period being spent on other projects.





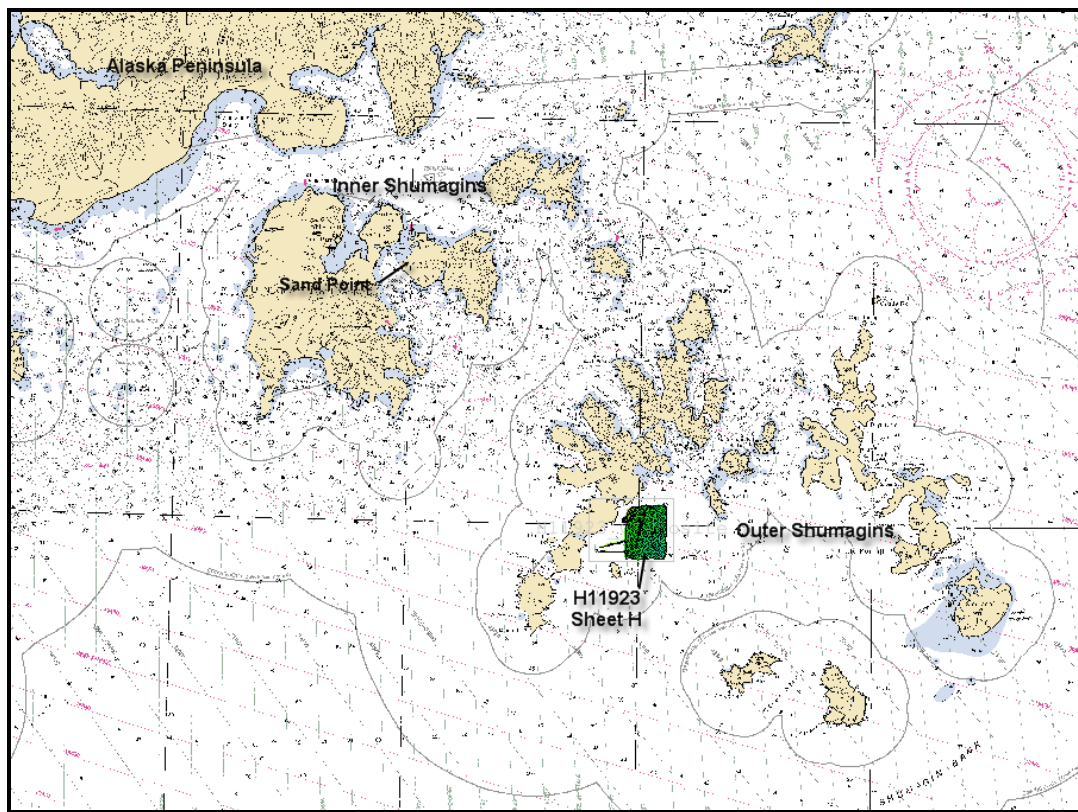
*Figure 1: H11923 Survey Outline*



## A.1 Area Description

The Shumagin Islands are a remote group of Islands located off the southwest coast of the Alaska Peninsula. The Shumagin Islands are separated from the Alaska Peninsula by Unga Strait, and are generally divided into the “Inner Shumagins” and the “Outer Shumagins”. Sand Point, on Popof Island, is the primary community serving the area. Sheet H of this project is located along the southeast shore of Nagai Island just south of Larsen Bay (Figure 2).

The Shumagins are a steep, barren group of Islands which show evidence along exposed shores of the powerful winter storms which regularly sweep through the area. Vegetation is limited to low growing brush and “tundra” cover. Nesting sea birds such as Tufted and Horned Puffins, Murres, Guillemot, Petrels and many others are common throughout the area. The region is tectonically very active as it lies along the subduction zone created by the collision of the Pacific and North American Tectonic Plates. It is this dynamic geologic boundary which gives rise to the many active volcanoes along the Alaska Peninsula and the Aleutians in addition to major earthquakes such as the Alaska Good Friday Quake of 1964.



*Figure 2: Shumagin Islands*

## A.2 Survey Scope

One hundred percent multibeam echosounder (MBES) coverage was obtained in the area surveyed. As shown in Table 1 most of that coverage was completed by the Fairweather with a minor contribution from Launch 1010. No depths shoaler than 20 meters were obtained within the surveyed area during the 2008 season.<sup>1</sup>



Shoreline data were acquired for H11923. These data have not been included in this report but will instead be compiled and included with any future sheet encompassing the unsurveyed portions of Sheet H.<sup>2</sup>

Main scheme and crossline mileage for Sheet H were calculated and are displayed in Table 1 below.

<b>MAIN SCHEME - Mileage</b>	
0	Single Beam MS
178.21	Multibeam MS mileage
164.85	FAIRWEATHER S-220
13.37	Launch 1010
0.00	Launch 1018
0	SideScan MS
178.21	Total MS
<b>CROSSLINE - Mileage</b>	
0	Single Beam XL
16.49	Multibeam XL
16.49	FAIRWEATHER S-220
0.00	Launch 1010
0.00	Launch 1018
16.49	Total XL
<b>OTHER</b>	
0	Developments/AWOIS - Mileage
0	Shoreline/Nearshore Investigation - Mileage
0	Total # of Investigated Items
0	Total Bottom Samples
12.1	Total SNM
6/26, 6/27, 6/29, 6/30, 8/14, 8/15	Specific Dates of Acquisition
178, 179, 181, 182, 227, 228	Specific Dn#s of Acquisition

*Table 1: H11923 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* 2008 Data Acquisition and Processing Report (DAPR)<sup>3</sup>, 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 21, 2008 and updated Sheet layout dated June 28, 2008. Unsurveyed portions of the assigned sheet will presumably be included on future surveys.



## B1. Equipment and Vessels

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

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

	FAIRWEATHER	Launch 1010	MonArk	Ambar 550
Hull Registration Number	S220	1010	Not Assigned	2302
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	MonArk	Marine Silverships, Inc
Length Overall	231 feet	28' 10"	17'	23'
Beam	42 feet	10' 8"	7'	9' 4"
Draft, Maximum	15' 6"	4' 0" DWL	1' 3"	1' 4"
Cruising Speed	12.5 knots	24 knots	20 knots	22 knots
Max Survey Speed	10 knots	10 knots		
Primary Echosounder	RESON 8111 & RESON 8160	RESON 8101		
Sound Velocity Equipment	SBE 19plus & 45, MVP 200	SBE 19plus		
Attitude & Positioning Equipment	POS/MV V4	POS/MV V4		
Type of operations	MBES	MBES	Shoreline	Shoreline

*Table 2: Vessel Inventory*

## B2. Quality Control

The Internal consistency and integrity of data collected using various acquisition platforms for survey H11923 were manually examined by the Hydrographer in Caris subset mode. Specific information relating to data quality is described below.

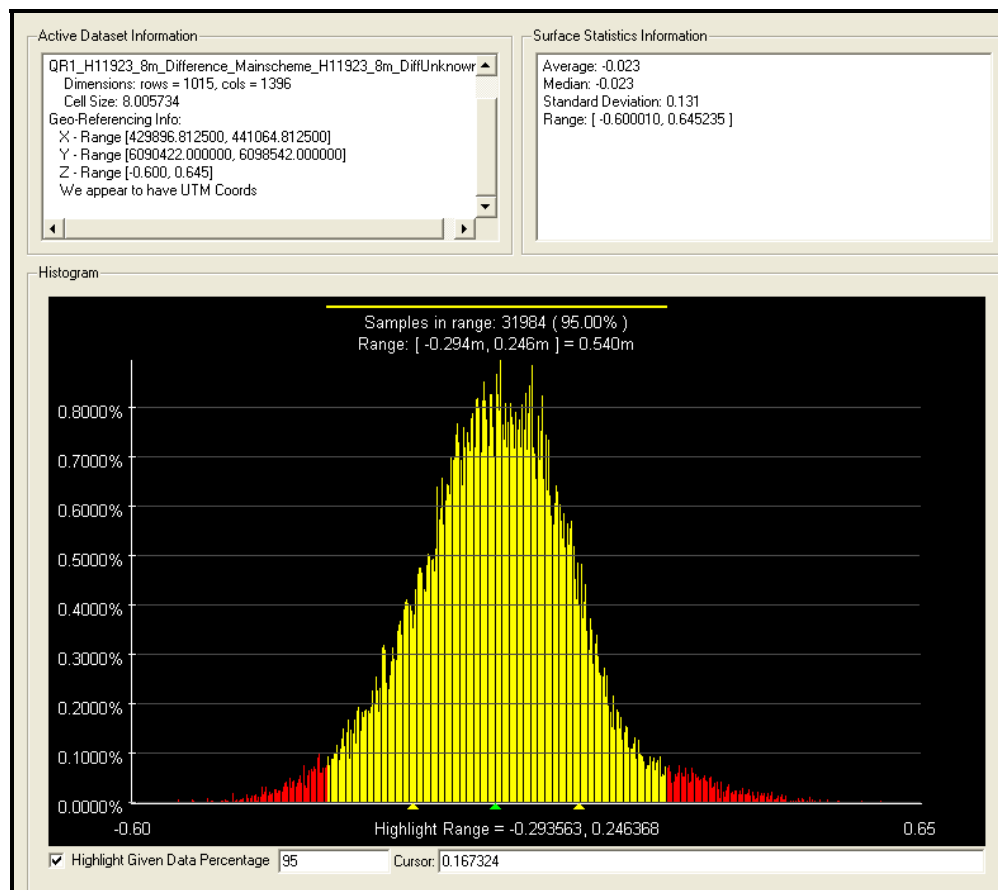


## CROSSLINES

Multibeam crosslines for this survey totaled 16.49 linear nautical miles (lnm), comprising 9.25% of the 178.21 lnm of total mainscheme MBES hydrography. These crosslines cover only the area surveyed by the Ship (S220). All crosslines were acquired on Dn 178, the first day of acquisition, by the Fairweather using the RESON 8111 Sonar Processor. No crosslines were acquired for data collected by Launch 1010 on Dn 227 and 228. Both mainscheme and crossline mileage are summarized in Table 1 above.

Comparison of crossline and mainscheme data was conducted both manually and quantitatively using separate Combined 8m resolution CARIS base surfaces. Surface statistics and a data histogram were generated using Fledermaus and are shown in Figure 3. As can be seen from the histogram, 95% of the data falls within the -0.294 to 0.246 range with the average value being -0.023 and a standard deviation of 0.131. Manual depth comparisons and comparisons using CARIS subset editor also show good agreement between crosslines and mainscheme data.

The Hydrographer has determined, using the methods mentioned above, that the crossline agreement with mainscheme data meet the vertical accuracy requirements as stated in the April, 2008 HSSDM.<sup>4</sup>

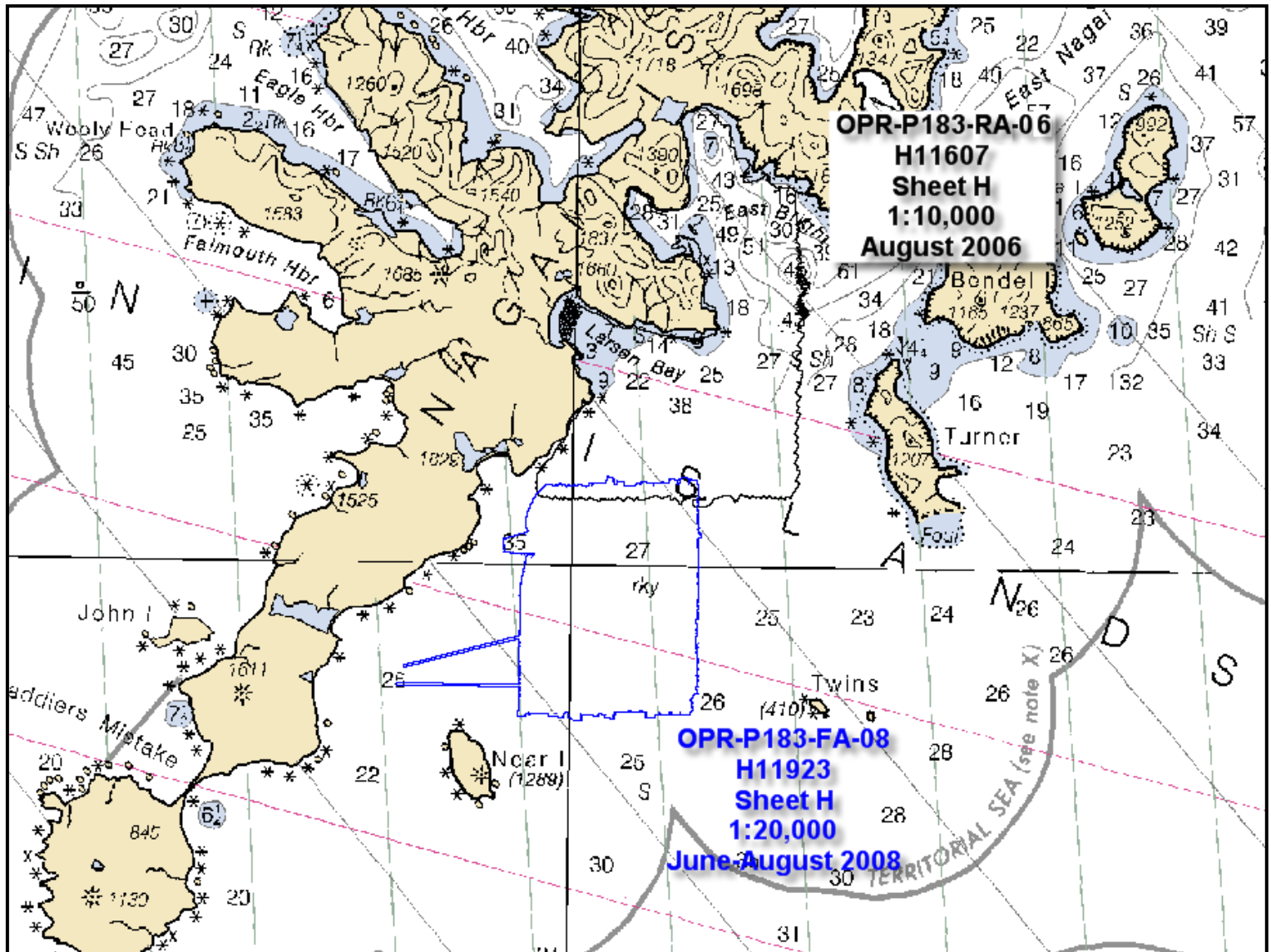


**Figure 3: Crossline difference Histogram and Statistics**



## JUNCTIONS

Survey H11923 of project OPR-P183-FA-08 junctions with H11607, which is Sheet P of project OPR-P183-RA-06.<sup>5</sup> The area of overlap covers approximately 4950 meters along the northern sheet boundary and varies between 300 and 500 meters wide. Review of Comparable CARIS Base Surfaces (8m and 10m) and sounding layers found excellent agreement between the two surveys with little to no deviation observed.<sup>6</sup> The survey limits and area of overlap for H11923 and H11607 are shown in Figure 4.



**Figure 4: Junction Between H11923 and H11607**



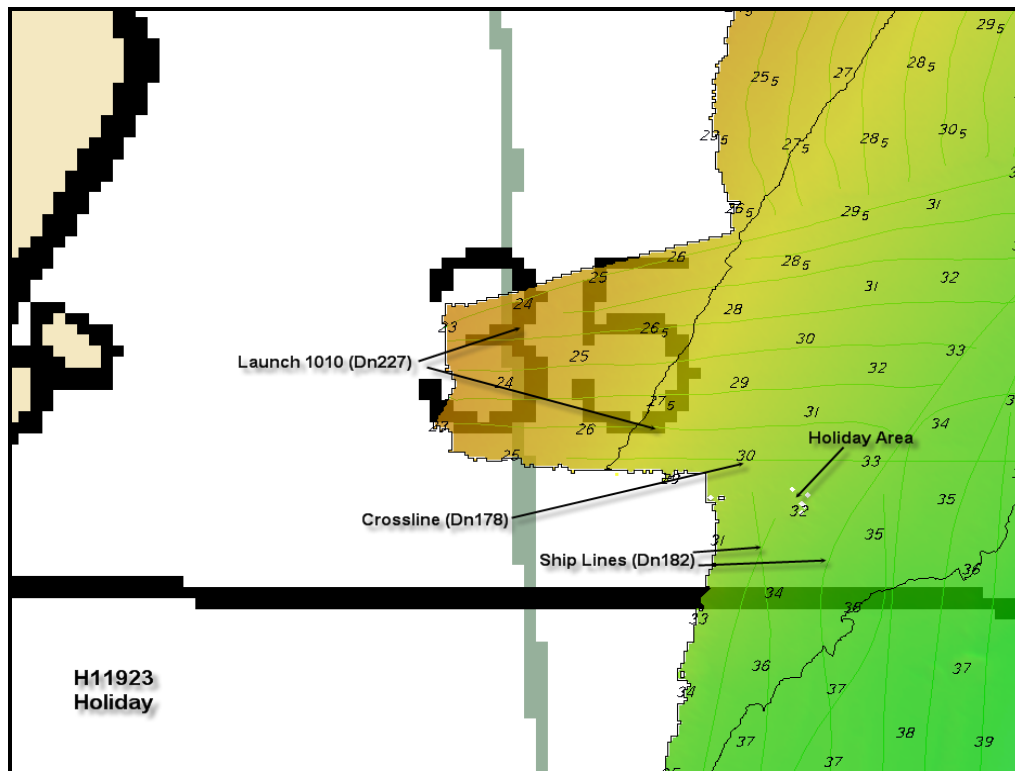
## QUALITY CONTROL CHECKS

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

## DATA QUALITY FACTORS

### COVERAGE ASSESSMENT

Coverage requirements were met in all but one area which fell between the end of lines 1444, 1526 and 1547 (Dn182) and crossline XL3 from Dn 178 (see Figure 5). Examination of backscatter using CARIS Side Scan Editor revealed no navigationally significant features (in this case flat seafloor) in the area and least depths are adequately represented by adjacent soundings.<sup>7</sup>

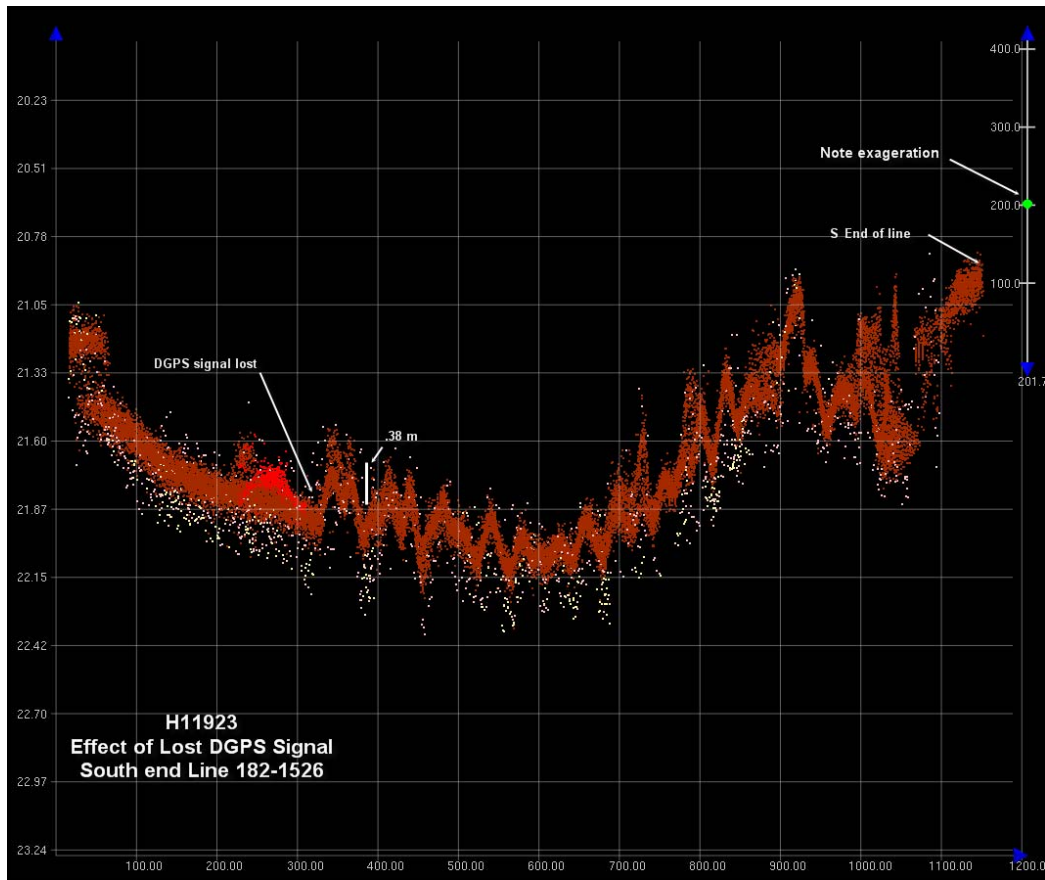


*Figure 5: H11923 Holiday*



## POSITIONING

Although the Cold Bay Differential Global Positioning System (DGPS) signal was occasionally lost during acquisition on H11923, the positional accuracy of the Coarse Acquisition (CA) signal was well within allowable error limits. One exception at the southern most end of line 182-1526 resulted in the surface shown in Figure 5, although the data still meets IHO Order 1 standards.<sup>8</sup>



*Figure 5: Surface disturbance due to lost DGPS signal*

It is recommended by the Hydrographer that future surveys adjacent to this area increase the overlap in the southwestern most corner of H11923 to at least 160°00'57" West and 54°57'58.52" North to improve coverage in this area.<sup>9</sup>

## TRUEHEAVE

True Heave has been applied successfully to all lines in this project. It was only necessary to use the NOAA utility for correcting corrupt True Heave files, known as Fixtrueheave, on Dn 179. Both the fixed and original files are available in the appropriate raw folder. No True Heave errors were noted during data review.<sup>10</sup>



**SOUND VELOCITY (SV)**

All MBES data collected on S220 (*Fairweather*) used a sound velocity profile selection method of casts taken nearest in distance within a time of 2 hours (Dn 178, 179, 181 and 182). The one day of data for Launch 1010 used a selection method of previous in time (Dn 227). All sound velocity profile selection methods have been documented in the Acquisition and Processing Logs located in Separates folder I - Acquisition\_&\_Processing Logs.

Although there are noticeable sound speed (SV) issues with the data (frowns and smiles), it doesn't become obvious in subset mode without a very large amount of exaggeration (30 to 50). Errors resulting from this slight SV issue, normally between 0.2 and 0.25 m, are within the allowable error limits.<sup>11</sup>

**BOTTOM SAMPLES**

Due to time constraints and lack of suitable anchorage locations within the bounds of the survey, bottom samples were deemed unnecessary.<sup>12</sup>

**DESIGNATED SOUNDINGS**

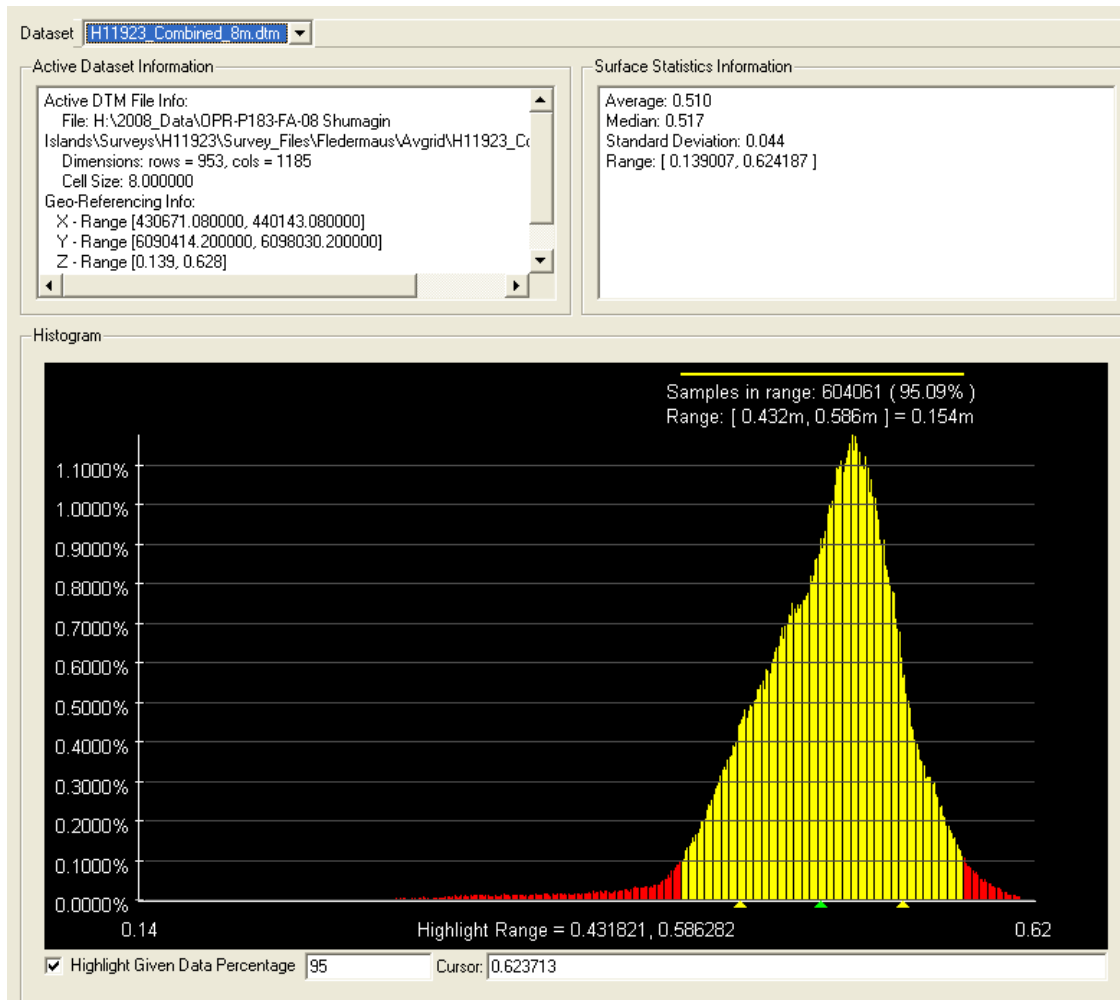
No soundings were designated for H11923. The search for designated soundings followed procedures as outlined in section 5.1.1.3 of the NOS Hydrographic Surveys Specifications and Deliverables (HSSDM) dated April 2008.

**ACCURACY STANDARDS**

The surveyed area for H11923 has a minimum depth of approximately 22 meters and a maximum depth of approximately 55 meters and thus falls entirely under International Hydrographic Organization (IHO) Order 1 accuracy standards. Using the IHO Error Calculator this indicates a 0.564 meter acceptable error limit on the shoal end and a 0.872 meter acceptable error limit on the deep end. No areas exceeding IHO Order 1 standards were observed during review of the combined IHO layer in HIPS.

A Fledermaus Histogram was produced from the Combined surface to quantitatively determine the percentage of uncertainty values that fall within the IHO Order 1 specifications. Figure 6 shows the histogram along with other pertinent statistics. All data falls between 0.13 and 0.62 with no data points falling below 0. As such, 100% of data meets IHO order 1 specifications.<sup>13</sup>





*Figure 6: IHO histogram of combined surface*

### B3. Corrections to Echo Soundings

Data reduction procedures for survey H11923 conform to those detailed in the DAPR.

### B4. Data Processing

Data processing procedures for survey H11923 conform to those detailed in the DAPR.

Initial data acquisition and processing notes are included in the acquisition and processing logs. Additional processing such as final tides and sound velocity applied is most accurately tracked in the survey wide query in the “Review\_Qry” tab of the H11923 data log. All of the logs are included with the digital Separates\I Acquisition & Processing Logs.



**TOTAL PROPAGATED ERROR (TPE) VALUES**

The parameters used to compute Total Propagated Error in CARIS for H11923 are listed in Table 3.

<b>Tide values:</b>	Measured	0.01 m	Zoning	0.10 m
<b>Sound Speed Values: Launch</b>	Measured	1.0 m/s	Surface	1.0 m/s
<b>Sound Speed Values: Ship (S220)</b>	Measured	0.50 m/s	Surface	0.50 m/s

*Table 3: Survey Specific CARIS TPE Parameters*

**CUBE SURFACES**

Base surface resolutions utilized are listed below in Table 4.<sup>14</sup> One CARIS fieldsheet was adequate for this survey. The area surveyed is quite flat and existing features are of limited size and height above the seafloor. In general depths decreased from the East to the West side of the area with the shoalest soundings in the Northwest and the deepest in the Southeast corner. As no soundings were in the 2 meter resolution or 16 meter resolution depth ranges only 4 and 8 meter resolution surfaces were generated.

<b>Fieldsheet Name</b>	<b>Surface Name</b>	<b>Depth Ranges (m)</b>	<b>Resolution (m)</b>
H11923_Composite	H11923_4m	15-40	4
H11923_Composite	H11923_8m	35-80	8
H11923_Composite	H11923_Combined	All	8
H11923_Composite	H11923_4m_15to40_Final	15 - 40	4
H11923_Composite	H11923_8m_35to80_Final	35 - 80	8

*Table 4: Depth Ranges and Resolutions*

**CUBE PARAMETERS**

The Combined Uncertainty and Bathymetric Estimator (CUBE) parameters used for creating CUBE surfaces are listed below in Table 5. The CUBE parameters .xml file is included with the digital data in the vessel configuration folder.

<b>Surface Resolutions</b>		<b>CUBE Parameters</b>				
<b>Depth Range</b>	<b>Grid Resolution</b>	<b>Profile Name</b>	<b>EOV</b>	<b>CDS</b>	<b>CDM</b>	<b>HES</b>
15 to 40m	4m	4metergrid	4.0	1.0	2.83	2.95
35 to 80m	8m	8metergrid	4.0	1.0	5.67	2.95

*Table 5: CUBE parameters used during this project.*



## SURFACE FILTERING

The Surface Filtering function in CARIS HIPS was used for first pass cleaning of data. The confidence level (CL) setting was 10 for standard deviation, and the data was filtered to the 8 meter surface. Due to the very flat nature of the area these settings worked well and substantially decreased the time necessary for manual cleaning.

## C. HORIZONTAL AND VERTICAL CONTROL

A summary of horizontal and vertical control for this survey follows.<sup>15</sup>

### C.1 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from the U.S. Coast Guard beacon at Cold Bay, Alaska (289 kHz) served as the primary correctors for this survey.

Periodic small dropouts were encountered with the corrector signal from the Cold Bay Station although the subsequent CA signal was normally well within the allowable 5 meter error limits. When these occurred the time and line number were noted in the days Acquisition and Processing Log. Table 6 lists the day numbers and lines affected by these dropouts. No significant horizontal positioning errors were observed during review of the data. The data meets the horizontal accuracy requirements of the NOS Hydrographic Surveys Specifications and Deliverables dated April 2008.

Day #	Line #
178	178-1844, 178-1946, 178-2050, 178-2122, XL3
182	182-0437, 182-0536, 182-0608, 182-0846, 182-1526

*Table 6: Lines with DGPS signal loss*

### 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 H11923.

A request for delivery of final approved (smooth) tides for survey H11923 was forwarded to the Center for Operational Oceanographic Products and Services on August 22, 2008 in accordance with the Field Procedures Manual (FPM), dated May, 2008. A copy of the request is included in Appendix V. A copy of the final tide note is also included in Appendix V.<sup>16</sup>



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) by applying verified tide file 9459450.tid and time and height correctors through the zone corrector file P183FA2008CORP.zdf. **It will not be necessary for the Pacific Hydrographic Branch to reapply the final approved water levels (smooth tides) to the survey data during final processing.**<sup>17</sup>

## 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.

Survey H11923 was compared with chart 16540 (12<sup>th</sup> Ed.; January 1, 2005, 1:300,000), chart 16006 (34<sup>th</sup> Ed.; May 1, 2006, 1:1,534,076), ENC US3AK57M (6<sup>th</sup> Ed.; March 11, 2008) and ENC US4AK50M (1<sup>st</sup> Ed.; December 13, 2008). All charts have been updated with the Notice to Mariners through August 25, 2008 (34/08). There were no new changes within the survey area. Table 7 lists all charts pertinent to survey H11923.<sup>18</sup>

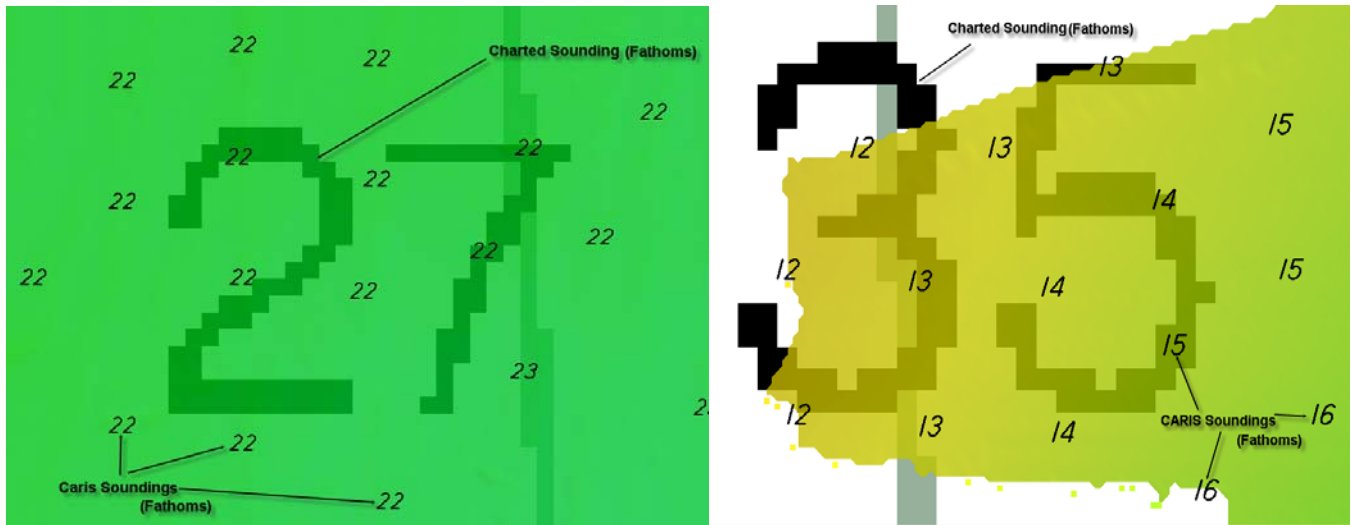
NOAA Chart Number	Chart Scale	Edition Number	Edition Date
16540	1:300,000	12	01/2005
16006	1:1,534,076	34	05/2006
ENC US4AK57M	N/A	6	3/11/2008
ENC US3AK50M	N/A	1	12/13/2007

*Table 7: NOAA Charts compared with Survey H11923*

### Chart 16540<sup>19</sup>

There are only 2 soundings on Chart 16540 that fall within the surveyed area of H11923. Neither of these soundings agree with the survey sounding data and one, the 35 fathom sounding, has a discrepancy of between 20 and 23 fathoms. Figure 7 illustrates the sounding variation in fathoms for these two cases.





*Figure 7: Charted vs. survey soundings.*

### **Chart 16006<sup>20</sup>**

Chart 16006 is the small scale chart of the entire Alaska Peninsula region, and at a scale of 1: 1,534,076 no meaningful comparison can be made with the current survey. The one sounding, 27 fathoms, which covers nearly the entire surveyed area could be said to be a good general number at this scale. The prudent mariner warning certainly applies on this chart.

### **ENC US3AK50M**

As this ENC was digitized from the raster image it has the same 2 soundings as chart 16540, only they are displayed in meters. The same lack of agreement exist for the ENC as for the chart.<sup>21</sup>

### **ENC US4AK57M**

There are no soundings to compare on this ENC.<sup>22</sup>

### **CHART COMPARISON RECOMMENDATIONS**

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the HSSDM. **The surveyed soundings are adequate to supersede prior surveys in their common areas.**<sup>23</sup>



## **D.2 AUTOMATED WRECK AND OBSTRUCTION INFORMATION SYSTEM (AWOIS) INVESTIGATIONS**

There were no AWOIS items located within the limits of H11923.<sup>24</sup>

## **D.3 DANGERS TO NAVIGATION**

There were no dangers to navigation found within the survey limits.<sup>25</sup>

## **D.4 ADDITIONAL RESULTS**

### **SHORELINE VERIFICATION**

Compiled shoreline data for this project have been saved aboard *Fairweather* for use and to be submitted with any future survey which covers the unsurveyed portions of this sheet.

### **Aids to Navigation**

There were no aids to navigation within the survey limits.<sup>26</sup>

### **Bottom Samples**

Due to a lack of suitable anchorages within the survey boundaries, as well as time constraints, no bottom samples were collected for this project.<sup>27</sup>

### **Additional Recommendations**

- Due to the common occurrence of sound velocity issues in the Outer Shumagins (normally within allowable limits) it would be a good idea for some future program to try and develop an alternative SV sampling methodology that would more accurately reflect the areas sound velocity variation.
- Any future survey which overlaps H11923 in the southwest corner should increase overlap to add coverage to the area at the end of Line 182-1526 which had positioning issues during acquisition. Overlap should extend to at least 160°00'57 East and 54°57'58.5" North.<sup>28</sup>
- The Shumagin area offers a very interesting variety of seafloor morphologies related to rising sea levels and retreating glaciers following the last major glaciation (~12,000 Before Present (BP)). This might present an excellent research opportunity for some aspiring Graduate Student.



**E. SUPPLEMENTAL REPORTS**

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

<b>Title</b>	<b>Date Sent</b>	<b>Office</b>
Hydrographic Systems Certification Report 2008	May 14, 2008	N/CS34
Data Acquisition and Processing Report 2008	November 14, 2008	N/CS34
Coast Pilot Report for OPR-P183-FA-08	November 14, 2008	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 21, 2008

MEMORANDUM FOR: CAPT David Neander, NOAA  
Chief, Pacific Hydrographic Branch

FROM: CDR Douglas D. Baird, NOAA  
Commanding Officer

Digitally signed by Doug Baird  
DN: cn=Doug Baird, o=NOAA Ship  
FAIRWEATHER, ou=NOAA, email=co.  
fairweather@noaa.gov, c=US  
Reason: I am approving this document  
Date: 2008.11.21 15:19:19 -08'00'

TITLE: Approval of Hydrographic Survey H11923,  
OPR-P183-FA-08

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11923 in accordance with the Hydrographic Manual, Fourth Edition; Field Procedures Manual, May 2008; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for April 2008. 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/CS34, Pacific 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:

Brenna Campbell  
I am the author of this document  
2008.11.21 17:45:37 Z

---

SST Brenna Campbell  
Survey Manager

Matthew Ringel  
2008.11.21 13:15:09 -08'00'

---

LT Matthew Ringel  
Field Operations Officer

Digitally signed by Lynnette Morgan  
DN: cn=Lynnette Morgan, c=US, o=NOAA, ou=NOAA  
Ship Fairweather, email=lynnette.v.morgan@noaa.gov  
Date: 2008.11.21 08:50:17 -08'00'

---

CST Lynnette V. Morgan  
Chief Survey Technician

Attachment





**Revisions Compiled During Office Processing and Certification**

<sup>1</sup> Concur.

<sup>2</sup> Concur with clarification. One rocky seabed area was digitized from the BASE surface used for compilation. No other features are included in HCell H11923.

<sup>3</sup> Filed with project records.

<sup>4</sup> Concur.

<sup>5</sup> H11607 has already been compiled and a common junction was made with that survey.

<sup>6</sup> Concur.

<sup>7</sup> Concur.

<sup>8</sup> Concur.

<sup>9</sup> Concur.

<sup>10</sup> Concur.

<sup>11</sup> Concur.

<sup>12</sup> Concur.

<sup>13</sup> Concur.

<sup>14</sup> A 4 meter combined surface (H11923\_Office\_4m\_Final) created during the Survey Acceptance Review was the basis for compilation.

<sup>15</sup> No Horizontal and Vertical Control Report was submitted for this project.

<sup>16</sup> See attached Tide Note dated August 29, 2008.

<sup>17</sup> Concur. Final approved water levels have been applied to all data.

<sup>18</sup> Concur with clarification. The northernmost portion of H11923 falls on Chart 16553 (1:80,000), however, the latest edition of that chart has a blue tint area with no data in the southeast corner. New soundings for this area are included in the HCell.

<sup>19</sup> Compiler concurs with field chart comparison. Update charted depths as depicted in the HCell.

<sup>20</sup> Compiler concurs with field chart comparison. Update charted depths as depicted in the HCell.

<sup>21</sup> Concur.

<sup>22</sup> Concur.

<sup>23</sup> Concur.

<sup>24</sup> Concur.

<sup>25</sup> Concur.

<sup>26</sup> Concur.

<sup>27</sup> Concur.

<sup>28</sup> Concur.





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

## **TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** August 29, 2008

**HYDROGRAPHIC BRANCH:** Pacific Hydrographic Branch  
**HYDROGRAPHIC PROJECT:** OPR-P183-FA-2008  
**HYDROGRAPHIC SHEET:** H11923

**LOCALITY:** East Nagai Strait, Shumagin Islands, AK  
**TIME PERIOD:** June 26 - August 15, 2008

**TIDE STATION USED:** 945-9450 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-2008, H11923, during the time period between June 26 to August 15, 2008.

Please use the zoning file "P183FA2008CORP" submitted with the project instructions for OPR-P183-FA-2008. Zone SWA204 is the applicable zone for H11923.

**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).

**Stephen K. Gill**

Digitally signed by Stephen K. Gill  
DN: c=US, st=Maryland, l=Silver Spring, ou=Center for  
Operational Oceanographic Products & Serv., o=National  
Oceanic and Atmospheric Administration, cn=Stephen K.  
Gill, email=Stephen.Gill@noaa.gov  
Date: 2008.09.05 16:28:00 -04'00'

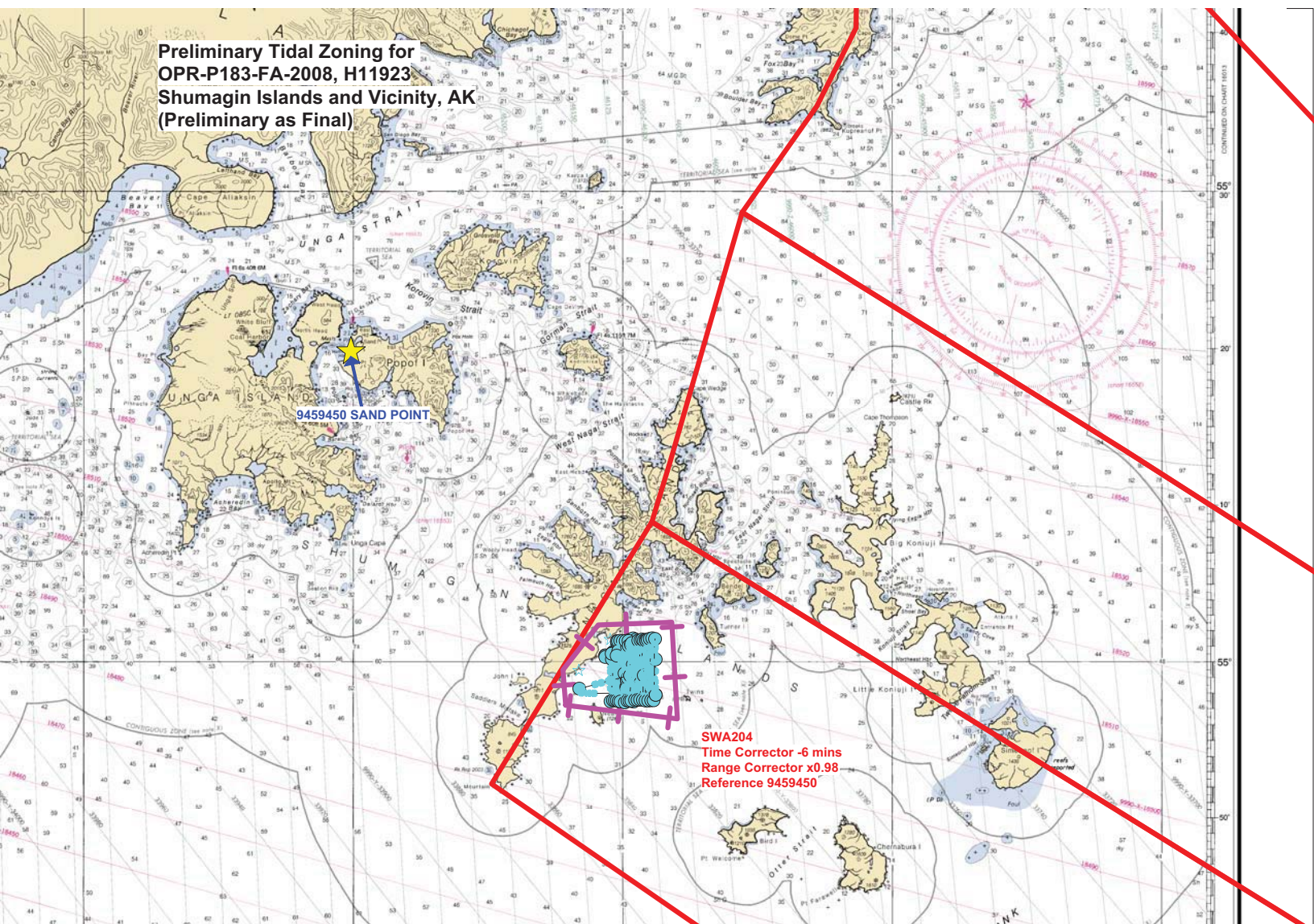
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CHIEF, PRODUCT AND SERVICES DIVISION





**Preliminary Tidal Zoning for  
OPR-P183-FA-2008, H11923  
Shumagin Islands and Vicinity, AK  
(Preliminary as Final)**





**H11923 HCell Report**  
Katie Reser, Physical Scientist  
Pacific Hydrographic Branch

**1. Specifications, Standards and Guidance Used in HCell Compilation**

HCell compilation of survey H11923 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March, 2010.  
HCell Reference Guide: Version 2.0, 22 February, 2010.

**2. Compilation Scale**

Depths and features for HCell H11923 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16553	1:80,000	6 <sup>th</sup>	07/01/2008	05/15/2010
16540	1:300,000	12 <sup>th</sup>	01/01/2005	05/15/2010

The following ENC's were also used during compilation:

Chart	Scale
US4AK57M	1:80,000
US3AK50M	1:300,000

**3. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 4-meter combined surface in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-5	10	3
10	20	4
20	50	4.5
50	500	5

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 17553	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 H11923_SS.000
0	0	0.000	0.000	0
3	5.4864	5.715	3.125	3
5	9.144	9.373	5.125	5
10	18.288	18.517	10.125	10
20	36.576	37.948	20.750	20
50	91.44	92.812	50.750	50
100	182.88	184.252	100.750	100

With the exception of zero contours included in the \*\_CS file, contours have not been de-conflicted 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 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 areas are included in HCell H11923:

M\_QUAL  
M\_CSCL

The Meta area objects were constructed on the basis of the limits of the hydrography.

#### 6. Features

No features were addressed during survey H11923. One rocky seabed area was digitized from the BASE surface and is included in the HCell.



## 7. S-57 Objects and Attributes

The \*\_CS HCell contains the following Objects:

\$CSYMB	Blue notes
M_QUAL	Data quality meta object
M_CSCL	Compilation scale meta object
SBDARE	Rocky seabed area
SOUNDG	Soundings at the chart scale density

The \*\_SS HCell contains the following Objects:

DEPCNT	Generalized 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

H11923 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

H11923_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:80,000 and 1:300,000
H11923 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:20,000
H11923 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11923 _Outline.gml	Survey outline
H11923 _Outline.xsd	Survey outline

### 11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.2	Creation of soundings and bathy-derived features, meta area objects, and blue notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.0	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	Validation of the base cell file.
Northport Systems, Inc., Fugawi Marine ENC Ver.3.1.0.435	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  
H11923

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 disproof 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.