

H11903

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.* ..... RA-10-16-08  
*Registry No.* ..... H11903

### LOCALITY

*State* ..... Alaska  
*General Locality* ..... Pavlof Island  
*Sublocality* ..... Dolgoi Harbor

**2008**

### CHIEF OF PARTY

..... Captain Donald W. Haines, 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;"><b>HYDROGRAPHIC TITLE SHEET</b></p>	<p>REGISTRY No</p> <p style="text-align: center;"><b>H11903</b></p>
<p><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.</p>	<p>FIELD No:</p> <p style="text-align: center;"><b>RA-10-16-08</b></p>
<p>State <u>Alaska</u></p> <hr/> <p>General Locality <u>Pavlof Island</u></p> <hr/> <p>Sub-Locality <u>Dolgoi Harbor</u></p> <hr/> <p>Scale <u>1:10,000</u> Date of Survey <u>July 11, 2008 - August 9, 2008</u></p> <hr/> <p>Instructions dated <u>6/4/2008</u> Project No. <u>OPR-P184-RA-08</u></p> <hr/> <p>Vessel(s) <u>RA6 (1015), RA1 (1101), RA2 (1103), RA4 (2801), RA5 (2802)</u></p> <hr/> <p>Chief of party <u>Captain Donald W. Haines, NOAA</u></p> <hr/> <p>Surveyed by <u>RAINIER Personnel</u></p> <hr/> <p>Soundings by <u>Reson SeaBat 8101, Reson SeaBat 7125, Tilted Reson SeaBat 8125, Knudsen 320M</u></p> <hr/> <p>SAR by <u>Tyanne Faulkes</u> Compilation by <u>Katie Reser</u></p> <hr/> <p>Soundings compiled in <u>Fathoms</u></p> <hr/>	
<p><b>REMARKS:</b> <u>All times are UTC. UTM Zones 3N and 4N.</u></p> <hr/> <p><u>The purpose of this survey is to provide contemporary surveys to update</u></p> <hr/> <p><u>National Ocean Service (NOS) nautical charts.</u></p> <hr/> <p><u>All separates are filed with the hydrographic data.</u></p> <hr/> <p><u>Revisions and end notes in red were generated during office processing.</u></p> <hr/> <p><u>Page numbering may be interrupted or non sequential.</u></p> <hr/>	

# Descriptive Report to Accompany Hydrographic Survey H11903

Project OPR-P184-RA-08

Pavlov Islands, Alaska

Dolgoi Harbor

Scale 1:10,000

July 2008-August 2008

**NOAA Ship *Rainier* (s221)**

Chief of Party: Captain Donald W. Haines, NOAA

## A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P184-RA-08 dated June 4, 2008 and all other applicable direction<sup>1</sup>, with the exception of deviations noted in this report. The survey area is Dolgoi Harbor, Pavlov Islands, AK. This survey corresponds to sheet “D” in the sheet layout provided with the Letter Instructions. OPR-P184-RA-08 responds to a request from the Southwestern Alaska Pilots due to an increase in freighter and passenger traffic.

Complete multibeam echosounder (MBES) coverage was achieved in the survey area in waters 4 meters and deeper, up to the assigned LIDAR survey junction. Total mileage acquired by each vessel and system is referenced in Table 1.

Limited Shoreline Verification was performed for the survey area.

Data Acquisition Type	Hull Number with Mileage (nm)					Total
	1101	1103	1015	2801	2802	
MBES (mainscheme)	21.98	-	123.32	54.32	115.58	315.2
Crosslines -		-	-	3.70	13.56	17.26
Developments	-	6.55	---			6.55
Total Number of Items Investigated	2	-	---			-
Total Area Surveyed (sq. nm)	-	-	-	-	-	9.582

*Table 1: Statistics for survey H11903*

Data acquisition was conducted from July 11 to August 9, 2008 (DN193 to DN222).

<sup>1</sup> NOS Hydrographic Surveys Specifications and Deliverables (April 2008), OCS Field Procedures Manual for Hydrographic Surveying (May 2008), and all Hydrographic Surveys Technical Directives issued through the dates of data acquisition.

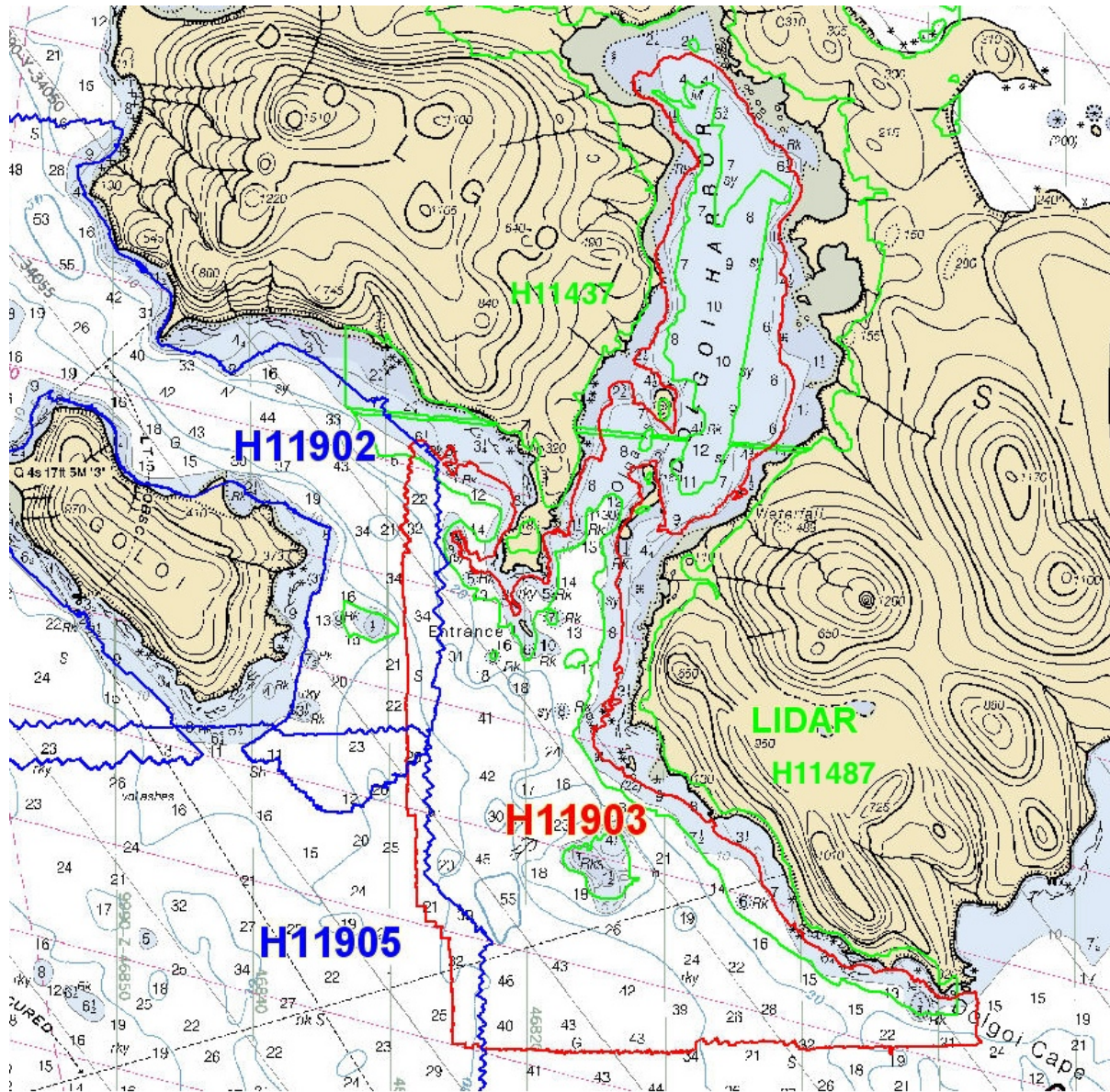


Figure 1: H11903 Survey outline overlaid on Chart 16549. Contemporary Rainier survey junctions are shown in blue and LIDAR junction is shown in green.

**B. DATA ACQUISITION AND PROCESSING**

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P184-RA-08 Data Acquisition and Processing Report (DAPR)*<sup>1</sup>, submitted under separate cover. Items specific to this survey, and any deviations from the DAPR are discussed in the following sections.

Final Approved Water Levels have been applied to this survey. See Section C. for additional information.

**B1. Equipment and Vessels**

Data for this survey were acquired by the following vessels:

Hull Number	Name	Acquisition Type
1101 RA-1		Multibeam Echosounder
1103	RA-2	Vertical Beam Echosounder Detached Positions
2801 RA-4		Multibeam Echosounder
2802 RA-5		Multibeam Echosounder
1015 RA-6		Multibeam Echosounder

*Table 2: Data Acquisition Vessels for H11903.*

Sound speed profiles were measured with the SEACAT SBE 19+ profiler in accordance with the Specifications and Deliverables.

No unusual vessel configurations were used for data acquisition.

**B2. Quality Control**

**Crosslines**

Multibeam Echosounder (MBES) crosslines totaled 17.26 nautical miles, comprising 5.48% of main scheme MBES hydrography. The mainscheme bathymetry was manually compared to the XL nadir beams in CARIS subset mode and agreed well with differences less than 0.2m.<sup>2</sup>

A statistical Quality Control Report has been conducted on representative data acquired with each system used on this survey. Results of these tests are included in the updated 2008 *Rainier* Hydrographic System Readiness Review package submitted with this survey.

**Junctions**

The following contemporary surveys junctions with H11903<sup>3</sup> (See Figure 1):

<b>Registry #</b>	<b>Scale</b>	<b>Date</b>	<b>Junction side</b>	
H11902	1:10,000	2008	Northwest	
H11905	1:10,000	2008	Southwest	
H11437	1:10,000	2005	LIDAR	Survey, North
H11487	1:10,000	2005	LIDAR	Survey, South

2008 Junction Surveys

All contemporary 2008 junction surveys (H11902, H11905) were run concurrently with project OPR-P184-RA-08. Data was compared in CARIS subset mode and all agreed well. Observed offsets were typically within 0.15 to 0.25 meters, and did not exceed 0.35 meters.<sup>4</sup> The areas of higher offset were often attributable to sound speed errors being present in the data.

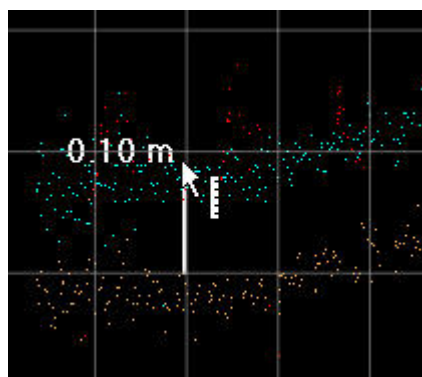
H11437 and H11487

CARIS BASE surfaces for H11438 and H11439 were provided by Pacific Hydrographic Branch for junction comparison. These BASE surfaces were compared to H11903 CUBE surfaces in CARIS HIPS/SIPS and were found to agree well with differences averaging approximately 0.20 to 0.30 meters, and not exceeding 1 meter.<sup>5</sup> Greater discrepancies are due to superior coverage with MBES and comparing BASE surfaces of different resolutions on steep, near shore slopes.

**Data Quality Factors**

Vessel 1015 Offset

An offset was observed when comparing data gathered by vessel 1015 within Dolgoi Harbor. This offset appeared both when compared with other data from vessel 1015 on the same day, and when the data was compared to data from other vessels on other days. It is indeterminate whether this is a vessel offset or a tidal offset, but it was within specs and had a minimal effect on the BASE surface.<sup>6</sup> Figure 2 shows one representative subset image.

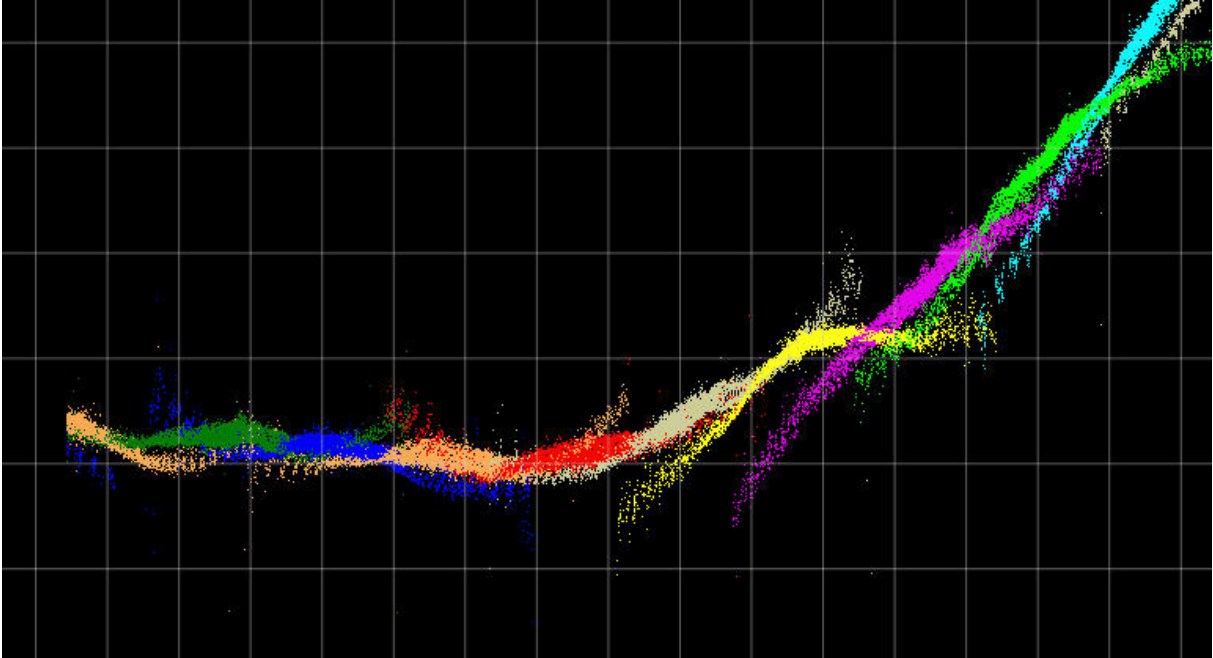


*Figure 2: Subset view of offset along eastern shore of Dolgoi Harbor*

Sound Speed Artifacts

Due to freshwater runoff from waterfalls and the effects of tidal mixing and solar heating in the shallow water, a sharp demarcation of water masses was often observed within Dolgoi Harbor, particularly in the southeast near the charted waterfall. This proved to be problematic

in the acquisition and application of sound velocity correctors. After correction for sound velocity in HDCS, some lines still exhibited the characteristic "smiles" and "frowns" indicative of inaccurate sound velocity corrections, as can be seen in Figure 3. Despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally, sound velocity errors were still noticeable in several regions. To compensate, the Hydrographer, where possible, rejected soundings obviously in error on the outer beams.<sup>7</sup>



*Figure 3: Sound Velocity errors in the vicinity of the charted waterfall in Dolgoi Harbor.*

#### Tilted multibeam

Vessel 1101 (RA-1) was fitted with a RESON 8125 tilted 30 degrees to starboard (see DAPR for additional information). This was used to acquire complete MBES coverage to the 4m curve and often beyond while staying out in deeper water. The outer starboard beams would sometimes get lost with no return, and a large block of noise was a common sight at the edge of the 8125 lines. Affected areas were rejected to more accurately represent the seafloor.<sup>8</sup> Figure 4 shows the outer beam noise spike in swath editor.

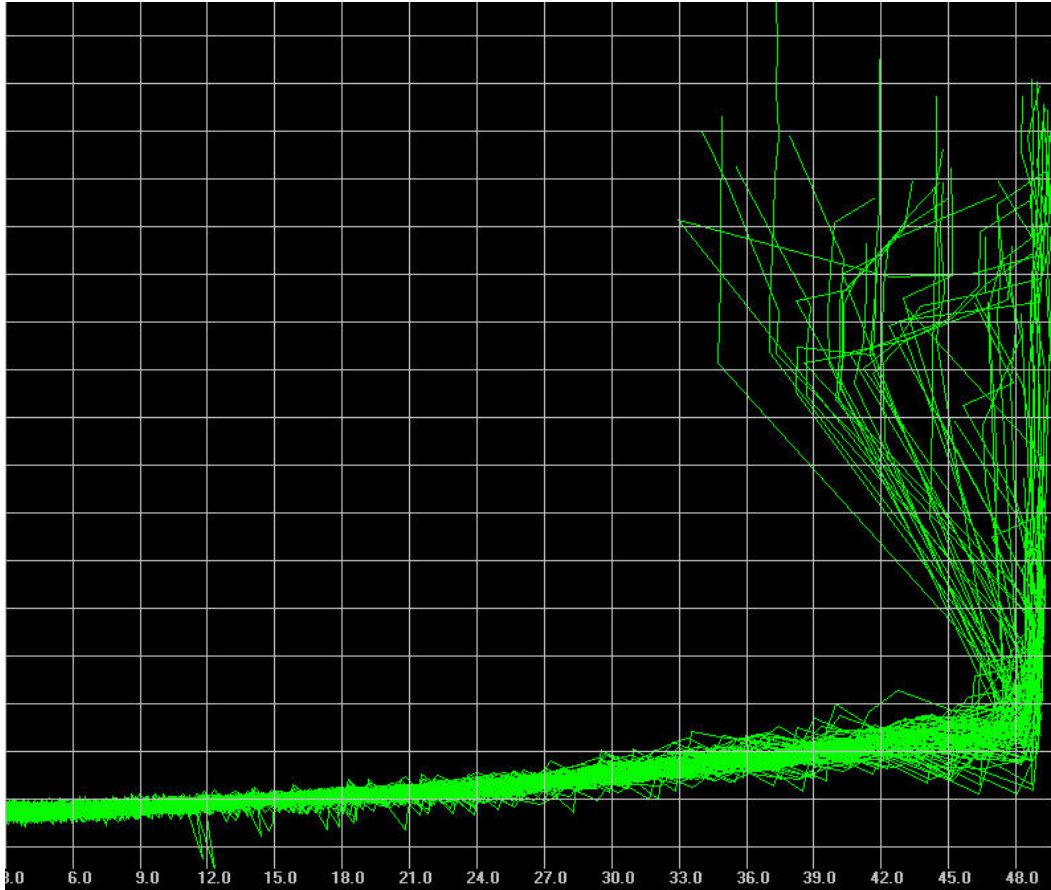


Figure 4: Outer beam noise on the tilted 8125 multibeam system as seen in Swath Editor.

**B3. Data Reduction**

Data reduction procedures for survey H11903 conform to those detailed in the *OPR-P184-RA-08 DAPR*.

**B4. Data Representation**

Many BASE surfaces were used in processing H11903. Final BASE surface resolutions and depth ranges were set according to Table 3 below, with field sheets smaller than  $25 \times 10^6$  nodes. The submission BASE Surface structure and Field Sheet layout are shown in Figures 5 and 6. All field sheets were created with all eastings and northings a multiple of 16m from the point 0.00N, 0.00E.

Depth Range (m)	Resolution (m)
0-21.5 1	
18.5-52 2	
46-115 4	

Table 3: Depth range and surface resolutions for H11904



Soundings and contours were generated in CARIS HIPS from the final combined BASE surface for field unit review purposes. They are included for reference only and are not intended as a deliverable.

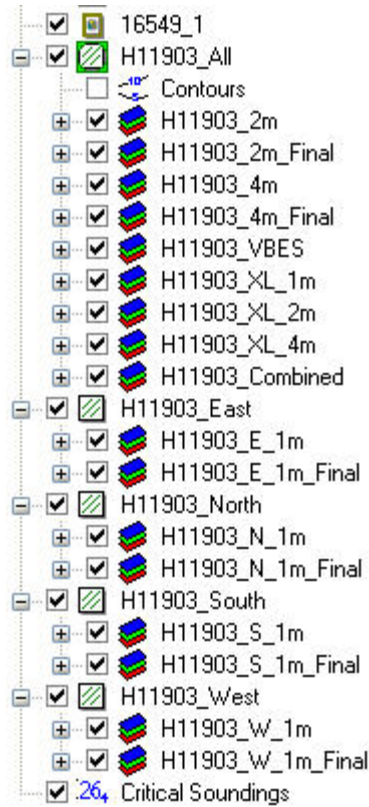


Figure 5: Field sheets and BASE surfaces submitted with H11903.

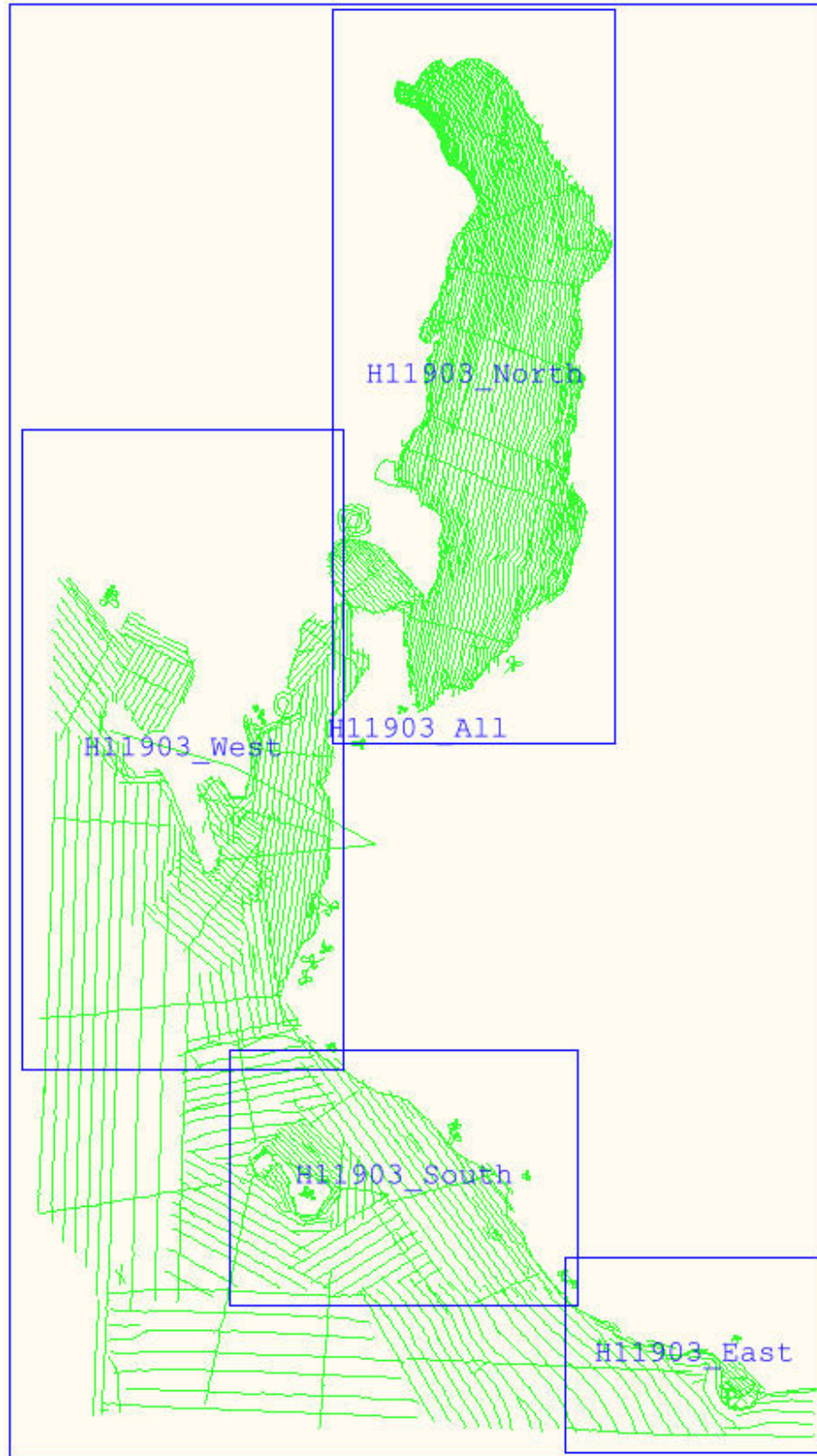


Figure 6: Layout of field sheets for H11903. H11903\_All contains the 4m, 2m, VBES, and combined surfaces. 1m surfaces are contained with H11903\_North, H11903\_South, H11903\_West, and H11903\_East.

**C. VERTICAL AND HORIZONTAL CONTROL**

Project OPR-P184-RA-08 did not require static GPS observations or other horizontal control work, and all tide corrections were generated from CO-OPS maintained tide stations. Thus, no Horizontal and Vertical Control Report will be submitted.

**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. The differential corrector beacons utilized for this survey are given in Table 4.

Location	Frequency	Operator	Distance	Priority
Cold Bay	289 kHz	USCG	30.8nm	Primary

*Table 4: Differential Corrector Sources for H11903.*

**Vertical Control**

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at King Cove, AK (945-9881) served as control for datum determination and as the primary source for water level reducers for survey H11903.

All data were reduced to MLLW using final approved water levels from King Cove, AK (945-9881) using the tide file 9459881.tid and final time and height correctors using the zone corrector file P184RA2008CORP.zdf

The request for Final Approved Water Levels for H11903 was submitted to CO-OPS on August 13, 2008 and the Final Tide Note was received on August 20, 2008. This documentation is included in Appendix IV.<sup>9</sup>

**D. RESULTS AND RECOMMENDATIONS**

**D.1. Chart Comparison**

**D.1.a. Survey Agreement with Chart**

Survey H11903 was compared with the following charts:

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
16549	1:80,000	15 <sup>th</sup> Ed, Jul 2003	11/22/2008

*Table 5: Charts compared with H11903*

All charted depths agree well with discrepancies no greater than two fathoms with two significant exceptions:

1. A charted 18-fathom depth in approximate position 55°05'15" N 161°49'42" W was surveyed to 15 fathoms.<sup>10</sup>
2. At approximate position 55°03'07" N 161°46'45" W , between the charted 26 and 22 fathom soundings, a rock with a least depth of 13 fathoms was found.<sup>11</sup>

Additionally, the 5-fathom contour inside Dolgoi Harbor along the eastern shore is mislabeled as the 10-fathom contour. The hydrographer recommends the contours for Chart 16549 be redrawn to reflect the current survey.<sup>12</sup>

The Hydrographer recommends that survey soundings supersede all prior survey and charted depths in the common area.<sup>13</sup>

#### **D.1.b. Dangers to Navigation**

One (1) Danger to Navigation (DTON) was found on survey H11903, and reported to the Marine Chart Division via email on 13 Jan, 2009.<sup>14</sup> The original DTON submission package is included in Appendix I. Descriptions of each DTON are included in the Survey Feature Report in Appendix II.<sup>15</sup>

#### **D.1.c. Other Features**

##### Automated Wreck and Obstruction Information System (AWOIS) Investigations

Two (2) AWOIS items fall the within the survey limits of H11903. Of these, both were assigned for position verification.<sup>16</sup> Descriptions of each AWOIS item investigation are included in the Survey Feature Report in Appendix II.<sup>17</sup>

##### Additional Items

No additional charted items were investigated and no other features were located on survey H11903.

#### **D.2. Additional Results**

##### **D.2.a. Prior Survey Comparison**

Prior survey comparison was not performed.

**D.2.b. Shoreline Verification**

Shoreline Source

The Pacific Hydrographic Branch provided *Rainier* with a list of features from LIDAR survey H11903 selected for further investigation.<sup>18</sup> These features fell into two categories:

- “LIDAR Investigation Features”: Features poorly resolved in LIDAR data and areas of possible features with sparse coverage.
- “LIDAR Disprovals”: Charted features not found in LIDAR survey data and recommended for removal from the chart.

Shoreline Verification

LIDAR investigation and limited shoreline verification, including AWOIS investigation, was conducted near predicted low water in accordance with the Specifications and Deliverables and FPM sections 6.1 and 6.2. Detached positions (DPs) acquired during shoreline verification were recorded and attributed in Caris Notebook.

All shoreline data is submitted in Caris Notebook .hob files. The session H11903\_NTBK contains the following:

<b>HOB File</b>	<b>Purpose and Contents</b>
H11903_Comp_Source.hob	Original Source Data as filtered from ENC cell US3AK61M
H11903_Reference.hob	Survey outline and limit lines, and AWOIS item positions and radii.
H11903_Field_Verified_Comp_Source.hob	The Field verified layer contains H11903_Comp_Source with survey updates. Features contained in H11903_Field_Verified_Source include: (a) new features (b) modification due to: attribution, geometry, feature object class, or position (c) Features from multiple sources (i.e. deconfliction). (d) Features Not Addressed remain in the Field Verified layer. This includes features inshore of the NALL and features from multiple sources which cannot be deconflicted. (e) LIDAR Investigation items that were confirmed or modified.
H11903_Disprovals.hob Features	from Composite Source or assigned LIDAR Investigations that have been disproved are in this layer. These include: (a) Features that no longer exist (b) Features that have been modified

*Table 6: List and Description of Notebook HOB files.*

### Source Shoreline Changes and New Features

Items for survey H11903 that require further discussion and are associated with a detached position, have been flagged “Report” in Pydro in H11903.pss. Investigation methods and recommendations are listed in the Remarks and Recommendation tabs. These features are included in the Survey Feature Report in Appendix II.<sup>19</sup>

### Recommendations

The Hydrographer recommends that the shoreline as depicted in the Notebook .HOB files supersede and complement shoreline information compiled in the charts as described above.<sup>20</sup>

#### **D.2.c. Aids to Navigation**

There are no Aids to Navigation within the limits of H11903.<sup>21</sup>

#### **D.2.d. Overhead Features**

There are no overhead features within the limits of survey H11903.<sup>22</sup>

#### **D.2.e. Submarine Cables and Pipelines**

There are no submarine cables or pipelines charted within the limits of H11903, and none were detected by the survey.<sup>23</sup>

#### **D.2.f. Ferry Routes**

There are no ferry routes charted within the limits of survey H11903, and none were observed to be operating in the area.<sup>24</sup>

#### **D.2.g. Bottom Samples**

Bottom samples were collected at the site of historical bottom samples. The bottom samples were recorded and attributed in Notebook at the time of collection, and have been added to the H11903\_Field\_Verified\_Source.hob file. Recommend bottom samples be charted as per this Notebook file.<sup>25</sup>

#### **D.2.h. Other Findings**


There are no other findings to report for survey H11903.

**E. APPROVAL**

As Chief of Party, Field operations for hydrographic survey H11903 were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports. The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual (May 2008 edition), Field Procedures Manual (May 2008 edition), Standing and Letter Instructions, and all HSD Technical Directives issued through August, 2008. 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.


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>
Data Acquisition and Processing Report for OPR-P184-RA-08	25NOV2008	N/CS34
Coast Pilot Report for OPR- P184-RA-08	TBD	N/CS26

Approved and Forwarded:  CAPT/NOAA  
 CAPT Donald W. Haines, NOAA  
 2009.04.07 08:29:39 -07'00'  
 Captain Donald W. Haines, NOAA  
 Commanding Officer

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

Survey Sheet Manager:   
 Russell A. Quintero  
 Ensign, NOAA  
cn=Russell Quintero, o=NOAA, ou=NOAA Ship RAINIER, email=russell.quintero@noaa.gov, c=US  
 I am the author of this document  
 2009.04.07 07:47:38 -07'00'

Chief Survey Technician:   
 James B. Jacobson  
 Chief Survey Technician, NOAA Ship *Rainier*  
 I have reviewed this document  
 2009.04.06 14:53:42 -07'00'

Field Operations Officer:   
 Lieutenant Charles Yoos, NOAA  
 Field Operations Officer  
 I have reviewed this document  
 2009.04.06 14:56:45 -07'00'

## **Revisions and Corrections Compiled During Office Processing and Certification**

<sup>1</sup> Filed with project records.

<sup>2</sup> Concur.

<sup>3</sup> H11902 and H11905 have been compiled and common junctions were made with those surveys. H11903 also junctions with LIDAR surveys H11437 and H11487, which were compiled with this survey.

<sup>4</sup> Concur.

<sup>5</sup> Concur.

<sup>6</sup> Concur. The data is adequate to supersede charted data.

<sup>7</sup> After the outer beams were rejected, the data meets specifications and is adequate to supersede charted data.

<sup>8</sup> After the data was rejected in the affected areas, the data meets specifications and is adequate to supersede charted data.

<sup>9</sup> See attached Tide Note dated August 15, 2008.

<sup>10</sup> Concur. A 15 fathom sounding is included in the HCell.

<sup>11</sup> Concur. A 13 fathom sounding is included in the HCell.

<sup>12</sup> Concur. Update contours based on new survey data.

<sup>13</sup> Concur.

<sup>14</sup> Do not concur. Two DTONs were reported during this survey. Both DTONs have been applied to the charts and both are included in the HCell.

<sup>15</sup> See DTON section in attached Feature Report.

<sup>16</sup> Both AWOIS items were maritime boundary verifications and both were addressed during this survey. The verified position for each item is included in the HCell as a blue note.

<sup>17</sup> See attached Feature Report

<sup>18</sup> Where there is overlap between a multibeam and LIDAR survey, the multibeam data supersedes the LIDAR data except when there are coincident soundings with shoaler depths from LIDAR.

<sup>19</sup> See attached Feature Report. Note: the survey feature report only includes assigned AWOIS items, LIDAR investigations and DTONs reported from H11903. Additional features were added, some removed and some modified in CARIS Notebook after the feature report was generated from Pydro. All features included in the compilation of H11903 have come directly from CARIS Notebook, which is the official features deliverable for this survey.

<sup>20</sup> Concur with clarification. The submitted hob files were used in the compilation of HCell H11903. During compilation, some modifications were made to accommodate chart scale. Chart features 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 with clarification. Eighteen bottom samples were collected during H11903 and 7 are included in the HCell. The remaining 11 bottom samples were not included because they conflicted with the delineated rocky seabed areas. One charted bottom samples has been blue noted to be retained. The remaining charted bottom samples within the survey area have been blue noted to be removed.



# H11903 Feature Report

**Registry Number:** H11903  
**State:** Alaska  
**Locality:** Pavlof Island  
**Sub-locality:** Dolgoi Harbor  
**Project Number:** OPR-P184-RA-08  
**Survey Dates:** 07/11/2008 - 08/09/2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16549	15th	07/01/2003	1:80,000 (16549_1)	USCG LNM: 04/01/2008 (04/15/2008) NGA NTM: 01/21/2006 (04/19/2008)
16540	12th	01/01/2005	1:300,000 (16540_1)	[L]NTM: ?
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: ?
513	7th	06/01/2004	1:3,500,000 (513_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	Shoal	0.52 m	55° 05' 56.0" N	161° 49' 00.9" W	53671
1.2	Shoal	0.39 m	55° 05' 35.1" N	161° 47' 48.0" W	53672
1.3	Shoal	28.62 m	55° 05' 15.1" N	161° 49' 41.5" W	---
1.4	Shoal	14.33 m	55° 05' 01.3" N	161° 48' 46.9" W	---
2.1	Rock	0.55 m	55° 06' 04.4" N	161° 50' 02.7" W	---
2.2	Rock	12.15 m	55° 04' 12.5" N	161° 47' 02.4" W	---
2.3	Rock	25.14 m	55° 03' 06.9" N	161° 46' 44.7" W	---
4.1	Rock	5.41 m	55° 04' 08.2" N	161° 48' 14.4" W	---
4.2	Shoal	2.99 m	55° 06' 14.6" N	161° 47' 21.6" W	---

# **1 - Charted Features**

## 1.1) Profile/Beam - 2/1 from h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214

### Primary Feature for AWOIS Item #53671

**Search Position:** 55° 05' 57.0" N, 161° 48' 59.1" W  
**Historical Depth:** [None]  
**Search Radius:** 100  
**Search Technique:** [None]  
**Technique Notes:** VERIFY LOCATION OF POINT IN SUPPORT OF MARITIME BOUNDARY CLAIM

#### History Notes:

H11487(2005)--LIDAR; A SMALL POINT OF LAND IN THE VICINITY OF DOLGOI HARBOR IN SCALED (CHART 16549) POSITION LAT. 55/05/57 N LONG. 161/48/59 W (NAD83) CLOSING LINE POINT NEEDS TO BE VERIFIED FOR A MARITIME BOUNDARY CLAIM, WHICH WILL FORM THE INNER LIMIT OF THE TERRITORIAL SEA AREA. THE SOURCE (CHART 16549) INDICATES THAT THE FEATURE IS A SMALL POINT OF LAND NEAR THE NORTHERN APPROACH TO DOLGOI HARBOR. ENTERED 5/08 BY RES.

### Survey Summary

**Survey Position:** 55° 05' 56.0" N, 161° 49' 00.9" W  
**Least Depth:** 0.52 m (= 1.72 ft = 0.286 fm = 0 fm 1.72 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-214.17:44:30.000 (08/01/2008)  
**DP Dataset:** h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214  
**Profile/Beam:** 2/1  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

#### Remarks:

AWOIS low water line

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11903/1103_nonechosounder_dp/2008-214/dp_1103_dn214	2/1	0.00	000.0	Primary
OPR-P184-RA-08	AWOIS # 53671	45.33	225.0	Secondary

## Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Land area (LNDARE)

**Attributes:** SORDAT - 20080809

SORIND - US, US, survy, H11903

## 1.2) Profile/Beam - 3/1 from h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214

### Primary Feature for AWOIS Item #53672

**Search Position:** 55° 05' 36.1" N, 161° 47' 51.3" W  
**Historical Depth:** [None]  
**Search Radius:** 100  
**Search Technique:** [None]  
**Technique Notes:** VERIFY LOCATION OF POINT IN SUPPORT OF MARITIME BOUNDARY CLAIM

#### History Notes:

H11487(2005)--LIDAR; A SMALL POINT OF LAND IN THE VICINITY OF DOLGOI HARBOR IN SCALED (CHART 16549) POSITION LAT. 55/05/36 N LONG. 161/47/51 W (NAD83) CLOSING LINE POINT NEEDS TO BE VERIFIED FOR A MARITIME BOUNDARY CLAIM, WHICH WILL FORM THE INNER LIMIT OF THE TERRITORIAL SEA AREA. THE SOURCE (CHART 16549) INDICATES THAT THE FEATURE IS A SMALL POINT OF LAND NEAR THE SOUTHERN APPROACH TO DOLGOI HARBOR. ENTERED 5/08 BY RES.

### Survey Summary

**Survey Position:** 55° 05' 35.1" N, 161° 47' 48.0" W  
**Least Depth:** 0.39 m (= 1.28 ft = 0.214 fm = 0 fm 1.28 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-214.18:35:42.000 (08/01/2008)  
**DP Dataset:** h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214  
**Profile/Beam:** 3/1  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

#### Remarks:

AWOIS low water line

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11903/1103_nonechosounder_dp/2008-214/dp_1103_dn214	3/1	0.00	000.0	Primary
OPR-P184-RA-08	AWOIS # 53672	65.88	117.2	Secondary

## Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Land area (LNDARE)

**Attributes:** SORDAT - 20080809

SORIND - US, US, survy, H11903

### 1.3) Profile/Beam - 2747/158 from h11903 / 2802\_reson7125\_lf\_256beams / 2008-193 / 378\_1957

#### Survey Summary

**Survey Position:** 55° 05' 15.1" N, 161° 49' 41.5" W  
**Least Depth:** 28.62 m (= 93.89 ft = 15.649 fm = 15 fm 3.89 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.973$  m ; **TVU (TPEv)**  $\pm 0.315$  m  
**Timestamp:** 2008-193.20:14:48.902 (07/11/2008)  
**Survey Line:** h11903 / 2802\_reson7125\_lf\_256beams / 2008-193 / 378\_1957  
**Profile/Beam:** 2747/158  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

#### Remarks:

3fthm discrepancy between sounding and chart. Shoalest designated

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11903/2802_reson7125_lf_256beams/2008-193/378_1957	2747/158	0.00	000.0	Primary

#### Hydrographer Recommendations

update sounding on chart

#### Cartographically-Rounded Depth (Affected Charts):

15fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)

29m (500\_1, 513\_1, 50\_1)

#### S-57 Data

[None]

**1.4) Profile/Beam - 789/235 from h11903 / 2802\_reson7125\_lf\_256beams / 2008-200 / 401\_1903**

**Survey Summary**

**Survey Position:** 55° 05' 01.3" N, 161° 48' 46.9" W  
**Least Depth:** 14.33 m (= 47.01 ft = 7.835 fm = 7 fm 5.01 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.977$  m ; **TVU (TPEv)**  $\pm 0.327$  m  
**Timestamp:** 2008-200.19:06:36.518 (07/18/2008)  
**Survey Line:** h11903 / 2802\_reson7125\_lf\_256beams / 2008-200 / 401\_1903  
**Profile/Beam:** 789/235  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

shoalest point on charted rock

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11903/2802_reson7125_lf_256beams/2008-200/401_1903	789/235	0.00	000.0	Primary

**Hydrographer Recommendations**

update chart sounding

**Cartographically-Rounded Depth (Affected Charts):**

7 <sup>3</sup>/<sub>4</sub>fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)

14.3m (500\_1, 513\_1, 50\_1)

**S-57 Data**

[None]



## **2 - New Features**

**2.1) Profile/Beam - 1/1 from h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214**

**Survey Summary**

**Survey Position:** 55° 06' 04.4" N, 161° 50' 02.7" W  
**Least Depth:** 0.55 m (= 1.81 ft = 0.301 fm = 0 fm 1.81 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2008-214.17:30:17.000 (08/01/2008)  
**DP Dataset:** h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214  
**Profile/Beam:** 1/1  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

lidar rock verified

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11903/1103_nonechosounder_dp/2008-214/dp_1103_dn214	1/1	0.00	000.0	Primary

**Hydrographer Recommendations**

verified extent of lidar rock, furthest extent of ledge. Chart.

**Cartographically-Rounded Depth (Affected Charts):**

0 ¼fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)  
 .6m (500\_1, 513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** SORDAT - 20080809  
 SORIND - US, US, survy, H11903  
 VALSOU - 0.551 m  
 WATLEV - 4:covers and uncovers

## Feature Images

[Image file K:/Projects/2008\_Projects/OPR-P184-RA-08,  
Pavlof/Surveys/H11903/PSS/Photos/1103\_214\_1140.JPG does not exist.]

**2.2) Profile/Beam - 252/1 from h11903 / 1103\_singlebeam\_hvf / 2008-214 / 000\_1923**

**Survey Summary**

**Survey Position:** 55° 04' 12.5" N, 161° 47' 02.4" W  
**Least Depth:** 12.15 m (= 39.85 ft = 6.642 fm = 6 fm 3.85 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 3.969$  m ; **TVU (TPEv)**  $\pm 0.288$  m  
**Timestamp:** 2008-214.19:23:44.855 (08/01/2008)  
**Survey Line:** h11903 / 1103\_singlebeam\_hvf / 2008-214 / 000\_1923  
**Profile/Beam:** 252/1  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

lidar rock verified

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11903/1103_singlebeam_hvf/2008-214/000_1923	252/1	0.00	000.0	Primary

**Hydrographer Recommendations**

lidar rock verified. chart

**Cartographically-Rounded Depth (Affected Charts):**

6 ½fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)

12.1m (500\_1, 513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** SORDAT - 20080809  
 SORIND - US, US, survy, H11903  
 STATUS - 1:permanent  
 TECSOU - 1:found by echo-sounder  
 VALSOU - 12.147 m  
 VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 2.3) Profile/Beam - 766/202 from h11903 / 2802\_reson7125\_lf\_256beams / 2008-222 / 913\_1700

### Survey Summary

**Survey Position:** 55° 03' 06.9" N, 161° 46' 44.7" W  
**Least Depth:** 25.14 m (= 82.47 ft = 13.745 fm = 13 fm 4.47 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.992$  m ; TVU (TPEv)  $\pm 0.358$  m  
**Timestamp:** 2008-222.17:03:11.266 (08/09/2008)  
**Survey Line:** h11903 / 2802\_reson7125\_lf\_256beams / 2008-222 / 913\_1700  
**Profile/Beam:** 766/202  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

#### Remarks:

13 fathom rock between 26 and 22 fathom soundings on chart

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11903/2802_reson7125_lf_256beams/2008-222/913_1700	766/202	0.00	000.0	Primary

### Hydrographer Recommendations

add rock to chart

#### Cartographically-Rounded Depth (Affected Charts):

13fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)

25m (500\_1, 513\_1, 50\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** QUASOU - 1:depth known  
 SORDAT - 20080809  
 SORIND - US, US, survy, H11903  
 STATUS - 1:permanent  
 TECSOU - 3:found by multi-beam  
 VALSOU - 25.136 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## **3 - AWOIS Features**



**3.1) Profile/Beam - 2/1 from h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214**

**See Chapter 1 - Charted Features: Feature 1.1)**

**3.2) Profile/Beam - 3/1 from h11903 / 1103\_nonechosounder\_dp / 2008-214 / dp\_1103\_dn214**

**See Chapter 1 - Charted Features: Feature 1.2)**

## **4 - Dangers to Navigation**

**4.1) Profile/Beam - 257/97 from h11903 / 1015\_reson8101\_hvf / 2008-218 / 450\_1822**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 55° 04' 08.2" N, 161° 48' 14.4" W  
**Least Depth:** 5.41 m (= 17.75 ft = 2.958 fm = 2 fm 5.75 ft)  
**TPU (±1.96σ):** **THU (TPEh)** ±1.966 m ; **TVU (TPEv)** ±0.284 m  
**Timestamp:** 2008-218.18:22:39.830 (08/05/2008)  
**Survey Line:** h11903 / 1015\_reson8101\_hvf / 2008-218 / 450\_1822  
**Profile/Beam:** 257/97  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

least depth on rock is well shoaler than charted

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11903/1015_reson8101_hvf/2008-218/450_1822	257/97	0.00	000.0	Primary

**Hydrographer Recommendations**

Update chart sounding.

**Cartographically-Rounded Depth (Affected Charts):**

3fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)  
 5.4m (500\_1, 513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 SORDAT - 20080809  
 SORIND - US, US, survy, H11903  
 STATUS - 1:permanent

TECSOU - 3:found by multi-beam

VALSOU - 5.410 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

## **Feature Images**

[Image file K:/Projects/2008\_Projects/OPR-P184-RA-08, Pavlof/Surveys/H11903/PSS/Photos/257\_97.jpg does not exist.]

## 4.2) Profile/Beam - 4411/234 from h11903 / 1101\_reson8125\_hvf / 2008-203 / 103\_1921

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 55° 06' 14.6" N, 161° 47' 21.6" W  
**Least Depth:** 2.99 m (= 9.82 ft = 1.636 fm = 1 fm 3.82 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.992$  m ; **TVU (TPEv)**  $\pm 1.035$  m  
**Timestamp:** 2008-203.19:34:36.504 (07/21/2008)  
**Survey Line:** h11903 / 1101\_reson8125\_hvf / 2008-203 / 103\_1921  
**Profile/Beam:** 4411/234  
**Charts Affected:** 16549\_1, 16540\_1, 16011\_1, 16006\_1, 500\_1, 513\_1, 530\_1, 50\_1

#### Remarks:

Charted contour is inshore of actual depth curves. This DTON selected to adequately portray the extent of the shoal.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11903/1101_reson8125_hvf/2008-203/103_1921	4411/234	0.00	000.0	Primary

#### Hydrographer Recommendations

Mark least depth on chart and recontour the chart. Also note the 5-fathom contour is mislabeled as the 10-fathom just NE of this sounding.

#### Cartographically-Rounded Depth (Affected Charts):

1 ½fm (16549\_1, 16540\_1, 16011\_1, 16006\_1, 530\_1)

3.0m (500\_1, 513\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 1:depth known  
 SORDAT - 20080809  
 SORIND - US, US, survy, H11903

TECSOU - 3:found by multi-beam

VERDAT - 12:Mean lower low water

## **Feature Images**

[Image file K:/Projects/2008\_Projects/OPR-P184-RA-08, Pavlof/Surveys/H11903/PSS/Photos/4411\_234.jpg does not exist.]



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** August 15, 2008

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-P184-RA-2008  
**HYDROGRAPHIC SHEET:** H11903

**LOCALITY:** Dolgoi Harbor, Pavlof Islands, AK  
**TIME PERIOD:** July 11 - August 9, 2008

**TIDE STATION USED:** 945-9881 King Cove, AK  
Lat. 55° 03.6'N Long. 162° 19.6' W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 1.876 meters

**REMARKS: RECOMMENDED ZONING**

Preliminary zoning is accepted as the final zoning for project OPR-P184-RA-2008, H11903, during the time period between July 11 and August 9, 2008.

Please use the zoning file "P184RA2008CORP" submitted with the project instructions for Pavlof Islands, AK. Zones SWA218 & SWA205 are the applicable zones for H11903.

**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).

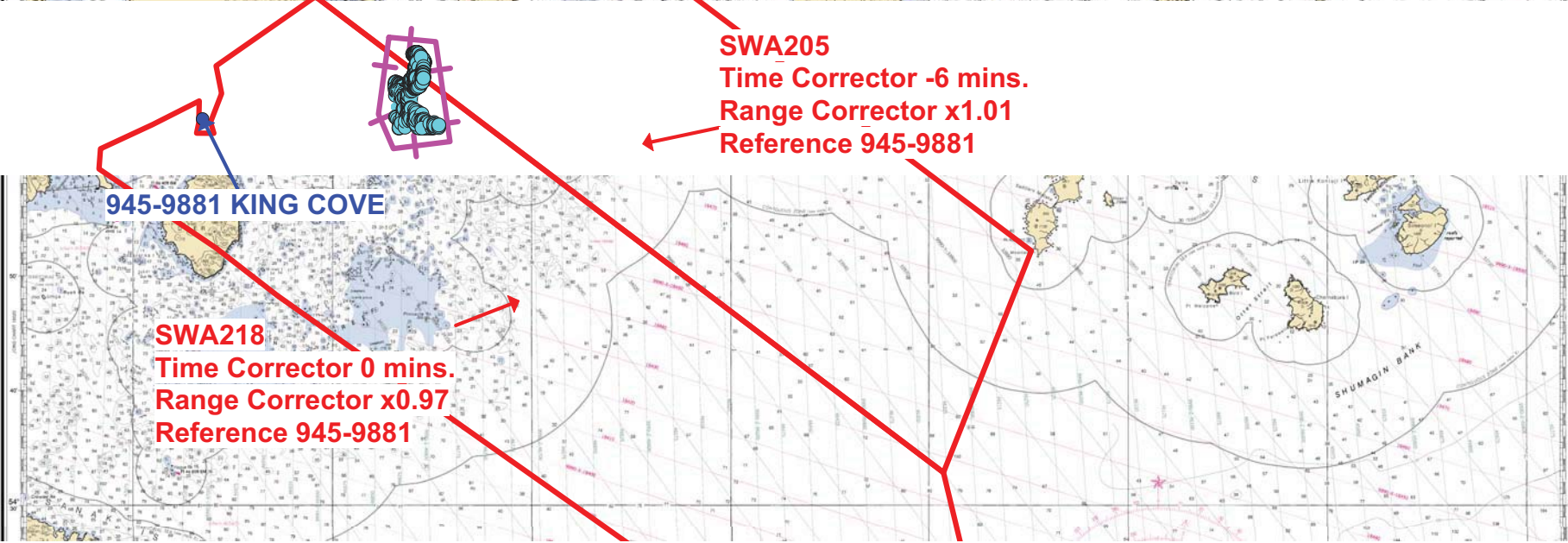
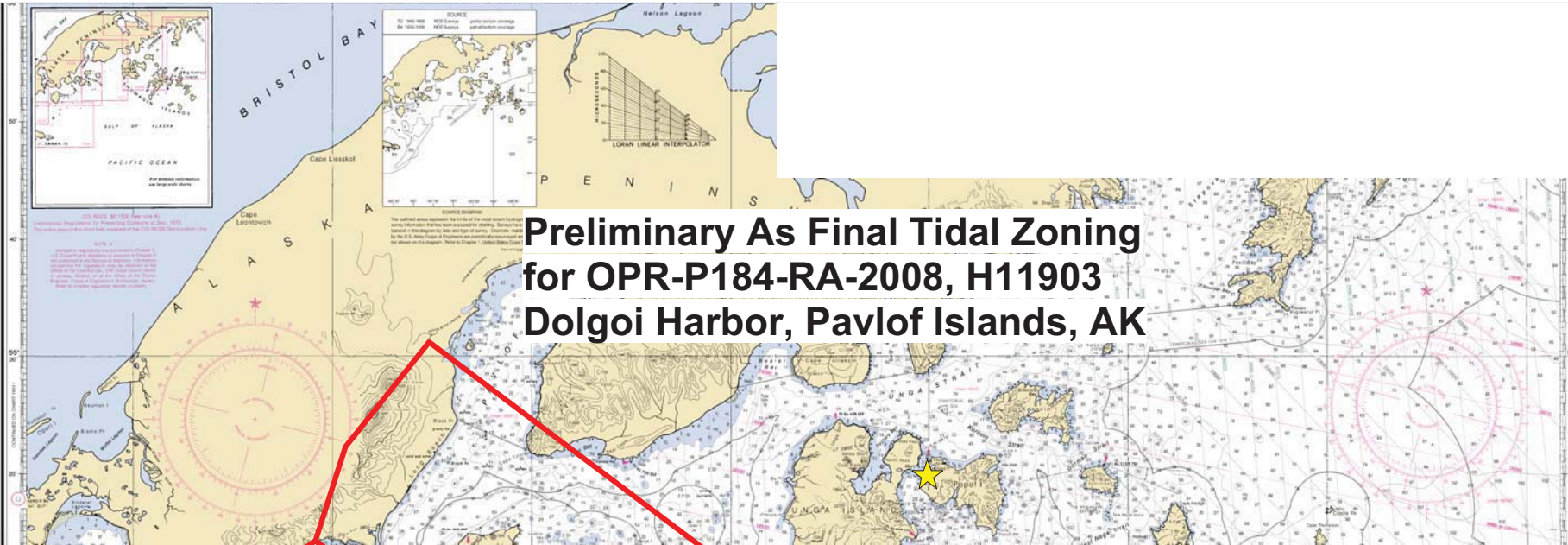
**Stephen K. Gill**

Digitally signed by Stephen K. Gill  
DN: cn=Stephen K. Gill, o=National Oceanic and Atmospheric Administration, ou=Center for Operational Oceanographic Products & Serv., email=Stephen.Gill@noaa.gov, c=US  
Date: 2008.08.15 11:51:08 -07'00'

CHIEF, PRODUCT AND SERVICES DIVISION







**H11903 HCell Report**  
Katie Reser, Physical Scientist  
Pacific Hydrographic Branch

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

HCell compilation of survey H11903 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 H11903 were compiled to the largest scale raster charts shown below:

Chart Scale	Edition	Edition Date	NTM Date
16549 1:80,000	16 <sup>th</sup> 03/01/2010	10	05/22/2010

The following ENC's were also used during compilation:

Chart Scale
US4AK55M 1:80,000

**3. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from a 4-meter multibeam combined surface from H11903 and 3-meter LIDAR surfaces from H11437 and H11487 in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 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	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 H11903_SS.000
0 0.0000		0.2286	0.125	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
30	54.864 56.235	30.750		30
50 91.44		92.812	50.750	50

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, DEPCNT 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 H11903:

##### M\_QUAL

The Meta area objects were constructed on the basis of the limits of the hydrography. H11903 contains several M\_QUAL objects: One large area depicting the data sourced from the H11903 main survey area, several smaller areas depicting H11437 and H11487 LIDAR data over multibeam holidays, one area depicting data from a portion of LIDAR survey H11437 and one area depicting data from a portion of LIDAR survey H11487.

Due to the numerous number of M\_QUALs included in this survey it was requested from MCD that a single area object depicting the full extents of the survey area be created. A single \$AREAS object has been included to fulfill that request.

## 6. Features

Features addressed by the field units are delivered to PHB where they are de-conflicted 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:

\$AREAS	Single area object depicting total coverage
\$CSYMB	Blue notes
COALNE	GC coastline
DEPCNT	LIDAR zero contours
LNDARE	Islands and islets
LNDELV	Heights on islands and islets
M_QUAL	Data quality meta object
SBDARE	Rocky seabed areas, ledges, reefs and bottom samples
SOUNDG	Soundings at the chart scale density
UWTROC	Rocks
WEDKLP	Kelp

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

H11903 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

H11903_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:80,000
H11903_SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000
H11903_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11903_Outline.gml	Survey outline
H11903_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:

Katie Reser  
Physical Scientist  
Pacific Hydrographic Branch  
Seattle, WA  
206-526-6864  
[katie.reser@noaa.gov](mailto:katie.reser@noaa.gov)

APPROVAL SHEET  
H11903

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 disapproval 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.