	NOAA FORM 76-35A
	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE
	DESCRIPTIVE REPORT
993	Type of Survey Hydrographic Survey Field No. N/A Registry No. H11993
	LOCALITY Stata Alaska
T	General Locality Sukkwan Narrows Sublocality South Passage
	2008 CHIEF OF PARTY Captain Donald W. Haines, NOAA
	LIBRARY & ARCHIVES

U.S. D NATIONAL OCEANIC AND ATM	REGISTRY No				
HYDROGRAPHIC TITLE SHEET	HYDROGRAPHIC TITLE SHEET				
<b>INSTRUCTIONS</b> – The Hydrographic Sheet should be accompanias completely as possible, when the sheet is forwarded to the Office.	<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.				
State Alaska		- 			
General Locality Sukkwan Narrows					
Sub-Locality South Passage					
Scale <u>1:10,000</u>	Date of Survey 10/7	/2008-11/10/2008			
Instructions dated 8/14/2008	Project No. S-O	901-RA-08			
Vessel RA2 (1103), RA3 (1021), RA4 (2801), RA5 (2802	)				
Chief of party <u>Captain Donald W. Haines, NOAA</u>					
Surveyed by RAINIER Personnel					
Soundings by Reson SeaBat 8101, Tilted Reson 8125, K	nudsen 320M, Reso	SeaBat 7125			
SAR by Annie Raymond Compilation by Tyanne Faulkes					
Soundings compiled in Fathoms					
REMARKS: <u>All times are UTC. UTM Projection 8.</u>					
The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS)					
nautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were					
generated during office processing. Page numbering may be interrupted or non sequential.					
All pertinent records for this survey, including the Descriptive Report, are archived at the					
National Geophysical Data Center (NGDC) and can be r	National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.				

# **Descriptive Report to Accompany Hydrographic Survey H11993**

Project S-O901-RA-08 Sukkwan Narrows, Alaska South Passage Scale 1:10,000 October 7 – November 10, 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 S-O901-RA-08 dated August 14, 2008 and all other applicable direction<sup>1</sup>, with the exception of deviations noted in this report. The survey area is the South Pass approaching Sukkwan Narrows near Hydaburg, Alaska. This survey corresponds to sheet "A" in the sheet layout provided with the Letter Instructions. S-O901-RA-08 responds to a request from the U.S. Coast Guard Cutter *Anthony Petit* to provide contemporary hydrography with full bottom multibeam coverage for use in identifying a safer passage within South Pass to the south of Sukkwan Narrows. The sheet layout of this hydrographic survey includes the proposed channel route previously evaluated by the U.S. Coast Guard.

With the exceptions noted in this report, complete multibeam echosounder (MBES) coverage was achieved in the survey area to either the navigable area limit line (NALL). Total mileage acquired by each vessel and system is reference in Table 1.

Data Acquisition Type		Hull Number with Mileage (nm)				Total
	1101	1103	1021	2801	2802	
MBES (mainscheme)	21.74	-	-	50.97	27.97	100.7
Crosslines	-	-	6.7	0.34	0.52	7.56
Developments/Holidays	-	0.5	-	-	-	0.5
VBES	-	1.43	-	-	-	1.43
Total Number of Items Investigated	-	10	-	-	-	10
Total Area Surveyed (sq. nm)	-	-	-	-	-	1.72

Limited Shoreline Verification was performed for the survey area.

 Table 1: Statistics for survey H11993

Data acquisition was conducted from October 7 to November 10, 2008 (DN 281 to 315).

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



Figure 1. H11993 Survey Limits (Chart 17407).

# **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 *S-O901-RA-08 Data Acquisition and Processing Report* (DAPR), 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

Hull Number	Name	Acquisition Type
1101	RA-1	Multibeam Echosounder
1103	RA-2	Vertical Beam Echosounder
		Detached Positions
1021	RA-3	Multibeam Echosounder
2801	RA-4	Multibeam Echosounder
2802	RA-5	Multibeam Echosounder

Data for this survey were acquired by the following vessels:

Sound speed profiles were measured with SEACAT SBE-19+ profiler in accordance with the Specifications and Deliverables and processed using a sheet wide concatenated SVP file using Nearest in Distance within 4 hours.

No unusual vessel configurations were used for data acquisition.

# **B2.** Quality Control

# System Certification and Calibration

Refer to NOAA Ship *Rainier* DAPR and Hydrographic Systems Readiness Report (HSRR) for a complete description of system integration and initial calibration results for equipment and sensors used for this survey.

# **Sounding Coverage**

Project instructions for this survey required 25 meter spaced line coverage of either multibeam echosounder (MBES or vertical beam echosounder (VBES) from the inshore limit to 8 meters water depth, and complete MBES in greater than 8 meters water depth. Complete multibeam coverage was acquired to the NALL line, whichever was further offshore.<sup>1</sup>

Bathymetric coverage was monitored by the creation of daily Digital Terrain Models (DTM's).

Table 2. Data Acquisition Vessels for H11993.

# Crosslines

Multibeam Echosounder (MBES) crosslines totaled 7.56 nautical miles, comprising 7.51% of main scheme MBES hydrography. The mainscheme bathymetry was manually compared to the crossline nadir beams in CARIS HIPS subset mode and agreed well with differences of approximately 0.2 meter and no greater than 0.5 meter. The larger offsets are due to sound velocity error in the outer beams of the crossline data. All vertical offsets between crosslines and mainshceme lines fall within the IHO accuracy limit specified for Order 1 surveys for the corresponding depth.<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

No contemporary surveys junction with H11993.<sup>3</sup>

# **Data Quality Factors**

# Data Gaps (Holidays)

A small holiday exists in a cove to the east of Whisker Point at the southern end of Goat Island (Figure 2). This data gap occurred due to a combination of kelp obstruction, poor maneuverability of launches in the tight working area, and the location being deemed not navigationally significant.<sup>4</sup>



Figure 2. Data gap at Whisker Point

Additionally, data gaps exist where kelp was too dense to survey through (Figure 3) and the rock was too shoal to survey over safely (Figure 4). The kelp area is located in a cove to the south of Passage Island while the rock is located to the northeast of Spook Island. Kelp areas are discussed in more detail under Shoreline Verification, Source Shoreline Changes and New Features in Section D.2.b. The rock in Figure 4 is an AWOIS item, which is discussed further in Section D.1.c.

H11993



Figure 3. Holiday due to kelp

Figure 4. Holiday due to rock

# Sound Speed Profile Errors

Some near shore areas had sound velocity errors, most likely due to freshwater runoff from the numerous nearby islands. In all cases, however, sounding density was high enough that the outer beam soundings affected by poor sound velocity could be rejected leaving unaffected soundings to more appropriately represent the seafloor.

Throughout the survey, sound velocity proved to be difficult to model resulting in a sound velocity error found in much of the data. The error is manifested as a vertical offset in the data between survey lines, increasing in magnitude toward the outer beams (Figure 5). The range of this offset between neighboring survey line soundings is from 0.2-0.5 meters while the offset between the CUBE generated surface and the soundings ranges from 0.1-0.4 meters. All offsets fall within the IHO accuracy limits for Order 1 surveys.<sup>5</sup>



Figure 5. Sound velocity offset in data between survey lines.

Additionally, an area with the greatest sound velocity error was identified in the northernmost portion of the H11993 survey. The magnitude of the sound velocity offset ranges from 0.3 to 0.55 meters (Figure 6). This error falls inside the IHO accuracy limits for Order 1 surveys for the depth range of the area.<sup>6</sup>



Figure 6: Sound velocity offset as seen in BASE surface.

# Surface Sound Speed Error

A surface sound speed error was identified for part of survey line 000\_2222 (1101\_Reson8125\_hvf, 2008-282) located in a cove east of Passage Island (Figure 7). Between 22:24:46 and 22:25:51, the surface sound velocimeter was not functioning properly and, as a result, the flat faced transducer of the Reson 8125 was not receiving correct surface sound speed data to correctly steer the beams. This error caused an offset in the data between neighboring lines on the magnitude of approximately 1.5 meters. The outerbeam soundings have been removed to minimize the effect on the surrounding BASE surface. While this offset falls outside the IHO accuracy limits for Order 1 surveys, the data lie on a smooth slope and were examined for objects; none were found. The hydrographer recommends accepting the data based on lack of significant features in the common area.<sup>7</sup>



Figure 7. Data offset due to surface sound speed error

# **B3.** Data Reduction

Data reduction procedures for survey H11993 conform to those detailed in the S-O901-RA-08 DAPR.

The near shore MBES hydrography for this survey was run at high tide and/or with a tilted sonar head along the shoreline of Sukkwan Island, Spook Island, Panhandle Island, Fishhook Island, Passage Island, and Goat Island. After correction for water levels, some soundings were found to have negative depths (i.e., elevations above MLLW). CARIS now honors negative soundings in the finalized BASE surfaces as long as appropriate depth range values are entered during surface creation. Negative soundings are seen in the lines of shoreline hydrography which were run with tilted 8125 MBES at or near high tide.

# **B4. Data Representation**

Survey H11993 was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. CUBE surfaces processed at 1 meter resolution were computed using the "shallow" CUBE parameters whereas CUBE surfaces with 2 meter resolutions were computed using "deep" CUBE parameters. The CUBE parameter files are included with the data submissions in the vessel configuration folder. Final BASE surface resolutions and depth ranges were set in accordance with the Specification and Deliverables Complete Multibeam Coverage requirements. Field Sheets have a grid resolution of at least 10% of the depth and are smaller than  $25 \times 10^6$  nodes. The submission Field Sheet and BASE Surface structure are shown in Figures 8 and 9.



Figure 8. Layout of field sheets for BASE surfaces of H11993



Figure 9. Field sheets and BASE surfaces submitted with H11993

Table 3 describes all BASE surfaces submitted as part of Survey H11993, while Table 4 identifies the depth range used for each resolution surface.

Name of Fieldsheet	Resolution	Туре	Purpose
H11993_A			
-H11993_A_2m_Final	2 meter	CUBE	Cube Base surface
-H11993_Combined	2 meter	CUBE	Combined Cube surfaces
H11993_B			
-H11993_B_1m_Final	1 meter	CUBE	Cube Base surface
H11993_C			
-H11993_C_1m_Final	1 meter	CUBE	Cube Base surface

Table 3. All Fieldsheets and BASE surfaces submitted as part of Survey H11993

Depth Range of Finalized Surface	Resolution
0-21.5 meters	1 meter
18.5-70 meters	2 meter

Table 4. Depth range and resolution of finalized surfaces

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.

# C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11993 can be found in the *S-O901-RA-08 Horizontal and Vertical Control Report*, submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

#### **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 5.

Location	Frequency	Operator	Distance	Priority
Level Island	295 kHz	USCG	88 nm	Primary
Annette Island	323 kHz	USCG	50 nm	Secondary
m 11 m		a	0 <b>T</b> T	1003

Table 5. Differential Corrector Sources for H11993.

#### **Vertical Control**

The vertical datum for this project is Mean Lower-Low Water (MLLW). RAINIER personnel installed Sutron 8210 "bubbler" tide gauge at the following subordinate station in accordance

with the Letter Instructions. This station is described in detail in the S-O901-RA-08 Horizontal and Vertical Control Report.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Hydaburg, AK	945-0364	30-day	October 7, 2008	November 10, 2008

Table 6. Tide Stations installed by RAINIER personnel for H11993

The Hydaburg, AK (945-0364) gauge served as control for datum determination and as the primary source for water level reducers for survey H11993. In addition, tide data from an operating National Water Level Observation Network (NWLON) station located in Ketchikan, AK (945-0460) was also used.

All data were reduced to MLLW using final approved water levels from the Hydaburg, AK (945-0364) and Ketchikan, AK (945-0460) stations using the tide files 9450364.tid and 9450460.tid. Final time and height correctors were applied using the zone corrector file H11993CORF.zdf.

The request for Final Approved Water Levels for H11993 was submitted to CO-OPS on November 11, 2008 and the Final Tide Note was received on January 13, 2009. This documentation is included in Appendix IV.<sup>8</sup>

# D. RESULTS AND RECOMMENDATIONS

# **D.1.** Chart Comparison

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

Survey H11993 was compared with the following charts manually in CARIS HIPS by overlaying the appropriate final BASE surface over the chart:<sup>9</sup>

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
17407	1:40,000	15 <sup>th</sup> Ed, Nov 2003	11/11/2003
17431	1:40,000	11 <sup>th</sup> Ed; Mar 2004	03/02/2004

Table 7. Charts compared with H11993

# Chart 17407

Chart 17407 covers all of survey H11993. There was good agreement between charted (17407) depths and survey (H11993) soundings with no trend in differences between the two. Differences between H11993 soundings and charted depths in shoaler areas (<10 fathoms) are within 1 fathom while differences in deeper areas (>10 fathoms) agree within 2 fathoms. The hydrographer recommends superseding all prior survey and charted depths with H11993 digital data in the common area.<sup>10</sup>

Several pile structures were observed in the MBES data (Figure 11). Upon further shoreline review, these pilings were found to be part of the Hydaburg pier (Figures 10 & 11). The Composite Souce file is correct and changes made to the chart (17407) should reflect the pier position and extents found in the Composite Source file. Piling soundings have been rejected to preserve sea floor depths below the pier.<sup>11</sup>



Figure 10. Composite source vs. charted (17407) pier location



Figure 11. Pier piling soundings

At the southern most end of the survey, the 10 fathom contour was found to be further inshore than charted (Figure 12). The hydrographer recommends recharting the 10 fathom contour as per the digital data to better represent the bathymetry in this area.<sup>12</sup>



Figure 12. 10 fm contour further inshore than charted (17407)

A shoal to the west of Lone Tree Island in the southern part of the survey was surveyed and is slightly south of where it is represented on the chart (Figure 13). Complete MBES coverage was obtained over this feature. The hydrographer recommends recharting the contours over the shoal to better represent its present location.<sup>13</sup>



Figure 13. Misscharted shoal to west of Lone Tree Island (Chart 17407)

In two locations, the 0 fathom contour was surveyed to be further offshore than represented on the chart (17407). The first area is located in a cove to the south of Passage Island (Figure 14), while the second area is located to the south of Spook Island at the southern entrance to Sukkwan Narrows (Figure 15). In both figures, the blue dashed line represents the approximate location of the surveyed 0 fathom contour. The hydrographer recommends extending the 0 fathom contour offshore in both locations.<sup>14</sup>



Figure 14. 0 fm ctr adjustment, Passage I.

Figure 15. 0 fm ctr adjustment, Spook I.

In a cove on the western side of Sukkwan Island and to the south of Passage Island, the chart (17407) displays the symbol for a large vessel anchorage (Figure 16). Considering the small size of the cove and the relatively shallow depths, the hydrographer recommends replacing the large vessel anchorage symbol with a small vessel anchorage symbol.<sup>15</sup>



Figure 16. Charted (17407) large vessel anchorage south of Passage Island

Additionally, there are two areas on the chart (17407) that are lacking 10 fathom contours and are incorrectly shaded according to depth. The first area is located in the central portion of the channel to the south of Sukkwan Narrows. Here, there are 15 and 16 fathom soundings charted, but no 10 fathom contour to delineate the deeper waters. Also, the entire region is shaded blue, including waters deeper than 10 fathoms (Figure 17). Similarly, in an area to the west of Hydaburg, a 12 fathom sounding is charted with no encompassing 10 fathom contour (17407 and 17431) and is incorrectly shaded blue (Figure 18). The hydrographer recommends adding a 10 fathom contour to both locations as per the digital data and updating the blue shading so as to not include waters greater than 10 fathoms.<sup>16</sup>



Figure 17. No 10 fm contour (Chart 17407) Figure 18. No 10 fm contour (Charts 17407 & 17431)

# Chart 17431

Chart 17431 covers the northeastern portion of survey H11993 directly west of Hydaburg. There was good agreement between charted (17431) depths and survey (H11993) soundings with no trend in differences between the two. Differences between H11993 soundings and charted depths are within 1 fathom. The hydrographer recommends superseding all prior survey and charted depths with H11993 digital data in the common area.<sup>17</sup>

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

Three (3) Dangers to Navigation (DToNs) were found on survey H11993, and reported to the Marine Chart Division via email on February 18, 2009. A copy of each Danger to Navigation Report is included in Appendix I, and a copy of each DToN email is located in Appendix V of this Descriptive Report.<sup>18</sup>

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

<u>Automated Wreck and Obstruction Information System (AWOIS) Investigations</u> Two (2) AWOIS items fall the within the survey limits of H11993. Both AWOIS items were assigned for full investigation. Descriptions of each AWOIS item investigation are included in the Survey Feature Report in Appendix II.<sup>19</sup>

AWOIS item 53707 is a charted rock located just north of Sukkwan Island and to the east of Sukkwan Narrows, as shown in Figure 19. A rock was located near the charted (17407 & 17431) position; the hydrographer recommends updating the rock as per the Notebook H11993\_Field\_Verified\_Comp\_Source.hob file.<sup>20</sup>



Figure 19. Location of AWOIS Item 53707 (Chart 17407)

AWOIS item 53706 is a charted rock located to the northeast of Spook Island, as shown in Figure 20. Although full coverage was not possible due to the shoalness of this feature, a DP was obtained on the feature to verify its position. The hydrographer recommends this feature be charted as per the GC reef in the Notebook H11993\_Field\_Verified\_Comp\_Source.hob file.<sup>21</sup>

H11993



Figure 20. Location of AWOIS Item 53706 (Chart 17407)

# Additional Items

A non-dangerous wreck was identified approximately 10 meters northwest of the Composite Source file GC pier location (Figure 21). This wreck was surveyed with a least depth of 3.13 fathoms in waters 3.6 fathoms deep with an overall length of approximately 4 meters. The wreck has been added to the H11993\_Field\_Verified\_Comp\_Source.hob file. Due to the insignificant nature of this wreck, the hydrographer does not recommend charting the feature.<sup>22</sup>



Figure 21. Non-dangerous wreck surveyed in vicinity of Hydaburg pier

A second non-dangerous wreck was identified directly to the east of the charted (17407) red No.8 daymark (Figure 22). This wreck was surveyed with a least depth of 3.72 fathoms in waters 4 fathoms deep with an overall length of approximately 3.75 meters. The wreck has been added to the H11993\_Field\_Verified\_Comp\_Source.hob file. Due to the insignificant nature of this wreck, the hydrographer does not recommend charting the feature.<sup>23</sup>



Figure 22. Non-dangerous wreck surveyed in vicinity of red No.8 daymark

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

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

Prior survey comparison was not performed.

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

#### Shoreline Source

The source shoreline for project S-O901-RA-08 is a composite source file compiled from photogrammetric survey project GC10648, charted features from the digital Electronic Navigational Chart (ENC) US5AK4IE, as well as prior survey features. This composite source was printed on paper "boat sheets" and displayed in both Hypack and CARIS Notebook for field verification.

#### Shoreline Verification

Limited shoreline verification was conducted for survey H11993 at intermediate tide levels during the survey period. Due to the time frame in which survey operations were conducted, shoreline verification near predicted low water, as specified by the Specifications and Deliverables and FPM section 3.5.5, was not possible. Detached positions (DPs) were recorded in Hypack, CARIS Notebook and logged on DP forms. DPs not found in the Notebook .hob file were then taken from Hypack, processed in Pydro, and then translated into CARIS Notebook. These DPs indicate revisions to features and features not found on the verified shoreline. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline, and transferred to the "remrks" attribute for the corresponding feature in Notebook. DP forms are included in the Detached Position directory of the *Separates to be Included with Survey Data*.

All shoreline data is submitted in Caris Notebook .hob files. The session H11993\_NTBK contains the following:

HOB File	Purpose and Contents	
H11993_Comp_Source.hob	Original Source Data as filtered from ENC cell	
	US5AK4IE	
H11993_Reference.hob	Survey outline and limit lines, and AWOIS item	
	Positions.	
H11993_Field_Verified_Comp_Source.hob	Field verified source features and shoreline,	
	including edits and updates.	
H11993_Disproval.hob	Items removed from the Field Verified Composite	
	Source requiring removal from chart.	

Table 8. List and Description of Notebook HOB files.

The Disproval files contain all disproved features requiring removal from the Composite Source file (CSF). The Field Verified files contain all shoreline features that were noted and/or modified in the field as well as all items that were not addressed in the field and therefore left unchanged. The Composite Source HOB file is a copy of the shoreline supplied

to the ship with no field edits. Note that some of features on the CSF were located in areas unsafe to approach and/or were considered insignificant to navigation, and were not further investigated. All new, charted, and AWOIS items within the limits of H11993 (i.e., offshore of the limits prescribed in the Letter Instructions and discussed in Section A) were addressed.

# Source Shoreline Changes and New Features

Items for Survey H11993 that require further discussion and are associated with a detached position, have been flagged "Report" in Pydro in H11993.pps. 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>24</sup>

The obstruction area around Lone Tree Island (chart 17407) at the southern end of survey H11993 was reduced in size shoreward to prevent confliction with the MBES data surrounding the island. Complete MBES coverage was acquired encompassing the island and no obstructions were found. The edited obstruction area was placed in the H11993\_Field\_Verified\_Comp\_Source.hob file. Additionally, the obstruction area located inside the obstruction area was removed and placed in the H11993\_Disproval.hob file (Figure 23). The hydrographer recommends that inside obstruction area be removed from the chart (17407) and the outside obstruction area be edited to correctly portray the seafloor surrounding Lone Tree Island.<sup>25</sup>



Figure 23. Lone Tree Island obstruction area at southern end of sheet.

The charted (17407) rock located in Sukkwan Narrows was disproved with complete MBES coverage. The hydrographer recommends removing this rock from the chart. Additionally, the obstruction area surrounding the rock in Sukkwan Narrows was disproved with complete MBES coverage (Figure 24). Due to the incomplete shoreward coverage of the obstruction area, the hydrographer recommends extending the ledge northward to the Sukkwan Narrows light and removing the obstruction area from the chart.<sup>26</sup>



Figure 24. Disproved rock and obstruction area in Sukkwan Narrows

Two kelp areas were added to the H11993\_Field\_Verified\_Comp\_Source.hob file. The first area is located in a small cove to the south of Passage Island. This kelp area is the blue region in the image on the left (Figure 25). Due to the shoalness of the feature and kelp obstructions, full coverage was not obtained in this area and a holiday in the MBES data exists. The second kelp area is located to the west of Hydaburg and is illustrated as the blue shaded region in the image on the right (Figure 25). Upon returning to complete acquisition on H11993 later in the season, the kelp density had diminished allowing the area to be surveyed for complete MBES coverage. Kelp in the cove to the east of Whisker Point was not dense enough to designate a kelp area.<sup>27</sup>



*Figure 25: Kelp areas added to H11993\_Field\_Verified\_Comp\_Source.hob file (Chart 17407)* 

# Recommendations

The Hydrographer recommends that the shoreline as depicted in the Notebook .HOB files supersede and complement shoreline information compiled on the GC, raster charts and ENC's as described above.<sup>28</sup>

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

Survey H11993 included nine (9) aids to navigation (ATONs). Four (4) ATONs were assigned for positioning, two of these ATONs being located outside and to the northeast of H11993 survey limits. Except as noted in the table below, the surveyed ATONs were found to be within acceptable positional accuracy limits (2mm at the scale of the chart, or 80 meters). Additionally, the red daymark #2, located to the northwest of Hydaburg, was found to be missing the actual daymark. Only a small remnant of the once red daymark was still visibly attached to the pole. Each ATON's position was visually checked in the field against the digital raster chart and verified by detached position. All ATONs were found to serve their intended purpose.<sup>29</sup>

ATON Description	Surveyed ATON Location	Difference between charted and DP positions	Method of positioning
Red No. 8 daymarker	55° 12.4' N, 132° 50.1' W	93.3 meters	DP

Table 9. Positional discrepancies between charted and surveyed ATONs.

Detached positions were taken on each ATON for check purposes only. No GPS static surveys were conducted for Survey H11993.

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

There are no overhead features within the limits of survey H11993.<sup>30</sup>

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

There are no submarine cables or pipelines charted within the limits of H11993, and none were detected by the survey.<sup>31</sup>

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

There are no ferry routes charted within the limits of survey H11993, and none were observed to be operating in the area.<sup>32</sup>

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

Bottom samples were not performed in survey H11993.<sup>33</sup>

# E. APPROVAL

As Chief of Party, Field operations for hydrographic survey H11993 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 (April 2008 edition), Field Procedures Manual (May 2008 edition), Standing and Letter Instructions, and all HSD Technical Directives issued through November 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:

#### **Title**

Date SentOffice

Data Acquisition and Processing Report for OPR-O901-RA-08March 2, 2009N/CS34Coast Pilot Report for S-O901-RA-08March 2, 2009N/CS26

CAPT Donald W. Haines, NOAA 2009.02.27 12:09:00 -08'00'

Approved and Forwarded:

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:

Samantha Allen 2009.02.27 07:22:25 -08'00'

Samantha K. Allen Hydrographic Survey Technician, NOAA Ship *Rainier* 

James B Jacobson I have reviewed this document 2009.02.27 07:55:10 -08'00'

Chief Survey Technician:

James B. Jacobson Chief Survey Technician, NOAA Ship *Rainier* 

I have reviewed this document 2009.02.27 08:07:18 -08'00'

Field Operations Officer:

Lieutenant Charles Yoos, NOAA Field Operations Officer

<sup>3</sup> Concur.

<sup>4</sup> Concur. Chart area as shown on the HCell.

<sup>5</sup> Concur.

<sup>6</sup> Concur.

<sup>7</sup> Concur.

<sup>8</sup> Tide note has been appended to this report.

<sup>9</sup> Concur with clarification. Chart 17407, 15<sup>th</sup> Edition dated November 2003 of Local Notice to Mariners dated September 11<sup>th</sup>, 2010 was used for chart comparison and compilation.

<sup>10</sup> Concur.

<sup>11</sup> Concur with clarification. Chart per HCell.

<sup>12</sup> Concur.

<sup>13</sup> Concur.

<sup>14</sup> Concur.

<sup>15</sup> Concur.

<sup>16</sup> Concur.

<sup>17</sup> Concur.

<sup>18</sup> DtoN Report is appended to this document.

<sup>19</sup> Concur with clarification. An AWOIS Report has been extracted from the Feautre Report. The AWOIS Report has been appended to this document.

<sup>20</sup> See attached AWOIS report.

<sup>21</sup> See attached AWOIS report.

<sup>22</sup> Concur. Wreck is located at 55-12-06.95N, 132-49-32.29W and has a depth of 5.73 meters. Recommended to be added to the AWOIS database.

<sup>23</sup> Concur. Wreck is located at 55-12.25.24N, 132-49-57.17W. Recommended to be added to the AWOIS database.

<sup>24</sup> The survey feature report is filed with hydrographic records. Note: The survey feature report does not include all features from H11993. Additional features were added, some removed, and some modified in CARIS Notebook after the feature report was generated in Pydro. All features included in the compilation of H11993 have come directly from CARIS Notebook which is the official feature deliverable for the survey.

<sup>25</sup> Concur. Chart per HCell.

<sup>26</sup> Concur.

<sup>27</sup> Concur. Chart per HCell.

<sup>28</sup> Concur with clarification. Chart per HCell.

<sup>29</sup> The compiler contacted the Coast Guard with the discrepancies discovered by the field party. Email correspondence has been attached to this document. Use latest ATONIS listing.

<sup>30</sup> Concur.

<sup>31</sup> Concur.

<sup>32</sup> Concur.

<sup>33</sup> Concur with clarification. Four bottom samples were retained from the chart; three were replaced with new rocky seabed areas. Chart per HCell.

<sup>&</sup>lt;sup>1</sup> Concur.

<sup>&</sup>lt;sup>2</sup> Concur.

# H11993 Danger to Navigation Report

<b>Registry Number:</b>	H11993
State:	Alaska
Locality:	Sukkwan Narrows
Sub-locality:	South Passage
Project Number:	S-O901-RA-08
Survey Dates:	10/07/2008 - 11/10/2008

# **Charts Affected**

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17431	11th	03/01/2004	1:40,000 (17431_1)	[L]NTM: ?
				USCG LNM: 08/07/2007 (02/26/2008) CHS NTM: None (01/25/2008)
17407	15th	11/01/2003	1:40,000 (17407_1)	NGA NTM: None (03/01/2008)
17400	17th	03/01/2007	1:229,376 (17400_1)	[L]NTM: ?
16016	21st	10/01/2007	1:969,756 (16016_1)	[L]NTM: ?
531	24th	07/01/2007	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_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	1.95 m	55° 12' 14.6" N	132° 50' 19.1" W	
1.2	Rock	8.65 m	55° 10' 04.7" N	132° 53' 30.2" W	
1.3	Shoal	3.30 m	55° 10' 35.2" N	132° 52' 05.2" W	

**1 - Dangers to Navigation** 

# 1.1) Profile/Beam - 1563/96 from h11993 / 1021\_reson8101\_hvf / 2008-315 / 921\_1645

# **DANGER TO NAVIGATION**

# **Survey Summary**

Survey Position:	55° 12' 14.6" N, 132° 50' 19.1" W
Least Depth:	1.95  m (= 6.40  ft = 1.067  fm = 1  fm 0.40  ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.376 m ; <b>TVU (TPEv)</b> ±0.422 m
Timestamp:	2008-315.16:49:00.812 (11/10/2008)
Survey Line:	h11993 / 1021_reson8101_hvf / 2008-315 / 921_1645
Profile/Beam:	1563/96
Charts Affected:	17407_1, 17431_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

A new rk with a LD of 1 fm surveyed nearing northern entrance to Sukkwan Narrows.

# **Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11993/1021_reson8101_hvf/2008-315/921_1645	1563/96	0.00	000.0	Primary

# **Hydrographer Recommendations**

Chart new rk.

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

1fm (17407\_1, 17400\_1, 16016\_1, 530\_1)

1fm 0ft (17431\_1, 531\_1)

2.0m (500\_1, 501\_1, 50\_1)

# S-57 Data

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

Attributes: VALSOU - 1.952 m

# **Office Notes**

Chart underwater rock.





Figure 1.1.1

# 1.2) Profile/Beam - 76/105 from h11993 / 2801\_reson7125\_hf\_512\_hysweep / 2008-281 / 000\_2255

# **DANGER TO NAVIGATION**

# **Survey Summary**

Survey Position:	55° 10' 04.7" N, 132° 53' 30.2" W
Least Depth:	8.65 m (= 28.38 ft = 4.729 fm = 4 fm 4.38 ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.964 m ; <b>TVU (TPEv)</b> ±0.413 m
Timestamp:	2008-281.22:55:56.583 (10/07/2008)
Survey Line:	$h11993 \ / \ 2801 \_ reson7125 \_ hf \_ 512 \_ hysweep \ / \ 2008-281 \ / \ 000 \_ 2255$
Profile/Beam:	76/105
Charts Affected:	17407_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

A new rk with a LD of 4.7 fms surveyed 45 m offshore of chd (17407) rk south of Whisker Pt.

# **Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11993/2801_reson7125_hf_512_hysweep/2008-281/000_2255	76/105	0.00	000.0	Primary

# Hydrographer Recommendations

Chart new rk.

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

4 ¾fm (17407\_1, 17400\_1, 16016\_1, 530\_1)

4fm 4ft (531\_1)

8.6m (500\_1, 501\_1, 50\_1)

# S-57 Data

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

Attributes: VALSOU - 8.649 m

# **Office Notes**

Chart underwater rock.



# **Feature Images**

Figure 1.2.1

# 1.3) Profile/Beam - 253/474 from h11993 / 2802\_reson7125\_hf\_512beams\_hysweep / 2008-315 / 000\_1708

# **DANGER TO NAVIGATION**

# **Survey Summary**

Survey Position:	55° 10' 35.2" N, 132° 52' 05.2" W
Least Depth:	3.30 m (= 10.84 ft = 1.807 fm = 1 fm 4.84 ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.963 m ; <b>TVU (TPEv)</b> ±0.412 m
Timestamp:	2008-315.17:08:20.767 (11/10/2008)
Survey Line:	h11993 / 2802_reson7125_hf_512beams_hysweep / 2008-315 / 000_1708
Profile/Beam:	253/474
Charts Affected:	17407_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

A new shoal with LD of 1.8 fms surveyed in vicinity of chd (17407) 3.5 fm sounding.

# **Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11993/2802_reson7125_hf_512beams_hysweep/2008-315/000_1708	253/474	0.00	000.0	Primary

# **Hydrographer Recommendations**

Chart new shoal.

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

1 ¾fm (17407\_1, 17400\_1, 16016\_1, 530\_1)

1fm 5ft (531\_1)

3.3m (500\_1, 501\_1, 50\_1)

# S-57 Data

Geo object 1: Sounding (SOUNDG)

# **Office Notes**

Concur with clarification. The designated sounding and least depth reported fall on the slope of the shoal and do not represent the true least depth on feature. A new sounding has been designated with a least depth of 2.2m (1.2 fm) at  $55^{\circ} 10' 35.23"$  N,  $132^{\circ}52'06.15"$  W. (See next item).



**Feature Images** 

Figure 1.3.1

# H11993 Dangers to Navigation

Registry Number:	H11993
State:	Alaska
Locality:	Sukkwan Narrows
Sub-locality:	South Passage
Project Number:	S-O901-RA-08
Survey Date:	11/10/2008

# **Charts Affected**

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17407	15th	11/01/2003	1.40,000 (17407,1)	USCG LNM: 08/07/2007 (03/03/2009) CHS NTM: None (02/27/2009) NGA NTM: None (03/07/2009)
17.100	17.1	00/01/2005		
17400	17th	03/01/2007	1:229,376 (17400_1)	[L]NTM: ?
16016	21st	10/01/2007	1:969,756 (16016_1)	[L]NTM: ?
531	24th	07/01/2007	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_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	Survey	Survey	Survey	AWOIS
	Type	Depth	Latitude	Longitude	Item
1.1	Shoal	2.21 m	55° 10' 35.2" N	132° 52' 06.2" W	

**1 - Dangers to Navigation** 

# 1.1) Profile/Beam - 824/156 from h11993 / 2802\_reson7125\_hf\_512beams\_hysweep / 2008-315 / 000\_1709

# **DANGER TO NAVIGATION**

# **Survey Summary**

Survey Position:	55° 10' 35.2" N, 132° 52' 06.2" W
Least Depth:	2.21 m (= 7.26 ft = 1.211 fm = 1 fm 1.26 ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.961 m ; <b>TVU (TPEv)</b> ±0.410 m
Timestamp:	2008-315.17:10:17.749 (11/10/2008)
Survey Line:	h11993 / 2802_reson7125_hf_512beams_hysweep / 2008-315 / 000_1709
Profile/Beam:	824/156
Charts Affected:	17407_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

A new sounding has been designated with a least depth of 2.2m (1.2 fm) in the vicinity of chd (17407) 3.5 fm sounding. This sounding should replace the incorrect least depth submitted for the shoal as reported in original DTON report H11993\_DTON\_Report, feature 1.3, sent 2/18/09.

The designated sounding and least depth submitted (3.3m) for the shoal reported at 55° 10' 35.2" N, 132° 52' 05.2" W in original DTON report H11993\_DTON\_Report fell on the slope of the shoal and did not represent the true least depth on feature. A new sounding has been designated with a least depth of 2.2m (1.2 fm) at 55° 10' 35.23" N, 132°52'06.15" W

# **Feature Correlation**

Address		Range	Azimuth	Status
h11993/2802_reson7125_hf_512beams_hysweep/2008-315/000_1709	824/156	0.00	000.0	Primary

# **Hydrographer Recommendations**

Chart new shoal with least depth per this report.

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

```
1 <sup>1</sup>/<sub>4</sub>fm (17407_1, 17400_1, 16016_1, 530_1)
```

1fm 1ft (531\_1)

2.2m (500\_1, 501\_1, 50\_1)

# S-57 Data

[None]

# **Office Notes**

Chart shoal sounding.



# **Feature Images**

Figure 1.1.1



Figure 1.1.2

2 - AWOIS Features

# 2.1) Profile/Beam - 135/239 from h11993 / 1101\_reson8125\_hvf / 2008-282 / 000\_2342

# **Primary Feature for AWOIS Item #53707**

Search Position:	55° 12' 08.1" N, 132° 50' 17.8" W
Historical Depth:	[None]
Search Radius:	50
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Search radius only within project area and as safety allows. Do not search within foul area of near shore limit.

#### **History Notes:**

H08326(1956)-- Rock or coral head (depth unknown) at Lat. 55/12/08 Long. 132/50/18 (RES 7/29/08).

# **Survey Summary**

Survey Position:	55° 12' 08.1" N, 132° 50' 17.5" W
Least Depth:	-0.96 m (= -3.14 ft = -0.523 fm = 0 fm 2.86 ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.966 m ; <b>TVU (TPEv)</b> ±2.760 m
Timestamp:	2008-282.23:42:38.114 (10/08/2008)
Survey Line:	h11993 / 1101_reson8125_hvf / 2008-282 / 000_2342
Profile/Beam:	135/239
Charts Affected:	17407_1, 17431_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

AWOIS #53707

# **Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11993/1101_reson8125_hvf/2008-282/000_2342	135/239	0.00	000.0	Primary
S-O901-FA-08_AWOIS	AWOIS # 53707	5.09	089.3	Secondary

# **Hydrographer Recommendations**

#### [None]

# **Cartographically-Rounded Depth (Affected Charts):** 0 ½fm (17407\_1, 17400\_1, 16016\_1, 530\_1)

0fm 3ft (17431\_1, 531\_1) -1.0m (500\_1, 501\_1, 50\_1)

# S-57 Data

#### [None]

Office Notes: Concur with clarification. Chart per HCell. Chart covers and uncovers rock at 55-12-08.11N, 132-50-17.54W. Rock has depth of -0.960 meters. Position and depth were obtained through 100% multibeam coverage.

# 2.2) Profile/Beam - 1681/239 from h11993 / 1101\_reson8125\_hvf / 2008-282 / 000\_2346

# **Primary Feature for AWOIS Item #53706**

Search Position:	55° 12' 34.7" N, 132° 50' 31.7" W
Historical Depth:	[None]
Search Radius:	50
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Search radius only within project area and as safety allows. Do not search within foul area of near shore limit.

#### **History Notes:**

H08326(1956)--Rock or coral head (depth unknown)at Lat. 55°12'35" and Long. 132°50'32" (RES 7/29/08).

# **Survey Summary**

Survey Position:	55° 12' 34.3" N, 132° 50' 32.4" W
Least Depth:	-2.01 m (= -6.59 ft = -1.098 fm = -1 fm 0.59 ft)
TPU (±1.96σ):	<b>THU (TPEh)</b> ±1.992 m ; <b>TVU (TPEv)</b> ±7.258 m
Timestamp:	2008-282.23:48:50.177 (10/08/2008)
Survey Line:	h11993 / 1101_reson8125_hvf / 2008-282 / 000_2346
Profile/Beam:	1681/239
Charts Affected:	17407_1, 17400_1, 16016_1, 531_1, 500_1, 501_1, 530_1, 50_1

#### **Remarks:**

AWOIS #53706

# **Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11993/1101_reson8125_hvf/2008-282/000_2346	1681/239	0.00	000.0	Primary
S-O901-FA-08_AWOIS	AWOIS # 53706	17.63	226.0	Secondary

# **Hydrographer Recommendations**

#### [None]

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

-1fm (17407\_1, 17400\_1, 16016\_1, 530\_1)

-1fm 0ft (531\_1)

-2.0m (500\_1, 501\_1, 50\_1)

# S-57 Data

[None]

Office Notes: Concur with clarification. Chart reef centered at 55-12-33.69N, 132-50-31.21W. Reef extents were delineated through multibeam coverage. High point was obtained through visual inspection. Reef is approximately 72 meters across. Chart per HCell. Subject: RE: ATONs within Sukkwan Narrows From: "Buck, Todd" <Todd.R.Buck@uscg.mil> Date: Wed, 17 Nov 2010 09:45:09 -0900 To: Tyanne.Faulkes@noaa.gov

Greetings,

I will take care of this on our end. Thanks for forwarding it on. I don't know if it is possible to provide feedback to the survey ship but it would be great if they could report any ATON discrepancy immediately so it can be corrected in a timely manner. The POC would be either the Command Center for Sector Anchorage or Sector Juneau, depending on where the ship was operating. Sector Juneau is responsible for SE Alaska and Sector Anchorage is responsible for the rest of the state. They can be contacted on VHF/FM channel 16 or (907) 463-2980 (Juneau) and (907) 271-6769 (Anchorage).

Thanks again,

Todd

-----Original Message-----From: Tyanne.Faulkes@noaa.gov [mailto:Tyanne.Faulkes@noaa.gov] Sent: Tuesday, November 16, 2010 12:43 PM To: Buck, Todd Cc: Gary Nelson; Matthew Forney Subject: ATONs within Sukkwan Narrows

Hello Todd,

My name is Tyanne Faulkes and I work at the Pacific Hydrographic Branch in Seattle. I am working on a survey which our field unit NOAA Ship RAINIER completed in 2008 in the Sukkwan Narrows (survey dates were 10/7/2008-11/10/2008). During the survey the field party verified that all ATONs were found to serve their intended purpose but two ATONs showed discrepancies from what is charted. First, Red No. 8 Daymarker was mispositioned on the chart. The RAINIER performed a detached position and provided a new surveyed location of the ATON at 55-12.4N, 132-50.1W (this results in a 93.3-meter discrepancy). In addition, Red No. 2 Daymarker, located northwest of Hydaburg at 55-12.67N, 132-49.86W, was found to be missing its daymark. It is reported that only a small remnant of the daymark was still visibly attached to the pole (a picture has been attached to this email).

It does not appear that the field party has contacted the Coast Guard about their findings during the survey. We wanted to make sure that the Coast Guard was provided with the proper information to update your ATON listing. Please let me know if you would like more information or if I need to notify any other individuals about these discrepancies.

Sincerely,

Tyanne Faulkes <u>Physical Scientist NOAA's Nation</u>al Ocean Service Office of Coast Survey, Hydrographic Surveys Division Pacific Hydrographic Branch, N/CS34 7600 Sand Point Way N.E. Seattle, WA 98115-6349

(206) 526-4761



Subject: RE: ATONs within Sukkwan Narrows From: "Buck, Todd" <Todd.R.Buck@uscg.mil> Date: Mon, 22 Nov 2010 14:49:11 -0900 To: Tyanne.Faulkes@noaa.gov

Tyanne,

I just wanted to follow-up on your previous email. It does not look like those two aids were reported discrepant. We just put out a Notice to mariners for the missing dayboard and notified the unit responsible to fix it, and the new location for the light will be published in this week's Local Notice to Mariners as a chart correction to accurately reflect it's true location. Thanks for taking the initiative to pass this information on to me. Please let me know if you see anything else.

Have a happy Thanksgiving.

Todd

-----Original Message-----From: <u>Tyanne.Faulkes@noaa.gov</u> [mailto:Tyanne.Faulkes@noaa.gov] Sent: Tuesday, November 16, 2010 12:43 PM To: Buck, Todd Cc: Gary Nelson; Matthew Forney Subject: ATONs within Sukkwan Narrows

Hello Todd,

My name is Tyanne Faulkes and I work at the Pacific Hydrographic Branch in Seattle. I am working on a survey which our field unit NOAA Ship RAINIER completed in 2008 in the Sukkwan Narrows (survey dates were 10/7/2008-11/10/2008). During the survey the field party verified that all ATONs were found to serve their intended purpose but two ATONs showed discrepancies from what is charted. First, Red No. 8 Daymarker was mispositioned on the chart. The RAINIER performed a detached position and provided a new surveyed location of the ATON at 55-12.4N, 132-50.1W (this results in a 93.3-meter discrepancy). In addition, Red No. 2 Daymarker, located northwest of Hydaburg at 55-12.67N, 132-49.86W, was found to be missing its daymark. It is reported that only a small remnant of the daymark was still visibly attached to the pole (a picture has been attached to this email).

It does not appear that the field party has contacted the Coast Guard about their findings during the survey. We wanted to make sure that the Coast Guard was provided with the proper information to update your ATON listing. Please let me know if you would like more information or if I need to notify any other individuals about these discrepancies.

Sincerely,

Tyanne Faulkes <u>Physical Scientist NOAA's National Ocean Service</u> Office of Coast Survey, Hydrographic Surveys Division Pacific Hydrographic Branch, N/CS34 7600 Sand Point Way N.E. Seattle, WA 98115-6349

(206) 526-4761



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

#### TIDE NOTE FOR HYDROGRAPHIC SURVEY

**DATE :** January 13, 2009

HYDROGRAPHIC BRANCH: Pacific HYDROGRAPHIC PROJECT: S-0901-RA-2008 HYDROGRAPHIC SHEET: H11993

LOCALITY: South Passage, Sukkwan Narrows, AK TIME PERIOD: October 7 - November 10, 2008

TIDE STATION USED: 945-0364 Hydaburg, AK Lat. 55° 12.1'N Long. 133° 49.4' W PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.700 meters

TIDE STATION USED: 945-0460 Ketchikan, AK Lat. 55° 19.9' N Long. 131° 37.5' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.433 meters

**REMARKS: RECOMMENDED ZONING** Use zone(s) identified as: SA36

#### 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).
- Note 2: Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector file (\*.ZDF). For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.







#### H11993 HCell Report

Tyanne Faulkes, Physical Scientist Pacific Hydrographic Branch

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

HCell compilation of survey H11993 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 H11993 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
17407	1:40,000	15th	11/01/2003	9/11/2010

The following ENCs were also used during compilation:

Chart	Scale
US3AK40M	1:40,000

#### 3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 12-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:6,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-4.7	10	3
10	20	4
20	50	4.5
50	200	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 17407	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 H11993_SS.000
0	0	0.2286	0.125	0
3	5.4864	5.715	3.125	3
5	9.144	9.3726	5.125	5
10	18.288	18.5166	10.125	10

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 H11993:

#### 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	Modified GC coastline
DEPCNT	Modified GC MLLW and surveyed zero contour
LNDARE	Islands and islets retained from the chart
M_QUAL	Data quality Meta object
OBSTRN	Obstruction area, line and point objects.
PILPNT	Piles
PONTON	Pontoons
SBDARE	Modified GC ledges and reefs, bottom samples, and rocky seabed areas
SOUNDG	Soundings at the chart scale density
SLCONS	Shoreline constructions such as piers
UWTROC	Rock features
WEDKLP	New and retained kelp points and areas

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

H11993 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

H11993_CS.000	Base Cell File, Chart Units, Soundings and features
	compiled to 1:40,000
H11993_SS.000	Base Cell File, Chart Units, Soundings and Contours
	compiled to 1:6,000
H11993_DR.pdf	Descriptive Report including end notes compiled during
	office processing and certification, the HCell Report, and
	supplemental items
H11993 _outline.gml	Survey outline
H11993 _outline.xsd	Survey outline

# 11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.3	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	Independent inspection of final HCells using a
Ver.1.0.0.3	COTS viewer.

#### 12. Contacts

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

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#### APPROVAL SHEET H11993

#### Initial Approvals:

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.