

H11582

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* ..... HYDROGRAPHIC

*Field No.* .....

*Registry No.* ..... H11582

### LOCALITY

*State* ..... Alaska .....

*General Locality* ..... Shumagin Islands and Vicinity

*Sublocality* ..... West Nagai and Vicinity

**2006**

### CHIEF OF PARTY

..... Commander Andrew L. Beaver, NOAA

### LIBRARY & ARCHIVES

DATE .....

**HYDROGRAPHIC TITLE SHEET**

H11582

INSTRUCTIONS - The hydrographic sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the office.

FIELD NO.

State Alaska

General Locality Shumagin Islands and Vicinity

Sublocality West Nagai and Vicinity

Scale 1:20,000 Date of Survey July 9, 2006 -August 28, 2006

Instructions Dated 5/3/2006 Project No. OPR-P183-FA-06

Vessel NOAA Ship FAIRWEATHER (S220)

Chief of Party Commander Andrew L. Beaver, NOAA

Surveyed by ENS Gonsalves, CST Froelich, LT Dowling

Soundings taken by echo sounder RESON 8101, Reson 8111

Graphic record scaled by N/A

Graphic record checked by N/A

Evaluation by S. Wolfskehl Automated plot by N/A

Verification by S. Wolfskehl, K. Reser

Soundings in Fathoms and Feet at MLLW

REMARKS: Time in UTC. UTM Projection Zone 4

Revisions and annotations appearing as endnotes were generated during office processing.

As a result, page numbering may be interrupted or non-sequential

All separates are filed with the hydrographic data.

# Descriptive Report to Accompany Hydrographic Survey H11582

Project OPR-P183-FA-06  
Shumagin Islands and Vicinity, Alaska

Scale 1:20,000

July - August 2006

**NOAA Ship FAIRWEATHER**

Chief of Party: Commander Andrew L. Beaver, NOAA

## A. AREA SURVEYED

The survey area was located in Shumagin Islands and Vicinity, within the sub-locality of West Nagai and Vicinity. This survey corresponds to Sheet G in the sheet layout provided with the Letter Instructions, as shown in Figure 1 below. The survey area is bounded on the Southwest corner at 55°07'00"N, 160°16'00"W and the Northeast corner at 55°23'00"N, 159°59'00"W.

Data acquisition was conducted from July 9 to August 28, 2006 (DN 190 to DN 240).

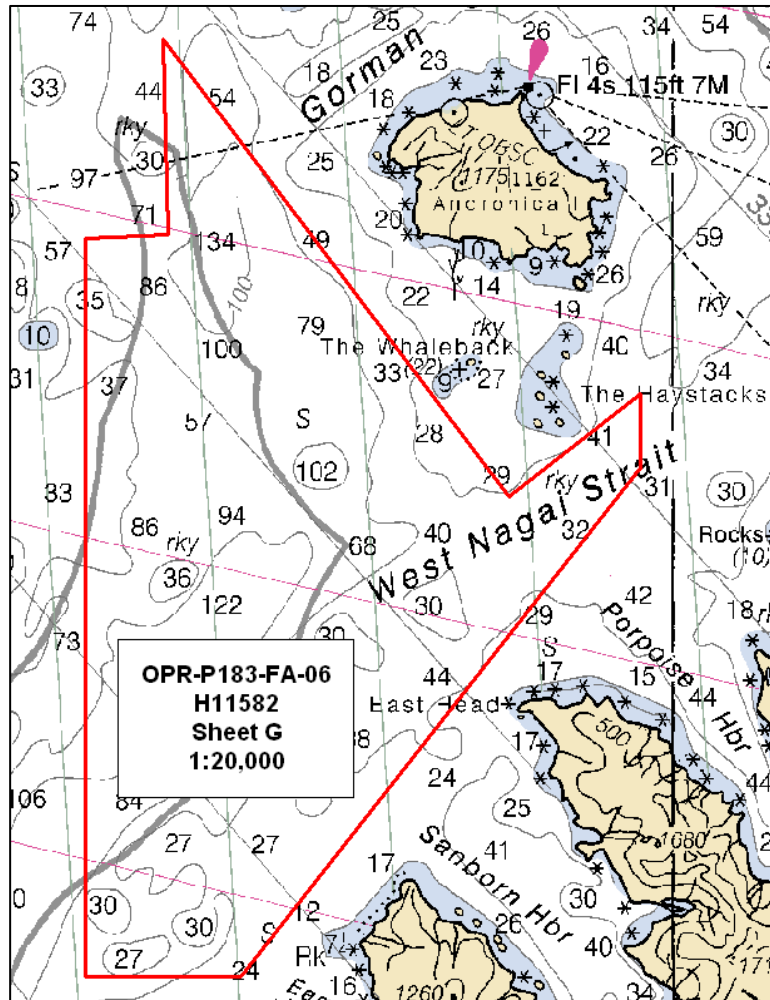


Figure 1: H11582 Sheet Limits

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area offshore of the 8-meter depth curve.<sup>1</sup> When conditions allowed, multibeam echosounder (MBES) data was acquired parallel to contours and at a line spacing of no less than 25 meters at depths between four and eight meters.<sup>2</sup> Additional coverage was obtained when determining least depths over features or shoals offshore of the Navigational Area Limit Line (NALL), which is defined as the furthest offshore of the either the 4-meter depth contour or 0.8mm distance of the scale of the largest chart from the Mean High Water line.<sup>3</sup>

## B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition/processing systems and survey vessels along with quality control procedures and data processing methods are included and described in the *OPR-P183-FA-06 Data Acquisition and Processing Report (DAPR)*<sup>4</sup>, submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P183-FA, dated May 3, 2006.

### B1. Equipment and Vessels

Equipment and vessels used for data acquisition and survey operations during this survey are listed below in Table 1.

	FAIRWEATHER	Jensen Launch 1010
<b>Hull Registration Number</b>	S220	1010
<b>Builder</b>	Aerojet-General Shipyard	The Boat Yard, Inc.
<b>Length Overall</b>	231 feet	28' 10"
<b>Beam</b>	42 feet	10' 8"
<b>Draft, Maximum</b>	15' 6"	4' 0" DWL
<b>Cruising Speed</b>	12.5 knots	24 knots
<b>Max Survey Speed</b>	10 knots	10 knots
<b>Primary Echosounder</b>	RESON 8111 & RESON 8160	RESON 8101
<b>Sound Velocity Equipment</b>	SBE 19plus & 45, MVP 200	SBE 19plus
<b>Attitude &amp; Positioning Equipment</b>	POS/MV V3	POS/MV V3
<b>Type of operations</b>	MBES, Bottom Samples	Bottom Samples

**Table 1: Vessel Inventory**

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

## B2. Quality Control

Internal consistency and integrity of data collected for survey H11582 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11582 were found to be very good.<sup>5</sup>

## Crosslines

Shallow water multibeam crosslines for this survey totaled 44.9 linear nautical miles (lnm), comprising 9.1% of the 490.4 lnm of total SWMB hydrography. Both main scheme and crossline mileage are summarized in Table 2.

<b>MAIN SCHEME - Mileage</b>	
Single Beam MS	0
Multibeam MS mileage	445.520616
SideScan MS	0
<b>Total MS</b>	<b>445.520616</b>
<b>CROSSLINE - Mileage</b>	
Single Beam XL	0
Multibeam XL	44.8508799
<b>Total XL</b>	<b>44.8508799</b>
<b>OTHER</b>	
Developments/AWOIS - Mileage	0
Shoreline/Nearshore Investigation - Mileage	0
Total # of Investigated Items	0
Total Bottom Samples	22
<b>Total SNM</b>	<b>54.7</b>
Specific Dates of Acquisition	July 9 - 10; July 23 - 25; Aug 25 - 27
Specific Dn#s of Acquisition	DN190 - 191; DN204 - 206; DN237 - 239

**Table 2: H11582 MBES Statistics**

The Hydrographer has determined, through manual examination of the data, that the crossline agreement with main scheme data meet the vertical accuracy requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>6</sup>

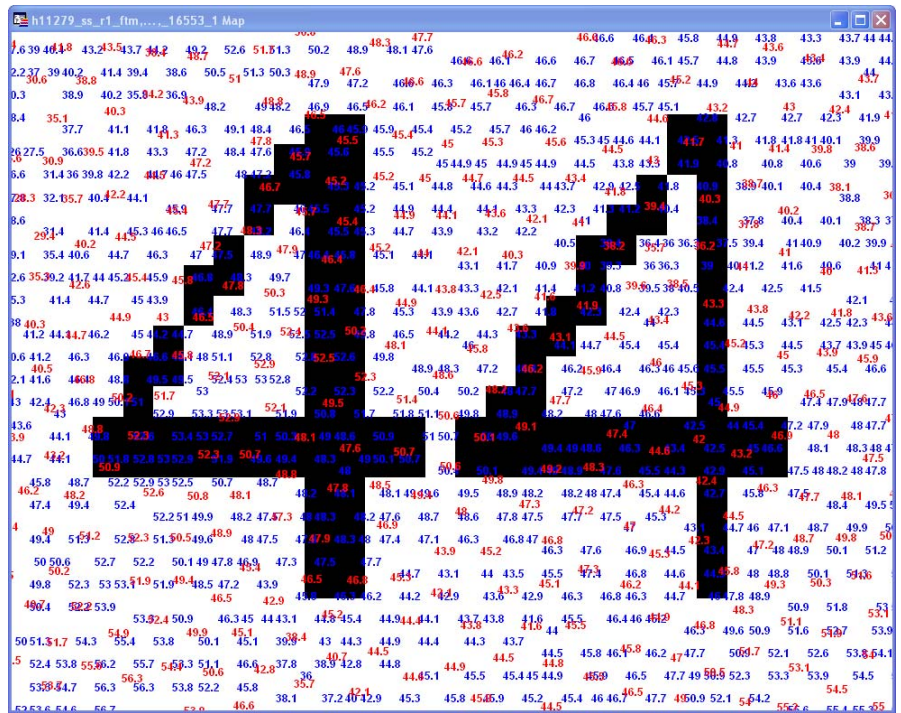
## Junctions

Survey H11582 junctions with H11580, which is Sheet B of the same project. The area of overlap between the sheets was approximately 250 meters wide. Data were reviewed in CARIS Subset Editor and

depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>7</sup>

**OPR-P183-KR-04 JUNCTIONS:**

Survey H11582 junctions with survey H11279; Sheet C of project OPR-P183-KR-04. The area of overlap between the sheets was approximately 2.8 kilometers wide. Area surveyed for junction analysis will be reduced on later projects. The survey data from project OPR-P183-KR-04 was received in .xyz format. This data was imported into MapInfo via an Excel spreadsheet. H11582 BASE points were exported to ASCII and also imported into MapInfo via Excel. The area of overlap was then reviewed in MapInfo, Figure 2, and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>8</sup>



**Figure 2: Soundings from survey H11582 (shown in blue) and H11279 (shown in red)**

Survey H11582 junctions with survey H11280; Sheet D of project OPR-P183-KR-04. The area of overlap between the sheets was approximately 600 meters wide. As with survey H11279, the area of overlap was reviewed in MapInfo and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>9</sup>

Survey H11582 junctions with survey H11281; Sheet K of project OPR-P183-KR-04. The area of overlap between the sheets was approximately 1 kilometer wide. Area surveyed for junction analysis will be reduced on later projects. As with survey H11279, the area of overlap was reviewed in MapInfo and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>10</sup>

The sheet limits and areas of overlap for H11582, H11580, H11279, H11280 and H11281 are shown in Figure 3.

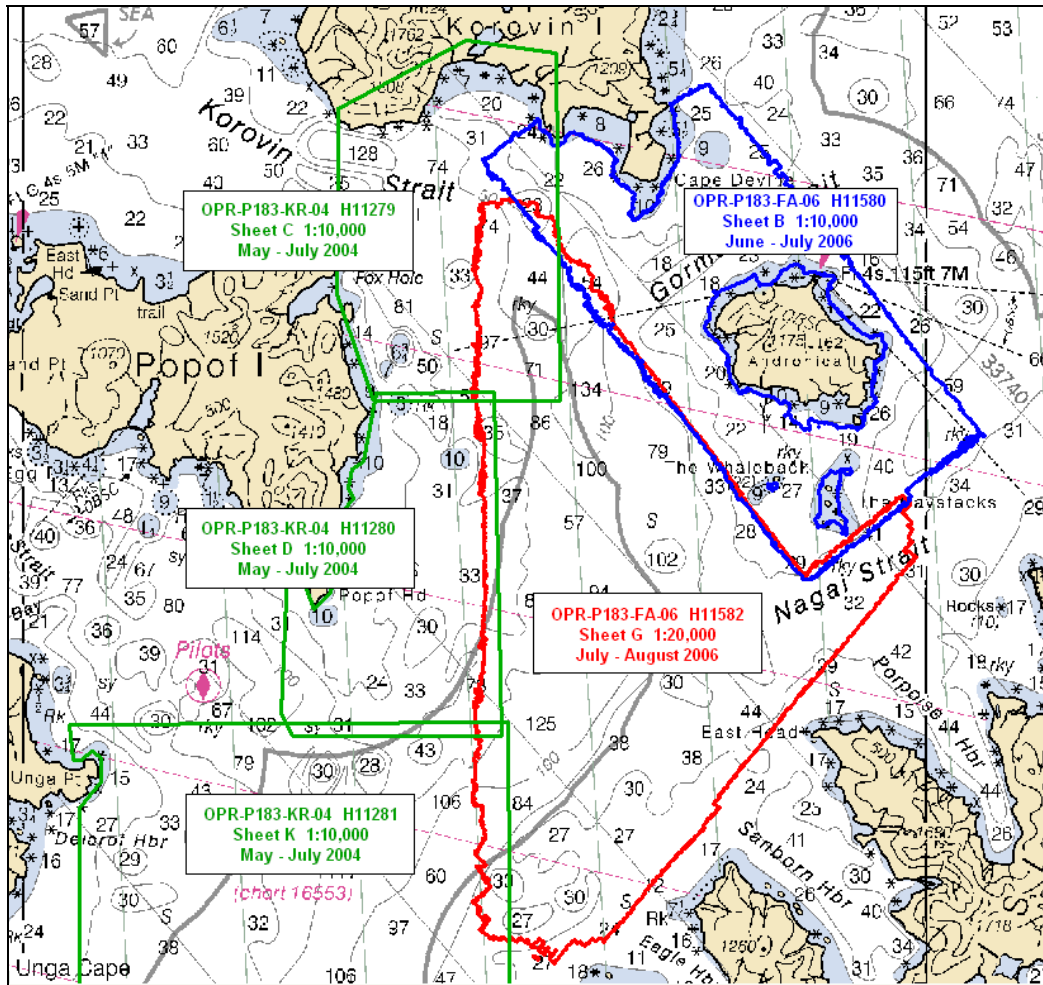


Figure 3: Junctions between H11582, H11580 and the three surveys from 2004 (H11279, H11280 and H11281)

## Quality Control Checks

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

## Data Quality Factors

### COVERAGE ASSESSMENT:

Coverage Assessment followed procedures as outlined in the DAPR.

### DESIGNATED SOUNDINGS:

Designation of soundings followed procedures as outlined in the DAPR.

### SOUND VELOCITY:

On July 9-10, 2006 (Dn190-191), the Moving Velocity Profiler was unavailable, forcing the ship to perform stationary casts during acquisition. As a result, there is some sound velocity error present within data acquired on these dates. However, when the data is examined in CARIS Subset Editor (Figure 4),



the CUBE surface does appear to average through the sound velocity error and depict the correct bottom.<sup>11</sup>

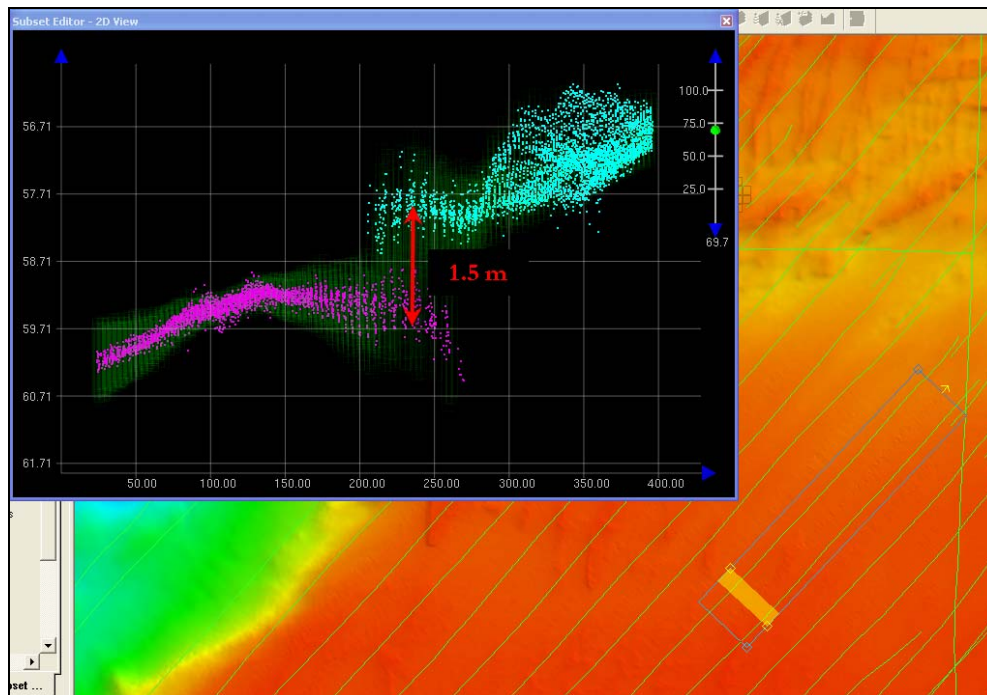


Figure 4: Sound velocity error and the associated BASE surface in the southern portion of survey H11582.

## Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated June 2006.<sup>12</sup>

### B3. Corrections to Echo Soundings

Data reduction procedures for survey H11582 conform to those detailed in the DAPR.

## C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11582 can be found in the *OPR-P183-FA-06 Horizontal and Vertical Control Report*, submitted under separate cover.<sup>13</sup> 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. Differential corrections came from the U.S. Coast Guard beacon at Cold Bay (289 kHz).



## 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 Sand Point (945-9450) served as control for datum determination and as the primary source for water level reducers for survey H11582 during acquisition. No tertiary gauges were set for this project per the Letter Instructions.

A request for delivery of final approved water level data (smooth tides) for survey H11582 was forwarded to N/OPS1 on September 15, 2006 in accordance with the *Field Procedures Manual v2p1*, dated May 2006 (FPM). A copy of the request is included in Appendix V.

FAIRWEATHER received the Tide Note for Hydrographic Survey H11582 on October 2, 2006. The Tide Note for Hydrographic Survey H11582 states that preliminary zoning is accepted as the final zoning correctors. Final approved water level data were received by the FAIRWEATHER on October 12, 2006 for NWLON primary tide station Sand Point (945-9450). The Tide Note for Hydrographic Survey H11582 and ancillary correspondence are included in Appendix V.<sup>14</sup>

As per the Letter Instructions, all data were reduced to MLLW using the final approved water levels (smooth tides) from station Sand Point (945-9450) by applying tide file 9459450.tid and time and height correctors through the zone corrector file H11582CORF.zdf. It will not be necessary for the Pacific Hydrographic Branch to reapply the final approved water levels (smooth tides) to the survey data during final processing.<sup>15</sup>

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

Chart comparison procedures were followed as outlined in the DAPR.

Survey H11582 was compared with charts 16553 (5<sup>th</sup> Ed.; September 01, 2005, 1:80,000), and 16540 (12<sup>th</sup> Ed.; January 1, 2005, 1:300,000). All charts have been updated with the Notice to Mariners through January 28, 2006 and the most recent Notice to Mariners from November 4, 2006 was consulted. There were no new changes within the survey area.

#### Chart 16540

The 94 fathom sounding at position 55°14'46" N, 160°10'50" W is not representative of the depths in the surrounding area. An uncharted shoal is shown in Figure 5 with a measured least depth of 26.3 fathoms.<sup>16</sup>

The rest of the depths on chart 16540 agree with the depths from survey H11582.<sup>17</sup>

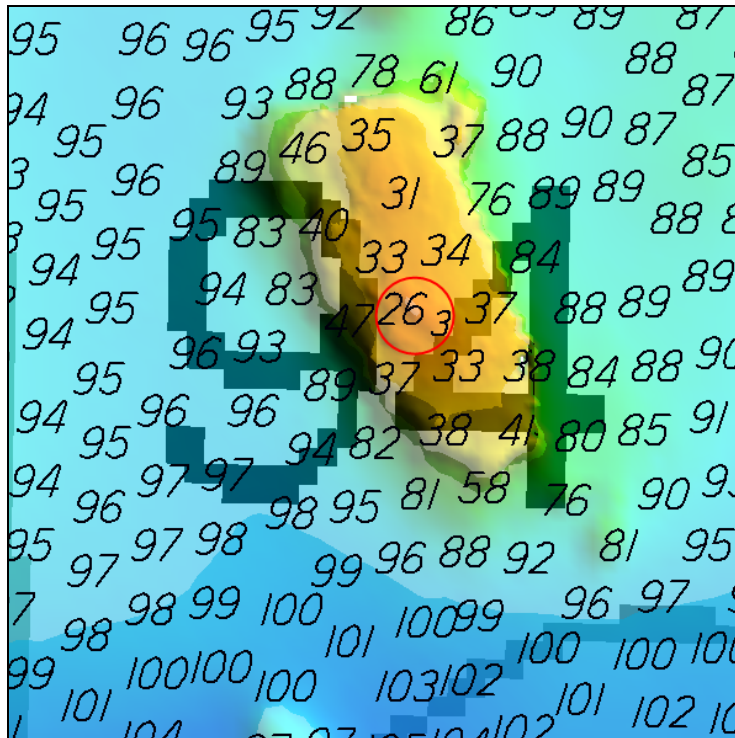


Figure 5: Charted (16540) 94 fathom sounding and surrounding soundings from 5m resolution BASE surface

### Chart 16553

Depths from survey H11582 agreed within one to two fathoms with depths on chart 16553. There were however fourteen charted soundings that had a difference exceeding two fathoms from the depths collected during survey H11582<sup>18</sup>:

- 55°20'50.0"N, 160°14'40.5"W, 116 fathom deepest sounding at a charted 119 fathoms (+3fm)
- 55°16'26.0"N, 160°07'07.9"W, 37 fathom shoalest sounding at a charted 29 fathoms (-8fm)
- 55°16'17.9"N, 160°10'32.9"W, 94 fathom shoalest sounding at a charted 69 fathoms (-25fm)
- 55°16'53.0"N, 160°13'36.4"W, 72 fathom deepest sounding at a charted 78 fathoms (+6fm)
- 55°15'38.1"N, 160°11'25.1"W, 84 fathom shoalest sounding at a charted 74 fathoms (-10fm)
- 55°15'06.8"N, 160°04'22.1"W, 32 fathom shoalest sounding at a charted 29 fathoms (-3fm)
- 55°14'11.8"N, 160°03'08.5"W, 39 fathom shoalest sounding at a charted 36 fathoms (-3fm)
- 55°14'12.8"N, 160°07'41.8"W, 66 fathom deepest sounding at a charted 88 fathoms (+22fm)
- 55°14'20.0"N, 160°09'53.2"W, 103 fathom shoalest sounding at a charted 99 fathoms (-4fm)
- 55°13'45.5"N, 160°12'09.1"W, 66 fathom shoalest sounding at a charted 36 fathoms (-30fm)
- 55°13'29.0"N, 160°07'30.4"W, 32 fathom deepest sounding at a charted 43 fathoms (+11fm)
- 55°12'23.1"N, 160°06'32.6"W, 38 fathom shoalest sounding at a charted 31 fathoms (-7fm)
- 55°11'35.0"N, 160°13'15.2"W, 115 fathom shoalest sounding at a charted 111 fathoms (-4fm)
- 55°09'08.7"N, 160°11'31.6"W, 32 fathom shoalest sounding at a charted 28 fathoms (-4fm)

These deviations from the charted soundings are shown in Figure 6.

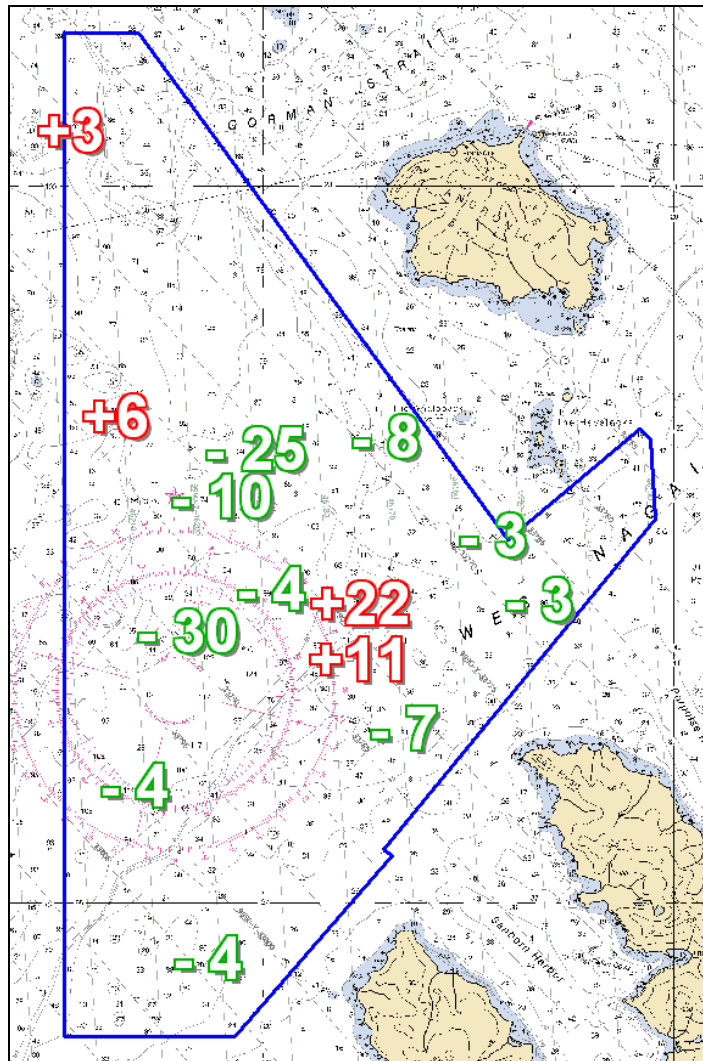


Figure 6: Depth comparisons between H11582 and chart 16553. Note: “+ 3” indicates surveyed depths are 3 fathoms shoaler than charted depths.

### Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *NOS Hydrographic Surveys Specifications and Deliverables* dated June 2006. The BASE surfaces with the application of designated soundings are adequate to supersede prior surveys in their common areas.<sup>19</sup> Based on the application of verified water level data (smooth tides) by FAIRWEATHER, final chart comparisons are not required by the Pacific Hydrographic Branch.

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

There were no AWOIS items located within the limits of H11582.<sup>20</sup>

## **Dangers to Navigation**

There were no dangers to navigation found within the limits of H11582.<sup>21</sup>

## **D.2 Additional Results**

### **Shoreline Source**

There was no shoreline data within the limits of H11582.<sup>22</sup>

### **Aids to Navigation**

There were no Aids to Navigation within the limits of H11582.<sup>23</sup>

### **Bottom Samples**

Bottom samples were collected on August 27 - 28, 2006 (DN 239 - 240) and are included as seabed classifications along with the other S57 features in the Pydro Preliminary Smooth Sheet. The bottom sample positions were also imported to the Notebook H11582\_Updates.hob file.<sup>24</sup>

## **E. Supplemental Reports**

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

<b><u>Title</u></b>	<b><u>Date Sent</u></b>	<b><u>Office</u></b>
Hydrographic Systems Readiness Review 2006	May 30, 2006	N/CS34
OPR-P183-FA-06 Data Acquisition and Processing Report	April 13, 2007	N/CS34
OPR-P183-FA-06 Horizontal & Vertical Control Report	Oct 31, 2006	N/CS34, N/OPS1



**UNITED STATES DEPARTMENT OF COMMERCE**

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

February 12, 2007

MEMORANDUM FOR: CDR Don Haines, NOAA  
Chief, Pacific Hydrographic Branch

FROM: CDR Andrew L. Beaver, NOAA  
Commanding Officer

**Andrew L.  
Beaver**

Digitally signed by Andrew L. Beaver  
DN: cn=Andrew L. Beaver, o=NOAA,  
ou=NOAA Ship FAIRWEATHER,  
email=Andrew.L.Beaver@noaa.gov  
Reason: I am approving this document  
Date: 2007.02.16 05:25:21 Z

TITLE: Approval of Hydrographic Survey H11582,  
OPR-P183-FA

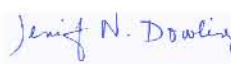
As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11582 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, May 2006 Version 2.1; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for June 2006. Additional guidance was provided by applicable Hydrographic Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

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

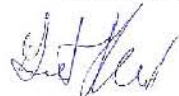
In addition, the following individuals were responsible for oversight of acquisition and processing of this survey:

  
Michael O. Gonsalves  
I attest to the accuracy and  
integrity of this document  
2007.02.12 15:10:45 -08'00'

LTjg Michael O. Gonsalves  
Survey Manager

  
Jennifer N. Dowling  
I attest to the accuracy and  
integrity of this document  
2007.02.12 15:05:46 -08'00'

LT Jennifer Dowling  
Field Operations Officer

  
Grant Froelich  
I attest to the accuracy and  
integrity of this document  
2007.02.12 15:04:05 -08'00'

CST Grant Froelich  
Chief Survey Technician

Attachment



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

---

<sup>1</sup> Concur.

<sup>2</sup> There was no data collected in less than 8 meters depth.

<sup>3</sup> The NALL is not applicable to this survey since shoreline verification was not conducted.

<sup>4</sup> Filed with project records.

<sup>5</sup> Concur.

<sup>6</sup> Concur.

<sup>7</sup> Concur.

<sup>8</sup> Concur.

<sup>9</sup> Concur.

<sup>10</sup> Concur.

<sup>11</sup> Concur. The data accurately represents the seafloor despite the SV errors.

<sup>12</sup> Concur. These data are adequate to supersede charted data in the common area.

<sup>13</sup> Do not concur. A memo stating no HVCR was created was submitted. See attached memo.

<sup>14</sup> See attached Tide Note dated October 2, 2006.

<sup>15</sup> Concur. Final approved water levels have been applied to all data.

<sup>16</sup> Concur. The 26 fathom sounding is included in HCell H11582.

<sup>17</sup> Concur.

<sup>18</sup> Concur with clarification. There is a 19fm sounding located at 55-09-31.115N, 160-11-30.192W in the vicinity of a charted 30fm sounding. The 19fm sounding is included in HCell H11582. There is also a 16fm sounding located at 55-08-42.126N, 160-10-04.003W in the vicinity of a charted 22fm sounding. The 16fm sounding is not included in HCell H11582 because there is a nearby 12fm sounding in the junctioning survey H11593.

<sup>19</sup> Concur.

<sup>20</sup> Concur.

<sup>21</sup> Concur.

<sup>22</sup> Concur.

<sup>23</sup> Concur.

<sup>24</sup> Twenty-two bottom samples collected during H11582 are included in the HCell. An additional twenty bottom samples were imported from ENC US4AK57M to be retained.



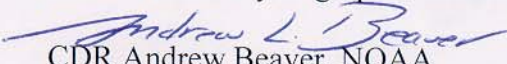


**UNITED STATES DEPARTMENT OF COMMERCE**

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

October 31, 2006

MEMORANDUM FOR: CDR Don Haines, NOAA  
Chief, Pacific Hydrographic Branch

FROM:   
CDR Andrew Beaver, NOAA  
Commanding Officer

TITLE: OPR-P183-FA-06  
Horizontal and Vertical Control Negative Report

A Horizontal and Vertical Control Report for OPR-P183-FA-06 has not been generated.

Section 5.8.1 of the Hydrographic Survey Letter Instructions for project OPR-P183-FA-06, dated May 3, 2006 did not require subordinate water level stations. Datum control for the project was based off the National Water Level Observation Network (NWLON) station at Sand Point, AK (945-9450). No leveling of the gauge was required by the NOAA Ship FAIRWEATHER.

No Aids to Navigation or prominent landmarks requiring high accuracy positioning were located within the project area. Position System Confidence Checks were not conducted during this survey. Section 5.5.2 of the NOS Hydrographic Surveys Specifications and Deliverables (HSSD), dated June 2006, requires the primary positioning system to be checked simultaneously against a separate system with a positional accuracy of better than 10 meters. Two independent USCG differential stations were not available within the project area to conduct the test.

Specific horizontal and vertical control information will be contained with the P183 Descriptive Reports as required.





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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** October 2, 2006

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-P183-FA-2006  
**HYDROGRAPHIC SHEET:** H11582

**LOCALITY:** West Nagai and Vicinity, Shumagin Islands and Vicinity, AK  
**TIME PERIOD:** July 9 - August 28, 2006

**TIDE STATION USED:** 945-9450 Sand Point, AK  
Lat. 55° 19.90'N Long. 160° 30.26' W

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

**REMARKS:** RECOMMENDED ZONING  
Use zone(s) identified as: SWA193A and SWA204A

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).

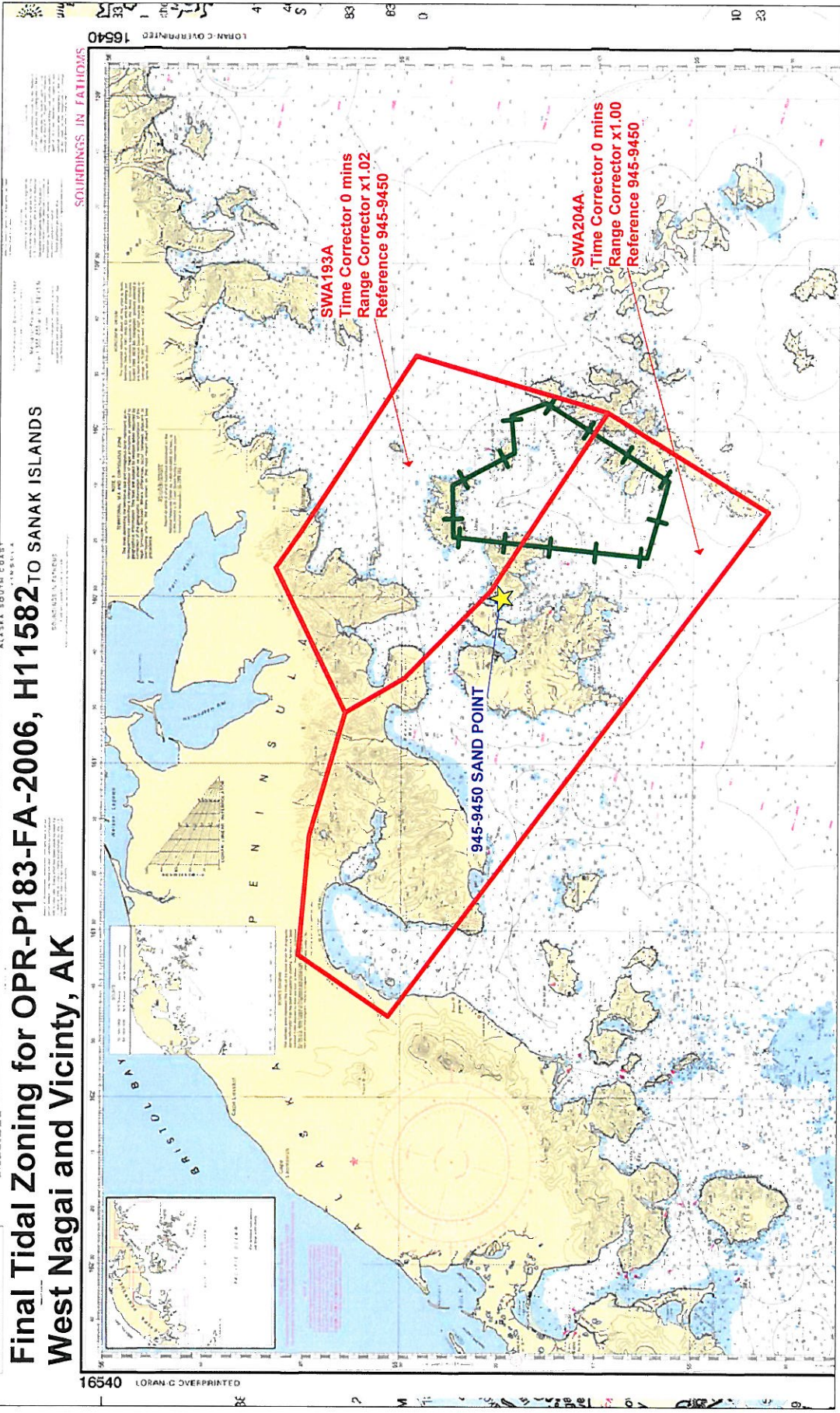
*fm*

  
\_\_\_\_\_  
CHIEF, PRODUCTS AND SERVICES DIVISION





# Final Tidal Zoning for OPR-P183-FA-2006, H11582 to SANAK ISLANDS West Nagai and Vicinity, AK



**Final tide zone node point locations for OPR-P183-FA-2006, H11582**

Format:                   Tide Station (in recommended order of use)  
                               Average Time Correction (in minutes)  
                               Range Correction  
                               Longitude in decimal degrees (negative value denotes Longitude West),  
                               Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone SWA193A	945-9450	0	1.02
-160.413652 55.714204			
-160.84746 55.595838			
-160.742316 55.493253			
-160.481674 55.347903			
-160.176243 55.234593			
-159.945566 55.149017			
-159.91114 55.213315			
-159.777635 55.47708			
-160.317429 55.676669			
-160.413652 55.714204			
Zone SWA204A	945-9450	0	1.00
-160.84746 55.595838			
-161.214616 55.656192			
-161.574022 55.673606			
-161.756807 55.520101			
-160.2432 54.869275			
-159.945566 55.149017			
-160.176243 55.234593			
-160.481674 55.347903			
-160.742316 55.493253			
-160.84746 55.595838			

**H11582 HCell Report**  
Katie Reser, Physical Scientist  
Pacific Hydrographic Branch

**Introduction**

The primary purpose of the HCell is to provide new survey information in International Hydrographic Organization (IHO) format S-57 to update the largest scale ENC and RNCs in the region: NOAA ENC US4AK57M and NOAA RNC 16553.

HCell compilation of survey H11582 used Office of Coast Survey HCell Specifications Version 3.0 and HCell Reference Guide Version 1.0.

**1. Compilation Scale**

Depths for HCell H11582 were compiled to the largest scale chart in the region, 16553, 1:80,000. The density and distribution of soundings from H11582 were selected to emulate the distribution on chart 16553. Non-bathymetric features have been generalized to chart scale.

**2. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 8-meter combined surface, **20m\_Combined**, in CARIS BASE Editor. A shoal-biased selection was made at 1:15,000 scale for the main chart area using a Radius Table file with values shown in the table, below. The resultant sounding layer contains depths ranging from 29.3 to 250.5 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0 10		3
10 20		4
20 50		4.5
50	350	5

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

**3. Depth Areas and Depth Contours**

**3.1 Depth Areas**

The extents of the highest resolution BASE Surface together with the extents of the soundings layer were used to digitize the hydrographic extents, which were then used to

create the single, all encompassing depth area (DEPARE). One depth range, from 0 to 350 meters, was used for the depth area object. Upon conversion to NOAA charting units, the depth range is 0 to 191.4 fathoms.

### 3.2 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 generalized metric and fathom equivalent contour values are shown in the table below.

Chart Contours in Fathoms	Metric Equivalent of Chart Contours	Metric Equivalent of Chart Contours NOAA Rounded	Actual Value of Chart Contours
0 0.00		0.2286	0.00
5 5.4864		5.715	3.125
10 18.288		18.5166	10.125
20 36.576		37.9476	20.750
50 91.44		92.8116	50.750
100 182.88		184.2516	100.75
150 274.32		275.6916	150.75
200 365.76		367.1316	200.75
250 457.2		458.5716	250.75
300 548.64		550.0116	300.75
350 640.08		641.4516	350.75

Contours delivered in the \*\_SS file 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 results in conflicts between the \*\_SS file contours and HCell features at or near the survey limits. Conflicts with M\_COVR, M\_QUAL, and DEPARE objects should be expected. HCell features should be honored over \*\_SS.000 file contours in all cases where conflicts are found.

### 4. Meta Areas

The following Meta object areas are included in HCell 11582:

M\_QUAL  
M\_COVR

Meta area objects were constructed on the basis of the limits of the hydrography. (See 3.1 *Depth Areas*.)

### 5. Features

There was no shoreline verification conducted during survey H11582.



Twenty-two bottom samples were collected during H11582 and are included in the HCell. An additional twenty bottom samples were imported from ENC US4AK57M to be retained.

There were no DTONs reported from survey H11582.

There were no AWOIS items investigated during survey H11582.

The source of all features included in the H11582 HCell can be determined by the SORIND field.

## **6. S-57 Objects and Attributes**

The \*\_CS HCell contains the following Objects:

SOUNDG	Chart scale soundings
DEPARE	All-encompassing depth area and intertidal areas
SBDARE Bottom	samples
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
\$CSYMB	Blue notes

The \*\_SS HCell contains the following Objects:

SOUNDG	Soundings at the survey scale density
DEPCNT	NOAA rounded contours at chart scale intervals

All S-57 Feature Objects in the \*\_CS HCell have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with current guidance and the OCS HCell Specifications.

## **7. Blue Notes**

Notes to the RNC and ENC chart compilers are included in the HCell as \$CSYMB features with the Blue Note information located in the INFORM field. The NINFOM field is populated with the charting disposition

## **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, and therefore have lower precision. 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

Conversion to charting units and application of NOAA rounding is completed in the same step, at the end of the HCell compilation process.

Conversion to fathoms and feet charting units with NOAA rounding ensures that:

- All depths deeper or equal to 11 fathoms display as whole fathoms.
- All depth units between 0 fathoms (MLLW) and 11 fathoms display as fathoms and whole feet.
- All depth units above MLLW (0 fathoms) to 2.0 feet above MHW display in feet for values that round to 5 feet or less, and in fathoms and feet above that.
- All height units (HUNI) which have been converted to charting units, and that are 2.0 feet above MHW and greater, are shown in feet.

In an ENC viewer fathoms and feet depth units (DUNI) display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. In an ENC viewer, heights (HUNI) display as whole feet.

## 9. Data Processing Notes

### 9.1 Junctions

H11582 junctions with surveys H11580, H11593, H11594, H11595, and H11596. H11580 has already been compiled and a common junction was made between the



	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.
Newport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

## 12. Contacts

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

Katie Reser, Physical Scientist, PHB, Seattle, WA; 206-526-6864;  
[Katie.Reser@noaa.gov](mailto:Katie.Reser@noaa.gov).

APPROVAL SHEET  
H11582

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

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

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