

H11587

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.* ..... H11587

### LOCALITY

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

*General Locality* ..... Southwest Alaska Peninsula

*Sublocality* ..... 11 Nautical Miles East-Southeast Mitrofanina Island

**2006**

### CHIEF OF PARTY

..... E.J. Van Den Aamele LCDR, NOAA

### LIBRARY & ARCHIVES

**DATE** .....

## HYDROGRAPHIC TITLE SHEET

H11587

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 AlaskaGeneral Locality Southwest Alaska PeninsulaSublocality 11 Nautical Miles East-Southeast Mitrofanina IslandScale 1:40,000Date of Survey May 28, 2006 - August 30, 2006Instructions Dated 4/27/2006Project No. OPR-P182-FA-06Vessel NOAA Ship FAIRWEATHERChief of Party LCDR E.J. Van Den Ameele, NOAASurveyed by CST Grant Froelich, LT Jennifer Dowling (FOO), ENS Guinevere R. LewisSoundings taken by echo sounder Reson 8111ERGraphic record scaled by N/AGraphic record checked by N/AEvaluation by E. Campbell Automated plot by N/AVerification by E. Campbell, K. ReserSoundings in Fathoms and Feet at MLLWREMARKS: 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 H11587

Project OPR-P182-FA-06  
Southwest Alaska Peninsula, Alaska  
Scale 1:40,000  
June 2006

## NOAA Ship FAIRWEATHER

Chief of Party: LCDR Edward J. Van Den Ameele, NOAA

### A. AREA SURVEYED

The survey area was located in Southwest Alaska Peninsula, within the sub-locality of 11 nautical miles East-Southeast of Mitrofanía Island. This survey corresponds to Sheet BC 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°42'00"N, 158°45'00"W and the Northeast corner at 56°00'00"N, 158°00'00"W.

Data acquisition was conducted from May 28 to Aug 30 2006 (DN 148 to DN 242).

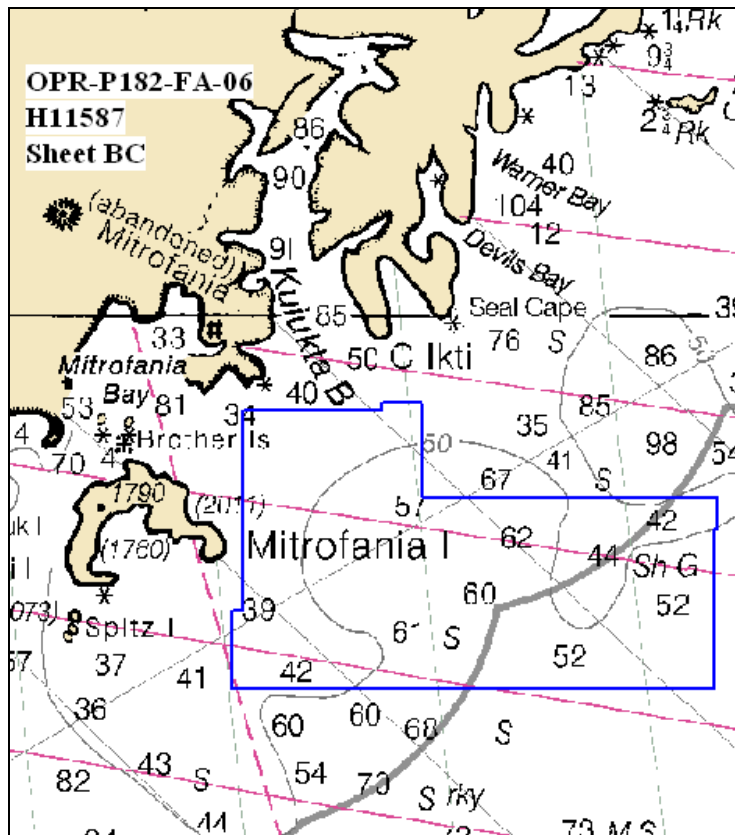


Figure 1: H11587

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area.<sup>1</sup> When conditions allowed, multibeam echosounder (MBES) data was acquired parallel to contours. No shoreline data was acquired for H11587.<sup>2</sup>

<b>MAIN SCHEME - Mileage</b>	
Single Beam MS	<u>0</u>
Multibeam MS mileage	<u>1068.28451</u>
SideScan MS	<u>0</u>
<b>Total MS</b>	<u>1068.28451</u>
<b>CROSSLINE - Mileage</b>	
Single Beam XL	<u>0</u>
Multibeam XL	<u>80.6263067</u>
<b>Total XL</b>	<u>80.6263067</u>
<b>OTHER</b>	
Developments/AWOIS - Mileage	<u>0</u>
Shoreline/Nearshore Investigation - Mileage	<u>0</u>
<b>Total # of Investigated Items</b>	<u>0</u>
<b>Total Bottom Samples</b>	<u>14</u>
<b>Total SNM</b>	<u>196.3</u>
<b>Specific Dates of Acquisition</b>	<u>May 28-31, June 1, 7-8, 25-26, Aug. 30</u>
<b>Specific Dn#s of Acquisition</b>	<u>Dn 148-152, 158-159, 176-177, 242</u>

## 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-P182-FA-06 Data Acquisition and Processing Report (DAPR)*<sup>3</sup>, submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P182-FA, dated April 27th 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
<b>Hull Registration Number</b>	S220
<b>Builder</b>	Aerojet-General Shipyard
<b>Length Overall</b>	231 feet
<b>Beam</b>	42 feet
<b>Draft, Maximum</b>	15' 6"
<b>Cruising Speed</b>	12.5 knots
<b>Max Survey Speed</b>	10 knots
<b>Primary Echosounder</b>	RESON 8111 & RESON 8160
<b>Sound Velocity Equipment</b>	SBE 19plus & 45, MVP 200
<b>Attitude &amp; Positioning Equipment</b>	POS/MV V3
<b>Type of operations</b>	MBES

*Table 1: Vessel Inventory*

## B2. Quality Control

Internal consistency and integrity of data collected for survey H11587 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11587 were found to meet the accuracy standards in section 5.2.1 of the June 2006 *NOS Hydrographic Surveys Specifications and Deliverables (HSSD)* manual which correlates to the standards of IHO Order 2.<sup>4</sup>

### Crosslines

Shallow water multibeam crosslines for this survey totaled 80.62 linear nautical miles (lnm), comprising 7.55% of the 1068.28 lnm of total SWMB hydrography.

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>5</sup>

### Junctions

OPR-P182-FA-06 JUNCTIONS<sup>6</sup>:

Survey H11587 junctions with survey H11477; sheet AW of project OPR-P183-RA-05. No junction data was included with the project files therefore a comparison was not able to be conducted.<sup>7</sup>

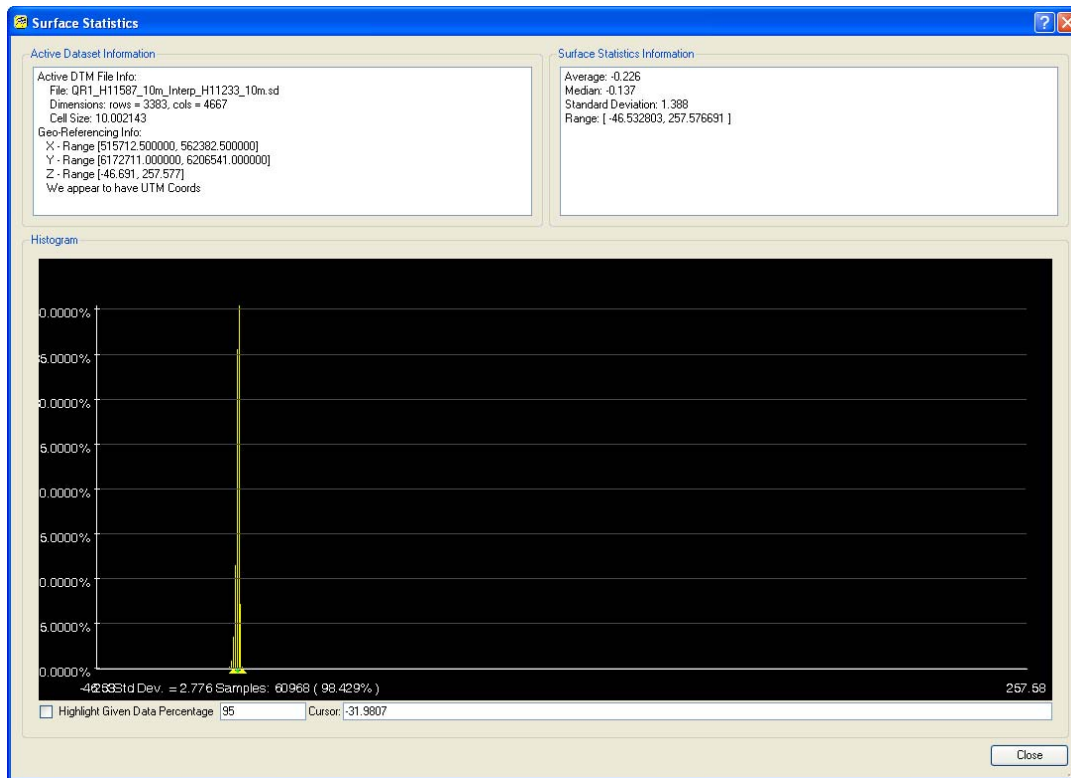
Survey H11587 junctions with survey H11476; sheet AT of project OPR-P182-RA-05. No junction data was included with the project files therefore a comparison was not able to be conducted.<sup>8</sup>

Survey H11587 junctions with survey H11233; sheet AS of project OPR-P182-RA-03. The junction data that was provided with the project files was imported into Fledermaus where a BASE surface comparison

was done; refer to figure 2 and table 2. The surfaces were found to be consistent between the two surveys, meeting the accuracy requirements as stated in section 5.2.1 of the *HSSD*.<sup>9</sup>

Difference surface comparison for H11587 BASE surface			
	Average	Median	Standard Deviation
<b>H11233</b>	-0.226 meter	-0.137 meters	1.388
<b>H11462</b>	-0.138 meters	-0.064 meters	0.541
<b>H11464</b>	-0.370 meters	-0.058 meters	3.666
<b>H11325</b>	0.322 meters	0.610 meters	3.500

**Table 2: Junction data Fledermaus surface comparison to H11587**



**Figure 2: Fledermaus surface comparison for H11233**

Survey H11587 junctions with survey H11462; sheet AJ of project OPR-P182-KR-05. The data that was provided with the project files was imported into Fledermaus where a BASE surface comparison was done; refer to figure 3 and table 2. The surfaces were found to be consistent between the two surveys, meeting the accuracy requirements as stated in section 5.2.1 of the *HSSD*.<sup>10</sup>

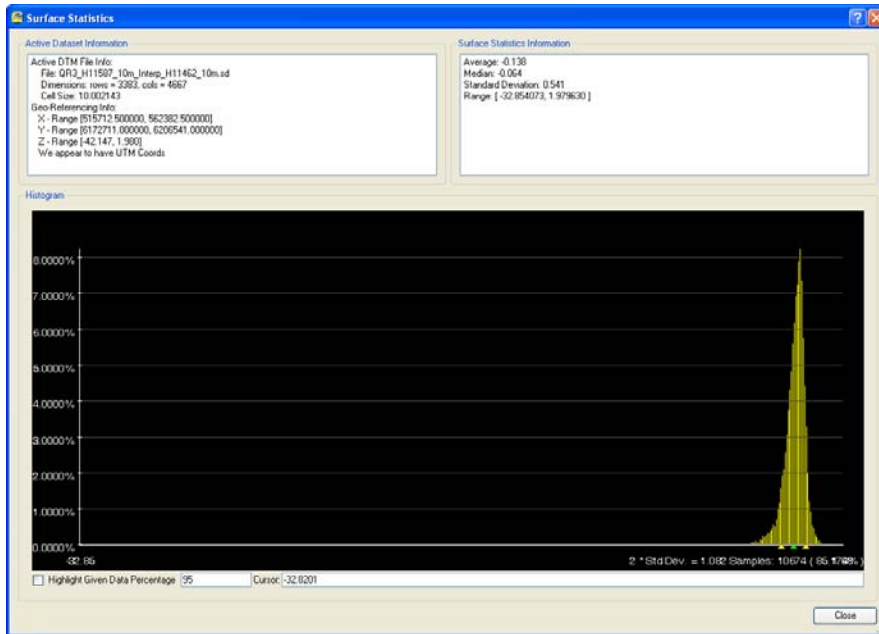


Figure 3: Fledermaus surface comparison for H11462

Survey H11587 junctions with survey H11464; sheet AL of project OPR-P182-KR-05. The data that was provided with the project files was imported into Fledermaus where a BASE surface comparison was done; refer to figure 4 and table 2. The surfaces were found to be consistent between the two surveys, meeting the accuracy requirements as stated in section 5.2.1 of the *HSSD*.<sup>11</sup>

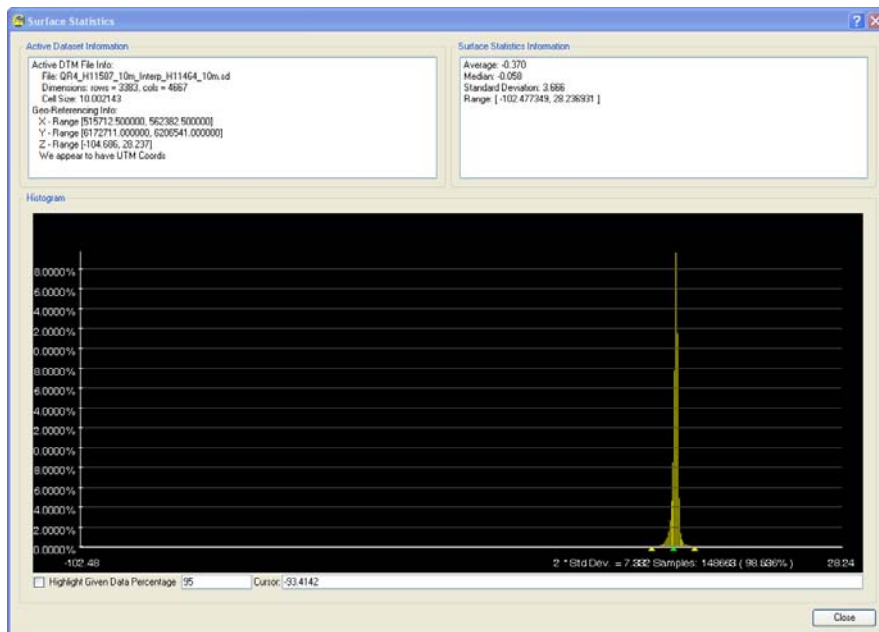
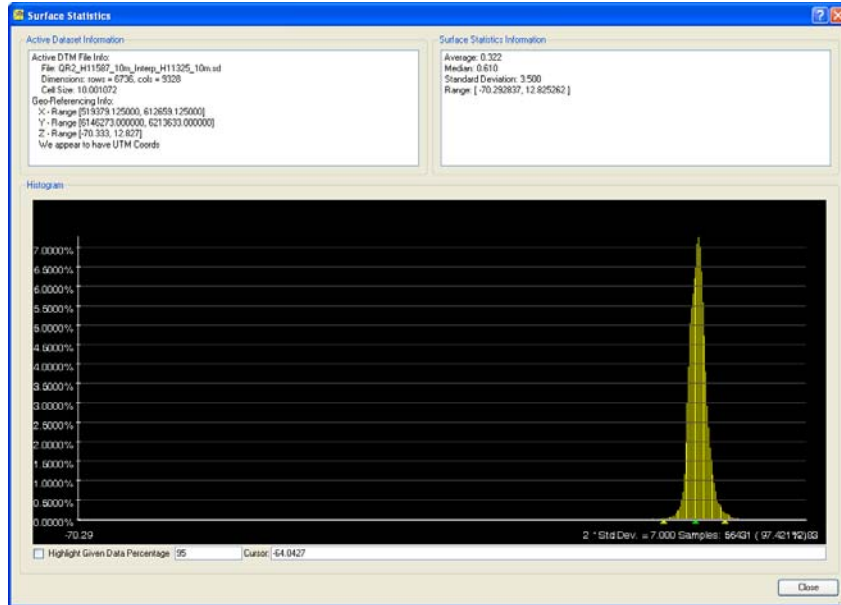


Figure 4: Fledermaus surface comparison for H11464

Survey H11587 junctions with survey H11325; sheet AV of project OPR-P182-RA-04. The data that was provided with the project files was imported into Fledermaus where a base surface comparison was done; refer to figure 5 and table 2. The surfaces were found to be consistent between the two surveys, meeting the accuracy requirements as stated in section 5.2.1 of the *HSSD*.<sup>12</sup>



**Figure 5: Fledermaus surface comparison for H11325**

The areas of junction for H11587 and H11476, H11233, H11462, H11464, H11325 and H11477 are shown in Figure 6.



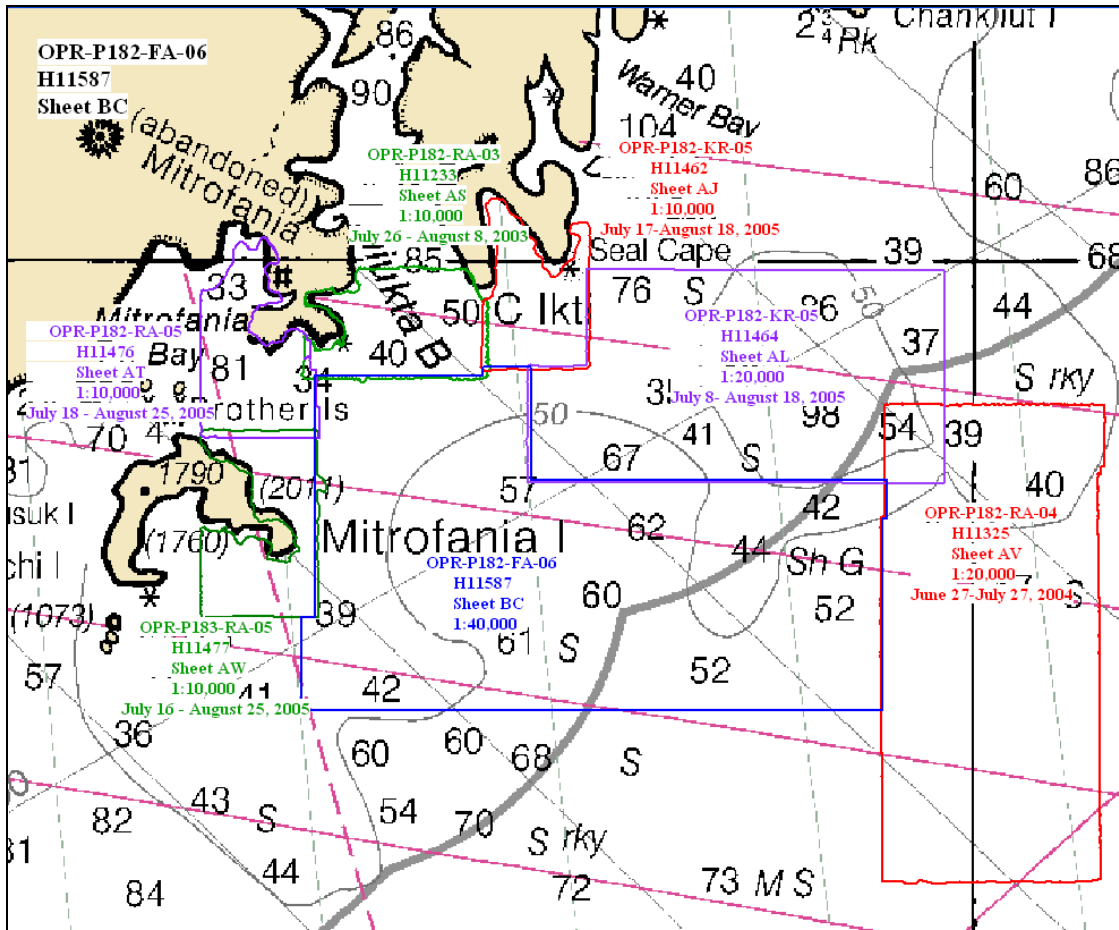


Figure 6: Junctions between H11587 and H11325, H11464, H11462, H11233, H11476, and H11477

### Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-P182-FA-06 Data Acquisition and Processing Report (DAPR)*.

### Data Quality Factors

#### COVERAGE ASSESSMENT:

Coverage Assessment followed procedures as outlined in the *DAPR*.<sup>13</sup>

Depth Ranges (m)		Resolution (m)
Low	High	
50	120	10
100	200	20
180	350	35

Table 3: Depth Ranges and Resolutions

**DESIGNATED SOUNDINGS:**

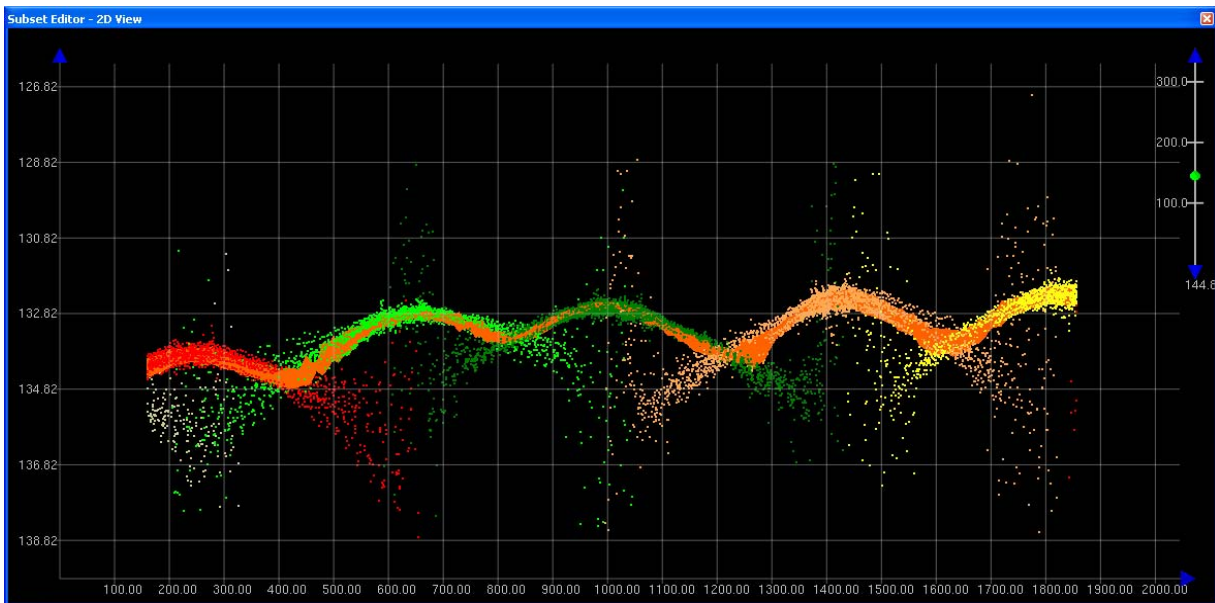
Designation of soundings followed procedures as outlined in the DAPR.

**TRUEHEAVE:**

TrueHeave data could not be applied to MBES data from May 31, 2006 (DN 151), due to a corrupt file. MBES data quality from that day does not appear to have been affected by the lack of TrueHeave, due to the negligible swell during data collection that day. Additionally, data were compared with crosslines and overlapping data with TrueHeave applied, and no heave artifact was present in the data from DN 151.<sup>14</sup>

**SOUND VELOCITY:**

Sound velocity issues were present in some of the MBES data for H11587; refer to figure 7. This illustrates the most extreme example of SV issues on this survey. However, upon further review in CARIS subset mode it was determined that the discrepancies fell well within the allotted *HSSD* error standards which correlate with the IHO error standards for the depth of water present<sup>15</sup>; refer to figure 8.



**Figure 7: Sound Velocity profile for H11587**

IHO Special Order	IHO Order 1	IHO Order 2
<b>IHO Order 2</b>		
Input depth of area in question in box labeled Input depth and press Calculate to determine IHO Order 2 acceptable error level.		
Input Depth (m)	$\pm \sqrt{a^2 + (b * d)^2}$	Acceptable Error (m)
130.00		+/- 3.153
<small>where a = sum of constant errors (1.0m), b = factor of depth dependant error (0.023) and d = depth (m)</small>		

**Figure 8: IHO Order 2 allowable error for 130m of water**

### **Accuracy Standards**

All data meet the data accuracy specifications as stated in the *HSSD* and the *DAPR*.<sup>16</sup>

### **B3. Corrections to Echo Soundings**

Data reduction procedures for survey H11587 conform to those detailed in *DAPR*.<sup>17</sup>

## **C. HORIZONTAL AND VERTICAL CONTROL**

A complete description of horizontal and vertical control for survey H11587 can be found in the *OPR-P182-FA-06 Horizontal and Vertical Control Report*,<sup>18</sup> 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). GPS was the sole method of positioning. Differential corrections were not available due to extended distance from U.S. Coast Guard beacons, and the inability to set up a fly away station. During data acquisition the ship's POS-MV was run in C/A mode and horizontal accuracy did not exceed 5 meters. During acquisition the POS-MV accuracy window was monitored to ensure the horizontal accuracy did not exceed 5 meters + 5 percent of the depth, as stated in the requirements section 3.1. Horizontal Position Accuracy of the *HSSD*. Data logging was stopped if the horizontal accuracy exceeded 5 meters.

### **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, AK (945-9450) served as control for datum determination and as the primary source for water level reducers for survey H11587 during acquisition..

Contract workers installed a tide gauge at the tertiary station listed below. The gauge was installed in order to provide information to the Center for Operational Oceanographic Products and Services (CO-OPS N/OPS1) for the determination of time and height correctors, in accordance with the Project Instructions.

<b>Station Name</b>	<b>Station Number</b>	<b>Type of Gauge</b>	<b>Date of Installation</b>	<b>Date of Removal</b>
Mitrofanis Is., AK	945-9016	Tertiary 30 Day	Unknown	Unknown

A request for delivery of final approved water level data (smooth tides) for survey H11587 was forwarded to N/OPS1 on September 25, 2006 in accordance with the *Field Procedures Manual v2.1 Beta*, dated

December, 2005 (FPM). A copy of the request is included in Appendix V.

As per the Letter Instructions, all data were reduced to MLLW using the predicted water levels with preliminary zoning from station Mitrofanina Is, AK by applying tide file 9459016.tid and time and height correctors through the zone corrector file P182FA2006CORP.zdf. It will be necessary for the Pacific Hydrographic Branch to apply the final approved water levels (smooth tides) to the survey data during final processing.<sup>19</sup>

## **D. RESULTS AND RECOMMENDATIONS**

### **D.1 Chart Comparison**

Chart comparison procedures were followed as outlined in the *DAPR*.

Survey H11587 was compared with charts 16011 (36<sup>th</sup> Ed.; August 1, 2004, 1:1023,188), 16013 (29<sup>th</sup> Ed.; November 1, 2003, 1:969,761), and 16561 (2<sup>nd</sup> Ed.; March 1, 2005, 1:80,000). All charts have been updated with the Notice to Mariners through April 15, 2006 and the most recent Notice to Mariners from November 4, 2006 was consulted. There were no new changes within the survey area.

H11587 covers sparsely surveyed areas as shown on all three published charts. The comparison to the charts can only reflect variations among these few charted soundings.

#### **Chart 16561**

Depths from survey H11587 generally agreed within one to two fathoms with depths on chart 16561.<sup>20</sup>

#### **Chart 16013 and Chart 16011**

Depths from survey H11587 generally agreed within one to two fathoms with depths on chart 16013 and chart 16011.<sup>21</sup> Chart 16013 and chart 16011 are small scale charts with very limited soundings, refer to Figure 8 and 9 below. However a few of the same discrepancies were present in both chart comparisons. The two 52 fathom soundings on the eastern portion of the sheet limit were not representative of the surrounding depths<sup>22</sup>; refer to figure 10 and 11 below.

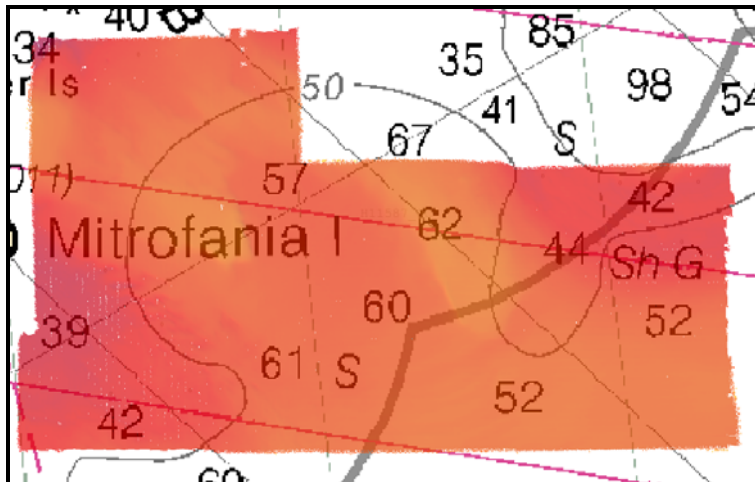


Figure 8. Chart (16013)

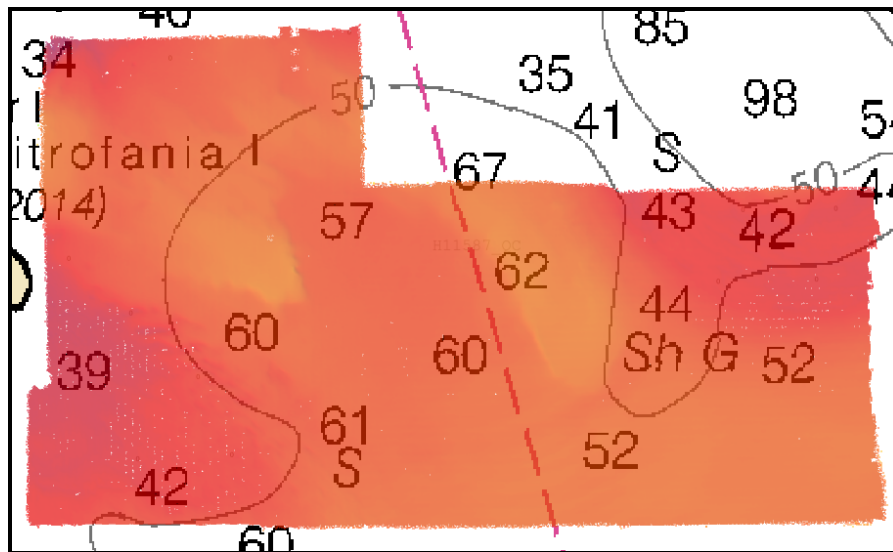
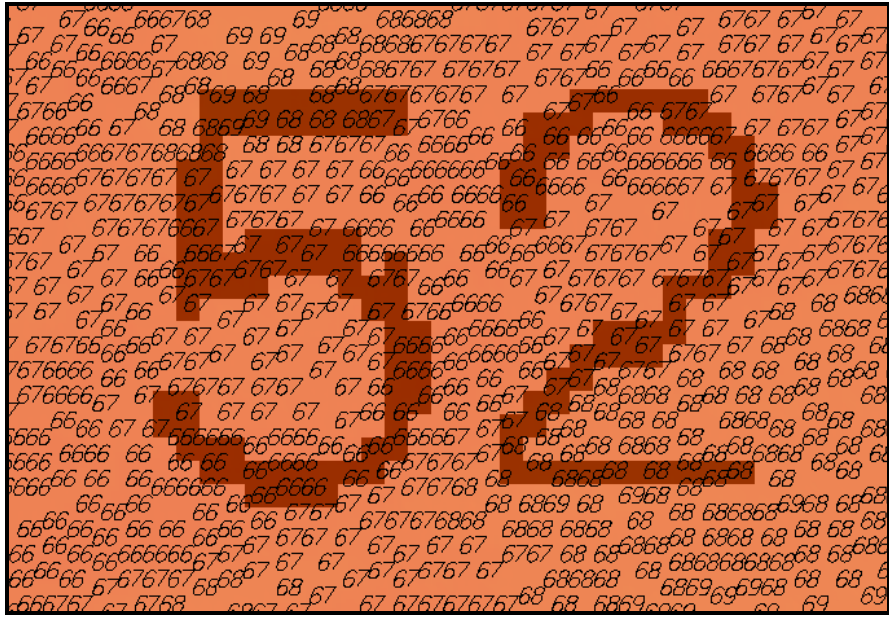
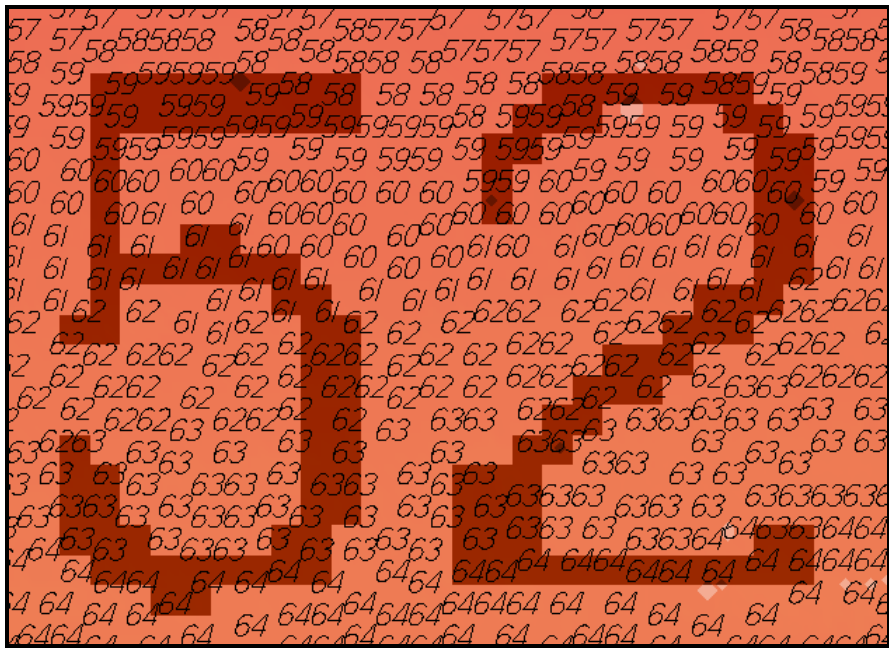


Figure 9. Chart (16011)



**Figure 10. Charted (16011) 52 fathom sounding (lower south east portion) and surrounding soundings from BASE surface**



**Figure 11. Charted (16011) 52 fathom sounding ( eastern portion) and surrounding soundings from BASE surface**

### Chart Comparison Recommendations

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

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.<sup>24</sup>

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

There were no AWOIS items located within the limits of H11587.<sup>25</sup>

### **Dangers to Navigation**

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

## **D.2 Additional Results**

### **Aids to Navigation**

There were no Aids to Navigation within the survey limits.<sup>27</sup>

### **Bottom Samples**

Bottom samples were collected on August 30, 2006 (DN 242) and are included as seabed classifications along with the other S57 features in the Pydro Preliminary Smooth Sheet.<sup>28</sup> The bottom sample positions were also imported to the Notebook H11587\_Updates.hob file.

## **E. Supplemental Reports**

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

<u><b>Title</b></u>	<u><b>Date Sent</b></u>	<u><b>Office</b></u>
Hydrographic Systems Readiness Review 2006	6/2/2006	N/CS34
OPR-P182-FA-06 Data Acquisition and Processing Report	TBD	N/CS34
OPR-P182-FA-06 Horizontal and Vertical Control Report	10/31/2006	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

March 26, 2007

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

FROM: LCDR E.J. Van Den Ameele, NOAA *EJ VanDenAmeele* EJ VanDenAmeele  
Executive Officer 2007.05.02 15:01:36  
-08'00'

TITLE: Approval of Hydrographic Survey H11587,  
OPR-P182-FA-06

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11587 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:

*Guinevere R. Lewis* Date: 2007.05.03  
17:13:16 Z

LTjg Guinevere R. Lewis  
Survey Manager

*Jennifer N. Dowling* Jennifer Dowling  
2007.05.02 14:53:40  
-08'00'

LT Jennifer Dowling  
Field Operations Officer

*Grant Froelich* Digitally signed by Grant  
Froelich  
Date: 2007.05.02 23:53:09 Z

CST Grant Froelich  
Chief Survey Technician

Attachment





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

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<sup>1</sup> Concur.

<sup>2</sup> Concur.

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

<sup>4</sup> Concur with clarification. Given the depth range of this survey, depths less than 100m must conform to IHO Order 1 specifications. All data in this survey meet specifications and are adequate to supersede charted data in the common area.

<sup>5</sup> Concur.

<sup>6</sup> H11587 also junctions with H11521 from OPR-P182-KR-06. At the time of this survey H11521 had not been completed. A cursory comparison during compilation shows good agreement in the junction area.

<sup>7</sup> A cursory comparison during compilation shows good agreement in the junction area.

<sup>8</sup> A cursory comparison during compilation shows good agreement in the junction area.

<sup>9</sup> Concur.

<sup>10</sup> Concur.

<sup>11</sup> Concur.

<sup>12</sup> Concur.

<sup>13</sup> The depth ranges and resolutions used by the field were modified during the survey acceptance review. Since the greatest depth in the area was just at 143 meters, it was determined that a 10-meter single resolution surface was more than adequate to represent the seafloor at that depth.

<sup>14</sup> Concur. Data meets specifications despite not having True Heave applied.

<sup>15</sup> Concur.

<sup>16</sup> Concur. These data are adequate to supersede charted data in the common area.

<sup>17</sup> Concur.

<sup>18</sup> Do not concur. A negative HVCR memo was submitted. See attached memo.

<sup>19</sup> Final approved water levels were applied to all data during the survey acceptance review.

<sup>20</sup> Concur.

<sup>21</sup> Concur.

<sup>22</sup> Concur.

<sup>23</sup> Concur.

<sup>24</sup> Cursory chart comparisons during compilation agree with field comparisons.

<sup>25</sup> Concur.

<sup>26</sup> Concur.

<sup>27</sup> Concur.

<sup>28</sup> Concur with clarification. No S-57 features other than the bottom samples were submitted with survey H11587. The fourteen bottom samples collected during H11587 are included in the HCell along with three charted bottom samples to be retained.

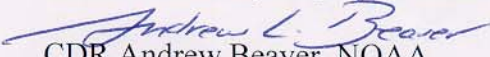


**UNITED STATES DEPARTMENT OF COMMERCE**

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-P182-FA-06  
Horizontal and Vertical Control Negative Report

A Horizontal and Vertical Control Report for OPR-P182-FA-06 has not been generated.

Section 5.8.1 of the Hydrographic Survey Letter Instructions for project OPR-P182-FA-06, dated April 27, 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 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 P182 Descriptive Report 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 :** February 21, 2007

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-P182-FA-2006  
**HYDROGRAPHIC SHEET:** H11587

**LOCALITY:** 11 NM E-Southeast of Mitrofanina island, AK  
**TIME PERIOD:** May 28 - June 26, 2006

**TIDE STATION USED:** 945-9016 Mitrofanina, AK  
Lat. 55° 53.4'N Long. 158° 49.20' W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 2.121 meters

**REMARKS: RECOMMENDED ZONING**  
Use zone(s) identified as: SWA169, SWA180 & SWA181

**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).

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



**Final tide zone node point locations for OPR-P182-FA-2006, H11587**

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 SWA169	945-9016	0	1.09
-158.357095 56.192143			
-158.352707 56.167654			
-158.358384 56.13423			
-158.152343 56.052012			
-158.050094 56.010801			
-157.661601 55.871655			
-157.142303 55.760791			
-157.229433 55.659196			
-157.310831 55.570259			
-157.934326 55.778669			
-158.239463 55.914375			
-158.421429 56.007001			
-158.483459 56.039447			
-158.510936 56.038617			
-158.48576 56.070531			
-158.523965 56.114338			
-158.477124 56.130876			
-158.477124 56.130876			
-158.430272 56.19459			
-158.357095 56.192143			
Zone SWA180	945-9016	0	1.05
-157.310831 55.570259			
-157.934326 55.778669			
-158.239463 55.914375			
-158.421429 56.007001			
-158.483459 56.039447			
-158.510936 56.038617			
-158.556712 56.03303			
-158.646196 56.017708			
-158.671891 55.997061			
-158.695213 55.986881			
-158.694834 55.973475			
-158.681231 55.953931			
-158.504524 55.833366			

-158.207958 55.662824  
-157.434421 55.337217  
-157.310831 55.570259  
Zone SWA181  
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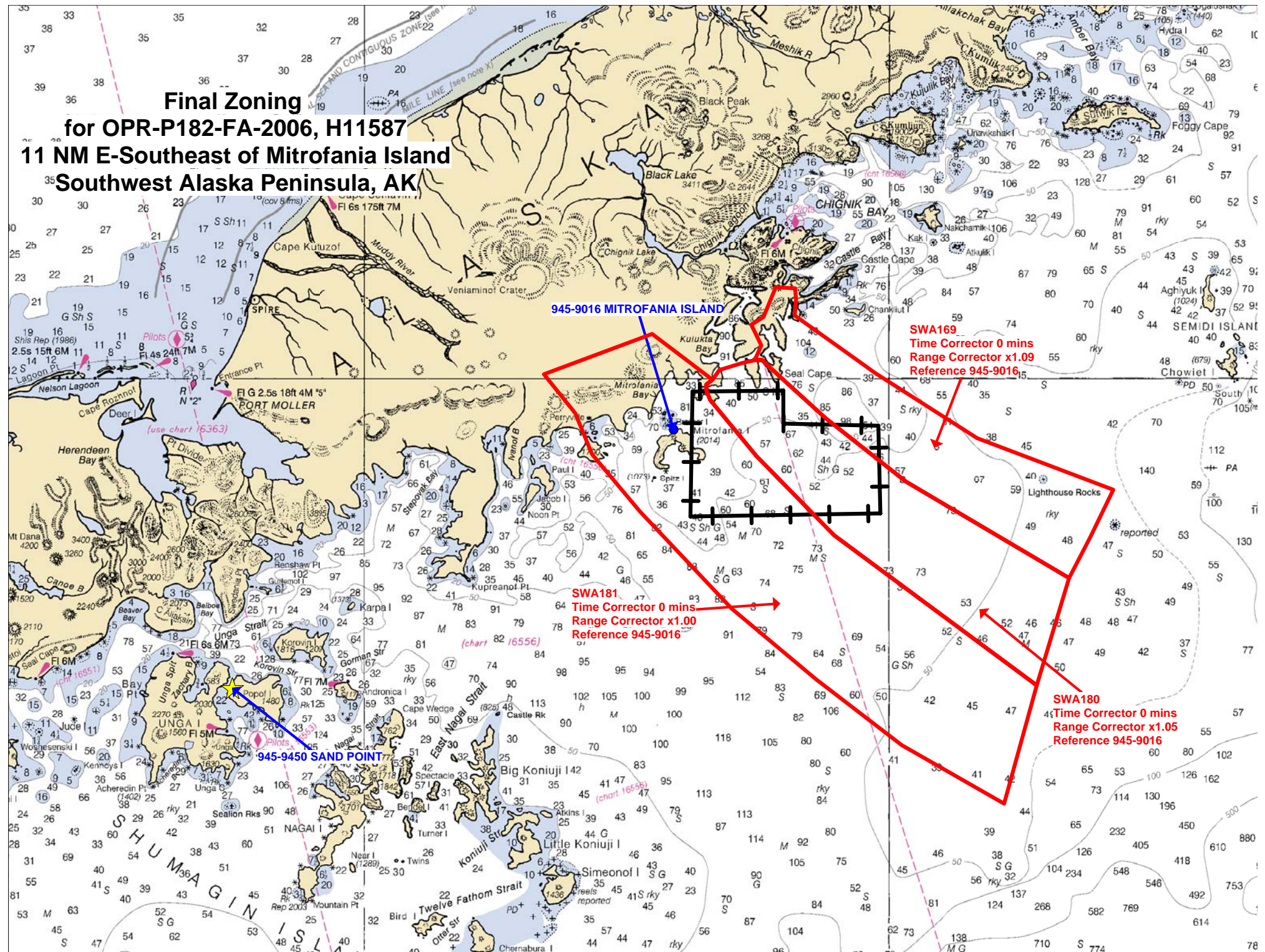
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**Final Zoning  
for OPR-P182-FA-2006, H11587  
11 NM E-Southeast of Mitrofanía Island  
Southwest Alaska Peninsula, AK**



**H11587 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 ENC and RNCs in the region: NOAA ENC US4AK59M, and NOAA RNC 16561.

HCell compilation of survey H11587 used Office of Coast Survey HCell Specifications Version 3.1 and HCell User Guide Version 1.2.

**1. Compilation Scale**

Depths for HCell H11587 were compiled to the largest scale chart in the region, 16561, 1:80,000. Much of the chart coincident with H11587 was previously unsurveyed, so density and distribution of soundings emulate more fully surveyed chart areas north of H11587.

**2. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 10-meter single resolution surface, **H11587\_50to150\_10m\_Final**, in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 scale using a Radius Table file with values shown in the table, below. The resultant sounding layer contains 53,613 depths ranging from 49.4 to 142.6 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	250	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 250 meters, was used for depth area objects. Upon conversion to NOAA charting units, the depth range is 0 to 136 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

Contours delivered in the \*\_SS file have not been deconflicted against 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 11587:

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

Fourteen bottom samples were delivered from the field and are included in the H11587 HCell. Three charted bottom samples in the survey area are included in the H11587 HCell to be retained.

The source of all features included in the H11587 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
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 survey registry number, chart number, chart edition and edition date.

## 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**

H11587 junctions with surveys H11476, H11477 and H11521, all of which have already been compiled. A common junction was made between the surveys. The junction with H11522 will be made when that survey is compiled.

## **10. QA/QC and ENC Validation Checks**

H11587 was subjected to QA checks in S-57 Composer prior to exporting to the HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to a 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 have been approved by MCD as inherent to and acceptable for HCells.

## 11. Products

### 11.1 HSD, MCD and CGTP Deliverables

- H11587 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11587 Base Cell File, Chart Units, Soundings compiled to 1:20,000
- H11587 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items

### 11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings H11587\_CS.000
- Chart units base cell file, survey scale soundings H11587\_SS.000
- Descriptive Report H11587\_DR.pdf

### 11.3 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.1	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. 2.0	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1	Validation of the base cell file.
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  
H11587

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

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

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