

H11406

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.* ..... H11406

### LOCALITY

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

*General Locality* ..... Ernest Sound and Eastern Passage

*Sublocality* ..... Southern Portion of Blake Canal

**2005**

### CHIEF OF PARTY

..... CDR John E. Lowell, Jr., NOAA

### LIBRARY & ARCHIVES

DATE .....

## HYDROGRAPHIC TITLE SHEET

H11406

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 Ernest Sound and Eastern PassageSublocality Southern Portion Blake CanalScale 1:10,000Date of Survey April 10, 2005-April 20, 2005Instructions Dated 1/4/2005Project No. OPR-O119-FA-05Vessel NOAA Ship FAIRWEATHER, Launch 1010, Launch 1018, Fast Rescue Boat 2301Chief of Party CDR John E. Lowell, Jr., NOAASurveyed by FAIRWEATHER personnelSoundings taken by echo sounder RESON 8101ER and RESON 8111Graphic record scaled by N/AGraphic record checked by N/AEvaluation by D. Sinson Automated plot by HP Designjet 1050CVerification by D. Sinson, K. ReserSoundings in Fathoms and Feet at MLLWREMARKS: Time in UTC. UTM Projection Zone 9

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.

The UTM zone on the original Title Sheet was found to be incorrect. This Title Sheet has been updated with the correct UTM zone.

*Kate J. Reser* Katie Reser  
2008.12.05  
14:06:16 -08'00'

# Descriptive Report to Accompany Hydrographic Survey H11406

Project OPR-O119-FA  
Eastern Passage, Alaska

Scale 1:10,000

April 2005

**NOAA Ship FAIRWEATHER**

Chief of Party: Captain John E. Lowell, Jr., NOAA

## A. AREA SURVEYED

The survey area was located in Ernest Sound and Eastern Passage, within the sub-locality of the Southern portion of Blake Canal. This survey corresponds to Sheet D 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 56°12'00"N, 132°03'00"W and the Northeast corner at 56°20'00"N, 131°53'00"W.

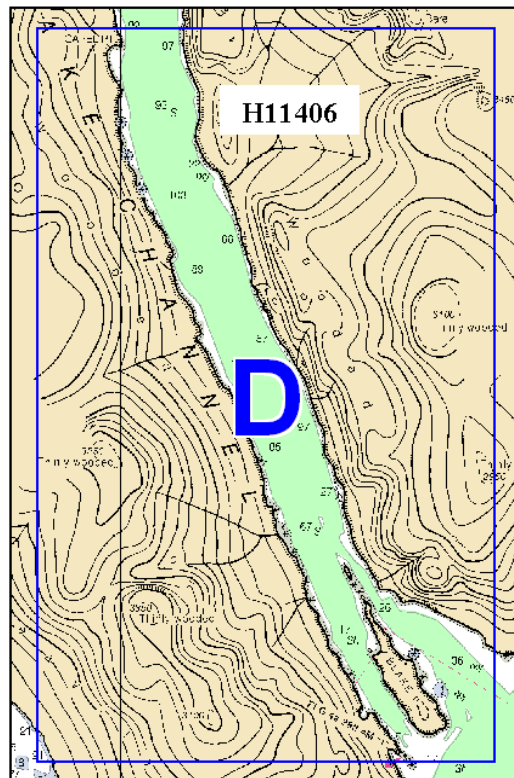


Figure 1: OPR-O119 H11406 Sheet D Survey Limits

Data acquisition was conducted from April 10 to April 20, 2005 (DN 100 to DN 110).

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area to depths of eight meters wherever possible. Additional coverage was obtained in order to determine least depths over features or shoals.

Shoreline data were also acquired for survey H11406. All objects were assigned S-57 attribution for submittal.

## B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems and survey vessels can be found in the *NOAA Ship FAIRWEATHER Hydrographic Systems Certification Report 2005*, submitted under a separate cover.<sup>1</sup> Quality control procedures and data processing methods are listed and described in the *OPR-O119-FA-05 Data Acquisition and Processing Report (DAPR)*, submitted under separate cover.<sup>2</sup> Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections.

### B1. Equipment and Vessels

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

	FAIRWEATHER	Launch 1010	Launch 1018	Fast Rescue Boat
<b>Hull Registration Number</b>	S220	1010	1018	2301
<b>Builder</b>	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	Zodiac of N. America
<b>Length Overall</b>	231 feet	28' 10"	28' 10"	23'
<b>Beam</b>	42 feet	10' 8"	10' 8"	8' 6"
<b>Draft, Maximum</b>	15' 6"	4' 0" DWL	4' 0" DWL	1' 5"
<b>Cruising Speed</b>	12.5 knots	24 knots	24 knots	20 knots
<b>Max Survey Speed</b>	10 knots	10 knots	10 knots	
<b>Primary Echosounder</b>	RESON 8111 & RESON 8160	RESON 8101	RESON 8101	
<b>Sound Velocity Equipment</b>	SBE 19plus & 45, MVP 200	SBE 19plus	SBE19plus	
<b>Attitude &amp; Positioning Equipment</b>	POS/MV V3	POS/MV V3	POS/MV V3	
<b>Type of operations</b>	MBES	MBES	MBES, Tide	Shoreline

*Table 1: Vessel Inventory*

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

### B2. Quality Control

Internal consistency and integrity of data collected for survey H11406 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11406 were found to be very good.

## Crosslines

Shallow water multibeam crosslines for this survey totaled 16.60 linear nautical miles (lnm), comprising 23.2% of the 71.61 lnm of mainscheme SWMB hydrography. Crosslines, which were run by the launches, were filtered to accept only those beams within 50° either side of nadir. This reduced the noise in the outer beams which was caused by the great depth in the area.

The Hydrographer has determined, through manual examination of the data, that the filtered crossline agreement with main scheme data meet the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.<sup>3</sup>

## Junctions

Survey H11406 junctions with H11405, which is Sheet C of the same project. The area of overlap between the sheets was approximately 400 meters wide. Area surveyed for junction analysis will be reduced on later projects. 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>4</sup> The sheet limits and area of overlap for Sheets C and D are shown in Figure 2.

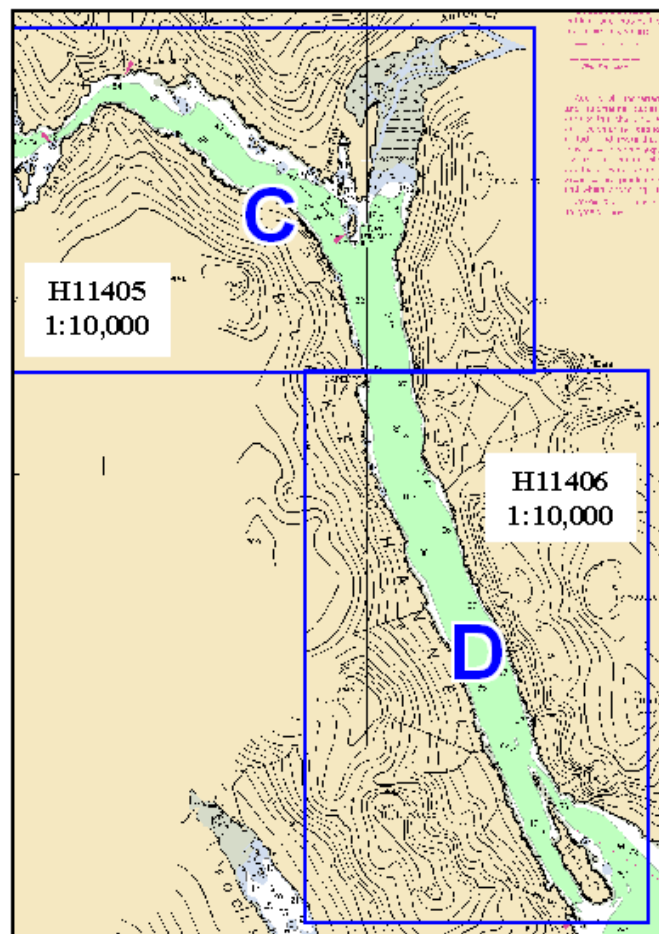


Figure 2: Junction Between OPR-O119 H11405 and H11406 April 2005

## Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-0119-FA-05 Data Acquisition and Processing Report*.

## Data Quality Factors

There were no significant sources of error affecting the quality of data from survey H11406.<sup>5</sup>

## Accuracy Standards

Total propagated error (TPE) filters were applied in CARIS HIPS to all sounding data from survey H11406. Only those soundings that satisfied the International Hydrographic Organization (IHO) requirements for both horizontal and vertical accuracy based on depth were accepted, as specified in the *NOS Hydrographic Surveys Specifications and Deliverables*. Data for this survey meet the prescribed accuracy standards.<sup>6</sup>

## B3. Corrections to Echo Soundings

Data reduction procedures for survey H11406 conform to those detailed in the DAPR.

## C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11406 can be found in the *OPR-0119-FA Horizontal and Vertical Control Report*, submitted under separate cover.<sup>7</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, with differential correctors received from the U.S. Coast Guard beacon at Annette Island (323 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 Ketchikan, AK (945-0460) served as control for datum determination and as the primary source for water level reducers for survey H11406.

FAIRWEATHER personnel installed two Sutron 8210 “bubbler” tide gauges at the tertiary station listed below. Gauge #12 (S/N 023513) was used as the primary gauge, while gauge #08 (S/N 002330) was installed as a back-up and for training purposes. The gauges were installed in order to provide information to 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. No calibration or quality assurance documentation was provided with the gauges.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Madan Bay	945-1152	Tertiary 30 Day	March 15, 2005	April 21, 2005

CO-OPS does not provide calibration or quality assurance documentation to the FAIRWEATHER. FAIRWEATHER personnel are responsible for installation and removal of the water level gauges. CO-OPS is responsible for delivering final approved vertical correctors to the processing branch for application to the hydrographic data set.

Refer to the *OPR-O119-FA-05 Horizontal and Vertical Control Report* for further information about the tide station.

All data were reduced to MLLW using verified tides from station Ketchikan, AK by applying tide file 9450460.tid and time and height correctors through the predicted zone corrector file O119FA2005CORP.zdf.

CO-OPS will provide final approved vertical correctors to the Pacific Hydrographic Branch, where final approved (smooth) tides will be applied to the survey data during final processing.<sup>8</sup> A request for delivery of final approved (smooth) tides for survey H11406 was forwarded to N/OPS1 on May 3, 2005 in accordance with the Field Procedures Manual (FPM) 5.3.3.3. A copy of the request is included in Appendix III.<sup>9</sup>

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

The CARIS HDCS data were brought into Pydro by means of the Insert HIPS Line Bathy function. The data were then excessed to survey scale and shoal biased. The affected charts in the survey area were brought into Pydro. The hydrographer manually compared the charted soundings to the shoal biased, excessed soundings in the Chart window.

Using the bathymetric depths inserted in Pydro, survey H11406 was compared with charts 17360 (33<sup>rd</sup> Ed.; May, 2003, 1:217,828) and 17385 (14<sup>th</sup> Ed.; February, 2003, 1:80,000). Chart 17360 has been corrected through Notice to Mariners (NM) May 17/03 and Local Notice to Mariners (LNM) Apr. 29/03. Chart 17385 was corrected through NM Feb. 8/03 and LNM Jan 28/03. The most recent Notice to Mariners from 43/04 was also consulted and there were no new changes within the survey area.<sup>10</sup>

#### Chart 17360

Depths from survey H11406 generally agreed within one to two fathoms with depths on chart 17360.<sup>11</sup>

#### Chart 17385<sup>12</sup>

Depths from survey H11406 generally agreed within one to two fathoms with depths on chart 17385.<sup>13</sup>



## **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 March 2003. The BASE surfaces and associated soundings are adequate to supersede prior surveys in their common areas. Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

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

There were no AWOIS items were located within the limits of H11406.<sup>14</sup>

## **Dangers to Navigation**

There were no dangers to navigation found within the survey limits.<sup>15</sup>

## **D.2 Additional Results**

### **Shoreline Source**

Source shoreline for this sheet was taken from photogrammetric survey AK9702E (NAD 83) GC-10547, at the scale of 1:20,000. The CFF shoreline was imported to CARIS Notebook 2.2 Beta as an editable layer named H11406\_Edited\_CFF\_Shoreline.hob, with all objects having S57 attribution. In addition, features from the editions of charts 17360 and 17385 provided with the Letter Instructions that were not depicted by the source shoreline data were digitized with S57 attribution in CARIS Notebook, to be displayed for field verification.

### **Shoreline Verification**

FAIRWEATHER personnel conducted shoreline verification at times near predicted low water, in accordance with the Standing Project Instructions. Detached positions (DPs) and generic positions (GPs) acquired during shoreline verification were recorded in TerraSync and on paper DP forms. Scanned copies of the DP forms are included in the digital Separates folder and hard copies can be found with the *Separates to be Included with Survey Data*.<sup>16</sup> In addition, annotations describing shoreline were recorded on hard copy plots of the digital shoreline.

### **Shoreline Data Processing**

Positions acquired during shoreline verification operations were processed in GPS Pathfinder Office and inserted into Pydro using the Generic GPs/DPs Import tool. Features were entered as Detached Positions (DPs) when tide correctors were required, while Generic Positions (GPs) were used if no tide correction was needed. The DPs and GPs indicate new features, revisions to features, or features not found during shoreline verification. A CartoAction of Add, Modify, Delete or None was assigned to each item in Pydro, and all features were S57 attributed.<sup>17</sup>

All primary detached and generic positions were imported from the Pydro .xml to three separate stand alone .hob files in CARIS Notebook 2.2 Beta. These were named H11406\_Add\_Features.hob, H11406\_Modify\_Features.hob, H11406\_Delete\_Features.hob.

### **Source Shoreline Changes, New Features and Charted Features**

Items for survey H11406 associated with a detached or generic position that needed further discussion were flagged Report in Pydro. Investigation or survey methods were listed under the Remarks tab and, when appropriate, recommendations to the cartographer were included in the Recommendations tab. A survey feature report for shoreline items was generated and included as H11406\_Features.pdf in Appendix I.<sup>18</sup>

Three .hob layers, named H11406\_Add.hob, H11406\_Modify.hob and H11406\_Delete.hob, were created in CARIS Notebook for features without associated DPs. New items were digitized to the Add layer, while existing features from the CFF and chart were transferred to the Modify or Delete layers, depending on the cartographic action deemed appropriate by the Hydrographer. Features to be retained as depicted by the source shoreline file were left in the H11406\_Edited\_CFF\_Shoreline.hob file. Field notes made by the Hydrographer on the boat sheets and DP forms<sup>19</sup> were transferred to the remarks field for each feature.

### **Shoreline Recommendations**

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede and complement shoreline information compiled on the CFF and charts.<sup>20</sup>

### **Aids to Navigation**

There were no aids to navigation within the survey limits.<sup>21</sup>

### **Bottom Samples**

Bottom samples were collected on April 20, 2005 (DN 110) 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 H11406\_Add\_Features.hob file.<sup>22</sup>

### **E. Supplemental Reports**

The following is a list of supplemental reports containing additional information relevant to this survey, submitted separately:

<u>Title</u>	<u>Date Sent Off</u>	<u>ice</u>
Hydrographic Systems Certification Report 2005	April 18, 2005	N/CS34
OPR-O119-FA-05 Data Acquisition and Processing Report	August 22, 2005	N/CS34
OPR-O119-FA-05 Horizontal and Vertical Control Report	August 22, 2005	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

September 11, 2005

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

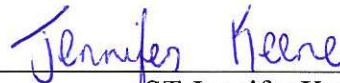
FROM: CAPT John E. Lowell, Jr, NOAA   
Commanding Officer

TITLE: Approval of Hydrographic Survey H11406,  
OPR-O119-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 H11406 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, January 2005 Preliminary Version 1.0; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for March, 2003. 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.

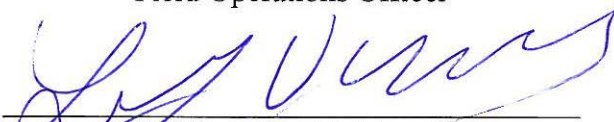
In addition, the following individuals were responsible for oversight of acquisition and processing of this survey:



ST Jennifer Keene  
Survey Manager

  
for

LT Mark A. Wetzler  
Field Operations Officer

  
CST Lynn V. Morgan  
Chief Survey Technician

Attachment



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

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

<sup>2</sup> Filed with project records.

<sup>3</sup> Concur.

<sup>4</sup> Concur.

<sup>5</sup> Concur.

<sup>6</sup> Concur.

<sup>7</sup> Filed with project records.

<sup>8</sup> Final tides were applied during office processing at PHB. See attached Tide Note dated January 3, 2006.

<sup>9</sup> Filed with hydrographic records.

<sup>10</sup> For compilation of this survey, the following updated charts were used: 17385, 1:80,000 (16<sup>th</sup> Ed.; September 2006, NM 10/04/2008) and 17360, 1:217,828 (35<sup>th</sup> Ed.; June 2008, NM 10/04/2008)

<sup>11</sup> Do not concur. While agreement is for the most part within 1 to 2 fathoms, there are instances of differences up to 30 fathoms with the surveyed depths being deeper. It appears that the discrepancies stem from pushing shoaler soundings offshore for display at chart scale.

<sup>12</sup> Because of the 100% multibeam coverage on this survey, it is recommended that the green tint area, wire drag area, should be removed from chart 17385 and superseded with depths from this survey within the common area.

<sup>13</sup> Do not concur. While agreement is for the most part within 1 to 2 fathoms, there are instances of differences up to 30 fathoms with the surveyed depths being deeper. It appears that the discrepancies stem from pushing shoaler soundings offshore for display at chart scale.

<sup>14</sup> Concur.

<sup>15</sup> Concur.

<sup>16</sup> Filed with hydrographic records.

<sup>17</sup> See attached Features Report.

<sup>18</sup> See attached Features Report.

<sup>19</sup> Filed with hydrographic records.

<sup>20</sup> Concur with clarification. Upon review of the shoreline data during compilation, it was determined that some of the features were characterized incorrectly based on the descriptions given in the Pydro remarks field. The features were modified and are appropriately depicted in the HCell.

<sup>21</sup> Do not concur. Although it is not located within the area of bathymetry, Blake Channel Light #1 is located in the survey area. It is recommended that the latest ATONIS information be used for the position and description of the aids to navigation.

<sup>22</sup> Five bottom samples were collected during H11406 and compiled to the HCell. Four additional bottom samples were imported from the ENC to be retained.

# H11406 Features Report

**Registry Number:** H11406  
**State:** Alaska  
**Locality:** Ernest Sound and Eastern Passage  
**Sub-locality:** Southern Portion of Blake Canal  
**Project Number:** OPR-O119-FA-05  
**Survey Dates:** 4/10/2005 - 4/20/2005

Items for survey H11406 associated with a detached or generic position that needed further discussion were flagged Report in Pydro. Investigation methods and recommendations were provided in the Remarks and Recommendations tabs.

## Charts Affected

Number	Version	Date	Scale
17385	14th Ed.	02/01/2003	1:80000
17360	33rd Ed.	05/01/2003	1:217828
16016	20th Ed.	11/01/2003	1:969756
531	22nd Ed.	03/01/2004	1:2100000
530	30th Ed.	03/23/2002	1:4860700
50	6th Ed.	06/01/2003	1:10000000

## Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
893/79	Sounding	4.39 m	056° 14' 52.884" N	131° 57' 31.689" W
11001	GP	[None]	056° 17' 42.561" N	131° 59' 39.191" W
11005	GP	[None]	056° 13' 21.570" N	131° 56' 19.829" W
11004	Sounding	0.70 m	056° 14' 36.046" N	131° 57' 22.876" W
11006	Sounding	-2.15 m	056° 14' 06.054" N	131° 56' 06.708" W
11008	Sounding	-0.02 m	056° 14' 11.628" N	131° 56' 15.566" W
11002	GP	[None]	056° 15' 38.820" N	131° 58' 01.434" W
11003	Sounding	-1.00 m	056° 14' 37.501" N	131° 57' 23.579" W
11012	GP	[None]	056° 13' 20.119" N	131° 55' 04.784" W
11011	Sounding	-1.51 m	056° 13' 32.568" N	131° 55' 17.986" W

11007	Sounding	-3.23 m	056° 14' 09.583" N	131° 56' 13.657" W
ChartGP1	GP	[None]	056° 17' 59.870" N	131° 59' 53.792" W
ChartGP2	GP	[None]	056° 15' 16.717" N	131° 57' 45.243" W
21041	GP	[None]	056° 13' 32.512" N	131° 55' 56.999" W

# **1 - Charted Features**

## 1.1) 893/79

### Survey Summary

**Survey Position:** 056° 14' 52.884" N, 131° 57' 31.689" W  
**Least Depth:** 4.39 m  
**Timestamp:** 2005-103.18:12:16.364 (04/13/2005)  
**Survey Line:** h11406 / 1018\_8101 / 2005-103 / 103-1810  
**Profile/Beam:** 893/79  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

NEW SHOAL

The charted (17385) rock located at 56°14'49.978"N , 131°57'31.032"W ( 316688.10E , 6237531.16N ) was not seen in the field during shoreline verification. When 100% SWMB data were acquired in the area, the charted rock was not found, but a shoal area was located approximately 100m to the north. The shoal area is located at 56°14'53.02"N , 131°57'31.74"W ( 316679.97E , 6237625.70N ). It is approximately 180m long by 40m wide, with a least depth of 4.5m found with MBES.

### Hydrographer Recommendations

[None]

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

2 ¼fm (17385\_1, 17360\_1, 16016\_1, 530\_1)  
 2fm 2ft (531\_1)  
 4.4m (50\_1)

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)

**Attributes:** INFORM - NEW SHOAL The charted (17385) rock located at 56°14'49.978"N , 131°57'31.032"W ( 316688.10E , 6237531.16N ) was not seen in the field during shoreline verification. When 100% SWMB data were acquired in the area, the charted rock was not found, but a shoal area was located approximately 100m to the north. The shoal area is located at 56°14'53.02"N , 131°57'31.74"W ( 316679.97E , 6237625.70N ). It is approximately 180m long by 40m wide, with a least depth of 4.5m found with MBES.

QUASOU - 1:depth known

TECSOU - 1:found by echo-sounder



## Office Notes

Chart shoal as submerged rock.

## **2 - New Features**

## 2.1) 11001

### Survey Summary

**Survey Position:** 056° 17' 42.561" N, 131° 59' 39.191" W  
**Least Depth:** [None]  
**Timestamp:** 2005-100.16:09:11.000 (04/10/2005)  
**GP Dataset:** TR1100\_\$CSYMB\_P.shp  
**GP No.:** 1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CHD (17385) RK DSP. COVERED WITH 100% SWMB.

The charted (17385) rock at 56°17'42.524"N , 131°59'39.225"W ( 314714.52E , 6242958.38N ) was disproved during shoreline verification with DP 11001 and with 100% SWMB.

### Hydrographer Recommendations

The Hydrographer recommends removal of the charted rock.

#### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CHD (17385) RK DSP. COVERED WITH 100% SWMB. The charted (17385) rock at 56°17'42.524"N , 131°59'39.225"W ( 314714.52E , 6242958.38N ) was disproved during shoreline verification with DP 11001 and with 100% SWMB.  
RECDAT - 20050410

### Office Notes

Do not concur. There is evidence of shoaling and rocks in the high resolution BASE surface. Retain as charted.

## 2.2) 11005

### Survey Summary

**Survey Position:** 056° 13' 21.570" N, 131° 56' 19.829" W  
**Least Depth:** [None]  
**Timestamp:** 2005-100.17:10:52.000 (04/10/2005)  
**GP Dataset:** TR1100\_\$CSYMB\_P.shp  
**GP No.:** 2  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CHD (17385) RK DSP. COVERED WITH 100% SWMB.

The charted (17385) rock located at 56°13'22.108"N , 131°56'19.044"W ( 317810.78E , 6234762.83N ) was disproved during shoreline verification with DP 11005 and with 100% SWMB.

### Hydrographer Recommendations

The Hydrographer recommends removal of the charted rock.

#### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CHD (17385) RK DSP. COVERED WITH 100% SWMB. The charted (17385) rock located at 56°13'22.108"N , 131°56'19.044"W ( 317810.78E , 6234762.83N ) was disproved during shoreline verification with DP 11005 and with 100% SWMB.  
PICREP - 11005\_from\_e.jpg  
RECDAT - 20050410

### Office Notes

Do not concur. There is evidence of shoaling and rocks in the high resolution BASE surface. Retain as charted.

### Feature Images



*Figure 2.2.1*

## 2.3) 11004

### Survey Summary

**Survey Position:** 056° 14' 36.046" N, 131° 57' 22.876" W  
**Least Depth:** 0.70 m  
**Timestamp:** 2005-100.16:54:32.000 (04/10/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-100 / tr1100\_obstrn\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

NEW S EXT CFF OBSTRN

During shoreline verification, the CFF obstruction was found to be connected to MLLW, but not MHW.

### Hydrographer Recommendations

[None]

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

0 ¼fm (17385\_1, 17360\_1, 16016\_1, 530\_1)

0fm 2ft (531\_1)

.7m (50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)

**Attributes:** CATOBS - 6:foul area

INFORM - NEW S EXT CFF OBSTRN During shoreline verification, the CFF obstruction was found to be connected to MLLW, but not MHW.

RECDAT - 20050410

STATUS - 1:permanent

VALSOU - 0.696 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

## Office Notes

Concur with clarification. Since the CFF obstruction is connected at MLLW, the obstruction should be re-characterized as a ledge. See DP 11003. Chart verified rock.

## 2.4) 11006

### Survey Summary

**Survey Position:** 056° 14' 06.054" N, 131° 56' 06.708" W  
**Least Depth:** -2.15 m  
**Timestamp:** 2005-100.17:40:07.000 (04/10/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-100 / tr1100\_obstrn\_p.shp  
**Profile/Beam:** 2/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

**Remarks:**

CHD (17385) RK IS HP CFF OBSTRN DP FOR HEIGHT ONLY

### Hydrographer Recommendations

[None]

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

-1fm (17385\_1, 17360\_1, 16016\_1, 530\_1)  
-1fm 1ft (531\_1)  
-2.2m (50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 6:foul area  
INFORM - CHD (17385) RK IS HP CFF OBSTRN DP FOR HEIGHT ONLY  
RECDAT - 20050410  
VALSOU - -2.153 m  
VERDAT - 12:Mean lower low water  
WATLEV - 4:covers and uncovers

### Office Notes

Verified rock is part of CFF reef. Chart verified rock and reef.



## 2.5) 11008

### Survey Summary

**Survey Position:** 056° 14' 11.628" N, 131° 56' 15.566" W  
**Least Depth:** -0.02 m  
**Timestamp:** 2005-100.17:52:33.000 (04/10/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-100 / tr1100\_obstrn\_p.shp  
**Profile/Beam:** 3/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CFF RK IS PART OF NEW EXT OBSTRN. CFF LDG CONNECTS TO OBSTRN.

During shoreline verification, the CFF rock located with DP 11008 at 56°14'11.600"N , 131°56'15.592"W ( 317935.45E , 6236289.65N ) was found to be part of a larger obstruction. The CFF obstruction connects to the CFF ledge to the north.

### Hydrographer Recommendations

The Hydrographer recommends removing the CFF rock symbol and charting the CFF obstruction as depicted in the H11406\_Modify.hob file.

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

0fm (17385\_1, 17360\_1, 16016\_1, 530\_1)

0fm 0ft (531\_1)

.0m (50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)

**Attributes:** CATOBS - 6:foul area

INFORM - CFF RK IS PART OF NEW EXT OBSTRN. CFF LDG CONNECTS TO OBSTRN. During shoreline verification, the CFF rock located with DP 11008 at 56°14'11.600"N , 131°56'15.592"W ( 317935.45E , 6236289.65N ) was found to be part of a larger obstruction. The CFF obstruction connects to the CFF ledge to the north.

RECDAT - 20050410

STATUS - 1:permanent

VALSOU - -0.024 m

VERDAT - 12:Mean lower low water

WATLEV - 4: covers and uncovers

### Office Notes

Do not concur. Since both rocks within the "new obstruction" are shoaler than MLLW and the "new obstruction" connects to CFF ledge, the obstruction should be re-characterized as a modification to the extent of CFF ledge. The verified rocks should be charted as high points of the ledge. See DP 11007.

### Feature Images



*Figure 2.5.1*

## 2.6) 11002

### Survey Summary

**Survey Position:** 056° 15' 38.820" N, 131° 58' 01.434" W  
**Least Depth:** [None]  
**Timestamp:** 2005-100.16:29:10.000 (04/10/2005)  
**GP Dataset:** TR1100\_SBDARE\_P.shp  
**GP No.:** 1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

SWMEXT NEW LDG

During shoreline verification, the seaward most extent of a new ledge was located at 56°15'38.816"N , 131°58'01.416"W ( 316230.39E , 6239062.83N ) with DP 11002. The ledge was found to be approximately 15m long, with a depth of approximately -0.1m.

### Hydrographer Recommendations

#### S-57 Data

**Geo object 1:** Seabed area (SBDARE)  
**Attributes:** INFORM - SWMEXT NEW LDG During shoreline verification, the seaward most extent of a new ledge was located at 56°15'38.816"N , 131°58'01.416"W ( 316230.39E , 6239062.83N ) with DP 11002. The ledge was found to be approximately 15m long, with a depth of approximately -0.1m.  
NATSUR - 9:rock  
RECDAT - 20050410  
WATLEV - 4:covers and uncovers

### Office Notes

Chart new ledge.

### Feature Images



*Figure 2.6.1*



*Figure 2.6.2*

## 2.7) 11003

### Survey Summary

**Survey Position:** 056° 14' 37.501" N, 131° 57' 23.579" W  
**Least Depth:** -1.00 m  
**Timestamp:** 2005-100.16:50:47.000 (04/10/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-100 / tr1100\_uwtroc\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

NEW RK IS HP CFF OBSTN

During shoreline verification, a new rock was located at 56°14'37.527"N , 131°57'23.579"W ( 316799.81E , 6237140.92N ) with DP 11003. This rock is the high point of the CFF obstruction. The CFF obstruction was found to be connected to MLLW, but not MHW. The charted (17385) rocks are part of the obstruction.

### Hydrographer Recommendations

[None]

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

0 ½fm (17385\_1, 17360\_1, 16016\_1, 530\_1)

0fm 3ft (531\_1)

-1.0m (50\_1)

### S-57 Data

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

**Attributes:** INFORM - NEW RK IS HP CFF OBSTN During shoreline verification, a new rock was located at 56°14'37.527"N , 131°57'23.579"W ( 316799.81E , 6237140.92N ) with DP 11003. This rock is the high point of the CFF obstruction. The CFF obstruction was found to be connected to MLLW, but not MHW. The charted (17385) rocks are part of the obstruction.

RECDAT - 20050410

STATUS - 1:permanent

TECSOU - 7:found by laser

VALSOU - -0.997 m

VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

## Office Notes

Concur with clarification. Since the rock within the CFF obstruction is shoaler than MLLW and the CFF obstruction is connected at MLLW, the obstruction should be re-characterized as a ledge. The verified rock should be charted as a high point of the ledge.

## 2.8) 11012

### Survey Summary

**Survey Position:** 056° 13' 20.119" N, 131° 55' 04.784" W  
**Least Depth:** [None]  
**Timestamp:** 2005-101.17:45:11.000 (04/11/2005)  
**GP Dataset:** 1101\_\$CSYMB\_P.shp  
**GP No.:** 1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CFF MLLW IS EXT LDG. CHD (17385) RK IS HP LDG.

During shoreline verification, a portion of the CFF MLLW at 56°13'20.120"N , 131°55'04.818"W ( 319086.05E , 6234647.04N )was found to be the extent of a ledge, positioned with GP 11012. The charted (17385) rock at 56°13'20.547"N , 131°55'09.619"W ( 319003.96E , 6234663.75N )is the high point of the ledge.

### Hydrographer Recommendations

Retain rock as charted.

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF MLLW IS EXT LDG. CHD (17385) RK IS HP LDG. During shoreline verification, a portion of the CFF MLLW at 56°13'20.120"N , 131°55'04.818"W ( 319086.05E , 6234647.04N )was found to be the extent of a ledge, positioned with GP 11012. The charted (17385) rock at 56°13'20.547"N , 131°55'09.619"W ( 319003.96E , 6234663.75N )is the high point of the ledge.  
RECDAT - 20050411

### Office Notes

Chart CFF ledge and retain rock as charted

### Feature Images





*Figure 2.8.1*



*Figure 2.8.2*

## 2.9) 11011

### Survey Summary

**Survey Position:** 056° 13' 32.568" N, 131° 55' 17.986" W  
**Least Depth:** -1.51 m  
**Timestamp:** 2005-101.17:33:55.000 (04/11/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-101 / 1101\_obstrn\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CHD (17385) RK IS HP CFF OBSTRN DP FOR HEIGHT USE CFF POSITION

### Hydrographer Recommendations

[None]

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

0 ¾fm (17385\_1, 17360\_1, 16016\_1, 530\_1)  
0fm 5ft (531\_1)  
-1.5m (50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** INFORM - CHD (17385) RK IS HP CFF OBSTRN DP FOR HEIGHT USE CFF POSITION  
RECDAT - 20050411  
STATUS - 1:permanent  
VALSOU - -1.513 m  
VERDAT - 12:Mean lower low water  
WATLEV - 4:covers and uncovers

### Office Notes

Concur with clarification. Since the rock within the CFF obstruction is shoaler than MLLW, the obstruction should be re-characterized as a ledge. The verified rock should be charted as a high point of the ledge.

**2.10) 11007****Survey Summary**

**Survey Position:** 056° 14' 09.583" N, 131° 56' 13.657" W  
**Least Depth:** -3.23 m  
**Timestamp:** 2005-100.17:46:51.000 (04/10/2005)  
**DP Dataset:** h11406 / trb1\_dpne / 2005-100 / 1100\_dp\_\$csymb\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

**Remarks:**

CHD (17385) / CFF RK IS HP CFF OBSTRN DP FOR HEIGHT ONLY

**Hydrographer Recommendations**

[None]

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

-1 ¾fm (17385\_1, 17360\_1, 16016\_1, 530\_1)  
-1fm 4ft (531\_1)  
-3.3m (50\_1)

**S-57 Data**

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CHD (17385) / CFF RK IS HP CFF OBSTRN DP FOR HEIGHT ONLY  
RECDAT - 20050410  
**Geo object 2:** Underwater rock / awash rock (UWTROC)  
**Attributes:** VALSOU - -3.235 m

**Office Notes**

Do not concur. Since both rocks within the "new obstruction" are shoaler than MLLW and the "new obstruction" connects to CFF ledge, the obstruction should be re-characterized as a modification to the extent of CFF ledge. The verified rocks should be charted as high points of the ledge. See DP 11008.

## 2.11) ChartGP1

### Survey Summary

**Survey Position:** 056° 17' 59.870" N, 131° 59' 53.792" W  
**Least Depth:** [None]  
**Timestamp:** 2005-102.15:22:03 (04/12/2005)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CHD (17385) RK DSP. COVERED WITH 100% SWMB.

The charted (17385) rock located at 56°17'59.870"N , 131°59'53.792"W ( 314487.57E , 6243505.30N ) was not seen in the field during shoreline verification. It was disproved with 100% SWMB.

### Hydrographer Recommendations

The Hydrographer recommends removal of the charted rock.

#### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CHD (17385) RK DSP. COVERED WITH 100% SWMB. The charted (17385) rock located at 56°17'59.870"N , 131°59'53.792"W ( 314487.57E , 6243505.30N ) was not seen in the field during shoreline verification. It was disproved with 100% SWMB.

### Office Notes

Do not concur. There is evidence of shoaling at the edge of the high resolution BASE surface. Retain as charted.

## 2.12) ChartGP2

### Survey Summary

**Survey Position:** 056° 15' 16.717" N, 131° 57' 45.243" W  
**Least Depth:** [None]  
**Timestamp:** 2005-102.15:22:39 (04/12/2005)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 2  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CHD (17385) RK DSP. COVERED WITH 100% SWMB.

The charted (17385) rock located at 56°15'16.730"N , 131°57'45.243"W ( 316479.17E , 6238368.37N ) was not seen in the field during shoreline verification. It was disproved with 100% SWMB.

### Hydrographer Recommendations

The Hydrographer recommend removal of the charted rock.

#### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CHD (17385) RK DSP. COVERED WITH 100% SWMB. The charted (17385) rock located at 56°15'16.730"N , 131°57'45.243"W ( 316479.17E , 6238368.37N ) was not seen in the field during shoreline verification. It was disproved with 100% SWMB.

### Office Notes

Do not concur. There is evidence of rocks in the high resolution BASE surfaces. Retain as charted.

## 2.13) 21041

### Survey Summary

**Survey Position:** 056° 13' 32.512" N, 131° 55' 56.999" W  
**Least Depth:** [None]  
**Timestamp:** 2005-104.15:55:30.000 (04/14/2005)  
**GP Dataset:** 2104\_\$CSYMB\_P.shp  
**GP No.:** 1  
**Charts Affected:** 17385\_1, 17360\_1, 16016\_1, 531\_1, 530\_1, 50\_1

#### Remarks:

CFF PILE IS RK ON SHORE

A high water GP was acquired over the position of a CFF pile at 56°13'32.512"N , 131°55'56.999"W ( 318204.00E , 6235068.14N ). The CFF pile was found to be a rock on shore and disproved with GP 21041. The rock is approximately 1.5m tall, by 2m across.

### Hydrographer Recommendations

The Hydrographer recommends not adding the CFF pile to the chart.

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF PILE IS RK ON SHORE A high water GP was acquired over the position of a CFF pile at 56°13'32.512"N , 131°55'56.999"W ( 318204.00E , 6235068.14N ). The CFF pile was found to be a rock on shore and disproved with GP 21041. The rock is approximately 1.5m tall, by 2m across.  
RECDAT - 20050414

### Office Notes

Concur.



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** January 3, 2006

**HYDROGRAPHIC BRANCH:** Pacific Hydrographic Branch

**HYDROGRAPHIC PROJECT:** OPR-0119-FA-2005

**HYDROGRAPHIC SHEET:** H11406

**LOCALITY:** Southern Portion of Blake Canal, Ernest Sound and Eastern Passage, AK

**TIME PERIOD:** April 10 - April 20, 2005

**TIDE STATION USED:** 945-1152 Madan Bay, AK  
Lat. 56 23.53' N Long. 132 10.14' W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters

**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 4.670 meters

**REMARKS: RECOMMENDED ZONING**

Use zone(s) identified as: SA118A & SA119

**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).

CHIEF, PRODUCTS AND SERVICES DIVISION



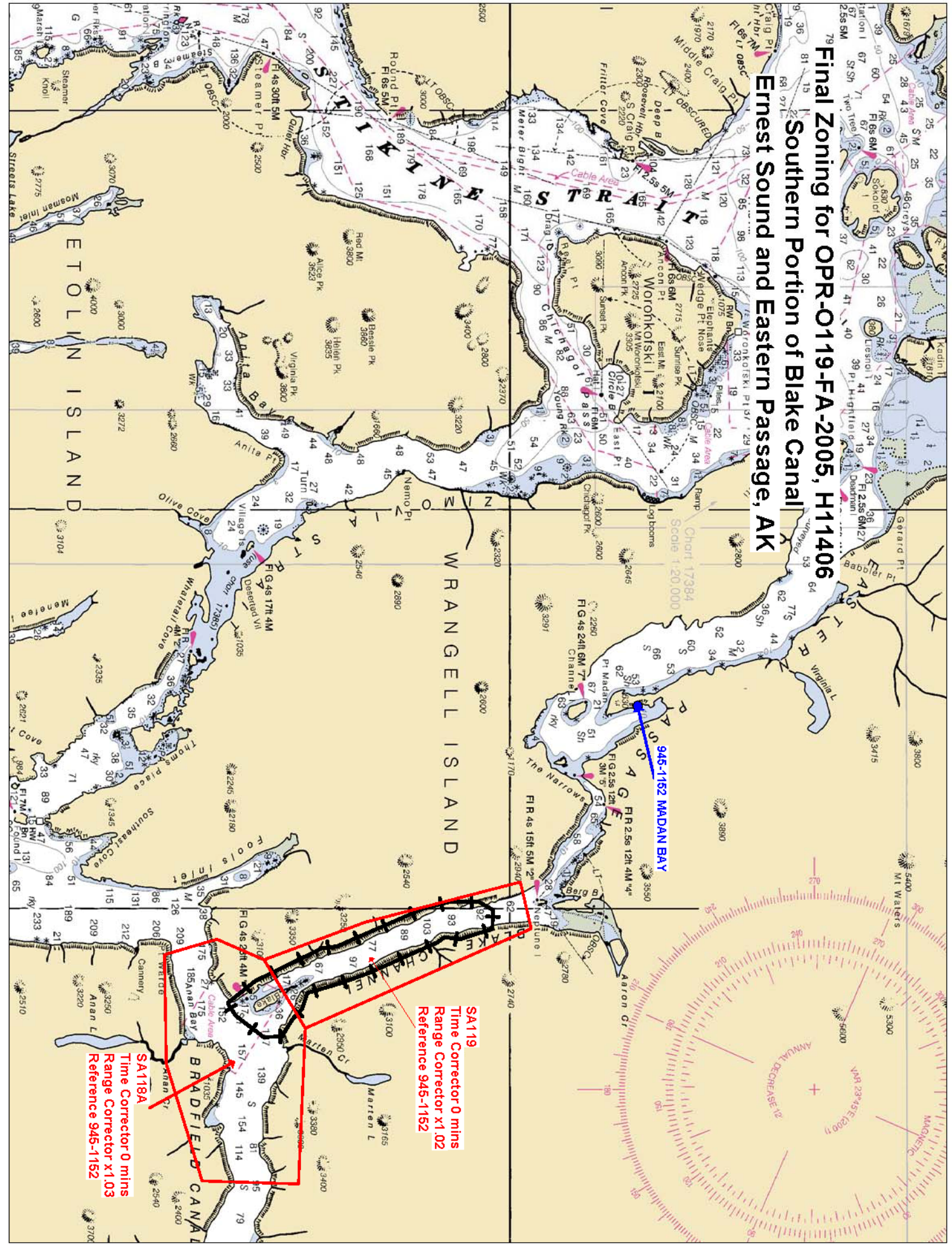


‘m taking **Final tide zone node point locations for OPR-O119-FA-2005, H11406**

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 Order	Station	AVG Correction	Time	Range Correction
Zone SA118A	945-1152	0	1.03	
-131.974275	56.196942			
-131.961424	56.172575			
-131.870219	56.173438			
-131.772496	56.190087			
-131.77009	56.234928			
-131.899959	56.238113			
-131.957139	56.218907			
-131.974275	56.196942			
Zone SA119	945-1152	0	1.02	
-132.022038	56.337904			
-131.98843	56.265795			
-131.957139	56.218907			
-131.899959	56.238113			
-131.983094	56.34296			
-132.022038	56.337904			

**Final Zoning for OPR-0119-FA-2005, H11406**  
**Southern Portion of Blake Canal**  
**Ernest Sound and Eastern Passage, AK**



945-1152 MADAN BAY

SA119  
 Time Corrector 0 mins  
 Range Corrector x1.02  
 Reference 945-1152

SA118A  
 Time Corrector 0 mins  
 Range Corrector x1.03  
 Reference 945-1152

**H11406 HCell Report**  
Katie Reser, Physical Scientist  
Pacific Hydrographic Branch

**Introduction**

The primary purpose of the HCell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11406 utilized Office of Coast Survey HCell Specifications Version 3.0, May 2008 and HCell User Guide Version 1.1, June 2008. HCell H11406 will be used to update charts 17385, 1:80,000 (16<sup>th</sup> Ed.; September 2006, NM 10/04/2008), 17360, 1:217,828 (35<sup>th</sup> Ed.; June 2008, NM 10/04/2008) and US4AK3OM.

**1. Compilation Scale**

The density of soundings in the HCell are compiled as appropriate to emulate those soundings of Chart 17385, 1:80,000. Position and density of non-bathymetric features included in the HCell have not been generalized from the scale of the hydrographic survey H11406.

**2. Soundings**

**2.1 Source Data**

One 12-meter resolution Combined BASE surface, **H11406\_12m\_Combined** was used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11406\_12m\_Combined** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 survey scale using a radius table with values shown in **Table 1**.

Upper limit (m)	Lower limit (m)	Radius (mm)
0 10		3
10 20		4
20 50		4.5
50	300	5

**Table 1**

**2.2 Sounding Feature Objects**

In CARIS BASE Editor soundings were manually selected from the high density sounding layers from H11406 and imported into a new layer created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and

distribution of soundings on chart 17385 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11405. The sounding feature object source layer was imported into the **H11406\_HCell\_Features.hob** file, which was used as a template to create the S-57 Composer product **H11406\_CS.prd**.

### **3. Depth Areas**

#### **3.1 Source Data**

Using the combined BASE surface **H11406\_12m\_Combined** and areas delineated as ledges or extents of the mean lower low water line, two depth areas were generated and separated by a zero meter contour. No other depth contours were delivered per OCS HCell Specifications ver.3.0 and Hcell User Guide ver. 1.1.

#### **3.2 Depth Area Feature Objects**

Two depth ranges, -4.7 meters to 0 meters and 0 meters to 300 meters, were used for all depth area objects. Upon conversion to NOAA charting units, this depth range is -2.6 fathoms to 0 fathoms and 0 fathoms to 164.0 fathoms.

### **4. Meta Areas**

The following Meta object areas are included in HCell 11406:

M\_QUAL  
M\_COVR

Meta area objects were constructed on the basis of perimeter lines delineating the surveyed limits and extents of data gaps inside the survey area. These perimeters were first used to create the Skin of The Earth (SOTE) layer, then were duplicated to the Meta object layers and attributed per the H-Cell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

### **5. Survey Features**

H11406 contains no DTONs.

H11406 contains no AWOIS items.

Five bottom samples were collected with H11406 and are included in the HCell. Four additional bottom samples were imported from the ENC to be retained. One bottom

sample from survey H11507 that fell within the limits of H11406 was also imported into the HCell.

The source of all features included in the H11406 HCell can be determined by the SORIND or SORDAT field. For the rock/islet determination, the Tide Note value for MHW (-4.67 meters) was used. All features to be included in the HCell were addressed and deconflicted in BASE Editor and imported into the **H11406\_HCell\_Features.hob** file, which was used as a template to create the S-57 Composer product **H11406\_CS.prd**.

## **Shoreline Features**

Shoreline features for H11406 were delivered in seven different files. There is some redundancy of features between the files.

- H11406\_Edited\_CFF\_Shoreline.hob (Features to be retained as depicted in the source shoreline file)
- H11406\_Add.hob (new features digitized in Notebook using DPs or VBES)
- H11406\_Modify.hob (features modified in Notebook using DPs or VBES)
- H11406\_Delete.hob (original source or charted features that were modified or disproved)
- H11406\_Add\_Features.hob (new feature or bottom samples processed in Pydro)
- H11406\_Modify\_Features.hob (modified features or bottom samples processed in Pydro)
- H11406\_Delete\_Features.hob (disprovals processed in Pydro)

## **6. Shoreline / Tide Delineation**

Depth areas (DEPARE) were created for all SOTE features.

## **7. Attribution**

All S-57 Feature Objects have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with OCS HCell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

## **8. Layout**

### **8.1 CARIS S-57 Composer Scheme**

SOUNDG	Chart scale soundings
DEPARE	Group 1 objects (Skin of the Earth)
DEPCNT	0-meter depth contours defining intertidal areas
UWTROC	Rock features
SBDARE	Bottom samples, reefs, ledges and rocky seabed areas

M_COVR	Data coverage meta object
M_QUAL	Data quality meta object
\$CSYMB	Blue notes

## 8.2 Blue Notes

Notes regarding data sources are in S-57 Composer as a \$CSYMB feature with the blue note located in the INFORM field and the survey registry number, chart number, chart edition and edition date located in the NINFOM field. The blue notes are included in the HCell when it is exported to .000. The blue notes are also included as a separate ASCII file **H11406\_Bluenotes.txt**.

## 9. Spatial Framework

### 9.1 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.

### 9.2 Horizontal and Vertical Units

During creation of sounding sets in CARIS BASE Editor, and creation of the HCell in CARIS S-57 Composer, units are maintained as metric with millimeter resolution. NOAA rounding is applied at the same time that conversion to chart units is made to the metric HCell base cell file, at the end of the HCell compilation process.

A CARIS environment variable, uslXsounding\_round, controls the depth at which rounding occurs. Setting this variable to NOAA fathoms and feet displays all soundings from 0 to equal to or greater than 11 fathoms as whole units.

In an ENC viewer fathoms and feet display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. For fathoms and feet between 0 and 10 fathoms 4.5 feet (10.75 fms), soundings round to the deeper foot if the decimals of the foot are X.Y75000 or greater. For fathoms and feet deeper or equal to 11 fathoms, soundings round to the deeper fathom if feet and decimals of the foot are X.45000 (X.Y75000) or greater. Drying heights are in feet and are rounded using arithmetic methods. In an ENC viewer, heights greater than 6 feet will register in fathoms and feet using the above stated rules.

#### S-57 Composer Units

Sounding Units:	Meters rounded to the nearest millimeter
Spot Height Units:	Meters rounded to the nearest meter

#### Chart Unit Base Cell Units

Depth Units (DUNI):	Fathoms and feet
---------------------	------------------

Height Units (HUNI):	Feet (or fathoms and feet above 6 feet)
Positional Units (PUNI):	Meters

## 10. QA/QC

### 10.1 Data Processing Notes

Manual chart scale sounding selections were made for this survey. Experience has shown that in areas where bathymetry is steep sided, as in the case of this extremely steep edged fjord, automated sounding selection is impractical. None of the default sounding suppression options offered in CARIS BASE Editor or S-57 Composer yields an acceptable density and distribution of depths, generally bunching soundings nearshore with too sparse coverage seaward. While the customized options are more practical for this type of terrain, an inordinate amount of time must be spent in experimentation with variations on the algebraic terms in order to devise the most suitable formula, and manual adjustments are still required to the resulting sounding set.

### 10.2 ENC Validation Checks

H11406 was subjected to QA and Validation checks in S-57 Composer prior to exporting to the HCell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was converted to a chart unit 000 file. dKart Inspector 5.1 was then used to further check the data set for conformity using the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

## 11. Products

### 11.1 HSD, MCD and CGTP Deliverables

- H11406 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11406 Base Cell File, Chart Units, Soundings compiled to 1:20,000
- H11406 Descriptive Report including end notes compiled during office processing and certification
- H11406 HCell Supplemental Report
- H11406 Blue Notes ASCII file

### 11.2 File Naming Conventions

S-57 Composer Product prefix: *H11406\_CS.prd and H11406\_SS.prd*

MCD Chart units base cell file: *US511406\_CS.000*

MCD Chart units base cell file, survey scale soundings: *US511406\_SS.000*

### 11.3 Software

HIPS 6.1:	Management and inspection of Combined BASE surfaces
BASE Editor 2.1: S-57	Combination of Product Surfaces and initial creation of the bathymetry-derived features
CARIS Notebook 3.0:	Management and inspection of shoreline files
S-57 Composer 2.0:	Assembly of the HCell, S-57 products export, QA
HOM 3.3:	Assembly of the HCell, S-57 products unit conversion and sounding rounding
GIS 4.4a:	Setting the sounding rounding variable
Pydro v7.3 (r2252)	Creation of Feature and DTON reports
dKart Inspector 5.1:	Validation of the base cell file

### 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.



APPROVAL SHEET  
H11406

Initial Approvals:

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


 Katie Reser  
2008.11.24  
14:52:39 -08'00'

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.



Digitally signed by Charles R. Davies  
DN: cn=Charles R. Davies, c=US,  
o=Pacific Hydrographic Branch,  
ou=NOAA,NOS,OCS, email=Russ.  
Davies@NOAA.GOV  
Date: 2008.11.25 12:44:35 -08'00'

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.

 Gary C. Nelson  
2008.11.25  
12:49:10 -08'00'



J. Corey Allen  
AWOIS and SURF Check  
Complete  
2008.12.01 08:06:43 -05'00'