

H11470

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* ..... Hydrographic Survey

*Field No.* ..... N/A

*Registry No.* ..... H11470

### LOCALITY

*State* ..... Alaska

*General Locality* ..... Cape Decision

*Sublocality* ..... Aats Bay and Egg Harbor

2005

### CHIEF OF PARTY

..... Commander John Lowell, NOAA

### LIBRARY & ARCHIVES

DATE .....

**HYDROGRAPHIC TITLE SHEET**

**H11470**

**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 Cape Decision

Sub-Locality Aats Bay and Egg Harbor

Scale 1:10,000 Date of Survey April 27 - May 30, 2005

Instructions dated 3/21/2005 Project No. OPR-O167-FA

Vessel NOAA Ship FAIRWEATHER, Launch 1010, Launch 1018, Skiff 1706, Ambar 2302

Chief of party CAPT John E. Lowell, Jr., NOAA

Surveyed by ENS Gonsalves, LT Wetzler, CST Morgan

Soundings by echo sounder, hand lead, pole Reson 8101, Reson 8111ER

Graphic record scaled by N/A

Graphic record checked by N/A Automated Plot N/A

Verification by Erin Campbell Evaluation by Sarah Wolfskehl

Soundings in Meters at MLLW

**REMARKS:** All times are UTC.

The purpose of this survey was to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All Separates are filed with the hydrographic data. Revisions and end notes in red were generated during office processing. Page numbering may be interrupted or non-sequential.

## Descriptive Report to Accompany Hydrographic Survey H11470

Project OPR-O167-FA

Cape Decision, Alaska

Scale 1:10,000

April - May 2005

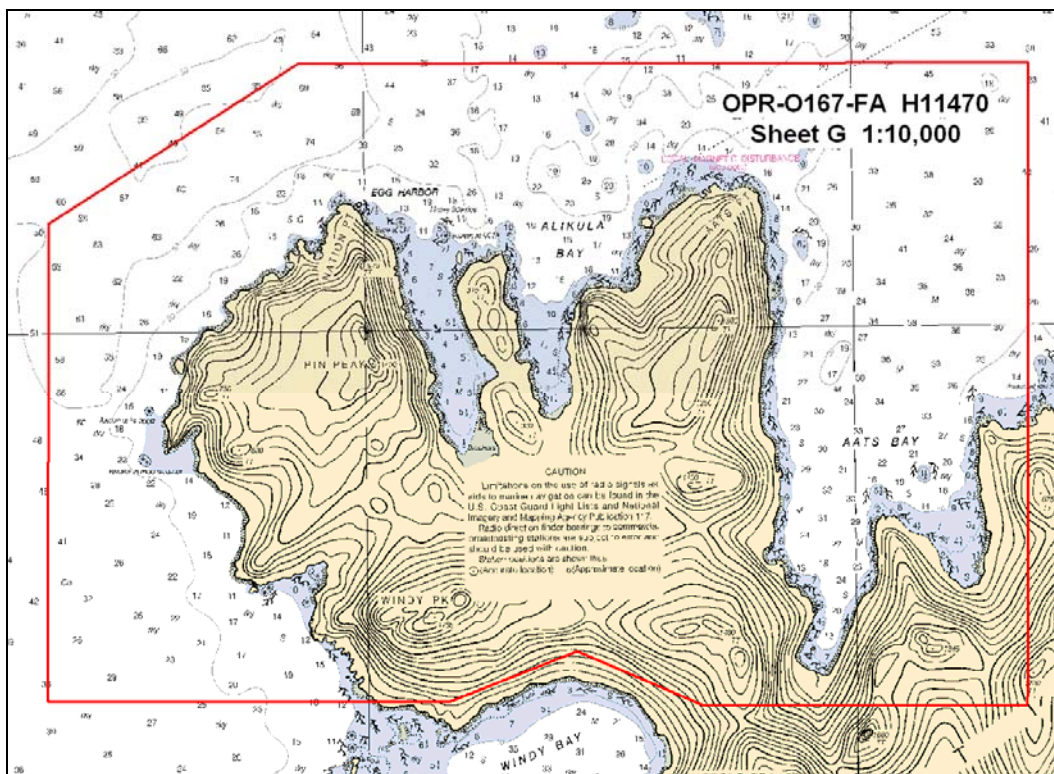
**NOAA Ship FAIRWEATHER**

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

### A. AREA SURVEYED

The survey area was located in Cape Decision, within the sub-locality of Aats Bay and Egg Harbor. This survey corresponds to Sheet G in the sheet layout provided with the Letter Instructions<sup>1</sup>, as shown in Figure 1 below. The survey area is bounded on the Southwest corner at 55°51'00"N, 134°26'00"W and the Northeast corner at 55°59'00"N, 134°08'00"W.

Data acquisition was conducted from April 27 to May 30, 2005 (DN117 to DN 150).



**Figure 1: H11470 Sheet Limits**

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area at least to depths of eight meters<sup>2</sup>. When conditions allowed, multibeam echosounder (MBES) data were acquired parallel to contours and at line spacing of no less than 25 meters in depths between four and eight meters. Additional coverage was obtained in order to determine least depths over features or shoals.

Shoreline data were acquired for H11470. These data were attributed as S-57 objects 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*<sup>3</sup>, submitted under separate cover. Quality control procedures and data processing methods are listed and described in the *OPR-O167-FA-05 Data Acquisition and Processing Report (DAPR)*<sup>4</sup>, submitted under separate cover. Items specific to this survey and any deviations from the aforementioned reports 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	MonArk	Ambar 550	Ambar 700
<b>Hull Registration Number</b>	S220	1010	1018	1706	1803	2302
<b>Builder</b>	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	MonArk	Marine Silverships, Inc	Marine Silverships, Inc
<b>Length Overall</b>	231'	28' 10"	28' 10"	17'	18'	23'
<b>Beam</b>	42'	10' 8"	10' 8"	7'	8' 6"	9' 4"
<b>Draft, Maximum</b>	15' 6"	4' 0" DWL	4' 0" DWL	1' 3"	1' 5"	1' 4"
<b>Cruising Speed</b>	12.5 knots	24 knots	24 knots	20 knots	20 knots	22 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, Tide	MBES	Shoreline	Tide, HORCON	Shoreline

**Table 1: Vessel Inventory**

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

### B2. Quality Control

Multibeam data for survey H11470 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity were found to be good<sup>5</sup>.

## Crosslines

Shallow water multibeam crosslines for this survey totaled 30.1 linear nautical miles (lnm), comprising 12.9% of the 234.0 lnm of total SWMB hydrography.

The Hydrographer has determined, through manual examination of the data, that the crossline multibeam is consistent with the main scheme hydrography<sup>6</sup>.

## Junctions

Eastern portions of survey H11470 junction with H11363, which is Sheet B of OPR-O167-FA, completed in May 2005. Survey H11363 was a MBES survey done by the FAIRWEATHER at a scale of 1:10,000. The area of overlap between the sheets was reviewed in CARIS Subset Editor for consistency and data were found to be in very good general agreement within half a meter<sup>7</sup>.

The northern edge of survey H11470 junctions with H11364, which is Sheet C of OPR-O167-FA, completed in May 2005. Survey H11364 was a MBES survey done by the FAIRWEATHER at a scale of 1:20,000. The area of overlap between the sheets was reviewed in CARIS Subset Editor for consistency and data were found to be in very good general agreement within half a meter<sup>8</sup>.

The sheet limits and area of overlap for survey H11470, H11363 and H11364 are shown in Figure 2.

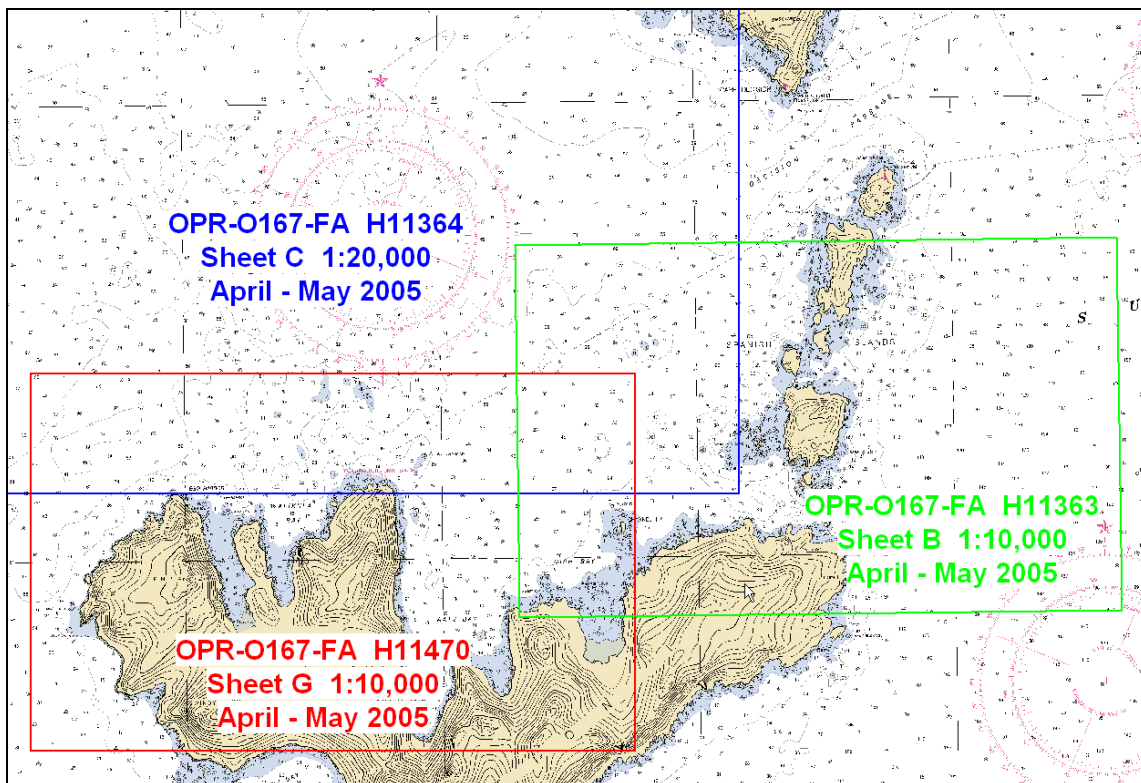


Figure 2: Junctions for Survey H11470

## Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-0167-FA-05 Data Acquisition and Processing Report*.

## Data Quality Factors

### COVERAGE ASSESSMENT:

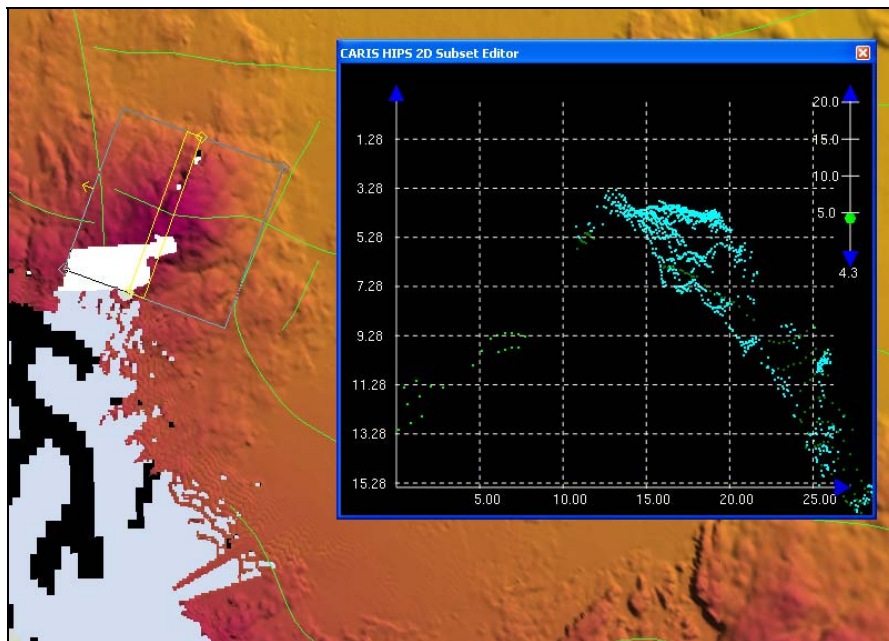
Coverage assessment was determined using the following base surface resolutions listed below in Table 2.

Depth Ranges (m)		Resolution (m)
Low	High	
0	42	1.2
25	55	2
40	90	3
62	200	5

**Table 2 Depth Ranges and Resolutions**

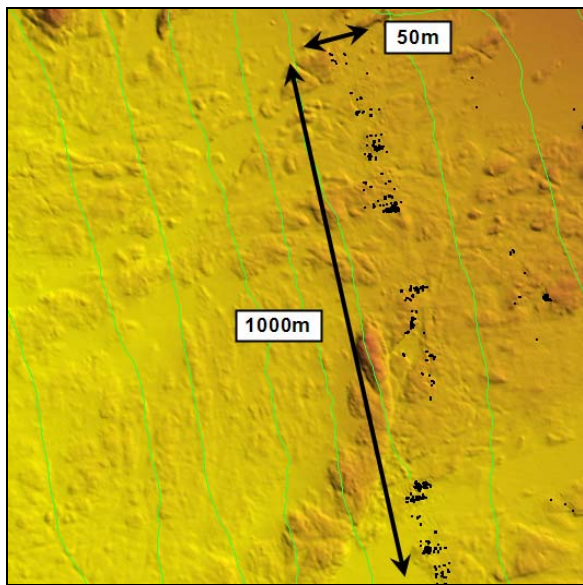
Each surface was interpolated using a 5x5 matrix with 12 nearest neighbors to determine whether any data gaps were larger than 3 nodes and therefore holidays. Instances where the holidays were larger than 3 nodes are discussed below. In all cases, the areas were examined with CARIS Side Scan Editor to identify any objects that may have escaped representation in the BASE surface.

Off Nation Pt, at position 55°55'45.7N, 134°19'54.5W, there is a 30 x 40m holiday in the shadow zone of a submerged rock. The holiday was examined in CARIS Subset Editor (see Figure 3), and the Hydrographer is confident a least depth of 3.4m from the feature was obtained<sup>9</sup>.

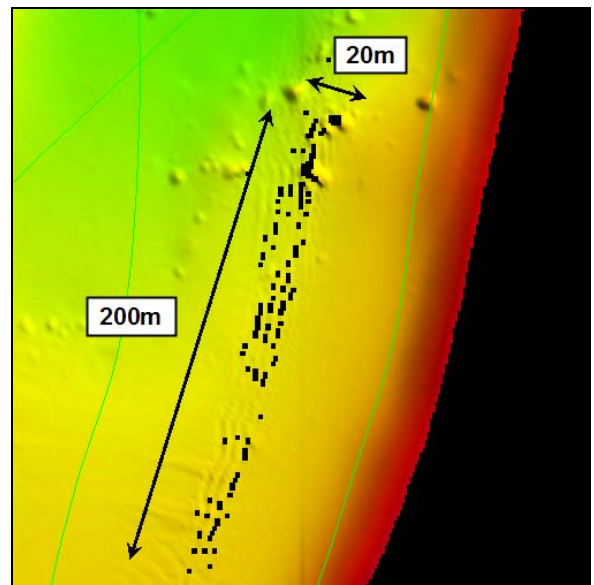


**Figure 3: Shadow zone and least depth of a submerged rock off Nation Point**

There is a gap in the data collected between Launch 1010 on May 28, 2005 (DN 148) and Launch 1018 on May 29, 2005 (DN 149), east of Windy Peak, resulting in a seam of thin coverage in the area of overlap. As shown in Figure 4, the affected area is approximately 1000 meters long, with a maximum width of 50 meters. A similar holiday developed in the southern end of Aats Bay where Launch 1018 provided insufficient line spacing (see Figure 5). The backscatter imagery of the two affected areas was examined, in addition to the data being thoroughly reviewed in CARIS Subset Editor. The Hydrographer is confident the least depths of all features are represented in the BASE surfaces and no additional contacts were noted<sup>10</sup>.



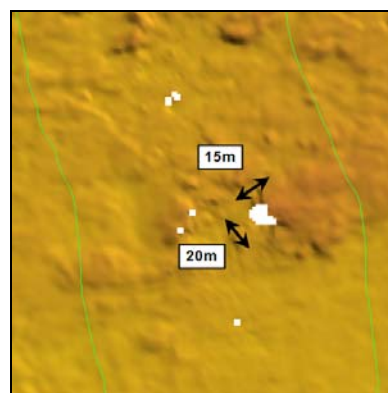
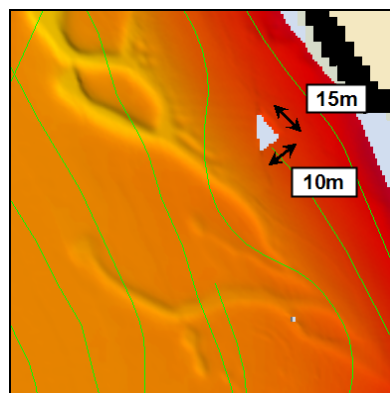
**Figure 4: Holiday resulting from poor line spacing between launches (1.2m resolution surface shown)**



**Figure 5: Holiday resulting from poor line spacing between launches (1.2m resolution surface shown)**

There are two spot holidays (Figure 6) that just exceed the three node metric in survey H11470:

- 55°54'50.6"N, 134°18'52.0"W, 15m by 10m holiday at a depth of 7m
- 55°53'10.0"N, 134°21'13.4"W, 20m by 15m holiday at a depth of 30m



**Figure 6: H11470 holidays in 2.0m surface (left) and 1.2m surface (right)**

In both instances, the backscatter imagery was examined with CARIS Side Scan Editor revealing no contacts. Additionally, the surrounding area displayed no trend towards shoaling<sup>11</sup>.

#### TRANSDUCER FIRING ERROR:

On May 28, 2005 (DN 148) the RESON 8101 on Launch 1010 experienced a strange data transmission error. The MBES was otherwise performing well until it experienced a logging blackout of 3 to 4 seconds (lines 148-2242-1 and 148-2221). These intermittent transmission losses resulted in data gaps of size 10m by 40m and 10m by 60m in the 1.2m resolution surface shown in Figure 7. Other than the small gaps, the MBES data quality does not appear to be affected<sup>12</sup>.

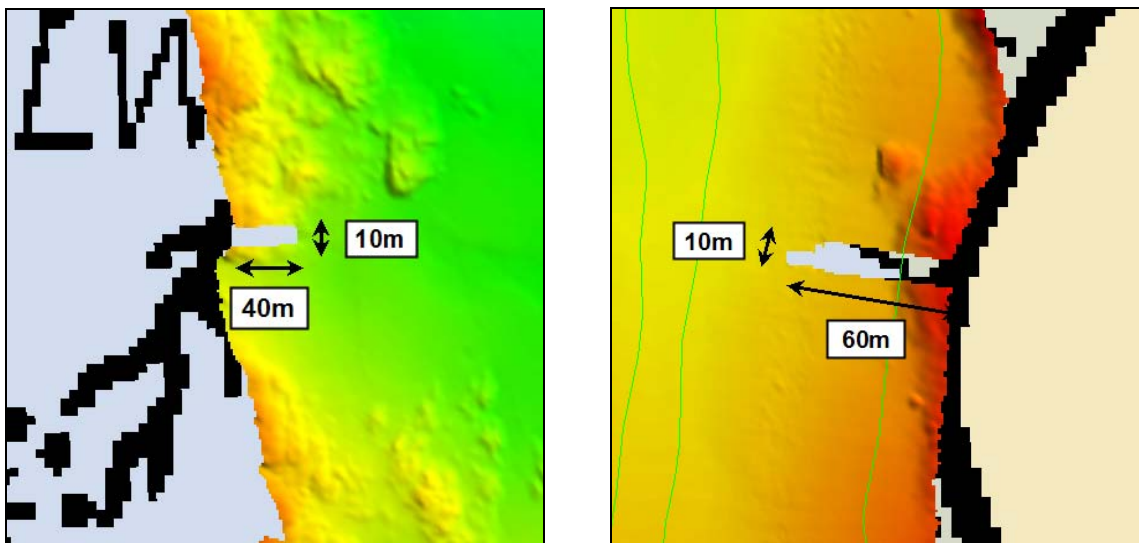


Figure 7: Data gaps resulting from transmission breaks in the MBES (1.2m resolution surface shown)

Due to heavy breakers during the survey period, the western side of Coronation Island was only surveyed to an average depth of 30 meters.

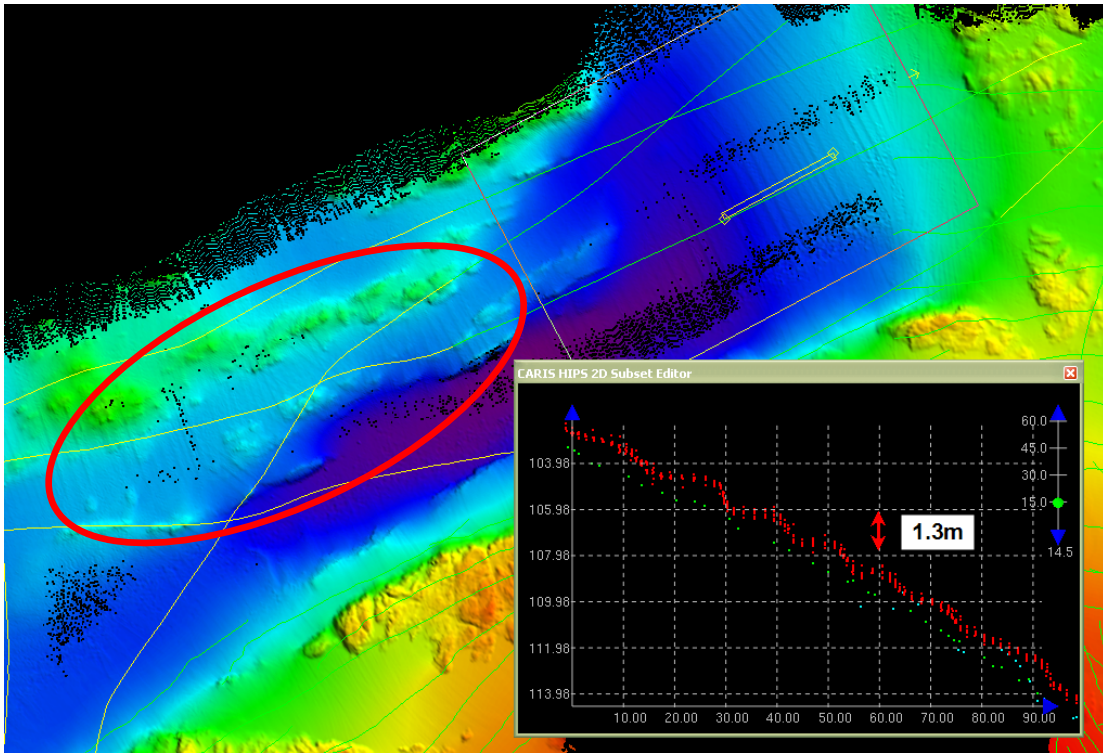
#### SOUND VELOCITY:

While using the Brooke Ocean Technology Moving Vessel Profiler 200 (MVP), the individually taken casts were concatenated to a ship .svp file for the project. No individual .svp files exist for each cast taken by the MVP.

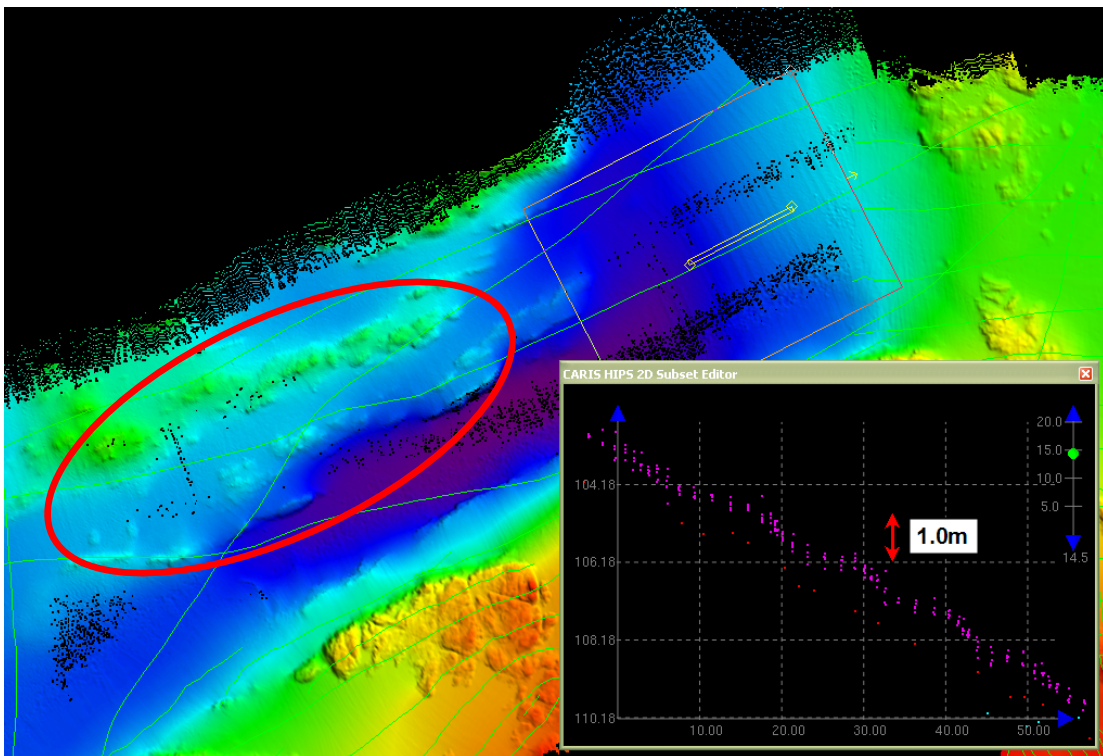
#### TRUE HEAVE:

The initial application of TrueHeave data to lines acquired by S220 in H11470 resulted in cross-track artifacts in the BASE surfaces suggestive of either heave or pitch-related errors. Additionally, data viewed in CARIS Subset Editor, as shown in Figure 8, displayed periodic tendencies exceeding 1 meter. The removal of TrueHeave from data acquired with S220 to H11470 resulted in smoother surfaces and a dampening of approximately 25% in the periodic anomalies seen in the bathymetry. Figure 9 shows an improvement in the MBES data integrity; therefore, TrueHeave data associated with S220 has not been applied to H11470. Given the survey lines acquired with S220 are straight with minimal turning, the lack of TrueHeave is unlikely to affect the MBES data quality.





**Figure 8: H11470 data with the application of TrueHeave**



**Figure 9: H11470 data with the application of TrueHeave**

## DESIGNATED SOUNDINGS:

In areas of navigational significance where the BASE surface did not depict the desired depth for the given area, a designated sounding was selected. Designated soundings were selected based on the difference between the BASE surface and reliable shoaler sounding(s) being more than half to two-thirds of the allowable IHO error budget in depths less than 20m.

## Accuracy Standards

Total propagated error (TPE) filters were applied in CARIS HIPS to all sounding data from survey H11470. 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>13</sup>.

## B3. Corrections to Echo Soundings

Data reduction procedures for survey H11470 conform to those detailed in the *OPR-O167-FA-05 Data Acquisition and Processing Report*.

## C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11470 can be found in the *OPR-O167-FA-05 Horizontal and Vertical Control Report*<sup>14</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). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from the U.S. Coast Guard beacon at Level Island (295 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 Sitka, AK (945-1600) served as control for datum determination and as the primary source for water level reducers for survey H11470.

FAIRWEATHER personnel installed one Sutron 8210 “bubbler” tide gauges at the tertiary station listed below. Gauge #09 (S/N 002332) was installed 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.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Kuiu Island	945-0913	Tertiary 30 Day	April 22, 2005	May 31, 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-O167-FA-05 Horizontal and Vertical Control Report* further information about the tide station.

All data were reduced to MLLW using unverified observed tides from station Sitka, AK by applying tide file 9451600.tid and time and height correctors through the revised zone corrector file O167FA2005CORP.zdf.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing<sup>15</sup>. A request for delivery of final approved (smooth) tides for survey H11470 was forwarded to N/OPS1 on June 7, 2005 in accordance with the *Draft Field Procedures Manual v1.1*, dated March 2005 (FPM). A copy of the request is included in Appendix III.

The OPR-O167-FA-05 Horizontal and Vertical Control Report was originally transmitted to N/OPS1, CO-OPS, on August 22, 2005. The report was not received by CO-OPS, so it was retransmitted on October 31, 2005.

## **D. RESULTS AND RECOMMENDATIONS**

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

The two meter resolution BASE surface was brought into Pydro by means of the Insert BASE/Weighted Grids function. The BASE surface soundings were then excessed to survey scale and shoal biased. All affected charts were opened in Pydro and the Hydrographer manually compared the charted soundings to the shoal biased, excessed soundings in the Pydro Chart window.

Survey H11470 was compared with charts 17320 (17<sup>th</sup> Ed.; November, 2005, 1:217,828), 17360 (34<sup>th</sup> Ed.; March, 2006, 1:217,828) and 17402 (11<sup>th</sup> Ed.; December, 2005, 1:40,000)<sup>16</sup>. All charts have been updated with the Notice to Mariners and Local Notice to Mariners through May 20, 2006.

#### **Chart 17320**

Depths from survey H11470 agreed within one to two fathoms with depths on chart 17320. Some of the shoaler depths represented on the chart near the shoreline appear to have been pulled off shore for cartographic representation, but remain accurate within the scale of the chart.

#### **Chart 17360**

Depths from survey H11470 agreed within one to two fathoms with depths on chart 17360.

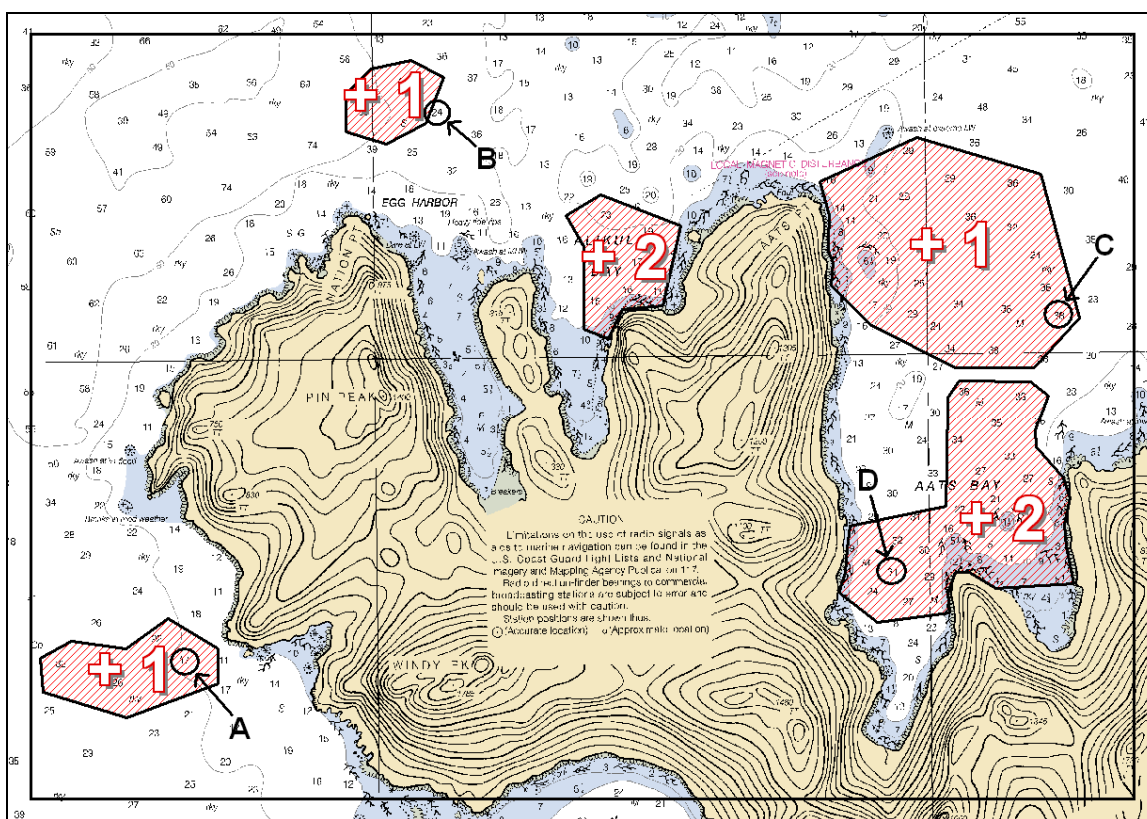
## Chart 17402

Depths from survey H11470 generally agreed or were one to two fathoms shoaler than depths on chart 17402. As shown in Figure 10, both Alikula Bay and the south end of Aats Bay had measured depths averaging 2 fathoms shoaler than charted. Three areas (northern Aats Bay, north of Nation Point and west of Windy Peak) had measured depths averaging 1 fathom shoaler than charted.

There were four soundings (see Figure 10) on chart 17402 that had a difference exceeding three meters from the depths collected during survey H11470:

- A.  $55^{\circ}53'30.28''\text{N}$ ,  $134^{\circ}21'44.66''\text{W}$  – 4.4 fathom shoalest sounding at a charted 17 fathom sounding<sup>17</sup>.
- B.  $55^{\circ}56'13.79''\text{N}$ ,  $134^{\circ}19'28.19''\text{W}$  – 36.8 fathom shoalest sounding at a charted 24 fathom sounding.
- C.  $55^{\circ}55'10.02''\text{N}$ ,  $134^{\circ}13'45.40''\text{W}$  – 30.8 fathom shoalest sounding at a charted 38 fathom sounding.
- D.  $55^{\circ}53'51.96''\text{N}$ ,  $134^{\circ}15'23.47''\text{W}$  – 26.7 fathom shoalest sounding at a charted 31 fathom sounding.

Some of the shoaler depths represented on the chart near the shoreline appear to have been pulled off shore for cartographic representation, but remain accurate within the scale of the chart.



**Figure 6: Depth comparisons between H11470 and chart 17402. Note: A “+1” indicates surveyed depths are 1 fathom shoaler than charted depths. Soundings A, B, C and D differ from the charted depths by more than three fathoms.**

## Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy is as discussed in the Accuracy Standards portion of this report. The BASE surfaces and associated soundings are adequate to supersede prior surveys in their common areas<sup>18</sup>. 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 located within the limits of H11470<sup>19</sup>.

### **Dangers to Navigation**

There were no dangers to navigation (Dton) found within the survey limits<sup>20</sup>.

## **D.2 Additional Results**

### **Shoreline Source**

Source shoreline for this sheet was taken from photogrammetric survey AK0202 (NAD 83) GC-10546, at the scale of 1:30,000 or preliminary source imagery dated October 2003. The CFF shoreline was imported to CARIS Notebook 2.2 as an editable layer named H11470\_Edited\_CFF\_Shoreline.hob, with all objects having S57 attribution. All CEF features were imported into Pydro using the Generic GPs/DPs Import Tool and processed in parallel with the DPs and GPs acquired in the field (see Shoreline Data Processing below). Due to the fact that the source file from NOAA's Remote Sensing Division (RSD) contained the weed/kelp delineation as a line feature, it had to be imported into the .hob file as a vegetation line. Correct S57 attribution does not allow WEDKLP to be a line feature.

Features from the current editions of charts 17360, 17320 and 17402 that were not depicted by the source shoreline data were digitized with S57 attribution in CARIS Notebook into H11470\_CHD\_Shoreline.hob file, to be displayed for field verification.

### **Shoreline Verification**

FAIRWEATHER personnel conducted limited 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>21</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 Carto Action of Add, Modify, Delete, or None was assigned to each item in Pydro, and all features were S57 attributed.

All accepted and primary detached and generic positions, in addition to the CEF features, were imported from the Pydro .xml to four separate stand alone .hob files in CARIS Notebook 2.2. These were named H11470\_Add\_Pydro.hob, H11470\_Modify\_Pydro.hob, H11470\_Delete\_Pydro.hob and H11470\_None\_Pydro.hob.

Features from the source CFF shoreline that could not be verified in the field were left in the H11470\_Edited\_CFF\_Shoreline.hob file and flagged with CARIS Notebook Marker text. Two CEF rocks that could not be verified in the field were flagged as Carto Action None in Pydro and had CARIS Notebook Marker text added to the H11470\_CHD\_Shoreline.hob file.

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

Items for survey H11470 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 H11470\_Features.pdf in Appendix I<sup>22</sup>.

Three additional .hob layers, named H11470\_Add\_Notebook.hob, H11470\_Modify\_Notebook.hob and H11470\_Delete\_Notebook.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 H11470\_Edited\_CFF\_Shoreline.hob or H11470\_CHD\_Shoreline.hob files. Field notes made by the Hydrographer on the boat sheets and DP forms were transferred to the remarks field for each feature.

### **Shoreline Recommendations**

Rocks which were considered to be significant high points of ledges, reefs or foul areas were left in the H11470\_Edited\_CFF\_Shoreline.hob layer. The Hydrographer believes that these significant rocks should be retained for charting<sup>23</sup>.

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede or complement shoreline information compiled on the CFF and charts<sup>24</sup>.

### **Aids to Navigation**

There were no aids to navigation (AtoN) within the survey limits<sup>25</sup>.

### **Bottom Samples**

Due to a large number of historic sites within the sheet limits, bottom sample sites for survey H11470 were chosen only in depths less than 100m, as required by the *Draft Field Procedures Manual v1.1*, dated

March, 2005. The historic sites in those depths were then reduced further, so that bottom samples were only taken at intervals of approximately 2000m, or within possible anchorage areas. This procedure was approved by NOAA's Hydrographic Survey Division (HSD) and a copy of the correspondence can be found in Appendix IV<sup>26</sup>.

Due to limited time, no bottom samples were obtained west of 134°20'00"W.

Bottom samples 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 H11470\_Add\_Pydro.hob file<sup>27</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 Certification Report 2005	April 18, 2005	N/CS34
OPR-O167-FA-05 Data Acquisition and Processing Report	November 15, 2005	N/CS34
OPR-O167-FA-05 Horizontal and Vertical Control Report	August 22, 2005	N/CS34, N/OPS1
Resent Horizontal and Vertical Control Report	October 31, 2005	N/OPS1

## Revisions Compiled During Office Processing and Certification

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<sup>1</sup> Filed with Project Records

<sup>2</sup> Concur with clarification. The west side of Coronation Island was only surveyed to an average of 30m depth.

<sup>3</sup> Filed with Project Records

<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 with clarification. Holidays are not navigationally significant and have not been included in the HCell.

<sup>12</sup> Concur

<sup>13</sup> Concur

<sup>14</sup> Filed with Project Records

<sup>15</sup> Final Approved Tides were applied on 1/3/2007 by the Pacific Hydrographic Branch. The Tide Note is attached to this report.

<sup>16</sup> Chart comparisons were performed with the most recent edition of chart 17402, 1:40,000 (11<sup>th</sup> Ed., Dec. 1, 2005, NM 10/12/05). General agreement was found between the field comparison and office comparison.

<sup>17</sup> Submitted as 4 fathom 2 foot DTON from the Branch and retained in the HCell

<sup>18</sup> Concur

<sup>19</sup> Concur

<sup>20</sup> Concur

<sup>21</sup> Filed with the Hydrographic Records

<sup>22</sup> Appended to this Report

<sup>23</sup> Concur

<sup>24</sup> Concur

<sup>25</sup> Concur

<sup>26</sup> The correspondence is attached to this report.

<sup>27</sup> Bottom samples collected by the field have been charted in conjunction with office delineated rocky seabed areas. Conflicting bottom samples were removed. Charted bottom samples have been retained where appropriate.



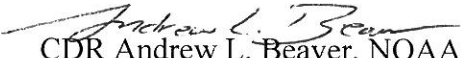


**UNITED STATES DEPARTMENT OF COMMERCE**

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

November 3, 2006

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


FROM:   
CDR Andrew L. Beaver, NOAA  
Commanding Officer


TITLE: Approval of Hydrographic Survey H11470,  
OPR-O167-FA

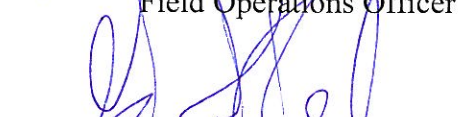
As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11470 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Draft Field Procedures Manual, March 2005 Version 1.1; 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:

  
\_\_\_\_\_  
LTjg Michael O. Gonsalves  
Survey Manager

  
\_\_\_\_\_  
LT Jennifer Dowling  
Field Operations Officer

  
\_\_\_\_\_  
CST Grant Frœlich  
Chief Survey Technician

Attachment



# H11470 Features Report

**Registry Number:** H11470  
**State:** Alaska  
**Locality:** Cape Decision, AK  
**Sub-locality:** Aats Bay and Egg Harbor  
**Project Number:** OPR-O167-FA  
**Survey Dates:** 4/27/2005 - 5/30/2005

## Charts Affected

Number	Version	Date	Scale
17402	11th Ed.	12/01/2005	1:40000
17320	17th Ed.	11/01/2005	1:217828
17360	34th Ed.	03/01/2006	1:217828
17400	16th Ed.	06/02/2001	1:229376
16016	20th Ed.	11/01/2003	1:969756
531	23rd Ed.	01/01/2006	1:2100000
500	8th Ed.	06/01/2003	1:3500000
530	31st Ed.	06/01/2005	1:4860700
50	6th Ed.	06/01/2003	1:10000000

## Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
21302	Sounding	0.13 m	55.92020428° N	134.26320285° W
21285	Sounding	16.38 m	55.92380434° N	134.31136190° W
21282	Sounding	10.01 m	55.92105420° N	134.28813459° W
21307	Sounding	-0.38 m	55.88565647° N	134.25711363° W
11301	Sounding	-20.67 m	55.90480884° N	134.36706354° W
GP1	GP	[None]	55.89502715° N	134.35623623° W
114	GP	[None]	55.89214018° N	134.35016405° W
115	GP	[None]	55.89171188° N	134.35098496° W
116	GP	[None]	55.90427905° N	134.37077701° W
117	GP	[None]	55.90460805° N	134.37147158° W

21281	Sounding	-0.45 m	55.93524998° N	134.25622858° W
21286	Sounding	0.50 m	55.92703365° N	134.32748763° W
21301	Sounding	-2.97 m	55.89645403° N	134.24676286° W
21304	Sounding	-2.11 m	55.89419044° N	134.26454031° W
21306	Sounding	-2.15 m	55.88518320° N	134.25893896° W
21305	Sounding	-4.12 m	55.89001398° N	134.25639703° W
GP2	GP	[None]	55.89368824° N	134.35633301° W

# **1 - Charted Features**

## 1.1) 21302

### Survey Summary

**Survey Position:** 55.92020428° N, 134.26320285° W  
**Least Depth:** 0.13 m  
**Timestamp:** 2005-130.16:19:01.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_\$csymb\_p.shp  
**Profile/Beam:** 2/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CEF RK NEW EXT CFF LDG

### Hydrographer Recommendations

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

0fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

0fm 0ft (531\_1)

.1m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CEF RK NEW EXT CFF LDG  
PICREP - 21302\_cef\_rk\_new\_ext\_cff\_ldg.jpg  
RECDAT - 20050510

### Office Notes

Chart rock and extend CFF ledge

## Feature Images



*Figure 1.1.1 21302\_CEF\_rk\_new\_ext\_CFF\_ldg*

## 1.2) 21285

### Survey Summary

**Survey Position:** 55.92380434° N, 134.31136190° W  
**Least Depth:** 16.38 m  
**Timestamp:** 2005-128.14:55:41.000 (05/08/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-128 / tr2128\_\$csymb\_p.shp  
**Profile/Beam:** 4/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CFF RK DISPROVAL

The CFF rock was not seen during field investigation. A 5 minute search with a 30 meter search radius in calm seas with a soft visible bottom type. 100 percent MBES coverage was obtained.

### Hydrographer Recommendations

The Hydrographer recommends discarding the CFF rock.

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

9fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

8fm 5ft (531\_1)

16.4m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)

**Attributes:** RECDAT - 20050508

### Office Notes

Remove Chd Rk

## 1.3) 21282

### Survey Summary

**Survey Position:** 55.92105420° N, 134.28813459° W  
**Least Depth:** 10.01 m  
**Timestamp:** 2005-128.14:08:35.000 (05/08/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-128 / tr2128\_\$csymb\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CHD (17402) RK DISPROVAL

The charted (17402) rock was not seen during field investigation. A 5 minute search with a 30 meter search radius in calm seas with a soft visible bottom was performed. Partial MBES coverage was obtained.

### Hydrographer Recommendations

The Hydrographer recommends removal of the rock symbol from chart 17402.

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

5 ½fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

5fm 3ft (531\_1)

10.0m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)

**Attributes:** INFORM - CHD (17402) RK DISPROVAL - DURING VERIFICATION, CHARTED ROCK WAS DISPROVED USING PARTIAL SWMB AND A VISUAL SEARCH OF 30M RADIUS FOR 5 MINUTES IN CALM SEAS WITH SOFT BOTTOM TYPE.

RECDAT - 20050508

### Office Notes

Remove Chd Rk



## 1.4) 21307

### Survey Summary

**Survey Position:** 55.88565647° N, 134.25711363° W  
**Least Depth:** -0.38 m  
**Timestamp:** 2005-130.17:29:01.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_\$csymb\_p.shp  
**Profile/Beam:** 6/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

NEW EXT CFF OBSTRN

Chart 17402 depicts three rocks and one islet in the southwestern extent of Aats Bay. These four features are part of one large reef that was presented in the CFF source.

### Hydrographer Recommendations

The Hydrographer recommends removing the rocks and islet from chart 17402 and rendering an obstruction line as depicted in the H11470\_MODIFY\_NOTEBOOK.hob layer.

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

0 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

0fm 1ft (531\_1)

-.4m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - NEW EXT CFF OBSTRN  
PICREP - 21307\_ext\_reef.jpg  
RECDAT - 20050510

### Office Notes

Chart new extents of reef

## Feature Images



*Figure 1.4.1 21307\_ext\_reef*

## 1.5) 11301

### Survey Summary

**Survey Position:** 55.90480884° N, 134.36706354° W  
**Least Depth:** -20.67 m  
**Timestamp:** 2005-130.14:30:26.000 (05/10/2005)  
**DP Dataset:** h11470 / trb1\_dpne / 2005-130 / tr1130\_\$csymb\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CFF RK IS CHD (17402) ISLET

### Hydrographer Recommendations

The Hydrographer recommends discarding the CFF rock and leaving the islet as charted on chart 17402.

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

-11 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
-11fm 2ft (531\_1)  
-20.7m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** RECDAT - 20050510

### Office Notes

Chart islet with CFF position and DP height

## Feature Images



*Figure 1.5.1*

## 1.6) GP1

### Survey Summary

**Survey Position:** 55.89502715° N, 134.35623623° W  
**Least Depth:** [None]  
**Timestamp:** 2006-095.09:28:11 (04/05/2006)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CFF RK DISPROVAL

During field verification, the CFF rock was not seen. The area was completely visible at LW.

### Hydrographer Recommendations

The Hydrographer recommends not adding a rock symbol to chart 17402.

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF RK DISPROVAL

### Office Notes

Remove Chd rk

## **2 - New Features**

## 2.1) 114

### Survey Summary

**Survey Position:** 55.89214018° N, 134.35016405° W  
**Least Depth:** [None]  
**Timestamp:** 2003-218.00:00:00.000 (08/06/2003)  
**GP Dataset:** ChartGPs - Sht G AK0202\_CEF\_new.xls  
**GP No.:** 1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CEF RK EXT CHD (17402) REEF

### Hydrographer Recommendations

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Existence Not Confirmed by imagery: OBSTRUCTION POINT  
Rock.Covers/Uncovers CEF is extent of reef.  
SORDAT - 20030806  
WATLEV - 4:covers and uncovers

### Office Notes

Chart rk and reef

## 2.2) 115

### Survey Summary

**Survey Position:** 55.89171188° N, 134.35098496° W  
**Least Depth:** [None]  
**Timestamp:** 2003-218.00:00:00.000 (08/06/2003)  
**GP Dataset:** ChartGPs - Sht G AK0202\_CEF\_new.xls  
**GP No.:** 2  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CEF RK IS EXT CHD (17402) REEF

### Hydrographer Recommendations

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Existence Not Confirmed by imagery: OBSTRUCTION POINT  
Rock.Covers/Uncovers CEF is extent of reef.  
SORDAT - 20030806  
WATLEV - 4:covers and uncovers

### Office Notes

Chart rk and reef



## 2.3) 116

### Survey Summary

**Survey Position:** 55.90427905° N, 134.37077701° W  
**Least Depth:** [None]  
**Timestamp:** 2003-218.00:00:00.000 (08/06/2003)  
**GP Dataset:** ChartGPs - Sht G AK0202\_CEF\_new.xls  
**GP No.:** 3  
**Charts Affected:** 17402\_1, 17320\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

COULD NOT CONFIRM CEF ROCK DURING VERIFICATION - BREAKERS NOTED

### Hydrographer Recommendations

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Existence Not Confirmed by imagery: OBSTRUCTION POINT Rock.Submerged  
Perform Highwater Multibeam. Possible submerged reef.  
SORDAT - 20030806  
WATLEV - 5:awash

### Office Notes

Retain

## 2.4) 117

### Survey Summary

**Survey Position:** 55.90460805° N, 134.37147158° W  
**Least Depth:** [None]  
**Timestamp:** 2003-218.00:00:00.000 (08/06/2003)  
**GP Dataset:** ChartGPs - Sht G AK0202\_CEF\_new.xls  
**GP No.:** 4  
**Charts Affected:** 17402\_1, 17320\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

COULD NOT CONFIRM CEF ROCK DURING VERIFICATION - BREAKERS NOTED

### Hydrographer Recommendations

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Existence Not Confirmed by imagery: OBSTRUCTION POINT Rock.Submerged  
Perform Highwater Multibeam. Possible submerged reef.  
SORDAT - 20030806  
WATLEV - 5:awash

### Office Notes

Retain

## 2.5) 21281

### Survey Summary

**Survey Position:** 55.93524998° N, 134.25622858° W  
**Least Depth:** -0.45 m  
**Timestamp:** 2005-128.13:40:17.000 (05/08/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-128 / tr2128\_uwtroc\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CFF RK VRD - DP'D FOR HEIGHT - USE CFF POSITION.

### Hydrographer Recommendations

[None]

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

0 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

0fm 1ft (531\_1)

-.5m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF (17402) rk vrd DP'd for height -- Use CFF position.

### Office Notes

Chart CFF position and DP height of rock

## 2.6) 21286

### Survey Summary

**Survey Position:** 55.92703365° N, 134.32748763° W  
**Least Depth:** 0.50 m  
**Timestamp:** 2005-128.15:33:14.000 (05/08/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-128 / tr2128\_obstrn\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

CFF RK VRD - DP'D FOR HEIGHT - USE CFF POSITION.

### Hydrographer Recommendations

[None]

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

0 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
0fm 1ft (531\_1)  
.5m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF RK VRD - DP'D FOR HEIGHT - USE CFF POSITION  
PICREP - 21286\_cff\_rk\_to\_se.jpg

### Office Notes

Chart rock

## Feature Images



*Figure 2.6.1 21286\_CFF\_rk\_toSE*

## 2.7) 21301

### Survey Summary

**Survey Position:** 55.89645403° N, 134.24676286° W  
**Least Depth:** -2.97 m  
**Timestamp:** 2005-130.15:32:14.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_\$csymb\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

NEW EXT CHD (17402) LDG

### Hydrographer Recommendations

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

-1 ½fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
-1fm 4ft (531\_1)  
-3.0m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - NEW EXT CHD (17402) LDG  
PICREP - 21301\_new\_ext\_chd\_ldg.jpg  
RECDAT - 20050510

### Office Notes

Retain ledge as charted

## Feature Images



*Figure 2.7.1 21301\_new\_ext\_chd\_ldg*

## 2.8) 21304

### Survey Summary

**Survey Position:** 55.89419044° N, 134.26454031° W  
**Least Depth:** -2.11 m  
**Timestamp:** 2005-130.16:52:41.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_\$csymb\_p.shp  
**Profile/Beam:** 4/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

NEW EXT CHD (17402) LDG

### Hydrographer Recommendations

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

-1fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
-1fm 1ft (531\_1)  
-2.1m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - NEW EXT CHD (17402) LDG  
PICREP - 21304\_new\_ext\_chd\_ldg (new lw).jpg  
RECDAT - 20050510

### Office Notes

Chart new extents of ledge



## Feature Images



*Figure 2.8.1 21304\_new\_ext\_chd\_ldg(new LW)*

## 2.9) 21306

### Survey Summary

**Survey Position:** 55.88518320° N, 134.25893896° W  
**Least Depth:** -2.15 m  
**Timestamp:** 2005-130.17:19:33.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_\$csymb\_p.shp  
**Profile/Beam:** 5/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CFF OBSTRN IS REEF - CONNECTED AT LW

### Hydrographer Recommendations

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

-1fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
-1fm 1ft (531\_1)  
-2.2m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF OBSTRN IS REEF - CONNECTED AT LW  
PICREP - 21306\_cff\_obstrn\_is\_reef (new ext lw).jpg  
RECDAT - 20050510

### Office Notes

Chart new extents of reef

## Feature Images



*Figure 2.9.1 21306\_CFF\_OBSTN\_is\_reef(new ext LW)*

## 2.10) 21305

### Survey Summary

**Survey Position:** 55.89001398° N, 134.25639703° W  
**Least Depth:** -4.12 m  
**Timestamp:** 2005-130.17:09:53.000 (05/10/2005)  
**DP Dataset:** h11470 / trb2\_dpne / 2005-130 / tr2130\_obstrn\_p.shp  
**Profile/Beam:** 1/1  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CFF RK VRD - DP'D FOR HEIGHT - USE CFF POSITION.

### Hydrographer Recommendations

[None]

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

-2 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)  
-2fm 1ft (531\_1)  
-4.1m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** PICREP - 21305\_cff\_rk\_vfd.jpg

### Office Notes

Chart rock with CFF position and DP height

## Feature Images



*Figure 2.10.1 21305\_CFF\_rk\_vfd*

## 2.11) GP2

### Survey Summary

**Survey Position:** 55.89368824° N, 134.35633301° W  
**Least Depth:** [None]  
**Timestamp:** 2006-095.09:29:22 (04/05/2006)  
**GP Dataset:** ChartGPs - Digitized  
**GP No.:** 2  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

CFF RK DISPROVAL

During field verification, the CFF rock was not seen. The area was completely visible at LW.

### Hydrographer Recommendations

The Hydrographer recommends not adding a rock symbol to chart 17402.

### S-57 Data

**Geo object 1:** Cartographic symbol (\$CSYMB)  
**Attributes:** INFORM - CFF RK DISPROVAL

### Office Notes

Remove Chd rk

# H11470 Danger to Navigation Report

**Registry Number:** H11470  
**State:** Alaska  
**Locality:** Cape Decision, AK  
**Sub-locality:** Aats Bay and Egg Harbor  
**Project Number:** OPR-O167-FA  
**Survey Dates:** 4/27/2005 - 5/30/2005

## Charts Affected

Number	Version	Date	Scale
17402	11th Ed.	12/01/2005	1:40000
17320	17th Ed.	11/01/2005	1:217828
17360	34th Ed.	03/01/2006	1:217828
17400	16th Ed.	06/02/2001	1:229376
16016	20th Ed.	11/01/2003	1:969756
531	23rd Ed.	01/01/2006	1:2100000
500	8th Ed.	06/01/2003	1:3500000
530	31st Ed.	06/01/2005	1:4860700
50	6th Ed.	06/01/2003	1:10000000

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	7.98 m	55° 53' 30.284" N	134° 21' 44.656" W	---

## **1 - Danger To Navigation**



**1.1) Profile/Beam - 36/93 from h11470 / 1018\_8101 / 2005-149 / 149-2113****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 55° 53' 30.284" N, 134° 21' 44.656" W  
**Least Depth:** 7.98 m  
**Timestamp:** 2005-149.21:14:45.443 (05/29/2005)  
**Survey Line:** h11470 / 1018\_8101 / 2005-149 / 149-2113  
**Profile/Beam:** 36/93  
**Charts Affected:** 17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

Designated Sounding

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11470/1018_8101/2005-149/149-2113	36/93	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

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

4 ¼fm (17402\_1, 17320\_1, 17360\_1, 17400\_1, 16016\_1, 530\_1)

4fm 2ft (531\_1)

8.0m (500\_1, 50\_1)

**S-57 Data****Geo object 1:** Sounding (SOUNDG)**Office Notes**

Chart 4 fthm 2 ft DTON found by office

### Feature Images

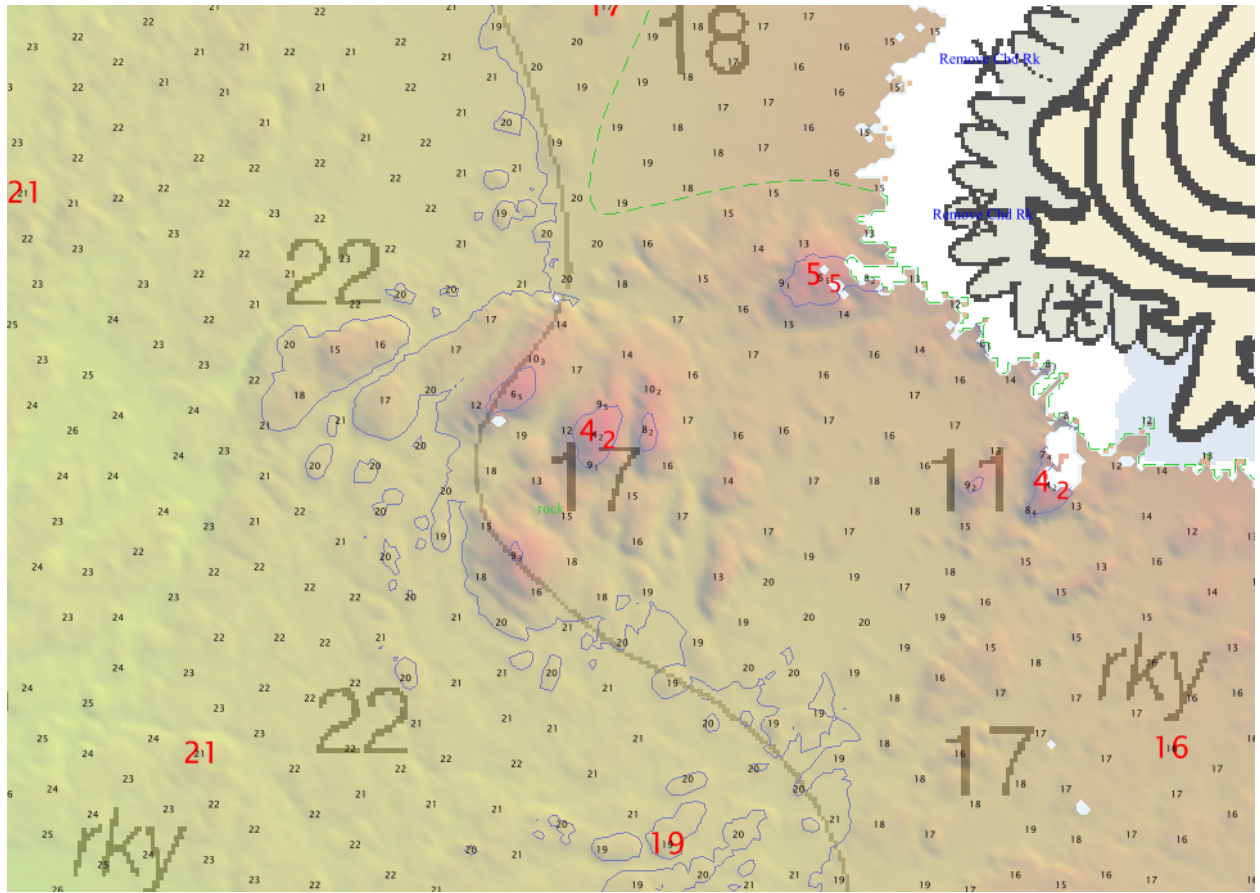


Figure 1.1.1



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** March 2, 2006

**HYDROGRAPHIC BRANCH:** Pacific Hydrographic Branch  
**HYDROGRAPHIC PROJECT:** OPR-O167-FA-2005  
**HYDROGRAPHIC SHEET:** H11470

**LOCALITY:** Aats Bay and Egg Harbor, Cape Decision, AK  
**TIME PERIOD:** April 27 - May 30, 2005

**TIDE STATION USED:** 945-0913 Kuiu Island, AK  
Lat. 56 02.2' N Long. 134 06.9' W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 3.052 meters

**TIDE STATION USED:** 945-1600 Sitka, AK  
Lat. 57 03.1' N Long. 135 20.5' W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 2.791 meters

**REMARKS: RECOMMENDED ZONING**

**Use zone(s) identified as:** SA227, SA232, SA233 & PAC296

**Refer to attachments for zoning information.**

**Note 1:** Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

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

CHIEF, PRODUCTS AND SERVICES DIVISION



**Final tide zone node point locations for OPR-O167-FA-2005, H11470**

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 SA227	945-0913	0	0.95
-134.221058 55.886934	945-1600	-6	1.06
-134.340174 55.854792			
-134.278845 55.827423			
-134.153147 55.768576			
-133.938043 55.687646			
-133.644836 55.621042			
-133.412691 55.570237			
-133.380726 55.55132			
-133.359403 55.569867			
-133.343302 55.581839			
-133.329214 55.597227			
-133.331531 55.624864			
-133.391526 55.656501			
-133.388738 55.680334			
-133.493275 55.714751			
-133.624251 55.7308			
-133.719365 55.733084			
-133.880478 55.762336			
-134.068642 55.822675			
-134.221058 55.886934			
Zone SA232	945-0913	0	0.97
-134.180977 55.897983	945-1600	-6	1.09
-134.221058 55.886934			
-134.273112 55.929502			
-134.396857 56.019466			
-134.559311 56.120354			
-134.668297 56.183267			
-134.668297 56.183267			
-134.665109 56.190378			
-134.66511 56.206372			
-134.523478 56.141033			
-134.347886 56.051564			
-134.129045 55.93643			
-134.180977 55.897983			

Zone SA233	945-0913	0	0.95
-134.340174 55.854792	945-1600	-6	1.06
-134.452424 55.972205			
-134.673184 56.166002			
-134.671594 56.175696			
-134.668297 56.183267			
-134.559311 56.120354			
-134.396857 56.019466			
-134.273112 55.929502			
-134.221058 55.886934			
-134.340174 55.854792			
Zone PAC296	945-0913	0	0.93
-133.605919 55.243308	945-1600	-6	1.04
-134.178754 55.174657			
-134.712992 55.093733			
-134.866171 55.517283			
-134.977374 56.055934			
-134.968794 56.134025			
-134.673184 56.166002			
-134.452424 55.972205			
-134.340174 55.854792			
-134.278845 55.827423			
-134.153147 55.768576			
-133.938043 55.687646			
-133.644836 55.621042			
-133.412691 55.570237			
-133.380726 55.55132			
-133.354427 55.538244			
-133.422426 55.5188			
-133.474552 55.505785			
-133.53479 55.499123			
-133.638205 55.307774			
-133.605919 55.243308			

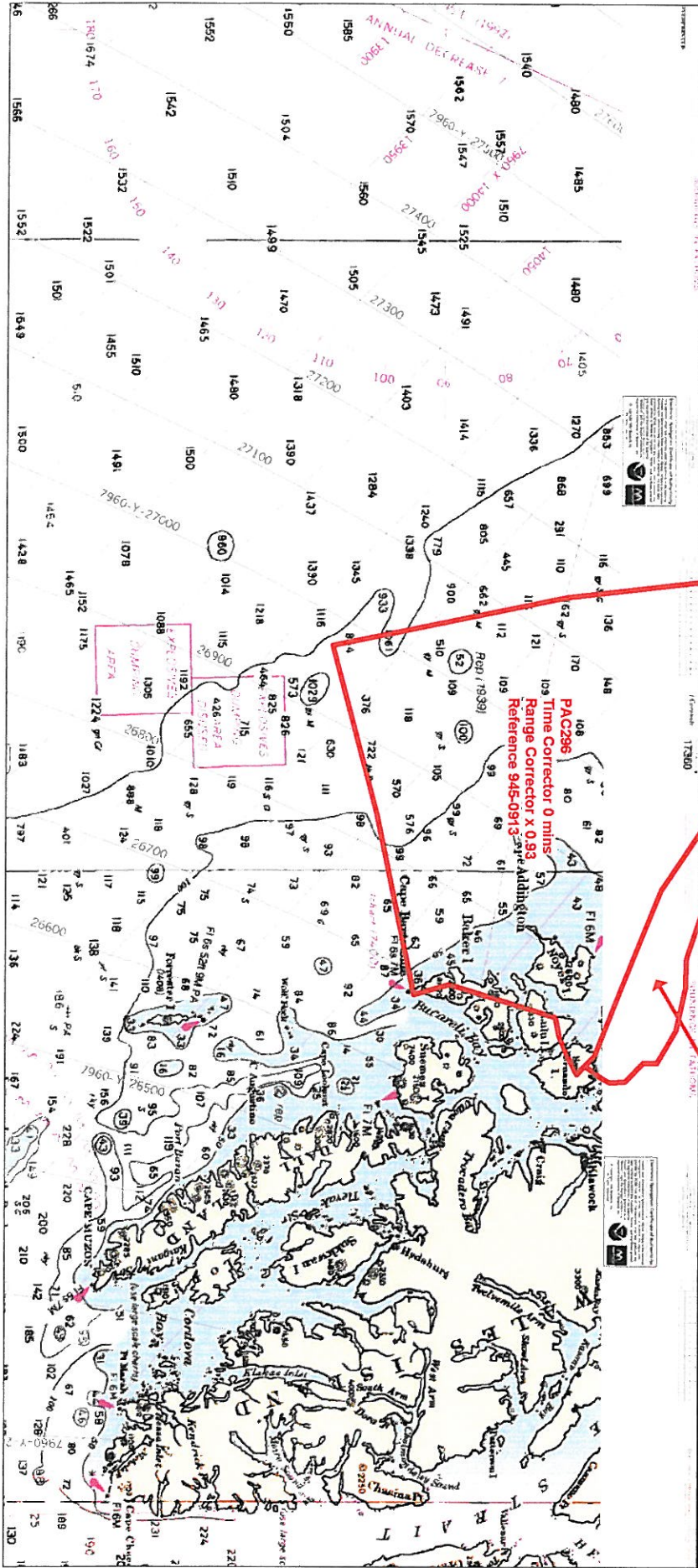
# Final Tidal Zoning for OPR-0167-FA-2005, H11470 At Bay and Egg Harbor Cape Decision, AK

**SA233**  
Time Corrector 0 mins  
Range Corrector x 0.85  
Reference 945-0913

**SA232**  
Time Corrector 0 mins  
Range Corrector x 0.97  
Reference 945-0913

**SA227**  
Time Corrector 0 mins  
Range Corrector x 0.95  
Reference 945-0913

**PAC296**  
Time Corrector 0 mins  
Range Corrector x 0.93  
Reference 945-0913



Subject: Re: Bottom sample guidance

Date: Tue, 31 May 2005 16:39:19 -0400

From: "Michael Riddle" <Michael.Riddle@noaa.gov>

Organization: NOAA/NOS

To: Holly DeHart atsea <holly.dehart.atsea@noaa.gov>

CC: mike.gibson@noaa.gov, Mark Wetzler <Mark.Wetzler@noaa.gov>

Hi Holly,

Sounds like it is getting rough out there. Just got back from leave in the UK (sounds like Mark could get a job at the Tower of London :) What Mark recommends (sample at charted locations approximately 2000m apart, but not all of the charted locations) sounds very reasonable to me.

Your right, the next version of the FPM should account for this non anchorage scenario. Perhaps something like this:

"To meet the requirement for non anchorage areas, the hydrographer may elect to obtain samples at the charted sediment locations at 2000m intervals."

Mike

Holly DeHart atsea wrote:

>

> Good morning Mike,

>

> Mark has tied me up in the chain locker and forced me to commit to an  
> interpretation of the FPM on bottom samples. He says if I can't get  
> an authoritative answer of this, he'll start cutting off one finger  
> each day and FedExing them to Ops!

>

> If you pull up that section on the March 2005 version, you'll see it's  
> a bit confusing. I think we've come up with the correct  
> interpretation, and if not, one that makes sense. I just wanted to  
> verify that this guidance is good so I can integrate it into FPM  
> version 2.

>

> The current doc says to sample in non-anchorage areas w/ a minimum  
> distance of 2000m between (no samples required in areas deeper than  
> 100m). It also says that, at a minimum, currently charted bottom  
> characteristics shall be verified. Then it says that if samples are  
> agreeing, that doing all of them can be waived by the hydrographer w/  
> command approval.

>

> FA has THIS situation (which I hadn't even considered when we

> discussed bottom samples last week): no anchoring in the area yet the  
> samples are as close as 500 meters apart. This would mean a WHOLE  
> LOTTA sampling if each characteristic was to be verified. What Mark  
> and I came up w/ was this: Perform samples at charted locations  
> approximately 2000m apart, but not ALL of the charted locations. This  
> will cut the sample numbers down to something reasonable. Then, if  
> these samples are agreeing well w/ what's charted, the hydrographer  
> can waive the verification of the additional samples at the command's  
> discretion. Obviously, if the portion of samples initially collected  
> (at approximate 2000m intervals) show significant discrepancies, all  
> charted characteristics should be verified.

>  
> I believe this is what the FPM is trying to say, but it needs some  
> revised verbage. Could you please verify that this procedure is OK  
> for Mark?

>  
> Thanks so much!

>  
> Holly



**H11470 HCell Report**  
Sarah Wolfskehl, 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 RNC in the region: NOAA ENC, US2AK3OM, and NOAA RNC, 17402.

HCell compilation of survey H11470 utilized Office of Coast Survey HCell Specifications Version 3.1, with approved modifications to better align with PHB's HCell process and to meet MCD needs.

**1. Compilation Scale**

Depths for HCell H11470 were compiled to the largest scale chart in the region, 17402, 1:40,000. Density and distribution of soundings and features emulate chart 17402.

**2. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 5-meter combined surface in CARIS BASE Editor. A shoal-biased sounding set was made at the survey scale, 1:10,000, using a Radius Table with values shown in the table, below. The resultant sounding layer contains 16,303 depths ranging from 0.9 to 140.8 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	345	5

In CARIS BASE Editor chart scale soundings were manually selected from the survey scale high density sounding layers and imported into a new layer. 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 Base Surface H11470\_combined\_final was used to auto generate a depth area. This depth area was cropped to junction with HCells H11363 and H11364, which have previously been compiled.

### 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 Generalized	Actual Value of Chart Contours
3	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 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, DEPARE, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over \*\_SS.000 file contours in all cases where conflicts are found.

### 4. Meta Areas

The following Meta object areas are included in HCell H11470:

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

Shoreline features for H11470 were delivered from the field in several .hob files described in the DR. The files contain new features, modification to GC or charted features, and disprovals. These were deconflicted against GC shoreline, the chart and hydrography during office processing. New features, modifications to GC features, and retained chart features have been included in the HCell. Please note, not all of these features are included in the Features Report section of this Descriptive Report. Only those features in the Pydro .pss file submitted from the field are in the report. There is also one DTON discovered and submitted by the office that can be found in the features report.

The source of all features included in the H11470 HCell can be determined by the SORIND field.

## 5.1 Mean High Water Used for HCells

For the purpose of compilation of intertidal depth areas within this survey, the CO-OPS “*Height of High Water Above the Plane of Reference*” is used from “*Tide Note for Hydrographic Survey*” which is included in this report. The MHW(-h) value from the primary tide station is used for defining the DRVAL1 (Depth Range Value) attribute field for the DEPARE component of the feature, where DRVAL2 is 0.0.

## 6. S-57 Objects and Attributes

The \*\_CS HCell contains the following Objects:

\$CSYMB	Blue Notes
ACHARE	Anchorage Area
DEPARE	The all-encompassing depth area
DEPCNT	Modified GC MLLW
LNDARE	Islets
LNDELV	Islet Elevation
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
OBSTRN	Obstruction area object
SBDARE	Modified GC ledges and reefs, bottom samples, and rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features
WATTUR	Tide Rips
WEDKLP	Kelp

The \*\_SS HCell contains the following Objects:

DEPCNT	Generalized contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

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. By agreement with MCD, the NINFOM field is populated with an abbreviated version of the Blue Note (30 characters or less), describing the chart disposition, to be used by MCD in generating their Chart History spreadsheet.

## **8. Spatial Framework**

### **8.1 Coordinate System**

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

### **8.2 Horizontal and Vertical Units**

DUNI, HUNI and PUNI are used to define units for depth, height and horizontal position in the chart units HCell, as shown below.

Chart Unit Base Cell Units:

Depth Units (DUNI):	Fathoms and feet
Height Units (HUNI):	Feet
Positional Units (PUNI):	Meters

During creation of the HCell in CARIS BASE Editor and CARIS S-57 Composer, all soundings and features are maintained in metric units with as high precision as possible. Depth units for soundings measured with sonar maintain millimeter precision. Depths on rocks above MLLW and heights on islets above MHW are typically measured with range finder, so precision is less. Units and precision are shown below.

BASE Editor and S-57 Composer Units:

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

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 skyward of 0 fathoms (MLLW) to 2.0 feet above MHW display in feet for values that round to 5 feet or less, and in fathoms and feet skyward of that.
- All height units (HUNI) which have been converted to charting units, and that are 2.00 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 Junction Surveys

H11470 junctions with H11363 (submitted April 2009) and H11364 (submitted November 2008). Comparison between the junction areas was made to ensure the most shoal soundings were retained from each survey. Various edits will need to be made to both H11363 and H11364, as noted in the HCell.

## 10. QA/QC and ENC Validation Checks

H11470 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 chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

## 11. Products

### 11.1 HSD, MCD and CGTP Deliverables

H11470_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000.
H11470_SS.000	Base Cell File, Chart Units, Soundings compiled to 1:10,000.
H11470_DR.doc	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items.
H11470_outline.gml	Survey outline to populate SURDEX.

### 11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.2`	Creation of soundings and bathy-derived features, 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.

## **12. Contacts**

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

Sarah Wolfskehl  
Physical Scientist, PHB  
Seattle, WA  
206-526-6859  
Sarah.Wolfskehl@noaa.gov

APPROVAL SHEET  
H11470

Initial Approvals:

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