

H11847

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.* ..... RA-20-01-08

*Registry No.* ..... H11847

### LOCALITY

*State* ..... ALASKA

*General Locality* ..... Approaches to Sitka

*Sublocality* ..... Vicinity of Biali Rock

.....  
2008  
.....

### CHIEF OF PARTY

..... Commander Donald W. Haines, NOAA

### LIBRARY & ARCHIVES

DATE .....

NOAA FORM 77-28 (11-72) <p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;"><b>HYDROGRAPHIC TITLE SHEET</b></p>	REGISTRY No  <b>H11847</b>
<b>INSTRUCTIONS</b> – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.	FIELD No  <b>RA-20-01-08</b>
State <u>Alaska</u> General Locality <u>Approaches to Sitka</u> Sub-Locality <u>Vicinity of Biali Rock</u> Scale <u>1:20,000</u> Date of Survey <u>5/20/2008 - 6/17/2008</u> Instructions dated <u>4/21/2008</u> Project No. <u>OPR-O112-RA-08</u> Vessel <u>RA3 (1021), RA4 (2801), RA5 (2802), RA9 (915_Ceeducer)</u> Chief of party <u>Commander Donald W. Haines, NOAA</u> Surveyed by <u>RAINIER Personnel</u> Soundings by echo sounder, hand lead, pole <u>Reson SeaBat 8101, Reson SeaBat 7125</u> Graphic record scaled by <u>RAINIER Personnel</u> Graphic record checked by <u>RAINIER Personnel</u> Automated Plot <u>HP1050C</u> Verification by <u>A. Foster, M. Herzog</u> Soundings in <u>Fathoms</u> at <u>MLLW</u>	
<b>REMARKS:</b> <u>All times are UTC.</u> <u>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.</u>	

## Descriptive Report to Accompany Hydrographic Survey H11847

Project OPR-O112-RA-08  
Approaches to Sitka, Alaska  
Vicinity of Biali Rock  
Scale 1:20,000  
May-June, 2008

**NOAA Ship *Rainier* (s221)**

Chief of Party: Commander Donald W. Haines, NOAA

### A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-O112-RA-08 dated April 21, 2008 and all other applicable direction<sup>1</sup>, with the exception of deviations noted in this report. The survey area is south of Rachek Island, in the vicinity of Biali Rock. This survey corresponds to sheet “D” in the sheet layout provided with the Letter Instructions. OPR-O112-RA-08 addresses inadequate chart data and reduces the Critical survey backlog. The USCG 17<sup>th</sup> District identifies the route south from Sitka “along a protected passage to Necker Bay and Crawfish Inlet, is seeing increased use by commercial fishing, charter, and recreational vessels.”

Complete multibeam echosounder (MBES) coverage was achieved in the survey area in waters 8 meters and deeper. In depths less than 8 meters additional MBES coverage was acquired to identify least depths over significant features or shoals, as appropriate for this survey.<sup>1</sup> Total mileage acquired by each vessel and system is reference in Table 1.

Data Acquisition Type	Hull Number with Mileage (nm)				Total
	1905	1021	2801	2802	
MBES (mainscheme)	-	142.50	177.74	62.05	382.29
Crosslines	-	-	25.15	5.21	30.36
Developments	0.52	-	-	-	0.52
Total Number of Items Investigated	2	-	-	-	2
Total Area Surveyed (sq. nm)	-	-	-	-	32.89

*Table 1: Statistics for Survey H11847*

Data acquisition was conducted from May 20th to June 17th, 2008 (DN 141 to DN169).

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

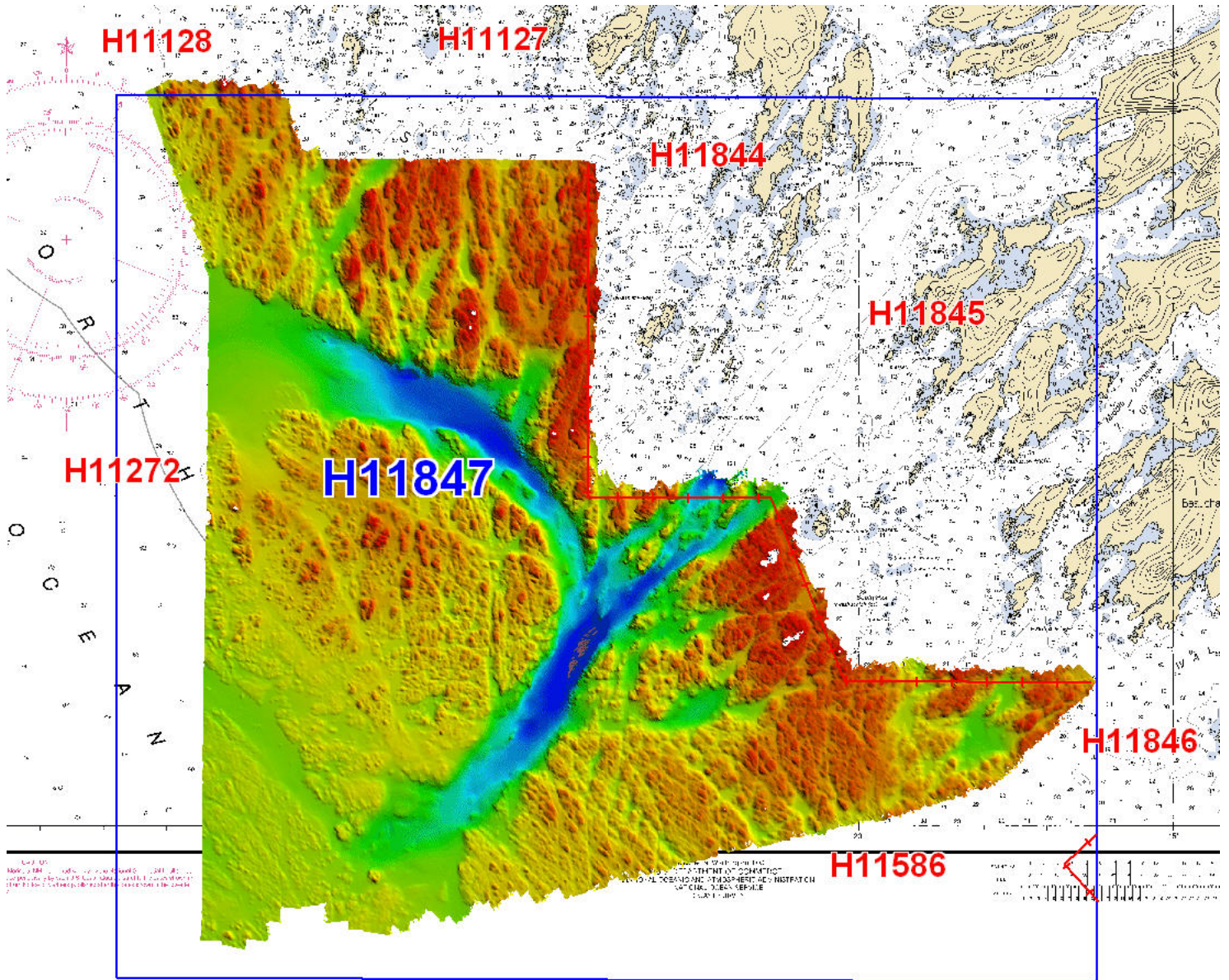


Figure 1. H11847 Survey Limits (Chart 17326)



**B. DATA ACQUISITION AND PROCESSING**

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-O112-RA-08 Data Acquisition and Processing Report (DAPR)*, submitted under separate cover.<sup>2</sup> Items specific to this survey, and any deviations from the DAPR are discussed in the following sections.

Final Approved Water Levels have been applied to this survey.<sup>3</sup> See Section C. for additional information.

**B1. Equipment and Vessels**

Data for this survey were acquired by the following vessels:

Hull Number	Name	Acquisition Type
1021	RA-3	Multibeam Echosounder
2801	RA-4	Multibeam Echosounder
2802	RA-5	Multibeam Echosounder
1905	RA-9	Vertical Beam Echosounder Detached Positions

*Table 2. Data Acquisition Vessels for H11847.*

Sound speed profiles were measured with SEACAT 19+ profilers in accordance with the Specifications and Deliverables.

No unusual vessel configurations were used for data acquisition.

**B2. Quality Control**

**Crosslines**

Multibeam Echosounder (MBES) crosslines totaled 30.36 nautical miles, comprising 7.94% of main scheme MBES hydrography. The mainscheme bathymetry was manually compared to the XL nadir beams in CARIS subset mode and agreed very well, all differences were within IHO Order 1 standard in deep or shallow water.

A statistical Quality Control Report has been conducted on representative data acquired with each system used on this survey. Results of these tests are included in the updated 2008 *Rainier Hydrographic System Readiness Review* package submitted with this survey.

## Junctions

The following contemporary surveys junction with H11847 (See Figure 1):

<b>Registry #</b>	<b>Scale</b>	<b>Date</b>	<b>Junction side</b>
H11272	1:20,000	2005	West
H11127	1:10,000	2006	North
H11128	1:10,000	2006	Northwest
H11586	1:10,000	2007	South
H11844	1:10,000	2008	Northeast
H11845	1:10,000	2008	East
H11846	1:10,000	2008	East-Southeast

Junction surveys H11844 and H11845 were compared with survey H11847. Agreement was excellent with all differences were within IHO Order 1 standard in the common area.<sup>4</sup> Survey H11846 and LIDAR junction data was available, however there was no data in the common area to compare.

## Data Quality Factors

No unusual conditions were encountered during the survey that affected the expected accuracy and quality of survey data, except as noted below:

### RA-3 (1021) Swing Arm

This launch's 8101 transducer is mounted on a retractable swing arm, which is hand-tightened by a turnbuckle when in the deployed position. This can contribute to a roll-offset error. However, the coverage was adequate enough to correct this offset as necessary.<sup>5</sup> Offsets were corrected on DN141 of acquisition by modifying the CARIS .hvf file.

### Holidays

There were five (5) holidays in coverage scattered throughout the survey area, due to charted shoals that were deemed too shallow to safely run a multibeam launch over, given the prevailing swell and weather conditions in the area. However there were also a few 'missing pixels' due to the combining of finalized BASE surfaces of differing resolutions, all were noted on a steep downslope. All the areas were 10 fathom or deeper and were deemed as not significant to navigation.<sup>6</sup> (See Figure 2)

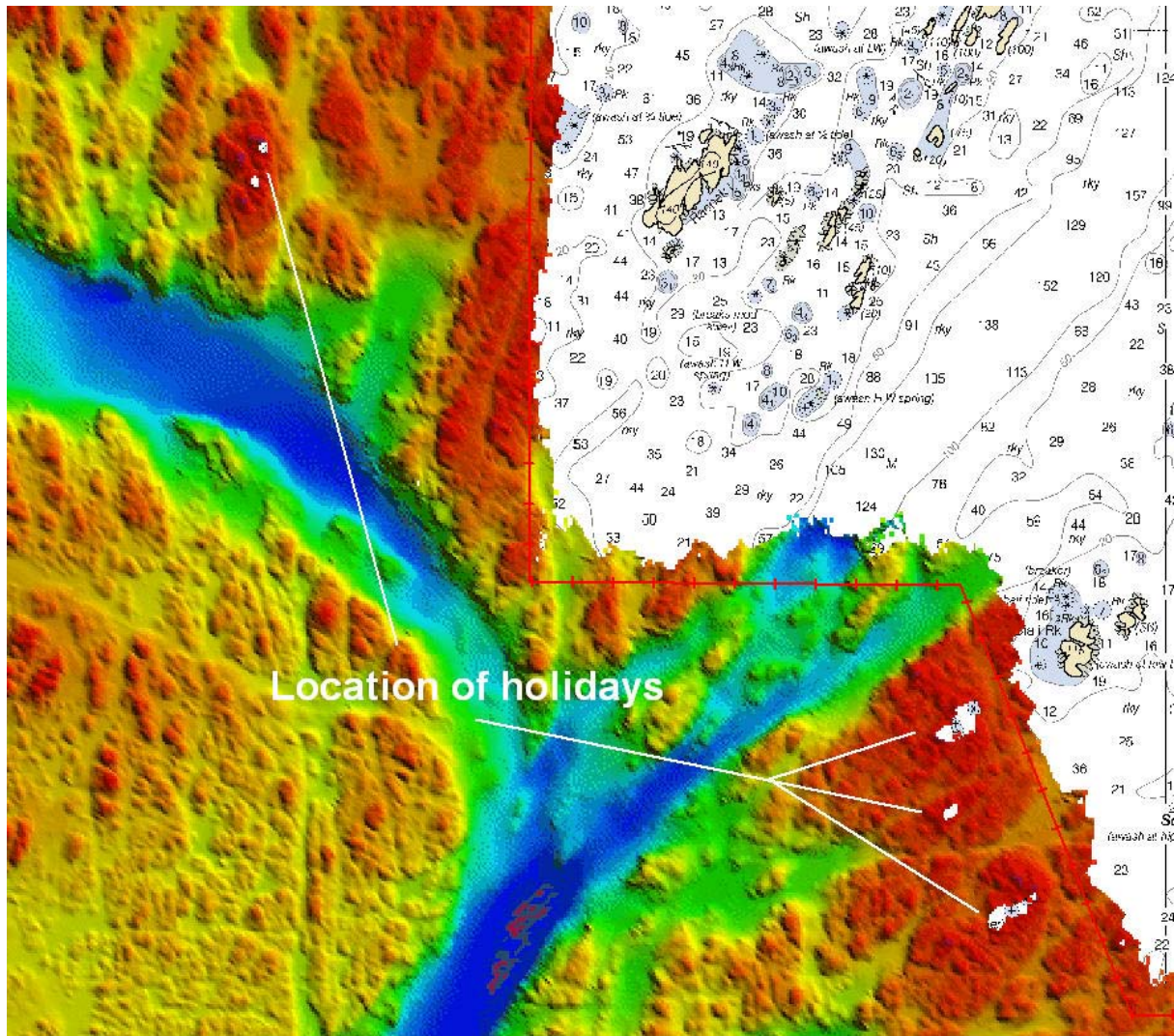


Figure 2: Location of holidays on H11847 (Chart 13726)

### B3. Data Reduction

Data reduction procedures for survey H11847 conform to those detailed in the *OPR-O112-RA-08 DAPR*.

### B4. Data Representation

Many BASE surfaces were used in processing H11847. Final BASE surface resolutions and depth ranges were set in accordance with the Field Procedures Manual with field sheets smaller than  $25 \times 10^6$  nodes. The submission Field Sheet and BASE Surface structure are shown in Figures 3 to 8.<sup>7</sup>

Soundings and contours were generated in CARIS HIPS from the final combined BASE surface for field unit review purposes. They are included for reference only and are not intended as a deliverable.

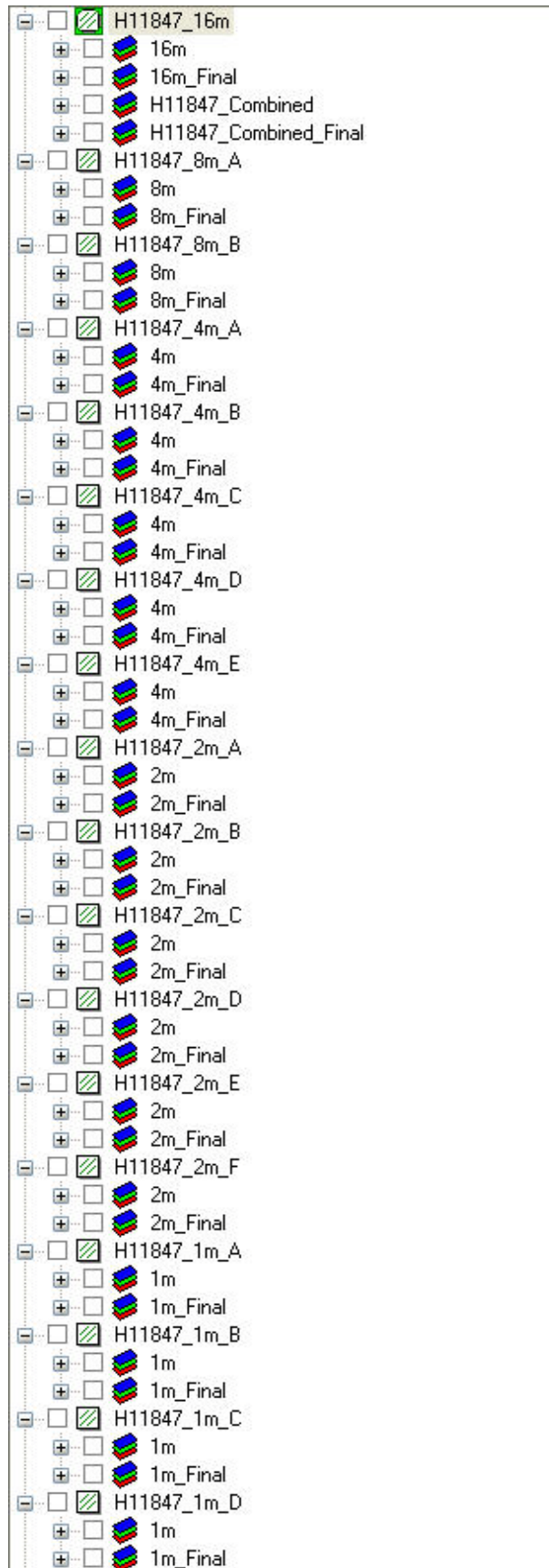


Figure 3: Field sheets and BASE surfaces submitted with H11847.



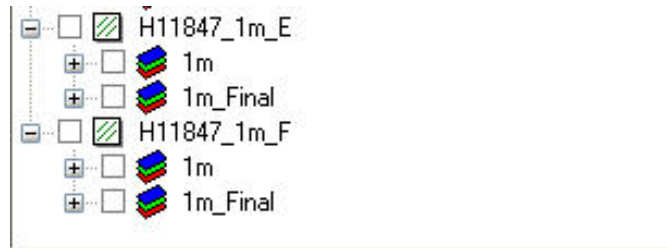


Figure 4: Field sheets and BASE surfaces submitted with H11847.

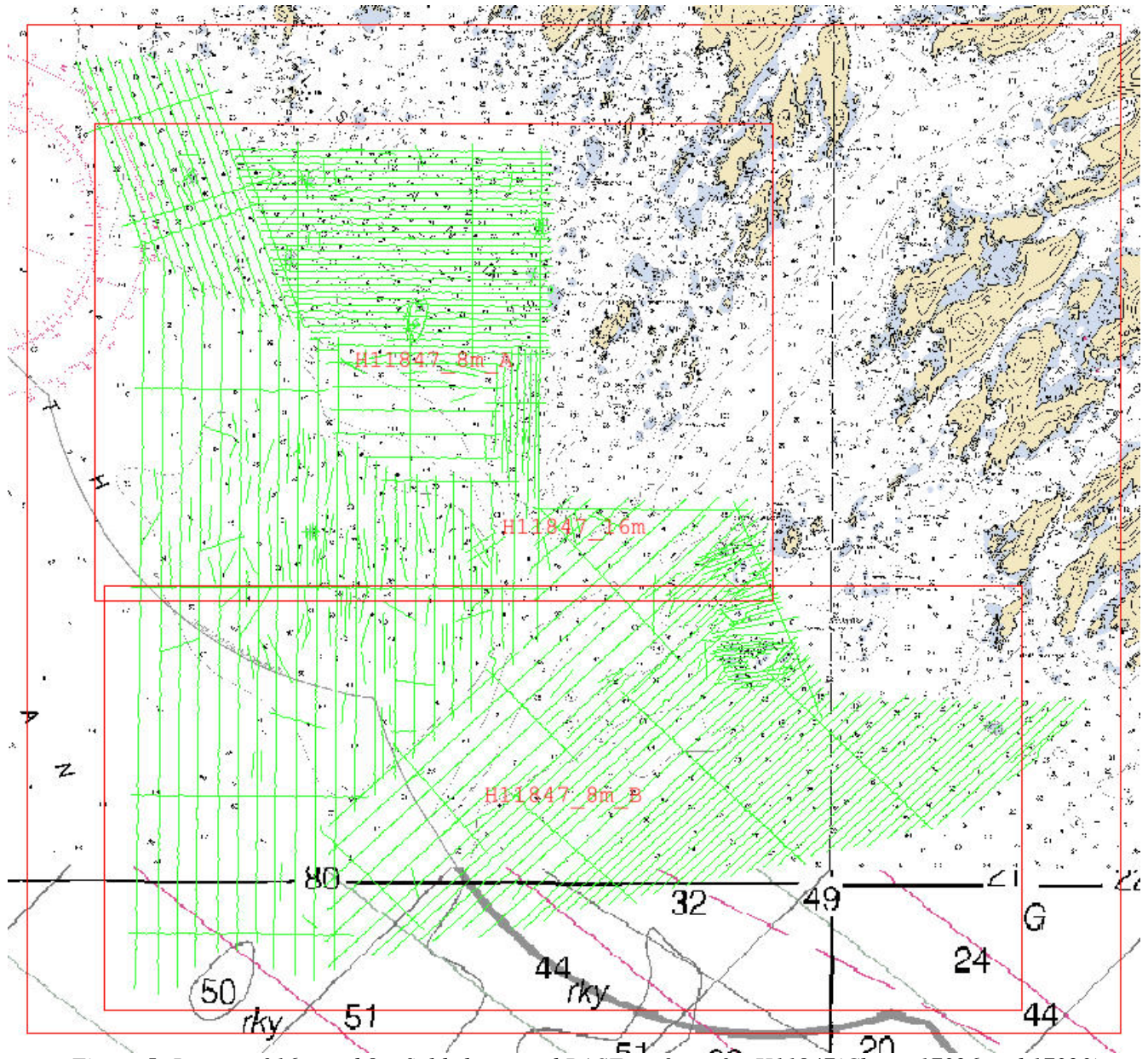


Figure 5: Layout of 16m and 8m field sheets and BASE surfaces for H11847(Charts 17326 and 17320)



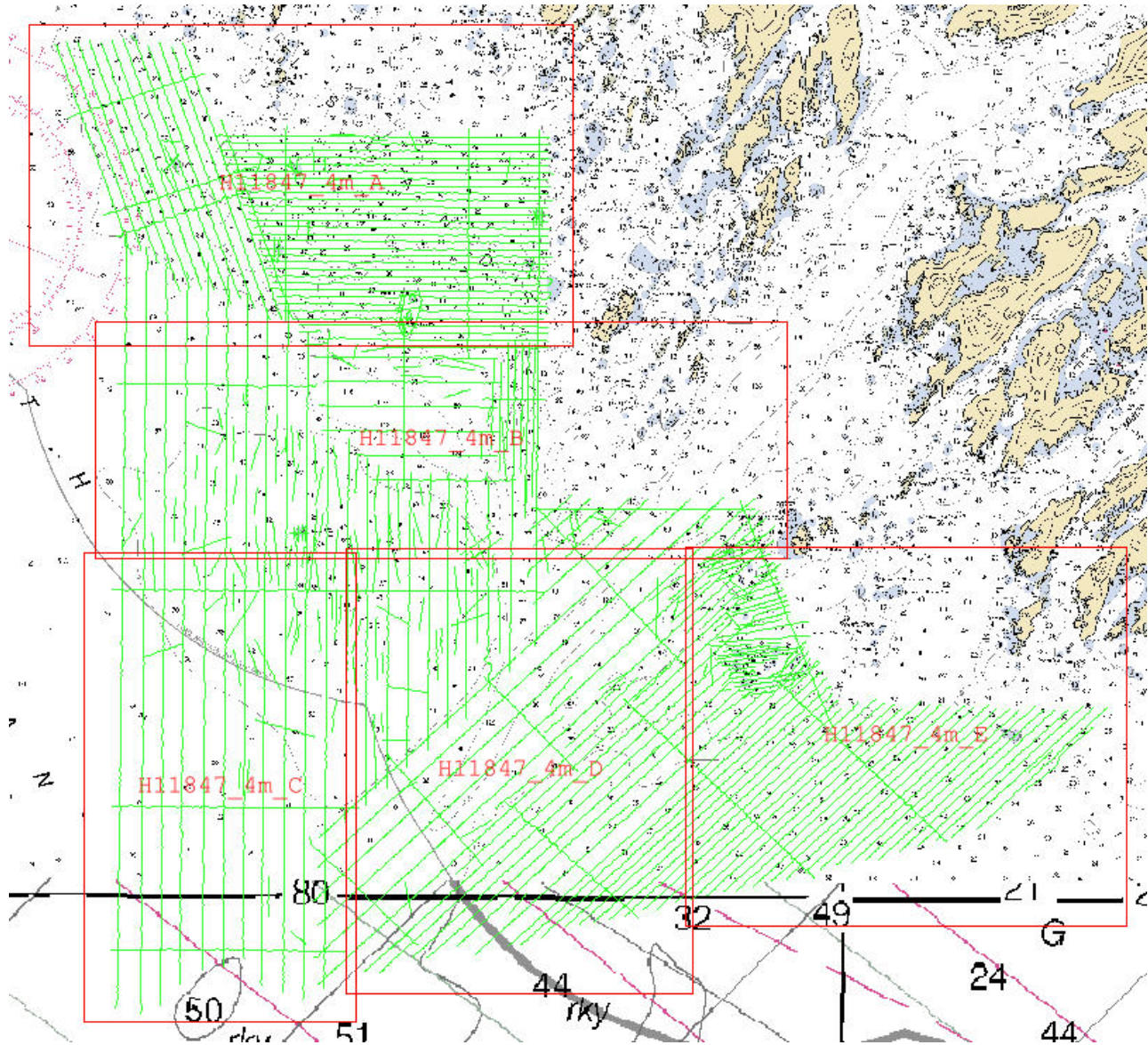


Figure 6: Layout of 4m field sheets and BASE surfaces for H11847 (Charts 17326 and 17320)



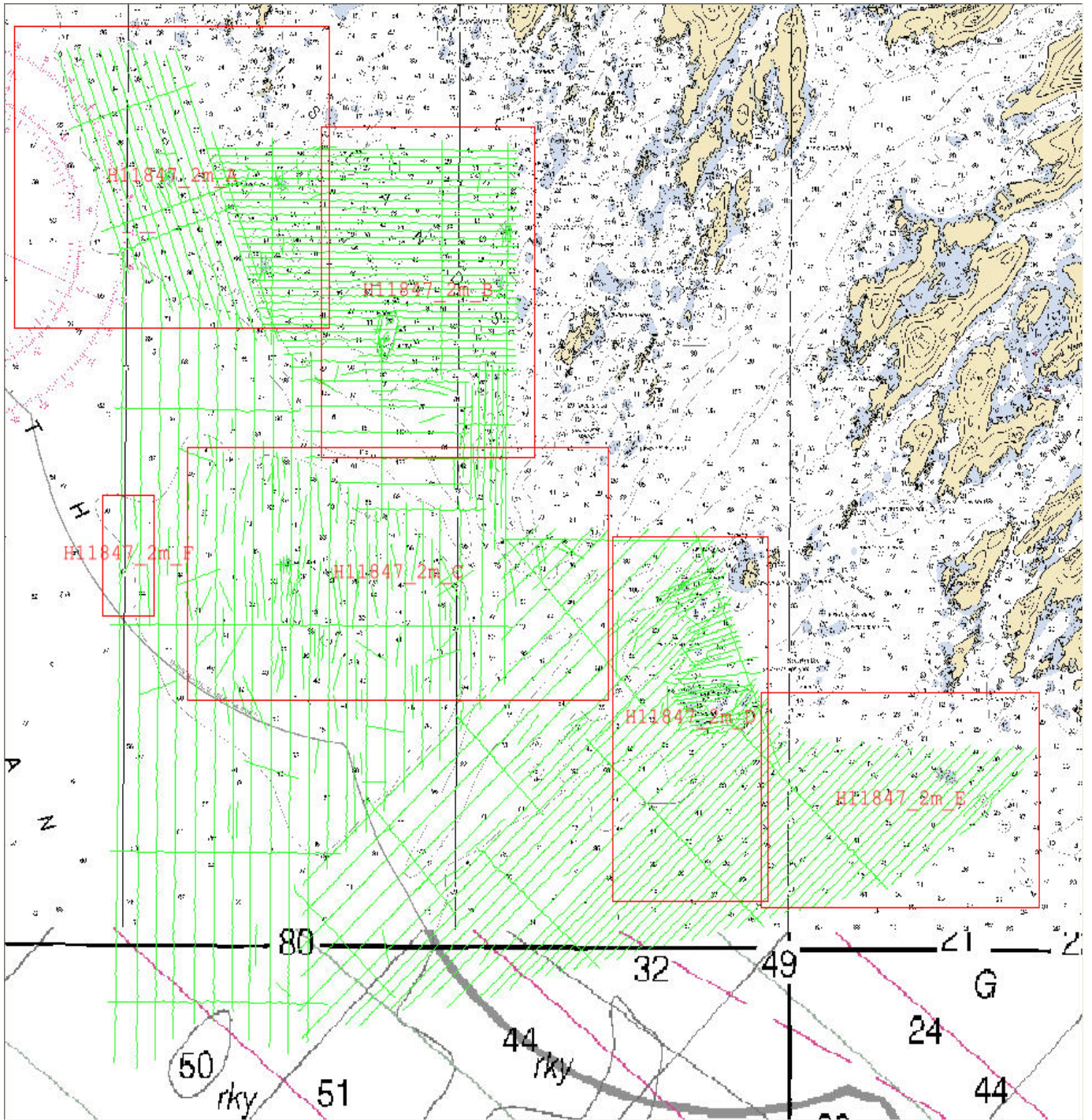


Figure 7: Layout of 2m Field Sheets and BASE surfaces for H11847 (Charts 17326 and 17320)



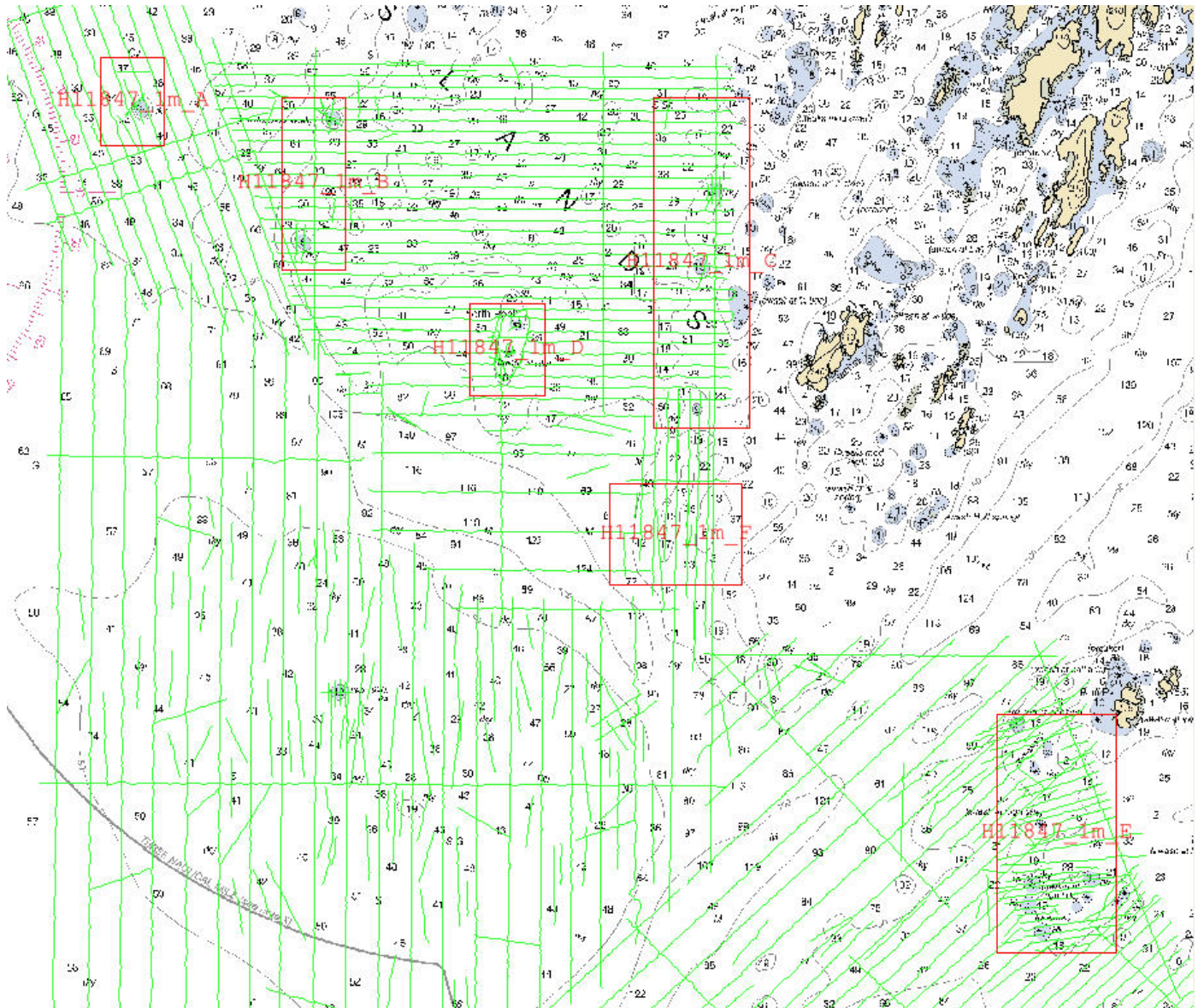


Figure 8: Layout of 1m Field Sheets and BASE Surfaces for H11847 (Chart 17326)



**C. VERTICAL AND HORIZONTAL CONTROL**

Project OPR-O112-RA-08 did not require static GPS observations or other horizontal control work, and all tide corrections were generated from CO-OPS maintained tide stations. Thus, no Horizontal and Vertical Control Report will be submitted.

**Horizontal Control**

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. The differential corrector beacons utilized for this survey are given in Table 3.

Location	Frequency	Operator	Distance	Priority
Biorka Island	305 kHz	USCG	17 nmi	Primary
Level Island	295 kHz	USCG	78 nmi	Secondary

*Table 3: Differential Corrector Sources for H11847.*

**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 H11847.

No tertiary gauges were required.

All data were reduced to MLLW using final approved Tidal Constituent And Residual Interpolator (TCARI) water levels using the TCARI file from O112RA2008P-TCARI.tc and station Sitka, AK (945-1600) with final application using the tide corrector file 9451600 verified\_thru20080630.txt.<sup>8</sup>

The request for Final Approved Water Levels for H11847 was submitted to CO-OPS on June 19<sup>th</sup>, 2008 and the Final Tide Note was received on July 3rd, 2008.<sup>9</sup> This documentation is included in Appendix IV.<sup>10</sup>

**D. RESULTS AND RECOMMENDATIONS**

**D.1. Chart Comparison**

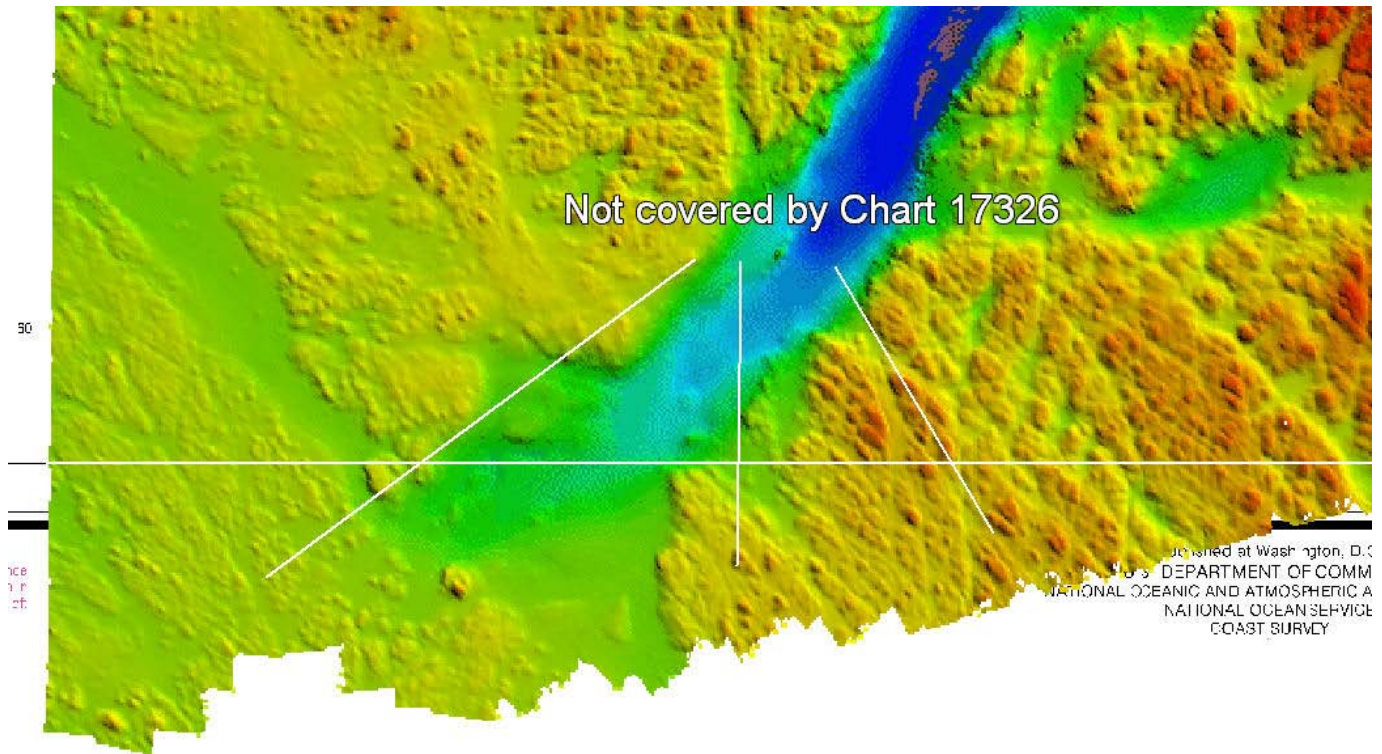
**D.1.a. Survey Agreement with Chart**

Survey H11847 was compared with the following chart:

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
17326	1:40,000	16 <sup>th</sup> Ed. Nov 2007	13Nov2007

*Table 4: Chart compared with H11847*

Chart 17326 covers nearly the entire area of H11847. The southern end of the survey was not covered by this chart. Due to the small scale of chart 17320, no soundings or features exist in the area of survey not covered by 17326, therefore a chart comparison was not conducted.<sup>11</sup>



*Figure 9: Data collected past Chart 17326 boundary*

Depth comparisons made in CARIS with Chart 17326 agreed very well for the most part, with up to a 2 fathom difference with no general trend between survey sounding and charted depth, except as noted in Figure 11.<sup>12</sup>

Figure 10 shows the Northeast corner of the survey, the circled part is an area of vastly different soundings than what's charted. The Hydrographer recommends the chart be updated with the current survey to reflect the changes.<sup>13</sup> Except as noted previously, most of this area is deeper than the 10 fathom curve so the area is not hazardous, except around North Rock, which is charted correctly.



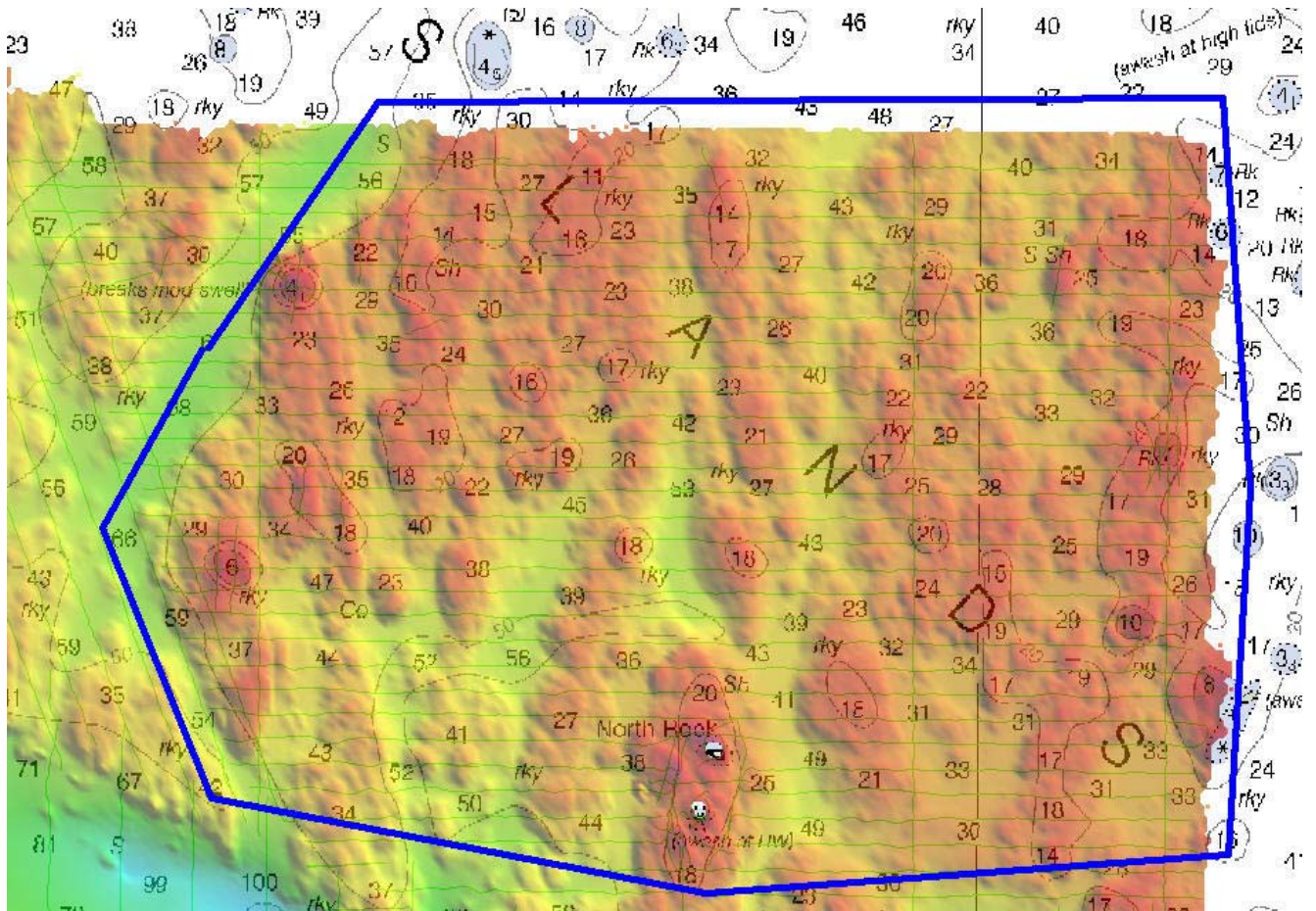


Figure 10: Area of highly variable soundings

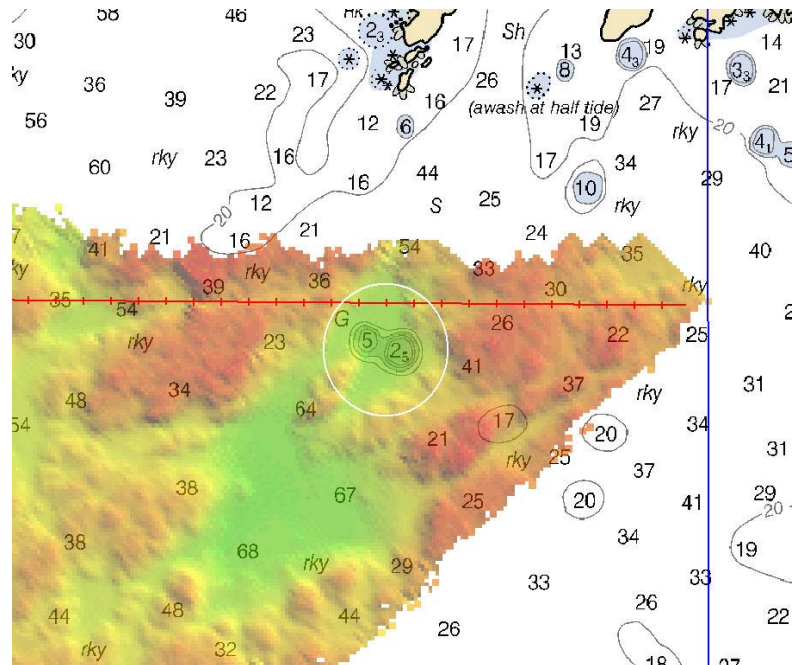


Figure 11: Two charted shoal depths not detected by MBES acquisition

Figure 11 shows a charted 2 fathom-5 foot sounding and associated 5 fathom sounding in the vicinity of  $56^{\circ} 41'11''$  N  $135^{\circ} 17'31''$  W. These were disproved with complete MBES coverage.<sup>14</sup> Although the bottom in this area is very irregular, H11847 revealed depths averaging 23 fathoms.

Figure 12 shows two other 3 fathom-3 foot soundings in the vicinity of  $56^{\circ} 41'49''$  N  $135^{\circ} 21'22''$  W that were also disproved with complete MBES coverage.<sup>15</sup> The average depth over the charted features was 19 fathoms.

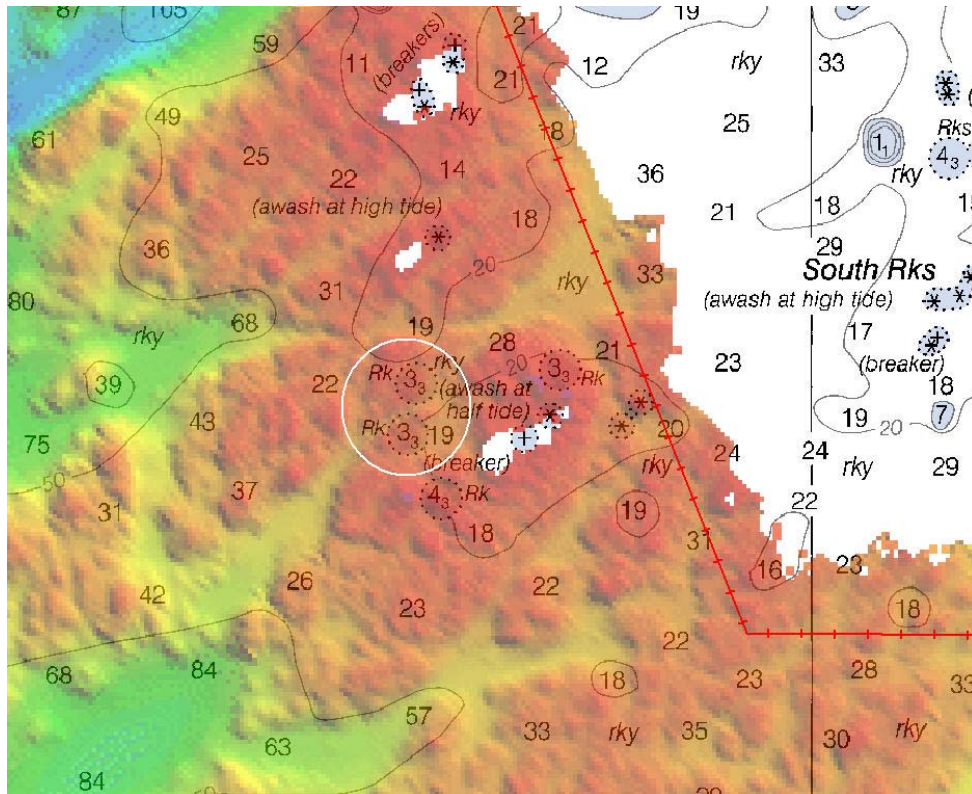


Figure 12: Other shoal area not detected by MBES acquisition

The Hydrographer recommends that survey soundings supersede all prior survey and charted depths in the common area.<sup>16</sup>

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

Ten (10) Dangers to Navigation (DTONs) were found on survey H11847, and reported to the Marine Chart Division via email on December 10, 2008. Although this DTON submission should have included ten (10) dangers, only nine (9) were actually submitted. One (1) of these DTONs was inadvertently omitted from original DTON report although the submitted sketch was correct. This missing DTON was reported to the Marine Chart Division via email on March 2, 2009.<sup>17</sup>

The original DTON submission packages are included in Appendix I. Descriptions of each DTON are included in the Survey Feature Report in Appendix II. Figure 13 shows the locations of each DTON:



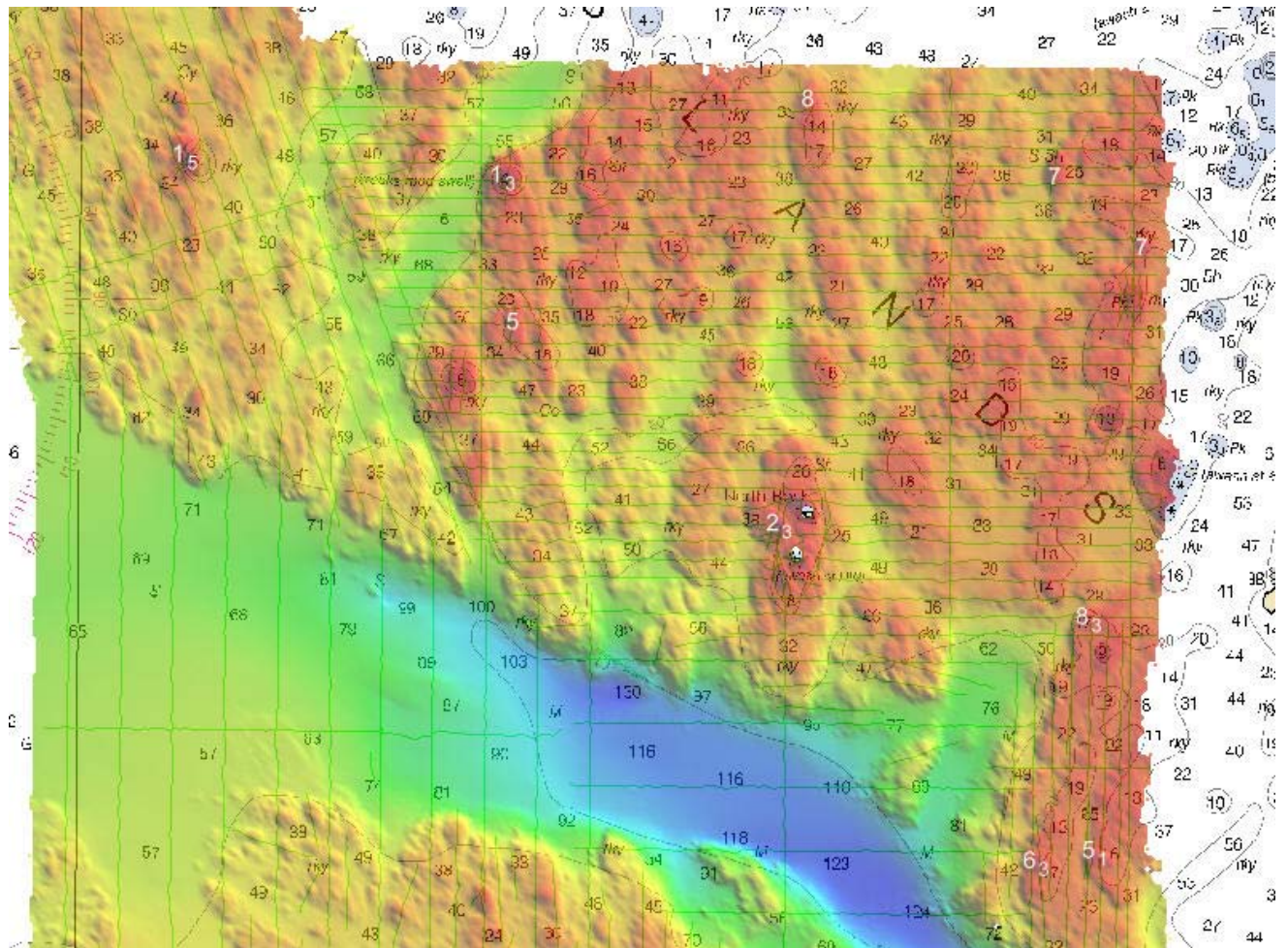


Figure 13: Location of DTONs

### D.1.c. Other Features

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

There were two (2) AWOIS items assigned to survey H11847. Item 53197 is a reported 12 fathom sounding located at 56°42'46" N 135°27'30" W in the survey area, as shown in Figure 14:

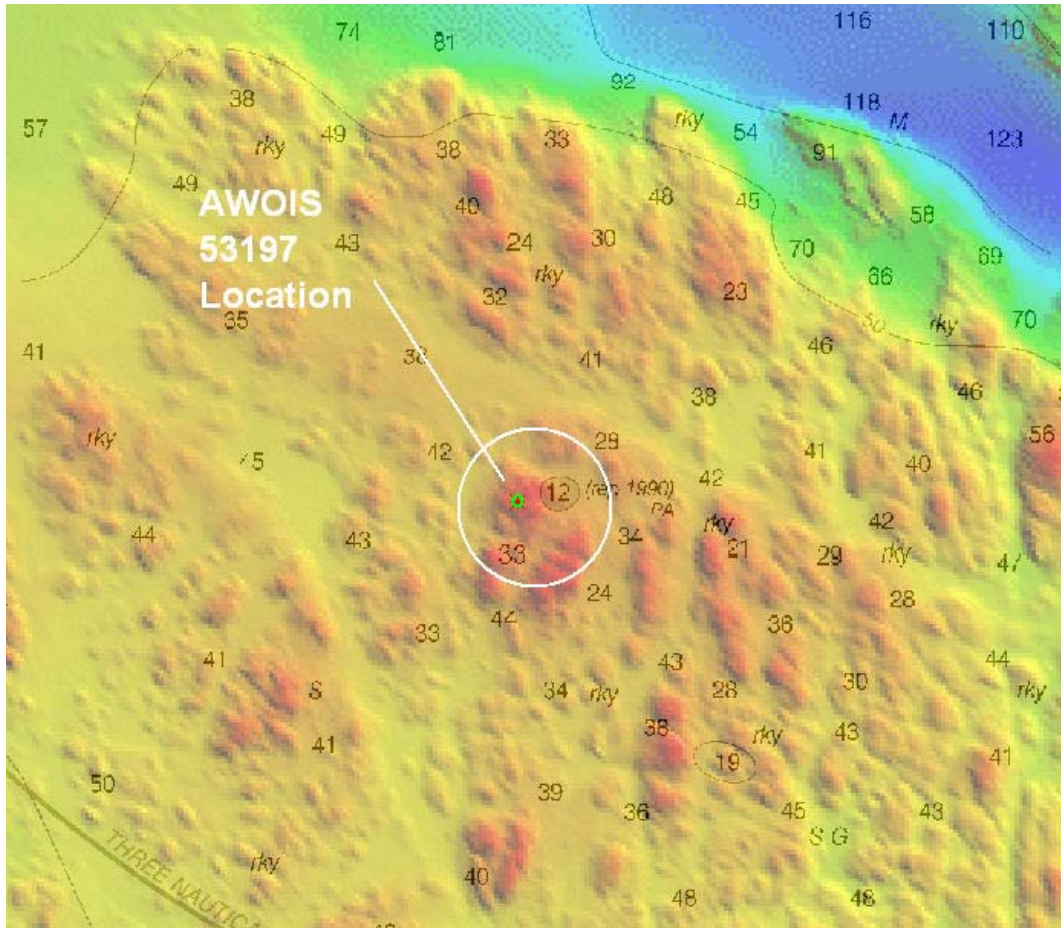


Figure 14: Location of AWOIS item (Chart 17326)

The charted 12 fathom sounding is slightly to the east of the actual least depth, which is 10 fathoms. The Hydrographer recommends the chart be updated to reflect the new depth/location of this shoal.<sup>18</sup>

AWOIS Item 53359 is a charted rock located at 56°44'25" N 135°26'04" W, just south of North Rock, as shown in Figure 15.<sup>19</sup>



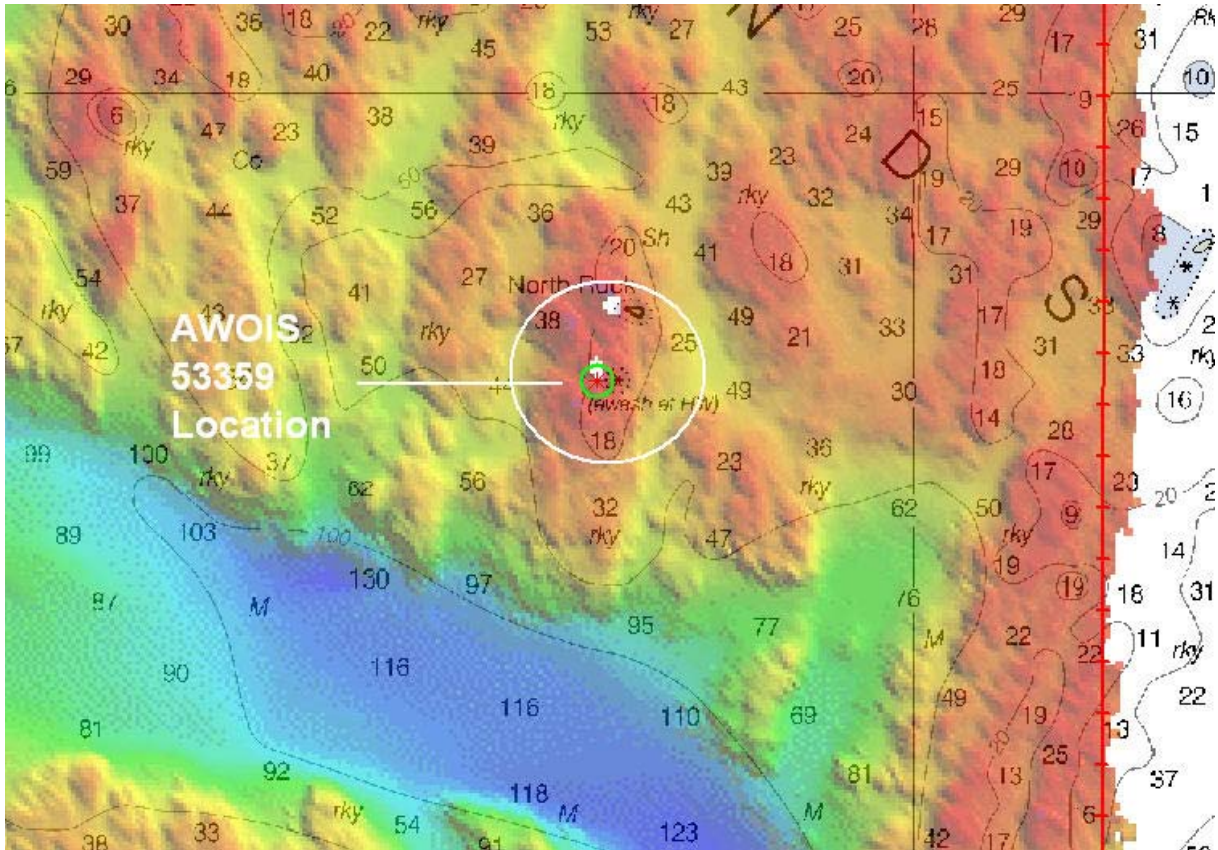


Figure 15: Location of AWOIS Item (Chart 17326)

This feature was seen by both VBES Ceeducer and MBES. The Hydrographer recommends this feature be charted as per the digital data and Notebook.

### Additional Items

There were no additional items on survey H11847.

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

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

Prior survey comparison was not performed.

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

With the exception of the AWOIS items noted above, no shoreline verification was performed on survey H11847.<sup>20</sup> All other features were inaccessible due to swell.

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

There are no Aids to Navigation within the limits of H11847.<sup>21</sup>

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

There are no overhead features within the limits of survey H11847.<sup>22</sup>

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

There are no submarine cables or pipelines charted within the limits of H11847, and none were detected by the survey.<sup>23</sup>

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

There are no ferry routes charted within the limits of survey H11847, and none were observed to be operating in the area.<sup>24</sup>

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

Bottom samples were not acquired in survey H11847.<sup>25</sup>

**D.2.h. Other Findings**

There were no other findings on survey H11847




**E. APPROVAL**


As Chief of Party, Field operations for hydrographic survey H11847 were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports. The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual (April 2008 edition), Field Procedures Manual (May 2008 edition), Standing and Letter Instructions, and all HSD Technical Directives issued June 2008. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.


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


<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-O-RA-08	07/28/2008	N/CS34
Coast Pilot Report for OPR- O112-RA-08	<i>will be submitted under separate cover</i>	

Approved and Forwarded:  CAPT/NOAA  
 \_\_\_\_\_  
 CAPT Donald W. Haines, NOAA  
 Commanding Officer  
 2009.03.02 15:00:07 -08'00'

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

Survey Sheet Manager:   
 \_\_\_\_\_  
 Shawn Gendron  
 Senior Survey Technician, NOAA Ship *Rainier*  
Digitally signed by Shawn Gendron  
 DN: cn=Shawn Gendron, c=US, o=NOAA, ou=NOAA  
 Ship RAINIER, email=shawn.gendron@noaa.gov  
 Date: 2009.03.02 13:29:13 -08'00'

Chief Survey Technician:   
 \_\_\_\_\_  
 James B. Jacobson  
 Chief Survey Technician, NOAA Ship *Rainier*  
 I have reviewed this document  
 2009.03.02 13:58:28 -08'00'

Field Operations Officer:   
 \_\_\_\_\_  
 Lieutenant Charles Yoos, NOAA  
 Field Operations Officer  
 I have reviewed this document  
 2009.03.02 14:49:43 -08'00'

- 
- <sup>1</sup> Concur.
  - <sup>2</sup> DAPR is filed with the project records.
  - <sup>3</sup> Concur. Final Approved Water Levels have been applied to this survey.
  - <sup>4</sup> Concur with all junction evaluations.
  - <sup>5</sup> Concur.
  - <sup>6</sup> Concur.
  - <sup>7</sup> During office processing the fieldsheets were reconfigured with the largest grid of 8 meters. See Survey Acceptance Review checklist and memo filed with the hydrographic records.
  - <sup>8</sup> Concur.
  - <sup>9</sup> Concur. The Final Tide Note is attached to this report.
  - <sup>10</sup> The approved Water Level Request is filed with the hydrographic records.
  - <sup>11</sup> Concur. Also no comparison was done with chart 17328 because the soundings duplicate soundings of chart 17326.
  - <sup>12</sup> Do not concur. The surveyed depths varied greatly with the chart. HCell H11571 should supersede all charted depths.
  - <sup>13</sup> Concur.
  - <sup>14</sup> Concur.
  - <sup>15</sup> Concur.
  - <sup>16</sup> Concur.
  - <sup>17</sup> This DTON has incorrect height. Upon inspection of the original data, the least depth in the area is 2.173 fathoms (3.97m). The other 9 DTONs submitted are correct and applied to the chart.
  - <sup>18</sup> Concur. This submerged rock/shoal AWOIS item location is represented in the data whereas the charted sounding is incorrectly located.
  - <sup>19</sup> Concur. AWOIS is now correctly charted.
  - <sup>20</sup> Concur.
  - <sup>21</sup> Concur.
  - <sup>22</sup> Concur.
  - <sup>23</sup> Concur.
  - <sup>24</sup> Concur.
  - <sup>25</sup> Concur. Forty-seven bottom samples were imported from the ENC to be retained.





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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** June 24, 2008

**HYDROGRAPHIC BRANCH:** Pacific Hydrographic Branch  
**HYDROGRAPHIC PROJECT:** OPR-O112-RA-2008  
**HYDROGRAPHIC SHEET:** H11847

**LOCALITY:** Vicinity of Biali Rock, Approaches to Sitka, AK  
**TIME PERIOD:** May 20 - June 17, 2008

**TIDE STATION USED:** 945-1600 Sitka, AK  
Lat. 57° 3.1'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**

Please use the TCARI grid "O112RA2008P-TCARI.tc" submitted with the project instructions as the final grid for project OPR-O112-RA-2008, H11847 during the time period between May 20 - June 17, 2008.

**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).

**Peter J. Stone**

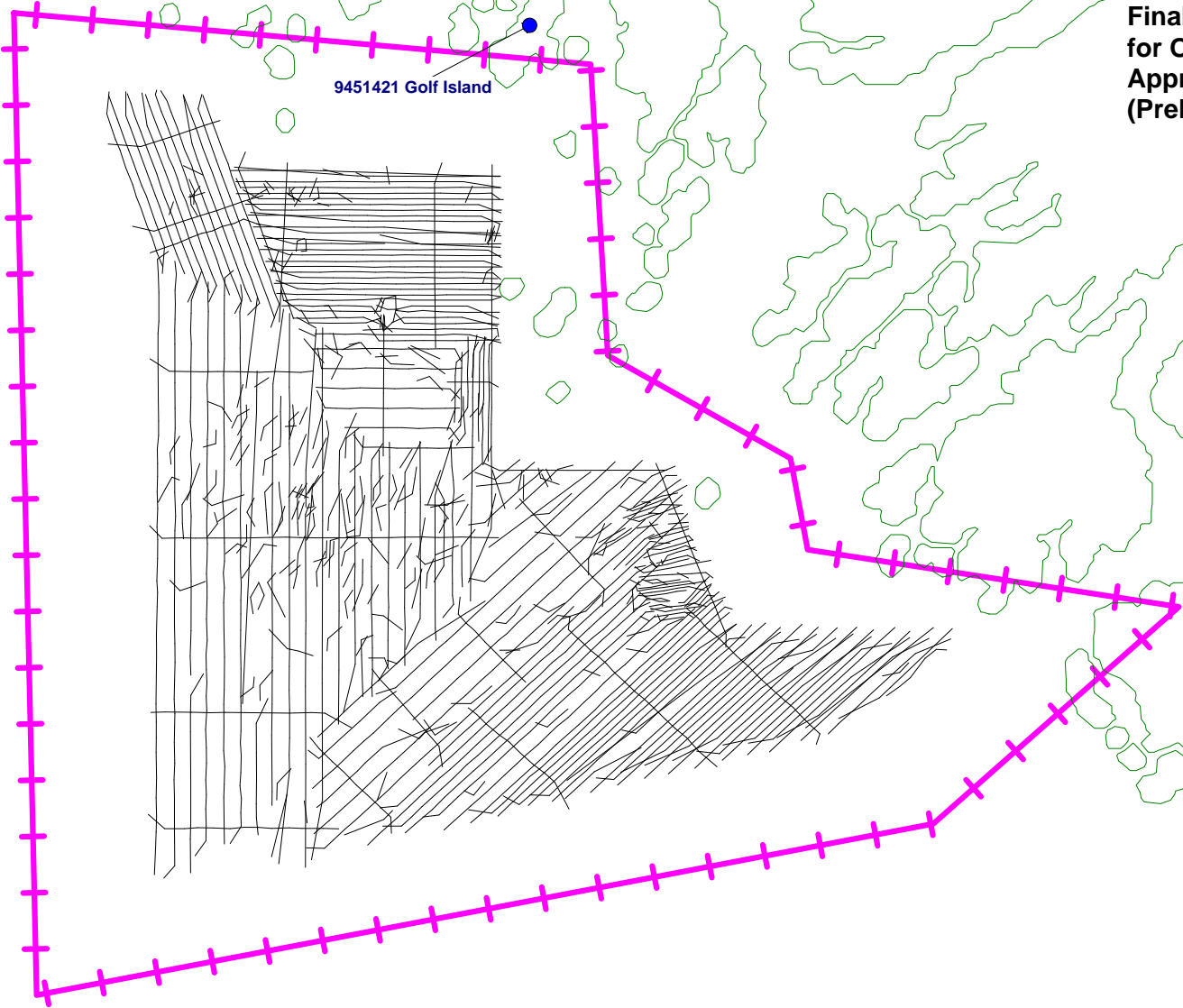
Digitally signed by Peter J. Stone  
DN: cn=Peter J. Stone, o=CO-OPS,  
ou=NOAA/NOS, email=peter.stone@noaa.  
gov, c=US  
Date: 2008.06.30 15:49:01 -04'00'

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CHIEF, PRODUCT AND SERVICES DIVISION



**Final TCARI Grid  
for OPR-0112-RA-2008, H11847  
Approaches to Sitka, AK  
(Preliminary as Final)**



9451421 Golf Island

9451376 Dorothy Cove



# H11847 DTON Report

**Registry Number:** H11847  
**State:** Alaska  
**Locality:** Approaches to Sitka  
**Sub-locality:** Vicinity of Biali Rock  
**Project Number:** OPR-O112-RA-08  
**Survey Dates:** 05/20/2008 - 06/11/2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17326	15th	06/01/2006	1:40,000 (17326_1)	[L]NTM: ?
17320	17th	11/01/2005	1:217,828 (17320_1)	[L]NTM: ?
16016	20th	11/01/2003	1:969,756 (16016_1)	[L]NTM: ?
531	23rd	01/01/2006	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	14.70 m	56° 45' 48.2" N	135° 26' 02.0" W	---
1.2	Rock	12.88 m	56° 45' 34.5" N	135° 24' 41.2" W	---
1.3	Rock	2.97 m	56° 45' 33.6" N	135° 27' 41.4" W	---
1.4	Rock	12.95 m	56° 45' 21.9" N	135° 24' 12.5" W	---
1.5	Rock	4.72 m	56° 44' 31.4" N	135° 26' 10.6" W	---
1.6	Rock	15.70 m	56° 44' 14.9" N	135° 24' 29.1" W	---
1.7	Rock	12.01 m	56° 43' 31.1" N	135° 24' 45.9" W	---
1.8	Rock	9.65 m	56° 43' 33.0" N	135° 24' 27.0" W	---
1.9	Rock	9.11 m	56° 45' 07.8" N	135° 27' 38.1" W	---



## **1 - Danger To Navigation**

**1.1) Profile/Beam - 2153/91 from h11847 / 1021\_reson8101\_hvf / 2008-141 / 300\_1745**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 56° 45' 48.2" N, 135° 26' 02.0" W  
**Least Depth:** 14.70 m (= 48.23 ft = 8.039 fm = 8 fm 0.23 ft)  
**TPU (±1.96σ):** **THU (TPEh)** ±1.377 m ; **TVU (TPEv)** ±0.163 m  
**Timestamp:** 2008-141.17:59:17.463 (05/20/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-141 / 300\_1745  
**Profile/Beam:** 2153/91  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-141/300_1745	2153/91	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

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

8fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 8fm 0ft (531\_1)  
 14.7m (500\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** TECSOU - 3:found by multi-beam  
 VALSOU - 14.701 m  
 WATLEV - 3:always under water/submerged

## 1.2) Profile/Beam - 659/99 from h11847 / 1021\_reson8101\_hvf / 2008-141 / 305\_2028

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 45' 34.5" N, 135° 24' 41.2" W  
**Least Depth:** 12.88 m (= 42.25 ft = 7.041 fm = 7 fm 0.25 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.378$  m ; **TVU (TPEv)**  $\pm 0.179$  m  
**Timestamp:** 2008-141.20:31:37.498 (05/20/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-141 / 305\_2028  
**Profile/Beam:** 659/99  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-141/305_2028	659/99	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

7fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

7fm 0ft (531\_1)

12.9m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 12.877 m



VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

### 1.3) Profile/Beam - 3336/101 from h11847 / 1021\_reson8101\_hvf / 2008-141 / 305\_2028

## DANGER TO NAVIGATION

### Survey Summary

**Survey Position:** 56° 45' 33.6" N, 135° 27' 41.4" W  
**Least Depth:** 2.97 m (= 9.75 ft = 1.625 fm = 1 fm 3.75 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.376$  m ; **TVU (TPEv)**  $\pm 0.158$  m  
**Timestamp:** 2008-141.20:44:58.952 (05/20/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-141 / 305\_2028  
**Profile/Beam:** 3336/101  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-141/305_2028	3336/101	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

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

1 ½fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 1fm 3ft (531\_1)  
 3.0m (500\_1, 50\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 2.971 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged



### Feature Images

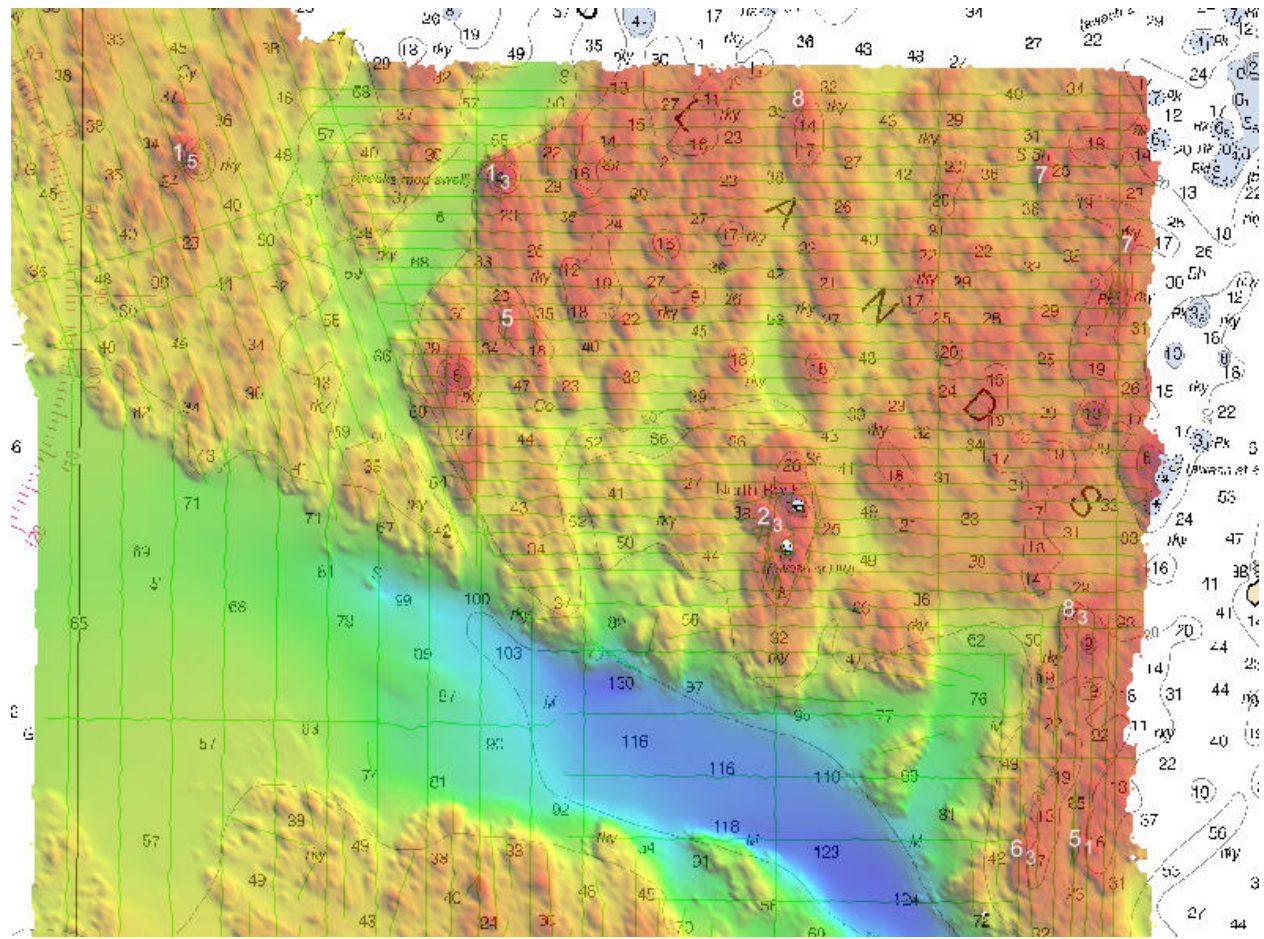


Figure 1.3.1

## 1.4) Profile/Beam - 3224/94 from h11847 / 1021\_reson8101\_hvf / 2008-141 / 308\_2158

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 45' 21.9" N, 135° 24' 12.5" W  
**Least Depth:** 12.95 m (= 42.50 ft = 7.083 fm = 7 fm 0.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.378$  m ; **TVU (TPEv)**  $\pm 0.165$  m  
**Timestamp:** 2008-141.22:17:51.358 (05/20/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-141 / 308\_2158  
**Profile/Beam:** 3224/94  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-141/308_2158	3224/94	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

7fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

7fm 0ft (531\_1)

13.0m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 12.954 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 1.5) Profile/Beam - 2610/101 from h11847 / 1021\_reson8101\_hvf / 2008-142 / 312\_2200

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 44' 31.4" N, 135° 26' 10.6" W  
**Least Depth:** 4.72 m (= 15.50 ft = 2.583 fm = 2 fm 3.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.377$  m ; **TVU (TPEv)**  $\pm 0.161$  m  
**Timestamp:** 2008-142.22:12:27.499 (05/21/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-142 / 312\_2200  
**Profile/Beam:** 2610/101  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-142/312_2200	2610/101	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

2 ½fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

2fm 3ft (531\_1)

4.7m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 4.724 m



VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 1.6) Profile/Beam - 478/100 from h11847 / 1021\_reson8101\_hvf / 2008-142 / 316\_2255

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 44' 14.9" N, 135° 24' 29.1" W  
**Least Depth:** 15.70 m (= 51.52 ft = 8.587 fm = 8 fm 3.52 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.380$  m ; **TVU (TPEv)**  $\pm 0.216$  m  
**Timestamp:** 2008-142.22:57:42.085 (05/21/2008)  
**Survey Line:** h11847 / 1021\_reson8101\_hvf / 2008-142 / 316\_2255  
**Profile/Beam:** 478/100  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/1021_reson8101_hvf/2008-142/316_2255	478/100	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

8 ½fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 8fm 3ft (531\_1)  
 15.7m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 15.703 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 1.7) Profile/Beam - 235/437 from h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 522\_2215

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 43' 31.1" N, 135° 24' 45.9" W  
**Least Depth:** 12.01 m (= 39.40 ft = 6.566 fm = 6 fm 3.40 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.967$  m ; **TVU (TPEv)**  $\pm 0.149$  m  
**Timestamp:** 2008-163.22:17:12.678 (06/11/2008)  
**Survey Line:** h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 522\_2215  
**Profile/Beam:** 235/437  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2801_reson7125_hf_512beams/2008-163/522_2215	235/437	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

6 ½fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 6fm 3ft (531\_1)  
 12.0m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 12.008 m



VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 1.8) Profile/Beam - 168/353 from h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 564\_2213

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 43' 33.0" N, 135° 24' 27.0" W  
**Least Depth:** 9.65 m (= 31.67 ft = 5.278 fm = 5 fm 1.67 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.962$  m ; **TVU (TPEv)**  $\pm 0.125$  m  
**Timestamp:** 2008-163.22:14:29.666 (06/11/2008)  
**Survey Line:** h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 564\_2213  
**Profile/Beam:** 168/353  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2801_reson7125_hf_512beams/2008-163/564_2213	168/353	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

5 ¼fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 5fm 1ft (531\_1)  
 9.7m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 9.653 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 1.9) Profile/Beam - 311/130 from h11847 / 2802\_reson7125\_lf\_256beams / 2008-157 / 566\_2044

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 45' 07.8" N, 135° 27' 38.1" W  
**Least Depth:** 9.11 m (= 29.89 ft = 4.981 fm = 4 fm 5.89 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.961$  m ; **TVU (TPEv)**  $\pm 0.122$  m  
**Timestamp:** 2008-157.20:45:37.053 (06/05/2008)  
**Survey Line:** h11847 / 2802\_reson7125\_lf\_256beams / 2008-157 / 566\_2044  
**Profile/Beam:** 311/130  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2802_reson7125_lf_256beams/2008-157/566_2044	311/130	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

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

5fm (17326\_1, 17320\_1, 16016\_1, 530\_1)  
 5fm 0ft (531\_1)  
 9.1m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 9.110 m



VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

# H11847 Danger to Navigation

**Registry Number:** H11847  
**State:** Alaska  
**Locality:** Approaches to Sitka  
**Sub-locality:** Vicinity of Biali Rock  
**Project Number:** OPR-0112-RA-08  
**Survey Date:** 06/11/2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17326	16th	11/01/2007	1:40,000 (17326_1)	USCG LNM: 02/24/2009 (02/24/2009) CHS NTM: None (02/27/2009) NGA NTM: 07/11/1998 (02/28/2009)
17320	18th	03/01/2008	1:217,828 (17320_1)	[L]NTM: ?
16016	21st	10/01/2007	1:969,756 (16016_1)	[L]NTM: ?
531	24th	07/01/2007	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	13.97 m	56° 42' 33.1" N	135° 27' 31.4" W	---

## **1 - Danger To Navigation**

## 1.1) Profile/Beam - 195/119 from h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 556\_1752

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 42' 33.1" N, 135° 27' 31.4" W  
**Least Depth:** 13.97 m (= 45.85 ft = 7.641 fm = 7 fm 3.85 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.966$  m ; **TVU (TPEv)**  $\pm 0.196$  m  
**Timestamp:** 2008-163.17:53:11.322 (06/11/2008)  
**Survey Line:** h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 556\_1752  
**Profile/Beam:** 195/119  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

Underwater rock found during office processing.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2801_reson7125_hf_512beams/2008-163/556_1752	195/119	0.00	000.0	Primary

#### Hydrographer Recommendations

Chart a 7 fathom 4 ft rock at the survey location.

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

7 ½fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

7fm 4ft (531\_1)

14.0m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 SORDAT - 20080617  
 SORIND - US, US, survy, H11847



STATUS - 1:permanent

TECSOU - 3:found by multi-beam

VALSOU - 13.974 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

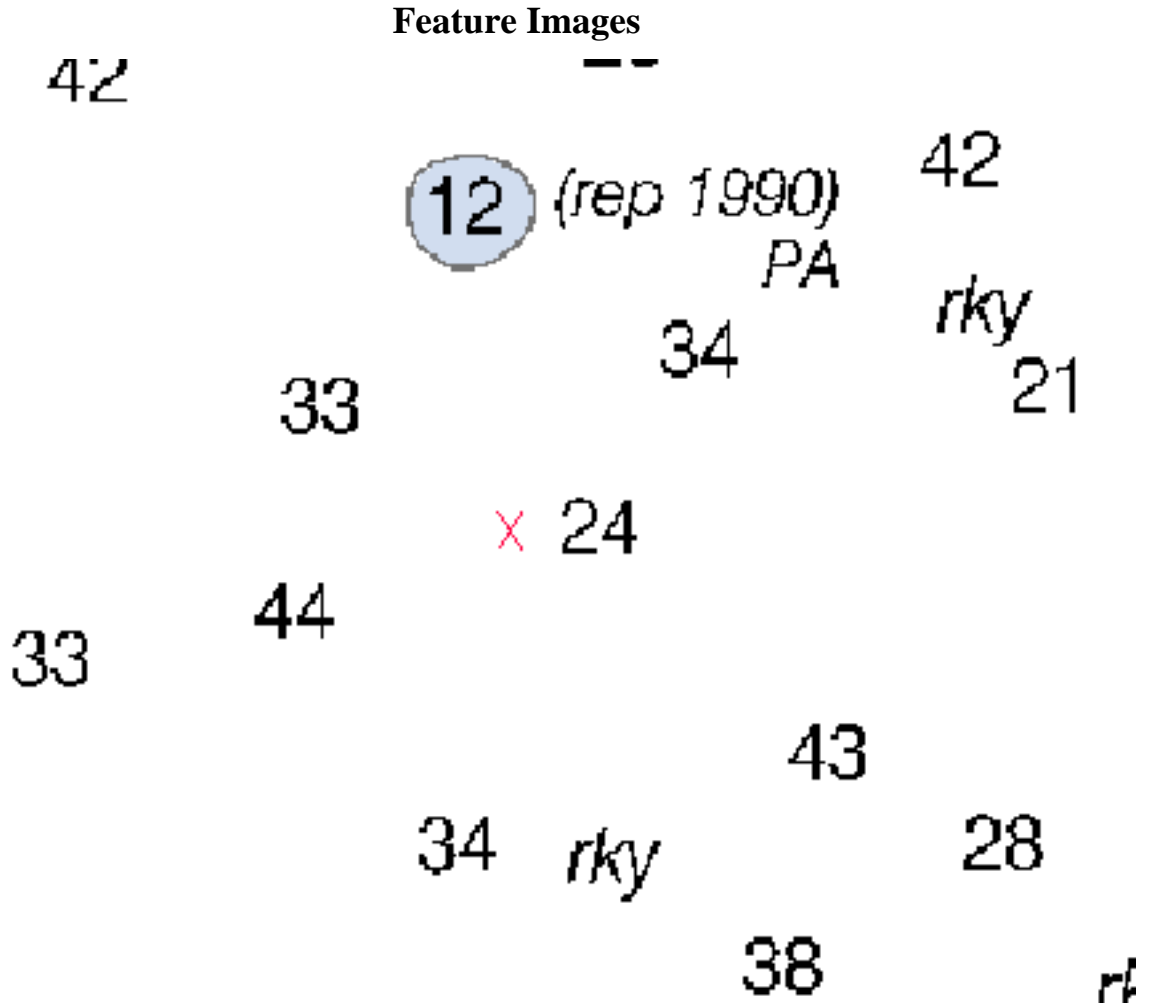


Figure 1.1.1

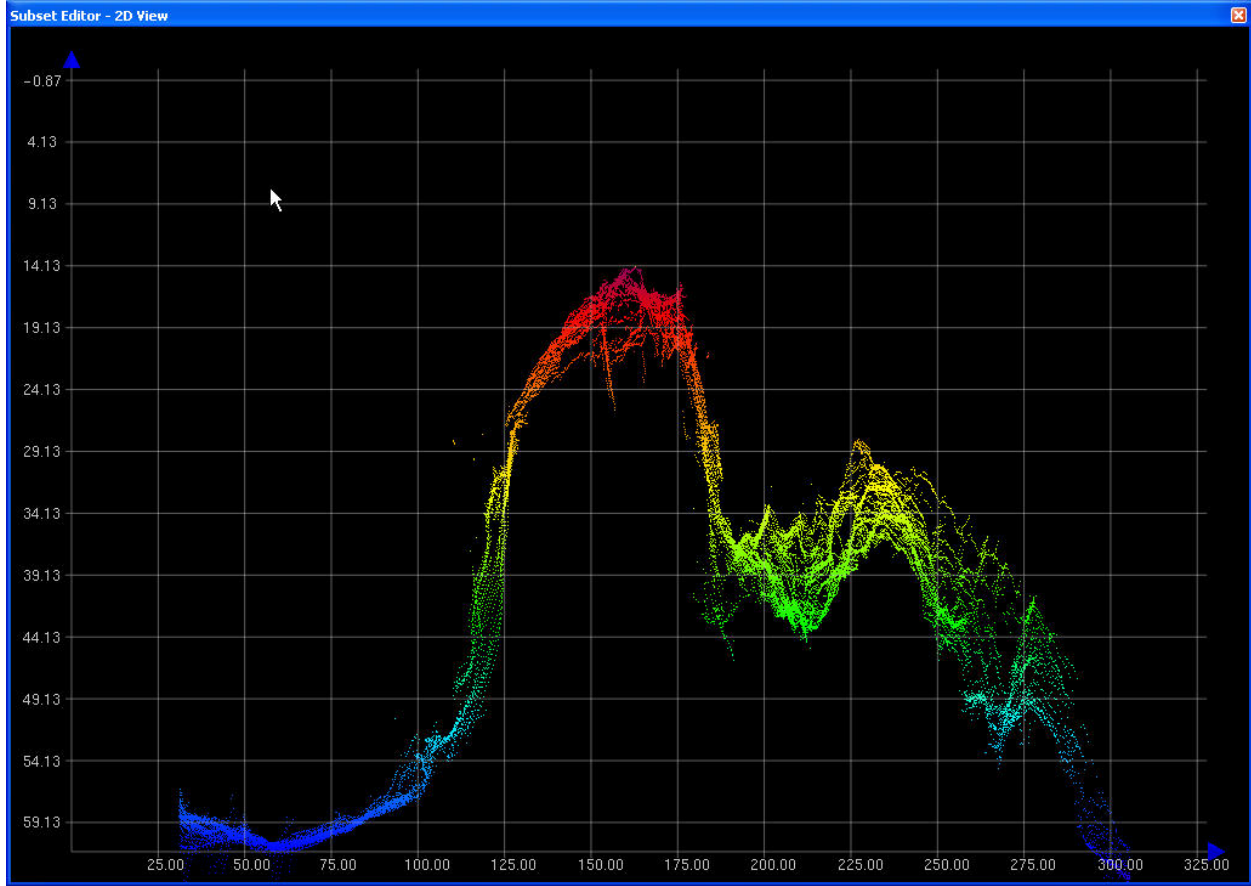


Figure 1.1.2

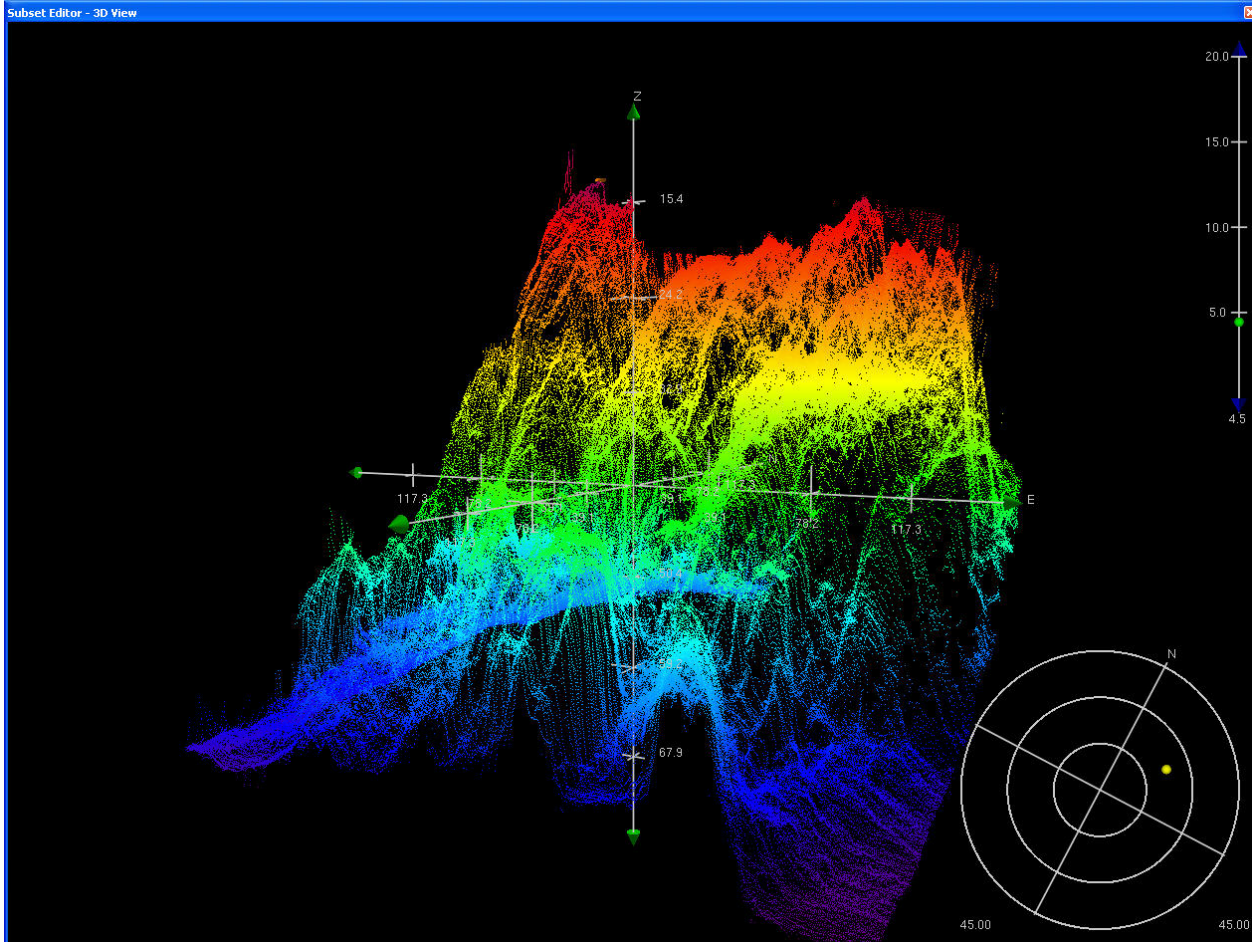


Figure 1.1.3

# H11847 DTON Report #2

**Registry Number:** H11847  
**State:** Alaska  
**Locality:** Approaches to Sitka  
**Sub-locality:** Vicinity of Biali Rock  
**Project Number:** OPR-O112-RA-08  
**Survey Date:** 06/11/2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17326	15th	06/01/2006	1:40,000 (17326_1)	[L]NTM: ?
17320	17th	11/01/2005	1:217,828 (17320_1)	[L]NTM: ?
16016	20th	11/01/2003	1:969,756 (16016_1)	[L]NTM: ?
531	23rd	01/01/2006	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	3.50 m	56° 45' 36.9" N	135° 29' 25.4" W	---



# **1 - Danger To Navigation**

## 1.1) Profile/Beam - 337/1 from h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 561\_2251

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 45' 36.9" N, 135° 29' 25.4" W  
**Least Depth:** 3.50 m (= 11.50 ft = 1.916 fm = 1 fm 5.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.962$  m ; **TVU (TPEv)**  $\pm 0.125$  m  
**Timestamp:** 2008-163.22:51:48.515 (06/11/2008)  
**Survey Line:** h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 561\_2251  
**Profile/Beam:** 337/1  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

DTON

New submerged rock found with SWMB

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2801_reson7125_hf_512beams/2008-163/561_2251	337/1	0.00	000.0	Primary

#### Hydrographer Recommendations

Chart a submerged rock in the surveyed position

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

1  $\frac{3}{4}$ fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

1fm 5ft (531\_1)

3.5m (500\_1, 50\_1)

#### S-57 Data

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

**Attributes:** QUASOU - 1:depth known

SORDAT - 20080617

SORIND - US,US,nsurf,H11847

TECSOU - 3:found by multi-beam

VALSOU - 3.504 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

# H11847 DTON Report

**Registry Number:** H11847  
**State:** Alaska  
**Locality:** Approaches to Sitka  
**Sub-locality:** Vicinity of Biali Rock  
**Project Number:** OPR-O112-RA-08  
**Survey Date:** 5/21/2008

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17326	16th	11/01/2007	1:40,000 (17326_1)	USCG LNM: 02/24/2009 (02/24/2009) CHS NTM: None (02/27/2009) NGA NTM: 07/11/1998 (02/28/2009)
17320	17th	11/01/2005	1:217,828 (17320_1)	[L]NTM: ?
16016	20th	11/01/2003	1:969,756 (16016_1)	[L]NTM: ?
531	23rd	01/01/2006	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	3.97 m	56° 45' 36.2" N	135° 29' 24.3" W	---

## **1 - Danger To Navigation**



## 1.1) Profile/Beam - 129/263 from h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 560\_2248

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 56° 45' 36.2" N, 135° 29' 24.3" W  
**Least Depth:** 3.97 m (= 13.04 ft = 2.173 fm = 2 fm 1.04 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.961$  m ; **TVU (TPEv)**  $\pm 0.122$  m  
**Timestamp:** 2008-163.22:49:39.978 (06/11/2008)  
**Survey Line:** h11847 / 2801\_reson7125\_hf\_512beams / 2008-163 / 560\_2248  
**Profile/Beam:** 129/263  
**Charts Affected:** 17326\_1, 17320\_1, 16016\_1, 531\_1, 500\_1, 530\_1, 50\_1

#### Remarks:

New DTON Submerged rock (4.0m) found with SWMB during office review.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11847/2801_reson7125_hf_512beams/2008-163/560_2248	129/263	0.00	000.0	Primary

#### Hydrographer Recommendations

Chart submerged rock with least depth 4.0m in surveyed position.

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

2fm (17326\_1, 17320\_1, 16016\_1, 530\_1)

2fm 1ft (531\_1)

4.0m (500\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** SORDAT - 20080617  
 SORIND - US, US, survy, H11847  
 VALSOU - 3.974 m

WATLEV - 3:always under water/submerged

## **Office Notes**

This H11847 DTON Report describes a new 4.0 m (2fm 1ft) submerged rock found during office review. This replaces the field "H11847 DTON Report #2" 3.5m (1 3/4fm) submerged rock which was actually noise in data.

### Feature Images

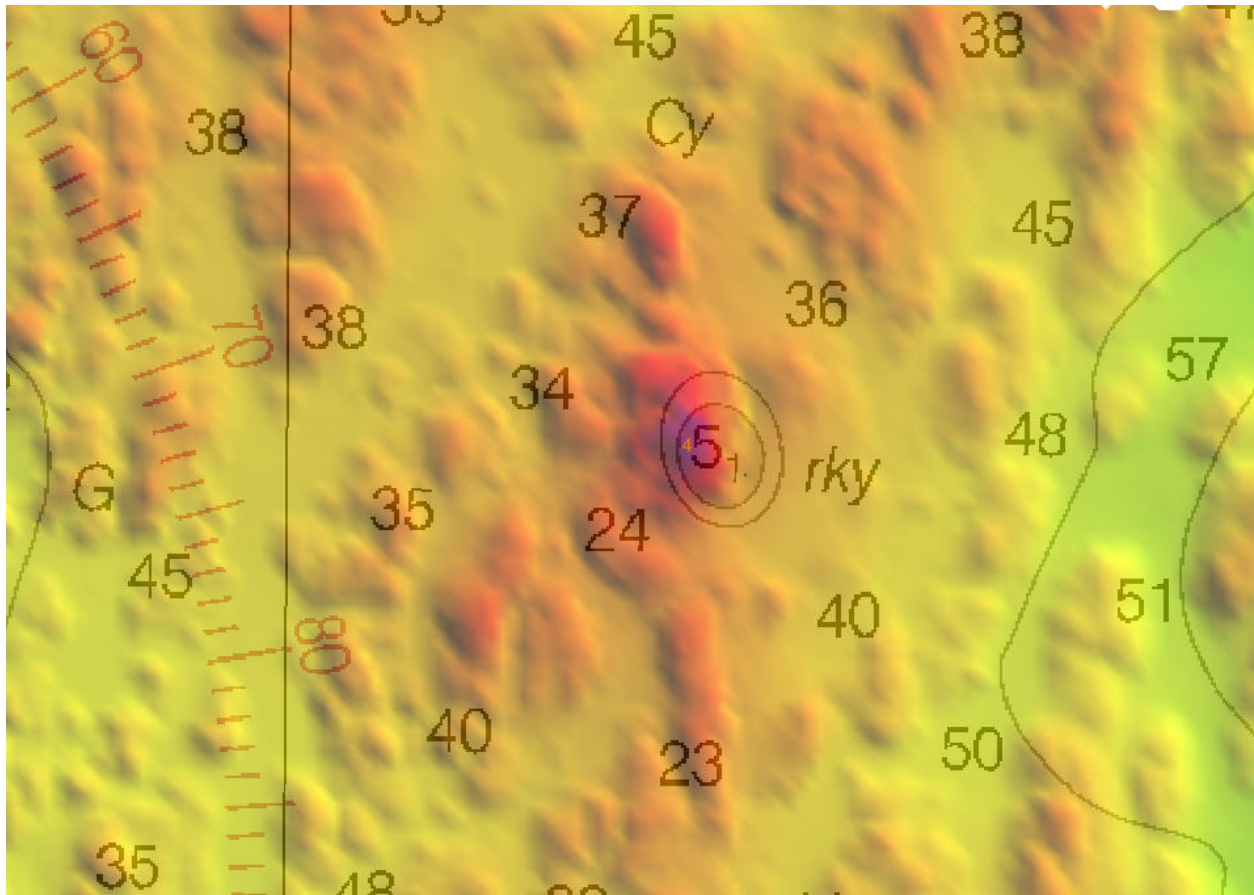


Figure 1.1.1

**H11847 HCell Report**  
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**Introduction**

The primary purpose of the HCell is to provide new survey information in International Hydrographic Organization (IHO) format S-57 to update the largest ENC's and RNC's in the region: NOAA ENC's US5AK3GM and US5AK3SM, and NOAA RNC's 17326 and 17328.

HCell compilation of survey H11847 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 H11847 were compiled to the largest scale charts in the region, 17326 and 17328, 1:40,000. Non-bathymetric features have not been generalized to chart scale; their position, characterization and density are as delivered from the field.

**2. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 8-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	200	5
200	500	6

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

**3. Depth Areas and Depth Contours**

**3.1 Depth Areas**

The extents of the highest resolution BASE Surface together with the extents of the soundings layer were used to digitize the hydrographic extents, which were then used to create the single, all encompassing depth area (DEPARE).

### 3.2 Depth Contours

Depth contours at the intervals on the largest scale chart are included in the H11847\_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
0	0	0.2286	0
3	5.4864	5.715	3.125
10	18.288	18.5166	10.125
50	91.44	92.8116	50.750
100	182.88	184.2516	100.75

Contours delivered in the H11847\_SS file have not been deconflicted against shoreline features, soundings and hydrography as all other features in the H11847\_CS file and soundings in the H11847\_SS have been. This results in conflicts between the H11847\_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 H11847\_SS.000 file contours in all cases where conflicts are found.

### 4. Meta Areas

The following Meta object areas are included in HCell H11847:

M\_QUAL  
M\_COVR  
M\_CSCL

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

### 5. Features

#### 5.1 Generalization of Features to Chart Scale

Features gathered by field units are delivered to PHB and applied to the preliminary HCell without reduction in number or character. This preliminary HCell is used to perform evaluation and verification of survey soundings and features, features are deconflicted against hydrography, and geometry is corrected as needed. Linear and area features are also digitized against the BASE Surfaces, and features to be retained are imported from the chart. This features file is used as the basis for the final HCell compilation with features reduced to the largest scale RNC and ENC.

Features generalization has been accomplished primarily through reduction in the number of features included in the HCell. Generalizing area features to point objects is entrusted to the RNC division. Where line and area objects are included in the HCell, complexity of the lines and edges comprising the features have been smoothed commensurate with chart scale.



## 5.2 Compilation of Features to the HCell

No shoreline verification was done in the field and only the composite source file was delivered.

During office processing, several submerged rocks, an obstruction area, and numerous rocky seabeds were digitized from the high resolution BASE Surfaces. The source of all features included in the H11847 HCell can be determined by the SORIND field.

## 6. S-57 Objects and Attributes

The H11847\_CS HCell contains the following Objects:

\$CSYMB	Blue Notes
COALNE	Chart/ENC coastline
DEPARE	The all-encompassing depth area
LNDARE	Islet
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
M_CSCL	Delineation of compilation scale
OBSTRN	Obstruction area object
SBDARE	Bottom samples and rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features

The H11847\_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 H11847\_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 above 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 above that. (This is a deviation from the traditional 'fathoms and feet' charting rule that requires that all depths above MLLW will be shown in feet. The display in fathoms and feet for depths between MLLW and 2 feet above MHW accommodates S-57 rules that require the same charting units to be used for all depth units (DUNI) in an ENC.)
- 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 with H11847

A common junction was made between H11847 and H11845 currently in compilation. Junctions with H11844 and H11845 will be made when they are compiled.

## 10. QA/QC and ENC Validation Checks

H11847 was subjected to QA checks in S-57 Composer prior to exporting to the HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to a chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

## 11. Products

### 11.1 HSD, MCD and CGTP Deliverables

- H11847 Base Cell File, Chart Units, Soundings and features compiled to 1:40,000.
- H11847 Base Cell File, Chart Units, Soundings compiled to 1:10,000.
- H11847 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items.
- H11847 Survey outline to populate the SURDEX.

### 11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings H11847\_CS.000
- Chart units base cell file, survey scale sounding set H11847\_SS.000
- Descriptive Report package H11847\_DR.pdf
- Survey outline H11847\_Outline.gml & H11847.xsd

### 11.3 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:  
Martha Herzog, Physical Scientist, PHB, Seattle, WA; 206-526-6730; Martha.herzog@noaa.gov

APPROVAL SHEET  
H11847

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.

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

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