

H11586

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. H11586

LOCALITY

State Alaska

General Locality Approaches to Sitka

Sublocality 8 Miles West of Aspid Cape

2007

CHIEF OF PARTY

..... Commander Guy T. Noll, NOAA

LIBRARY & ARCHIVES

DATE

<p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;">HYDROGRAPHIC TITLE SHEET</p>	<p>REGISTRY No</p> <p style="text-align: center;">H11586</p>
<p>INSTRUCTIONS – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.</p>	<p>FIELD No: N/A</p>
<p>State <u>Alaska</u></p> <p>General Locality <u>Approaches to Sitka</u></p> <p>Sub-Locality <u>8 Miles West of Aspid Cape</u></p> <p>Scale <u>1:20,000</u> Date of Survey <u>April 28 to July 22, 2007</u></p> <p>Instructions dated <u>3/28/2007</u> Project No. <u>OPR-O112-RA-07</u></p> <p>Vessel <u>RA5 (1006), RA4 (1016), RA4 (1016 Elac 1180), RA3 (1021)</u> <u>RA2 (1103), RAINIER (S221)</u></p> <p>Chief of party <u>Commander Guy T. Noll, NOAA</u></p> <p>Surveyed by <u>RAINIER Personnel</u></p> <p>Soundings by <u>Reson SeaBat 8101, Seabeam/Elac 1180, Reson SeaBat 8125, Knudsen 320M, Seabeam/Elac 1050D</u></p> <p>SAR by <u>Tyanne Faulkes</u> Compilation by <u>Peter Holmberg</u></p> <p>Soundings compiled in <u>Fathoms</u></p>	
<p>REMARKS: <u>All times are UTC. UTM Projection zone # 8</u></p> <p><u>The purpose of this survey is 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></p>	

Descriptive Report to Accompany Hydrographic Survey H11586

Project OPR-O112-RA-07
Approaches to Sitka, Alaska
8 Miles West of Aspid Cape
Scale 1:20,000
April – July, 2007
NOAA Ship RAINIER (s221)
Chief of Party: Commander Guy T. Noll, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-O112-RA-07 dated March 28, 2007 and all other applicable direction¹, with the exception of deviations noted in this report. The survey area is approaches to Sitka, Alaska, 8 miles west of Aspid Cape. This survey corresponds to sheet “D” in the sheet layout provided with the Letter Instructions. OPR-O112-RA-07 responds to a request from the USCG 17th District Aids to Navigation Branch. The route south from Sitka “along a protected passage to Necker Bay and Crawfish Inlet, is seeing increased use by commercial fishing vessels, commercial charter vessels and recreational boaters.” As tour companies respond to the growing numbers of visitors that are looking for the “real Alaska”, this area will see increased passenger vessel traffic in the near future.

The survey area (see Figure 1) consists of three definable sections (see Figure 4.): the offshore section, the Walker Channel and Necker Bay section, and the Middle Channel section. Complete multibeam echosounder (MBES) coverage was acquired within the survey area.

The offshore section is a result of the original survey limits altered to devote resources toward Walker Channel, Necker Bay, and Middle Channel (see Figure 2). Due to time constraints and loss of equipment, the western edge of H11586’s survey limits was not reached. As per the project instructions, the survey area was “squared off” (See Figure 3).

The Walker Channel and Necker Bay section consists of complete multibeam echosounder (MBES) coverage within the survey area, but with only sporadic coverage to the 8 meter curve. Lidar has been flown in the area and RAINIER will conduct shoreline operations in the future when those data are compiled. No shoreline verification was completed in Walker Channel and Necker Bay.

The Middle Channel section consists of complete multibeam echosounder (MBES) coverage acquired within the survey area in waters 8 meters and deeper. In depths less than 8 meters additional MBES coverage acquired least depths over significant features or shoals, as

¹ Standing Instructions for Hydrographic Surveys (March 2007), NOS Hydrographic Surveys Specifications and Deliverables (April 2007), OCS Field Procedures Manual for Hydrographic Surveying (March 2007), and all Hydrographic Surveys Technical Directives issued through the dates of data acquisition.

appropriate for this survey. Except as noted below, vertical beam echo sounder (VBES) data were acquired in depths from approximately 4 to 20 meters to define the navigable area limit, aid in the planning of SWMB data acquisition, and provide inshore bathymetry in navigationally significant areas. Shoreline Verification was performed for the Middle Channel section.

The Chief of Party, in consultation with Northwest Navigation Manager, Hydrographic Surveys Division Operations Branch, and Pacific Hydrographic Branch, determined that coverage is sufficient for submission.¹

Data Acquisition Type	Hull Number with Mileage (nm)					Total
	1103	1016	1006	1021	S221	
VBES (mainscheme)	7.481	-	-	-	-	7.481
MBES (mainscheme)	-	90.76	43.299	206.065	517.53	857.654
SSS (mainscheme)	-	-	-	-	-	
VBES + SSS (mainscheme)	-	-	-	-	-	
Crosslines	-	-	-	-	76.41	76.41
Developments	-	-	15.6	-	16.91	32.51
Shoreline	1.629	-	-	-	-	1.629
Bottom Samples	-	-	-	-	-	
Total Number of Items Investigated	-	-	-	-	-	
Total Area Surveyed (sq. nm)	--	-	-	-	-	101.0

Table 1: Statistics for survey H11586

Data acquisition was conducted from April 28 to July 22, 2007 (DN 118 to 203).

SURVEY H11586

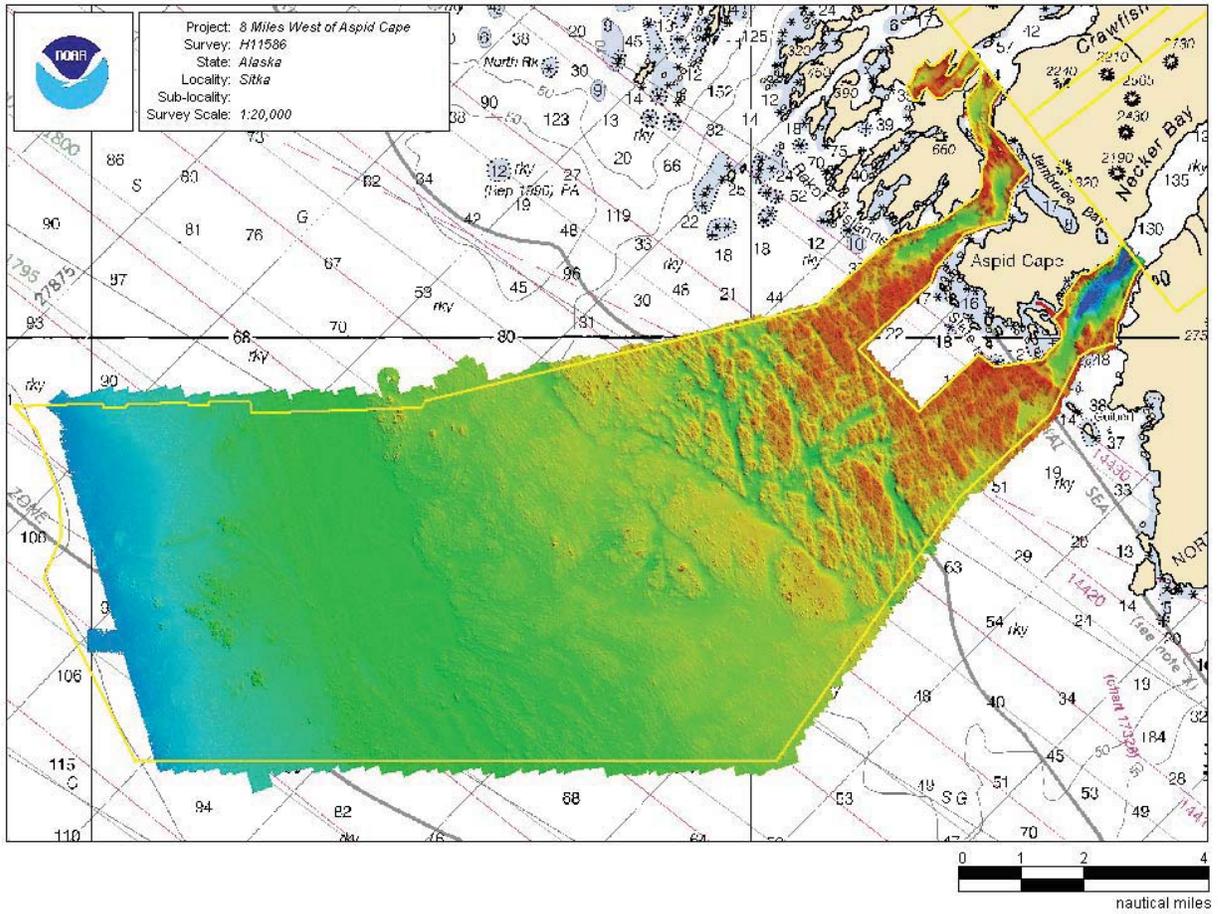


Figure 1. H11586 Survey Limits (Chart 17320).

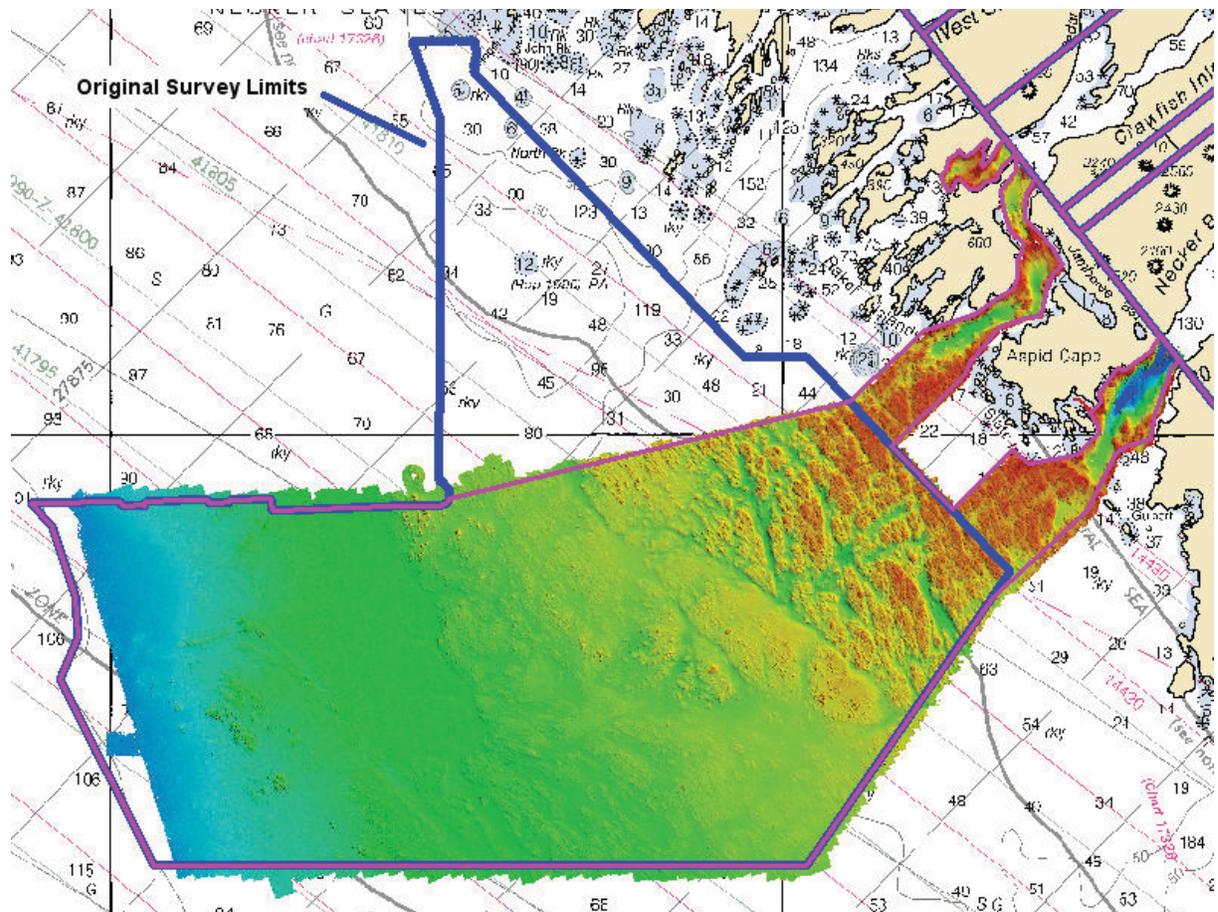


Figure 3. The blue polygon represents survey H11586's original survey limits. The purple polygon represents area surveyed.

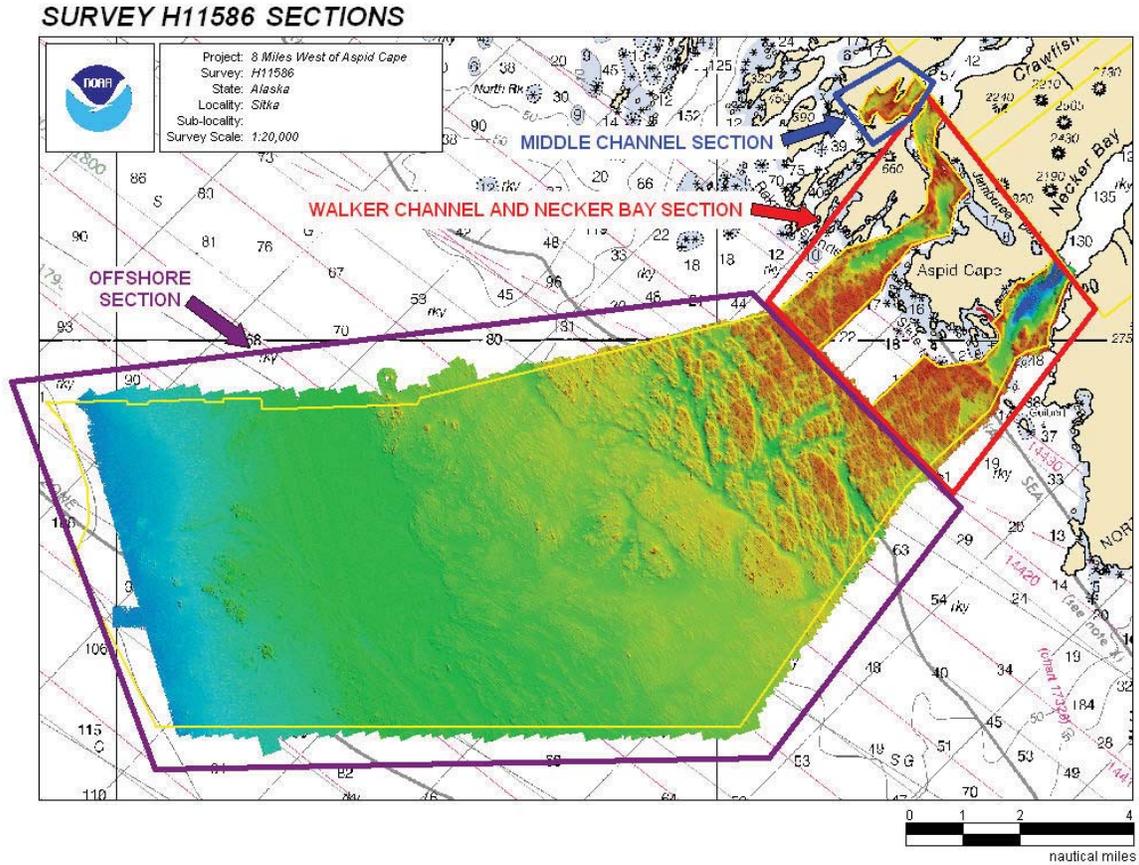


Figure 4. Survey H11586 sections are the offshore section, the Walker Channel and Necker Bay section, and the Middle Channel section.²

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-07 Data Acquisition and Processing Report (DAPR)*,³ submitted under separate cover. Items specific to this survey, and any deviations from the DAPR are discussed in the following sections.

Final approved TCARI water levels have been applied to this survey. 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
S221	RAINIER	Multibeam Echosounder
1103	RA-2	Vertical Beam Echosounder Detached Positions Bottom Samples
1021	RA-3	Multibeam Echosounder
1016	RA-4	Multibeam Echosounder
1006	RA-5	Multibeam Echosounder

Table 2: Data Acquisition Vessels for H11586.

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

No unusual vessel configurations were used for data acquisition.

B2. Quality Control

Crosslines

Vertical Beam Echo Sounder (VBES) crosslines were not run on H11586.

Multi-Beam Echosounder (MBES) crosslines totaled 76.41 nautical miles, comprising 8.91% of main scheme MBES hydrography. The mainscheme bathymetry was manually compared to the XL nadir beams in CARIS subset mode and agreed well with differences averaging approximately 0.25 meter.

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 2007 RAINIER Hydrographic System Readiness Review package⁴ submitted with this survey.

Junctions

The following contemporary surveys junctions with H11586 (See Figure 5):

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H11678	1:10,000	2007	Northeast
H11679	1:10,000	2007	Northeast

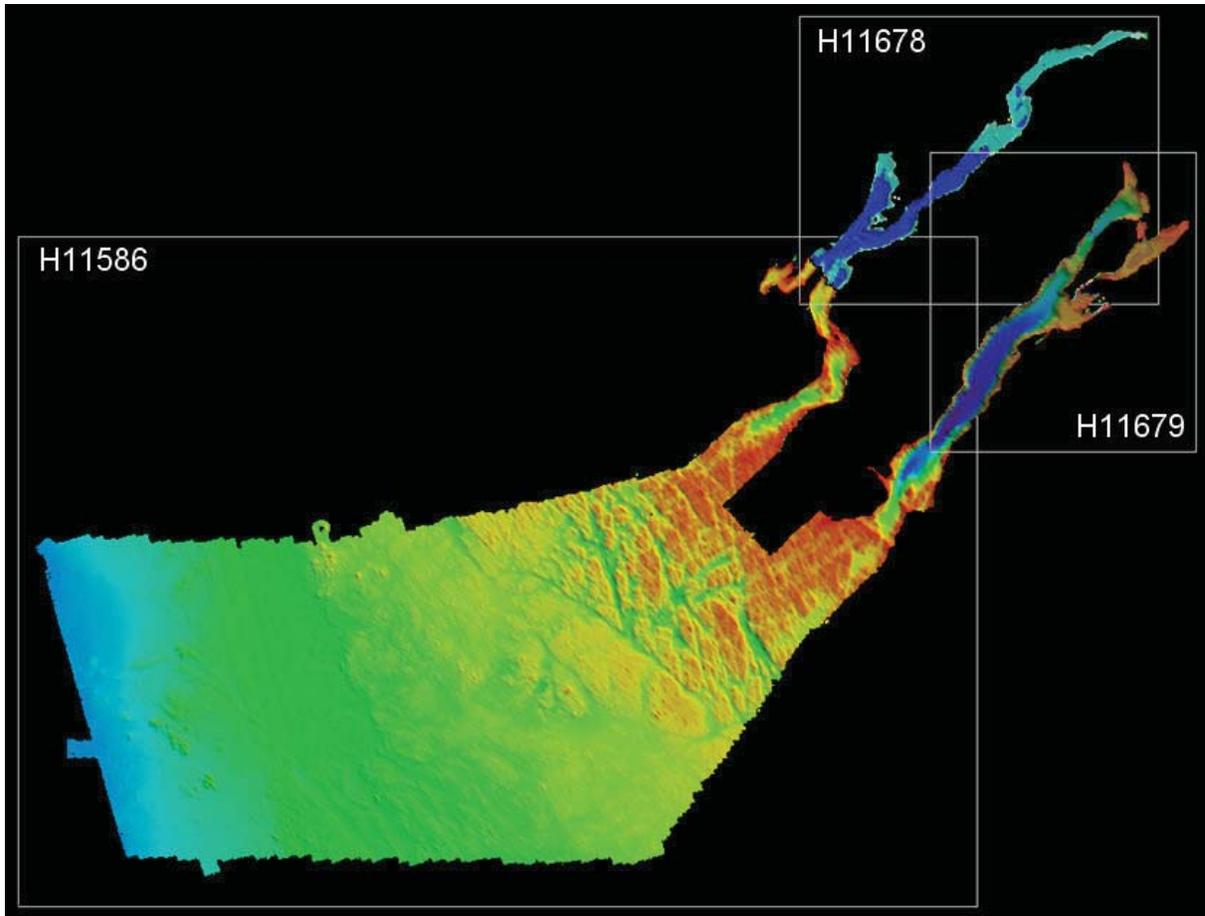


Figure 5. H11586 with adjoining surveys H11678 and H11679.

CARIS Field Sheets and BASE surfaces for H11678 and H11679 were created by RAINIER April – July 2007 for junction comparison. Observations were made with subset mode. Survey H11678 has noticeable offsets within half a meter in 55 meters of water. Survey H11679 has noticeable offsets of up to one meter in 240 meters of water. These differences are cartographically insignificant and within the error budget.⁵

Data Quality Factors

RAINIER Thermosalinograph Problems:

In spite of frequent CTD casts, initial data collected by RAINIER exhibited “frowning” very typical of sound speed problems. After a number of lines had been run, it was realized that the Thermosalinograph (TSG) was reading a much higher sound velocity (~1501 m/s) than various CTD casts were indicating at the surface (~1493 m/s). The TSG values were apparently in error due to warming of the water in the TSG piping. The problem was solved by disabling TSG values in the acquisition software and using only the CTD cast corrections present in the SVA file.

The lines already acquired with the faulty TSG were corrected since CARIS is capable of re-applying the flat face refraction correction at the face at the transducer in post processing for ELAC systems. By deleting the “SSP” files (SSP, SSPLineSegments, & SSPTmIdx) in the HDCS data folder, CARIS will automatically reapply the flat face refraction correction, thus solving the problem in the affected lines.

Holidays:

Sheet H11586 contains three significant holidays and several insignificant deep water holidays.

Two significant holidays are located in the Middle Channel area (see Figures 6 and 7). Both do not meet the requirements of the project instructions for coverage to the NALL line. RAINIER plans to complete coverage during the 2008 field season.⁶

The western edge of sheet H11586 is incomplete (see Figure 3), due to time constraints exacerbated by the loss of survey equipment.

Insignificant deepwater holidays are located throughout the survey area, all at depths greater than 50 fathoms. No shoaling was evident in the surrounding areas and the hydrographer is confident that no shoal areas were missed.⁷

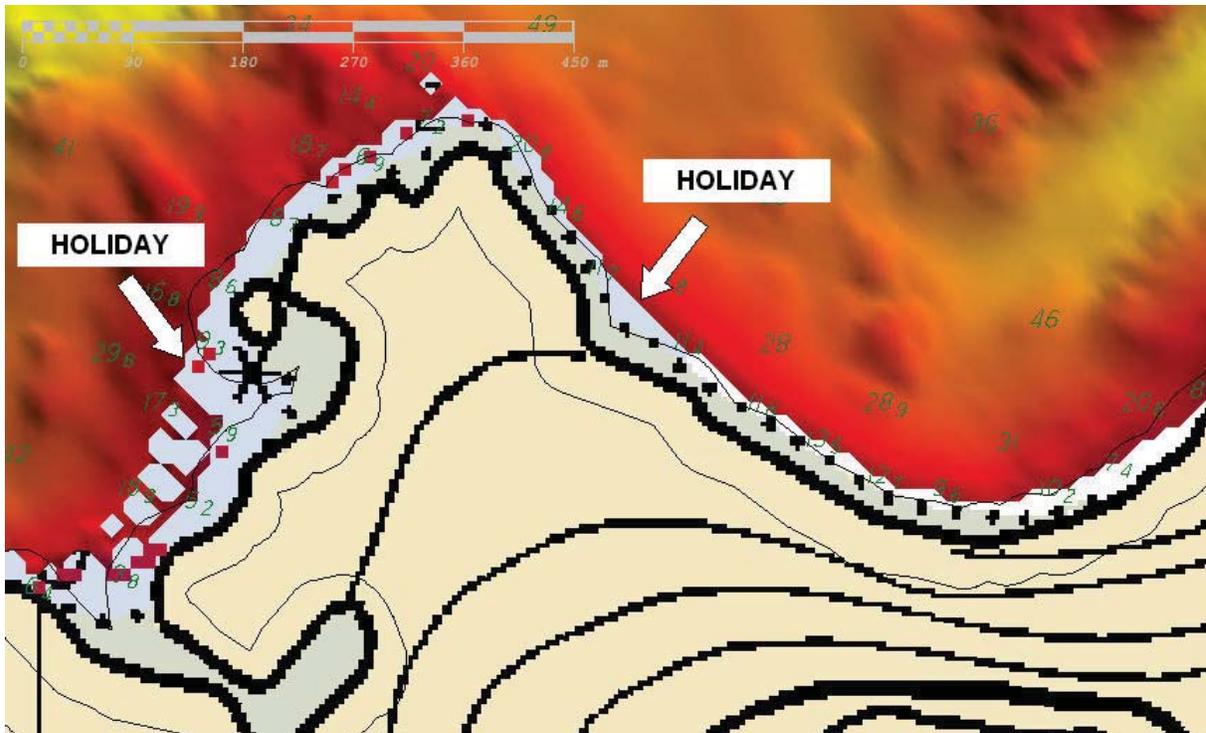


Figure 6. Holidays created by coverage that does not extend beyond the NALL line in Middle Channel (56°44'07.28" N 135°14'34.48" W).

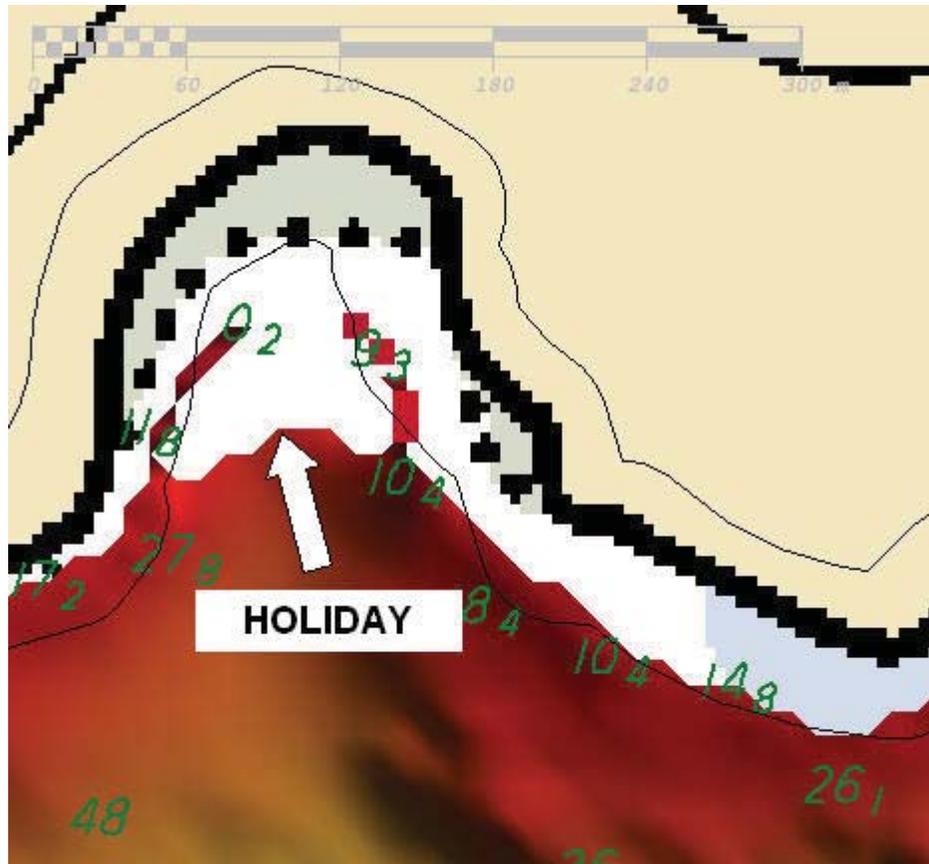


Figure 7. A holiday in Middle Channel ($56^{\circ}44'33.45''$ N $135^{\circ}14'38.59''$ W).

B3. Data Reduction

Data reduction procedures for survey H11586 conform to those detailed in the *OPR-O112-RA-07 DAPR*.

B4. Data Representation

Many BASE surfaces were used in processing H11586. Due to the steep cliffs in the eastern inlets seen in the majority of the survey area, each field sheet required multiple BASE surfaces to adequately portray the varying depth ranges. The shoreline was comprised of very steep cliffs and two offshore features were observed. Final BASE surface resolutions and depth ranges were set to most adequately display relevant features, with field sheets being smaller than 25×10^6 nodes. Depth ranges were set in accordance with the Table 3 below.

Depth Range of Finalized Surface	Resolution
0.0 – 16.0 m	0.5 m
14.0 – 31.5 m	1 m
28.5 – 63 m	2 m
57 – 158 m	5 m
> 143 m	10 m

Table 3: Depth ranges and resolution of BASE surfaces

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

-  H11586_FINAL_05m_A
 -  H11586_FINAL_05m_A
 -  H11586_FINAL_05m_A_Final
-  H11586_FINAL_05m_B
 -  H11586_FINAL_05m_B
 -  H11586_FINAL_05m_B_Final
-  H11586_FINAL_05m_C
 -  H11586_FINAL_05m_C
 -  H11586_FINAL_05m_C_Final
-  H11586_FINAL_05m_D
 -  H11586_FINAL_05m_D
 -  H11586_FINAL_05m_D_Final
-  H11586_FINAL_05m_E
 -  H11586_FINAL_05m_E
 -  H11586_FINAL_05m_E_Final
-  H11586_FINAL_05m_F
 -  H11586_FINAL_05m_F
 -  H11586_FINAL_05m_F_Final
-  H11586_FINAL_05m_G
 -  H11586_FINAL_05m_G
 -  H11586_FINAL_05m_G_Final
-  H11586_FINAL_05m_H
 -  H11586_FINAL_05m_H
 -  H11586_FINAL_05m_H_Final
-  H11586_FINAL_05m_I_2
 -  H11586_FINAL_05m_I
 -  H11586_FINAL_05m_I_Final
-  H11586_FINAL_05m_J_3
 -  H11586_FINAL_05m_J_3
 -  H11586_FINAL_05m_J_3_Final
-  H11586_FINAL_05m_K
 -  H11586_FINAL_05m_K
 -  H11586_FINAL_05m_K_Final
-  H11586_FINAL_05m_L
 -  H11586_FINAL_05m_L
 -  H11586_FINAL_05m_L_Final
-  H11586_FINAL_05m_M
 -  H11586_FINAL_05m_M
 -  H11586_FINAL_05m_M_Final
-  H11586_FINAL_05m_N
 -  H11586_FINAL_05m_N
 -  H11586_FINAL_05m_N_Final

-  H11586_FINAL_05m_0
 -  H11586_FINAL_05m_0
 -  H11586_FINAL_05m_0_Final
-  H11586_FINAL_05m_P
 -  H11586_FINAL_05m_P
 -  H11586_FINAL_05m_P_Final
-  H11586_FINAL_10m
 -  H11586_FINAL_10m
 -  H11586_FINAL_10m_Final
-  H11586_FINAL_1m_A
 -  H11586_FINAL_1m_A
 -  H11586_FINAL_1m_A_Final
-  H11586_FINAL_1m_B
 -  H11586_FINAL_1m_B
 -  H11586_FINAL_1m_B_Final
-  H11586_FINAL_1m_C
 -  H11586_FINAL_1m_C
 -  H11586_FINAL_1m_C_Final
-  H11586_FINAL_1m_D_2
 -  H11586_FINAL_1m_D
 -  H11586_FINAL_1m_D_Final
-  H11586_FINAL_1m_E
 -  H11586_FINAL_1m_E
 -  H11586_FINAL_1m_E_Final
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 -  H11586_FINAL_1m_F
 -  H11586_FINAL_1m_F_Final
-  H11586_FINAL_1m_G_2
 -  H11586_FINAL_1m_G_2
 -  H11586_FINAL_1m_G_2_Final
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 -  H11586_FINAL_2m_A
 -  H11586_FINAL_2m_A_Final
-  H11586_FINAL_2m_B
 -  H11586_FINAL_2m_B
 -  H11586_FINAL_2m_B_Final
-  H11586_FINAL_2m_C
 -  H11586_FINAL_2m_C
 -  H11586_FINAL_2m_C_Final
-  H11586_FINAL_2m_D
 -  H11586_FINAL_2m_D
 -  H11586_FINAL_2m_D_Final

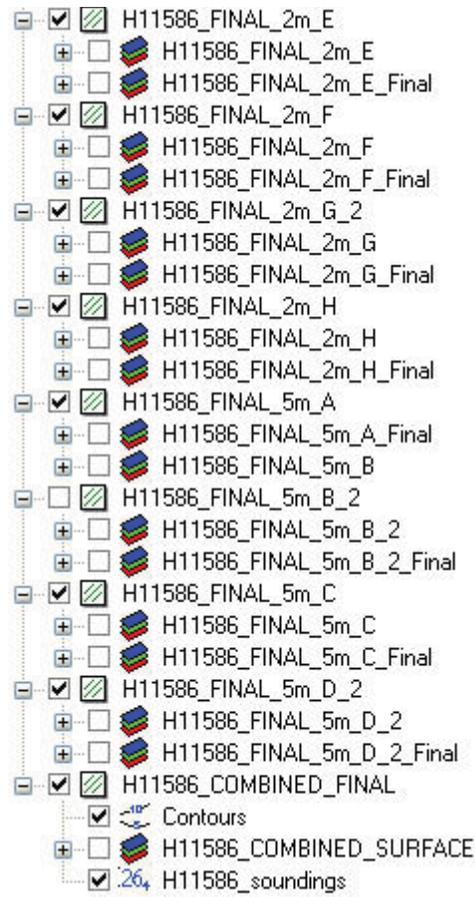


Figure 9. Field sheets and BASE surfaces submitted with H11586.

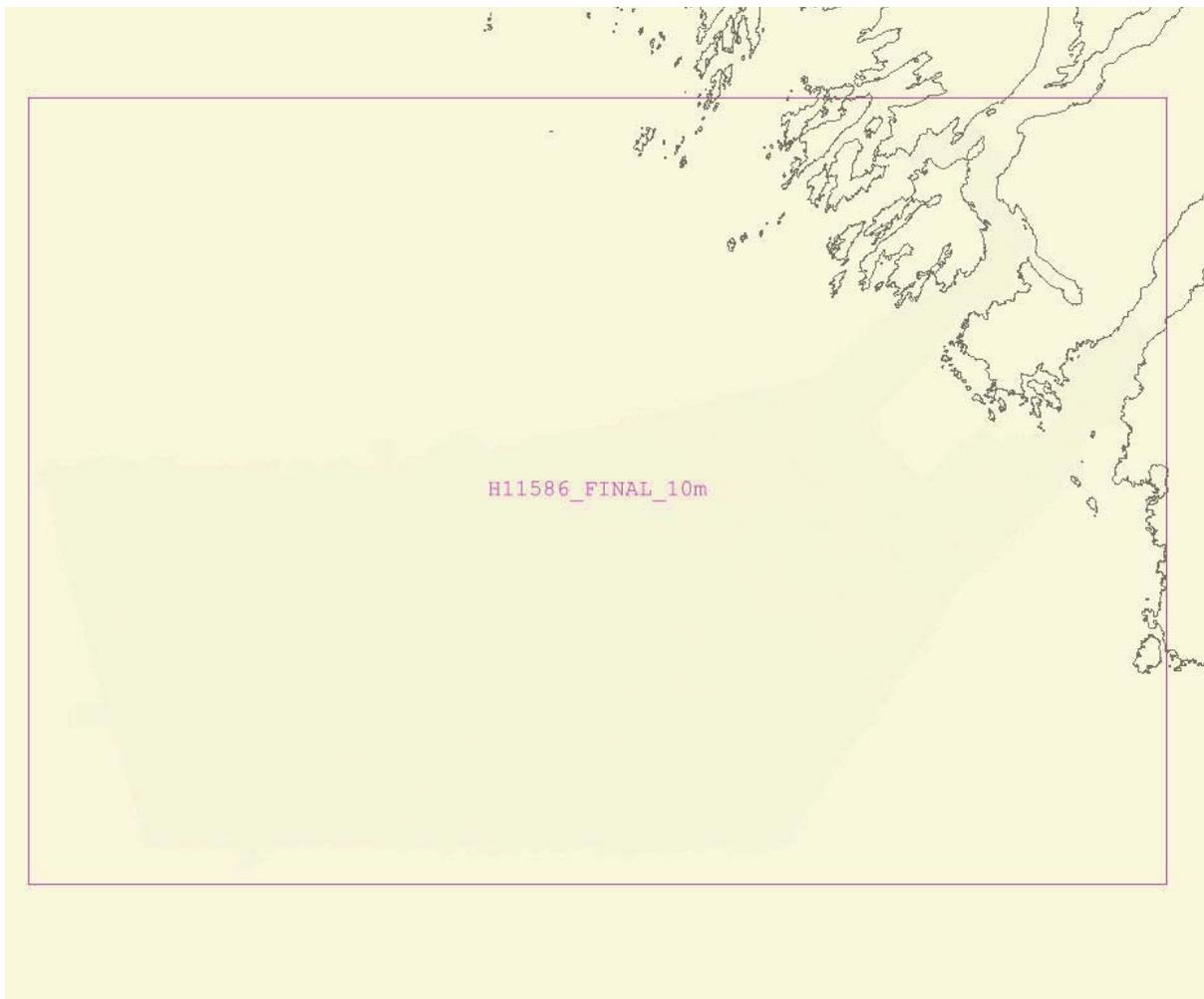


Figure 10. Layout of 10 meter field sheet for H11586.



Figure 11. Layout of five meter field sheets for H11586.

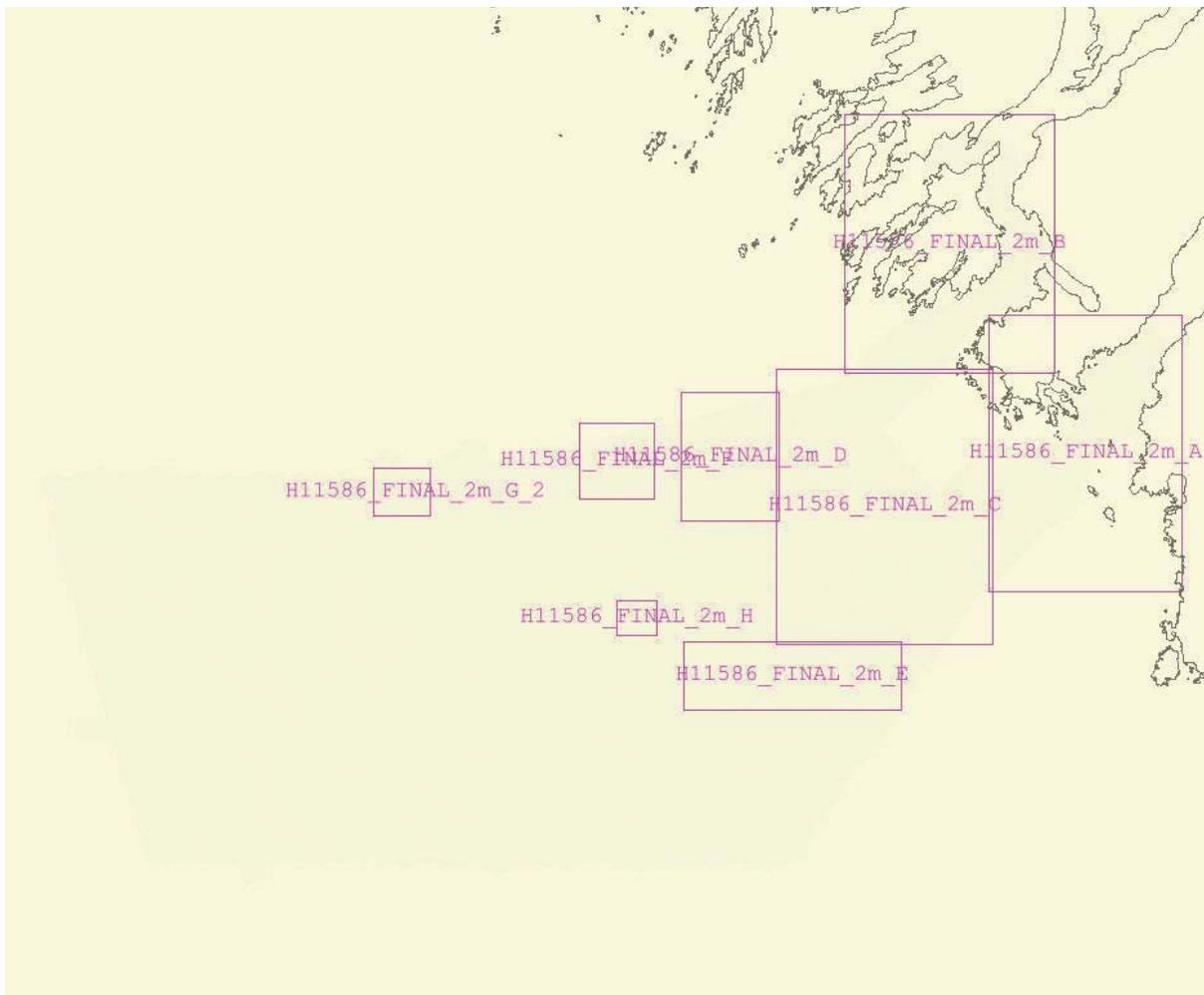


Figure 12. Layout of two meter field sheets for H11586.

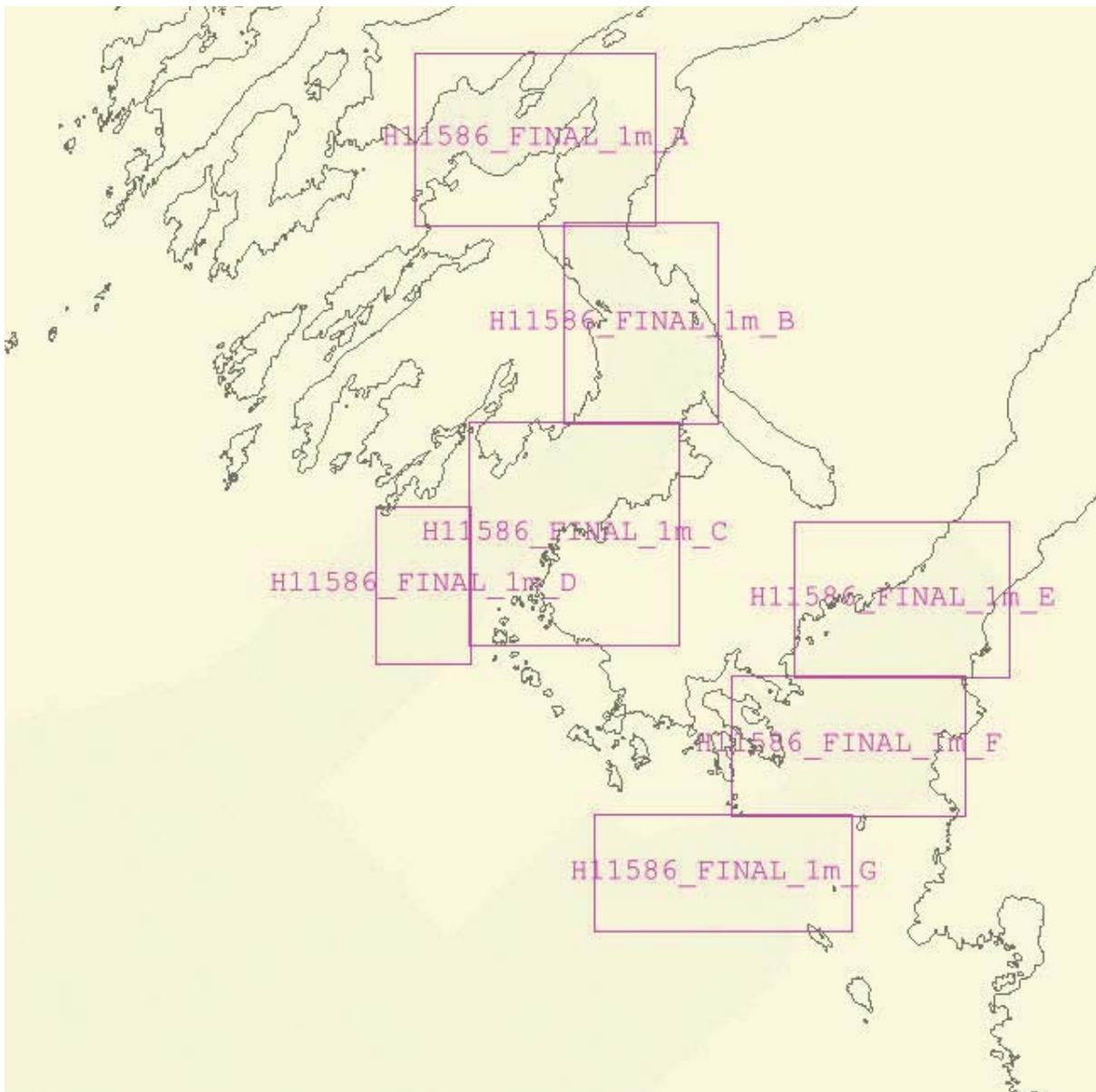


Figure 13. Layout of one meter field sheets for H11586.

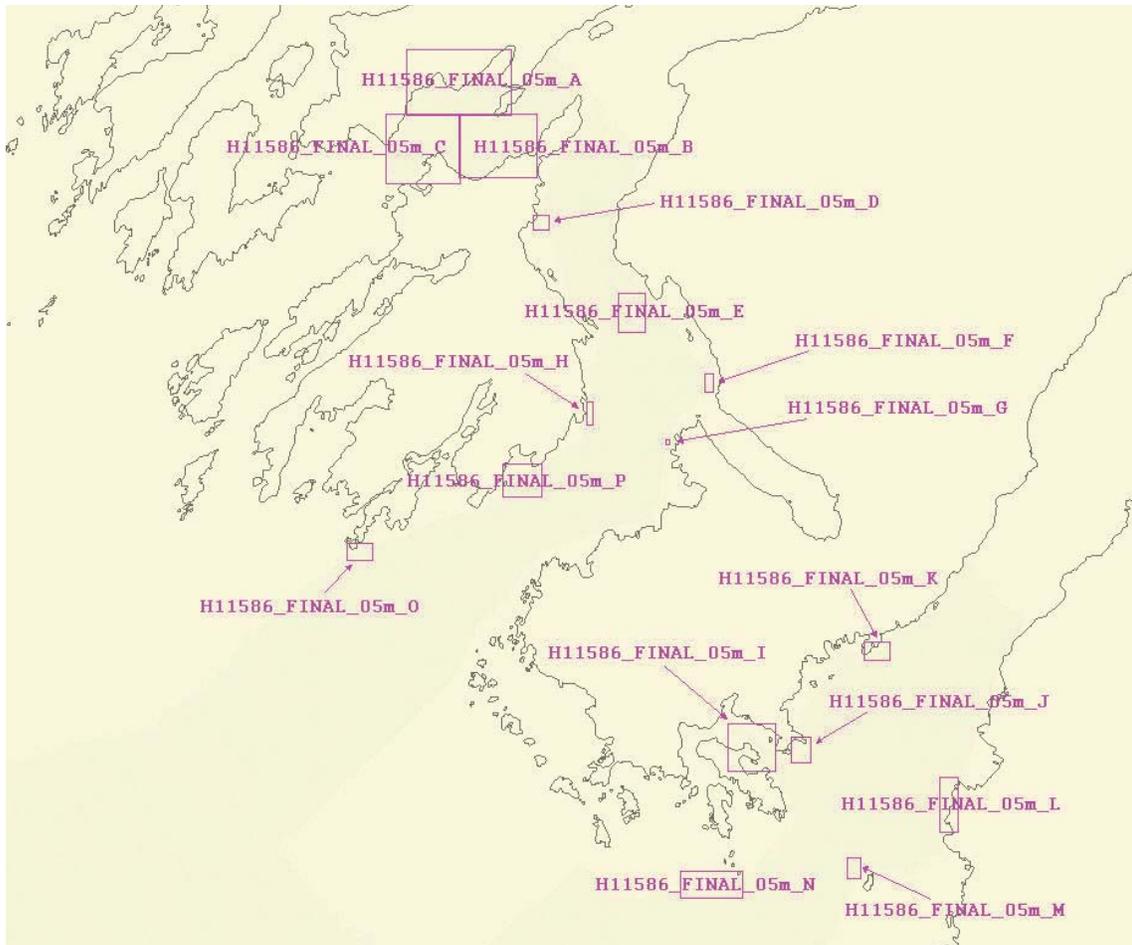


Figure 14. Layout of half meter field sheets for H11586.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11586 can be found in the *OPR-O112-RA-07 Horizontal and Vertical Control Report*,⁸ 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. The differential corrector beacons utilized for this survey are given in Table 4.

Location	Frequency	Operator	Distance	Priority
Biorka Island	305 kHz	USCG	12nm	Primary
Level Island	295 kHz	USCG	73nm	Backup

Table 4: Differential Corrector Sources for H11586.

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 H11586.

RAINIER personnel installed a Sutron 8210 “bubbler” tide gauge at the following subordinate station in accordance with the Letter Instructions. This station is described in detail in the *OPR-O112-RA-07 Horizontal and Vertical Control Report*.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Dorothy Cove, AK	945-1376	30-day	April 18, 2007	July 22, 2007

Table 5: Tide Stations installed by RAINIER personnel for H11586

All data were reduced to MLLW using **final verified TCARI water levels** using TCARI file O112RA2007.tc and stations Sitka, AK (945-1600) and Dorothy Cove, AK (945-1376) using the tide files 9451376_Verified_MSL.txt and 9451600_Verified_MSL.txt.

The request for Final Approved Water Levels for H11586 was submitted to CO-OPS on September 6, 2007, and the Final Tide Note was received on September 27, 2007. This documentation is included in Appendix IV.⁹

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Survey H11586 was compared with the following charts:

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
17328	1:40,000	7 th Ed, Nov 2003	5/28/2007
17320	1:217,828	17 th Ed, Nov 2005	10/8/2007

Table 6: Charts compared with H11586

A chart comparison was made to the largest scale raster chart of the survey area in accordance with verbal instructions received from the Chief, Hydrographic Surveys Division Operations Branch, at the 2007 Field Procedures Workshop.

Chart 17320

Soundings from survey H11586 generally agreed within 1 to 5 fathoms of current charted depths. In two cases, discrepancies of 8 fathoms or more were seen that were shoaler than charted (see Figures 15 - 17). Overall survey H11586 revealed shoaler soundings between charted depths; this can be attributed to increased bottom coverage using MBES methods.¹⁰

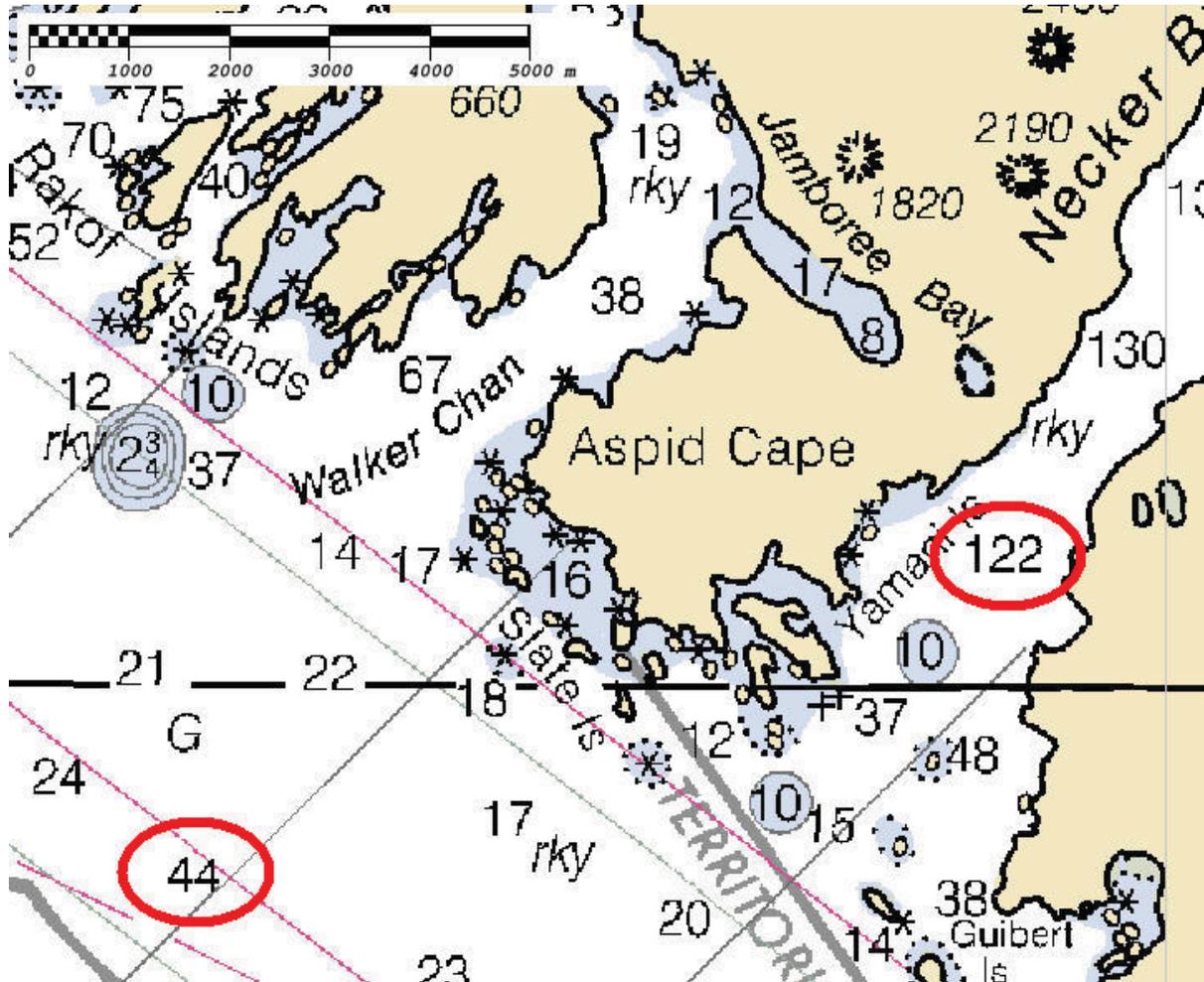


Figure 15. Two depths have discrepancies of 8 fathoms or more to soundings.

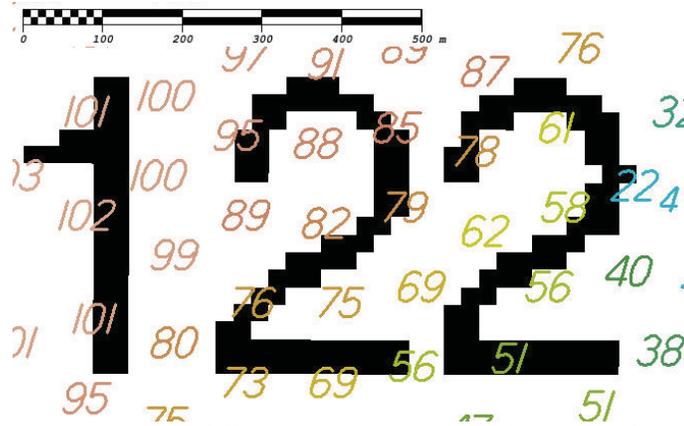


Figure 16. 40 fathom difference between charted depth and soundings.

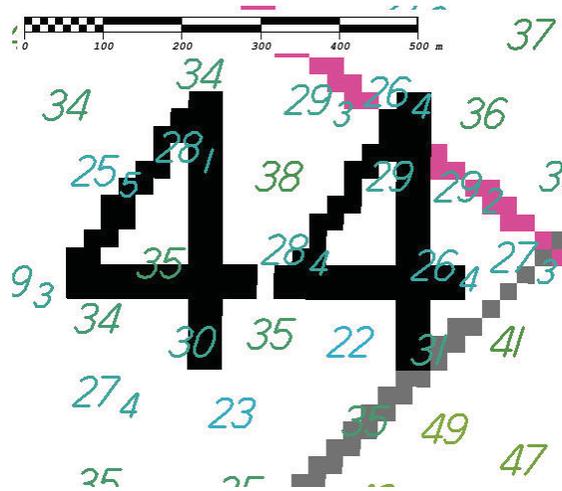


Figure 17. 8 fathom difference between charted depth and soundings.

Chart 17328

Soundings from survey H11586 generally agreed within 1 to 3 fathoms of current charted depths. Overall survey H11586 revealed shoaler soundings between charted depths. This can be attributed to increased bottom coverage using MBES methods.

The Hydrographer recommends that current survey soundings supersede all prior survey and charted depths in the common area.¹¹

Final chart comparisons will be made at the Pacific Hydrographic Branch.¹²

D.1.b. Dangers to Navigation

DTON

One Danger to Navigation (DTONs) was found on survey H11586 and reported to the Marine Chart Division via email on 5/12/2007. The original DTON submission package is included in Appendix IV. Description of the DTON is included in the Survey Feature Report in Appendix II.¹³

Anti-DTON

During survey acquisition, a 5¼ fathom sounding in Walker Channel, at 56° 42' 27.06" N 135° 12' 40.32" W, was disproved with complete MBES coverage and submitted as an anti-DTON (see Figure 18). At the time of acquisition, Walker Channel was planned to be submitted with survey H11678 and the anti-DTON was submitted under that survey number. This corresponds to the third item found in the DTON report included in Appendix I. After restructuring the survey limits, the disproved sounding is now a part of the current survey.

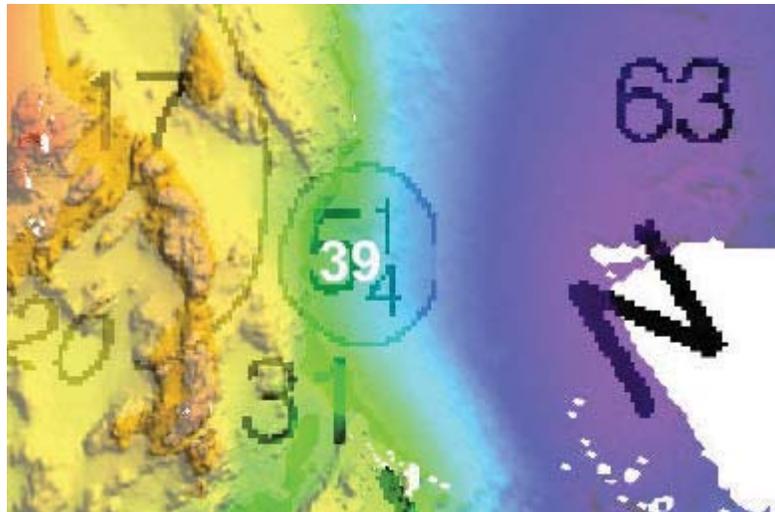


Figure 18. 5¼ fathom depth disproved by 39 fathom sounding in Walker Channel.

D.1.c. Other Features

Automated Wreck and Obstruction Information System (AWOIS) Investigations

AWOIS item #53197 was assigned in the original survey limits, but because of the survey limit restructuring, the item is no longer located within survey H11586. This item will be addressed in 2008 by RAINIER when the area to the north is surveyed.¹⁴

Additional Items

No additional charted items were investigated and no other features were located on survey H11586.

D.2. Additional Results

D.2.a. Prior Survey Comparison

Prior survey comparison was not performed.

D.2.b. Shoreline Verification

Shoreline verification was performed for survey H11586.

Shoreline Source

The Pacific Hydrographic Branch provided RAINIER with ENC US5AK3SM for shoreline reference and verification purposes. The ENC has been adequately updated according to photogrammetric survey project GC-10517 (NAD 83).

Shoreline Verification

Limited shoreline verification was conducted in Middle Channel (see Figure 19). Shoreline verification for Walker Channel and Necker Bay was not conducted.

Detached positions (DPs) acquired during shoreline verification were recorded in HYPACK, on DP forms, and were processed in Pydro. These indicate revisions to features and features not found on the verified shoreline. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline. DP forms are included in the *Separates to be Included with Survey Data*.

All shoreline data is submitted in Caris Notebook .hob files. The session H11586_NTBK contains the following:

HOB File	Purpose and Contents
H11586_CompSource.hob	Original Source Data as filtered from ENC cell US5AK3SM
H11586_field_verified_source.hob	Field verified source features and shoreline, including edits and updates not requiring DPs.
H11586_pydro_updates.hob	New or modified items processed through Pydro.
H11586_disprovals.hob	Deleted items processed through Pydro.

Table 7. List and description of Notebook HOB files.

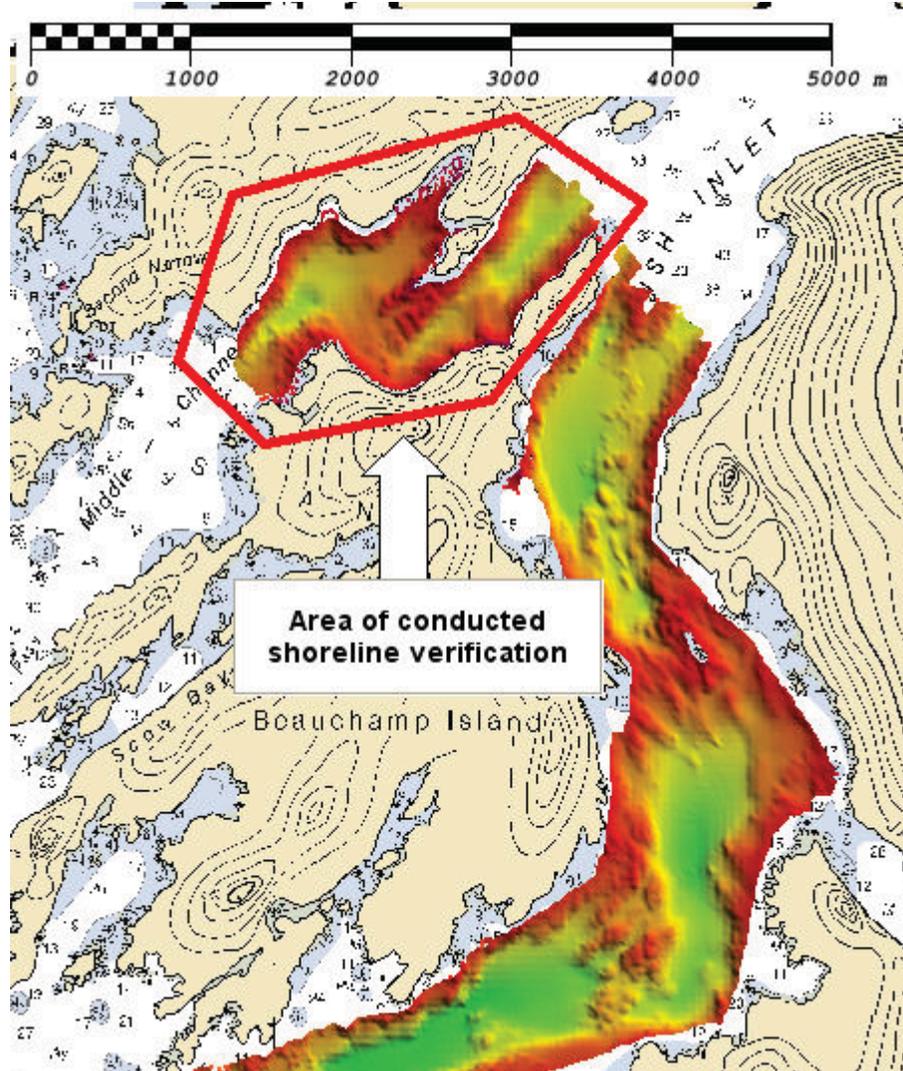


Figure 19. H11586 area of conducted shoreline verification.

Source Shoreline Changes and New Features

Items for survey H11586 that require further discussion and are associated with a detached position, have been flagged “Report” in Pydro in H11586_Final.pss. Investigation methods and recommendations are listed in the Remarks and Recommendation tabs. These features are included in the Survey Feature Report in Appendix I.¹⁵

Recommendations

The Hydrographer recommends that the shoreline as depicted in the Notebook .HOB files supersede and complement shoreline information compiled on the CFF and charts as described above.¹⁶

D.2.c. Aids to Navigation

There are no Aids to Navigation within the limits of H11586.¹⁷

D.2.d. Overhead Features

There are no overhead features within the limits of survey H11586.¹⁸

D.2.e. Submarine Cables and Pipelines

There are no submarine cables or pipelines charted within the limits of H11586, and none were detected by the survey.¹⁹

D.2.f. Ferry Routes

There are no ferry routes charted within the limits of survey H11586, and none were observed to be operating in the area.²⁰

D.2.g. Bottom Samples

Bottom samples were not performed in survey H11586.²¹

D.2.h. Other Findings

There were no additional findings in survey H11586.²²

E. APPROVAL

As Chief of Party, Field operations for hydrographic survey H11586 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 2007 edition), Field Procedures Manual (March 2007 edition), Standing and Letter Instructions, and all HSD Technical Directives issued through June 2007. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report. 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-O112-RA-05	11/02/07	N/CS34
Coast Pilot Report for OPR- O112-RA-05 <i>(Will be submitted under separate cover)</i>		N/CS26

Approved and Forwarded:



, CDR/NOAA

Digitally signed by Donald W. Haines, CDR/NOAA
 DN: cn=Donald W. Haines, CDR/NOAA, c=US, o=NOAA/NMAO/
 MOC-P, ou=NOAA Ship RAINIER, email=co.rainier@noaa.gov
 Reason: I am approving this document for CDR Noll
 Date: 2008.03.05 14:58:18 -08'00'

Commander Guy T. Noll, NOAA
 Commanding Officer

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

Survey Sheet Manager:



Ian Colvert
 I am the author of this document
 2008.03.05 22:30:33 Z

Ian Colvert
 Assistant Survey Technician, NOAA Ship RAINIER.

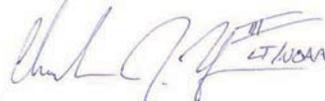
Chief Survey Technician:



James B Jacobson
 I have reviewed this document
 2008.03.05 22:23:59 Z

James B. Jacobson
 Chief Survey Technician, NOAA Ship RAINIER

Field Operations Officer:



Charles Yoos
 I have reviewed this document
 2008.03.05 14:42:17 -08'00'

Lieutenant Charles J. Yoos, NOAA
 Field Operations Officer

Revisions and Corrections During Office Processing and Certification

¹ Concur.

² The Northern sections of the Walker channel and Necker Bay data were compiled to HCells H11845_CS.000 and H11846_CS.000. See HCell report at end of this document and HCell reports for H11845 and H11846.

³ Filed with project records.

⁴ Filed with project records.

⁵ Concur.

⁶ Concur with clarification, full coverage was achieved by a combination of multibeam data from H11845 (2008 survey) and H11586.

⁷ Concur, insignificant holidays were removed from the M_QUAL layer (coverage depiction) of H11586_CS.000.

⁸ Filed with project records.

⁹ Tide note is appended to this report.

¹⁰ Concur.

¹¹ Concur.

¹² Concur, final chart comparisons were performed at PHB during the survey acceptance review and during HCell compilation.

¹³ DTON report is appended to this report. Note: DTON is located in portion of data compiled to H11846_CS.000.

¹⁴ Concur with clarification, AWOIS Item 53197 is located within the modified boundaries of H11847. See section D.1.c of the descriptive report for H11847.

¹⁵ The Survey Feature Report is filed with the hydrographic records. Note: the survey feature report does not include all features from H11586. Additional features were added, some removed, and some modified in CARIS Notebook after the feature report was generated from Pydro. All features included in the compilation of H11586 have come directly from CARIS Notebook, which is the official features deliverable for this survey.

¹⁶ Concur with clarification. All shoreline data acquired fell within the modified boundaries of H11845_CS.000 and H11846_CS.000. Chart shoreline as depicted within those HCells.

¹⁷ Concur.

¹⁸ Concur.

¹⁹ Concur.

²⁰ Concur.

²¹ One bottom sample was retained from chart 17320 in H11586_CS.000. The remaining charted bottom samples located on charts 17326, 17328, and 17320 are recommended for removal and to be replaced by the rocky seabed areas digitized from the base surfaces.

²² Concur.

H11586 DTON

Registry Number: H11586
State: Alaska
Locality: Approaches to Sitka
Sub-locality: 8 Miles West of Aspid Cape
Project Number: OPR-O112-RA-07
Survey Date: 04/30/2007

Charts Affected

Number	Version	Date	Scale
17328	7th Ed.	11/01/2003	1:40000
17320	17th Ed.	11/01/2005	1:217828
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	Sounding	16.10 m	56° 38' 57.336" N	135° 10' 33.114" W	---

1 - Danger To Navigation

1.1) Profile/Beam - 2224/1 from h11586 / 1006_reson8101_hvf / 2007-120 / 342_2106

DANGER TO NAVIGATION

Survey Summary

Survey Position: 56° 38' 57.336" N, 135° 10' 33.114" W
Least Depth: 16.10 m
Timestamp: 2007-120.21:16:02.374 (04/30/2007)
Survey Line: h11586 / 1006_reson8101_hvf / 2007-120 / 342_2106
Profile/Beam: 2224/1
Charts Affected: 17328_1, 17320_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

MBES data indicate a rocky shoal NW of Guibert Island. Although the submitted sounding is the least depth obtained in the data set, it appears that shoaling continues in the direction of the island. This sounding should indicate to mariners to steer clear of Guibert island.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11586/1006_reson8101_hvf/2007-120/342_2106	2224/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart sounding as per digital data.

Cartographically-Rounded Depth (Affected Charts):

8 ¾fm (17328_1, 17320_1, 16016_1, 530_1)

8fm 5ft (531_1)

16.1m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: QUASOU - 1:depth known
 SORDAT - 20070721
 SORIND - US,US,graph,H11586

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

Feature Images

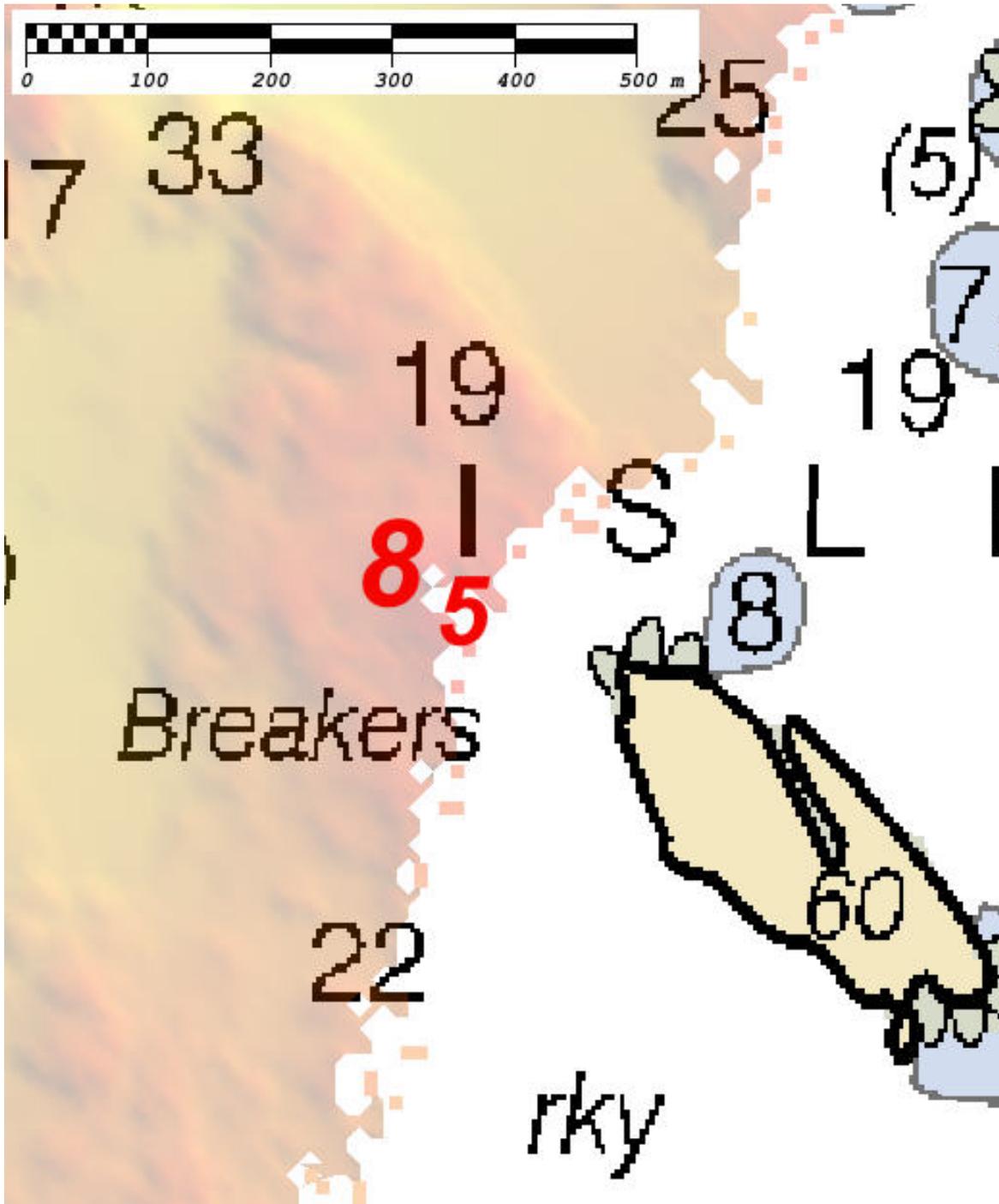


Figure 1.1.1



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 19, 2007

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-O112-RA-2007
HYDROGRAPHIC SHEET: H11586

LOCALITY: 8 Miles West of Aspid Cape, Approaches to Sitka, AK
TIME PERIOD: April 28 - July 21, 2007

TIDE STATION USED: 945-1600 Sitka, AK
Lat. 57° 03.1'N Long. 135° 20.4' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.791 meters

TIDE STATION USED: 945-1376 Dorothy Cove, AK
Lat. 56° 43.3' N Long. 135° 4.5' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.699 meters

REMARKS: RECOMMENDED ZONING

Please use the TCARI grid "O112RA2007-TCARI-F.tc" as the final grid for project OPR-O112-RA-2007, H11586, during the time period between April 28 - July 21, 2007.

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).

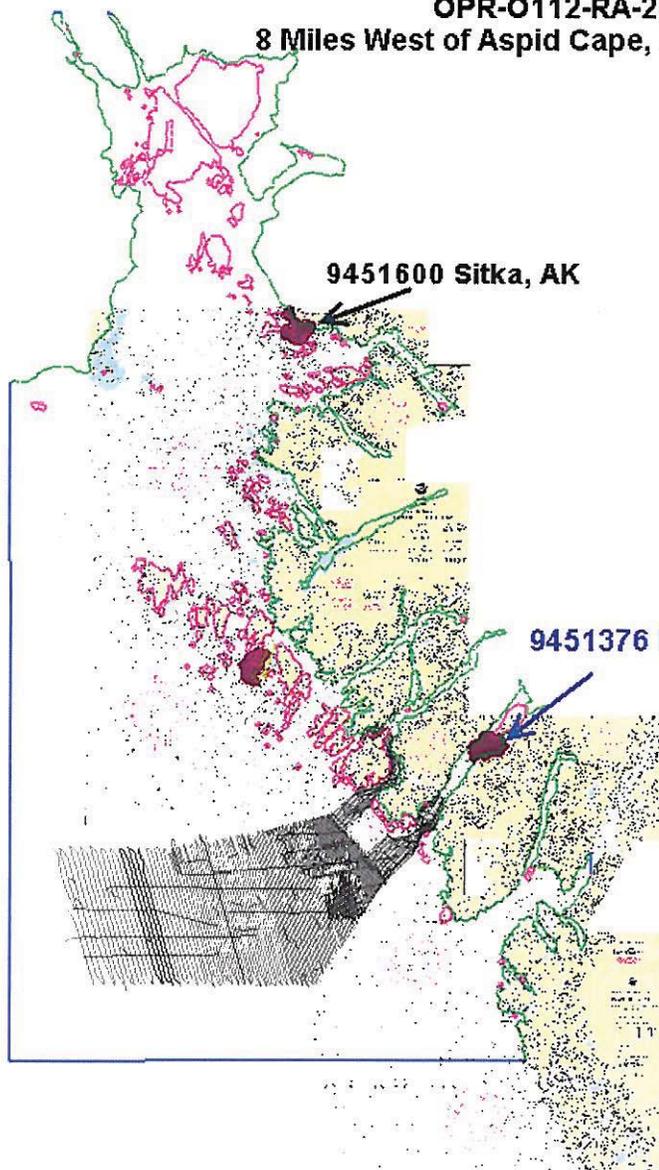
Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, c=US, o=CO-
OPS, ou=NOAA/NOS, email=peter.
stone@noaa.gov
Date: 2007.09.28 13:08:20 -04'00'

CHIEF, PRODUCTS AND SERVICES DIVISION



**Final TCARI grid for
OPR-O112-RA-2007, H11586
8 Miles West of Aspid Cape, Approaches to Sitka, AK**



H11586 HCell Report
Peter Holmberg, 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's and RNC's in the region: NOAA RNCs, 17326 (1:40,000) , 17328 (1:40,000), and 17320 (1:217,828), and corresponding NOAA ENC's, US5AK3GM, and US5AK3SM. (See section 4. Meta Areas.)

HCell H11586 contains the remaining offshore data not applied to HCells H11845, and H11846 (see figure 1).

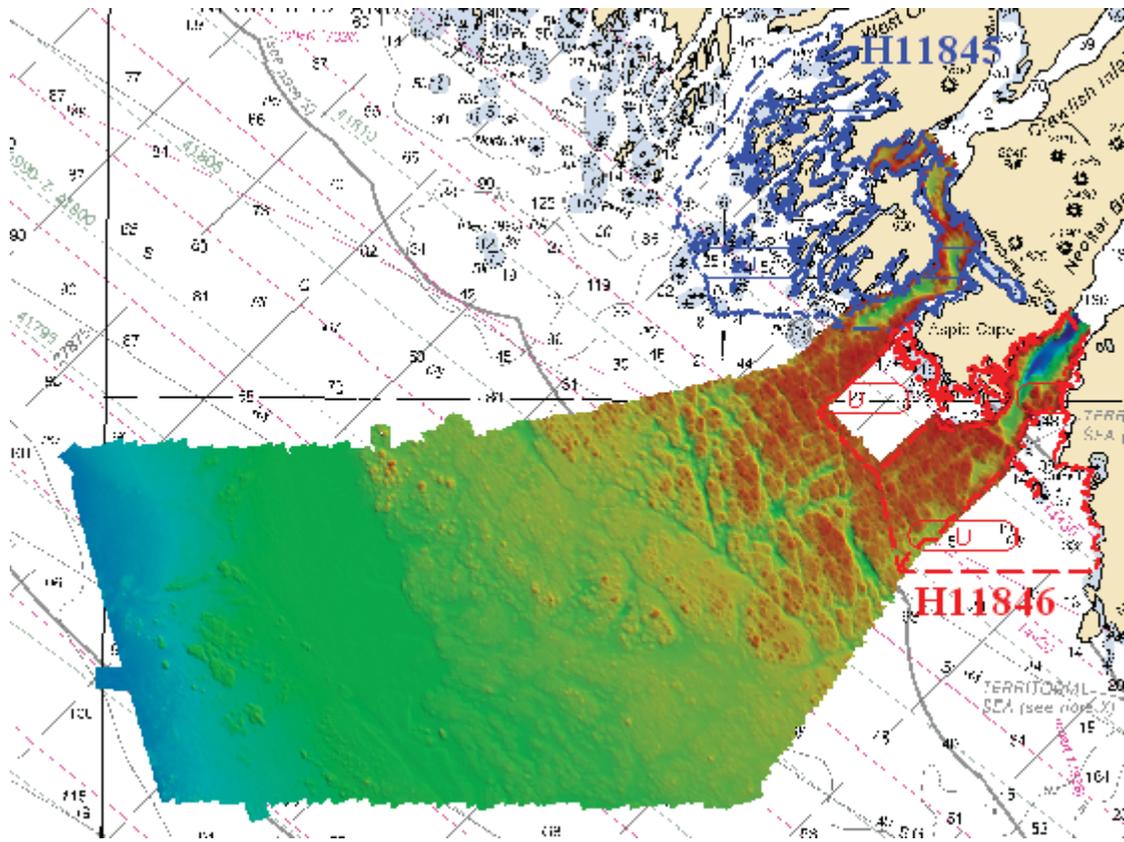


Figure 1. Remaining offshore portion of H11586

HCell compilation of survey H11586 utilized Office of Coast Survey DRAFT HCell Specifications Version 4.0. For additional information on the standards and protocols used for HCell Compilation, see the DRAFT A/PHB HCell Reference Guide, version 2.0, 22 February, 2010.

1. Compilation Scale

Depths and features for HCell H11586 were compiled to the largest scale charts in the region, 17328, 1:40,000, 17326, 1:40,000, and 17320, 1:217,828.

2. Soundings

Survey-scale sounding (SOUNDG) feature object layers were built from a 10-meter surface H11586.csar. From the surface a shoal-biased selection was made at 1:20,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	300	5

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

3. Depth 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 metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in Fathoms from Chart 17328*	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H11586 SS.000
20	36.576	37.9476	20.750	20
50	91.44	92.812	50.750	50

*Note: Chart 17328 does not contain 20 and 50 fathom contours., whereas the adjacent and overlapping chart 17326 does. Both 17326 and 17328 are 1:40,000 scale charts. Compiler recommends adding 20 and 50 fathom contours to chart 17328.

4. Meta Areas

The following Meta object areas are included in HCell H11586:

M_QUAL
M_CSCL

Meta area objects were constructed on the basis of the limits of the hydrography and junctioning overlapping surveys.

5. Features

5.1 Generalization of Features to Chart Scale

With the exception of seabed area objects no features are located within the modified boundaries of H11586.

5.2 Compilation of Features to the HCell

During office processing rocky seabeds were digitized from the high resolution BASE Surfaces.

5.2 Mean High Water Used for HCells

No features above mean high water are located within the modified boundaries of H11586.

6. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue Notes
M_CSCL	Area defining different compilation scale for chart 17320
M_QUAL	Data quality Meta objects
SBDARE	Ledges and reefs, bottom samples, and rocky seabed areas
SOUNDG	Soundings at the chart scale density

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. 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 Junctions

H11586 junctions with H11272, H11847, H11845, and H11846. An effort was made among compilers to pick soundings appropriately at adjoining edges between the five surveys during the compilation processes.

9.2 Conflicts between Shoreline and Hydrography

No hydrography adjacent to shoreline with the modified boundaries of H11586.

10. QA/QC and ENC Validation Checks

H11586 was subjected to QA checks in S-57 Composer prior to exporting to the metric 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

H11586_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000
H11586_SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000
H11586_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11586_outline.gml	Survey outline to populate SURDEX
H11586_outline.xsd	

11.3 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.3	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. 2.1	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1	Validation of the base cell file.
Newport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

Peter Holmberg
Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206-526-6843
peter.holmberg@noaa.gov.

APPROVAL SHEET
H11586

Initial Approvals:

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

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

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