H11574

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No.

Registry No. H11574

LOCALITY

State ALASKA

General Locality West of Prince of Wales Island

Sublocality Iphigenia Bay to Arriaga Passage

2007

CHIEF OF PARTY

Commander Guy T. Noll, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)

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

REGISTRY NO.

HYDROGRAPHIC TITLE SHEET

H11574

INSTRUCTIONS - The hydrographic sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the office.

FIELD NO.

State: Alaska

General Locality: West of Prince of Wales Island

Sublocality: Iphigenia Bay to Arriaga Passage

Scale: 1:10,000

Dates of Survey: 5/17/2007 to 7/28/2007

Instructions Date: 4/30/2007

Project No.: OPR-O190-RA-07

Vessel: S-221, Launches 1103, 1021, 1016, 1015, and 1006

Chief of Party: CDR Guy T. Noll, NOAA

Surveyed by: Jacobson, Gendron, Yoos

Soundings taken by echo sounders: Reson 8101, Reson 8125

Graphic record scaled by: N/A

Graphic record checked by: N/A

Evaluation by: M. Herzog

Automated plot by: N/A

Verification by: K.Brown

Soundings in: Fathoms at MLLW

REMARKS: Time in UTC. UTM Projection Zone 8

Revisions and annotations appearing as endnotes were generated during office processing.

As a result, page numbering may be interrupted or non-sequential

All separates are filed with the hydrographic data.

Descriptive Report to Accompany Hydrographic Survey H11574

Project OPR-O190-RA-07
West Prince of Wales Island, AK
Iphigenia Bay to Arriaga Passage
Scale 1:10,000
May – 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-O190-RA-07 dated April, 30, 2007 and all other applicable direction[1], with the exception of deviations noted in this report. The survey area is West of Prince of Wales Island, Alaska, Iphigenia Bay to Arriaga Passage in the Gulf of Esquibel. This survey corresponds to sheet "A" in the sheet layout provided with the Letter Instructions. OPR-O190-RA-07 responds to a request from the National Ocean Service (NOS) for the purpose of updating nautical charts. This project lies in the critical survey area of the NOAA Hydrographic Survey Priorities (NHSP). See Figure 1 for survey area.

Except as noted below, complete multibeam echosounder (MBES) coverage was obtained in the survey area in waters 8 meters and deeper. In depths less than 8 meters additional MBES coverage was obtained to acquire least depths over significant features or shoals, as appropriate for this survey. Vertical beam echo sounder (VBES) data were also acquired in depths from approximately 4 to 20 meters to define the navigable area limit, aid in the planning of MBES data acquisition, and provide inshore bathymetry in navigationally significant areas. Limited Shoreline Verification was performed for the survey area.

Data Acquisition Type	Hull Number with Mileage (nm)						Total
	1103 RA2	1021 RA 3	1016 RA 4	1006 RA 5	1015 RA 6	S221 RAINIER	
MBES (mainscheme)	-	104.58	175.15	228.02	180.68	18.32	706.75
Crosslines	-	-	-	1.91	48.50	-	50.41
Developments	19	-	-	-	-	-	19
Shoreline	9.47	-	-	-	-	-	9.47
Bottom Samples	22	-	-	-	-	-	22
Total Number of Items Investigated	19	-	-	-	-	-	19
Total Area Surveyed (sq. nm)	-	-	-	-	-	-	53.09

Table 1: Statistics for survey H11574

Data acquisition was conducted from May 17th to July 28th, 2007 (DN 137 to 209).

[1] Standing Instructions for Hydrographic Surveys (March 2004), NOS Hydrographic Surveys Specifications and Deliverables (June 2006), OCS Field Procedures Manual for Hydrographic Surveying (March 2005), and all Hydrographic Surveys Technical Directives issued through the dates of data acquisition.

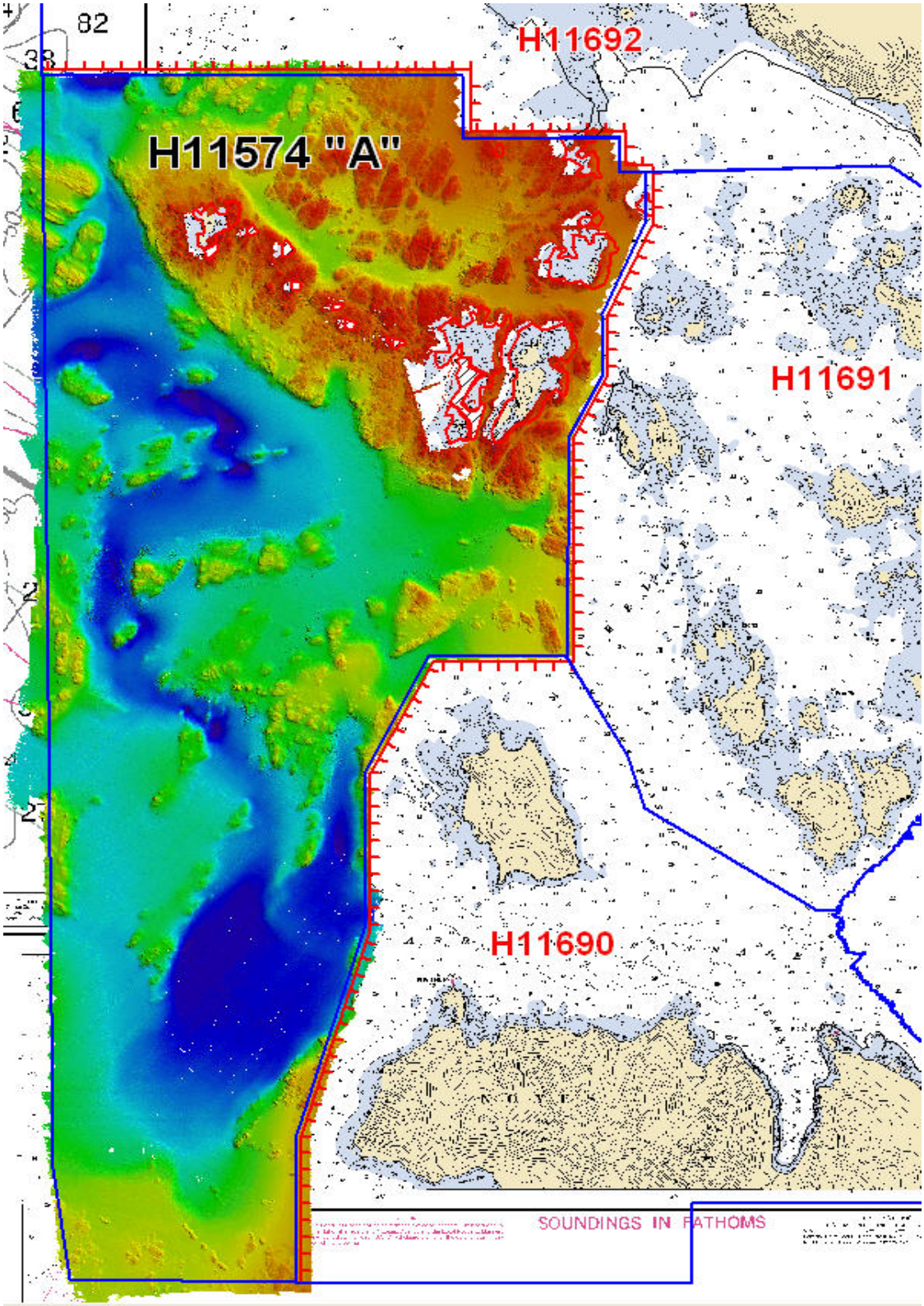


Figure 1: H11574 Survey Limits (Charts 17400, 17404, 17406)

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-O190-RA-07 Data Acquisition and Processing Report* (DAPR)[1] submitted under separate cover. 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. See Section C. for additional information.

B1. Equipment and Vessels

Data for this survey was acquired by the following vessels:

Hull Number	Name	Acquisition Type
S-221	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
1015	RA-6	Multibeam Echosounder

Table 2: Data Acquisition Vessels for H11574

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) main scheme and crosslines were not run on H11574.

Multi-Beam Echosounder (MBES) crosslines totaled 50.41 nautical miles, comprising 7.1% 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 0.5 meter.[2]

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 package submitted with this survey.

Junctions

The following contemporary surveys junction with H11574 (See Figure 1):

Registry #	Scale	Date	Junction side
H11690 "B"	1:10,000	2007	Southeast
H11691 "C"	1:10,000	2007	East
H11208 "D"	1:10,000	2004	North, East
H11692 "E"	1:10,000	2007	North, East

Survey H11574 junctions well with the above multibeam surveys, all comparisons made with CARIS subset editor reflected differences of less than a half meter.[3]

Additionally, H11574 was compared with lidar junction survey H11208D (see Figure 2) using Caris subset editor and comparing survey MBES HDCS data to a 5-m lidar reference surface.

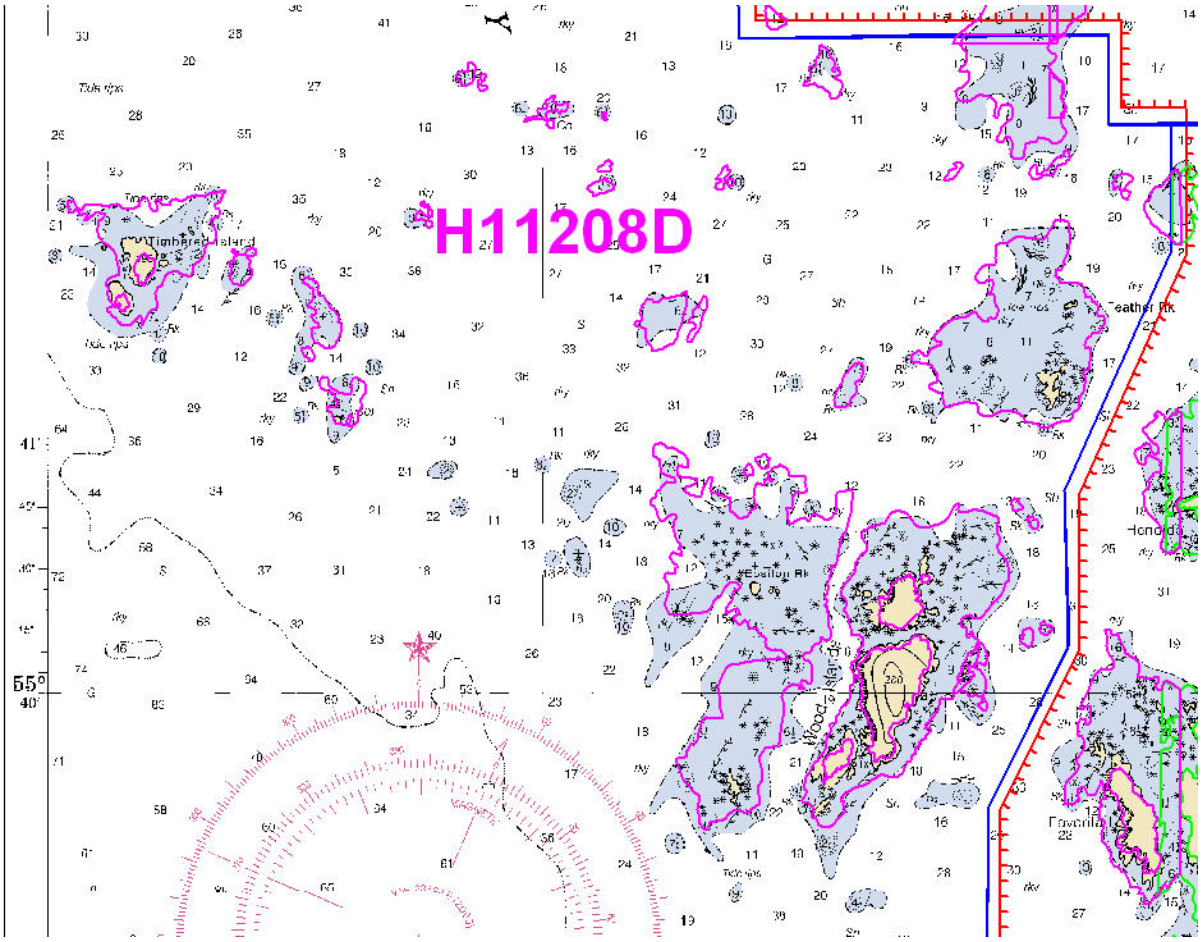


Figure 2: H11574 Lidar Junction (Chart 17404)

In general the lidar survey agreed with H11574's data, however in shoaler areas the MBES data was approximately 1m shoaler than the lidar.[4] Also, the MBES data showed superior object detection. In one instance, a 1.4m rock was not detected by the lidar, as shown in Figures 3 and 4:

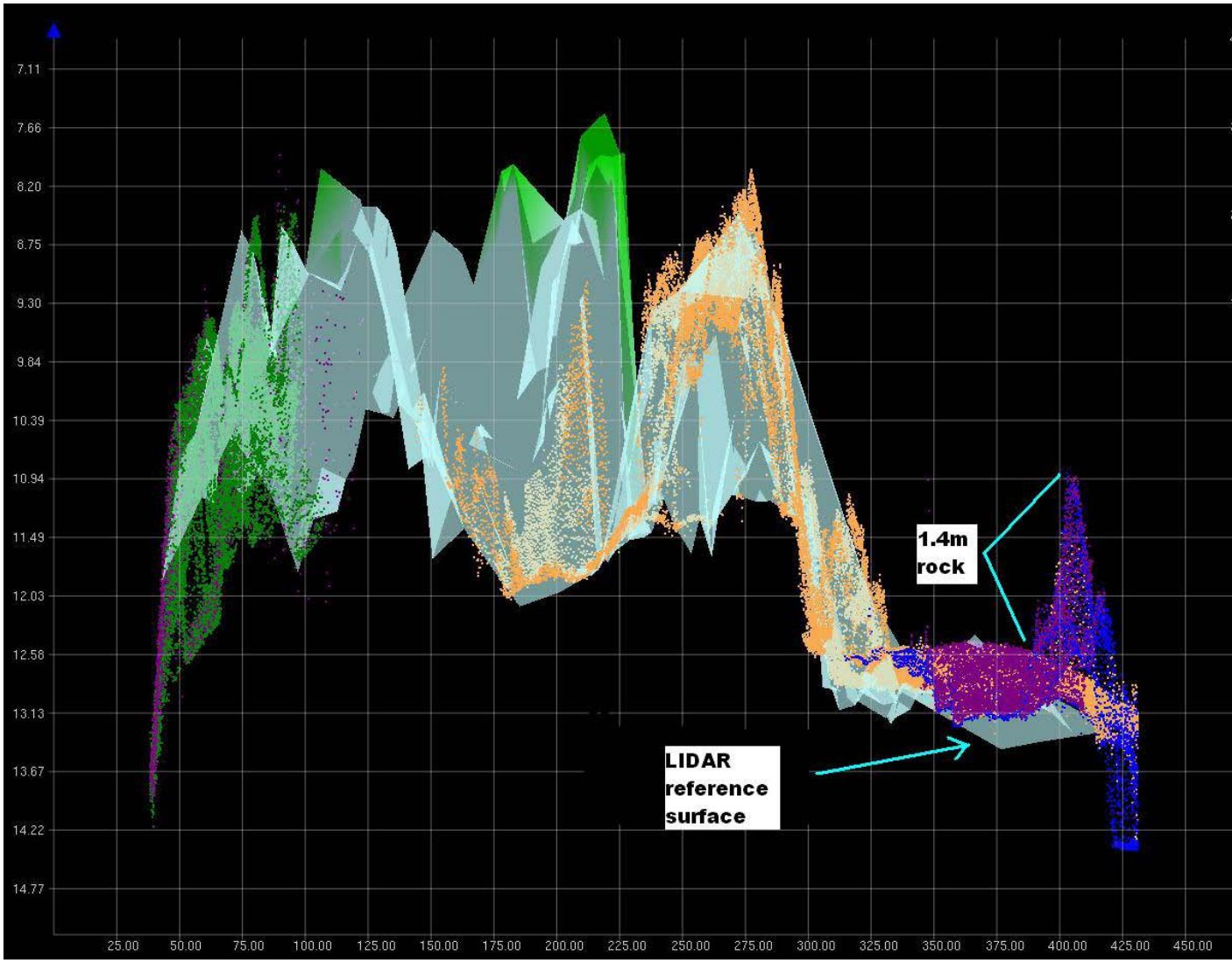


Figure 3: Rock not detected by lidar survey H11208D (12.5m water level)

In all common areas, the Hydrographer recommends charting survey multibeam in preference to lidar soundings.[5]

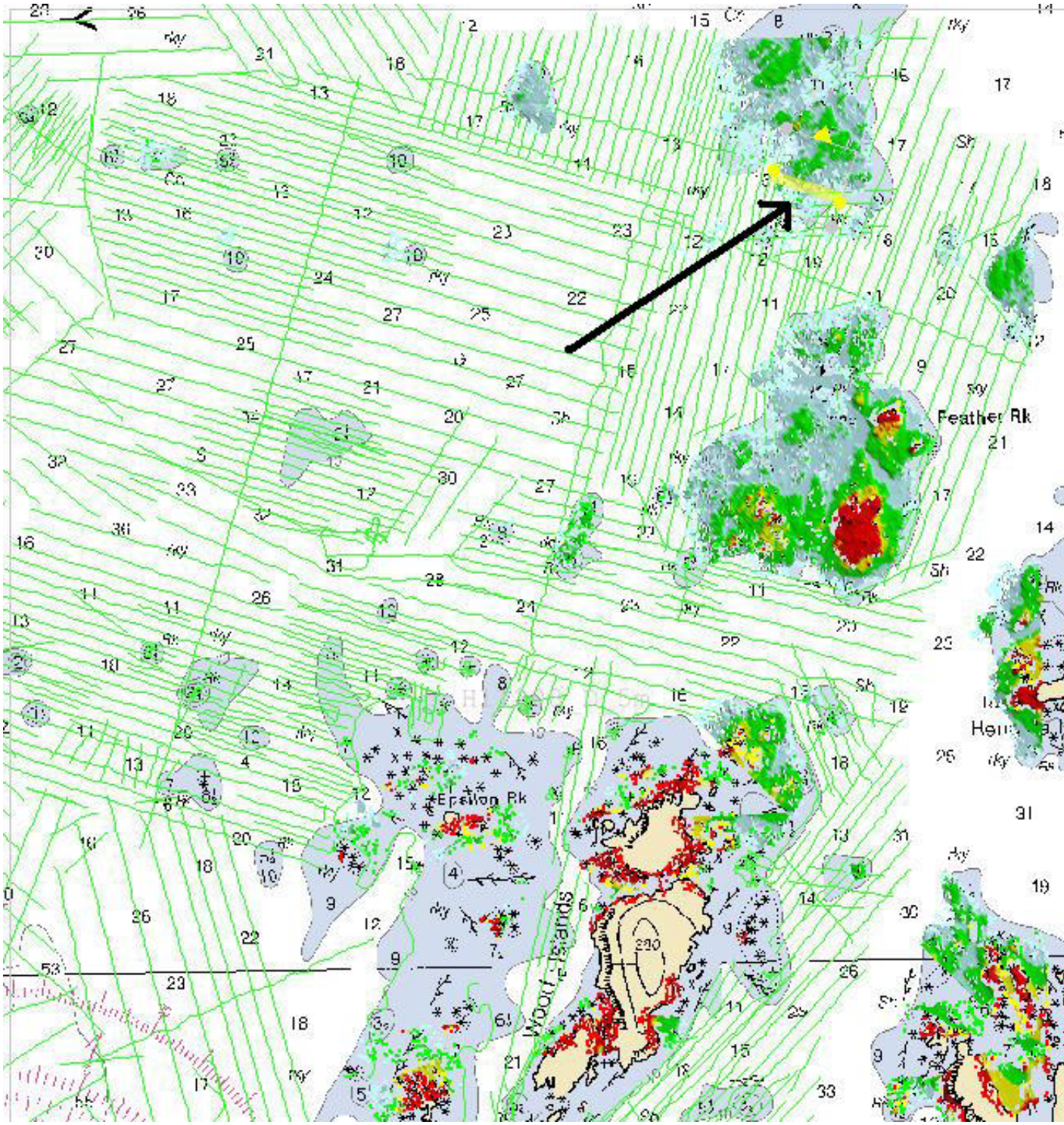


Figure 4: Location of 1.4m rock (Chart 17404)

In addition to the lidar junction, 41 lidar items were assigned for investigation. Three of these items were unaddressed due to inaccessibility (e.g. fouled with kelp/breakers). For more information on investigation items see section **D.2.b.**

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.

Data gaps

There were 11 gaps in the data collected (see Figure 5). Most were due to areas being fouled with kelp[6] or other obstructions as shown below. The Hydrographer recommends charting these areas as "Fouled with Kelp." The red outlines represent the latest lidar junction prior to this survey.[7]

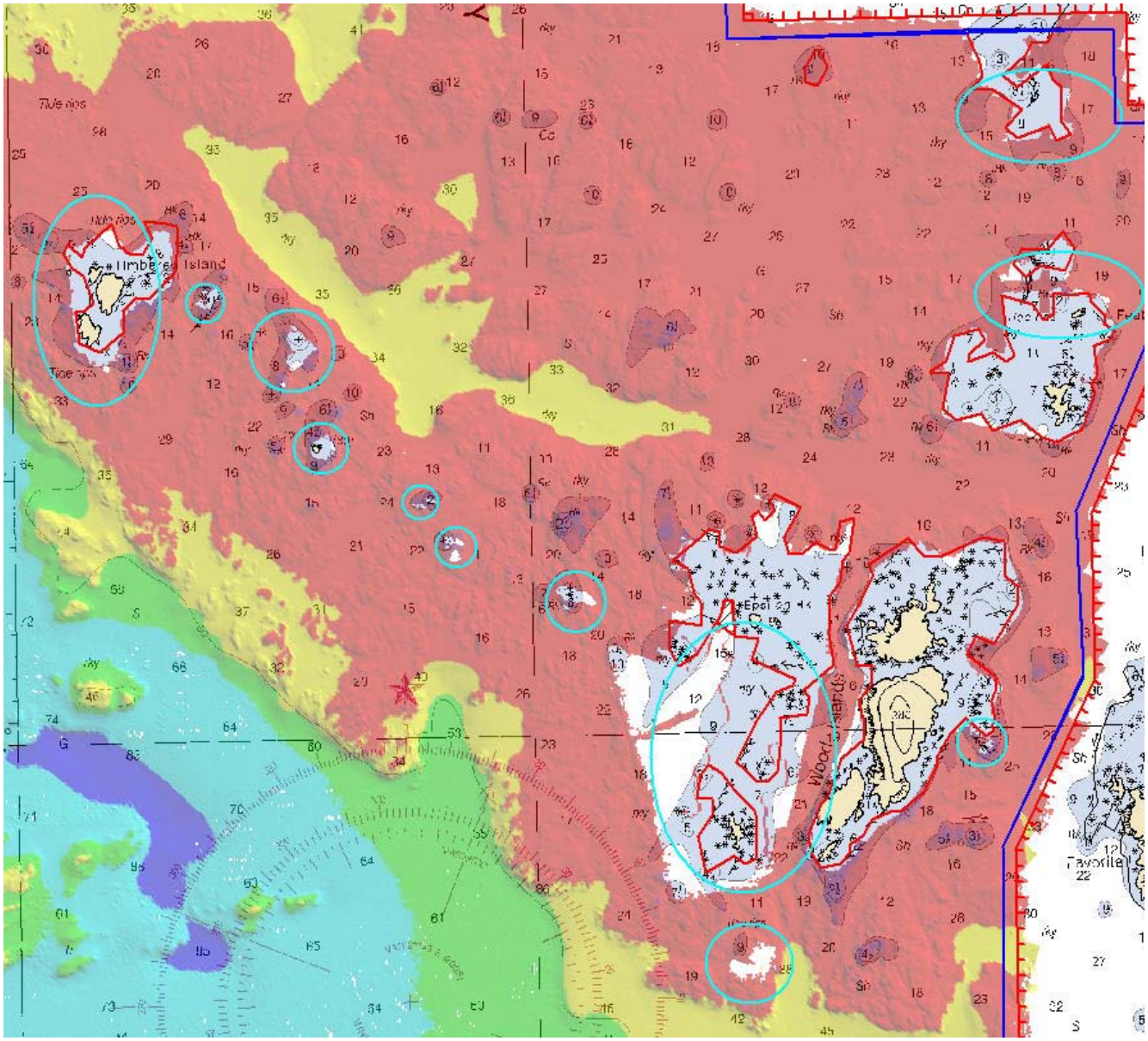


Figure 5: Data gaps in Survey H11574 (Chart 17404)

Due to breaking waves and limited fair weather days, there is a small area in the vicinity of Epsilon Rock that was not fully surveyed, as shown in figure 6:

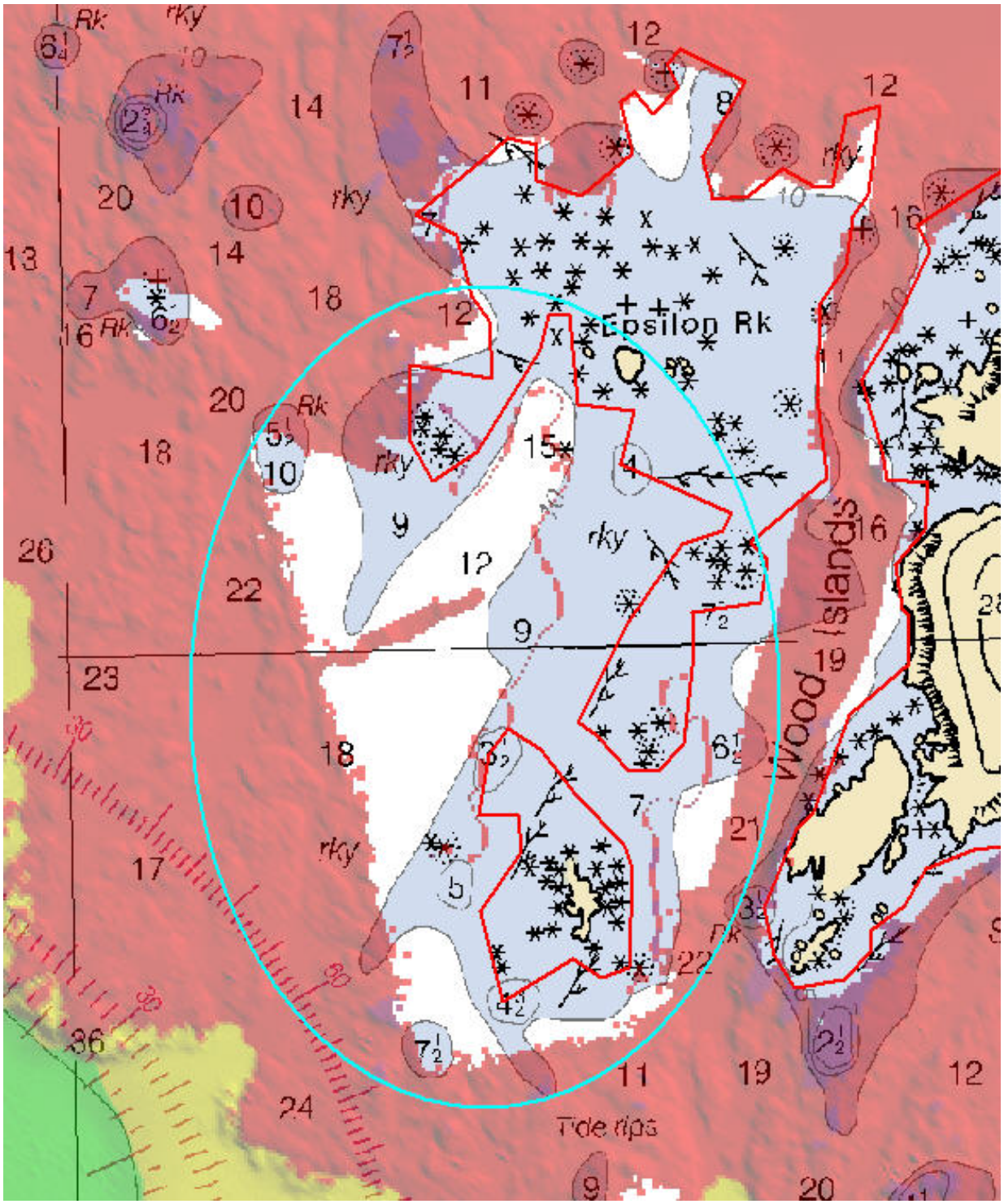


Figure 6: "Squared off" area (Chart 17404)

The Hydrographer recommends this area be surveyed, however it is mostly fouled with kelp and there are many awash rocks in the immediate vicinity. Breakers were also noted during

most of the survey. The H11574_Field_Verified.hob file shows the exact location of these fouled areas. The H11574_Composite_Source.hob file had most of these features digitized from lidar survey H11280D; however some features were not on the chart. The Hydrographer recommends charting kelp and breakers as per the H11574_Filed_Verified.hob file.[8]

In the deeper areas surveyed in H11574, there are several noticeable 'pixels' of data missing, see Figures 7, 8, and 9. The MBES system utilized for these areas was the Seabeam Elac 1180, which under certain conditions (e.g. a more than 14-degree induced roll from the sea state) doesn't provide enough soundings to meet coverage criteria for the CUBE algorithm. However, the shoalest missing 'pixel' is approximately 54 ftm. It was deemed unnecessary to re-run data acquisition to 'fill in the pixels' in these areas due to the depths, as they did not represent a hazard to navigation. There was no indication of shoaling near these gaps.[9]

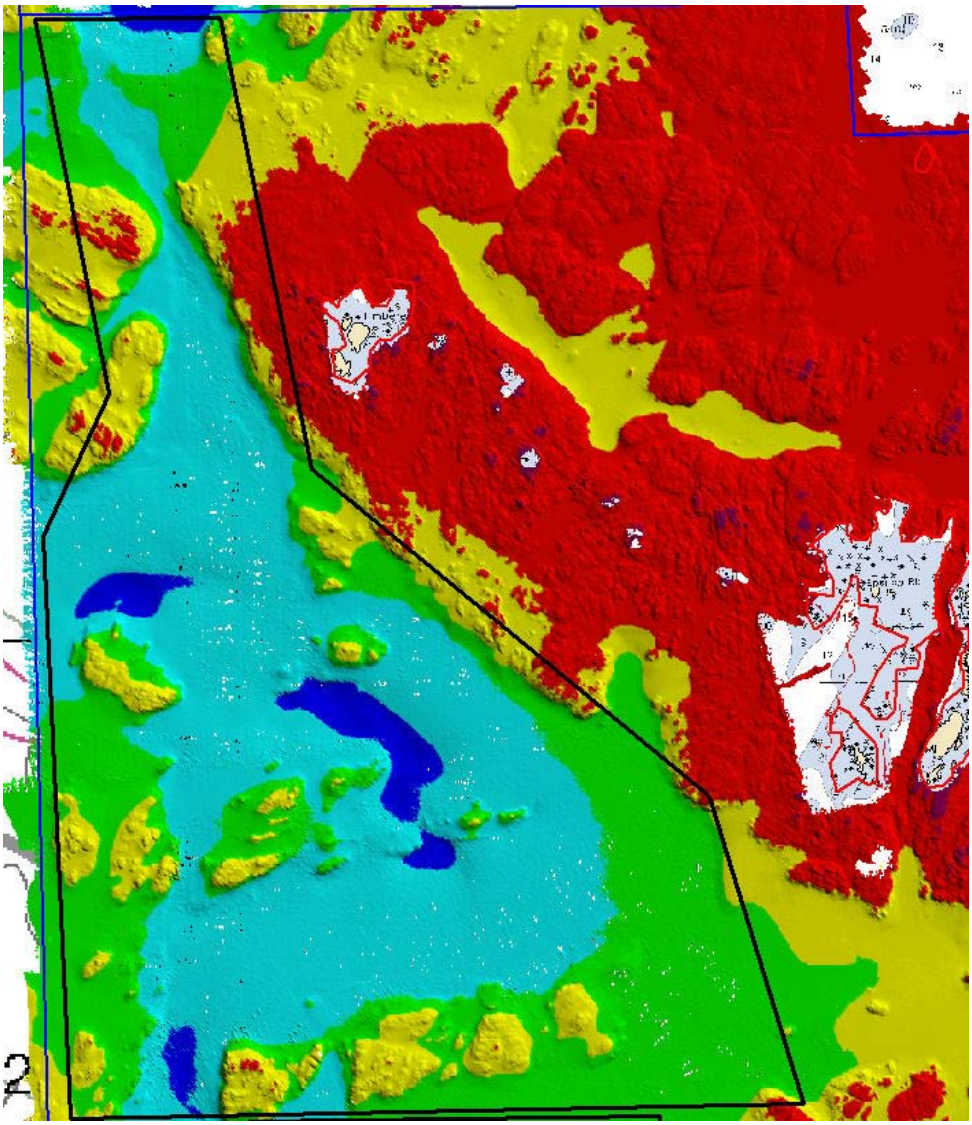


Figure 7: "Missing Pixels" Part 1 (Charts 17400 and 17404)

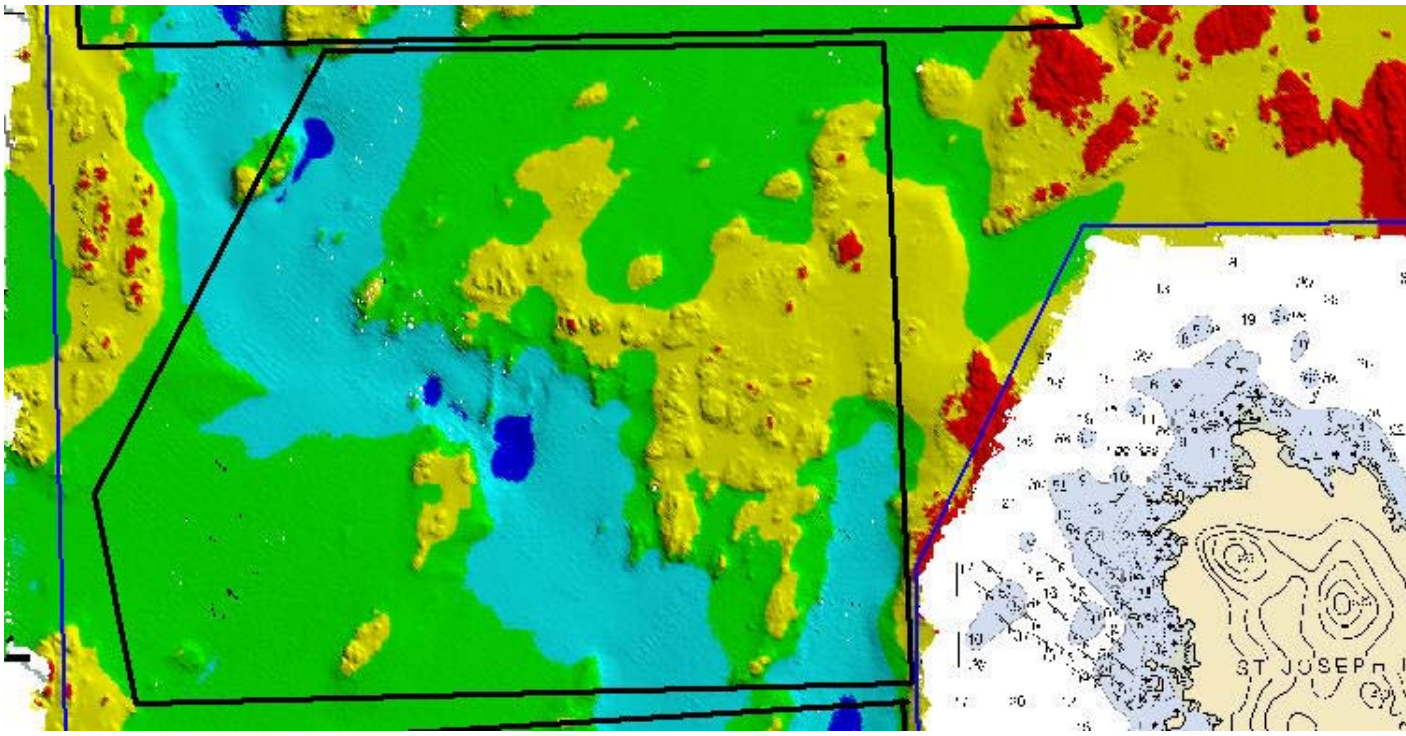


Figure 8: "Missing Pixels" Part 2 (Charts 17400 and 17404)

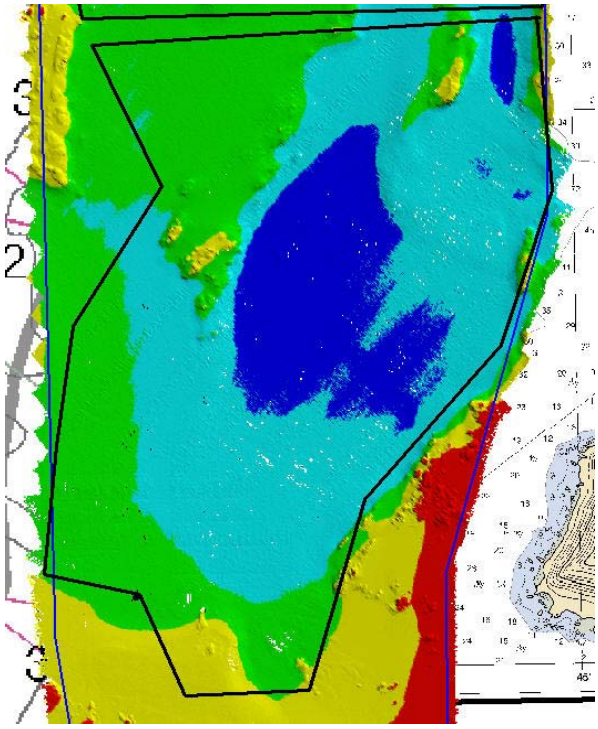


Figure 9: "Missing Pixels" Part 3 (Charts 17400 and 17404)

B3. Data Reduction

Data reduction procedures for survey H11574 conform to those detailed in the *OPR-O190-RA-07 DAPR.*

B4. Data Representation

Many BASE surfaces were used in processing H11574. Final BASE surface resolutions and depth ranges were set as indicated in table below, with field sheets smaller than $25x10^6$ nodes. Grid depth and resolution limits are shown in Table 3.[10] The submission Field Sheet and BASE Surface structure and layout are shown in Figures 10- 14.

Depth Range of Finalized Surface (m)	Resolution (m)
0-16	0.5
14-31.5	1
28.5-63	2
57-158	5
143-500	10

Table 3: Depth ranges and resolutions of finalized surfaces in meters.

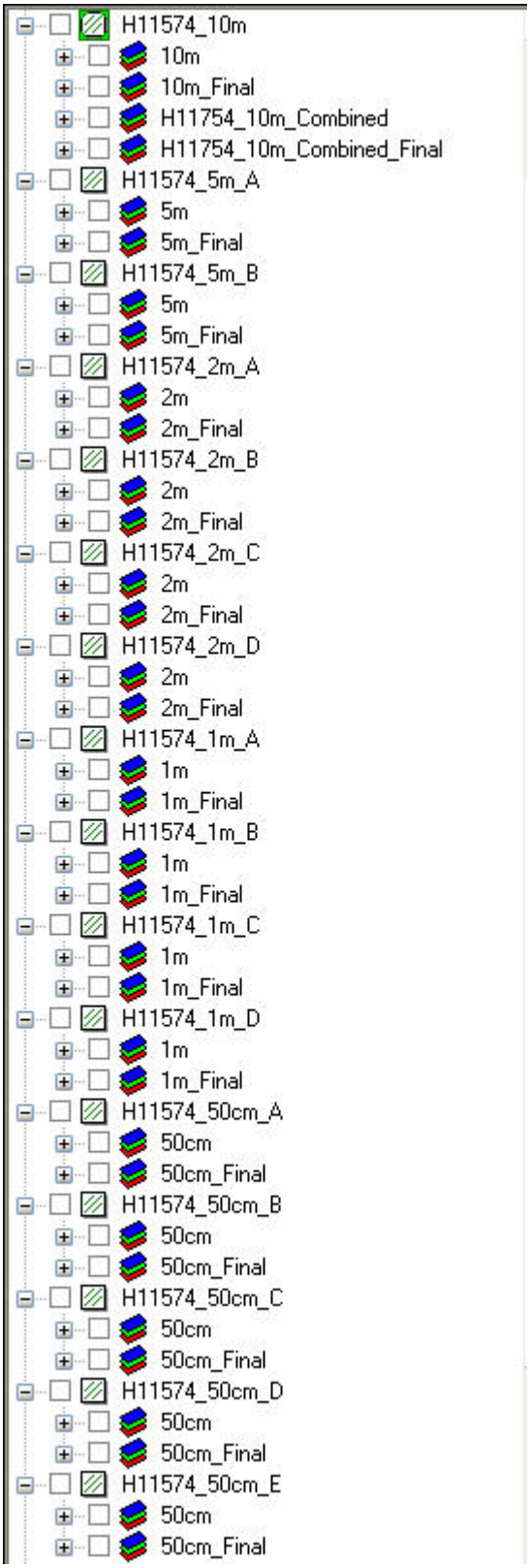


Figure 10: Field sheets and BASE surfaces submitted with H11574 (Part 1)

Figure 11: Field sheets and BASE surfaces submitted with H11574 (Part 2)

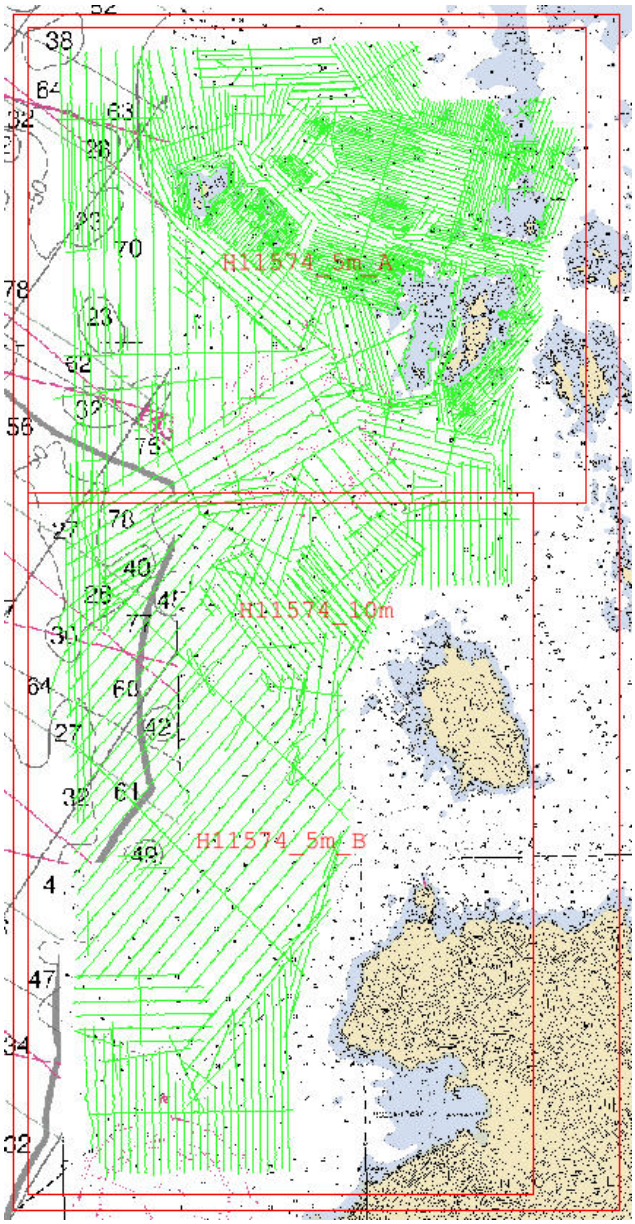


Figure 12: Layout of the 10m and 5m field sheets for H11574. (Charts 17400, 17404, 17406)

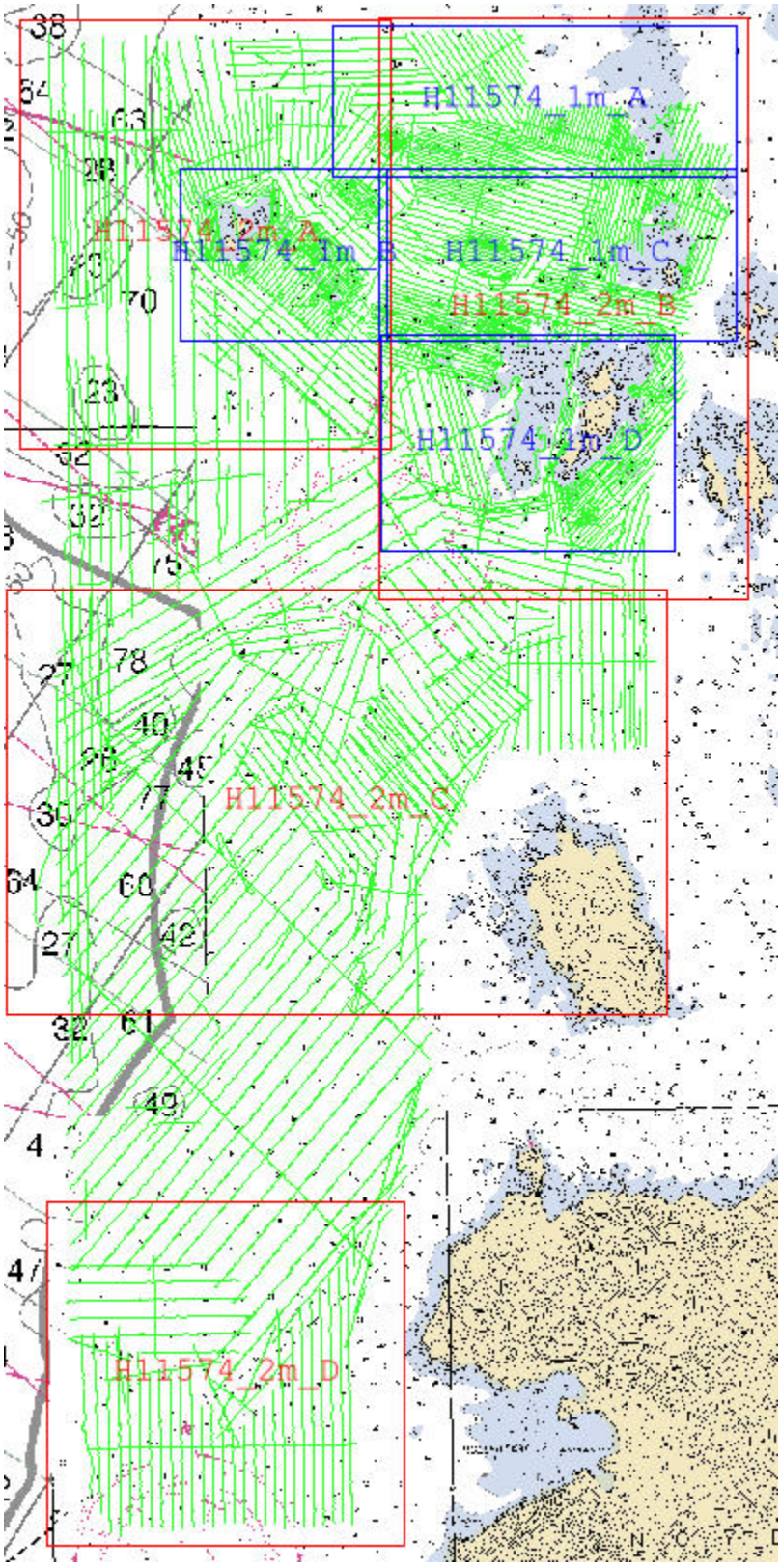


Figure 13: Layout of the 2m and 1m field sheets for H11574. (Charts 17400, 17404, 17406)

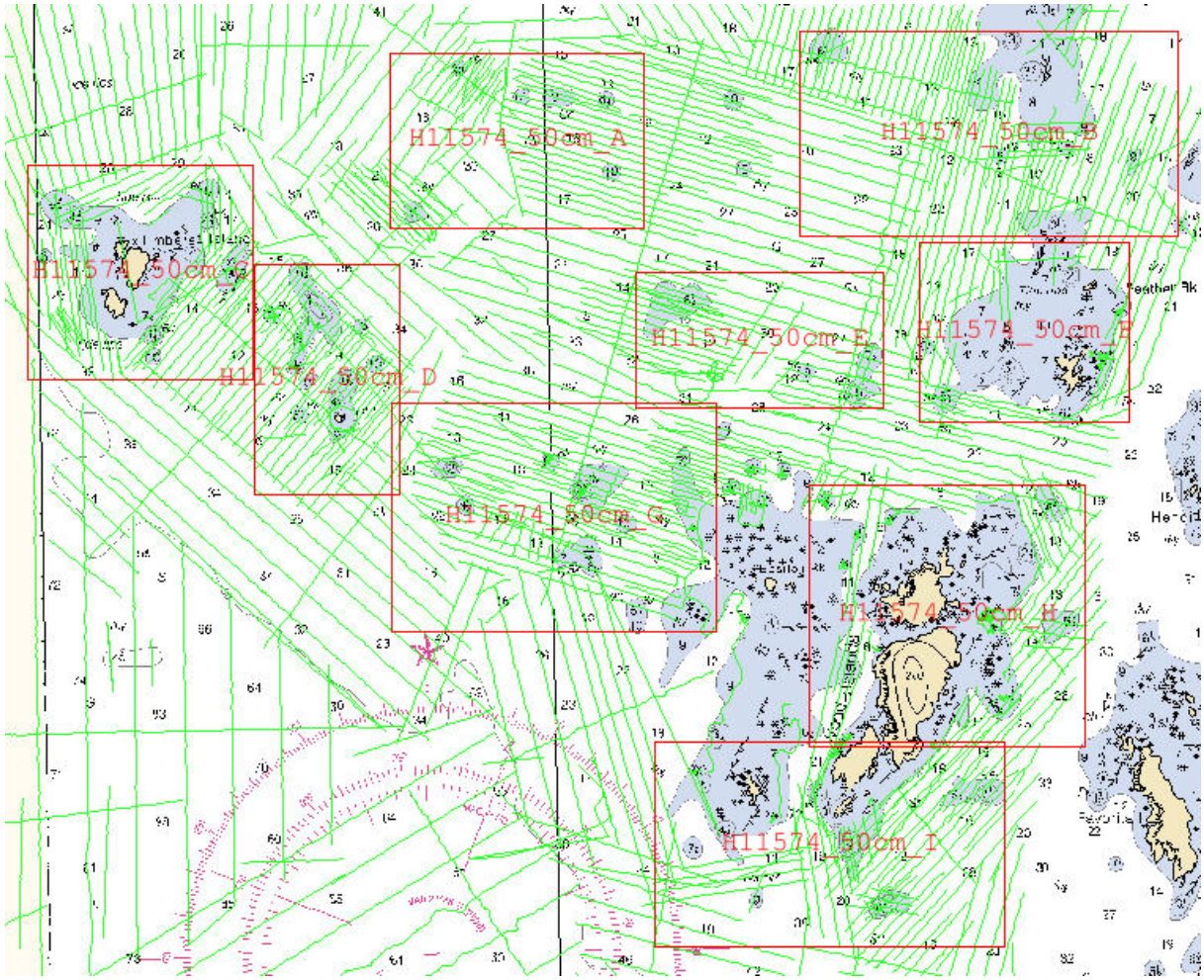


Figure 14: Layout of the 50cm field sheets for H11574 (Chart 17404)

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11574 can be found in the *OPR-O190-RA-07 Horizontal and Vertical Control Report*,[11] 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. Changes in the corrector source were noted in the data acquisition logs.

Location	Frequency	Operator	Distance	Priority
Level Island	295 kHz	USCG	46 nm	Primary
Biorka Island	305 kHz	USCG	97 nm	Backup

Table 4: Differential Corrector Sources for H11574.

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 H11574.

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-O190-RA-07 Horizontal and Vertical Control Report*.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Nossuk Bay	945-0711	30-day	May 5, 2007	July 28, 2007

Table 5: Tide Stations installed by RAINIER personnel for H11574

All data were reduced to MLLW using **final approved water levels** from station Sitka, AK, (945-1600) using the tide file 9451600.tid and **final** time and height correctors using the zone corrector file O190RA2007CORP.zdf.

The request for Final Approved Water Levels for H11754 was submitted to CO-OPS on September 6, 2007 and the Final Tide Note was received on October 4, 2007.[12] This documentation is included in Appendix IV.

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Survey H11574 was compared with the following charts:[13]

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
17404	1:40,000	12th Ed, June 2000	LNM Corrected July 2007
17400	1:229,376	17th Ed; March 2007	LNM Corrected March 2007

Table 6: Charts compared with H11574

Chart 17404

In general, survey soundings were within 1-2 fathoms of charted depths. Shoaler survey soundings were frequently found near or between charted depths due to the increased coverage of this multibeam survey compared to the prior methods.[14]

A 15 fm charted depth at approximate position 55° 37' 41" N, 133° 48'10" W was surveyed with complete multibeam coverage and found not to exist. Survey soundings in the area are

near 60 fm and no shoaling was indicated. The Hydrographer recommends deleting the charted 15 fm sounding and charting as per the digital survey data.[15]

Chart 17400

Chart 17400 was only compared to survey data on the western edge of the survey where chart 17404 does not overlap the survey area. Due to the small scale of the chart (1:229,376), the charted depths cover a large horizontal area, but within the limitations of the small scale, charted depths compare to within 1-2 fathoms of survey soundings in this area except as noted below.[16]

Complete multibeam coverage was obtained over a 23 fm charted depth in approximate position 55° 40' 20" N, 133° 50'0" W. Although shoaling occurs in the area, the survey soundings in the vicinity of the charted depth are approximately 40 fathoms. Approximately 700 meters southeast of the charted 23 fm depth, a new shoal was surveyed with a least depth of 30 fathoms. Multibeam coverage in the entire area was adequate to detect all shoaling and least depths. The Hydrographer recommends deleting the 23 fm depth and charting as per digital survey data.[17]

The Hydrographer recommends that survey soundings supersede all prior survey and charted depths in the common area.[18]

D.1.b. Dangers to Navigation

There were three (3) Dangers to Navigation (DToN) found during data acquisition of H11574. These were submitted to the Marine Charting Division via email on April 2, 2008. The original DTON submission packages are included in Appendix IV.[19]

D.1.c. Other Features

Automated Wreck and Obstruction Information System (AWOIS) Investigations
No AWOIS items fall the within the survey limits of H11574.[20]

Additional Items
Additional features investigated within the limits of H11574 are described in the Survey Feature Report in Appendix II.[21]

No additional charted items were investigated and no new features were located on survey H11574.

D.2. Additional Results

D.2.a. Prior Survey Comparison

Prior survey comparison was not performed on survey H11574.

D.2.b. Shoreline Verification

Shoreline Source

Vector photogrammetric data from project AK0503 were supplied by N/NGS3 in the form of digital Cartographic Feature File (CFF) GC-10545 and GC-10583. Features shown on the current edition of chart 17404 but not included in the CFF were digitized manually in CARIS Notebook by RAINIER personnel, and compiled with the CFF into a composite shoreline source file. This composite source was printed on paper "boat sheets" and displayed in Hypack for field verification. See Table 7 for a listing of all source .hob files used to plan and conduct shoreline verification on survey H11574.

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Specifications and Deliverables and FPM sections 6.1 and 6.2. Detached positions (Dips) acquired during shoreline verification were recorded in HYPACK, on DP forms, and 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*[22]

File Name	Description
OPR-O190-RA-07_Composite_Source_Original.hob	Original Composite Source file from Operations converted from a .000 file to a .hob file. Compilation consists of ENC and Lidar features merged in to one dataset. The ENC and Lidar data were merged in Operations. **(Note: No deconfliction has occurred therefore there may be duplicate features)**
OPR-O190-RA-07_Composite_Source.hob	Same as "original" composite source above however extraneous ENC features (features which do not need to be verified during shoreline acquisition, i.e. buildings, metadata, landmarks, etc.) have been removed.
OPR-O190-RA-07_Reference.hob	Survey and sheet limits
OPR-O190-RA-07_Discrepency.hob	AWOIS Items
OPR-O190-RA-07_Lidar_extents.hob	Lidar extents approved by the Pacific Hydrographic Branch
OPR-O190-RA-07_Lidar_investigations.hob	Lidar features requiring further investigation

Table 7: H11574 Shoreline Source files

All shoreline data is submitted in Caris Notebook .hob files. The session H11574_NTBK.wrk contains the following:

HOB File	**Purpose and Contents**
H11574_Composit_Source.hob	Original Source Data as filtered from ENC cell
H11574_Reference.hob	Survey outline and limit lines.
H11574_Field_Verified.hob	Field verified source features and shoreline, including edits and updates not requiring Dips.
H11574_Pydro_Updates.hob	New or modified items processed through Pydro.
H11574_Pydro_Disprovals.hob	Deleted items processed through Pydro.
H11574_Deleted_Source.hob	Disproved items deleted from the composite source layer.

Table 8: List and Description of Notebook HOB files

H11574_Field_Verified.hob and H11574_Pydro_Updates.hob depicts the shoreline as surveyed.

Source Shoreline Changes and New Features

Items for survey H11574 that require further discussion and are associated with a detached position, have been flagged "Report" in Pydro in H11574.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.

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.[23]

D.2.c. Aids to Navigation

There are no Aids to Navigation (ATONs) within the limits of survey H11574.[24]

D.2.d. Overhead Features

There are no overhead features within the limits of survey H11574.[25]

D.2.e. Submarine Cables and Pipelines

There are no submarine cables or pipelines charted within the limits of H11574, and none were detected by the survey.[26]

D.2.f. Ferry Routes

There are no ferry routes charted within the limits of survey H11574, and none were observed to be operating in the area.[27]

D.2.g. Bottom Samples

Twenty-two bottom samples were collected in water less than 100 meters deep and no more than 2000 meters away from another bottom sample. Of these samples 9 agreed with charted bottom type, 5 disagreed with the charted bottom type, and 8 samples were collected at positions without a charted bottom type. Refer to the Survey Feature Report in Appendix II for details and recommendations for each bottom sample.[28]

D.2.h. Other Findings

There are no other findings to report regarding survey H11574.

E. APPROVAL

As Chief of Party, Field operations for hydrographic survey H11574 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 July, 2007. 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:

Title	Date Sent	Office
Data Acquisition and Processing Report for OPR-O190-RA-07	April 2, 2008	N/CS34
Coast Pilot Report for OPR- O190-RA-07	TBD	N/CS26

Approved and Forwarded: _____

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: 2008.04.02 15:32:03 -07'00'

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: _____

James B Jacobson
I am signing this document for Shawn Gendron
2008.04.02 21:29:20 Z

Shawn J. Gendron
Survey Technician, NOAA Ship RAINIER

Chief Survey Technician: _____

James B Jacobson
I have reviewed this document
2008.04.02 21:29:43 Z

James B. Jacobson
Chief Survey Technician, NOAA Ship RAINIER

Field Operations Officer: _____

Charles Yoos
I have reviewed this document
2008.04.02 14:50:16 -07'00'

Lieutenant Charles J. Yoos, NOAA
Field Operations Officer

Revisions Compiled During Office Processing and Certification

[1] Filed with project records
[2] Concur
[3] Concur
[4] Concur
[5] In areas with both lidar and SWMB coverage the compiler generally used SWMB data for sounding selection. In the areas covered only by survey H11208, features and soundings were compiled to the HCell and heights on several rocks and islets were updated using the lidar data. The lidar data was not used to disprove charted features. Charted features in the lidar area were retained.
[6] Retain all charted kelp areas.
[7] Concur with clarification. With the exception of the holidays around Epsilon rock and south of Wood Islands, the holidays are covered by lidar data from survey H11208. In areas where holidays are present, the compiler retained all charted features and soundings.
[8] Concur. New areas of breakers (bluenoted) and kelp (symbols) are included in the HCell.
[9] Concur
[10] A new fieldsheet H11574_Office_Combined containing surface H11574_final_combined_10m was created by the reviewer. This surface was used for compilation.
[11] Filed with project records
[12] See attached Tide Note dated October 3, 2007
[13] RNC 17404 (14th ed, October, 2008), 17406 (7th ed., February, 2004) and 17400 (17th ed., March, 2007) was used for compilation.
[14] Concur
[15] Concur
[16] Concur
[17] Concur with clarification. The new shoal to the SE has a least depth of 32 fathoms.
[18] Concur
[19] Three DTONs were submitted by the field unit and three DTONs were submitted by the branch during the SAR. See attached DTON reports. All DTONs have been applied to the chart and are included in the HCell.
[20] Do not concur. Four AWOIS items (53344, 53345, 53346 and 53347) were investigated and addressed in the Pydro PSS. The compiler concurred with all hydrographer recommendations and the items are updated and included in the HCell. See attached AWOIS report for details.
[21] The Survey Feature Report is filed with the hydrographic records. Note: the survey feature report does not include all features from H11574. 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 H11574 have come directly from CARIS Notebook, which is the official features deliverable for this survey.
[22] Filed with hydrographic records
[23] Concur
[24] Concur
[25] Concur
[26] Concur

[27] Concur

[28] 17 bottom samples were included in the H11574_PYDRO_Updates.hob file. Of these, 8 were imported into the HCell. Other bottom samples either agreed with what appears on the chart or were rky bottom samples falling within a rocky seabed area.

DToN Report H11574

Registry Number: H11574

State: Alaska

Locality: West of Prince of Wales Island

Sub-locality: Iphegenia Bay to Arriaga Passage

Project Number: OPR-O190-RA-07

Survey Dates: 06/21/2007 - 07/28/2007

Charts Affected

Number	Version	Date	Scale
17404	13th Ed.	05/01/2006	1:40000
17400	16th Ed.	06/02/2001	1:229376
16016	20th Ed.	11/01/2003	1:969756
531	23rd Ed.	01/01/2006	1:2100000
500	8th Ed.	06/01/2003	1:3500000
530	31st Ed.	06/01/2005	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Sounding	6.62 m	55° 41' 30.189" N	133° 48' 22.679" W	---
1.2	Sounding	3.46 m	55° 39' 09.441" N	133° 42' 47.066" W	---
1.3	Sounding	5.44 m	55° 40' 16.325" N	133° 41' 23.219" W	---

1 - Danger To Navigation

1.1) Profile/Beam - 343/25 from h11574 / 1006_reson8101_hvf / 2007-172 / 098_1715

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 41' 30.189" N, 133° 48' 22.679" W

Least Depth: 6.62 m

Timestamp: 2007-172.17:16:54.787 (06/21/2007)

Survey Line: h11574 / 1006_reson8101_hvf / 2007-172 / 098_1715

Profile/Beam: 343/25

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Dangerous rocky outcropping found with multibeam

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1006_reson8101_hvf/2007-172/098_1715	343/25	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

3 ½fm (17404_1, 17400_1, 16016_1, 530_1)

3fm 3ft (531_1)

6.6m (500_1, 50_1)

S-57 Data

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

Attributes: QUASOU - 6:least depth known

SORDAT - 20070728

SORIND - US,US,graph.H11574

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

VALSOU - 6.617 m

WATLEV - 3:always under water/submerged

Feature Images

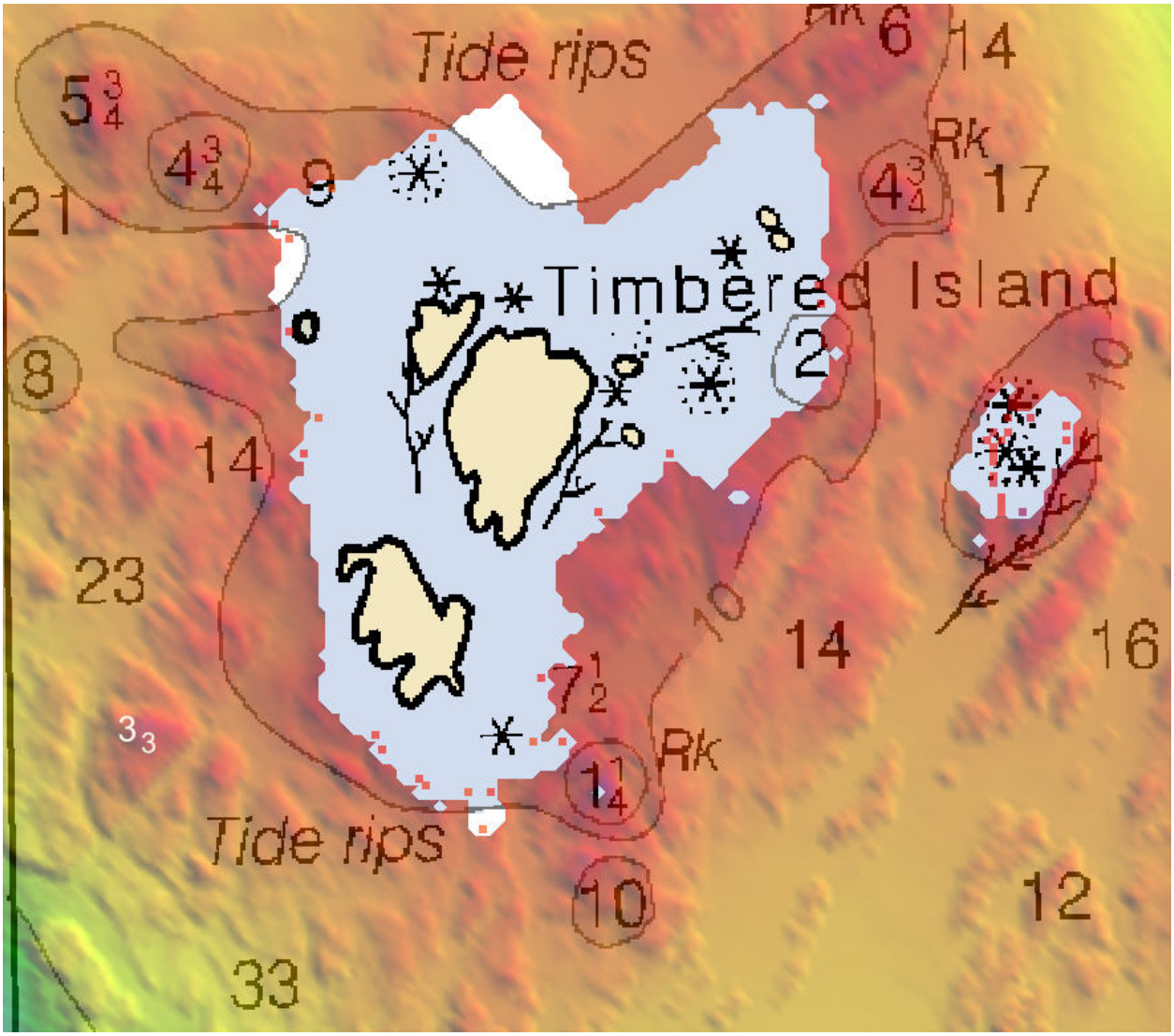


Figure 1.1.1

1.2) Profile/Beam - 760/69 from h11574 / 1021_reson8101_hvf / 2007-209 / 022_2018

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 39' 09.441" N, 133° 42' 47.066" W

Least Depth: 3.46 m

Timestamp: 2007-209.20:19:30.943 (07/28/2007)

Survey Line: h11574 / 1021_reson8101_hvf / 2007-209 / 022_2018

Profile/Beam: 760/69

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Rocky outcropping found significantly shoaler than charted.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1021_reson8101_hvf/2007-209/022_2018	760/69	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

1 ¾fm (17404_1, 17400_1, 16016_1, 530_1)

1fm 5ft (531_1)

3.4m (500_1, 50_1)

S-57 Data

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

Attributes: QUASOU - 6:least depth known

SORDAT - 20070728

SORIND - US,US,graph,H11574

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

VALSOU - 3.458 m

WATLEV - 3:always under water/submerged

Feature Images

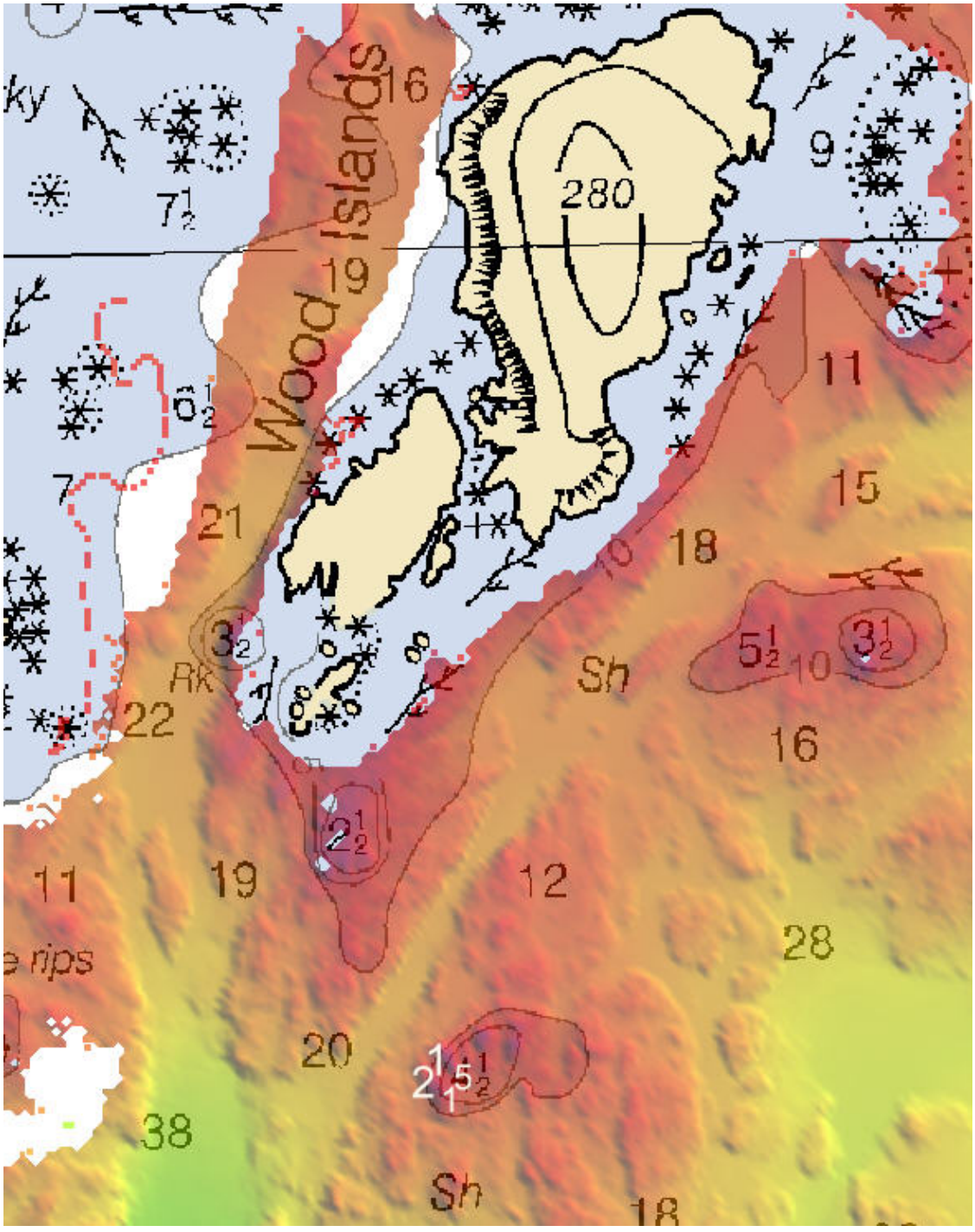


Figure 1.2.1

1.3) Profile/Beam - 721/94 from h11574 / 1021_reson8101_hvf / 2007-209 / 516_1942

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 40' 16.325" N, 133° 41' 23.219" W

Least Depth: 5.44 m

Timestamp: 2007-209.19:44:35.646 (07/28/2007)

Survey Line: h11574 / 1021_reson8101_hvf / 2007-209 / 516_1942

Profile/Beam: 721/94

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Rocky outcropping has a higher least depth than charted

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1021_reson8101_hvf/2007-209/516_1942	721/94	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

3fm (17404_1, 17400_1, 16016_1, 530_1)

1fm 0ft (531_1)

5.4m (500_1, 50_1)

S-57 Data

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

Attributes: QUASOU - 6:least depth known

SORDAT - 20070728

SORIND - US,US,graph.H11574

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

VALSOU - 5.442 m

WATLEV - 3:always under water/submerged

Feature Images

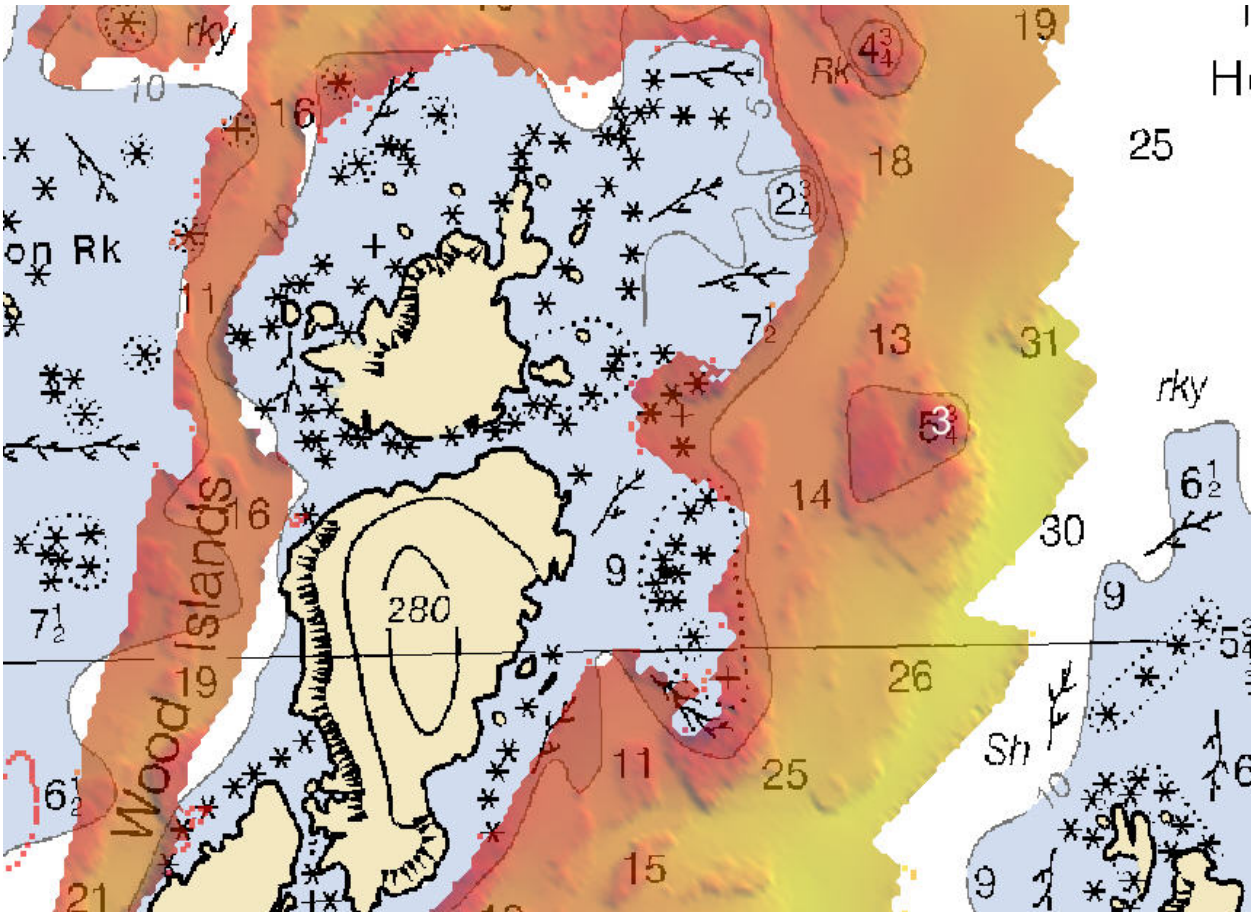


Figure 1.3.1

H11574 DTON - Office submitted

Registry Number: H11574

State: Alaska

Locality: West of Prince of Wales Island

Sub-locality: Iphegenia Bay to Arriaga Passage

Project Number: OPR-O190-RA-07

Survey Dates: 06/20/2007 - 07/24/2007

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17404	14th	10/01/2008	1:40,000 (17404_1)	[L]NTM: ?
17400	17th	03/01/2007	1:229,376 (17400_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	Shoal	6.09 m	55° 40' 54.2" N	133° 46' 31.2" W	---
1.2	Shoal	6.01 m	55° 41' 32.9" N	133° 44' 00.8" W	---
1.3	Shoal	9.65 m	55° 41' 43.6" N	133° 48' 20.4" W	---

1 - Danger To Navigation

1.1) Profile/Beam - 216/71 from h11574 / 1021_reson8101_hvf / 2007-205 / 554_2216

DANGER TO NAVIGATION

Survey Summary

Survey Position:	55° 40' 54.2" N, 133° 46' 31.2" W
Least Depth:	6.09 m (= 19.99 ft = 3.331 fm = 3 fm 1.99 ft)
TPU (±1.96σ):	**THU (TPEh)** ±1.377 m ; **TVU (TPEv)** ±0.268 m
Timestamp:	2007-205.22:17:20.692 (07/24/2007)
Survey Line:	h11574 / 1021_reson8101_hvf / 2007-205 / 554_2216
Profile/Beam:	216/71
Charts Affected:	17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Least depth of 6.1 meters (3.3 fathoms) significantly shoaler than then charted (17404) 15 fathom sounding.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1021_reson8101_hvf/2007-205/554_2216	216/71	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

3 ¼fm (17404_1, 17400_1, 16016_1, 530_1)

3fm 2ft (531_1)

6.1m (500_1, 50_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20070728
	SORIND - US,US,survy,H11574

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

Office Notes

Charted sounding changed to UWTROC in HCell H11574.

Feature Images

[Image file DToNImages/tmpqrbrrw.jpg does not exist.]

1.2) Profile/Beam - 655/227 from h11574 / 1016_reson8125_hvf / 2007-181 / 434_2331

DANGER TO NAVIGATION

Survey Summary

Survey Position:	55° 41' 32.9" N, 133° 44' 00.8" W
Least Depth:	6.01 m (= 19.71 ft = 3.285 fm = 3 fm 1.71 ft)
TPU (±1.96σ):	**THU (TPEh)** ±1.964 m ; **TVU (TPEv)** ±0.248 m
Timestamp:	2007-181.23:34:29.887 (06/30/2007)
Survey Line:	h11574 / 1016_reson8125_hvf / 2007-181 / 434_2331
Profile/Beam:	655/227
Charts Affected:	17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Least depth of 6.01 meters (3.3 fathoms) shoaler than charted (17404) 6.25 fathom sounding.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1016_reson8125_hvf/2007-181/434_2331	655/227	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

3 ¼fm (17404_1, 17400_1, 16016_1, 530_1)

3fm 1ft (531_1)

6.0m (500_1, 50_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20070728
	SORIND - US,US,survy,H11574

TECSOU - 3:found by multi-beam

Office Notes

[None]

Feature Images

[Image file DToNImages/tmptj1bip.jpg does not exist.]

1.3) Profile/Beam - 838/5 from h11574 / 1016_reson8125_hvf / 2007-171 / 310_1745

DANGER TO NAVIGATION

Survey Summary

Survey Position:	55° 41' 43.6" N, 133° 48' 20.4" W
Least Depth:	9.65 m (= 31.67 ft = 5.278 fm = 5 fm 1.67 ft)
TPU (±1.96σ):	**THU (TPEh)** ±1.965 m ; **TVU (TPEv)** ±0.250 m
Timestamp:	2007-171.17:48:21.782 (06/20/2007)
Survey Line:	h11574 / 1016_reson8125_hvf / 2007-171 / 310_1745
Profile/Beam:	838/5
Charts Affected:	17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Least depth of 9.65 meters (5.28 fathoms) adjacent to charted (17404) 8 and 14 fathom soundings.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1016_reson8125_hvf/2007-171/310_1745	838/5	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data

Cartographically-Rounded Depth (Affected Charts):

5 ¼fm (17404_1, 17400_1, 16016_1, 530_1)

5fm 1ft (531_1)

9.7m (500_1, 50_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	QUASOU - 6:least depth known
	SORDAT - 20070728
	SORIND - US,US,survy,H11574

STATUS - 1:permanent

TECSOU - 3:found by multi-beam

Office Notes

[None]

Feature Images

[Image file DToNImages/tmpt-zjbi.jpg does not exist.]

H11574 AWOIS Items

Registry Number: H11574

State: Alaska

Locality: West of Prince of Wales Island

Sub-locality: Iphegenia Bay to Arriaga Passage

Project Number: OPR-O190-RA-07

Survey Date: 05/18/2007

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17404	13th	05/01/2006	1:40,000 (17404_1)	[L]NTM: ?
17400	16th	06/02/2001	1:229,376 (17400_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	-0.19 m	55° 41' 54.4" N	133° 47' 59.4" W	53347
1.2	Rock	0.89 m	55° 41' 29.8" N	133° 47' 54.0" W	53346
1.3	Rock	0.70 m	55° 39' 31.2" N	133° 43' 50.9" W	53344
1.4	Rock	-1.92 m	55° 39' 42.5" N	133° 44' 01.5" W	53345

1 - DR_AWOIS

1.1) Profile/Beam - 1/1 from h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Primary Feature for AWOIS Item #53347

Search Position: 55° 41' 55.0" N, 133° 47' 59.5" W

Historical Depth: [None]

Search Radius: 0

Search Technique: [unknown]

Technique Notes: [unknown]

History Notes:

[unknown]

Survey Summary

Survey Position: 55° 41' 54.4" N, 133° 47' 59.4" W

Least Depth: -0.19 m (= -0.64 ft = -0.106 fm = 0 fm 5.36 ft)

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2007-138.15:50:47.000 (05/18/2007)

DP Dataset: h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Profile/Beam: 1/1

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Charted rock verified, AWOIS 53347

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1103_nonechosounder_dp/2007-138/05182007_a	1/1	0.00	000.0	Primary
OPR-O190-RA	AWOIS # 53347	19.47	175.2	Secondary
h11574_$cSYMB_v2.xls	5	26.19	161.5	Secondary

Hydrographer Recommendations

Retain charted rock position with new height

Cartographically-Rounded Depth (Affected Charts):

0fm (17404_1, 17400_1, 16016_1, 530_1)

0fm 0ft (531_1)

-.2m (500_1, 50_1)

S-57 Data

Geo object 1:	Underwater rock / awash rock (UWTROC)
Attributes:	SORDAT - 20070728
	SORIND - US,US,graph.H11574
	VALSOU - -0.194 m
	WATLEV - 4:covers and uncovers

Office Notes

Concur.

Feature Images

Figure 1.1.1

1.2) Profile/Beam - 2/1 from h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Primary Feature for AWOIS Item #53346

Search Position: 55° 41' 29.7" N, 133° 47' 53.7" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [unknown]
Technique Notes: [unknown]

History Notes:

[unknown]

Survey Summary

Survey Position: 55° 41' 29.8" N, 133° 47' 54.0" W
Least Depth: 0.89 m (= 2.90 ft = 0.484 fm = 0 fm 2.90 ft)
TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2007-138.16:02:08.000 (05/18/2007)
DP Dataset: h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a
Profile/Beam: 2/1

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

DP on AWOIS item 53346.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1103_nonechosounder_dp/2007-138/05182007_a	2/1	0.00	000.0	Primary
ChartGPs - ENC H11574_LidarInvestigations	Danger 4	3.26	200.2	Secondary (grouped)
OPR-O190-RA	AWOIS # 53346	50.84	058.2	Secondary (grouped)

Hydrographer Recommendations

Retain charted rock position with new height.

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (17404_1, 17400_1, 16016_1, 530_1)

0fm 3ft (531_1)

.9m (500_1, 50_1)

S-57 Data

Geo object 1:	Underwater rock / awash rock (UWTROC)
Attributes:	SORDAT - 20070728
	SORIND - US,US,graph.H11574
	VALSOU - 0.885 m
	WATLEV - 4:covers and uncovers

Office Notes

Concur.

Feature Images

Figure 1.2.1

1.3) Profile/Beam - 9/1 from h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Primary Feature for AWOIS Item #53344

Search Position: 55° 39' 31.7" N, 133° 43' 50.0" W
Historical Depth: [None]
Search Radius: 0
Search Technique: [unknown]
Technique Notes: [unknown]

History Notes:

[unknown]

Survey Summary

Survey Position: 55° 39' 31.2" N, 133° 43' 50.9" W
Least Depth: 0.70 m (= 2.31 ft = 0.384 fm = 0 fm 2.31 ft)
TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2007-138.18:26:58.000 (05/18/2007)
DP Dataset: h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a
Profile/Beam: 9/1

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

DP seawardmost rock AWOIS 53344 for height.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1103_nonechosounder_dp/2007-138/05182007_a	9/1	0.00	000.0	Primary
OPR-O190-RA	AWOIS # 53344	158.79	189.3	Secondary (grouped)

Hydrographer Recommendations

Edit charted rock with new height.

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17404_1, 17400_1, 16016_1, 530_1)

0fm 2ft (531_1)

.7m (500_1, 50_1)

S-57 Data

Geo object 1:	Underwater rock / awash rock (UWTROC)
Attributes:	SORDAT - 20070728
	SORIND - US,US,graph.H11574
	VALSOU - 0.703 m
	WATLEV - 4:covers and uncovers

Office Notes

Concur.

Feature Images

Figure 1.3.1

1.4) Profile/Beam - 10/1 from h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Primary Feature for AWOIS Item #53345

Search Position: 55° 39' 42.2" N, 133° 44' 00.6" W

Historical Depth: [None]

Search Radius: 0

Search Technique: [unknown]

Technique Notes: [unknown]

History Notes:

[unknown]

Survey Summary

Survey Position: 55° 39' 42.5" N, 133° 44' 01.5" W

Least Depth: -1.92 m (= -6.30 ft = -1.050 fm = -1 fm 0.30 ft)

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2007-138.18:37:25.000 (05/18/2007)

DP Dataset: h11574 / 1103_nonechosounder_dp / 2007-138 / 05182007_a

Profile/Beam: 10/1

Charts Affected: 17404_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

DP on AWOIS 53345

The northernmost of two charted rocks was the AWOIS item. The southern charted rock was not seen. A VBES star pattern search was conducted with an average depth of 12m and a minimum depth of 5.6 m seen.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11574/1103_nonechosounder_dp/2007-138/05182007_a	10/1	0.00	000.0	Primary
OPR-O190-RA	AWOIS # 53345	18.19	298.3	Secondary

Hydrographer Recommendations

Chart one rock at survey position.

Cartographically-Rounded Depth (Affected Charts):

-1fm (17404_1, 17400_1, 16016_1, 530_1)

-1fm 0ft (531_1)

-1.9m (500_1, 50_1)

S-57 Data

Geo object 1:	Underwater rock / awash rock (UWTROC)
Attributes:	SORDAT - 20070728
	SORIND - US,US,graph.H11574
	VALSOU - -1.920 m
	WATLEV - 4:covers and uncovers

Office Notes

Concur. Lidar data from survey H11208 supports the recommendation.

Feature Images

Figure 1.4.1

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 3, 2007

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-O190-RA-2007
HYDROGRAPHIC SHEET: H11574

LOCALITY: Iphegenia Bay to Arriaga Passage, AK
TIME PERIOD: May 17 - July 28, 2007

TIDE STATION USED: 945-0711 Nossuk Bay, AK
Lat. 55° 43.3'N Long. 133° 21.0' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.922 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SA227 & PAC296

Refer to attachments for zoning information.

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

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
Reason: I am approving this document
Date: 2007.10.09 11:13:18 -04'00'

CHIEF, PRODUCTS AND SERVICES DIVISION

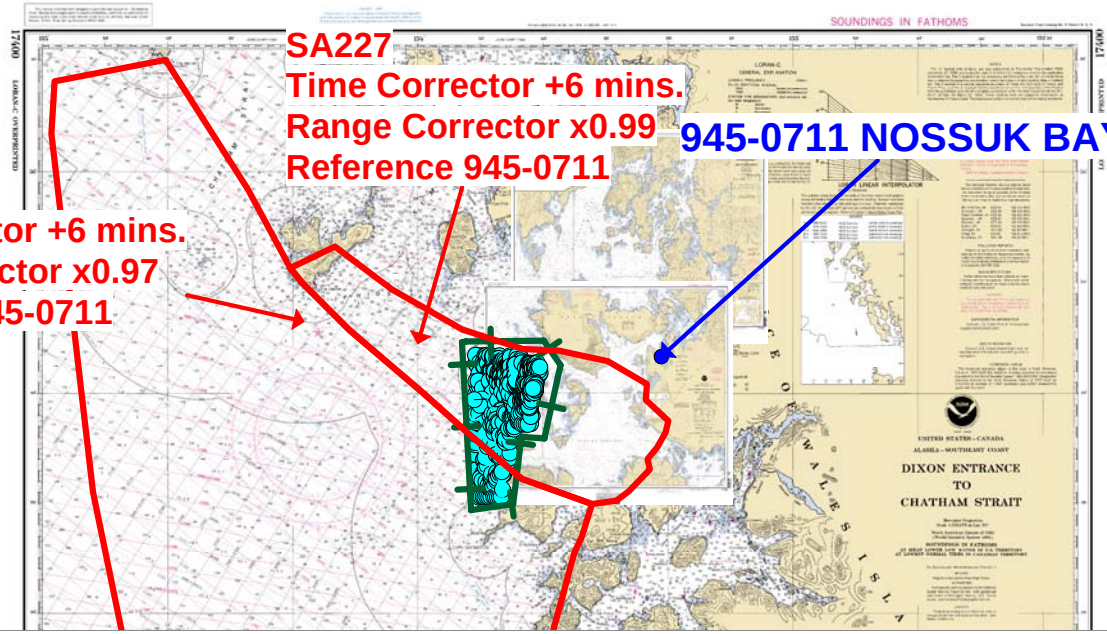
945-1600 SITKA

Final Tidal Zoning
for OPR-O190-RA-2007
H11574
West of Prince of Wales Island, AK

SA227
Time Corrector +6 mins.
Range Corrector x0.99
Reference 945-0711

945-0711 NOSSUK BAY

PAC296
Time Corrector +6 mins.
Range Corrector x0.97
Reference 945-0711



H11574 HCell Report

Kurt Brown, 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 ENCs and RNCs in the region:

ENC US5AK4AM
ENC US5AK4CM
RNC 17404 (1:40,000)
RNC 17406 (1:40,000)
RNC 17400 (1:229,376)

HCell compilation of survey H11574 used 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 for HCell H11574 were compiled to the largest scale charts in the region, 17404 and 17406 (both 1:40,000) with additional scales compiled using the M_CSCL meta area object. (See section 4. Meta Areas.)

2. Soundings

A survey-scale sounding feature layer, H11574_SS, was built in CARIS BASE Editor using the following BASE surface from survey H11574:

H11574_Final_Combined_10m

A shoal-biased selection was made at 1:7,500. The resultant sounding layer contains depths ranging from 0 to 162.763 meters.

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.

Soundings were also digitized from smooth sheet soundings (displayed as .dgn files in CARIS BASE Editor) from Lidar survey H11208D.

3. Depth Contours

Depth contours at the intervals on the largest scale chart are included in the H11574_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 Contour Intervals in Fathoms from Chart 17404	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 H11574_SS.000
3	5.4864	5.715	3.125	3
5	9.144	9.372	9.125	5
10	18.288	18.517	10.125	10
50	91.44	92.812	50.750	50

Contours delivered in the H11574_SS file have not been deconflicted against shoreline features, soundings and hydrography as all other features in the H11574_CS file and soundings in the H11574_SS have been. This results in conflicts between the H11574_SS file contours and HCell features at or near the survey limits. Conflicts with M_QUAL, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over H11574_SS.000 file contours in all cases where conflicts are found.

4. Meta Areas

The following Meta objects areas are included in HCell 11574:

M_QUAL
M_CSCL

Meta area objects were constructed on the basis of the limits of the hydrography and lidar data. Separate M_QUAL objects were created for SWMB and lidar data.

5. Features

5.1 Generalization of Features to Chart Scale

Features addressed by the field units are delivered to PHB where they are deconflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base surface are included in the HCell. The geometry of these features is modified to emulate chart scale.

Feature generalization to emulate chart scale is accomplished primarily through reduction in the number of features included in the HCell, and in some cases generalizing area features to point objects. Some instances of reduction of area features to point objects is entrusted to the RNC division, for example rocky seabed areas that will display as point features on the RNC. Where line and area objects are included in the HCell, complexity of the lines and edges comprising the features have been smoothed to commensurate with chart scale.

5.2 Compilation of Features to the HCell

Shoreline features for H11574 were delivered from the field in several .hob files described in the DR. The files contained new features, modification to GC or charted features, and disprovals. These were deconflicted against GC shoreline, the chart and hydrography during office processing.

During office processing, numerous obstruction areas and rocky seabeds were digitized from the high resolution BASE surfaces.

In nearshore areas not covered by survey H11574, features from Lidar survey H11208 are also included in the HCell.

8 bottom samples were imported from the survey into the HCell.

There were 3 DTONs reported from survey H11574 and 3 reported during office processing. The DTONs are charted and reflected in the HCell.

4 AWOIS items were included in survey H11574.

The source of all features included in the H11574 HCell can be determined by the SORDAT and SORIND fields.

5.3 Mean High Water Used for HCells

For the purposes of determining the height at which a rock becomes an islet, the CO-OPS *"Tide Note for Hydrographic Survey"*, *"Height of High Water Above the Plane of Reference"* is used.

6. S-57 Objects and Attributes

The H11574_CS HCell contains the following Objects:

SOUNDG	Chart scale soundings
UWTROC	Rock features
SBDARE	Bottom samples, rocky seabed areas and ledges
M_QUAL	Data quality Meta object
M_CSCL	Compilation scale meta area
$CSYMB	Blue notes
LNDARE	Islets

OBSTRN	Foul areas
COALNE	Coastline imported from ENC
LNDELV	Updated heights for islets
WEDKLP	Kelp areas

The H11574_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 H11574_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

H11574 junctions to the north with survey H11692, to the east with survey H11691 and to the southeast with survey H11690. These surveys have been compiled and the junctions made.

10. QA/QC and ENC Validation Checks

H11574 was subjected to QA checks in S-57 Composer prior to exporting to the HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to a chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they have been approved by MCD as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11574 Base Cell File, Chart Units, Soundings compiled to 1:40,000

- H11574 Base Cell File, Chart Units, Soundings compiled to 1:7,500
- H11574 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
- H11574 Survey Outline to populate SURDEX

11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings — H11574_CS.000
- Chart units base cell file, survey scale soundings — H11574_SS.000
- Descriptive Report package — H11574_DR.pdf
- Survey outline — H11574_Outline.gml & *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:

Kurt Brown, Physical Scientist, PHB, Seattle, WA; 206-526-6839;
Kurt.Brown@noaa.gov.

APPROVAL SHEET
H11574

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.

Digitally signed by Kurt Brown
Date: 2010.04.15 12:39:57 -07'00'

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

Digitally signed by Russ Davies
Date: 2010.04.15 15:23:24 -07'00'

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

Gary C. Nelson
2010.04.15 15:27:59 -07'00'

Digitally signed by Rachel Soraruf
DN: cn=Rachel Soraruf, o=NOAA/NOS/OCS/HSD, ou=Operations Branch, email=Rachel.Sorasuf@noaa.gov, c=US
Reason: AWOIS and SURF check complete
Date: 2010.04.20 10:07:05 -04'00'