

H11508

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. H11508

LOCALITY

State Alaska

General Locality Ernest Sound and Eastern Passage

Sublocality Western Portion of Bradfield Canal

2005

CHIEF OF PARTY

..... Captain John E. Lowell, Jr., NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11508

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 Ernest Sound and Eastern Passage

Sublocality Western Portion of Bradfield Canal

Scale 1:10,000

Date of Survey October 9, 2005-November 4, 2005

Instructions Dated 1/4/2005

Project No. OPR-O119-FA-05

Vessel NOAA Ship FAIRWEATHER, Launch 1010, Launch 1018

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

Surveyed by SST Froelich, CST Morgan, LTjg Higgins

Soundings taken by echo sounder RESON 8101ER and RESON 8111

Graphic record scaled by N/A

Graphic record checked by N/A

Evaluation by D. Sinson

Automated plot by HP Designjet 1050C

Verification by D. Sinson, K. Reser

Soundings in Fathoms and Feet

at

MLLW

REMARKS: Time in UTC. UTM Projection Zone 9

Revisions and annotations appearing as endnotes were

generated during office processing.

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

All separates are filed with the hydrographic data.

Descriptive Report to Accompany Hydrographic Survey H11508

Project OPR-O119-FA
Ernest Sound and Eastern Passage, Alaska
Scale 1:10,000
October-November 2005
NOAA Ship FAIRWEATHER
Chief of Party: Captain John E. Lowell, Jr., NOAA

A. AREA SURVEYED

The survey area was located in Ernest Sound and Eastern Passage, within the sub-locality of Western Portion of Bradfield Canal. This survey corresponds to Sheet F in the sheet layout provided with the Letter Instructions, as shown in Figure 1 below. The survey area is bounded on the Southwest corner at 56°11'00"N, 131°53'00"W and the Northeast corner at 56°14'00"N, 131°40'00"W.

Data acquisition was conducted from October 9 to November 4, 2005 (DN 282 to DN 308).

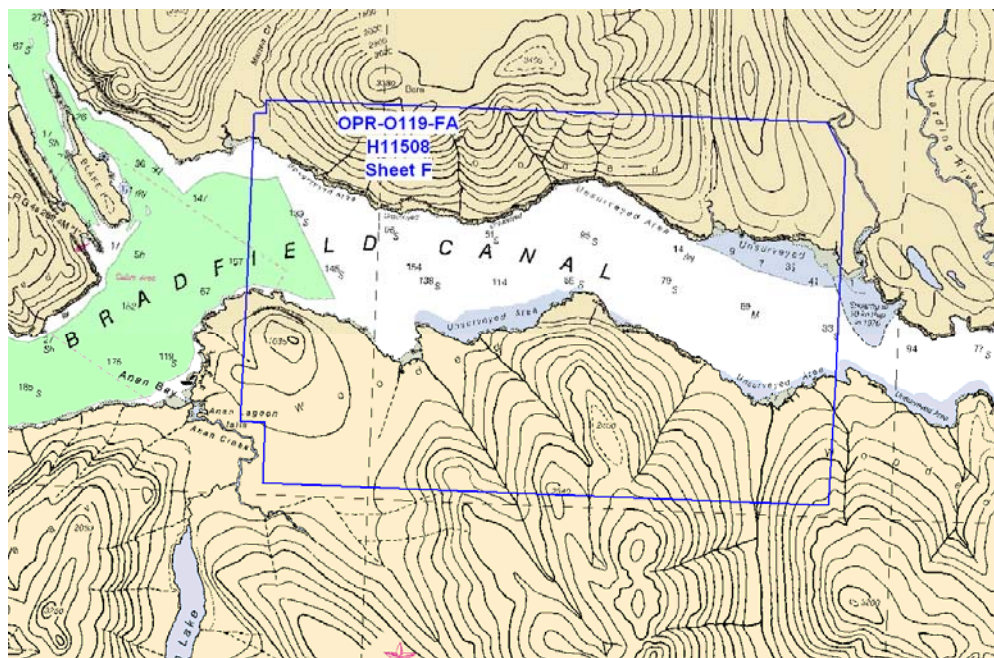


Figure 1: H11508

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area at least to depths of eight meters where conditions allowed. The steep and deep bathymetry of the survey area did not always allow data to be collected safely to the 8 meter curve. When conditions allowed, multibeam echosounder (MBES) data was acquired parallel to contours in depths between four and eight meters. Additional coverage was obtained in order to determine least depths over features or shoals.

Shoreline data were acquired for H11508. These data were attributed as S-57 objects for submittal.

B. DATA ACQUISITION AND PROCESSING

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

CARIS 6.0 was utilized during processing of this survey, but the products submitted were not created using the CUBE algorithm and conform to the specifications stated in the *NOS Hydrographic Surveys Specifications and Deliverables*. CUBE products will be submitted at a later date to Pacific Hydrographic Branch (N/CS34) for information/QA purposes only (see Appendix IV).³

B1. Equipment and Vessels

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

	FAIRWEATHER	Launch 1010	Launch 1018	MonArk	Ambar 700
Hull Registration Number	S220	1010	1018	1706	2302
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	MonArk	Marine Silverships, Inc
Length Overall	231 feet	28' 10"	28' 10"	17'	23'
Beam	42 feet	10' 8"	10' 8"	7'	9' 4"
Draft, Maximum	15' 6"	4' 0" DWL	4' 0" DWL	1' 3"	1' 4"
Cruising Speed	12.5 knots	24 knots	24 knots	20 knots	22 knots
Max Survey Speed	10 knots	10 knots	10 knots		
Primary Echosounder	RESON 8111 & RESON 8160	RESON 8101	RESON 8101		
Sound Velocity Equipment	SBE 19plus & SBE 45, MVP 200	SBE 19plus	SBE19plus		
Attitude & Positioning Equipment	POS/MV V3	POS/MV V3	POS/MV V3		
Type of operations	MBES	MBES	MBES	Shoreline	Shoreline, BS

Table 1: Vessel Inventory

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

B2. Quality Control

Internal consistency and integrity of data collected for survey H11508 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11508 were found to be very good.

Crosslines

Shallow water multibeam crosslines for this survey totaled 19.03 linear nautical miles (lnm), comprising 15.7% of the 120.81 lnm of total MBES hydrography.

The Hydrographer has determined, through manual examination of the data, that the crossline agreement with main scheme data meet the vertical accuracy requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁴

Junctions

Survey H11508 junctions with H11507 and H11509, which are Sheet E and G, respectively, of the same project. The area of overlap between sheet E was approximately 250 meters wide. The area of overlap between sheet G was approximately 225 meters wide. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁵ The sheet limits and area of overlap for Sheets E, F and G are shown in Figure 2.

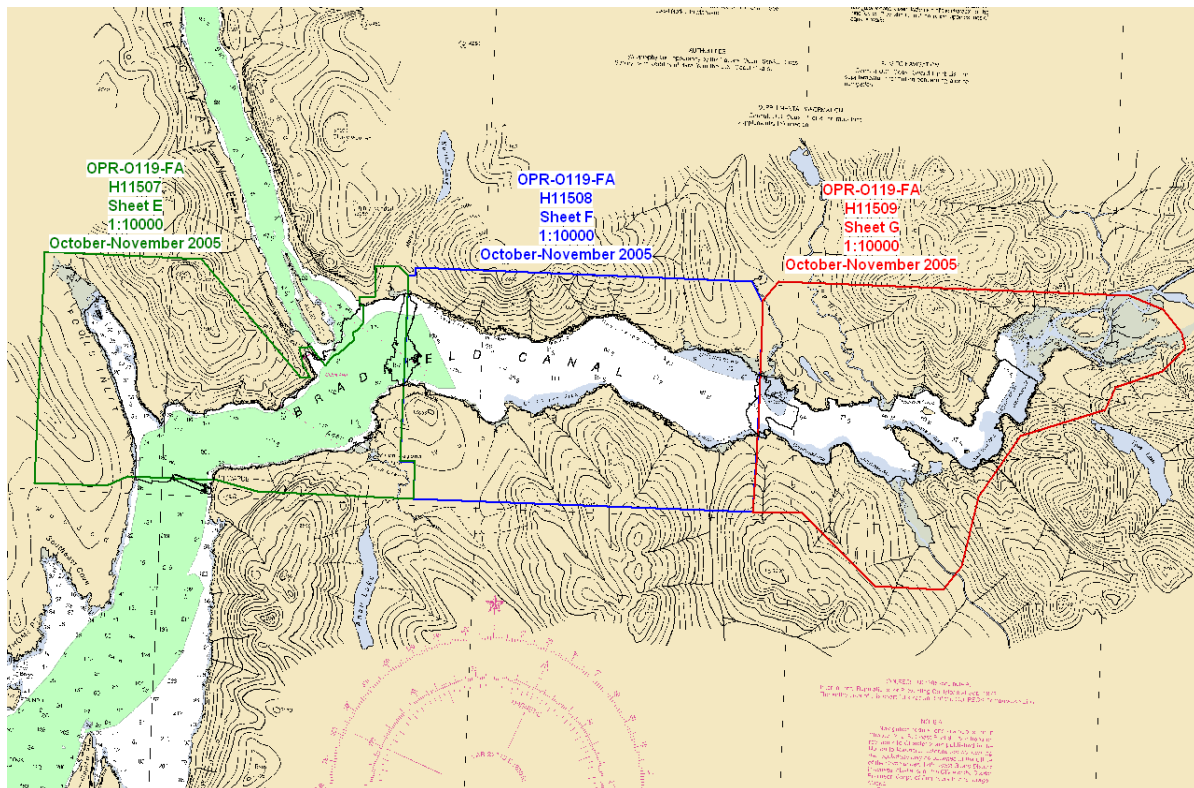


Figure 2: Junctions Between H11507, H11508 and H11509

Quality Control Checks

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

Data Quality Factors

CUBE:⁶

CARIS HIPS 6.0, incorporating the CUBE algorithm, was utilized as the processing software during the acquisition of data. Problems with the CARIS implementation of CUBE caused areas, that later appear as data gaps, to seem filled during acquisition. CARIS HIPS 6.0 Service Pack 1 included a fix for this problem. These gaps usually occur on steep slopes where the CUBE algorithm had difficulty distinguishing the “true” bottom from the characteristic down-slope burst noise seen in steep slopes. Most holidays were not larger than 3 nodes across. In the case that the holiday was larger than 3 nodes across, the corresponding multibeam backscatter sidescan was examined and no navigationally significant items were found.

DESIGNATED SOUNDINGS:

In areas of navigational significance where the BASE surface did not depict the desired depth for the given area, a designated sounding was selected.

Designated soundings were selected based on the difference between the BASE surface and reliable shoaler sounding(s) being more than half of the allowable IHO error budget in depths less than 30m.

COVERAGE ASSESSMENT:

Coverage assessment was determined using the following base surface resolutions listed below in Table 2. Depth ranges were adjusted so that adequate overlap was achieved in areas of steep bathymetry.

Depth Ranges (m)		Resolution (m)
Low	High	
0	35	0.8
15	50	2
20	125	5
85	300	12
250	550	22

Table 2: Depth Ranges and Resolutions

Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated March 2003.⁷

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11508 conform to those detailed in the of the *Fall OPR-O119-FA-05 Data Acquisition and Processing Report*.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11508 can be found in the *OPR-O119-FA-05 Fall Horizontal and Vertical Control Report*, submitted under separate cover.⁸ A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections came from the U.S. Coast Guard beacons at Annette Island (323 kHz) and Level Island (295 kHz).

Distances from the U.S. Coast Guard beacons combined with fjord-like topography created weak signal to noise ratios for the DGPS corrections within the project area. Occasionally the corrector signal from a beacon would be lost. When that occurred a launch would move away from the shoreline to re-acquire the signal or switch to another corrector station. Switching stations is known to shift the relative horizontal position by a few meters, which causes vertical errors in regions with steep slope. Stations would only be switched while data was not being collected. Data affected by this issue has been reviewed and it meets the horizontal accuracy required by the *NOS Hydrographic Surveys Specifications and Deliverables* dated March 2003.

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Ketchikan, AK (945-0460) served as control for datum determination and as the primary source for water level reducers for survey H11508 during acquisition. The NWLON tertiary 30 day tide station listed below served as the primary source for water level reducers for survey H11508 once verified tides were available.

FAIRWEATHER personnel installed one Sutron 8210 “bubbler” tide gauge (Gauge #12 S/N 023512) at the tertiary station listed below. The gauge was installed in order to provide information to Center for Operational Oceanographic Products and Services (CO-OPS N/OPS1) for the determination of time and height correctors, in accordance with the Project Instructions.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Bradfield Canal, AK	945-1012	Tertiary 30 Day	October 8, 2005	November 7, 2005

A request for delivery of approved water level data (smooth tides) for survey H11508 was forwarded to N/OPS1 on November 14, 2005 in accordance with the *Preliminary Field Procedures Manual v1.1*, dated March 2005 (FPM). A copy of the request is included in Appendix III.⁹

FAIRWEATHER received verified water level data for NWLON tertiary 30 day tide station Bradfield Canal, AK (945-1012) and the Tide Note for Hydrographic Survey H11508 on December 22, 2005. The Tide Note included a new zone file which was applied to the data. Application of smooth tides and the new zone file by FAIRWEATHER were not required in Project Instructions, but because they were made available by CO-OPS they were applied. The Tide Note for Hydrographic Survey H11508 and ancillary correspondence are included in Appendix IV.¹⁰

As per the letter instructions, all data were reduced to MLLW using the observed water level data from station Ketchikan, AK by applying tide file 9450460.tid and time and height correctors through the zone corrector file O119FA2005CORP.zdf during acquisition. Once verified tides and final zoning were available, all data were reduced to MLLW using the verified water level data (smooth tides) from station Bradfield Canal, AK by applying tide file 9451012.tid and time and height correctors through the revised zone corrector file H115082005CORF.zdf. It will not be necessary for the Pacific Hydrographic Branch to apply the verified water level data (smooth tides) to the survey data during final processing.¹¹

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

The appropriate resolution BASE surface dependant on the general depth of the survey was brought into Fieldsheet Editor in HIPS 6.0. The soundings were displayed in the same unit as the chart, with the applicable charts displayed behind for comparison. The BASE surface was also displayed as a translucent layer to reveal trends.

Survey H11508 was compared with charts 17360 (33rd Ed.; April 1, 2003, 1:217,828), and 17385 (15th Ed.; February 1, 2005, 1:80,000). All charts have been updated with the Notice to Mariners through March 4, 2006.

Chart 17360

The 95 fathom sounding in the center of the sheet is not representative of the depths in the surrounding area (see Figure 3).¹²

The 154 fathom sounding at the west end of the sheet is not representative of the depths in the surrounding area (see Figure 4).¹³

The 4 fathom sounding at the northeast corner of the sheet appears to have been pulled off shore. Given the steep and deep bathymetry of the area, however, it does not accurately represent the “true” sea floor.¹⁴

The rest of the depths on chart 17360 generally agree with the depths from survey H11508.¹⁵

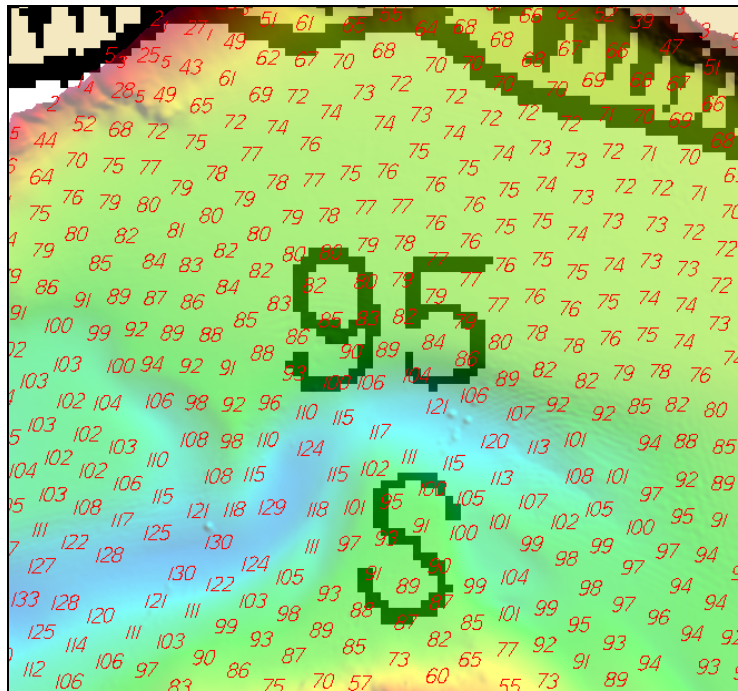


Figure 3. Charted (17360) 95 fathom sounding and surrounding soundings from BASE surface

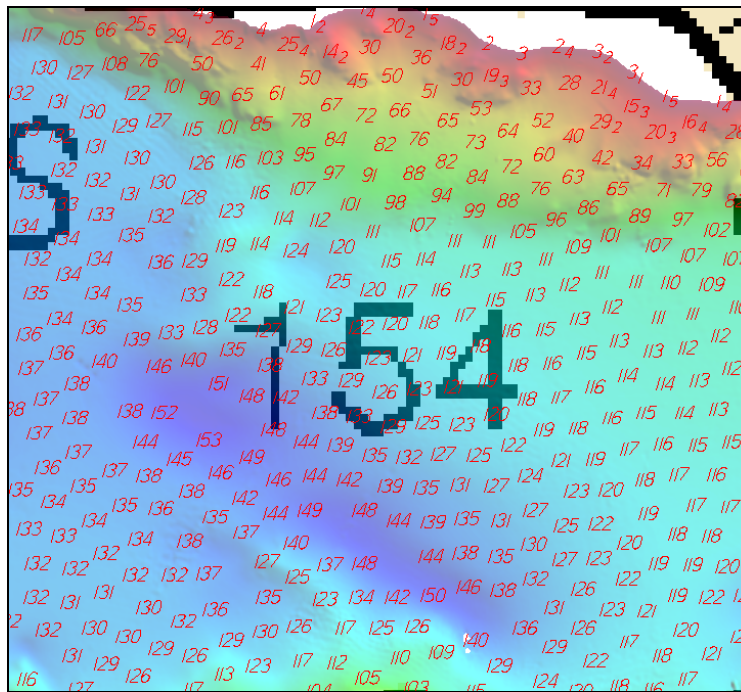


Figure 4. Charted (17360) 154 fathom sounding and surrounding soundings from BASE surface

Chart 17385¹⁶

The 33 fathom sounding at the east end of the sheet is ~15 fathoms shoaler than the depths from survey H11508.¹⁷

The soundings near the Unsurveyed area at the north east corner of the sheet are significantly shoaler (~20 fathoms) than depths from survey H11508 (see Figure 5).¹⁸

The 14 fathom sounding west of the Unsurveyed north east corner is significantly shoaler (~45 fathoms) than depths from survey H11508.¹⁹

The 154 fathom sounding at the west end of the sheet is significantly deeper (~20 fathoms) than depths from survey H11508.²⁰

The 96 fathom sounding at the west end of the sheet appears to have been pulled off shore for cartographic representation (see Figure 6).²¹

The rest of the depths on chart 17385 generally agree with the depths from survey H11508.²²

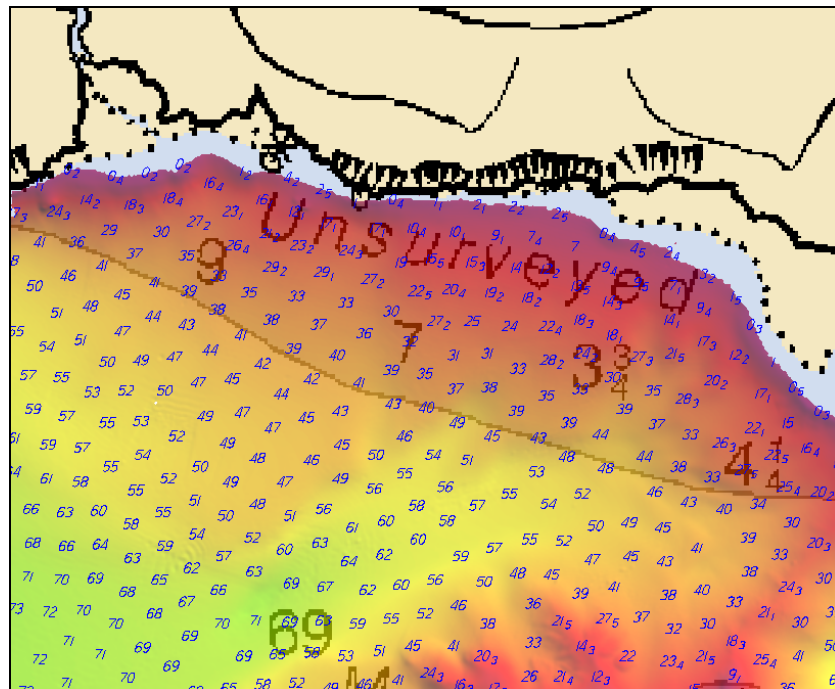


Figure 5. Charted (17385) soundings near the north east corner of the sheet and surrounding soundings from BASE surface

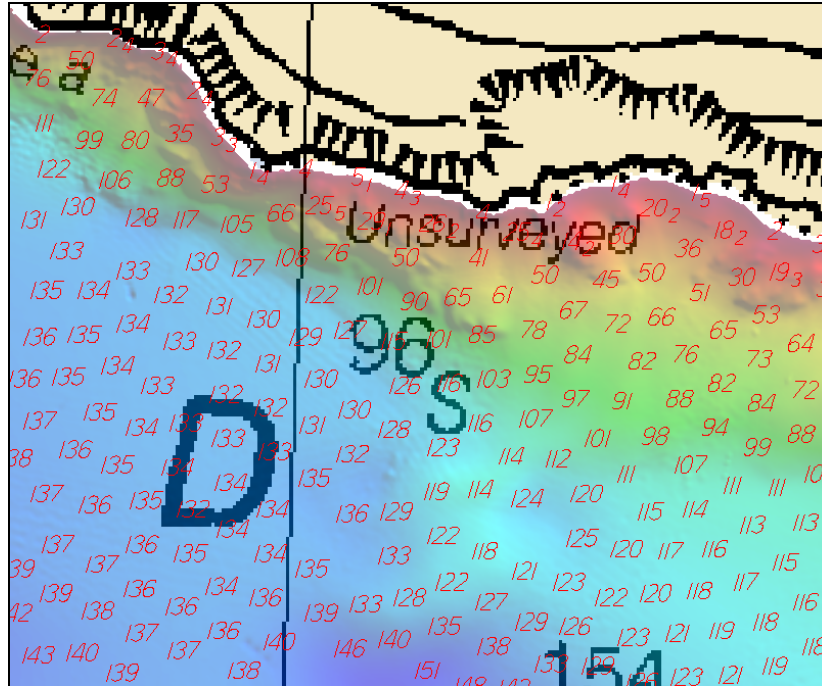


Figure 6. Charted (17385) 96 fathom sounding and surrounding soundings from BASE surface

Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *NOS Hydrographic Surveys Specifications and Deliverables* dated March 2003.²³ The BASE surfaces with the application of designated soundings are adequate to supersede prior surveys in their common areas. Based on the application of verified water level data (smooth tides) by FAIRWEATHER, final chart comparisons are not required by the Pacific Hydrographic Branch.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS items located within the limits of H11508.²⁴

Dangers to Navigation

One danger to navigation (DTON) was found and reported to the Mapping and Charting Division for verification and final submission to the Seventeenth Coast Guard District on October 11, 2005.²⁵ A copy of the preliminary Danger to Navigation Report is included with the Pydro Preliminary Smooth Sheet (PSS).²⁶ The DTON was included in U.S. Coast Guard District 17 Local Notice to Mariners 44/05 (Nov 3, 2005).

Upon further Hydrographer review of additional data and the application of smooth tides, the DTON should be re-charted at location 56°12'05.679" N, 131°41'44.797" W with a depth of 5.79 meters (3.17 fathoms). An additional DTON was not submitted due to the new depth being slightly deeper than the original DTON reported depth.²⁷

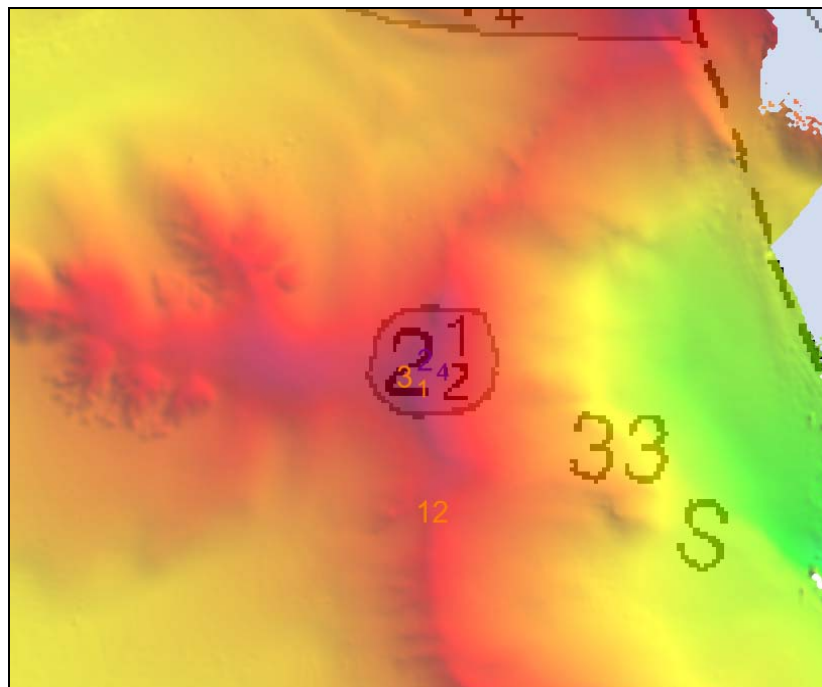


Figure 7. Revised depth and location of submitted DTON.

D.2 Additional Results

Shoreline Source

Source shoreline for this sheet was taken from photogrammetric survey AK9702E (NAD 83) GC-10547, at the scale of 1:20,000. The CFF shoreline was imported into CARIS Notebook 2.2 as an editable layer named H11508_Edited_CFF_Shoreline.hob, with all objects having S57 attribution. In addition, features from the current editions of charts 17360 and 17385 that were not depicted by the source shoreline data were digitized in MapInfo and then imported into CARIS Notebook attributed with S57 into H11508_CHD_Object Acronym.

Shoreline Verification

FAIRWEATHER personnel conducted limited shoreline verification at times near predicted low water, in accordance with the Standing Project Instructions. Detached positions (DPs) and generic positions (GPs) acquired during shoreline verification were recorded in TerraSync and on paper DP forms. Scanned copies of the DP forms are included in the digital Separates folder and hard copies can be found with the *Separates to be Included with Survey Data*.²⁸ In addition, annotations describing shoreline were recorded on hard copy plots of the digital shoreline.

Shoreline Data Processing

Positions acquired during shoreline verification operations were processed in GPS Pathfinder Office and inserted into Pydro using the Generic GPs/DPs Import tool. Features were entered as Detached Positions (DPs) when tide correctors were required, while Generic Positions (GPs) were used if no tide correction

was needed. The DPs and GPs indicate new features, revisions to features, or features not found during shoreline verification. A Carto Action of Add, Modify, Delete, or None was assigned to each item in Pydro, and all features were S57 attributed.²⁹

All accepted and primary detached and generic positions were imported from the Pydro .xml to three separate stand alone .hob files in CARIS Notebook 2.2. These were named H11508_Add_Pydro.hob, H11508_Modify_Pydro.hob and H11508_Delete_Pydro.hob.

Source Shoreline Changes, New Features and Charted Features

Two additional .hob layers, named H11508_Delete_Ntbk.hob and H11508_Modify_Ntbk.hob, were created in CARIS Notebook for features without associated DPs. Existing features from the CFF and chart were transferred to the Modify or Delete layers, depending on the cartographic action deemed appropriate by the Hydrographer. Features to be retained as depicted by the source shoreline file were left in the H11508_Edited_CFF_Shoreline.hob file. Field notes made by the Hydrographer on the boat sheets and DP forms³⁰ were transferred to the remarks field for each feature. A survey feature report for shoreline items was generated and included as H11508_Survey_Features.pdf in Appendix I.³¹

Shoreline Recommendations

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede and complement shoreline information compiled on the CFF and charts.³²

Aids to Navigation

There were no aids to navigation within the survey limits.³³

Bottom Samples

Bottom samples were collected on October 25, 2005 (DN 298) and are included as seabed classifications along with the other S57 features in the Pydro Preliminary Smooth Sheet. The bottom sample positions were also imported to the Notebook H11508_Add_Features.hob file.³⁴

E. Supplemental Reports

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>
Hydrographic Systems Certification Report 2005	April 18, 2005	N/CS34
OPR-O119-FA-05 Fall Data Acquisition and Processing Report	April 24, 2006	N/CS34
OPR-O119-FA-05 Fall Horizontal & Vertical Control Report	Nov 17, 2005	N/CS34, N/OPS1



UNITED STATES DEPARTMENT OF COMMERCE

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

April 17, 2006

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

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

TITLE: Approval of Hydrographic Survey H11508,
OPR-O119-FA

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11508 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, March 2005 Version 1.1; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for March, 2003. Additional guidance was provided by applicable Hydrographic Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

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

SST Grant D. Froelich
Survey Manager

CST Lynnette V. Morgan
Chief Survey Technician

Attachment



Revisions Compiled During Office Processing and Certification

¹ Filed with project records.

² Filed with project records.

³ CUBE surfaces were never submitted for this survey. The uncertainty weighted grids submitted meet specifications.

⁴ Concur.

⁵ Concur.

⁶ The final surfaces submitted for this survey are uncertainty weighted grids.

⁷ Concur.

⁸ Filed with project records.

⁹ Filed with hydrographic records.

¹⁰ See attached Tide Note dated December 22, 2005.

¹¹ Concur.

¹² Concur.

¹³ Concur.

¹⁴ Concur with clarification. Given the sounding is pulled offshore, it is the safest representation for the given scale of the chart. The 4.25 fm sounding will be superseded with a 4 fm 3 ft sounding surveyed 388 meters to the east of the charted position.

¹⁵ Concur.

¹⁶ Because of the 100% multibeam coverage on this survey, it is recommended that the remaining green tint, wire drag area and the "Unsurveyed" areas should be removed from chart 17385 and superseded with depths from this survey within the common area.

¹⁷ Concur.

¹⁸ Concur.

¹⁹ Concur.

²⁰ Concur with clarification. Although the surveyed depth is significantly shoaler, the overall depth is sufficiently deep so that the discrepancy is not a danger to navigation.

²¹ Concur with clarification. The surrounding depths suggest that the generalization is very minor. There is a surveyed 94 fathom sounding 113 meters to the north of the charted 96 fathom sounding.

²² Concur.

²³ Concur.

²⁴ Concur.

²⁵ Concur.

²⁶ The depth of the reported DTON has been modified since submission. During the survey acceptance review, the new depth was determined, but a new report was not submitted since the new depth is deeper than the original reported depth. The new depth is depicted in HCell H11508. See DTON section of attached Features Report.

²⁷ Concur (see endnote 25).

²⁸ Filed with hydrographic records.

²⁹ See attached Features Report.

³⁰ Filed with hydrographic records.

³¹ See attached Features Report.

³² Concur with clarification. Upon review of the shoreline data during compilation, it was determined that some of the features were characterized incorrectly based on the descriptions given in the Pydro remarks field. The features were modified and are appropriately depicted in the HCell.

³³ Concur.

³⁴ Thirteen bottom samples were collected with H11508 and are included in the HCell. Seven additional bottom samples were imported from the ENC to be retained.

H11508 Features Report

Registry Number: H11508
State: Alaska
Locality: Ernest Sound and Eastern Passage
Sub-locality: Western Portion of Bradfield Canal
Project Number: OPR-O119-FA-05
Survey Dates: October 9, 2005 - November 4, 2005

Items for survey H11508 associated with detached or generic positions that needed further discussion were flagged Report in Pydro. Investigation methods and recommendations were provided in the Remarks and Recommendations tabs.

Charts Affected

Number	Version	Date	Scale
17385	15th Ed.	02/01/2005	1:80000
17360	33rd Ed.	05/01/2003	1:217828
16016	20th Ed.	11/01/2003	1:969756
531	22nd Ed.	03/01/2004	1:2100000
530	30th Ed.	03/23/2002	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
13081	GP	[None]	056° 11' 51.790" N	131° 47' 26.549" W
13082	GP	[None]	056° 11' 35.595" N	131° 49' 48.050" W
---	GP	[None]	056° 11' 22.426" N	131° 41' 42.299" W
444/100	Sounding	5.79 m	056° 12' 05.679" N	131° 41' 44.797" W

1 - New Features

1.1) 13081**Survey Summary**

Survey Position: 056° 11' 51.790" N, 131° 47' 26.549" W
Least Depth: [None]
Timestamp: 2005-308.16:34:37.000 (11/04/2005)
GP Dataset: tr1_308_OBSTRN_L.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Buffer line for New extent CFF ledge. Offset 40m.

Feature Correlation

Address	Feature	Range	Azimuth	Status
tr1_308_OBSTRN_L.shp	1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Acronym was changed from OBSTRN to SBDARE to depict the feature as a ledge. Chart new extent of ledge.

1.2) 13082**Survey Summary**

Survey Position: 056° 11' 35.595" N, 131° 49' 48.050" W
Least Depth: [None]
Timestamp: 2005-308.16:54:27.000 (11/04/2005)
GP Dataset: tr1_308_MORFAC_P.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

New Floating Pier.

Feature Correlation

Address	Feature	Range	Azimuth	Status
tr1_308_MORFAC_P.shp	1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Mooring/warping facility (MORFAC)
Attributes: CATMOR - 4:tie-up wall
 RECDAT - 20051104

Office Notes

Chart as MORFAC with CATMOR=4 (tie-up wall)

1.3) GP No. - 1 from ChartGPs - Digitized

Survey Summary

Survey Position: 056° 11' 22.426" N, 131° 41' 42.299" W
Least Depth: [None]
Timestamp: 2006-096.17:57:55 (04/06/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF RK BARE DISPROVAL

A 10 minute visual search for the CFF Rk Bare was conducted and no rock was found. The CFF RK BARE is disproved.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

Do not chart CFF RK BARE.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur.

2 - Dangers to Navigation

2.1) 444/100**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 056° 12' 05.679" N, 131° 41' 44.797" W
Least Depth: 5.79 m
Timestamp: 2005-295.21:54:25.856 (10/22/2005)
Survey Line: h11508 / 1010_8101 / 2005-295 / 295-2151
Profile/Beam: 444/100
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

5.79 meters (3.17 fathoms) sounding (Smooth/Verified tide file applied) along ridge line in charted 33 fathoms. Upon further Hydrogrpaher review, and application of smooth tides, the DTON should be located at position 56°12'05.679" N, 131°41'44.797" W with a depth of 5.79 meters (3.17 fathoms).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11508/1010_8101/2005-295/295-2151	444/100	0.00	000.0	Primary
h11508/1010_8101/2005-283/283-1707	652/1	55.64	230.9	Secondary (grouped)

Hydrographer Recommendations

Re-Chart DTON at position 56°12'05.679" N, 131°41'44.797" W with a depth of 5.79 meters (3.17 fathoms).

Cartographically-Rounded Depth (Affected Charts):

3fm (17385_1, 17360_1, 16016_1, 530_1)

3fm 1ft (531_1)

5.8m (50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: QUASOU - 1,6:depth known,least depth known
 TECSOU - 3:found by multi-beam

Office Notes

Concur.

Feature Images



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : December 22, 2005

HYDROGRAPHIC BRANCH: Pacific Hydrographic Branch
HYDROGRAPHIC PROJECT: OPR-0119-FA-2005
HYDROGRAPHIC SHEET: H11508

LOCALITY: Western Portion of Bradfield Canal, Ernest Sound and Eastern Passage, AK
TIME PERIOD: October 09 - November 4, 2005

TIDE STATION USED: 945-1012 Bradfield Canal, AK
Lat. 56 11.75' N Long. 131 33.47' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.770 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SA118A & SA119A

Refer to attachments for zoning information.

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



CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-O119-FA-2005, H11508

Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes Longitude West),
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone SA119A	945-1012	0	1.00
-131.7643 56.189578			
-131.586935 56.149695			
-131.437623 56.229946			
-131.455325 56.249661			
-131.550761 56.238948			
-131.605406 56.210221			
-131.700851 56.222866			
-131.77009 56.234928			
-131.772496 56.190087			
-131.7643 56.189578			
Zone SA118A	945-1012	0	1.01
-131.974275 56.196942			
-131.961424 56.172575			
-131.870219 56.173438			
-131.772496 56.190087			
-131.77009 56.234928			
-131.899959 56.238113			
-131.957139 56.218907			
-131.974275 56.196942			

H11508 HCell Report
Katie Reser, Physical Scientist
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11508 utilized Office of Coast Survey HCell Specifications Version 3.0, May 2008 and HCell User Guide Version 1.1, June 2008. HCell H11508 will be used to update charts 17385, 1:80,000 (16th Ed.; September 2006, NM 10/04/2008), 17360, 1:217,828 (35th Ed.; June 2008, NM 10/04/2008) and US4AK3OM.

1. Compilation Scale

The density of soundings in the HCell are compiled as appropriate to emulate those soundings of Chart 17385, 1:80,000. Position and density of non-bathymetric features included in the HCell have not been generalized from the scale of the hydrographic survey H11508.

2. Soundings

2.1 Source Data

One 12-meter resolution Combined BASE surface, **H11508_Combined_12m** was used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11508_Combined_12m** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 survey scale using a radius table with values shown in **Table 1**.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	320	5

Table 1

2.2 Sounding Feature Objects

In CARIS BASE Editor soundings were manually selected from the high density sounding layers from H11508 and imported into a new layer created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and

distribution of soundings on chart 17385 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11405. The sounding feature object source layer was imported into the **H11508_HCell_Features.hob** file, which was used as a template to create the S-57 Composer product **H11508_CS.prd**.

3. Depth Areas

3.1 Source Data

Using the combined BASE surface **H11508_Combined_12m** and areas delineated as ledges or extents of the mean lower low water line, two depth areas were generated and separated by a zero meter contour. No other depth contours were delivered per OCS HCell Specifications ver.3.0 and Hcell User Guide ver. 1.1.

3.2 Depth Area Feature Objects

Two depth ranges, -4.7 meters to 0 meters and 0 meters to 320 meters, were used for all depth area objects. Upon conversion to NOAA charting units, this depth range is -2.6 fathoms to 0 fathoms and 0 fathoms to 174.9 fathoms.

4. Meta Areas

The following Meta object areas are included in HCell 11508:

M_QUAL
M_COVR

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

5. Survey Features

H11508 contains one DTON. The DTON is located at 56-12-05.679N, 131-41-44.797W with a depth of 5.79 meters (3.17 fathoms). The DTON was originally reported with a depth of 4.6 meters (2.5 fathoms) and is currently depicted on Chart 17385 as a 2.5 fathom sounding. During the survey acceptance review, the new depth was determined, but a new report was not submitted since the new depth is deeper than the original reported depth. The new depth is depicted in HCell H11508.

H11508 contains no AWOIS items.

Thirteen bottom samples were collected with H11508 and are included in the HCell. Seven additional bottom samples were imported from the ENC to be retained.

The source of all features included in the H11508 HCell can be determined by the SORIND or SORDAT field. For the rock/islet determination, the Tide Note value for MHW (-4.77 meters) was used. All features to be included in the HCell were addressed and deconflicted in BASE Editor and imported into the **H11508_HCell_Features.hob** file, which was used as a template to create the S-57 Composer product **H11508_CS.prd**.

Shoreline Features

Shoreline features for H11508 were delivered in seven different files. There is some redundancy of features between the files.

- H11508_Edited_CFF_Shoreline.hob (Features to be retained as depicted in the source shoreline file)
- H11508_CHD_UWTROC.hob (Rock feature digitized from chart 17385 that was not included in the original CFF)
- H11508_Modify_Ntbk.hob (features modified in Notebook using DPs or VBES)
- H11508_Delete_Ntbk.hob (original source or charted features that were modified or disproved)
- H11508_Add_Pydro.hob (new feature or bottom samples processed in Pydro)
- H11508_Modify_Pydro.hob (modified features or bottom samples processed in Pydro)
- H11508_Delete_Pydro.hob (disprovals processed in Pydro)

6. Shoreline / Tide Delineation

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

7. Attribution

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

8. Layout

8.1 CARIS S-57 Composer Scheme

SOUNDG	Chart scale soundings
DEPARE	Group 1 objects (Skin of the Earth)
DEPCNT	0-meter depth contours defining intertidal areas

UWTROC	Rock features
MORFAC	Floating dock / tie-up wall
SBDARE	Bottom samples, reefs, ledges and rocky seabed areas
M_COVR	Data coverage meta object
M_QUAL	Data quality meta object
\$CSYMB	Blue notes

8.2 Blue Notes

Notes regarding data sources are in S-57 Composer as a \$CSYMB feature with the blue note located in the INFORM field and the survey registry number, chart number, chart edition and edition date located in the NINFOM field. The blue notes are included in the HCell when it is exported to .000. The blue notes are also included as a separate ASCII file **H11508_Bluenotes.txt**.

9. Spatial Framework

9.1 Coordinate System

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

9.2 Horizontal and Vertical Units

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

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

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

S-57 Composer Units

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

Chart Unit Base Cell Units

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

10. QA/QC

10.1 Data Processing Notes

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

10.2 ENC Validation Checks

H11508 was subjected to QA and Validation checks in S-57 Composer prior to exporting to the HCell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was converted to a chart unit 000 file. dKart Inspector 5.1 was then used to further check the data set for conformity using the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11508 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11508 Base Cell File, Chart Units, Soundings compiled to 1:20,000
- H11508 Descriptive Report including end notes compiled during office processing and certification
- H11508 HCell Supplemental Report
- H11508 Blue Notes ASCII file

11.2 File Naming Conventions

S-57 Composer Product prefix: *H11508_CS.prd and H11508_SS.prd*

MCD Chart units base cell file: *US511508_CS.000*

MCD Chart units base cell file, survey scale soundings: *US511508_SS.000*

11.3 Software

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

12. Contacts

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

Katie Reser, Physical Scientist, PHB, Seattle, WA; 206-526-6864;
Katie.Reser@noaa.gov.

APPROVAL SHEET
H11508

Initial Approvals:

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

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or 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.

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.