

H11405

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. H11405

LOCALITY

State Alaska

General Locality Ernest Sound and Eastern Passage

Sublocality The Narrows to Northern Portion of Blake Canal

2005

CHIEF OF PARTY

..... CDR John E. Lowell, Jr., NOAA

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DATE

NOAA FORM 77-28 (11-72)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		REGISTER NO. H11405
HYDROGRAPHIC TITLE SHEET				
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 <u>Alaska</u>				
General Locality <u>Ernest Sound and Eastern Passage</u>				
Sublocality <u>The Narrows to Northern Portion Blake Canal</u>				
Scale <u>1:10,000</u>		Date of Survey <u>March 27, 2005-April 20, 2005</u>		
Instructions Date <u>1/4/2005</u>		Project No. <u>OPR-O119-FA-05</u>		
Vessel <u>Launch 1010, Launch 1018, MonArk Skiff 1706, Fast Rescue Boat 2301</u>				
Chief of Party <u>CDR John E. Lowell, Jr., NOAA</u>				
Surveyed by <u>ENS Higgins, CST Morgan, LT Wetzler and FAIRWEATHER personnel</u>				
Soundings taken by <u>echo sounder</u> <u>RESON 8101ER MBES</u>				
Graphic record <u>N/A</u>				
Graphic record checked by <u>N/A</u>				
Evaluation by <u>P. Holmberg</u>		Automated plot by <u>HP Designjet 1050C</u>		
Verification by <u>P. Holmberg, K. Reser</u>				
Soundings in <u>Fathoms and Feet</u>		at <u>MLLW</u>		
REMARKS: <u>Time in UTC. UTM Projection Zone 8</u>				
<u>Revisions and annotations appearing as endnotes were</u>				
<u>generated during office processing.</u>				
<u>As a result, page numbering may be interrupted or non-sequential</u>				
<u>All separates are filed with the hydrographic data.</u>				

The UTM zone on the original Title Sheet was found to be incorrect. This Title Sheet has been updated with the correct UTM zone.

Katie J. Reser

Katie Reser

2008.12.05

14:05:37 -08'00'

Descriptive Report to Accompany Hydrographic Survey H11405

Project OPR-O119-FA

Eastern Passage, Alaska

Scale 1:10,000

March - April 2005

NOAA Ship FAIRWEATHER

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

A. AREA SURVEYED

The survey area was located in Ernest Sound and Eastern Passage, within the sub-locality of the Narrows to Northern Portion of Blake Canal. This survey corresponds to Sheet C 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°19'05" N 132°08'13" W and the Northeast corner at 56°23'12" N 131°56'23" W.

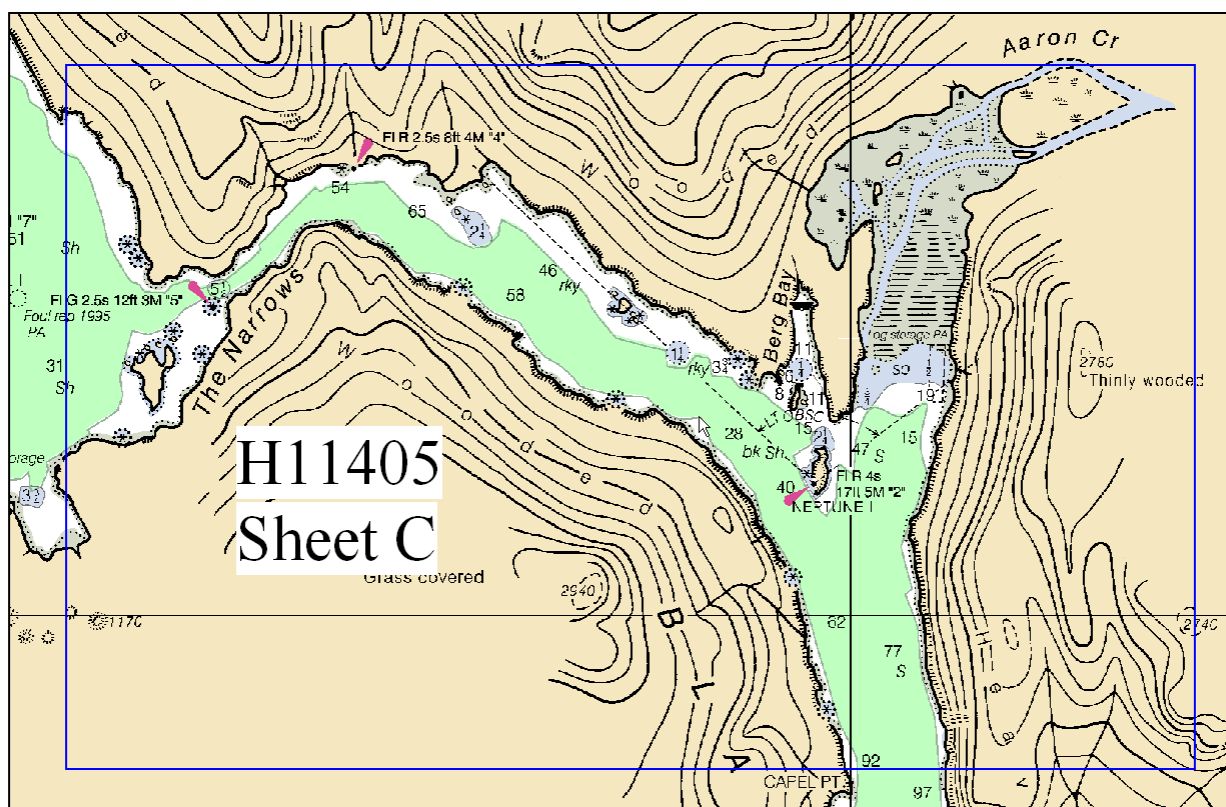


Figure 1: OPR-O119 H11405 Sheet C Sheet Limits

Data acquisition was conducted from March 27 to April 21, 2005 (DN 086 to DN 111).

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area to depths of eight meters wherever possible. Additional coverage was obtained in order to determine least depths over features or shoals.

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 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.

B1. Equipment and Vessels

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

	Launch 1010	Launch 1018	MonArk	Fast Rescue Boat
Hull Registration Number	1010	1018	1706	2301
Builder	The Boat Yard, Inc.	The Boat Yard, Inc.	MonArk	Zodiac of N. America
Length Overall	28' 10"	28' 10"	17'	23'
Beam	10' 8"	10' 8"	7'	8' 6"
Draft, Maximum	4' 0" DWL	4' 0" DWL	1' 3"	1' 5"
Cruising Speed	24 knots	24 knots	20 knots	20 knots
Max Survey Speed	10 knots	10 knots		
Primary Echosounder	RESON 8101	RESON 8101		
Sound Velocity Equipment	SBE 19plus	SBE19plus		
Attitude & Positioning Equipment	POS/MV V3	POS/MV V3		
Type of operations	MBES	MBES	Shoreline	Shoreline

Table 1: Vessel Inventory

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

B2. Quality Control

Internal consistency and integrity of data collected for survey H11405 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11405 were found to be very good.

Crosslines

Shallow water multibeam crosslines, for this survey totaled 12.9 linear nautical miles (lnm), comprised 9.6% of the 124.8 lnm of mainscheme MBES hydrography. The outer beams of the crosslines were cleaned in subset to reduce sound velocity issues.

The Hydrographer has determined, through manual examination of the data, that crossline agreement with main scheme data meet the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.³

Junctions

Survey H11405 junctions with H11404 and H11406, which is Sheet B and Sheet D of the same project. The area of overlap between the sheets was approximately 570 meters wide for the junction with Sheet B and approximately 760 meters wide for the junction with Sheet D. Area surveyed for junction analysis will be reduced on later projects. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the three surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁴ The sheet limits and area of overlap for Sheets C and D are shown in Figure 2.

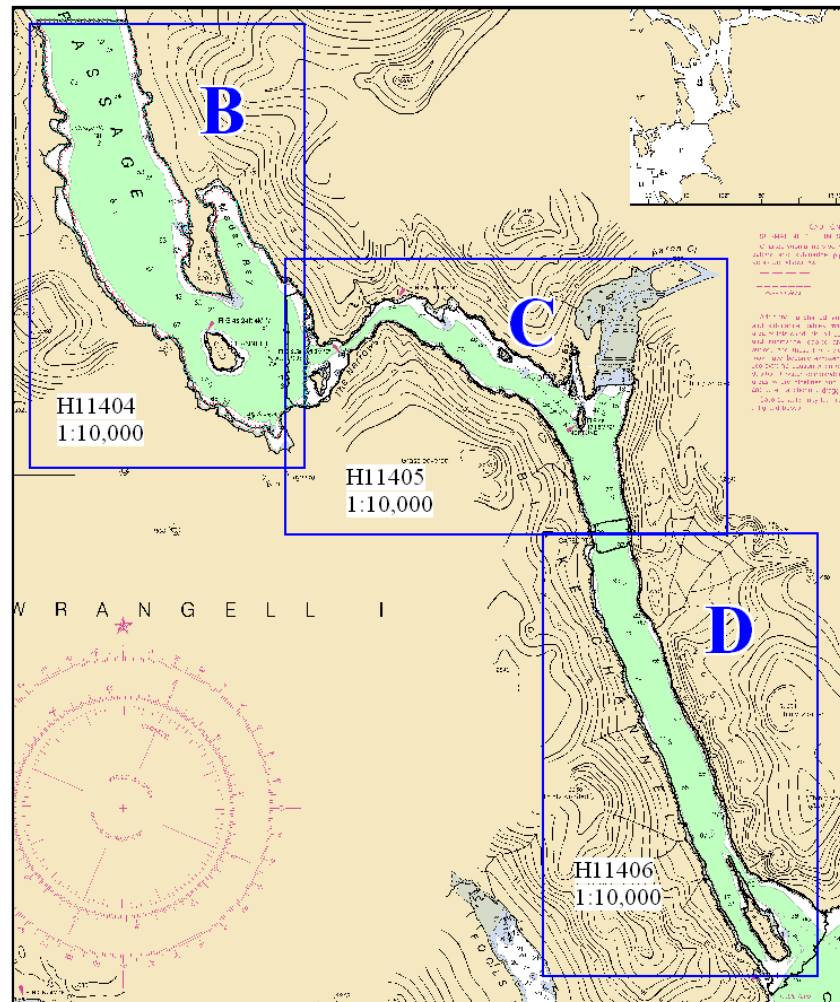


Figure 2: Junction Between OPR-O119 H11404, H11405 and H11406 April 2005

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-O119-FA-05 Data Acquisition and Processing Report*.

Data Quality Factors

COVERAGE ASSESMENT:

Coverage assessment was completed using the following base surface resolutions.

Depth Ranges and Resolutions		
Depth Ranges (m)		
Low	High	Resolution (m)
0	45	0.8
25	80	2
60	180	5
150	300	12

Shoreline data were also acquired for survey H11405. All objects were assigned S-57 attribution for submittal.

SOUND VELOCITY:

Only one sound velocity cast was taken during crossline data acquisition on DN 103. This led to characteristic smiles associated with sound velocity errors. As noted in the Crosslines section above, the crossline data from that day were reviewed in subset mode and the outer beams were manually cleaned. The remaining data agreed well with mainscheme MBES.

DESIGNATED SOUNDINGS:

In areas where the hydrographer felt the base surface did not depict the desired depth for the given area, a designated sounding was selected. Designated soundings were selected based on a combination of the navigational significance of the area, and the difference between the base surface and the shoalest reliable sounding(s).

The creation of BASE surfaces from the data resulted in many areas where designated soundings were considered. In these areas, the hydrographer made conservative judgments when selecting designated soundings. It is expected that fewer soundings will be selected as we become more familiar with handling the surfaces and obtain additional feedback from the program.

Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated March 2003.⁵

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11405 conform to those detailed in the *OPR-O119-FA-05 Data Acquisition and Processing Report*, with the exceptions as discussed below.

Prior to the collection of MBES data on this survey, the transducer swing arms on both launches were experiencing roll issues. This issue was resolved before data collection began, however, because of the issue, frequent patch tests were performed. Due to the concatenated sound velocity file structure, some SV files from the patch tests are included amongst the SV files applied to survey data. The SV files for the patch tests, though in the concatenated files, were not applied to survey data.

Additionally, on day number 102, Launch 1018 shifted working position frequently. Because of the frequent movement between two survey areas, the sound velocity casts could not be applied with a concatenated file. For day number 102, Launch 1018 sound velocity data was applied individually. See the 1018 day number 102 acquisition log for details.⁶

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11405 can be found in the *OPR-O119-FA Horizontal and Vertical Control Report*, submitted under separate cover.⁷ 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 corrections from the U.S. Coast Guard beacons at Annette Island (323 kHz), Level Island (295 kHz) and Gustavus (288 kHz) were utilized. DGPS beacons were only switched when the previous beacon signal was lost and data logging had been temporarily halted.

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 H11405.

FAIRWEATHER personnel installed two Sutron 8210 “bubbler” tide gauges at the tertiary station listed below. Gauge #12 (S/N 023513) was used as the primary gauge, while gauge #08 (S/N 002330) was installed as a back-up and for training purposes. The gauges were 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. No calibration or quality assurance documentation was provided with the gauges.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Madan Bay	945-1152	Tertiary 30 Day	March 15, 2005	April 21, 2005

CO-OPS does not provide calibration or quality assurance documentation to the FAIRWEATHER. FAIRWEATHER personnel are responsible for installation and removal of the water level gauges. CO-OPS is responsible for delivering final approved vertical correctors to the processing branch for application to the hydrographic data set.

Refer to the *OPR-O119-FA-05 Horizontal and Vertical Control Report* for further information about the tide station.

All data were reduced to MLLW using unverified observed tides from station Ketchikan, AK by applying tide file 9450460.tid and time and height correctors through the zone corrector file O119FA2005CORP.zdf.

CO-OPS will provide approved (smooth) tides to the Pacific Hydrographic Branch, where they will be applied to the survey data during final processing.⁸ A request for delivery of approved (smooth) tides for survey H11405 was forwarded to N/OPS1 on May 3, 2005 in accordance with the Field Procedures Manual (FPM) 5.3.3.3. A copy of the request is included in Appendix III.⁹

The *OPR-O119-FA-05 Horizontal and Vertical Control Report* was originally transmitted to N/OPS1, CO-OPS, on August 22, 2005. The report was not received by CO-OPS, and the report was retransmitted on October 31, 2005. A delay in delivery of final approved vertical correctors to the Pacific Hydrographic Branch may result from the non-receipt of the original report transmission.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

The bathymetric data were inserted in Pydro with the Insert HIPS Line Bathy function. The data were then shoal biased, and survey H11405 was compared with charts 17360 (33rd Ed.; May, 2003, 1:217,828) and 17385 (14th Ed.; February, 2003, 1:80,000). Chart 17360 has been corrected through Notice to Mariners (NM) May 17/03 and Local Notice to Mariners (LNM) Apr. 29/03. Chart 17385 was corrected through NM Feb. 8/03 and LNM Jan 28/03. The most recent Notice to Mariners from 43/04 was also consulted and there were no new changes within the survey area.¹⁰

Chart 17360

Depths from survey H11405 generally agreed within one to two fathoms of chart 17360 within the scale of the chart. There are, however, two notable exceptions. The charted 65 fathom sounding to the north east of The Narrows Light 5 and the charted 47 fathom sounding north east of Neptune Island are in disagreement with surveyed depths. The depths in those areas are 10 to 20 fathoms shoaler than the charted soundings.¹¹ Finally, the charted 10-fathom curve on Chart 17360 is generally offshore of the surveyed 10-fathom curve.¹²

Chart 17385¹³

Approximately half the depths from survey H11405 agreed within one to two fathoms with chart 17385 for the scale of the chart.¹⁴ However, the charted soundings in the vicinity of Neptune Island and the charted soundings to the east of The Narrows differ from the surveyed depths by as much as 20 fathoms, both shoaler and deeper.¹⁵

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. The BASE surfaces with the application of designated soundings are adequate to supersede prior surveys in their common areas. Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS items were located within the limits of H11405.¹⁶

Dangers to Navigation

Two bathymetric dangers to navigation were found and reported to the Mapping and Charting Division for final submission to the Seventeenth Coast Guard District on August 11, 2005. A copy of the preliminary Danger to Navigation Report is included with the Pydro Preliminary Smooth Sheet (PSS).¹⁷

In addition to the bathymetric dangers to navigation, two mischarted lights were identified. The mischarted lights were reported to Stephen Hill with the Update Service branch of the Marine Charting Division on August 11, 2005 for communication with the Coast Guard. A copy of the preliminary Danger to Navigation Report for the mischarted lights and the correspondence with Mr. Hill is included with the Pydro Preliminary Smooth Sheet (PSS).¹⁸

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 to CARIS Notebook 2.2 Beta as an editable layer named H11405_Edited_CFF_Shoreline.hob, with all objects having S57 attribution. In addition, features from the editions of charts 17360 and 17385 provided with the Letter Instructions that were not depicted by the source shoreline data were digitized with S57 attribution in CARIS Notebook, to be displayed for field verification.

Shoreline Verification

FAIRWEATHER personnel conducted 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*.¹⁹ 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 CartoAction of Add, Modify, Delete or None was assigned to each item in Pydro, and all features were S57 attributed.²⁰

All primary detached and generic positions were imported from the Pydro .xml to four separate stand alone .hob files in CARIS Notebook 2.2 Beta. These were named H11405_Add_Features.hob, H11405_Modify_Features.hob, H11405_Delete_Features.hob, and H11405_None_Features.

Source Shoreline Changes, New Features and Charted Features

Items for survey H11405 associated with a detached or generic position that needed further discussion were flagged Report in Pydro. Investigation or survey methods were listed under the Remarks tab and, when appropriate, recommendations to the cartographer were included in the Recommendations tab. A survey feature report for shoreline items was generated and included as H11405_Features.pdf in Appendix I.²¹

Three .hob layers, named H11405_Add.hob, H11405_Modify.hob and H11405_Delete.hob, were created in CARIS Notebook for features without associated DPs. New items were digitized to the Add layer, while existing features from the CFF and chart were transferred to the Modify or Delete layers, depending on the cartographic action deemed appropriate by the Hydrographer. Features to be retained as depicted by the source shoreline file were left in the H11405_Edited_CFF_Shoreline.hob file. Field notes made by the Hydrographer on the boat sheets and DP forms²² were transferred to the remarks field for each feature.

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.²³

Aids to Navigation

Survey H11405 included three aids to navigation (ATONs). The ATONs were positioned with generic positions and static GPS survey methods.²⁴

As mentioned in the Dangers to Navigation section above, it was determined that two of the three ATONs were mischarted. Light 2 (Light List number 22675) and Light 4 (Light List number 22678) were 150 m and 214 m from their charted positions, respectively. The Narrows Light 5 (Light List number 22680) was found to serve its intended purpose.

The following is a summary of the static GPS survey on the fixed ATONs. See the *Horizontal and Vertical Control Report for OPR-O119-FA* for further information.

Light List Name	Light List Number	NAD83 (CORS 96) (EPOCH:2003.0000)		Ellipsoid Ht. (m) (Pk to Pk Err. (m))	NAVD88 Ortho Ht. (m) (Pk to Pk Err. (m))
		N. Latitude (Pk to Pk Err. (m))	W. Longitude (Pk to Pk Err. (m))		
LIGHT 2	22675	56° 20' 41.58043" (0.061)	132° 00' 20.38115" (0.198)	6.839 (0.032)	8.276 (0.041)
LIGHT 4	22678	56° 22' 35.78052" (0.072)	132° 05' 23.76826" (0.119)	6.680 (0.200)	7.971 (0.202)
THE NARROWS LIGHT 5	22680	56° 21' 48.87985" (0.044)	132° 06' 43.30054" (0.008)	5.021 (0.016)	6.377 (0.030)

Bottom Samples

Bottom samples were collected on April 21, 2005 (DN 111) 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 H11405_Add_Features.hob file.²⁵

E. Supplemental Reports

The following is a list of supplemental reports containing additional information relevant to this survey, submitted separately:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Hydrographic Systems Certification Report 2005	April 18, 2005	N/CS34
OPR-O119-FA-05 Data Acquisition and Processing Report	August 22, 2005	N/CS34
OPR-O119-FA-05 Horizontal and Vertical Control Report	August 22, 2005	N/CS34, N/OPS1
OPR-O119-FA-05 Horizontal and Vertical Control Report	Resent 10/31/05	N/OPS1

Revisions Compiled During Office Processing and Certification

¹ Filed with project records.

² Filed with project records.

³ Concur.

⁴ Concur.

⁵ Concur.

⁶ Filed with hydrographic records.

⁷ Filed with project records.

⁸ Final tides were applied during office processing at PHB. See attached Tide Note dated January 3, 2006.

⁹ Filed with hydrographic records.

¹⁰ For compilation of this survey, the following updated charts were used: 17385, 1:80,000 (16th Ed.; September 2006, NM 10/04/2008) and 17360, 1:217,828 (35th Ed.; June 2008, NM 10/04/2008)

¹¹ Concur with clarification. The surveyed soundings in the vicinity of the 65 fathom sounding are 10 to 20 fathoms shoaler. The 47 fathom has been removed from Chart 17360 to accommodate a 1 fathom sounding that was reported as a DTON.

¹² Concur with clarification. In order to depict the 10 fathom curve at the scale of the chart, it has to be generalized offshore.

¹³ Because of the 100% multibeam coverage on this survey, it is recommended that the green tint area, wire drag area, should be removed from chart 17385 and superseded with depths from this survey within the common area.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ Concur.

¹⁷ Danger to Navigation Report attached.

¹⁸ Danger to Navigation Report attached.

¹⁹ Filed with hydrographic records.

²⁰ See attached Features Report.

²¹ See attached Features Report.

²² Filed with hydrographic records.

²³ Concur with clarification. Discrepancies were noted between depths recorded for features on DP forms and those entered in Pydro (some negative depths were entered as positive depths). The incorrect depths carried through to the Notebook HOB files upon export from Pydro. See attached Features Report Office Comments.

²⁴ It is recommended to use the latest ATONIS information for the position and description of the aid to navigation.

²⁵ Four bottom samples were collected with H11405. Two of the surveyed bottom samples, one "mud" and one "rky" were excluded from the HCell because they conflicted or were redundant with the rocky seabed areas delineated from the high resolution BASE surfaces. Only one bottom sample, "sand", was retained from the ENC. The rest of the ENC bottom samples either conflicted or were redundant with the delineated rocky seabed areas.

H11405 Features Report

Registry Number: H11405
State: Alaska
Locality: Ernest Sound and Eastern Passage
Sub-locality: The Narrows to Northern Portion of Blake Canal
Project Number: OPR-O119-FA
Survey Dates: April 9, 2005 - April 20, 2005

Items for survey H11405 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
10891	GP	[None]	056° 21' 48.705" N	132° 06' 46.820" W
ChartGP 1	GP	[None]	056° 21' 45.175" N	132° 02' 11.840" W
ChartGP 2	GP	[None]	056° 21' 55.183" N	132° 04' 02.696" W
ChartGP 6	GP	[None]	056° 21' 17.456" N	131° 59' 51.210" W
ChartGP 7	GP	[None]	056° 19' 27.447" N	132° 00' 14.577" W
10861	GP	[None]	056° 21' 23.330" N	132° 07' 06.445" W
10865	GP	[None]	056° 21' 48.400" N	132° 00' 26.549" W
10895	GP	[None]	056° 21' 08.713" N	132° 07' 09.412" W
10892	Sounding	2.01 m	056° 21' 47.413" N	132° 06' 36.465" W
10893	Sounding	1.32 m	056° 21' 30.398" N	132° 01' 20.278" W

10894	Sounding	3.51 m	056° 21' 51.116" N	132° 02' 32.048" W
10871	Sounding	-2.18 m	056° 22' 08.857" N	132° 07' 33.353" W
10874	Sounding	-0.21 m	056° 22' 23.235" N	132° 07' 34.411" W
10872	Sounding	1.39 m	056° 22' 13.458" N	132° 07' 36.346" W
10873	Sounding	0.69 m	056° 22' 14.956" N	132° 07' 37.851" W
ChartGP 5	GP	[None]	056° 20' 13.916" N	132° 00' 35.791" W
1392/28	Sounding	0.57 m	056° 21' 14.545" N	132° 07' 04.620" W
1534/10	Sounding	1.77 m	056° 21' 03.712" N	132° 00' 02.013" W
OPUS 1	GP	[None]	056° 20' 41.580" N	132° 00' 20.381" W
OPUS 2	GP	[None]	056° 22' 35.781" N	132° 05' 23.768" W

1 - Charted Features

1.1) 10891

Survey Summary

Survey Position: 056° 21' 48.705" N, 132° 06' 46.820" W
Least Depth: [None]
Timestamp: 2005-089.17:36:41.000 (03/30/2005)
GP Dataset: OBSTRN2.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

buffer around obstn, ext is 20 m in from buffer

The buffer around the obstruction was collected during negative tide shoreline verification. The extent of the obstruction is located 20m inward from the obstruction line.

Hydrographer Recommendations

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - buffer around obstn, ext is 20 m in from buffer The buffer around the obstruction was collected during negative tide shoreline verification. The extent of the obstruction is located 20m inward from the obstruction line.
RECDAT - 20050330
WATLEV - 4:covers and uncovers

Office Notes

Since the high point of the "Obstruction" area is shoaler than MLLW, the area is a reef (See DP 10892). Chart reef using the buffer line.

1.2) ChartGP 1

Survey Summary

Survey Position: 056° 21' 45.175" N, 132° 02' 11.840" W
Least Depth: [None]
Timestamp: 2005-159.14:07:14 (06/08/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHD (17385) rk disproval, CHD rk is hp of CFF ldg

The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Hydrographer Recommendations

Hydrographer recommends removal of charted rock.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CHD (17385) rk disproval, CHD rk is hp of CFF ldg The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Office Notes

Concur.

1.3) ChartGP 2

Survey Summary

Survey Position: 056° 21' 55.183" N, 132° 04' 02.696" W
Least Depth: [None]
Timestamp: 2005-159.15:24:16 (06/08/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 2
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHD (17385) rk disproval, CHD rk is ext of CFF ldg

Charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Hydrographer Recommendations

Hydrographer recommends removal of charted rock.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CHD (17385) rk disproval, CHD rk is ext of CFF ldg Charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Office Notes

Concur.

1.4) ChartGP 6

Survey Summary

Survey Position: 056° 21' 17.456" N, 131° 59' 51.210" W
Least Depth: [None]
Timestamp: 2005-228.08:47:18 (08/16/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 6
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF rk disproval

The CFF rock was not seen in low water shoreline verification or with multibeam coverage.

Hydrographer Recommendations

Hydrographer recommends not charting CFF rock.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CFF rk disproval The CFF rock was not seen in low water shoreline verification or with multibeam coverage.

Office Notes

Concur.

1.5) ChartGP 7

Survey Summary

Survey Position: 056° 19' 27.447" N, 132° 00' 14.577" W
Least Depth: [None]
Timestamp: 2005-231.19:36:51 (08/19/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 7
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHD (17385) rk disproval, CHD rk is ext of CFF ldg

The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Hydrographer Recommendations

Hydrographer recommends removal of charted rock.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CHD (17385) rk disproval, CHD rk is ext of CFF ldg The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Office Notes

Concur.

2 - New Features

2.1) 10861

Survey Summary

Survey Position: 056° 21' 23.330" N, 132° 07' 06.445" W
Least Depth: [None]
Timestamp: 2005-086.22:02:17.000 (03/27/2005)
GP Dataset: TR1086_PONTON.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

forest service cabin on pontoons

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Pontoon (PONTON)
Attributes: INFORM - forest service cabin on pontoons
NATCON - 6:wooden
RECDAT - 20050327
STATUS - 2:occasional

Office Notes

Chart as new SLCONS.

Feature Images



Figure 2.1.1

2.2) 10865

Survey Summary

Survey Position: 056° 21' 48.400" N, 132° 00' 26.549" W
Least Depth: [None]
Timestamp: 2005-086.23:45:36.000 (03/27/2005)
GP Dataset: TR1086_PONTON2.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

mooring dock for forest service cabin

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Pontoon (PONTON)
Attributes: INFORM - mooring dock for forest service cabin
NATCON - 6:wooden
RECDAT - 20050327
STATUS - 1:permanent

Office Notes

Chart as new SLCONS and remove Chd mooring buoy.

Feature Images



Figure 2.2.1

2.3) 10895

Survey Summary

Survey Position: 056° 21' 08.713" N, 132° 07' 09.412" W
Least Depth: [None]
Timestamp: 2005-089.20:00:09.000 (03/30/2005)
GP Dataset: SLCONS3.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF obstn is house in ruins--afloat at hw

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Shoreline Construction (SLCONS)
Attributes: CONDTN - 2:ruined
INFORM - CFF obstn is house in ruins--afloat at hw
NATCON - 6:wooden
RECDAT - 20050330
STATUS - 4:disused

Office Notes

Update Chd Crib with new SLCONS position and orientation.

Feature Images



Figure 2.3.1

2.4) 10892

Survey Summary

Survey Position: 056° 21' 47.413" N, 132° 06' 36.465" W
Least Depth: 2.01 m
Timestamp: 2005-089.17:43:07.000 (03/30/2005)
DP Dataset: h11405 / trb1_dpne / 2005-089 / obstn3.shp
Profile/Beam: 1/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

ext of obstn

The shoreward extent of the obstruction. The DP was collected at negative tide shoreline verification. A buffer line (GP 10891) was run around the obstruction. The GP 10862 (The Narrows Light 5, Fl G 2.5s, LL# 22680) marks the seaward most extent of the obstruction.

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

1fm (17385_1, 17360_1, 16016_1, 530_1)
 1fm 0ft (531_1)
 2.0m (50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - ext of obstn The shoreward extent of the obstruction. The DP was collected at negative tide shoreline verification. A buffer line (GP 10891) was run around the obstruction. The GP 10862 (The Narrows Light 5, Fl G 2.5s, LL# 22680) marks the seaward most extent of the obstruction.
 RECDAT - 20050330
 VALSOU - 2.007 m
 WATLEV - 4: covers and uncovers

Office Notes

Extent of reef (See DP 10891). Depth entered in Pydro incorrectly. According to DP Form, the rock is above the water with a height of -2.007. Chart new rock with corrected depth.

2.5) 10893

Survey Summary

Survey Position: 056° 21' 30.398" N, 132° 01' 20.278" W
Least Depth: 1.32 m
Timestamp: 2005-089.18:49:31.000 (03/30/2005)
DP Dataset: h11405 / trb1_dpne / 2005-089 / obstn3.shp
Profile/Beam: 2/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

swm ext of obstn

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 4ft (531_1)

1.3m (50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - swm ext of obstn
REC DAT - 20050330
VALSOU - 1.322 m
WATLEV - 4: covers and uncovers

Office Notes

Depth entered in Pydro incorrectly. According to DP Form, the rock is above the water with a height of -1.322.
Chart new rock with corrected depth.

Feature Images



Figure 2.5.1

2.6) 10894

Survey Summary

Survey Position: 056° 21' 51.116" N, 132° 02' 32.048" W
Least Depth: 3.51 m
Timestamp: 2005-089.19:14:54.000 (03/30/2005)
DP Dataset: h11405 / trb1_dpne / 2005-089 / obstn3.shp
Profile/Beam: 3/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF obstn verified, dp on hp

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

1 ¾fm (17385_1, 17360_1, 16016_1, 530_1)
1fm 5ft (531_1)
3.5m (50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - CFF obstn verified, dp on hp
RECDAT - 20050330
VALSOU - 3.506 m
WATLEV - 4: covers and uncovers

Office Notes

Depth entered in Pydro incorrectly. According to DP Form, the rock is above the water with a height of -3.506.
Chart new rock with corrected depth.

Feature Images



Figure 2.6.1

2.7) 10871

Survey Summary

Survey Position: 056° 22' 08.857" N, 132° 07' 33.353" W
Least Depth: -2.18 m
Timestamp: 2005-087.16:00:46.000 (03/28/2005)
DP Dataset: h11405 / trb1_dpne / 2005-087 / tr1_087_uwtroc.shp
Profile/Beam: 1/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF rk verified, CFF Rk is CHD rk, dp'd for ht, use CFF position

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-1 ¼fm (17385_1, 17360_1, 16016_1, 530_1)
-1fm 1ft (531_1)
-2.2m (50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CFF rk verified, CFF Rk is CHD rk, dp'd for ht, use CFF position

Office Notes

Update charted rock with new SORDAT, SORIND, VALSOU, TECSOU and WATLEV.

Feature Images



Figure 2.7.1

2.8) 10874

Survey Summary

Survey Position: 056° 22' 23.235" N, 132° 07' 34.411" W
Least Depth: -0.21 m
Timestamp: 2005-087.16:19:22.000 (03/28/2005)
DP Dataset: h11405 / trb1_dpne / 2005-087 / tr1_087_uwtroc.shp
Profile/Beam: 2/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF rk verified, dp for ht only, use CFF position

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 0ft (531_1)

-.2m (50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CFF rk verified, dp for ht only, use CFF position

Office Notes

Update charted rock with new SORDAT, SORIND, VALSOU, TECSOU and WATLEV.

2.9) 10872

Survey Summary

Survey Position: 056° 22' 13.458" N, 132° 07' 36.346" W
Least Depth: 1.39 m
Timestamp: 2005-087.16:08:20.000 (03/28/2005)
DP Dataset: h11405 / trb1_dpne / 2005-087 / tr1_087_obstrn3.shp
Profile/Beam: 1/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

ext new reef

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 4ft (531_1)

1.4m (50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - ext new reef
REC DAT - 20050328
VALSOU - 1.393 m

Office Notes

Chart new rock.

2.10) 10873**Survey Summary**

Survey Position: 056° 22' 14.956" N, 132° 07' 37.851" W
Least Depth: 0.69 m
Timestamp: 2005-087.16:13:10.000 (03/28/2005)
DP Dataset: h11405 / trb1_dpne / 2005-087 / tr1_087_obstrn3.shp
Profile/Beam: 2/1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

ext new reef

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 2ft (531_1)

.7m (50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: INFORM - ext new reef
REC DAT - 20050328
VALSOU - 0.690 m

Office Notes

Chart new rock.

2.11) ChartGP 5

Survey Summary

Survey Position: 056° 20' 13.916" N, 132° 00' 35.791" W
Least Depth: [None]
Timestamp: 2005-228.08:45:43 (08/16/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 5
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHD (17385) rk disproval

The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Hydrographer Recommendations

Hydrographer recommends removal of charted rock.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CHD (17385) rk disproval The charted (17385) rock was not seen in low water shoreline verification or with multibeam coverage.

Office Notes

Concur.

3 - Dangers to Navigation

3.1) 1392/28

DANGER TO NAVIGATION

Survey Summary

Survey Position: 056° 21' 14.545" N, 132° 07' 04.620" W
Least Depth: 0.57 m
Timestamp: 2005-101.21:55:39.880 (04/11/2005)
Survey Line: h11405 / 1018_8101 / 2005-101 / 101-2151
Profile/Beam: 1392/28
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Shoal sounding

Hydrographer Recommendations

Chart sounding.

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 2ft (531_1)

.5m (50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: INFORM - Shoal sounding
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Shoal sounding reported as a DTON. Chart 17385 has been updated with new sounding. However, after reviewing the BASE surface, it was determined that the sounding is a rock and will be compiled to the HCell as a rock.

Feature Images

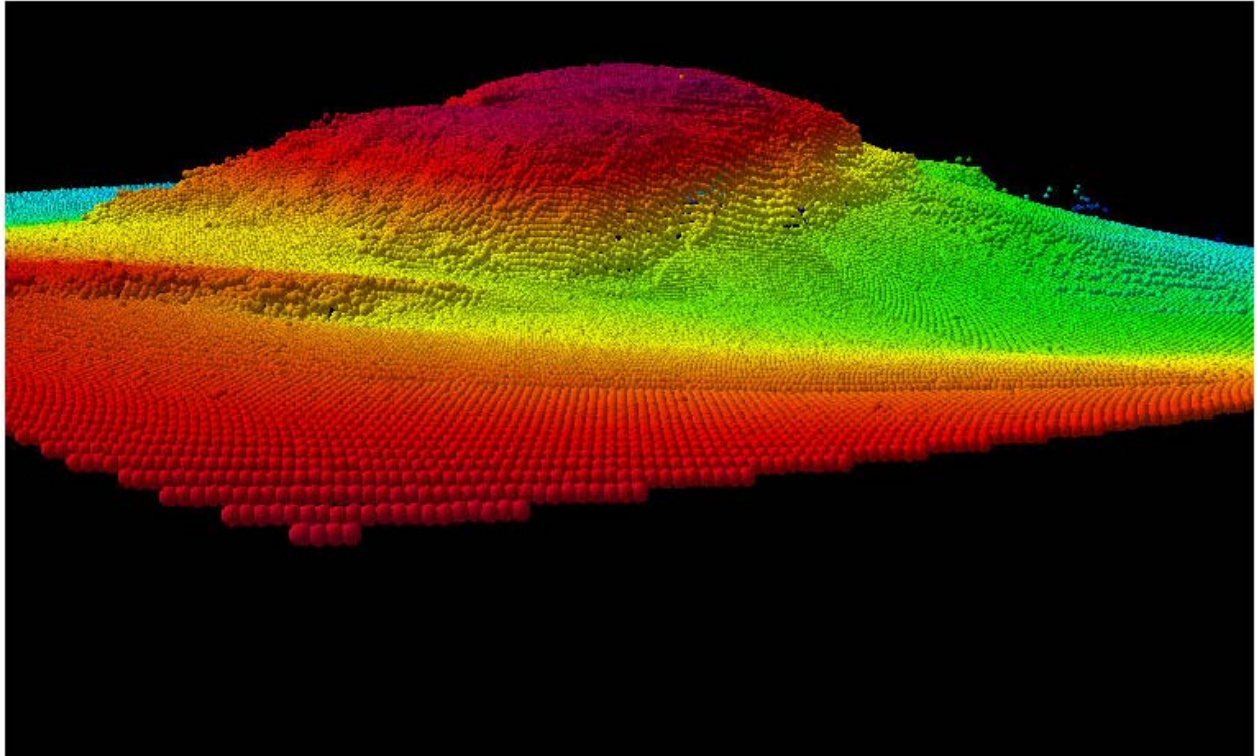


Figure 3.1.1

3.2) 1534/10

DANGER TO NAVIGATION

Survey Summary

Survey Position: 056° 21' 03.712" N, 132° 00' 02.013" W
Least Depth: 1.77 m
Timestamp: 2005-102.22:49:28.162 (04/12/2005)
Survey Line: h11405 / 1018_8101 / 2005-102 / 102-2246
Profile/Beam: 1534/10
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Shoal sounding

Hydrographer Recommendations

Chart sounding.

Cartographically-Rounded Depth (Affected Charts):

1fm (17385_1, 17360_1, 16016_1, 530_1)
-1fm 0ft (531_1)
1.7m (50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: INFORM - Shoal sounding
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Shoal sounding reported as a DTON. Chart 17385 has been updated with new sounding. However, after reviewing the BASE surface, it was determined that the sounding is a rock and will be compiled to the HCell as a rock.

Feature Images

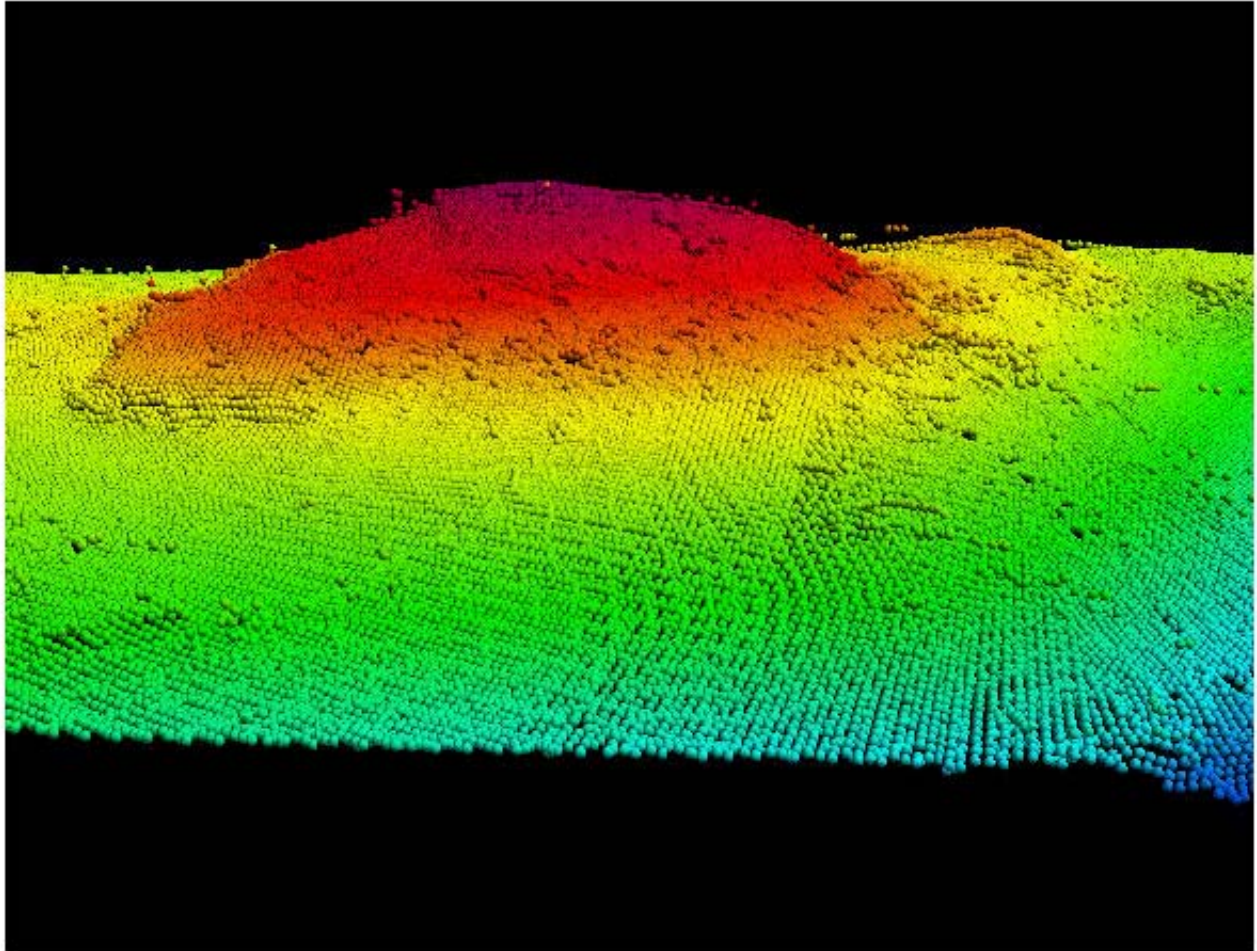


Figure 3.2.1

3.3) OPUS 1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 056° 20' 41.580" N, 132° 00' 20.381" W
Least Depth: [None]
Timestamp: 1990-001.11:60:00.000 (01/01/1990)
GP Dataset: OPUS_LIGHT_POSITIONS.xls
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Blake Channel Light 2, Fl R 4s, LL# 22675

The static GPS position, processed via OPUS, for light 2 is 150 m from charted position on chart 17385.

Hydrographer Recommendations

Rechart light 2 at the provided GPS position. MCD has already been provided with this information.

S-57 Data

Geo object 1: Beacon, lateral (BCNLAT)
Attributes: BCNSHP - 3:beacon tower
 CATLAM - 2:starboard-hand lateral mark
 COLOUR - 7:grey
 INFORM - Blake Channel Light 2, Fl R 4s, LL# 22675 The static GPS position, processed via OPUS, for light 2 is 150 m from charted position on chart 17385.

Geo object 2: Daymark (DAYMAR)
Attributes: COLOUR - 3:red
 INFORM - Blake Channel Light 2, Fl R 4s, LL# 22675 The static GPS position, processed via OPUS, for light 2 is 150 m from charted position on chart 17385.
 TOPSHP - 24:triangle, point up

Geo object 3: Light (LIGHTS)
Attributes: COLOUR - 3:red
 INFORM - Blake Channel Light 2, Fl R 4s, LL# 22675 The static GPS position, processed via OPUS, for light 2 is 150 m from charted position on chart 17385.

Office Notes

The light is now positioned correctly on the affected charts. No further action is required.

Feature Images



Figure 3.3.1

3.4) OPUS 2

DANGER TO NAVIGATION

Survey Summary

Survey Position: 056° 22' 35.781" N, 132° 05' 23.768" W
Least Depth: [None]
Timestamp: 1990-001.11:60:00.000 (01/01/1990)
GP Dataset: OPUS_LIGHT_POSITIONS.xls
GP No.: 2
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Blake Channel Light 4, Fl R 2.5s, LL# 22678

The static GPS position, processed via OPUS, for Light 4 is 214 m from charted position on chart 17385.

Hydrographer Recommendations

Rechart Light 4 at the provided GPS position. MCD has already been provided with this information.

S-57 Data

Geo object 1: Beacon, lateral (BCNLAT)
Attributes: CATLAM - 2:starboard-hand lateral mark
 COLOUR - 3:red
 COLPAT - 6:border stripes
 INFORM - Blake Channel Light 4, Fl R 2.5s, LL# 22678 The static GPS position, processed via OPUS, for Light 4 is 214 m from charted position on chart 17385.

Geo object 2: Daymark (DAYMAR)
Attributes: COLOUR - 3:red
 INFORM - Blake Channel Light 4, Fl R 2.5s, LL# 22678 The static GPS position, processed via OPUS, for Light 4 is 214 m from charted position on chart 17385.
 TOPSHP - 24:triangle, point up

Geo object 3: Light (LIGHTS)
Attributes: COLOUR - 3:red
 INFORM - Blake Channel Light 4, Fl R 2.5s, LL# 22678 The static GPS position, processed via OPUS, for Light 4 is 214 m from charted position on chart 17385.

Office Notes

The light is now positioned correctly on the affected charts. No further action is required.

Feature Images



Figure 3.4.1



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : January 3, 2006

HYDROGRAPHIC BRANCH: Pacific Hydrographic Branch
HYDROGRAPHIC PROJECT: OPR-0119-FA-2005
HYDROGRAPHIC SHEET: H11405

LOCALITY: The Narrows to Northern Portion of Blake Canal, Eastern Passage, AK

TIME PERIOD: March 27 - April 20, 2005

TIDE STATION USED: 945-1152 Madan Bay, AK
Lat. 56 23.53' N Long. 132 10.14' W


PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.670 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SA119, SA120 & SA121

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, PRODUCTS AND SERVICES DIVISION

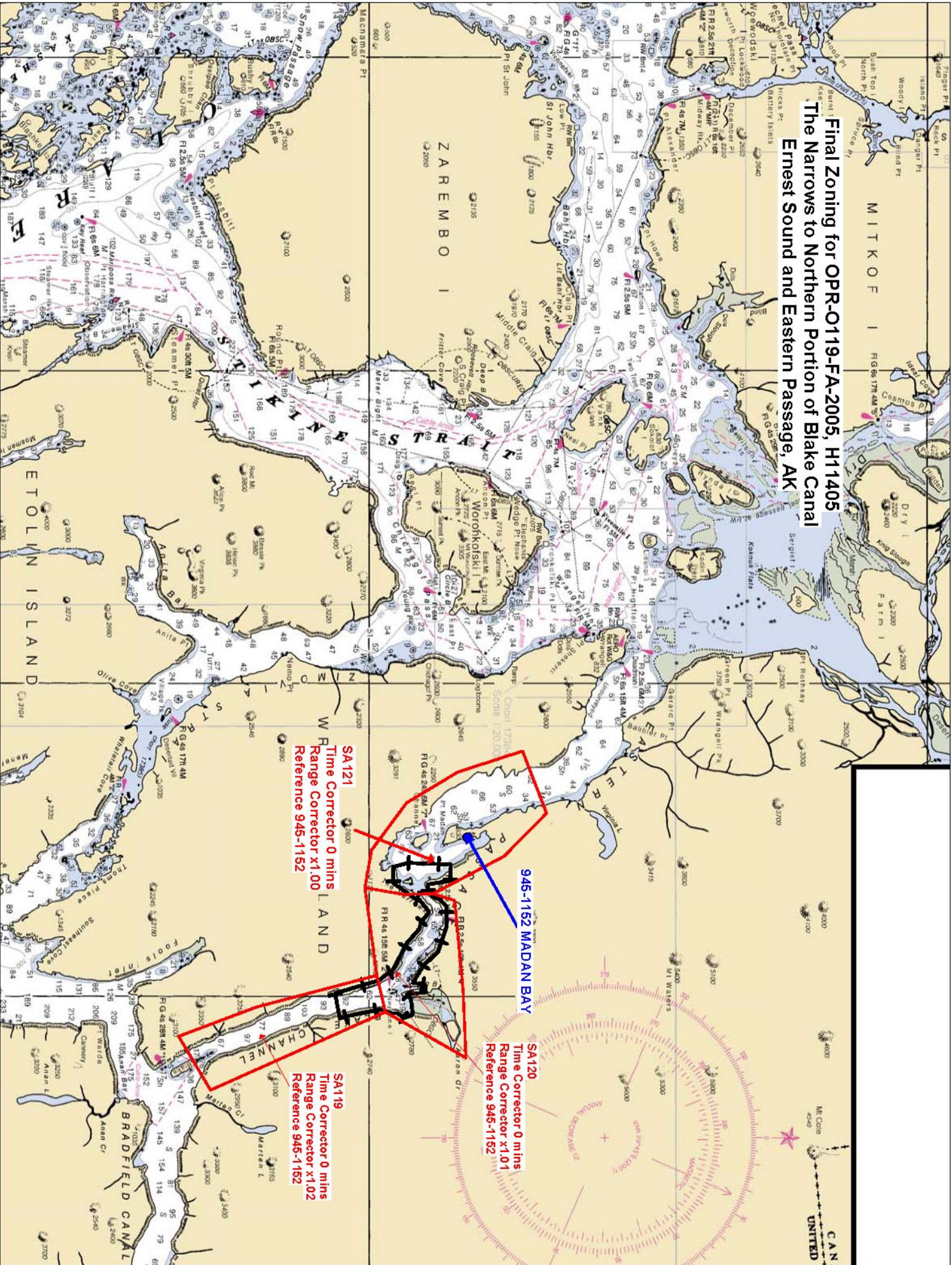


Final tide zone node point locations for OPR-O119-FA-2005, H11405

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 Order	Station	AVG Correction	Time	Range Correction
Zone SA119	945-1152	0	1.02	
-132.022038	56.337904			
-131.98843	56.265795			
-131.957139	56.218907			
-131.899959	56.238113			
-131.983094	56.34296			
-132.022038	56.337904			
Zone SA120	945-1152	0	1.01	
-132.022038	56.337904			
-132.115464	56.330751			
-132.108174	56.354054			
-132.109031	56.371645			
-132.101801	56.384501			
-132.004088	56.389608			
-131.934293	56.391256			
-131.983094	56.34296			
-132.022038	56.337904			
Zone SA121	945-1152	0	1.00	
-132.194758	56.439468			
-132.148836	56.41392			
-132.109031	56.371645			
-132.108174	56.354054			
-132.115464	56.330751			
-132.155559	56.334711			
-132.205679	56.355659			
-132.238584	56.386356			
-132.260944	56.425084			
-132.194758	56.439468			

Final Zoning for OPR-0119-FA-2005, H11405 **The Narrows to Northern Portion of Blake Canal** **Ernest Sound and Eastern Passage, AK**



945-1152 MADAN BAY

SA120
 Time Corrector 0 mins
 Range Corrector x1.01
 Reference 945-1152

SA121
 Time Corrector 0 mins
 Range Corrector x1.00
 Reference 945-1152

SA119
 Time Corrector 0 mins
 Range Corrector x1.02
 Reference 945-1152

H11405 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 H11405 utilized Office of Coast Survey H-Cell Specifications Version 3.0, May 2008 and Hcell User Guide Version 1.1, June 2008. HCell H11405 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 H11405.

2. Soundings

2.1 Source Data

One 12-meter resolution Combined BASE surface, **H11405 _Combined** was used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11405 _Combined** 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	220	5

Table 1

2.2 Sounding Feature Objects

In CARIS BASE Editor soundings were manually selected from the high density sounding layers from H11405 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 **H11405_Features.hob** file, which was used as a template to create the S-57 Composer product **H11405_CS.prd**.

3. Depth Areas

3.1 Source Data

Using the combined BASE surface **H11405_Combined** 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 220 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 120.3 fathoms.

4. Meta Areas

The following Meta object areas are included in HCell 11405:

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

H11405 contains four DTONs as follows:

1. A 0 fm 2 ft shoal sounding located at 56-21-14.545 N, 132-07-04.620 W. The DTON was reported by the field and has been applied to the affected charts. However, after reviewing the BASE surface, it was determined that the sounding is a rock and will be compiled to the HCell as a rock.
2. A 1 fm 0ft shoal sounding at 56-21-03.712 N, 132-00-02.013 W. The DTON was reported by the field and has been applied to the affected charts. However, after

- reviewing the BASE surface, it was determined that the sounding is a rock and will be compiled to the HCell as a rock.
3. Blake Channel Light #2 (22675) was found to be positioned incorrectly on Chart 17385. The correct position, determined by static GPS observations and processed via OPUS, is 56-20-41.580 N, 132-00-20.381W. The light is now position correctly on the affected charts.
 4. Blake Channel Light #4 (22678) was found to be positioned incorrectly on Chart 17385. The correct position, determined by static GPS observations and processed via OPUS, is 56-22-35.781 N, 132-05-23.768 W. The light is now position correctly on the affected charts.

H11405 contains no AWOIS items.

Four bottom samples were collected with H11405. Two of the surveyed bottom samples, one “mud” and one “rky” were excluded from the HCell because they conflicted or were redundant with the rocky seabed areas delineated from the high resolution BASE surfaces. Only one bottom sample, “sand”, was retained from the ENC. The rest of the ENC bottom samples either conflicted or were redundant with the delineated rocky seabed areas.

The source of all features included in the H11405 HCell can be determined by the SORIND or SORDAT field. For the rock /islet determination, the Tide Note value for MHW (-4.67 meters) was used. All features to be included in the HCell were addressed and deconflicted in BASE Editor and imported into the **H11405_Features.hob** file, which was used as a template to create the S-57 Composer product **H11405_CS.prd**.

Shoreline Features

Shoreline features for H11405 were delivered in nine different files. There is some redundancy of features between the files.

- H11405_Edited_CFF_Shoreline.hob (Features to be retained as depicted in the source shoreline file)
- H11405_Charted_Shoreline.hob (digitized charted shoreline features not seen in the CFF)
- H11405_Add.hob (new features digitized in Notebook using DPs or VBES)
- H11405_Modify.hob (features modified in Notebook using DPs or VBES)
- H11405_Delete.hob (original source or charted features that were modified or disproved)
- H11405_Add_Features.hob (new feature or bottom samples processed in Pydro)
- H11405_Modify_Features.hob (modified features or bottom samples processed in Pydro)
- H11405_Delete_Features.hob (disprovals processed in Pydro)
- **H11405_None_Features.hob (supposed to be noted charted or CFF source features processed in Pydro, but the submitted file was empty)

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
SBDARE	Bottom samples, reefs, ledges and rocky seabed areas
SLCONS	Shoreline construction features
LNDARE	Land features coincident with SLCONS features
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 **H11405_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

H11405 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

- H11405 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11405 Base Cell File, Chart Units, Soundings compiled to 1:20,000
- H11405 Descriptive Report including end notes compiled during office processing and certification
- H11405 HCell Supplemental Report
- Blue Notes ASCII file

11.2 File Naming Conventions

S-57 Composer Product prefix: *H11405_CS.prd and H11405_SS.prd*

MCD Chart units base cell file: *US511405_CS.000*

MCD Chart units base cell file, survey scale soundings: *US511405_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
H11405

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.

 Katie Reser
2008.10.29
14:28:15 -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 Charles R.
Davies
DN: cn=Charles R. Davies, c=US,
o=Pacific Hydrographic Branch,
ou=NOAA,NOS,OCS,
email=Russ.Davies@NOAA.GOV
Date: 2008.10.29 14:40:57 -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
For Dave Neander
2008.10.29 14:56:25 -07'00'



J. Corey Allen
AWOIS and SURF Check
Complete
2008.11.25 07:56:03 -05'00'