

H11496

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. OPR-P158-FA-05
Registry No. H11496

LOCALITY

State ALASKA
General Locality Orca Bay
Sublocality Nelson Bay

2005

CHIEF OF PARTY

..... CAPT John E. Lowell, Jr., NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11496

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 Orca Bay

Sublocality Nelson Bay

Scale 1:10,000

Dates of Survey 08/18/05 – 09/25/05

Instructions Date 7/27/2005

Project No. OPR-P158-FA

Vessel Launch 1010, Skiff 2302

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

Surveyed by Keene, Herzog, Morgan, Higgins

Soundings taken by echo sounders: Reson 8101

Graphic record scaled by N/A

Graphic record checked by N/A

Evaluation by L. Pagaono

Automated plot by HP Design Jet 500

Verification by K. Brown

Soundings in Feet

at

MLLW

REMARKS: Time in UTC. UTM Projection Zone 6

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 H11496

Project OPR-P158-FA
 Approaches to Cordova, Alaska
 Scale 1:10,000
 August – September 2005
NOAA Ship FAIRWEATHER
 Chief of Party: Captain John E. Lowell, Jr., NOAA

A. AREA SURVEYED

The survey area was located in Orca Bay, within the sub-locality of Nelson Bay. This survey corresponds to Sheet A 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 60°36'00"N, 145°50'00"W and the Northeast corner at 60°40'00"N, 145°36'00"W. ¹

Data acquisition was conducted from August 18 to September 25, 2005 (DN 230 to DN 268).

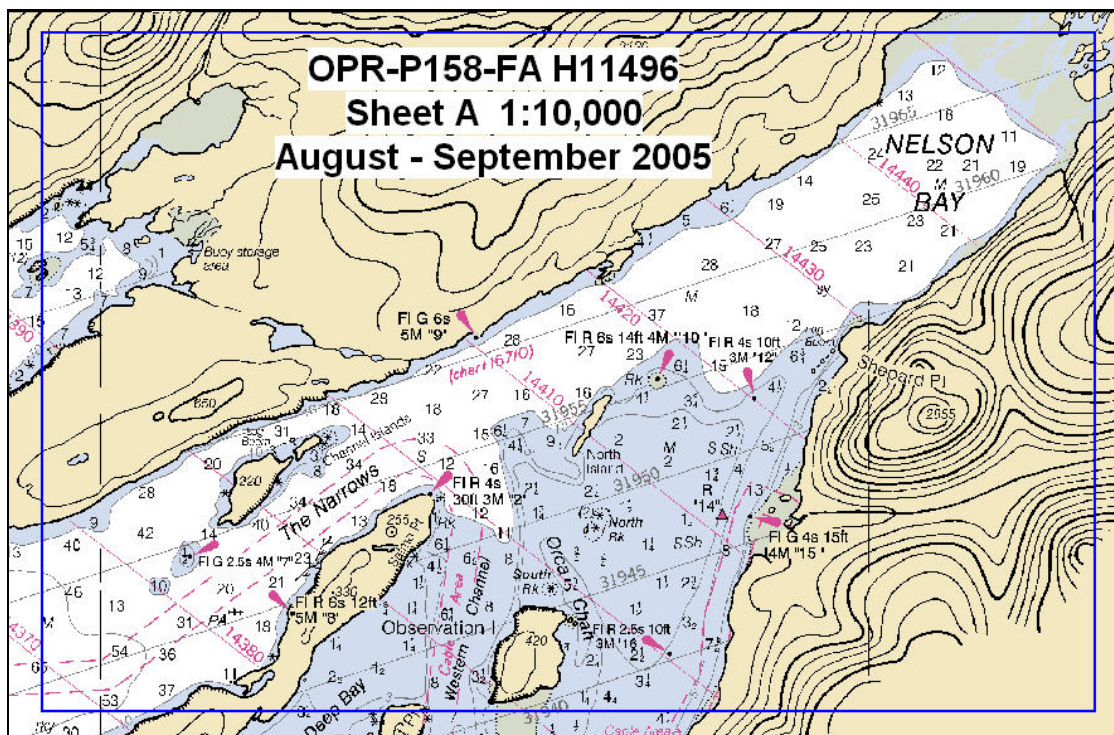


Figure 1: H11496 Sheet Limit

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area at least to depths of eight meters. When conditions allowed, multibeam echosounder (MBES) data was acquired parallel to contours and at line spacing of no less than 25 meters 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 H11496. These data were attributed as S-57 objects for submittal.

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems and survey vessels can be found in the *NOAA Ship FAIRWEATHER Hydrographic Systems Certification Report 2005*,² submitted under a separate cover. Quality control procedures and data processing methods are listed and described in the *OPR-P158-FA-05 Data Acquisition and Processing Report (DAPR)*³, submitted under separate cover. 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	Ambar 700
Hull Registration Number	1010	2302
Builder	The Boat Yard, Inc.	Marine Silverships, Inc
Length Overall	28' 10"	23'
Beam	10' 8"	9' 4"
Draft, Maximum	4' 0" DWL	1' 4"
Cruising Speed	24 knots	22 knots
Max Survey Speed	10 knots	
Primary Echosounder	RESON 8101	
Sound Velocity Equipment	SBE 19plus	
Attitude & Positioning Equipment	POS/MV V3	
Type of operations	MBES	Shoreline, Bottom Samples

Table 1: Vessel Inventory

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

B2. Quality Control

Multibeam data for survey H11496 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity were found to be good. Limited problem areas are discussed in the data quality factors section below.

Crosslines

Shallow water multibeam crosslines for this survey totaled 11.84 linear nautical miles (lnm), comprising 11% of the 107.72 lnm of total SWMB hydrography.⁴

At the head of Nelson Bay, there was some sound velocity error in the crossline data. All crossline data were filtered to reject any beams past 45° from nadir, in order to eliminate outer beam errors. Comparisons were made between nadir beams of the crosslines to full swaths of multibeam data.

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*.⁵

Junctions

Survey H11496 junctions with H11497 and with H11498, which are Sheets B and C of the same project. The area of overlap between the sheets was approximately 250 meters wide. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁶

The sheet limits and areas of overlap for Sheets A, B and C are shown in Figure 2.

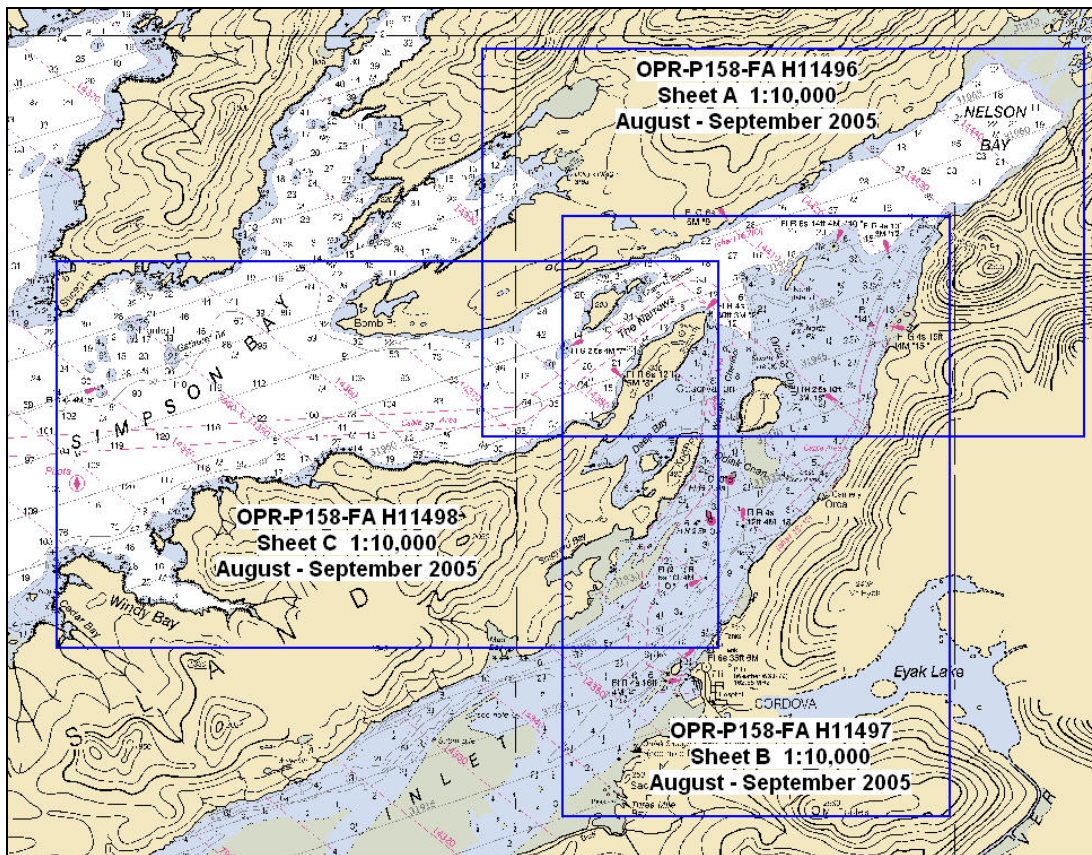


Figure 2: Junctions for Survey H11496

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-P158-FA-05 Data Acquisition and Processing Report*.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage assessment was determined using the following base surface resolutions listed below in Table 2.

Depth Ranges (m)		Resolution (m)
Low	High	
0	35	0.8
25	70	2
60	170	5

Table 2: Depth Ranges and Resolutions

TRUEHEAVE:

TrueHeave data could not be applied to one line of MBES data from September 8, 2005 (DN 251). The TrueHeave file ends part way through line 252-0006, and thus could not be applied to the line. MBES data quality from that line does not appear to have been affected by the lack of TrueHeave, due to the negligible swell in the protected waters of Nelson Bay, and still meet accuracy requirements.⁷

SOUND VELOCITY:

Sound velocity error is evident in the MBES data near North Island. In an area approximately 400m wide by 1500m long, centered at 60°37'26.4"N, 145°44'27.4"W (568897.63E, 6721567.65N), data do not meet IHO Order 1 accuracy requirements based on depth. The original data acquired in this area were rejected by the Hydrographer, because of the sound velocity problems. More data were acquired in the area, but the problems persisted, due to the variant water column in the area.

There is also a very small area to the Northeast of the Channel Islands that does not meet IHO Order 1 accuracy requirements based on depth. The sound velocity error seems to be localized to the area around 60°37'23.9"N, 145°46'20.7"W (567177.00E, 6721457.74N).

Data in these areas were filtered to reject data beyond 60° from nadir in an attempt to reduce the effects of the sound velocity error.

Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated March 2003, except as discussed in the Data Quality Factors section above.⁸

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11496 conform to those detailed in the of the *OPR-P158-FA-05 Data Acquisition and Processing Report*, or as noted below.

INCORRECT TIME STAMP:

A time stamp problem exists in the ISIS sonar suite software used for data acquisition, causing navigation data for lines logged through or after midnight UTC to become corrupted. The raw XTF files can be fixed as described in the DAPR, creating new files with the suffix “_dt.xtf.” Both the uncorrected and corrected XTF files have been submitted with the digital data, but only the corrected HDCS files are included. Four lines of MBES data for survey H11496 with corrected time stamps exist for DN230.

SOUND VELOCITY:

There were several lines from August 18, 2005 (DN 230), acquired by Launch 1010, that exhibited sound velocity error. Instead of using the concatenated .svp file for those lines, an individual cast was applied to these lines, which reduced the amount of sound velocity error in the data. The affected lines are noted in the acquisition log, which is included in Separates folder.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11496 can be found in the *OPR-P158-FA-05 Horizontal and Vertical Control Report*,⁹ submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning, with differential corrections received from the U.S. Coast Guard beacons at Potato Point (298 kHz) and Hinchinbrook (292 kHz).

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 Cordova, AK (945-4050) served as control for datum determination and as the primary source for water level reducers for survey H11496.

A request for delivery of approved water level data (smooth tides) for survey H11496 was forwarded to N/OPS1 on September 30, 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.

Verified water level data (smooth tides) were received by the FAIRWEATHER on November 10, 2005 for NWLON primary tide station at Cordova, AK (945-4050). As per the letter instructions, all data were reduced to MLLW using the smooth tides, by applying tide file 9454050.tid and time and height correctors through the zone corrector file P158FA2005CORP.zdf. FAIRWEATHER received the Tide Note for Hydrographic Survey H11496 on November 3, 2005, which states that preliminary zoning is accepted as the final zoning for the project. A copy of the Tide Note is included in Appendix IV. It will not be necessary for the Pacific Hydrographic Branch to reapply the verified water level data (smooth tides) to the survey data during final processing.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

The five meter resolution BASE surface was brought into Pydro by means of the Insert BASE/Weighted Grids function. The BASE surface soundings were then excessed to survey scale and shoal biased. All affected charts were opened in Pydro and the Hydrographer manually compared the charted soundings to the shoal biased, excessed soundings in the Pydro Chart window.

Survey H11496 was compared with charts 16700 (29th Ed.; July, 2004, 1:200,000), 16709 (23rd Ed.; April, 2005, 1:80,000) and 16710 (16th Ed.; December, 1997, 1:30,000).

Chart 16700

Chart 16700 (29th Ed.; July, 2004, 1:200,000) has been updated with the Notice to Mariners through Jul 17/04 and Local Notice to Mariners Jun 17/04. The Notice to Mariners through October 40/05 were consulted. There were no new changes within the survey area. Depths from survey H11496 generally agreed with depths on chart 16700 within three fathoms.¹⁰

Chart 16709

Chart 16709 (23rd Ed.; April, 2005, 1:80,000) has been updated with the Notice to Mariners through April 2/05 and Local Notice to Mariners Mar 15/05. The Notice to Mariners through October 40/05 were consulted. There were no new changes within the survey area. Depths from survey H11496 generally agreed with depths on chart 16709 within two fathoms, with exceptions as noted below.

Within The Narrows, there is a charted depth of 20 fathoms in the channel, but a least depth of 13 fathoms was found 300 meters Northeast, at 60°36'26.113"N, 145°48'01.789"W (565673.09E, 6719641.76N).

At the head of Nelson Bay, surveyed depth were shoaler than charted soundings by approximately eight fathoms in the area near the low water line.¹¹

Chart 16710

Chart 16710 (16th Ed.; December, 1997, 1:30,000) has not been updated with the Notice to Mariners or Local Notice to Mariners. The Notice to Mariners through October 40/05 were consulted. There were no new changes within the survey area. Depths from survey H11496 generally agreed with depths on chart 16710 within ten feet.¹²

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 and associated HDCS data are adequate to supersede prior surveys in common areas.¹³ 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 was one AWOIS item located within the limits of survey H11496. It is addressed in the H11496_Features_Report.pdf located in Appendix I.¹⁴

Dangers to Navigation

There were no dangers to navigation found within the survey limits.¹⁵

Charted Feature Removal Request

There is a charted log boom near the Channel Islands on charts 16709 and 16710. This log boom was assigned as AWOIS item #53298 and is discussed in the H11496_Features_Report.pdf, located in Appendix I. Remnants of securing cables were seen on the shore, but the log boom was not seen in the field. It is recommended that this feature be removed from the affected charts.¹⁶

D.2 Additional Results

Shoreline Source

Source shoreline for this sheet was taken from photogrammetric survey AK0402 (NAD 83) GC-10570, at the scale of 1:30,000. The CFF shoreline was imported into CARIS Notebook 2.2 as an editable layer named H11496_Edited_CFF_Shoreline.hob, with all objects having S57 attribution. In addition, features from the current editions of charts 16700 and 16710 that were not depicted by the source shoreline data were digitized with S57 attribution in CARIS Notebook into the files H11496_Chd16700_Shoreline.hob and H11496_Chd16710_Shoreline.hob, to be displayed for field verification.

CEF Investigations were inserted into Pydro as Chart GPs for management and exported to CARIS Notebook 2.2 for field verification. The CEF features were used as reference only and were removed from Pydro after field verification.

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*. 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.

All accepted primary detached and generic positions were imported from the Pydro .xml to four separate stand alone .hob files in CARIS Notebook 2.2. These were named H11496_Add_Pydro, H11496_Modify_Pydro, H11496_Delete_Pydro, and H11496_None_Pydro.

Source Shoreline Changes, New Features and Charted Features

Items for survey H11496 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 H11496_Features_Report.pdf in Appendix I.

Three additional .hob layers, named H11496_Add_Notebook, H11496_Modify_Notebook and H11496_Delete_Notebook, 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 files were left in the appropriate source layer as H11496_Edited_CFF_Shoreline, H11496_Chd16700_Shoreline, or H11496_Chd16710_Shoreline. Field notes made by the Hydrographer on the boat sheets and DP forms 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.¹⁷

Aids to Navigation

Survey H11496 included three (3) aids to navigation (ATONs). Each of the ATONs was found to serve its intended purpose. The ATONs were positioned using static GPS survey methods. See the *Horizontal and Vertical Control Report for OPR-P158-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))		
Channel Island Rock	25555	60° 36' 30.84733" (0.016)	145° 48' 51.18664" (0.036)	22.797 (0.132)	8.340 (0.135)
Orca Bay Light 9	25565	60° 37' 56.77371" (0.172)	145° 45' 5.29440" (0.188)	28.546 (2.566)	13.761 (2.566)
N/A		60° 36' 56.62807" (0.020)	145° 45' 41.45875" (0.034)	26.230 (0.226)	11.620 (0.227)

Bottom Samples

Bottom samples were collected on August 28, 2005 (DN 240) 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 H11496_Add_Pydro.hob file.

Miscellaneous

During shoreline investigations, eel grass was noted in the vicinity of the Channel Islands. The approximate position was marked in the H11496_Add_Notebook.hob layer in CARIS Notebook.

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-P158-FA-05 Data Acquisition and Processing Report	November 15, 2005	N/CS34
OPR-P158-FA-05 Horizontal & Vertical Control Report	November 15, 2005	N/CS34, N/OPS1

Revisions Compiled During Office Processing and Certification

¹ Concur

² Filed with project records.

³ Filed with project records.

⁴ Concur

⁵ Concur

⁶ Concur

⁷ Concur with clarification. The data meet accuracy requirements.

⁸ Concur

⁹ Filed with project records.

¹⁰ Concur

¹¹ Concur with clarification. The deeper charted depths are inshore of the shallow surveyed depths. No coverage was obtained over the 11 and 12 fathom charted depths at the head of the bay.

¹² Concur with clarification. In several areas shoal depths were found that differed by more than 10 ft. The charted 97 ft. sounding at 60-37-36N, 145-44-31W does not agree with the 198 ft. surveyed depths.

¹³ Concur

¹⁴ Concur

¹⁵ Concur

¹⁶ Concur

¹⁷ Concur



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

November 8, 2005

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

FROM: CAPT John E. Lowell, Jr, NOAA *JEL*
Commanding Officer

TITLE: Approval of Hydrographic Survey H11496,
OPR-P158-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 H11496 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:

Jennifer Keene

ST Jennifer A. Keene
Survey Manager

Abigail S. Higgins

LTJg Abigail S. Higgins
Field Operations Officer

Lynnette V. Morgan

CST Lynnette V. Morgan
Chief Survey Technician

Attachment



H11496 Features Report

Registry Number: H11496
State: Alaska
Locality: Orca Bay
Sub-locality: Nelson Bay
Project Number: OPR-P158-FA
Survey Dates: August 18, 2005 - September 25, 2005

Items for survey H11496 associated with a detached or generic position that needed further discussion were flagged Report in Pydro. Investigation methods and recommendations were provided in the Remarks and Recommendations tabs.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16710	17th	06/01/2007	1:30,000 (16710_1)	USCG LNM: 09/16/2008 (04/14/2009) CHS NTM: None (03/27/2009) NGA NTM: None (04/25/2009)
16709	24th	08/01/2008	1:80,000 (16709_1)	USCG LNM: 09/16/2008 (04/14/2009) CHS NTM: None (03/27/2009) NGA NTM: 02/10/2007 (04/25/2009)
16700	29th	07/01/2004	1:200,000 (16700_1)	[L]NTM: ?
16013	29th	11/01/2003	1:969,761 (16013_1)	[L]NTM: ?
531	22nd	03/01/2004	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

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

Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
22363	Rock	-1.47 m	60° 36' 50.6" N	145° 48' 21.4" W
22365	Rock	-1.38 m	60° 37' 19.1" N	145° 47' 12.8" W
22366	Rock	-1.84 m	60° 36' 26.3" N	145° 47' 12.9" W
12501	Shoal	-6.81 m	60° 37' 16.4" N	145° 47' 07.4" W
12503	Shoal	-4.57 m	60° 37' 16.0" N	145° 47' 10.6" W
12505	Shoal	-2.91 m	60° 37' 11.0" N	145° 47' 30.4" W

12506	Shoal	-2.98 m	60° 36' 47.5" N	145° 48' 21.7" W
12502	Obstruction	-2.44 m	60° 37' 16.9" N	145° 47' 02.3" W
#53298 - OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]

1 - New Features

1.1) 22363

Survey Summary

Survey Position: 60° 36' 50.6" N, 145° 48' 21.4" W
Least Depth: -1.47 m (= -4.83 ft = -0.804 fm = 0 fm 1.17 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-235.09:21:39.000 (08/23/2005)
DP Dataset: h11496 / trb2_dpne / 2005-235 / 2236_uwtroc_p.shp
Profile/Beam: 3/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

NEW RK

Hydrographer Recommendations

Chart new rock.

Cartographically-Rounded Depth (Affected Charts):

-5ft (16710_1)

0 ¾fm (16709_1, 16700_1, 16013_1)

0fm 5ft (531_1)

-1.5m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - NEW RK
RECDAT - 20050823
VALSOU - -1.471 m
WATLEV - 3:always under water/submerged

Office Notes

Concur

1.2) 22365**Survey Summary**

Survey Position: 60° 37' 19.1" N, 145° 47' 12.8" W
Least Depth: -1.38 m (= -4.52 ft = -0.753 fm = 0 fm 1.48 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-235.09:47:28.000 (08/23/2005)
DP Dataset: h11496 / trb2_dpne / 2005-235 / 2236_uwtroc_p.shp
Profile/Beam: 5/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

NEW RK

The new rock at this position falls inside the current charted (16710) high water. The CFF MHW is correct for the area and should be used for charting.

Hydrographer Recommendations

The Hydrographer recommends charting a new rock at this position, using the CFF MHW to modify the charted (16710) shoreline of the islet.

Cartographically-Rounded Depth (Affected Charts):

-5ft (16710_1)

0 ¾fm (16709_1, 16700_1, 16013_1)

0fm 4ft (531_1)

-1.4m (500_1, 50_1)

S-57 Data

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

Attributes: INFORM - NEW RK The new rock at this position falls inside the current charted (16710) high water. The CFF MHW is correct for the area and should be used for charting.

RECDAT - 20050823

VALSOU - -1.378 m

WATLEV - 3:always under water/submerged

Office Notes

Concur.

1.3) 22366**Survey Summary**

Survey Position: 60° 36' 26.3" N, 145° 47' 12.9" W
Least Depth: -1.84 m (= -6.03 ft = -1.005 fm = -1 fm 0.03 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-235.10:35:54.000 (08/23/2005)
DP Dataset: h11496 / trb2_dpne / 2005-235 / 2236_uwtroc_p.shp
Profile/Beam: 6/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

CHD (16710) KELP IS NEW RK

The charted (16710) kelp at this position was found to be growing on a submerged rock.

Hydrographer Recommendations

Chart new rock.

Cartographically-Rounded Depth (Affected Charts):

-6ft (16710_1)

-1fm (16709_1, 16700_1, 16013_1)

-1fm 0ft (531_1)

-1.8m (500_1, 50_1)

S-57 Data

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

Attributes: INFORM - CHD (16710) KELP IS NEW RK The charted (16710) kelp at this position was found to be growing on a submerged rock.

RECDAT - 20050823

TECSOU - 5:found by lead-line

VALSOU - -1.838 m

WATLEV - 3:always under water/submerged

Office Notes

Concur.

1.4) 12501**Survey Summary**

Survey Position: 60° 37' 16.4" N, 145° 47' 07.4" W
Least Depth: -6.81 m (= -22.33 ft = -3.722 fm = -3 fm 4.33 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-250.21:39:26.000 (09/07/2005)
DP Dataset: h11496 / trb1_dpne / 2005-250 / 1250_\$csymb_p.shp
Profile/Beam: 1/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

CFF RK IS NEW POS CHD (16710) ISLET. USE CFF POS. DP FOR HT.

The charted (16710) islet at this position was incorrectly represented in the CFF by a rock symbol. The islet is always dry and connected to the main island by a ledge.

Hydrographer Recommendations

The Hydrographer recommends using the position of the CFF rock to adjust the charted (16710) islet and adding a ledge connecting the islet to the main island.

Cartographically-Rounded Depth (Affected Charts):

-23ft (16710_1)
-3 ¾fm (16709_1, 16700_1, 16013_1)
-3fm 4ft (531_1)
-6.8m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CFF RK IS NEW POS CHD (16710) ISLET. USE CFF POS. DP FOR HT. The charted (16710) islet at this position was incorrectly represented in the CFF by a rock symbol. The islet is always dry and connected to the main island by a ledge.
PICREP - 12501_1.jpg
RECDAT - 20050907

Office Notes

Concur.

Feature Images



Figure 1.4.1



Figure 1.4.2

1.5) 12503**Survey Summary**

Survey Position: 60° 37' 16.0" N, 145° 47' 10.6" W
Least Depth: -4.57 m (= -14.99 ft = -2.498 fm = -2 fm 2.99 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-250.21:59:13.000 (09/07/2005)
DP Dataset: h11496 / trb1_dpne / 2005-250 / 1250_\$csymb_p.shp
Profile/Beam: 2/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

CFF LNDARE IS CHD (16710) MHW

The charted (16710) high water is correct at this position, verified with DP's 12503 and 12504. The CFF LNDARE is the extent of the high water.

Hydrographer Recommendations

The Hydrographer recommends adjusting the CFF MHW at this position, using DP's 12503 and 12504. Do not add the CFF LNDARE to the chart, as it is the extent of the high water.

Cartographically-Rounded Depth (Affected Charts):

-15ft (16710_1)
-2 ½fm (16709_1, 16700_1, 16013_1)
-2fm 3ft (531_1)
-4.6m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: INFORM - CFF LNDARE IS CHD (16710) MHW The charted (16710) high water is correct at this position, verified with DP's 12503 and 12504. The CFF LNDARE is the extent of the high water.

PICREP - 12503.jpg

RECDAT - 20050907

Office Notes

Concur. Retain as charted.

Feature Images



Figure 1.5.1

1.6) 12505**Survey Summary**

Survey Position: 60° 37' 11.0" N, 145° 47' 30.4" W
Least Depth: -2.91 m (= -9.54 ft = -1.591 fm = -1 fm 3.54 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-250.22:28:20.000 (09/07/2005)
DP Dataset: h11496 / trb1_dpne / 2005-250 / 1250_\$csymb_p.shp
Profile/Beam: 4/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

CHD (16710) MHW IS NEW LDG. DP EXT.

The charted (16710) high water at this position was found to be a ledge. The ledge extends from the CFF MHW to the extent positioned with DP 12505.

Hydrographer Recommendations

The Hydrographer recommends using the CFF MHW to adjust the charted (16710) island and adding a new ledge at this position.

Cartographically-Rounded Depth (Affected Charts):

-10ft (16710_1)
-1 ½fm (16709_1, 16700_1, 16013_1)
-1fm 3ft (531_1)
-2.9m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - CHD (16710) MHW IS NEW LDG. DP EXT. The charted (16710) high water at this position was found to be a ledge. The ledge extends from the CFF MHW to the extent positioned with DP 12505.
PICREP - 12505_1.jpg
RECDAT - 20050907

Office Notes

Concur.

Feature Images



Figure 1.6.1

1.7) 12506**Survey Summary**

Survey Position: 60° 36' 47.5" N, 145° 48' 21.7" W
Least Depth: -2.98 m (= -9.79 ft = -1.631 fm = -1 fm 3.79 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-250.22:35:48.000 (09/07/2005)
DP Dataset: h11496 / trb1_dpne / 2005-250 / 1250_\$csymb_p.shp
Profile/Beam: 5/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

NEW EXT HW

The CFF MHW incorrectly represents the shoreline in this area. The small CFF islet to the SW is connected to the main island at high water. The connecting high water is approximately 10m wide, with the NW extent positioned with DP 12506.

Hydrographer Recommendations

The Hydrographer recommends changing the CFF MHW to connect the SW islet to the main island.

Cartographically-Rounded Depth (Affected Charts):

-10ft (16710_1)
 -1 ½fm (16709_1, 16700_1, 16013_1)
 -1fm 4ft (531_1)
 -3.0m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - NEW EXT HW The CFF MHW incorrectly represents the shoreline in this area. The small CFF islet to the SW is connected to the main island at high water. The connecting high water is approximately 10m wide, with the NW extent positioned with DP 12506.
 PICREP - 12506_west_side.jpg
 RECDAT - 20050907

Office Notes

Concur

Feature Images



Figure 1.7.1

1.8) 12502**Survey Summary**

Survey Position: 60° 37' 16.9" N, 145° 47' 02.3" W
Least Depth: -2.44 m (= -7.99 ft = -1.332 fm = -1 fm 1.99 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-250.21:49:09.000 (09/07/2005)
DP Dataset: h11496 / trb1_dpne / 2005-250 / 1250_obstrn_p.shp
Profile/Beam: 1/1
Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

SWM EXT NEW OBSTRN/REEF. CHD (16710) ISLET IS OBSTRN. CFF RK IS SIG HP REEF.

The charted (16710) islet at this position is part of a reef that is partly submerged at high water. The CFF rock is the significant high point of the reef. Use DP's 12502 and 22361 for extents of the reef.

Hydrographer Recommendations

The Hydrographer recommends changing the charted (16710) rock and islet to represent a new reef. The CFF rock represents the high point of the reef.

Cartographically-Rounded Depth (Affected Charts):

-8ft (16710_1)
-1 ¼fm (16709_1, 16700_1, 16013_1)
-1fm 2ft (531_1)
-2.4m (500_1, 50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 7:foul ground
INFORM - SWM EXT NEW OBSTRN/REEF. CHD (16710) ISLET IS OBSTRN. CFF RK IS SIG HP REEF. The charted (16710) islet at this position is part of a reef that is partly submerged at high water. The CFF rock is the significant high point of the reef. Use DP's 12502 and 22361 for extents of the reef.
RECDAT - 20050907
STATUS - 1:permanent
TECSOU - 5:found by lead-line

VALSOU - -2.436 m

VERDAT - 12:Mean lower low water

WATLEV - 1;partly submerged at high water

Office Notes

Concur. Chart new reef using DPs and islet for extents.

Feature Images



Figure 1.8.1

2 - AWOIS Features

2.1) AWOIS #53298 - #53298 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position: 60° 37' 14.7" N, 145° 47' 34.8" W
Historical Depth: [None]
Search Radius: 175
Search Technique: VS, MB, ES, S2
Technique Notes: [None]

History Notes:

L1404/96--A LOG BOOM WAS CONSTRUCTED AND SUBMITTED FOR CHARTING IN 1966 IN SCALED POSITION CENTERED AROUND LAT. 60/37/14.7N LONG. 145/47/34.8W (NAD83). THE FOLLOWING GP'S DELINEATE THE EXTENTS OF THE BOOM. (ENTERED 9/05 BY JCA) ■■■ SW CORNER 60/37/9N 145/47/38.7W ■ NW CORNER 60/37/14.5N 145/47/45.1W ■ NE CORNER 60/37/19.3N 145/47/30.8W ■ SE CORNER 60/37/15.2N 145/47/23.9W

Survey Summary

Charts Affected: 16710_1, 16709_1, 16700_1, 16013_1, 531_1, 500_1, 50_1

Remarks:

AWOIS search radius filled in with 200% multibeam data. Remnants of cable seen on shore. Log boom not seen.

Hydrographer Recommendations

Hydrographer recommends removal of charted (16710, 16709) log boom.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - AWOIS search radius filled in with 200% multibeam data. Remnants of cable seen on shore. Log boom not seen.

Office Notes

Concur

Feature Images



Figure 2.1.1



Figure 2.1.2



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 31, 2005

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P158-FA-2005
HYDROGRAPHIC SHEET: H11496

LOCALITY: Nelson Bay, Orca Bay, AK
TIME PERIOD: August 18 - September 25, 2005

TIDE STATION USED: 945-4050 Cordova, AK
Lat. 60° 33.5'N Long. 145° 45.2' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.559 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-P158-FA-2005, H11496, during the time period between August 18 to September 25, 2005.

Please use the zoning file "P158FA2005CORP" submitted with the project instructions for OPR-P158-FA-2005. Zones PWS58A & PWS59 are the applicable zones for H11496.

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



H11496 HCell Report
Kurt Brown, Physical Scientist
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to provide new survey information in International Hydrographic Organization (IHO) format S-57 to update the largest scale ENC's and RNC's in the region: NOAA ENC US4AK25M, US5AK2CM and NOAA RNC's 16709 and 16710.

HCell compilation of survey H11496 used Office of Coast Survey HCell Specifications Version 3.0 and HCell Reference Guide Version 1.0.

1. Compilation Scale

Depths for HCell H11496 were compiled to the largest scale charts in the region, 16709, 1:80,000 and 16710, 1:30,000. The density and distribution of soundings from H11496 were selected to emulate the distribution on chart 16709 and 16710. Non-bathymetric features have been generalized to chart scale.

2. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 5-meter combined surface, **H11496_Combined_5m**, in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 scale with no radius table. The resultant sounding layer contains depths ranging from 1.0 to 97.5 meters.

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

3. Depth Areas and Depth Contours

3.1 Depth Areas

The extents of the highest resolution BASE Surface together with the extents of the soundings layer were used to digitize the hydrographic extents, which were then used to create the single, all encompassing depth area (DEPARE). Two depth ranges, from 0 to 101 meters and from -3.5 to 0 meters, were used for depth area objects. Upon conversion to NOAA charting units, the depth ranges are 0 to 331.364 feet and -11.483 to 0 feet.

3.2 Depth Contours

Depth contours at the intervals on the largest scale chart are included in the H11496_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The generalized metric and feet equivalent contour values are shown in the table below.

Chart Contours in Feet	Metric Equivalent of Chart Contours	Metric Equivalent of Chart Contours NOAA Rounded	Actual Value of Chart Contours
6	1.8288	2.0574	6.75
12	3.6576	3.8862	12.75
18	5.4864	5.715	18.75
30	9.144	9.3726	30.75
60	18.288	18.5166	60.75

Contours delivered in the H11496_SS file have not been deconflicted against shoreline features, soundings and hydrography as all other features in the H11496_CS file and soundings in the H11496_SS have been. This results in conflicts between the H11496_SS file contours and HCell features at or near the survey limits. Conflicts with M_COVR, M_QUAL, DEPARE, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over H11496_SS.000 file contours in all cases where conflicts are found.

4. Meta Areas

The following Meta object areas are included in HCell 11496:

M_QUAL M_CSCL
M_COVR

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

5. Features

Shoreline features for H11496 were delivered from the field in several .hob files described in the DR. The files contained new features, modification to GC or charted features, and disprovals. These were deconflicted against GC shoreline, the chart and hydrography during office processing.

13 new rocky seabed areas were delineated using the high resolution BASE surfaces and are included in the H11496 HCell.

There were no DTONs reported from survey H11496.

The source of all features included in the H11496 HCell can be determined by the SORIND field.

6. S-57 Objects and Attributes

The H11496_CS HCell contains the following Objects:

SOUNDG	Chart scale soundings
DEPARE	All-encompassing depth area and intertidal areas
DEPCNT	Zero contour for ledges and intertidal areas
COALNE	GC and charted MHW line
LNDARE	Islet features
LNDELV	Height feature for islets
UWTROC	Rock features
OBSTRN	Foul areas
WEDKLP	Kelp features
SBDARE	Bottom samples, rocky seabed areas and ledges
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
M_CSCL	Compilation scale Meta object
\$CSYMB	Blue notes

The H11496_SS HCell contains the following Objects:

DEPCNT	NOAA rounded contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

All S-57 Feature Objects in the H11496_CS HCell have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with current guidance and the OCS HCell Specifications.

7. Blue Notes

Notes to the RNC and ENC chart compilers are included in the HCell as \$CSYMB features with the Blue Note information located in the INFORM field. The NINFOM field is populated with the charting disposition

8. Spatial Framework

8.1 Coordinate System

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

8.2 Horizontal and Vertical Units

DUNI, HUNI and PUNI are used to define units for depth, height and horizontal position in the chart units HCell, as shown below.

Chart Unit Base Cell Units:

Depth Units (DUNI):	Feet
Height Units (HUNI):	Feet
Positional Units (PUNI):	Meters

During creation of the HCell in CARIS BASE Editor and CARIS S-57 Composer, all soundings and features are maintained in metric units with as high precision as possible. Depth units for soundings measured with sonar maintain millimeter precision. Depths on rocks above MLLW and heights on islets above MHW are typically measured with range finder, and therefore have lower precision. Units and precision are shown below.

BASE Editor and S-57 Composer Units:

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

Conversion to charting units and application of NOAA rounding is completed in the same step, at the end of the HCell compilation process.

Conversion to feet charting units with NOAA rounding ensures that soundings round to the deeper foot if the decimals of the foot is .75000 or greater.

In an ENC viewer feet display in whole feet. Soundings round to the deeper foot if the decimals of the foot are .75000 or greater and heights (HUNI) display as whole feet.

9. Data Processing Notes

9.1 Junctions

H11496 junctions with surveys H11497 which has been compiled, and H11498. The junction with H11498 will be made when the survey is compiled.

10. QA/QC and ENC Validation Checks

H11496 was subjected to QA checks in S-57 Composer prior to exporting to the HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to a chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of

the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they have been approved by MCD as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11496 Base Cell File, Chart Units, Soundings compiled to 1:80,000 and 1:30,000
- H11496 Base Cell File, Chart Units, Soundings compiled to 1:10,000
- H11496 Base Cell File, Metric Units, Features compiled to 1:10,000
- H11496 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
- H11496 Survey Outline to populate SURDEX

11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings H11496_CS.000
- Chart units base cell file, survey scale soundings H11496_SS.000
- Metric base cell file, survey scale features H11496_Features.000
- Descriptive Report package H11496_DR.pdf
- Survey outline H11496_Outline.gml & *.xsd

11.3 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.2	Creation of soundings and bathy-derived features, creation of the depth area, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.0	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1	Validation of the base cell file.
Newport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

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

APPROVAL SHEET
H11496

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.