

H11630

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. H11630

LOCALITY

State Alaska

General Locality Patton Bay

Sublocality Nearshore Area of Patton Bay

2007

CHIEF OF PARTY

..... *Commander Andrew L. Beaver, NOAA*

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DATE

NOAA FORM 77-28
(11-72)

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

REGISTRY No

HYDROGRAPHIC TITLE SHEET

H11630

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 Patton Bay, Alaska

Sub-Locality Nearshore Areas of Patton Bay

Scale 1:10,000

Date of Survey 08/21/2007 - 09/18/2007

Instructions dated 6/20/2007

Project No. S-P903-FA-07

Vessel FA S220, JENSEN LAUNCH 1010 AND 1018

Chief of party Commander Andrew L. Beaver, NOAA

Surveyed by FAIRWEATHER Personnel

Soundings by echo sounder, hand lead, pole Reson 8111 and 8101

Graphic record scaled by N/A

Graphic record checked by N/A

Automated Plot N/A

SAR by Anthony Lukach

Compilation by Fernando Ortiz

Soundings in Fathoms and Feet at MLLW

REMARKS: All times are UTC, UTM Projection (zone #6)

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS)

nautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were

generated during office processing. Page numbering may be interrupted or non sequential.

Descriptive Report to Accompany Hydrographic Survey H11630

Project S-P903-FA-07

Patton Bay, Alaska

Scale 1:10,000

August 2007

NOAA Ship FAIRWEATHER

Chief of Party: Commander Andrew L. Beaver, NOAA

A. AREA SURVEYED

The survey area was located in Patton Bay, within the sub-locality of Nearshore Areas of Patton 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 $59^{\circ}45'00''N$, $147^{\circ}35'00''W$ and the Northeast corner at $60^{\circ}00'00''N$, $147^{\circ}10'00''W$.¹

Data acquisition was conducted from August 21st to September 18th, 2007 (DN 233 to DN 261).

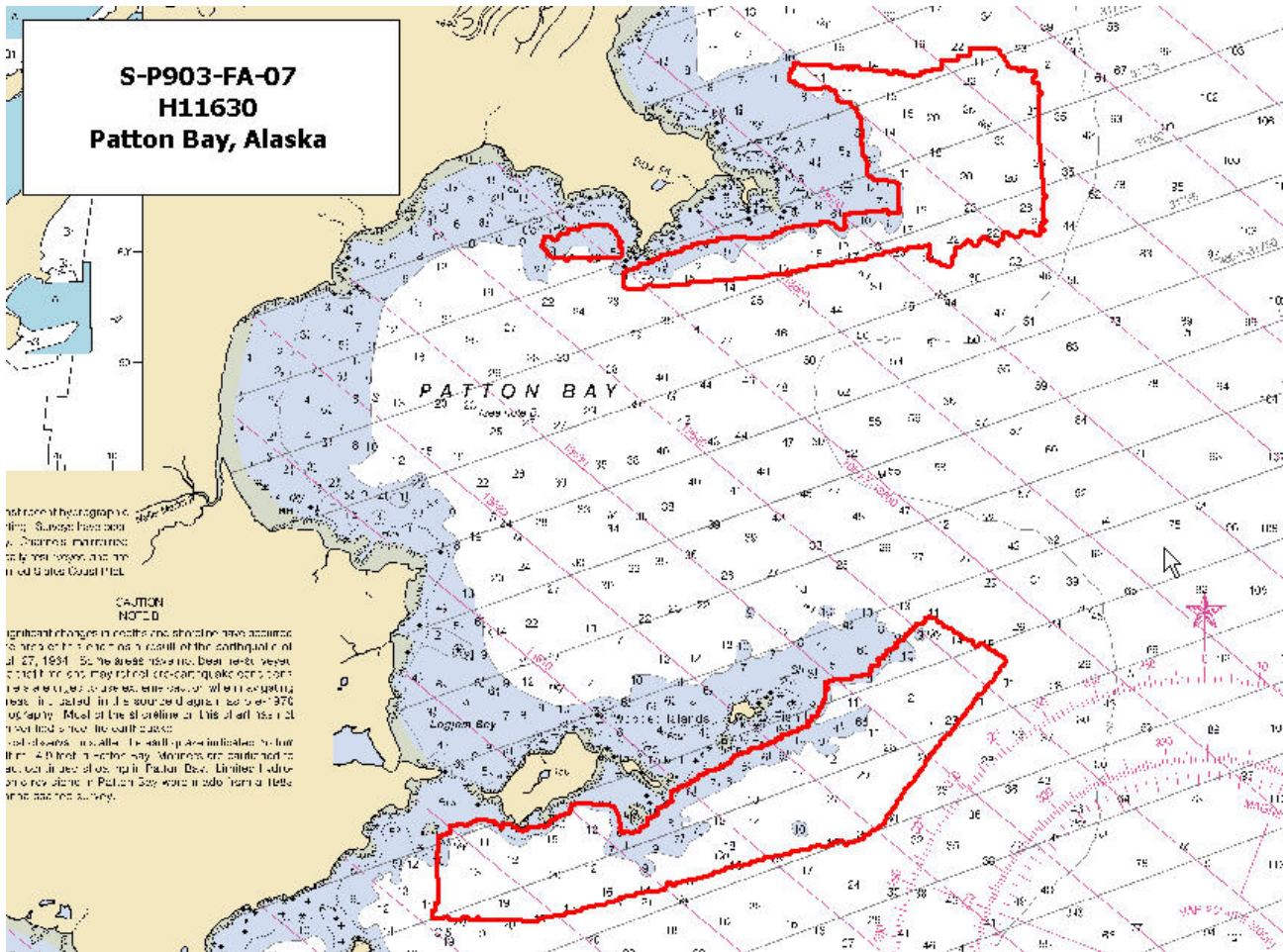


Figure 1: H11630 survey limits

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area offshore of the 8-meter depth curve. When conditions allowed, multibeam echosounder (MBES) data were acquired parallel to contours and at a line spacing of no less than 25 meters at depths between four and eight meters. Additional coverage was obtained when determining least depths over features or shoals offshore of the Navigable Area Limit Line (NALL), which is defined as the furthest offshore of either the 4-meter depth contour or a distance of 64 meters (0.8 mm at the scale of the largest scale chart of 1:81,000) from the Mean High Water line.

Shoreline data were not acquired for H11630.²

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition/processing systems and survey vessels along with quality control procedures and data processing methods are included and described in the *S-P903-FA-07 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. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions S-P903-FA-07, dated July 20, 2007.

B1. Equipment and Vessels

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

	FAIRWEATHER	Jensen Launch 1010	Jensen Launch 1018
Hull Registration Number	S220	1010	1018
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.
Length Overall	231 feet	28' 10"	28' 10"
Beam	42 feet	10' 8"	10' 8"
Draft, Maximum	15' 6"	4' 0" DWL	4' 0" DWL
Cruising Speed	12.5 knots	24 knots	24 knots
Max Survey Speed	10 knots	10 knots	10 knots
Primary Echosounder	RESON 8111	RESON 8101	RESON 8101
Sound Velocity Equipment	SBE 19plus & 45, MVP 200	SBE 19plus	SBE19plus
Attitude & Positioning Equipment	POS/MV V4	POS/MV V4	POS/MV V4
Type of operations	MBES	MBES	MBES

Table 1: Vessel Inventory

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

B2. Quality Control

Internal consistency and integrity of data among acquisition platforms collected for survey H11630 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11630 were found to be good as the data agreed within day-to-day, vessel-to-vessel and line-to-line.

Crosslines

Shallow water multibeam crosslines for this survey totaled 26.3 linear nautical miles (lnm), comprising 15.8% of the 166.77 lnm of total MBES hydrography. Both main scheme and crossline mileage are summarized in Table 2.

MAIN SCHEME - Mileage	
Single Beam MS	0
Multibeam MS mileage	166.771693
SideScan MS	0
Total MS	166.771693
CROSSLINE - Mileage	
Single Beam XL	0
Multibeam XL	26.3109703
Total XL	26.3109703
OTHER	
Developments/AWOIS - Mileage	0
Shoreline/Nearshore Investigation - Mileage	0
Total # of Investigated Items	0
Total Bottom Samples	0
Total SNM	15
Specific Dates of Acquisition	Aug 21, 22, 23, Sep 18
Specific Dn#s of Acquisition	233, 234, 235, 261

Table 2: H11630 Survey Statistics

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 March 2007 *NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSDM)*. An exception occurs in the deepest area of the south sheet, likely attributable to roll error. See ROLL ERROR section below and Figure 5.

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Junctions

Survey H11630 junctions with H11333, a 2004 NOAA Time Charter survey. The area of overlap between survey H11630 and H11333 varied from 80 to 140 meters wide. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *HSSDM*. The sheet limits and area of overlap is shown in Figure 2.⁴

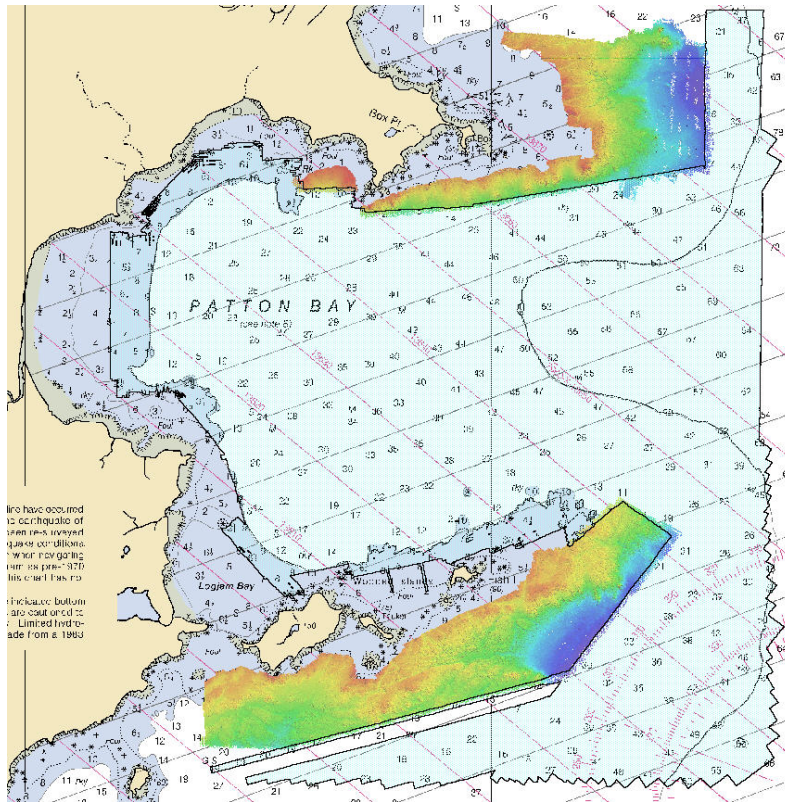


Figure 2: Junction between H11630 and H11333

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the DAPR.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage Assessment followed procedures as outlined in the DAPR. FAIRWEATHER acquired data as close to shore as practicable and with respect to the time constraints between two other survey projects. Complete multibeam was obtained throughout the survey area.

The remainder of survey H11630 meets the coverage requirements as stated in the Letter Instructions.

DESIGNATED SOUNDINGS:

Designation of soundings followed procedures as outlined in the DAPR. Designated soundings were selected to better represent shoal features in the survey area. All of the selected soundings are displayed in the critical sounding layer in CARIS. Three of the designated soundings were submitted as DTONs⁵, see section D.1 of this report for further information on those soundings.

TRUEHEAVE:

A common problem encountered during daily processing was the occurrence of “corrupted” True Heave files. Due to a probable formatting problem with many of the daily True Heave files it was necessary to run a CARIS provided tool called “fixTrueHeave.exe” in order for CARIS to apply the file to the days data. In cases where this was necessary a new “fixed” file was created with the extension “.fixed”. The new fixed True Heave was then applied. Instances where this was the case are reflected in the Data Log.

True Heave data were successfully applied to all acquired MBES data collected during the project and no True Heave related error was noted.⁶

TIDES:

Tidal offset issues are associated with H11630 along a trench southwest of Tanker Island. Data collected on adjacent lines on DN234 and DN261 show a less than 0.5m offset in 12 fathoms of water. See Figure 3. The correct shoal depth is preserved in the base surface.

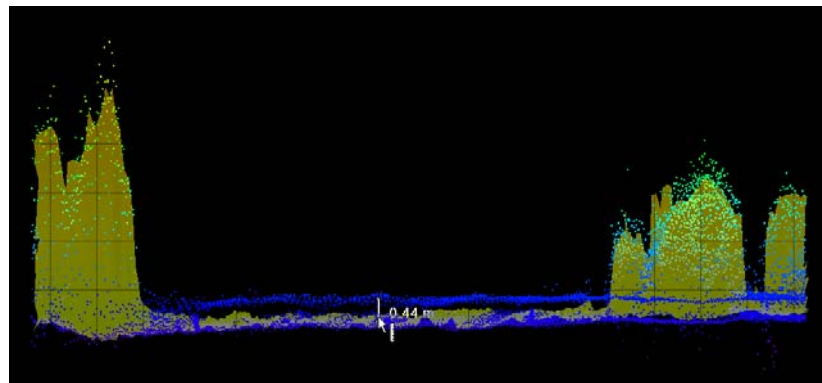
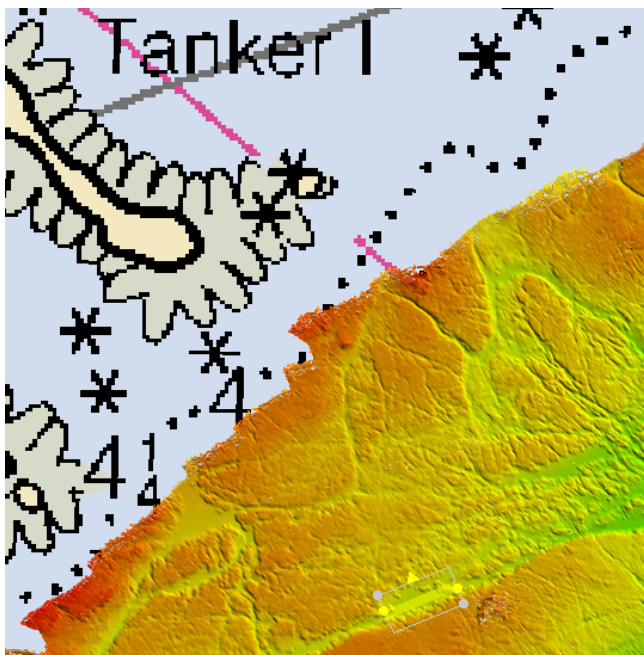


Figure 3: The trench feature is shown with three lines, one of which was 0.4m shoaler in an area showing vertical offsets likely attributed to incorrect tidal zoning or distance from primary gauge.

OUTERBEAM NOISE:

There are several instances of outerbeam noise in the south part of the sheet, particularly an area east of Fish Island where the seafloor is particularly rocky and at an average depth of 12 fathoms. Nadir to nadir data between mainscheme and crosslines match within tolerances, and the CUBE algorithm successfully identified the bottom. The data were refiltered to up to 50 degrees to assist data cleaning of outliers and to keep the data within tolerances. See Figure 4.

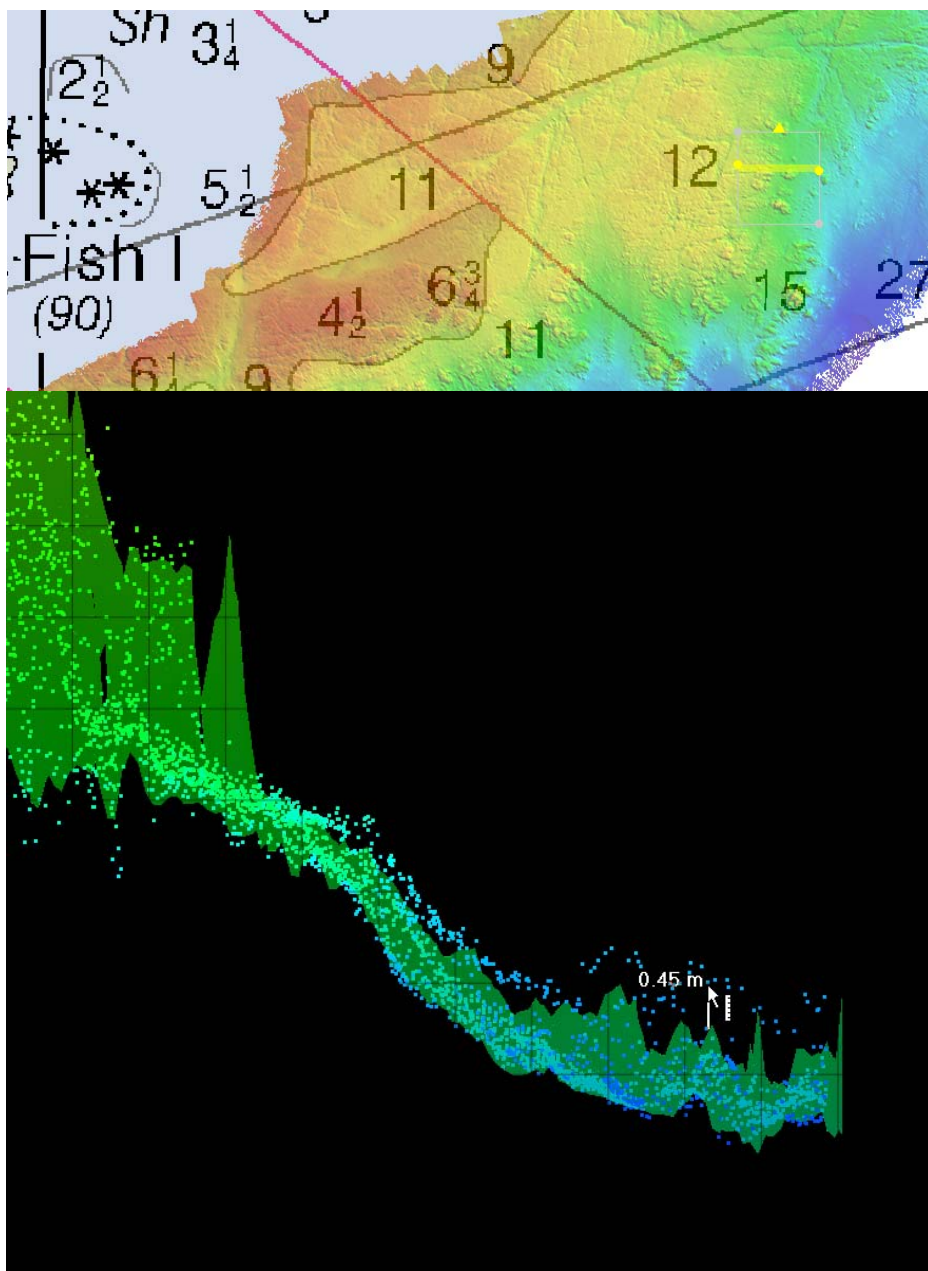


Figure 4: The average depth in this figure is approximately 21 fathoms. The outerbeam noise is lessened and the hypotheses fall within IHO Order 1, meeting the accuracy specifications as stated in the HSSDM.

ROLL ERROR:

A likely roll error is present on the southern fieldsheet. The greatest error is between mainscheme and crossline data and increases as you move away from crossline nadir. The error is greater than that allowed by the *HSSDM* but falls in the deepest part of the survey in an area between 45-55m. The surface generally represents the shoalest soundings and correctly represents the seafloor. This roll error is not present in shoaler surrounding areas.

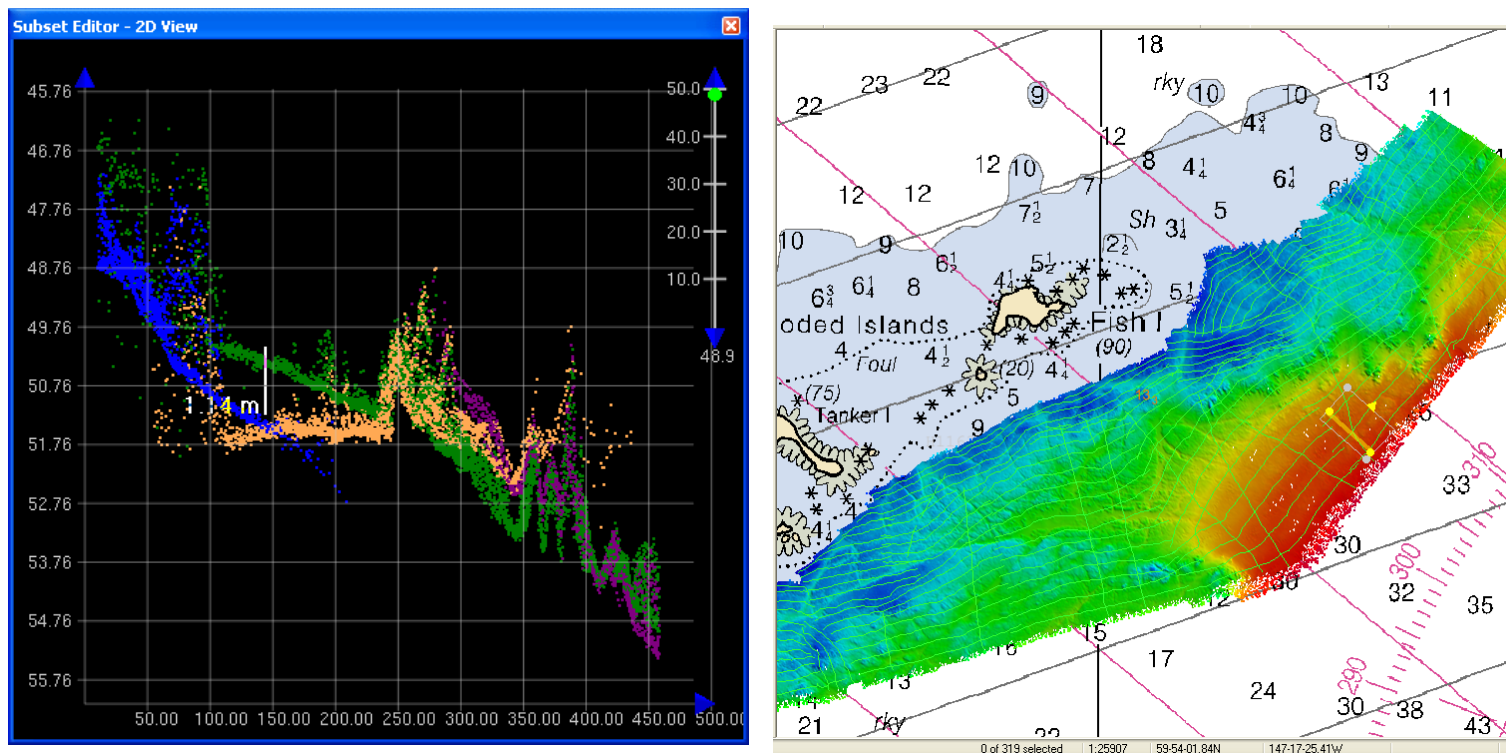


Figure 5: Roll error in deep area of south sheet. Subset editor view shows an offset of 1.14m in approximately 50m of water.

Accuracy Standards

All data meet the data accuracy specifications as stated in the *HSSDM* except where noted above. 95% of the data meet IHO Order 1 for this survey.⁷

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11630 conform to those detailed in the DAPR⁸, with the exceptions discussed above.

B4. Data Processing

Data processing procedures for survey H11630 conform to those detailed in the DAPR.

A detailed listing of the surface resolutions used for each depth range are given in Table 3. The grid resolutions were chosen to satisfy the complete multibeam coverage requirement of 10 to 20 percent of depth as stated in section 5.1.2 of the HSSDM.

Fieldsheet Name	Surface Name	Depth Ranges (m)	Resolution (m)
	H11630_N_Final_Combined_5m		5
H11630_North	H11630_N_0to20_1m	0-20	1
	H11630_N_10to40_2m	10 - 40	2
	H11630_N_30to70_5m	30 - 70	5
	H11630_S_Final_Combined_5m		5
H11630_South	H11630_S_0to20_1m	0-20	1
	H11630_S_10to40_2m	10 - 40	2
	H11630_S_30to70_5m	30 - 70	5

Table 3: H11630 Surface Resolutions by Depth Range

There are two fieldsheets fulfilling the various resolution requirements for survey H11630. Fieldsheets H11630_North and H11630_South encompass the entire survey area to the one-, two-, and five-meter resolutions.⁹

Survey H11630 has been examined for noise in offshore areas via the creation of a combined surface; all such fliers have been removed that were evident in the last re-computation of the surfaces.

C. HORIZONTAL AND VERTICAL CONTROL

No supplemental FAIRWEATHER installed or monitored control stations were required for this project. A complete description of horizontal and vertical control for survey H11630 can be found in the *S-P903 - FA-07 Horizontal and Vertical Control Report*¹⁰, 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. Differential corrections came from the U.S. Coast Guard beacons at Cape Hinchinbrook (292 kHz) and Potato Point (298 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 (945-4050) served as control for datum determination and as the primary source for water level reducers for survey H11630 during acquisition.

No tertiary tide stations were installed per the Letter Instructions.

During acquisition all data were reduced to MLLW using observed water levels with preliminary zoning downloaded from the CO-OPS website for station Cordova by applying tide file 9454050.tid and time and height correctors through the preliminary zone corrector file P903FA2007CORP.zdf.

A request for delivery of final approved water level data for survey H11630 were forwarded to N/OPS 1 on September 11, 2007 in accordance with the FPM, dated March 2007. A copy of the request is included in Appendix V.

Fairweather received the Tide Note for Survey H11630 and final approved water level data dated October 9, 2007 for the NWLON primary tide station Cordova (945-4050). The Tide Note for Hydrographic Survey H11630 along with applicable files are included in Appendix V¹¹.

Final approved water level data were applied by FAIRWEATHER

As per the Letter Instructions, all data were reduced to MLLW using the final approved water levels (smooth tides) from the primary tide station Cordova (945-4050) by applying tide file 9454050.tid and time and height correctors through the zone corrector file P903FA2007CORP.zdf. The preliminary zoning was accepted as final for project S-P903-FA-2007, H11630.

D. RESULTS AND RECOMMENDATIONS

D1. Chart Comparison

Chart comparison procedures were followed as outlined in the FPM.

Survey H11630 was compared with charts 16700 (29th ed, Jul 2004, Scale 1:200,000), and 16701 (21st ed, Nov 2006, Scale 1:81,436). Chart 16700 has been updated with the Notice to Mariners through October 3, 2007, and chart 16701 has been updated through Notice to Mariners through May 27, 2007. The most recent Notice to Mariners from December 8, 2007 was consulted.¹² There were no new changes within the survey area.

Chart 16700

Depths from survey H11630 agreed within one to two fathoms with depths on chart 16701. Charted soundings near shore tended to be one to two fathoms deeper than measured.¹³

Chart 16701

Most charted soundings agree within one to two fathoms of the surveyed depth. In instances of disagreement along the southern section the acquired soundings were usually deeper than the charted. These varied between three to five fathoms. Variations in soundings in the northern section were between three to five fathoms, with the charted soundings being deeper than the acquired soundings.¹⁴

Along the southern edge of the survey is a charted 15 fm that has an acquired least depth of 10.7 fm. See Figure 6.

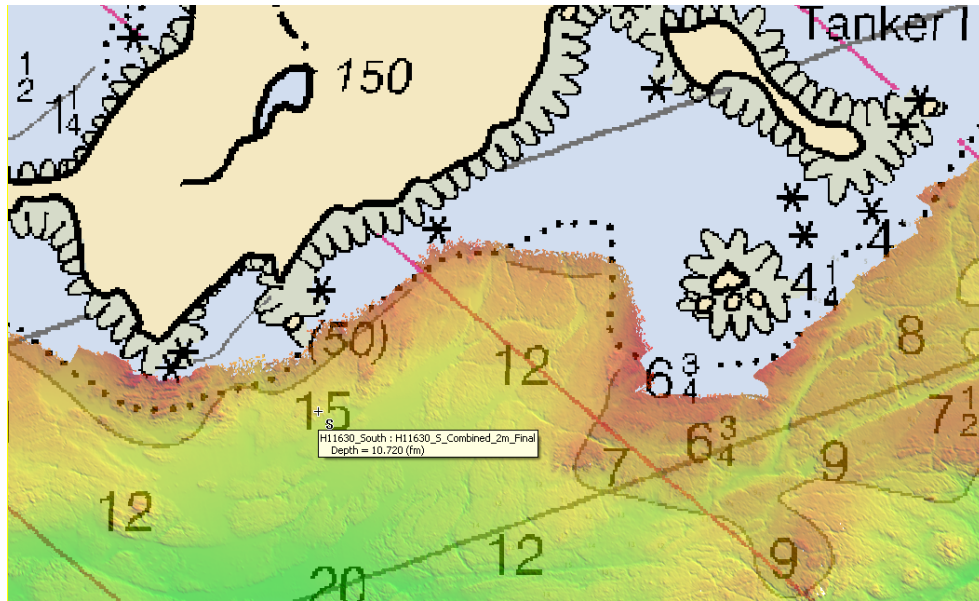


Figure 6: Charted value is deeper than acquired value.

Along the northern edge of the survey is a charted 6 ½ fm with an acquired least depth of 2.6 fm (4.7m). See Figure 7.

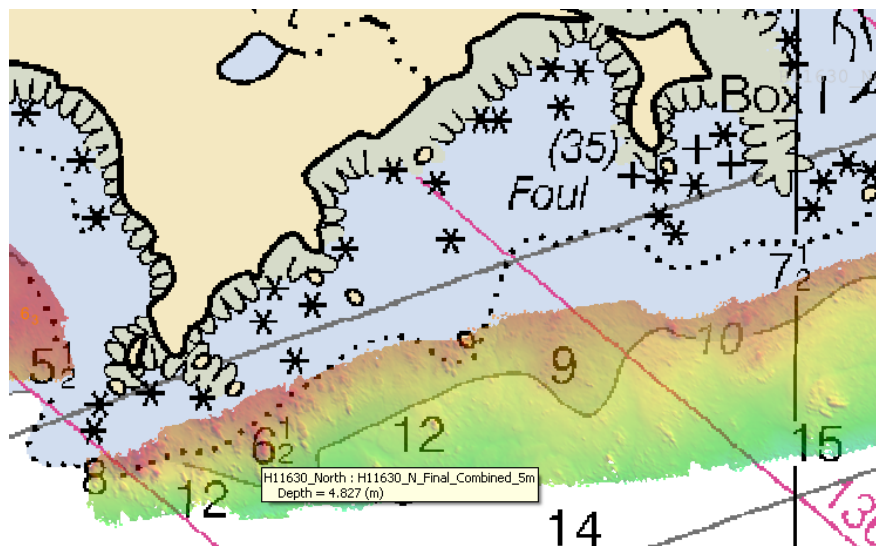


Figure 7: Charted value is deeper than acquired value.

Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *HSSDM*. **The surveyed soundings are adequate to supersede prior surveys in their common areas.**¹⁵

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were two AWOIS items located within the limits of H11630¹⁶. Time constraints prevented their investigation.¹⁷

Dangers to Navigation

A total of four dangers to navigation were reported. Three dangers to navigation were found and reported to the Mapping and Charting Division for final submission to the Seventeenth Coast Guard District on August 28, 2007 and a fourth was reported on Sept. 20, 2007. Copies of the preliminary Danger to Navigation Reports are included in Appendix I¹⁸.

D2. Additional Results

Shoreline Verification and Processing

No shoreline data were acquired for H11630.

Aids to Navigation

There were no Aids to Navigation within the survey limits.¹⁹

Bottom Samples

Bottom samples were not collected for H11630 due to time constraints. The bay encompassed by H11630 (H11333) was sampled in 2005 and bottom samples were acquired then.²⁰

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 Readiness Review Memo 2007	April 23, 2007	N/CS34
S-P903-FA-07 Data Acquisition and Processing Report	Under Same Cover	N/CS34
S-P903-FA-07 Horizontal & Vertical Control Report	Nov 19, 2007	N/CS34, N/OPS1
S-P903-FA-07 Coast Pilot Report	N/A	N/CS26

Revisions compiled during office processing and certification

¹ Concur with clarification. The North sheet area of survey H11630 is bounded on the Southwest corner at 59-56-29.790N, 147-24-26.711W and the Northeast corner at 59-59-01.675 N, 147-15-05.936W.

The South sheet area of survey H11630 bounded on the Southwest corner at 59-50-49.521N , 147-26-30.008 W and the Northeast corner at 59-54-08.543N, 147-15-41.054W

² Concur.

³ Filed with the project records.

⁴ Concur.

⁵ Concur. Dton's have been applied to the chart.

⁶ Concur.

⁷ Concur.

⁸ Concur.

⁹ Concur.

¹⁰ Filed with the project records.

¹¹ Tide note is appended to this report. Final tides were applied by FA using the Tide station 945-4050 in Cordova, WA

¹² Concur. During Hcell processing survey H11630 was compare with chart 16701 (22nd ed, Jan 2008, Scale 1:81,436). Chart 16701 has been updated through Notice to Mariners through May 05, 2009, and Chart 16700 (31st ed, Jan 2009, Scale 1:200,000). Chart 16700 has been updated through Notice to Mariners through Dec 15, 2009.

¹³ Concur.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ AWOIS items 53501 and 53502 were outside the survey area. Retain AWOIS items as charted.

¹⁷ Concur.

¹⁸ Concur with clarification. During Hcell processing 3 additional DTONS' were found within survey H11630. See Dton report appended to this report.

¹⁹ Concur.

²⁰ Concur. No bottom samples were collected during H11630 and 0 are included in the Hcell 11630. No additional bottom samples were imported from the ENC.

Danger to Navigation

Registry Number: H11630
State: Alaska
Locality: Patton Bay
Sub-locality: Nearshore Areas of Patton Bay
Project Number: S-P903-FA-07
Survey Dates: 08/21/2007 - 08/22/2007

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16701	22nd	01/01/2008	1:81,436 (16701_1)	USCG LNM: 05/05/2009 (03/02/2010) CHS NTM: None (09/25/2009) NGA NTM: 02/10/2007 (03/20/2010)
16700	31st	01/01/2009	1:200,000 (16700_1)	[L]NTM: ?
16013	30th	07/01/2006	1:969,761 (16013_1)	[L]NTM: ?
531	24th	07/01/2007	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

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

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Shoal	14.40 m	59° 51' 31.4" N	147° 24' 45.1" W	---
1.2	Shoal	10.72 m	59° 51' 28.1" N	147° 22' 18.9" W	---
1.3	Shoal	10.88 m	59° 51' 38.5" N	147° 21' 45.1" W	---

1 - Danger To Navigation

1.1) Profile/Beam - 1723/33 from h11630 / fa_1010_reson8101 / 2007-233 / 233-1956

DANGER TO NAVIGATION

Survey Summary

Survey Position: 59° 51' 31.4" N, 147° 24' 45.1" W
Least Depth: 14.40 m (= 47.23 ft = 7.872 fm = 7 fm 5.23 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.991 m ; **TVU (TPEv)** ± 0.187 m
Timestamp: 2007-233.20:00:57.950 (08/21/2007)
Survey Line: h11630 / fa_1010_reson8101 / 2007-233 / 233-1956
Profile/Beam: 1723/33
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Dton found during Office Processing A 7.87 fathom submerged Rock (14.40m) was found by multibeam echosounder South of Logjam Bay

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11630/fa_1010_reson8101/2007-233/233-1956	1723/33	0.00	000.0	Primary

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

7 $\frac{3}{4}$ fm (16701_1, 16700_1, 16013_1, 530_1)
 7fm 5ft (531_1)
 14.4m (500_1, 50_1)

S-57 Data

[None]

Feature Images

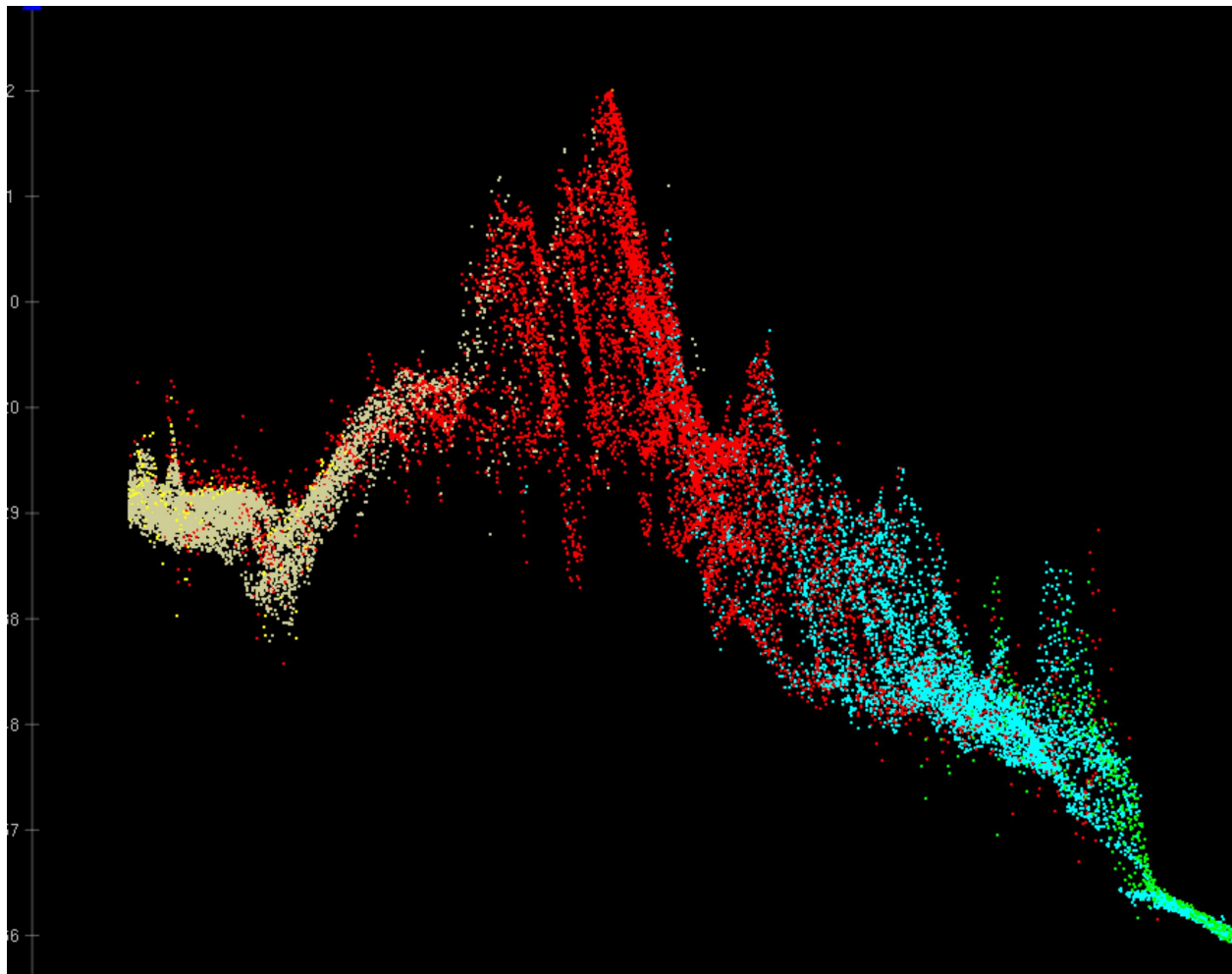


Figure 1.1.1

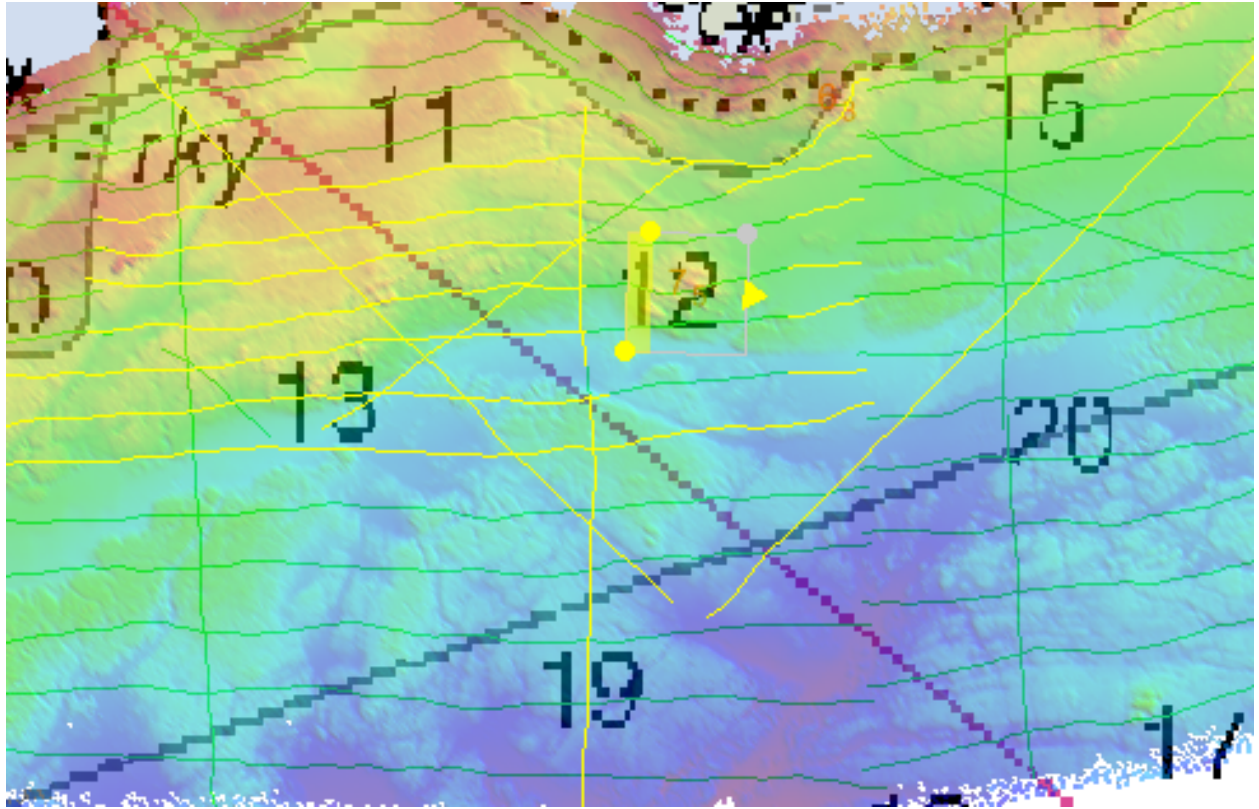


Figure 1.1.2

1.2) Profile/Beam - 185/5 from h11630 / fa_1010_reson8101 / 2007-233 / 233-2320

DANGER TO NAVIGATION

Survey Summary

Survey Position: 59° 51' 28.1" N, 147° 22' 18.9" W
Least Depth: 10.72 m (= 35.18 ft = 5.864 fm = 5 fm 5.18 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.999 m ; **TVU (TPEv)** ± 0.259 m
Timestamp: 2007-233.23:20:35.248 (08/21/2007)
Survey Line: h11630 / fa_1010_reson8101 / 2007-233 / 233-2320
Profile/Beam: 185/5
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Dton found during Office Processing A 5.86 fathom shoal (10.72m) was found by multibeam echosounder South of Wooded Islands

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11630/fa_1010_reson8101/2007-233/233-2320	185/5	0.00	000.0	Primary

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

5 ¾fm (16701_1, 16700_1, 16013_1, 530_1)
 5fm 5ft (531_1)
 10.7m (500_1, 50_1)

S-57 Data

[None]

Feature Images

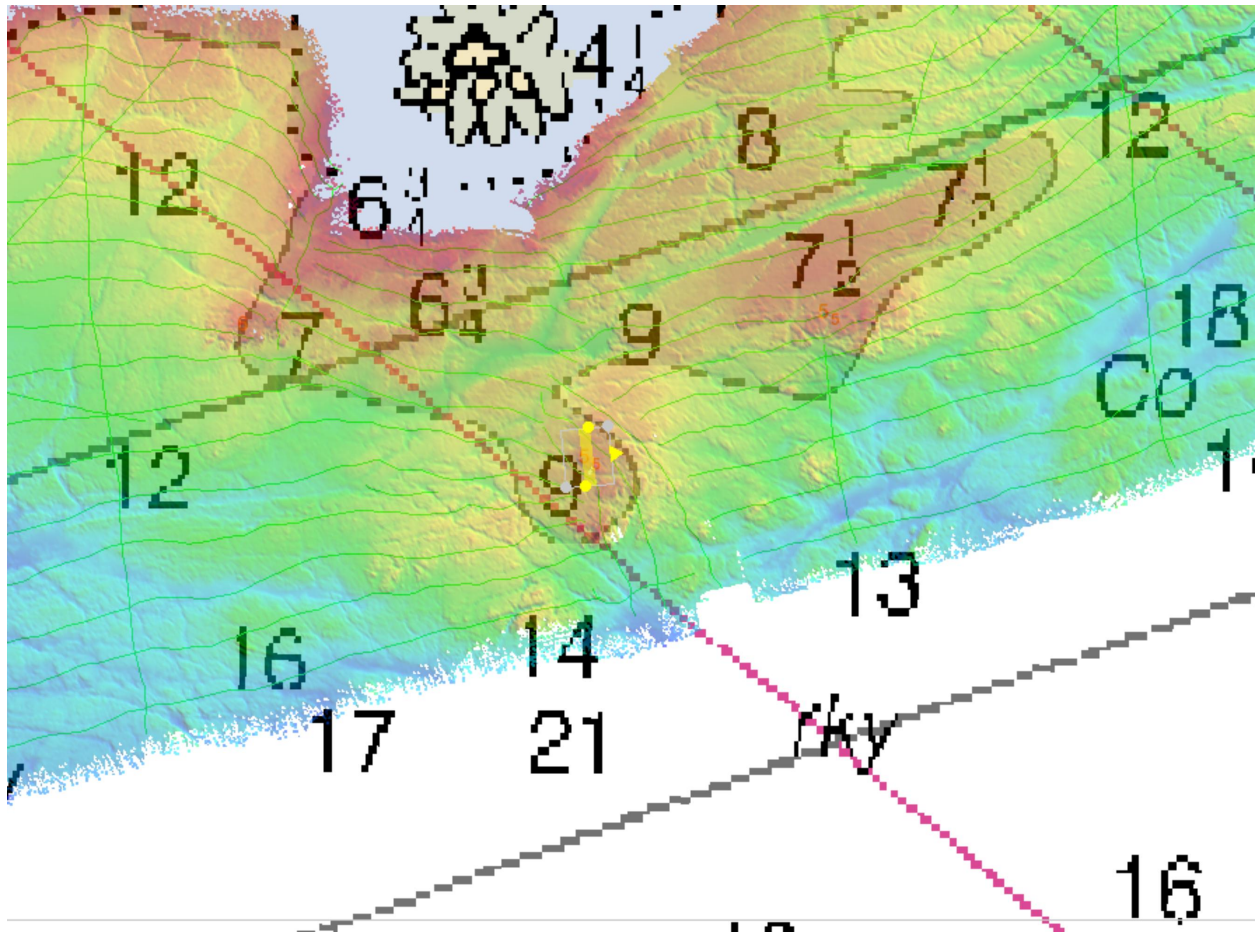


Figure 1.2.1

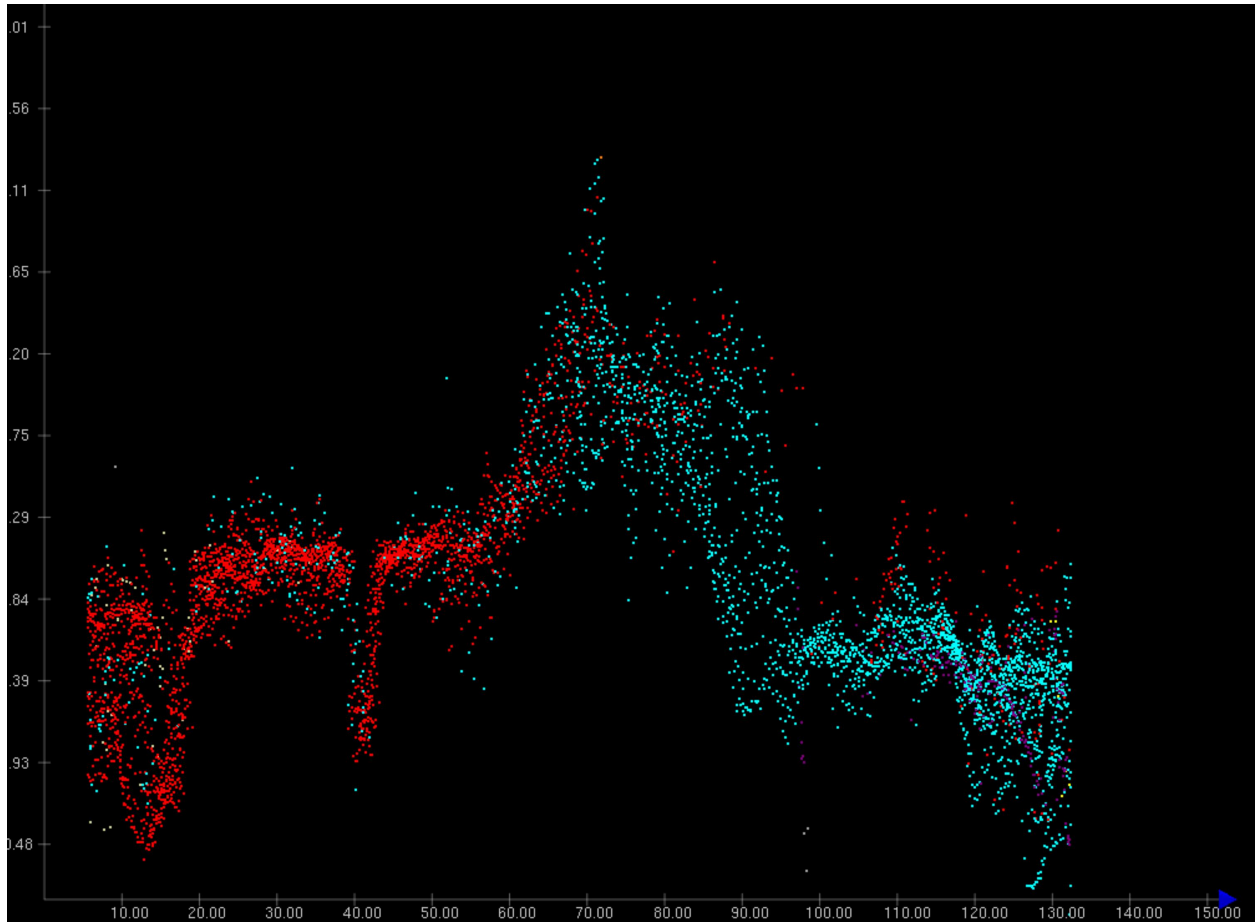


Figure 1.2.2

1.3) Profile/Beam - 1730/50 from h11630 / fa_1010_reson8101 / 2007-234 / 234-1740

DANGER TO NAVIGATION

Survey Summary

Survey Position: 59° 51' 38.5" N, 147° 21' 45.1" W
Least Depth: 10.88 m (= 35.70 ft = 5.950 fm = 5 fm 5.70 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.988 m ; **TVU (TPEv)** ± 0.181 m
Timestamp: 2007-234.17:44:43.198 (08/22/2007)
Survey Line: h11630 / fa_1010_reson8101 / 2007-234 / 234-1740
Profile/Beam: 1730/50
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Dton found during Office Processing A 5.95 fathom shoal (10.88m) was found by multibeam echosounder South of Wooded Islands

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11630/fa_1010_reson8101/2007-234/234-1740	1730/50	0.00	000.0	Primary

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

6fm (16701_1, 16700_1, 16013_1, 530_1)
 5fm 5ft (531_1)
 10.9m (500_1, 50_1)

S-57 Data

[None]

Feature Images

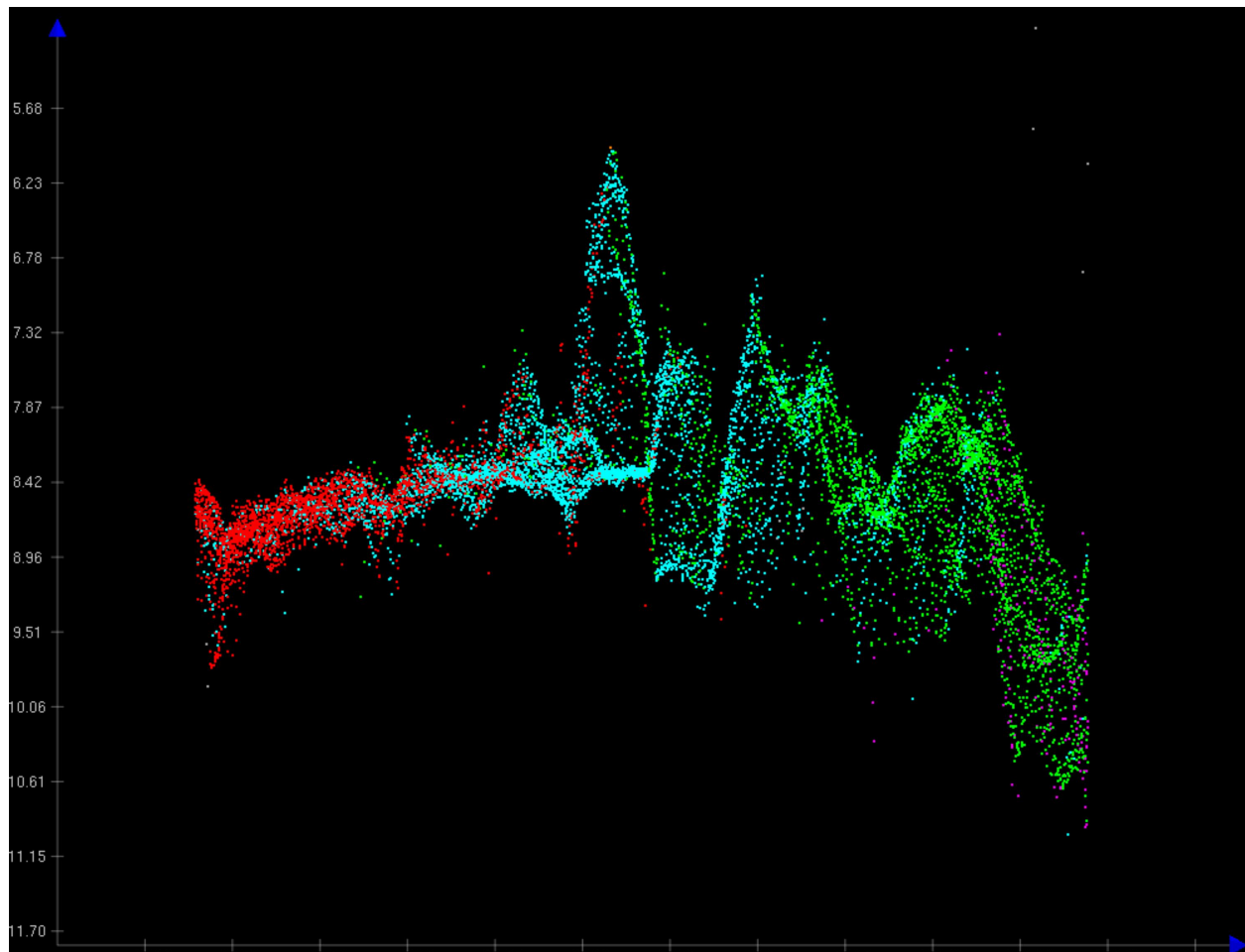


Figure 1.3.1

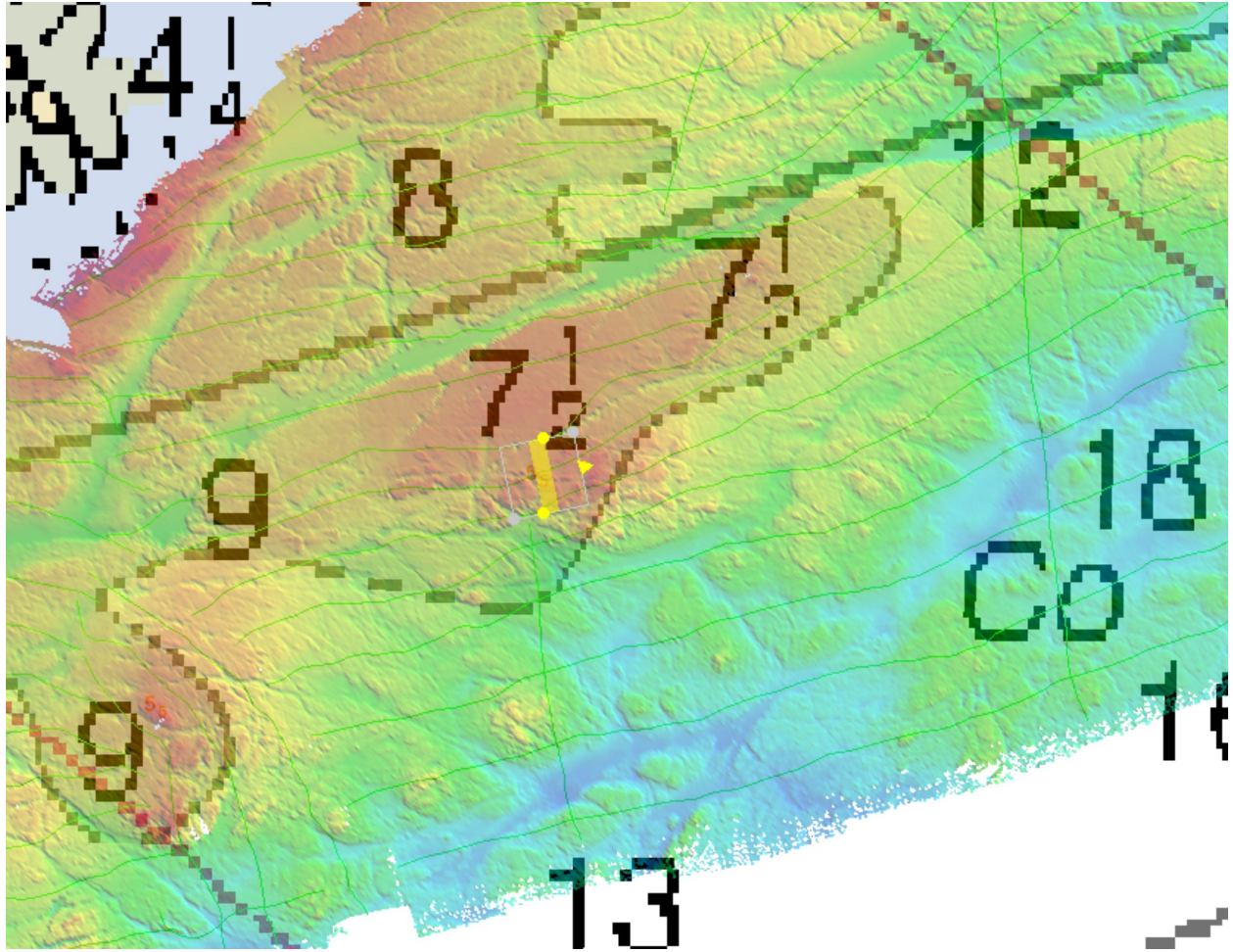


Figure 1.3.2



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 9, 2007

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: S-P903-FA-2007
HYDROGRAPHIC SHEET: H11630

LOCALITY: Nearshore Areas of Patton Bay, Patton Bay, VA
TIME PERIOD: August 21 - September 18, 2007

TIDE STATION USED: 945-4050 Cordova, WA
Lat. 60° 33.4'N Long. 145° 45.3' 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 S-P903-FA-2007, H11630, during the time period between August 21 to September 18, 2007.

Please use the zoning file "P903FA2007CORP" submitted with the project instructions for S-P903-FA-2007. Zones CA131 and CA132 are the applicable zones for H11630.

Refer to attachments for zoning information.

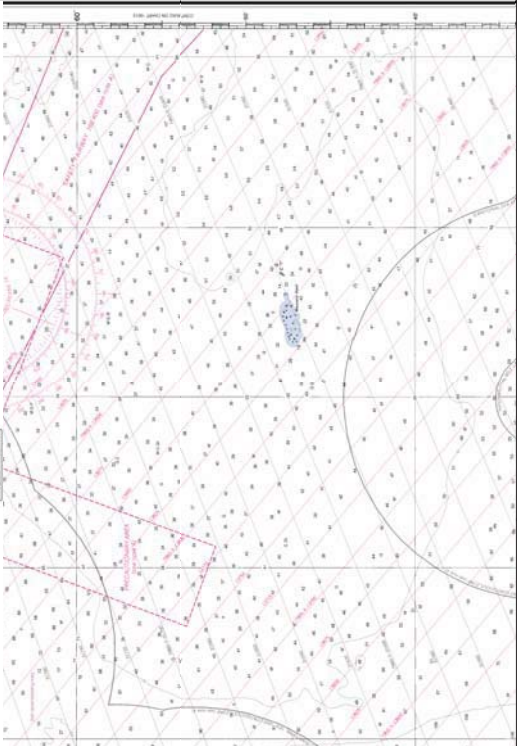
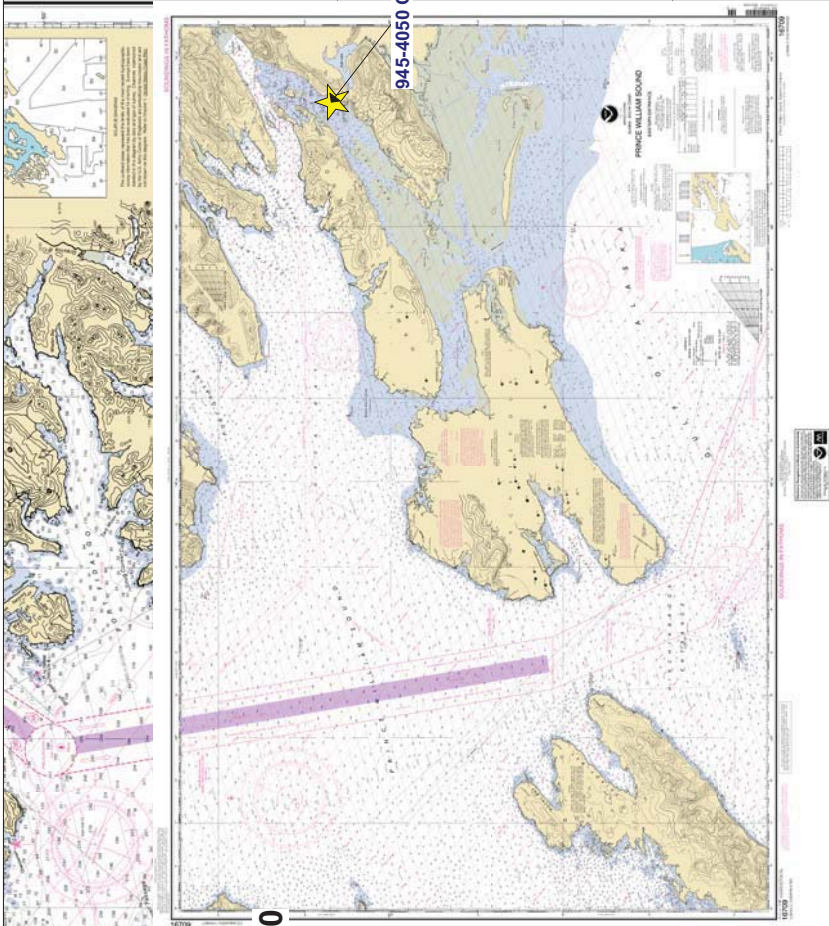
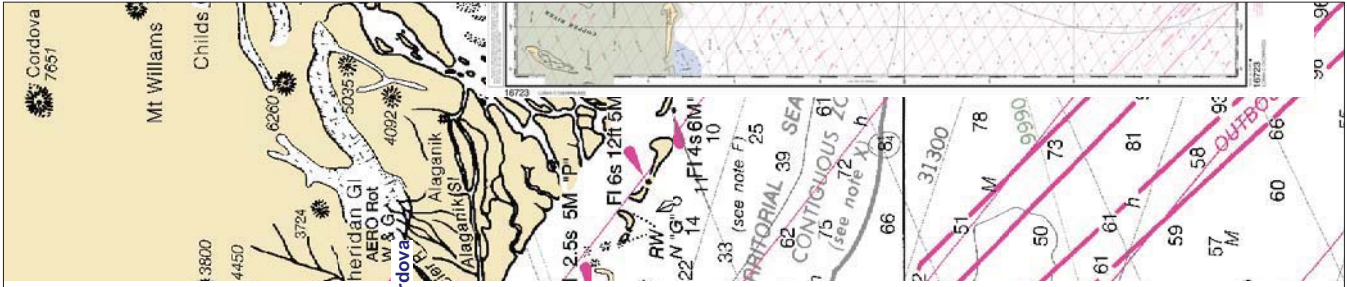
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Peter J. Stone

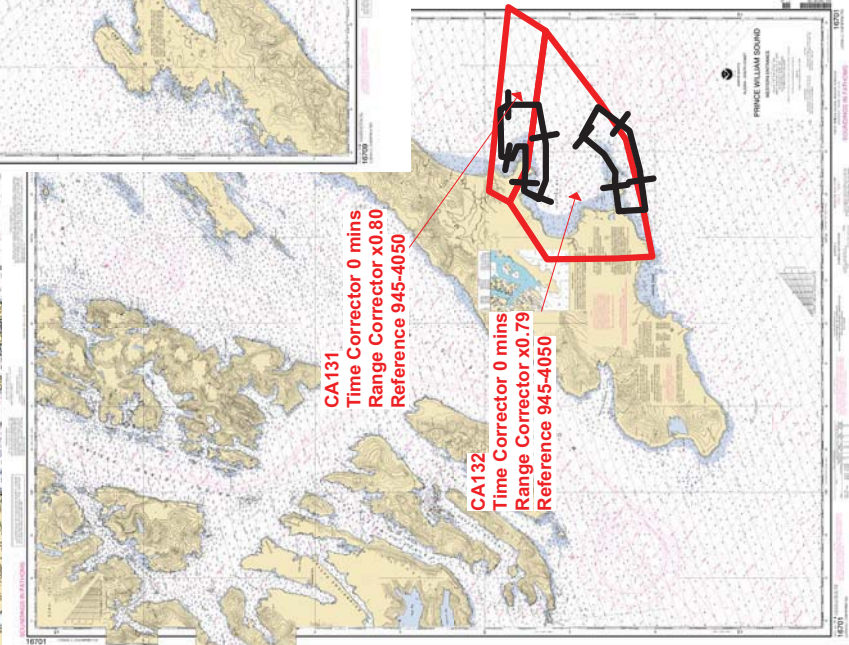
Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/
NOS, email=peter.stone@noaa.gov, c=US
Date: 2010.04.09 10:27:45 -04'00'

CHIEF, PRODUCT AND SERVICES DIVISION





**Final Tidal Zoning for
S-P903-FA-2007, H11630
Patton Bay, AK
(Preliminary as Final)**



CA131
Time Corrector 0 mins
Range Corrector x0.80
Reference 945-4050

CA132
Time Corrector 0 mins
Range Corrector x0.79
Reference 945-4050

H11630 HCell Report
Fernando Ortiz, Hydrographic Contractor
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's US4AK22M.000, and NOAA RNC's 16701.

HCell compilation of survey H11630 used Office of Coast Survey DRAFT HCell Specifications Version 4.0. For additional information on the standards and protocols used for HCell Compilation, see the DRAFT A/PHB HCell Reference Guide, version 2.0, March 17th, 2010.

1. Compilation Scale

Depths for HCell H11630 were compiled to the largest scale charts in the region, 16701 (1:81,436). The density and distribution of soundings from H11630 were selected to emulate the distribution on these charts. 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 finalized surface, **H11630_Office_final_combined.hns**, in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 scale for chart 16701. These shoal-based selections were made using a Radius Table file with values shown in the table, below . The resultant sounding layer contains 36,054 depths ranging from 2.9 to 62.5 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	20	2.0
20	50	2.5
50	150	3.0

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

3. Depth Contours

Depth contours at the intervals on the largest scale chart are included in the H11630_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The generalized metric and fathom equivalent contour values are shown in the table below.

Chart Contours in Fathoms	Metric Equivalent of Chart Contours	Metric Equivalent of Chart Contours NOAA Rounded	Actual Value of Chart Contours
3	5.4864	5.715	3
10	18.288	18.5166	10

Contours delivered in the H11630_SS file have not been deconflicted against soundings and hydrography as all other features in the H11630_CS file and soundings in the H11630_SS have been. This results in conflicts between the H11630_SS file contours and HCell features at or near the survey limits.

4. Meta Areas

The following Meta object areas are included in HCell 11630:

M_QUAL

Meta area objects were constructed on the basis of the limits of the hydrography. 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 M_QUAL.

5. Features

Shoreline features for H11630 were delivered from the field in one S-57 file defining new features and modification to GC or charted features. The features included in the HCell were de-conflicted against GC shoreline, the chart and hydrography during office processing.

Features delivered in survey H11630 were reduced to chart scale and they were included in H11630_CS.000.

There were 2 AWOIS items assigned to the survey.

There were 4 DTONs found during survey H11630 an additional 3 DTON were found during Hcell compilation.

The source of all features included in the H11630 HCell can be determined by the SORIND field.

5.3 Mean High Water Used for HCells

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

6. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue notes
M_QUAL	Data quality Meta object
PILPNT	Piles
SBDARE	Bottom samples and rocky seabed areas
SOUNDG	Chart scale soundings

The *_SS HCell contains the following Objects:

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

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

7. Blue Notes

Notes to the RNC and ENC chart compilers are included in the HCell as \$CSYMB features. By agreement with MCD, the NINFOM field is populated with an abbreviated version of the Blue Note (30 characters or less), describing the chart disposition, to be used by MCD in generating their Chart History spreadsheet.

8. Spatial Framework

8.1 Coordinate System

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

8.2 Horizontal and Vertical Units

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

Chart Unit Base Cell Units:

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

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

All depths deeper or equal to 11 fathoms display as whole fathoms.

- All depth units between 0 fathoms (MLLW) and 11 fathoms display as fathoms and whole feet.
- All depth units above MLLW (0 fathoms) to 2.0 feet above MHW display in feet for values that round to 5 feet or less, and in fathoms and feet above that.
- All height units (HUNI) which have been converted to charting units, and that are 2.0 feet above MHW and greater, are shown in feet.

In an ENC viewer fathoms and feet depth units (DUNI) display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. In an ENC viewer, heights (HUNI) display as whole feet.

9. Data Processing Notes

9.1 Junctions

Refer to section B.2 of the Descriptive Report for information on junction surveys.

10. QA/QC and ENC Validation Checks

H11630 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

- H11630_CS, Chart Units, Soundings compiled to 1:10,000
- H11630_SS, Chart Units, Soundings compiled to ;1:10,000
- H11630 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
- H11630 Survey Outline to populate SURDEX

11.2 File Naming Conventions

- | | |
|--|----------------------------|
| • Chart units base cell file, chart scale soundings | H11630_CS.000 |
| • Chart units base cell file, survey scale soundings | H11630_SS.000 |
| • Descriptive Report package | H11630_DR.pdf |
| • Survey outline | H11630_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.
Jeppesen Marine, 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:

Fernando Ortiz, Hydrographic Contractor, PHB, Seattle, WA; 206-526-6883;
Fernando.ortiz@noaa.gov.

APPROVAL SHEET
H11630

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

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

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