H11704

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. H11704

LOCALITY

State Alaska

General Locality Chatham Strait

Sublocality Chaik Bay

2007

CHIEF OF PARTY

Dean Moyles, Fugro Pelagos, Inc.

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DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H11704

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:

NA

State: **Alaska**

General Locality: **Chatham Strait**

Sub-Locality: **Chaik Bay**

Scale: **1:10,000** Date of Survey: **May 30, 2007 - September 1, 2007**

Instructions dated: **6/15/2006** Project No.: **OPR-O322-KR-07**

Vessel(s): **R/V Davidson (1066485), R/V R2 (623241), R/V D2 (647782), Shoreline Skiff (WN6739NW)**

Chief of party: **DEAN MOYLES**

Surveyed by: **ORTHMANN, REYNOLDS, GILL, MOUNT, STOCK, FARLEY, BRIGGS, POECKERT, ET AL.**

Soundings by: **Reson 8101 (R2 & D2 - Hull Mount), Reson 8111 (Davidson - Hull Mount), and Reson 8125 (Skiff - Pole Mount)**

SAR by: **Tyanne Faulkes** Compilation by: **Katie Reser**

Soundings compiled in: **Fathoms**

REMARKS: **All times are UTC. UTM Projection 8N.**

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.

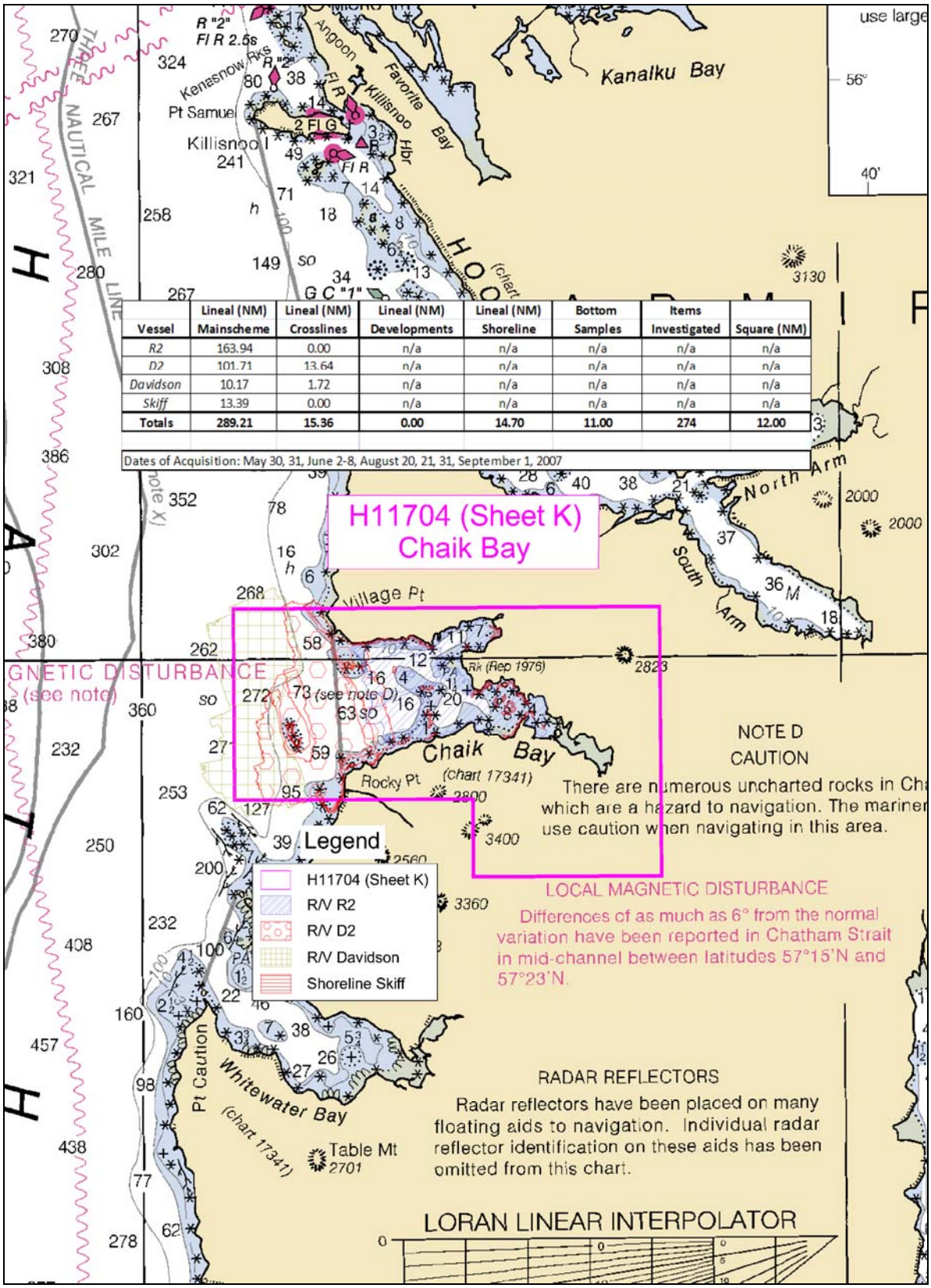
A - Area Surveyed

H11704 (Sheet K) is bound by the coordinates listed below, which encompass Chalk Bay.

Hydrographic data collection began on May 30, 2007 to June 8, 2007 and commenced again on August 20, 2007 and ended on September 1, 2007.

Table 1 – H11704 Sheet Limits[1]

Sheet Limits H11704 Sheet K Scale 1:10,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	57-20-45.34 N	134-37-21.34 W
2	57-20-45.34 N	134-25-10.26 W
3	57-16-39.28 N	134-25-10.26 W
4	57-16-39.43 N	134-30-32.64 W
5	57-17-50.60 N	134-30-32.54 W
6	57-17-50.62 N	134-37-21.34 W



Vessel	Lineal (NM) Mainscheme	Lineal (NM) Crosslines	Lineal (NM) Developments	Lineal (NM) Shoreline	Bottom Samples	Items Investigated	Square (NM)
R2	163.94	0.00	n/a	n/a	n/a	n/a	n/a
D2	101.71	13.64	n/a	n/a	n/a	n/a	n/a
Davidson	10.17	1.72	n/a	n/a	n/a	n/a	n/a
Skiff	13.39	0.00	n/a	n/a	n/a	n/a	n/a
Totals	**289.21**	**15.36**	**0.00**	**14.70**	**11.00**	**274**	**12.00**

Dates of Acquisition: May 30, 31, June 2-8, August 20, 21, 31, September 1, 2007

Figure 1 H11704 Area Surveyed

B – Data Acquisition & Processing

Refer to the OPR-O322-KR-07 Data Acquisition and Processing Report[2] for a detailed description of all equipment, survey vessels, processing procedures, and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.

Equipment & Vessels

The R/V Davidson, R/V R2, and the Shoreline Skiff acquired all soundings for H11704. R/V Davidson, 175 feet in length with a draft of 17.75 feet, was equipped with a 100 kHz Reson 8111 with option 033 (pseudo Side Scan) for multibeam data acquisition. R/V R2, 29 feet in length with a draft of 5.7 feet, were equipped with a 240 kHz Reson 8101 with option 033 (pseudo Side Scan) for multibeam data acquisition. The Shoreline Skiff, 24 feet in length with a draft of 1.42 feet, was equipped with a 455 kHz Reson 8125 with option 033 (pseudo Side Scan) for multibeam data acquisition. All vessels were also equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessel (POS/MV 320) (v4) with XTF files logged in Triton ISIS (v7.0.413.9).

Heights were taken on features awash or above the water level by visual estimation, using simultaneous comparison to a known reference (the vessel's bow).

Refer to OPR-O322-KR-07 Data Acquisition & Processing Report for a complete listing of equipment and vessel descriptions.

Quality Control

Crosslines

Crosslines were planned and well distributed throughout the survey to ensure adequate quality control. Total crossline length surveyed was 15.36 nautical miles or 5.31 percent of the total main scheme line length, exceeding the 5 percent planned. Each crossline was compared to all main scheme lines it intersected, using the CARIS HIPS QC report routine.

The majority of QC Reports fall well within the required accuracy specifications. However, beams that fall below the 95 percent confidence level in the QC report are associated with areas and conditions illustrated below. It should be noted that these locations are in agreement with the surrounding adjacent lines and are considered well within the required specifications.[3]

The majority of beams that fall below the 95 percent confidence level are located in areas having extremely steep slopes and/or rocks. Figures 2 and 3 below provide examples.

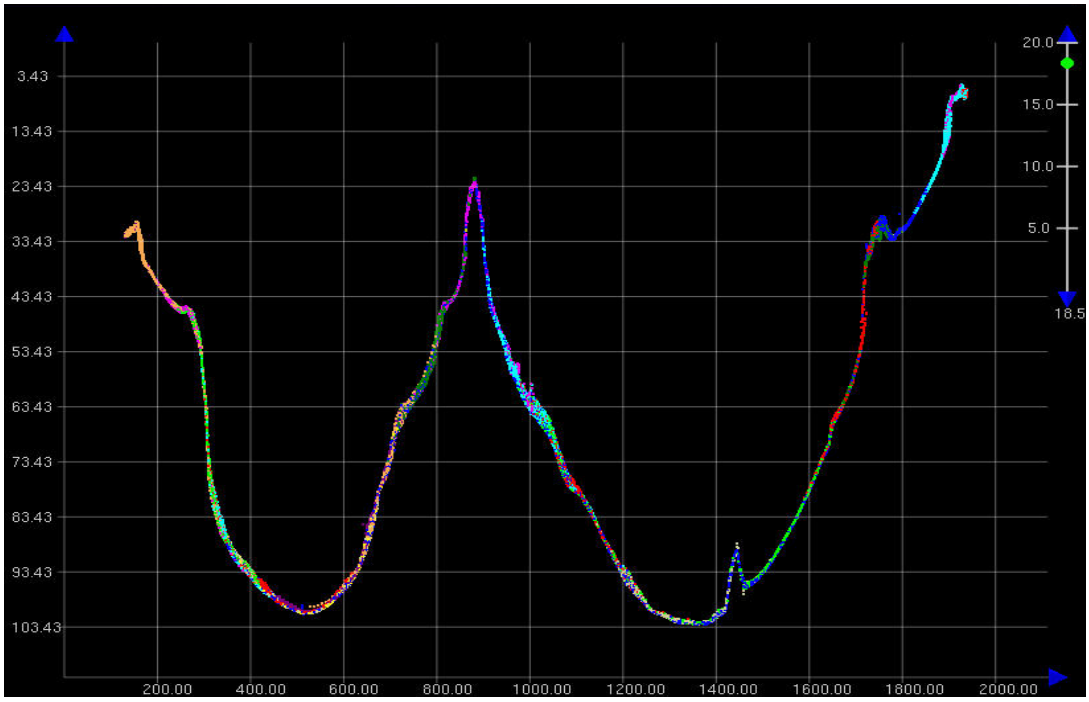


Figure 2 Profile of 2K04-TIE01

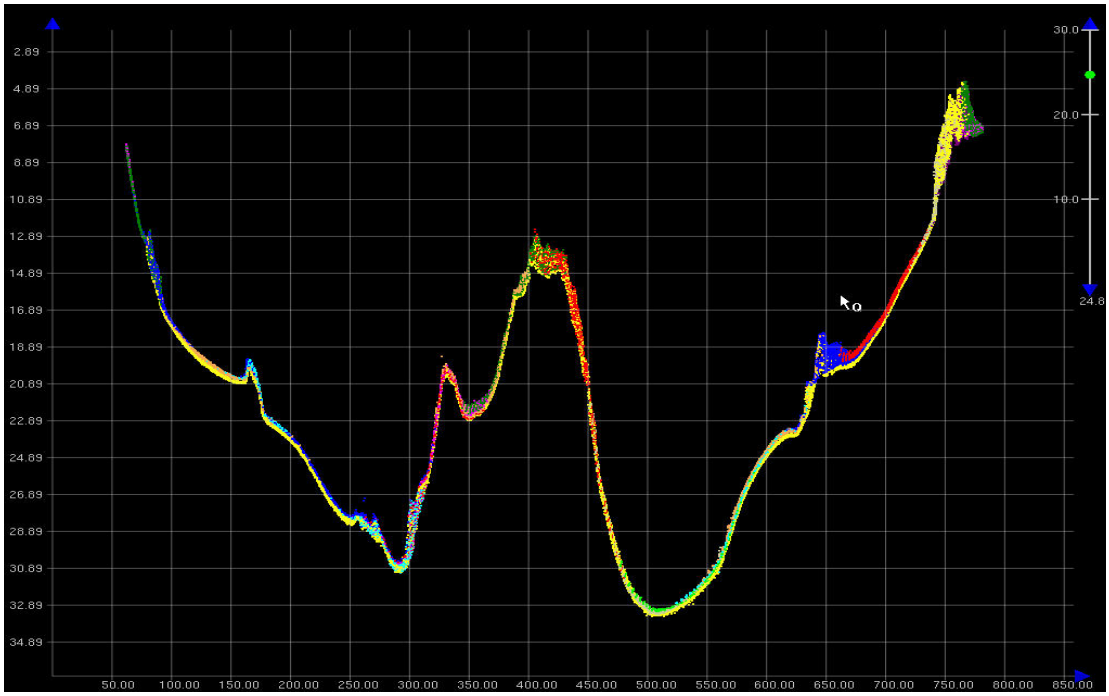


Figure 3 Profile of 2K02-TIE03

Note: The QC reports were generated based on the given accuracy specification of:

$$\pm\sqrt{[a^2 + (b*d)^2}$$

where, a = 0.5, b = 0.013, and d = depth.

However, since a variance of a difference, rather than a variance from a mean is being used, the a and b values were defined in the user defined option within the CARIS HIPS QC Report routine:

$$a = 0.5*\sqrt{2} = 0.707$$
$$b = 0.013*\sqrt{2} = 0.018$$

Uncertainty Values (CARIS BASE Surface)

The majority of H11704 had an uncertainty of about 0.20 to 0.50 meters, except for the deep water areas having extremely steep slopes or deemed to be rocky, where values ranged from 0.7 to 1.5 meters. Another exception to this is found in the nearshore areas in water depths of 1 to 2 meters where the uncertainty values ranged from 1.5 meters and higher, due to outer beams and no overlap. No uncertainty values were greater than the IHO level Order 1.[4]

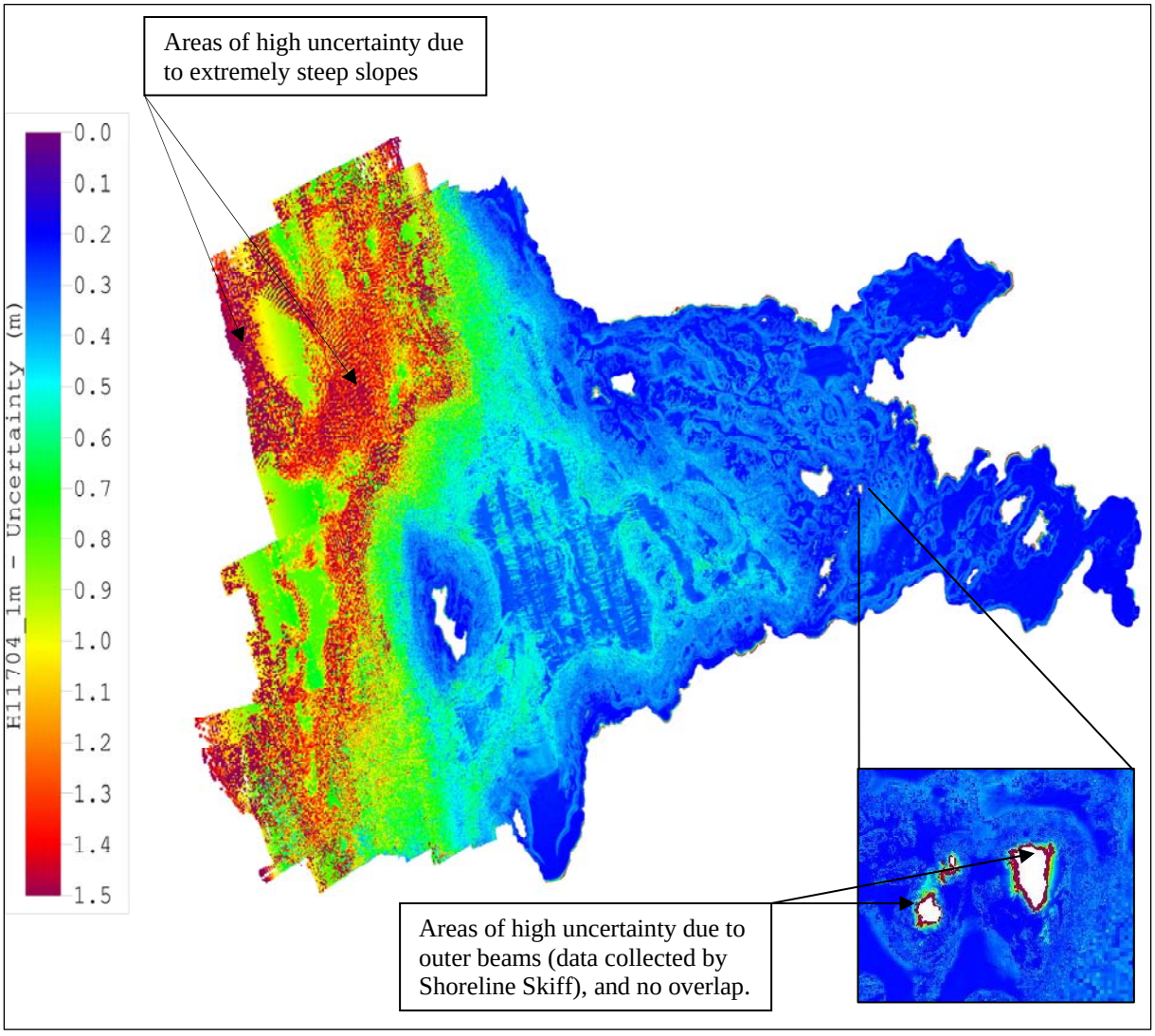


Figure 4 H11704 Uncertainty DTM

Survey Junctions

H11704 (Sheet K) junctions with:[5]

Registry #	Scale	Date	Junction Side
H11702	1:10,000	2007	North
H11699	1:20,000	2007	West
H11705	1:10,000	2007	Southwest

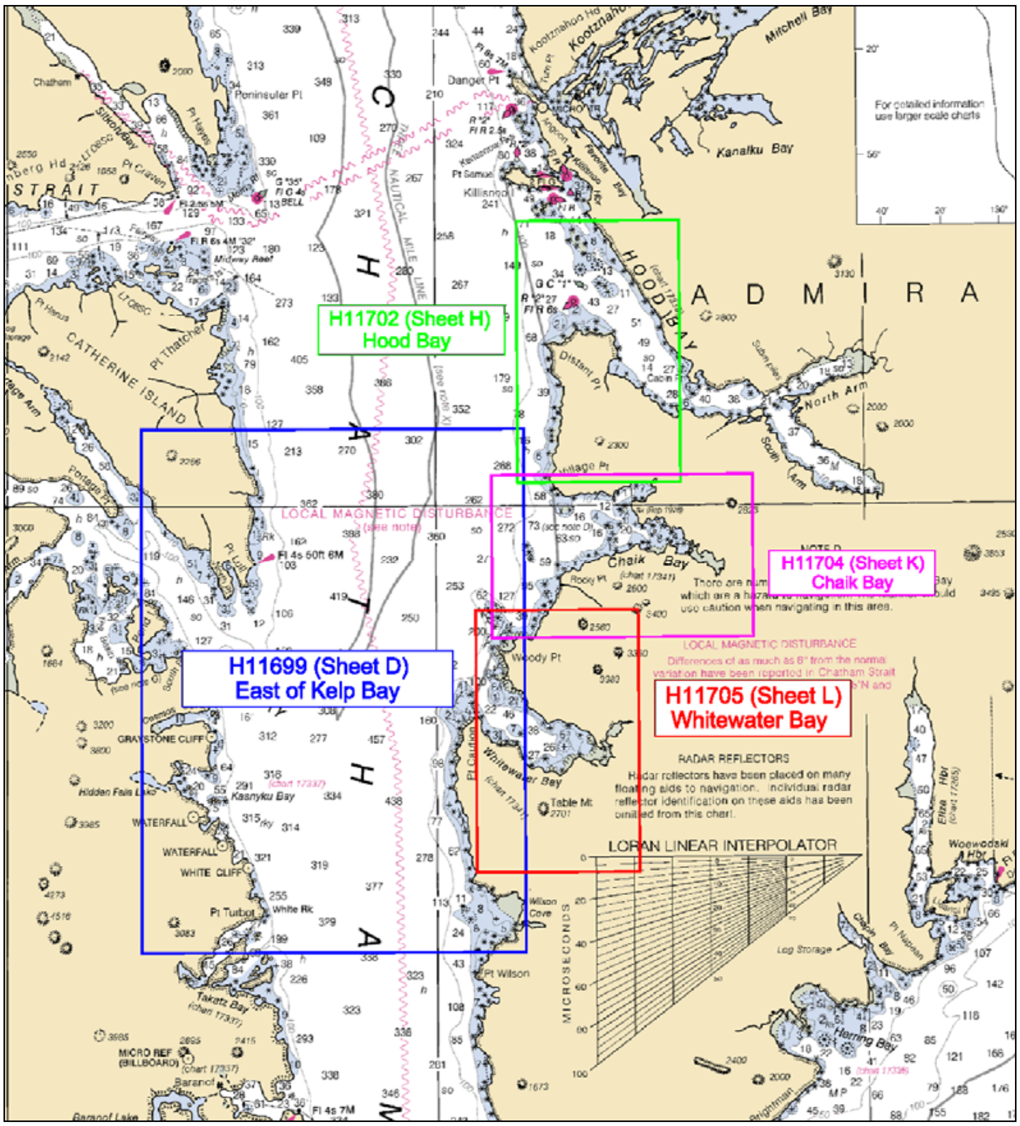


Figure 5 H11704 Survey Junctions

The surveys are in agreement along their common borders. The agreement was noted in the field using the CARIS CUBE surfaces during subset cleaning. The conformity is also apparent in the final combined BASE surfaces.[6]

Quality Control Checks

During the hydrographic survey OPR-O322-KR-07 the survey vessels conducted a number of confidence checks. These consisted of the vessels running two lines in the opposite direction over a reference surface (normally the patch test site). The data sets collected with the Reson 8125 (Shoreline Skiff), 8101 (R2), and8111 (Davidson) compared within 5 to 10 centimeters.

Positioning system confidence checks were conducted on a daily basis using the POS/MV controller software. The controller software had numerous real time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables (April 2007) were achieved. These include, but were not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP), and Satellite Status. During periods of high HDOP and/or low number of available satellites, survey operations were suspended.

Data Quality

In general, the multibeam data quality for H11704 was excellent, there were no unusual conditions encountered.[7]

Corrections to Echo Soundings

Refer to the OPR-O322-KR-07 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

Data Processing

Refer to the OPR-O322-KR-07 Data Acquisition and Processing Report for a detailed description of the processing flow.

The final Bathymetric with Associated Statistical Error (BASE) surface for H11704 is called H11704 and it contains six different BASE surfaces of different resolutions. To ensure sufficient overlap between these surfaces the follow parameters were used:[8]

Depth Threshold: 0 to 16 meters, resolution = 1m, Name in BASE Surface H11704_1m
Depth Threshold: 12 to 45 meters, resolution = 2m, Name in BASE Surface H11704_2m
Depth Threshold: 40 to 60 meters, resolution = 4m, Name in BASE Surface H11704_4m
Depth Threshold: 50 to 150 meters, resolution = 5m, Name in BASE Surface H11704_5m
Depth Threshold: 130 to 500 meters, resolution =10m, Name in BASE Surface H11704_10m
Depth Threshold: 400 to Max depth, resolution = 15m, Name in BASE Surface H11704_15m

The final S57 file for this project is called "H11704_S57_Features.000". This file contains all shoreline and bottom sample feature data for this project in S57 format as required in the Specifications and Deliverables.[9]

C – Horizontal & Vertical Control

Refer to the OPR-O322-KR-07 Horizontal and Vertical Control Report[10] for a detailed description of the horizontal and vertical control used. No deviations from the report occurred. A summary of the project's horizontal and vertical control follows.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83). All raw positions were originally collected in WGS84 and transformed to NAD83 during the post-processed kinematic GPS (PPK) routine.

It was necessary to acquire dual frequency GPS data at known locations on the ground so that a PPK solution could be used for final positioning. Sub-contractor John Oswald and Associates LLC (JOA) established two local control points: station "Angoon A" and station "Angoon B" in Angoon, AK. Refer to Appendix II in the "OPR-O322-KR-07 Horizontal &Vertical Control Report" for additional information.

Vessel position was determined in real time using a Trimble Zephyr L1/L2 GPS antenna, which was connected to a Trimble BD950 L1/L2 GPS card residing in the POS/MV. The POS/MV was set up via Com 2 to accept USCG differential corrections, which were output from a CSI MBX-3S Coast Guard beacon receiver. Note: since the pseudo range corrections received by the POS/MV are based on the NAD83 position of the reference station antenna, all DGPS-based final positions are NAD83. However, final positions were determined by a post-processed kinematic (PPK) solution using POSPac 4.3 processing software, which output a final solution in NAD83. (Refer to the "2007-NOAAProcessingProcedures" document for PPK processing procedure).

Table 2 - DGPS Stations

Station	ID	Latitude	Longitude	Freq.	Tx. Rate
Biorka, AK USCG	890	56°51'18" N	135°32'05"W	305	100BPS
Level Island, AK USCG	891	56°28'03" N	133°04'32" W	295	100BPS

Vertical Control

All sounding data were initially reduced to mean lower low water (MLLW) using unverified tidal data from three tide stations located in Warm Spring Bay, False Bay, and Mitchell Bay, AK. Sub-contractor John Oswald & Associates LLC (JOA) operated the gauges and e-mailed the data to the R/V Davidson at the end of every Julian day.

Table 3 - Tide Gauges

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
9451625	H350XL/355	Digital Bubbler	Warm Spring Bay, AK	57º05'18"N	134º49'30" W	April-September
9452328	H350XL/355	Digital Bubbler	False Bay, AK	57º40'00"N	134º56'06" W	April-September
9451953	H350XL/355	Digital Bubbler	Mitchell Bay, AK	57º32'24"N	134º25'30" W	August-September

TIDES

All sounding data were reduced to MLLW initially using unverified tidal data from the three tide stations located in Warm Spring Bay, False Bay, and Mitchell Bay, AK. Tidal data for a twenty-four hour period UTC, (Alaska Daylight Time to UTC was +8 hours) was assembled by JOA and e-mailed to the R/V Davidson at the end of every Julian Day. A cumulative file for the gauges was updated each day by appending the new data. Refer to the OPR-O322-KR-07 Horizontal and Vertical Control Report for additional tidal information and station descriptions.

The tidal zoning was modified by JOA, providing a more elaborate zoning scheme from those zones issued in the Statement of Work. For additional information, refer to JOA's Final Technical Report.

November 5, 2007, JOA issued verified tidal data and final zoning for H11696, H11697, H11698, H11699, H11702, H11703, H11704, H11705, H11706, H11707, & H11708 of OPR-O322-KR-07. On January 2, 2008, JOA issued verified tidal data and final zoning for H11700 & H11701 of OPR-O322-KR-07. All sounding data were then re-merged using CARIS HIPS and SIPS tide routine. Verified tidal data were used for all final Navigation BASE surfaces and S57 Feature files.[11]

D – Results and Recommendations

Chart Comparison

H11704 survey was compared with charts:[12]

Chart No.	Scale	Edition	Edition Date
17341	20,000	8th	May 2000
17339	30,000	11th	Mar. 1998
17320	217,828	17th	Nov. 2005

Note: Electronic chart (US3AK3BM) covers only a portion of the survey.[13]

Comparison of Soundings

In general, the soundings from chart 17341 coincide with the soundings from H11704 to within 1 to 5 fathoms; areas that do vary to any degree are as follows;[14]

- Item # 1: Hydrographic survey H11704 revealed a depth of 43 fathoms in the vicinity of a 35 fathom sounding on chart 17341 located at 57º19’13” N, 134º32’20” W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11704 revealed a depth of 10 fathoms in the vicinity of a 2 ¾ fathom sounding on chart 17341 located at 57º19’13” N, 134º28’56” W. This area was surveyed with 100% multibeam coverage.
- Item # 3: Hydrographic survey H11704 revealed a depth of 33 fathoms in the vicinity of a 20 fathom sounding on chart 17341 located at 57º18’44” N, 134º33’16” W. This area was surveyed with 100% multibeam coverage.
- Item # 4: Hydrographic survey H11704 revealed a depth of 23 fathoms in the vicinity of a 7 ½ fathom sounding on chart 17341 located at 57º18’34” N, 134º33’21” W. This area was surveyed with 100% multibeam coverage.
- Item # 5: Hydrographic survey H11704 revealed a depth of 17 fathoms in the vicinity of a 1 ½ fathom sounding on chart 17341 located at 57º18’28” N, 134º33’23” W. This area was surveyed with 100% multibeam coverage.
- Item # 6: Hydrographic survey H11704 revealed a depth of 35 fathoms in the vicinity of a 17 fathom sounding on chart 17341 located at 57º18’33” N, 134º33’36” W. This area was surveyed with 100% multibeam coverage.
- Item # 7: Hydrographic survey H11704 revealed a depth of 19 fathoms in the vicinity of a 7 fathom sounding on chart 17339 located at 57º18’49” N, 134º35’56” W. This area was surveyed with 100% multibeam coverage.

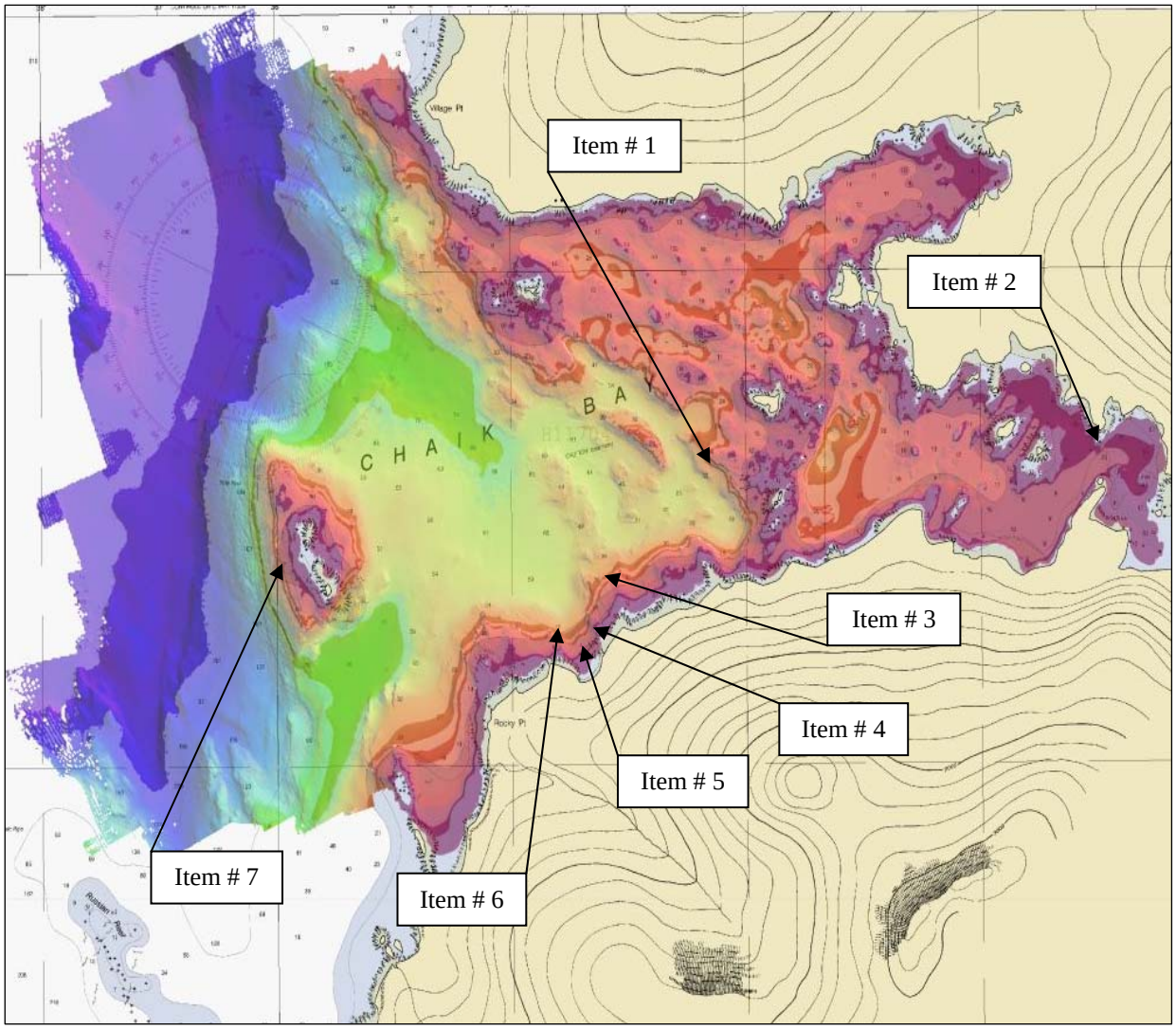


Figure 6 H11704 Chart Comparison (Chart 17341)

It should be noted that the soundings from chart 17339 coincide with the soundings from H11704 to within 1 to 5 fathoms.[15]

It should also be noted that the soundings from chart 17320 coincide with the soundings from H11704 to within 1 to 5 fathoms.

In general, the soundings from electronic chart US3AK3BM coincide with the soundings from H11704 to within 5 to 15 meters; areas that do vary to any degree are as follows:[16]

- Item # 1: Hydrographic survey H11704 revealed a depth of 153 meters in the vicinity of a 106 meter sounding on electronic chart US3AK3BM located at 57º20'15" N, 134º35'07" W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11704 revealed a depth of 1.4 meters in the vicinity of a 14.6 meter sounding on electronic chart US3AK3BM located at 57º19'10" N, 134º29'33" W. This area was surveyed with 100% multibeam coverage. Suggest moving the sounding more offshore, as it is located in sparse data.
- Item # 3: Hydrographic survey H11704 revealed a depth of 34 meters in the vicinity of a 1.8 meter sounding on electronic chart US3AK3BM located at 57º18'56" N, 134º31'55" W. This area was surveyed with 100% multibeam coverage.

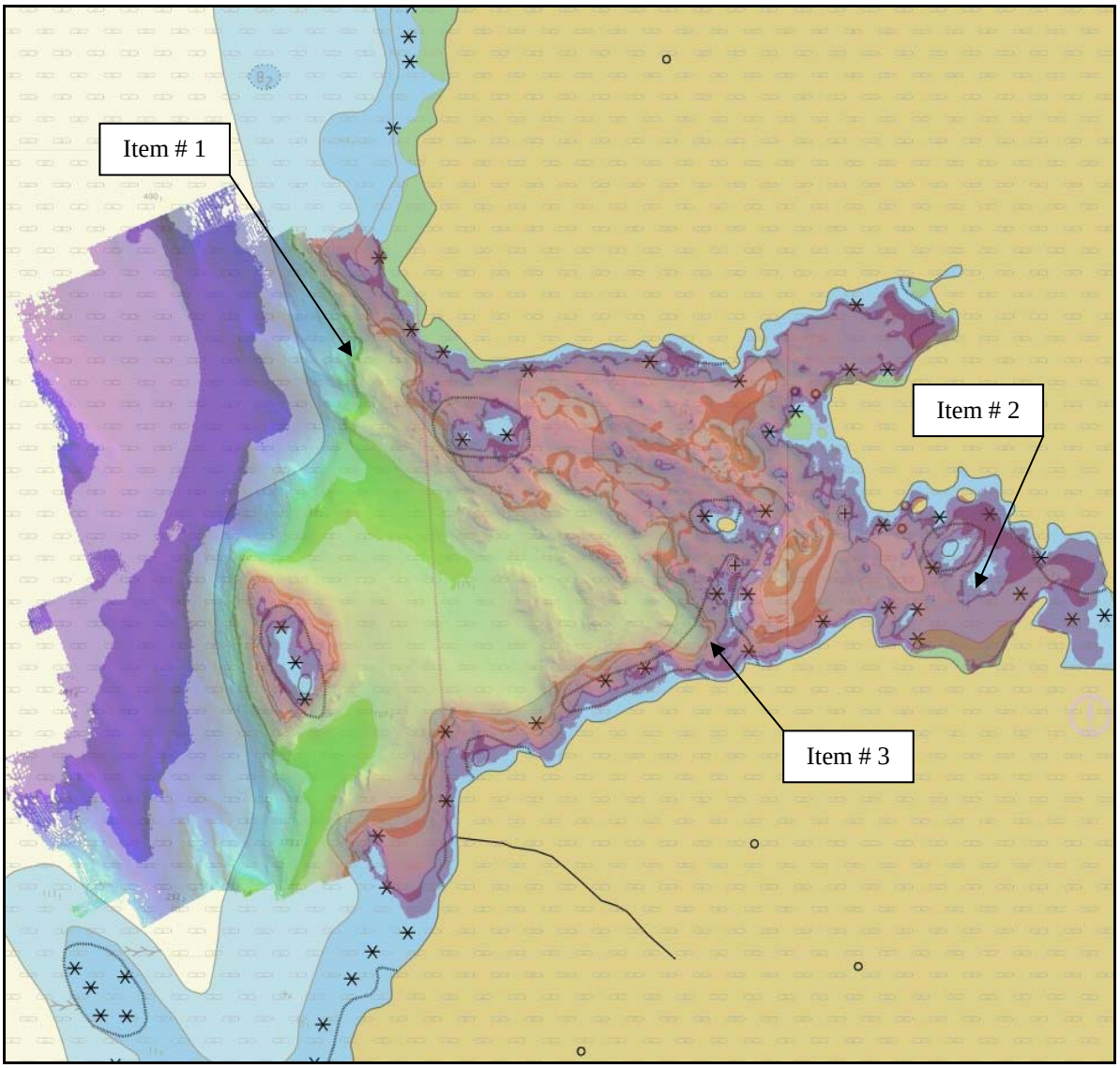


Figure 7 H11704 Electronic Chart Comparison (Chart US3AK3BM)

Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11704.[17]

Charted Features

All charted features residing on charts incorporated within H11704 (see Listing of Charts above) were investigated and are as follows:

- PD Rk located at 57º19'42" N and 134º31'24" W, refer to RSD Shoreline Verification Results for more details regarding this charted feature.[18]
- Rk (Rep 1976) PA located at 57º19'36" N and 134º30'56" W, refer to RSD Shoreline Verification Results for more details regarding this charted feature.[19]
- PD Rk located at 57º19'13" N and 134º31'36" W, refer to RSD Shoreline Verification Results for more details regarding this charted feature.[20]

Dangers to Navigation

Five Dangers to Navigation were located during the survey of H11704. The Dangers to Navigation were reported on June 6, 2007 and reviewed June 8, 2007 (See Appendix I for submitted reports).[21]

Bottom Samples

The R/Vs Davidson and R2 were fitted to obtain bottom samples as specified in the Statement of Work. The purpose of this was to characterize the bottom in charted anchorages and for general bottom classification.

Samples were taken with a Van Veen grab sampler and position was recorded with WinFrog (v3.7.0). Sediment retrieved from the sampler was analyzed and then encoded with the appropriate S57 attributes. Positions and descriptions of all samples are found in the H11704_S57_Features file.[22]

Aids to Navigation

There were no charted aids to navigation in the survey area. No uncharted aids to navigation were found in the survey area.[23]

Shoreline Verification Results

Remote Sensing Division (RSD) provided the shoreline detail (AK0401B) for this survey. Since the RSD shoreline was the official shoreline source provided by NOAA, primary focus was given to its verification during this survey. However, charted features were investigated if practical as were any significant new features observed during the course of shoreline verification. Significant features were deemed to be those potentially dangerous to navigation and / or seaward of the 4m contour.

Visual inspection during shoreline verification determined the RSD shoreline to be very accurate. RSD foul areas commonly needed some adjustment but the MHW line and point features provided by RSD were particularly good. Any discrepancies are detailed below.

The Hydrographer recommends that the RSD MHW from (AK0401B) supersede previously charted shoreline where any discrepancies occur unless noted below.[24]

The following tables itemize any errors or discrepancies found in the RSD source and charted shoreline. Note that RSD and charted features that were found to be positioned accurately are not itemized here and are not included in the S57 feature file. New features (features not in the RSD source/chart but found during field investigation) do appear in the S57 feature file, but are generally not itemized here.[25]

RSD Source (AK0401B) Changes and Discrepancies				
RSD Feature	RSD Position	Remarks	Actions Taken in S57 Feature File / Recommendations	Applicable DP form(s)
Rock	57 19 59.40 N 134 33 41.51 W	RSD Rock 45463 not found, full MBES coverage at position.	Do not chart.	N/A
Foul	Centered at: 57 19 54.78 N 134 33 57.78 W	Foul area found to be two separate foul areas and does not conform to MBES data.	Remove existing RSD foul and chart as two foul areas as depicted in the S-57 feature file.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Rock	57 17 54.24 N 134 34 50.90 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 17 58.42 N 134 34 53.01 W	Charted rock not found, full MBES coverage at position.	Remove.	JD156_087
US3AK3BM Rock	57 18 01.54 N 134 34 55.84 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Center at: 57 17 42.60 N 134 34 46.29 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
US3AK3BM Obstruction	Centered at: 57 17 53.30 N 134 18 11.11 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A
17341 Ledge	Extents: 57 18 00.30 N 134 34 14.35 W 57 18 23.71 N 134 33 30.27 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_007
US3AK3BM Rock	57 18 11.09 N 134 34 18.76 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 18 26.73 N 134 34 16.06 W	Charted rock not found, full MBES coverage at position.	Remove.	JD156_087
US3AK3BM Rock	57 18 30.56 N 134 34 19.17 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Land Area	57 18 23.53 N 134 34 00.43 W	Charted land area not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Obstruction	Centered at: 57 18 25.39 N 134 33 57.79 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A
US3AK3BM Rock	57 18 32.82 N 134 33 30.48 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Ledge	Extents: 57 18 26.27 N 134 33 22.45 W 57 18 35.97 N 134 33 01.82 W	Ledge exists but doesn't conform to MBES data. Continuation of ledge to the East is charted correctly.	Modify existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_031
US3AK3BM Rock	57 18 44.56 N 134 32 53.38 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 18 47.98 N 134 32 31.96 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 18 45.82 N 134 32 17.19 W	Ledge exists but doesn't conform to MBES data. Continuation of ledge to the East and West is charted correctly.	Modify existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_048
17341 Ledge	Centered at: 57 18 47.03 N 134 31 43.84 W	Charted ledge not found through observation and MBES data.	Remove.	JD253_052
US3AK3BM Rock	57 18 50.77 N 134 31 36.65 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 19 04.43 N 134 31 44.14 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_059
17341 Rock	57 19 04.02 N 134 31 38.10 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_086
17341 Rock	57 19 06.35 N 134 31 36.01 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_085
17341 Submerged Rock PD	57 19 13.72 N 134 31 36.22 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
US3AK3BM Submerged Rock	57 19 16.57 N 134 31 43.62 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 19 08.76 N 134 31 53.27 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Obstruction	Extents: 57 18 52.51 N 134 31 35.27 W 57 19 17.36 N 134 31 46.07 W 57 18 39.34 N 134 33 08.74 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A
US3AK3BM Rock	57 19 00.72 N 134 30 56.58 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 18 58.60 N 134 30 48.23 W	Charted ledge not found through observation and MBES data.	Remove.	N/A
US3AK3BM Rock	57 19 04.50 N 134 30 21.66 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 18 55.70 N 134 30 06.08 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 19 03.97 N 134 30 06.16 W	Charted rock not found, full MBES coverage at position. Possibly rock on Chart 17341 40m to the West.	Remove.	N/A
17341 Rock	57 19 05.22 N 134 30 09.43 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_097

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17339 Shoal	Centered at: 57 18 52.01 N 134 29 39.52 W	Shoal boundary is inaccurate in reference to the MBES data.	Revise shoal boundary to conform to MBES data.	N/A
US3AK3BM Rock	57 19 08.26 N 134 29 10.84 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 05.10 N 134 29 07.94 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_100
17339 Shoal	Centered at: 57 19 07.65 N 134 28 55.01 W	Shoal boundary was observed to be a ledge and is inaccurate in reference to the MBES data.	Remove existing shoal and chart ledge as depicted in the S-57 feature file.	JD 253_103
17341 Ledge	Centered at: 57 18 57.66 N 134 28 54.54 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_106
US3AK3BM Rock	57 19 00.85 N 134 28 43.08 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 18 52.20 N 134 28 37.02 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_110
17341 Rock	57 18 50.81 N 134 28 28.65 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_111
US3AK3BM Obstruction	Centered at: 57 19 16.42 N 134 28 46.92 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A
17341 Ledge	Centered at: 57 19 23.80 N 134 29 23.92 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Ledge	Centered at: 57 19 30.22 N 134 29 19.22 W	Charted ledge not found, full MBES coverage at position.	Remove	N/A
17341 Ledge	Centered at: 57 19 35.46 N 134 29 24.51 W	Charted ledge not found, full MBES coverage at position.	Remove	N/A
17341 Ledge	Center at: 57 19 32.38 N 134 29 52.97 W	Ledge exists but doesn't conform to MBES data and was observed to extend beyond the charted ledge extents.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_142 JD253_143
17341 Ledge	Centered at: 57 19 32.10 N 134 30 09.43 W	Charted ledge not found, full MBES coverage at position.	Remove	N/A
US3AK3BM Land Area	57 19 26.65 N 134 30 14.13 W	Charted land area not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 19 27.69 N 134 30 24.25 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 19 30.55 N 134 30 30.78 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_171
US3AK3BM Submerged Rock	57 19 31.07 N 134 30 44.57 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 19 38.56 N 134 30 43.92 W	Ledge not found and was observed to be a rock foul.	Remove existing ledge and chart rock foul as depicted in the S-57 feature file.	N/A
17341 Submerged Rock PA	57 19 36.89 N 134 30 56.81 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 28.96 N 134 31 21.04 W	Charted rock not found, full MBES coverage at position.	Remove.	JD253_074

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Rock	57 19 27.49 N 134 31 38.09 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 19 31.93 N 134 31 26.95 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Kelp	57 19 31.93 N 134 31 26.95 W	Charted kelp not found.	Remove.	JD253_075
17341 Ledge	Centered at: 57 19 28.56 N 134 31 46.75 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_077
US3AK3BM Rock	57 19 30.50 N 134 31 59.50 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Obstruction	Centered at: 57 19 31.11 N 134 31 58.77 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A
17341 Submerged Rock PD	57 19 42.99 N 134 31 24.36 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 48.93 N 134 31 09.31 W	Charted rock not found, full MBES coverage at position.	Remove.	JD153_192
US3AK3BM Land Area	57 20 05.35 N 134 31 10.83 W	Charted land area not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Land Area	57 20 04.70 N 134 30 59.87 W	Charted land area not found, full MBES coverage at position.	Remove.	N/A
17341 Ledge	Centered at: 57 19 46.27 N 134 30 44.14 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_178

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Ledge	Centered at: 57 20 01.70 N 134 30 53.77 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_208
17341 Rock	57 20 11.32 N 134 30 45.12 W	Charted rock not found, full MBES coverage at position.	Remove.	JD153_209
17341 Rock	57 20 11.43 N 134 30 24.37 W	Charted rock not found, full MBES coverage at position.	Remove.	JD153_212
17341 & US3AK3BM Ledge	Centered at: 57 20 17.94 N 134 30 00.05 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_219
17341 Ledge	Centered at: 57 20 20.44 N 134 29 50.16 W	Charted ledge not found, full MBES coverage at position.	Remove	N/A
US3AK3BM Obstruction	Centered at: 57 20 22.27 N 134 29 56.91 W	Obstruction doesn't conform to the MBES data.	Revise obstruction area to conform to MBES data.	N/A
17339 Ledges	Extents: 57 20 20.24 N 134 29 45.57 W 57 20 02.01 N 134 30 52.86 W 57 19 42.40 N 134 30 41.01 W	Charted ledges on Chart 17341 were found to be a better representation of actual ledge extents.	Remove charted ledges and chart ledges as depicted in Chart 17341 and the S-57 feature file.	N/A
US3AK3BM Rock	57 20 29.48 N 134 30 37.43 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 20 08.37 N 134 31 40.57 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 & 17339 Ledge	Centered at: 57 20 11.86 N 134 31 46.62 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Rock	57 20 17.34 N 134 32 09.60 W	Charted rock exists but was found to be an islet as depicted in the RSD.	Remove charted rock and chart islet as depicted in the S-57 feature file.	JD153_251
US3AK3BM Rock	57 20 14.07 N 134 32 28.37 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17339 & 17341 Ledges	Center at: 57 20 17.35 N 134 33 00.39 W	Ledge exists but doesn't conform to MBES data and was observed to extend beyond the charted ledge extents.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_260 JD253_253
US3AK3BM Rock	57 20 11.78 N 134 33 33.74 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17339 & 17341 Ledges	Extents: 57 20 13.58 N 134 33 56.38 W 57 20 43.13 N 134 34 44.80 W	Ledge exists but doesn't conform to MBES data and was observed to extend beyond the charted ledge extents.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_026_D2 JD253_039_D2
17339 & 17341 Ledge	Centered at: 57 20 15.33 N 134 34 17.66 W	Charted ledge not found, full MBES coverage at position.	Remove	N/A
US3AK3BM Rock	57 20 17.21 N 134 34 19.06 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Rock	57 20 23.42 N 134 34 36.02 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 54.73 N 134 34 12.01 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 51.82 N 134 34 02.76 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
17341 Rock	57 19 50.59 N 134 34 00.49 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 52.75 N 134 33 59.55 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17341 Rock	57 19 54.43 N 134 34 02.93 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
17339 & 17341 Ledge	Centered at: 57 19 54.78 N 134 33 57.78 W	Charted ledge found to be two separate foul areas and does not conform to MBES data.	Remove existing ledge and chart as two foul areas as depicted in the S-57 feature file.	N/A
US3AK3BM Obstruction	Centered at: 57 19 54.78 N 134 33 57.78 W	Charted obstruction found to be two separate foul areas and does not conform to MBES data.	Remove existing obstruction and chart as two foul areas as depicted in the S-57 feature file.	N/A
17341 Ledges	Center at: 57 18 50.69 N 134 35 43.43 W	Two Ledges exist but should be one ledge and don't conform to MBES.	Remove existing ledges and chart ledge as depicted in the S-57 feature file.	JD253_003_D2 JD253_006_D2
17341 Kelp	57 19 21.24 N 134 29 32.35 W	Charted kelp not found.	Remove.	JD253_185
17341 Ledge	Center at: 57 19 13.82 N 134 29 31.47 W	Ledge exists but doesn't conform to MBES data and was observed to extend beyond the charted ledge extents.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	JD253_153
17341 Ledge	Centered at: 57 19 20.87 N 134 29 50.74 W	Ledge exists but doesn't conform to MBES data.	Remove existing ledge and chart ledge as depicted in the S-57 feature file.	N/A
US3AK3BM Rock	57 19 30.48 N 134 29 26.85 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
US3AK3BM Rock	57 19 15.49 N 134 29 57.77 W	Charted rock not found, full MBES coverage at position.	Remove.	N/A
US3AK3BM Obstruction	Centered at: 57 19 21.85 N 134 29 48.47 W	Obstruction not found sufficient MBES data provided to disprove the existence of the charted obstruction.	Remove.	N/A

Shoreline Correlator Sheet

ArcMap (v9.2) with the Shoreline Correlator add-on, written by the Fugro Pelagos Inc. GIS department, aided in the processing of the investigation results. The Correlator utilized the WinFrog log files to create an individual DP form for all acquired DPs. The Correlator was mapped to the log file, tide file, photos, NOAA Chart (largest scale available), and CARIS BASE Surfaces to calculate and display the desired information for each DP. The DP forms and raw field records can be found on the Project USB Drive under; OPR-O322-KR-07\H11704\Final_Deliverables\Reports\Descriptive Report\H11704 Shoreline.

DP ITEM NUMBER : JD253_003 DP Form

Date:	10 September, 2007
Julian Day:	253
UTC Time:	14:19:08
Latitude:	57 18 37.65 N
Longitude:	134 35 22.67 W
Northing:	6352020.05
Easting:	524721.03
Raw (+Depth) or (-Height) (m):	N/A
Draft Corrector (m):	N/A
SV Corrector (m):	N/A
Tide Corrector (m):	-0.33
Corrected to MLLW (m):	N/A
Corrected to MLLW (fathoms):	N/A
Corrected to MLLW (feet):	N/A

DP Comment: D2_K ledges around islet to mhw

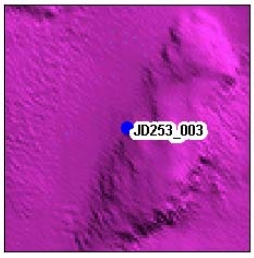
Correlating DP Item Numbers:
JD253_006_D2 N/A
N/A N/A

Correlating MB Least Depth:
None

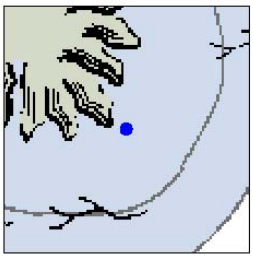
Remarks/Recommendations:
Two Ledges exist but should be one ledge and don't conform to MBES. Remove existing ledges and chart ledge as depicted in the S-57 feature file.

Chart: 17341_1 Topo: Carto Code: None

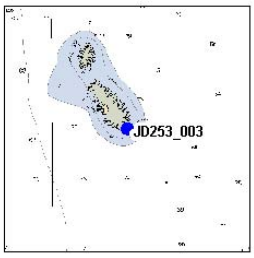
DPs and RSD AK0401B
200m x 200m



DPs, RSD AK0401B, and MBES coverage
200m x 200m



DP and Chart
200m x 200m



DP and Chart
2000m x 2000m

E – Approval Sheet

Approval Sheet

For

H11704

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-O322-KR-07 Statement of Work and 2007 Specifications & Deliverables;
Fugro Pelagos, Inc. Acquisition Procedures (2007- NOAAAcquisitionProcedures);
Fugro Pelagos, Inc. Processing Procedures (2007-NOAAProcessingProcedures);

The data were reviewed daily during acquisition and processing.

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

Approved and forwarded,

Dean Moyles,
Lead Hydrographer
Fugro Pelagos, Inc. Survey Party

Invalid signature

X Dean Moyles

Dean Moyles
ACSM Certified

Revisions Compiled During Office Processing and Certification

[1] Do not concur. The bounding box of the survey has the following corners;
SW – 57-17-27.977N, 134-38-27.575W NE – 57-21-12.032N, 134-28-16.691W
[2] Filed with project records.
[3] Concur.
[4] Concur.
[5] During compilation, a junction was made with H11699, H11702 and H11705, all of which have been compiled and submitted.
[6] Concur.
[7] Concur.
[8] Concur with clarification. A 15m combined surface was created during the Survey Acceptance Review and was the basis of compilation. See Survey Acceptance Review Checklist.
[9] Concur.
[10] Filed with project records.
[11] Concur.
[12] Charts used during compilation were Chart 17339, 12th Ed., August 2007, Chart 17341, 9th Ed., July 2007 and Chart 17320, 18th Ed., March 2008.
[13] Do not concur. ENC US3AK3BM is based on Chart 17320 and covers the entire survey area.
[14] Concur with clarification. Compiler agrees with field chart comparison and additional discrepancies found during the Survey Acceptance Review. See SAR checklist.
[15] Concur. Compiler agrees with hydrographer's chart comparison. Supersede charted data in the common area.
[16] Concur. Compiler agrees with hydrographer's chart comparison. Supersede charted data in the common area.
[17] Concur with clarification. There were no AWOIS items located within the limits of H11704.
[18] The dangerous rock, depth unknown and the PD notation have been blue noted to be removed. Chart submerged 0fm 4ft rock at 57-19-43.008N, 134-31-20.056W.
[19] The charted 1 ¼ fm rock and Rep (1976) PA notation have been blue noted to be removed. Chart submerged 2fm rock at 57-19-36.620N, 134-30-58.616W.
[20] The dangerous rock, depth unknown and the PD notation have been blue noted to be removed. Chart submerged 2fm 1ft rock at 57-19-14.447N, 134-31-35.670W.
[21] Concur . All 5 DTONs reported from H11704 have been charted and all are included in the HCell.
[22] Do not concur. There were no bottom sample features included in the submitted feature file. Given that a majority of the area is classified as a rocky seabed area, it is unlikely that any bottom samples collected in the field would have been included in the HCell. Two charted bottom samples were blue noted to be retained.
[23] Concur.
[24] Concur.
[25] Concur with clarification. All items addressed in the tables have been reviewed during compilation and are either included in the HCell or have been blue noted to be removed or modified as appropriate.

Hydrographic Survey Registry Number: **H11704**

Survey Title: **State:** **ALASKA**
Locality: **Chatham Strait**
Sub-locality: **Chaik Bay**

Project Number: **OPR-O322-KR-07**

Survey Dates: **May & June, 2007**

Depths are reduced to Mean Lower Low Water using preliminary tides.

Positions are based on the NAD83 horizontal datum.

Charts Affected:

Chart No.	Scale	Edition	Edition Date
16016	969,756	20th	Nov. 2003
17320	217,828	17th	Nov. 2005
17341	20,000	8th	May 2000

DANGER TO NAVIGATION:

Feature	Depth (fms ft)	Latitude	Longitude
Sounding	2 fms 0 ft	57-19-50.40N	134-32-47.44W
Sounding	3 fms 4 ft	57-20-11.43N	134-31-05.23W
Sounding	2 fms 0 ft	57-19-16.05N	134-30-33.20W
Sounding	5 fms 2 ft	57-19-15.61N	134-32-06.64W
Sounding	2 fms 3 ft	57-19-17.72N	134-31-38.32W

COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6835.

H11704 HCell Report

Katie Reser, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11704 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March, 2010.
HCell Reference Guide: Version 2.0, 22 February, 2010.

2. Compilation Scale

Depths and features for HCell H11704 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
17341	1:20,000	9th	07/01/2007	12/26/2009

The following ENCs were also used during compilation:

Chart	Scale
US3AK3BM	1:217,828

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 15-meter combined surface in CARIS BASE Editor. A shoal-biased selection was made at 1:7,500 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	400	5

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

4. Depth Contours

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

Chart Contour Intervals in Fathoms from Chart 17339	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H11704_SS.000
0	0	0.000	0.000	0
3	5.4864	5.715	3.125	3
10	18.288	18.517	10.125	10
50	91.44	92.812	50.750	50
100	182.88	184.252	100.750	100
150	274.32	275.692	150.750	150
200	365.76	367.132	200.750	200

With the exception of the zero contours included in the *_CS file, contours have not been deconflicted against shoreline features, soundings and hydrography, as all other features in the *_CS file and soundings in the *_SS have been. This may result in conflicts between the *_SS file contours and HCell features at or near the survey limits. Conflicts with M_QUAL, COALNE and SBDARE objects should be expected. HCell features should be honored over *_SS.000 file contours in all cases where conflicts are found.

5. Meta Areas

The following Meta object areas are included in HCell H11704:

M_QUAL

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

6. Features

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

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

$CSYMB	Blue notes
COALNE	GC coastline
DEPCNT	Zero contours defining intertidal area features
LNDARE	Islet
LNDELV	Height on islet
M_QUAL	Data quality Meta object
OBSTRN	Foul areas
SBDARE	Ledges, reefs and rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features
WEDKLP	Kelp features

The *_SS HCell contains the following Objects:

DEPCNT	Generalized contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

8. Spatial Framework

8.1 Coordinate System

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

8.2 Horizontal and Vertical Units

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

Chart Unit Base Cell Units:

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

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

BASE Editor and S-57 Composer Units:

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

See the HCell Reference Guide for details of conversion from metric to charting units, and application of NOAA rounding.

9. Data Processing Notes

There were no significant deviations from the standards and protocols given in the HCell Specification and HCell Reference Guide.

10. QA/QC and ENC Validation Checks

H11704 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to 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 are MCD approved as inherent to and acceptable for HCells.

11. Products

11. 1 HSD, MCD and CGTP Deliverables

H11704_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:20,000
H11704 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:7,500
H11704 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11704 _Outline.gml	Survey outline
H11704 _Outline.xsd	Survey outline

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.2	Creation of soundings and bathy-derived features, 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.
Northport Systems, Inc., Fugawi Marine ENC Ver.3.1.0.435	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

Katie Reser
Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206-526-6864
katie.reser@noaa.gov

APPROVAL SHEET
H11704

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

Katie Reser
2010.05.28
08:10:31 -07'00'

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

Digitally signed by
Russ Davies
Date: 2010.05.28
09:10:41 -07'00'

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

Gary C. Nelson
2010.05.28
09:08:49 -07'00'

Digitally signed by David Scharff
DN: cn=David Scharff, o=OCS, ou=NOAA, email=david.scharff@noaa.gov, c=US
Reason: AWOIS and Surf Check complete
Date: 2010.06.02 13:52:48 -04'00'