H11717

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic Survey

Field No. N/A

Registry No. H11717

LOCALITY

State Alaska

General Locality Akutan Pass

Sublocality Unalga Island to Cape Sedanka

2007

CHIEF OF PARTY
DEAN MOYLES

LIBRARY & ARCHIVES

DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H11717

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: N/A

State Alaska

General Locality Akutan Pass

Sub-Locality Unalga Island to Cape Sedanka

Scale 1:10,000 **Date of Survey** June 15 to July 27, 2007

Instructions dated 6/15/2006 **Project No.** OPR-Q191-KR-07

Vessel R/V Davidson (1066485) , R/V R2 (623241), R/V D2 (647782)

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)

SAR by Tyanne Faulkes Compilation by Annie Raymond

Soundings compiled in Fathoms

REMARKS: All times are UTC. UTM Projection 3N

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.

All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

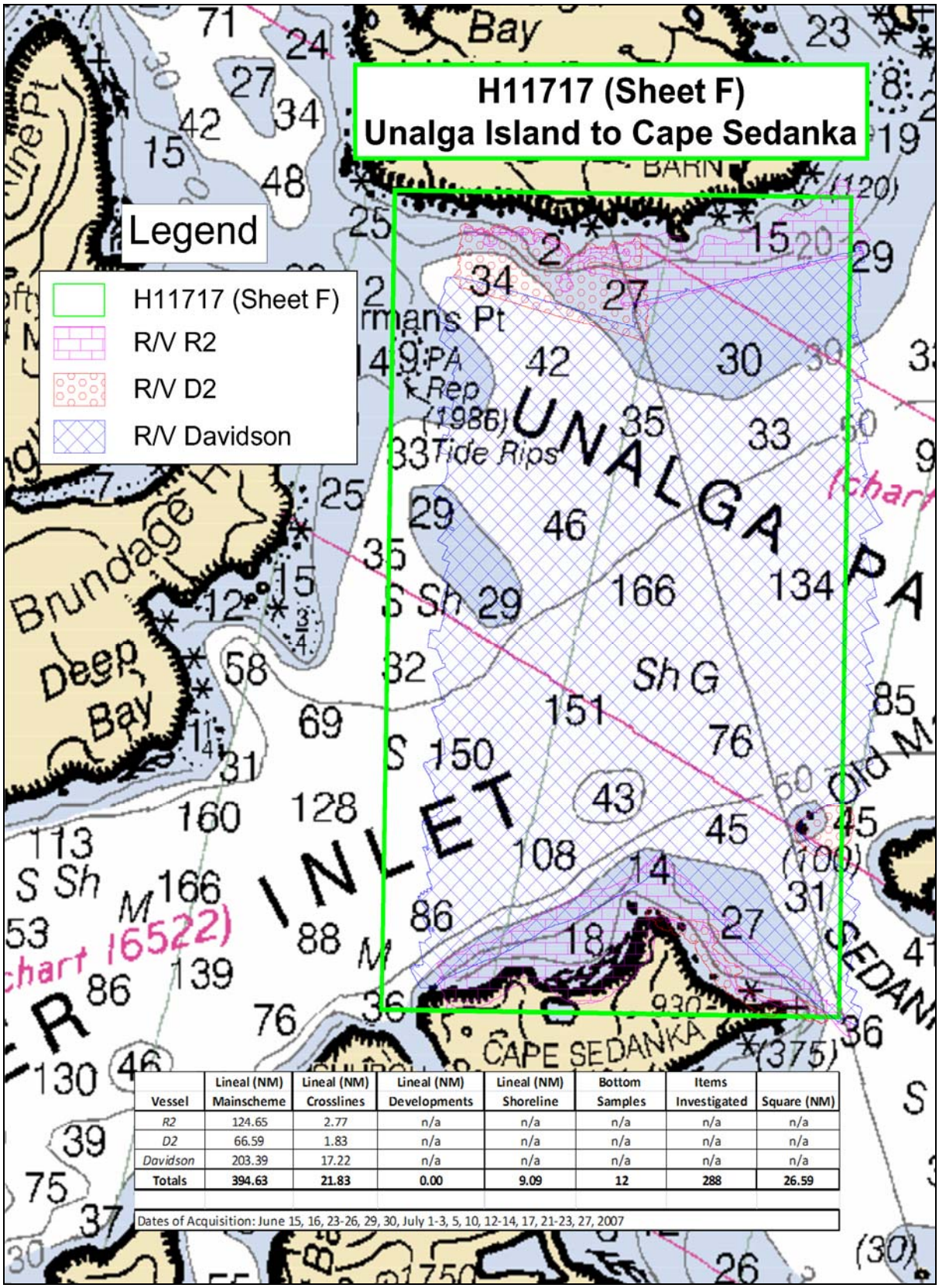
A - Area Surveyed

H11717 (Sheet F) is bound by the coordinates listed below, which encompass the area from Unalga Island to Cape Sedanka.

Hydrographic data collection began on June 15, 2007 and ended on July 27, 2007.

Table 1 – H11717 Sheet Limits

Sheet Limits H11717 Sheet F Scale 1:10,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	53-57-49.32 N	166-11-06.01 W
2	53-50-33.36 N	166-04-11.82 W
3	53-50-23.44 N	166-04-11.82 W
4	53-50-23.44 N	166-11-06.01 W



Vessel	Lineal (NM) Mainscheme	Lineal (NM) Crosslines	Lineal (NM) Developments	Lineal (NM) Shoreline	Bottom Samples	Items Investigated	Square (NM)
R2	124.65	2.77	n/a	n/a	n/a	n/a	n/a
D2	66.59	1.83	n/a	n/a	n/a	n/a	n/a
Davidson	203.39	17.22	n/a	n/a	n/a	n/a	n/a
Totals	**394.63**	**21.83**	**0.00**	**9.09**	**12**	**288**	**26.59**

Dates of Acquisition: June 15, 16, 23-26, 29, 30, July 1-3, 5, 10, 12-14, 17, 21-23, 27, 2007

Figure 1 H11717 Area Surveyed

B – Data Acquisition & Processing

Refer to the OPR-Q191-KR-07 Data Acquisition and Processing Report 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 R/V D2 acquired all soundings for H11717. The 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/Vs R2 & D2, 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. 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-Q191-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 21.83 nautical miles or 5.53 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.[1]

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

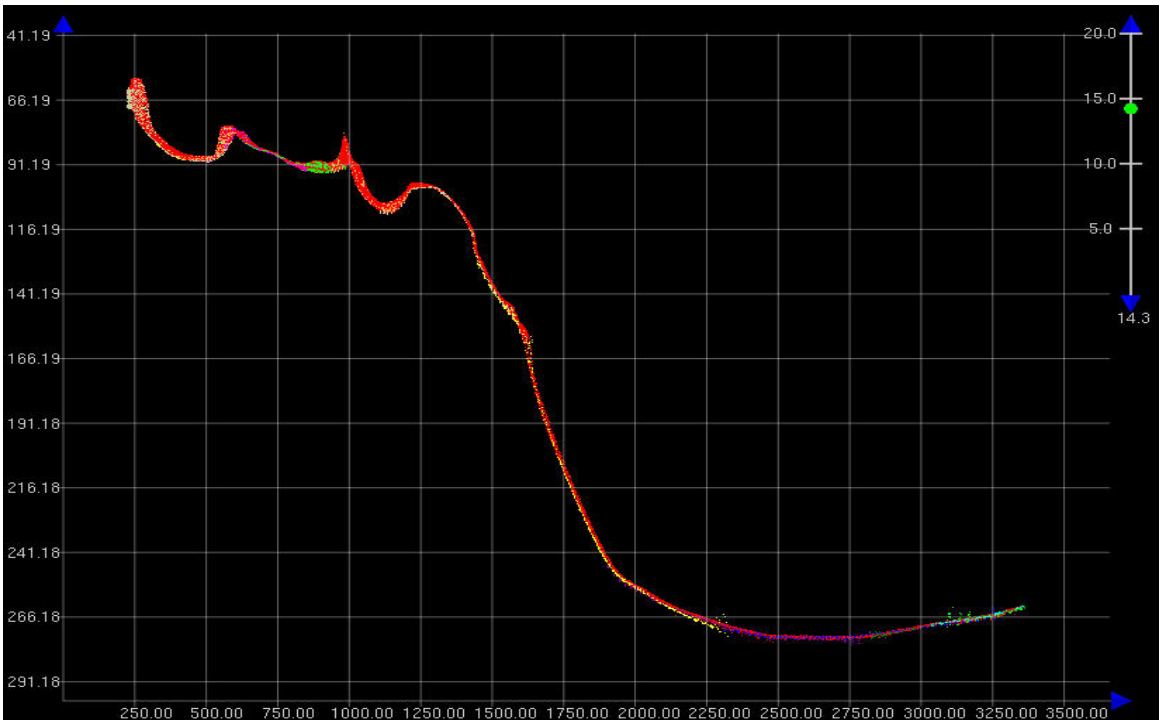


Figure 2 Profile of 3F06-TIE01A

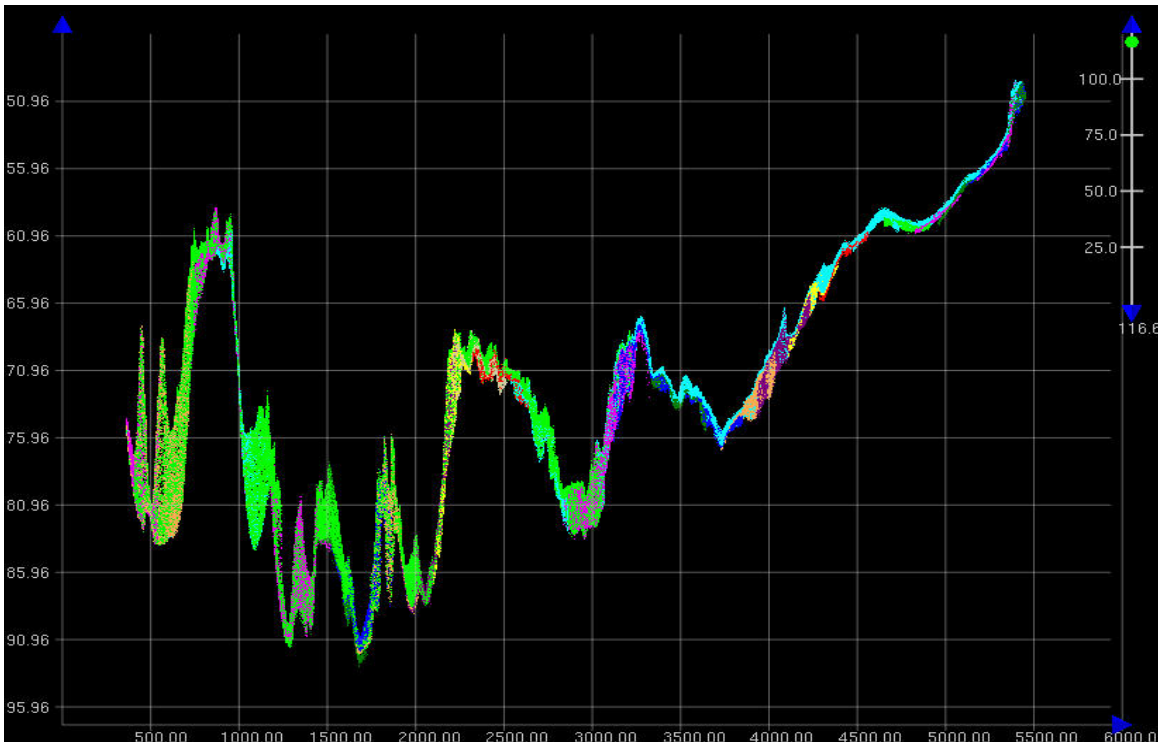


Figure 3 Profile of 3F07-TIE02

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 H11717 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 0.60 to 1.5 meters. No uncertainty values were greater than the IHO level Order 1.[3]

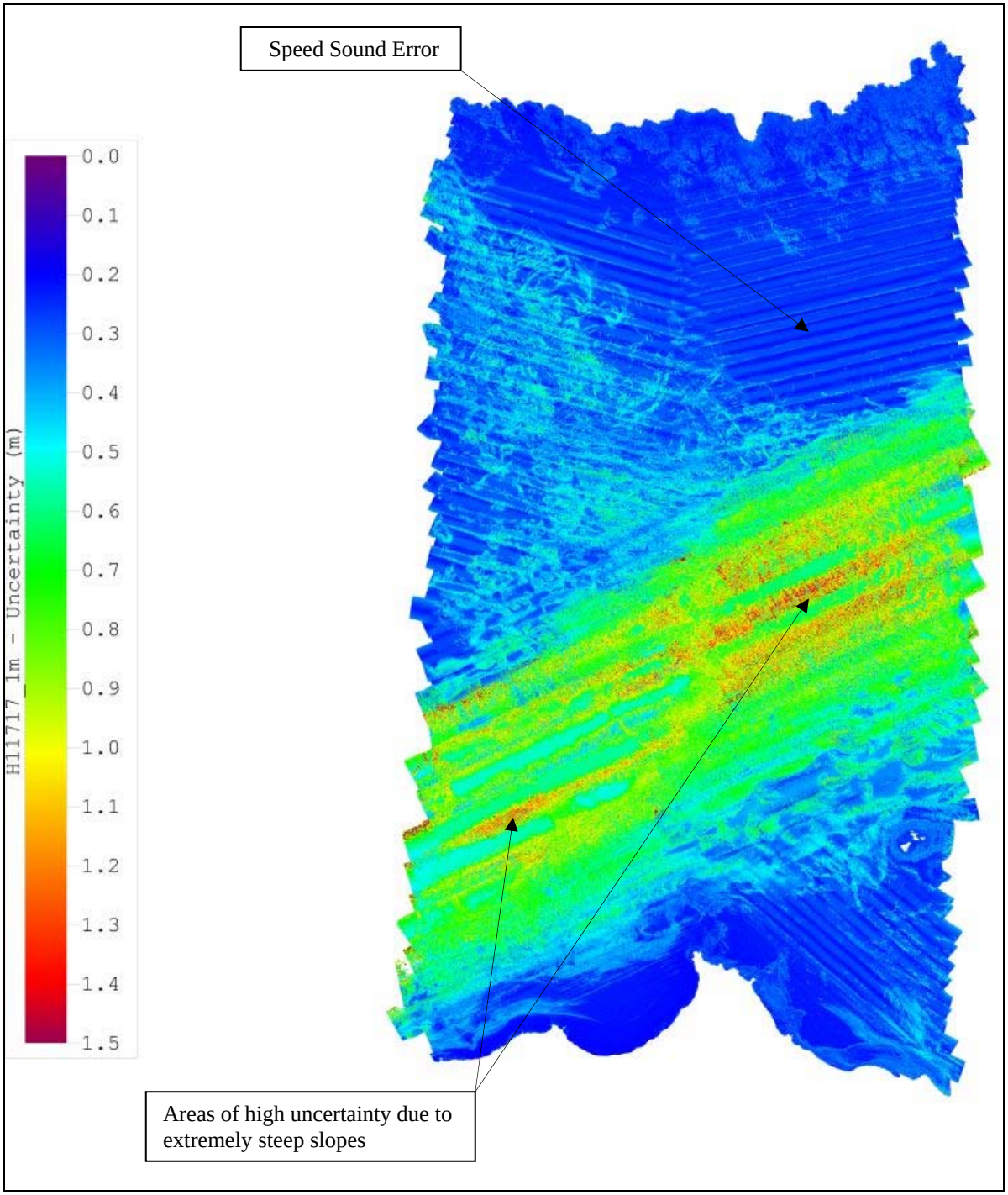


Figure 4 H11717 Uncertainty DTM

Survey Junctions

H11717 (Sheet F) junctions with[4]:

Registry #	Scale	Date	Junction Side
H11715	1:10,000	2007	West
H11716	1:10,000	2007	East
H11718	1:10,000	2007	West
H11719	1:10,000	2007	Southeast

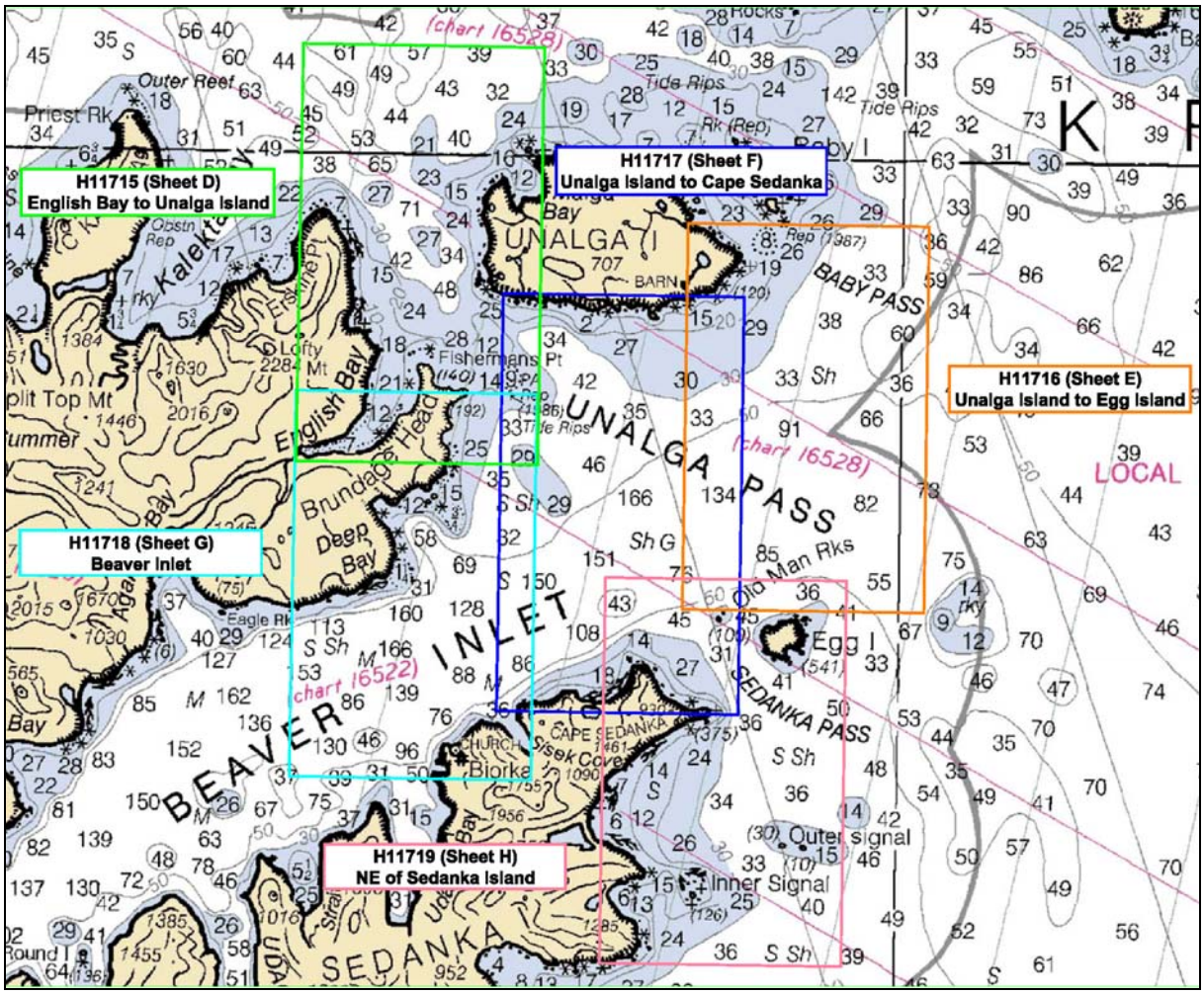


Figure 5 H11717 Survey Junctions

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.[5]

Quality Control Checks

During the hydrographic survey OPR-Q191-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 8101 (R2 & D2), and 8111 (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 H11717 was excellent. Two notable problems follow:

- During data acquisition and routine processing, a general downward and/or upward cupping was noticed in the across track sounding profiles for certain areas. This is possibly due to a high volume of thermal layering and strong undercurrents in the water column. This problem was addressed by conducting SVP casts more frequently and reducing the line spacing interval. Even though this SVP error is noticeable on the uncertainty surface DTM in Figure 4 above, the data are well within the required specifications.[6]
- During routine processing, tidal offsets were noticed in the survey area. In addition to tide gauge information, GPS heights from the survey vessels were examined and used to derive final tide zoning and to provide a better understanding of the tides within this area. No uncertainty values were greater than the IHO level Order 1.[7]

Corrections to Echo Soundings

Refer to the OPR-Q191-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-Q191-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 H11717 is called H11717, and it contains five different BASE surfaces of different resolutions. To ensure sufficient overlap between these surfaces the follow parameters were used:

Depth Threshold: 0 to 20 meters, resolution = 1m, Name in BASE Surface H11717_1m
Depth Threshold: 15 to 45 meters, resolution = 2m, Name in BASE Surface H11717_2m
Depth Threshold: 40 to 60 meters, resolution = 4m, Name in BASE Surface H11717_4m
Depth Threshold: 50 to 150 meters, resolution = 5m, Name in BASE Surface H11717_5m
Depth Threshold: 130 to Max depth, resolution = 10m, Name in BASE Surface H11717_10m

The final S57 file for this project is called "H11717_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. [8]

C – Horizontal & Vertical Control

Refer to the OPR-Q191-KR-07 Horizontal and Vertical Control Report 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. John Oswald and Associates LLC (JOA) established two local control points: station "Malga A" and station "Malga B" in Malga Bay on Unalga Island, AK. Refer to Appendix II in the "OPR-Q191-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 Station

Station	ID	Latitude	Longitude	Freq.	Tx. Rate
Cold Bay, AK USCG	898	55°11'25" N	162°42'24"W	289	100BPS

Vertical Control

All sounding data were initially reduced to mean lower low water (MLLW) using unverified tidal data from two tide stations located in Reef Bight and Biorka Village, 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	Gauge Type	Location	Latitude	Longitude	Operational
9462645	Sutron Xpert/Paroscientific Digiquartz (DAA H355 digital bubbler gauge)	Biorka Village, AK	53º49'44"N	166º12'59" W	June-August
9462662	Seabird SBE26 (w/submersible pressure gauge)	Reef Bight, AK	54º09'25"N	166º04'24" W	June-August

TIDES

All sounding data were reduced to MLLW initially using unverified tidal data from the two tide stations located in Reef Bight and Biorka Village, 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.

January 10, 2008, JOA issued verified tidal data and final zoning for OPR-Q191-KR-07. 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 Report in Appendix I, in the "OPR-Q191-KR-07 Horizontal & Vertical Control Report". 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. [9]

During the OPR-Q191-KR-07 survey there were some unusual conditions regarding tidal information to note. Refer to the "OPR-Q191-KR-07 Horizontal & Vertical Control Report", Appendix I, for a more detailed description (Tidal Zoning for Krenitzens.doc) and tidal data. [10]

D – Results and Recommendations

Chart Comparison

H11717 survey was compared with charts:

Chart No.	Scale	Edition	Edition Date
16522	40,000	6th	Feb. 2004
16528[11]	40,000	16th	Jun. 1998
16531	80,000	7th	Feb. 2002
16520[12]	300,000	22nd	Mar. 2004

Note: Electronic Charts US3AK61M, US4AK6FM (partially covers survey area), and US5AK6CM

Comparison of Soundings[13]

In general the soundings from chart 16522 coincide with the soundings from H11717 to within 1 to 5 fathoms; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 82 fathoms in the vicinity of a 67 fathom sounding on chart 16522 located at 53º53’13” N, 166º05’36” W. This area was surveyed with 100% multibeam coverage.

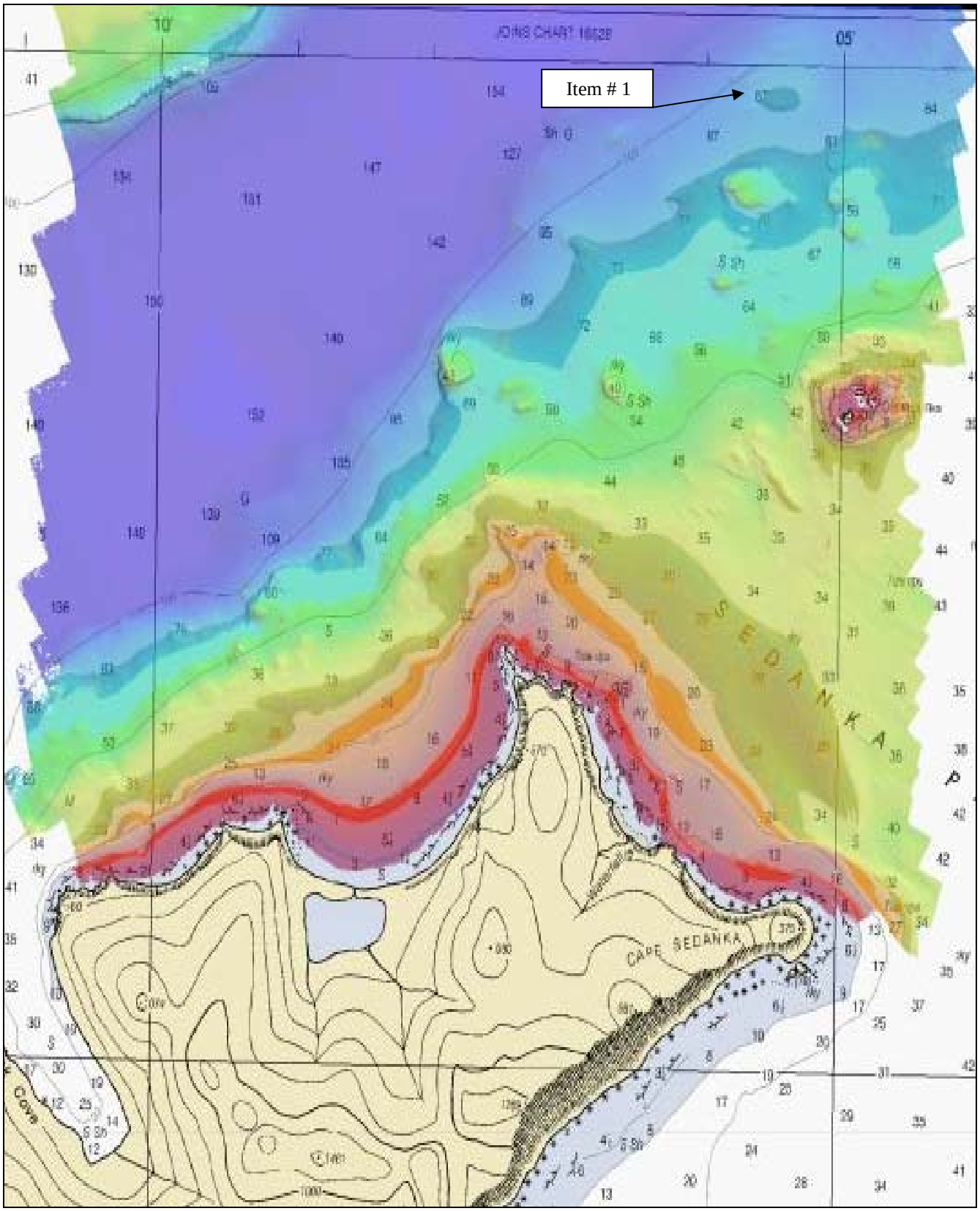


Figure 6 H11717 Chart Comparison (Chart 16522)

In general the soundings from chart 16528 coincide with the soundings from H11717 to within 1 to 5 fathoms; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 45 fathoms in the vicinity of a 35 fathom sounding on chart 16528 located at 53º54’01” N, 166º08’25” W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11717 revealed a depth of 46 fathoms in the vicinity of a 35 fathom sounding on chart 16528 located at 53º55’07” N, 166º05’38” W. This area was surveyed with 100% multibeam coverage.
- Item # 3: Hydrographic survey H11717 revealed a depth of 87 fathoms in the vicinity of a 67 fathom sounding on chart 16528 located at 53º53’14” N, 166º05’38” W. This area was surveyed with 100% multibeam coverage.
- Item # 4: Hydrographic survey H11717 revealed a depth of 22 fathoms in the vicinity of a 15 fathom sounding on chart 16528 located at 53º51’20” N, 166º06’28” W. This area was surveyed with 100% multibeam coverage.[14]
- Item # 5: Hydrographic survey H11717 revealed a depth of 28 fathoms in the vicinity of a 15 fathom sounding on chart 16528 located at 53º51’43” N, 166º06’56” W. This area was surveyed with 100% multibeam coverage.

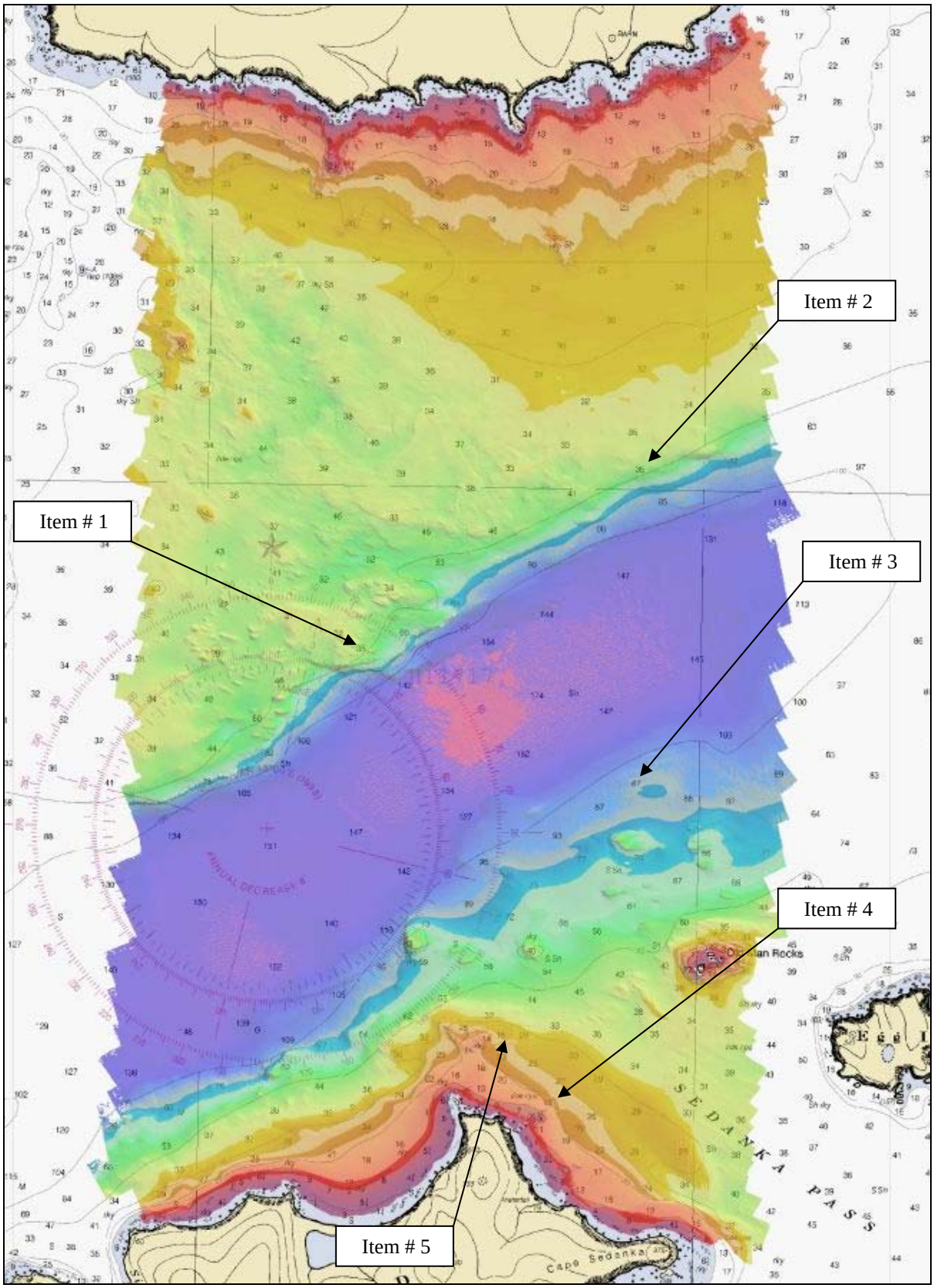


Figure 7 H11717 Chart Comparison (Chart 16528)

In general soundings from chart 16531 coincide with the soundings from H11717 to within 1 to 5 fathoms; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 42 fathoms in the vicinity of a 35 fathom sounding on chart 16531 located at 53º55’09” N, 166º05’37” W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11717 revealed a depth of 86 fathoms in the vicinity of a 67 fathom sounding on chart 16531 located at 53º53’16” N, 166º05’35” W. This area was surveyed with 100% multibeam coverage.
- Item # 3: Hydrographic survey H11717 revealed a depth of 37 fathoms in the vicinity of a 31 fathom sounding on chart 16531 located at 53º51’30” N, 166º04’49” W. This area was surveyed with 100% multibeam coverage.

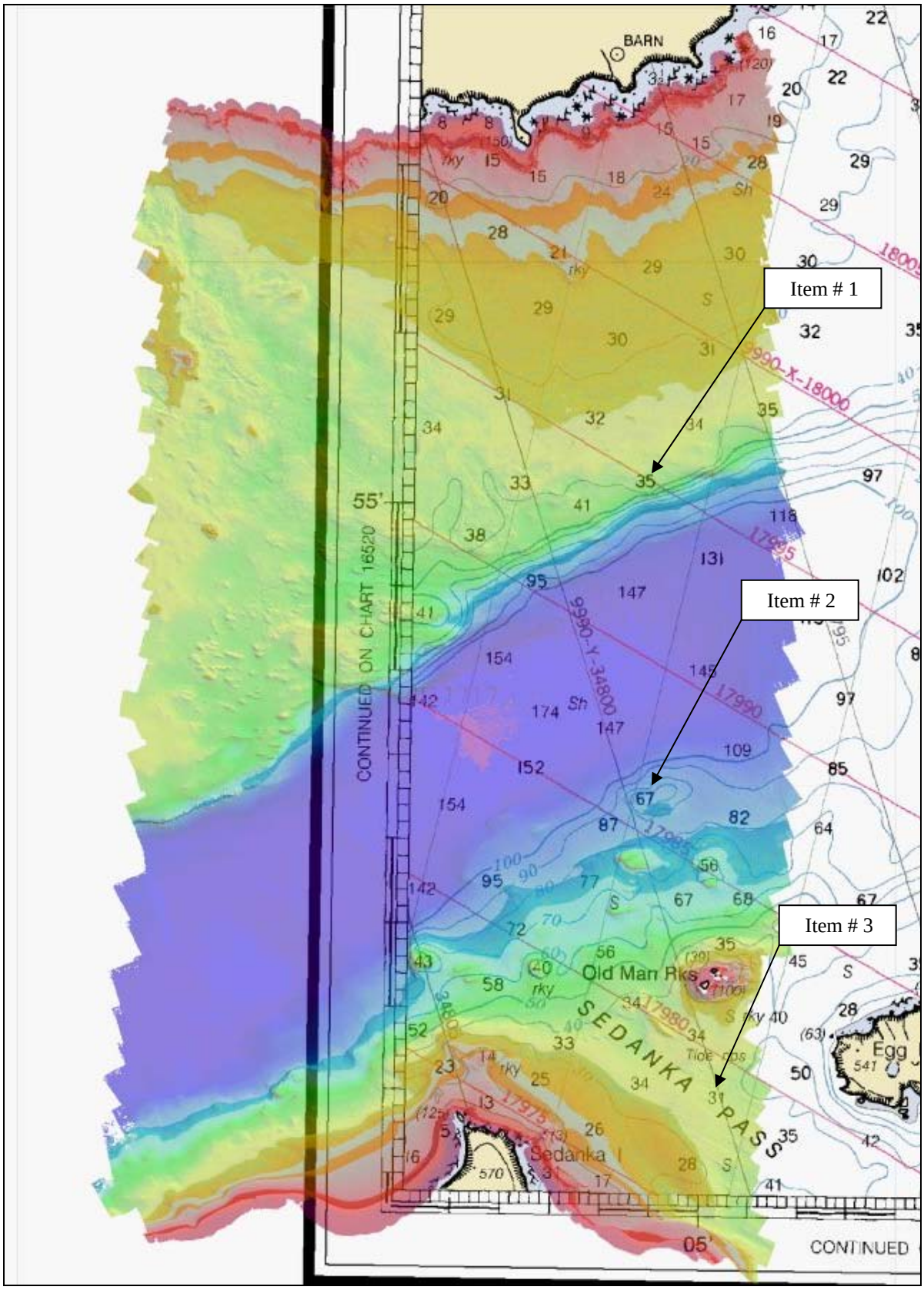


Figure 8 H11717 Chart Comparison (Chart 16531)

In general the soundings from chart 16520 coincide with the soundings from H11717 to within 1 to 5 fathoms; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 140 fathoms in the vicinity of a 150 fathom sounding on chart 16520 located at 53º52’45” N, 166º07’29” W. This area was surveyed with 100% multibeam coverage. The shoaling is centered in the area depicted below.
- Item # 2: Hydrographic survey H11717 revealed a depth of 26 fathoms in the vicinity of a 14 fathom sounding on chart 16520 located at 53º51’47” N, 166º07’29” W. This area was surveyed with 100% multibeam coverage.

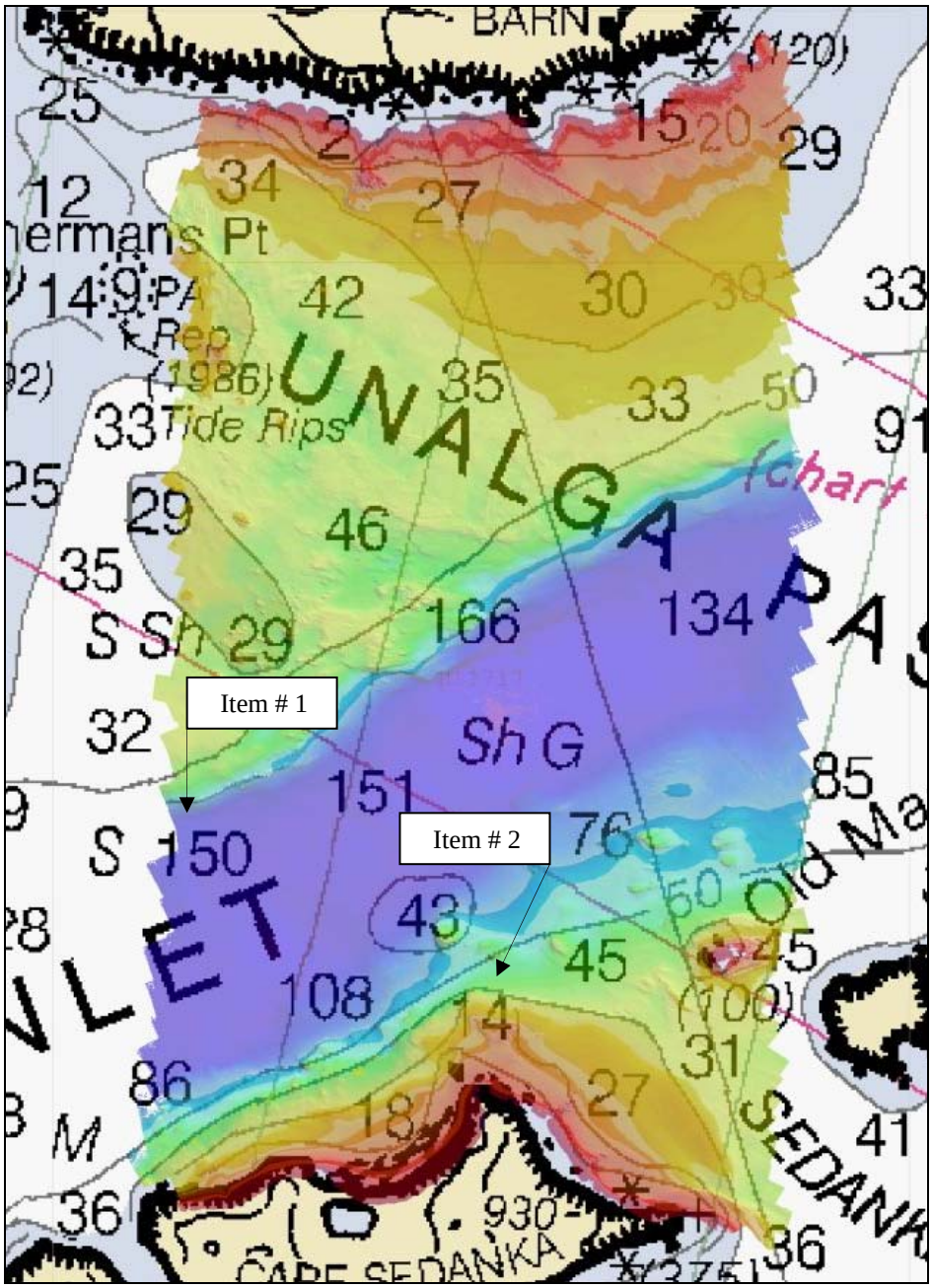


Figure 9 H11717 Chart Comparison (Chart 16520)

In general, the soundings from electronic chart US3AK61M coincide with the soundings from H11717 to within 5 to 15 meters; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 22 meters in the vicinity of a 3.6 meter sounding on electronic chart US3AK61M located at 53º57'09" N, 166º09'07" W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11717 revealed a depth of 250.6 meters in the vicinity of a 274.3 meter sounding on electronic chart US3AK61M located at 53º52'46" N, 166º10'22" W. This area was surveyed with 100% multibeam coverage. The shoaling is centered in the area depicted below. [15]
- Item # 3: Hydrographic survey H11717 revealed a depth of 52 meters in the vicinity of a 25.6 meter sounding on electronic chart US3AK61M located at 53º51'48" N, 166º07'26" W. It should be noted that approximately 400 meters to the SE is an area of shoaling. It is recommended that the 25.6 meter sounding be removed from the chart and the chart updated to reflect the submitted H11717 CARIS BASE Surface. This area was surveyed with 100% multibeam coverage.

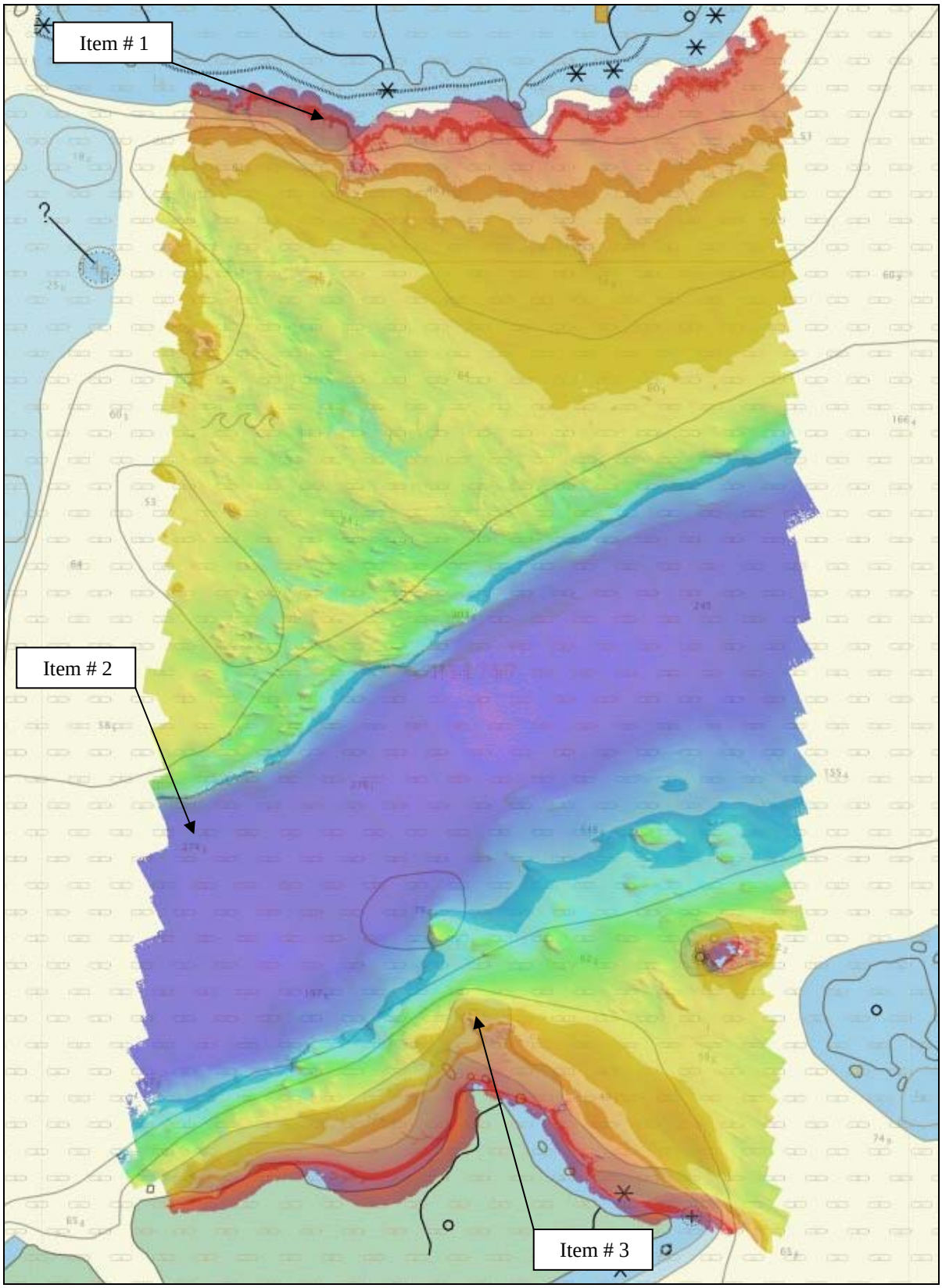


Figure 10 H11717 Electronic Chart Comparison (US3AK61M)

In general, the soundings from electronic chart US4AK6FM coincide with the soundings from H11717 to within 5 to 15 meters; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 157.5 meters in the vicinity of a 122.5 meter sounding on electronic chart US4AK6FM located at 53º53'15" N, 166º05'35" W. This area was surveyed with 100% multibeam coverage.

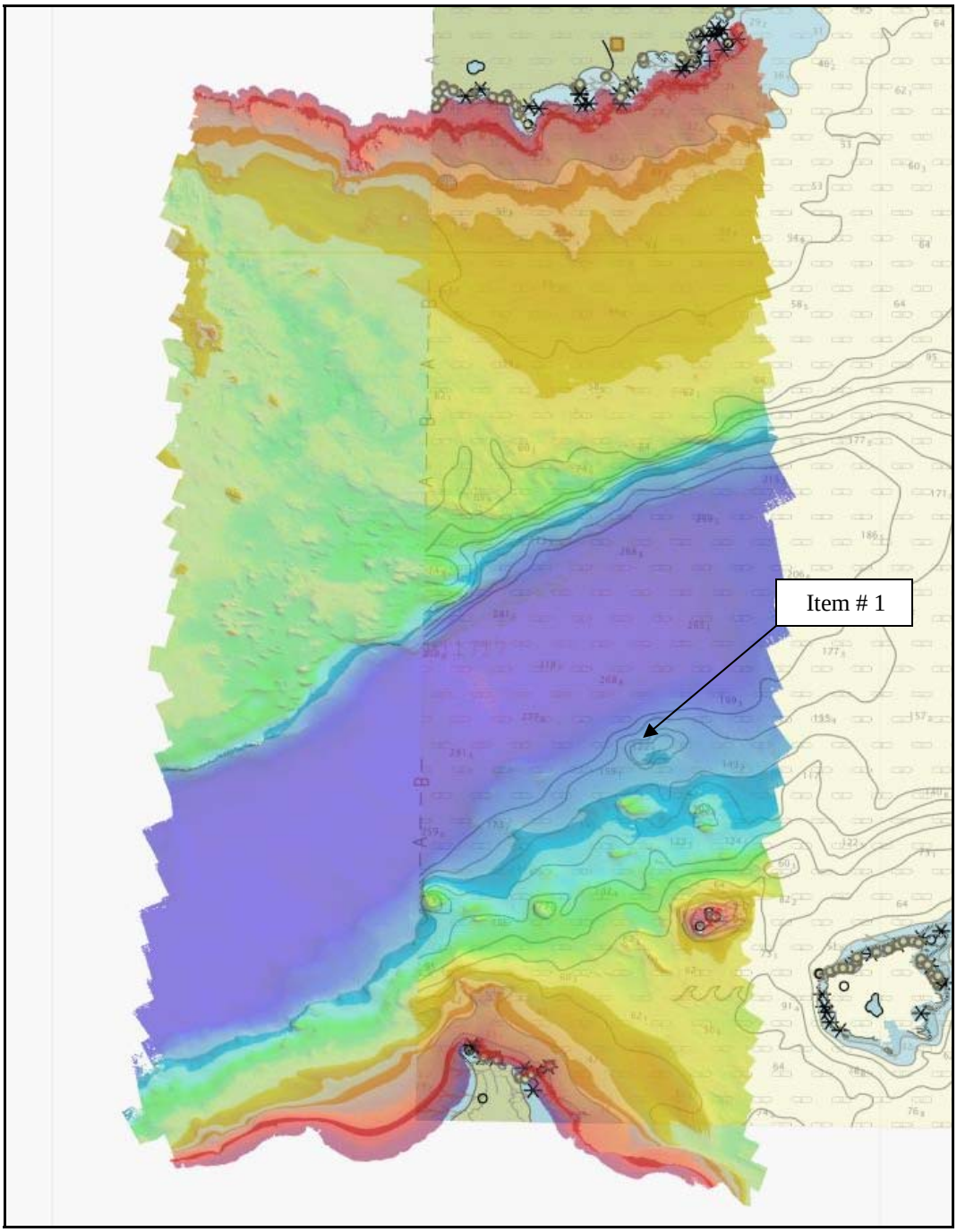


Figure 11 H11717 Electronic Chart Comparison (US4AK6FM)

In general, the soundings from electronic chart US5AK6CM coincide with the soundings from H11717 to within 5 to 15 meters; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11717 revealed a depth of 84.2 meters in the vicinity of a 64 meter sounding on electronic chart US5AK6CM located at 53º55’07” N, 166º05’38” W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11717 revealed a depth of 159 meters in the vicinity of a 122.5 meter sounding on electronic chart US5AK6CM located at 53º53’15” N, 166º05’38” W. This area was surveyed with 100% multibeam coverage.
- Item # 3: Hydrographic survey H11717 revealed a depth of 50.8 meters in the vicinity of a 27.4 meter sounding on electronic chart US5AK6CM located at 53º51’44” N, 166º06’57” W. This area was surveyed with 100% multibeam coverage.

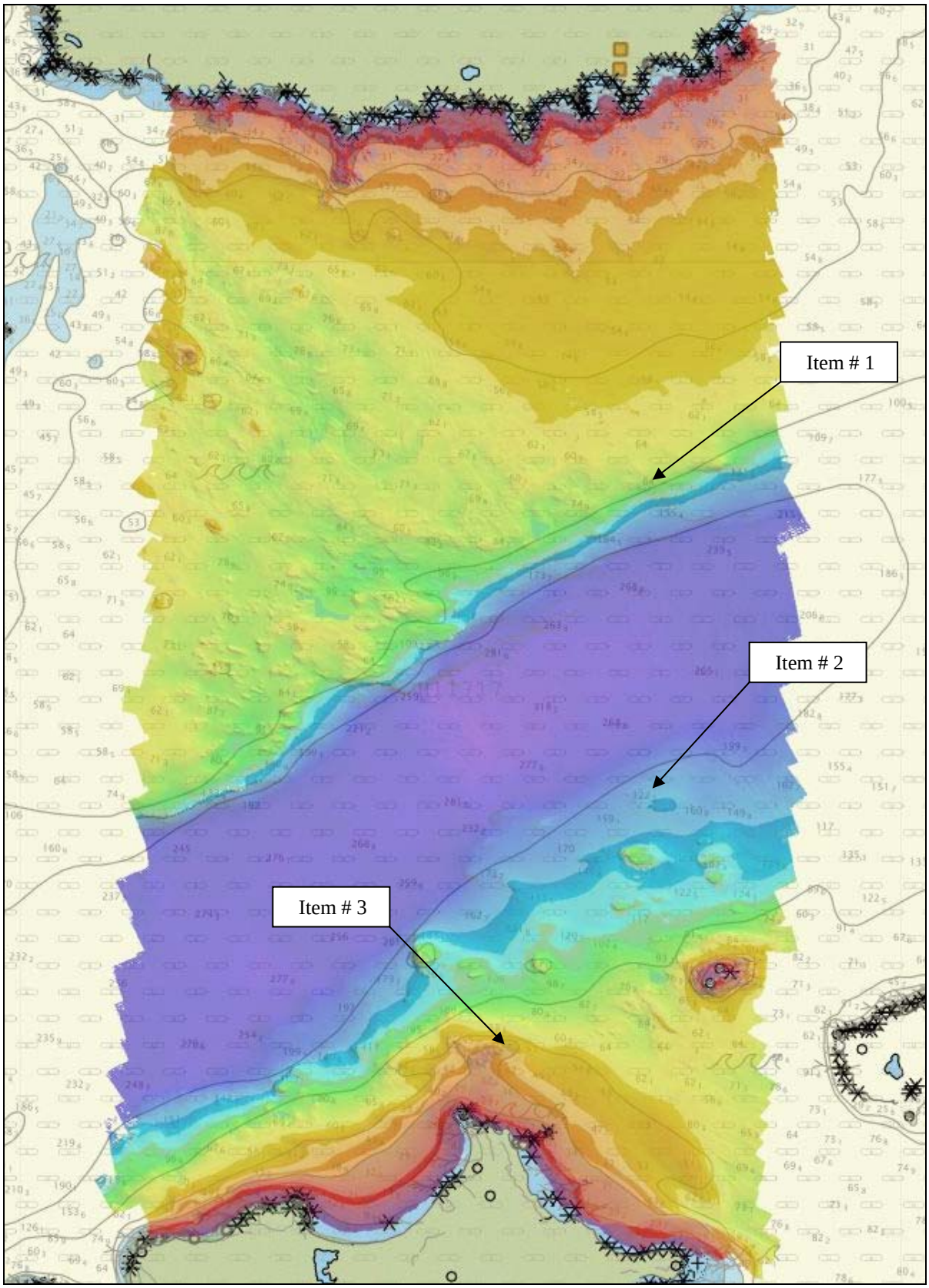


Figure 12 H11717 Electronic Chart Comparison (US5AK6CM)

Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11717. [16]

Charted Features

All charted features residing on charts incorporated within H11717 (see Listing of Charts above) were investigated and are as follows[17]:

- 2.1 meter shoal located at 53º57'14" N and 166º10'05" W; survey lines were conducted to provide 200% coverage over the area. The multibeam data was reviewed in CARIS HIPS and the shoal was located (and issued as a danger to navigation) at 53º57'14.46" N, 166º10'05.28" W with a least depth of 2.4 meters. The area of shoaling was found on electronic chart US5AK6CM. It is recommended that the 2.1 meter shoal be removed from the chart and the chart updated to reflect the submitted H11717 CARIS BASE Surface.[18]

Dangers to Navigation

Two Dangers to Navigation were located during the survey of H11717. The Dangers to Navigation were reported on August 1, 2007 (See Appendix I for submitted reports). [19]

Bottom Samples

The R/Vs Davidson, R2, and D2 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 H11717_S57_Features file. [20]

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. [21]

Shoreline Verification Results

Remote Sensing Division (RSD) provided the shoreline detail (CM-8306) 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 very accurate. RSD foul and kelp 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 CM-8306 supersede previously charted shoreline where any discrepancies occur unless noted below.[22]

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.[23]

RSD Source (CM-8306) Changes and Discrepancies				
RSD Feature	RSD Position	Remarks	Actions Taken in S57 Feature File / Recommendations	Applicable DP form(s)
Rock	53 50 51.39 N 166 09 03.99 W	Rock not found, full MBES coverage at position.	Do not chart.	JD207_055_D2
Rock	53 50 41.72 N 166 08 08.26 W	Rock not found, full MBES coverage at position.	Do not chart.[24]	JD207_064_D2
Foul limit	53 57 05.52 N 166 08 44.08 W	Foul limit does not extend this far seaward.	Foul limit modified using MBES coverage. Recommend do not chart RSD foul here, chart as depicted in S57 file instead.	N / A

Charted Feature Changes and Discrepancies				
Chart No. and Feature	Charted Position	Remarks	Recommendations	Applicable DP form(s)
US5AK6CM Rock	53 50 51.39 N 166 09 03.99 W	Rock not found, full MBES coverage at position.	Remove.	JD207_055_D2
16528 and US5AK6CM Islet	53 50 49.28 N 166 08 57.76 W	Charted islet out of position. Found to northwest. Better position on chart 16522 / RSD.	Remove. Chart new islet as depicted in S57 file.	JD207_057_D2
16528 and US5AK6CM Rock	53 50 45.08 N 166 08 54.21 W	Charted rock not found, full MBES coverage.	Remove.	JD207_062_D2
16522 16528 USAK6CM Rock	53 51 13.46 N 166 06 48.73 W	Charted rock not found, full MBES coverage. A new rock was found to the northwest.	Remove. Chart new rock as depicted in S57 file.	JD204_025_D2
16528 and USAK6CM Rock	53 51 11.88 N 166 06 41.23 W	Charted rock not found at position, full MBES coverage. RSD rock does exist just to the north (position good on 16522)	Remove. Chart the RSD rock to the north instead at 53 51 12.93 N / 166 06 41.64 W	N / A
16528 and USAK6CM Islet	53 57 42.53 N 166 04 47.92 W	General position of islet confirmed. However does not exist in RSD data.	Retain / chart.	JD208_062_D2
USAK6CM Foul limit	53 57 05.52 N 166 08 44.08 W	Foul limit does not extent this far seaward.	Remove. Recommend chart foul area as depicted in S57 file instead.	N / A
16528 and USAK6CM Rocks (2)	53 57 44.53 N 166 04 45.56 W 53 57 43.01 N 166 04 43.24 W	Rocks not found, full MBES coverage at positions.	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 DVD under Reports\Descriptive Report\H11717 Shoreline.

DP ITEM NUMBER : JD204_025

DP Form

Date:	23 July, 2007
Julian Day:	204
UTC Time:	17:29:59
Latitude:	53 51 13.31 N
Longitude:	166 06 48.25 W
Northing:	5967818.73
Easting:	426762.65
Raw (+Depth) or (-Height) (m):	-0.75
Draft Corrector (m):	N/A
SV Corrector (m):	N/A
Tide Corrector (m):	0.64
Corrected to MLLW (m):	-1.39
Corrected to MLLW (fathoms):	-0.76
Corrected to MLLW (feet):	-4.57

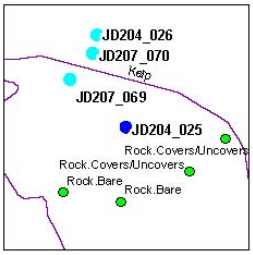
DP Comment: F_Uncharted rock 41m at 283 ok

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

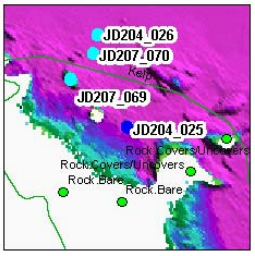
Correlating MB Least Depth:
None

Remarks/Recommendations:
Charted rock not found, full MBES coverage. A new rock was found to the north west. Remove. Chart new rock as depicted in S57 file.

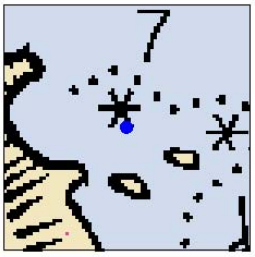
Chart: 16522 Topo: Carto Code: None



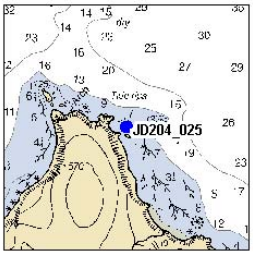
DPs and RSD CM-8306
300m x 300m



DPs, RSD CM-8306, and MBES coverage
300m x 300m



DP and Chart
300m x 300m



DP and Chart
2000m x 2000m

E – Approval Sheet

Approval Sheet

For

H11717

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

> OPR-Q191-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

X

Dean Moyles
ACSM Certified

[1] Concur.
[2] Concur.
[3] Concur.
[4] A common junction was created between H11717 and surveys H11715 and H11716. H11718 and H11719 have not been compiled and a common junction has not been created.
[5] Concur.
[6] Do not concur. Sound speed errors not within specifications are present. However, the areas showing errors out of specifications are located in deep water and are close to falling within specifications. Data was therefore deemed adequate for charting.
[7] Concur.
[8] H11717_S57_Features.000 was used in the compilation of H11717_CS.000
[9] Concur.
[10] No tidal errors visible in survey.
[11] 17th Edition, 7/08, Corrected through NM July 12th, 2008.
[12] 23rd Edition, 8/08, Corrected through NM August 9th, 2008.
[13] Concur generally with sounding comparison unless otherwise noted. Chart soundings per HCell.
[14] Do not concur, a 14 fathom sounding present at this location. Chart per HCell.
[15] Do not concur. Chart per HCell
[16] Concur.
[17] In addition to the item listed below, a wreck is charted on 16528 and US4AK6FM at 53-52-59.119N 166-05-15.650 at an approximate depth of 143m. Although no indication of the wreck is present in the data, given the depth and resolution of the surfaces, wreck should be retained as charted.
[18] Concur.
[19] See attached DTON report. The DTONs are charted and have been compiled to the HCell. The DTON reported at 53-50-57.81N 166-06-09.21W has been compiled as an obstruction area with a least depth of 1.667 fathoms instead of the 1 ¾ fathom sounding as reported.
[20] Ten new bottom samples compiled and 15 retained as charted. Chart bottom samples in accordance with HCell.
[21] Concur.
[22] Concur.
[23] Concur with itemized features useless otherwise noted. Chart features per HCell.
[24] Do not concur. Full coverage not achieved, rock should be retained as charted and per HCell.

Hydrographic Survey Registry Number: **H11717**

Survey Title:	**State:**	**ALASKA**
	Locality:	**Akutan Pass**
	Sub-locality:	**Unalga Island to Cape Sedanka**

Project Number: **OPR-Q191-KR-07**

Survey Dates: **June – July 2007**

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

Positions are based on the NAD83 horizontal datum.

Charts Affected:

Chart No.	Scale	Edition	Edition Date
16528	40,000	16th	June 1998
16520	300,000	22nd	March 2004

DANGER TO NAVIGATION:

Feature	**Depth (fathoms)**	**Latitude**	**Longitude**
Rock	1 ¼ fms	53-57-14.42 N	166-10-05.27 W
Sounding	1 ¾ fms	53-50-57.81 N	166-06-09.21 W

COMMENTS:

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

Appendix IV - Tides and Water Levels

Abstract of Times of Hydrography for Smooth Tides
Project Number: OPR-Q191-KR-07 Registry Number: H11717
Contractor Name: Fugro Pelagos Inc. Date: March 13, 2008
Sheet Letter: F
Inclusive Dates: June 15, 2007 and ended on July 27, 2007
Fieldwork is complete and verified tides were applied for the production of the final combined soundings and S-57 feature file.

Final Tide Zones

Zone	Primary			
	Site	Number	Time	Range Ratio
KR01	9462645	Biorka Village, AK	-12	1.03
KR02	9462645	Biorka Village, AK	-6	1.02
KR03	9462645	Biorka Village, AK	0	1
KR04	9462645	Biorka Village, AK	6	1
KR05	9462662	Reef Bight, AK	18	0.8
KR06	9462662	Reef Bight, AK	12	0.8
KR07	9462662	Reef Bight, AK	12	0.8
KR08	9462662	Reef Bight, AK	18	0.9
KR09	9462662	Reef Bight, AK	12	0.9
KR10	9462662	Reef Bight, AK	6	0.9
KR20	9999920	*Biorka Village & Reef Bight, AK	0	1
KR21	9999921	*Biorka Village & Reef Bight, AK	0	1
KR22	9999922	*Biorka Village & Reef Bight, AK	0	1
KR23	9999923	*Biorka Village & Reef Bight, AK	0	1
KR24	9999924	*Biorka Village & Reef Bight, AK	0	1
KR25	9999925	*Biorka Village & Reef Bight, AK	0	1
KR26	9999926	*Biorka Village & Reef Bight, AK	0	1
KR27	9999927	*Biorka Village & Reef Bight, AK	0	1
KR28	9999928	*Biorka Village & Reef Bight, AK	0	1
KR30	9999930	*Biorka Village & Reef Bight, AK	0	1
KR31	9999931	*Biorka Village & Reef Bight, AK	0	1
KR32	9999932	*Biorka Village & Reef Bight, AK	0	1
KR33	9999933	*Biorka Village & Reef Bight, AK	0	1
KR34	9999934	*Biorka Village & Reef Bight, AK	0	1
KR35	9999935	*Biorka Village & Reef Bight, AK	0	1
KR36	9999936	*Biorka Village & Reef Bight, AK	0	1
KR37	9999937	*Biorka Village & Reef Bight, AK	0	1
KR38	9999938	*Biorka Village & Reef Bight, AK	0	1

*see "Tidal Zoning for Krenitzins.doc" in OPR-Q191-KR-07 Horizontal & Vertical Control Report", Appendix I.

Abstract of Times of Hydrography for R/V R2

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2007	174	16:08:25	23:59:59	
2007	175	00:00:00	02:15:53	
2007	175	17:09:24	23:59:59	
2007	176	00:00:00	00:28:15	
2007	181	16:07:30	23:59:59	
2007	182	00:00:00	02:38:04	
2007	182	15:42:51	23:29:31	
2007	193	15:58:52	21:09:08	
2007	194	19:30:53	22:47:56	

Abstract of Times of Hydrography for R/V D2

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2007	174	15:59:54	00:25:00	
2007	175	00:26:30	02:29:16	
2007	181	15:59:12	17:44:32	
2007	182	22:03:04	23:59:59	
2007	183	00:00:00	02:07:06	
2007	195	21:36:12	22:19:00	
2007	203	18:43:52	19:11:24	
2007	204	16:16:54	18:04:01	
2007	208	19:49:40	19:50:17	

Abstract of Times of Hydrography for R/V Davidson

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2007	166	16:13:02	23:59:59	
2007	167	00:00:00	02:22:57	
2007	176	15:33:22	16:53:05	
2007	176	20:17:22	23:59:59	
2007	177	00:00:00	02:14:41	
2007	180	16:51:53	17:41:58	
2007	180	19:45:59	23:59:59	
2007	181	00:00:00	02:24:38	
2007	181	15:55:50	17:54:12	
2007	182	20:13:29	23:59:59	
2007	183	00:00:00	00:58:50	
2007	183	19:22:40	23:59:59	
2007	184	00:00:00	02:44:44	
2007	186	19:59:31	20:19:02	
2007	191	04:13:19	08:23:01	
2007	202	10:53:24	13:52:59	

H11717 HCell Report

Annie Raymond, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11717 used:

Office of Coast Survey HCell Specifications: Version: 4.0, 2 June, 2010.
HCell Reference Guide: Version 2.0, 2 June, 2010.

2. Compilation Scale

Depths and features for HCell H11717 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16528	1:40,000	17th	07/01/2008	07/12/2008

The following ENCs were also used during compilation:

Chart	Scale
US5AK61M	1:40,000

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 10-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-4.7	10	3
10	20	4
20	50	4.5
50	200	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

The smaller scale chart 16531 covering the eastern portion of the survey area has denser contour intervals than chart 16528. Depth contours were created at these denser intervals in from chart

16531 and are included in the H11717_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 16531	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 H11717_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
20	36.576	37.9476	20.750	20
30	54.864	56.236	30.750	30
40	73.152	74.5236	40.750	40
50	91.44	92.812	50.750	50
60	109.728	111.0996	60.750	60
70	128.016	129.3876	70.750	70
80	146.304	147.6756	80.750	80
90	164.592	165.9636	90.75	90
100	182.88	184.252	100.750	100

With the exception of the zero contours included in the H11717_CS file, contours have not been deconflicted against shoreline features, soundings and hydrography, as all other features in the H11717_CS file and soundings in the H11717_SS have been. This may result in conflicts between the H11717_SS file contours and HCell features at or near the survey limits. Conflicts with M_QUAL, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over H11717_SS.000 file contours in all cases where conflicts are found.

5. Meta Areas

The following Meta object areas are included in HCell H11717:

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. Spatial Framework

7.1 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.

7.2 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.

8. Data Processing Notes

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

9. QA/QC and ENC Validation Checks

H11717 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.

10. Products

10.1 HSD, MCD and CGTP Deliverables

H11717_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000
H11717 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000
H11717 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11717 _outline.gml	Survey outline
H11717 _outline.xsd	Survey outline

10.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 3.0, HF9	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. 2.1, HF5	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, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

11. Contacts

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

Annie Raymond
Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206-526-6849
annemieke.raymond@noaa.gov

APPROVAL SHEET
H11717

Initial Approvals:

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

Annemieke Raymond
2011.01.31 09:17:38
-08'00'

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
Kurt Brown
Date: 2011.01.31
10:22:07 -08'00'

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.

Digitally signed by Gary C. Nelson
DN: cn=Gary C. Nelson, o=NOAA,
ou=Pacific Hydrographic Branch,
email=gary.nelson@noaa.gov,
c=US
Date: 2011.01.31 10:48:14 -08'00'

David Scharff
AWOIS and Surf Check
2011.02.03 14:22:20
-05'00'