

H11713

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. H11713

LOCALITY

State Alaska

General Locality Akutan Pass

Sublocality North of Unalga Island

2007

CHIEF OF PARTY

DEAN MOYLES

LIBRARY & ARCHIVES

DATE

| | |
|--|---|
| <p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;">HYDROGRAPHIC TITLE SHEET</p> | <p>REGISTRY No</p> <p style="text-align: center;">H11713</p> |
| <p>INSTRUCTIONS – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.</p> | <p>FIELD No: N/A</p> |
| <p>State <u>Alaska</u></p> <p>General Locality <u>Akutan Pass</u></p> <p>Sub-Locality <u>North of Unalga Island</u></p> <p>Scale <u>1:10,000</u> Date of Survey <u>06/22/07 - 07/26/07</u></p> <p>Instructions dated <u>6/15/2006</u> Project No. <u>OPR-Q191-KR-07</u></p> <p>Vessel <u>R/V Davidson (1066485), R/V R2 (623241), R/V D2 (647782)</u></p> <p>Chief of party <u>DEAN MOYLES</u></p> <p>Surveyed by <u>ORTHMANN, REYNOLDS, GILL, MOUNT, STOCK, FARLEY, BRIGGS, POECKERT, ET AL</u></p> <p>Soundings by <u>RESON 8101 (R2 & D2 - HULL MOUNT), RESON 8111 (DAVIDSON - HULL MOUNT)</u></p> <p>SAR by <u>Tyanne Faulkes</u> Compilation by <u>Andrew Clos</u></p> <p>Soundings compiled in <u>Fathoms and feet</u></p> | |
| <p>REMARKS: <u>All times are UTC. UTM Projection 03</u></p> <p><u>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. 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. Revisions and end notes in red were generated during office processing. Page numbering may be interrupted or non sequential.</u></p> | |



A - Area Surveyed

H11713 (Sheet B) is bound by the coordinates listed below, which encompasses an area North of Unalga Island.

Hydrographic data collection began on June 22, 2007 and ended on July 26, 2007.

Table 1 – H11713 Sheet Limits

| Sheet Limits H11713 Sheet B Scale 1:10,000 | | |
|--|----------------------|-----------------------|
| Point # | Positions on NAD83 | |
| | Degrees Latitude (N) | Degrees Longitude (W) |
| 1 | 54-06-03.96 N | 166-05-07.80 W |
| 2 | 54-06-03.96 N | 166-12-06.84 W |
| 3 | 54-01-53.40 N | 166-12-06.84 W |
| 4 | 54-01-53.40 N | 166-10-26.76 W |
| 5 | 53-59-29.04 N | 166-10-26.76 W |
| 6 | 53-59-29.04 N | 166-05-07.80 W |

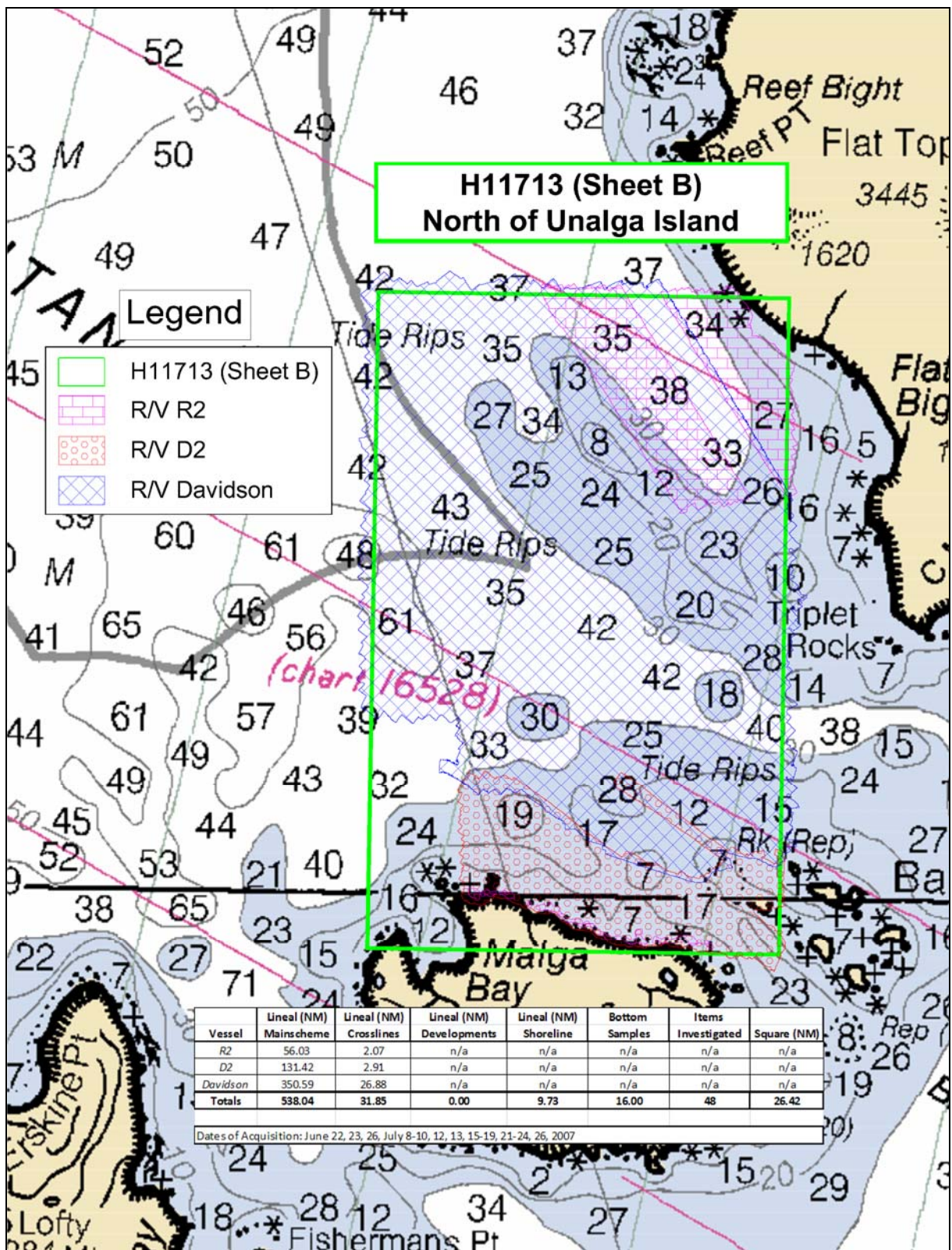


Figure 1 H11713 Area Surveyed



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 H11713. 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 31.85 nautical miles or 5.92 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. Figures 2 and 3 below provide examples.

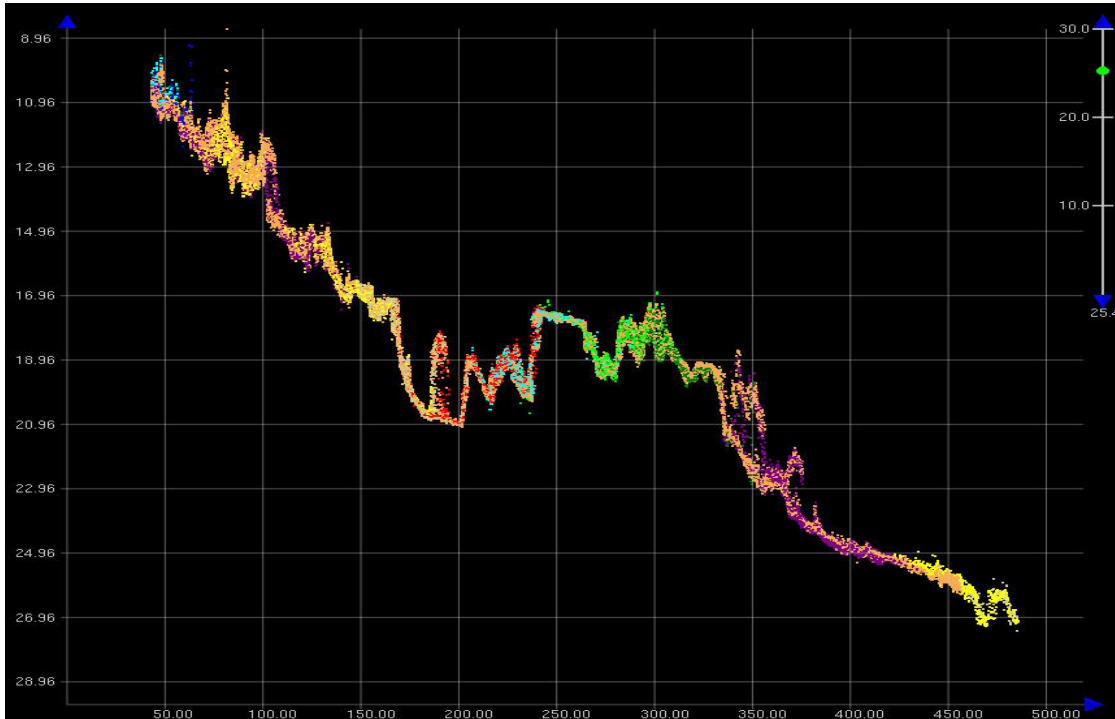


Figure 2 Profile of 1B06-TIE02

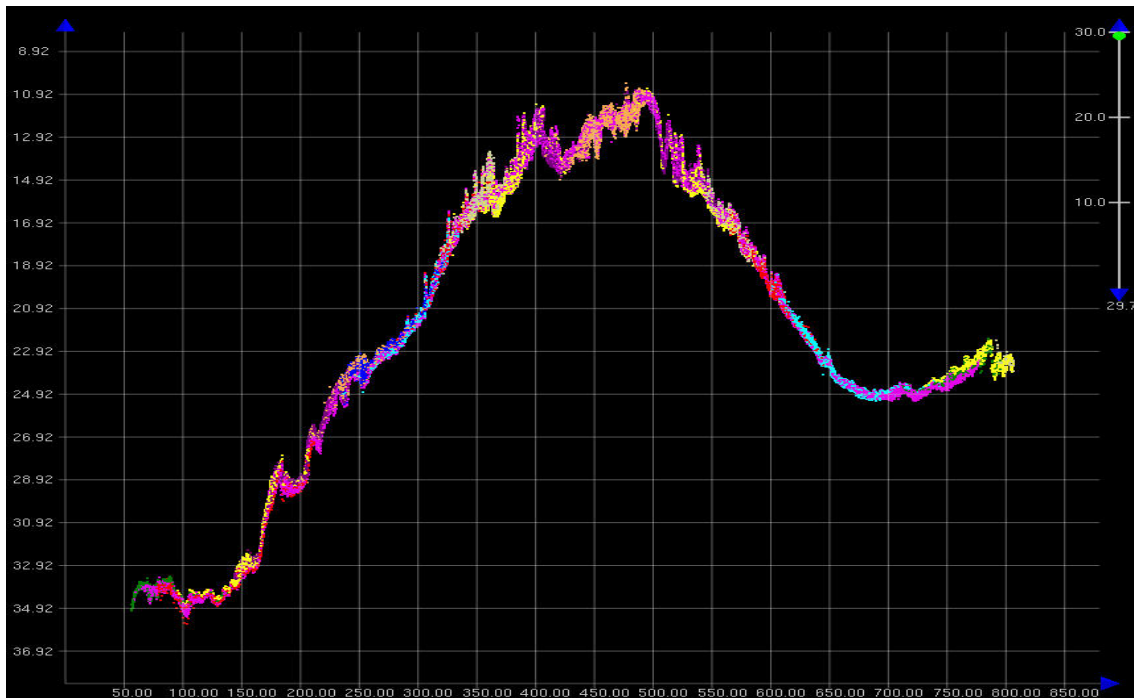


Figure 3 Profile of 2B05-TIE02

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 $d = \text{depth}$.

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 H11713 had an uncertainty of about 0.20 to 0.40 meters, except for the deep water areas having extremely steep slopes or deemed to be rocky, where values ranged from 0.50 to 0.70 meters. No uncertainty values were greater than the IHO level Order 1.²

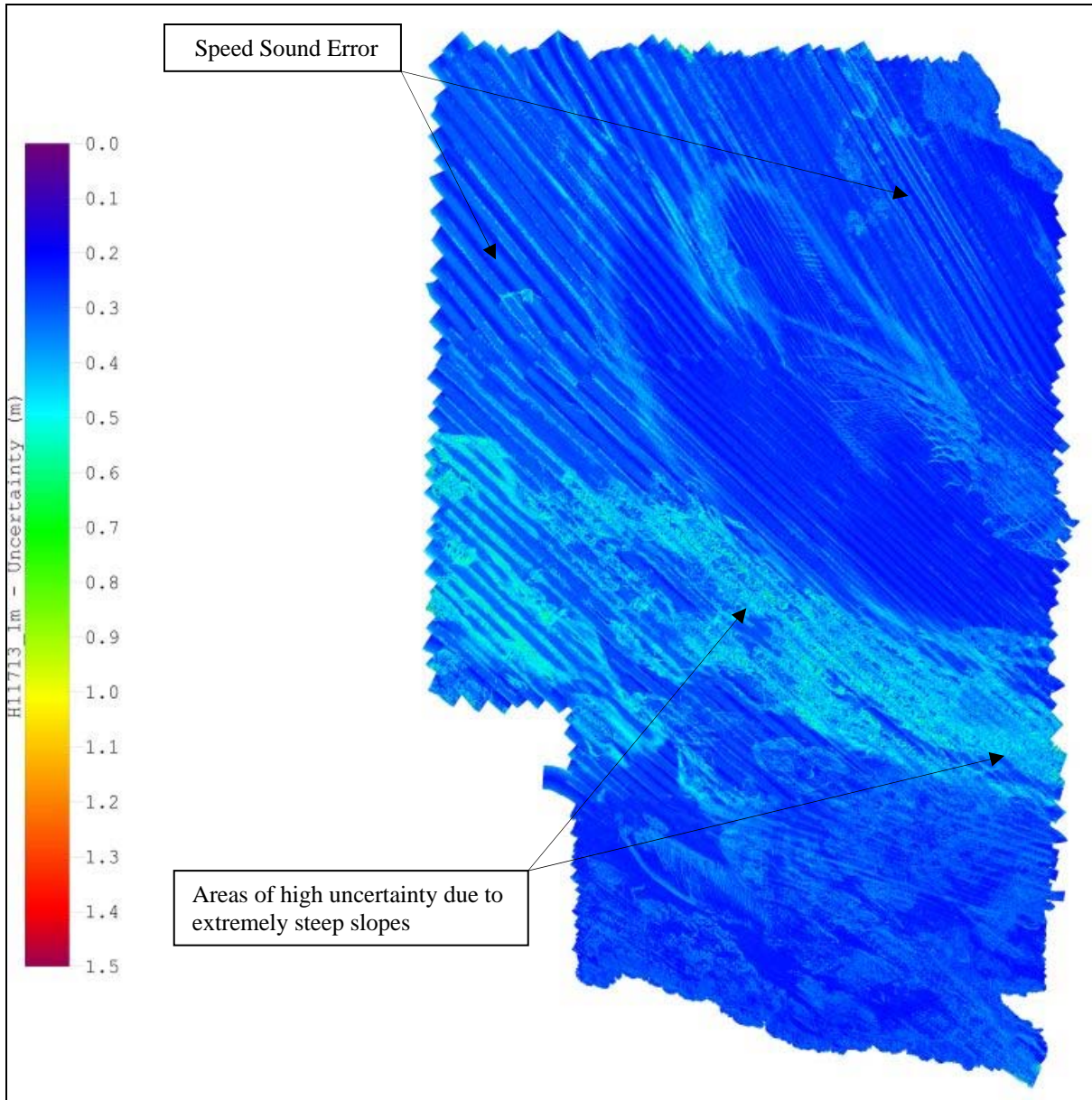


Figure 4 H11713 Uncertainty DTM

Survey Junctions

H11713 (Sheet B) junctions with³:

| Registry # | Scale | Date | Junction Side |
|------------|----------|------|---------------|
| H11712 | 1:10,000 | 2007 | East |
| H11715 | 1:10,000 | 2007 | Southwest |

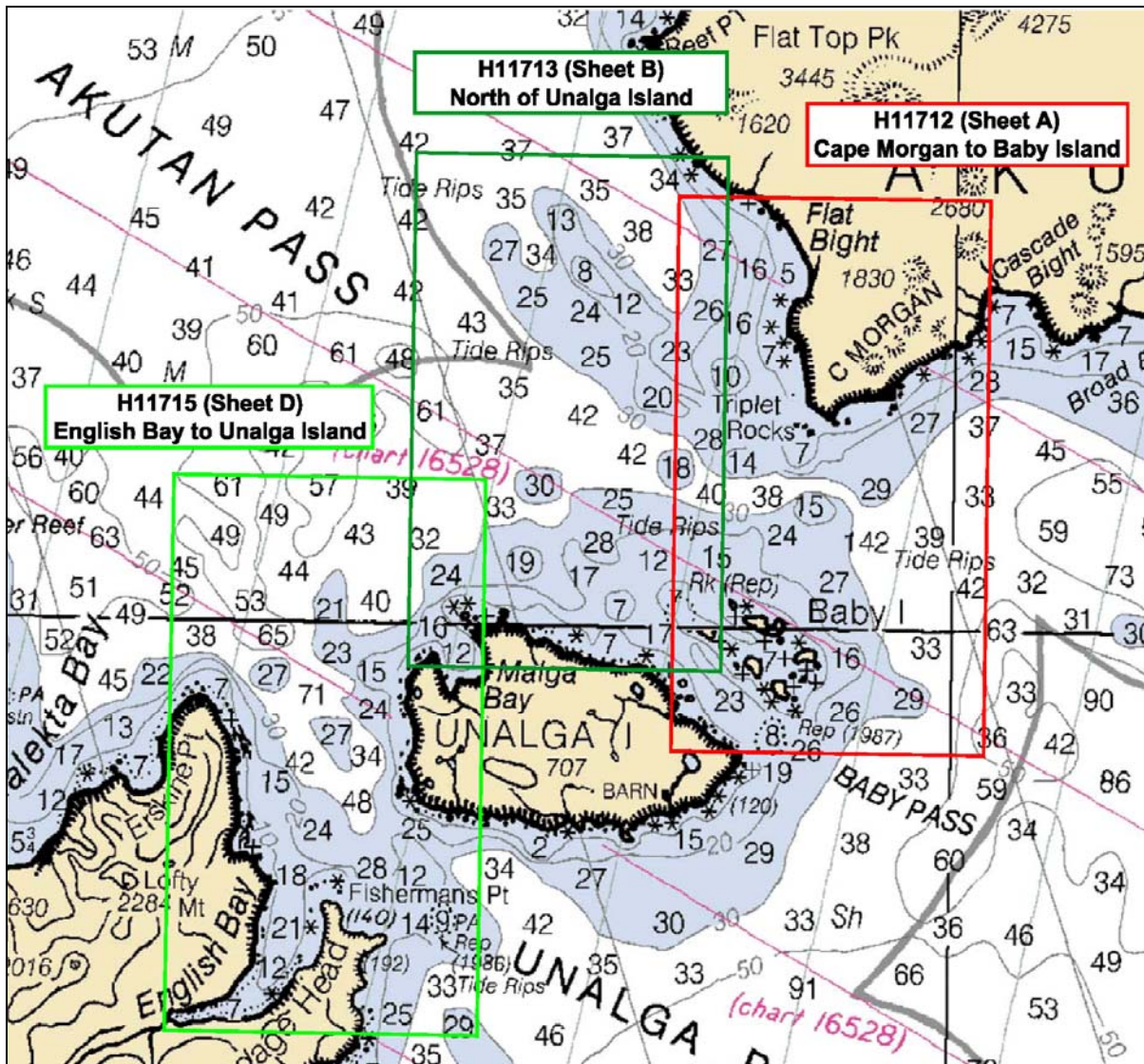


Figure 5 H11713 Survey Junctions

The surveys are in agreement along their common borders.⁴ 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.

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 H11713 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.⁵
- 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 1.⁶

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 H11713 is called H11713, and it contains four 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 H11713_1m
- Depth Threshold: 15 to 45 meters, resolution = 2m, Name in BASE Surface H11713_2m
- Depth Threshold: 40 to 60 meters, resolution = 4m, Name in BASE Surface H11713_4m
- Depth Threshold: 50 to 150 meters, resolution = 5m, Name in BASE Surface H11713_5m

The final S57 file for this project is called “H11713_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.⁷

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 | 53°49'44"N | 166°12'59" W | June-August |
| 9462662 | Seabird SBE26 (w/submersible pressure gauge) | Reef Bight, AK | 54°09'25"N | 166°04'24" 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.

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.



D – Results and Recommendations

Chart Comparison

H11713 survey was compared with charts:

| Chart No. | Scale | Edition | Edition Date |
|---------------------|---------|---------|--------------|
| 16528 ⁸ | 40,000 | 16th | Jun. 1998 |
| 16531 ⁹ | 80,000 | 7th | Feb. 2002 |
| 16520 ¹⁰ | 300,000 | 22nd | Mar. 2004 |

Note: Electronic Charts US3AK61M, US4AK6FM, US5AK6CM
Charts 16528 and 16531 do not cover entire survey area.

Comparison of Soundings

In general, the soundings from chart 16528 coincide with the soundings from H11713 to within 1 to 5 fathoms;¹¹ areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11713 revealed a depth of 16 fathoms in the vicinity of a 9 fathom sounding on chart 16528 located at 54°04'12" N, 166°07'51" W.¹² This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11713 revealed a depth of 21 fathoms in the vicinity of a 28 fathom sounding on chart 16528 located at 54°00'40" N, 166°10'10" W.¹³ This area was surveyed with 100% multibeam coverage. The shoaling is centered in the area depicted below.

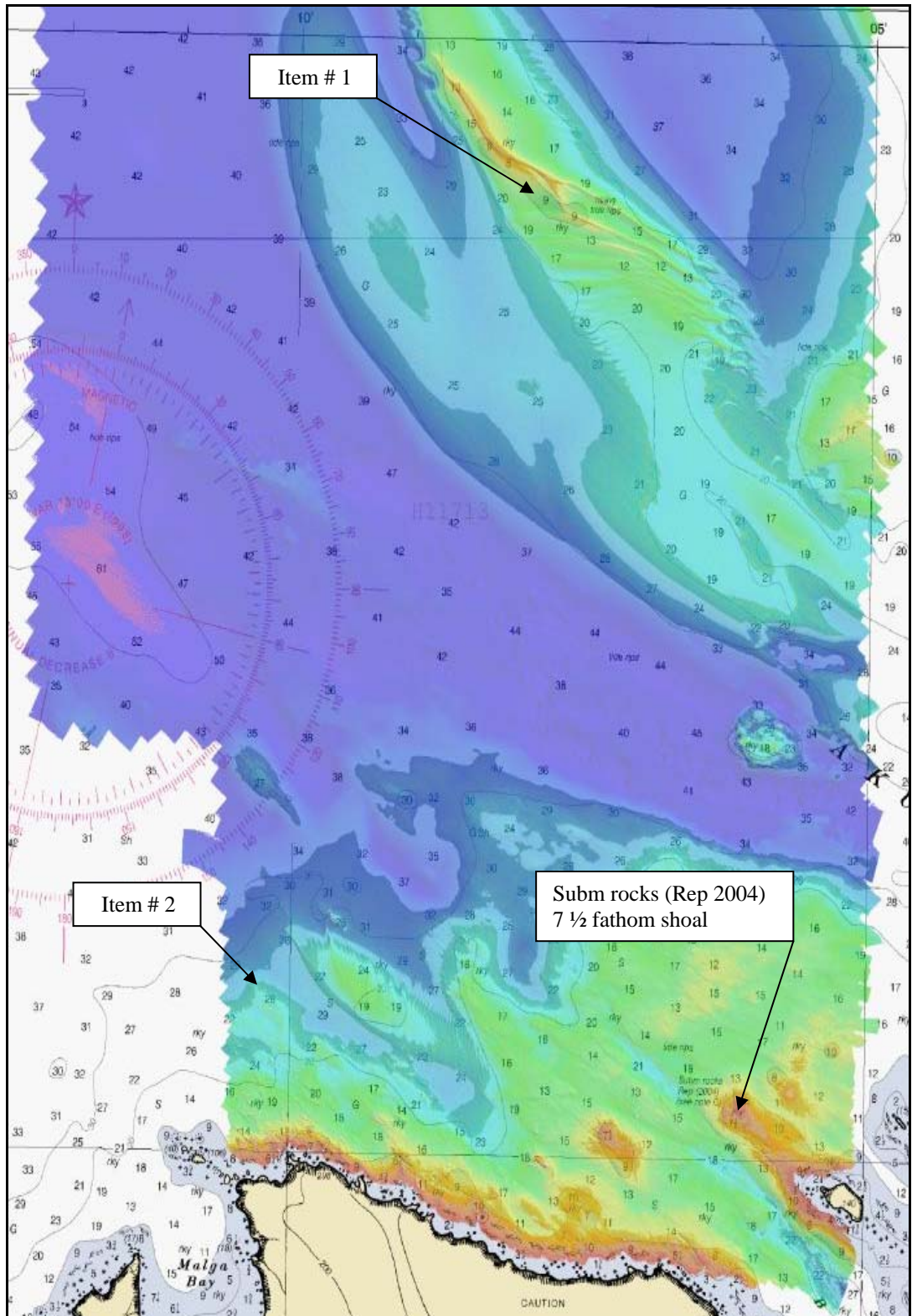


Figure 6 H11713 Chart Comparison (Chart 16528)

In general, the soundings from chart 16520 coincide with the soundings from H11713 to within 1 to 5 fathoms¹⁴; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11713 revealed a depth of 20 fathoms in the vicinity of a 13 fathom sounding on chart 16520 located at 54°05'13" N, 166°08'51" W.¹⁵ This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11713 revealed a depth of 36 fathoms in the vicinity of a 25 fathom sounding on chart 16520 located at 54°01'37" N, 166°07'28" W.¹⁶ This area was surveyed with 100% multibeam coverage.

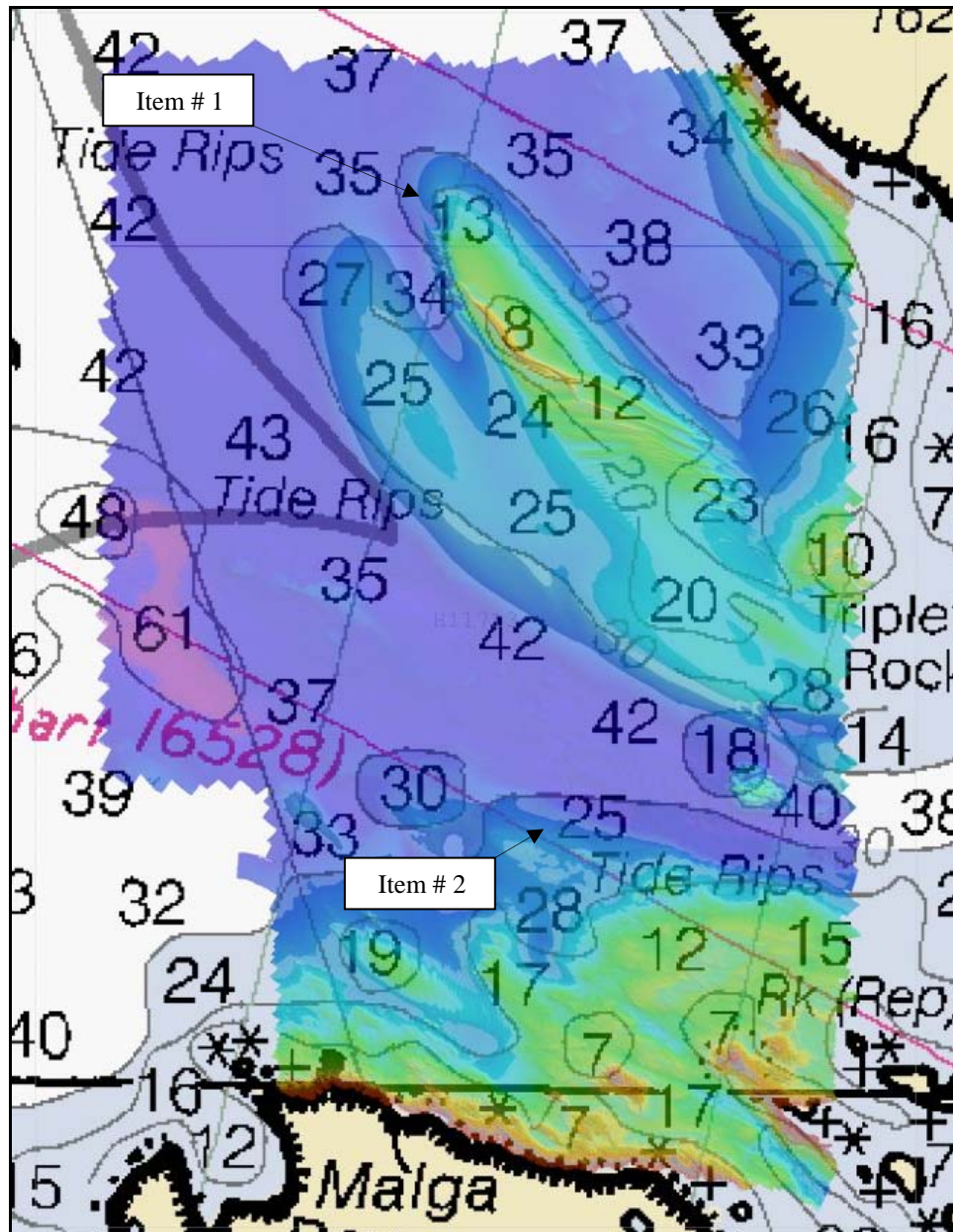


Figure 7 H11713 Chart Comparison (Chart 16520)

It should also be noted that the soundings from H11713 coincide with the soundings from chart 16531 to within 1 to 5 fathoms.¹⁷

In general, the soundings from electronic chart US3AK61M coincide with the soundings from H11713 to within 5 to 15 meters; areas that do vary to any degree are as follows:

- Item # 1: Hydrographic survey H11713 revealed a depth of 69.8 meters in the vicinity of a 32.9 meter sounding on electronic chart US3AK61M located at 54°02'04" N, 166°06'13" W. This area was surveyed with 100% multibeam coverage.
- Item # 2: Hydrographic survey H11713 revealed a depth of 68.6 meters in the vicinity of a 45.7 meter sounding on electronic chart US3AK61M located at 54°01'39" N, 166°07'30" W. This area was surveyed with 100% multibeam coverage.

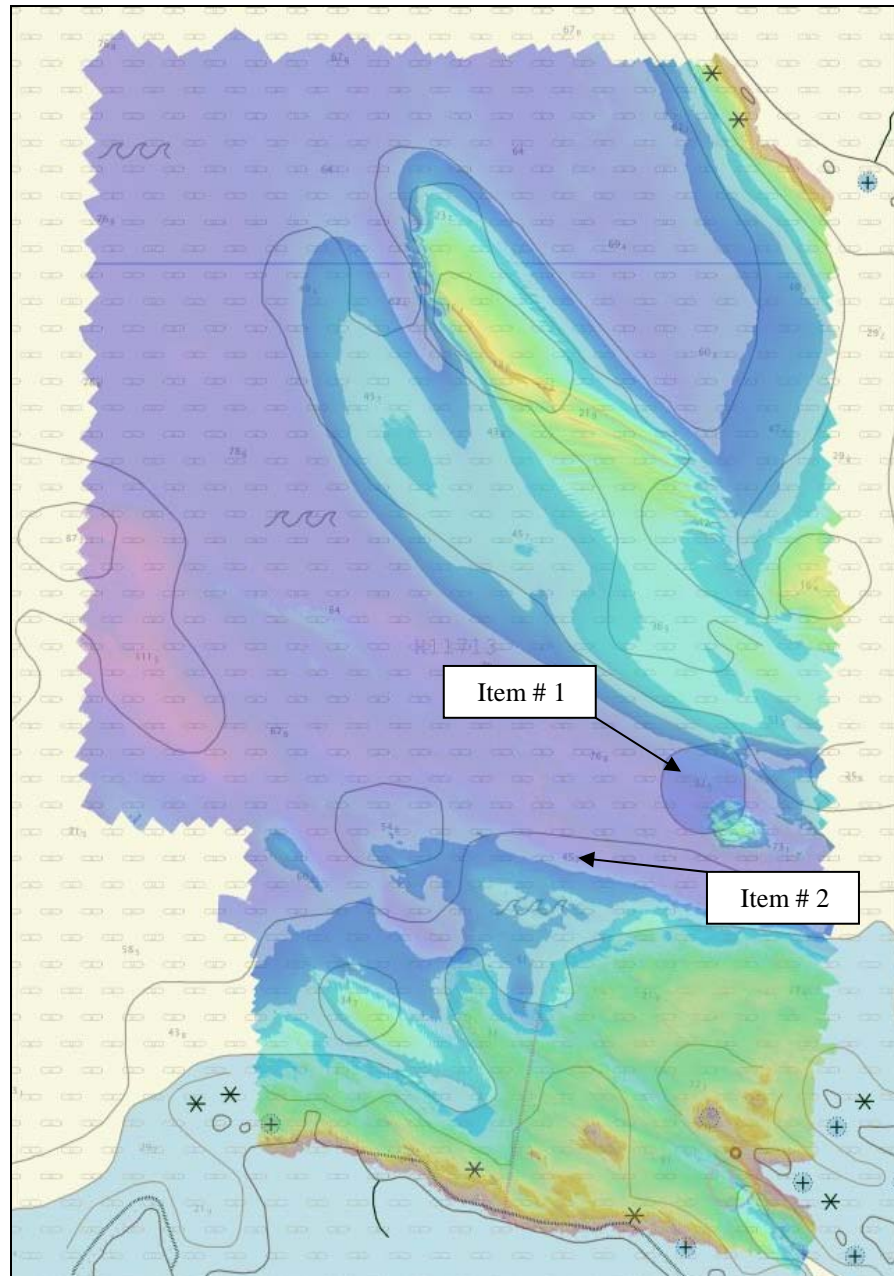




Figure 8 H11713 Electronic Chart Comparison (US3AK61M)

It should also be noted that the soundings from H11713 coincide with the soundings from electronic charts US4AK6FM and US5AK6CM to within 5 to 15 meters.¹⁸

Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11713.¹⁹

Charted Features

All charted features residing on charts incorporated within H11713 (see Listing of Charts above) were investigated and are as follows:

- Subm rocks (Rep 2004) 7 ½ fathom shoal located at 54°00'11" N and 166°06'05" 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 54°00'13.32" N, 166°06'04.84" W with a least depth of 2.74m (1.5 fathoms). It is noted above in Figure 6 H11713 Chart Comparison (Chart 16528). This area of shoaling can also be found in charts 16531, 16520 and electronic charts US3AK61M, US4AK6FM, and US5AK6CM. It is recommended that the Subm rocks (Rep 2004) 7 ½ fathom shoal be removed from the charts and the charts updated to reflect the submitted H11713 CARIS BASE Surface.²⁰
- 1.8 meter shoal located at 54°00'02.75" N and 166°10'18.66" 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 54°00'02.75" N, 166°10'18.62" W with a least depth of 2.2 meters. The area of shoaling was found on electronic chart US5AK6CM. It is recommended that the 1.8 meter shoal be removed from the chart and the chart updated to reflect the submitted H11713 CARIS BASE Surface.²¹

Dangers to Navigation

Nine²² Dangers to Navigation were located during the survey of H11713.²³ The Dangers to Navigation were reported on July 14, 2007 and July 20, 2007 (See Appendix I for submitted reports).



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 H11713_S57_Features file.²⁴

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.²⁵

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 fowl and kelp areas commonly needed some adjustment but the MHW line and point features provided by RSD were particularly good.²⁶ 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.²⁷

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.


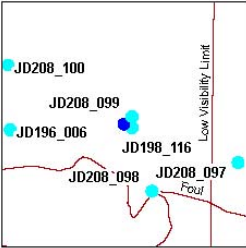
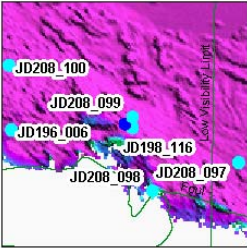
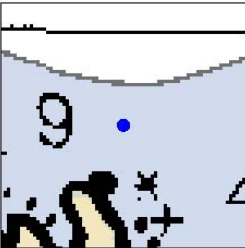
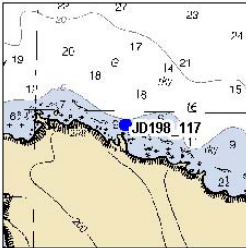


| RSD Source (CM-8306) Changes and Discrepancies²⁸ | | | | |
|--|---------------------------------|--|--|--|
| RSD Feature | RSD Position | Remarks | Actions Taken in S57 Feature File / Recommendations | Applicable DP form(s) |
| MHW Line | 53 59 59.12 N 166 09 53.94 W | RSD MHW this area bad. Corresponds to low-visibility area marked in RSD file. Adjusted using DPs and MBES coverage. | Chart MHW as depicted in the S57 file this area. | JD198_108_R2 JD198_111_R2 JD198_114_R2 JD198_113_R2 JD198_117_R2 |
| Rock | 53 59 55.03 N 166 05 32.59 W | RSD rock not observed but unable to approach to investigate further. | Chart. | JD202_035_D2 |
| Foul areas | (All) | Foul areas generally did not extend seaward enough. Extremely dense mats of kelp were encountered seaward of these areas, thick enough to be obstructions to navigation. | Extend RSD foul/obstruction areas as depicted in the S57 file. Obstruction areas are also depicted as kelp areas with duplicate object geometry. | For an example of these obstruction areas see DP JD198_117_R2 |

| Charted Feature Changes and Discrepancies | | | | |
|--|------------------|---------|-----------------|-----------------------|
| Chart No. and Feature | Charted Position | Remarks | Recommendations | Applicable DP form(s) |
| No significant changes / discrepancies found. | | | | |

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\H11713 Shoreline.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|--|-----|-----------|----------|-----------|---------------|------------|----------------|-----------|------------|----------|-----------|--------------------------------|-----|----------------------|-----|-------------------|-----|---------------------|------|------------------------|-----|------------------------------|-----|---------------------------|-----|-------------|----------------------------|--|------------------------------|---------------------------|---------------------------|-----------------------------|------|--------------------------|---|---|
| DP ITEM NUMBER : JD198_117 | | DP Form | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Date:</td><td>17 July, 2007</td></tr> <tr><td>Julian Day:</td><td>198</td></tr> <tr><td>UTC Time:</td><td>21:36:39</td></tr> <tr><td>Latitude:</td><td>53 59 56.34 N</td></tr> <tr><td>Longitude:</td><td>166 09 19.14 W</td></tr> <tr><td>Northing:</td><td>5984026.27</td></tr> <tr><td>Easting:</td><td>424269.26</td></tr> <tr><td>Raw (+Depth) or (-Height) (m):</td><td>N/A</td></tr> <tr><td>Draft Corrector (m):</td><td>N/A</td></tr> <tr><td>SV Corrector (m):</td><td>N/A</td></tr> <tr><td>Tide Corrector (m):</td><td>0.05</td></tr> <tr><td>Corrected to MLLW (m):</td><td>N/A</td></tr> <tr><td>Corrected to MLLW (fathoms):</td><td>N/A</td></tr> <tr><td>Corrected to MLLW (feet):</td><td>N/A</td></tr> <tr><td>DP Comment:</td><td>B_tip of shoreline 87m 214</td></tr> </table> | Date: | 17 July, 2007 | Julian Day: | 198 | UTC Time: | 21:36:39 | Latitude: | 53 59 56.34 N | Longitude: | 166 09 19.14 W | Northing: | 5984026.27 | Easting: | 424269.26 | Raw (+Depth) or (-Height) (m): | N/A | Draft Corrector (m): | N/A | SV Corrector (m): | N/A | Tide Corrector (m): | 0.05 | Corrected to MLLW (m): | N/A | Corrected to MLLW (fathoms): | N/A | Corrected to MLLW (feet): | N/A | DP Comment: | B_tip of shoreline 87m 214 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Correlating DP Item Numbers:</td></tr> <tr><td>JD198_108_R2 JD198_114_R2</td></tr> <tr><td>JD198_111_R2 JD198_113_R2</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Correlating MB Least Depth:</td></tr> <tr><td>None</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Remarks/Recommendations:</td></tr> <tr><td>RSD MHW bad, corresponding to low-visibility limit in RSD. Adjusted using DP ranges/bearings, and MB ES coverage. Chart as depicted in S57 file. Ex: Foul</td></tr> <tr><td>Chart: 16528 Topo: Carto Code: None</td></tr> </table> | Correlating DP Item Numbers: | JD198_108_R2 JD198_114_R2 | JD198_111_R2 JD198_113_R2 | Correlating MB Least Depth: | None | Remarks/Recommendations: | RSD MHW bad, corresponding to low-visibility limit in RSD. Adjusted using DP ranges/bearings, and MB ES coverage. Chart as depicted in S57 file. Ex: Foul | Chart: 16528 Topo: Carto Code: None |
| Date: | 17 July, 2007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Julian Day: | 198 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UTC Time: | 21:36:39 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Latitude: | 53 59 56.34 N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Longitude: | 166 09 19.14 W | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Northing: | 5984026.27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Easting: | 424269.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Raw (+Depth) or (-Height) (m): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft Corrector (m): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SV Corrector (m): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tide Corrector (m): | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corrected to MLLW (m): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corrected to MLLW (fathoms): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corrected to MLLW (feet): | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP Comment: | B_tip of shoreline 87m 214 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Correlating DP Item Numbers: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JD198_108_R2 JD198_114_R2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JD198_111_R2 JD198_113_R2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Correlating MB Least Depth: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remarks/Recommendations: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RSD MHW bad, corresponding to low-visibility limit in RSD. Adjusted using DP ranges/bearings, and MB ES coverage. Chart as depicted in S57 file. Ex: Foul | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chart: 16528 Topo: Carto Code: None | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>DPs and RSD CM-8306 300m x 300m</p> |  <p>DPs, RSD CM-8306, and MB ES coverage 300m x 300m</p> |  <p>Chart 300m x 300m</p> |  <p>Chart 2000m x 2000m</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



E – Approval Sheet

Approval Sheet

For

H11713

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 This HCell was junctioned with H11712, which was compiled prior to H11713. H11715 has not been compiled yet, and a common junction was therefore not created.

⁴ Concur.

⁵ Concur.

⁶ Concur.

⁷ Concur.

⁸ Corrected through NM July 12th, 2008.

⁹ Corrected through NM August 7th, 2010.

¹⁰ Corrected through NM August 9th, 2008.

¹¹ Concur.

¹² Concur.

¹³ Concur with clarification. Least depth found in this area is 18 fathoms.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ Concur with clarification. Area of disagreement with chart 16520 falls within an area of the survey covered by chart 16528. The same disagreement does not exist on 16528.

¹⁷ Concur.

¹⁸ Concur.

¹⁹ Concur.

²⁰ Charts have been updated to reflect 1.5fm depth prior to the compilation of H11713.

²¹ Concur.

²² An additional DTON was found during SAR review.

²³ DTON report appended to this report. DTONs noted in H11713_CS.000

²⁴ Concur. 14 of the 18 collected bottom samples were retained during compilation. 5 of the bottom samples from 16528 were retained as well.

²⁵ Concur.

²⁶ Concur.

²⁷ Concur with clarification. Chart as depicted in H11713_CS.000

²⁸ Items have been reviewed by PHB and are charted as appropriate. See HCell.

H11713 Danger to Navigation

Registry Number: H11713
State: Alaska
Locality: Akutan Pass
Sub-locality: North of Unalga Island
Project Number: OPR-Q191-KR-07
Survey Date: 07/24/2007

Charts Affected

| Number | Version | Date | Scale |
|--------|----------|------------|------------|
| 16528 | 16th Ed. | 06/13/1998 | 1:40000 |
| 16531 | 7th Ed. | 02/16/2002 | 1:80000 |
| 16520 | 22nd Ed. | 03/01/2004 | 1:300000 |
| 16011 | 36th Ed. | 08/01/2004 | 1:1023188 |
| 16006 | 34th Ed. | 05/01/2006 | 1:1534076 |
| 513 | 7th Ed. | 06/01/2004 | 1:3500000 |
| 530 | 31st Ed. | 06/01/2005 | 1:4860700 |
| 50 | 6th Ed. | 06/01/2003 | 1:10000000 |

Features

| No. | Feature Type | Survey Depth | Survey Latitude | Survey Longitude | AWOIS Item |
|-----|--------------|--------------|-----------------|------------------|------------|
| 1.1 | Rock | 2.70 m | 54° 00' 13.4" N | 166° 06' 04.9" W | --- |

1 - Danger To Navigation

1.1) Profile/Beam - 525/13 from h11713 / d2 / 2007-205 / 2b05-inf003a**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 54° 00' 13.4" N, 166° 06' 04.9" W
Least Depth: 2.70 m
Timestamp: 2007-205.00:17:03.012 (07/24/2007)
Survey Line: h11713 / d2 / 2007-205 / 2b05-inf003a
Profile/Beam: 525/13
Charts Affected: 16528_1, 16531_1, 16520_1, 16011_1, 16006_1, 513_1, 530_1, 50_1

Remarks:

1.48 fathom sounding on shoal

Feature Correlation

| Address | Feature | Range | Azimuth | Status |
|---------------------------------|---------|-------|---------|---------|
| h11713/d2/2007-205/2b05-inf003a | 525/13 | 0.00 | 000.0 | Primary |

Hydrographer Recommendations

Delete 7.5 fm sounding and chart dangerous submerged rock with a least depth of 1.5 fathoms.

Cartographically-Rounded Depth (Affected Charts):

1 ½fm (16528_1, 16531_1, 16520_1, 16011_1, 16006_1, 530_1)

2.7m (513_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20070726
 SORIND - US,US,surve,H11713
 VALSOU - 2.704 m
 WATLEV - 3:always under water/submerged

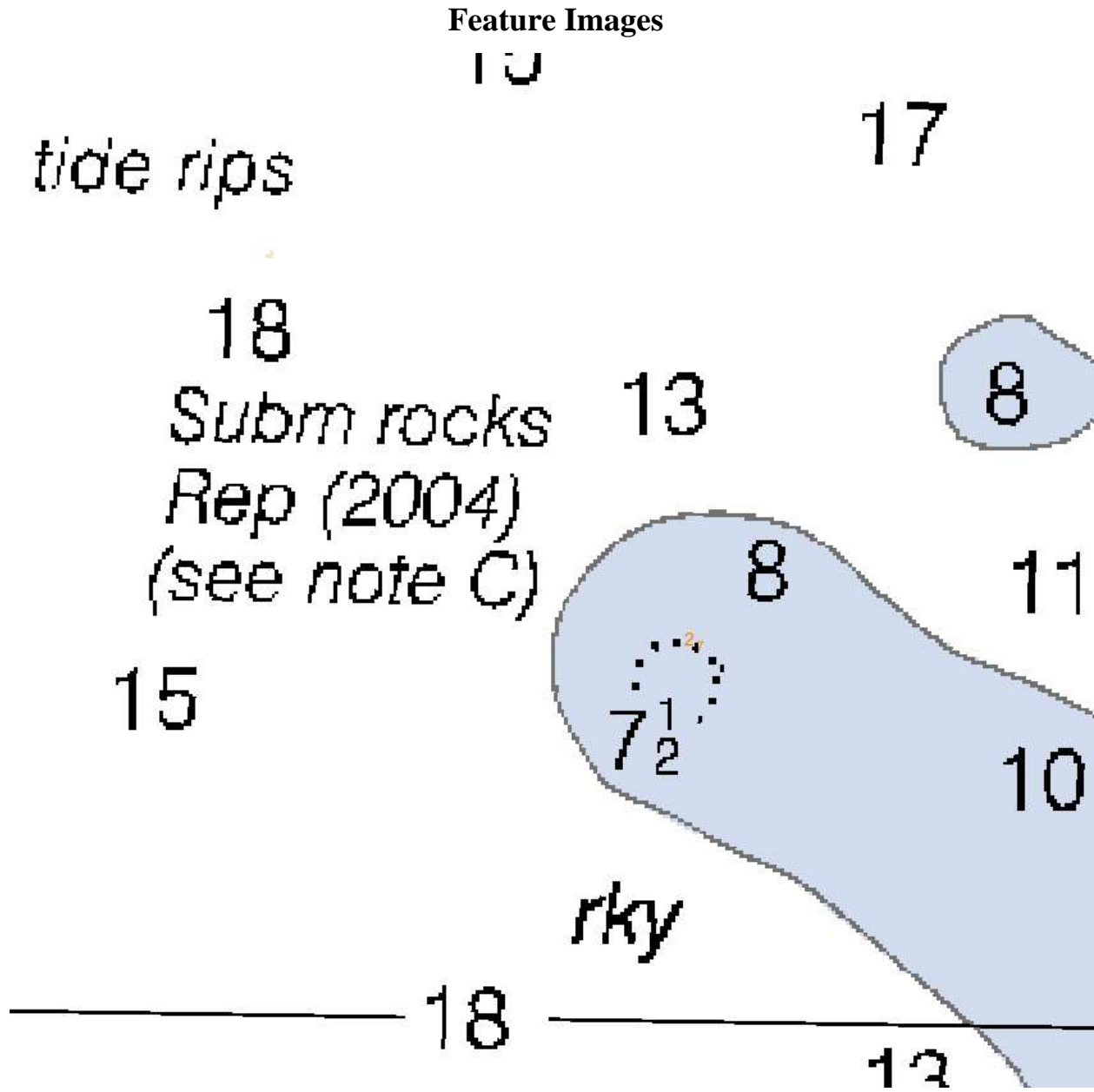


Figure 1.1.1

Hydrographic Survey Registry Number: H11713

Survey Title: **State:** **ALASKA**
 Locality: **Akutan Pass**
 Sub-locality: **North of Unalga Island**

Project Number: OPR-Q191-KR-07

Survey Dates: June 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 |
|----------------|------------------------|-----------------|------------------|
| Sounding | 3 fms 3 ft | 54-00-06.46N | 166-07-16.23W |

COMMENTS:

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

Hydrographic Survey Registry Number: H11713

Survey Title: **State:** **ALASKA**
 Locality: **Akutan Pass**
 Sub-locality: **North of Unalga Island**

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 fms 0 ft | 54-00-02.75N | 166-10-18.66W |
| Sounding | 6 fms 4 ft | 54-00-05.85N | 166-09-59.08W |
| Sounding | 7 fms 2 ft | 53-59-49.29N | 166-08-11.13W |
| Sounding | 5 fms 5 ft | 53-59-57.89N | 166-07-45.94W |
| Sounding | 7 fms 0 ft | 54-00-18.52N | 166-05-37.28W |
| Sounding | 7 fms 2 ft | 54-04-17.58N | 166-07-48.88W |
| Sounding | 7 fms 0 ft | 54-04-24.54N | 166-08-14.98W |
| Sounding | 9 fms 0 ft | 54-04-43.38N | 166-08-42.98W |

COMMENTS:

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

H11713 HCell Report
Anddrew Clos, Hydrographer Intern
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11713 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 H11713 were compiled to the largest scale raster charts shown below:

| Chart | Scale | Edition | Edition Date | NTM Date |
|-------|-----------|---------|--------------|------------|
| 16520 | 1:300,000 | 23rd | 08/2008 | 08/09/2008 |
| 16528 | 1:40,000 | 17th | 08/2008 | 07/12/2008 |
| 16531 | 1:80,000 | 7th | 02/16/2002 | 08/07/2010 |

The following ENC's were also used during compilation:

| Chart | Scale |
|----------|-----------|
| US5AK6CM | 1:40,000 |
| US4AK6FM | 1:80,000 |
| US3AK61M | 1:300,000 |

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 5-meter Combined Surface in CARIS BASE Editor. Shoal-biased selections were made at 1:15,000 (16528), 1:17,000 (16531), and 1:25,000 (16520) 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 | 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

Depth contours at the intervals on the largest scale chart are included in the H11713_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 16708 | 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 H11713_SS.000 |
|---|--|--|------------------------------------|---|
| 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 |
| 50 | 91.44 | 92.812 | 50.750 | 50 |

Contours have not been deconflicted against shoreline features, soundings and hydrography, as all other features in the H11713_CS file and soundings in the H11713_SS have been. This may result in conflicts between the H11713_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 H11713_SS.000 file contours in all cases where conflicts are found.

5. Meta Areas

The following Meta object areas are included in HCell H11713:

M_QUAL
M_CSCL

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 H11713_CS HCell contains the following Objects:

| | |
|---------|--|
| \$CSYMB | Blue Notes-Notes to the MCD chart Compiler |
| M_CSCL | Compilation scale Meta areas to define insets |
| M_QUAL | Data quality Meta object |
| OBSTRN | Obstruction area object |
| SBDARE | Modified GC ledges and reefs, bottom samples, and rocky seabed areas |
| SNDWAV | Area objects depicting sand wave formations on the sea floor. |
| SOUNDG | Soundings at the chart scale density |
| WATTUR | Areas of water turbulence |
| WEDKLP | New and retained kelp areas |

The H11713_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

H11713 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

| | |
|--------------------|--|
| H11713_CS.000 | Base Cell File, Chart Units, Soundings and features compiled to 1:40,000 |
| H11713_SS.000 | Base Cell File, Chart Units, Soundings and Contours compiled to 1:15,000 |
| H11713_DR.pdf | Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items |
| H11713_outline.gml | Survey outline |
| H11713_outline.xsd | Survey outline |

11.2 Software

| | |
|---|--|
| CARIS HIPS Ver. 6.1 | Inspection of Combined BASE Surfaces |
| CARIS BASE Editor Ver. 2.3 | 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 | 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. |

12. Contacts

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

Andrew Clos
Hydrographer Intern
Pacific Hydrographic Branch
Seattle, WA
206-526-6853
Andrew.clos@noaa.gov

APPROVAL SHEET
H11713

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.

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

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