H12261

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. H12261

LOCALITY

State Alaska

General Locality Krenitzin Islands

Sublocality Kaligagan Island

2010

CHIEF OF PARTY

David D Briggs

LIBRARY & ARCHIVES

DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H12261

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 **Krenitzin Islands**

Sub-Locality **Kaligagan Island**

Scale **1:10,000** Date of Survey **06/12/2010 – 07/07/2010**

Instructions dated **4/1/2010** Project No. **OPR-Q191-KR-10**

Vessel **F/V PACIFIC STAR (556510), R/V R2 (623241), R/V D2 (647782)**

Chief of party **David D Briggs**

Surveyed by **FUGRO PELAGOS**

Soundings by **RESON SEABAT 7125 (PACIFIC STAR), RESON SEABAT 7101 (R2, D2)**

SAR by **Kurt Mueller** Compilation by **Annie Raymond**

Soundings compiled in **Fathoms**

REMARKS: **All times are UTC. UTM Zone 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. The processing branch concurs with all information and recomendations in the DR unless otherwise noted. 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 [1]

H12261 (Sheet B) is located in the area near Kaligagan Island.

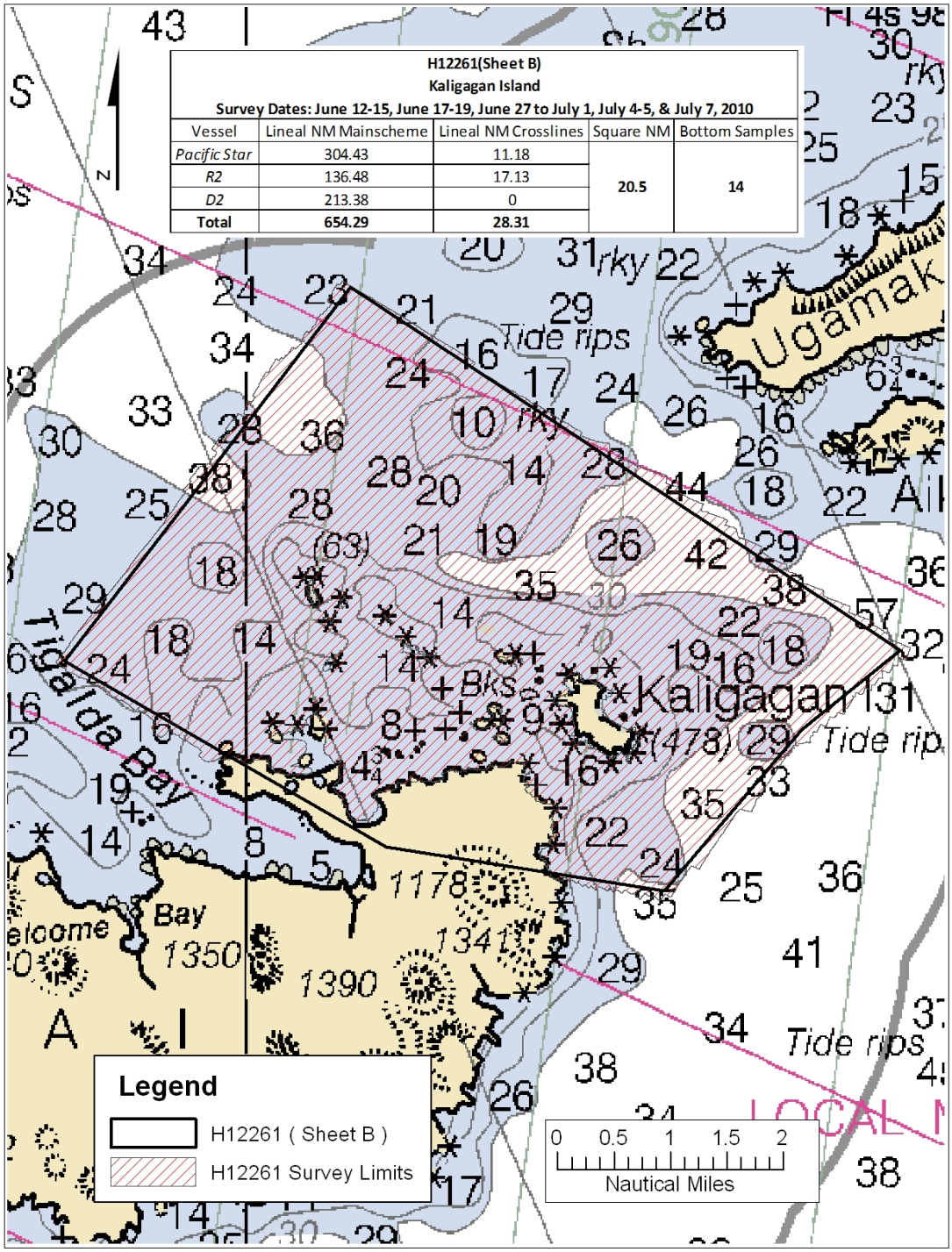

Figure 1 H12261 Area Surveyed

B. Data Acquisition and Processing

Refer to the OPR-Q191-KR-10 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.

B.1 Equipment & Vessels

The F/V Pacific Star, along with launches R2 and D2 acquired all sounding data for H12261.

F/V Pacific Star, 162 feet in length with a draft of 16 feet, was equipped with a hull mounted Reson SeaBat 7125 dual-frequency multibeam echosounder system for the OPR-Q191-KR-10 project. The Reson 7125 operates at two user-selectable frequencies of 400 and 200 kHz. The 7125 forms 256 or 512 beams over 128° with a beam width of 0.5° (across-track) in the 400 kHz mode, and 256 beams over 128° with a beam width of 1° (across-track) in the 200 kHz mode. It allows the operator to select equi-angle or equi-distant beam spacing. For this project, both the 400 kHz and 200 kHz systems were configured for 256 equi-angle beams. The selection of these frequencies as well as range scale, gain, power levels, ping rates, etc. was a function of water depth and data quality and was noted on the survey line logs (see Separate 1). All 7125 multibeam data files were logged in the S7K format using WinFrog Multibeam v3.09.02. The vessel was equipped with two AML sound velocity and pressure sensors (SV&P), and a Brooks Ocean Moving Vessel Profiler (MVP), for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4. OTT RLS radar sensors were installed on the port and starboard gunwales of F/V Pacific Star to obtain a more precise static draft measurement. Samples were taken over a 10 minute period and averaged to determine the vessel's draft. Traditional static draft measurement techniques were also employed as a substitute to the OTT RLS measurements when required.

R/V R2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. For this survey, R2 was initially equipped with a hull mounted Reson SeaBat 7101 multibeam echosounder. The Reson 7101 on R2 was fitted with a stick projector and operated at a frequency of 240 kHz. The system forms either 239 or 511 beams across a 150° swath width. All 7101 multibeam data files were logged in the S7K format using WinFrog Multibeam v3.09.02. On the 26th of June (JD177), the 7101 transducer and receiver were replaced with an extended range 7101 system. The extended range 7101 head did not change any of the original specifications of the Reson beam forming or WinFrog Multibeam logging. R2 was equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

R/V D2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. For this survey, D2 was equipped with a hull mounted Reson SeaBat 7101 multibeam echosounder. The Reson 7101 on D2 was fitted with a stick projector and operated at a frequency of 240 kHz. The system forms

either 239 or 511 beams across a 150° swath width. All 7101 multibeam data files were logged in the S7K format using WinFrog Multibeam v3.09.02. On the 19th of June (JD170), D2 struck a rock causing the 7101 transducer and receiver to become inoperable. On the 26th of June (JD177), due to hull mounting restrictions, the sonar head on R2 was installed on D2 and the head was rotated 25° to the starboard for the remainder of the project. R2 was equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

Refer to OPR-Q191-KR-10 Data Acquisition and Processing Report for a complete listing of equipment and vessel descriptions.

B.2 Quality Control

Crosslines

Crosslines were planned and well distributed throughout the survey to ensure adequate quality control. Total crossline length surveyed was 28.31 nautical miles or 4.3 percent of the total main scheme line length. Each crossline was compared to the entire main scheme line plan through a 2m CUBE surface using the CARIS HIPS QC report routine.

The majority of QC Reports fall well within the required accuracy specifications. The one exception is several crosslines run by R2 in shallow areas west of Kaligagan Island. The R2 QC report beams fall below the 95% confidence level due to steep slopes and significant rock ledges. Good conformity was still seen between the main scheme lines and crosslines.[2] Main scheme lines are shown in green and crosslines in yellow. Quality Control Results are located in Separate IV.

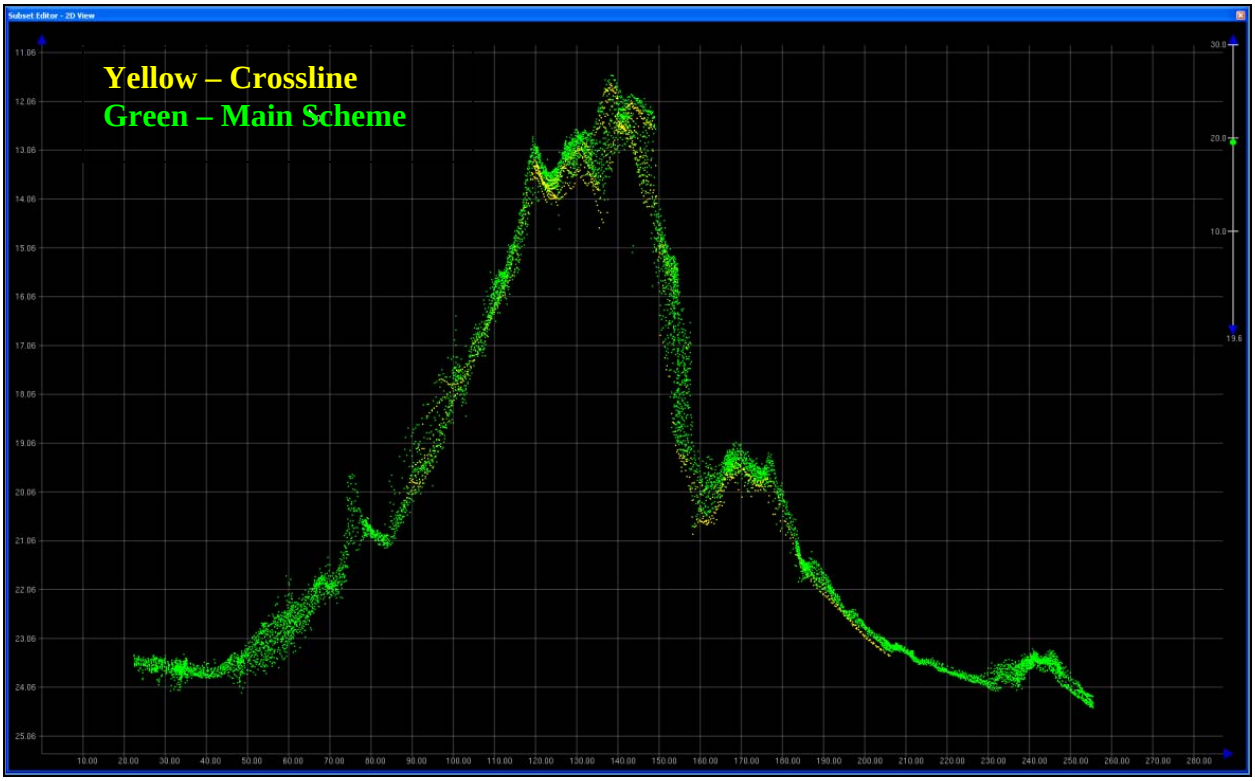

Figure 2 Profile of 2B04-TIE02

Note: The QC reports were generated based on the IHO Order 1a accuracy specification:

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

Where, a=0.5 and b=0.013, d=depth

<u>Uncertainty Values</u>

The majority of H12261 had uncertainty values of 0.46m to 0.60m, which met project specifications (**Figure 3**).

As seen in the uncertainty surface graphic, uncertainty is generally lowest near the sonar nadir beams and increases toward the outside of each swath. This is expected and primarily a result of sound velocity error uncertainty and bottom detection.

Oscillations along-track and port to starboard on the uncertainty surface are due to higher uncertainty computed due to vessel roll, again prevalent mostly in the outer beams.

Higher uncertainties exist in rocky areas as a result of the steep slopes and irregular bottom topography.

Greater depths and steep slopes cause higher uncertainty mainly in the Eastern portion of H12261.

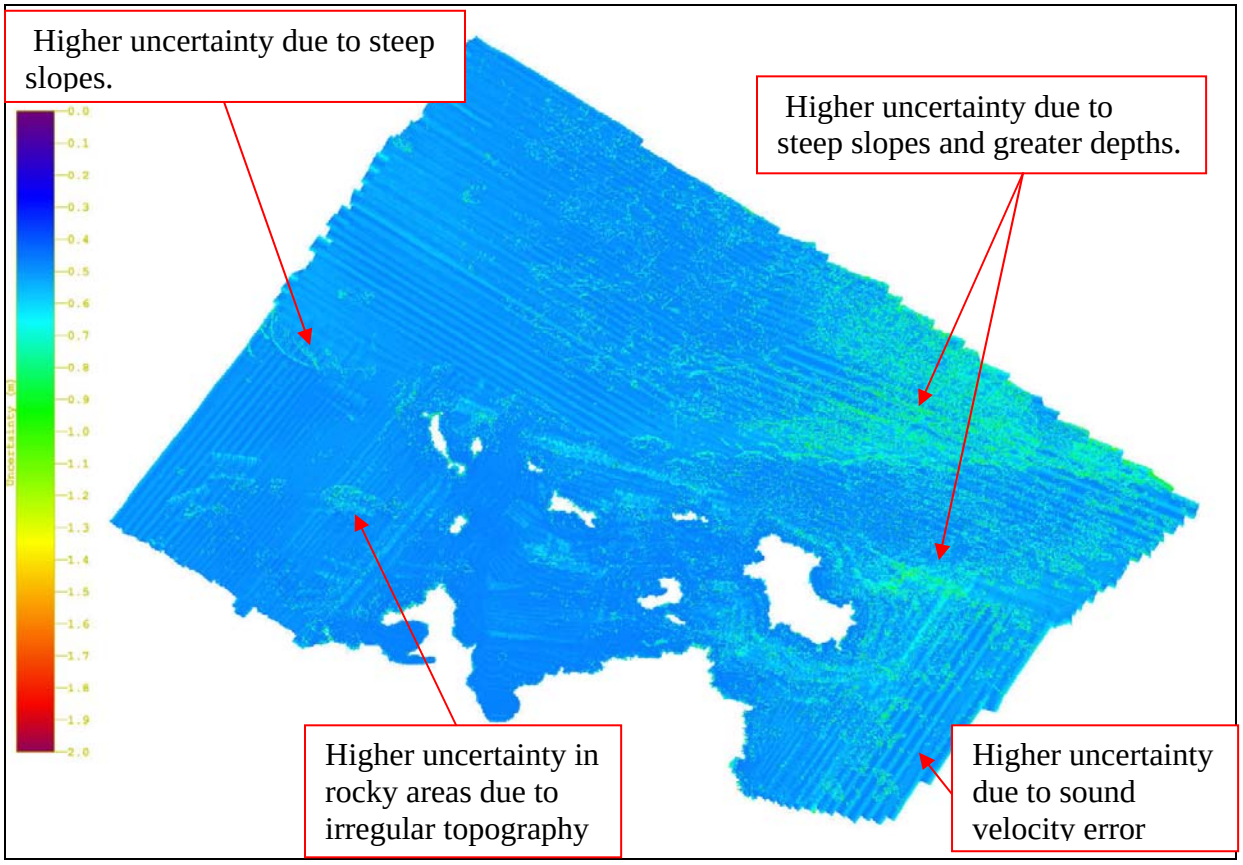

Figure 3 Uncertainty DTM

Data Density

The NOS Hydrographic Surveys Specifications and Deliverables, April 2010, require 95% of all nodes to be populated with at least five soundings. Survey H12261 met these project specifications. The nodes that fell below five pings were mainly at the edge of shoreline areas where low densities are expected, and as a result of high concentration of kelp and consequently large amount of noise in the data. Multiple lines were run in these areas in order to achieve required density, but due to consistent poor data quality and safety concerns, survey operations were halted (**Figure 4**).

Figure 4 Density DTM

Detection requirements were met by minimizing vessel speed when necessary, using sonar range scales appropriate to the water depth to maximize ping rates, and maximizing swath overlap. These variables were adjusted in real-time by the online acquisition crew based on the WinFrog QC and coverage displays. The shipboard processing crew provided feedback after preliminary processing and coverage creation in CARIS HIPS, and reported re-runs or in-fills as necessary to the acquisition crew.

Survey Junctions

H12261 (Sheet B) junctions with: [3]

Registry #	Date	Junction Side
H12260	2010	North
H12262	2010	West
H12263	2010	West

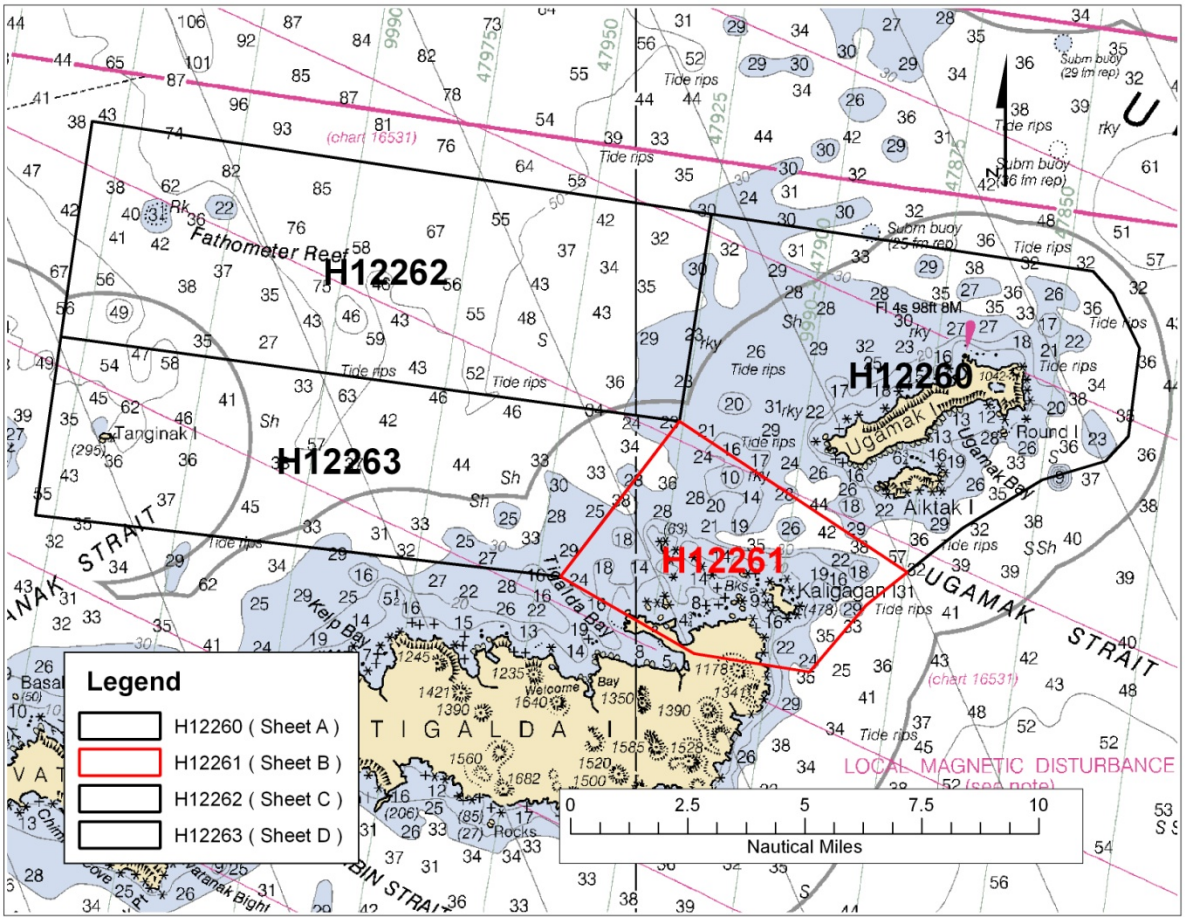

Figure 5 H12261 Survey Junctions

The surveys are in agreement along their common borders. The agreement was noted in the field using the CUBE surfaces during subset cleaning. The conformity is also apparent in the Finalized BASE Surfaces.

Quality Control Checks

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 were achieved. These include, but are 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.

Sonar system confidence checks were performed weekly by comparing post processed depth information collected by multiple vessels surveying over a common area. In addition, bar checks were performed to maintain a high confidence level. Sound Velocity Probe confidence checks were conducted weekly by acquiring comparable sound velocity data between all vessels. This was conducted by having all sound velocity profiling equipment (MVP and SVPs) perform a cast in close proximity to each other in a near simultaneous time period.

Data Quality

In general, the multibeam data quality for H12261 was good. Four notable problems follow:

1. A general downward and/or upward cupping is noticeable 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 in the data, it is within required specifications.[4]

The Pacific Star and R/V's R2 and D2 collected sound velocity profiles every two hours (or less) to compensate for velocity changes over time. Profiles were collected on alternate ends of lines, or often in the middle of lines, to minimize the spatial aspect of sound velocity changes.

2. Small tide busts, up to 30cm, exist in the southern region of H12261. All data met IHO Order 1a specifications.

3. Data density requirements and bathymetric coverage to the 4m contour were not met in some areas due to the high concentrations of kelp and swift currents. Multiple attempts were made to achieve the desired data density and coverage requirements; however, due to consistently poor data quality and safety concerns survey operations were halted.[5]

4. In the southern portion of H12261, the data exhibited a dynamic bottom due to sedimentation transport. Over the acquisition period, a horizontal shift of 8 meters west to east was seen on sand waves in the center of FPI Block B04. Conformity between the data for these two time periods was exhibited in hard bottom areas to the immediate

North-East of the sandwaves (**Figure 7**). The dynamic bottom issue was isolated to this small area of sand waves and occurred in data collected after JD 179.[6] After discussion with Pacific Hydrographic Branch, H12261 was broken into two separate fieldsheets to best represent the bottom prior to and after the sedimentation transport. Specifics on how the data was broken into fieldsheets can be found in section B.4 Data Processing.

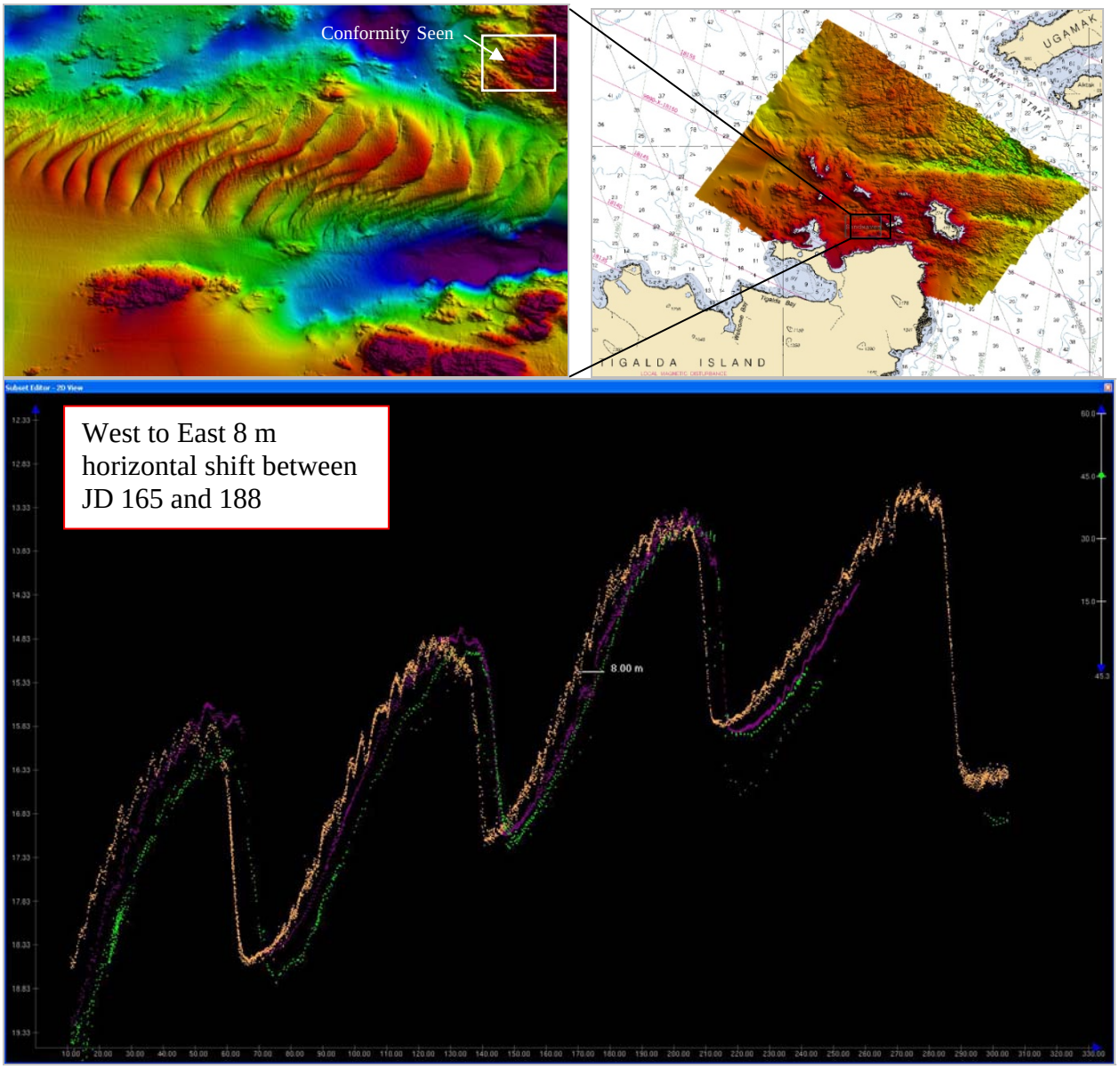

Figure 6 Horizontal shift between Julian Days 165 and 188 in sand waves

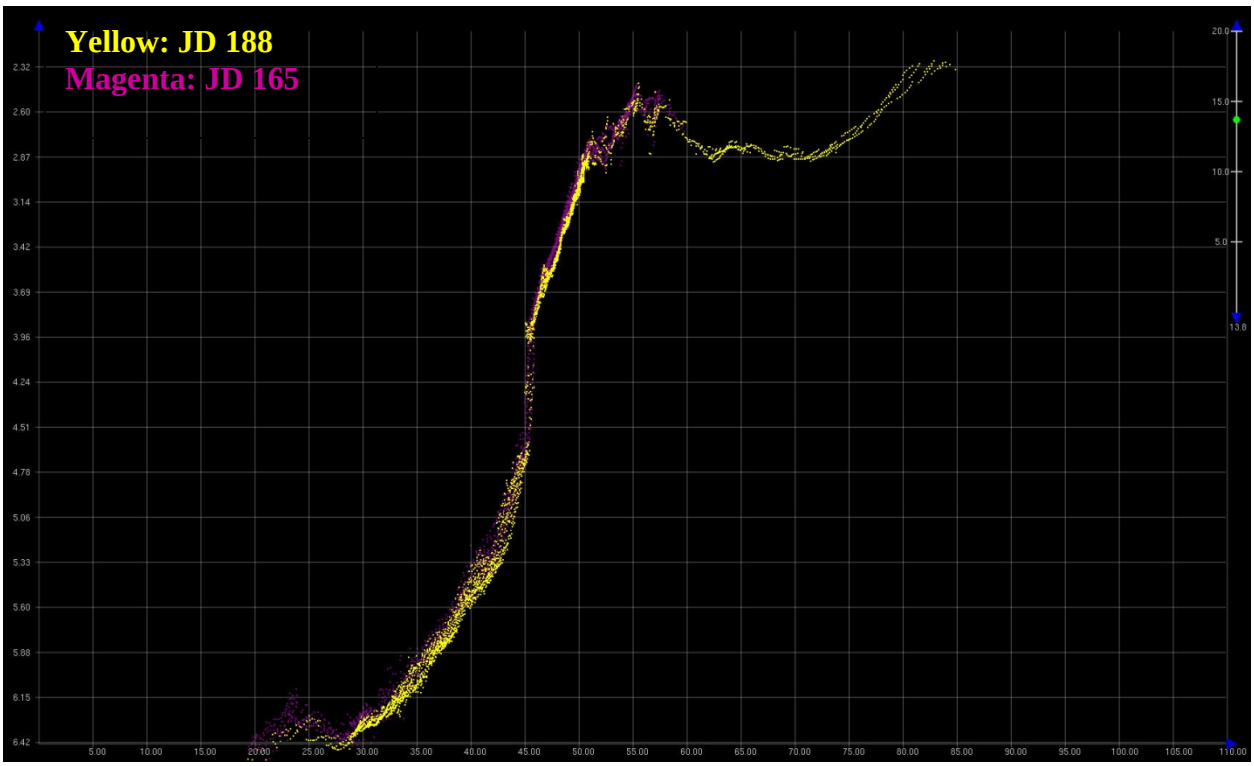

Figure 7 Conformity between days 165 and 188 in a hard bottom

Refer to the OPR-Q191-KR-10 Data Acquisition and Processing Report for a detailed description of the survey equipment and methodology used over the course of this survey.

B.3 Corrections to Echo Soundings

Refer to the OPR-Q191-KR-10 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

B.4 Data Processing

Refer to the OPR-Q191-KR-10 Data Acquisition and Processing Report for a detailed description of the processing flow.

In order to provide more accurate project wide TPU values, all full water column sound speed cast measurements were statistically analyzed in MBTools, via the SVP Statistics utility. This utility calculated a mean, variance, and standard deviation at a user specified depth interval. The standard deviation was then used to produce a TPU value of higher accuracy that was vessel and sheet specific.

TPU models for the 7101 and 7125 system were found to be incorrectly applied in CARIS v7.0.

The DeviceModel.xml file was edited to correct the sonar TPU values. See the Data Acquisition and Processing Report Section B for a more specific description of the issue and corrective action. TPU values specific to H12261 are shown in **Table 1**.

Table 1 H12261 TPU Values

Vessel	Measured	Surface
1-Pacific Star	1.480	0.250
2-R2	0.905	0.250
3-D2	1.557	0.250

In the southern portion of H12261, the data exhibited a dynamic bottom due to sediment transport. After discussion with Pacific Hydrographic Branch, H12261 was broken into two separate fieldsheets to best represent the bottom prior to and after the sediment transport. The lines which exhibited the dynamic bottom issue, lines collected in the vicinity of the sand waves after JD 179, are listed in **Table 2**.

Table 2: Dynamic Bottom Lines

Vessel	Julian Day	Line Name		Vessel	Julian Day	Line Name		Vessel	Julian Day	Line Name
R2	180	2B04-INF014		D2	188	3B04-INF301		D2	188	3B04-INF305
R2	180	2B04-INF015		D2	188	3B04-INF320		D2	188	3B04-INF315
R2	180	2B04-INF027		D2	188	3B04-INF307A		D2	188	3B04-INF311
R2	180	2B04-INF028		D2	188	3B04-INF314		D2	188	3B04-INF306A
R2	180	2B04-INF029		D2	188	3B04-INF311A		D2	188	3B04-INF312
R2	180	2B04-INF030		D2	188	3B04-INF308A		D2	188	3B04-INF313
boR2	180	2B04-INF031		D2	188	3B04-INF321		D2	188	3B04-INF322
R2	180	2B04-INF032		D2	188	3B04-INF309		D2	188	3B04-INF319
D2	188	3B04-INF305A		D2	188	3B04-INF304		D2	188	3B04-INF303
D2	188	3B04-INF307		D2	188	3B04-INF306		D2	188	3B04-INF304A
D2	188	3B04-INF310A		D2	188	3B04-INF316		D2	188	3B04-INF308
D2	188	3B04-INF309A		D2	188	3B04-INF321A		D2	188	3B04-INF310
D2	188	3B04-INF318		D2	188	3B04-INF317				
D2	188	3B04-INF312A		D2	188	3B04-INF316A				

The final fieldsheet for H12261 is called "H12261_(Sheet_B)" and excludes lines exhibiting dynamic bottom issues.[7] This fieldsheet contains all data collected in H12261 **EXCLUDING** lines found in **Table 2**. The following parameters were used:

0-22 meters: 1 m resolution, name “H12261_1m_Final”
20-44 meters: 2 m resolution, name “H12261_2m_Final”
40-88 meters: 4 m resolution, name “H12261_4m_Final”
80-176 meters: 8 m resolution, name “H12261_8m_Final”

Notes:

- Maximum depth was approximately 112m; therefore, resolutions coarser than 8m were not computed.

- Final CUBE BASE surfaces were created with CARIS v 7.0 in the CARIS Spatial Archive (CSAR) format. These surfaces are located under the “H12261(Sheet_B)\CARIS\Fieldsheets” directory.[8]

The dynamic bottom fieldsheet for H12261 is called “H12261_(Sheet_B)_Dynamic_Bottom” and contains only lines collected after JD 179 in the area of the dynamic bottom. This fieldsheet contains **ONLY** lines found in **Table 2**. The following parameters were used:

0-22 meters: 1 m resolution, name “H12261_1m_Final”
20-44 meters: 2 m resolution, name “H12261_2m_Final”

Notes:

- Maximum depth was approximately 37m; therefore, resolutions coarser than 2m were not computed.

- Final CUBE BASE surfaces were created with CARIS v 7.0 in the CARIS Spatial Archive (CSAR) format. These surfaces are located under the “H12261(Sheet_B)\CARIS\Fieldsheets” directory.

The final S57 file for this project is called “H12261_S57_Features.000”.[9] This file contains the object and metadata S57 objects as required in the Specifications and Deliverables.

C. Vertical and Horizontal Control

Refer to the OPR-Q191-KR-10 Horizontal and Vertical Control Report for a detailed description of the horizontal and vertical control used on this survey. 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).

For real-time DGPS corrections, a CSI MBX-3 unit was tuned to the Cold Bay, Alaska USCG DGPS site. The unit output differentially corrected positions at 1 Hz to the (POS MV) 320 V4 where it was integrated with inertial data and a position for the top-center of the IMU was generated. This position was logged concurrently with the bathymetry from WinFrog and the POS file with Fugro Pelagos PosMvLogger. It was later corrected for offsets to the multibeam echosounder (MBES) by CARIS HIPS in post processing.

Final positioning was done using post-processed kinematic (PPK) methods. Applanix POSPac v5.3 software was used in conjunction with the POS files and local 1Hz base station data to generate a higher accuracy position which was applied in processing, replacing the real-time position records.

See OPR-Q191-KR-10 Horizontal and Vertical Control Report for a more detailed description of PPK positioning methods used.

Vertical Control

All sounding data were reduced to MLLW initially using observed tidal data from two John Oswald and Associates (JOA) tide stations located in Akun Bay and Tigalda Bay, AK and one NOAA COOPS tide station located in King Cove, 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 F/V Pacific Star at the end of every Julian Day. A cumulative file for the gauges was updated each day by appending the new data. It should be noted that these unverified tides were used in the field for preliminary processing only. The NOAA supplied tidal zoning was modified by JOA, providing a more elaborate zoning scheme than those zones issued in the Statement of Work.

On March 29, 2011, JOA issued verified tidal data and final zoning for H12260, H12261, H12262, H12263, & H12264 of OPR-Q191-KR-10. All sounding data was 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.

For additional information, refer OPR-Q191-KR-10 Horizontal and Vertical Control Report.

Table 3 Tide Gauge

Gauge	Location	Latitude	Longitude
946-2719	Akun Island, AK	54° 14' 20” N	165° 32' 28” W
946-2782	Tigalda Bay, AK	54° 07' 05” N	164° 58' 35” W
945-9881	King Cove, AK	55° 03' 42” N	162° 19' 36” W

D. Results and Recommendations

D.1 Chart Comparison

H12261 survey was compared with charts shown in **Table 4**.

Table 4 Chart Comparisons

Chart Number	Type	Scale	Edition	Edition Date
16520	Raster	1:300,000	23	August-2008
16531	Raster	1:80,000	7	February-2002
US3AK61M	ENC	n/a	16	January-2011
US4AK6FM	ENC	n/a	7	October-2010

Comparison of Soundings

A comparison of soundings was accomplished by overlaying the latest edition of NOAA charts and ENCs onto the final BASE surfaces in CARIS HIPS & SIPS. The general agreement between the charted soundings and H12261 soundings is noted. A more detailed comparison was undertaken for any charted shoals or other dangerous features.

Agreement between the H12261 BASE surface depths and the charted soundings for all applicable ENC and Raster charts was within +/- 1 to 3 fathoms.[10] Since the survey area was ensonified with 100% multibeam coverage, shoaler depths were discovered between the charted soundings. Additionally, contours in the area were adequate, but require revision from the high resolution data. In these areas, when necessary, the sounding was designated to ensure its inclusion in the finalized BASE surface. Exceptions follow:

1. Charted contours were in general found to be adequate, but the 100% multibeam coverage discovered discrepancies between charted and observed contours. Hydrographer recommends contours and soundings should be modified to agree with the H12261 survey.

2. Conformity to the charts was found to be poor in some areas. Deviations from the charts were mainly found around the 10 fathom contour. Hydrographer recommends contours

and soundings should be modified to agree with the H12261 survey.

3. Some discrepancy exists at the exact position of charted soundings on steep slopes, likely due to the charted soundings being slightly out of position, making a large difference in depths apparent.

4. Shoreline features on ENC US3AK61M should be updated to agree with this survey, ENC US4AK6FM, and RNC 16531 charts. The ENC has numerous erroneous and incorrectly positioned islets and rocks.[11]

5. Several shoals depicted on the north edge of Tigalda Island inside of the 5 fathom contours were found to be shoaler than their depths indicated. Hydrographer recommends revising least depths of shoals from H12261.

The Hydrographer recommends that soundings within the survey limits of H12261 supersede all prior survey and charted depths.

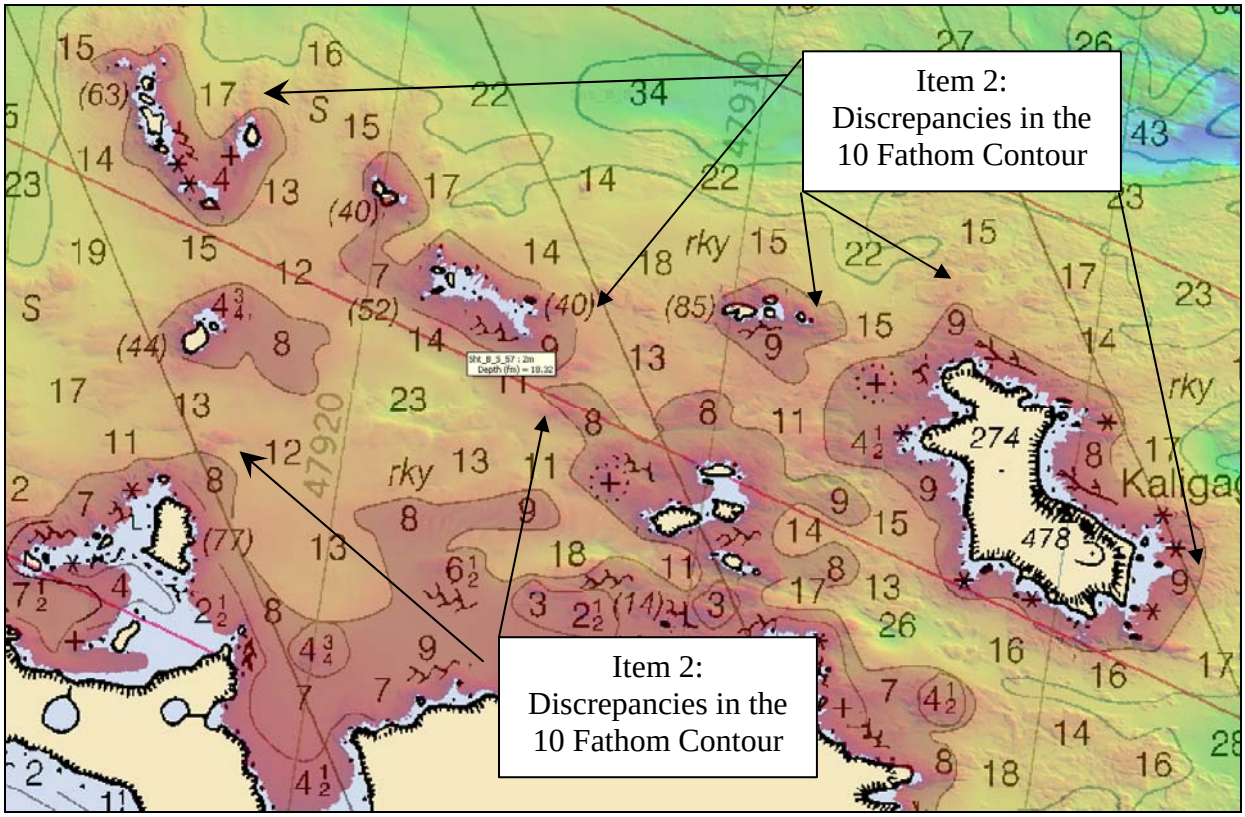

Figure 8 Bathymetry overlayed on Chart 16531

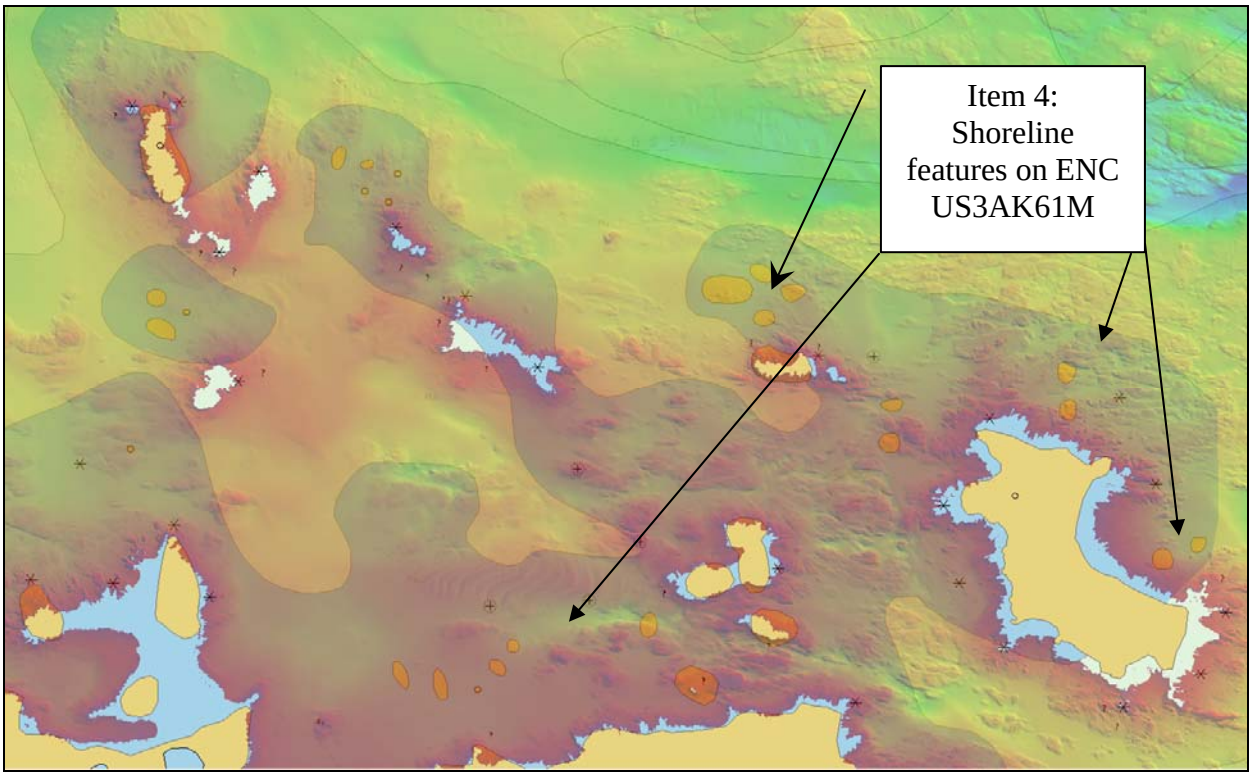

Figure 9 Bathymetry overlayed on ENC US3AK61M

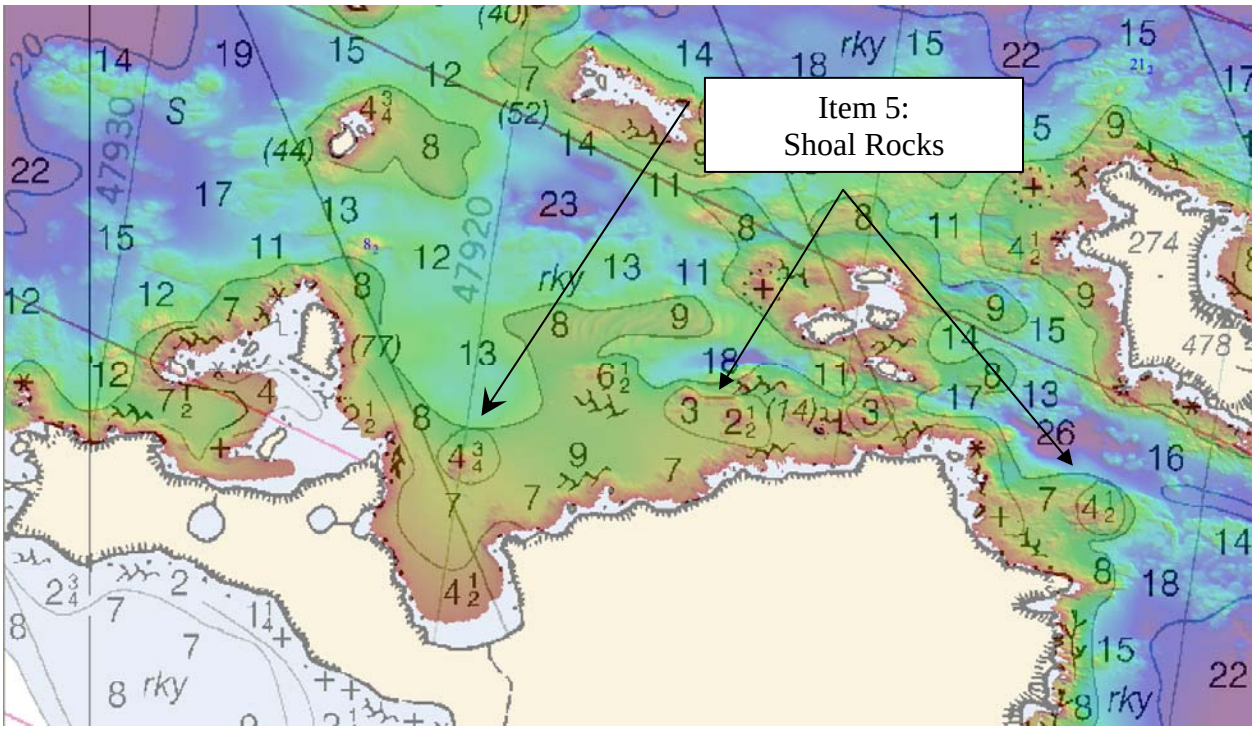

Figure 10 Bathymetry overlayed on Chart 16531

Automated Wreck and Observation Information System (AWOIS)

There were no AWOIS items assigned for investigation.

Charted Features

There were no charted features labeled ED, PD, or PA within the limits of H12261.

Dangers to Navigation

Three dangers to navigation were found and reported during this survey. Refer to AppendixI(Danger to Navigation Reports) for details.[12]

D.2 Additional Results

None to note.

Bottom Samples

The F/V Pacific Star and launches (R2 and D2) were fitted to obtain bottom samples as specified in the Statement of Work. Fourteen samples were obtained in survey H12261.

Samples were taken with a Van Veen grab sampler and positions were recorded with WinFrog Multibeam v 3.09.02. Samples retrieved were analyzed and then encoded with the appropriate S57 attributes. Positions and descriptions of samples are found in the H12261_S57_Features.000 file. [13]

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.

Shoreline Features[14]

FPI's effort should not be considered a complete feature verification (verify or disprove rocks, islets, shoreline, etc), our intent was only to identify holes within our MBES coverage.

The following table itemizes any discrepancies found with charted feature on the applicable RNC or ENC charts.

Shoreline Investigation Results			
Chart No. and Feature	**Charted Position**	**Remarks**	**Recommendations**
16531, 16520, US3AK61M,US4AK6FM Feature: Islet	54 08 12.29N 164 56 30.12W	Represented correctly on all RNCs and ENCs.	Update height of the islet to be 6.0m referenced to MHW; height was obtained during data collection.
16531, 16520, US3AK61M,US4AK6FM Feature: Islets	54 08 22.73N 164 56 10.31W	Represented correctly on RNC 16531 and ENC US4AK6FM.	Update height of the largest islet to be 17.5m referenced to MHW; height was obtained during data collection. Recommend position of the islets on RNC 16520 and ENC US3AK61M be adjusted to agree with mish ENC US4AK6FM.
16531, 16520, US3AK61M,US4AK6FM Feature: Islet [15]	Not currently charted as an islet.	This feature may be one of the charted islets that are located inshore on RNC 16531.	Included in the S-57 feature file. Position: 54 08 09.71N 164 54 29.65W

E. Approval Sheet

Approval Sheet

For

H12261

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

OPR-Q191-KR-10 Statement of Work
NOS Hydrographic Surveys Specifications and Deliverables, April 2010 Edition
Fugro Pelagos, Inc. Acquisition Procedures (2010-MBES_Acquisition_Procedures_R0);
Fugro Pelagos, Inc. Processing Procedures (2010-MBES_Processing_Procedures_R0)

The data were reviewed daily during acquisition and processing, and the survey is complete and adequate for its intended purpose.

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,

David D Briggs,
Lead Hydrographer
Fugro Pelagos, Inc.
May 17, 2011

5/17/2011

X

David D Briggs,
Lead Hydrographer

Revisions and corrections performed during office processing and certification.

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[1] Details typically incorporated into Section A, such as survey purpose, dates of acquisition, general and specific descriptions of the survey area, general overview of coverage, and shoreline verification, were not included in this section of this report. The information has been included in subsequent sections of the report.

[2] The effect of slope and rocky seafloor on confidence level are as expected. Resulting depths were used for updating the chart, but enclosed inside rocky area features as an added precaution. Data is adequate to supersede charted data in the common area.

[3] H12261 junctions with H12260 to the NE and H12263 to the NW. A common junction was made between H12261 and H12260 and H12263 during compilation. A common junction was not necessary with H12262 to the north as the prior compilations of H12260 and H12263 already performed this task and no overlap existed between the final products.

[4] The data is adequate for charting despite the presence of sound speed artifacts.

[5] In areas in which bathymetric coverage to 4 m was not achieved due to the presence of kelp, the rocky nature of the seafloor is encoded for chart production, in addition to the kelp features, in order to convey an additional degree of danger to the mariner.

[6] A sandwave area (SNDWAV) was created over this area and one other area and is included in the chart update product.

[7] H12261_8m_Office_Combined, created during office processing, was used for compilation. This surface was created from the finalized surfaces as listed excluding the lines exhibiting dynamic bottom issues as it best represents the seafloor in this area.

[8] An 8-meter combined surface, H12261_8m_Office_Combined.csar, was created during office processing and was used as the basis for compilation.

[9] H12261_S57_Features_PHB.hob, modified during office processing, was used for compilation.

[10] During office processing differences of up 6 fathoms were noted between 16531 charted depths and H12261 surveyed depths.

[11] US4AK6FM also appears to be compiled at greater detail than the largest scale RNC 16531 (1:80,000). H12261 nearshore features are compiled relative to the ENC,while depths are compiled relative to the RNC. See note 14.

[12] DTONs were not applied by the Marine Chart Division in advance of this survey submission, but are included in the chart update product and should be applied accordingly. Dton report is attached.

[13] A total of 13 bottom samples, 10 new and 3 previously charted, are included for compilation. New rocky seabed areas were also created during compilation.

[14] During office processing it was discovered that shoreline applied to the October 2011 edition of ENC US4AK6FM was both more up-to-date and more features intensive than the most recent equivalent scale raster chart, 16531. An offset of 15-30 meters was also noted between the more recent ENC and older RNC shoreline and features. These discrepancies were addressed during compilation of depths and features to the chart update product.

[15] A new islet with an elevation of 1 meter was added to the chart update product.

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H12261 (Sheet B)

Survey Title: **State:** Alaska

Locality: Pacific Ocean
Sub-locality: Kaligagan Island

Project Number: OPR-Q191-KR-10

Survey Dates: June 12, 2010 – July 7, 2010

Survey Danger Acquisition Date and Time: See feature.
Feature is reduced to Mean Lower Low Water with final verified tidal data.

CHARTS AFFECTED:

Chart Number	Type	Scale	Edition	Edition Date
16520	Raster	1:300,000	23	August-2008
16531	Raster	1:80,000	7	February-2002
US3AK61M	ENC	n/a	16	January-2011
US4AK6FM	ENC	n/a	7	October-2010

DANGER:

Feature	Depth	Latitude	Longitude	Time (UTC)
1. Sounding	4.4 fathoms	54-08-43.60N	164-58-38.63W	2010-06-14 21:42:58.985
2. Sounding	5.8 fathoms	54-08-59.88N	164-56-35.73W	2010-06-29 22:05:38.264
3. Sounding	5.0 fathoms	54-08-07.85N	164-53-58.77W	2010-06-29 15:35:53.801

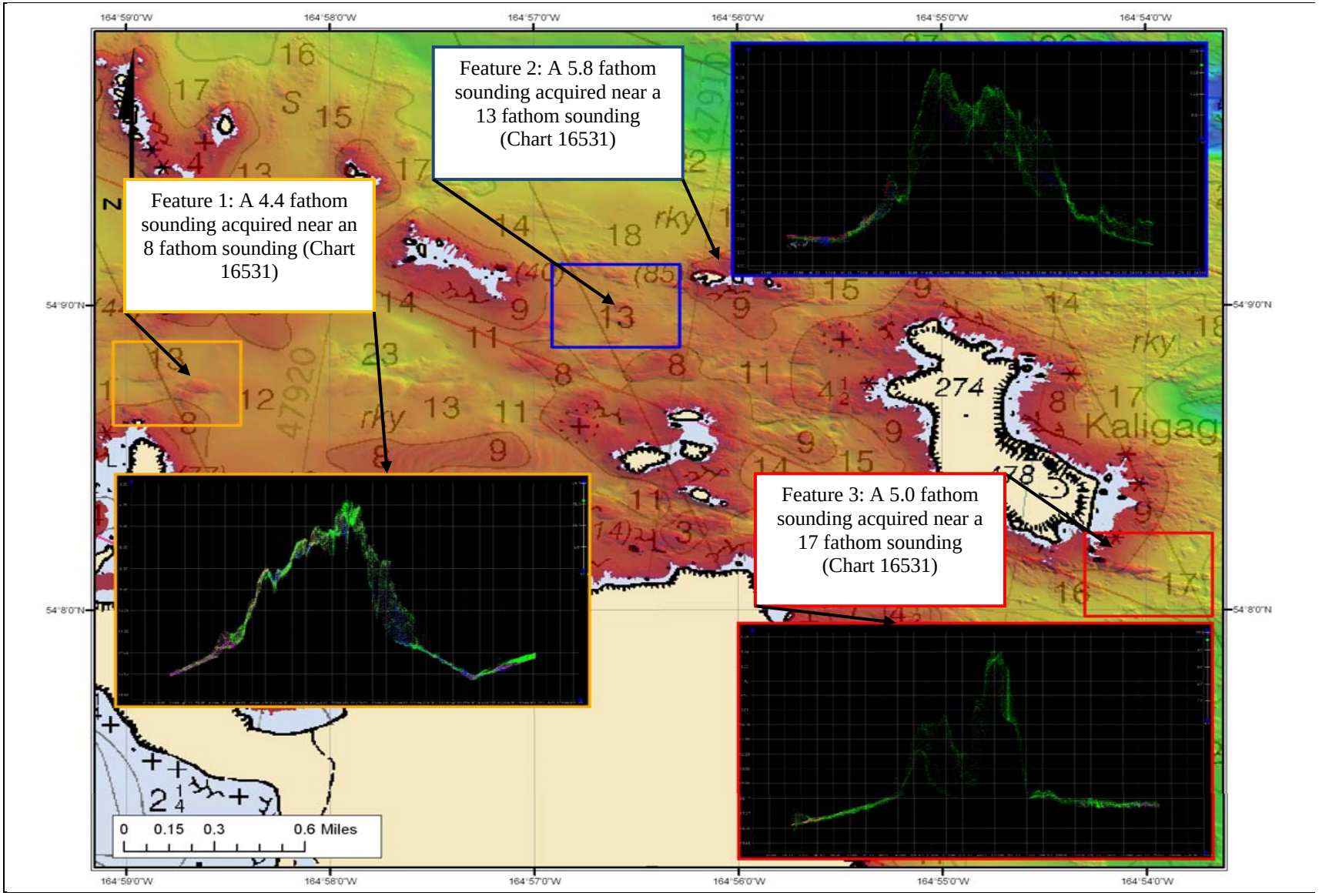

Figure 1: Features 1 thru 3

COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34), at (206) 526-6835.

APPENDIX V – SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

The following emails are included since they are recommendations or directives from NOAA that affected the survey.

FW: S7K Format

Dean Moyles

Sent: Thursday, March 31, 2011 8:12 AM
To: David Briggs

FYI

From: Dean Moyles
Sent: Friday, May 21, 2010 4:29 PM
To: 'Crescent.Moegling@noaa.gov'; 'David.Scharff'
Subject: S7K Format

Dave/Crescent

We have upgraded our two 7125's and 8101's to the 7125 SV and 7101, with these upgrades comes new records that can be logged by Fugro Pelagos in our WinFrog Multibeam software. The 7028 (7k Snippet Data) was put in place to replace the 7008 (Beam formed data and snippets), it is only functional different from the 7008 by the variable sample length, thus reducing the file sizes. We have been looking at the 7028 snippet data in our version of Geocoder, and we are very pleased with the results, so it is our intention the logged these instead of the 7008 records. If you guys have any objections please let us know.

In addition to this we will be collecting the 7027 records which include among other things the real-time uncertainty. We are working with Reson and CARIS to prove and integrate this in to our work flow.

Dean Moyles
Senior Hydrographer (ACSM certified)
Fugro Pelagos, Inc.
San Diego, CA 92123
Phone (858) 292-8922
Fax (858) 292-5308
Cell (858) 945-6378 www.fugro-pelagos.com

Toshi,

Thanks for the response, you will have two surface for the sheets which will have dynamic bottom issues.

David

From: Toshi Wozumi [Toshi.Wozumi@noaa.gov]
Sent: Friday, March 04, 2011 11:12 AM
To: David Briggs
Cc: David.Scharff; Dean Moyles; Crescent Moegling; Gary Nelson
Subject: Re: Dynamic Bottom Issues

Hi David,

We've asked for two surfaces in the past so that we can combine them to preserve the shoal soundings.
As long as the deeper soundings are being rejected in the dataset, submitting just one surface would
not be a problem. We just wanted to avoid relying on CUBE to preserve the shoal soundings in dynamic bottom areas.
If you have any further questions let me know.

Thanks,
Toshi

On 3/3/2011 11:29 AM, David Briggs wrote:

> Toshi,
>
> We are encountering some dynamic bottom issues in our 2010 Krenitizin Islands data. The dynamic bottom issues are the result of infills performed several weeks after the mainshceme lines had been completed. In the past, California State Mapping Project 2008 and 2009, we would keep the shoaler data and reject the deeper data for the final products. I discussed this with Crescent in 2010 and she told me that PHB was taking a different approach of keeping all of the data and producing 2 separate surfaces, one of the mainscheme and one of the busted infills.
>
> Which approach would you prefer for the final products? What ever we do, the issues and actions will be documented in the DRs.
>
> Thanks,
> David
>
> *David D Briggs*
> *Lead Hydrographer*
>
> *Fugro Pelagos, Inc*
> *3574 Ruffin Rd*
> *San Diego, CA 92123 USA*
> *Tel: +1(858)292-8922*
> *Fax: +1(858)292-5308*
> *Mobile: +1(858)598-7317*
> *Email: dbriggs@fugro.com*
> *Website: www.fugro-pelagos.com*

--
Toshi Wozumi
Physical Scientist
Pacific Hydrographic Branch
206-526-4763

David,

Just the spread sheet, if your still creating the sketches as part of your own requirements it would be nice to see but the monthly progress sketches are no longer a requirement.

Correct, we only need them once a month.

Dave

David Briggs wrote:
> Dave,
>
> Just two question,
>
> Do you still want the area plot submitted showing what has been accomplished by each boat for the monthly progress sketch or just this spreadsheet?
>
> This is only to be completed monthly?
>
> Thanks,
> David
>
> _____
> From: David.Scharff [David.Scharff@noaa.gov]
> Sent: Tuesday, June 15, 2010 12:04 PM
> To: David Briggs
> Subject: [Fwd: new progress reporting template]
>
> Hi David,
>
> I actually meant to send this to you as you're the lead in the field.
> Let me know if you have any questions.
>
> Thanks,
> Dave
>
> -------- Original Message --------
> Subject: new progress reporting template
> Date: Tue, 15 Jun 2010 14:44:50 -0400
> From: David.Scharff <David.Scharff@noaa.gov>
> To: James Hailstones <JHailstones@fugro.com>
>
>
>
> Hi James,
>
> Not sure if you noticed the change in the 2010 Specs (8.1.1) regarding
> this new progress reporting spreadsheet. This has to be sent on the
> fifth day of the month to progress.sketches@noaa.gov. Personally I have
> no problem with your progress reports but I guess this is an attempt to
> keep the reporting uniform for all our hydro vessels. Let me know if you
> have any questions.
>
> Thanks,
> Dave

David,

1. The new specification should be online any day now but I have attached a copy for your review. Section 5 should answer your question , or confuse you more :-) . Take a look at the new specs and let me know you need additional clarification.
2. The shape files you have been sending us have worked well and are easy to convert to MapInfo. ArcMap would probably work as well.

Dave

David Briggs wrote:
> Dave,
>
> I just want to clarify a few things from the current project instructions.
>
>
> 1.
> Under the converage section, the second coverage type states
> "All significant shoals or features in waters less than 30m
> deep". Is this a refrence towards AWOIS or features in shipping
> channels?
> 2.
> Under the survey outline section, the instruction state to
> deliver the outline in a MapInfo format. Is an ArcMap format an
> acceptable substitute?
>
>
>
> Also, the 2010 Specs and Deliverables have not yet been uploaded to
> the NOS site. Do you know if the new specs will be published soon?
>
>
>
> Thanks,
>
>
>
> David
>
>

Dean Moyles

From: David Briggs
Sent: Friday, April 01, 2011 1:38 PM
To: Crescent.Moegling@noaa.gov
Cc: Toshi.Wozumi@noaa.gov; David.Scharff; Dean Moyles; Gary Nelson; Katie Reser
Subject: RE: Shoreline Verification Reporting

Crescent,

We did determine the height of the rocks via leveling. Do you still want us to attribute the rocks with VALSOU = unknown and QUASOU = depth unknown?

Thanks,
David

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Friday, April 01, 2011 11:09 AM
To: David Briggs
Cc: Toshi.Wozumi@noaa.gov; David.Scharff; Dean Moyles; Gary Nelson; Katie Reser
Subject: Re: Shoreline Verification Reporting

Hi David,

I forwarded your question on to Katie who is currently the Carto Team Lead on how best to include (or not) these features in your submission). She indicated this is useful information, particularly when it falls within a MBES holiday. Please submit it as whatever the feature is (UWTROC, OBSTRN, etc) with VALSOU = unknown and QUASOU = depth unknown.

Thanks!

Crescent

On 4/1/2011 9:58 AM, David Briggs wrote:
Toshi,

We have a few shoreline feature positions, detached positions, which were collected last summer in our 2010 season. We were not required in the Project Instructions to perform any shoreline verification, but collected a few positions on rocks. Our effort should not be considered a complete feature verification (verify or disprove rocks, islets, shoreline, etc) and our intent was only to identify holes within our MBES coverage.

Since this was not a complete feature verification project, how do you want us to report this information. Should we include the information in S-57 as well as the DRs? Only comment in the DRs? Only produce a feature report?

Thanks,
David

--
Crescent Moegling
Hydrographic Team Lead
Pacific Hydrographic Branch
206.526.6840

PHB Compilation Log

General Survey Info

Survey Number	H12261	Field Unit	FUGRO PELAGOS	State	Alaska	UTM Zone	3N
Project Date	OPR-Q191-KR-10	Project Name (Locality)	Krenitzin Islands		
Start Date	06/12/2010	Sublocality	Kaligagan Island		
End Date	07/07/2010	Survey Scale	1:10,000	Compilation Scale	1:80,000

Affected Raster Charts

Chart	KAPP	Scale	Edition	Date	NTM Date
16531	2525	1:80,000	7th	02/16/2002	01/07/2012

Add Chart | Remove Chart

Affected Electronic Charts

ENC	Scale
US4AK6FM	1:80,000

Add ENC | Remove ENC

Spatial Refrence

Horizontal Datum	WGS84
Coordinate System	LLDG
Sounding Datum	MLLW
Vertical Datum	MHW

Junction Surveys

Survey Number	Survey Date	Location Relative to Current Survey
H12260	07/07/2010	NE
H12263	07/08/2011	NW

Add Survey | Remove Survey

Processing Info

SAR Reviewer	Kurt Mueller	**HCell Compiler**	Annie Raymond	**HCell Reviewer**	Cathleen Barry

Source Surfaces

Resolution	File Name
8m	H12261_8m_Office_Combined.csar

Add Surface | Remove Surface

Supporting Documents

Name	Version
Specs and Deleverables	April 2011
HCell Specs	6.1

Add Doc | Remove Doc

PHB Compilation Log

Select Software Used	HydroService, dKart Inspector

Software	Version, Hot Fix	Used For
CARIS HIPS	7, SP1 HF1	SAR Review. Inspection of Combined BASE Surfaces.
CARIS BASE Editor	3.2, SP1 HF3	Creation of soundings and bathy-derived features, meta area object, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer	2.2, SP1 HF3	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS	4.4	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding. (For Fathoms and Feet chart units only.)
CARIS HOM	3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding. (For Fathom and Feet chart units only)
HydroService, dKart Inspector	6.0	Validation check of the base cell file.

Reset Table

Product Info

Deleverables	
Survey Scale HCell	H12261_CS.000
HCell Report for MCD	H12261_SS.000
Feature Listing	H12261_HR.pdf
Descriptive Report	H12261_FL.txt
Survey Outline	H12261_DR.pdf
Chart Scale HCell	H12261_Outline.gml and .xsd

Horizontal and Vertical Units

During creation of the HCell 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.

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

PHB Compilation Log

Radius Setting

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

Radius (mm)	Min. Depth (m)	Max Depth
3	0	10
4	10	20
4.5	20	50
5	50	500

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. With the exception of the zero contours included in the *_CS file, contours have not been deconflicted against shoreline features, soundings and hydrography.

Charted Contours	Metric Equivalent	Metric NOAA Rounded	Charted NOAA Rounded
0	0	0.2286	0.125
3	5.4864	5.715	3.125
5	9.144	9.3726	5.125
10	18.288	18.5166	10.125
20	36.576	37.9476	20.75
30	54.864	56.2365	30.75
40	73.152	74.5236	40.75
50	91.44	92.8166	50.75
60	109.728	111.0996	60.75

Add Contour | Remove Contour

Additional Info

Contact Information

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

HCell Compiler	Annie Raymond
Phone Number	206-526-6849
Email	annemieke.raymond@noaa.gov

Compilation Comments

In addition to the deliverables listed above, a Geospatial PDF file was created and archived for this survey.

HCell H12261 features were compiled to the ENC; depths were compiled to the RNC.

APPROVAL PAGE

H12261

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- H12261_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12261_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Approved:_____ Digitally signed by Cathleen Barry
Date: 2012.07.18 07:51:58 -07'00'

Cathleen Barry
Cartographer, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved:_____ Digitally signed by Peter S. Holmberg
DN: cn=Peter S. Holmberg, o, ou,
email=peter.holmberg@noaa.gov, c=US
Date: 2012.07.18 08:06:09 -07'00'

Peter Holmberg, NOAA
Cartographic Team lead, Pacific Hydrographic Branch