

H12076

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. RA-40-01-09

Registry No. H12076

LOCALITY

State Alaska

General Locality Pavlof Islands

Sublocality West of Ukolnoi Island

.....
2009
.....

CHIEF OF PARTY

..... Captain Donald W. Haines, NOAA

LIBRARY & ARCHIVES

DATE

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| U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | | REGISTRY No H12076 |
| HYDROGRAPHIC TITLE SHEET | | |
| 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: RA-40-01-09 |
| State <u>Alaska</u> | | |
| General Locality <u>Pavlof Islands</u> | | |
| Sub-Locality <u>West of Ukolnoi Island</u> | | |
| Scale <u>1:40,000</u> | | Date of Survey <u>June 17, 2009 - August 1, 2009</u> |
| Instructions dated <u>5/4/2009</u> | | Project No. <u>OPR-P184-RA-09</u> |
| Vessel(s) <u>RA1 (1101), RA2 (1103), RA4 (2801), RA5 (2802), RA3 (2803) RA6 (2804), RAINIER (S221)</u> | | |
| | | |
| Chief of party <u>Captain Donald W. Haines, NOAA</u> | | |
| Surveyed by <u>RAINIER Personnel</u> | | |
| Soundings by <u>Reson SeaBat 7125, Tilted Reson SeaBat 8125, Knudsen 320M</u> | | |
| SAR by <u>Fernando Ortiz</u> | | Compilation by <u>Katie Reser</u> |
| Soundings compiled in <u>Fathoms</u> | | |
| REMARKS: <u>All times are UTC. UTM Zone 4N.</u> | | |
| <u>The purpose of this survey is to provide contemporary surveys to update</u> | | |
| <u>National Ocean Service (NOS) nautical charts.</u> | | |
| <u>All separates are filed with the hydrographic data.</u> | | |
| <u>Revisions and end notes in red were generated during office processing.</u> | | |
| <u>Page numbering may be interrupted or non sequential.</u> | | |

Descriptive Report to Accompany Hydrographic Survey H12076

Project OPR-P184-RA-09
Pavlof Islands, Alaska
West of Ukolnoi Island, Alaska
Scale 1:40,000
June – August, 2009
NOAA Ship *Rainier* (s221)
Chief of Party: Captain Donald W. Haines, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Project Instructions OPR-P184-RA-09 dated May 4, 2009 and all other applicable direction¹, with the exception of deviations noted in this report. The survey area is West of Ukolnoi Island, Alaska and corresponds to sheet “A” in the sheet layout provided with the Project Instructions. OPR-P184-RA-09 responds to increased traffic through the Pavlof Islands in waters which have not been surveyed since the 1930s or are uncharted.

Complete multibeam echosounder (MBES) coverage was achieved in the survey area in waters 8 meters and deeper. In depths less than 8 meters additional MBES coverage was acquired to identify least depths over significant features or shoals, as appropriate for this survey. Additional multibeam coverage was achieved in water depths between 8 m and 4 m that meet or exceed the project instruction requirements. Total mileage acquired by each vessel and system is referenced in Table 1.

| Data Acquisition Type | Hull Number with Mileage (Inm) | | | | | | | Total |
|------------------------------------|--------------------------------|------|------|-------|-------|--------|-------|--------|
| | S221 | 1101 | 1103 | 2801 | 2802 | 2803 | 2804 | |
| VBES (main scheme) | - | - | 0.12 | - | - | - | - | 0.12 |
| MBES (main scheme) | - | 7.11 | - | 78.82 | 56.99 | 111.85 | 79.61 | 334.38 |
| Crosslines | - | - | - | 2.18 | - | 6.46 | - | 8.64 |
| Developments | - | - | - | - | - | - | - | - |
| Shoreline | - | - | - | - | - | - | - | - |
| Bottom Samples | 14 | - | 2 | - | - | - | - | 16 |
| Total Number of Items Investigated | - | - | - | - | - | - | - | - |
| Total Area Surveyed (sq. nm) | - | - | - | - | - | - | - | 35.04 |

Table 1: Statistics for survey H12076

Limited Shoreline Verification was performed for the survey area seaward of the Navigable Area Limit Line (NALL) for H12076, as per section 3.5.5 of the Field Procedures Manual April 2009 (FPM). Shoreline features were given S-57 attribution and included for submission in Notebook HOB files.

¹ NOS Hydrographic Surveys Specifications and Deliverables (April 2009), OCS Field Procedures Manual for Hydrographic Surveying (April 2009), and all Hydrographic Surveys Technical Directives issued through the dates of data acquisition.

Data acquisition was conducted from June 17 to August 1, 2009 (DN 168 to 213).

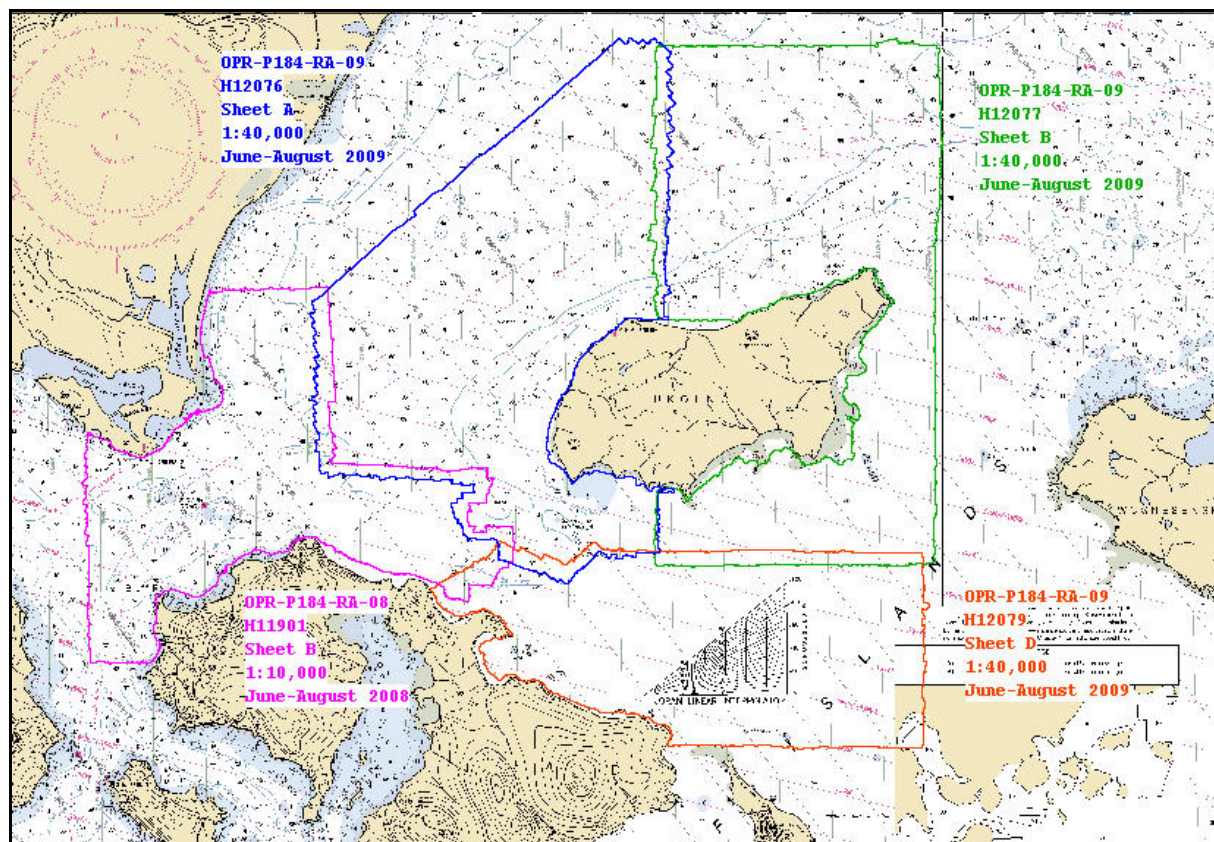


Figure 1: H12076 Survey Outline and Junctions

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P184-RA-09 Data Acquisition and Processing Report (DAPR)*¹, submitted under separate cover. Items specific to this survey, and any deviations from the DAPR are discussed in the following sections.

Final Approved Water Levels have been applied to this survey. See Section C. for additional information.

B.1. Equipment and Vessels

Data for this survey were acquired by the following vessels:

| Hull Number | Name | Length (ft) | Draft (ft) | Acquisition Type |
|-------------|----------------|-------------|------------|--|
| S221 | <i>Rainier</i> | 231 | 15.5 | Bottom Samples |
| 1101 | RA-1 | 29 | 2 | Reson 8125 Multibeam Echosounder |
| 1103 | RA-2 | 29 | 2 | Knudsen 320M Vertical Beam Echosounder Detached Positions Bottom Samples |
| 2803 | RA-3 | 29 | 3.5 | Reson 7125 Multibeam Echosounder |
| 2801 | RA-4 | 29 | 3.5 | Reson 7125 Multibeam Echosounder |
| 2802 | RA-5 | 29 | 3.5 | Reson 7125 Multibeam Echosounder |
| 2804 | RA-6 | 29 | 3.5 | Reson 7125 Multibeam Echosounder |

Table 2: Data acquisition vessels and systems for H12076

Sound speed profiles were measured in accordance with the Specifications and Deliverables using SEACAT SBE-19 and 19+ profilers, as well as the Brooke Ocean Technology Moving Vessel Profiler.

Multibeam vessel navigation and attitude data were measured and recorded using Applanix POS/MV 320 systems, version 4. Vertical Beam echosounder navigation and attitude data were measured using a Trimble DSM212L GPS receiver and a TSS MAHRS system.

A complete description of survey vessels, hardware, and software systems is included in the *OPR-P184-RA-09 DAPR*.

No unusual vessel configurations were used for data acquisition.

B.2. Quality Control**B.2.a. Crosslines**

Multibeam Echosounder (MBES) crosslines totaled 8.64 nautical miles, comprising 2.58% of main scheme MBES hydrography. Due to time constraints and sever weather, crosslines totaling more that 4% of main scheme hydrography were not acquired. The main scheme bathymetry was manually compared to the crossline nadir beams in CARIS subset mode and agreed within 0.1 meters.²

A statistical Quality Control Report has been conducted on representative data acquired with each system used on this survey. Results of these tests are included in the updated 2009 *Rainier* Hydrographic System Readiness Review package submitted with this survey.

B.2.b. Final Uncertainty

Uncertainty values of submitted, finalized grids are calculated in CARIS using the “Greater of the Two” of total propagated uncertainty and standard deviation (scaled to 95%). An IHO “child” attribute layer was created for the H12076_Final_Combined surface in CARIS HIPS for analysis. Throughout the majority of the survey, uncertainty values for H12076 fall below the IHO levels as described in the NOS Specifications and Deliverables.³ The exception to these results occurred along very near-shore areas when using the tilted Reson 8125 sonar configuration, refer to OPR-P184-RA-09 Data Acquisition and Processing Report for specifics.⁴

B.2.c. Junctions

Survey H12076 junctions with surveys H12077 and H12079, which are sheets B and D of the same project, respectively, and H11901.⁵ The sheet limits and area of overlap for all sheet junctions are shown in Figure 1.

| Junction Survey | Survey Scale | Date of Survey | Survey Location |
|------------------------|---------------------|-----------------------|------------------------|
| H11901 | 1:10,000 | August 2008 | West |
| H12077 | 1:40,000 | August 2009 | East |
| H12079 | 1:40,000 | August 2009 | South East |

Table 3: Junction Surveys

Survey H12076 was completed concurrently with survey H12077 during project OPR-P184-RA-09. The area of overlap between current sheets was reviewed in CARIS Subset Editor for consistency and data were found to be in good general agreement within 0.3 meters with H12077.⁶

Survey H12076 was completed concurrently with survey H12079 during project OPR-P184-RA-09. The area of overlap between current sheets was reviewed in CARIS Subset Editor for consistency and data were found to be in good general agreement within 0.3 meters with one notable exception. At the SE corner of H12076 where H12079 junctions, there is an agreement within 0.47 meters in the approximate position of 55°10.5'N, 161°38.9'W. The survey depths in this area are 64 meters and falls within IHO order 1 specification.⁷

CARIS Field Sheets and BASE surfaces for H11901 were available on the *Rainier* for junction comparison. H11901 BASE surfaces were compared to this junction surface in CARIS HIPS. Agreement was excellent with no discernable offsets in the common area.⁸

B.2.d. Quality Control Checks

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

B.2.e. Data Quality FactorsSound Velocity Blowouts

Mulibeam echosounder acquired with 1101 (RA-1) tilted Reson 8125 displayed several momentary sound velocity ‘blowouts’ where the vessel’s Digibar surface sound velocimeter was not reading the proper surface sound speed (Figure 2). Because this sonar uses surface sound speed input for beam forming, it was impossible to correct this data. To compensate, the Hydrographer, where possible, rejected soundings obviously in error from the outer beams.⁹

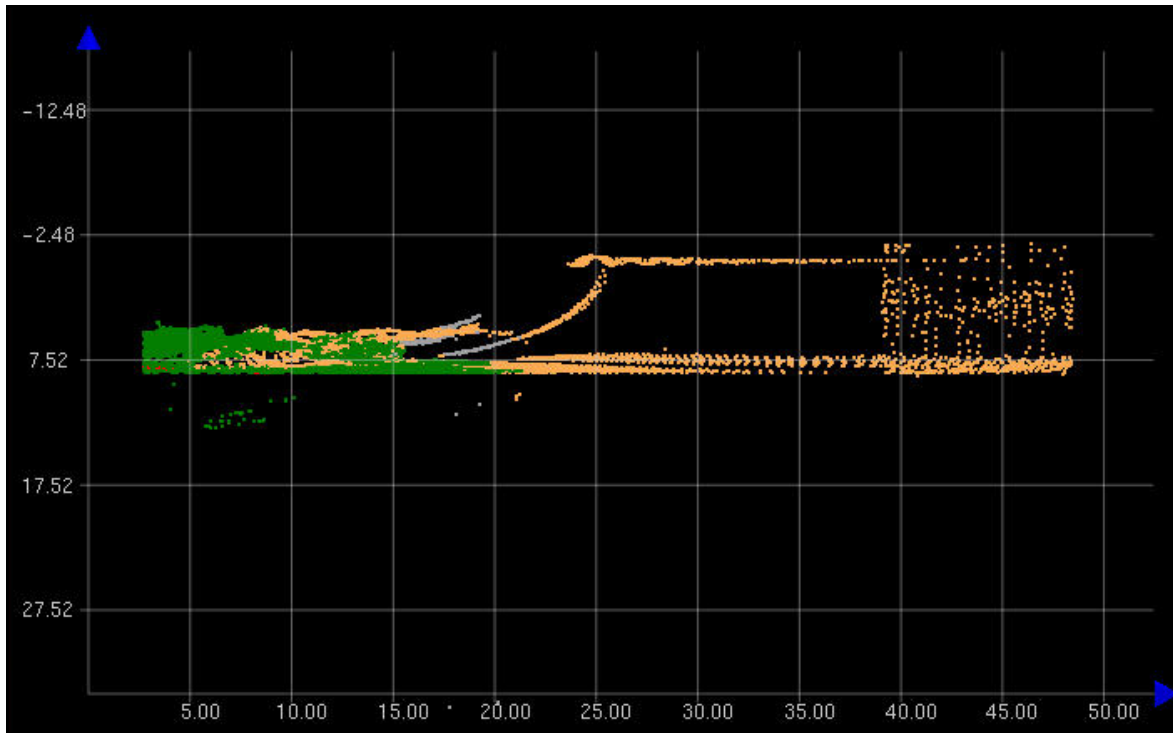


Figure 2: Sound Speed Blowout in H12076

B.2.f. Object Detection and Coverage Assessment

Data density for survey H12076 fell just below the 5 sounding per node density requirement with 94.6% of nodes having greater than 5 contributing soundings. These requirements were waived in depths greater than 100 meters after consultation with HSD Operations Branch and Pacific Hydrographic Branch (see email correspondence in Appendix V).¹⁰

Deep water holidays occurred in areas over 90m deep on H12076. These holidays are all located in the 4 meter finalized surface, and are particularly evident in the overlap between the 4 and 8 meter surfaces with no holidays being present in the 8 meter finalized surface.¹¹

There is an area where a holiday was created in 17 meters of water due to absolute gates being improperly adjusted, resulting in the rejection of the true sea floor. The backscatter was examined and there appears to be no significant features evident and the least depths were represented.¹² This holiday measures approximately 9 nodes by 18 nodes and is located in approximate position 55°14'56"N, 161°39'10"W.

There are twenty four (24) notable holidays in H12076. Unfortunately these holidays were not able to be filled due to time restraints in the survey area that were caused by bad weather limiting operations. Figures 3-6 are the locations of holidays larger than 3 nodes:

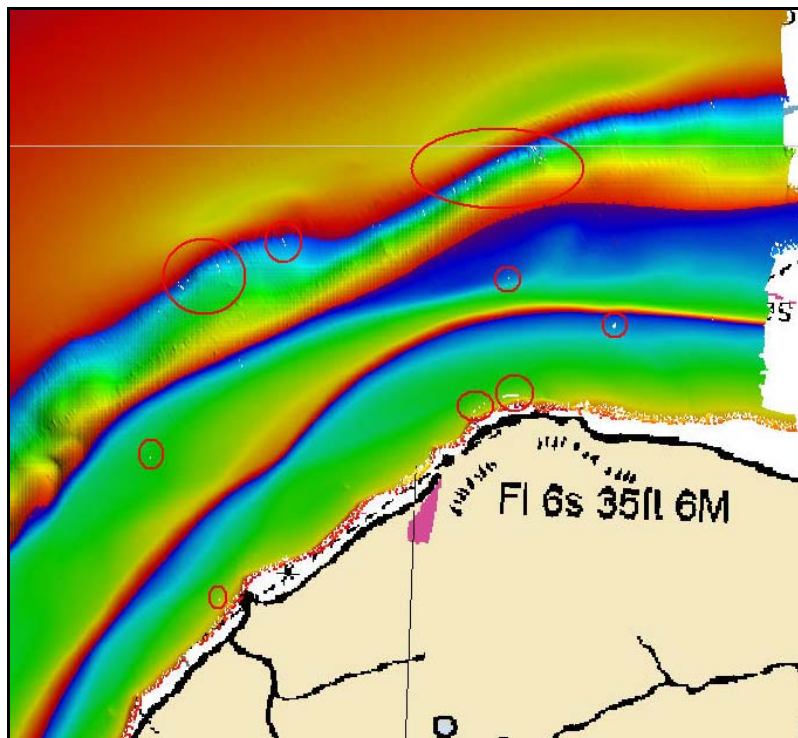


Figure 3: Holidays larger than 3-nodes on H12076

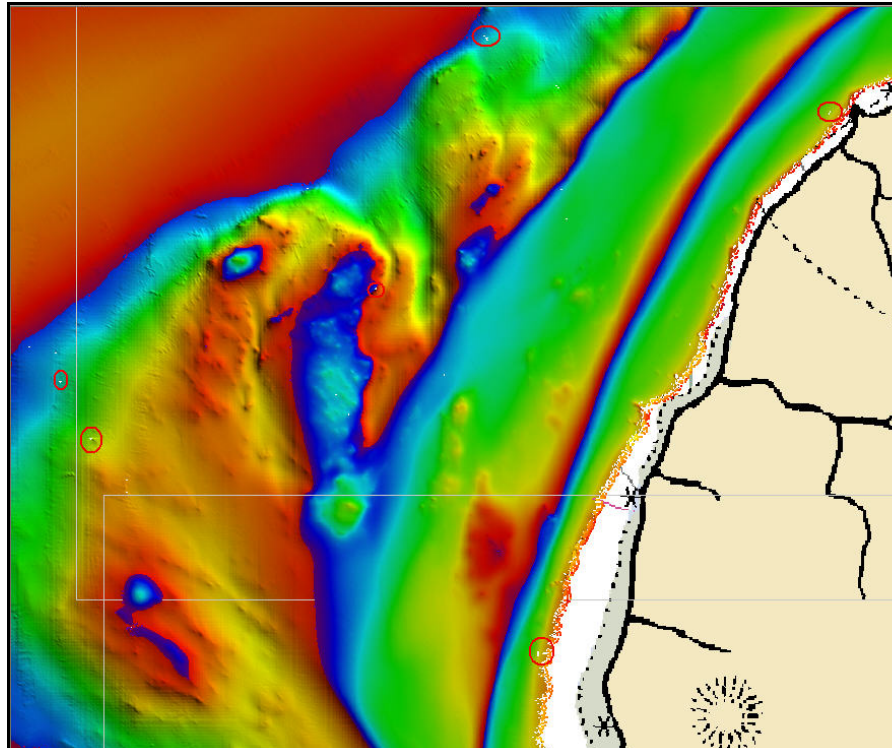


Figure 4: Holidays larger than 3-nodes on H12076

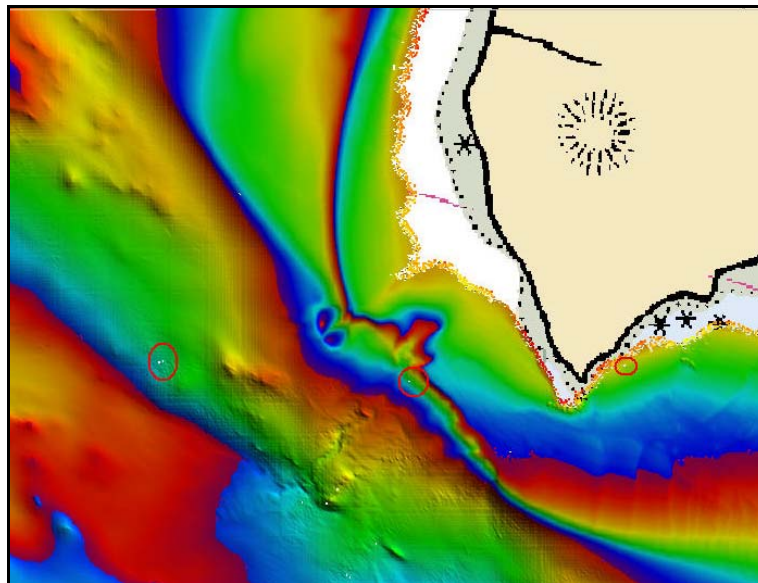


Figure 5: Holidays larger than 3-nodes on H12076

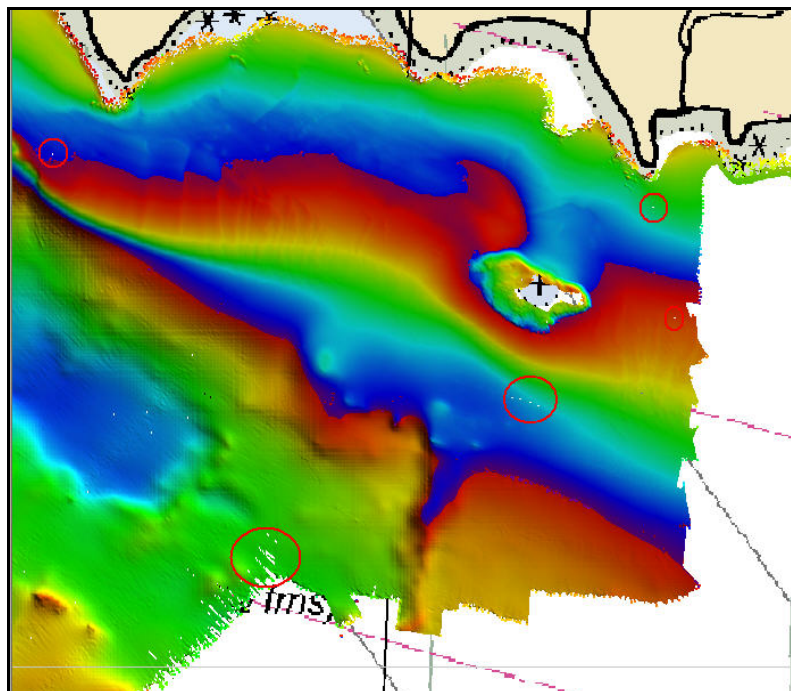


Figure 6: Holidays larger than 3-nodes on H12076

For holidays larger than 3 nodes across, the corresponding multibeam backscatter was examined and no navigationally significant items were found; additionally, the least depths were represented.¹³

B.2.g. Unusual Conditions

No unusual conditions were encountered during the survey that affected the expected accuracy and quality of survey data.

B.3. Corrections to Echo soundings

Data reduction procedures for survey H12076 conform to those detailed in the *OPR-P184-RA-09 DAPR*.

B.4. Data Processing

Data processing procedures for survey H12076 conform to those detailed in the DAPR. Data were processed initially using CARIS HIPS & SIPS v6.1, Service Pack 2, and Hotfix 8. Additional processing details regarding Total Propagated Uncertainty (TPU/TPE) and CUBE Surfaces and Parameters utilized, along with any of the deviations from the processing procedures outlined in the DAPR are discussed below.

TPU VALUES:

The survey specific parameters used to compute TPU in CARIS for H12076 are listed in Table 4.

| | | | | |
|----------------------------|----------|----------|---------|-------------|
| Tide values: | Measured | 0.01 m | Zoning | 0.12 m |
| Sound Speed Values: | Measured | 0.50 m/s | Surface | As per DAPR |

Table 4: Survey Specific CARIS TPU Parameters

Many BASE surfaces were used in processing H12076. Final BASE surface resolutions and depth ranges were set according to Table 5 below, with field sheets smaller than 25 million nodes. CUBE surfaces were processed with a parameter set corresponding to each resolution as per HTD 2009-2. The CUBE parameter XML file is included with the data deliverables. The submission Field Sheet and BASE Surface structure are shown in Figures 7 and 8.

| Depth Range (m) | Resolution (m) |
|-----------------|----------------|
| 0-23 | 1 |
| 20-52 | 2 |
| 46-115 | 4 |
| 103-350 | 8 |

Table 5: Depth range and surface resolutions for H12076

Soundings and contours were generated in CARIS HIPS from the final combined BASE surface for field unit review purposes. They are included for reference only and are not intended as a deliverable.

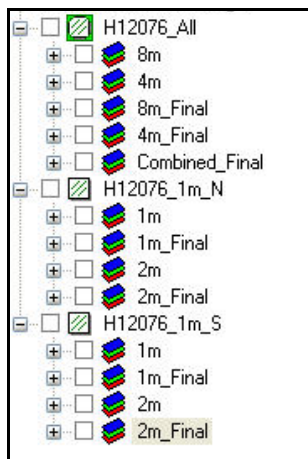


Figure 7: Field sheets and BASE surfaces submitted with H12076

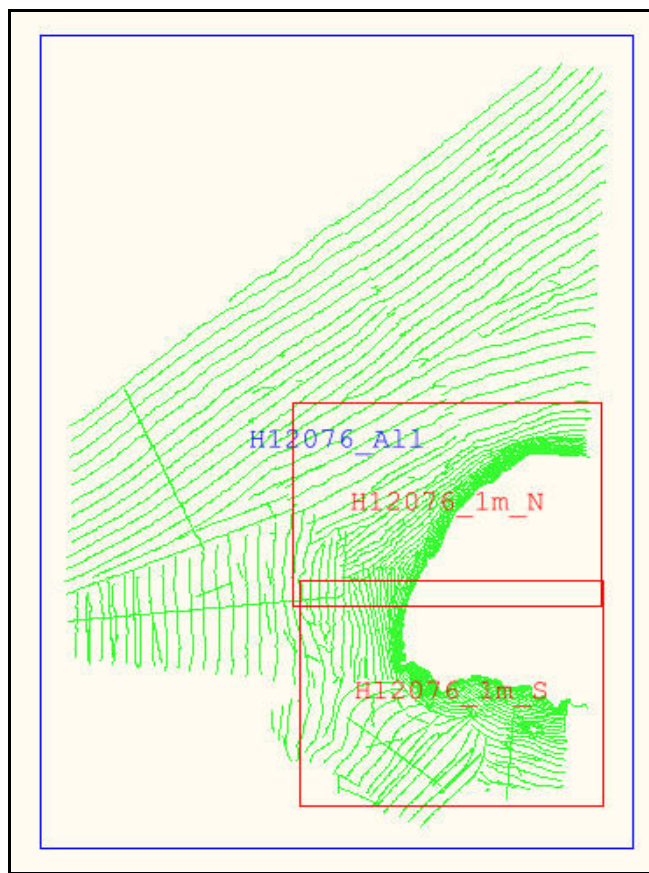


Figure 8: H12076 Field Sheet Layout

C. VERTICAL AND HORIZONTAL CONTROL

Project OPR-P184-RA-09 did not require static GPS observations or other horizontal control work, and all tide corrections were generated from CO-OPS maintained tide stations. Thus, no Horizontal and Vertical Control Report will be submitted.

C.1. Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. The differential corrector beacons utilized for this survey are given in Table 6.

| Location | Frequency | Operator | Priority |
|----------|-----------|----------|----------|
| Cold Bay | 289 kHz | USCG | Primary |

Table 6: Differential Corrector Sources for H12076

C.2. Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Sand Point, AK (945-9450)

served as control for datum determination and as the primary source for water level reducers for survey H12076.

No tertiary gauges were required.

As per the Project Instructions, all data were reduced to MLLW using the final approved water levels from the Sand Point, AK station (954-9450) by applying tide file 9459450.tid and time and height correctors through the zone corrector file P184RA2009CORP.zdf. **It will not be necessary for the Pacific Hydrographic Branch to reapply the final approved water levels to the survey data during final processing.**

The request for Final Approved Water Levels for H12076 was submitted to CO-OPS on August 12, 2009. The Final Tide Note was received on September 11, 2009.¹⁴ This documentation is included in Appendix IV.

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Chart comparison procedures were followed as outlined in section 4.5 of the FPM and section 8.1.3-D.1 of the HSSDM, utilizing CARIS HIPS software program.

Survey H12076 was compared with the following charts:

| Chart | Scale | Edition and Date | Local Notice to Mariners Applied Through |
|-------|----------|-------------------------------|--|
| 16549 | 1:80,000 | 15 th Ed, Jul 2003 | 10/24/2009 |
| 16551 | 1:80,000 | 10 th Ed, Apr 2008 | 10/24/2009 |

Table 7: Charts compared with H12076

Soundings from survey H12076 agreed with charted depths to within 2 fathoms throughout the survey area with the following exceptions:

- Survey soundings were deeper than the four charted depths in the vicinity of the 50 fm contour on the west side of Ukolnoi Island.¹⁵
- A 59 fm survey sounding was found in the vicinity of a 47 fm charted depth at approximate position 55°16.7'N, 161°44.7'W. Chart the area as per digital data.¹⁶
- The 50 fm contour in the SW corner of survey H12076 in the approximate 55°12.2'N, 161°47.9'W should be shifted to the west in accordance with digital data.¹⁷
- There is shoaling of the SW coast of Ukolnoi Island in the vicinity of 55°11.7'N, 161°41.9'W. This was submitted as a DTON.¹⁸
- The submerged buoys in the approximate positions of 55°11.2'N, 161°41.7'W and 55°10.9'N, 161°41.1'W were not seen in the MBES coverage. The Hydrographer recommends the origin of the charted submerged buoys be researched to determine if they may be removed from the chart.¹⁹

The intertidal zone on chart 16551 is charted incorrectly. The placement of the MLLW line is correct, but the area between MLLW and mean high water (MHW) is tinted blue, instead of green. The Hydrographer recommends adjusting the tint of the intertidal region on chart 16551 to green. The discrepancy between the Chart 16551 and 16549 were reported to MCD through PHB and are being addressed.²⁰

The Hydrographer recommends that survey soundings supersede all prior survey and charted depths in the common area.²¹

D.1.b. Automated Wreck and Obstruction Information System (AWOIS) Items

Two (2) AWOIS items fall within the survey limits of H12076, but were located inshore of the 4m NALL line. Both were assigned for full investigation.²² Descriptions of each AWOIS item investigation are included in the Survey Feature Report in Appendix II.²³

| AWOIS# | Latitude | Longitude | remark | recommendation |
|---------------|-----------------|------------------|--------------------|--|
| 53796 | 55° 13' 08.19" | 161° 41' 42.32" | position confirmed | Chart as submerged rock as per survey position |
| 53799 | 55° 14' 18.76" | 161° 40' 33.88" | new position | Chart as submerged rock as per survey position |

Table 8: Assigned AWOIS Items and the Hydrographer's remarks and recommendations

D.1.c. Other Investigated Features

Additional Items

No additional charted items were investigated and no other features were located on survey H12076.

D.1.d. Dangers to Navigation

One (1) Danger to Navigation (DTONs) and one (1) anti-DTON were found on survey H12076 and reported to the Marine Chart Division via email on 16 December 2009.²⁴ The original DTON submission package is included in Appendix I.²⁵ Descriptions of each DTON are included in the Survey Feature Report in Appendix II.

D.2. Additional Results

D.2.a. Shoreline Verification

Shoreline Source

Limited shoreline verification was accomplished using the composite source file (CSF) provided with the project instructions. The CSF has been created using the latest ENC's, most recent aerial photogrammetry, and prior hydrographic surveys. Prior survey features within the CSF are for reference. This composite source was printed on paper "boat sheets" and displayed in CARIS Notebook and/or Hypack for field verification.

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Specifications and Deliverables and FPM sections 6.1 and 6.2. Detached positions (DPs) acquired during shoreline verification were recorded and S-57 attributed in CARIS Notebook. These indicate revisions to features and features not found in the provided CSF. In addition, annotations describing shoreline were recorded on the hard copy plots of the CSF as described above.

All shoreline data is submitted in CARIS Notebook HOB files. The session H12076_NTBK contains the following:

| HOB File | Purpose and Contents |
|-------------------------------|---|
| H12076_Comp_Source.hob | Original Source Data as provided for project OPR-P184-RA-09 and filtered to the limits of survey H12076 |
| H12076_Reference.hob | Survey outline and limit lines, and AWOIS item positions and radii. |
| H12076_Final_Feature_File.hob | Composite source data modified by the field to best represent the shoreline at survey scale. This includes the addition of new features and modification of source features. This file retains all features neither verified nor disproved by this survey |
| H12076_Disprovals.hob | Composite source items that were deleted or modified in position or geographic type. |

Table 9: List and Description of Notebook HOB files

Source Shoreline Changes and New Features

The charted rock approximately 0.75 nm SE of the SW point of Ukolnoi Island in approximate position 55°11.4'N, 161°40.2'W was disproved by complete MBES coverage of the area. The Hydrographer recommends removing this rock from the chart and it was submitted to MCD as an anti-DTON to allow for anchorage in the bay immediately to the north of this location.²⁶

Recommendations

The Hydrographer recommends that the shoreline as depicted in the Notebook HOB files supersede and complement shoreline information compiled on the composite source file and charts as described above.²⁷

D.2.b. Prior Survey Comparison

Prior survey comparison was not performed.

D.2.c. Aids to Navigation

There was one (1) aid to navigation (ATON) within the survey limits of H12076. The ATON's position was visually checked in the field against the digital raster chart and was found to be correctly charted and serving its intended purpose.²⁸

D.2.d. Overhead Features

There are no overhead features within the survey limits of H12076.²⁹

D.2.e. Submarine Cables and Pipelines

There is one charted cable area within the survey limits of H12076, as shown in Figure 9. No visible indication of cables was evident in the MBES data in the cable areas running from the northern portion of the eastern sheet limit to the southern end of the western sheet limits to the northwest of Ukolnoi Island on charts 16549 and 16551. The Hydrographer recommends retaining the cable area as charted.³⁰

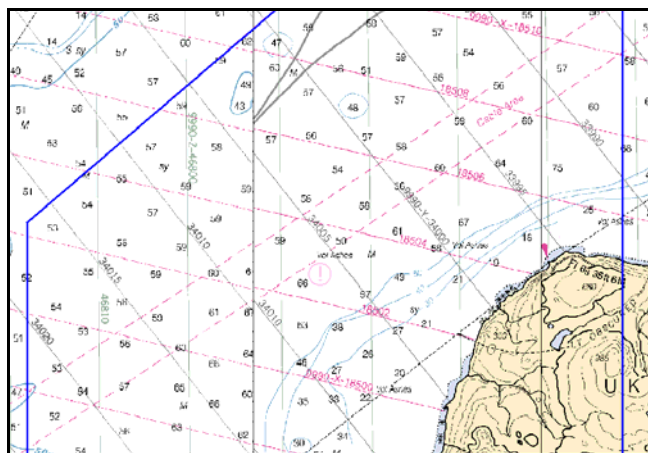


Figure 9: Cable Area running northeast to southwest on H12076

D.2.f. Ferry Routes

There are no ferry routes charted within the survey limits of H12076, and none were observed to be operating in the area.³¹

D.2.g. Bottom Samples

There were 17 bottom samples collected on H12076.³² Of the 14 historic bottom sample sites collected, 5 did not agree with the charted characteristics. The five discrepancies are displayed below in Table 10. All samples have been S-57 attributed and are included in H12076_Final_Features_File.hob in the CARIS Notebook session.

| Historic S-57 Attribution | H12076 S-57 Attribution | Latitude | Longitude |
|----------------------------------|--------------------------------|-----------------|------------------|
| Soft | Green Sticky Mud | 55° 12.12' N | 161° 48.49' W |
| Lava | Green Sticky Mud | 55° 11.51' N | 161° 43.45' W |
| Volcanic Ash | Green Sticky Mud | 55° 15.07' N | 161° 38.68' W |
| Sticky Mud | Volcanic Ash/Broken Shells | 55° 12.58' N | 161° 43.70' W |
| Sticky | Coarse Sand/Mud | 55° 14.10' N | 161° 42.41' W |

Table 10: Differences between historic and H12076 bottom samples

D.2.h. Other Findings


There are no other findings to report for this survey.

E. APPROVAL

As Chief of Party, field operations for hydrographic survey H12076 were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports. The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual (April 2009 edition), Field Procedures Manual (April 2009 edition), Standing and Project Instructions, and all HSD Technical Directives issued through August 2009. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.


Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

| <u>Title</u> | <u>Date Sent</u> | <u>Office</u> |
|---|-----------------------------|---------------|
| Hydrographic Systems Readiness Review Package | <i>Under separate cover</i> | N/CS34 |
| Data Acquisition and Processing Report for OPR-P184-RA-09 | January 12, 2010 | N/CS34 |
| Coast Pilot Report for OPR- P184-RA-09 | <i>To be submitted</i> | N/CS26 |
| Tides and Water Levels Package for OPR-P184-RA-09 | August 12, 2009 | N/OPS1 |

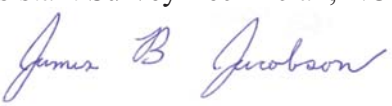
Approved and Forwarded:  Donald W. Haines, CAPT/NOAA
I am approving this document
2010.02.01 15:12:32 -08'00'

Captain Donald W. Haines, NOAA
Commanding Officer, NOAA Ship *Rainier*


In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager:  Nickolas Mitchell
I am the author of this document
2010.02.01 11:02:27 -08'00'

Nickolas A. Mitchell
Assistant Survey Technician, NOAA Ship *Rainier*

Chief Survey Technician:  James B Jacobson
I have reviewed this document
2010.01.29 20:36:38 Z

James B. Jacobson
Chief Survey Technician, NOAA Ship *Rainier*

Field Operations Officer:  Brent Pounds
I have reviewed this document
2010.01.29 16:06:22 -09'00'

Lieutenant Brent J. Pounds, NOAA
Field Operations Officer, NOAA Ship *Rainier*

Revisions and Corrections Compiled During Office Processing and Certification

¹ Filed with project records.

² Concur.

³ Concur. The data meets specifications.

⁴ No soundings along the very nearshore were selected for charting.

⁵ A common junction was made with H11901, which has already been compiled. A common junction with H12077 and H12079 will be made when those surveys are compiled.

⁶ Concur.

⁷ Concur.

⁸ Concur.

⁹ After the outer beams were rejected, the remaining data is adequate to supersede charted data in the common area.

¹⁰ See attached correspondence.

¹¹ The deep water holidays are not navigationally significant and are not represented in the HCell. The data is adequate to supersede charted data in the common area.

¹² Concur. The data is adequate to supersede charted data in the common area.

¹³ Concur. The data is adequate to supersede charted data in the common area.

¹⁴ See attached Tide Note dated September 4, 2009.

¹⁵ Concur. Chart depths as depicted in the HCell.

¹⁶ Concur. Chart depths as depicted in the HCell.

¹⁷ Concur. Chart depths as depicted in the HCell.

¹⁸ The DTON has been applied to the charts. A nearby shoaler sounding is included in the HCell and the original DTON has been blue noted to be removed.

¹⁹ Concur with clarification. The submerged buoys have been blue noted to be retained because there is no clear evidence to support their removal from the charts.

²⁰ Concur with clarification. Chart the zero contour and the intertidal area as depicted in the HCell.

²¹ Concur.

²² Compiler concurs with the recommendations in the following table. Both AWOIS items are included in the HCell.

²³ See attached Feature Report.

²⁴ The DTON has been applied to the charts and the anti-DTON has been removed from the charts. A nearby shoaler sounding is included in the HCell and the original DTON has been blue noted to be removed.

²⁵ See attached DTON Report.

²⁶ Concur. See endnote 24.

²⁷ Concur with clarification. The submitted hob files were used in the compilation of HCell H12076. During compilation, some modifications were made to accommodate chart scale. Chart features as depicted in the HCell.

²⁸ Chart per latest ATONIS information.

²⁹ Concur.

³⁰ Concur. The cable area has been blue noted to be retained.

³¹ Concur.

³² All 17 bottom samples are included in the HCell. Where a new bottom sample was coincident with a charted bottom sample, the charted one was blue noted to be removed.

Dangers to Navigation Report for Survey H12076

Registry Number: H12076
State: Alaska
Locality: Pavlof Islands
Sub-locality: West of Ukolnoi Island
Project Number: OPR-P184-RA-09
Survey Dates: 06/17/2009 - 08/01/2009

Contains a danger to navigation report and a charted feature disapproval for survey H12076, Pavlof Islands, AK.

Charts Affected

| Number | Edition | Date | Scale (RNC) | RNC Correction(s)* |
|--------|---------|------------|-----------------------|---|
| 16551 | 10th | 04/01/2008 | 1:80,000 (16551_1) | [L]NTM: ? |
| 16549 | 15th | 07/01/2003 | 1:80,000 (16549_1) | USCG LNM: 02/24/2009 (04/07/2009) CHS NTM: None (03/27/2009) NGA NTM: 01/21/2006 (04/11/2009) |
| 16540 | 12th | 01/01/2005 | 1:300,000 (16540_1) | [L]NTM: ? |
| 16011 | 37th | 11/01/2007 | 1:1,023,188 (16011_1) | [L]NTM: ? |
| 16006 | 35th | 04/01/2008 | 1:1,534,076 (16006_1) | [L]NTM: ? |
| 513 | 7th | 06/01/2004 | 1:3,500,000 (513_1) | [L]NTM: ? |
| 500 | 8th | 06/01/2003 | 1:3,500,000 (500_1) | [L]NTM: ? |
| 530 | 32nd | 06/01/2007 | 1:4,860,700 (530_1) | [L]NTM: ? |
| 50 | 6th | 06/01/2003 | 1:10,000,000 (50_1) | [L]NTM: ? |

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

Features

| No. | Feature Type | Survey Depth | Survey Latitude | Survey Longitude | AWOIS Item |
|-----|--------------|--------------|-----------------|------------------|------------|
| 1.1 | Shoal | 37.69 m | 55° 11' 23.6" N | 161° 40' 17.8" W | --- |
| 1.2 | Shoal | 11.15 m | 55° 12' 03.2" N | 161° 42' 14.5" W | --- |

1 - Danger To Navigation

1.1) Profile/Beam - 2573/144 from h12076 / 2802_reson7125_hf_512 / 2009-168 / 000_2118

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 11' 23.6" N, 161° 40' 17.8" W
Least Depth: 37.69 m (= 123.65 ft = 20.608 fm = 20 fm 3.65 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) ± 1.987 m ; TVU (TPEv) ± 0.300 m
Timestamp: 2009-168.21:24:26.875 (06/17/2009)
Survey Line: h12076 / 2802_reson7125_hf_512 / 2009-168 / 000_2118
Profile/Beam: 2573/144
Charts Affected: 16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

Chart shows a dangerous rock, least depth unknown. Object detection multibeam reveals a flat bottom. This is believed to be sufficient information to disprove the existence of the charted rock.

Feature Correlation

| Address | Feature | Range | Azimuth | Status |
|--|----------|-------|---------|---------|
| h12076/2802_reson7125_hf_512/2009-168/000_2118 | 2573/144 | 0.00 | 000.0 | Primary |

Hydrographer Recommendations

Remove charted rock, least depth unknown from chart.

Cartographically-Rounded Depth (Affected Charts):

20fm (16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 530_1)

38m (500_1, 513_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: QUASOU - 1:depth known
 SORDAT - 20090805
 SORIND - us,us,insurf,H12076

TECSOU - 3:found by multi-beam

Feature Images

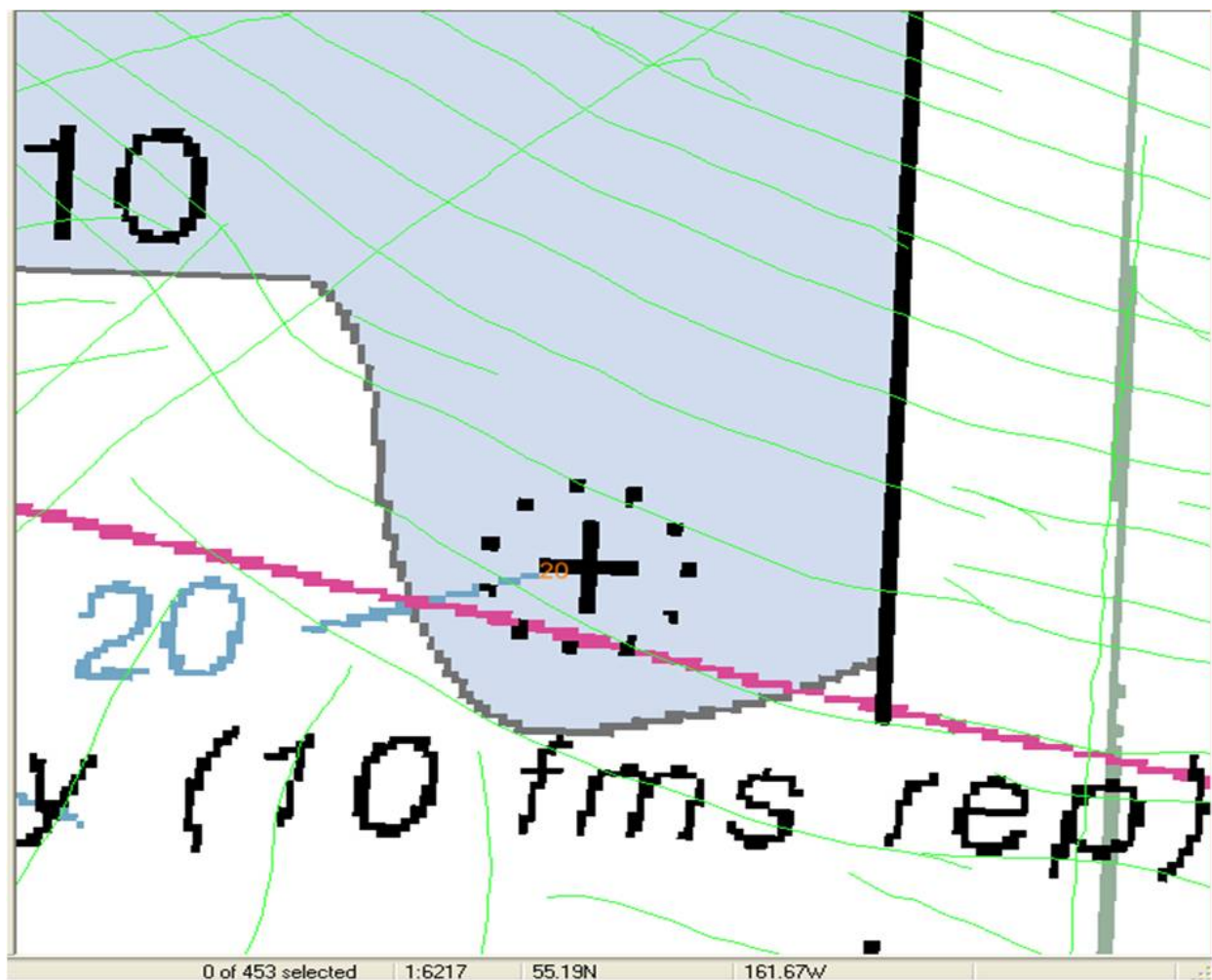


Figure 1.1.1

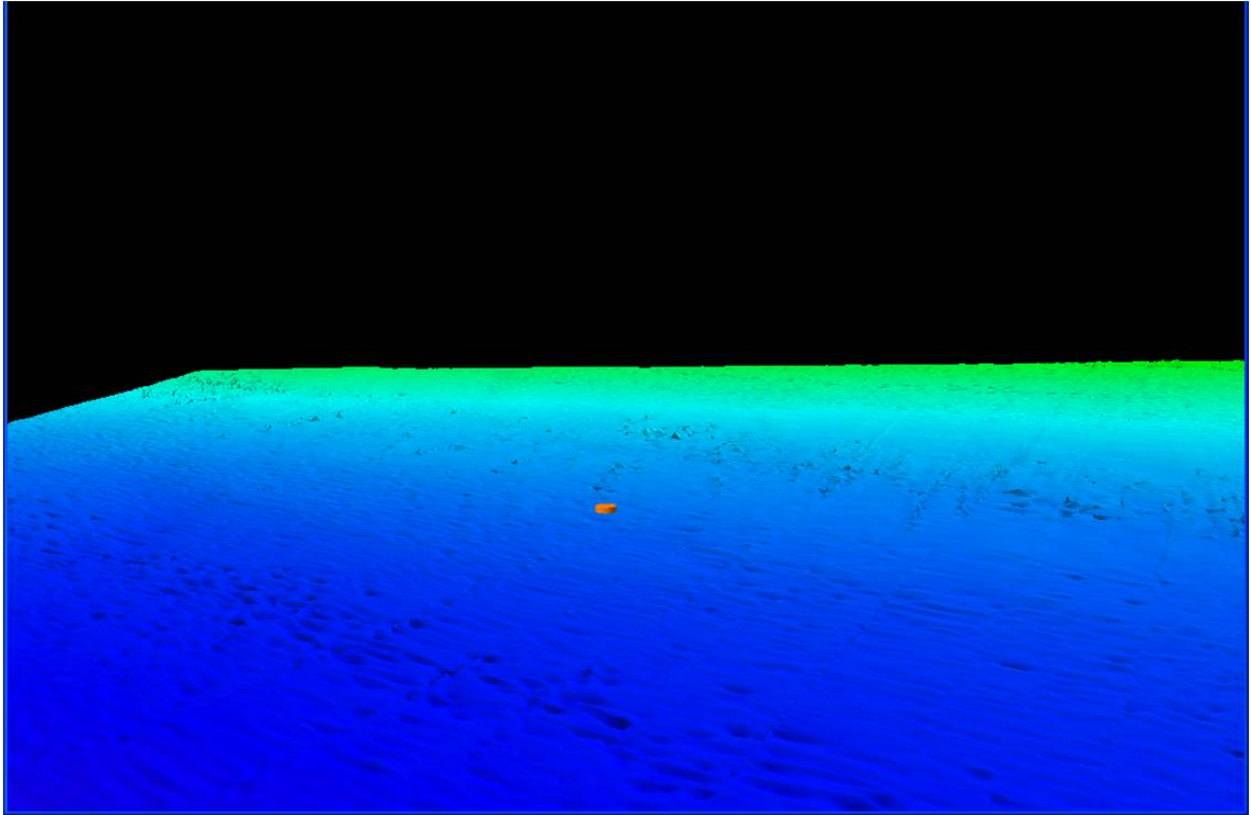


Figure 1.1.2

1.2) Profile/Beam - 2421/151 from h12076 / 2802_reson7125_hf_512 / 2009-213 / 044_1918

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 12' 03.2" N, 161° 42' 14.5" W
Least Depth: 11.15 m (= 36.59 ft = 6.099 fm = 6 fm 0.59 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) ± 1.963 m ; TVU (TPEv) ± 0.267 m
Timestamp: 2009-213.19:23:45.752 (08/01/2009)
Survey Line: h12076 / 2802_reson7125_hf_512 / 2009-213 / 044_1918
Profile/Beam: 2421/151
Charts Affected: 16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

Survey data showed shoal extending further off shore than indicated by chart. Least depth at crest of slope is 6.09 fathoms and at the toe of the slope is 10.14 fathoms, while the chart shows 27 fathoms.

Feature Correlation

| Address | Feature | Range | Azimuth | Status |
|--|----------|-------|---------|---------|
| h12076/2802_reson7125_hf_512/2009-213/044_1918 | 2421/151 | 0.00 | 000.0 | Primary |

Hydrographer Recommendations

Chart according to surveyed position, depth, and S-57 attribution.

Cartographically-Rounded Depth (Affected Charts):

6fm (16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 530_1)

11.2m (500_1, 513_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: SORDAT - 20090805
 SORIND - us,us,insurf,H12076

Feature Images

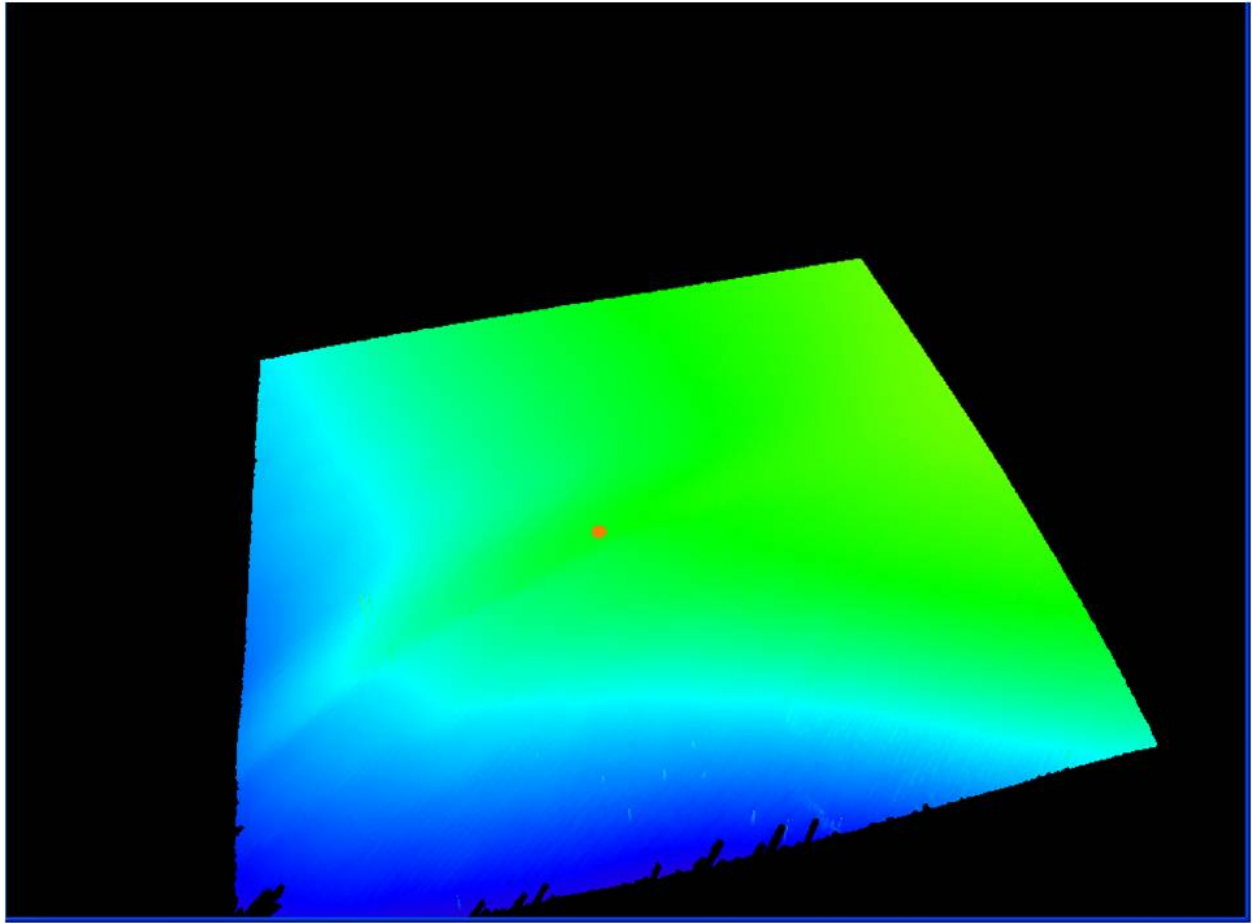
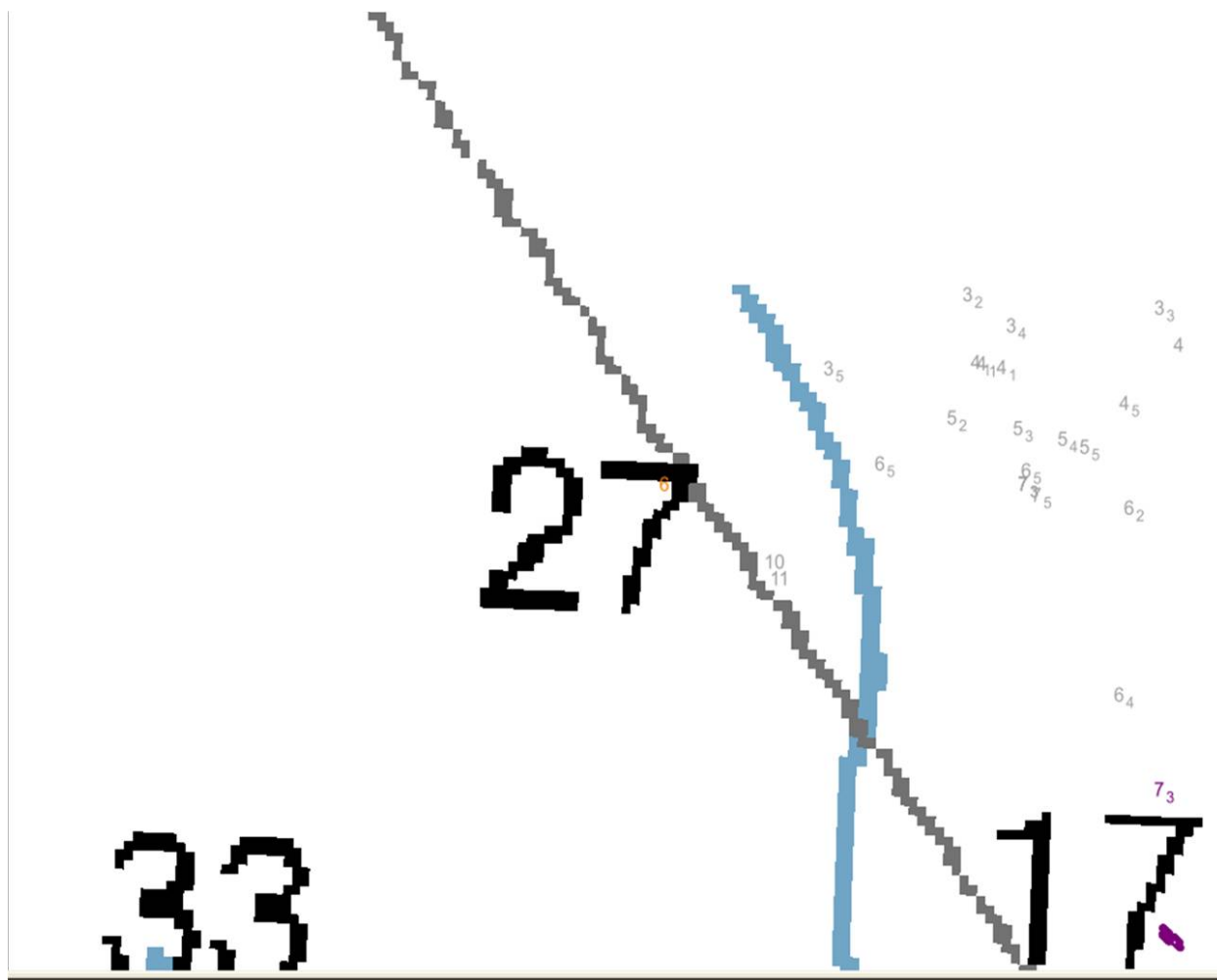


Figure 1.2.1

*Figure 1.2.2*

H12076 Feature Report

Registry Number: H12076
State: Alaska
Locality: Pavlof Islands
Sub-locality: West of Ukolnoi Island
Project Number: OPR-P184-RA-09
Survey Dates: 06/17/2009 - 08/01/2009

Charts Affected

| Number | Edition | Date | Scale (RNC) | RNC Correction(s)* |
|--------|---------|------------|-----------------------|---|
| 16551 | 10th | 04/01/2008 | 1:80,000 (16551_1) | [L]NTM: ? |
| 16549 | 15th | 07/01/2003 | 1:80,000 (16549_1) | USCG LNM: 02/24/2009 (04/07/2009) CHS NTM: None (03/27/2009) NGA NTM: 01/21/2006 (04/11/2009) |
| 16540 | 12th | 01/01/2005 | 1:300,000 (16540_1) | [L]NTM: ? |
| 16011 | 37th | 11/01/2007 | 1:1,023,188 (16011_1) | [L]NTM: ? |
| 16006 | 35th | 04/01/2008 | 1:1,534,076 (16006_1) | [L]NTM: ? |
| 513 | 7th | 06/01/2004 | 1:3,500,000 (513_1) | [L]NTM: ? |
| 500 | 8th | 06/01/2003 | 1:3,500,000 (500_1) | [L]NTM: ? |
| 530 | 32nd | 06/01/2007 | 1:4,860,700 (530_1) | [L]NTM: ? |
| 50 | 6th | 06/01/2003 | 1:10,000,000 (50_1) | [L]NTM: ? |

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

Features

| No. | Feature Type | Survey Depth | Survey Latitude | Survey Longitude | AWOIS Item |
|-----|--------------|--------------|-----------------|------------------|------------|
| 1.1 | AWOIS | [no data] | [no data] | [no data] | --- |
| 1.2 | AWOIS | [no data] | [no data] | [no data] | --- |
| 2.1 | Shoal | 37.69 m | 55° 11' 23.6" N | 161° 40' 17.8" W | --- |
| 2.2 | Shoal | 11.15 m | 55° 12' 03.2" N | 161° 42' 14.5" W | --- |

1 - AWOIS Features

1.1) AWOIS #53796 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 13' 08.2" N, 161° 41' 42.3" W
Historical Depth: [None]
Search Radius: 75
Search Technique: [None]
Technique Notes: Verify location and height of chart rock in support of Maritime Boundary claim.

History Notes:

Source not available.

Survey Summary

Charts Affected: 16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

AWOIS item 53796 was noted as an exposed rock in the charted position during shoreline verification.

Feature Correlation

| Address | Feature | Range | Azimuth | Status |
|--------------|---------------|-------|---------|---------|
| H12076_AWOIS | AWOIS # 53796 | 0.00 | 000.0 | Primary |

Hydrographer Recommendations

Hydrographer recommends that the charted rock be used as a valid maritime boundary claim

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 19470101
SORIND - US,US,reprt,DD-7384(T-11364)
WATLEV - 4:covers and uncovers

1.2) AWOIS #53799 - MARITIME BOUNDARY CLAIM

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 14' 18.8" N, 161° 40' 33.9" W
Historical Depth: [None]
Search Radius: 75
Search Technique: [None]
Technique Notes: Verify location and height of chart rock in support of Maritime Boundary claim.

History Notes:

Source not available.

Survey Summary

Charts Affected: 16549_1, 16551_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

AWOIS item 53799 was found to be a new rock at position, 55.23811650 , -161.67803340, offshore of a charted rock.

Feature Correlation

| Address | Feature | Range | Azimuth | Status |
|--------------|---------------|-------|---------|---------|
| H12076_AWOIS | AWOIS # 53799 | 0.00 | 000.0 | Primary |

Hydrographer Recommendations

Hydrographer recommends that the new rock be used as a valid maritime boundary claim and be charted as per the surveyed position.

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: SORDAT - 20090801
SORIND - US,US,survey,H12076
WATLEV - 4:covers and uncovers

HSD Ops also concurs with this.

CDR James Crocker, NOAA
Chief, Operations Branch
Hydrographic Surveys Division
NOAA

>David Neander wrote:

>

>Agree. Do not re-run data acquisition to meet 5 soundings per node in deeper water.

>Document in the DR and move on.

>

>Thanks,

>Dave

>

>>FOO Rainier wrote:

>>

>>Forgot attachments, sorry.

>>

>>

>>

>>FOO Rainier wrote:

>>

>>CAPT Neander, CDR Crocker,

>>

>>Rainier is currently experiencing similar to density issues to those encountered in the
>>Prince of Wales project area. Specifically, we are seeing density less than 5 soundings
>>per node data on sheet H12077, OPR-P184-RA-09, in the 4-meter grid in the area of
>>overlap with the 8-meter grid in a depth range over 100-meters. The 8-meter grid
>>shows no issues with density in this common area. Please see attached .jpgs. The
>>density layer shows a color map where nodes with a density higher than 5 are colored
>>green and nodes of a density less than 5 are colored red. The depth layer shows the
>>color map used. As there is a large area within this overlapping depth range, sheets
>>throughout the project (H12076-H12081) will likely exhibit the same issue of not
>>meeting density requirement in the 4-meter resolution grid while meeting the density
>>requirement in the 8-meter resolution grid. Again, the areas of low density are being
>>gridded at resolutions considerably deeper than the 10% of water depth criteria.

>>

>>This email is to confirm the earlier decision that we do not need to re-
>>run data in order to obtain the 5 soundings per node spec in this deep water area. We
>>feel that at these depths, we are detecting all items of significance and that the
>>resources used to merely increase data density would be better utilized elsewhere on
>>this project. All areas of navigational significance will meet density requirements of 5
>>soundings per node.

>>

>>We will document in the DR, the lack of density in effected areas and include this
>>correspondence in the deliverable package.

>>

>>V/R,

>>Brent Pounds, LT/NOAA

>>Field Operations Officer

>>NOAA Ship Rainier



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 4, 2009

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P184-RA-2009
HYDROGRAPHIC SHEET: H12076

LOCALITY: West of Ukolnoi Island, AK
TIME PERIOD: June 17 - August 3, 2009

TIDE STATION USED: 945-9450 Sand Point, AK
Lat. 55° 19.9'N Long. 160° 30.3' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.988 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SWA205

Refer to attachments for zoning information.

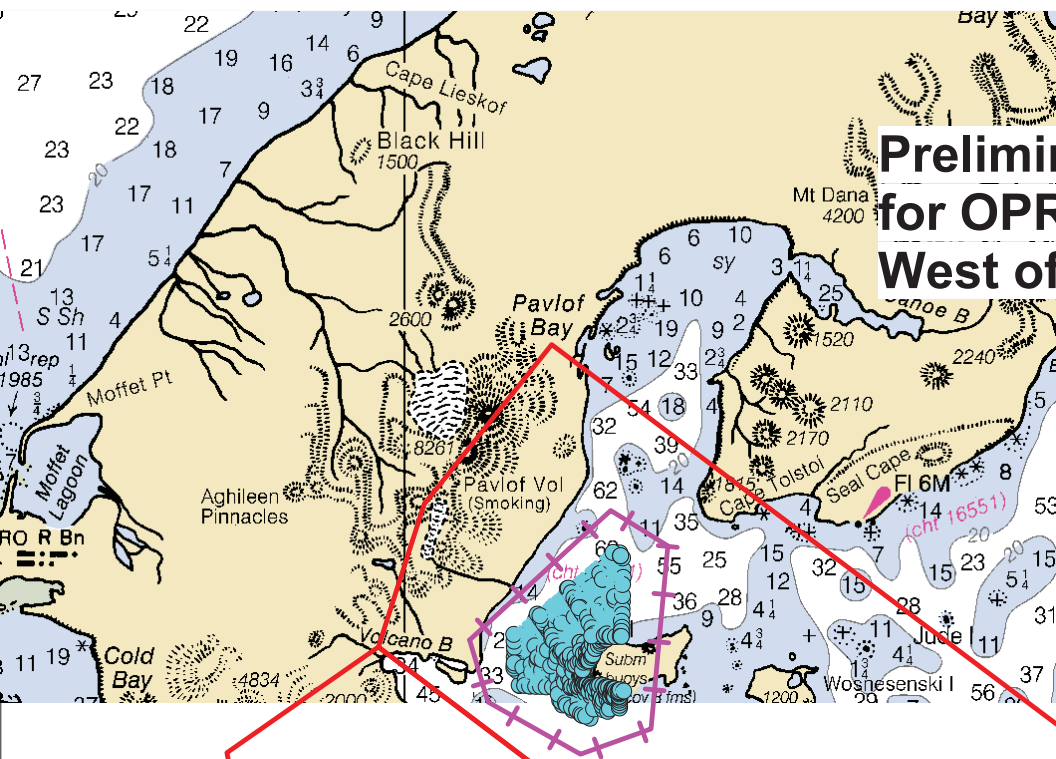
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/
NOS, email=peter.stone@noaa.gov, c=US
Date: 2009.09.11 15:34:53 -04'00'

CHIEF, OCEANOGRAPHIC DIVISION





Preliminary As Final Tidal Zoning for OPR-P184-RA-2009, H12076 West of Ukolnoi Island, AK

★
945-9450 SAND POINT

SWA205
Time Corrector 0 mins.
Range Corrector x0.94
Reference 945-9450

H12076 HCell Report
Katie Reser, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H12076 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 H12076 were compiled to the largest scale raster charts shown below:

| Chart | Scale | Edition | Edition Date | NTM Date |
|-------|----------|------------------|--------------|------------|
| 16549 | 1:80,000 | 16 th | 03/01/2010 | 05/22/2010 |
| 16551 | 1:80,000 | 10 th | 04/01/2008 | 09/11/2010 |

The following ENC's were also used during compilation:

| Chart | Scale |
|----------|----------|
| US4AK55M | 1:80,000 |

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from an 8-meter multibeam combined surface in CARIS BASE Editor. A shoal-biased selection was made at 1:15,000 survey scale using a Radius Table file with values shown in the table, below.

| Shoal Limit (m) | Deep Limit (m) | Radius (mm) |
|-----------------|----------------|-------------|
| -5 | 10 | 3 |
| 10 | 20 | 4 |
| 20 | 50 | 4.5 |
| 50 | 500 | 5 |

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

4. Depth Contours

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

| Chart Contour Intervals in Fathoms | 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 H12076_SS.000 |
|------------------------------------|--|--|------------------------------------|---|
| 0 | 0.0000 | 0.2286 | 0.125 | 0 |
| 3 | 5.4864 | 5.715 | 3.125 | 3 |
| 5 | 9.144 | 9.373 | 5.125 | 5 |
| 10 | 18.288 | 18.517 | 10.125 | 10 |
| 20 | 36.576 | 37.948 | 20.750 | 20 |
| 30 | 54.864 | 56.2356 | 30.750 | 30 |
| 40 | 73.152 | 74.5236 | 40.750 | 40 |
| 50 | 91.44 | 92.812 | 50.750 | 50 |

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

5. Meta Areas

The following Meta object areas are included in HCell H12076:

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 de-conflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base Surface, are included in the HCell. The geometry of these features may be modified to emulate chart scale per the HCell Reference Guide on compiling features to the chart scale HCell.

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

| | |
|---------|--------------------------------------|
| \$CSYMB | Blue notes |
| COALNE | GC coastline |
| DEPCNT | Zero contours |
| LNDARE | Island |
| M_QUAL | Data quality meta object |
| OBSTRN | Obstruction areas |
| SBDARE | Ledges and bottom samples |
| SOUNDG | Soundings at the chart scale density |
| UWTROC | Rocks |
| WEDKLP | Kelp |

The *_SS HCell contains the following Objects:

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

8. Spatial Framework

8.1 Coordinate System

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

8.2 Horizontal and Vertical Units

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

Chart Unit Base Cell Units:

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

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

BASE Editor and S-57 Composer Units:

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

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

9. Data Processing Notes

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

10. QA/QC and ENC Validation Checks

H12076 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

| | |
|---------------------|--|
| H12076_CS.000 | Base Cell File, Chart Units, Soundings and features compiled to 1:80,000 |
| H12076 _SS.000 | Base Cell File, Chart Units, Soundings and Contours compiled to 1:15,000 |
| H12076 _DR.pdf | Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items |
| H12076 _Outline.gml | Survey outline |
| H12076 _Outline.xsd | Survey outline |

11.2 Software

| | |
|--|--|
| CARIS HIPS Ver. 6.1 | Inspection of Combined BASE Surfaces |
| CARIS BASE Editor Ver. 2.2 | Creation of soundings and bathy-derived features, meta area objects, and blue notes; Survey evaluation and verification; Initial HCell assembly. |
| CARIS S-57 Composer Ver. 2.0 | Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA. |
| CARIS GIS 4.4a | Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding. |
| CARIS HOM Ver. 3.3 | Perform conversion of the metric HCell to NOAA charting units with NOAA rounding. |
| HydroService AS, dKart Inspector Ver. 5.1 | Validation of the base cell file. |
| Northport Systems, Inc., Fugawi Marine ENC Ver.3.1.0.435 | Independent inspection of final HCells using a COTS viewer. |

12. Contacts

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

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

APPROVAL SHEET
H12076

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.