H11331

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-10-12-04

Registry No. H-11331

LOCALITY

State Alaska

General Locality Shumigan Islands and Vicinity

Sublocality South East Entrance to Popof Strait

2004

CHIEF OF PARTY
CDR J.W.Humphrey, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H11331

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-10-12-04

State: Alaska

General Locality: Shumigan Islands and Vicinity

Sublocality: South East Entrance of Popof Strait

Scale: 1:10,000 Date of Survey: 6/20/04-7/26/04

Instructions Dated: 16-Jun-04 Project No.: OPR-P183-RA-04

Vessel: Hull # 1006, 1015, 1016, 1021, 1101, 1103

Chief of Party: CDR J.W. Humphrey, NOAA

Surveyed by: RAINIER Personnel

Soundings taken by echo sounder: Reson SeaBat 8101 & 8125, Knudsen 320M, Seabeam/Elac 1180

Graphic record scaled b: RAINIER Personnel

Graphic record checkec: RAINIER Personnel

Evaluation by: B. Taylor Automated plo: HP Designjet 1050C

Verification by: Bonnie Johnston, Elias Domingo

Soundings in: Fathoms and tenths at MLLW

REMARKS: Time in UTC. UTM Projection Zone 4

Revisions and annotations appearing as endnotes were generated during office processing.

All separates are filed with the hydrographic data.

As a result, page numbering may be interrupted or non-sequential

Descriptive Report to Accompany Hydrographic Survey H11331

Project OPR-P183-RA-04
Shumagin Islands, Alaska
Scale 1:10,000
June and July 2004
NOAA Ship RAINIER
Chief of Party: Commander John W. Humphrey, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P183-RA-04, dated June 16, 2004, Draft Standing Project Instructions dated March 23, 2004, and NOS Hydrographic Specifications and Deliverables dated March 2003. The survey area is from Delarof Harbor to Egg Island.[1] This survey corresponds to sheet "E" in the sheet layout provided with the Letter Instructions.

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters 20 meters and deeper. There is approximately a five-meter depth overlap with LIDAR coverage along the 20-meter curve that was defined by the Pacific Hydrographic Branch (PHB) and modified by the Field Operations Officer (FOO).[2] Vertical-Beam Echo Sounder (VBES) data was acquired at four meters to define the 4-meter contour for shoreline comparison. Additional coverage was obtained to acquire least depths over significant features or shoals.

SWMB data acquisition was conducted from June 20 to July 26, 2004 (DN 172 to 208).[3]

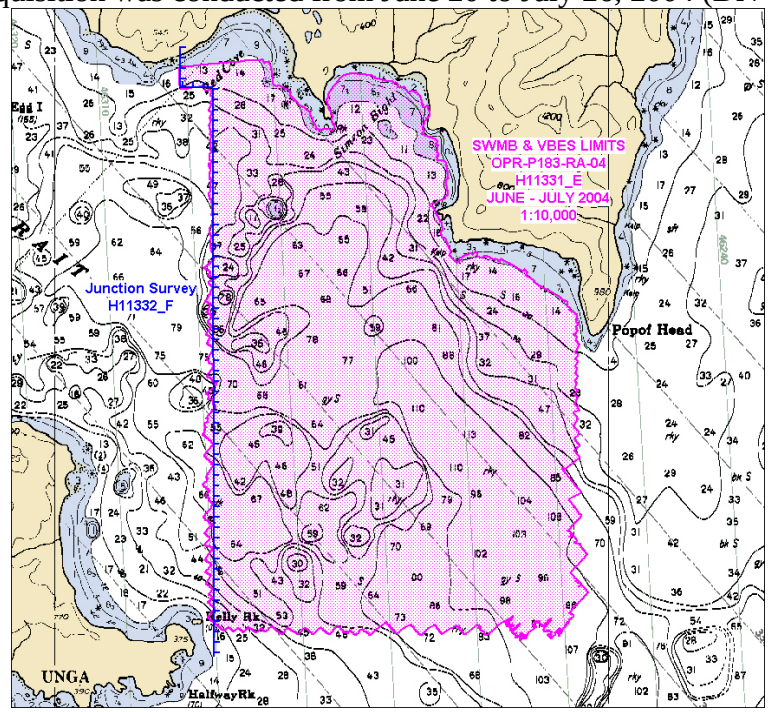


Figure 1. H11331 Survey Limits and Junctions.

B. DATA ACQUISTION 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-P183-RA-04 Data Acquisition and Processing Report* (DAPR), submitted under separate cover.[4] Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Data were acquired by RAINIER and her survey launches RA1 (1101), RA2 (1103), RA3 (1021), RA4 (1016), RA5 (1006), and RA6 (1015). Vessels RA3 (1021), RA4 (1016), RA5 (1006), and RA6 (1015) were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessels RA1 (1101), RA2 (1103) were used to acquire vertical-beam echo soundings (VBES) and detached positions (DPs) for shoreline verification. Vessel RA2 (1103) was also used to collect bottom samples.

No unusual vessel configurations were used for data acquisition.

B2. Quality Control

Crosslines

Shallow-Water Multibeam (SWMB) crosslines totaled 13.09 nautical miles, comprising 4.9% of SWMB hydrography. The mainscheme bathymetry was manually compared to the XL nadir beams in CARIS subset mode and agreed well with differences of approximately 0.4 meters noted.

A Checkpoint Report was conducted using Pydro 4.9.0, and is submitted digitally in the quality control folder[5], but is not submitted as a hard copy with this report due to its size (106 pages). The report was generated using checkpoints created at the intersections of mainscheme lines and crosslines in survey areas with homogeneous seafloor. A total of 24 checkpoints were created in areas surveyed using Reson 8101 on RA5 (1006), Reson 8101 on RA 3 (1021), and Elac on RA4 (1016). All checkpoint comparisons passed IHO Order One depth accuracy standards except checkpoints 5,15,16, and 20. These checkpoint locations were on steep slopes and can reasonably be discounted.[6]

A statistical Quality Control Report was generated for RESON SWMB data acquired on the Lake Washington Reference Surface at the start of the season to validate launch offsets and sonar biases. A copy of this report is included in the OPR-P183-RA-04 DAPR.

Through manual examination of the data and statistical analysis of data accuracy standards for this survey have been met.[7]

Junctions

The following contemporary survey junctions with H11331:[8]

Registry #	Scale	Date	Junction side
H11332	1:10,000	2004	West

Survey H11332 junctions well with this survey, a cursory comparison indicates differences are generally less than a quarter meter.[9]

The following LIDAR survey junctions with H11331:

Registry #	Scale	Date	Junction side
H11147[10]	1:10,000	2003	North[11]

LIDAR survey H11147[12] junctions well with this survey. A cursory comparison indicates no notable differences in most areas, except for the western shore of Simeon Bight. Several features at approximately 9 meters were detected by SWMB but not by LIDAR. Vessel RA4 (1016) day number 2004-207 line 025_2241 shows shoaling up to 7 meters. The LIDAR did not detect these features because coverage in this area was sparse.[13]

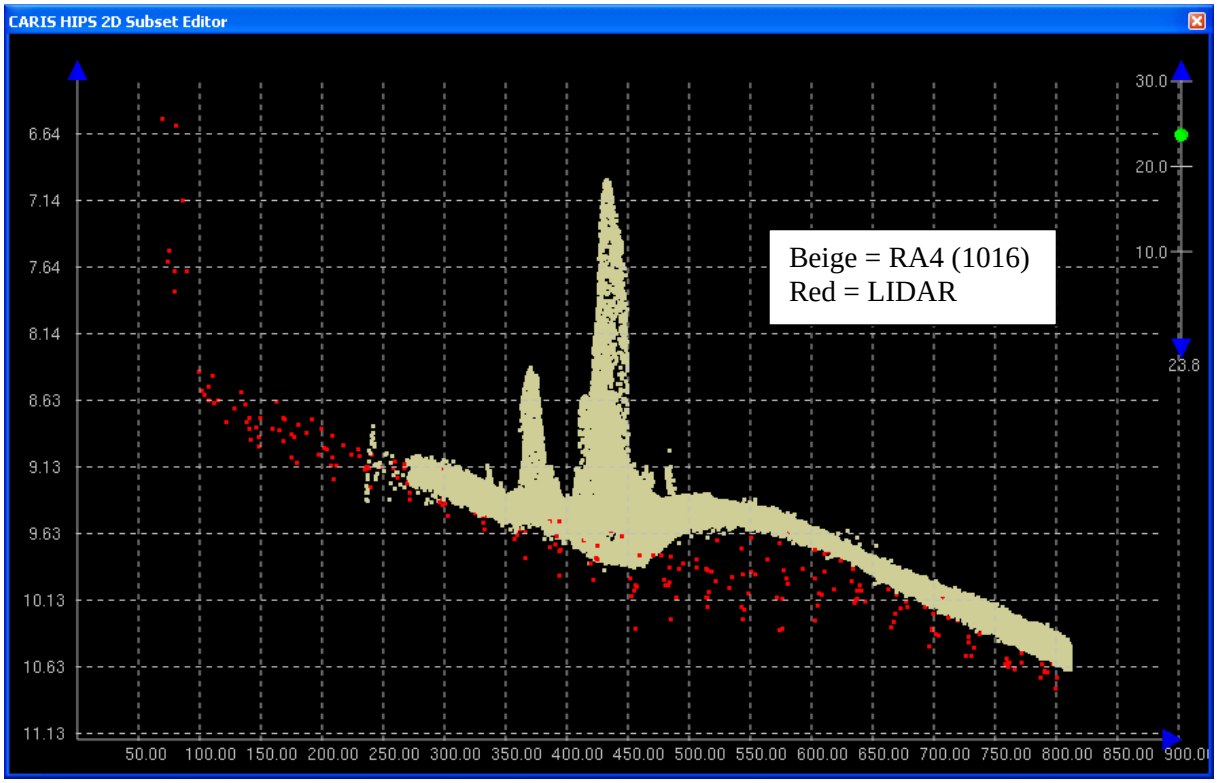


Figure 2. LIDAR Junction Survey H11147[14] and H11331

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.

Data Quality Factors

During data collection for H11331, CARIS HIPS and SIPS was upgraded from version 5.3 to 5.4. Shortly after leaving the project area, it was discovered that CARIS 5.4 does not apply concatenated sound velocity in the format RAINIER was previously using. The concatenated sound velocity files were reformatted, and re-applied to the data, correcting the problem.[15]

During post processing, sound velocity errors of less then one meter were noted in Simeon Bight in approximately 15 meters of water. In an attempt to resolve this problem, the Hydrographer applied the sound velocity casts in CARIS using the "nearest in distance" option. After re-evaluation, and noting that the "nearest in distance" option did not resolve the sound velocity problem, the hydrographer re-applied sound velocity casts using the "previous in time" method.

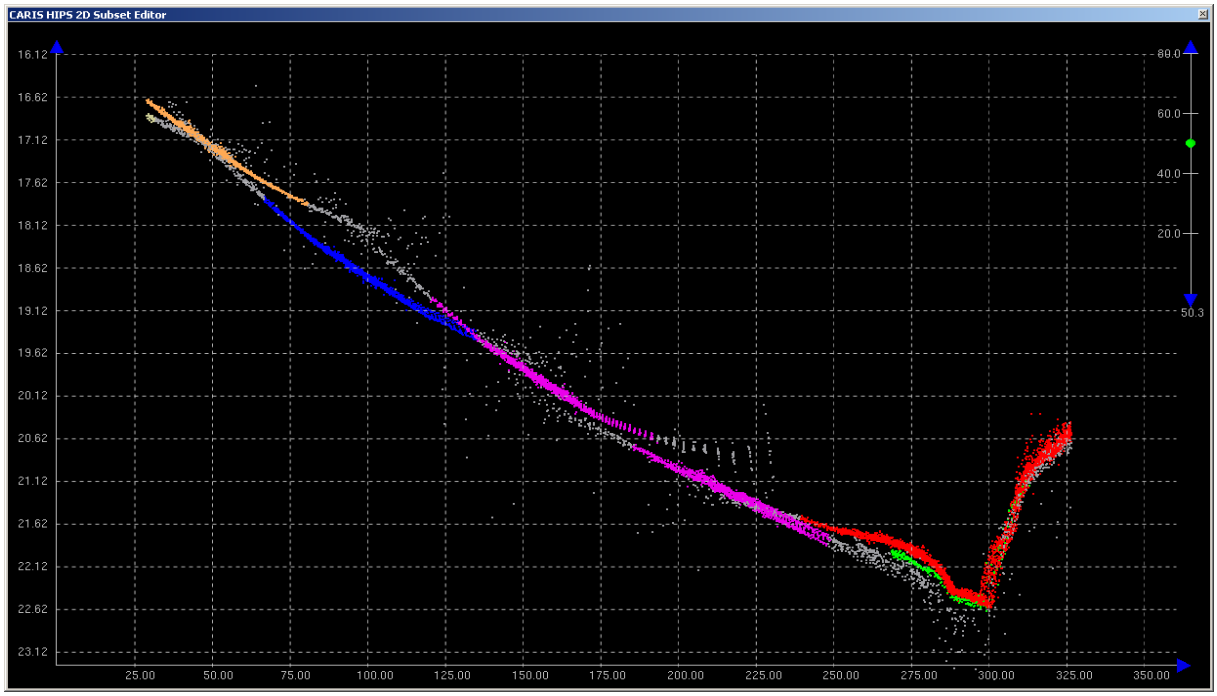


Figure 3. Sound Velocity Errors in Simeon Bight

Also during post processing the hydrographer noted a 'heave filter' issue on RA5 (1006) in Red Cove in approximately 24 meters of water and in Simeon Bight in approximately 15 meters of water. Every other line, run in[16] opposite direction, appears to have an offset of less than one meter. After the survey was complete it was noted that the heave filter on the Position and Orientation System for Marine Vessels (POMV)[17] was set too low causing the system to take a longer time to 'settle' or 'level out'.[18] See figures below.

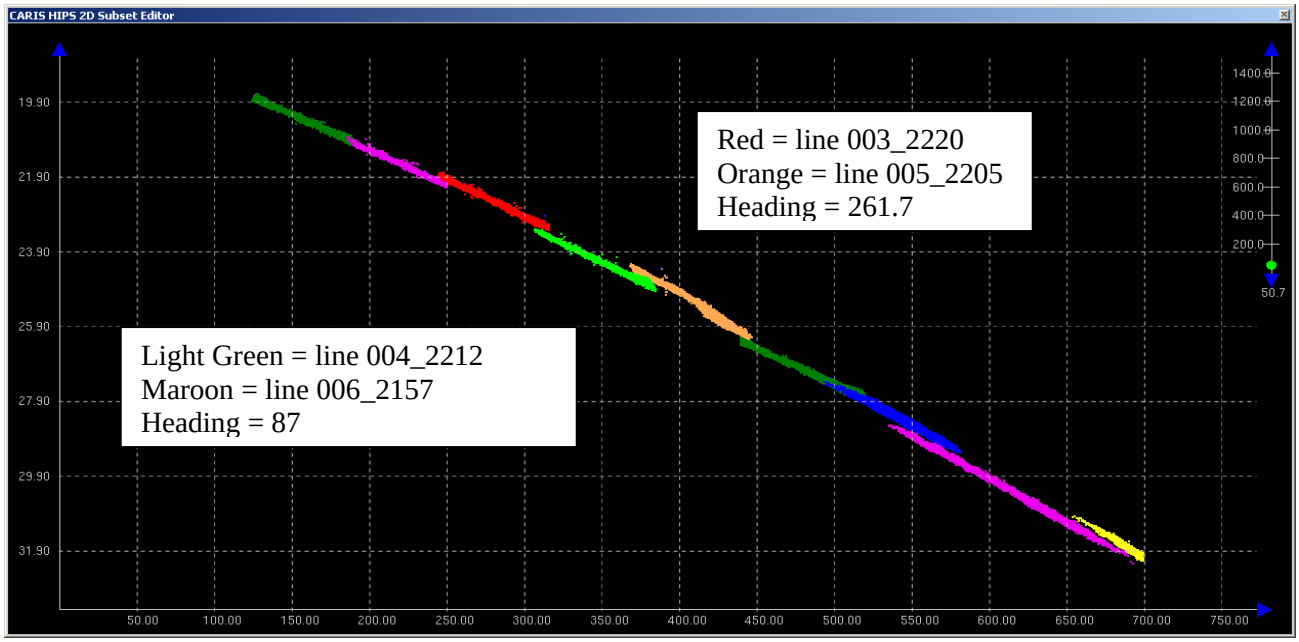


Figure 4. Error in 'Heave Filter' for vessel RA5 (1006) in Red Cove

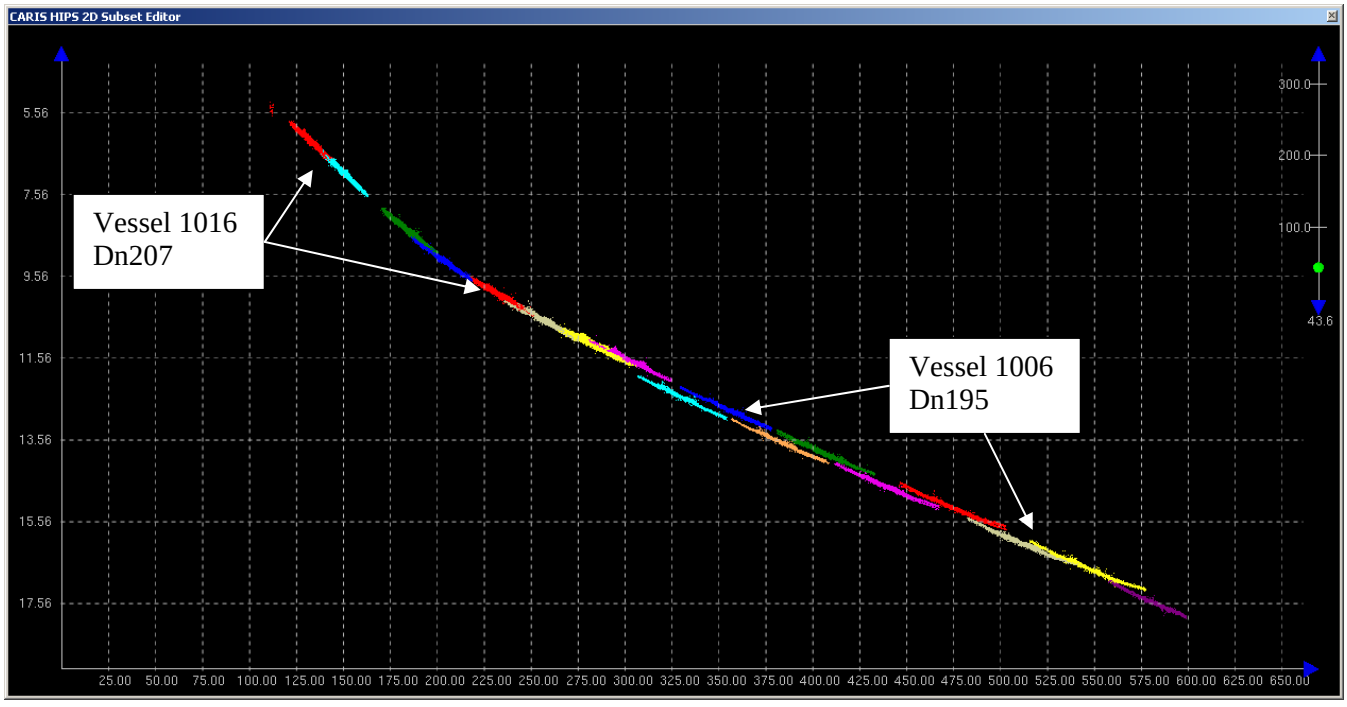


Figure 5. Error in 'Heave Filter' for vessel RA5 (1006) in Simeon Bight

B3. Data Reduction

Data reduction procedures for survey H11331 conform to those detailed in the *OPR-P183-RA-04 DAPR.*

C. VERTICAL AND HORIZONTAL CONTROL

A summary of horizontal and vertical control for this survey follows.[19]

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. Differential corrections from U.S. Coast Guard beacon at Cold Bay (289 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were not accomplished due to the Cold Bay DGPS beacon being the only available beacon for the area.

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 H11331.

No secondary gauges were required.

All data were reduced to MLLW using unverified observed tides from station Sand Point, AK using the tide file 9459450.tid and time and height correctors using the zone corrector file P183RA2004CORP.zdf.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. A request for delivery of final approved (smooth) tides for survey H11331 was forwarded to N/OPS1 on July 27, 2004. A copy of the request is included in Appendix IV.[20]

D. RESULTS AND RECOMMENDATIONS

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

No AWOIS items were located within the limits of H11331.[21]

D.2 Chart Comparison

Survey H11331 was compared with chart 16553 (3rd Ed.; September 2, 1989, 1:80,000) updated through Notice to Mariners 21/04.[22]

Chart 16553

Depths from survey H11331 were generally one to three fathoms more shoal than depths on chart 16553. Depths that were four to six fathoms more shoal were found in the southeast in deeper waters from 70 to 110 fathoms. These differences can be attributed to more advanced technology and increased bottom coverage using SWMB methods.[23]

The Hydrographer has determined that data accuracy standards and bottom coverage requirements have been met and survey data are adequate to supersede charted data in their common areas.[24]

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

D.3 Shoreline

Shoreline Source

Vector photogrammetric projects AK-0308 was supplied by N/NGS3 in the form of cartographic feature file GC-10558 (CFF). RAINIER conducted limited shoreline verification of the CFF. In addition, features shown on the current edition of chart 16553 that were not depicted on the shoreline source document were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

LIDAR data was also provided from inshore to the 20-meter contour. There were two feature files in the form of MapInfo tables, LIDAR_ReqFldWrk_E.tab and LIDAR_OK_E.tab, which are described in the LIDAR Descriptive Report. All features from the LIDAR_ReqFldWrk_E.tab were investigated and are addressed in the Detached Position and Bottom Sample Plot. LIDAR data also included a ‘test area’ in Simeon Bight (see *Figure 6*). Features from LIDAR_OK_E.tab were only investigated if they were inside of the test area.

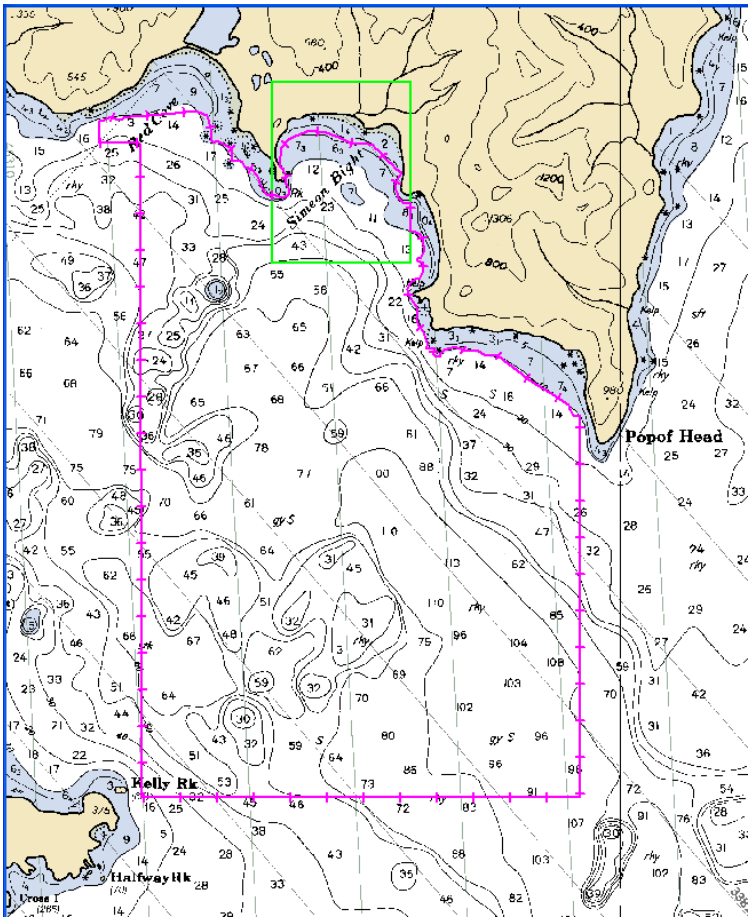


Figure 6. LIDAR Test Area (green box) in Simeon Bight

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM sections 6.1 and 6.2. Detached positions (DPs) taken during shoreline verification were recorded in HYPACK, on DP forms, and processed in Pydro. These indicate verifications or revisions of existing features and updates to features not found on the verified shoreline. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline. DP forms are included in Section I of the *Separates to be Included with Survey Data*.[25]

A detailed Detached Position and Bottom Sample plot in MapInfo format is provided[26] showing all detached positions and bottom samples with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot. Verified CFF shoreline that did not require revision is in MapInfo table H11331_CFF_Shoreline and shown in black.[27] New MHW features and changes to the MHW shoreline, CFF or charted, are displayed in red on the "H11331_shoreline_updates" MapInfo table.[28] Charted shoreline, when used for reference purposes or when source data were not available, is depicted in the MapInfo table "H11331_CHD_Shoreline" and displayed in brown [29]

Source Shoreline Changes and New Features

Items for survey H11331 that needed further discussion and are associated with a detached position have been flagged "Report" in Pydro in H11331.pss. Investigation and survey methods are listed in the Remarks tabs. A report with these items was generated (H11331_Shoreline_Report.pdf). The report is located in the supplemental correspondence section of the descriptive report appendices in both digital and hard copy.[30] Items not associated with a detached position are discussed below.

The three LIDAR (H11147)[31] rocks at 55°17'48.65" N 160°26'44.28" W ; (408212.31 , 6128777.01) and the two LIDAR (H11147)[32] rocks at 55°17'02.53" N 160°25'36.68" W ; (409375.31 , 6127326.92) were visually noted but not verified with DP's because of shallow depths and they fall inshore of the four-meter buffer and therefore are not navigationally significant.[33] The LIDAR (H11147)[34] rocks at 55°16'40.07" N 160°25'02.17" W ; (409969.98 , 6126620.27) were also visually noted but not verified with DP's because of dangerous sea conditions.[35]

The CFF foul area limits west of Popof Head at 55°15'29.37" N 160°21'22.58" W[36] ; (414338.19 , 6124126.75) have been extended to shore.[37]

There is a new area foul with kelp northwest of Popof Head from 55°15'30.12" N 160°22'46.87" W[38] ; (412740.38 , 6124461.71) to the west[39] at 55°15'29.92" N 160°23'59.77" W[40] ; (413784.37 , 6124369.14). The area was added to the H11331_Shoreline_Updates layer using the VBES 4M shoreline buffer from DN172 vessel 1103 line 000_2009.[41]

Charted Features

The Chd(16553) foul area from the NW junction of the survey at 55°17'30.11" N 160°27'21.47" W[42] ; (407018.9 , 6127912.25) to the northeast at 55°17'39.41" N 160°27'08.73" W[43] ; (407892.92 , 6128723.54) has been expanded offshore. The new extents are in H11331_Shoreline_Updates and were revised using the VBES 4M shoreline buffer from DN173 vessel 1103 line 000_2051.[44]

The Chd(16553) foul area southeast of Simeon Bight from 55°15'30.12" N 160°22'46.87" W[45] ; (412260.43 , 6124803.91) to the southeast at 55°15'29.92" N 160°23'59.77" W[46] ; (412498.37 , 6124407.93) has been revised in the H11331_Shoreline_Updates layer using the VBES 4M shoreline buffer from DN172 vessel 1103 line 000_2009.[47]

The Chd(16553) rock at 55°15'25.94" N 160°22'46.57" W ; (412312.77 , 6124281.14) was not noted because the area was foul with kelp and rocks.[48]

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample and final sounding Mapinfo digital file supersede and complement shoreline information compiled on the CFF, LIDAR and charts as noted.[49] In addition, field notes made

by the Hydrographer, including verification of source features or charted features if no source shoreline was available are submitted in the digital MapInfo file "H11331_shoreline_notes."[50]

D.4 Dangers to Navigation

No Dangers to Navigation (DTONS) are located[51] within the limits of H11331.[52]

D.5 Aids to Navigation

No aids to navigation (ATONs) are located within the limits of H11331.[53]

D.6 Miscellaneous

Bottom samples were collected and are depicted on the Detached Position and Bottom Sample Plot. In general the bottom samples do not agree with the charted bottom samples.[54]

E. APPROVAL

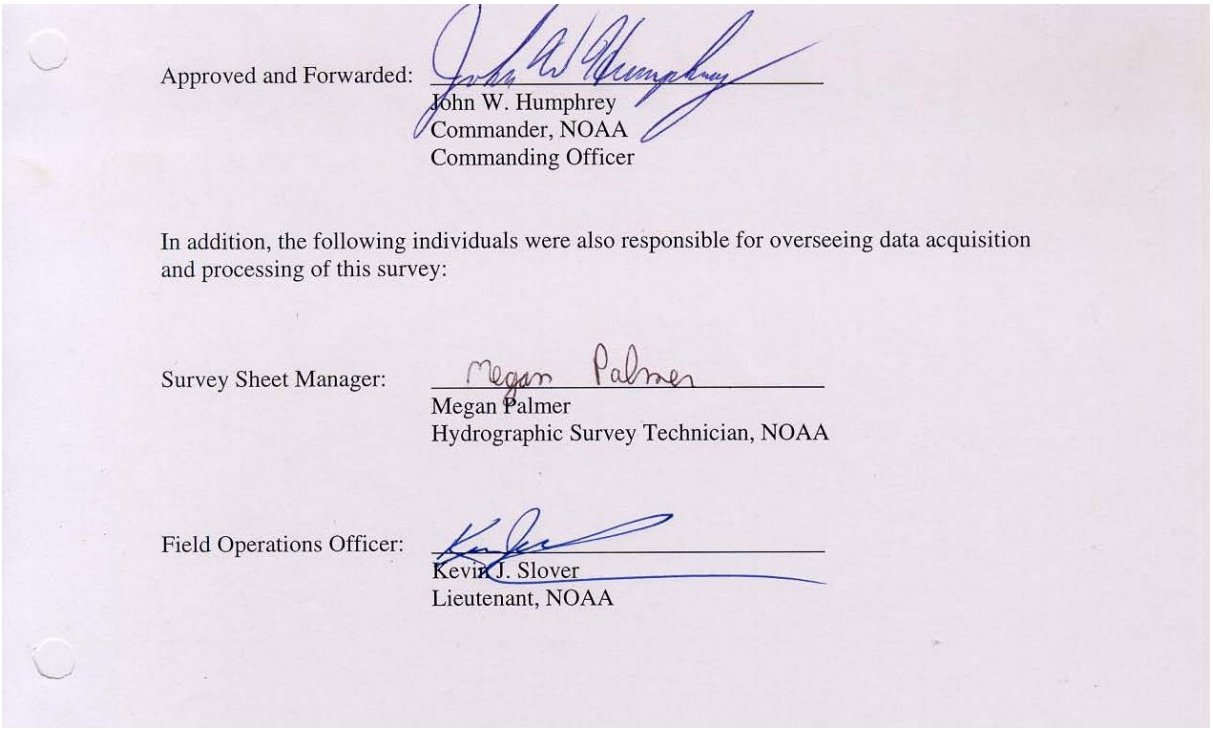
As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this survey in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2003.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11331 is complete and adequate to supersede charted soundings[55] in their common areas. No additional work is required for this survey.

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

Title	Date Sent	Office
Data Acquisition and Processing Report for OPR-P183-RA-04	4/8/05	N/CS34
Tides and Water Levels Package for OPR-P183-RA-04	7/29/04	N/OPS1



Approved and Forwarded:

John W. Humphrey
Commander, NOAA
Commanding Officer

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

Survey Sheet Manager: Megan Palmer

Megan Palmer
Hydrographic Survey Technician, NOAA

Field Operations Officer:

Kevin J. Slover
Lieutenant, NOAA

Revisions Compiled During Office Processing and Certification

[1] Survey area is South East Entrance to Popof Strait.
[2] Concur with clarification. The overlap between H11147e LIDAR and H11331 swmb data generally covered depths from approximately 20 to 27 meters (10.9 to 15 fathoms). In Simeon Bight, swmb data extended futher inshore, so the overlap area covered from approximately 9.1 meters (5 fathoms) to 27 meters (15 fathoms). See smooth sheets for H11147e and H11331 for further information.
[3] Concur.
[4] Filed with the project reports.
[5] Filed with the hydrographic records.
[6] Concur.
[7] Concur. H11331 is adequate to supersede all prior surveys and charted miscellaneous source data in the common areas except as noted in this report and the Hdrawing.
[8] Concur with clarification. H11331 also junctions with H11330 (2004) and H11147a (2003) at the northwest corner, H11280(2004) on the east side, H11147d (2203) at the northeast corner, and H11281(2004) on the south side. All junction surveys have been considered in compiling features, soundings, and contours to the Hdrawing.
[9] Concur with clarification. H11331 also compares well with H11330, H11280, and H11281, generally to within one fathom or less. LIDAR junction surveys H11147d and H11147a match LIDAR survey H11147e and all compare generally to within less that 0.5 fm in overlap areas with H11331.
[10] The LIDAR junction survey is H11147e.
[11] Concur with clarification. H11147e also junctions with H11331 at the southwest.
[12] The LIDAR junction survey is H11147e.
[13] Concur with clarification. Selected features and soundings from H11147e were depicted on the H11331 smooth sheet, generally in areas of overlap. In some areas where there was insufficient swmb or VIBES data for contours, dashed contours were created on the H11331 smooth sheet using data from H11147e. Both H11147e and H11331 have been compiled to the Hdrawing.
[14] H11147e.
[15] See CARIS_SBEDIT_Bug[1].doc, attached to this report, for further information.
[16] Insert “the”.
[17] POSMV
[18] In PHB reprocessing, the data was found to be acceptable for charting.
[19] A complete description of vertical and horizontal control for survey H11331 can be found in the *OPR-P183-RA-04 Horizontal and Vertical Control Report*, filed with the project reports.
[20] Filed with the hydrographic records. See Final Tide Note dated April 11, 2005, attached to this report, for further information.
[21] Concur.
[22] In PHB processing, H11331 was compared with chart 16553, 5th Edition, continuous maintenance raster dated 9/13/06.
[23] Concur.
[24] Concur.
[25] Copies of DP forms annotated with office comments are attached to this report.

[26] Filed with the hydrographic records.
[27] Shown in blue on Level 5 of the Hdrawing.
[28] No MHW revisions were made for H11331 except as derived from H11147e LIDAR source data, shown on Level 10 of the smooth sheet.
[29] No charted shoreline (MHWL) is retained for H11331. Chart shoreline as shown on the smooth sheet, using latest RSD. Retained charted features are depicted in brown on Level 11 of the smooth sheet.
[30] See Shoreline Report, amended with office remarks, attached to this report.
[31] (H11147e).
[32] (H11147e).
[33] Concur. Due to scale, only two of the three rocks near lat. 55°17'48.65" N. lon. 160°26'44.28" W are shown on the Hdrawing. Chart both areas as shown on the Hdrawing.
[34] (H11147e).
[35] Concur with clarification. Due to scale, only the shoalest of the four LIDAR rocks near this position is shown on the Hdrawing. Chart 2 fm with *Rks* notation as shown on the Hdrawing.
[36] Strikethrough ~~55°15'29.37" N 160°21'22.58" W~~, replace with 55°15'22.2" N 160°20'51.9" W.
[37] Concur with clarification. The area falls within the junction with H11280. Chart as depicted on 16553h11.280.
[38] Strikethrough ~~55°15'30.12" N 160°22'46.87" W~~, replace with 55°15'32.0" N 160°22'22.8" W.
[39] Strikethrough ~~west~~, replace with “east”.
[40] Strikethrough ~~55°15'29.92" N 160°23'59.77" W~~, replace with 55°15'29.7" N 160°21'23.6" W.
[41] Chart as depicted on the smooth sheet.
[42] Strikethrough ~~55°17'30.11" N 160°27'21.47" W~~, replace with 55°17'19.9" N 160°27'50.9" W.
[43] Strikethrough ~~55°17'39.41" N 160°27'08.73" W~~, replace with 55°17'46.7" N 160°27'2.3" W.
[44] Chart as depicted on the smooth sheet.
[45] Strikethrough ~~55°15'30.12" N 160°22'46.87" W~~, replace with 55°15'42.8" N 160°22'50.4" W.
[46] Strikethrough ~~55°15'29.92" N 160°23'59.77" W~~, replace with 55°15'30.2" N 160°22'36.4" W.
[47] Concur with clarification. The positions given describe the limits of the smooth sheet foul area. Chart according to the smooth sheet.
[48] Retain charted rock as depicted on the smooth sheet and Hdrawing.
[49] The evaluator concurs with the hydrographer’s findings as presented on the DP plot and attached Pydro Shoreline report as annotated, with the following clarifications:

- Examination of the data during PHB quality control indicated that the charted dangerous rock at Lat 55° 17’ 14.46” N, Lon 160° 26’ 01.33” W was not satisfactorily disproved. For further information, see H11331 Certification Memo, attached to this report. LIDAR data indicates the presence of a rock approximately 35-40 meters southeast of the charted rock position at depth 1 fm, 5 ft. The evaluator recommends deleting the dangerous rock at charted

position and charting 1 fm, 5 ft with *Rks* notation, as depicted on the Hdrawing.

- CFF rock at approximate position Lat 55°15'19"N, Lon 160°22'42"W was noted in shoreline verification. Since the rock was inside a foul area, it was not verified. However, LIDAR found the CFF rock to be an islet. Chart islet as depicted on the smooth sheet.
- Two CFF rocks in the vicinity of Lat 55°17'5"N, Lon 160°25'31"W were visually noted by the hydrographer and are shown on the H11331 smooth sheet. These rocks were not verified due to foul conditions. LIDAR found the rocks to be an islet. Nearby charted islets (16553, 5th Edition, continuous maintenance raster dated 9/13/06) were not discussed by the hydrographer. The evaluator recommends deleting the charted islets and charting the LIDAR islet as shown on the Hdrawing.
- Shoreline verification disproved a LIDAR rock at position Lat 55°16'39.319"N, Lon 160°25'19.651"W. While the disproval is noted on the DP text layer (Level 37) of the H11331 smooth sheet, the rock does not appear on the final version of the H11147e (LIDAR) smooth sheet. Chart vicinity according to the H11331 smooth sheet.

[50] Filed with the hydrographic records.
[51] Strikethrough ~~are located~~, replace with "were found".
[52] Concur.
[53] Concur.
[54] Concur with clarification. Chart H11331 bottom samples as depicted on the smooth sheet. Chart retained bottom samples and characteristics as depicted on the Hdrawing.
[55] Insert "and features".

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 11, 2005

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P183-RA-2004
HYDROGRAPHIC SHEET: H11331

LOCALITY: Southeast Entrance of Popof Strait
Shumagin Islands, AK

TIME PERIOD: June 20 - July 26, 2004

TIDE STATION USED: 945-9450 Sand Point, AK
Lat. 55° 20.2'N Lon.160° 30.1'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: SWA204A

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 new 1983-2001 National Tidal Datum Epoch (NTDE).

For ----------
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

March 18, 2004

MEMORANDUM TO: Commander John E. Lowell, Jr., NOAA
Chief, Pacific Hydrographic Branch

THROUGH: Lieutenant Edward J. Van Den Ameele, NOAA
Hydrographic Team Leader

FROM: Kim Sampadian
Physical Scientist

SUBJECT: CARIS NT SBEdit Bug

A bug in CARIS HIPS SBEdit has been identified by HSTP and AHB that affects the accuracy of SVP-corrected singlebeam data under the following specific circumstances:

1) SVP Correct singlebeam data (at least once), followed by

2) Save any edits (includes accept/reject flagging), followed by

3) SVP Re-Correct (reload or reprocess) and Merge

All three of these actions are needed to compromise the accuracy of the data. Singlebeam data affected by this sequence of events will be made deeper by approximately a multiple of the static draft. It is possible to see errors on the order of 1 x draft, 2 x draft, etc depending upon the number of times this sequence occurs. Additional processing scenarios tested at PHB confirmed that the sequence stated above is the only process by which the data is corrupted.

All singlebeam surveys submitted to PHB since 2001 field season are potentially affected by this software bug. This constitutes approximately forty in-house surveys at various stages of processing within the branch.

Initial efforts at PHB were directed in determining an appropriate “test” that could be used to identify corrupt data. Unfortunately, the tests proved to be time consuming and inconclusive. Jack Riley’s global approach to re-convert the data in order to recover the slant range files (SLRange, SLRangeTmIdx, and SLRangeLineSegements) and replace the bad slant range files appears to be the most thorough and direct solution at this time. However, this fix does not repair data that has had depths edited through the “Change Depths..." and "Add Depth..." functions in SBEditor. The only remedy for this situation at present is to reconvert the raw data and re-perform the edits. A sampling of surveys reveals that it is not readily apparent when depths have been changed or added.

In an effort to determine the extent to which this software bug has affected surveys currently at PHB, three surveys were selected at random (H11086, H11113, and H11121), one from each field season since 2001, to reprocess and evaluate the magnitude of discrepancies. All three surveys

were reprocessed within one day due to the ease of access to the raw data files. The results of the reprocessing are as follows:

H11086 was not affected.

H11113 had differences up to 0.2 meters in depths ranging from 2 to 12 meters (within error budget) that represents approximately 3.5 % of the singlebeam data.

H11121 had differences up to 0.5 meter in depths ranging from 0 to 17 meters (upper limit of error budget) that represents approximately 2 % of the singlebeam data.

Similar results were reported from the RAINIER on seven surveys they reprocessed.

CARIS is aware of this software bug and is actively working to resolve it however they have not released a fix to date. The fix should prevent any future problems but does not address existing corrupt data.

Typically, bottom slope and variability on the west coast and Alaska make detection of errors on the order of a half meter difficult with visual inspection of the data. Therefore I recommend that if singlebeam data is deemed navigationally significant and used to supercede the chart, then the data should be reprocessed.

Cc: CO RAINIER
N/CS3 Gibson

November 21, 2005

MEMORANDUM TO: Commander Donald W. Haines, NOAA
Chief, Pacific Hydrographic Branch

FROM: Keith H. Toepfer
Physical Scientist

SUBJECT: Review of Hydrographic Survey H11331
OPR-P183-RA-04
Shumagin Islands, Alaska

I have reviewed hydrographic survey H11331 with regard to data integrity and completeness of the data submission package, survey field procedures, data processing and quality assurance methods, and overall data accuracy and data quality. Survey H11331 complies with specifications and requirements set forth in the NOS Hydrographic Surveys Specifications and Deliverables Manual, the Field Procedures Manual, and the Standing and Letter Project Instructions with the following exceptions

- A portion of line 1016_Reson8125/065_ 2355 on day 2004-207, representing about 25 pings, was devoid of heading information and appeared to contain a data blow-out when compared to the surrounding data from launch 1006 Reson 8101 data on date 194. These anomalous data should have been noticed from either a review of the attitude information or from a review of areas of significant standard deviation in the surface, and rejected.
- I do not concur with the Hydrographer's disproval of Shoreline Feature 1.13 (DP1103_173_947, from 1103_Echosounder_DP/DP_1103_173 on day 2004-173), a charted dangerous rock in position 55° 17' 14.46" N 160° 26' 01.33" W NAD83. The area surveyed was covered solely with single beam data in a somewhat abbreviated star search with radius averaging approximately 35m, marking a point at a depth of 10.06m at the presumed location of the rock. Additionally, the shoreline report specifies that data coverage was sparse due to the presence of kelp and recommends further investigation. Finally, at a distance of about 20m from the marked position of the dangerous rock, the single beam data clearly exhibit shoaling to the range of 5.7m. I believe the evidence of shoaling should have been further developed. Lacking that, I recommend that the charted dangerous rock be retained.

I have performed the following additional processing of this survey in conjunction with this evaluation:

- I rejected the pings from launch 1016, line 065_2355 representing the blow-out and loss of heading data using Attitude Editor.
- I applied approved smooth tides, re-merged and recomputed both the 5m and 10m resolution surfaces, which was completed on November 15, 2005.

Special attention should be given to:

- Determination of the adequacy of disproval of the charted dangerous rock in position 55° 17’ 14.46” N 160° 26’ 01.33” W NAD83.
- The corrected data and recomputed surfaces have been placed into their respective folders on: N:\OPRP183RA04\Surveys\H11331\Caris (\HDCS_DATA and \Fieldsheets, respectively). The office-generated surfaces will be found in Fieldsheet H11331_QA, with the surfaces containing “_QA_” as part of their name.
- The Preliminary Smooth Sheet following the Refreshing of Stale and Outdated and the Re-insertion of Stale has been placed into the folder: N:\OPRP183RA04\Surveys\H11331\Smooth_Sheet\Preliminary

To improve the quality of future survey submissions the following recommendations are made:

- Recommend comparison of the vessel configuration files to the corresponding data in the DAPR prior to submission of the newer document with the express purpose of ensuring that specific changes in the data between the two documents are clearly and fully addressed in the Descriptive Report.

Final Recommendations:

- The survey should be accepted.
- The survey should supersede the existing data in their common areas with the exception that charted dangerous rock in position 55° 17’ 14.46” N 160° 26’ 01.33” W NAD83 should not be removed.
- This survey should be given a relatively high priority because of the notably shoaler depths observed in the multi-beam data by both the Hydrographer and reviewer. The differences between charted depths and those found during this survey are probably due to the combination of advanced positioning and sounding technology and increased bottom coverage, as identified in the Descriptive Report, plus the relatively complex morphology of the sea bottom in the survey area.

Reviewed and approved: _____ Date: _____

David Sinson
Acting Hydrographic Team Leader, PHB

H11331_Shoreline_Report

Registry Number: H11331

State: Alaska

Locality: Shumagin Islands

Sub-locality: Southeast Entrance of Popof Strait

Project Number: OPR-P183-RA-04

Survey Dates: 06/20/2004 - 07/14/2004

Charts Affected

Number	Version	Date	Scale
16553	4th Ed.	03/01/2004	1:80000
16540	11th Ed.	03/04/1989	1:300000
16011	36th Ed.	08/01/2004	1:1023188
16006	33rd Ed.	12/23/2000	1:1534076
500	8th Ed.	06/01/2003	1:3500000
530	30th Ed.	03/23/2002	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	1103_172_590	Rock	2.93 m	055° 15' 10.463" N	160° 20' 47.329" W	---
1.2	1103_173_711	Sounding	12.57 m	055° 16' 20.220" N	160° 22' 58.188" W	---
1.3	1103_173_733	Sounding	8.16 m	055° 16' 39.256" N	160° 23' 20.926" W	---
1.4	1103_173_765	Rock	4.73 m	055° 17' 03.083" N	160° 23' 36.711" W	---
1.5	1103_173_839	Sounding	20.59 m	055° 16' 50.213" N	160° 24' 55.953" W	---
1.6	1103_173_866	Sounding	14.37 m	055° 16' 39.319" N	160° 25' 19.651" W	---
1.7	1103_173_890	Sounding	13.58 m	055° 17' 06.046" N	160° 25' 48.061" W	---
1.8	1103_173_903	Rock	27.81 m	055° 16' 55.669" N	160° 25' 48.849" W	---
1.9	1103_173_909	Rock	5.58 m	055° 16' 57.692" N	160° 25' 45.988" W	---
1.10	1103_173_912	Rock	5.57 m	055° 16' 59.132" N	160° 25' 41.065" W	---
1.11	1103_173_917	Rock	2.97 m	055° 16' 55.827" N	160° 25' 32.713" W	---
1.12	1103_173_925	Rock	13.27 m	055° 16' 49.995" N	160° 25' 35.292" W	---

Generated by Pydro v6.4.9 on Wed Dec 19 17:52:34 2007 [UTC]

1.13	1103_173_947	Sounding	10.05 m	055° 17' 14.650" N	160° 25' 59.890" W	---
1.14	1103_173_778	Rock	-0.32 m	055° 17' 00.026" N	160° 23' 23.317" W	---
1.15	1103_173_809	Rock	-0.62 m	055° 17' 16.340" N	160° 24' 36.984" W	---
1.16	1103_173_810	Rock	-1.11 m	055° 17' 16.106" N	160° 24' 31.767" W	---
1.17	1103_173_842	Rock	-0.31 m	055° 17' 02.126" N	160° 25' 04.535" W	---
1.18	1103_173_843	Rock	4.20 m	055° 17' 00.935" N	160° 25' 03.878" W	---
1.19	1103_173_897	Rock	-1.31 m	055° 16' 55.083" N	160° 25' 45.077" W	---
1.20	1103_173_938	Rock	-1.06 m	055° 17' 08.234" N	160° 26' 03.832" W	---
1.21	1103_173_978	Rock	0.25 m	055° 17' 37.037" N	160° 26' 04.506" W	---
1.22	1103_173_1026	Rock	0.07 m	055° 17' 26.632" N	160° 27' 31.213" W	---
1.23	1103_173_1027	Rock	-0.04 m	055° 17' 32.994" N	160° 27' 09.621" W	---
1.24	1101_196_878	Sounding	-1.56 m	055° 17' 43.358" N	160° 27' 01.012" W	---
1.25	1101_196_884	Sounding	4.71 m	055° 17' 40.811" N	160° 26' 09.015" W	---
1.26	1101_196_889	Rock	25.82 m	055° 17' 09.754" N	160° 26' 09.611" W	---
1.27	1101_196_908	Sounding	4.02 m	055° 16' 32.687" N	160° 23' 46.826" W	---

1 - New Features

1.1) 1103_172_590

Survey Summary

Survey Position:	055° 15' 10.463" N, 160° 20' 47.329" W
Least Depth:	2.93 m
Timestamp:	2004-172.20:06:26.000 (06/20/2004)
DP Dataset:	h11331 / 1103_nonechosounder_dp / 2004-172 / dp_1103_172
Profile/Beam:	1/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

52.Surveyed 16 [14] RK in posn: 55°15'10.40" N 160°20'47.29" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Low amplitude pulses. Recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-172/dp_1103_172	1/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

1 ½fm (16540_1, 16011_1, 16006_1, 530_1)

1fm 3ft (16553_1)

2.9m (500_1, 50_1)

Office Notes

Concur with clarification. The submerged rock was verified and is shown as a 1.6 fm RK on the smooth sheet. This feature was also found on survey H11280 and shown as a 1 fm 3 ft RK on Hdrawing 16553h11.280. Chart as shown on 16553h11.280.

1.2) 1103_173_711

Survey Summary

Survey Position:	055° 16' 20.220" N, 160° 22' 58.188" W
Least Depth:	12.57 m
Timestamp:	2004-173.17:22:56.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	1/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

1103_173_711 LIDAR RK DISPROVAL

STAR PATTERN SEARCH 10MIN, 50M RADIUS VIS 2M. AVG DEPTH 15M, IRREGULAR BOTTOM.

41.Surveyed 53 [52] RK in posn: 55°16'20.72" N 160°22'58.78" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Kelp. Recommend check with boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	1/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Office Notes

Concur with clarification. Chart vicinity according to the smooth sheet.

1.3) 1103_173_733

Survey Summary

Survey Position:	055° 16' 39.256" N, 160° 23' 20.926" W
Least Depth:	8.16 m
Timestamp:	2004-173.17:38:27.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	2/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

1103_173_733 LIDAR RK DISPROVAL

STAR PATTERN SEARCH 10MIN, AVG DEPTH 15M, VIS 2M KELP IN AREA. LIDAR POSN IS HP OF AREA. LATER COVERED WITH 100% SWMB, AVG DEPTH 13M

38.Surveyed 39 [35] RK in posn: 55°16'39.87" N 160°23'21.41" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Recommend investigate with boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	2/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Office Notes

Concur with clarification. Chart 4 fm sounding as depicted on the smooth sheet.

1.4) 1103_173_765

Survey Summary

Survey Position:	055° 17' 03.083" N, 160° 23' 36.711" W
Least Depth:	4.73 m
Timestamp:	2004-173.17:57:40.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	3/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

32.Surveyed 14 [12] RK in posn: 55°17'03.73" N 160°23'36.89" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Note other surveyed rocks in the vicinity, area of sparse data recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	3/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

2 ½fm (16540_1, 16011_1, 16006_1, 530_1)

2fm 3ft (16553_1)

4.7m (500_1, 50_1)

Office Notes

Concur with clarification. Chart 1 fm 2 ft sounding from this survey with Rk note from LIDAR as depicted on the smooth sheet.

1.5) 1103_173_839

Survey Summary

Survey Position:	055° 16' 50.213" N, 160° 24' 55.953" W
Least Depth:	20.59 m
Timestamp:	2004-173.18:45:18.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	4/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) RK DISPROVAL

STAR PATTERN SEARCH 50M RADIUS, AVG DEPTH 20M,WATER VIS

30.Charted dangerous rock in posn: 55°16'50.38" N 160°24'57.72" W NAD83 not found this survey, area covered with 4x4 meter spot spacing at 200% lidar coverage. Recommend removing charted dangerous rock.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	4/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

11fm (16540_1, 16011_1, 16006_1, 530_1)

11fm (16553_1)

20.6m (500_1, 50_1)

Office Notes

Concur.

1.6) 1103_173_866

Survey Summary

Survey Position:	055° 16' 39.319" N, 160° 25' 19.651" W
Least Depth:	14.37 m
Timestamp:	2004-173.19:18:20.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	5/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

1103_137_866 LIDAR RK DISPROVAL

5 MIN SEARCH, 50M RADIUS. DEPTH IRREGULAR, VARYING FROM 15-30M. LIDAR POSN HP OF SEARCH AREA. LATER COVERED WITH 100% SWMB, AVG DEPTH 27M

o.In the vicinity of 55°16'40" N 160°25'02" W NAD83 a number of surveyed rocks in sparse data and kelp were surveyed.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	5/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Office Notes

Concur. The LIDAR rock was not shown on the final version of the H11147e smooth sheet. Chart area according to the H11331 smooth sheet.

1.7) 1103_173_890

Survey Summary

Survey Position:	055° 17' 06.046" N, 160° 25' 48.061" W
Least Depth:	13.58 m
Timestamp:	2004-173.19:32:05.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	6/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) RK DISPROVAL

STAR PATTERN SEARCH 50M RADIUS, AVG DEPTH 16M, 2M VIS.

12.Recommend remove charted dangerous rock symbol in posn: 55°17'06.06" N 160°25'49.74" W NAD83. Surveyed (04) [02] Ú in posn: 55°17'09.99" N 160°25'44.42" W NAD83.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	6/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

7 ¼fm (16540_1, 16011_1, 16006_1, 530_1)

7fm 2ft (16553_1)

13.6m (500_1, 50_1)

Office Notes

Concur. Chart vicinity as shown on the smooth sheet.

1.8) 1103_173_903

Survey Summary

Survey Position:	055° 16' 55.669" N, 160° 25' 48.849" W
Least Depth:	27.81 m
Timestamp:	2004-173.19:49:44.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	7/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) RK DISPROVAL

STAR PATTERN SEARCH 5MIN. AVG DEPTH 27M, 2M VIS, LATER COVERED WITH 100% SWMB, AVG DEPTH 24M

20.Charted dangerous rock symbol, danger curve and blue tint in posn: 55°16'55.76" N 160°25'50.58" W NAD83, surveyed (1) Ú in posn: 55°16'54.93" N 160°25'44.93" W NAD83. Area of sparse data recommend, further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	7/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

15fm (16540_1, 16011_1, 16006_1, 530_1)

15fm (16553_1)

28m (500_1, 50_1)

Office Notes

Concur. Delete charted rock and danger curve and chart area as shown on the smooth sheet.

1.9) 1103_173_909

Survey Summary

Survey Position: 055° 16' 57.692" N, 160° 25' 45.988" W

Least Depth: 5.58 m

Timestamp: 2004-173.19:57:06.000 (06/21/2004)

DP Dataset: h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 8/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

15.Surveyed 32 [31] RK in posn: 55°16'58.38" N 160°25'46.38" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Area of sparse data, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	8/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

3fm (16540_1, 16011_1, 16006_1, 530_1)

3fm 0ft (16553_1)

5.6m (500_1, 50_1)

Office Notes

Concur. Chart 2 fm 5 ft sounding from this survey with Rk note from LIDAR as shown on the smooth sheet.

1.10) 1103_173_912

Survey Summary

Survey Position: 055° 16' 59.132" N, 160° 25' 41.065" W

Least Depth: 5.57 m

Timestamp: 2004-173.20:02:23.000 (06/21/2004)

DP Dataset: h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 9/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

16.Surveyed 32 [31] RK in posn: 55°16'59.73" N 160°25'41.86" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Area of sparse data, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	9/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

3fm (16540_1, 16011_1, 16006_1, 530_1)

3fm 0ft (16553_1)

5.5m (500_1, 50_1)

Office Notes

Concur with clarification. Due to chart scale, the 3 fm rock is not shown on the Hdrawing. Chart area as depicted on the Hdrawing.

1.11) 1103_173_917

Survey Summary

Survey Position: 055° 16' 55.827" N, 160° 25' 32.713" W

Least Depth: 2.97 m

Timestamp: 2004-173.20:08:40.000 (06/21/2004)

DP Dataset: h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 10/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

21.Surveyed 19 [15] RK in posn: 55°16'56.38" N 160°25'32.92" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	10/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

1 ½fm (16540_1, 16011_1, 16006_1, 530_1)

1fm 3ft (16553_1)

2.9m (500_1, 50_1)

Office Notes

Concur. Chart 1 fm 3 ft sounding from this survey with Rk note from LIDAR as shown on the smooth sheet.

1.12) 1103_173_925

Survey Summary

Survey Position:	055° 16' 49.995" N, 160° 25' 35.292" W
Least Depth:	13.27 m
Timestamp:	2004-173.20:13:46.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	11/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR SOUNDING VERIFIED

HP IN AREA OF DEPTHS FROM 25-30M.

22.Surveyed 73 [72] RK in posn: 55°16'50.50" N 160°25'35.99" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Area of sparse data - kelp. Recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	11/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

7 ¼fm (16540_1, 16011_1, 16006_1, 530_1)

7fm 1ft (16553_1)

13.2m (500_1, 50_1)

Office Notes

Concur. Chart 7 fm sounding as shown on the smooth sheet.

1.13) 1103_173_947

Survey Summary

Survey Position:	055° 17' 14.650" N, 160° 25' 59.890" W
Least Depth:	10.05 m
Timestamp:	2004-173.20:30:39.000 (06/21/2004)
DP Dataset:	h11331 / 1103_echosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	12/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) RK DISPROVAL

STAR PATTERN SEARCH 10MIN, 50M RADIUS, AVG DEPTH 9M, 2M VIS.

9.Charted dangerous rock in posn: 55°17'14.67" N 160°26'01.39" W NAD83; Surveyed 19 [15] RK in posn: 55°17'14.46" N 160°26'01.33" W NAD83. Sparse coverage due to kelp, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_echosounder_dp/2004-173/dp_1103_173	12/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

5 ½fm (16540_1, 16011_1, 16006_1, 530_1)

5fm 3ft (16553_1)

10.0m (500_1, 50_1)

Office Notes

Concur with clarification. Examination of the data during PHB quality control indicated that the rock was not satisfactorily disproved. However, LIDAR data indicates a rock approximately 35-40 meters southeast of the charted rock. Delete dangerous rock at charted position and chart vicinity as shown on the Hdrawing. See Certification Memo and endnotes attached to Descriptive Report for further information.

1.14) 1103_173_778

Survey Summary

Survey Position: 055° 17' 00.026" N, 160° 23' 23.317" W

Least Depth: -0.32 m

Timestamp: 2004-173.18:04:18.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 1/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

MOST SEAWARD ROCK IN CLUSTER OF ROCKS

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	1/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 1ft (16553_1)

-.3m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.15) 1103_173_809

Survey Summary

Survey Position:	055° 17' 16.340" N, 160° 24' 36.984" W
Least Depth:	-0.62 m
Timestamp:	2004-173.18:23:37.000 (06/21/2004)
DP Dataset:	h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173
Profile/Beam:	2/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	2/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 2ft (16553_1)

-.6m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.16) 1103_173_810

Survey Summary

Survey Position: 055° 17' 16.106" N, 160° 24' 31.767" W

Least Depth: -1.11 m

Timestamp: 2004-173.18:29:44.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 3/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	3/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 3ft (16553_1)

-1.1m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.17) 1103_173_842

Survey Summary

Survey Position: 055° 17' 02.126" N, 160° 25' 04.535" W

Least Depth: -0.31 m

Timestamp: 2004-173.18:50:07.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 4/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	4/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 1ft (16553_1)

-.3m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.18) 1103_173_843

Survey Summary

Survey Position: 055° 17' 00.935" N, 160° 25' 03.878" W

Least Depth: 4.20 m

Timestamp: 2004-173.18:52:58.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 5/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR RK VERIFIED

28.Surveyed 15 [13] RK in posn: 55°17'01.08" N 160°25'04.58" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Area of sparse data, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	5/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

2 ¼fm (16540_1, 16011_1, 16006_1, 530_1)

2fm 2ft (16553_1)

4.2m (500_1, 50_1)

Office Notes

Concur with clarification. Due to chart scale, the 1 fm 3 ft Rk is not shown on the Hdrawing. Chart area as shown on the Hdrawing.

1.19) 1103_173_897

Survey Summary

Survey Position: 055° 16' 55.083" N, 160° 25' 45.077" W

Least Depth: -1.31 m

Timestamp: 2004-173.19:42:08.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 6/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW POSITION CHD(16553) RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	6/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 4ft (16553_1)

-1.3m (500_1, 50_1)

Office Notes

Concur. Delete charted rock and chart rock as shown on the smooth sheet.

1.20) 1103_173_938

Survey Summary

Survey Position: 055° 17' 08.234" N, 160° 26' 03.832" W

Least Depth: -1.06 m

Timestamp: 2004-173.20:22:02.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 7/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW POSITION CHD(16553) RK

8.Surveyed 23 [22] RK in posn: 55°17'09.36" N 160°26'02.53" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Low amplitude pulse - kelp, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	7/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 3ft (16553_1)

-1.1m (500_1, 50_1)

Office Notes

Concur. Delete charted rock and chart rock as shown on the smooth sheet.

1.21) 1103_173_978

Survey Summary

Survey Position: 055° 17' 37.037" N, 160° 26' 04.506" W

Least Depth: 0.25 m

Timestamp: 2004-173.20:49:19.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 8/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

5.Surveyed 19 [15] RK in posn: 55°17'38.77" N 160°26'07.27" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage. Low amplitude pulse, recommend further investigation by boat.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	8/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 1ft (16553_1)

.2m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.22) 1103_173_1026

Survey Summary

Survey Position: 055° 17' 26.632" N, 160° 27' 31.213" W

Least Depth: 0.07 m

Timestamp: 2004-173.21:09:55.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 9/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	9/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 0ft (16553_1)

.0m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.23) 1103_173_1027

Survey Summary

Survey Position: 055° 17' 32.994" N, 160° 27' 09.621" W

Least Depth: -0.04 m

Timestamp: 2004-173.21:13:14.000 (06/21/2004)

DP Dataset: h11331 / 1103_nonechosounder_dp / 2004-173 / dp_1103_173

Profile/Beam: 10/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

NEW RK

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1103_nonechosounder_dp/2004-173/dp_1103_173	10/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 0ft (16553_1)

-.1m (500_1, 50_1)

Office Notes

Concur. Chart rock as shown on the smooth sheet.

1.24) 1101_196_878

Survey Summary

Survey Position: 055° 17' 43.358" N, 160° 27' 01.012" W

Least Depth: -1.56 m

Timestamp: 2004-196.16:41:21.000 (07/14/2004)

DP Dataset: h11331 / 1101_nonechosounder_dp / 2004-196 / dp_1101_196

Profile/Beam: 1/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

RK IS N MOST EXT NEW FOUL AREA

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1101_nonechosounder_dp/2004-196/dp_1101_196	1/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 5ft (16553_1)

-1.6m (500_1, 50_1)

Office Notes

Concur. Chart rock and foul area as shown on the smooth sheet and Hdrawing.

1.25) 1101_196_884

Survey Summary

Survey Position: 055° 17' 40.811" N, 160° 26' 09.015" W

Least Depth: 4.71 m

Timestamp: 2004-196.17:38:30.000 (07/14/2004)

DP Dataset: h11331 / 1101_echosounder_dp / 2004-196 / dp_1101_196

Profile/Beam: 1/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) ISLET DISPROVAL

4.Recommend moving charted islet in posn 55°17'41.00" N 160°26'09.42" W NAD83 to surveyed posn 55°17'39.63" N 160°26'02.24" W NAD83. Height of islet > 33 feet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1101_echosounder_dp/2004-196/dp_1101_196	1/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

2 ½fm (16540_1, 16011_1, 16006_1, 530_1)

2fm 3ft (16553_1)

4.7m (500_1, 50_1)

Office Notes

Concur. Chart according to the smooth sheet.

1.26) 1101_196_889

Survey Summary

Survey Position: 055° 17' 09.754" N, 160° 26' 09.611" W

Least Depth: 25.82 m

Timestamp: 2004-196.17:52:44.000 (07/14/2004)

DP Dataset: h11331 / 1101_echosounder_dp / 2004-196 / dp_1101_196

Profile/Beam: 2/1

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

CHD(16553) RK DISPROVAL

100% SWMB

10.Replace charted dangerous rock and danger line in posn: 55°17'09.66" N 160°26'11.03" W NAD83 with 56 [54] RK in posn: 55°17'09.86" N 160°26'13.41" W NAD83.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1101_echosounder_dp/2004-196/dp_1101_196	2/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

14fm (16540_1, 16011_1, 16006_1, 530_1)

14fm (16553_1)

26m (500_1, 50_1)

Office Notes

Concur with clarification. Delete charted rock and danger line and chart new rock as shown on the smooth sheet.

1.27) 1101_196_908

Survey Summary

Survey Position:	055° 16' 32.687" N, 160° 23' 46.826" W
Least Depth:	4.02 m
Timestamp:	2004-196.18:23:22.000 (07/14/2004)
DP Dataset:	h11331 / 1101_echosounder_dp / 2004-196 / dp_1101_196
Profile/Beam:	3/1
Charts Affected:	16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

LIDAR SOUNDING VERIFIED

35.Surveyed 17 [14] RK in posn: 55°16'33.02" N 160°23'46.89" W NAD83, area covered with 4x4 meter spot spacing at 200% lidar coverage, kelp. Recommend further investigation by boat. See item 6, Danger to Navigation Report H11147E in Appendix I.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11331/1101_echosounder_dp/2004-196/dp_1101_196	3/1	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

2 ¼fm (16540_1, 16011_1, 16006_1, 530_1)

2fm 1ft (16553_1)

4.0m (500_1, 50_1)

Office Notes

Concur. Retain 1 fm 4 ft sounding with Rks notation as charted.

APPROVAL SHEET
H11331

Initial Approvals:

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

Bruce A. Olmstead Date: 12/19/2007

Bruce A. Olmstead
Cartographic Team
Pacific Hydrographic Branch

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

Date: 12/21/07

David O. Neander
CDR, NOAA
Chief, Pacific Hydrographic Branch

Kyle R. Ward
AWOIS and SURF check
2008.01.09 09:47:32 -05'00'

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11331

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16553	9/12/07	B. Taylor	Full Part ~~Before After Marine Center Approval Signed Via~~ Application of
			~~Drawing No.~~ Soundings and feauters from
			smooth sheet. Partial application
			~~Full Part Before After Marine Center Approval Signed Via~~ of soundings
			~~Drawing No.~~ and features from LIDAR
			survey H11147E combined on the
			~~Full Part Before After Marine Center Approval Signed Via~~ same Hdrawing
			~~Drawing No.~~ with H11331. All items from
			H11147E have been placed on Level 7
			~~Full Part Before After Marine Center Approval Signed Via~~ of the Hdrawing.
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.