

H11138

NOAA FORM 78-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-20-01-02

Registry No. H-11138

LOCALITY

State Alaska

General Locality SW Alaska Peninsula & Semidi Islands

Sublocality Semidi Islands - Vicinity of Aghiyuk Is.

2001

CHIEF OF PARTY

Captain James C. Gardner, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H-11138

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-20-01-02

State AlaskaGeneral Locality Southwest Alaska Peninsula and Semidi IslandsSublocality Semidi Islands - Vicinity of Aghiyuk IslandScale 1:20,000Date of Survey 6/6/2002 - 7/29/2002Instructions Date 3/16/2002Project No. OPR-P182-RA-02Vessel NOAA Ship Rainier(2120), RA-2(2122), RA-3(2123), RA-4(2124)
RA-5(2125), RA-6(2126)Chief of Party Captain James C. Gardner, NOAASurveyed by Rainier PersonnelSoundings taken by echo sounder, hand lead, pole Knudsen 320M, Seabeam/Elac 1180,
Seabeam/Elac 1050D MKII, Reson Seabats 8101 & 8125Graphic record scaled by Rainier PersonnelGraphic record checked by Rainier PersonnelEvaluation by G. Nelson Automated plot by HP Design Jet 750CVerification by G. NelsonSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC. Revisions and end notes in red
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 H11138

Project OPR-P182-RA
Southwest Alaska Peninsula, Alaska
Scale 1:20,000
June - July 2002
NOAA Ship RAINIER
Chief of Party: Captain James C. Gardner, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P182-RA, dated May 16, 2002, and the Draft Standing Project Instructions dated March 21, 2001. The survey area is located in the North Pacific Ocean, along the southeast coast of the Alaska Peninsula, surrounding Aghiyuk Island, the northernmost island of the Semidi Islands. This survey corresponds to sheet “BE” in the sheet layout provided with the Letter Instructions.¹

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters up to a 5 meter depth² overlap with LIDAR soundings (H11064) as specified in the Hydrographic Survey Letter Instructions, Section 6.8.1.³ Vertical-beam echo sounder (VBES) data were acquired during limited verification with LIDAR (H11064) shoreline.⁴

Data acquisition was conducted from June 6 to July 29, 2002 (DN 157 to 210).

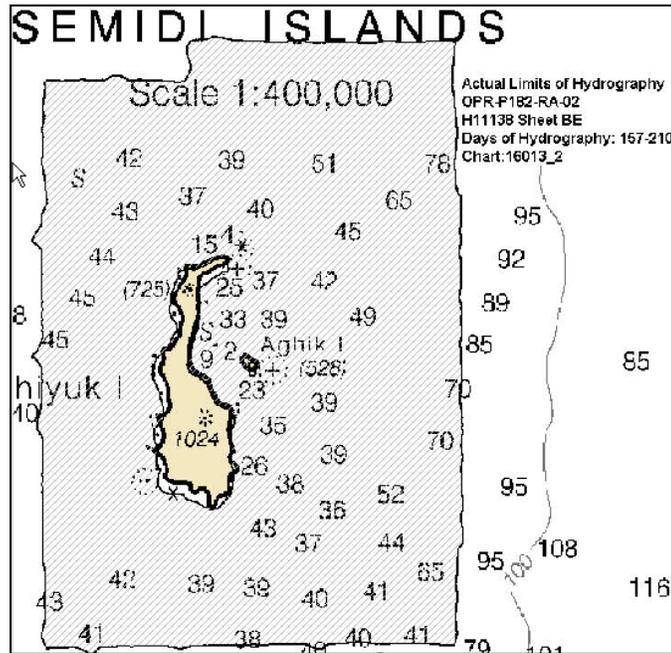


Figure 1. H11138 Survey Limits

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-P182-RA-02 Data Acquisition and Processing Report*,⁵ submitted under separate cover. 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 (vessel numbers 2120, 2122, 2123, 2124, 2125, and 2126). Vessels 2120, 2123, 2124, 2125 and 2126 were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessel 2122 was used to acquire vertical-beam echo soundings (VBES) and detached positions (DPs) for shoreline verification. No unusual vessel configurations or problems were encountered during this survey.⁶

B2. Quality Control

Crosslines

Shallow-Water Multibeam (SWMB) crosslines totaled 57.8 nautical miles, comprising 6.1% of SWMB hydrography. Three separate quality control reports, one consisting of data gathered using the SeaBeam (2120 and 2126), one for the Reson 8101 (2123 and 2125) data and the final report consisted of data gathered using the Reson 8125 (2124). The Quality Control Reports (CARIS HIPS) for the checkline file for the three systems data averaged 98.7787%, 94.1607% and 99.7340% respectively with a depth tolerance factor of 0.023. Both the data collected using the SeaBeam (2120 and 2126) and the data collected using Reson 8125 (2124) conform to International Hydrographic Organization Order 2 specifications detailed in Special Publication S-44, Edition 4, as well as NOS Hydrographic Surveys Specifications and Deliverables Manual, however, data collected using the Reson 8101 (2123 and 2125) just misses the specifications (95%) most likely because of the high variability of the area surveyed by the 8101.⁷ See Appendix V⁸ for the detailed report.

Junctions

The following contemporary surveys junction with H11138:

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H10554	1:40,000	1994	Northwest
H11062	1:40,000	2001	West
H11064	1:10,000	2001	Around the Islands (LIDAR)
H11069	1:40,000	2001	East
H11139	1:20,000	2002	South

Survey H10554 junctions were not compared as information was not provided in the project CD.⁹

Survey H11062 junctions well with this survey, a cursory comparison indicates that 99.6% of junction has differences less than 2.0 fathoms with a maximum difference of 3.6 fathoms.¹⁰

Survey H11064 (LIDAR) junctions fairly well with this survey. A cursory comparison indicates that approximately 80% of the junction has differences of less than 2.0 fathoms. In some instances, there were areas with larger differences, up to 5.0 fathoms. The hydrographer believes this is due to the steep and irregular bathymetry near shore.¹¹

Survey H11069 junctions well with this survey, a cursory comparison indicates that 98.9% of the junction has differences less than 2.0 fathoms with a maximum difference of 3.4 fathoms.¹²

Survey H11139 junctions well with this survey.¹³

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.¹⁴

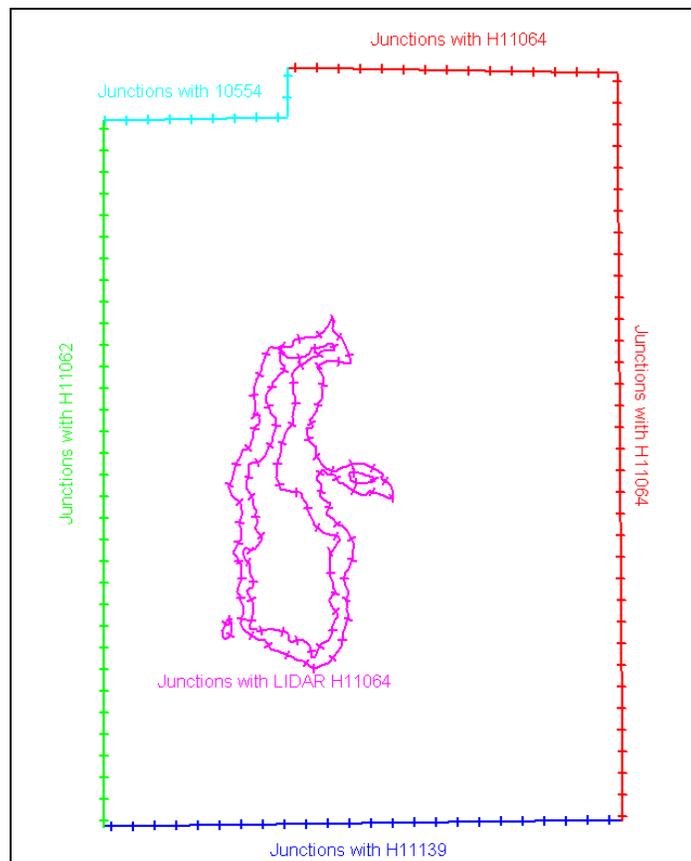


Figure 2. H11138 Junction Surveys

Data Quality Factors

After correction for sound velocity in HDCS, some lines still exhibited the characteristic "smiles" and "frowns" indicative of inaccurate sound velocity corrections. To correct these sound velocity problems, correctors were often applied based on the geographic position of the cast, rather than the time the cast was collected. Such application was performed on a line-by-line basis only on individual lines that exhibited profound sound velocity problems. Despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally, and to correct for sound velocity errors in post processing through methods previously mentioned, sound velocity errors were still noticeable in several regions mainly deeper outer regions of the sheet limits which consisted of ELAC data.¹⁵

B3. Data Reduction

Data reduction procedures for survey H11138 conform to those detailed in the OPR-P182-RA-02 Data Acquisition and Processing Report with the exception of vessel 2126.

The firmware on the TSS inertial motion sensor was changed over the 2001/2002 winter inport and the sign was reversed on the analog input. This affected only the ELAC 1180 data on 2126. The heave value for the ELAC 1180 data was corrected in post processing through the Pydro Utility program "Postacquisitiontools".

To minimize the effect of characteristic "smiles" and "frowns" for data obtained by Reson 8125 (2124), all lines were filtered to 58° instead of the normal 60°.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11138 can be found in the *OPR-P182-RA-02 Horizontal and Vertical Control Report*,¹⁶ submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

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 Kodiak (313 kHz) and Cold Bay (289 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P182-RA-02 Horizontal and Vertical Control Report*.

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 H11138.

RAINIER personnel installed Sutron 8210 “bubbler” tide gauges at the following subordinate stations to provide information for N/OPS1 to determine time and height correctors in accordance with the Project Instructions:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Chankliut Island	945-8849	30-day	June 6, 2002	July 30, 2002

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 P182RA2002CORP.zdf.¹⁷

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 H11138 was forwarded to N/OPS1 on August 2, 2002 in accordance with FPM 4.8. A copy of the request is included in Appendix IV.¹⁸

D. RESULTS AND RECOMMENDATIONS

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

No AWOIS items are located on sheet H11138.¹⁹

D.2 Chart Comparison

Survey H11138 was compared with charts 16013_1 (28th Ed.; April 14, 2001 1:969,761), and 16013_2 (28th Ed.; April 14, 2001, 1:400,000).²⁰

Chart 16013_1

Depths from survey H11138 generally agreed within 0-5 fathoms of the 12 depths indicated in the survey limits for chart 16013_1. In one instance, the 53 fathom charted depth (Northeast corner of survey limit) is approximately 10-15 fathoms shoaler than the surveyed depth. In addition, a shift in the shoreline up to 300m was noted. This can be attributed to the small scale of the chart and the possibility that original positioning methods used were below the accuracy standards used in modern surveys.²¹

Chart 16013_2

Depths from survey H11138 generally agreed within 0-5 fathoms of the depths on chart 16013_2, with a small percentage of charted depths shoaler than those obtained from survey H11138. In one instance, the 49 fathom charted depth (Northeast of Aghik Island) was deeper

than that obtained for survey H11138. The four charted soundings 25 fathoms, 33 fathoms, 12 fathoms and 9 fathoms (Eastern shore of Aghiyuk Island) all have equivalent soundings obtained from survey H11138. In addition, a shift in the shoreline from 5m up to 500m was noted. This can be attributed to the small scale of the chart and the possibility that original positioning methods used were below the accuracy standards used in modern surveys.²²

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.²³

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.²⁴

D.3 Shoreline

Shoreline Source

No source shoreline was provided, however, shoreline from junction survey H11064 (LIDAR) provided rocks, MHW and MLLW lines. Much of the shoreline was too rough to safely approach to conduct traditional shoreline verification. RAINIER conducted cursory investigation of all the shoreline and traditional limited shoreline verification in just a few small areas safe for nearshore navigation.

Shoreline Verification

Shoreline verification was conducted near predicted low water. Detached positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms, and processed in Pydro. These indicate revisions to features and 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

Negative LIDAR soundings offshore were digitized into LIDAR rocks following field verification. Any additional unusually shoal LIDAR soundings offshore were investigated and digitized into LIDAR rocks if warranted following field verification.

A detailed Detached Position and Bottom Sample plot, in both paper copy and MapInfo format, is provided showing all detached positions with notes relating to each feature. LIDAR MHW shoreline was verified and did not require revision. MapInfo table H11138_Shoreline is shown in black on the Detached Position and Bottom Sample Plot. LIDAR MLLW line was typically digitized offshore of nearshore rocks and islets when the actual MLLW was between the rocks and MHW. A few changes were made to the MLLW as an example but it appears this is a systemic problem with the MLLW contour created with automated software. Changes to the LIDAR MLLW shoreline are displayed in pink on the "H11138_ShorelineUpdates" Mapinfo table.²⁶

Charted Features

100% multibeam coverage disproved most of the off shore charted (16013_2) islets (ink blobs), while inshore charted (16013_2) islets (ink blobs) if corrected for poor geographic registration and scale were all identifiable LIDAR shoreline features and noted on the Detached Position and Bottom Sample Plot.²⁷

Recommendations

The LIDAR MHW line was found to be very accurate and no changes to the MHWL are required. However, the Hydrographer found offshore rocks from the LIDAR survey were frequently digitized at the wrong height and the H11064 (LIDAR) survey occasionally digitized on kelp.²⁸

The Hydrographer also noted that the MLLW on H11064 (LIDAR) survey was not accurately depicted around nearshore rocks.²⁹

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample plot and final sounding plot supersede and complement shoreline information compiled on the H11064 (LIDAR) and charts as noted.³⁰ In addition, field notes made by the Hydrographer, including verification of H11064 (LIDAR) features are submitted in the digital MapInfo file "H11138_ShorelineNotes."

D.4 Dangers to Navigation

No dangers to navigation were found within the limits of H11138.³¹

D.5 Aids to Navigation

No aids to navigation (ATONs) are located within the limits of H11138.³²

D.6 Miscellaneous

Due to time constraints on the project, Bottom Samples were not collected.³³

E. APPROVAL

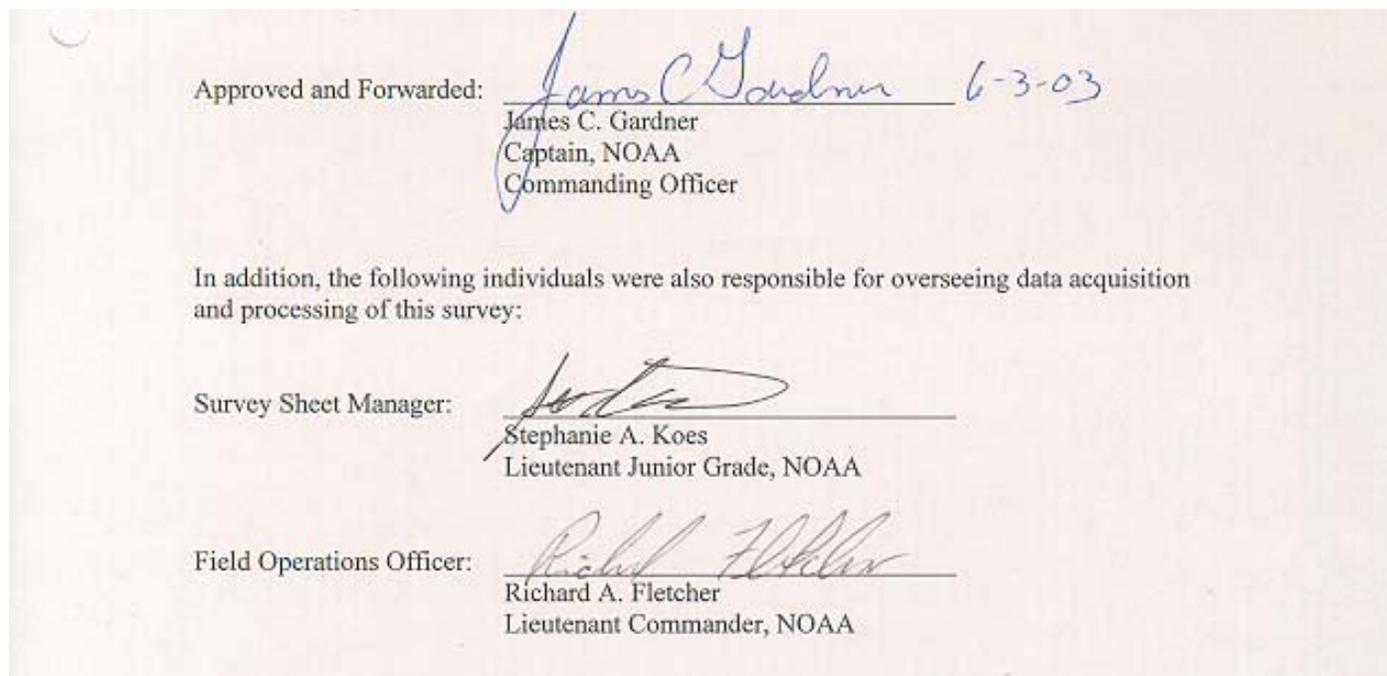
As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

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 H11138 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.³⁴

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>
Data Acquisition and Processing Report for OPR-P182-RA-02	2 August 2002	N/CS34
Horizontal and Vertical Control Report for OPR-P182-RA-02	12 February 2003	N/CS34
Tides and Water Levels Package for OPR-P182-RA-02	21 August 2002	N/OPS1
Coast Pilot Report for OPR-P182-RA-02	TBD	N/CS26



Revisions Compiled During Office Processing and Certification

¹ Concur.

² ~~Strikethrough in waters up to a 5 meter depth overlap with LIDAR soundings (H11064) as specified in the Hydrographic Survey Letter Instructions, Section 6.8.1.,~~ replace with “. The junction with H11064 was surveyed to ensure at least 5 meters depth overlap with LIDAR soundings as specified in the Hydrographic Survey Letter Instructions, Section 6.8.1.”

³ Survey H11064 is a LIDAR survey that encompassed the Semidis Island, Lighthouse Rocks, Atkulik Island, Kak Island, Chankliut Island, and the south end of Nakchamik Island. Data from H11064 was reviewed and accepted by PHB. Data from H11064 will be compiled to the smooth sheets of the junctioning surveys. Survey H11064 will be submitted at a later date.

⁴ The data from H11064 was incomplete when submitted to the Rainier for use in H11138 shoreline verification. Consequently, some islets in H11064 were not shown on the Rainier shoreline data and were not discussed. The islets were inshore of the limits of hydrography and were not disproved. They have been retained on the smoothsheet and Hdrawing.

⁵ Filed with the project records.

⁶ Concur.

⁷ Concur with clarification. During office review of the survey by a PHB hydrographer, it was the opinion of the hydrographer that the survey conforms to International Hydrographic Organization Order #2. This was determined by qualitative analysis of the data. The hydrographer’s memo is attached to this report. Considering chart scale and the lack of contemporary survey data in the survey area, the evaluator recommends charting the area as shown on the Hdrawing.

⁸ Concur. Appendix V is filed with the hydrographic data.

⁹ Concur.

¹⁰ Concur.

¹¹ Concur with clarification. LIDAR soundings from H11064 were placed on Level 19 of the smooth sheet to complete coverage of near-shore areas. Since LIDAR may be affected by turbidity, it is currently assumed that multibeam soundings become increasingly more accurate than LIDAR with increasing depth. Where there were differences between multibeam and LIDAR soundings in the survey, generally the multibeam soundings are shoaler.

¹² Concur.

¹³ Concur.

¹⁴ The junction with surveys H11062, H10554, H11069, and H11139 are complete; soundings and depth curves are in good agreement within the common area. A “Joins” note has been shown on the smooth sheet where applicable.

¹⁵ The data have been reviewed and are acceptable for charting.

¹⁶ Filed with the project records.

¹⁷ Tide note is appended to this report.

¹⁸ File with the hydrographic records.

¹⁹ Concur.

²⁰ H11139 was compared with charts 16013 (29th Ed.; Nov1, 2003 1:969,761) and 16013 (29th Ed.; Nov. 1, 2003, 1:400,000) during processing at PHB.

²¹ Concur.

²² Concur.

²³ Concur.

²⁴ Concur. Office review and comparison after application of smooth tides agreed with the hydrographer's findings. See endnotes 21 and 22.

²⁵ Filed with the hydrographic records.

²⁶ See smooth sheet for the depiction of the MHWL and MLLW.

²⁷ Concur.

²⁸ Concur with clarification. The MLLW line is not depicted on the Hdrawing due to scale.

²⁹ Concur. Chart according to the smooth sheet.

³⁰ Concur.

³¹ Concur.

³² Concur.

³³ Concur. Chart retained bottom samples from 16013 and other sources.

³⁴ Concur



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 4, 2002

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P182-RA-2002
HYDROGRAPHIC SHEET: H11138

LOCALITY: Semidi Islands, AK
TIME PERIOD: June 6 - July 29, 2002

TIDE STATION USED: 945-8849 Chankliut Island, AK
Lat. 56° 08.7'N Lon. 158° 06.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.368 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SWA155, SWA156 & SWA157.

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.

Thomas V. Hero 12/4/02

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for **OPR-P182-RA-2002, Sheet H11138.**

Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes
 Longitude West),
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone SWA155	945-8849	-12	1.11
-157.107648 56.445969			
-157.241858 56.370111			
-157.032765 56.306289			
-156.730153 56.246814			
-156.366023 56.203353			
-156.30685 56.201619			
-156.169669 56.312115			
-156.333004 56.319101			
-156.704922 56.352554			
-156.937857 56.395634			
-157.107648 56.445969			
Zone SWA156	945-8849	-12	1.08
-157.241858 56.370111			
-157.271849 56.353122			
-157.463905 56.279948			
-157.095579 56.174362			
-156.535086 56.0872			
-156.453487 56.083477			
-156.368298 56.151019			
-156.30685 56.201619			
-156.366023 56.203353			
-156.730153 56.246814			
-157.032765 56.306289			
-157.241858 56.370111			
Zone SWA157	945-8849	-12	1.05
-156.453487 56.083477			
-156.535086 56.0872			
-157.095579 56.174362			
-157.463905 56.279948			

-157.70266 56.188715
-157.561336 56.143358
-157.172021 56.057531
-156.607631 55.969471
-156.573673 55.986595
-156.453487 56.083477

Subject: [Fwd: H11138]
From: "Kim Sampadian" <Kim.Sampadian@noaa.gov>
Date: Fri, 12 Aug 2005 08:20:58 -0700
To: Gary Nelson <Gary.Nelson@noaa.gov>
CC: Don Haines <Don.Haines@noaa.gov>

Gary,

Below is Shyla's recommendation for H11138 after reviewing the data.

Kim

----- Original Message -----

Subject:H11138
Date:Thu, 11 Aug 2005 17:25:27 -0700
From:Shyla Allen <shyla.allen@noaa.gov>
To:Kim Sampadian <Kim.Sampadian@noaa.gov>

I have reviewed H11138 for data quality. I saved a session named H11138_Office which includes depths and subset tiles. I reviewed areas less than 100m (usually 40 or less). There are numerous issues with the data quality for this survey. There are systematic problems visible in the 2m office generated DTM. Further inspection of these areas showed data agreement to be just within IHO Order 1 tolerance. There are also areas that contained noise, sound velocity errors, and timing offset.

Based on my observations this survey meets IHO Order 1 error tolerances in only 50% of the observed crossings. I agree with the hydrographer that this survey should be considered to meet IHO Order 2 error tolerances.

Shyla

APPROVAL SHEET
H11138

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.



Russ Davies
Cartographic Team
Pacific Hydrographic Branch

Date: 8/18/05

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.



Donald W. Haines, *COR/NOAA*
LCDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 24 Aug 2005

