

H11008

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-10-09-02

Registry No. H-11008

LOCALITY

State Alaska

General Locality Southwest Prince William Sound

Sublocality Southwest Coast of Montague Island

2002

CHIEF OF PARTY

..... CAPT James C Gardner, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		REGISTER NO. H11008
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-10-09-02
State <u>Alaska</u>				
General Locality <u>Southwest Prince William Sound</u>				
Sublocality <u>Southwest Coast of Montague Island - San Juan Bay and Vicinity</u>				
Scale <u>1:10,000</u>		Date of Survey <u>7/9/2002 - 9/7/2002</u>		
Instructions Date <u>7/9/2002</u>		Project No. <u>OPR-P139-RA-02</u>		
Vessel <u>NOAA Ship RAINIER launches 2121, 2122, 2123, 2124, 2125, 2126</u>				
Chief of Party <u>CAPT. J.C. Gardner, NOAA</u>				
Surveyed by <u>RAINIER Personnel</u>				
Soundings taken by echo sounder <u>Knudsen 320M, Reson SeaBat 8101, 8125, Seabeam/Elac 1180</u>				
Graphic record scaled by <u>RAINIER Personnel</u>				
Graphic record checked by <u>RAINIER Personnel</u>				
Evaluation by <u>R. Davies</u>		Automated plot by <u>HP Designjet 1050C</u>		
Verification by <u>R. Davies</u>				
Soundings in <u>Fathoms and tenths</u>		at <u>MLLW</u>		
REMARKS: <u>Time in UTC. UTM Projection Zone 6</u>				
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 H11008

Project OPR-P139-RA-02
Southwest Prince William Sound, Alaska

Scale 1:10,000

July 9 – September 7, 2002

NOAA Ship RAINIER

Chief of Party: Captain James C. Gardner, NOAA

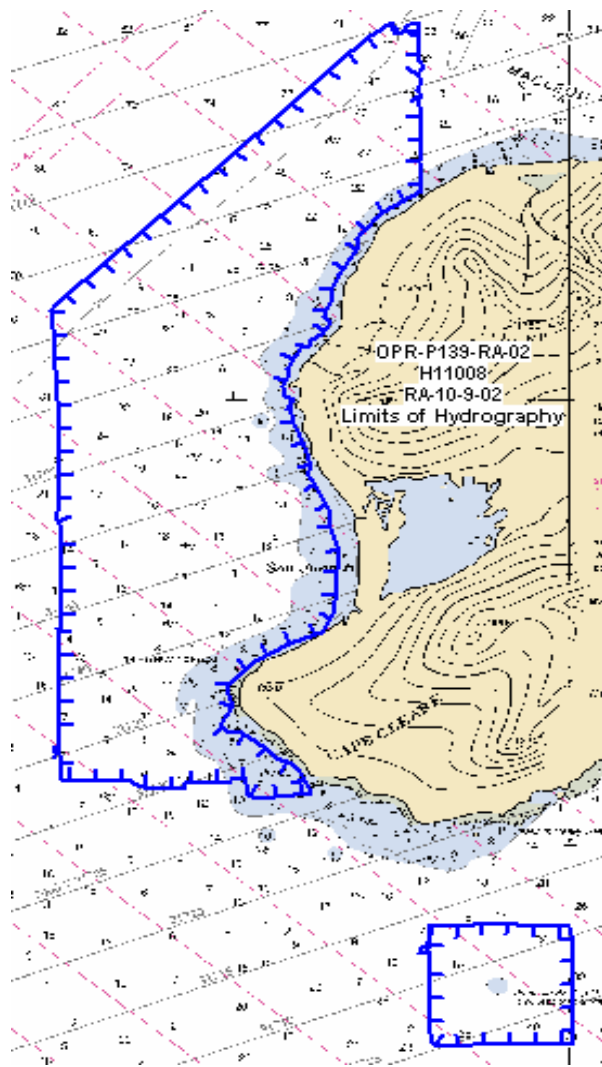


Figure 1. H11008 Survey Limits

A. AREA SURVEYED

This hydrographic survey was completed, as specified by Hydrographic Survey Letter of Instructions OPR-P139-RA-02, dated July 9, 2002, the Standing Project Instructions and Field Procedures Manual as updated for 2002. The survey area is located in the southwest portion of

Prince William Sound, Alaska. This survey area includes the southwest coast of Montague Island, in San Juan Bay and vicinity.

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters 8 meters and deeper. In waters from 4 meters to 8 meters, SWMB data were obtained at 25-meter line spacing, and in these areas additional coverage was obtained to obtain least depths over features or shoals. Vertical-beam echo sounder (VBES) data were acquired in depths from 4 to 20 meters, at a line spacing of 100 meters, to define the four-meter curve and to aid in the planning of SWMB data acquisition.¹

Data acquisition was conducted from July 9 to September 7, 2002 (DN 190 to 250).

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-P139-RA-02 Data Acquisition and Processing Report, submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

B.1 Equipment and Vessels

Data were acquired by RAINIER survey launches (vessel numbers 2121, 2122, 2123, 2124, 2125, and 2126). Vessels 2123, 2124, 2125 and 2126 were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessels 2121 and 2122 were used to acquire vertical-beam echo soundings (VBES) and detached positions (DPs) for shoreline verification. Vessel 2125 was also used to collect bottom samples. No unusual vessel configurations or problems were encountered during this survey.²

B.2 Quality Control

Crosslines

Vertical Beam Echo Sounder (VBES) crosslines totaled 8.54 nautical miles, comprising 52.6% of VBES mainscheme hydrography. Crosslines generally agreed within 1 meter of mainscheme hydrography.

Shallow-Water Multibeam (SWMB) crosslines totaled 10.81 nautical miles, comprising 2.25% of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 99.67917% with a depth tolerance factor of 0.023, which conforms to International Hydrographic Organization Order 2 specifications detailed in Special Publication S-44, Edition 4,³ as well as NOS Hydrographic Surveys Specifications and Deliverables Manual. See Appendix V for the detailed report.⁴

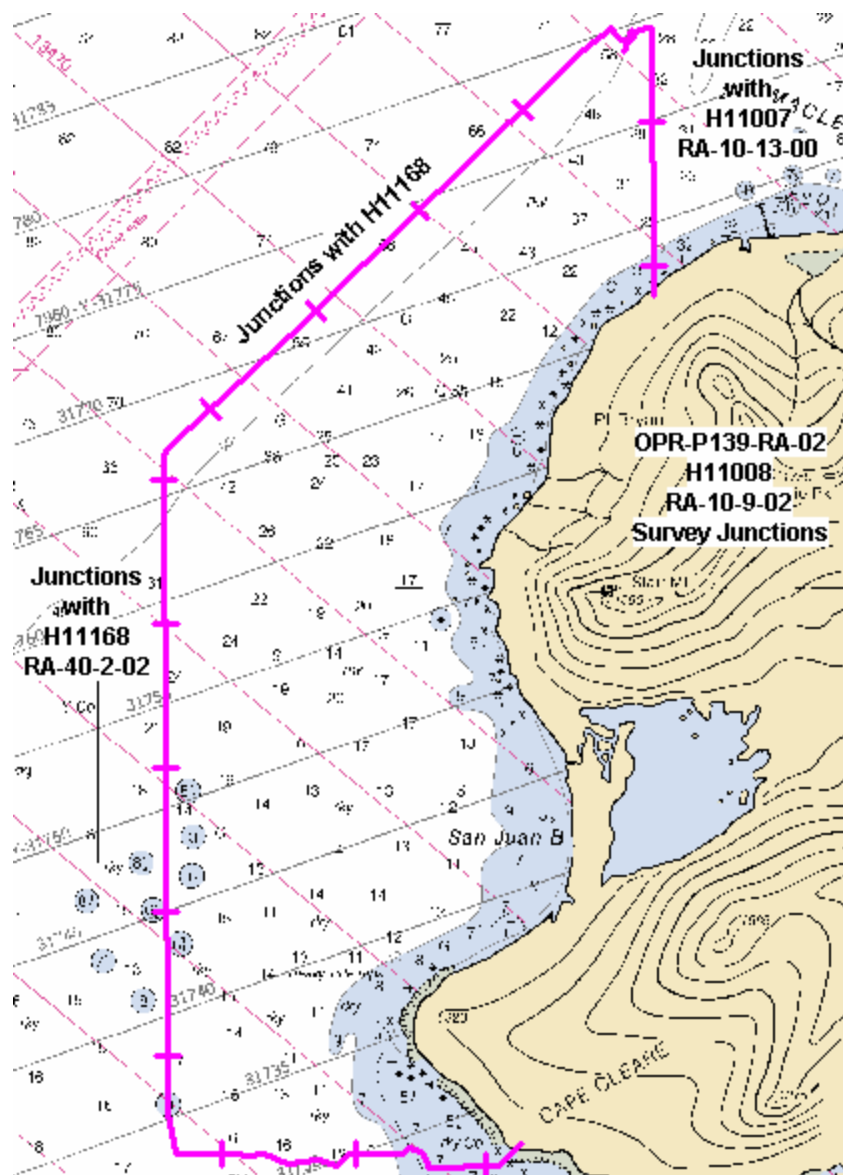


Figure 2. H11008 Junction Surveys

Junctions⁵

The following contemporary surveys junction with H11008:

Registry #	Scale	Date	Junction Side
H11168	1:40,000	2002	West
H11007	1:10,000	2000	East

Surveys H11168 and H11007 junction well with this survey, with differences of one to two fathoms.⁶

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.⁷

Data Quality Factors

In several areas near shore, 10 meters and shoaler, thick eelgrass often obscured the detection of the bottom. On the VBES fathograms, acoustic returns from eelgrass usually appeared as a faint trace clearly separated from the bottom, which had a darker, more definitive trace. In this case, the VBES digital data were edited as necessary to reflect the true bottom. In the SWMB data, removal of soundings obtained over eelgrass was not possible in HDCS SwathEdit, as there is no definitive way to determine if a sounding is on a feature such as a rock, or on eelgrass. In some instances, when in HDCS Subset Mode, it was possible to discern the true bottom, as eelgrass often appeared as soundings “disconnected” from the continuous bottom. In these instances, soundings over eelgrass were rejected. However, when unable to clearly distinguish between the bottom and eelgrass, the eelgrass was not rejected. Areas with eelgrass were noted by the Hydrographer during shoreline verification and are also indicated in the “H11008_ShorelineNotes” table of the Detached Position and Bottom Sample Plot. ⁸

B.3 Data Reduction

Data reduction procedures for survey H11008 conform to those detailed in the OPR-P139-RA-02 Data Acquisition and Processing Report.

The firmware and TSS motion sensor were changed over the 2001/2002 winter inport and the sign was reversed on the analog heave output and not compensated for, during field acquisition. The heave value for the ELAC 1180 data was corrected in post processing through the Pydro utility programs “Post-acquisition Tool”.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of vertical and horizontal control for survey H11008 can be found in the OPR-P139-RA-02 Horizontal and Vertical Control Report, submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

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. Differential corrections from U.S. Coast Guard beacons at Cape Hinchbrook (292 kHz) and Potato Point (298 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-P139-RA-02 Horizontal and Vertical Control Report.

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 Cordova, AK (945-4050) served as control for datum determination and as the primary source for water level reducers for survey H11008.

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
Bainbridge Point	945-4755	30-days	August 9, 2002	September 9, 2002
Guguak	945-4751	30-days	August 6, 2002	September 12, 2002
Latouche	945-4713	30-days	June 30, 2002	September 12, 2002
Point Elrington	945-4814	30-days	June 30, 2002	September 11, 2002

Table 1. List of Tide Gauge Stations and Installation Dates for Project OPR-P139-RA-02

All data were reduced to MLLW using unverified observed tides from station Cordova, AK using the tide file 9454050.tid and time and height correctors using the zone corrector file P139RA2002CORP.zdf.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing.⁹ A request for delivery of final approved (smooth) tides for survey H11008 was forwarded to N/OPS1 on September 21, 2002 in accordance with FPM 4.8. A copy of the request is included in Appendix IV.¹⁰

D. RESULTS AND RECOMMENDATIONS

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

A total of one (1) AWOIS item is located within the limits of H11008 and investigated during this survey. Investigation methods, results, and charting recommendations have been entered into the Microsoft Access AWOIS database and are submitted with the digital data. Printout of the AWOIS Database form is included in this report.¹¹

D.2 Chart Comparison

Survey H11008 was compared with charts 16700 (27th ed.; March 9, 2002, 1:200,000) and 16701 (18th ed.; March 9, 2002, 1:81,436).¹²

Chart 16700¹³

The majority of the depths from survey H11008 were three to four (3-4) fathoms shoaler than the depths on chart 16700, with several instances where the depths were five to eight fathoms shoaler. These changes in depths are suggested to have been caused by the uplift and earthquake of March 27, 1964.

The 10-fathom curve throughout survey H11008 has moved offshore, likely, due to the earthquake of March 27, 1964. The surveyed 10-fathom curve north of San Juan Bay at 59°49'11.990"N, 147°55'24.450"W (448,213.19E, 6,631,725.74N) is 200m to 400m offshore of the published 10-fathom curve on chart 16700, with some areas as great as 700m offshore. In San

Juan Bay the surveyed 10-fathom curve is 2,380m offshore of the published 10-fathom curve on chart 16700, and west of Cape Cleare the surveyed 10-fathom curve extends 700m to 1,500m offshore of the published curve.

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.¹⁴

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

Chart 16701

The majority of the depths from survey H11008 were three to four (3-4) fathoms shoaler than the depths published on chart 16701, with a minority of the surveyed depths as great as ten (10) fathoms shoaler.¹⁵ These changes in depths, in the vicinity of Montague Island, have been observed prior to this survey and noted to be a result of the earthquake of March 27, 1964, according to Caution Note B on chart 16701.

The 10-fathom curve throughout survey H11008 has moved offshore, likely, due to the earthquake of March 27, 1964.¹⁶ The 10-fathom curve north of San Juan Bay at 59°49'11.990"N, 147°55'24.450"W (448,213.19E , 6,631,725.74N) is 200m to 400m offshore of the published 10-fathom curve on chart 16701, with some areas as great as 700m offshore.¹⁷ In San Juan Bay the 10-fathom curve is 2,380m offshore of the published ten-fathom curve on chart 16701, and west of Cape Cleare the 10-fathom curve extends 700m to 1,500m offshore of the published curve.¹⁸

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.¹⁹

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.²⁰

D.3 Shoreline

Shoreline Source

The Pacific Hydrographic Branch provided digital shoreline files from the following registered shoreline manuscripts:

T-12704

T-12720

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 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*.²¹

A detailed Detached Position and Bottom Sample (DPBS) plot,²² in both paper copy and MapInfo format, is provided 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 TS shoreline that did not require revision is in MapInfo table H11008_Shoreline and shown in black. New MLLW features and changes to the MLLW shoreline, TS or charted, are displayed in pink on the “H11008_ShorelineUpdates” MapInfo table.²³ Charted shoreline, when used for reference purposes or when source data were not available, is depicted in the MapInfo table “H11008_ChartedShoreline” and displayed in brown.²⁴

Source Shoreline Changes and New Features

The Source rock positioned at 59°51'00.39"N, 147°54'23.11"W (449214.55E, 6635065.67N) was disproved by conducting 100% Multibeam Coverage over the area. The Hydrographer recommends not charting the TS rock.²⁵

The Source rock positioned at 59°49'01.41"N, 147°54'33.10"W (449008.58E, 6631387.42N) was disproved by conducting 100% Multibeam Coverage over the area. The Hydrographer recommends not charting the TS rock.²⁶

The Source rock at 59°47'42.59"N, 147°54'17.29"W (449221.59E, 6628945.93N) was not seen but is located within an area foul with rocks. The Hydrographer recommends charting the Source rock as depicted on the DPBS plot.²⁷

Many of the Source rocks are high points and extents of ledges. These Source rocks were removed and the shoreline updated on the DPBS plot. The Hydrographer recommends charting the new and Source ledges as depicted on the DPBS plot.²⁸

Two new wrecks positioned with DP 22202, 59°46'14.745"N, 147°54'28.691"W (449006.65E, 6626231.10N) and DP 22411, 59°47'23.808"N, 147°55'19.313"W (448246.66E, 6628378.27N) are above Mean High Water and visible from the water. The positions were estimated from a survey vessel, offshore. Due to shallow water and ledges the survey vessels were not able to get a better position for the wrecks.²⁹

Charted Feature Changes

The charted rock positioned at 59°49'01.57"N, 147°54'36.62"W (448953.81E, 6631393.12N) was disproved with 100% Multibeam coverage over the area. The Hydrographer recommends removal of the rock from the chart.³⁰

The charted rock positioned at 59°51'00.19"N, 147°54'25.61"W (449175.55E, 6635060.01N) was disproved with 100% Multibeam coverage over the area. The Hydrographer recommends removal of the rock from the chart.³¹

The charted islet at 59°51'35.70"N, 147°53'49.80"W (449747.81E, 6636150.79N) is the seaward most extent of a new ledge, 1221437. The Hydrographer recommends removing the charted islet and charting the new ledge as depicted on the DPBS plot.³²

The charted islet at 59°49'54.48"N, 147°55'15.75"W (448367.03E, 6633038.14N) was disproved visually during shoreline verification and with shallow-water multibeam coverage. The Hydrographer recommends removing charted islet and charting Source islets and new ledge positioned with DP 2192274, 59°49'55.334"N, 147°55'14.252"W (448390.66E, 6633064.28N).³³

Recommendations

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 T-Sheets and charts as noted.³⁴ These revisions are recorded in the MapInfo digital files named "H11008_Shoreline" and "H11008_ShorelineUpdates". In addition, field notes made by the Hydrographer, including verification of source features and descriptions of shoreline classification are submitted in the digital MapInfo file "H11008_ShorelineNotes."

D.4 Dangers to Navigation

Twenty (20) dangers to navigation were found and reported to the Marine Chart Division for verification and final submission to the Seventeenth Coast Guard District on May 25, 2003. A copy of the preliminary Danger to Navigation Report is included in Appendix I.³⁵ A copy of the final report will be inserted by PHB following verification and submission to the U.S Coast Guard.³⁶

D.5 Aids to Navigation

No aids to navigation (ATONs) are located within the limits of H11008.³⁷

D.6 Miscellaneous

Bottom samples were collected and are depicted on the Detached Position and Bottom Sample Plot.³⁸ The bottom type mostly did not match with the published bottom type on chart 16701.³⁹

The Hydrographer recommends, due to the fact that the waters off the Southwest end of Montague Island were found to be significantly shoaler than charted and this area is a turning point for traffic from the Gulf of Alaska to the southern end of Montague Strait, that the area south of this survey area should be surveyed.⁴⁰

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 2002.


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 H11008 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.⁴¹

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-P139-RA-02	1 October, 2002	N/CS34
Horizontal and Vertical Control Report for OPR-P139-RA-02	30 May, 2003	N/CS34
Tides and Water Levels Package for OPR-P139-RA-02	4 December, 2002	N/OPS1
Coast Pilot Report for OPR-P139-RA-02	TBD ⁴²	N/CS26

Approved and Forwarded:


 James C. Gardner
 Captain, NOAA
 Commanding Officer

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

Survey Sheet Manager:


 Amanda J. McKinney
 NOAA Survey Technician

Field Operations Officer:


 Richard A. Fletcher
 Lieutenant Commander, NOAA

Revisions Compiled During Office processing and Certification.

¹ Concur

² Concur

³ During office review of the survey by a hydrographer, it was the opinion of the hydrographer that the survey conforms to International Hydrographic Organization Order #1 as required by the Letter Instructions. This was determined by qualitative analysis of the data.

⁴ Filed with the hydrographic records.

⁵ The junction with survey H11168 and H11007 are complete. A "Joins" note has been added to the smooth sheets where applicable.

⁶ Concur

⁷ Concur, results of the comparison after applications of approved tides are considered good.

⁸ No eel grass was located within the survey limits.

⁹ Approved tide note dated August 8, 2003 is attached.

¹⁰ Filed with the hydrographic records.

¹¹ Concur

¹² Only the largest scale chart was compared to, 16701, 20th Edition, dated September 1, 2004

¹³ See comparison with chart 16701

¹⁴ Concur

¹⁵ Concur

¹⁶ Concur

¹⁷ Concur

¹⁸ Concur

¹⁹ Concur

²⁰ Concur

²¹ Filed with the hydrographic records.

²² Filed with the hydrographic records.

²³ Results of this work have compiled on the smooth sheet.

²⁴ No shoreline in brown was shown on the smooth sheet for H11008.

²⁵ Concur, chart area according to the smooth sheet.

²⁶ Concur, chart area according to the smooth sheet.

²⁷ Concur with clarification, due to the scale of the chart, 1:81,436, this manuscript rock could not be shown on chart 16701.

²⁸ Concur. See the smooth sheet for portrayal of these areas common to H-11008.

²⁹ Chart two visible wrecks, *PA*, to the reported positions based on the accessibility.

³⁰ Concur, chart area as shown on the smooth sheet.

³¹ Concur, chart area as shown on the smooth sheet.

³² Concur, chart area as shown on the smooth sheet.

³³ Concur, chart area as shown on the smooth sheet.

³⁴ Concur, chart area as shown on the smooth sheet.

³⁵ Filed with the hydrographic records.

³⁶ After office review, twenty dangers to navigation were submitted by PHB to the USCG and to MCD, and were applied to the 20th Edition of chart 16701. Reported depths from fifteen of these dangers remained unaffected by the application of approved tidal correctors and were depicted in green on the H-drawing. The remaining dangers were changed after the application of smooth tides and have been shown on the H-drawing in red.

³⁷ Concur

³⁸ Filed with the hydrographic records.

³⁹ Chart bottoms samples as shown on the smooth sheet.

⁴⁰ Concur

⁴¹ Concur

⁴² Sent 12/3/2001

RECRD 52600 VESSLTERMS OBSTRUCTION CHART 16701 AREA P
CARTOCODE 0104 SENDINGCODE DEPTH

LAT83 59 44 09.6 LONG83 147 51 17.2 NATIVDATUM 06
LATDEC: 59.736 LONDEC: 147.85477777778 GPQUALITY Low
GPSOURCE Direct

PROJECT OPR-P139-02 ITEMSTATUS Assigned SEARCHTYPE Full
RADIUS 1000 INIT MCR ASSIGNED 8/10/2000
TECNIQ MB,ES

Techniqnote

History HISTORY
CL1196/78--NOAA SHIP MC ARTHUR, 7/28/78-- INVESTIGATION OF A REPORTED SUBMERGED PINNACLE ROCK BY FISHING VESSEL. THE ROCK WAS LOCATED AND POSITIONED BY VISUAL AND LORAN-C METHODS. LEAST DEPTH ON THE ROCK WAS 3 FMS IN POS.59-44-12N, 147-51-10W NAD 27.

Fieldnote INVESTIGATION
DATE(S): 08/07/02, 08/26/02, 08/29/02 (DN:219,238,241)
HYDROGRAPHIC SURVEY NUMBER: H11008
VN: 2124 (SWMB) TIME: DN238 16:59 - 18:24 (UTC)
VN: 2125 (SWMB) TIME: DN219 17:42 - 22:45 (UTC); DN241 18:05 - 18:31 (UTC)
INVESTIGATION METHODS USED: 100% SWMB
SURVEYED POSITION: LAT: 59 44 09.6 LON:147 51 17.2
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: AWOIS item was covered by 100% SWMB. Three obstructions with least depths of 2.4 fms, 2.8 fms and 3.9 fms were located within the AWOIS radius, at 59°44'40.482"N , 147°51'33.069"W (451708.57E , 6623278.77N), 59°44'21.692"N , 147°51'37.986"W (451624.26E , 6622698.55N), and 59°44'15.056"N , 147°51'44.709"W (451516.61E , 6622494.66N), respectively.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends removal of charted "Pinnacle Rk Rep 1978 PA (Cov less than 3 fms) and charted foul area from chart 16701. The Hydrographer recommends charting the area based upon current hydrography.
EVALUATOR COMMENTS:Concur

Proprietary

YEARSUNK NIMANUM

Print Record

2.1) Profile/Beam - 4208/14 from h11008 / r3mb_2002 / 2002-219 / 109_1849**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.86427545° N, 147.89588028° W
Least Depth: 9.83 m
Timestamp: 2002-219.18:59:50.503 (08/07/2002)
Survey Line: h11008 / r3mb_2002 / 2002-219 / 109_1849
Profile/Beam: 4208/14
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 5 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

5 1/4fm (16701_1, 16700_1, 16013_1, 530_1)

5fm 2ft (531_1)

9.8m (500_1, 50_1)

2.2) Profile/Beam - 1426/237 from h11008 / r4re_2002 / 2002-240 / 115_1736**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.84415982° N, 147.91767301° W
Least Depth: 1.87 m
Timestamp: 2002-240.17:38:28.551 (08/28/2002)
Survey Line: h11008 / r4re_2002 / 2002-240 / 115_1736
Profile/Beam: 1426/237
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 1 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

1fm (16701_1, 16700_1, 16013_1, 530_1)

1fm 0ft (531_1)

1.8m (500_1, 50_1)

2.3) Profile/Beam - 131/233 from h11008 / r4re_2002 / 2002-240 / 173_1849**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.83182897° N, 147.92608111° W
Least Depth: 8.50 m
Timestamp: 2002-240.18:49:46.157 (08/28/2002)
Survey Line: h11008 / r4re_2002 / 2002-240 / 173_1849
Profile/Beam: 131/233
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 4 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

4 ½fm (16701_1, 16700_1, 16013_1, 530_1)

4fm 4ft (531_1)

8.5m (500_1, 50_1)

2.4) Profile/Beam - 246/238 from h11008 / r4re_2002 / 2002-236 / 268_2322**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.82685890° N, 147.92789579° W
Least Depth: 5.89 m
Timestamp: 2002-236.23:22:24.168 (08/24/2002)
Survey Line: h11008 / r4re_2002 / 2002-236 / 268_2322
Profile/Beam: 246/238
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 3 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

3 1/4fm (16701_1, 16700_1, 16013_1, 530_1)

3fm 1ft (531_1)

5.9m (500_1, 50_1)

2.5) Profile/Beam - 113/78 from h11008 / r4re_2002 / 2002-236 / 267_2324**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.82128746° N, 147.92776624° W
Least Depth: 10.19 m
Timestamp: 2002-236.23:24:16.593 (08/24/2002)
Survey Line: h11008 / r4re_2002 / 2002-236 / 267_2324
Profile/Beam: 113/78
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 5 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

5 ½fm (16701_1, 16700_1, 16013_1, 530_1)

5fm 3ft (531_1)

10.2m (500_1, 50_1)

2.6) Profile/Beam - 16187/18 from h11008 / r5mb_2002 / 2002-236 / 137_2311**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.82627626° N, 147.94807547° W
Least Depth: 6.99 m
Timestamp: 2002-236.23:47:02.440 (08/24/2002)
Survey Line: h11008 / r5mb_2002 / 2002-236 / 137_2311
Profile/Beam: 16187/18
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 3 3/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

3 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

3fm 5ft (531_1)

7.0m (500_1, 50_1)

2.7) Profile/Beam - 1836/17 from h11008 / r5mb_2002 / 2002-236 / 137_2311**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.77666620° N, 147.94854587° W
Least Depth: 8.10 m
Timestamp: 2002-236.23:15:53.773 (08/24/2002)
Survey Line: h11008 / r5mb_2002 / 2002-236 / 137_2311
Profile/Beam: 1836/17
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 4 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

4 1/4fm (16701_1, 16700_1, 16013_1, 530_1)

4fm 2ft (531_1)

8.1m (500_1, 50_1)

2.8) Profile/Beam - 8247/11 from h11008 / r5mb_2002 / 2002-236 / 127_1927**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.80987053° N, 147.96168248° W
Least Depth: 8.93 m
Timestamp: 2002-236.19:46:38.680 (08/24/2002)
Survey Line: h11008 / r5mb_2002 / 2002-236 / 127_1927
Profile/Beam: 8247/11
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 4 3/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

4 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

4fm 5ft (531_1)

8.9m (500_1, 50_1)

2.9) Profile/Beam - 2132/33 from h11008 / r5mb_2002 / 2002-240 / 146_0001**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.80255885° N, 147.97235742° W
Least Depth: 8.75 m
Timestamp: 2002-241.00:05:55.094 (08/29/2002)
Survey Line: h11008 / r5mb_2002 / 2002-240 / 146_0001
Profile/Beam: 2132/33
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 4 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

4 ¾fm (16701_1, 16700_1, 16013_1, 530_1)

4fm 4ft (531_1)

8.7m (500_1, 50_1)

2.10) Profile/Beam - 6651/19 from h11008 / r5mb_2002 / 2002-236 / 113_2141**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.80040361° N, 147.95984225° W
Least Depth: 11.41 m
Timestamp: 2002-236.21:56:57.399 (08/24/2002)
Survey Line: h11008 / r5mb_2002 / 2002-236 / 113_2141
Profile/Beam: 6651/19
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 6 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

6 1/4fm (16701_1, 16700_1, 16013_1, 530_1)

6fm 1ft (531_1)

11.4m (500_1, 50_1)

2.11) Profile/Beam - 6579/79 from h11008 / r5mb_2002 / 2002-190 / 220_2155**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.79279186° N, 147.97156262° W
Least Depth: 13.37 m
Timestamp: 2002-190.22:17:57.169 (07/09/2002)
Survey Line: h11008 / r5mb_2002 / 2002-190 / 220_2155
Profile/Beam: 6579/79
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 7 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

7 1/4fm (16701_1, 16700_1, 16013_1, 530_1)

7fm 2ft (531_1)

13.3m (500_1, 50_1)

2.12) Profile/Beam - 17320/25 from h11008 / r3mb_2002 / 2002-220 / 158_1636**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.78167247° N, 147.96587114° W
Least Depth: 13.32 m
Timestamp: 2002-220.17:09:59.541 (08/08/2002)
Survey Line: h11008 / r3mb_2002 / 2002-220 / 158_1636
Profile/Beam: 17320/25
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 7 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

7 ¼fm (16701_1, 16700_1, 16013_1, 530_1)

7fm 1ft (531_1)

13.3m (500_1, 50_1)

2.13) Profile/Beam - 9208/24 from h11008 / r5mb_2002 / 2002-190 / 219_2307**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.77622508° N, 147.96757466° W
Least Depth: 14.19 m
Timestamp: 2002-190.23:36:21.033 (07/09/2002)
Survey Line: h11008 / r5mb_2002 / 2002-190 / 219_2307
Profile/Beam: 9208/24
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 7 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

7 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

7fm 4ft (531_1)

14.2m (500_1, 50_1)

2.14) Profile/Beam - 1841/1 from h11008 / r4re_2002 / 2002-238 / 157_1931**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.78314830° N, 147.94439760° W
Least Depth: 3.07 m
Timestamp: 2002-238.19:33:15.702 (08/26/2002)
Survey Line: h11008 / r4re_2002 / 2002-238 / 157_1931
Profile/Beam: 1841/1
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 1 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

1 ½fm (16701_1, 16700_1, 16013_1, 530_1)

1fm 4ft (531_1)

3.0m (500_1, 50_1)

2.15) Profile/Beam - 3546/90 from h11008 / r5mb_2002 / 2002-221 / 154_2125**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.78158527° N, 147.95143409° W
Least Depth: 9.35 m
Timestamp: 2002-221.21:31:43.147 (08/09/2002)
Survey Line: h11008 / r5mb_2002 / 2002-221 / 154_2125
Profile/Beam: 3546/90
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 5 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

5fm (16701_1, 16700_1, 16013_1, 530_1)

5fm 0ft (531_1)

9.3m (500_1, 50_1)

2.16) Profile/Beam - 260/17 from h11008 / r5mb_2002 / 2002-236 / 317_2241**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.77075511° N, 147.95034645° W
Least Depth: 11.18 m
Timestamp: 2002-236.22:42:28.521 (08/24/2002)
Survey Line: h11008 / r5mb_2002 / 2002-236 / 317_2241
Profile/Beam: 260/17
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 6 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

6fm (16701_1, 16700_1, 16013_1, 530_1)

6fm 0ft (531_1)

11.2m (500_1, 50_1)

2.17) Profile/Beam - 427/19 from h11008 / r3mb_2002 / 2002-221 / 274_1843**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.77161855° N, 147.93909980° W
Least Depth: 6.92 m
Timestamp: 2002-221.18:44:31.811 (08/09/2002)
Survey Line: h11008 / r3mb_2002 / 2002-221 / 274_1843
Profile/Beam: 427/19
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 3 1/2 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

3 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

3fm 4ft (531_1)

6.9m (500_1, 50_1)

2.18) Profile/Beam - 1625/88 from h11008 / r5mb_2002 / 2002-219 / 809_1849**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.74458056° N, 147.85916474° W
Least Depth: 4.49 m
Timestamp: 2002-219.18:58:07.294 (08/07/2002)
Survey Line: h11008 / r5mb_2002 / 2002-219 / 809_1849
Profile/Beam: 1625/88
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 2 1/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

2 ½fm (16701_1, 16700_1, 16013_1, 530_1)

2fm 2ft (531_1)

4.5m (500_1, 50_1)

2.19) Profile/Beam - 321/212 from h11008 / r4re_2002 / 2002-238 / 263_1742**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.73934459° N, 147.86055766° W
Least Depth: 5.30 m
Timestamp: 2002-238.17:43:22.536 (08/26/2002)
Survey Line: h11008 / r4re_2002 / 2002-238 / 263_1742
Profile/Beam: 321/212
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 2 3/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

2 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

2fm 5ft (531_1)

5.3m (500_1, 50_1)

2.20) Profile/Beam - 160/92 from h11008 / r5mb_2002 / 2002-241 / 137_1813**DANGER TO NAVIGATION****Survey Summary**

Survey Position: 59.73746706° N, 147.86239353° W
Least Depth: 7.08 m
Timestamp: 2002-241.18:13:32.371 (08/29/2002)
Survey Line: h11008 / r5mb_2002 / 2002-241 / 137_1813
Profile/Beam: 160/92
Charts Affected: 16701_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Shoal

Hydrographer Recommendations

The Hydrographer recommends charting a 3 3/4 fathom sounding.

Cartographically-Rounded Depth (Affected Charts):

3 3/4fm (16701_1, 16700_1, 16013_1, 530_1)

3fm 5ft (531_1)

7.1m (500_1, 50_1)

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 8, 2003

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P139-RA-2002
HYDROGRAPHIC SHEET: H11008

LOCALITY: Prince William Sound, AK
TIME PERIOD: July 9-September 7, 2002

TIDE STATION USED: 945-4713 LaTouche, AK
Lat. 60° 03.3'N Lon. 147° 54.4'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.255 meters

TIDE STATION USED: 945-4814 Point Elrington, AK
Lat. 59° 56.4'N Lon. 148° 13.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.005 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: CA132, CA133, CA134, PWS18, PWS19 & PWS20.

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).

Note 2: Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR-P139-RA-2002, H11008

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 CA132	945-4814	0	0.97
	945-4713	0	0.88
-147.929815 59.782623			
-147.816056 59.639479			
-147.734568 59.418061			
-147.543153 59.575629			
-147.164142 59.751839			
-146.592643 59.945967			
-147.100914 59.935473			
-147.133984 59.910203			
-147.253795 59.844969			
-147.493381 59.807049			
-147.777585 59.807746			
-147.885989 59.791454			
-147.929815 59.782623			
Zone CA133	945-4814	0	0.98
	945-4713	0	0.90
-147.929815 59.782623			
-148.655827 59.530663			
-148.603903 59.224053			
-148.703502 59.019171			
-148.321708 58.755213			
-148.087103 58.942309			
-147.853081 59.199026			
-147.734568 59.418061			
-147.816056 59.639479			
-147.929815 59.782623			
Zone CA134	945-4814	0	0.98
	945-4713	0	0.90
-148.655827 59.530663			

-147.929815 59.782623
-148.046435 59.859656
-148.249602 59.93478
-148.445818 59.954138
-148.463554 60.035154
-148.996033 60.050061
-149.070356 59.957131
-148.826452 59.763477
-148.655827 59.530663

Zone PWS18

945-4814	0	1.01
945-4713	0	0.92

-147.891299 59.856319
-147.959905 59.90201
-148.039826 59.940341
-148.101438 59.961313
-148.162288 59.945242
-148.071736 59.911068
-147.992521 59.877344
-147.897663 59.822389
-147.891299 59.856319

Zone PWS19

945-4814	0	0.98
945-4713	0	0.90

-148.249602 59.93478
-148.23717 59.938853
-148.202462 59.937466
-148.162288 59.945242
-148.071736 59.911068
-147.992521 59.877344
-147.897663 59.822389
-147.885989 59.791454
-147.929815 59.782623
-148.046435 59.859656
-148.249602 59.93478

Zone PWS20

945-4814	0	1.03
945-4713	0	0.94

-147.891299 59.856319
-147.85719 59.871259
-147.872402 59.912061
-147.964395 59.962459
-148.039826 59.940341
-147.959905 59.90201
-147.891299 59.856319

Final Tidal Zoning for OPR-P139-RA-2002 Southwest Prince William Sound, AK- Sheet H11008

945-4814 POINT ELRINGTON, AK

PWS18
Time Corrector 0 mins
Range Corrector x1.01
Reference 945-4814

PWS19
Time Corrector 0 mins
Range Corrector x0.98
Reference 945-4814

CA134
Time Corrector 0 mins
Range Corrector x0.98
Reference 945-4814

PWS20
Time Corrector 0 mins
Range Corrector x1.03
Reference 945-4814

CA132
Time Corrector 0 mins
Range Corrector x0.97
Reference 945-4814

CA133
Time Corrector 0 mins
Range Corrector x0.98
Reference 945-4814

NOTE:
The chart shows the
tidal information for the
area in the Sound to the
left of the chart. The
area to the right of the
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APPROVAL SHEET
H11008

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 Olmstead
Cartographic Team
Pacific Hydrographic Branch

Date: 8/18/2005

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
CDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 25 Aug. 2005

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-11008

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.

[illegible]