

H-11100

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.* ..... OPR-0309-KR

*Registry No.* ..... H-11100

### LOCALITY

*State* ..... ALASKA

*General Locality* ..... GULF OF ALASKA

*Sublocality* ..... APPROACHES TO ICY BAY

2002

CHIEF OF PARTY  
DEAN MOYLES

### LIBRARY & ARCHIVES

DATE .....

**HYDROGRAPHIC TITLE SHEET****H-11100**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.

State ALASKAGeneral Locality GULF OF ALASKASublocality APPROACHES TO ICY BAYScale 1:20,000Date of Survey 5/23/02 - 7/15/02Instructions Dated 12/12/2001Project No. OPR-O309-KRVessel R/V QUICKSILVER & R/V MINOTAURChief of Party DEAN MOYLESSurveyed by MOYLES, ARUMUGAM, REYNOLDS, ORTHMAN, SIPOS, GREENE,  
HARRISON, NADEAU, ET ALSoundings taken by echo sounder, hand lead, pole RESON 8101

Graphic record scaled by \_\_\_\_\_

Graphic record checked by \_\_\_\_\_

Evaluation by B. Taylor Automated plot by HP DESIGN JET 1055Verification by B. TaylorSoundings in Fathoms and tenths at MLLWREMARKS: The purpose of this work is to provide NOAA with modern and accurate  
accurate hydrographic survey data for the Approaches to Icy Bay.ALL TIMES ARE RECORDED IN UTC.THALES GEOSOLUTIONS (PACIFIC) INC., 3738 RUFFIN ROAD, SAN DIEGO, CA 92123LCMF, 139 EAST 51ST AVE, ANCHORAGE, AK 99503TERRA SURVEYS, 1930 WHITING CIRCLE, PALMER, AK 99645All separates are filed with the hydrographic data.As a result, page numbering may be interrupted or non-sequential.

**A - Area Surveyed**

H11100 (Sheet B & Inset), is bounded by the coordinate listing below, and encompasses the approaches to Icy Bay in the Gulf of Alaska.<sup>1</sup>

Hydrographic data collection began on May 23, 2002 and ended on July 15, 2002.

**Table 1 H11100 Survey Limits**

<b>Survey Limits</b> Task Order # 8 H11100 Sheet B Scale 1:20,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	59 53 13.560	141 23 1.680
2	59 45 54.360	141 30 25.200
3	59 51 51.480	141 53 50.280
4	59 59 10.320	141 46 26.760

<b>Survey Limits</b> Task Order # 8 H11100 Inset Scale 1:20,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	59 58 13.800	141 39 54.360
2	59 56 37.680	141 39 54.360
3	59 56 37.680	141 32 49.560
4	59 58 13.800	141 32 49.560



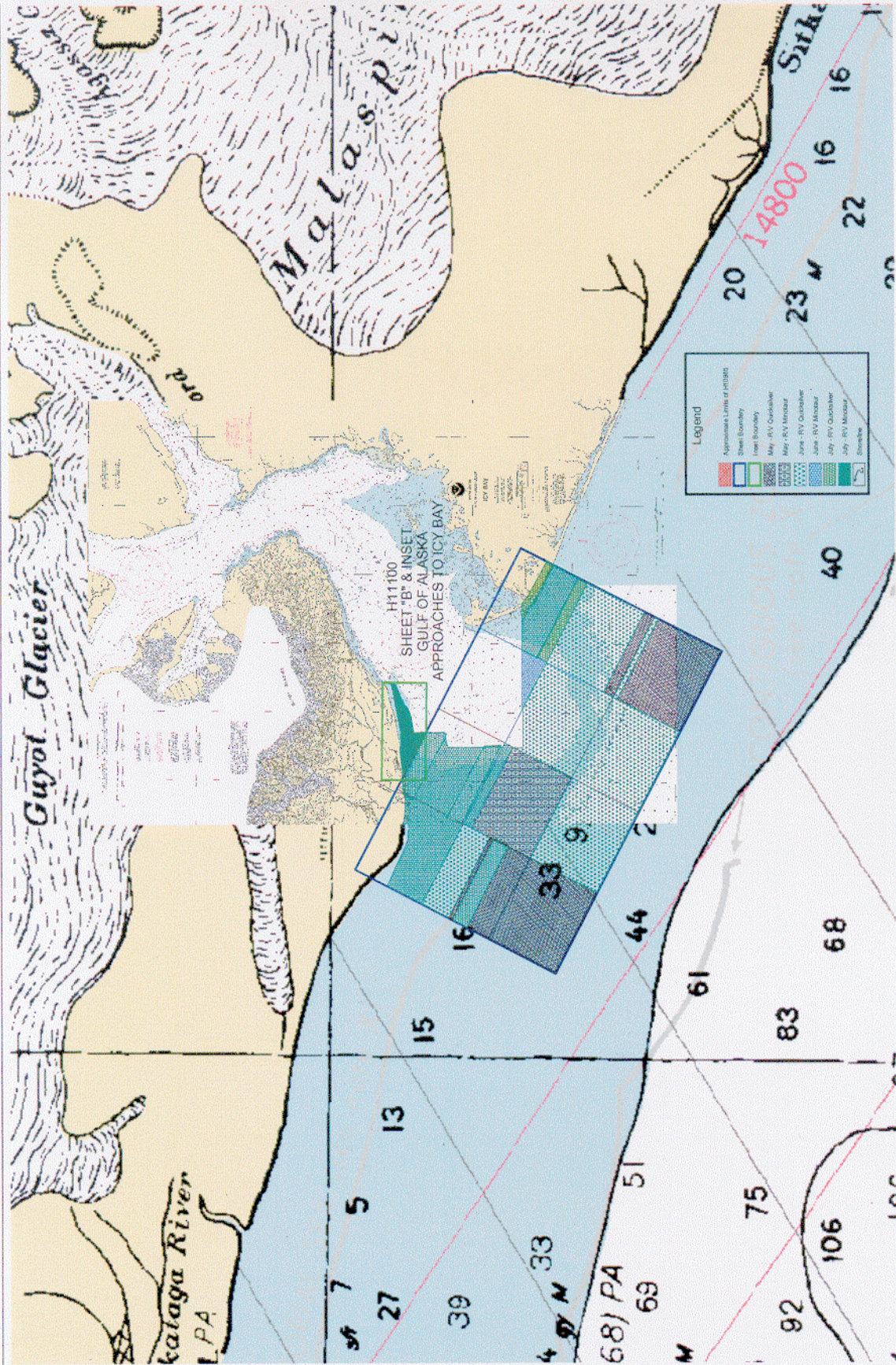


Figure 1 H11100 Survey Limits



## **B – Data Acquisition & Processing**

Refer to the OPR-O309-KR Data Acquisition and Processing Report<sup>2</sup> for a detailed description of all equipment, survey vessels, processing procedures and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.<sup>3</sup>

### Equipment & Vessels

The R/V Quicksilver and R/V Minotaur acquired all sounding data for H11100. The Quicksilver, which is 32 feet in length with a draft of 3 feet, was equipped with a Reson 8101 for medium multibeam data acquisition. From May 23, 2002 to July 15, 2002 the Quicksilver was equipped with the Reson SeaBat 8101 (Processor SN 12715 and Transducer SN 2100063) with option 033 (pseudo SideScan). The vessel was also equipped with two sound velocity and pressure sensors (4656-SV&P & 4431-SV&P) for sound velocity profiles. Vessel attitude was measured using a TSS Heading and Dynamic Motion Sensor (HDMS, IMU SN 078, Processor SN 016) and XTF files logged in ISIS V 5.84.

The Minotaur, which is 29 feet in length with a draft of 2 feet, was also equipped with a Reson 8101 for shallow to medium water multibeam data acquisition. From May 23, 2002 to July 15, 2002 the Minotaur was equipped with the Reson SeaBat 8101 (Processor SN 12945, Transducer SN 1600001) with option 033 (pseudo SideScan). The Minotaur was also equipped with two sound velocity and pressure sensors (4704-SV&P & 4703-SV&P) for sound velocity profiles. Vessel attitude was measured using a TSS Heading and Dynamic Motion Sensor (POS/MV, IMU SN 135, Processor SN 213) and XTF files logged in ISIS V 5.84.

Refer to OPR-O309-KR Data Acquisition & Processing Report<sup>4</sup> for a complete listing of equipment and vessel descriptions.

### Quality Control

#### Crosslines

H11100 (Sheet B and Inset) was divided into 13 areas for survey operations. Quality control tielines were planned to measure 5 percent of the main scheme line length. The total crossline length was 344.16 km (185.83 nautical miles) or 5.1 percent of the total main scheme kilometers. A total of 726 tie line crossings were examined using the CARIS HIPS Q/C Report. Of these, twenty-six had beams that fell below the 95 percent confidence level. The cause of these failures was primarily due to SVP refraction and/or heave in the tie line. The area with the highest concentration of failures was along the Northwest coast of Sheet B and the Inset. This area was influenced by fresh water runoff and mass quantities of ice flow on a daily basis. Note: Sounding data from the tielines are never used when compiling the smooth sheet.<sup>5</sup>

Note: The QC reports were generated based on the given accuracy specification of:

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

where, a = 0.5, b = 0.013 and d = depth.

However, since a variance of a difference, rather than a variance from a mean is being used, the a and b values defined in the makehist.cla file within CARIS will use:

$$a = 0.5 * \sqrt{2} = 0.707$$

$$b = 0.013 * \sqrt{2} = 0.018$$

Data Quality

Throughout the survey and routine processing, a general downward and/or upward cupping was noticed in the sounding data for certain areas. As mentioned above, the Northwest coast of Sheet B and the Inset were influenced by fresh water runoff and mass quantities of ice flow on a daily basis. This problem was resolved by conducting more sound velocity casts and by decreasing the survey line spacing. (Refer to Separate 2 for Svp plots).

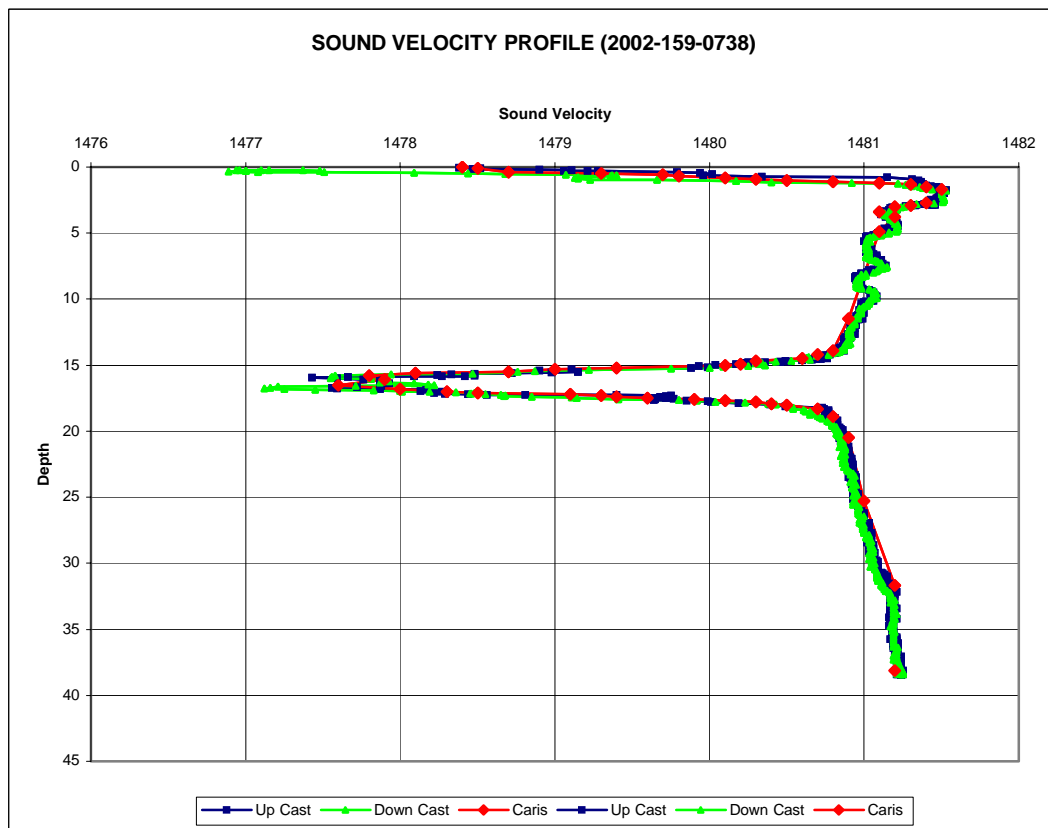


Figure 2 Sample SVP Plot

In addition to the Svp refraction, heave artifacts were also noticed in the data set. To account for the long period swell the heave filter in the HDMS and POS M/V systems were increased from 100 seconds to 400 seconds. The Graph Window in Isis displayed the sensor data in a graphical format, this aided in determining heave filter settings for the HDMS and POS M/V. Although noticeable in the sun-illuminated images all soundings<sup>6</sup> were within the NOS Specifications.<sup>7</sup>

Bottom detect was a problem in random areas throughout the survey. Since no grab samples were conducted to determine bottom type, it is assumed that these areas consisted of sea grass, soft bottom sediment, or other acoustically absorbent materials. To resolve this problem all survey vessels lay static and adjusted the SeaBat 8101 to find the optimal settings for bottom detection. All remaining noise was flagged as rejected in CARIS HDCS. Areas with this problem were re-ran,<sup>8</sup> resulting in no data gaps.<sup>9</sup>

The positioning contained a variable latency in the navigation timing; refer to the Non-Conformance Reports numbered 2002-001 and 2002-002 in Appendix F.<sup>10</sup>

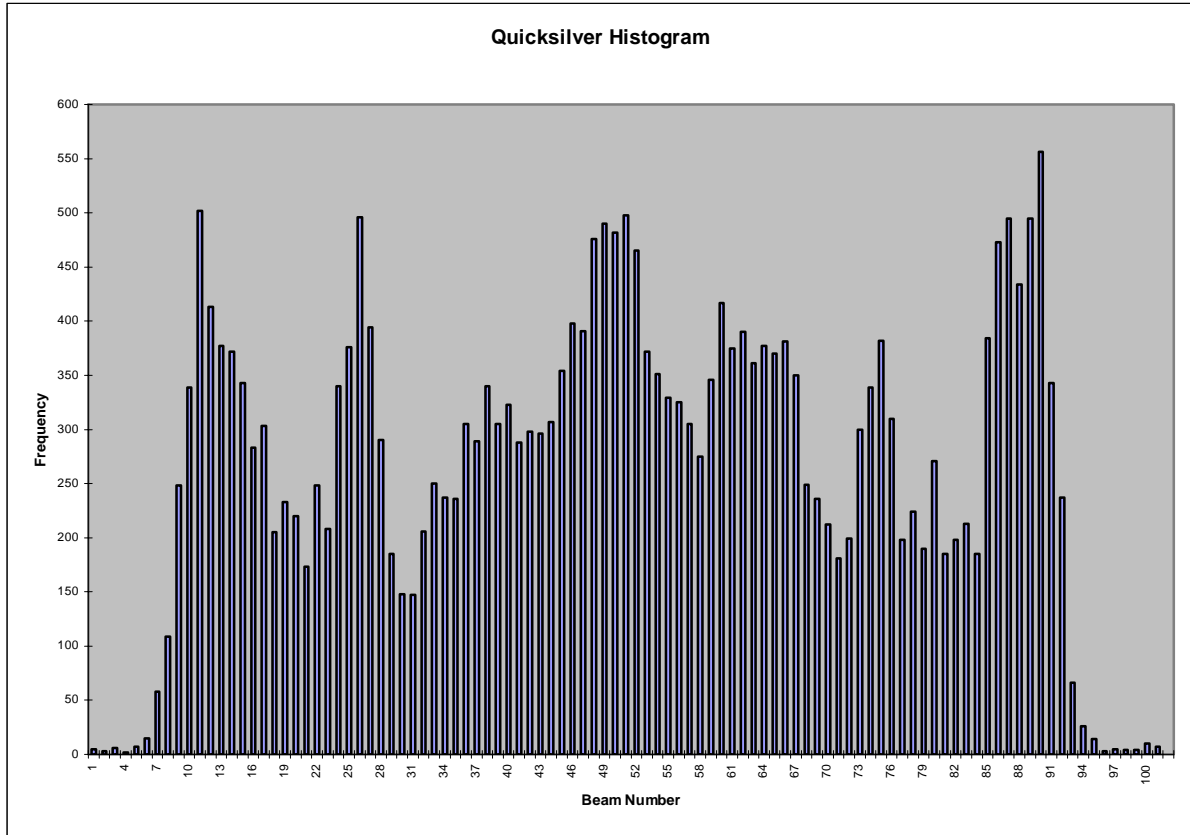
### Smooth Sheet Histograms

Histograms of the selected smooth sheet soundings are displayed below. Although soundings used to compile the smooth sheet fell within the specified error budget at nearly 100% confidence, the distribution of soundings across sonar beams is not perfectly even.

The first histogram is for the Reson 8101 data collected from May 23, 2002 to July 15, 2002 on the Quicksilver. This histogram shows a number of distinct features, one being the valley around the nadir beams. This is a result of nadir penetration, which is a common feature with Reson 8101 data. This is a result of having the power high enough to receive an accurate detection on the outer beams as well as being a function of bottom type. The majority of lines collected had a noticeable sample of nadir beams that had deeper depths than the surrounding soundings. These typically did not have any significant structure and were flagged as noise in HDCS. Since these were rejected, soundings from the adjacent beams were selected instead causing the spikes around beams 46 and 55.

The valley around beams 31 and 70 is the result of the survey line pattern. As the lines were run, port beams overlapped with port beams and starboard beams overlapped with starboard beams from the adjacent lines. This makes it possible to have higher density data per square meter on the outer edges, leading to a higher chance of sounding selection on the smooth sheet. Superimposed on these examinations is the transition from phase to amplitude detection method of the sonar and any errors due to sound velocity.

Given all of these observations, the distribution is an example of what would be expected using a Reson 8000 series multibeam sonar for a hydrographic survey.<sup>11</sup>



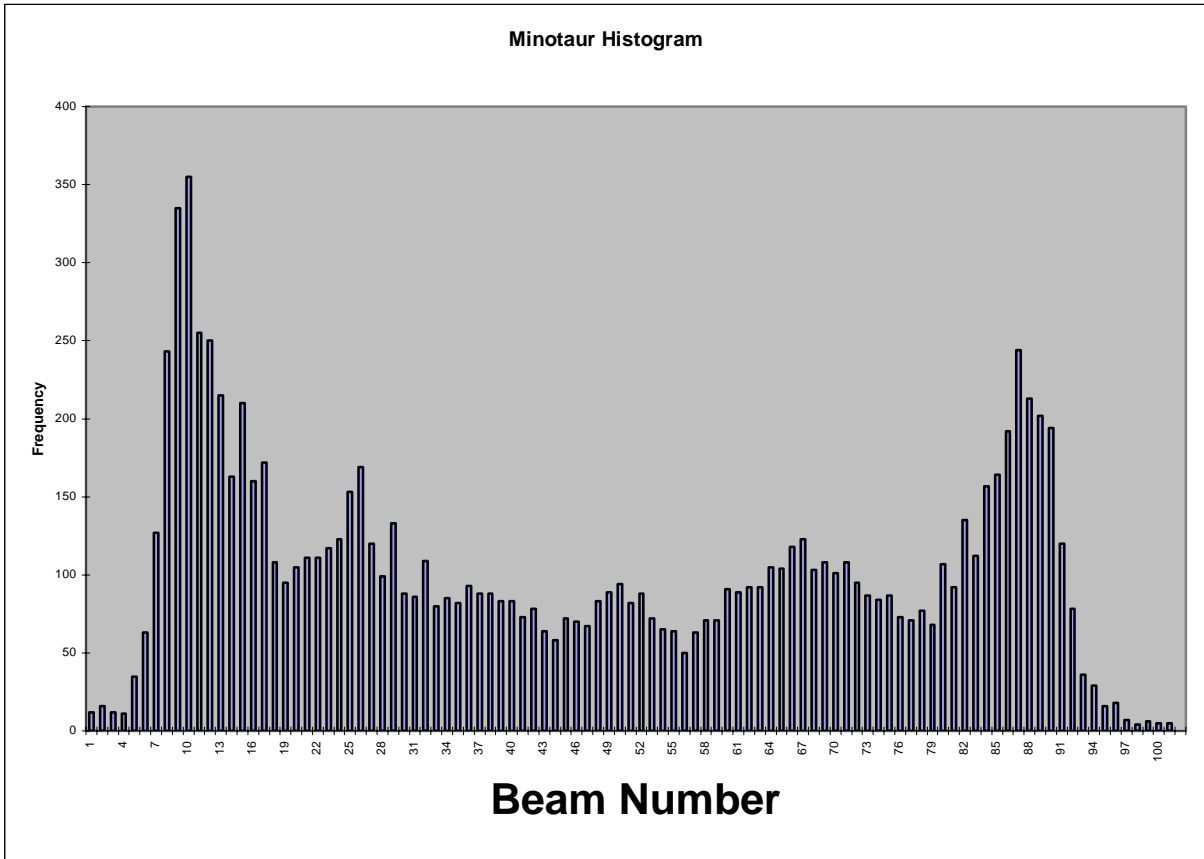
**Figure 3 Histogram for 8101 (QuickSilver)**

The second histogram is for the Reson 8101 data collected from May 23, 2002 to July 15, 2002 on the Minotaur. This histogram shows a few distinct features, one being around the nadir beams. The majority of lines collected had a noticeable sample of nadir beams that had shoaler depths than the surrounding soundings. This is a result of early bottom detections by the Reson 8101 and was due to having the power high enough to receive an accurate detection on the outer beams as well as being a function of bottom type. The valley on either side of nadir around beams 43 and 58 is the result of a graphical shadow created by the shoaler nadir soundings.

The valley and spikes around beams 25 and 70 is the result of survey line pattern. As the lines were run, port beams overlapped with port beams and starboard beams overlapped with starboard beams from the adjacent lines. This makes it possible to have higher density data per square meter on the outer edges, leading to a higher chance of sounding selection on the smooth sheet. The spike on the port and starboard are the result of surveying near the shoreline. Superimposed on these examinations is the transition from phase to amplitude detection method of the sonar and any errors due to sound velocity.

Given all of these observations, the distribution is an example of what would be expected using a Reson 8000 series multibeam sonar for a hydrographic survey.<sup>12</sup>





During hydrographic survey H11100 the Quicksilver and Minotaur conducted a number of patch tests and confidence checks. This data was used to quantify errors associated with timing, pitch, heading, and roll, as well as to compare the two multibeam systems. The two systems usually compared to within 5 to 10 centimeters. Refer to the OPR-O309-KR Data Acquisition and Processing Report<sup>13</sup> for the results of the multibeam patch tests conducted during the Icy Bay Survey.

Positioning system confidence checks were<sup>14</sup> conducted on a daily basis. WinFrog had built in QC windows, where the positioning data was displayed and monitored. The graphics window was configured to show the navigation information in plan view. This included vessel position, survey lines, and background plots and charts. The Vehicle window can be configured to show any tabular navigation information required. Typically, this window displays position, time, line name, heading, HDOP, speed over ground, distance to start of line, distance to end of line, and distance off line. The Calculation window is used to examine specific data items in tabular or graph format. Operators look here to view GPS satellite constellations and position solutions.

Corrections to Echo Soundings

Refer to the OPR-O309-KR Data Acquisition and Processing Report<sup>15</sup> for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

**C – Horizontal & Vertical Control**

Refer to the OPR-O309-KR Horizontal and Vertical Control Report<sup>16</sup> for a detailed description of the horizontal and vertical control used on this Survey. A summary of the projects<sup>17</sup> horizontal and vertical control follows. No deviations from the report occurred.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83). All positions were originally collected in WGS84 and transformed to NAD83 during HIPS workfile creation. Projection of smooth sheet is in NAD83, UTM (Central Meridian 141°00’00”).

Two MBX-3 differential receivers that used the U.S. Coast Guard (USCG) network of differential beacons were the main source of RTCM; a third source of differential corrections was mobilized on an NGS control point near Riou Point by LCMF. Refer to the OPR-O309-KR Horizontal and Vertical Control Report<sup>18</sup> for DGPS verification results.

Vertical Control

All sounding data were reduced to MLLW initially using unverified tidal data from one tide station located in Moraine Bay. A sub-contractor, LCMF, operated the gauges and the data was emailed to the R/V Davidson at the end of every Julian day.

**Table 2 Tide Gauges**

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
945-3443	H350/355	Digital Bubbler	Moraine Bay	N59°55’42”	W141°21’44”	05/2002 07/15/02

Tidal data for a twenty-four hour period was assembled by LCMF and emailed to the R/V Davidson at the end of every day, UTC (Alaska Standard Time to UTC was +8 hours). A cumulative file for each gauge was updated each day by appending the new data. HPTools (V 8.9.5) was used to calculate zoned tidal correctors using CARIS navigation files. The output from HPTools was appended to each project tide file.

On July 27, 2002, LCMF issued verified tidal data and final zoning for OPR-O309-KR. The tidal zoning was modified by LCMF, but only fine adjustments were made from those issued in the Statement of Work (for additional information refer to LCMF’s Final Technical Report<sup>19</sup>). Verified tidal data was used for the Preliminary Smooth Sheet.<sup>20</sup>

**D – Results and Recommendations**

Chart Comparison

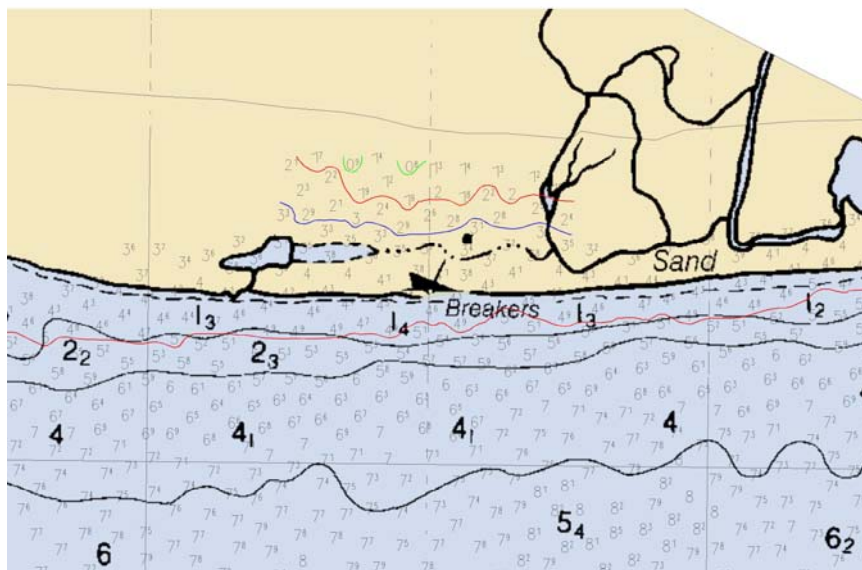
H11100 survey was compared with charts:

- 16016, 19th Edition (July 10, 1993, 1:969,756)
- 16741, 9th Edition (January 10, 1998, 1:40,000)
- 500, 7th Edition (June 1, 1996, 1:3,500,000)
- 530, 29th Edition (November 13, 1999, 1:4,860,700)
- 531, 20th Edition (September 4, 1999, 1:2,100,000)

Comparison of Soundings

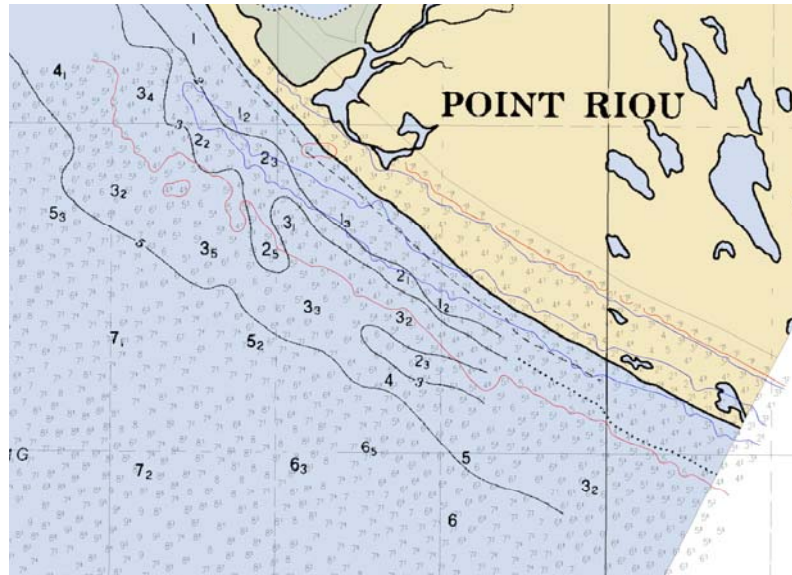
The soundings and contours in general compare well with the existing chart, but a few areas to note are:

- Hydrographic survey H11100 revealed that the shoreline shown on chart 16741 might be projected incorrectly.<sup>21</sup> The shoreline provided with the SOW has migrated north of the charted shoreline. This is more predominant on the northwest corner of H11100 and Inset. Due to this shift the soundings and contours do not match with those shown on the chart.<sup>22</sup> Although as you move south on H11100 the sounding and contours agree.



**Figure 5 Chart Comparison-1**

- The same problem is occurring on the east side of Sheet B: the shoreline, soundings and contours have migrated onto the chart.<sup>23</sup>



**Figure 6 Chart Comparison-2**

- The soundings that differ are due to the problem noted above.

Soundings that differ from hydrographic survey H11100 are highlighted in red on the chart comparison sheet included in Separate 6.<sup>24</sup> The soundings that did differ resulted in a Danger to Navigation and are listed in Appendix A Danger to Navigations.<sup>25</sup>



---

Automated Wreck and Observation Information System

There were two AWOIS items assigned for OPR-O309-KR.

- AWOIS Item 52828- this item is described as being barge ruins on the beach.

Survey lines were planned to provide 200% coverage over the required area, but due to safety reasons this was not achieved. This item was re-visited on four different occasions, due to the weather and ground swell near the beach. Note: the north section of the search radius with<sup>26</sup> not surveyed because it was too shallow and deemed unsafe for navigation.

Since the shore seems to be projected incorrectly,<sup>27</sup> the AWOIS item was not found at the assigned position. It can be seen in the photos that follow (photos were taken at: DGPS Position- 59 57 18.73 N, 141 42 0.24 W), the shoreline is north of the AWOIS position. An obstruction was located at 59°57'32.539"N, 141°42'16.721"W on chart 16741 with a least depth of 0.9 fathoms. Even though this obstruction has conspicuous dimensions and is in close proximity to the charted wreck position, it can't be said for certain that this obstruction is the wreck, therefore it should be charted has<sup>28</sup> an obstruction with a least depth of 0.9 fathoms.<sup>29</sup>



**Figure 7 AWOIS 52828-Northeast View**



**Figure 8 AWOIS 52828-Northwest View**

- AWOIS Item 52618- this item is described as being the sunken wreck Yakutat Eagle.

On chart 16741 the item is located at 59°53'00.000"N, 141°32'00.000"W and is noted with a PA label and wreck symbol.

Survey lines were conducted to provide 200% coverage over the required search radius. The multibeam and backscatter data was reviewed in Delphmap.

No features were found in the area. Therefore, it is recommended that the PA label and wreck symbol be removed from the chart.<sup>30</sup> Refer to Appendix E for AWOIS Forms.<sup>31</sup>

### Dangers to Navigation

Four dangers to navigation were located during the hydrographic survey of H11100 and were submitted on September 12, 2002. Refer to Appendix A for Submitted Report<sup>32</sup>

### Additional Results

#### Shoreline Verification

Shoreline verification was not required under this contract.<sup>33</sup>

#### Bottom Samples

Bottom Samples were not required under this contract.<sup>34</sup>

#### Aids to Navigation

There were no charted aids to navigation in the survey area. No uncharted aids to navigation were found in the survey area.<sup>35</sup>

#### Charted Features

All charted features were AWOIS items and were investigated accordingly.<sup>36</sup>

#### Miscellaneous

The Northwest coast of Sheet B and the Inset were influenced by fresh water runoff and mass quantities of ice flow on a daily basis, and is<sup>37</sup> due to the receding glaciers in the area. As a result a general downward and/or upward cupping was noticed in the sounding data for certain areas.<sup>38</sup>

#### Prior Surveys

Not required under this contract.<sup>39</sup>

---

**E – Approval Sheet****Approval Sheet**

For

**H11100**

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

OPR-O309-KR-02 statement of work and hydrographic manual;  
Thales GeoSolutions (Pacific) Inc. Acquisition Procedures (AP-2438-01 & AP-ISIS-01);  
Thales GeoSolutions (Pacific) Inc. Processing Procedures (PP-2438-01);  
Technical Report for Tides, Icy Bay.

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

The data were reviewed daily during acquisition and processing.

Approved and forwarded,



Dean Moyles, Thales GeoSolutions (Pacific) Inc.  
Lead Hydrographer  
TGP Survey Party



**Appendix A - Danger to Navigation**

Four Dangers to Navigation were located in the survey.<sup>40</sup>

## Danger to Navigation Report

Hydrographic Survey Registry Number: H11100

Survey Title:      State:      ALASKA  
                          Locality:    Gulf of Alaska  
                          Sub-locality: Approaches to Icy Bay

**ADVANCE  
INFORMATION**

Project Number: OPR-0309-KR-02

Survey Dates:    May - July 2002

Depths are reduced to Mean Lower Low Water using unverified observed tide correctors.

Positions are based on the NAD83 horizontal datum.

### CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16016	1:969,756	19 <sup>th</sup>	07/10/93
16741	1:40,000	9 <sup>th</sup>	01/10/98

### DANGER:

<u>Feature</u>	<u>Depth(ft or fms)</u>	<u>Latitude</u>	<u>Longitude</u>
Shoal	Covered 9 fms 3 ft	59/52/58.184N	141/45/55.784W
Shoal	Covered 6 fms 3 ft	59/52/37.910N	141/41/09.480W
Shoal	Covered 8 fms 5 ft	59/49/43.156N	141/32/01.328W
Shoal	Covered 8 fms 4 ft	59/49/27.459N	141/32/18.322W

### COMMENTS:

I was not able to properly reference the other Charts listed in the SOW, so they're not included in the above list of affected charts.

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34), at 526-6836.

**Appendix B - List of Geographic Names**

No new geographic names in the survey were discovered.<sup>41</sup>

**RECRD**  **VESSLTERMS**  **CHART**  **AREA**   
**CARTOCODE**  **SENDINGCODE**  **DEPTH**

<b>NATIVLAT</b>	<input type="text" value="59 53 00"/>	<b>NATIVLON</b>	<input type="text" value="141 32 00"/>	<b>NATIVDATUM</b>	<input type="text" value="31"/>
<b>LAT83</b>	<input type="text" value="59 53 00"/>	<b>LONG83</b>	<input type="text" value="141 32 00"/>	<b>GPQUALITY</b>	<input type="text" value="Low"/>
<b>LATDEC</b>	<input type="text" value="59 53 00"/>	<b>LONDEC</b>	<input type="text" value="141 32 00"/>	<b>GPSOURCE</b>	<input type="text" value="Direct"/>
	<input type="text" value="59.88333333333333"/>		<input type="text" value="141.53333333333333"/>		

**PROJECT**  **ITEMSTATUS**  **SEARCHTYPE**   
**RADIUS**  **INIT**  **ASSIGNED**   
**TECNIQ**

**Techniqnote**  
 FOR THE CY 2000 SEASON, SEARCH ONLY IN THE NORTHERN HEMISPHERE OF THE SEARCH RADIUS. FOR THE 2002 FIELD SEASON SEARCH THE SOUTHERN HEMISPHERE OF THE SEARCH RADIUS AS SHOWN ON THE AWOIS GRAPHIC.

**History**  
 HISTORY  
 LNM45/95--17TH CGD, 11/07/95--ADD (TO CHART) SUNKEN WRECK "YAKUTAT EAGLE" IN APPROX. POS. 59 53 00N, 141 32 00W NAD 83.  
 INTERNET--STATE OF ALASKA -- COMMERCIAL FISHERIES ENTRY COMMISSION, 1966; YAKUTAT EAGLE LISTED AS A 32 FT F/V BUILT IN 1984 IN JUNEAU, AK. UNKNOWN IF THIS IS THE SAME VESSEL..  
 http://www.cfec.state.ak.us/VEHSLIST/YR1996/ADFG/A0058.HTM. ENTERED 8/00 MCR  
 H10985/00--OPR-0309-RA; THE FIELD SHEET AVAILABLE FOR INSPECTION - NO INDICATION OF THE SUNKEN WRECK APPEARS ON THE FIELD SHEET. CURRENTLY THIS SURVEY IS DUE FOR COMPILATION 11/15/01. (UPDATED 7/01 BY MBH)  
 H10985/00--OPR-0309-RA, UPDATE; Hydrographer searched in northern half of search radius with SWMB during course of survey. Nothing indicating a wreck was observed in the SWMB data. Time constraints prevented a further search with SSS. Evaluator concurs, the submerged wreck PA charted at latitude 59/53/00N, longitude 141/32/00W, was not completely investigated, 100% SWMB coverage was not achieved for a complete disproval. Retain the charted submerged wreck PA at the charted location above.

**Fieldnote**  
 INVESTIGATION  
 DATES: 6/6/02 to 6/8/02 (JULIAN DAYS 157-159)  
 HYDROGRAPHIC SURVEY H11100  
 VN: Minotaur TIME: 06:55:23  
 INVESTIGATION METHOD: 200% Multibeam and Backscatter coverage  
 SURVEYED POSITION: LAT 59/53/00N LON 141/32/00W, searched the southern hemisphere of a 1500m radius circle.  
 POSITION DETERMINED BY: Differential GPS  
 INVESTIGATION SUMMARY: No feature was found in the area. Therefore, it is recommended that the PA label and wreck symbol be removed from the chart.  
 EVALUATOR COMMENTS: Concur. Remove PA and wreck symbol, chart least depths from 2002 survey.

**Proprietary**

**YEARSUNK**  **NIMANUM**  **SYSTEMNUM**  **Print Record**



**RECD**  **VESSLTERMS**  **CHART**  **AREA**   
**CARTOCODE**  **SENDINGCODE**  **DEPTH**

NATIVLAT	<input type="text" value="59.57/18.68"/>	NATIVLON	<input type="text" value="141/41/59.89"/>	<a href="#">Convert</a>	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="59.57/18.68"/>	LONG83	<input type="text" value="141/41/59.89"/>	<a href="#">Update GP</a>	GPQUALITY	<input type="text" value="High"/>
	<input type="text" value="59"/> <input type="text" value="57"/> <input type="text" value="18.68"/>		<input type="text" value="141"/> <input type="text" value="41"/> <input type="text" value="59.89"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="59.955188888889"/>	LONDEC	<input type="text" value="141.699969444444"/>			

**PROJECT**  **ITEMSTATUS**  **SEARCHTYPE**   
**RADIUS**  **INIT**  **ASSIGNED**   
**TECNIQ**

**Techniqnote**   
**History**

**Fieldnote**

**Proprietary**  **YEARSUNK**  **NIMANUM**  **SYSTEMNUM**

**2002 FIELD and FINAL TIDE NOTE**

**Hydrographic Sheet: H11100**

**Sheet B**

**Approaches to Icy Bay**

**Gulf of Alaska**

NOAA Project No:		OPR-O309-KR-2002 Icy, Alaska			
NOAA Contract No:		50-DGNC-8-90028			
The NOS Yakutat, AK tide station (945-3220) served as control for the subordinate station on this project. Datum determinations were made for the tertiary subordinate station: Moraine Bay (945-3443). The NTDE 1960-78 was utilized.					
Location and Time Meridian	Name:	Lat (NAD 83)	Long (NAD 83)	Time Meridian:	
	Moraine Bay	59° 55' 42"	141° 21' 44"	0° (UTC)	
Time Period and Datum Reference	Name:	Established:	Removed:	MLLW	MHW units
	Moraine Bay	5/20/2002	7/15/2002	0.000	2.715 meters
Tide observer	LCMF, Inc. 139 E. 51st Avenue Anchorage, AK 99503 (907) 273-1825				
Gauges	Two Design Analysis H350/355 bubbler systems and one H350XL/355 bubbler system.				
Installation	Each gauge was secured inside a waterproof Pelican case, and fastened vertically inside of an Weatherport Tent.  Refer to the tide station package for additional site specific details of installation.				
Tide staff	No tide staff was installed. Leveling was performed from a tidal benchmark to the water surface. The water height was read using a metric rod with a stilling well attached to remove interference from waves.				
Benchmarks	The following benchmarks were installed at this site: Moraine Bay: 3443 D 2002, 3443 E 2002, 3443 F 2002  The following NOS benchmarks were recovered at this site: Moraine Bay: 3443 A 1979, 3443 C 1979, Camp RM 1 1976 (stem)  The following non-NOS benchmarks were recovered at this site: Moraine Bay: BLM#1 and BLM#2				
Levels	Benchmarks were leveled at the installation and removal of the tidal station. The benchmarks and station datums were connected through frequent measurements to the water. The level runs closed within NOS tolerance. Existing NOS benchmarks were not stable compared to the previous levels run in 1979. The new bench mark 3443 F 2002 was designated the new primary bench mark.				
Final Tidal Zoning	Tidal zones CA1 and CA2 were utilized to correct tide data for this survey sheet.				
Reduction of Hydrographic data	Thales Geosolutions, Pacific (the prime contractor) was provided with preliminary datums developed by LCMF during June 2002 based upon a short series simultaneous comparison between Yakutat and the subordinate station. Six minute tide data reduced to MLLW and smoothed with a 5th order 5 hour polynomial curve fit was provided to Thales throughout the field season. In July 2002, LCMF finalized datums and forwarded all data necessary to reduce hydrographic soundings to the prime contractor.				

**2002 FIELD and FINAL TIDE NOTE**

**Hydrographic Sheet: H11100**

**Sheet B Inset**

**Approaches to Icy Bay**

**Gulf of Alaska**

NOAA Project No:		OPR-O309-KR-2002 Icy, Alaska			
NOAA Contract No:		50-DGNC-8-90028			
The NOS Yakutat, AK tide station (945-3220) served as control for the subordinate station on this project. Datum determinations were made for the tertiary subordinate station: Moraine Bay (945-3443). The NTDE 1960-78 was utilized.					
Location and Time Meridian	Name:	Lat (NAD 83)	Long (NAD 83)	Time Meridian:	
	Moraine Bay	59° 55' 42"	141° 21' 44"	0° (UTC)	
Time Period and Datum Reference	Name:	Established:	Removed:	MLLW	MHW units
	Moraine Bay	5/20/2002	7/15/2002	0.000	2.715 meters
Tide observer	LCMF, Inc. 139 E. 51st Avenue Anchorage, AK 99503 (907) 273-1825				
Gauges	Two Design Analysis H350/355 bubbler systems and one H350XL/355 bubbler system.				
Installation	Each gauge was secured inside a waterproof Pelican case, and fastened vertically inside of a Weatherport Tent.  Refer to the tide station package for additional site specific details of installation.				
Tide staff	No tide staff was installed. Leveling was performed from a tidal benchmark to the water surface. The water height was read using a metric rod with a stilling well attached to remove interference from waves.				
Benchmarks	The following benchmarks were installed at this site: Moraine Bay: 3443 D 2002, 3443 E 2002, 3443 F 2002  The following NOS benchmarks were recovered at this site: Moraine Bay: 3443 A 1979, 3443 C 1979, Camp RM 1 1976 (stem)  The following non-NOS benchmarks were recovered at this site: Moraine Bay: BLM#1 and BLM#2				
Levels	Benchmarks were leveled at the installation and removal of the tidal station. The benchmarks and station datums were connected through frequent measurements to the water. The level runs closed within NOS tolerance. Existing NOS benchmarks were not stable compared to the previous levels run in 1979. The new bench mark 3443 F 2002 was designated the new primary bench mark.				
Final Tidal Zoning	Tidal zone CA1 was utilized to correct tide data for this survey sheet.				
Reduction of Hydrographic data	Thales Geosolutions, Pacific (the prime contractor) was provided with preliminary datums developed by LCMF during June 2002 based upon a short series simultaneous comparison between Yakutat and the subordinate station. Six minute tide data reduced to MLLW and smoothed with a 5th order 5 hour polynomial curve fit was provided to Thales throughout the field season. In July 2002, LCMF finalized datums and forwarded all data necessary to reduce hydrographic soundings to the prime contractor.				

---

### Revisions Compiled During Office Processing and Certification

<sup>1</sup> Concur.

<sup>2</sup> Filed with the hydrographic data.

<sup>3</sup> Fifteen soundings present on the mylar plot provided by the hydrographer were missing from the digital data. All were located on the outermost edge of the northwest side of the survey between Lat 59/53/00N, Lon 141/52/50W and Lat 59/56/00N, Lon 141/50/00W. Two soundings present in the digital data (Lat 59/58/00N, Lon 141/32/40W) were missing on the mylar plot. The location of these two soundings is noted on the Hdrawing.

Office examination of the soundings discussed above showed that none were least depths or critical to accurate depiction of the survey area. Chart selected soundings as shown on the Hdrawings.

<sup>4</sup> Filed with the hydrographic data.

<sup>5</sup> Crossline data met or exceeded requirements for quality control.

<sup>6</sup> Strikethrough ~~sounding~~, replace with “soundings.”

<sup>7</sup> Concur. Survey data was reviewed in digital terrain models and Caris Hips during office processing, and is consistent with contemporary junction data. The evaluator considers this data acceptable for charting.

<sup>8</sup> Strikethrough ~~re-ran~~, replace with “rerun.”

<sup>9</sup> Concur.

<sup>10</sup> Filed with the hydrographic data.

<sup>11</sup> Concur. Chart according to the current survey.

<sup>12</sup> Concur. Chart according to the current survey.

<sup>13</sup> Filed with the hydrographic data.

<sup>14</sup> Strikethrough ~~where~~, replace with “were.”

<sup>15</sup> Filed with the hydrographic data.

<sup>16</sup> Filed with the hydrographic data.

<sup>17</sup> Strikethrough ~~projects~~, replace with “project’s.”

<sup>18</sup> Filed with the hydrographic data.

<sup>19</sup> Filed with the hydrographic data.

<sup>20</sup> 2002 Field and Final tide note attached to this report.

<sup>21</sup> Do not concur. It is likely that the shoreline has undergone considerable migration since last surveyed due to rapid movement of sediments from glacial melt, river runoff, and tidal currents.

<sup>22</sup> Concur with clarification. A comparison of the present survey to charted depths shows general agreement (plus or minus 0.5 - 1 fathom) throughout the survey area, with two exceptions. Based on the present survey data and, the evaluator estimates that in the Priest River vicinity, the MHWL has migrated up to 435 meters shoreward with depths up to 4½ fathoms deeper than charted, and in the Point Riou vicinity, the MHWL has migrated up to 495 meters shoreward with depth increases to 5 fathoms deeper than charted. Refer to the Hdrawing for approximate MHWL revisions and approximate depth curves based on the current survey. MHWL estimations and approximate depth curves were added during PHB processing and were not depicted by the hydrographer.



During PHB processing of H11100 and re-examination of H10985, it was observed that no adjustment had been made to the charted MHWL around Point Riou Spit. Since considerable migration of the spit was found during H10985, the evaluator recommends compiling the MHWL as portrayed on Hdrawing 16741h11.100 to reflect a more accurate charting representation.

<sup>23</sup> Concur. Strikethrough ~~onto the chart~~, replace with “shoreward of the charted MHWL.” See endnote 22.

<sup>24</sup> Chart according to the current survey.

<sup>25</sup> Attached to this report.

<sup>26</sup> Strikethrough ~~with~~, replace with “was.”

<sup>27</sup> See endnote 21.

<sup>28</sup> Strikethrough ~~has~~, replace with “as.”

<sup>29</sup> Concur with clarification. Remove charted Wreck at Lat 59/57/18.68N, Lon 141/41/59.89W. Chart 0 fathom 5 foot *Obstn* at survey position, Lat 59/57/32.539N, Lon 141/42/16.721W.

<sup>30</sup> Concur.

<sup>31</sup> See PHB updated AWOIS reports attached to this report.

<sup>32</sup> Attached to this report.

<sup>33</sup> Do not concur. Limited shoreline verification was conducted by the hydrographer in accordance with the Statement of Work, 3.4.2.

<sup>34</sup> Bottom samples on the Hdrawing are retained from 16741, continuous maintenance raster. Note that two bottom samples within the current survey limits were taken during H10985 but not depicted on 16741 at the time of this evaluation. They were:

“P” at Lat 59/53/15.42N Lon 141/40/6.89W

“P” at Lat 59/54/12.88N Lon 141/40/6.01W

It is recommended that these bottom samples be charted on 16741 as positioned on H10985.

<sup>35</sup> Concur.

<sup>36</sup> Concur. See AWOIS reports attached to this report.

<sup>37</sup> Strikethrough ~~and is~~.

<sup>38</sup> Concur with clarification. Similar issues were discussed in adjacent survey H10985.

Junction data from the two surveys utilizing ten different survey vessels were found to be of good overall consistency.

<sup>39</sup> With 100% multibeam coverage, the current survey is considered adequate to supersede all prior surveys and miscellaneous source data except as specifically noted in this report. Six isolated depth curves (5- or 10-fathom contours) around shoal soundings were missing from the smooth sheet. Shoal soundings and contours are depicted correctly on the Hdrawing.


<sup>40</sup> Concur.

<sup>41</sup> Concur.

APPROVAL SHEET  
H11100

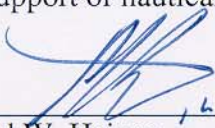
Initial Approvals:

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.

  
\_\_\_\_\_  
B. A. Olmstead  
Chief, Cartographic Team  
Pacific Hydrographic Branch

Date: 3/16/2005

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  
LCDR, NOAA  
Chief, Pacific Hydrographic Branch

Date: 17 MARCH 2005

