

H-11238

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-0331-KR

Registry No. H-11238

LOCALITY

State ALASKA

General Locality Kasaan Bay

Sublocality Skowl Arm

2003

CHIEF OF PARTY

Christopher D. Kemp

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET**H-11238**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 Kasaan BaySublocality Skowl ArmScale 1:10,000Date of Survey July 27-August 20, 2003Instructions Dated 3/1/2003Project No. OPR-O331-KR-03Vessel Luna Sea, Ducer and skiffChief of Party Christopher D. KempSurveyed by Terra Surveys, LLC personnelSoundings taken by echo sounder, hand lead, pole Reson 8101Graphic record scaled by N/AGraphic record checked by N/AEvaluation by B Taylor Automated plot by HP Design Jet 1055cm+Verification by G NelsonSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC. (Contract No: 50-DGNC-0-90003)**Revisions and annotations appearing as endnotes were generated during office****processing. All separates are filed with the project data. As a result, page numbering****may be interrupted or non-sequential.****Terra Surveys** **John Oswald & Associates****1930 Whiting Circle** **12001 Audubon Drive****Palmer, AK 99645** **Anchorage, AK 99516**

Descriptive Report to Accompany Hydrographic Survey H-11238

Sheet G

Scale 1:10,000

July 27-August 20, 2003

Terra Surveys, LLC

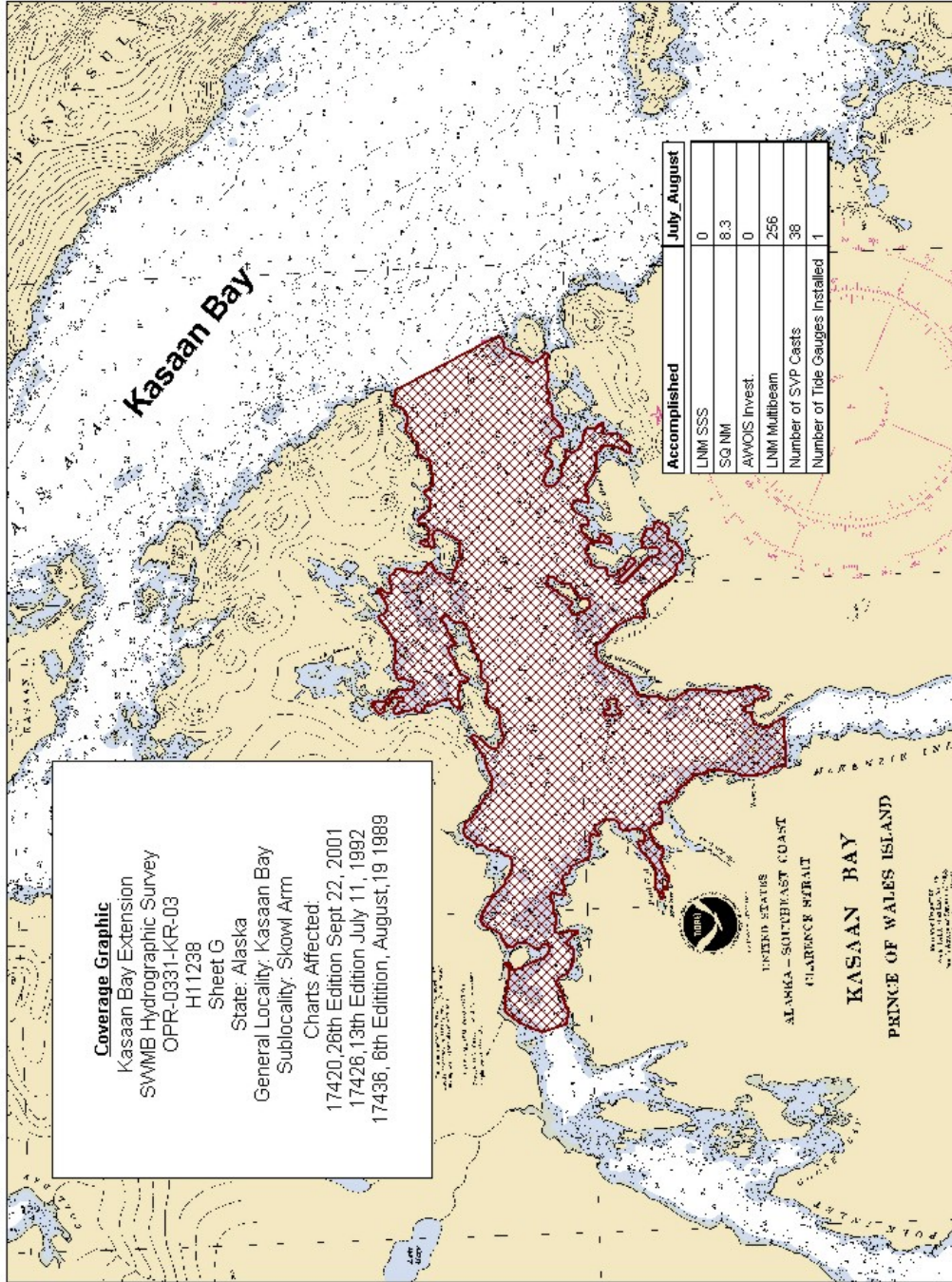
Lead Hydrographer: Chris Kemp

A. AREA SURVEYED

This navigable area survey was conducted in accordance with Hydrographic Project Instructions OPR-O331-KR-03, Kasaan Bay, Alaska dated March 1, 2003.¹ The purpose of this contract was to provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of this area. A shallow-water multibeam sonar system was used to locate and determine the least depth over obstructions, wrecks and shoals as well as to determine the least depths over the entire project area.

The project area is located in Kasaan Bay, Alaska. The survey limits encompass an area of approximately 8.3 square nautical miles in Skowl Arm extending from Skowl Point to the entrances of Polk and McKenzie Inlets. The area consists of irregular bathymetry, rocky shoreline and variable bottom type. Soundings as shoal as 0.3 fathom above datum and as deep as 133 fathoms were collected during the survey.²

Kasaan Bay is used by both commercial and recreational traffic. The Inter-Island Ferry Authority's ferry, *Prince of Wales*, transports passengers twice a day from Ketchikan to Hollis and return. Commercial vessels in the timber, fishing and tourism industries are often in the area. Common destinations for sport and charter fishing vessels coming from lodges in Kasaan Bay or nearby Ketchikan include Twenty Fathom Bank, Grindall Island and other locations throughout the bay.



Section B Data Acquisition and Processing

B.1 Equipment

Luna Sea

All soundings for this survey were acquired from the motor vessel *Luna Sea*. The *Luna Sea* is a 38-foot aluminum hull boat with a 12.1-foot beam and a 2.25-foot draft. Major systems used on the *Luna Sea* are listed in the following table.

VESSEL <i>Luna Sea</i>	
LOA: 38 FT, BEAM 12.1 FT, DRAFT: 2.25 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8101
Positioning	Seatex Seapath 200 RTK
Sound velocity	Applied Microsystems 3317 4425 3259
Vessel attitude	Seatex MRU-5

Equipment performance details are provided in the Project-Wide Report,³ Sections A, Equipment and B, Quality Control.

B2. Quality Control

The internal consistency and integrity of the survey data was found to be good.⁴ All of the soundings that appear on the smooth sheet meet or exceed the accuracy requirements in the specifications.

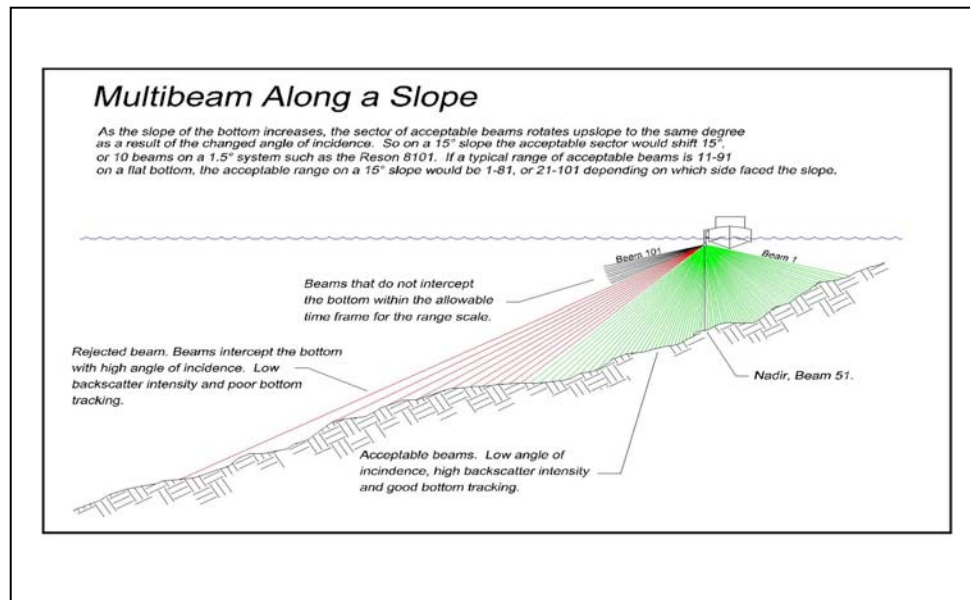
Crosslines

Survey H-11238 had 163.4 nautical miles of main scheme lines and 8.5 NM of crosslines. This equates to 5.2% of the mainscheme lines and exceeds the requirement of 5% set forth in the Specifications and Deliverables, Sec. 5.5.3. There were 13 crosslines and 191 mainscheme lines. This resulted in 151 crossings, of which, a total of 25 were analyzed. The crossings varied spatially and temporally. A location plot is included in “Separate V Crossline Comparisons.”⁵

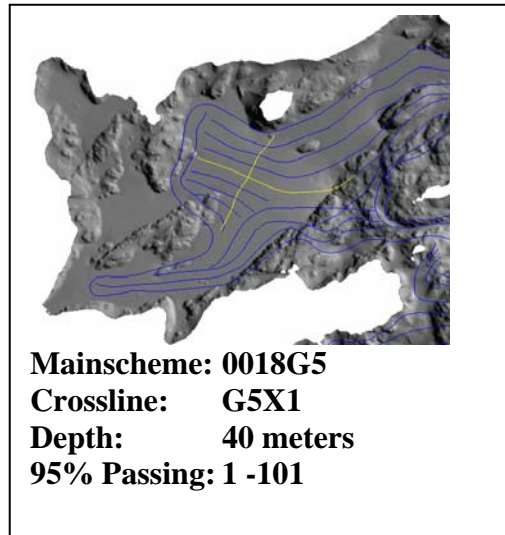
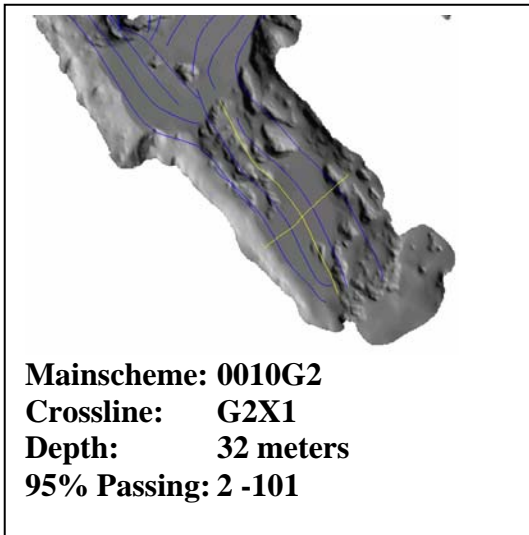
The crosslines were analyzed with a program developed in-house in accordance with Specifications and Deliverables 2003, Section 5.5.3. A comprehensive explanation of the program is in the Data Acquisition and Processing Report. The reports generated from the crossline analysis are in “Separate V Crossline Comparisons.”

An estimated 95% confidence level generated from crossline analysis was used as a guide in determining data acceptability. In practice, the subjective nature of multibeam data cleaning resulted in a slight variance of final smooth sheet soundings from the estimated 95% confidence level. Conditions warranting accepting data from outer beams occurred along steep terrain where the outermost beams had a better angle of incidence on the uphill side. This was often the case, due to the steep slopes encountered through most of the survey. This effect is shown in figure 1.

Figure 1



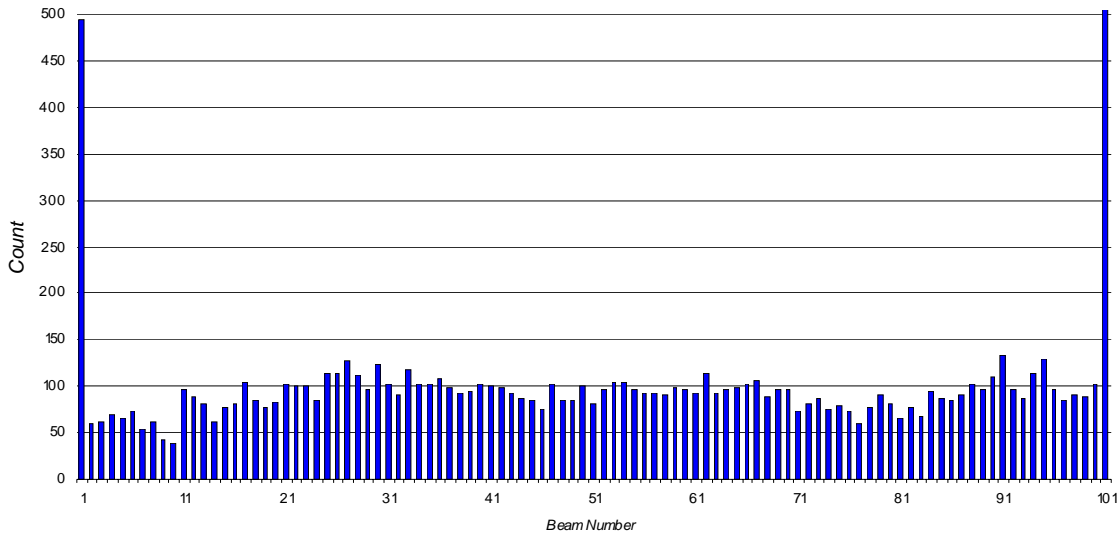
Crossline comparison results were generally good and met specifications. A lack of suitable areas within the sheet to run crosslines adversely affected some crossline results. Most of the survey area consisted of a rocky bottom type, which made creating a reference surface to compare the crossline to difficult. When a small cell size in a gridded DTM was used, it created gaps in the surface and few occurrences where a crossline sounding and the DTM coincided. As a solution, a larger cell size in the DTM was used. This filled the gaps, but also smoothed the surface and resulted in misleading residuals between the reference surface and crossline sounding. Crossline results significantly improved in areas with a flat bottom. The examples below from Saltery Cove and Smith Cove demonstrate the reliability of the sounding equipment and methodology used throughout the survey.



Smooth Sheet Soundings

Final smooth sheet soundings were compiled into a spreadsheet and plotted. Figure 2 shows a histogram depicting the number of soundings per beam on the smooth sheet. Tabular results are presented in Table 1. The Reson 8101 multi-beam echo sounder has 101 beams and is numbered from port to starboard, 1-101 with beam 51 representing the nadir beam.

Figure 2. Smoothsheet Sounding Distribution



The histogram brings to attention the large number of soundings from beam 1 and beam 101. Typically, soundings from outer beams were filtered out during line cleaning. On shallow, near shore lines this filter was not applied to aid in the attainment of soundings at the 4 meter curve. As a result, depending on which side of the sonar was oriented towards the shore, soundings from beam 1 or 101 were the outermost, and on an upwardly sloping bottom, shoalest soundings of a shore buffer line. This manifested itself as a rim of soundings from beams 1 and 101 along the shoreline in the shoal biased smoothsheet. The tables below show the distribution of soundings by depth for beams 1 and 101.

Table 1.

Beam 1		Beam 101	
<i>Depth(m)</i>	<i>Count</i>	<i>Depth(m)</i>	<i>Count</i>
< 0	3	< 0	3
0-10	336	0-10	404
10-20	90	10-20	72
20-30	31	20-30	25
30-40	15	30-40	11
40-50	9	40-50	7
50-100	10	50-100	26
> 100	0	> 100	7

Table 2.

Sheet G
Number of Smoothsheet Soundings by Beam

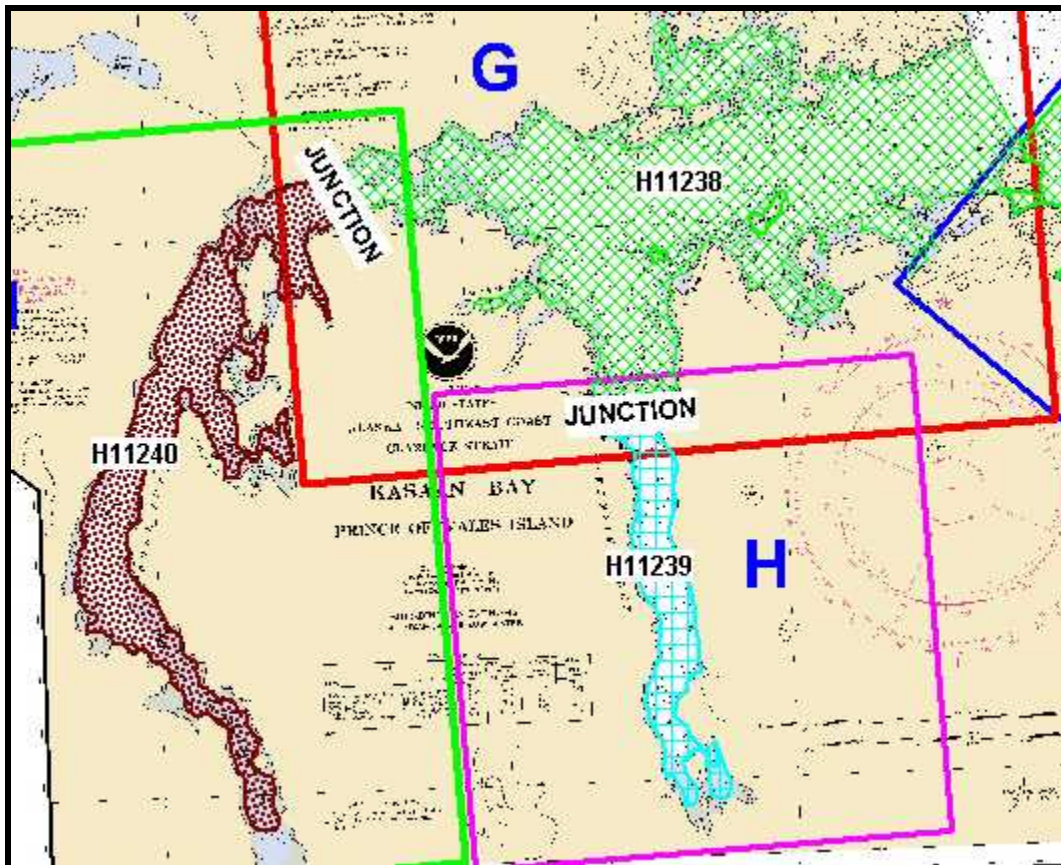
Beam	Count	% of Total
1	494	4.93
2	59	0.59
3	61	0.61
4	69	0.69
5	66	0.66
6	74	0.74
7	54	0.54
8	62	0.62
9	42	0.42
10	39	0.39
11	96	0.96
12	89	0.89
13	81	0.81
14	61	0.61
15	77	0.77
16	81	0.81
17	105	1.05
18	84	0.84
19	78	0.78
20	83	0.83
21	103	1.03
22	101	1.01
23	100	1.00
24	84	0.84
25	114	1.14
26	114	1.14
27	127	1.27
28	112	1.12
29	96	0.96
30	124	1.24
31	103	1.03
32	90	0.90
33	117	1.17
34	102	1.02
35	103	1.03
36	109	1.09
37	98	0.98
38	92	0.92
39	95	0.95
40	102	1.02
41	100	1.00
42	98	0.98
43	92	0.92
44	87	0.87
45	85	0.85
46	75	0.75
47	102	1.02
48	84	0.84
49	85	0.85
50	100	1.00
51	82	0.82

Beam	Count	% of Total
52	96	0.96
53	105	1.05
54	105	1.05
55	96	0.96
56	92	0.92
57	92	0.92
58	90	0.90
59	99	0.99
60	96	0.96
61	93	0.93
62	114	1.14
63	92	0.92
64	96	0.96
65	98	0.98
66	102	1.02
67	106	1.06
68	89	0.89
69	96	0.96
70	97	0.97
71	74	0.74
72	82	0.82
73	87	0.87
74	76	0.76
75	80	0.80
76	74	0.74
77	59	0.59
78	78	0.78
79	90	0.90
80	82	0.82
81	65	0.65
82	77	0.77
83	68	0.68
84	94	0.94
85	87	0.87
86	84	0.84
87	91	0.91
88	102	1.02
89	97	0.97
90	110	1.10
91	134	1.34
92	96	0.96
93	87	0.87
94	114	1.14
95	129	1.29
96	96	0.96
97	85	0.85
98	90	0.90
99	89	0.89
100	102	1.02
101	555	5.54
Total	10019	

Contemporary Survey Junctions

The easterly, westerly and southerly limits of this survey junction with H11236, H11240 and H1129⁶, respectively (2003, Scale 1:10,000). All of the smooth sheets were plotted at the same scale and the soundings at all survey junctions agreed well.⁷ There are no recommendations and no adjustments were made.

Figure 3.



The junction locations of H11238, H11236, H11239, H11240

Quality Control Checks

Nadir Beam versus Lead line checks were done daily during the survey. The results of the quality control checks are contained in “Separate I Acquisition and Processing Logs”⁸ of this report. There were no unique problems that pertain to this survey. Line acquisition logs are also included in “Separate I Acquisition and Processing Logs” that details all required aspects of quality control for each line.

B3. Corrections To Echo Soundings

Hydrographic Survey H11238 was performed with four other surveys in Project OPR-O331-KR-03. Changes to the corrections to echo soundings affect all five surveys in the area and is⁹ described in the project wide Data Acquisition and Processing Report.

The hydrographic survey began on DN 208. The tide station at Saltery Cove (945-0495) began collecting data on DN 198, prior to data collection. The hydrographic survey data collected was reduced using Saltery Cove (945-0495).¹⁰

C. Vertical and Horizontal Control

NOAA tide station Ketchikan (945-0460); tertiary station Saltery Cove (945-0581) and short-period stations Hollis Anchorage (945-0544), Polk Inlet (945-0467), and McKenzie Inlet (945-0466) provided initial and final tide processing for this project. Ketchikan preliminary water level data was downloaded from the NOAA web site (<http://www.cops.nos.noaa.gov>) daily. Verified tide data and final zoning from these stations was processed by John Oswald and Associates (JOA). The stations were installed by Terra Surveys, LLC. Soundings for this survey were tide adjusted using verified data from tertiary station Saltery Cove (945-0581). The final zoning methodology is described in further detail in the project wide Vertical and Horizontal Control Report.¹¹

The horizontal control datum for this survey is North American Datum of 1983 (NAD 83). The projection used during collection was UTM, Zone 8. United States Coast Guard Station (USCG) *Annette Island* was used to send correctors to the survey vessels. A 24-hour observation on NGS station *CAN 2* was used as a fixed point DGPS performance check on *Annette Island*. The observation survey showed the position on *CAN 2* met the required accuracy standards. The 24-hour observation survey is detailed in the project wide Vertical and Horizontal Control Report. A summary of the daily DGPS confidence checks can be found in “Separate I Acquisition and Processing Logs”¹² included with this report.

D1. Chart Comparison¹³

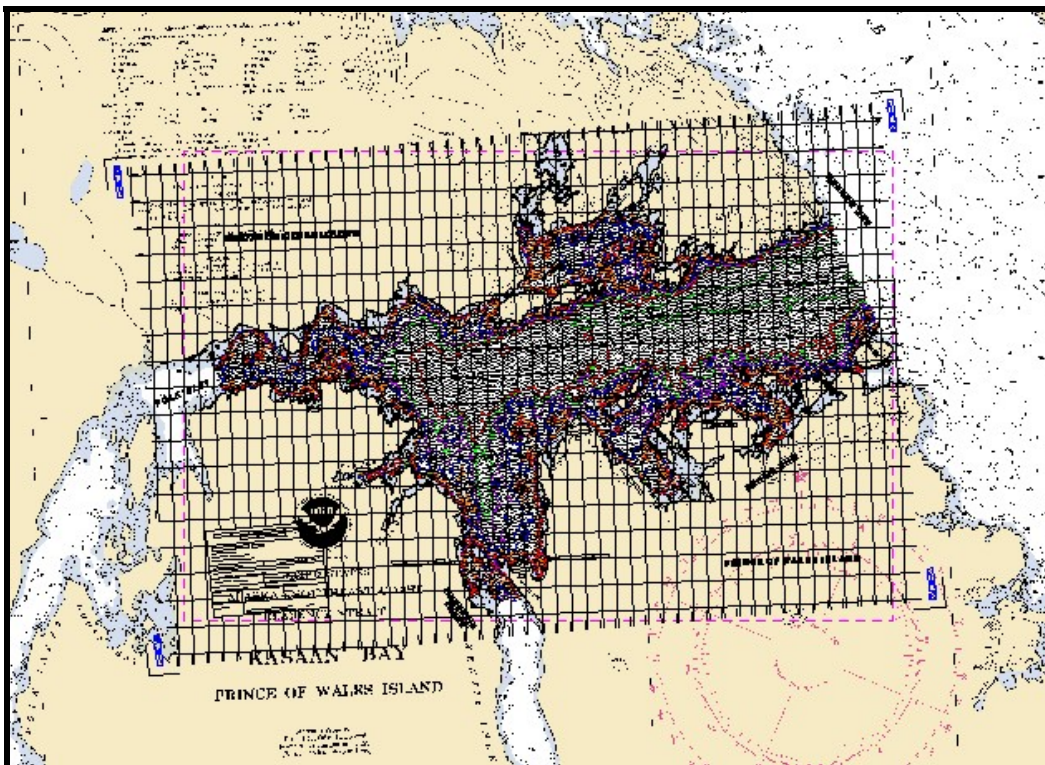
There was no Local Notice to Mariners that affected the survey area. Notice number 39 (Weekly Edition-August 2003) was the last notice reviewed for this project. There were no Dangers to Navigation Reports submitted for this survey.¹⁴

This survey was compared in MicroStation to the following charts:

Chart	Scale	Edition	Date
17420	1:229,376	26 th	Sept. 22,2001
17426	1:40,000 & 1:10,000	13th	July 11,1992
17436	1:40,000	6th	Aug. 19,1989

Charts 17426 and 17436

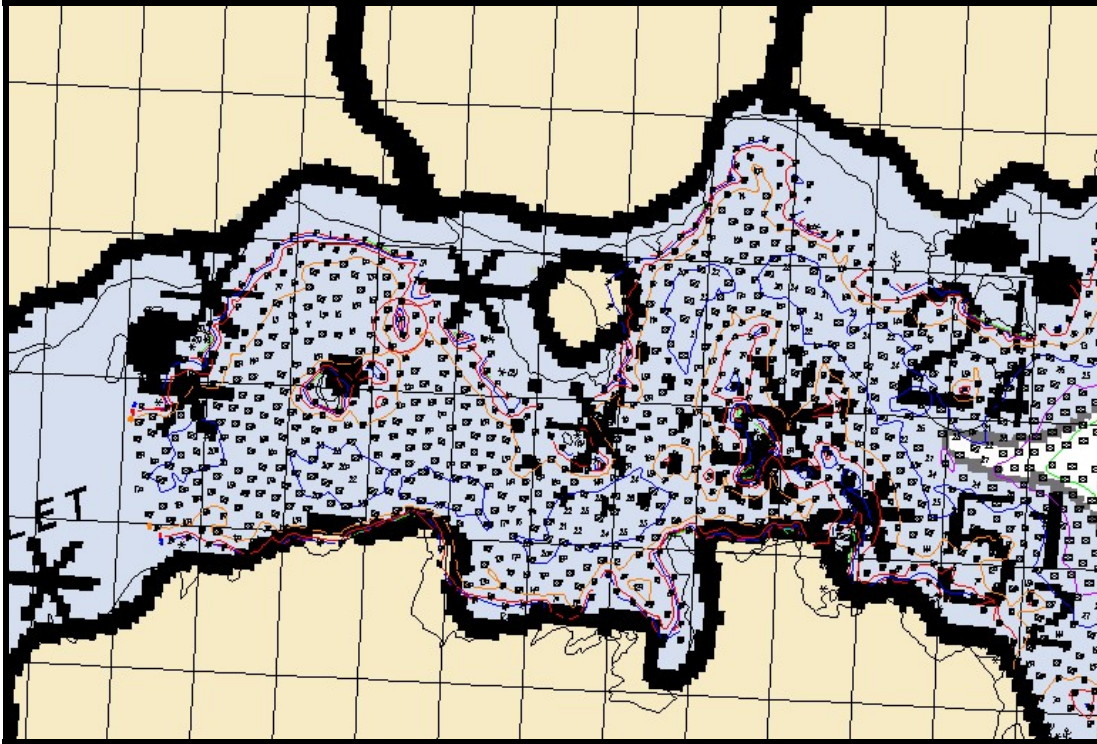
This survey generally agreed well with the charts.¹⁵ Occasionally, minor disagreements with the curves or soundings were noted. Charted and remote sensing features that differed significantly are discussed on the following pages. Refer to “Section D2 Additional Results” for shoreline investigation results affecting this chart.



Smooth sheet H-11238 overlaid on Chart 17426 for comparison

Chart 17420

This survey generally agreed well with the chart. There were no outstanding disagreements with the depth curves or soundings. A comparison of the chart and remote sensing data does reveal a general discrepancy in the form of a shift in the shoreline. The charted shoreline is shifted overall to the east of the remote sensing data. The remote sensing data was verified through traditional and limited methods during this survey and was found to be accurate.

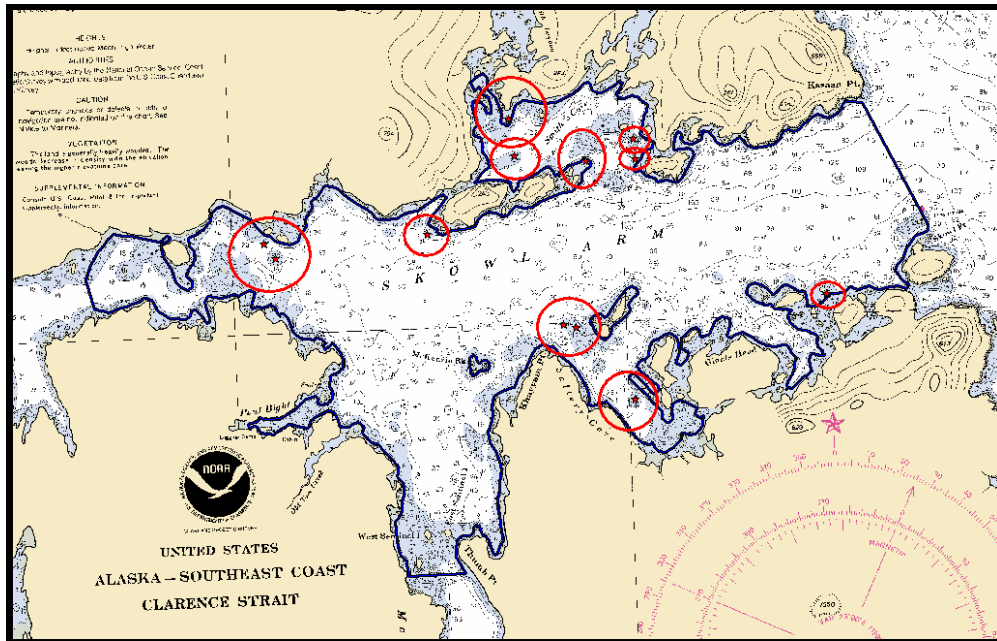


A portion of Chart 17420 showing the charted versus RSD shoreline discrepancy

New Rocks

There are seventeen new rocks identified in this survey from bathymetry. The following is a list of their positions and depths.¹⁶

<u>Latitude</u>	<u>Longitude</u>	<u>Depth fathoms</u>
55° 25' 37.47"	132° 26' 10.75"	0.9
55° 25' 39.41"	132° 24' 35.87"	9.8 ¹⁷
55° 26' 1.09"	132° 20' 5.18" 0	5.0 ¹⁸
55° 25' 56.77"	132° 23' 49.91"	2.0
55° 26' 9.98"	132° 21' 36.97"	4.0 ¹⁹
55° 26' 10.27"	132° 19' 48.66"	3.5 ²⁰
55° 26' 10.47"	132° 20' 26.68"	0.7
55° 24' 25.94"	132° 19' 55.66"	1.6 ²¹
55° 24' 58.24"	132° 20' 39.19"	3.9
55° 26' 13.82"	132° 21' 21.27"	3.6 ²²
55° 24' 59.74"	132° 20' 48.84"	9.2 ²³
55° 26' 29.88"	132° 21' 24.7" 3	0.0 ²⁴
55° 25' 32.98"	132° 24' 27.56"	2.1 ²⁵
55° 25' 41.03"	132° 22' 29.98"	18.0 ²⁶
55° 26' 19.09"	132° 19' 49.91"	0.1
55° 25' 8.71"	132° 17' 26"	0.2 ²⁷



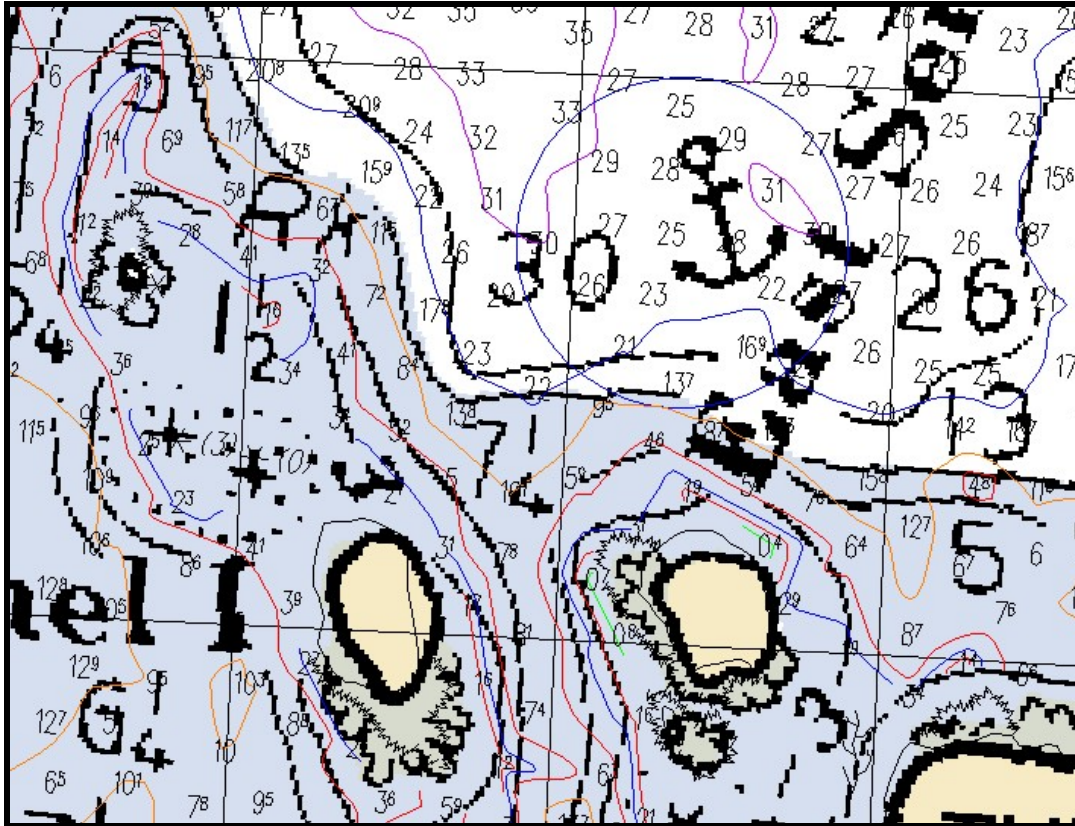
New Rocks found from bathymetry(circled red) in Chart 17426

Recommendations

Based on the results of survey H-11238, the Hydrographer recommends updating the next editions with the rocks listed.²⁸

Vessel Anchorage

Chart 17426 has one vessel anchorage symbol. All the soundings agree well with the chart in this area. The hydrographer recommends the symbol be retained as charted.²⁹



Vessel anchorage symbol near East Sentinel Island , Chart 17426

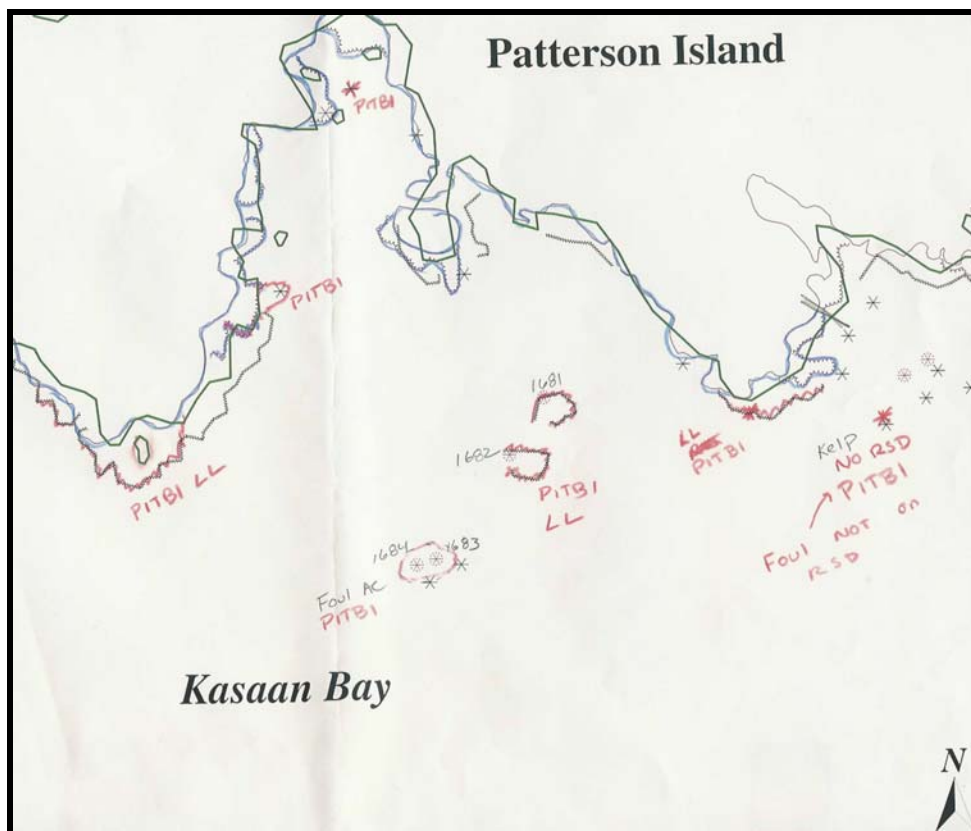
Danger to Navigation Reports

This survey produced two Danger to Navigation Reports and one amendment. The reports and the associated correspondence are included in “Appendix A” of this report.³⁰

D2. Additional Results ³¹

Shoreline Investigation Summary

Shoreline and near-shore investigation were required for this contract. The ground truth observations agreed well with the remote sensing data (RSD).³² The field crews worked with shoreline maps showing RSD and charted shoreline, ledge line, islets and rocks. The crews noted agreements, disagreements and sketched any ground-truth changes onto these maps.³³ Navigation was achieved through HYPACK software showing the position of the boat in its relationship to both sets of data simultaneously. If a feature was not represented in the RSD or disagreed with the RSD position by more than 20 meters, it was noted as a “Potential Item To Be Investigated” (PITBI) in accordance with SOW 3.4.2.1. The survey also found features that were charted, but not represented on the RSD. Those features were noted as PITBI if they were navigationally significant.³⁴ The field maps with notes were scanned into jpeg format. The scanned maps were then uploaded via file transfer protocol to the COTR for review. There were no PITBIs approved for further investigation.



Typical Field Notes from Shoreline Investigation

This survey identified foul areas and ledge lines that were not represented on the RSD. Refer to the following pages for location maps of these areas.

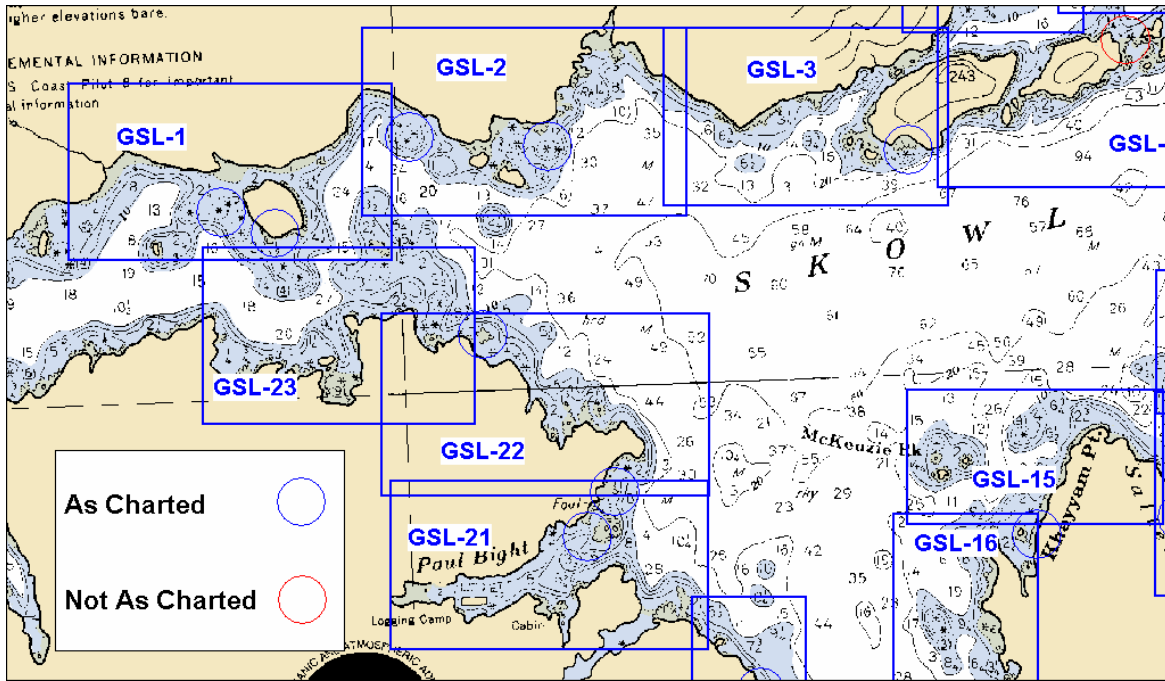


Chart 17426 with charted areas (circled red³⁵) and not charted (circled red) areas not represented by the RSD

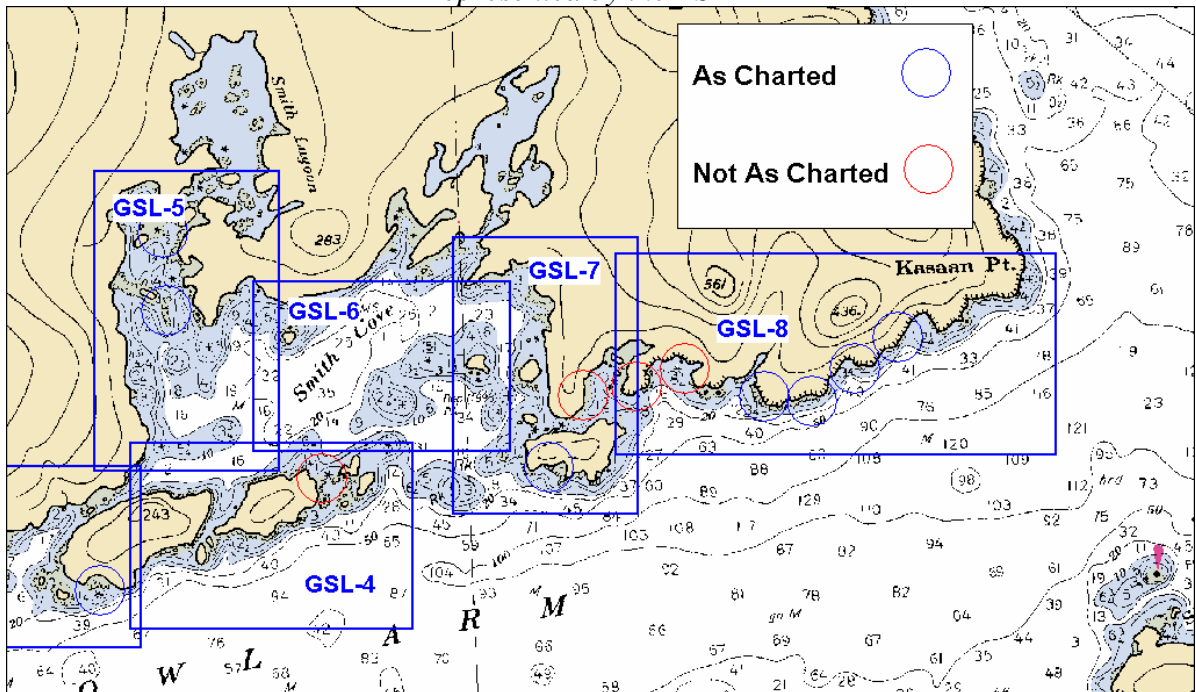


Chart 17426 with charted areas (circled red³⁶) and not charted (circled red) areas not represented by the RSD

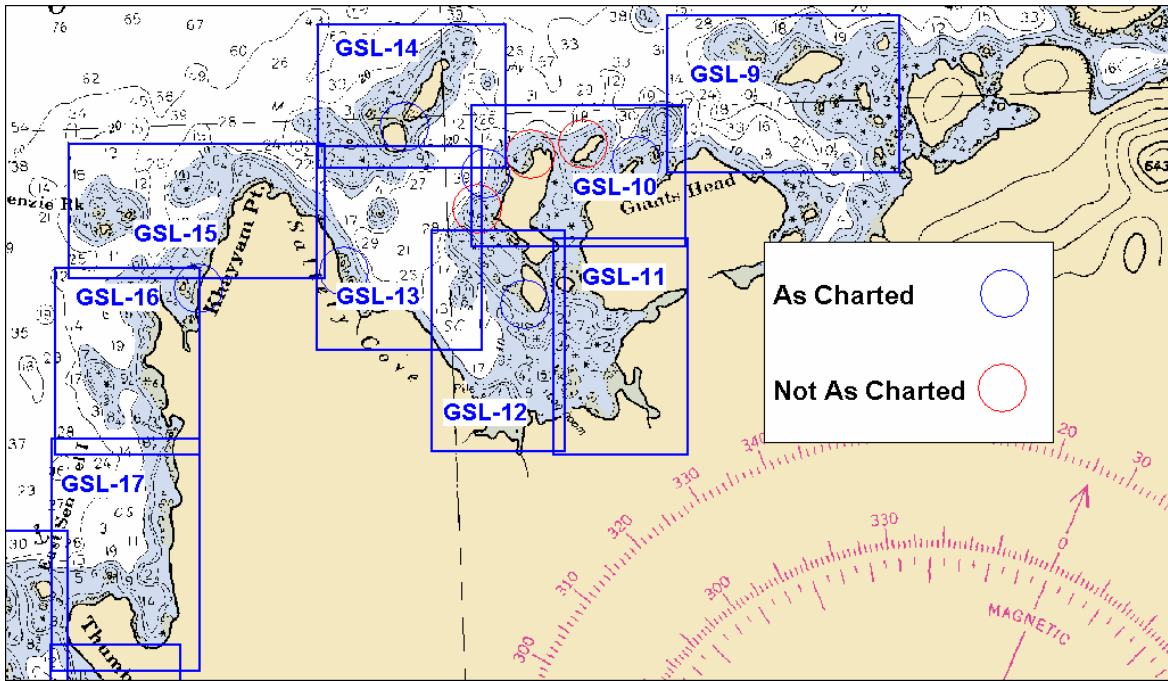


Chart 17426 with charted areas (circled red³⁷) and not charted (circled red) areas not represented by the RSD

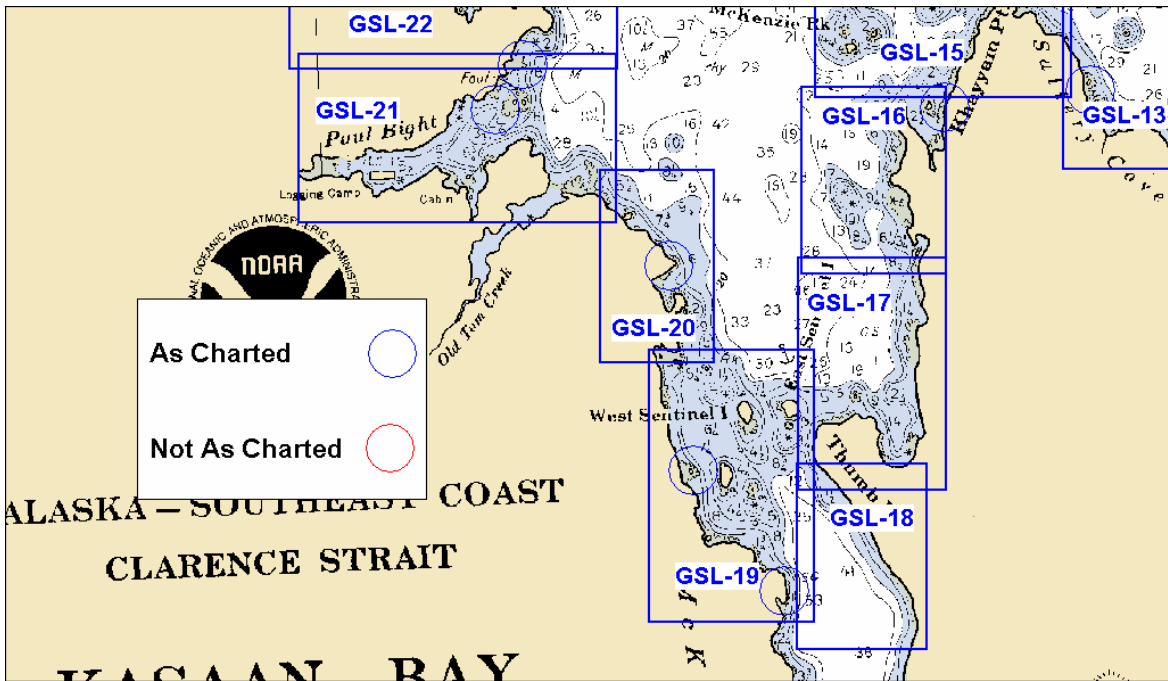


Chart 17426 with charted areas (circled red³⁸) and not charted (circled red) areas not represented by the RSD

Recommendations

Based on the results of survey H-11238, the Hydrographer recommends retaining charted foul and ledge lines not represented by the RSD.³⁹ The hydrographer also recommends further investigation into the areas not charted that were discovered through shoreline verification.⁴⁰

Traditional Verification Offshore of 4-meter Curve

Offshore features separated by navigable water from the mean high water line were verified by detached position per SOW 3.4.3. A detached position log of the items follows. Heights and depths are in meters.⁴¹

Target	Height(-) Depth(+) above water surface	Time	Date	Height(-) Depth(+) Ref MLLW	On RSD	On Chart
1635	0	18:33:52	7/21/2003	-1.807	Y	Y
1637	0	18:47:15	7/21/2003	-1.71	Y	Y
1638	-2.5	18:51:58	7/21/2003	-4.134	Y	Y
1639	0	18:55:44	7/21/2003	-1.563	Y	Y
1645	0	19:57:21	7/21/2003	-1.168	Y	Y
1646	0	19:59:54	7/21/2003	-1.178	Y	Y
1648	0	20:05:47	7/21/2003	-1.151	Y	Y
1649	0	20:07:13	7/21/2003	-1.115	Y	Y
1650	0	20:10:49	7/21/2003	-1.125	Y	Y
1651	-2	20:13:08	7/21/2003	-3.098	Y	Y
1653	0	20:25:50	7/21/2003	-1.074	Y	Y
1654	0	20:30:22	7/21/2003	-1.082	Y	Y
1655	0	20:32:15	7/21/2003	-1.07	Y	Y
1656	-0.5	20:34:01	7/21/2003	-1.571	Y	N
1657	-2	20:36:36	7/21/2003	-3.073	Y	N
1658	6	21:25:02	7/21/2003	4.825	Y	Y
1659	0	21:27:30	7/21/2003	-1.166	Y	Y
1660	0	21:28:02	7/21/2003	-1.162	Y	Y
1661	0	21:45:43	7/21/2003	-1.256	Y	Y
1662	0	21:48:36	7/21/2003	-1.239	Y	Y
1663	-2.5	21:50:05	7/21/2003	-3.797	Y	Y
1667	0	21:57:40	7/21/2003	-1.328	Y	Y
1703	0	14:01:47	7/27/2003	0.25	Y	Y
1705	-6	15:31:17	7/27/2003	-5.982	Y	Y
1706	0	15:33:45	7/27/2003	0.034	Y	Y
1706 ⁴²	0	15:33:45	7/27/2003	0.034	Y	Y
1707	0	15:37:05	7/27/2003	-0.032	Y	Y
1708	0	15:42:49	7/27/2003	0.01	Y	Y
1709	0	15:48:11	7/27/2003	-0.041	Y	Y
1710	0	15:56:38	7/27/2003	-0.198	Y	Y
1711	0	16:04:39	7/27/2003	-0.241	Y	Y
1712	0	16:07:05	7/27/2003	-0.344	Y	Y
1712	0	16:07:05	7/27/2003	-0.344	Y	Y
1713	0	16:11:35	7/27/2003	-0.298	Y	Y
1714	0	16:16:05	7/27/2003	-0.38	Y	Y
1715	0	16:18:29	7/27/2003	-0.356	Y	Y
1717	0	16:42:23	7/27/2003	-0.665	Y	Y
1718	0	16:49:03	7/27/2003	-0.907	Y	Y
1721	-2.5	15:02:47	7/28/2003	-1.933	Y	Y
1722	-4	15:10:12	7/28/2003	-3.431	Y	Y

Target	Height(-) Depth(+) above water surface	Time	Date	Height(-) Depth(+) Ref MLLW	On RSD	On Chart
1723	0	15:13:41	7/28/2003	0.566	Y	Y
1724 ⁴³	0	15:18:29	7/28/2003	0.57	N	N
1726	0	15:33:33	7/28/2003	0.53	Y	Y
1727	0	15:47:04	7/28/2003	0.488	Y	Y
1728	0	15:52:48	7/28/2003	0.451	Y	Y
1729	-4	15:54:26	7/28/2003	-3.537	Y	N
1730	-4.5	16:05:46	7/28/2003	-4.122	Y	Y
1731	-1	16:41:33	7/28/2003	-0.967	Y	Y
1732	0	16:58:43	7/28/2003	-0.208	Y	Y
1733	-1	17:01:30	7/28/2003	-1.334	Y	Y
1734	-2	14:42:31	7/29/2003	-1.723	Y	Y
1735	0	14:53:24	7/29/2003	0.415	Y	Y
1736	-5	15:05:57	7/29/2003	-4.48	N	Y
1737	-0.5	15:08:27	7/29/2003	0.083	N	Y
1740	0	15:33:01	7/29/2003	0.684	Y	Y
1742	-1	15:45:53	7/29/2003	-0.298	Y	Y
1743	-3.5	15:47:19	7/29/2003	-2.798	Y	Y
1745	-5	16:50:47	7/29/2003	-4.614	Y	Y
1746	0	16:58:29	7/29/2003	0.346	Y	Y
1748	0	17:31:22	7/29/2003	-0.144	Y	Y
1750	-5	17:51:58	7/29/2003	-5.392	Y	N
1752	-3.5	18:27:04	7/29/2003	-4.524	Y	N
1753	-1	14:57:39	7/30/2003	-0.848	Y	Y
1792	0	13:27:46	8/9/2003	0.306	Y	Y
1793	-1.5	13:32:23	8/9/2003	-1.201	Y	Y
1794	-0.5	13:38:43	8/9/2003	-0.213	N	N
1795	0	13:46:18	8/9/2003	0.277	N	N
1796	-4.5	13:51:41	8/9/2003	-4.246	Y	Y
1797	-2	13:57:31	8/9/2003	-1.772	Y	Y
1798	0	14:01:57	8/9/2003	0.187	Y	Y
1799	-0.2	14:10:56	8/9/2003	-0.03	N	Y
1800	0	14:46:15	8/9/2003	-0.125	Y	Y
1801	-1.3	14:50:50	8/9/2003	-1.511	Y	Y
1802	-2.1	14:53:25	8/9/2003	-2.278	Y	Y
1803	-3.5	14:56:26	8/9/2003	-3.78	Y	Y
1804	0.3	14:57:59	8/9/2003	0.032	Y	Y
1805	0	15:42:27	8/9/2003	-0.79	Y	Y
1806	0	15:48:16	8/9/2003	-0.881	Y	Y
1807	0	13:43:07	8/10/2003	0.547	Y	Y
1808	0.5	13:50:39	8/10/2003	1.069	N	N
1809	-1.5	13:55:13	8/10/2003	-0.905	Y	Y
1810	-2	13:58:12	8/10/2003	-1.415	Y	Y
1811	-2	14:03:55	8/10/2003	-1.395	Y	Y
1812	-6	14:36:13	8/10/2003	-5.392	Y	Y
1813	-0.3	15:04:02	8/10/2003	0.162	N	Y
1814	0	15:18:14	8/10/2003	0.386	N	Y
1815	-1.5	15:19:54	8/10/2003	-1.215	N	Y

Target	Height(-) Depth(+) above water surface	Time	Date	Height(-) Depth(+) Ref MLLW	On RSD	On Chart
1816	-0.1	15:23:00	8/10/2003	0.223	N	Y
1817	-2.5	15:25:17	8/10/2003	-2.277	Y	Y
1818	0.3	15:28:49	8/10/2003	0.554	N	Y
1819	-1.3	15:32:12	8/10/2003	-1.132	Y	Y
1820	0	15:53:50	8/10/2003	-0.014	N	N
1821	0	15:59:49	8/10/2003	-0.095	N	N
1822	0	16:01:18	8/10/2003	-0.238	N	N
1823	0	16:04:36	8/10/2003	-0.194	N	N
1824	0	16:11:27	8/10/2003	-0.268	N	N
1825	0	16:13:03	8/10/2003	-0.423	N	N
1826	0	16:14:51	8/10/2003	-0.407	N	N
1827	0	16:17:10	8/10/2003	-0.36	N	N
1882	0	15:04:22	8/13/2003	0.227	N	Y
1927	-5	15:06:42	8/13/2003	-4.804	Y	Y
1928	0	15:14:55	8/13/2003	0.426	N	N
1929	0	15:20:05	8/13/2003	0.5	N	N
1930	0	15:21:22	8/13/2003	0.488	Y	Y
1931	-5.5	15:23:21	8/13/2003	-5.036	Y	Y
1932	-6	15:25:09	8/13/2003	-5.421	Y	Y
1933	-2.5	15:28:10	8/13/2003	-1.954	Y	Y
1934	-2	15:32:05	8/13/2003	-1.371	Y	Y
1935	-2.5	15:33:58	8/13/2003	-1.881	Y	Y
1935 ⁴⁴	-2.5	15:33:58	8/13/2003	-1.881	Y	Y
1936	0	15:38:49	8/13/2003	0.683	N	N
1937	-2.3	15:56:37	8/13/2003	-1.498	Y	Y
1938	-1.5	15:59:10	8/13/2003	-0.713	N	Y
1939	-4	16:04:35	8/13/2003	-3.18	N	N
1940	-3	16:06:24	8/13/2003	-2.188	N	N
1941	0	16:07:33	8/13/2003	0.848	N	N
1942	0	16:12:27	8/13/2003	0.835	N	N
1943	0	16:13:29	8/13/2003	0.858	N	N
1944	0	16:15:06	8/13/2003	0.855	N	N
1945	0	16:16:47	8/13/2003	0.854	N	Y
1946	0	16:18:12	8/13/2003	0.851	N	N
1947	0	16:19:34	8/13/2003	0.86	N	N
1948	0	16:21:38	8/13/2003	0.859	N	N
1949	0	16:24:44	8/13/2003	0.859	N	N
1950	-1.6	16:32:12	8/13/2003	-0.753	N	N
1952	0.3	16:37:19	8/13/2003	1.127	N	N
1953	-1.3	16:40:19	8/13/2003	-0.463	N	Y
1954	0	16:41:50	8/13/2003	0.84	N	N
1955	0	16:43:12	8/13/2003	0.802	N	N
1956	0.6	16:51:50	8/13/2003	1.382	N	Y
1957	-1.6	16:57:23	8/13/2003	-0.854	Y	N
1958	-0.2	17:48:28	8/13/2003	0.087	N	N
1958 ⁴⁵	-0.2	17:48:28	8/13/2003	0.087	N	N
1959	-0.6	17:56:46	8/13/2003	-0.551	N	Y

Target	Height(-) Depth(+) above water surface	Time	Date	Height(-) Depth(+) Ref MLLW	On RSD	On Chart
1960	0	18:00:02	8/13/2003	0.112	N	Y
1961	0	18:01:33	8/13/2003	-0.066	N	Y
1962	0	18:14:29	8/13/2003	-0.258	N	Y
1963	0	18:15:47	8/13/2003	-0.24	N	Y
1964	0	18:18:54	8/13/2003	-0.186	N	N
1965	0	18:19:47	8/13/2003	-0.387	N	N
1966	0	18:20:35	8/13/2003	-0.369	N	N
1967	0	18:23:27	8/13/2003	-0.313	N	N
1968	0	18:24:09	8/13/2003	-0.294	N	N
1969	0	18:39:56	8/13/2003	-0.701	N	N
1970	0.3	18:50:51	8/13/2003	-0.672	N	Y
1971 ⁴⁶	0	18:54:08	8/13/2003	-0.887	N	Y
1972	1	18:54:09	8/13/2003	0.113	N	Y
1973	0	16:13:05	8/15/2003	-0.292	N	Y
1974	0	16:14:41	8/15/2003	-0.305	Y	Y
1975	0	16:19:18	8/15/2003	-0.219	Y	Y
1976	0	16:20:16	8/15/2003	-0.231	N	Y
1977	0	16:21:44	8/15/2003	-0.243	N	Y
1978	0	16:24:19	8/15/2003	-0.279	N	Y
1979	0	16:25:32	8/15/2003	-0.151	N	Y
1980	0	16:26:35	8/15/2003	-0.162	Y	Y
1981	0	16:29:21	8/15/2003	-0.196	Y	Y
1982	0	16:30:32	8/15/2003	-0.207	N	Y
1983	-0.2	16:50:25	8/15/2003	-0.145	N	N
1984	-1	16:53:40	8/15/2003	-0.967	N	N
1985	0	16:56:16	8/15/2003	0.094	N	Y
1986	0	16:57:41	8/15/2003	0.088	N	N
1987	-0.5	16:59:07	8/15/2003	-0.425	N	Y
1988	0	17:00:20	8/15/2003	0.069	N	N
1989	0	17:01:43	8/15/2003	0.132	N	N
1990	0	17:10:15	8/15/2003	0.145	N	Y
1998	-1.2	17:52:53	8/16/2003	-1.269	N	N
1999	0	17:54:48	8/16/2003	-0.073	Y	Y
2000	-1.5	17:56:53	8/16/2003	-1.555	N	N
2001	-0.3	18:20:06	8/16/2003	-0.378	N	Y
2002	-0.5	18:25:00	8/16/2003	-0.602	N	Y
2003	-0.2	18:31:28	8/16/2003	-0.328	N	Y
2004	-0.2	18:37:09	8/16/2003	-0.36	N	Y

The above items have been fully investigated and are represented on the smoothsheet.⁴⁷

Aids to Navigation:

There is one aid to navigation to report in survey H-11238, Skowl Point Light. This navigation aid appears to serve its intended purpose and was located within an acceptable range of the charted position and the 2003 Light List vol. VI, recorded position.⁴⁸

Skowl Point Light (22380)

Skowl Point Light was found in good condition and appears to serve its intended purpose.

USCG Light List name: Skowl Point Light

Name on chart: No name

USCG Light List number: 22380

Characteristics: Fl W 4s

Height: 15 feet

Range: 5 nautical miles

Structure: NR on skeleton tower

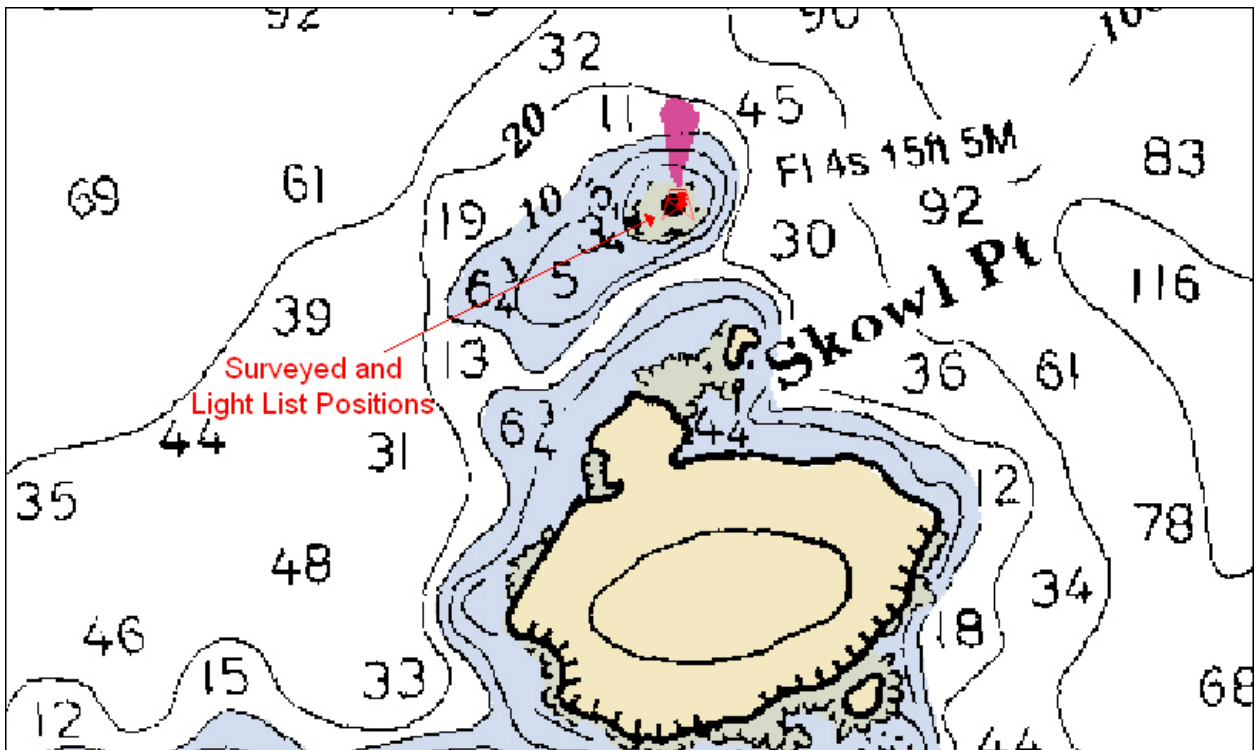
Light List published position: Lat 55°25'39"N Long 132°16'11"W

2003 Surveyed position: Lat 55°25'39.4"N Long 132°16'08.4"W

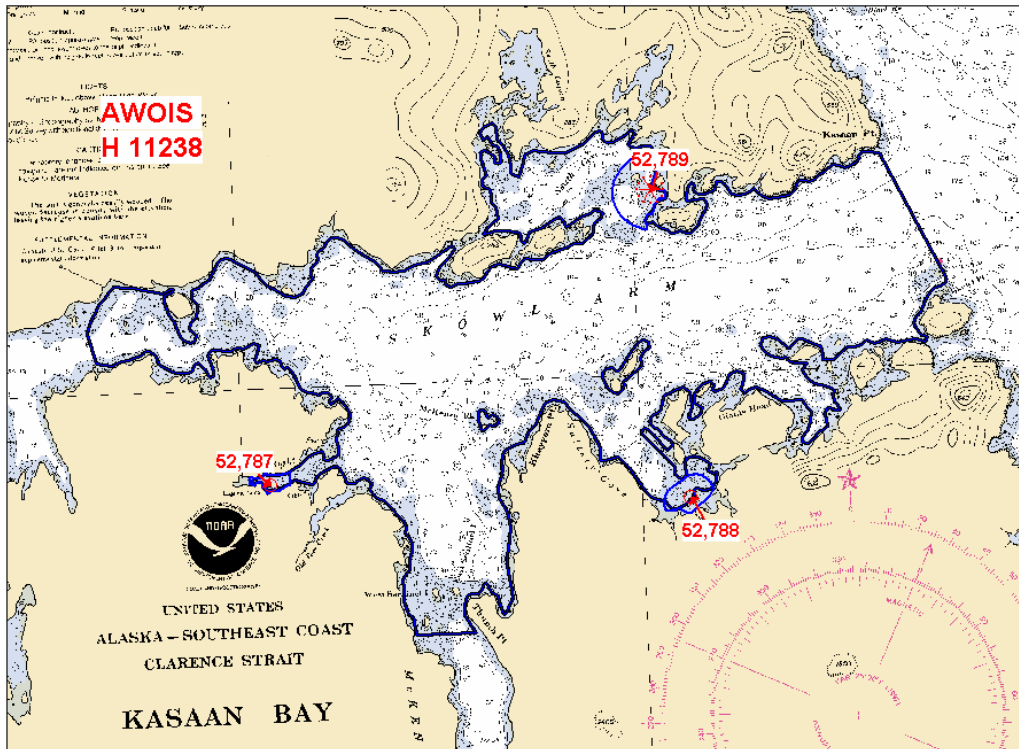
Recorded on: 07/21/2003 17:33:48 UTC



Skowl Point Light (22380)



AWOIS Investigations



AWOIS Items Summary

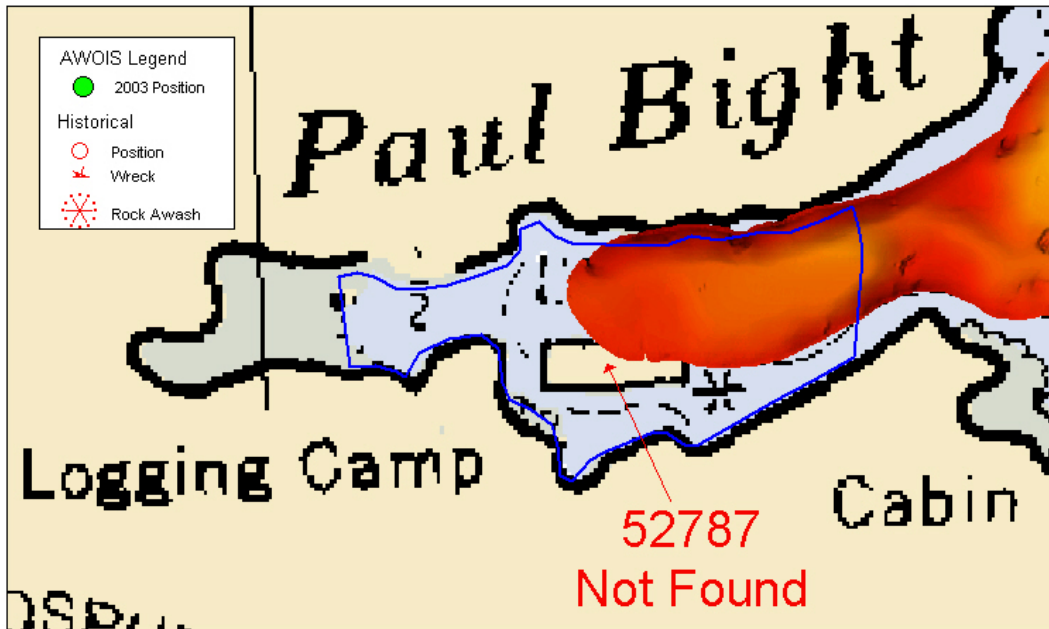
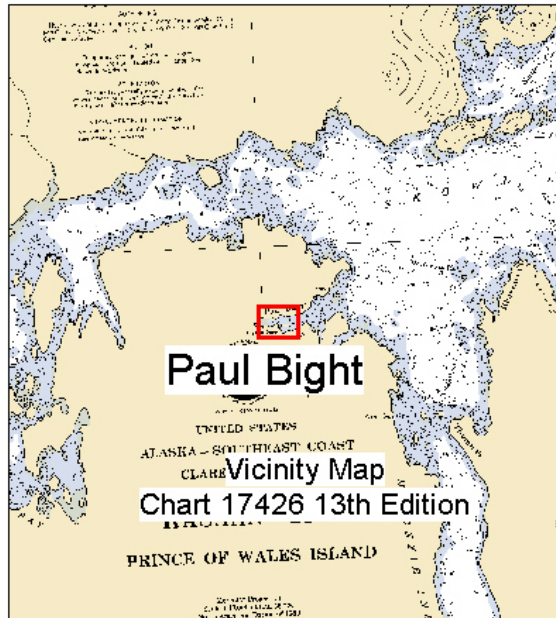
This contract requires full investigation of three AWOIS items. The table below is a summary of the items and their results. The following pages show location maps, followed by individual reports.

Record	Description	Comment
52787	Logging camp	Full investigation with shoreline verification and SWMB, not found.
52788	Log boom	Full investigation with shoreline verification and SWMB, not found.
52789	Submerged rock	Full investigation with shoreline verification and SWMB, found .

Historical and 2003
AWOIS Positions

H-11238

52787



Item Investigation Report

Description (as charted): Logging Camp
Source: AWOIS record number 52787
Charted Position: Lat 55°24'18.86"N Long 132°24'39.50"W
Charts Affected: 17426 13th edition, July 11, 1992

Investigation

Date(s)/Day Number(s): 07/29/2003 / DN210
Survey Vessel Name: Ducer
Position Numbers/Time: Search Area: 55°24'23"N 132°24'41W/21:05:16
Investigation Method: Shallow Water Multi-beam Sonar/Shoreline Verification
Surveyed Position (NAD83): N/A
Position Determined By: N/A
Investigation Summary: The charted position of this item fell outside the limits of hydrography. The AWOIS radius was fully investigated by 200% SWMB coverage and shoreline investigation. A review of the digital terrain model detected no topographic relief.

Charting Recommendation

Based on the results of survey H-11238, the hydrographer recommends removing the logging camp symbol and notation from the chart and database.⁴⁹

Recommended Least Depth: N/A



AWOIS item 52787 search area, looking west

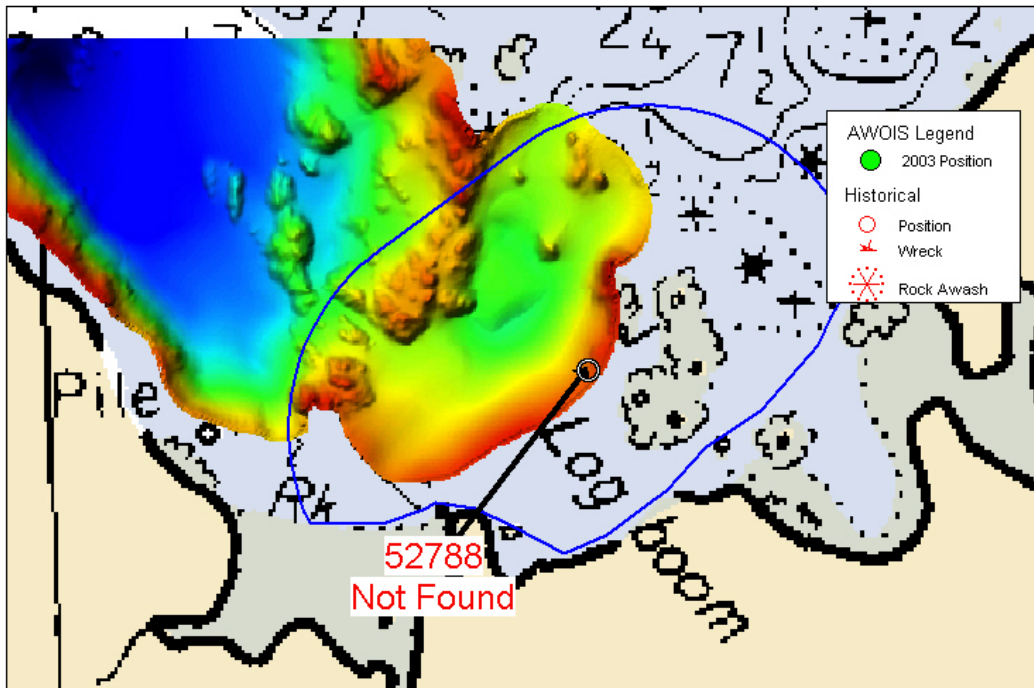
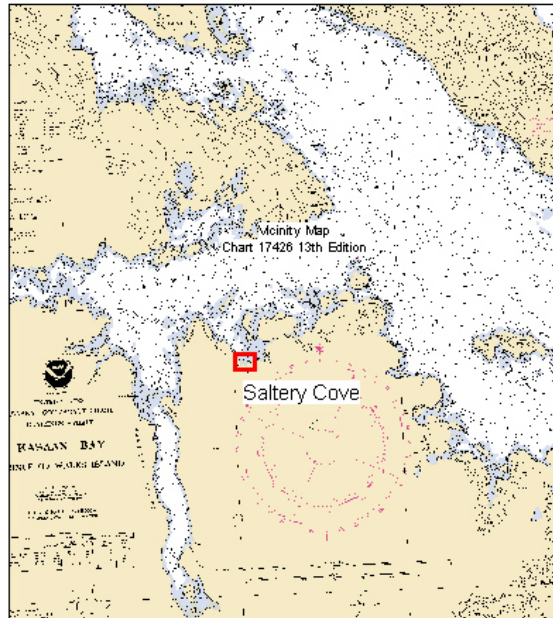


AWOIS item 52787 search area, looking south

Historical and 2003
AWOIS Positions

H-11238

52788



Item Investigation Report

Description (as charted): Log Boom
Source: AWOIS record number 52788
Charted Position: Lat 55°24'07.06"N Long 132°19'24.92"W
Charts Affected: 17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 08/20/2003 / DN 232
Survey Vessel Name: Skiff
Position Numbers/Time: Search Area Lat 55°24'07.06"N Long 132°19'24.92"W
Time 20:30
Investigation Method: Shallow Water Multi-beam Sonar/Shoreline Verification
Surveyed Position (NAD83): N/A
Position Determined By: N/A
Investigation Summary: The charted position of this item fell outside the limits of hydrography. The AWOIS radius was fully investigated by 200% SWMB coverage and shoreline investigation. A review of the digital terrain model detected no topographic relief.

Charting Recommendation

Based on the results of survey H-11238, the hydrographer recommends the log boom notation be removed from the chart and database.⁵⁰

Recommended Least Depth: N/A

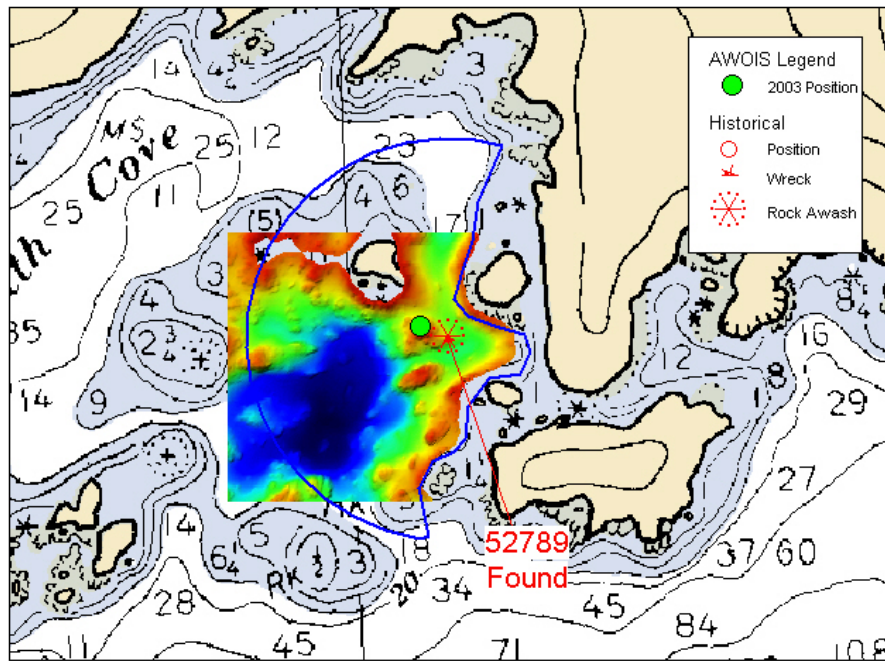
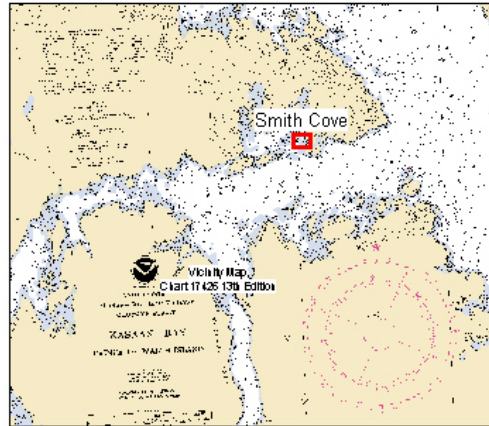


AWOIS item 52788 search area, looking SSW

Historical and 2003
AWOIS Positions

H-11238

52789



AWOIS item 52788, radius, 2003 bathymetry, Chart 17426

Item Investigation Report

Description (as charted): Rock
Source: AWOIS record number 52789
Charted Position: Lat 55°26'18.00"N Long 132°19'46.00"W
Charts Affected: 17426 13th edition July 11, 1992

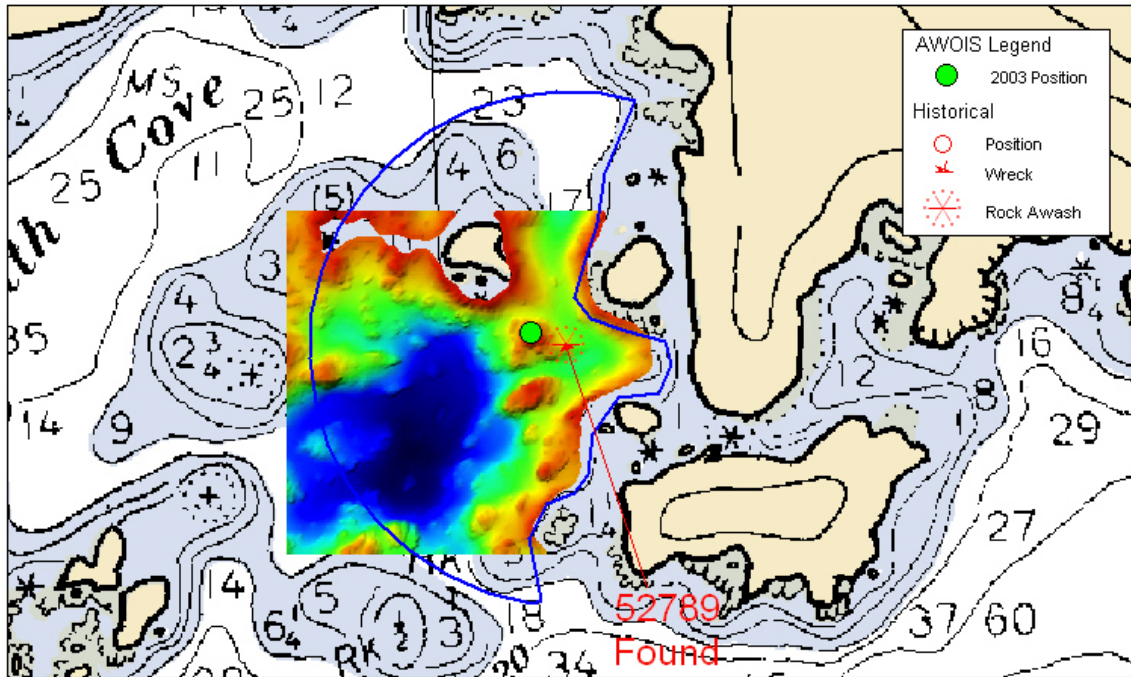
Investigation

Date(s)/Day Number(s): 07/31/2003 / DN 212
Survey Vessel Name: Luna Sea
Position Numbers/Time: ID 13486/01:00:40
Investigation Method: Shallow Water Multi-beam Sonar/Shoreline Verification
Surveyed Position (NAD83): Lat 55°26'19.10" N Long 132°19'49.93" W
Position Determined By: SWMB
Investigation Summary: The AWOIS radius was fully investigated by 200% SWMB coverage and shoreline investigation. A review of the digital terrain model detected a shoal approximately 85 m WNW of the charted position. A Report of Danger to Navigation was also filed.⁵¹

Charting Recommendation

Based on the results of survey H-11238, the hydrographer recommends that the rock symbol be moved to the surveyed position and updated in the database.⁵²

Recommended Least Depth: 0 fathoms, 1 foot



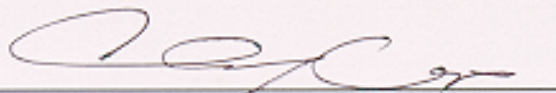
AWOIS item 52789, radius, 2003 bathymetry, Chart 17426

LETTER OF APPROVAL
REGISTRY NO. H11238

This Report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of survey H11238 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report, smooth sheet, digital data, and accompanying records have been closely reviewed and are considered complete and adequate as per the Statement of Work. Other reports submitted with this survey include Data Acquisition and Processing Report, Vertical and Horizontal Report, and the Shoreline Verification Field Notes.

I believe this survey is complete and adequate for its intended purpose.



Chris Kemp, Hydrographer
Terra Surveys, LLC

Date 12/18/2003

APPENDIX I

Dangers to Navigation

No Dangers to Navigation were found during this survey.

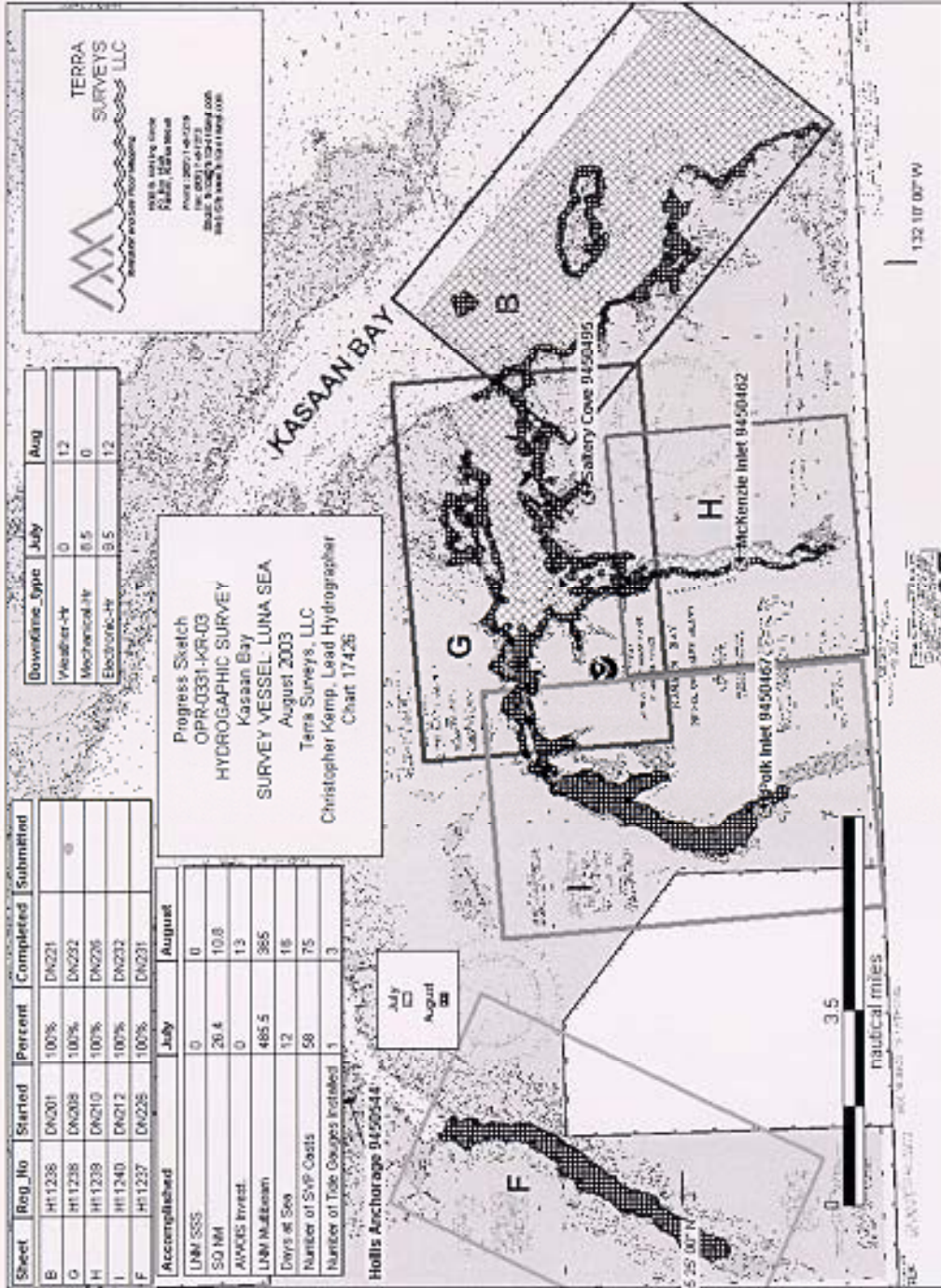
APPENDIX II

List of Geographic Names

There were no corrections or new geographic names to report on within the limits of the survey area.

APPENDIX III

Progress Sketch



APPENDIX IV

Tides and Water Levels

2003 FIELD and FINAL TIDE NOTE

Hydrographic Sheet: H11238

Sheet G

Skowl Arm

Kasaan Bay, Alaska

NOAA Project No:	OPR-0331-KR-2003 Kasaan Bay, Alaska				
NOAA Contract No:	50-DGNC-0-90003				
The NOS Ketchikan, AK tide station (945-0460) served as control for the subordinate stations on this project. Datum determinations were made for the tertiary subordinate stations: Sallery Cove (945-0495) and Hollis Anchorage (945-0544). The NTDE 1993-2001 was utilized.					
Location and Time Meridian	Name:	Lat (NAD83)	Long(NAD83)	Time Meridian:	
	Sallery Cove	55° 24' 07"	132° 19' 53"	0° (UTC)	
	Hollis Anchorage	55° 28' 45"	132° 38' 30"	0° (UTC)	
Time Period and Datum Reference	Name:	Established:	Removed:	MLLW	MHW
	Sallery Cove	7/17/2003	9/3/2003	0.000 m	4.472 m
	Hollis Anchorage	8/12/2003	9/1/2003	0.000 m	4.584 m
Tide Observer	Terra Surveys, LLC 1930 South Whiting Circle Palmer, Alaska 99645 (907) 745-7215				
Gauges	Design Analysis Ass. H350XL/355 bubbler systems.				
Install Type	Each gauge was secured inside a waterproof case, and fastened vertically inside of an enclosed Rubbermaid garden toolshed. Refer to the tide station package for additional site specific details of installation.				
Tide Staff	No tide staff was installed. Levelling was performed from a tidal bench mark to the water surface. The water height was read using a metric rod with a stilling well attached to remove interference from waves.				
Bench Marks	The following bench marks were installed at these sites: Sallery Cove: none Hollis Anchorage: none The following bench marks were recovered at these sites: Sallery Cove: BM 2 1921, BM 3 1921, BM 4 1958, BM 5 1958, BM 6 1959 Hollis Anchorage: BM 1 1924, BM 2 1924, BM 3 1924, BM 4 1953, BM 5 1960				
Levels	Bench marks were levelled at the installation and removal of the tidal stations. The bench marks and station datums were connected through frequent water level measurements. The level runs closed within NOS tolerance.				
Final Tidal Zoning	This sheet is covered by zone SA100 and SA38.				
Reduction of Hydrographic Data	Six minute tide data reduced to MLLW and smoothed with a 5th order 5 hour polynomial curve fit and was provided to Terra Surveys, LLC (prime contractor) by John Oswald and Associates (JOA) throughout the field season. In October of 2003, JOA finalized datums and forwarded all data necessary to reduce hydrographic soundings to the prime contractor.				

APPENDIX V

Supplemental Survey Records and Correspondence

There are no supplemental survey records or correspondence to report on this survey.

APPENDIX VI

AWOIS

RECD 52787 VESLTERMS OBSTRUCTION CHART 17428 AREA 0
 CARTOCODE 085 SDCINGCODE DEPTH

NATIVLAT 55.24/18.86 NATIVLON 132.24/39.50 NATIVDATUM 31
 LAT83 55.24/18.86 LONG93 132.24/39.50 GPQUALITY Mad
 55 24 18.86 132 24 39.5 Update GP GRSOURCE Scaled
 LATDEC 55.4052388888889 LONDEC 132.4109722222222

PROJECT OPR-0331 ITEMSTATUS Assigned SEARCHTYPE Full
 RADIUS 200 INIT MBH ASSIGNED 6/9/2001
 TECNIQ VS,BD,DI,SD

Techniqnote SEARCH THE AREA AS SHOWN ON THE AWOIS GRAPHIC.

History THE AWOIS POSITION IS THE CENTER OF THE SOUTHERN STRUCTURE (FLOAT CAMP).
 CL23185-USACE PERMIT TO THE HOLLIS LOGGING COMPANY, PERMITTING THE CONSTRUCTION OF A LOG DUMP,
 DAGBOOM, RAFTING & STORAGE GEAR IN APPROX. LAT. 55.24/21.74N, LONG. 132.24/39.50W (NAD83), AND A FLOAT
 CAMP IN APPROX. LAT. 55.24/18.86N, LONG. 132.24/39.50W (NAD83) AT THE HEAD OF PAUL BIGHT. (ENTERED 6/01 BY
 MBH)

Fieldnote Date(s) Day Number(s) 07/28/2003 / DN210
 Survey Vessel Name Duber
 Position Numbers/Time: Search Area: 55.24.23N 132.24.41W 021.05.16
 Investigation Method: Shallow Water Multi-beam Sonar/Shoreline Verification
 Surveyed Position (NAD83): N/A
 Position Determined By: N/A

Investigation Summary: The charted position of this item fell outside the limits of hydrography. The AWOIS radius was fully
 investigated by 200% SWMB coverage and shoreline investigation. A review of the digital terrain model detected no topographic
 relief.
 Charting Recommendation
 Based on the results of survey H-11238, the hydrographer recommends removing the logging camp symbol and notation from the
 chart and database.

Proprietary Evaluator comment: Remove logging camp symbol and notation from affected charts and chart area according to the H11238
 smooth sheet
 YEARSUNK NIMANUM SYSTEMNUM 13211 Print Record

RECRD 52788 VESSELTERMS OBSTRUCTION CHART 17426 AREA 0
 CARTOCODE 284 SINDINGCODE _____ DEPTH _____

NATIVLAT 55/24/07.06 NATIVLON 132/19/24.92 NATIVDATUM 31
 LAT63 55/24/07.06 LONG83 132/19/24.92 GPCQUALITY Med
55/24/07.06 132/19/24.92 Update GP GPCSOURCE Scaled
 LATDEC 55.401961111111 LONDEC 132.323568888889

PROJECT OPR-0331 ITEMSTATUS Assigned SEARCHTYPE Full
 RADIUS 250 INIT MBH ASSIGNED 6/8/2001
 TECNIO VS,BD,DI,SD

Technique SEARCH THE AREA AS SHOWN ON THE AWOIS GRAPHIC.

History
 THE AWOIS POSITION IS THE APPROXIMATE CENTER OF THE CHARTED LOG BOOM STRUCTURE.
 CL64558--USACE PERMIT TO THE KETCHIKAN PULP COMPANY; PERMITTING PLACEMENT OF A LOG RAFT MOORING
 BOOM IN SALTERY COVE AS SHOWN ON A SKETCH. THE STRUCTURE EXTENDS FROM:
 LAT. 55/24/04.97N, LONG. 132/19/30.11W (NAD83) TO LAT. 55/24/06.50N, LONG. 132/19/21.00W (NAD83) (ENTERED 6/01
 BY MBH)

Fieldnote
 Investigation
 Date(s)/Day Number(s): 08/20/2003 / DN 232
 Survey Vessel Name: Skiff
 Position Numbers/Time: Search Area Lat 55/24/07.06N Long 132/19/24.92W
 Time 20:30
 Investigation Method: Shallow Water Multi-beam Sonar/Shoreline Verification
 Surveyed Position (NAD83): N/A
 Position Determined By: N/A

Investigation Summary: The charted position of this item fell outside the limits of hydrography. The AWOIS radius was fully
 investigated by 200% SWMB coverage and shoreline investigation. A review of the digital terrain model detected no topographic
 relief.

Charting Recommendation

Based on the results of survey H-11238, the hydrographer recommends the log boom notation be removed from the chart and
 database.

Proprietary Evaluator comment: Remove Log Boom ED notation from affected charts and chart area according to the H11238 smooth sheet.

Revisions Compiled During Office Processing and Certification

¹ Concur.

² Concur.

³ Project Wide Data Acquisition and Processing Report, filed with the project reports.

⁴ Concur. The data is adequate to supersede all prior surveys and miscellaneous charted data except as specifically mentioned in this report or the Hdrawing.

⁵ Filed with the project reports.

⁶ Strikethrough ~~1129~~, replace with “11239”.

⁷ Concur. In PHB processing, H11238 was also compared with OPR-0331-KR-02 survey H11098. In general, junction areas showed very good correlation. An exception occurred in the area of Kasaan Point, where there was a discrepancy between smooth sheet MHWL and ledges shown for H11098 and H11238. The H11098 shoreline was shifted seaward of the charted shoreline in the area between approximately Lat 55/26/29N, Lon 132/17/32W and Lat 55/26/35N, Lon 132/16/56W. Use verified shoreline from H11238 in this area, with some ledgelines from H11098, as depicted on the Hdrawings.

All data sets have been considered when compiling contours and soundings to H11238.

Note that errors occurred in the depiction of contours on the smooth sheet. Contour errors have been corrected on the Hdrawing.

⁸ Filed with the project reports.

⁹ Strikethrough ~~is~~, replace with “are”.

¹⁰ See Final Tide Note attached to this report.

¹¹ Filed with the project reports.

¹² Filed with the project reports.

¹³ Office comparison was also made to Chart 17426, 14th Edition, Chart 17420, 27th Edition, and Chart 17436, 8th Edition, continuous maintenance rasters.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ Chart all features according to the smooth sheet and Hdrawing except as noted.

¹⁷ Concur with clarification. The rock is in an area of similar depths and is not depicted on the Hdrawing.

¹⁸ Concur with clarification. Strikethrough ~~132° 20' 5.18" 0 — 5.0~~, replace with Longitude “132° 20' 5.18” and Depth Fathoms “0.5”. The depth is depicted on Chart 17426, 14th Edition, continuous maintenance raster, as ½ fathom. Chart 0 fathom 3 foot *Rk* at smooth sheet position.

¹⁹ Concur with clarification. Chart 4 fathom sounding at smooth sheet location.

²⁰ Concur with clarification. Due to scale, the rock is not depicted on the Hdrawing.

²¹ Concur with clarification. The rock is depicted on Chart 17426, 14th Edition, continuous maintenance raster, as 1¾ fathoms. Chart 1 fathom 3 ft. *Rk* at smooth sheet position.

²² Concur with clarification. The rock is depicted on Chart 17426, 14th Edition, continuous maintenance raster, as a 3¾ fathom sounding. Chart 3 fathom 3 ft. *Rk* at smooth sheet position.

²³ Concur with clarification. The rock is depicted on Chart 17426, 14th Edition, continuous maintenance raster, as a 9 fathom sounding. Chart 9 fathom 1 ft. *Rk* at smooth sheet position.

²⁴ Do not concur. The rock at the position given is depicted on the smooth sheet as 3 fathoms deep. Since a “3” appears after the longitude in the table, strikethrough ~~132° 21' 24.7" 3—0.0~~ and replace with Longitude “132° 21' 24.7”” and Depth Fathoms “3”.

²⁵ Concur with clarification. The rock is depicted on Chart 17426, 14th Edition, continuous maintenance raster, as a 2¼ fathom sounding. Chart 2 fathom *Rk* at smooth sheet position.

²⁶ Concur with clarification. Due to a nearby shoaler sounding, the rock is not depicted on the Hdrawing. Chart according to the Hdrawing.

²⁷ Concur with clarification. The 0.2 fathom sounding is not noted as a rock on the smooth sheet. Due to its close proximity to a rock awash, it is not depicted on the Hdrawing. Chart according to the Hdrawing.

²⁸ Concur with clarification. Chart rocks according to the smooth sheet and Hdrawing as noted.

²⁹ Concur.

³⁰ Do not concur. No Dangers to Navigation were reported for H11238 after PHB review.

³¹ Additional PHB Comments: A charted rock with danger curve (Chart 17426, 14th Ed., Aug 04) located at 55/26/10.3N, 132/21/48.7W was not discussed in the Descriptive Report and is not shown on the smooth sheet. A PHB review of the area in CARIS/HIPS revealed the rock does not exist. The area was covered with 100% multibeam sonar. PHB recommends removing the charted rock and danger curve. Chart the area as shown on the Hdrawing.

Three charted log booms (Chart 17426, 14th Ed., Aug 04) located at 55/26/10.3N 132/21/48.7W to 55/26/12.3N 132/21/28.2W; 55/26/07.4N 132/21/25.7W to 55/26/10.4N 132/21/07.5W; and 55/26/06.5N 132/21/50.4W to 55/26/04.0N 132/21/32.0W were not discussed in the Descriptive Report and were not shown on the smooth sheet. The hydrographer used Chart 17426, 13th Edition for chart comparisons. The log booms were not shown on the 13th Edition. A PHB review of the hydrographer’s shoreline investigation notes indicated the log booms no longer exist. The log booms were shown on the RSD shoreline provided to the hydrographer. In addition, a PHB review of the area in CARIS/HIPS showed survey lines were run over the charted log booms proving the log booms no longer exist. PHB recommends removing the charted log booms. Chart the area as shown on the Hdrawing.

³² Concur.

³³ Concur with clarification. Not all charted features were annotated on shoreline maps. In addition, RSD shoreline and features were missing from shoreline verification map GSL-13 (submitted with the project reports in Shoreline Verification). Generally, where charted features were not either clearly repositioned (by RSD or shoreline investigation),

or annotated as disproved, they were retained as charted in green on the Hdrawing,.
Chart retained features as depicted on the Hdrawing.

³⁴ Concur with clarification. Charted features not shown on the RSD that were annotated “as charted” or “AC” were retained in green on the Hdrawing.

³⁵ ~~Strikethrough red~~, replace with “blue”.

³⁶ ~~Strikethrough red~~, replace with “blue”.

³⁷ ~~Strikethrough red~~, replace with “blue”.

³⁸ ~~Strikethrough red~~, replace with “blue”.

³⁹ Concur.

⁴⁰ Conduct further investigations as national budget and survey priorities allow.

⁴¹ The evaluator concurs with the hydrographer’s Traditional Verification list except as noted. Chart all areas according to the smooth sheet and Hdrawing.

⁴² ~~Strikethrough row~~, repeated from previous row.

⁴³ Target 1724 was not found on the smooth sheet during PHB review.

⁴⁴ ~~Strikethrough row~~, repeated from previous row.

⁴⁵ ~~Strikethrough row~~, repeated from previous row.

⁴⁶ Target 1971 was not found on the smooth sheet during PHB review.

⁴⁷ Concur, except as noted.

⁴⁸ Concur with clarification. Position aids to navigation according to the most recent ATOINOS information.

⁴⁹ Concur. See AWOIS report 52787, attached to this report.

⁵⁰ Concur. See AWOIS report 52788, attached to this report.


⁵¹ After PHB review, no Danger to Navigation was submitted.

⁵² Concur with clarification. See AWOIS report 52789, attached to this report.

APPROVAL SHEET
H11238

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: 6/21/06

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: 29 JUNE 2006

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11238

INSTRUCTIONS

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

CHART	DATE	CARTOGRAPHER	REMARKS
17426	4/27/06	B. TAYLOR	Full Part Before After Marine Center Approval Signed Via APPLICATION OF Drawing No. SOUNDINGS, FEATURES AND CURVES FROM SMOOTH SHEET
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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