

9635

Diag. Cht. 8002-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. RA-20-2-76
Office No..... H-9635

LOCALITY
State ALASKA
General Locality GULF OF ALASKA
Locality ENTRANCE TO ICY BAY

1976

CHIEF OF PARTY
C.K. Townsend, R.L. Speer, J.P. Randall

LIBRARY & ARCHIVES

DATE Jan. 24, 1978

PS 4
CS 2 20

9635

Area 6

Charts
16016
16741

DESCRIPTIVE REPORT

to

ACCOMPANY HYDROGRAPHIC SURVEY

H-9635

(FIELD NO. RA-20-2-76)

SCALE 1:20,000

1976

NOAA SHIP RAINIER

C.K. TOWNSEND

R.L. SPEER

J.P. RANDALL

COMMANDING OFFICERS

HYDROGRAPHIC TITLE SHEET

H-9635

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.

2
RA-20-3-76

State Alaska

General locality Gulf of Alaska

Locality Entrance to Icy Bay

Scale 1:20,000 Date of survey July¹² Sept¹⁶ 1976

Instructions dated 8 June 1976 Project No. OPR-524-RA-76

Vessel SHP RAINIER (2120), 2123, 2125, 2126
Launches RA-3 RA-5 RA-6

Chief of party CDR's C.K. Townsend, R.L. Speer, CAPT J.P. Randall
Team Leader, ENS J.C. Osborn, LT F.L. Kleinschmidt, ENS K.J. Doering,

Surveyed by ENS J. Peterson and ENS K.A. Lerch

Soundings taken by echo sounder, hand lead, pole Ross Fathometer Model 5000

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Positions verified

~~XXXXXX~~ by Thelma O. Jones Automated plot by PMC Xynetics Plotter

Verification by Thelma O. Jones

Soundings in fathoms ~~XXXXXX~~ *and tenths* at ~~XXXX~~ *XXXX* MLLW

REMARKS: This survey is complete and adequate to supersede prior surveys.

Time meridian 0° (GMT)

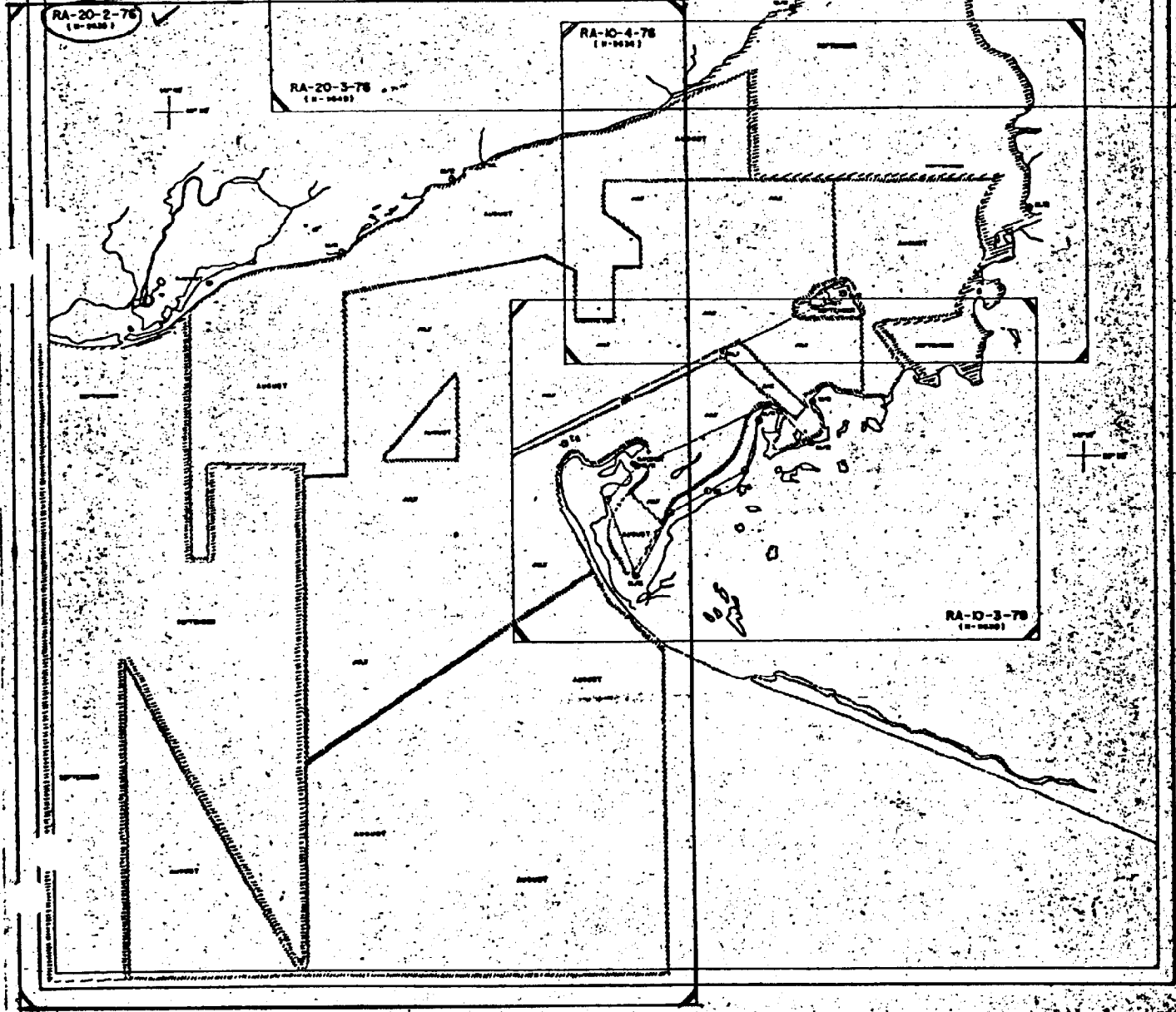
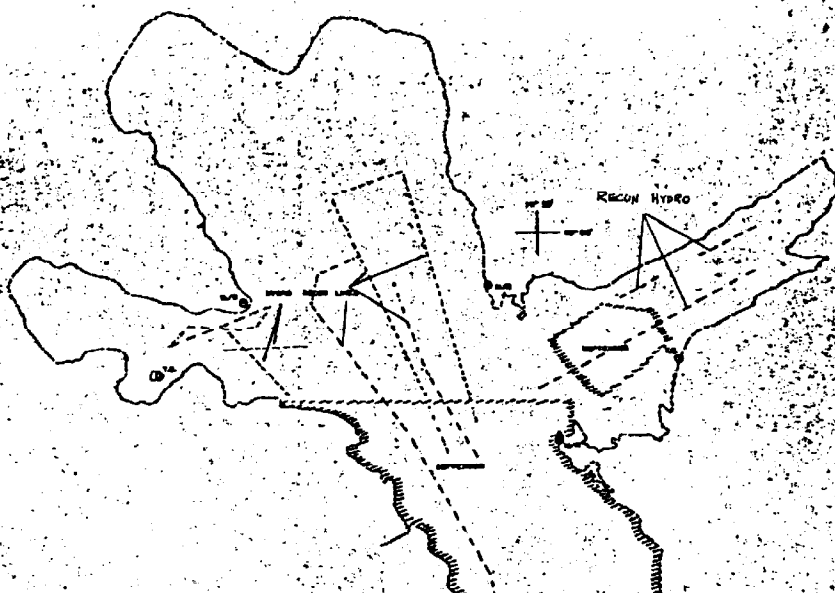
Applied to stats 5/11/78
[Signature]

PROGRESS SKETCH
 OPR-524
 KY BAY, ALASKA
 JUNE 26 - SEPTEMBER 16, 1978
 NOAA SHIP RAINIER
 CHARLES K. TOWNSEND, CDR., NOAA
 COMD'G. JULY 16 - JULY 20, 1978
 RAYMOND L. SPEER, CDR., NOAA
 COMD'G. JULY 21 - AUGUST 10, 1978
 JAMES P. RANDALL, CAPT., NOAA
 COMD'G. FROM AUGUST 10, 1978
 From Data 1978 (Primary COBS SHEET)

LEGEND

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

1. 1:1 SCALE
 2. 1:100 SCALE
 3. 1:500 SCALE
 4. 1:1000 SCALE
 5. 1:2000 SCALE
 6. 1:5000 SCALE
 7. 1:10000 SCALE
 8. 1:20000 SCALE
 9. 1:50000 SCALE
 10. 1:100000 SCALE
 11. 1:200000 SCALE
 12. 1:500000 SCALE
 13. 1:1000000 SCALE
 14. 1:2000000 SCALE
 15. 1:5000000 SCALE
 16. 1:10000000 SCALE
 17. 1:20000000 SCALE
 18. 1:50000000 SCALE
 19. 1:100000000 SCALE
 20. 1:200000000 SCALE
 21. 1:500000000 SCALE
 22. 1:1000000000 SCALE
 23. 1:2000000000 SCALE
 24. 1:5000000000 SCALE
 25. 1:10000000000 SCALE
 26. 1:20000000000 SCALE
 27. 1:50000000000 SCALE
 28. 1:100000000000 SCALE
 29. 1:200000000000 SCALE
 30. 1:500000000000 SCALE
 31. 1:1000000000000 SCALE
 32. 1:2000000000000 SCALE
 33. 1:5000000000000 SCALE
 34. 1:10000000000000 SCALE
 35. 1:20000000000000 SCALE
 36. 1:50000000000000 SCALE
 37. 1:100000000000000 SCALE
 38. 1:200000000000000 SCALE
 39. 1:500000000000000 SCALE
 40. 1:1000000000000000 SCALE
 41. 1:2000000000000000 SCALE
 42. 1:5000000000000000 SCALE
 43. 1:10000000000000000 SCALE
 44. 1:20000000000000000 SCALE
 45. 1:50000000000000000 SCALE
 46. 1:100000000000000000 SCALE
 47. 1:200000000000000000 SCALE
 48. 1:500000000000000000 SCALE
 49. 1:1000000000000000000 SCALE
 50. 1:2000000000000000000 SCALE
 51. 1:5000000000000000000 SCALE
 52. 1:10000000000000000000 SCALE
 53. 1:20000000000000000000 SCALE
 54. 1:50000000000000000000 SCALE
 55. 1:100000000000000000000 SCALE
 56. 1:200000000000000000000 SCALE
 57. 1:500000000000000000000 SCALE
 58. 1:1000000000000000000000 SCALE
 59. 1:2000000000000000000000 SCALE
 60. 1:5000000000000000000000 SCALE
 61. 1:10000000000000000000000 SCALE
 62. 1:20000000000000000000000 SCALE
 63. 1:50000000000000000000000 SCALE
 64. 1:100000000000000000000000 SCALE
 65. 1:200000000000000000000000 SCALE
 66. 1:500000000000000000000000 SCALE
 67. 1:1000000000000000000000000 SCALE
 68. 1:2000000000000000000000000 SCALE
 69. 1:5000000000000000000000000 SCALE
 70. 1:10000000000000000000000000 SCALE
 71. 1:20000000000000000000000000 SCALE
 72. 1:50000000000000000000000000 SCALE
 73. 1:100000000000000000000000000 SCALE
 74. 1:200000000000000000000000000 SCALE
 75. 1:500000000000000000000000000 SCALE
 76. 1:1000000000000000000000000000 SCALE
 77. 1:2000000000000000000000000000 SCALE
 78. 1:5000000000000000000000000000 SCALE
 79. 1:10000000000000000000000000000 SCALE
 80. 1:20000000000000000000000000000 SCALE
 81. 1:50000000000000000000000000000 SCALE
 82. 1:100000000000000000000000000000 SCALE
 83. 1:200000000000000000000000000000 SCALE
 84. 1:500000000000000000000000000000 SCALE
 85. 1:1000000000000000000000000000000 SCALE
 86. 1:2000000000000000000000000000000 SCALE
 87. 1:5000000000000000000000000000000 SCALE
 88. 1:10000000000000000000000000000000 SCALE
 89. 1:20000000000000000000000000000000 SCALE
 90. 1:50000000000000000000000000000000 SCALE
 91. 1:100000000000000000000000000000000 SCALE
 92. 1:200000000000000000000000000000000 SCALE
 93. 1:500000000000000000000000000000000 SCALE
 94. 1:1000000000000000000000000000000000 SCALE
 95. 1:2000000000000000000000000000000000 SCALE
 96. 1:5000000000000000000000000000000000 SCALE
 97. 1:10000000000000000000000000000000000 SCALE
 98. 1:20000000000000000000000000000000000 SCALE
 99. 1:50000000000000000000000000000000000 SCALE
 100. 1:100000000000000000000000000000000000 SCALE



A. PROJECT

This survey was accomplished in accordance with Project Instructions OPR-524-RA-76, Icy Bay, Alaska, dated 8 June 1976; Change No. 1, Supplement to Instructions, dated 1⁰/₈ June 1976; and Change No. 2, Amendment to Instructions, dated 13 August 1976. ✓

B. AREA SURVEYED

This survey covers the entrance to Icy Bay, from the mouth of the bay seaward to the limits of Chart 16741. It is bounded on the north by the shoreline, on the west by Lon $141^{\circ}43'35''$ W., on the south by Lat $59^{\circ}47'35''$ N., and on the east by Lon $141^{\circ}27'45''$ W. north of Lat $59^{\circ}56'50''$ N., ✓ by Lon $141^{\circ}30'00''$ W. at midbay, by the shoreline of Riou Point, and by Lon $141^{\circ}26'00''$ W. to the south of the shoreline. Hydrography on this sheet began on 12 July 1976 and ended on 16 Sept. 1976.

C. SOUNDING VESSELS

Sounding vessels used for this survey were Uniflite RA-6(2126), and aluminum launches RA-3(2123) and RA-5(2125). All three launches ✓ were equipped with Ross Model 5000 Fineline Fathometers. In addition, bottom samples were obtained by RAINIER (2120).

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDERS

Launch 2123 operated with Ross Model 5000 Fathometer S/N 1042 through Julian Day 196, and S/N 1071 for the remainder of work on this ✓ sheet. A transducer correction (TRA) of 0.3 fathoms was determined

by measuring the vertical distance from the waterline to the transducer and was verified by bar checks daily. Launch 2125 operated with Ross Model 5000 Fathometer S/N 1070 for all work on this sheet. A TRA of 0.3 fathoms was determined as described above for 2123. Launch 2126 operated with Ross Model 5000 Fathometer S/N 1071 through Julian Day 196, and S/N 1040 for the remainder of work on this sheet. A TRA of 0.3 fathoms was determined as described above for 2123. Measurements on RA-5(2125) using a level and rod showed this launch to have negligible settlement and squat. Settlement and squat measurements were run on RA-6(2126) by running at various speeds past a buoy placed in an area of flat bottom; it was found that settlement and squat corrections were less than 0.2 fathoms at all speeds and at various settings of the trim tabs. ✓

Fathometers were monitored continuously during operations to keep the phase calibrate setting correct at a depth as close as possible to the actual bottom trace; thus minimizing analog-to-digital scanning errors. The fathograms were scanned during or after data acquisition and all digitized values were compared to the analog trace. When scanning showed that the digitized value was obviously in error by more than 0.3 fathoms, or when inserting peaks and deeps, or when meaning out swell, the depth was determined from the analog trace and corrected for any systematic analog-to-digital differences. In areas of heavy swell, depths were determined by taking the value midway between the peak and trough. ✓

Whenever possible, bar checks were made twice daily on each launch. (accurate bar checks were not always possible due to wind, sea,

and ice conditions). A Nansen Cast was made at 1600Z on 15 July 1976 at Lat $59^{\circ}55'35''$, Lon $141^{\circ}30'28''$ for the purpose of determining velocity corrections in deep water. A Plessey Salinometer, S/N 1011, was used for these measurements; calibration was performed in December, 1975.

It was noted during the project that the accuracy of Ross Fathometers was less than optimum when operated in units of fathoms. Examination of the analog trace and the blanking/phase calibrate traces shows that the analog trace would on numerous occasions exhibit a random scatter of about 0.2 fathoms. This was still the case when the launch was stationary and in the absence of swell. This scatter was not observed when sounding in units of feet. In feet the analog trace varies by less than 0.1 foot. This problem was so severe on one occasion that fathometer S/N 1042 on RA-3 was replaced. Fathometer S/N 1040 also showed this effect, but to a lesser extent.

Another difficulty encountered when sounding in fathoms rather than feet is the slower sounding frequency (2 soundings per second rather than 6 per second in feet). At a speed of 18 knots one sounding is obtained for every 4.5 meters horizontally traversed. In depths less than 5 fathoms, a 30° beam width transducer will produce no overlap at this speed, thus pinnacles passing directly beneath the launch may be undetected.

E. HYDROGRAPHIC SHEETS

The modified transverse Mercator Projection and all soundings were plotted by RAINIER personnel using the on-board PDP-8/e Complot systems. The smooth field sheets were constructed and plotted using

PDP-8/e computer S/N 995 and Complot Plotter S/N 5445-7. Rough plots were made daily and the final plot collated as work progressed. The smooth field sheet was started on 22 Aug. 1976 and completed on 30 Sept. 1976. No discernable distortion was detected. Velocity correctors, TRA, and predicted tides were applied to all data on the smooth field sheets. All data was transferred to PMC for verification. ✓

F. CONTROL STATIONS

Third order survey methods were utilized to establish station control. Existing triangulation stations were used to establish and supplement this control. The basis used for horizontal control was the 1927 North American Datum. Station names, brief descriptions, dates of establishment, quad, and location information are contained on the signal list in the separates following this text. For more complete documentation and computations, see the Horizontal Control Report, OPR-524-RA-76. ✓

G. HYDROGRAPHIC POSITION CONTROL

Position control was by electronic range-range methods using Motorola Mini-Ranger III and Teledyne Hastings Raydist. The following is a table of electronic components for each vessel:

<u>VESNO</u>	<u>MINI-RANGER</u>		<u>RAYDIST XMTR</u>
	<u>CONSOLE</u>	<u>R/T</u>	
2120	-	-	170
2123	720	727	167
2125	715	720	170
2126	711	718	166

The following is a table of electronic shore stations used on this sheet:

<u>NAME</u>	<u>SIGNAL NO.</u>	<u>TYPE CONTROL</u>	<u>S/N</u>
Runt Raydist	105	Green Raydist	233
Watson 2 Raydist	106	Red Raydist	232
Carson	103	M/R Code 3	776
Chirp	104	M/R Code 4	777 ✓
Claybluff Pt.	109	M/R Code 2	775
Traverse "B"	208	M/R Code 1	774

In addition, signals 106(Watson 2 Raydist), 109(Claybluff Pt.), and 103 (Carson) were used for visual calibration.

Calibrations were performed at least twice daily except when obviated by equipment failures. Whenever possible, calibrations were performed at the intersection of two visual ranges which were set up on stations located by geodetic observations. The two ranges were formed by stations Chirp(104) and CHIRP FRONT RANGE(204) on Gull Island; ^(ESKER) and by SEAL (200) and HARBOR (201) in Seal Camp Harbor. The location of the range intersection and desired rates from each shore station were calculated using the RK-562 computer program. Raydist lane counts were manually set to the desired values while in standby mode; the launch was run, at idle speed, along one range, and the Raydist dial counter switched into track mode when the second range was crossed. At least six additional passes along the range were made to obtain sufficient data to calculate a mean corrector to the partial (fractional) lane count. Partial lane counts which differed from the mean by more than

0.05 lanes were rejected. All sets of calibrations for any single day were meant to obtain correctors for plotting, except as noted below. Mini-Ranger corrections were determined in similar fashion; however, these rates were used only to verify validity of baseline correctors, the latter being used for plotting purposes. On a few occasions when weather or sea conditions (fog, heavy ice, etc.) precluded calibration at the range intersection, Raydist calibration was performed by comparing the observed Raydist rates with those calculated from simultaneously obtained Mini-Ranger fixes. Ten such comparisons were made for calibrations. Visual 3-point sextant fixes were used to verify Mini-Ranger baseline calibration correctors when calibration at the range intersection was not possible. ✓

Raydist calibrations were linearly pro-rated through the day when the difference between a.m. and p.m. calibrations was in excess of 0.40 lanes; i.e., when the mean differed from either calibration by 0.20 lanes, which corresponds to 0.5 mm at the scale of the survey. This occurred only once, on launch 2123 on day 246. The strip chart record was examined carefully to insure that no lane losses occurred.

It was noted that two launches using Raydist at the same time could interfere with each other to such an extent that one or both launches would completely lose signal reception, even though the launches were separated by over 400 lanes. On several occasions hydrography was lost due to multiple lane losses caused by this interference. ✓
Hydrography was retained in a few cases when the exact time and extent of lane losses could be established beyond doubt. The exact cause of this problem was not determined. An explanation of this problem and

its disposition is given on all affected raw data printouts. Refer to the Electronic Control Report, OPR-524-RA-76, Icy Bay, for further details.

The presence of large fields of brash ice and larger bergs caused extreme refraction in the visible range (see Section P). The extent to which this refraction affected signals at Raydist and Mini-Ranger frequencies is not known. It was noted, however, that Mini-Ranger skip zones and null zones were more extensive when large ice fields were present between the launches and shore stations. ✓

H. SHORELINE

Shoreline was transferred from the field-edited T-sheet manuscript TP-00895. All shoreline and topographic detail on the boatsheet was verified by field edit. For further information, refer to the Field Edit Report OPR-524-RA-76. ✓

I. CROSSLINES

Approximately 174.6 n.mi. of crosslines were run on this sheet, equal to 10.0% of mainscheme mileage. In areas deeper than 11 fathoms, agreement is excellent with 85% of all crossings agreeing exactly and with a maximum discrepancy of 1 fathom. In areas shoaler than 11 fathoms, approximately 70% of all crossings agree within 0.3 fathoms and 90% within 0.6 fathoms, with a maximum difference of 0.8 fathoms in a depth of 8 fathoms at Lat $59^{\circ}51.0'$, Lon $141^{\circ}30.0'$. These are very good crossings considering the persistent 6 to 8 foot swell and some areas of irregular bottom characteristics. ✓

J. JUNCTIONS

Junction was made with two contemporary surveys to the east: RA-10-3-76, H-9630, scale 1:10,000; and RA-10-4-76, H-9634, scale 1:10,000. Agreement is very good in all cases, all crossings being consistent to the nearest fathom (0.4 fathoms in areas less than 11 fathoms) and with no jogs in the depth curves. ✓

K. COMPARISON WITH PRIOR SURVEYS

Presurvey Item #1 concerns rocks awash charted near Lat $59^{\circ}55.5'$, Lon $141^{\circ}40.5'$. These rocks are carried from H-4256a, 1922, where they show as rocks awash 100 meters and 400 meters east of a north-south spit of land, in an area of 1 fathom or less in depth. The shoreline in this area has completely disappeared, having been eroded away some $2\frac{1}{2}$ miles northward. In the vicinity of these features, bare land in 1922, the depth is now a uniform 6 to 8 fathoms. No traces of these rocks or even of this shore were found. It is recommended that the rock awash symbol marking this item be removed from the chart. *Concur* ✓

The dashed presurvey review item "Tide Rips" across the entrance bar was found to be misleading. Hydrography was run in these areas during rough seas and during calm seas, and at all stages of the tide. Discernable tide rips were never observed. It is recommended that this notation be removed from the chart. ✓

Comparison was made with prior surveys H-4256a, 1:10,000 scale, 1922, and H-4257, 1:20,000 scale, 1922. The datum of the prior surveys was adjusted to the 1927 N.A. Datum for the purpose of comparisons. ✓
Close comparison showed major disagreement in most areas. The shoreline

west of Claybluff Point has eroded northward some $2\frac{1}{2}$ miles, leaving 6 to 8 fathom depths where land was present in 1922. Claybluff Point has eroded to such an extent that it is no longer recognizable as a "point". At the east edge of the sheet, the shoreline of Riou Point has shifted northeastward approximately $1\frac{1}{2}$ miles with subsequent deepening on the seaward side. In addition to the general northeastward shift, the tip of Riou Point has extended northward $2\frac{1}{2}$ miles. The deep area northeast of the entrance bar, near Lat $59^{\circ}56.0'N.$, Lon $141^{\circ}33.0'W.$, has shoaled considerably, from 53 fathoms in 1922 to 37 fathoms at present. The central portion of the entrance bar, is generally the same, but the eastern and northwestern parts of this bar are now 2 to 5 fathoms deeper. The shoal shown by the prior survey to extend from the shore off Riou Point seaward to a $4\frac{1}{2}$ fathom sounding at Lat $59^{\circ}50.7'$, Lon $141^{\circ}31.8'$ is shown by this survey to be a set of three isolated peaks punctuating a deeper area. These peaks were developed with 45 meter spaced lines; their positions and least depths are the first three listed in the following table, which includes all shoal developments on the entrance bar. All depths are corrected for predicted tides.

<u>POSITION NO.</u>	<u>DEPTH</u>	<u>LOCATION</u>
6 sec. after 2nd out of 8003	5.2 fm	$59^{\circ}51'36''$ $141^{\circ}27'54''$
6 sec. after 2nd out of 8015	4.6 fm	$59^{\circ}51'27''$ $141^{\circ}29'27''$
10 sec. after 3rd out of 8025 10 " " 714 " " 7432	4.6 fm 4.6	$59^{\circ}50'58''$ $51^{\circ}03''$ $50'58''$ $141^{\circ}31'18''$ $28'19''$ ✓
6 sec. after 2nd out of 3953	5.2 fm	$59^{\circ}53'47''$ $141^{\circ}41'12''$
10 sec. after 5th out of 5463	5.2 fm	$59^{\circ}55'05''$ $141^{\circ}42'05''$ 52"
7 sec. after 6th out of 4146	5.2	$59^{\circ}55'58''$ $141^{\circ}43'07''$

Comparison was also made with the reconnaissance survey conducted by the NOAA Ship Surveyor in May, 1976, 1:40,000 scale. The present survey shows differences up to 9 fathoms as follows:

<u>AREA</u>	<u>SURVEYOR</u>	<u>RAINIER</u>	
59°56'30" 141°30'45"	37 to 42 fm	35 to 37 fm	Present survey 2-5 fm shoaler
59°58'00" 141°28'00"	23 to 28 fm	32 to 35 fm	Present survey up to 9 fm deeper
North Shoreline	---	3 to 5 fms	shoaler than Surveyor

L. COMPARISON WITH THE CHART

Comparison of the present survey with Chart 16741, 1:40,000 scale, 5th edition, 1 June 1974, showed many disagreements. In general, soundings on the chart were taken from the prior surveys discussed above and show the same discrepancies. Shoreline features are of more recent origin than the 1922 survey; nevertheless, the present survey shows that Riou Point has shifted about $\frac{1}{2}$ mile ⁿortheast of the charted point. The area around Claybluff Point shows a much less pronounced point than the one charted.

M. ADEQUACY OF THE SURVEY

This survey is complete and adequate to supersede prior surveys for charting. Two small regions along shorelines (between WATSON 2 and CLAYBLUFF POINT on the north shore, and along the east shore) were not surveyed with 100-meter line spacing due to the consistent presence of ice and heavy surf in these areas. However, these areas are very small and do not obviate the capability of drawing signifi-

cant depth curves. Further work in these areas was considered both hazardous and economically infeasible.

N. AIDS TO NAVIGATION

There are no floating aids to navigation within the limits of this survey.

The only fixed aid to navigation within the limits of this sheet is Icy Bay Light (LL 181.50); the listed position of this light is in error as follows:

Listed:	59 ^o 57.9'	Actual:	59 ^o 57'58.284"
	141 ^o 35.1'		141 ^o 35'01.095"

A letter to this effect was transmitted to the Commander, 17th Coast Guard District. A copy of this letter is enclosed in the separates following the text.

O. STATISTICS

This survey contains 1943.4 n.mi. of soundings, covering 89.0 square nautical miles. This data was obtained by the following vessels:

<u>VESSEL</u>	<u>N.MI.</u>	<u>POSITIONS</u>	<u>BOTTOM SAMPLES</u>
RAINIER (2120)	-0-	38	34
RA-3 (2123)	502.2	1468	-0-
RA-5 (2125)	167.9	555	33
RA-6 (2126)	1273.3	3194	-0-

Refer to the Abstract of Positions in the Separates following this text for further information.

P. MISCELLANEOUS

A predominant characteristic of Icy Bay is the presence of floating ice,

often in large quantities. For the most part this usually consists of large fields of brash (size: 6 feet or less in diameter) interspersed with occasional growlers (up to 30 ft. diameter). Such fields were frequently observed along the northern shoreline and extending up to a mile offshore, sufficiently dense to preclude survey operations and to be hazardous to operation of small boats. Brash was only rarely observed more than 2 miles south of Icy Bay Light; the furthest south ice was observed was near $59^{\circ}51'30''$, $141^{\circ}40'00''$ where a large field of brash and growlers was encountered on several occasions. On some rare occasions, larger bergy bits up to 60' in diameter were observed within the sheet limits. Refer to Descriptive Reports of Sheets H-9630, H-9634, and H-9649, for further information of ice conditions. ✓

Whenever large quantities of ice were present, they were accompanied by the effect of mirages, a result of refraction of visible light. When observed from a distance of several miles, the resultant distortion of visual images causes even thin fields of brash to appear to be a huge wall of ice extending across the bay. ✓

Q. RECOMMENDATIONS

This survey is considered complete and adequate for charting, and there are no recommendations other than those already mentioned. ✓

R. DATA PROCESSING PROCEDURES

Data acquisition and processing were accomplished per instructions in the Provisional Hydrographic Manual and the PMC Order. Soundings and positions were by both the Hydroplot system using RK-111 and by ✓

ASI Logger. Data acquired by the latter method was reformatted using program RK 330. For each vessel there are daily master tapes and corresponding corrector tapes which include the vessel's TRA, electronic control calibration corrections, and all depth corrections. Velocity tapes were generated from bar check and Nansen Cast data.

The following is a list of all computer programs (and version dates) used for this sheet:

PDP-8

RK 111	Range-Range Real Time Plot	1/30/76
RK 201	Grid, Signal, and Lattice Plot	7/12/75
RK 211	Range-Range Non-Real Time Plot	1/15/76
RK 300	Utility Computations	2/10/76
RK 330	Reformat and Data Check	5/4/76
PM 360	Electronic Corrector Abstract	2/2/76
RK 407	Geodetic Inverse/Direct	10/23/75
RK 409	Geodetic Utility Package	9/5/73
RK 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections for Velocity	6/25/74
RK 561	H/R Geodetic Calibration	2/19/75
RK 562	Azimuth to Electronic Calibration	9/10/74
RK 602	Elinore	5/21/75

WANG

Long Line Geodetic Position	700-1
Long Line Inverse	700-2
Intersection	700-PF-022

S. REFERENCES TO REPORTS

Correction to Echo Soundings, Icy Bay	OPR-524-RA-76
Field Edit Report, Icy Bay	OPR-524-RA-76
Horizontal Control Report, Icy Bay	OPR-524-RA-76 ✓
Electronic Control Report, Icy Bay	OPR-524-RA-76
Coast Pilot Report, Icy Bay	OPR-524-RA-76
Descriptive Report H-9630	
Descriptive Report H-9634	
Descriptive Report H-9649	

Respectfully Submitted,



Fred L. Kleinschmidt, LT., NOAA

INDEX TO SEPARATES FOLLOWING THE TEXT

<u>Page</u>	
✓16	Hydrographic Sheet Projection Parameters
17	Field Tide Note
21	Geographic Names
✓ 23-24	" "
25	Abstracts of Corrections to Echo Soundings
✓26	Abstracts of TC/TI Tapes
✓ 28	Electronic Corrector Abstracts
35	Stations List
38	Signal Tape Listing
✓ 39	Abstract of Positions
✓ 42	Bottom Samples (Log Sheet M)
46	Landmarks for Charts
✓ 47	" " " (No relevant information shown)
48	Letter to USCG 17th District (Icy Bay, Light)
49	Approval Sheet
✓	Misc. items removed from the D.R. and filed in the cahier

Field Tide Note

H-9630, H-9635, H-9634, H-9649

OPR-524

Icy Bay, Alaska

Field tide reduction of soundings was based on station No. 1635, Table 2 (Icy Bay) of the Tide Tables using Sitka, Alaska (945-1600) as the reference station. These predicted tides were converted to GMT tide correctors with PDP8/E computer using Program AM 500, PREDICTED TIDE GENERATOR, version 10 November 1972. PROJECT INSTRUCTIONS stated that no zoning was required and field tide observations during the survey indicate the same. All observations were done on GMT.

Five stations were established to monitor the tide within the project limits:

<u>Station</u>	<u>Location</u>	<u>Operation Dates</u>
T-1, Riou Bay 945-3456	Lat: 59°54.63' N Lon: 141°24.69' W	30 JUN - 16 SEP 76 79 Days
T-2, Carson Creek 945-3464	Lat: 59°59.22' N Lon: 141°30.69' W	28 JUN - 16 SEP 76 81 Days
T-3, Tyndall Glacier 945-3431	Lat: 60°04.7' N Lon: 141°16.5 W	6 AUG - 15 SEP 76 41 Days
T-4, Guyot Glacier 945-3454	Lat: 60°04.31' N Lon: 141°28.74' W	6 AUG - 15 SEP 76 41 Days
T-5, Riou Spit 945-3484	Lat: 59°55.31' N Lon: 141°28.55' W	22 AUG - 6 SEP 76 16 Days

T-1, Riou Bay, 945-3456

T-1 was a Bristol, 0-20 ft bubbler tide gage, SN 67 A 16202. It is recommended that this gage be used to control all hydrography from 1 July, 1976 to the end of the project. This gage was well protected from surf and ice and the best tidal data from Icy Bay was recorded here. The only problem with this gage is that the marigram jumped a sprocket on two occasions during the 2 1/2 months of operations.

The 1922 bench marks were searched for, not found, and are presumed lost. A major shift in the shoreline of Riou Spit 1 1/2 miles to the northeast since 1922 makes recovery unlikely. The gage site was relocated and five (5) new disks set.

-2- T-1, Riou Bay

Levels were run to five (5) standard NOS disks. Installation levels were run on 30 June and 9 July; and removal levels were run on 10-11 September 1976. Comparison of elevation differences between installation and removal level records indicate that the staff sunk 0.02 ft in 2 1/2 months of operation.

T-2, Carson Creek, 945-3464

T-2 was a Bristol, 0-20 ft bubbler tide gage, SN 73 A 226. An observer was contracted for this station and the gage was operated on GMT (000" W).

The Carson Creek gage was exposed to the south and to the west; therefore was continually subjected to breakers and occasionally to floe ice. The observer knocked the gage pen off its pivots on two occasions. 1) At 2200, 17 July the pen was pushed 1.5 ft low, at 2200 on 18 July it was pushed an additional 0.6 ft lower. The pen was not reset until 27 July 1976. 2) At 1625, 20 August, the pen was knocked off the pivots and was reset at 2305 on 21 August 1976.

T-2 ran out of paper at 0800, 10 July, and a new roll was installed at 1800 on 15 July 1976.

On 8 August the observer found the staff support cables broken. It is believed that the staff sunk when the cables were broken. Due to thick ice and bad weather during the last few weeks of the project, the staff (2 in. diameter pipe with the orifice attached) was found bent on 11 September and by 13 September the staff was no longer visible. It is presumed the staff was bent below the water line rather than removed by the ice (this occurred after removal levels).

It is recommended that this gage NOT be used for tide control except for the first two days of hydrography (28 and 29 June). Records from Riou Bay gage were superior to the Carson Creek records, therefore it is recommended that the Riou Bay gage control hydrography from 1 July to the end of the project.

Levels were run to four (4) standard NOS disks and one (1) recoverable point. Installation levels were run on 28-29 June removal levels on 2 September 1976. It was noted that the staff moved 0.36 ft. This change probably occurred on 8 August when ice was thick in the area and the pipe supporting both the orifice and the tape reference-mark was torn from its supports.

T-3, Tyndall Glacier, 945-3431

T-3 was a Bristol, 0-20 ft bubbler tide gage, SN 67 A 10287. Observations were done on GMT (000° W) by RAINIER personnel.

The Tyndall Glacier was well protected from both surf and ice. It ran out of paper at 1130 on 15 September and the marigram jumped a sprocket two (2) times during the 1 1/4 months of operations.

-3-

Levels were run to four (4) standard NOS disks and two (2) recoverable points. After installation levels were run on 11 August to three (3) standard NOS disks and two (2) recoverable points, an additional NOS disk was recovered so a spur was run to it on 5 September, 1976. Removal levels were run on 10 September, 1976.

T-4, Guyot Glacier, 945-3454

T-4 was a Bristol, 0-20 ft bubbler tide gage SN 63A 2925. Observations were done on GMT (000⁰W) by RA personnel.

Since T-4 was so close to glaciers, it was continually subjected to floe ice. From 1600 on 11 September, the marigram trace slowly increased to full deflection; then at 1900 the trace dropped rapidly to normal. It is believed that ice came to rest on the bubbler tubing, crimped it, and caused the gage to register the feed pressure. As the tide rose, the ice was floated and the pressure dropped to normal. At 1018 on 14 September, ice action parted the bubbler tubing.

During the operation of the gage, the marigram jumped a sprocket on three occasions.

Since the gage was originally to be established for less than thirty (30) days of observation, levels were run only to three (3) recoverable points. Installation levels were run on 23 August and removal levels on 10 September, 1976. Comparison of elevation differences between installation and removal level records indicate that the staff sunk 0.03 ft in 1½ months of operation.

T-5, Riou Spit, 945-3484

T-5 was a Bristol, 0-30 ft bubbler tide gage SN 72A 21485. Observations were done on GMT (000⁰W) by RA personnel.

This gage was operated sixteen (16) days with no staff and no levels required in accordance with change no.2 to OPR-524 Project Instructions dated 13 August, 1976.

T-5 ran approximately 0.85 min/day slow and the marigram jumped a sprocket on 7 occasions in the 14 days of operation.

Comparison Among Gages

Since it is recommended that T-1, Riou Bay, be used for control of hydrography, this investigation consists of comparing the Riou Bay marigram with the marigrams of each of the other four gages. In each case the marigram trace of the comparison gage was overlaid on the trace of the Riou Bay marigram (allowing for change in datum) and the comparison done on a light table. Values for comparing Riou Spit had to be scaled since the gages were of different ranges. In all cases, the comparison was done for 2 through 4 September, 1976.

-4-

Carson Creek - Riou Bay

A comparison of the Carson Creek marigram with the Riou Bay marigram showed a difference in the height of high and low tide of between 0.0 and 0.2 ft; and a difference in times of high and low tides varied between 0 and 15 minutes.

Tyndall Glacier - Riou Bay

A comparison of the Tyndall Glacier marigram with the Riou Bay marigram showed a difference in the height of high and low tide of between 0.0 and 0.2 ft. The difference in times of high and low tides was so small as to be indiscernible on the marigrams.

Guyot Glacier - Riou Bay

A comparison of the Guyot Glacier marigram with the Riou Bay marigram showed a difference in the height of the high and low tide between 0.0 and 0.4 ft; and a difference in times of high and low tides of 0 and 5 minutes.

Riou Spit - Riou Bay

A comparison of the Riou Spit marigram with the Riou Bay marigram showed a difference in the height of the high tide between 0.1 and at worst 0.5 ft and a difference in the height of the low tide between 0.0 and 0.3 ft. The difference in the times of high and low tides was between 0 and 15 minutes.

Recommended Zoning

Unless Rockville Smooth Tides display significantly different comparison information to the above field comparison, it is recommended that this survey be reduced using smooth tidal data from Carson Creek tide gage for June and Riou Bay data from 1 July to the end of the project. Since comparison among the gages indicated no tidal height difference equal to, nor greater than 0.1 fathom; it is recommended that no zoning be applied.

VELOCITY CORRECTOR TAPE LISTING
RA-20-2-76 (H-9635)LAUNCH - 2123 (RA-3)
SCALE - FATHOM
TABLE NO. 1000071 0 0000 0001 001 212300 009635
000201 0 0001
000326 0 0002
000444 0 0003
999999 0 0004LAUNCH - 2125 (RA-5)
SCALE - FATHOM
TABLE NO. 1000071 0 0000 0001 001 212500 009635
000201 0 0001
000326 0 0002
000444 0 0003
999999 0 0004LAUNCH - 2126 (RA-6)
SCALE - FATHOM
TABLE NO. 1000071 0 0000 0001 001 212600 009635
000201 0 0001
000326 0 0002
000444 0 0003
999999 0 0004

STATION LIST ICY BAY, ALASKA PROJECT OPR-524
VER. FINAL VERSION

100-299 ELECTRONIC AND/OR GEODETIC CONTROL STATIONS
300-399 PHOTO CONTROL STATIONS

EXISTING TRIANGULATION STATIONS
REFERENCE HORIZONTAL CONTROL REPORT

=====

103	202	206	220
104	205	213	221

STATIONS ESTABLISHED BY THIRD ORDER TRIANGULATION, TRAVERSE, OR
INTERSECTION METHODS.

REFERENCE HORIZONTAL CONTROL REPORT

=====

102	108	203	209	214	218
105	109	204	210	215	219
106	200	207	211	216	
107	201	208	212	217	

STATIONS ESTABLISHED BY PHOTO IDENTIFICATION
REFERENCE FIELD EDIT REPORT

=====

300

STA	0	LATITUDE	LONGITUDE	CRT	ELEV	F	KHZ
102	7	59 55 46409	141 21 44471	250	0000	000000	
/CAMP 1976 M/R CODE 2							591411
103	3	59 59 01235	141 31 57069	250	0005	000000	
/CARSON 1974 MR CODE 3							591414
104	1	59 57 20001	141 20 47347	250	0012	000000	
/CHIRP 1974 M/R CODE 4							591411
105	3	59 54 53988	141 26 47999	254	0012	329640	
/GREEN FAYDIST STATION 1976							591411
106	1	59 57 33167	141 38 51639	254	0008	329640	
/RED FAYDIST STATION 1976							591414
107	3	60 01 26844	141 22 10771	250	0006	000000	
/ICY 1976 M/R CODE 1 & 2							601412
108	4	59 55 45384	141 23 02483	250	0003	000000	
/ISLE 1922 RM3 M/R CODE 4							591411
109	2	59 57 58284	141 35 01095	250	0010	000000	
/ICY EAY LIGHT(CLAY BLUFF PT) M/R CODE 2							591414
200	5	59 55 39875	141 22 35480	250	0000	000000	
/SEAL 1976 M/R CODE 4							591411
201	7	59 55 13538	141 21 44972	250	0000	000000	
/HARBOR M/R CODE 4							591411
202	3	59 54 51947	141 26 42707	250	0000	000000	
/RUNT 1974 M/R CODE 1							591411
206	7	60 03 28530	141 19 32535	250	0000	000000	
/CHAIX 1974 M/R CODE 4							601412
208	7	59 53 14394	141 26 30985	243	0000	000000	
/RIOU "B" M/R CODE 1							591411
209	7	59 54 07790	141 25 43702	243	0000	000000	
/RIOU "C" M/R CODE 4							591411
218	2	59 58 32071	141 15 37358	250	0000	000000	
/CAETANI 2 1976 M/R CODE 1							591411
220	4	60 05 19802	141 21 10312	250	0000	000000	
/KARR 1974 M/R CODE 3							601412
221	3	60 05 11108	141 26 53471	250	0000	000000	
/TOYUG 1974 M/R CODE 2							601412

203	4	59	55	17958	141	21	20978	243	0000	000000	591411
/SHIP FRONT RANGE											
204	4	59	57	07930	141	21	36772	243	0000	000000	591411
/CHIRP FRONT RANGE											
205	6	60	01	54296	141	22	17296	139	0000	000000	601412
/KICHYATT 1974											
207	0	59	54	20552	141	27	19774	243	0000	000000	591411
/RIOU "A"											
210	7	59	54	37949	141	24	41242	139	0000	000000	591411
/RIOU "D" TIDAL EM 3456-F-1976											
211	7	59	54	46045	141	23	40645	243	0000	000000	591411
/RIOU "E"											
212	7	59	55	31774	141	23	14267	243	0000	000000	591411
/RIOU "F"											
213	3	59	54	23715	141	24	11152	139	0030	000000	591411
/RIDGE 1922-74											
214	4	59	55	47163	141	21	44367	139	0000	000000	591411
/CAMP 1976 RM1											
215	6	59	56	08844	141	19	10144	243	0000	000000	591411
/BITS 1976											
216	4	59	56	29849	141	17	02530	243	0000	000000	591411
/BURGEE 1976											
217	7	59	57	32876	141	38	50619	139	0000	000000	591411
/WATSON 2 1976											
219	3	60	00	09462	141	26	00214	243	0000	000000	601412
/PEN											
300	3	59	55	58762	141	21	32154	252	0000	000000	591411
/HYDRO SIGNAL											

ASCII SIGNAL TAPE
FA-20-2-76 (H-9635)

102	7	59	55	46409	141	21	44471	250	0000	000000
103	3	59	59	01235	141	31	57069	250	0005	000000
104	1	59	57	20001	141	20	47347	250	0012	000000
105	3	59	54	53988	141	26	47999	254	0012	329640
106	1	59	57	33167	141	38	51639	254	0008	329640
107	3	60	01	26844	141	22	10771	250	0006	000000
108	4	59	55	45384	141	23	02483	250	0003	000000
109	2	59	57	58284	141	35	01095	250	0010	000000
200	5	59	55	39875	141	22	35480	250	0000	000000
201	7	59	55	13538	141	21	44972	250	0000	000000
202	3	59	54	51947	141	26	42707	250	0000	000000
203	4	59	55	17958	141	21	20978	243	0000	000000
204	4	59	57	07930	141	21	36772	243	0000	000000
205	6	60	01	54296	141	22	17296	139	0000	000000
206	7	60	03	28530	141	19	32535	250	0000	000000
207	0	59	54	20552	141	27	19774	243	0000	000000
208	7	59	53	14394	141	26	30985	243	0000	000000
209	7	59	54	07790	141	25	43702	243	0000	000000
210	7	59	54	37949	141	24	41242	139	0000	000000
211	7	59	54	46045	141	23	40645	243	0000	000000
212	7	59	55	31774	141	23	14267	243	0000	000000
213	3	59	54	23715	141	24	11152	139	0030	000000
214	4	59	55	47163	141	21	44367	139	0000	000000
215	6	59	56	08844	141	19	10144	243	0000	000000
216	4	59	56	29849	141	17	02530	243	0000	000000
217	7	59	57	32876	141	38	50619	139	0000	000000
218	2	59	58	32071	141	15	37358	250	0000	000000
219	3	60	00	09462	141	26	00214	243	0000	000000
220	4	60	05	19802	141	21	10312	250	0000	000000
221	3	60	05	11108	141	26	53471	250	0000	000000
300	4	59	55	58762	141	21	32154	252	0000	000000



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship RAINIER MSS21
FPO Seattle, WA 98799

48

Date : 23 August 1976

To : Commander, 17th Coast Guard District
ATTN: Chief, Aids to Navigation Branch

From : *James P. Randall*
James P. Randall, CAPT, NOAA
Commanding Officer

Subj : Icy Bay Light Position

Icy Bay Light, Light List No. 181.50, published position 59°57.9' N LAT. and 141°35.1' W LONG. is in error. Hydrographic survey operations by RAINIER this summer show Icy Bay Light's true location to be 59°57'58.284" N LAT. and 141°35'01.095" W LONG. which would result in a published Light List position for Icy Bay Light of 59°58.0' N LAT. and 141°35.0' W LONG.

cc: C322 thru CPM



APPROVAL SHEET
DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY

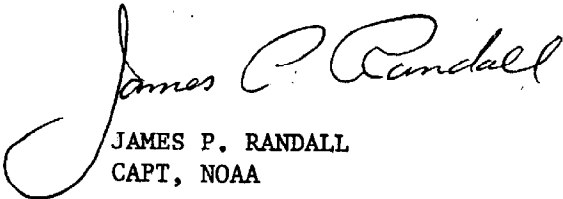
H-9635

RA-20-2-76

OPR-524-RA-76

In producing this sheet, standard procedures were observed in accordance with the Provisional Hydrographic Manual and the PMC OPORDER. The data was examined by me daily during the execution of the survey.

The boatsheet and the accompanying records have been examined and are complete and adequate for charting purposes and are approved.


JAMES P. RANDALL
CAPT, NOAA

March 29, 1977

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Riou Bay

Period: June 26 - September 15, 1976

HYDROGRAPHIC SHEET: H-9635

OPR: 524

Locality: Icy Bay, Alaska

Plane of reference (mean lower low water): 4.9 ft.

Height of Mean High Water above Plane of Reference is
8.9 ft.

Remarks: Zone direct

James E. Hubbard
for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9635

Name on Survey

On Chart No 16741
 On previous survey
 On U.S. Navigational Charts
 From local information
 On local maps
 P.O. Guide of Map
 Rand McNally Atlas
 U.S. Light List
 TP=00895

Name on Survey	A	B	C	D	E	F	G	H	K	
CARSON CREEK ✓									X	1
CLAYBLUFF POINT ✓	X									2
GULF OF ALASKA ✓	X									3
ICY BAY ✓	X									4
POINT RIOU ✓	X									5
PRIEST RIVER ✓	X									6
RIOU SPIT ? PENDING BGN				X ²⁻³⁻⁷⁸ CH						7
WATSON CREEK ✓	X									8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

APPROVED
Chas. E. Harrington
 STAFF GEOGRAPHER C51 x 2
 3 Feb. 1978

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9635

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET 2-excess, 1-control & 1 position ovly.		1	BOAT SHEETS		5 parts	
DESCRIPTIVE REPORT		1	OVERLAYS		13	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	2 4-printouts & sawtooth records included					
VOLUMES	7					Misc. reports
BOXES			1-smooth & tides			
T-SHEET PRINTS (List)						
TP-00895 TP-00896						
SPECIAL REPORTS (List)						

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				5255
POSITIONS CHECKED		5255		
POSITIONS REVISED		-		
DEPTH SOUNDINGS REVISED		61		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		-		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		-		
	TIME (MANHOURS)			
Verification of Control		8		
Verification of Positions		137		
Verification of Soundings		205		
Smooth Sheet Compilation		30		
ALL OTHER WORK		40		
TOTALS		420	HIT 13	
PRE-VERIFICATION BY		BEGINNING DATE	ENDING DATE	
James S. Green		1-22-77	1-22-77	
VERIFICATION BY		BEGINNING DATE	ENDING DATE	
Thelma O. Jones <i>Thelma O. Jones</i>		2-12-77	11-25-77	
REVIEW BY- QUALITY CONTROL BY		BEGINNING DATE	ENDING DATE	
<i>R.W. Wellman</i> 46 hrs			2-3-78	
<i>D.R. Engle</i>				

Cartographer 2 hrs 4-4-78 DPH

REGISTRY NO. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

REGISTRY NO. H-9635

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

H-9635

Information for Future Presurvey Reviews

This area is subject to significant shifting of bottom sediments and changes in shoreline configuration. Accordingly, future surveys in the area should be adequate, both in scale and development, to reveal any discernible pattern of change in shoreline or bottom configuration. In addition, any increase in the transit and/or resource exploration and development may require an appropriate revision of the resurvey cycle indicated below.

<u>Position Index</u>		<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle</u>
594	1415	0	0	50 years
594	1414	0	0	50 years
594	1413	3	0	50 years
595	1415	7	0	50 years
595	1414	7	0	50 years
595	1413	7	0	50 years

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: H-9635

FIELD NO: RA-20-2-76

Alaska, Gulf of Alaska, Entrance to Icy Bay

SURVEYED: July - September 1976

SCALE: 1:20,000

PROJECT NO: OPR-524

SOUNDINGS: Ross Finline Fathometer

CONTROL: Mini-Ranger
Raydist

Chief of Party.....CDRS C.K. Townsend, R.L. Speer,
CAPT J.P. Randall
Surveyed by.....LT F.L. Kleinschmidt, ENS J.C.
Osborn, K.J. Doering, J. Peterson,
and K.A. Lerch
Automated plot by.....PMC Xynetics Plotter
Verified by.....Thelma O. Jones
25 November 1977

I. INTRODUCTION

H-9635 is a basic survey conducted by the RAINIER from 12 July to 16 September 1976. The area surveyed covers a portion of the Gulf of Alaska including the Entrance to Icy Bay, AK. It is bounded on the north by the shoreline and by latitude 59°47'00" to the south.

Field sheet soundings were reduced using predicted tides for station no. 1635 (Icy Bay) using Sitka, AK as the reference station. Smooth sheet soundings were reduced using smooth tidal data from Riou Bay Tide Station.

Rock elevations were transferred directly from the Class I manuscripts, since observed tides were used in the update for field edit.

The geographic names were taken from the chart and manuscript instead of using the list on page 23 of the Descriptive Report.

Four (4) bottom samples in the vicinity of latitude 59°54'30", between longitude 141°29'00" and 141°30'00" were not plotted on the smooth sheet, because there was no data for them in the hydrographic records for this survey. The bottom samples were plotted on the junction survey, H-9630.

II. CONTROL AND SHORELINE

Horizontal control is adequately described in paragraph F of the Descriptive Report.

The Class I unreviewed photogrammetric manuscript, TP-00895 of 1975-76, was used for this survey.

III. HYDROGRAPHY

Crossline agreement ^{is} ~~was~~ excellent with a maximum difference of less than a fathom throughout the survey.

Standard depth curves could be adequately drawn except for the zero curve. Due to ice and heavy surf, the zero curve could not be adequately portrayed.

The basic hydrography incorporated in this survey is adequate to delineate the bottom configuration and to determine least depths. There were no major difficulties in the verification of main scheme soundings.

There are sixty-seven (67) bottom samples in this survey.

IV. CONDITION OF SURVEY

The hydrographic records, overlays, smooth sheet and reports are adequate and conform to the requirements of the Provisional Hydrographic Manual.

V. JUNCTIONS

Junctions were made to the east with contemporary surveys, H-9630, 1:10,000 (1976) and H-9634, 1:10,000 (1976). The curves and soundings were in excellent agreement, within a fathom in all cases. The junction curves and notes were inked accordingly. (See Q.C. Report-item 2)

Eight (8) soundings were transferred from the junction survey H-9630 in order to effectively delineate two 30 fathom shoals in the junction area.

No contemporary survey junctions on the west, on the east, south of Pt. Riou and on the south, but there have been considerable changes since the prior survey. (See paragraph VI of the Verifier's Report)

VI. COMPARISON WITH PRIOR SURVEYS

H-4256a, 1:10,000 (1922)

H-4257, 1:20,000 (1922)

(See Q.C. Report-item 3)

Comparison was made with prior surveys H-4256a, 1:10,000 (1922) and H-4257, 1:20,000 (1922). The central portion of the survey is generally unchanged with the present survey being 1 to 3 fathoms shoaler than the priors. The eastern and northwestern portions are now deeper by 1 to 6 fathoms.

Claybluff Point has eroded to such an extent that ^{it} is no longer recognizable as a point. The shoreline west of Claybluff Point has eroded northward leaving 5 to 9 fathom depths where land was present in 1922. There is no indication of the ~~island~~ ^{land mass} on the western edge of prior survey H-4256a.

At the east edge of the survey, the shoreline of Riou Bay has shifted eastward approximately $1\frac{1}{2}$ miles, and extended northward approximately $2\frac{1}{2}$ miles. See Q.C. Report - Item 3

The deep area in the vicinity of latitude $59^{\circ}56'$, longitude $141^{\circ}33'$ has shoaled considerably from 53 fathoms in 1922 to the present depth of 37 fathoms.

The shoal shown by prior survey H-4257, extending from the shore of Riou Bay seaward to a $4\frac{1}{2}$ fathom sounding at latitude $59^{\circ}50.7'$ longitude $141^{\circ}31.8'$ is shown on this survey as two isolated peaks with the least depth of 4.6 fathoms in areas of 6 to 8 fathoms.

The pre-survey review items were adequately disposed of in Paragraph K of the Descriptive Report.

H-9635 is adequate to supersede H-4256a and H-4257 in areas of common hydrography.

No comparison was made with the reconnaissance survey of the SURVEYOR in May of 1976 since it is not considered a prior survey and is also superseded by H-9635.

VII. COMPARISON WITH CHART (16741, 5th Ed., 1 June 1974, 1:40,000)

a. Hydrography (See Q.C. Report-item 4) ^{with}
All identified charted soundings originated ~~from~~ the following surveys:

- H-4256a, 1:10,000 (1922) in orange
- H-4257, 1:20,000 (1922) in violet
- U. S. Coast Guard Reconnaissance Survey (1971)

Soundings in general showed the same discrepancies as discussed in the previous paragraph. The shoreline features are of more recent origin than the 1922 surveys. However, the following discrepancies still exist in the charted topographic features.

- a. The tip of Riou Spit has extended approximately $\frac{1}{2}$ mile northward.
- b. Claybluff Point is no longer a point
- c. Icy Cape and Guyot Bay no longer exist
- d. No tide rips observed around Latitude $59^{\circ}50'$, Longitude $141^{\circ}37'$, (see paragraph K of Descriptive Report).

The buoy charted in the vicinity of Latitude $59^{\circ}50'$, Longitude $141^{\circ}33'$ apparently no longer exists. There was no mention of any investigation in the ship's report. It is the verifier's recommendation that the existence of the buoy be researched, and disposed of appropriately.

H-9635 is adequate to supersede charted hydrography.

- b. Controlling Depths
~~b.~~ There are no controlling depths on Chart 16741.
- c. Aids to Navigation
~~c.~~ There are no floating aids to navigation maintained by the Coast Guard within the limits of this survey. However, there are three (3) log buoys in the vicinity of the Icy Bay Lumber Co. pier. The only fixed aid to navigation is Icy Bay Light. It is sufficient to serve the purpose for which it was intended.

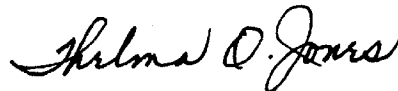
VIII. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey adequately complies with the Project Instructions, dated 8 June 1976, Change No. 1, dated 10 June 1976; and amended 13 August 1976.

IX. ADDITIONAL FIELD WORK

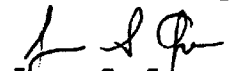
This is an excellent basic survey. No additional field work is recommended.

Respectfully submitted,



Thelma O. Jones
Cartographic Technician
25 November 1977

Examined and approved,



James S. Green
Chief, Verification Branch

APPROVAL SHEET

FOR

SURVEY H- 9635

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 12/28/77

Signed:



Title: Chief, Verification Branch



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Pacific Marine Center

10 January 1978

Ed
TO: Eugene A. Taylor
Director, Pacific Marine Center

FROM: *Glen R. Schaefer*
Glen R. Schaefer
Chief, Processing Division

SUBJECT: PMC Hydrographic Survey Inspection Team Report -- H-9635

This survey is a basic survey of Entrance to Icy Bay, Gulf of Alaska, Alaska. This survey was conducted by NOAA Ship RAINIER in 1976 in accordance with Project Instructions OPR-524-RA-76, dated 8 June 1976 and Changes No. 1, dated 10 June 1976 and No. 2, dated 13 August 1976.

The inspection team finds H-9635 to be an excellent basic survey adequate to supersede common areas of prior surveys and charted hydrography.

Glen R. Schaefer
Glen R. Schaefer

John C. Albright
John C. Albright

James W. Steensland
James W. Steensland

Stanley H. Otsubo
Stanley H. Otsubo



ADMINISTRATIVE APPROVAL
H-9635

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.



Eugene A. Taylor, RADM
Director
Pacific Marine Center

11 Jan. 1978

Date



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352/KWW

February 3, 1978

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*
Quality Evaluator

SUBJECT: Quality Control Report for H-9635 (1976), Alaska, Gulf of
Alaska, Entrance to Icy Bay

A quality control inspection of H-9635 has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigational hazards, shoreline transfer, junctions, decisions and actions by the verifier, and cartographic presentation of data.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. Three bottom characteristics included the term "rock" on Oceanographic Log Sheet M and had been shown on the smooth sheet as rocky. However, all such bottom characteristics are shown on the raw data printout as gravel and pebbles. The smooth sheet was revised accordingly during quality control evaluation.

2. Reference section V of the Verifier's Report:

The depth curves in the common area between the present survey and junctional surveys were not in coincidence thus necessitating extensive revisions of such depth curves during quality control evaluation to effect satisfactory agreement. (See provisional manual--sections 6.3.4.7 and 7.3.12.5 and the memorandum dated August 6, 1976, from the Office of Marine Surveys and Maps entitled "Depth Contour Agreement in Overlap Areas.")

3. Reference section VI of the Verifier's Report:

It appears that the text of the referenced section is a paraphrased reiteration of the discussion in section K of the Descriptive Report.



Some of the revised comments in the Verifier's Report are misleading inasmuch as they indicate that the ". . . central portion of the survey is generally unchanged . . ." Further, the shoreline and depth differences noted in the referenced section of the Verifier's Report are not consistent with those noted during the quality control comparisons between the present and prior surveys. In addition, the referenced section of the Verifier's Report contains no reference to the possible cause(s) of the noted differences. (See provisional manual--section 6.6(11).)

The first three paragraphs of section VI of the Verifier's Report are superseded by the following:

These prior surveys cover most of the area of the present survey. A comparison between the present and prior surveys reveals a variable pattern of depth differences of ± 6 fathoms with scattered indications of present depths as much as 16 fathoms shoaler in the central portion of the common area. Present depths are as much as 40 fathoms shoaler than prior depths in proximity to migrating shoreline features at the east-central limits of the present survey.

The former shoreline in the vicinity of latitude $59^{\circ}58.00'$, longitude $141^{\circ}34.00'$ has randomly accreted and eroded approximately 400 to 800 meters thereby obliterating Clay Bluff Point which was previously a pronounced feature in the vicinity of latitude $59^{\circ}57.80'$, longitude $141^{\circ}34.00'$. Farther to the west, a former peninsula, extending from the vicinity of latitude $59^{\circ}57.50'$, longitude $141^{\circ}39.50'$ to latitude $59^{\circ}55.40'$, longitude $141^{\circ}40.80'$, and the end of a peninsula in the vicinity of latitude $59^{\circ}55.00'$, longitude $141^{\circ}40.30'$ on H-4256a are no longer extant. The present survey shows general depths of 8 fathoms in the two areas.

The peninsula, extending north from the general shoreline in the vicinity of latitude $59^{\circ}52.00'$, longitude $141^{\circ}27.00'$ on H-4256a, has migrated as much as approximately 1,400 meters to the north and northeast and thence accreted an additional 1,000 meters to the northwest thereby filling in former depths of as much as 40 fathoms.

The noted depth and shoreline differences are attributed to natural causes and to the less accurate surveying methods employed on the prior surveys.

4. Reference section VII of the Verifier's Report:

The following subheadings were omitted during verification:

- a. Hydrography
- b. Controlling Depths

c. Aids to Navigation

(See the memorandum dated March 21, 1977, from the Office of Marine Surveys and Maps entitled "Verifier's Report Format.") The referenced section of the Verifier's Report was appropriately annotated during quality control evaluation.

cc:
C351

(2 sheets)

