

7768

Diag. Cnt. No. 8502-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF-2249 Office No. H-7768

LOCALITY

State ALASKA

General locality BRISTOL BAY

Locality KVICHAK BAY, OFF ETOLIN POINT

1949

CHIEF OF PARTY

R. W. Knox

LIBRARY & ARCHIVES

DATE Feb. 21, 1950

8924

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO.

HYDROGRAPHIC TITLE SHEET

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. PF-2249

REGISTER NO. H-7768

State Alaska ✓

General locality Bristol Bay ✓

Locality Kvichak Bay, Off Etolin Point ✓

Scale 1:20,000 ✓ Date of survey August 1 - 30, 1949 ✓

Vessel SS PATHFINDER'S Launches Nos. 1 & 2.

Chief of Party Robert W. Knox ✓

Surveyed by A.L. Wardwell & R.C. Bolstad ✓

Protracted by J.J. Dermody & R.C. Bolstad

Soundings penciled by R.C. Bolstad

Soundings in ~~fathoms~~ feet ✓

Plane of reference MLLW ✓

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by R.K. De Lawder

Verified by R.K. De Lawder

Instructions dated \_\_\_\_\_ 20 June, 1946

Remarks: Supplemental Instructions dated 24 March 1947, 7 April 1948, and 13 April 1949.

## DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY H-7768

FIELD NO. PF- 2249

1949 FIELD WORK

Scale 1: 20,000

USC&amp;GSS PATHFINDER

ROBERT W. KNOX, COMDG.

A - PROJECT

Project No. CS-327, General Instructions dated 20 June 1946. Supplemental Instructions dated 24 March 1947, 7 April 1948 and 13 April 1949.

B- SURVEY LIMITS AND DATES

This survey covers the area just offshore to the south of Etolin Point, bounded on the west by an approximate line from lat.  $58^{\circ} 36'$ , long.  $158^{\circ} 09'$  to lat.  $58^{\circ} 28.8'$ , long.  $158^{\circ} 14.4'$ , on the south along the parallel  $58^{\circ} 28.8'$  to long.  $157^{\circ} 56.5'$ , and on the east from this point northward to lat.  $58^{\circ} 35.4'$ , long.  $157^{\circ} 57'$ , thence inshore to the northwest to shoal water at lat.  $58^{\circ} 37'$ , long.  $158^{\circ} 03'$ .

Along the eastern inshore limits/<sup>(1947-49)</sup>junction is made with the 1949 field hydrographic survey H-7767,<sup>(1949)</sup> and H-7667 offshore; junction on the south is with the 1949 work performed on H-7770.<sup>(1949)</sup> An index of hydrographic sheets has been previously forwarded the Washington office.

Field work was commenced on August 1, 1949 and continued at intervals, weather permitting, until August 30, 1949.

C- VESSELS AND EQUIPMENT

The PATHFINDER'S motor launches nos. 1 & 2, operating from the ship, were used for this survey.

Fathometers of the 808 type were used, calibrated to a velocity of 820 fms/sec. Launch no. 1 used fathometer no. 74-S while launch no. 2 used no. 59. "A" scale was used except where otherwise marked on the fathogram.

D- TIDE AND CURRENT STATIONS

No current stations were observed in this area during 1949.

Although no tide stations were observed within the boundary limits of this sheet, the PATHFINDER maintained various fathometer tide stations in adjacent localities during the time of launch hydrography, except for Aug. 15th in which Clark's Point tide station was used after applying constants as covered in the 1949 Tidal Analysis Report previously submitted. The following summary lists tidal data for reducing sounding on this sheet:

Date	Use Tide Sta. No.	Range ratio	And apply constants:	
			High Waters	Low Waters
Aug. 1,2,3	20	0.95	0.0 hr.	∕ 0.1 hr.
" 15	#A (Clarks Point)	0.95	- 0.7 hr.	- 0.7 hr.
" 16,17	25	0.95	0.0 hr.	∕ 0.1 hr.
" 23	27	1.05	∕ 0.2 hr.	∕ 0.3 hr.
" 29,30	30	1.05	∕ 0.2 hr.	∕ 0.3 hr.

This method of obtaining tide reducers, as covered in the special Tidal Analysis report submitted 10 Oct. 1949, has been approved by the Director's letter dated 24 Oct 1949, subject: Tides, Bristol Bay, Alaska, 1949, ref. 36-tmo.

#### E- SMOOTH SHEET

The smooth sheet was prepared aboard the PATHFINDER by Officer personnel; transfer of shoreline has been verified.

#### F- CONTROL

Control of hydrography was by means of Shoran distance-measuring equipment.

Station SHOA was located on Middle Bluff by taped distance from triangulation station EPIC 1948 (C. LeFever, Chief of Party) and azimuth determined from theodolite angle at EPIC; an inverse computation determined the azimuth EPIC 1948 - MIDDLE 1946. The computed position of SHOA was determined to be Lat. 58°- 24'- 25.857", Long. 157° - 31'- 20.269".

Station SHOB was established on the southerly curve of Etolin Point. It was located by measuring a short base line from the shoran antenna mast (SHOB) to this baseline point (SHORT) and observing all angles of the triangle LASTOR 1947, SHOB, SHORT, by theodolite. The azimuth for the position computation was determined by initialing on LASTOR AZIMUTH MARK 1947 in observing at LASTOR. The computed position of SHOB was found to be Lat. 58°- 37'- 08.915", Long. 158°- 07'- 04.754".

Station SHOC was established about twelve miles east of Etolin Point. It was located by a short traverse from topographic station MIKE 1947 and measurement of the angle by theodolite at MIKE between triangulation station LAKE POINT 1947 and SHOC; the azimuth MIKE to LAKE POINT was determined by and inverse computation. The computed position of SHOC was found to be Lat. 58°- 40'- 39.330", Long. 157°- 51'- 52.778".

All the above shoran control stations are on the N.A. 1927 datum (un-adjusted); their descriptions and positions have been submitted on recoverable topographic station form 524. (Also see paragraph F-CONTROL, Suppl., page 7).

#### G- SHORELINE AND TOPOGRAPHY

Shoreline for this sheet was obtained from Air Photo Topographic sheet T-9066(1949)

The low water line on this smooth hydrographic sheet has been defined by widely spaced inshore lines of soundings; the inshore area is flat and it was considered neither economical nor practical to spend additional time for development. The large range of tide and rough waters were also factors limiting access to these shoal flats.

## H- SOUNDINGS

The 808 type fathometers were used with launches no. 1 and no. 2. A temporary recording of soundings was made for use in inking in the soundings on the boat sheet only. No sounding record book (form 275) was used for the permanent record; the fathogram was considered the permanent record and tide reducers were entered in red pencil directly on the roll prior to reducing the soundings for the smooth sheet. The fathograms were then run through a scanner equipped with templates to provide for velocity and tide corrections. The soundings (reduced) were called off by the scanner as an officer pencilled in the smooth-sheet soundings. This method has the advantage of permitting more uniform spacing of soundings when launch speed is constantly being varied by irregular current, a more minute inspection of bottom profile which is especially important where irregular sand ridges frequently occur.

A copy of the Fathometer corrections is included in this report. The template for a velocity of 1480 m/sec. was used on the scanner; when the index setting varied other than shown on the velocity correction sheets it was taken into account in correctly setting the template to give the proper sounding. Similarly when "B" scale was used the template was adjusted to provide for the differences as listed.

Hand-lead comparisons and bottom characteristics were taken at intervals as the work progressed.

## I- CONTROL OF HYDROGRAPHY

Distances determined by electronic equipment, known as SHORAN, were used to control all the hydrography on this sheet. Concentric circles, one statute mile apart, were drawn from each Shoran station on the sheet, and the positions plotted with an Odessey protractor. Three Shoran stations were necessary to give good intersections over the area. The western limits of hydrography was determined by the point where reliable plotting (good intersections) could be obtained from SHOB and SHOC as the work approached the extension of the line between these two stations. Returns from station SHOA were uncertain around twenty-five miles on the launches and beyond this distance they faded out in accordance with tidal conditions, etc.

The position and course record was maintained on the "Shoran or E P I Plotting Abstract" (form M-2527-1). "Zero Checks" and other pertinent observations was entered in the "Remarks" column on these pages.

The use of Shoran for control on this sheet proved exceedingly satisfactory. Practically no time was lost due to mechanical difficulties, either ashore or aboard the launches. The work was carried off-shore farther than would have been possible with sextant fixes on shore objects, and much of it was done in periods of limited visibility. By running a system of sounding lines which followed the concentric arcs following the general trend of the current (arcs of station SHOB on this sheet) it was possible to cover the area with no "lost" lines and to maintain position "right-on" the arc. It should be noted on this sheet that the arc lines actually follow the true path of the launches as the "drift pip<sup>ing</sup>" was maintained on the selected sounding arc by varying the courses at random; consequently the courses as recorded are an indication of the average course rather than each minute course change.

Consequently the the sounding lines on the shorter radius arcs have been plotted using a french curve rather than a straightedge between positions.

Two officers were assigned to each launch. One kept a continuous watch at the Shoran indicator and directed the helmsman so as to maintain position along the arc being run. The other officer recorded the position data on the Abstract sheets, plotted the positions, and inked in the soundings (unless too rough) on the boat sheet.

#### J- ADEQUACY OF SURVEY

This survey is complete and adequate for charting. No prior surveys were made in this area. (1949)

Junctions with the adjoining survey H-7767 (PF-2149) on the east is satisfactory and depth curves have been drawn at the junction; the tracing showing this junction is enclosed with the smooth sheet. (tracing subsequently destroyed)

#### K- CROSSLINES

Sixty miles of crosslines (out of a total of 596.5 naut. miles) constitutes about ten percent.

Of 438 crossings 256 or 58.4% gave 0 ft. discrepancy, 151 or 34.4% were 1 ft. crossings, 27 or 6.2% were 2 ft. crossings, and 4 or 1.0% were 3 ft. crossings. The above crossing include the line, \*position 29 to 59 a (purple) day, launch no. 2, Aug. 1st. in which all soundings on this line appear to be too shoal by approximately 2 ft. Although an investigation of the tides used on this day resulted in some adjustment there appears no logical evidence to support changing the tidal data by this amount; therefore the soundings on this line have not been changed but remain in agreement with tidal information. It is probable in this area of high tide range that the high water at the ship fathometer station #20 on this particular day, for no apparent reason including winds, was not in agreement at the sounding area which lies somewhat more inshore and to the westward, although the range factor when applied to tides on other days resulted in favorable crossings. It has been found upon investigation of tidal information on some of the other days in which soundings were conducted the ship fathometer stations sometimes resulted in irregular curves due to bottom irregularities at the anchorage which produced curves with a certain degree of flexibility in depth and particularly times of high and low waters. In this area where the tide often changes at the rate of a foot in ten minutes ship fathometer stations do not offer the perfect solution. This flexibility of tidal data has been utilized to adjust the reducers to obtain better consistencies of crosslines as long as it violated no logic; all readjustments of tidal information is included in the reducers furnished with this report. \* 2-ft. correction applied; determined from sdg. line crossings

#### L- COMPARISON WITH PRIOR SURVEYS

There are no prior surveys in this area.

#### M- COMPARISON WITH CHART (see Review, par. 6.)

In comparing this survey with chart 9050<sup>ed</sup> has been superseded by Charts 9051 & 9052 (11-20-50) the 10 ft. sounding shown thereon at Lat. 58°-32.8', Long. 158°-10.7' and the 12 ft. sounding shown at Lat. 58°-32.0', long. 158°-10.5' are only slightly out of position after accounting for change in datums. The 24 ft. sounding at Lat. 58°-29.4, Long. 158°-09.2' is approximately in the correct position and the 18 ft. sounding at lat. 58°-30.5', long. 158°-09.7' should be northeast about a quarter mile after allowing

for datum change. There are no other soundings shown on chart 9050 within the area covered by this survey.

A comparison of this survey with chart 8802 shows the charted depth of 3 fms. at lat.  $58^{\circ}-29.78$ , long.  $157^{\circ}-59.0'$  as falling in the vicinity of 26 ft. soundings on this survey; there is a 16 ft. depth in a foul area at the southern limits of this survey at approximate position lat.  $58^{\circ}-28.8'$ , long.  $158^{\circ}-06'$ . About one-half mile SW on hydrographic sheet H-7770 (PF-4149) (1949) a detached shoal was found just off the foul area of this survey; this sounding shows 17 ft. on the boat sheet and it may reduce to less when the smooth sheet H-7770 (1949) is plotted. At lat.  $58^{\circ}-29.7'$ , long.  $158^{\circ}-10.0'$  on chart 8802 is shown a 4 fm. sdg.; this survey shows the 24 ft. curve to fall farther offshore about one mile. The 2 fm. depth at lat.  $58^{\circ}-32.0'$ , long.  $158^{\circ}-09.7'$  on chart 8802 is very close to the 12 ft. depth curve as plotted on this smooth sheet.

#### N- DANGERS AND SHOALS

The foul area mentioned in the preceding paragraph is the limiting off-shore danger shown on this sheet; it has a least depth of 15 ft. on position 15j (purple) at lat.  $58^{\circ}-29.1'$ , long.  $158^{\circ}-05.0'$  although the 16 ft. depth to the SW as mentioned above is the offshore danger falling on this survey at position 23j (purple). However, on the adjacent off-shore hydrographic sheet H-7770 the 17 ft. depth to the SW would be the farthest offshore least depth. (1949)

least depth of  
14 ft. at  
 $58^{\circ} 29.35'$   
 $158^{\circ} 04.60'$

#### O- COAST PILOT INFORMATION

Coast Pilot Notes for Bristol Bay, Alaska, were forwarded to the DC office 14 October 1949.

The PATHFINDER did not anchor at any time within the boundaries covered by this survey. The ship's launches frequently dropped anchor usually at the end of a sounding line; the holding qualities of the bottom appeared to be very good, so good in fact that to avoid the exertion of breaking out the firmly held anchor each time the launches were allowed to drift during the lunch period. It is most probable the bottom consists of an under-layer of clay as was noted on the anchor several times when hauled in; bottom characteristics obtained by arming the lead with soap would not show this.

In the course of running the sounding lines on this survey it was noted that as the launches approached the meridian  $158^{\circ}-10'$  the effects of current from Nushagak Bay became more pronounced; it is somewhere in this vicinity where the current divides although this division as shown by observation on this sheet is probably over a broad area varying with rising and falling tides and the stage of tide or gradient.

#### P- AIDS TO NAVIGATION

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

#### Q- LANDMARKS FOR CHARTS

Landmarks for charts covering the Bristol Bay area have previously been submitted; there are none in this area.

#### R- GEOGRAPHIC NAMES

Reports have been submitted for both 1948 and 1949.

S- SILTED AREAS

As mentioned on the preceding page under paragraph "O" it appears the surface samples obtained with the armed lead are indicative only of the upper crust. In places where the current was strong, as around the Sw part of this sheet where the armed lead showed only pebbles, and not many of these, the clay surface was undoubtedly exposed without indication on the lead.

T- BY-PRODUCT INFORMATION

No information of this character has been noted.

Military intelligence information has been submitted in a special report on November 1949 to the District Intelligence Officer, Headquarters, Thirteenth Naval District, 1611 West Wheeler St., Seattle 99, Wn.

Z-TABULATION OF APPLICABLE DATA

(a) Attached to this report:-

1. Tabulation of Statistics
2. Abstract of Fathometer Corrections.
3. Tide Reducers used on the survey.


(b) Reports submitted under separate cover:-

1. Report on Tides submitted 10 October 1949
2. Geographic Names submitted 14 October 1949
3. Landmarks for Charts submitted 14 October 1949
4. Coast Pilot Information submitted 14 October 1949
5. Report of Fathometer Corrections, Part I - 1949 submitted 10 Nov. 1949 *with fms of this survey*
6. Report of Tide Reducers for PATHFINDER'S 1949 Field Season's work. (Note: This report will be submitted in the near future - probably to the Processing Office for continuance of processing the hydro. sheets).

Submitted-

  
Roswell C. Bolstad, Lt. Cmdr., USC&GS

Approved and forwarded:-

  
Robert W. Knox, Comdr. USC&GS  
Comdg. Officer, SS PATHFINDER  
Chief of Party



**F- CONTROL (Supplement)**

Calibration of the shoran stations was accomplished at the beginning of the field season when each of the stations was established. Stations ShoA and ShoB were calibrated from 3-point sextant fixes on triangulation stations; the mean of a series of angles being used to compute inverses. Station ShoC was calibrated from the tangent arcs to the calibrated station ShoA. In addition throughout the course of the work checks were frequently taken when the arcs were tangent. Both in this case and while performing hydrography requiring switching from one station to another no "jumps" in the positions were noted.

TABLE OF STATISTICS

<u>DATE</u> <u>1949</u>	<u>DAY LETTER</u>	<u>LAUNCH</u> <u>NO.</u>	<u>NO. OF</u> <u>POS.</u>	<u>HYDRO.</u> <u>STAT. MI.</u>	<u>TOTAL</u> <u>NAUT. MI.</u>
Aug.					
1	a(purple)	2	59	21.6	18.8
2	b(purple)	2	113	45.1	50.7
3	c(purple)	2	119	43.7	48.5
3	a(blue)	1	135	46.8	50.4
15	d(purple)	2	88	30.9	43.7
15	b(blue)	1	74	32.2	40.5
16	e(purple)	2	101	43.7	45.2
17	f(purple)	2	165	72.8	74.6
16	c(blue)	1	140	52.3	62.4
17	d(blue)	1	175	66.1	69.8
23	g(purple)	2	88	35.1	37.8
23	e(blue)	1	122	43.1	42.3
28	h(purple)	2	93	36.2	46.5
29	f(blue)	1	138	42.5	44.0
30	j(purple)	2	106	36.3	42.4
30	g(blue)	1	112	37.9	44.6
TOTALS			1828	686.3	762.2

# 1249

**VELOCITY CORRECTIONS FOR PATENTMETER LAUNCH NO. 1**

(SOS Type Pathometer No. 74-0)

**For month of June 1949 only:**

(From curve "A" - Vel. 1468.1 m/sec. or 502.8 fms/sec.)

DEPTH IN FATH.	VELOCITY CORRECTIONS (Index setting 1.0 Ft.)*	
	"A" SCALE**	"B" SCALE**
0-12.0	0.0	
12.5-36.0	-0.5	-1.5
36.5-60.0	-1.0	-2.0
60.5-83.5		-2.5
84.0-107.5		-3.0

**For months of July, August and September 1949 only:**

(From Curve "B" - Vel. 1479.9 m/sec. or 509.2 fms/sec.)

DEPTH IN FATH.	VELOCITY CORRECTION, FT. (Index setting 1.0 Ft.)*	
	"A" SCALE**	"B" SCALE**
0-19.0	0.0	
19.5-57.5	-0.5	-1.5
58.0-95.0		-2.0

\* Apply correction for any different setting.

\*\* Includes phase correction of -1.0 for "B" Scale readings ("B" Scale reads 1.0 ft. more than "A" Scale.).

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**VELOCITY CORRECTIONS FOR FATHOMER LAUNCH NO. 2**

(SOS Type Fathometer No. 77)

**For month of June 1948 only**

(From curve "A" - Vel. 1468.3 m/sec. or 502.5 fms/sec.)

DEPTH IN FATH.	VELOCITY CORRECTION, FT. (Under setting 1.3 ft.) <sup>a</sup>		
	"A" SCALE	"B" SCALE	"C" SCALE
0-12.0	0.0		
12.5-36.0	-0.5		
36.5-60.0	-1.0	0.0	
60.5-83.5		-0.5	0.0
84.0-107.5			-0.5

**For months of July, August, and September 1948 only**

(From curve "B" - Vel. 1479.9 m/sec. or 509.3 fms/sec.)

DEPTH IN FATH.	VELOCITY CORRECTION, FT. (Under setting 1.3 ft.) <sup>a</sup>		
	"A" SCALE	"B" SCALE	"C" SCALE
0-19.0	0.0		
19.5-47.5	-0.5		
48.0-75.0		0.0	
75.5-133.0			+0.5 0.0

<sup>a</sup> Apply correction for any different setting.

<sup>b</sup> Includes phase corrections: "B" Scale=1.0 ("B" Scale reads 1.0 ft. less than "A" Scale).  
"C" Scale=1.5 ("C" Scale reads 0.5 ft. less than "B" Scale).

TIDE REDUCERS - SHEET PP-2249  
(CG ZONE)

1 August

Time	Ft.
1421 - 1433	-1
1444	-1
1456	-1 1/2
1502	-2
1511	-2 1/2
1516	-3
1521	-3 1/2
1530	-4
1538	-4 1/2
1542	-5
1550	-5 1/2
1557	-6
1602	-6 1/2
1610	-7
1827 - 1836	-17 1/2
1845	-18
1859	-18 1/2
1918	-19
2032	-19 1/2

2 August

Time	Ft.
0848 - 0858	-14 1/2
0904	-14
0910	-13 1/2
0919	-13
0928	-12 1/2
0933	-12
0942	-11 1/2
0950	-11
0958	-10 1/2
1004	-10
1012	-9 1/2
1020	-9
1028	-8 1/2
1034	-8
1042	-7 1/2
1050	-7
1059	-6 1/2
1107	-6
1114	-5 1/2
1121	-5
1129	-4 1/2
1138	-4
1145	-3 1/2
1152	-3

2 August (Cont'd.)

Time	Ft.
1152 - 1200	-2 1/2
1208	-3
1216	-3 1/2
1224	-4
1233	-4 1/2
1241	-5
1259	-5 1/2
1317	-6
1340	-6 1/2
1438	-7 1/2
1455	-8 1/2
1507	-9 1/2
1519	-10 1/2
1519 - 1528	-11
15:34	-1 1/2
15:41	-1

3 August

Time	Ft.
0838 - 0850	-16 1/2
0900	-16
0909	-15 1/2
0916	-15
0928	-14 1/2
0934	-14
0942	-13 1/2
0951	-13
1000	-12 1/2
1009	-12
1029	-11 1/2
1038	-11
1055	-10 1/2
1065	-10
1082	-9 1/2
1096	-9
1110	-8 1/2
1120	-8
1128	-7 1/2
1137	-7
1145	-6 1/2
1153	-6
1203	-5 1/2
1212	-5
1221	-4 1/2
1230	-4
1239	-3 1/2
1248	-3
1258	-2 1/2
1305	-2

15:49 - 1 1/2  
15:49 - 1553 - 2

3 August (Cont'd.)

Time	Ft.
1305 - 1314	-1 1/2
1325	-1
1333	-1
1342	-1 1/2
1353	-2
1353 - 1405	-2 1/2
1422	-3
1440	-3 1/2
1453	-4
1605	-4 1/2
1610	-5
1620	-5 1/2
1627	-6
1631	-6 1/2
1638	-7
1643	-7 1/2
1652	-8

15 August

Time	Ft.
1009 - 1015	-5 1/2
1028	-5
1039	-4 1/2
1049	-4
1059	-3 1/2
1112	-3
1127	-2 1/2
1147	-2
1221	-1 1/2
1255	-1
1330	-1 1/2
1348	-2
1404	-2 1/2
1418	-3
1430	-3 1/2
1440	-4
1449	-4 1/2
1459	-5
1509	-5 1/2
1516	-6
1529	-6 1/2
1539	-7
1558	-7 1/2

H-7768 (1949)

TIDE REDUCERS - SHEET PP-32A9  
(OC ZONE)

16 August

<u>Time</u>	<u>Ft.</u>
0831 - 0841	-10
0855	-9½
0904	-9
0915	-8½
0927	-8
0940	-7½
0951	-7
1001	-6½
1015	-6
1025	-5½
1038	-5
1049	-4½
1101	-4
1111	-3½
1125	-3
1141	-2½
1204	-2
1204 - 1350	-1½
1409	-2
1423	-2½
1434	-3
1442	-3½
1455	-4
1502	-4½
1514	-5
1522	-5½
1533	-6
1544	-6½
1555	-7
1603	-7½
1612	-8
1623	-8½
1632	-9
1642	-9½
1654	-10
1702	-10½
1712	-11
1722	-11½
1732	-12
1741	-12½
1752	-13
1800	-13½
1812	-14
1827	-14½

16 August (Cont'd.)

<u>Time</u>	<u>Ft.</u>
1827 - 1843	-15
1903	-15½
1903 - 2035	-16
2055	-15½
2111	-15

17 August

<u>Time</u>	<u>Ft.</u>
0850 - 0901	-11
0911	-10½
0923	-10
0934	-9½
0945	-9
0956	-8½
1009	-8
1019	-7½
1030	-7
1041	-6½
1052	-6
1103	-5½
1115	-5
1126	-4½
1138	-4
1148	-3½
1200	-3
1211	-2½
1227	-2
1243	-1½
1260	-1
1274	-½
1294	0
1320 - 1424	1
1454	2
1455	2½
1510	3
1522	3½
1532	4
1541	4½
1551	5
1600	5½
1610	6
1620	6½
1629	7
1638	7½

17 August (Cont'd.)

<u>Time</u>	<u>Ft.</u>
1638 - 1647	-7
1656	-7½
1705	-8
1713	-8½
1722	-9
1731	-9½
1741	-10
1750	-10½
1800	-11
1809	-11½
1819	-12
1826	-12½
1835	-13
1843	-13½
1853	-14
1903	-14½
1913	-15
1926	-15½
1950	-16
1950 - 2100	-16½

23 August

<u>Time</u>	<u>Ft.</u>
0830 - 0842	-10½
0855	-11
0901	-11½
0927	-12
0945	-12½
1002	-13
1030	-13½
1120	-14
1200	-13½
1221	-13
1240	-12½
1250	-12
1307	-11½
1319	-11
1329	-10½
1340	-10
1350	-9½
1400	-9
1410	-8½

TIDE REDUCERS - SHEET PF-2249  
(CG ZONE)

23 August (Cont'd.)

<u>Time</u>	<u>Ft.</u>
1410 - 1420	-8
1430	-7½
1440	-7
1450	-6½
1500	-6
1510	-5½
1520	-5
1530	-4½
1540	-4
1550	-3½
1600	-3
1610	-2½
1620	-2
1630	-1½
1630 - 1640	-1
1658	-½
1658 - 1810	0

29 August

<u>Time</u>	<u>Ft.</u>
0905 - 0912	-4½
0920	-4
0927	-3½
0934	-3
0941	-2½
0950	-2
0956	-1½
1005	-1
1015	-½
1021	0
1031	+½
1043	+1
1101	+1½
1101 - 1235	+2
1249	+1½
1301	+1
1310	+½
1314	0
1320	-½
1326	-1
1331	-1½
1340	-2
1345	-2½
1350	-3
1356	-3½

29 August (Cont'd.)

<u>Time</u>	<u>Ft.</u>
1356 - 1402	-4
1410	-4½
1415	-5
1421	-5½
1429	-6
1434	-6½
1440	-7
1445	-7½
1451	-8
1459	-8½
1505	-9
1511	-9½
1516	-10
1522	-10½
1529	-11
1535	-11½
1540	-12
1546	-12½
1552	-13
1600	-13½
1605	-14
1611	-14½
1618	-15
1622	-15½

30 August

<u>Time</u>	<u>Ft.</u>
0910 - 0919	-8
0925	-7½
0932	-7
0941	-6½
0949	-6
0956	-5½
1003	-5
1010	-4½
1019	-4
1025	-3½
1031	-3
1040	-2½
1048	-2
1055	-1½
1103	-1
1110	-½
1120	0
1130	+½

30 August (Cont'd.)

<u>Time</u>	<u>Ft.</u>
1130 - 1141	+1
1158	+1½
1158 - 1328	+2
1345	+1½
1400	+1
1410	+½
1416	0
1421	-½
1429	-1
1433	-1½
1440	-2
1449	-2½
1454	-3
1500	-3½
1507	-4
1512	-4½
1520	-5
1527	-5½
1531	-6
1540	-6½
1545	-7
1551	-7½
1559	-8

APPROVAL SHEET

The work on hydrographic sheet H-7768 was accomplished under my occasional supervision. The records and reports have been inspected and approved. No additional work is considered necessary.

A handwritten signature in cursive script, reading "Robert W. Knox".

ROBERT W. KNOX

Comdr., USC&GS

Cmdg., Ship PATHFINDER



GEOGRAPHIC NAMES  
 Survey No. H-7768

Name on Survey											
	A	B	C	D	E	F	G	H	K		
<u>Alaska</u>											1
<u>Bristol Bay</u>									US+B		2
											3
<u>Kvichak Bay</u>											4
<u>Etolin Point</u>											5
											6
											7
											8
											9
											10
											11
											12
											13
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											23
											24
											25
											26
											27

*Names underlined in red are approved.*

*3-16-50*

*L. Heck*

C

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7768 .....

Records accompanying survey:

Boat sheets <sup>2</sup>.....; sounding vols. <sup>0</sup>.....; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls <sup>14</sup>.....;  
 special reports, etc. <sup>1</sup>..... overlay tracing of crossings; 1 overlay tracing of  
 junction of PF-2149 & PF-2249; 1 Portfolio of Shearan Abstracts .....

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

Number of positions on sheet		1828	.....
Number of positions checked		123	.....
Number of positions revised		10	.....
Number of soundings revised (refers to depth only)		600	.....
Number of soundings erroneously spaced		190	.....
Number of signals erroneously plotted or transferred		0	.....
Topographic details	Time	0	.....
Junctions	Time	0	.....
Verification of soundings from graphic record	Time	<del>30</del> 40 hrs.	.....
Verification by <i>M. M. ROGERS</i> <i>R. K. DE LAWDER</i> .....	Total time	20 hrs 143 hrs.	Date 11-21-50.
Reviewed by <i>J. A. Dinsmore</i> .....	Time	16 hrs.	Date 27 Febr. 1951

RHC

Form 719  
DEPARTMENT OF COMMERCE  
COAST AND GEODETIC SURVEY  
Rev. June 1937

## TIDE NOTE FOR HYDROGRAPHIC SHEET

~~DIVISION OF HYDROGRAPHY AND TOPOGRAPHY~~

7 November 1950

Division of Charts: R. H. Carstens

Plane of reference approved ~~for~~ for  
~~VOLUMES OF SOUNDING RECORDS FOR~~

HYDROGRAPHIC SHEET 7768

Locality: Kvichak Bay, Bristol Bay, Alaska

Chief of Party: R. W. Knox in 1949

Plane of reference is mean lower low water, reading

6.6 ft. on tide staff at Clark Point

24.6 ft. below B. M. 4A (1947)

47.2 ft. on fathometer at Station No. 20

35.5 ft. on fathometer at Station No. 25

58.0 ft. on fathometer at Station No. 27

31.1 ft. on fathometer at Station No. 30

Height of mean high water above plane of reference is 17.8 feet.

Condition of records satisfactory except as noted below:

*E. C. McKay*  
Section

Chief, ~~Division of Tides and Currents.~~

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7768

FIELD NO. PF-2249

Alaska, Bristol Bay, Kvichak Bay - Off Etolin Point  
Surveyed in - August, 1949                      Scale 1:20,000  
Project No. CS-327

Soundings:

Control:

808 Fathometer

Shoran

Chief of Party - R. W. Knox  
Surveyed by - A. L. Wardwell and R. C. Bolstad  
Protracted by - J. J. Dermody and R. C. Bolstad  
Soundings plotted by - R. C. Bolstad  
Verified and inked by - R. K. DeLawder  
Reviewed by - T. A. Dinsmore, 27 February 1951  
Inspected by - R. H. Carstens

1. Shoreline and Control

The origin of the shoreline and control is given in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in very good agreement. After revisions mentioned in paragraph 7b. a few discrepancies of 1 ft. remain.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated. The 3-ft. depth curve has been added to aid in defining more clearly the configuration of the inshore bottom.

Except for minor irregularities, the bottom is fairly smooth.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7767 (1949) on the east and H-7667 (1947-49) on the southeast. The junction with H-7770 (1949) on the south will be considered in the review of that survey. Project surveys on the west are not yet registered in this office.

5. Comparison with Prior Surveys

There are no prior surveys of the area by this Bureau.

6. Comparison with Chart 9051 (Latest print date 11/20/50)  
Chart 9052 (Latest print date 11/20/50)

A. Hydrography

Charted hydrography originates principally with the boat sheet of the present survey supplemented by a few soundings from the present smooth sheet prior to verification and review. Numerous soundings have been revised one to two feet in depth during verification.

The present survey supersedes the charted hydrography within the common area.

B. Aids to Navigation

No aids to navigation are charted within the limits of the present survey.

7. Condition of Survey

- a. No sounding volumes accompany the present survey. The fathograms represent the only permanent record of the depths obtained. The method by which the soundings were scanned and reduced directly from the fathograms is explained in paragraph "H" of the Descriptive Report. The Descriptive Report is particularly comprehensive.
- b. The smooth plotting was satisfactory except that about 180 soundings affecting crossings and depth curves were revised one foot in the rescanning of the fathograms by the verifier.

8. Evaluation of Mechanical Scanning Method

A mechanical method of scanning and reducing soundings directly from the fathograms was employed in both plotting and verifying the smooth sheet of this survey. This method eliminates the recording and reduction of soundings in the sounding volume (Form 275). The use of the mechanical scanning method in the field is discussed in paragraph H. of the Descriptive Report. Considerable time is obviously saved in the field by the use of this method. However, the time consumed in verification is appreciably increased. The time required to ink and verify soundings of the present survey (H-7768) has been determined to be 25% more than would have been required by the stan-

standard practice of using soundings recorded and reduced in sounding volumes. The present survey is comprised of a system of regularly-spaced sounding lines over a relatively smooth bottom and is considered to approach optimum conditions. H-7767 which adjoins the present survey on the east covers areas of both smooth and irregular bottom. This survey was also verified by the mechanical scanning method but at an estimated increase in time of 35% above what would have been required by the standard procedure. In irregular bottom, the verifier experienced difficulty in verifying the specific soundings plotted by the field party because of the absence of recorded time for the intermediate soundings between fixes. Only the time of each fix is recorded on the fathograms. On this particular survey, many soundings were plotted at varying time intervals by the field party in order to obtain a more uniform spacing of soundings. This increased the time necessary to verify the survey and in many instances added little to the appearance of the survey. This practice though having advantages in some instances should be held to a minimum.

During the verification of H-7768, the use of two verifiers working as a team was tried. One verifier scanned and called the soundings while the other inked them on the smooth sheet. Although about 50% more progress resulted from this arrangement, the increased production did not equal that of two verifiers working independently on separate surveys.

H-7767 and H-7768 (1949) are the first surveys to have been plotted and verified by the mechanical scanning method. An experienced verifier was assigned to the verification of these surveys. The method by which the surveys were verified had no appreciable effect on the reviews of the surveys. The ultimate check of critical soundings on a survey is a routine matter during the review of the survey and in uncongested areas is not presumed to require more time with the mechanical scanning method than by the use of recorded soundings.

#### Conclusions:

The mechanical scanning method can be used with ease in areas of smooth bottom when the control and crossings are good and there is little congestion of sounding lines. The time required to verify and ink soundings for surveys of this type is probably 20-30% greater than the time required by the standard procedure using sounding volumes.


In areas of irregular bottom or where sounding lines are congested, difficulty is foreseen. On such surveys, verification and inking soundings could conceivably require twice the number of man hours than by the standard procedure.

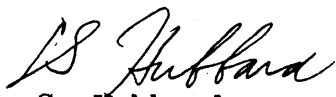
9. Compliance with Project Instructions

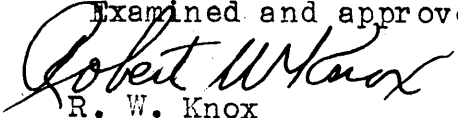
The survey adequately complies with the Project Instructions.

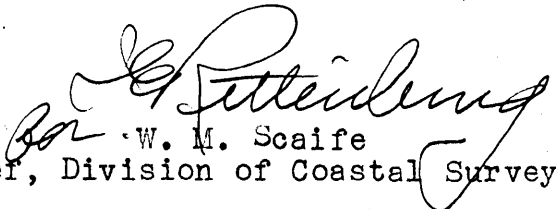
10. Additional Field Work

This is a basic survey and no additional field work is required.

  
H. R. Edmonston  
Chief, Nautical Chart Branch

  
L. S. Hubbard  
Chief, Section of Hydrography

Examined and approved:  
  
R. W. Knox  
Chief, Division of Charts

  
W. M. Scaife  
Chief, Division of Coastal Surveys

# NAUTICAL CHARTS BRANCH

SURVEY NO. H 7768

## Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
2/28/50	9052	J. H. Gam	<del>Before</del> <u>After</u> Verification and Review
			Added 3 sds west of junction with chart 9051
1-19-55	9051	J. H. Eaton	<del>Before</del> <u>Comp. applied</u> <u>After</u> Verification and Review
6-18-52	9802	Everett	<del>Before</del> <u>After</u> Verification and Review
4-14-55	9000	D. H. Benson	<del>Before</del> <u>After</u> Verification and Review thru ch 8802
12-20-63	9052	E. H. (Hydrog.)	Fully app'd. in area of ch 9051 - Remainder part. app'd.
			<del>Before</del> <u>After</u> Verification and Review
10-2-91	16322	W. J. Ohns	<del>Before</del> <u>Comp. applied</u> <u>After</u> Verification and Review - considered adequately applied
			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review
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			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review
			<del>Before</del> <u>After</u> Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.