7767

Dia. Cht. No. 8502-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

7767

Type of Survey HYDROGRAPHIC

Field No. PF-2149 Office No. H-7767

LOCALITY

State ALASKA

General locality BRISTOL BAY

Locality KVICHAK BAY - NORTH SHORE

194 9

CHIEF OF PARTY

R. W. Knox

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DATE Feb. 21, 1950

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Form 537
Ed. Dec. 1930

REG. NO.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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. ~~PP-214~~

REGISTER NO. H-7767

State ..... Alaska ..... ✓

General locality ..... Bristol Bay ..... ✓

Locality ..... Kvichak Bay, ~~East of Diablo Point~~ - North Shore ..... ✓

Scale ~~1:20,000~~ ✓ Date of survey ~~June 23 to August 1,~~ 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 ~~H.P.Demuth, C.D.Scott, & A.L.Wardwell~~

Soundings penciled by ~~J.J.Dermody & A.L.Wardwell~~

Soundings in ~~fathoms~~ ~~xxxxxx~~ 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~~, 19 46

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

U. S. GOVERNMENT PRINTING OFFICE

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY H-7767

FIELD NO. PF- 2149

1949 FIELD WORK

Scale 1: 20,000

USC&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 April 1949.

B- SURVEY LIMITS AND DATES

This survey covers the inshore hydrography on the north side of Kvichak Bay about twenty miles east of Etolin Point, bounded on the west by an approximate line from lat. 58°-37.6'± long. 158°-02.5'± to lat. 58°-35.0'± long.157°-57.0'± to lat. 58°-31.3'±,long.157°-57.0'± thence along southern limits to lat. 58°-37.5'± long. 157°-30.4'± and from this point the eastern boundary to 58°-41.0'±, long. 157°-37.0'± and continueing to lat. 58°-43.4'± long 157°-36.5'±.

Along the eastern inshore limits junction is made with the 1948 field hydrographic survey H-7671, along the southern limits with H-7667,(1947-48) and along the western boundary with H-7768.(1949) An index of hydrographic sheets has been previously forwarded the DC office.

Field work was commenced on 23 June, 1949 and continued at intervals, weather permitting, until 1 Aug, 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 observered in this immediate area during 1949. The PATHFINDER maintained fathometer tide stations near the southern limits, about lat. 58°-34', long. 157°-46', of the hydrography on this sheet. These stations were maintained during all periods of launch hydrography except on July 10th when the ship conducted hydrography simultaneously with the launches; the tides at Clark Point were used for this day after applying the constants as listed in the special report 1949 Tide Analysis. The following summary lists tidal data for reducing soundings on this sheet:

Date	Use Tide Sta. No.	Range ratio	And apply constants: Time Differences High Waters	Low Waters
June 23	7	1.0	0.0	0.0
July 9	11	1.0	0.0	0.0
* 10	#A(Clarks Point)	1.05	-0.6 hr.	-0.6 hr.
** 10	" "	1.00	-0.7 hr.	-0.8 hr.
July,13,15,16	13	1.00	0.0	0.0
" 18	14	1.00	0.0	0.0
" 20	16	1.00	0.0	0.0
" 23,25,26	18	1.00	0.0	0.0
" 30,31	20	1.00	0.0	0.0
Aug. 1	20	1.00	0.0	0.0

* For area in AA zone only.
** For area in BB zone only.

This method of obtaining 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 an 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 (Unadjusted); their descriptions and positions have been submitted previously on topographic station forms 524. **(Also see paragraph F- CONTROL, Supplement, page 7).**

G - SHORELINE AND TOPOGRAPHY: Shoreline for this sheet was obtained from Air Photo Topographic sheets T-9066 and T-9067 (1948).

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 (and variance of index setting) corrections. The reduced soundings were called off by the scanner as another officer pencilled in the smooth-sheet soundings. This method was found to have merit over the standard procedure in permitting a visual picture of the bottom profile which was found essential in this area of irregular bottom of frequent closely spaced ridges and depressions for correct delination of the bottom and to obtain correct crossings. Also in running arcs where the course is frequently changing the distance interval between fixes is irregular; in this area of off-lying shoals the current varies considerably in both direction and strength. Under such conditions the direct scanning method for the smooth sheet penciling of soundings will permit a more uniform spacing of the soundings by varying the interval to fit the changing conditions. Although during the 1949 season's work when Shoran was first used on the PATHFINDER, an extra man was provided on each of the launches for the purpose of temporarily recording the fathometer soundings for inking on the boat sheet, it may be found after more experience this man may be dispensed with and used elsewhere when the direct scanning process is used.

A copy of the Fathometer corrections is included in this report. The template for a velocity of 1465 m/s was used for the launch work of June 23rd.; thereafter the template for velocity of 1480 m/s was used. When the index setting varied other than shown on the velocity correction sheets it was taken into account on the setting of the template to provide the proper sounding. Similarily 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 entire area.

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 were entered in the "Remarks" column of these pages.

The use of Shoran for the control of hydrography on this sheet proved exceptionally satisfactory. Practically no time was lost due to mechanical or electronic 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 lines which followed the concentric arcs (most closely paralleling the beach) it was possible to cover the area without excess lines

and to maintain position with certainty at any time. Running arcs also assists splitting lines for development with greatest economy and coverage. It should be noted on this sheet that the arc lines actually follow the true path of the launches as the "drift" pip was maintained on the selected sounding arc by varying the courses at random; consequently the courses as recorded are indications of average course rather than each minute course change. Shoran station SHOA was used as the drift station because it most closely followed the current and shoreline trend.

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 on the arc, SHOA; in the future it might prove helpful to provide the helmsman access to a view of the indicator. The other officer recorded the 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; inshore flats were not developed extensively (see par. G). No prior surveys were made of this area.

Junction with the adjoining survey H-7768 (1949) (PF-2249) on the west is satisfactory and depth curves have been penciled without interruption at the border. Along the east boundary of this sheet junction is made with the 1948 survey H-7671 (1948); this junction is unsatisfactory in its present state. It is believed the discrepancies are in the 1948 work and not with the 1949 survey which is exceptionally well controlled by Shoran fixes. It appears that some of the 1948 positions are in error and also the reduced soundings. During the days in which launch hydrography was performed in 1949 the ship lay at anchor nearby and a ship fathometer tide station was maintained; although there might be a small height difference in reducing soundings from this data (see report of PATHFINDER'S 1949 Tide Reducers) crosslines and junctions between 1949 surveys have been good and it appears unlikely the 1949 work at the junction with the 1948 work on the east would be inconsistent. An overlay tracing is being forwarded; adjustments should be effected in the DC office.

* see note below

junctional area very irregular

Along the southern boundary junction has not been effected with survey PF-4147 (H-7667) (1947-49) the 1949 work having not yet been plotted. (Review, par. 4)

* Major discrepancies eliminated during verification

K- CROSSLINES

One hundred three miles of crosslines, constituting 10% of the total miles of sounding lines, were run.

Of 946 total crossings there were 538 or 57% at 0 ft. discrepancy; 269 or 29 % with 1 ft. discrepancy; 100 or 11 % with 2 ft. discrepancy; and 39 or 3 % with 3 ft. discrepancy. In accordance with authority received from the DC office the soundings on this sheet have been penciled only to the nearest foot; tidal information for reducing the soundings is probably no more accurate than this and at times even worse. The last three sentences of paragraph K- CROSSLINES in the descriptive report for hydrographic sheet register no. H-7768 (1949) also apply to this survey; under these conditions of flexibility it is not unlikely that an office adjustment if deemed necessary could be effected on certain lines by small amounts (readjustment of original tidal data from ship fathometer observations have been made up to a maximum of 2 feet, actually somewhat less than this amount but in plotting soundings to nearest foot a 2 ft. difference was effective).

see note below

(corrections applied during verification have eliminated most of the discrepancies at crossings; some corrections were determined from crossing differences)

L- COMPARISON WITH PRIOR SURVEYS

There are no prior surveys in this area.

M- COMPARISON WITH CHART

Charts of this area do not show any hydrographic information thereon. See Review, par. 6.

N- DANGERS AND SHOALS

Near the western offshore extremities of this survey at lat. 58°-32.2', long. 157°-54.5' a shoal sounding of 16 feet lies just inside the four fathom currve; it is between positions 109 and 110 "h" day(purple).

Near the central offshore portion of this survey at lat. 58°-35.6', long. 157°-47.4' there is a 15 ft. sounding between positions 97 and 98 "a" day(purple). Inshore from this sounding one nautical miles on bearing 23° the shoal extends to the shoalest depth which bares at low water, on both sides are deeper water.

Near the eastern offshore boundaries of this survey at lat. 58°-37.3', long. 157°-35.3', between positions 80 and 81 "p" day(blue) is a 14 ft. sounding; there are shoaler soundings inshore to the north.

South of ~~From~~ a line drawn between these three shoal points as listed above there are no shoaler depths on this survey.

O- COAST PILOT INFORMATION

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

During the period the launches were sounding on this survey the PATHFINDER frequently anchored in the vicinity of lat. 58°-34', long.157°-47'; the holding qualities of the bottom appear to be excellent. Although the bottom characteristic as obtained by the launches shows this bottom to be "fine grey sand and gravel", and"fine grey sand" the ship's anchor showed a substrata of clay to exist. This is probably true of all this area as explained in paragraph O- COAST PILOT INFOR* MATION for descriptive report for hydrographic sheet, reg. no. 7768.(1949)

P- AIDS TO NAVIGATION

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

Q- LANDMARKS FOR CHARTS

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

R- GEOGRAPHIC NAMES 1947

Reports have been submitted for both 1948 and 1949.

S- SILTED AREAS

As mentioned in the preceeding paragraph "O" it appears the surface samples obtained with the armed lead are indicative only of the upper strata; in places where little indication was obtained the clay surface was undoubtedly exposed, swept clean by the current. This is further borne out in that during the course of launch hydrography in anchoring during lunch hour difficulty was had in break- the anchor loose, and in hoisting it in, clay was frequently found still clinging to the flukes.

T- BY-PRODUCT INFORMATION

No information of this character has been noted.

Military intelligence information has been submitted in a special report in November 1949 directly 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 as used on this survey.

(b) Reports and data 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 (pertains to this survey) 1949 submitted 10 November 1949 Filed with H-7768
6. Report of Tide Reducers for PATHFINDER'S 1949 Field Season's work.(Note: This report will be submitted in the near future, providing for the revision of reducers as found necessary in the field, probably to the Processing Office for continuance of processing the balance of the 1949 hydrographic surveys).
7. Overlay tracing showing Junction Data between PF-2149(H-7767)(1949) and PF-2548 (H-7671)(1948) for DC information on adjustment necessary.
8. Overlay tracing showing Crossings on this survey.

13 February 1950

Submitted -

Roswell C. Bolstad, Comdr. 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

DATE 1949	DAY LETTER	LAUNCH No.	NO. OF POS.	HYDRO. STAT. MI.	TOTAL NAUT. MI.
June 23	a(purple)	2	102	34.5	34.3
23	a(blue)	1	61	22.2	35.7
July 9	b(blue)	1	114	39.9	46.4
10	c(blue)	1	133	40.3	45.2
13	d(blue)	1	118	46.9	46.4
15	e(blue)	1	119	45.6	45.8
15	b(purple)	2	163	46.9	42.7
16	f(blue)	1	113	43.9	45.0
16	c(purple)	2	89	40.2	36.2
18	d(purple)	2	48	18.2	20.4
18	g(blue)	1	44	17.6	24.0
20	e(purple)	2	117	50.1	46.8
20	h(blue)	1	115	44.2	44.3
23	j(blue)	1	146	46.2	49.5
23	f(purple)	2	129	52.4	52.8
25	g(purple)	2	95	41.7	51.4
25	k(blue)	1	145	56.9	54.1
26	l(blue)	1	113	45.2	46.9
26	h(purple)	2	124	54.4	54.2
30	m(blue)	1	109	40.6	43.5
30	j(purple)	2	121	46.3	45.3
31	k(purple)	2	110	42.6	50.0
31	n(blue)	1	83	29.6	26.6
Aug. 1	p "	1	121	46.2	45.7
1	l(purple)	2	121	38.5	35.0
	TOTALS		2,753	1,031.1	1,069.2

VELOCITY CORRECTIONS FOR PATHFINDER LAUNCH NO. 1

(808 Type Fathometer No. 74-8)

For month of June 1949 only:

(From curve "A" - Vel. 1468.1 m/sec. or 802.8 fms/sec.)

DEPTH IN FEET	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 809.2 fms/sec.)

DEPTH IN FEET	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.).

VELOCITY CORRECTIONS FOR PATHFINDER LAUNCH NO. 2

(808 Type Fathometer No. 59)

For month of June 1949 only:

(From curve "A" - Vel. 1468.1 m/sec. or 802.8 fms/sec.)

DEPTH IN FEET	VELOCITY CORRECTION, FT. (Index setting 1.1 ft.)* "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 1949 only:

(From curve "B" - Vel. 1479.9 m/sec. or 809.2 fms/sec.)

DEPTH IN FEET	VELOCITY CORRECTION, FT. (Index setting 1.1 ft.)* "A" SCALE	"B" SCALE**	"C" SCALE**
0-19.0	0.0		
19.5-57.5	-0.5	+0.5	
58.0-95.0		0.0	+0.5
95.5-133.0			0.0

* Apply correction for any different setting.

** 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 PF-2149
(AA & BB ZONE)

23 June

Time	Ft.
0835 - 0850	-11
0906	-11½
0920	-12
0940	-12½
1019	-13
1045	-13½
1125	-13
1145	-12½
1201	-12
1215	-11½
1225	-11
1237	-10½
1248	-10
1300	-9½
1311	-9
1322	-8½
1334	-8
1345	-7½
1355	-7
1407	-6½
1419	-6
1430	-5½
1441	-5
1453	-4½
1504	-4
1515	-3½
1526	-3
1538	-2½
1550	-2
1603	-1½
1620	-1
1641	-½
1700	-0

9 July

Time	Ft.
1049 - 1105	-15½
1140	-16
1215	-16½
1245	-16
1256	-15½
1306	-15
1316	-14½
1325	-14
1331	-13½
1338	-13

9 July (Cont'd.)

Time	Ft.
1338 - 1345	-12½
1352	-12
1359	-11½
1405	-11
1411	-10½
1417	-10
1425	-9½
1430	-9
1437	-8½
1443	-8
1450	-7½
1457	-7
1504	-6½
1510	-6
1517	-5½
1525	-5
1531	-4½
1537	-4
1545	-3½
1550	-3
1558	-2½
1604	-2
1611	-1½
1619	-1
1625	-½
1631	-0
1636	+½
1645	+1
1655	+1½
1705	+2
1715	+2½
1732	+3
1732 - 1852	+3½

13 July

Time	Ft.
0047 - 0356	-6½
0909	-6
0925	-5½
0949	-5
0949 - 1109	-4½
1130	-5
1141	-5½
1151	-6
1204	-6½
1213	-7

13 July (Cont'd.)

Time	Ft.
1213 - 1225	-7½
1235	-8
1245	-8½
1256	-9
1309	-9½
1319	-10
1330	-10½
1341	-11
1352	-11½
1405	-12
1415	-12½
1430	-13
1430 - 1600	-13½
1615	-13
1628	-12½
1637	-12
1646	-11½

15 July

Time	Ft.
0808 - 0815	-14
0825	-13½
0834	-13
0843	-12½
0852	-12
0901	-11½
0910	-11
0920	-10½
0930	-10
0939	-9½
0945	-9
0955	-8½
1005	-8
1014	-7½
1023	-7
1031	-6½
1044	-6
1056	-5½
1116	-5
1150	-4½
1230	-4
1301	-4½
1320	-5
1335	-5½
1345	-6
1356	-6½

TIDE REDUCERS - SHEET PF-2149
(AA & BB ZONE)

15 July (Cont'd.)

Time	Ft.
1356 - 1409	-7
1420	-7½
1430	-8
1444 - 8½	
1454	-9
1506	-9½
1517	-10
1529	-10½
1540	-11
1552	-11½
1602	-12
1613	-12½
1625	-13
1637	-13½
1650	-14
1701	-14½
1701 - 1750	-15

* 10 July (AA ZONE)

Time	Ft.
0519 - 0525	-13
0535	-12½
0543	-12
0552	-11½
0600	-11
0608	-10½
0616	-10
0625	-9½
0634	-9
0641	-8½
0655	-8
0705	-7½
0726	-7
0726 - 0840	-6½

* 10 July (BB ZONE)

Time	Ft.
0920 - 0932	-8½
0943	-9
0955	-9½
1008	-10
1018	-10½
1029	-11
1040	-11½

* 10 July (BB ZONE -Cont'd.)

Time	Ft.
1040 - 1051	-12
1102	-12½
1114	-13
1123	-13½
1135	-14
1140	-14½
1222	-15
1302	-15½
1337	-15
1355	-14½
1409	-14
1419	-13½
1430	-13
1440	-12½
1448	-12

18 July

Time	Ft.
1232 - 1250	-2
1320	-1½
1359	-1
1429	-1½
1449	-2
1502	-2½
1514	-3
1523	-3½
1531	-4
1540	-4½
1550	-5

20 July

Time	Ft.
0759 - 0900	-15½
0928	-15
1945	-14½
1000	-14
1012	-13½
1023	-13
1033	-12½
1043	-12
1054	-11½
1105	-11
1114	-10½
1125	-10

20 July (Cont'd.)

Time	Ft.
1125 - 1135	-9½
1145	-9
1155	-8½
1206	-8
1216	-7½
1228	-7
1238	-6½
1248	-6
1300	-5½
1309	-5
1320	-4½
1330	-4
1341	-3½
1354	-3
1406	-2½
1422	-2
1451	-1½
1540	-1
1613	-1½
1633	-2

16 July

Time	Ft.
0830 - 0840	-13½
0805	-13
0900	-12½
0910	-12
0920	-11½
0928	-11
0938	-10½
0947	-10
0957	-9½
1007	-9
1015	-8½
1024	-8
1033	-7½
1043	-7
1053	-6½
1102	-6
1113	-5½
1129	-5
1145	-4½
1208	-4
1208 - 1336	-3½
1400	-4
1418	-4½

* Soundings on 10 July are the only ones influenced by zones.

TIDE REDUCERS -- SHEET FF-2149
(AA & BB ZONE)

16 July (Cont'd.)

Time	Ft.
1418 - 1429	-5
1440	-5½
1450	-6
1501	-6½
1512	-7
1527	-7½
1538	-8
1550	-8½
1600	-9
1611	-9½
1622	-10
1633	-10½
1644	-11
1656	-11½
1656 - 1709	-12

23 July

Time	Ft.
0827 - 0849	-10½
0911	-11
0945	-11½
0945 - 1129	-12
1153	-11½
1211	-11
1226	-10½
1238	-10
1249	-9½
1300	-9
1312	-8½
1324	-8
1334	-7½
1348	-7
1359	-6½
1410	-6
1420	-5½
1432	-5
1444	-4½
1455	-4
1508	-3½
1519	-3
1530	-2½
1542	-2
1553	-1½
1605	-1
1619	-½

23 July (Cont'd.)

Time	Ft.
1619 - 1636	-0
1659	+½
1659 - 1830	+1
1842	+½
1854	0
1901	-½
1911	-1
1919	-1½
1925	-2
1931	-2½
1936	-3
1942	-3½
1949	-4
1955	-4½
2000	-5
2006	-5½
2012	-6
2019	-6½
2025	-7
2031	-7½
2038	-8
2042	-8½
2042 - 2049	-9

25 July

Time	Ft.
0811 - 0841	-9
0900	-9½
0920	-10
0935	-10½
0955	-11
1012	-11½
1031	-12
1048	-12½
1107	-13
1133	-13½
1133 - 1251	-14
1316	-13½
1331	-13
1342	-12½
1354	-12
1403	-11½
1412	-11
1422	-10½
1431	-10

25 July (Cont'd.)

Time	Ft.
1431 - 1440	-9½
1450	-9
1500	-8½
1510	-8
1520	-7½
1530	-7
1540	-6½
1550	-6
1559	-5½
1609	-5
1619	-4½
1629	-4
1638	-3½
1648	-3
1658	-2½
1708	-2
1716	-1½
1728	-1

26 July

Time	Ft.
0738 - 0824	-8½
0824 - 0842	-8
0928	-8½
0948	-9
1002	-9½
1021	-10
1036	-10½
1055	-11
1110	-11½
1127	-12
1143	-12½
1200	-13
1225	-13½
1337	-14
1402	-13½
1420	-13
1431	-12½
1441	-12
1452	-11½
1501	-11
1510	-10½
1519	-10
1528	-9½
1536	-9

TIDE READERS - SHEET PF-2149
(AA & BB ZONE)

26 July (Cont'd.)

Time	Ft.
1536 - 1545	-8½
1554	-8
1602	-7½
1612	-7
1621	-6½
1630	-6
1639	-5½
1648	-5
1656	-4½
1706	-4
1714	-3½
1722	-3

30 July

Time	Ft.
0811 - 0819	-10
0825	-9½
0831	-9
0837	-8½
0845	-8
0851	-7½
0859	-7
0904	-6½
0910	-6
0916	-5½
0924	-5
0930	-4½
0940	-4
0946	-3½
0955	-3
1005	-2½
1018	-2
1029	-1½
1048	-1
1110	-½
1110 - 1205	-0
1225	-½
1240	-1
1250	-1½
1259	-2
1303	-2½
1310	-3
1317	-3½
1322	-4
1328	-4½

30 July (Cont'd.)

Time	Ft.
1328 - 1335	-5
1341	-5½
1347	-6
1352	-6½
1359	-7
1404	-7½
1411	-8
1417	-8½
1423	-9
1430	-9½
1437	-10
1442	-10½
1448	-11
1455	-11½
1500	-12
1506	-12½
1512	-13
1519	-13½
1525	-14
1531	-14½
1537	-15
1542	-15½
1550	-16
1556	-16½
1601	-17
1610	-17½
1620	-18
1620 - 1640	-18½

31 July

Time	Ft.
0849 - 0854	-11½
0901	-11
0909	-10½
0916	-1 0
0921	-9½
0930	-9
0936	-8½
0945	-8
0951	-7½
0958	-7
1004	-6½
1010	-6
1019	-5½
1025	-5
1031	-4½
1040	-4

31 July (Cont'd.)

Time	Ft.
1040 - 1045	-3½
1053	-3
1100	-2½
1110	-2
1119	-1½
1130	-1
1141	-½
1202	-0
1202 - 1308	+½
1330	-0
1341	-½
1353	-1
1400	-1½
1409	-2
1415	-2½
1423	-3
1429	-3½
1436	-4
1442	-4½
1451	-5
1459	-5½
1504	-6
1510	-6½
1518	-7
1521	-7½
1530	-8
1538	-8½
1545	-9
1550	-9½
1600	-10
1605	-10½
1615	-11
1621	-11½
1630	-12
1637	-12½
1645	-13

1 August

Time	Ft.
0809 - 0815	-15½
0821	-15
0830	-14½
0839	-14
0845	-13½
0855	-13

TIDE REDUCERS - SHEET PF-2149
(AA & BB ZONE)

1 August (Cont'd.)

Time		Ft.
0855 -	0901	-12½
	0910	-12
	0917	-11½
	0925	-11
	0931	-10½
	0940	-10
	0949	-9½
	0955	-9
	1004	-8½
	1011	-8
	1019	-7½
	1028	-7
	1035	-6½
	1042	-6
	1050	-5½
	1059	-5
	1107	-4½
	1115	-4
	1121	-3½
	1130	-3
	1137	-2½
	1145	-2
	1152	-1½
	1202	-1
	1212	-½
	1224	-0
	1237	+½
	1301	+1
1301 -	1409	+1½
	1428	+1
	1438	+½
	1447	-0
	1455	-½
	1504	-1
	1510	-1½
	1515	-2
	1521	-2½
	1528	-3
	1531	-3½
	1539	-4
	1544	-4½
	1550	-5
	1556	-5½

1 August (Cont'd.)

1556 -	1601	-6
	1609	-6½
	1612	-7
	1619	-7½
	1625	-8
	1630	-8½
	1636	-9
	1641	-9½
	1648	-10
	1652	-10½
	1659	-11
	1704	-11½
	1710	-12
	1715	-12½
	1721	-13
	1726	-13½
	1731	-14
	1737	-14½
	1743	-15
	1749	-15½
	1755	-16
	1800	-16½
	1805	-17
	1811	-17½
	1818	-18
	1825	-18½
	1833	-19
	1843	-19½
	1855	-20
	1920	-20½
	1952	-21
	2022	-20½
	2040	-20
	2055	-19½

APPROVAL SHEET

The work of hydrographic sheet PF-2149 (H-7767) was accomplished under my occasional supervision. The records and reports have been inspected and approved. No additional work is considered necessary.

Robert W. Knox

ROBERT W. KNOX

Comdr., USC&GS

Cmdg. Ship PATHFINDER

GEOGRAPHIC NAMES

Survey No. H-7767

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Alaska			(for title)							1
Bristol Bay			"	"					USrB	2
Etolin Point			"	-						3
										4
Kvichak Bay										5
										6
										7
										8
										9
				Names underlined in red are approved.						10
				3-16-50. L. Heck						11
										12
										13
										14
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										25
										26
										27

M 234

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7767

Records accompanying survey:

Boat sheets 2; sounding vols. 0; wire drag vols. ;

bomb vols. ; graphic recorder rolls 15 env.;

special reports, etc. 1 overlay tracing of crossings; 1 overlay tracing of junction of Pf-2149 & PF-2249; 1 overlay tracing of junction of PF-2149 & PF-2548
1 Portfolio of Shoran Abstracts

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

Number of positions on sheet		2753
Number of positions checked		171
Number of positions revised		4
Number of soundings revised (refers to depth only)		494 (This figure does not include sdgs changed by an arbitrary correction)
Number of soundings erroneously spaced		132
Number of signals erroneously plotted or transferred		0
Topographic details	Time	0
Junctions	Time	36 hrs
Verification of soundings from graphic record	Time	40 hrs

Verification by Stirrit R.K. De Lawder Total time 246 hrs Date 1-11-50.

Reviewed by J.A. Dinsmore Time 16 hrs. Date 21 Febr. 51

M-2232-1

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~ 6 November 1950

Division of Charts: R. H. Carstens

Plane of reference approved ~~as~~ for
~~volumes of sounding records for~~

HYDROGRAPHIC SHEET 7767

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

23.7 ft. on fathometer at Station No. 7
31.2 ft. on fathometer at Station No. 11
55.3 ft. on fathometer at Station No. 13
37.8 ft. on fathometer at Station No. 14
41.0 ft. on fathometer at Station No. 16
38.7 ft. on fathometer at Station No. 18
47.2 ft. on fathometer at Station No. 20

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

Condition of records satisfactory except as noted below:

E.C.McKay
Section
Chief, ~~Division~~ of Tides ~~and Currents.~~

U. S. GOVERNMENT PRINTING OFFICE 756675

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY REGISTRY NO. H-7767

FIELD NO. PF-2149

Alaska, Bristol Bay, Kvichak Bay - North Shore
Surveyed in June - 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 - H. P. Demuth, G. D. Scott and R. C. Bolstad
Soundings plotted by - J. J. Dermody and A. L. Wardwell
Verified and inked by - R. K. DeLawder
Reviewed by - T. A. Dinsmore, 21 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

Considering the uneveness of much of the bottom, depths at crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated. Several supplementary curves have been added to aid in defining more completely the configuration of the bottom.

Except over the inshore mud flats, the bottom is extremely uneven. Numerous irregularly-shaped sand shoals uncover at M.L.L.W.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7671 (1948) on the east, H-7667 (1947-49) on the south and H-7768 (1949) on the west.

A few discrepancies appear in the junctional areas between depths of 1947 and those obtained in 1949. The discrepancies, however, are minor and are attributed to irregularities and the instability of the bottom.

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)

A. Hydrography

Charted hydrography originates with the boat sheet of the present survey. The present smooth-sheet soundings, in some instances, differ by several feet with the charted soundings.

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

B. Aids to Navigation

No aids to navigation are charted in this area. Navigation of the shoal areas should be done during a rising tide.

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. However, numerous soundings were revised in depth as a result of rescanning the fathograms during verification. The revised depths eliminated most of the discrepancies at crossings and greatly improved the delineation of the depth curves.

c. The field practice of varying the sounding interval in order to obtain more uniform spacing of soundings on the smooth sheet increased the time necessary to verify the survey and in many instances added little to the appearance of the survey, This practice though having advantage in some instances should be held to a minimum.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This is an excellent basic survey and no additional field work is required.

Examined and approved:

H. R. Edmonston
Chief, Nautical Chart B ranch

R. W. Knox
Chief, Division of Charts

L. S. Hubbard
Chief, Section of Hydrography

W. M. Scaife
Chief, Division of Coastal Surveys

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7767

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
12/29/50	8802	CHE	Before ~~After~~ Verification and Review
	9051	ch. 9051 shows that survey was applied and is listed in history of that chart as a Blueprint (photostat of Boat Sheet)	Before ~~After~~ Verification and Review
1-19-55	9051	J.H Eaton	Comp. Applied ~~Before~~ After Verification and Review
8/14/60	9052	CHelmer	Exam ~~Before~~ After Verification and Review for critical changes
2-23-61	8802	F. M. Albert	~~Before~~ After Verification and Review via ch 9051
12/23/76	9051	M.J. Friese	Exam ~~Before~~ After Inspection ~~Verification and Review~~ for critical changes No Critical Corrections
10-2-91	16322	C.O. Ohno	~~Before~~ After Verification and Review considered adequately applied
			Before After Verification and Review
			Before After Verification and Review
			Before After 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.