

7667

Diag. Cht. No. 8502-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF-4147 Office No. H-7667

LOCALITY

State ALASKA

General locality BRISTOL BAY

Locality KVICHAK BAY

1949

CHIEF OF PARTY

R. F. A. Studds & R. W. Knox

LIBRARY & ARCHIVES

DATE July 26, 1949 and March 10, 1950

7667

JUL 26 1949

Form 537  
Ed. Dec. 1930

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. H-7667

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-4147

REGISTER NO. H-7667

State Alaska ✓

General locality Bristol Bay ✓

Locality Kvichak Bay ✓

Scale 1:40,000 ✓ Date of survey 25 Sept. 1947 - 27 Sept. 1947  
25 May 1948, 18 Sept. 1948 ✓  
and Season of 1949

Vessel PATHFINDER & LAUNCHES #1 & #2

Chief of Party R.F.A. STUDDS & R.W. Knox ✓

Surveyed by E. C. BAUM, J.C. MATHISSON, EM. SHERIDAN & Ship's Personnel ✓

Protracted by Christine N. Hillman & Ship' Personnel

Soundings penciled by Christine N Hillman & Ship's Personnel

Soundings in ~~fathoms~~ feet ✓

Plane of reference M L L W ✓

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

Inked by A.R. STIRNI - R.K. deLawder

Verified by A.R. STIRNI - R.K. deLawder

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

Remarks: Survey executed during 1947 & 1948<sup>& 1949</sup> field seasons. That part of survey executed from 25 Sept. 1947 to 27 Sept. 1947 was deleted from boat sheet and the area resurveyed during the 1948 field season. The 1948 work should be plotted first and if required the 1947 work should be used to fill in ~~any mistakes~~ <sup>(gaps)</sup>.

Soundings taken by graphic recorder.

Date of Survey

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY H-7667

FIELD NO. PF-4147

KVICHAK BAY, BRISTOL BAY, ALASKA 1947 & 1948

Scale 1:40,000

USC&GSS PATHFINDER

R.F.A. STUDDS, Comdg.

Surveyed by:

E. C. BAUM

J. C. MATHISSON

E. H. SHERIDAN

A - PROJECT

CS-327, Instructions dated 20 June 1946.

B - SURVEY LIMITS AND DATES

Locality - Alaska, Bristol Bay, Kvichak Bay. Survey extends southwestward from vicinity of Naknek River to vicinity of Egagik River including all the deepwater areas (ship hydrographic depths) in the northern portion and restricted to deep water areas contiguous to the eastern portion of bay at the southern extremity of survey.

Junctures with contemporary hydrographic surveys:

to the north ~~H-7617 (1947)~~, H-7165 (1947), H-7671 (1948).  
to the east H-7666 (1948), H-7672 (1948).

Review,  
par. 4.

Area surveyed 184 square statute miles.

Hydrography was executed during the periods: 25 Sept. 1947 to 27 Sept. 1947; 25 May 1948 to 18 Sept. 1948.

C - VESSELS AND EQUIPMENT

The hydrography was executed by the Ship PATHFINDER and launches 1, 2, 3 and 4 operating from the ship. The attached statistic sheet indicates particular days the various sounding units were used.

Model 808A fathometers with inboard hull units, utilizing the foot scale were used throughout:

<u>Fathometer No.</u>	<u>Used by</u>
46*	Launch No. 4
59	Launch No. 1
68	Launch No. 2
74	Launch No. 3
130S	Ship PATHFINDER

\* Fathometer number 46 used by ship 8 July 1948. For additional information refer to report of "Fathometer Corrections for 1948 Season, Ship PATHFINDER, Project CS-327".

D - TIDES & CURRENT STATIONS

The tides were reduced in accordance with Special Tide Report of Commanding Officer, Ship PATHFINDER, dated 17 November 1948 for Project CS-327. The reductions being based on Portable Automatic Tide Gage operated at Clarks Point, Nushagak Bay. Numerous ship - fathometer tide stations were effected throughout the area to ascertain proper tidal correction factors.

The ship PATHFINDER occupied Current Station No. 2 at latitude  $58^{\circ} 25.61'$ , longitude  $157^{\circ} 45.21'$  during 21 - 24 August 1948.

E - SMOOTH SHEET

Function of Seattle Processing Office.

F - CONTROL

Control was from the following sources:

Triangulation by party of John C. Tribble in 1946.  
Triangulation by party of Curtis LeFever in 1947.  
Triangulation by Ship PATHFINDER 1947 & 1948.  
Air photo control prints by party of A. Newton Stewart in 1947.  
Hydrographic Stations located by sextant & theodolite cuts by personnel of Ship PATHFINDER in 1948.  
Graphic Control Topographic Sheet T-7085 executed in 1948.

G - SHORELINE & TOPOGRAPHY

The shoreline and topographic details pertaining to this survey were taken from nine-lens air photo compilation sheets numbers T-9068, T-9073, T-9072, T-9076, T-9061, T-9060 and T-9067<sup>(1948)</sup>, and supplemented by topographic sheet T-7085 accomplished in 1948.

H - SOUNDINGS

All soundings were recorded in feet and tenths using 808A fathometers.

Hydrography was controlled by standard sextant-fix methods.

J - ADEQUACY OF SURVEY

Survey is adequate. Satisfactory junctions were made with contemporary surveys.

K - CROSSLINES

Adequate crosslines, in satisfactory agreement, were obtained.

L - COMPARISON WITH PRIOR SURVEYS See Review, par. 5.

None

M - COMPARISON WITH CHART 9051 (Review, par. 6.)

This survey is considered an initial survey and precludes satisfactory comparison with limited soundings charted on chart 8802.

N - DANGERS AND SHOALS

No dangers exist. A shoal delimited by depth curves lies to westward of main channel.

O - COAST PILOT INFORMATION

This subject is covered in a separate report by the Commanding Officer, Ship PATHFINDER.

P - AIDS TO NAVIGATION

No floating aids exist.

(see chart 9051 for this area)

Fixed aids to navigation are shown on preliminary chart (no number) of Kvichak Bay, Egegik Bay to Libbyville, Scale 1:100,000 surveys to September 1947.

Q - LANDMARKS FOR CHARTS

The positions of the landmarks to be charted are reported on form No. 567. *2 841 (49)*

R - GEOGRAPHIC NAMES *814*

The subjects covered in a separate report by the Commanding Officer, Ship PATHFINDER.

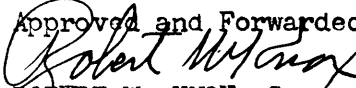
S - TABULATION OF APPLICABLE DATA

- (a) Attached to this report:
  - 1. Tabulation of statistics
  - 2. Fathometer corrections and summary of velocity curves
  - 3. List of signals
- (b) To be submitted to Washington Office under separate cover:
  - 1. Report of tides submitted 17 November 1948
  - 2. Geographic names.
  - 3. Landmarks for charts

Respectfully submitted,



EDWIN C. BAUM  
Lt. Comdr., USC&GS  
Ship PATHFINDER

Approved and Forwarded:  
  
ROBERT W. KNOX, Commander USC&GS  
Commanding Officer  
Ship PATHFINDER

## FATHOMETER CORRECTIONS FOR 1948 SEASON

### SHIP PATHFINDER

#### Project 62-327

Portable 808-type fathometers were used for sounding during the entire 1948 season. Bar check corrections were obtained for each fathometer by measuring all the bar checks taken on that fathometer for the entire season, regardless of the launch or boat sheet used. In addition, for the fathometer used for ship soundings the fathometer comparisons (vertical casts) were measured in conjunction with the bar checks.

During the field season an abstract was maintained on the bar checks against the fathometer number. The corrections were individually plotted on graph paper and a mean curve obtained. A study of the curves show negligible variances during the season. The temperature and salinity observations follow this in showing, outside of the surface layer, constant velocity corrections for the entire season. The T & S curve approximates the bar check curves closely. Since there are inherent instrumental characteristics the bar check curves were held rather than the T & S curves. Corrections are in units of 0.5 foot in accordance with Director's letter 24 December 1947, No. 36-22.

The fathometer installations for the PATHFINDER's launches are all practically the same, with inboard units. For ease of operation the initial was held on one foot for all launch work and the bar check curves were drawn from this point. Initial corrections were applied when the initial drifted off the one-foot line. No instrumental (electrical) changes were made during the season outside of replacement of weak tubes. The B and C scale corrections were obtained at the time the bar check was made, when possible. Vertical casts for the ship were plotted in different colors for the three scales and the corrections were obtained from this curve. The draft was set for the initial for all ship work. Insufficient data was obtained for Fathometer No's. 61 and 68 on the working grounds and the B scale corrections were taken in Lake Washington, Seattle. For only a few soundings were the bar check curves extended beyond the limits allowed by the manual, and apparently reliable vertical casts were used for verification.

At the beginning of the season all launches had a common bar - a six foot by eight inch drilled plate supported by a steel frame. One of these bars was lost and either a three inch pipe seven feet long or a four foot by eight inch flat plate was used instead. All bar lines were of tiller cord marked in five foot intervals. All lines (both bar and hand lead) were new at the beginning of the season. For the first month sufficient line comparisons were not taken and several bar checks were rejected. After the lines became stable the bar checks with the first bar proved adequate and reliable. The handlead lines were not remarked in the field and all handlead soundings should not be plotted unless corrected.

LIST OF SIGNALS

KVICHAK BAY - H-7667 - PF 4147

NAME	SOURCE
ABE	ABE, 1946 - 4th Ord. - Studds, 1948
BRIS	Bristol Bay P. Co., Tank, 1946
BUG	BUG, 1948
CHAK	Kvichak, 1946
COPE	COPE, 1947
CUT	4th Ord. - Studds, 1948
DAY	4th Ord. - Studds, 1948
DEED	DEED, 1946
DIM	Middle Bluff Lt., 1946
EAR	4th Ord. - Studds, 1948
FLO	4th Ord. - Studds, 1948
HAM	HAM, 1948 4th Ord. - Studds, 1948
HIGH	HIGH, 1947
HILL	Johnson Hill Cairn, 1946
HOUSE	T-7036 b
JOHN	JOHNSON, 1946
JOE	JOE, 1946 4th Ord. - Studds, 1948
LIBB	L. Mc L. "Libbyville" Cannery, Tank, 1946
LITE	Red Bluff Lt., 1946
LUK	4th Ord. - Studds, 1948
MARK	MARK, 1947
PAD	APA $\diamond$ Cannery, Tanks, 1946
PET	4th Ord. - Studds, 1948
PEP	PEPPER, 1948
RED	RED, 1946
ROY (SE shore)	4th Order. - Studds, 1948
SEC	SECOND PT., 1947
ROY (NW shore)	4th Order. - Studds, 1948
SHE	PF-B-48
SOB	SOB, 1946
SPIT	SPIT, 1946
SUE	SUE, 1946
WILL	WILL, 1948

H 7667 Pf 4147  
Kvichak Bay, Alaska.

Processing Office Notes.

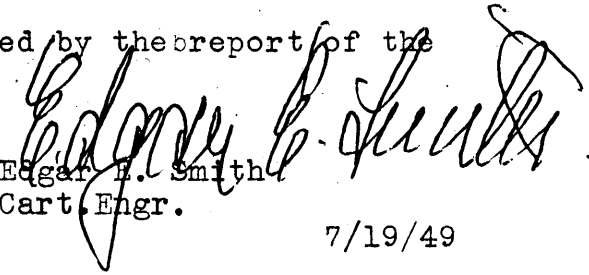
Smooth sheet. The projection is hand made on Dietzgen paper D 117. The plotting of this sheet was nearing completion when the letter was received instructing that D 117 was not to be used for smooth sheets because it does not stand the wet rubbing test. See test in upper left corner of sheet. We think that the validity of the wet rubbing test should be re-examined because of the complete failure of Whatman paper in this test. That paper stands about a third as much rubbing as D 117. However, D 117 is not being used for new smooth sheets.

Shore line. The shoreline was taken from T 9061, T 9062, T 9067, T 9068, T 9072, T 9073, T 9076 & T 9078. (1948-49) and graphic control sheets T-7036a&b, T-7085 & T-7099 (1947)

Box enclosed area. This is the continuation of sounding lines beyond the southern limit of the sheet. It was the intention of the chief of party to plot the southern part of H 7667 (1947-49) approximately the part south of parallel 58 22 and east of meridian 157 46, on the 1/20,000 scale inshore sheet H 7672. (1948-49) The two smooth sheets H 7672 and H 7667 were prepared for plotting as the chief of party wished. However, when we came to plot this area on the 1/20,000 scale sheet the distances to signals was so very great that it was impracticable. So we returned to the 1/40,000 scale H 7667 for plotting this part of the work, and you will see that it is not over crowded. A piece of linen was attached to the table so as to overlap the smooth sheet. The south ends of the line were plotted on the linen. It was then lifted and positions were pricked through in the boxed area. The linen accompanies the smooth sheet. (subsequently destroyed)

Boatsheet. This sheet was returned to the field party for the 1949 season. When it comes into your hands you will note that the launch work of 1947 in the north end of the boatsheet Pf 4147 was not plotted on H 7667. That work was plotted on H 7165, scale 1/20,000, as preferred by the chief of party. (1946-48)

Other subjects have been covered by the report of the field party.

  
Edgar H. Smith  
Cart. Engr.

7/19/49



STATISTICS SHEET H-7667 (PF-4117)

DATE	DAY LETTER	VOL. NO.	NUMBER POSITIONS	STAT. MILES SDG. LINE	BOAT	REMARKS
9-25-47	A	1	163	71.4	Ship	
9-26-47	B	2	51	31.4	Ship	
9-27-47	C	2	60	31.4	Ship	
1947 Total Ship			274	134.2		
6-10-48	D	2-3	259	111.3	Ship	
6-14-48	E	3	1	0	Ship	
7-8-48	F	3	38	20.0	Ship	
7-9-48	G	4	99	44.0	Ship	
7-10-48	H	4-5	310	127.9	Ship	
7-14-48	J	5-6	142	66.7	Ship	
7-15-48	K	6	171	72.2	Ship	
7-16-48	L	6-7	192	80.0	Ship	
7-19-48	M	7	117	52.5	Ship	
7-20-48	N	7-8	136	49.8	Ship	
7-21-48	P	8-9	331	139.7	Ship	
8-5-48	Q	9-10	226	88.8	Ship	
8-9-48	R	10-11	204	95.5	Ship	
8-10-48	S	11	189	77.0	Ship	
8-11-48	T	11-12	131	51.4	Ship	
8-12-48	U	12	168	69.4	Ship	
8-14-48	V	12-13	236	95.2	Ship	
8-17-48	W	13-14	239	104.0	Ship	
8-25-48	X	14	138	52.3	Ship	
9-1-48	Y	15	27	21.0	Ship	
9-4-48	Z	16	93	37.0	Ship	
9-5-48	AA	16-17	240	93.7	Ship	
9-7-48	BA	17	247	95.7	Ship	
9-8-48	CA	18	80	32.7	Ship	
9-9-48	DA	18	25	8.0	Ship	
9-18-48	EA	18	198	76.0	Ship	
1948 Total Ship			4237	1761.8		
7-17-48	a (green)	1	65	16.0	Launch No. 1	
8-18-48	a (purple)	1	96	26.7	Launch No. 2	
7-9-48	a (green)	1	71	21.0	Launch No. 3	
7-12-48	b (green)	1	144	52.1	Launch No. 3	
7-13-48	c (green)	2	126	33.7	Launch No. 3	
5-25-48	a (red)	1	90	21.3	Launch No. 4	
5-26-48	b (red)	1	41		Launch No. 4	Sdgs. not plotted
7-30-48	c (red)	2	150	38.4	Launch No. 4	
			783	209.2		
GRAND TOTAL			5294	2105.2		

H 7667 Pf 4147

Bristol Bay, Alaska.

Tidal Note.

The tides were reduced in accordance with the Special Tide Report of the Commanding Officer, Ship PATHFINDER, dated 17 November 1948 for Project CS-327. The reductions were based on Portable Automatic Tide Gage operated at Clarks Point, Nushagak Bay. Numerous ship-fathometer tide stations were operated thruout the area to ascertain proper tidal correction factors.

USCOAST PATFINDER, 705 Federal Office Bldg., Seattle 4, Wash.

17 November 1948

Refer to File  
9723/JON/esl

To: Director,  
U. S. Coast & Geodetic Survey  
Department of Commerce Building  
Washington 25, D. C.

Subject: Tides; Bristol Bay, Alaska, 1948

Transmitted under separate cover are the tide data obtained in the Bristol Bay, Alaska, area by the PATFINDER during the 1948 field season as tabulated on the attached copy of the transmitting letter.

Three portable automatic gages were established and maintained during the periods as shown:

Clarks Point (4 June - 22 September)  
Snag Point (23 June - 10 September)  
Naknek River (25 May - 16 September)

One improvised tide station was established near Middle Bluff Light in order to obtain a series of tidal observations of approximately two weeks at this location. A multiple staff tide station was established and the staffs read by a camp party maintained for this purpose. Four staffs were placed in line so that at least one staff would afford a reading at any stage of the tide. The four staffs were connected by spirit levels in order to reduce all readings to the same "0" of the staff. Staff readings were recorded each half-hour during the rise and fall with readings being recorded at five minute intervals during and near high and low waters. During the period 18 June to 2 July 1948, a total of 25 lows and 24 highs were determined.

Nine fathometer tide stations were observed. Four of the stations were not used in determining tidal factors. Stations No. 1 and 3 were rejected as the Clarks Point Gage was not in operation at the time these stations were observed. Station No. 2 was observed by the Ship JONES while the latter was observing a current station off Cape Constantine. Because of the inclement weather and uneven bottom at the anchorage, the results of this station was not used and, as no sounding was done in the area, tidal information was not required during the season. Station No. 4 was also rejected because the tide gage at Clarks Point was not operating at the time due to a severe storm.

In analyzing the tidal data, Clarks Point was selected as the master station. It was in operation throughout the season and gave a much better representation of the tidal curve in Bristol Bay than the Naknek River gage. It is believed that the extensive shoal area and the river discharge at

**Subject: Tides Bristol Bay, Alaska, 1948**

**17 November 1948**

The mouth of the Naknek River distorts the tidal information obtained at this station.

The area of sounding in Kvichak Bay was divided into five sections using the high water factor as determined by a simultaneous comparison at each fathometer station and Clarke Point tide gage as the basis of division. A print showing this division is being transmitted with the tide data. For the area sounded in Wushagak Bay and on the Wushagak River, in addition to the tide gages at Clarke Point and Snag Point, two fathometer stations, Sand and Lewis Point, were observed in order to determine tidal factors in this area. This total area was also divided into five sections.

It is requested that the division of areas, as shown on the print be approved and that this vessel be furnished with the MLLW datum for the three tide gage stations and the hourly heights reduced to MLLW datum for the Clarke Point Gage for the days and hours as shown on the attached sheet at your earliest convenience. The entering of tide reducers in the sounding volumes is being deferred until your approval is received. Authority is also requested to continue to use one foot reducers as used previously in the reduction of soundings on this project for the 1947 field season. (See letter dated 24 December 1947, Reference 36-uv)

ROBERT W. KNOX  
Comdr., G & CS  
Comdg. Ship PATWINDER

H 7667 Pf 4147

Bristol Bay, Alaska.

List of geographic names penciled on smooth sheet.

Alaska Peninsula

Kvichak Bay.

Cape Suworof.

Cape Chichagof.

Naknek River.

Johnston Hill

South Spit : per H7167, H7672 it is Goose Pt.

SUPPLEMENTAL NOTES FOR DESCRIPTIVE REPORT TO ACCOMPANY

1949 FIELD WORK.

HYDROGRAPHIC SURVEY H- 7667

FIELD NO. PF- 4147

Scale: 1: 40,000

USC&GSS PATHFINDER

ROBERT W. KNOX, COMDG.

The following notes cover only the supplemental 1949 season's work on this sheet; they are intended to supplement the descriptive report proper.

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

The 1949 work on this sheet consists of filling in a central area between the 1947 and 1948 work of this sheet and the 1949 inshore launch work on the north (Survey H-7767) and northwest (Survey H-7768), and the 1949 1:40,000 hydrographic survey H-7770 which adjoins the offshore limits at the southwestern boundaries. The 1949 area is somewhat triangular in shape defined by approximately straight lines between the following points; lat.  $58^{\circ}-36'$ , long.  $157^{\circ}-36'$  to lat.  $58^{\circ}-29'$ , long.  $157^{\circ}-58'$  to lat.  $58^{\circ}-28'$ , long.  $157^{\circ}-45'$ .

C- VESSELS AND EQUIPMENT

The PATHFINDER and its 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. The ship used fathometer no. 130-S; launch no. 1 used no. 74-S while launch no. 2 used no. 59.

D- TIDE AND CURRENT STATIONS

A fathometer tide gage was maintained at Protection Point during the first period of operations on this sheet; Clarks Point tide gage was not yet in operation. The tide reducers used for this survey are explained in the special report of Analysis of Tidal Data dated 10 October 1949; this was approved in the Director's letter dated 24 October 1949, subject: Tides, Bristol Bay, Alaska, 1949, ref. 36-tmo. A portfolio of tides effecting this sheet will be enclosed in a Report of Tide Reducers used by the USC&GSS PATHFINDER during the 1949 Field Season; this report will be submitted at a future date.

No current stations were observed in this area during 1949.

### E- SMOOTH SHEET

This party has no knowledge of when or where the smooth sheet was prepared; this information should be included in the descriptive report proper already in the DC office. The smooth sheet was returned to this vessel just recently to allow plotting the 1949 field season's work in accordance with the Director's letter dated 18 October 1949, ref. 22/MEK, S-1-PF.

### F- CONTROL STATIONS

Control of the 1949 field season's work on this sheet 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.  $58^{\circ}-24'-25.857''$ , Long.  $157^{\circ}-31'-20.269''$ .

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.  $58^{\circ}-37'-08.915''$ , long.  $158^{\circ}-07'-04.754''$ .

Station SHOC was established about twelve miles east of Etolin Point for the purpose of providing strong fixes no otherwise possible in the area of tangent arcs of the other two stations. 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.  $58^{\circ}-40'-39.330''$ , long.  $157^{\circ}-51'-52.778''$ .

All the above shoran control stations are on the N.A. 1927 datum (unadjusted); their descriptions and positions have been submitted on recoverable topographic station form 524. ~~(to be submitted)~~

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.

### G- SHORELINE AND TOPOGRAPHY

The smooth sheet was obtained from the DC office in accordance with the Director's letter mentioned in paragraph E above; covered in descriptive report proper.

## H- SOUNDINGS

The 808 type fathometers were used on both the ship and launches. 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 be varied by irregular current, and 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 velocity 1465 m/sec. was used for "A" and "B" ship days and thereafter the 1480 m/sec. template was used. (See Velocity Corrections report for 1949 Field Season submitted Nov. 10, 1949).

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 the 1949 hydrography on this sheet. Concentric circles, two statute miles apart, were drawn from each shoran station on the sheet in different colored inks, and the positions plotted with the Odessey protractor. Three shoran stations were necessary to secure pairs giving good intersections over the 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 on these pages.

The use of shoran control for the 1949 area of hydrography proved very satisfactory; at the start of the work the use of stations SHOA and SHOB gave weak fixes in places and necessitated the installation of another station, SHOC, established July 16th, to provide for strong intersections. The central area of the 1949 work was run on north-south courses principally by the ship in coming and going to anchorage; most of the launch work was run by a system of sounding lines following the concentric circles of one of the stations; in this way it was possible to cover the area most economically and to maintain exact position on the selected arc at all times regardless of varying current conditions. In the cases where arcs were run at the desired spacing the arced lines follow the true path of the launch as the "drift pip" was maintained with a variation seldom ever exceeding one-hundredth of a statute mile; consequently the recorded courses are an average indication rather than each minute change.

## J- ADEQUACY OF SURVEY

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



Completion of the 1949 smooth sheet work on this survey was subsequent to shipment of the 1949 survey smooth sheets H-7767 and H-7768 to the DC office; junction of this survey with these two surveys will have to be effected in the DC office. On the south junction with survey H-7770 (1949) has not been effected as the smooth sheet is in progress. Junctions of the 1949 work with the previous soundings on this sheet are complete and depth curves have been extended without breaks.

#### K- CROSSLINES

Approximately fourteen miles of crosslines, not counting the previous lines which cross the 1949 survey lines, out of a total of 359 naut. miles for 1949, constitutes approximately four percent.

The discrepancies of crossings were as follows: 40% were 0 ft.; 36% were 1 ft.; 14% were 2 ft.; 7 % were 3 ft.; and 3% were 4 ft. *Major discrepancies eliminated during verification.*

There is one noticeably poor crossing at lat. 58°- 33.2', long. 157°-43.0' of 7 feet falling between the 1949 launch positions 40 to 41 "l"(blue) day and the previous seasons line 72 to 73 "b"(blue) day; the fathogram shows a flat bottom of 38 feet between positions 40 and 41 at this crossing. It appears the 31 ft. sounding between the positions 72 to 73 "b" day should be checked on the fathogram in the office; if confirmed it is most probable the visual fixes on this line are in error somewhat as the 1949 work is exceedingly well controlled by shoran. Also other crossing with the old work appear to be in fairly good agreement consistent with available tidal data for reducers. (Also see descriptive report for hydrographic survey H-7768, second paragraph under item K- CROSSLINES, page 4). \* 31 ft. sdg. found to be <sup>(1949)</sup> O.K. However, the entire line of blue "b" day, 1948, is shoal in this area and has been rejected where it differed greatly with the 1949 launch work.

#### L- COMPARISONS WITH PRIOR SURVEYS

There are no prior surveys in this area of the 1949 work.

#### M- COMPARISON WITH CHART *See Review, par. 6.*

The charts of this area, nos. 9050 and 8802, show no soundings in this area.

#### N- DANGERS AND SHOALS

There are no separate shoals in the area of the 1949 work; the shoalest depth of (21) feet lies inshore at the northwest corner and represents a gradual inshore shoaling. Revised to 23 ft. through application of revised tide reducers.

#### O- COAST PILOT INFORMATION

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

#### P- AIDS TO NAVIGATION

There are no aids to navigation within the confines of this 1949 survey, unless the submarine valley extending inshore can be considered so for small craft with fathometers but without radar equipment.

Q- LANDMARKS FOR CHARTS C.L. 841 (1949)

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

R- GEOGRAPHIC NAMES

Reports have been submitted previously for both 1948 and 1949.

S- SILTED AREAS

See descriptive report for hydrographic survey H-7767, page 5, paragraph S- SILTED AREAS.

T- BY-PRODUCT INFORMATION

No information of this character has been noted.

Z- TABULATION OF APPLICABLE DATA

(a) Attached to this report:-

1. Abstract of Fathometer Corrections.
2. Note: Abstract of Statistics is listed in portfolio of Shoran Abstracts. Tide reducers used on this survey are included in the Report of Tide Reducers used by the USC&GSS PATHFINDER during the 1949 Field Season; a duplicate copy will be forwarded the DC office pending retention of the original by the processing office.


(b) Reports and data submitted under separate cover:-

1. Report on Tides submitted 10 Oct. 1949
2. Geographic names submitted 14 Oct. 1949
3. Landmarks for Charts submitted 14 Oct. 1949
4. Coast Pilot Information submitted 14 Oct. 1949
5. Report of Fathometer Corrections submitted 10 Nov. 1949 See H-77686-5
6. Portfolio of Shoran Abstracts.
7. Applicable fathograms.

27 Feb. 1950

Submitted-

Approved and forwarded:

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

447  
 (P.C. 2148)

VELOCITY CORRECTIONS FOR FATHOMETER LAUNCH NO. 2

(SOS Type Fathometer No. 59) + (46 g & h 4 4147)  
 Launch no. 4

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	0.0	
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).

VELOCITY CORRECTIONS FOR SAGE PATAMINDER

(808-J Type Fathometer No. 130-S)

For month of June 1949 only:

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

DEPTH IN FT.	VEL. CORR. FT.	CORE. FROM V.C.S.	VELOCITY CORRECTIONS (Initial set at mid-draft reading)*		
			"A" SCALE**	"B" SCALE**	"C" SCALE**
0.0-12.0	0.0	+ 0.5	+0.5		
12.5-36.0	-0.5	+ 0.5	0.0		
36.5-60.0	-1.0	+ 0.5	-0.5	-0.5	
60.5-83.5	-1.5	+ 0.5		-1.0	-1.0
84.0-107.5	-2.0	+ 0.5		-1.5	-1.5
108.0-131.0	-2.5	+ 0.5			-2.0

For Months of July, August and September 1949 only:

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

DEPTH IN FT.	VEL. CORR. FT.	CORE. FROM V.C.S.	VELOCITY CORRECTIONS (Initial set at mid-draft reading)*		
			"A" SCALE**	"B" SCALE**	"C" SCALE**
0-19.0	0.0	+ 0.5	+ 0.5		
19.5-57.5	-0.5	+ 0.5	0.0	0.0	
58.0-95.0	-1.0	+ 0.5		-0.5	-0.5
95.5-133.0	-1.5	+ 0.5			-1.0

\* Apply correction for any different setting.

\*\* Phase corrections zero.

VELOCITY CORRECTIONS FOR PARAFFINER 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.).

APPROVAL SHEET

The work on hydrographic sheet PF-4147 (H-7667) performed in 1949 was accomplished under my occasional supervision. The records and reports have been inspected and approved. No additional work is considered necessary.

  
ROBERT W. KNOX

Comdr., USC&GS

Cmdg. SS PATHFINDER

RHC

## TIDE NOTE FOR HYDROGRAPHIC SHEET

August 23, 1949

~~Division of Hydrography and Topography:~~

Division of Charts: R. H. Carstens

Plane of reference approved in  
24 volumes of sounding records for

### HYDROGRAPHIC SHEET 7667

Locality Kvichak Bay, Bristol Bay, Alaska

Chief of Party: R. F. A. Studds in 1947-48  
Plane of reference is mean lower low water, reading  
3.9 ft. on tide staff at Clark Point  
25.2 ft. below B. M. 5 (1947)

4.5 ft. on tide staff at Naknek River Entrance  
24.7 ft. below B. M. 2 (1946)

Heights of mean high water above plane of reference is as follows:

Naknek River Entrance = 20.7 feet  
Clark Point = 17.8 feet

Condition of records satisfactory except as noted below:

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

GEOGRAPHIC NAMES

Survey No. H-7667

Name on Survey	Source										
	A	B	C	D	E	F	G	H	K		
<u>Alaska</u>			(for title)								1
<u>Bristol Bay</u>			"						USGB		2
<u>Alaska Peninsula</u>									"		3
<u>Kvichak Bay</u>											4
<u>Cape Suwurof</u>									USGB		5
<u>Naknek River</u>									"		6
<u>Johnston Hill</u>											7
<u>Cape Chichagof</u>											8
<u>Goose Point</u>											9
											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

Names underlined in red are approved. 8-19-49

L. Heck

No new names in 1949 work. L.H.



Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7667 .....

Records accompanying survey:

Boat sheets ...<sup>3</sup>...; sounding vols. ...<sup>24</sup>...; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls ...<sup>21</sup>... + 9 envel.  
 special reports, etc. ....  
 .....

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

Number of positions on sheet	.....	734
Number of positions checked	.....	78
Number of positions revised	.....	4
Number of soundings revised (refers to depth only)	.....	104
Number of soundings erroneously spaced	.....	183
Number of signals erroneously plotted or transferred	.....	0
Topographic details	Time	..... 0
Junctions	Time	..... 50 hrs
Verification of soundings from graphic record	Time	..... 20 hrs

*Does not include  
 edg. revised  
 when table  
 reducer was  
 changed  
 R.K.D.*

Verification by R. K. DeLAWDER ..... Total time 93 hrs Date 1-26-51

Reviewed by J. Adams ..... Time on following sheet Date 7 Mar. 1951

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7667...

Records accompanying survey:

Boat sheets ..3..; sounding vols. ..24..; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls 30 envelopes  
 special reports, etc. ....  
 .....

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

Number of positions on sheet	5294
Number of positions checked	..79..
Number of positions revised	...6...
Number of soundings revised (refers to depth only)	..26..
Number of soundings erroneously spaced	.....
Number of signals erroneously plotted or transferred	.....
Topographic details	Time ..... hrs
Junctions	Time ..16..
Verification of soundings from graphic record	Time ..24..

Verification by...A.P...S.T.P.M!.....Total time 222 hrs. Date Jan 13-1950

Reviewed by....J.A. Simmore..... Time 24 hrs. Date 7 Mar. 1951

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7667

FIELD NO. PF-4147

Alaska, Bristol Bay, Kvichak Bay  
Surveyed in seasons 1947, 1948 & 1949      Scale 1:40,000  
Project No. CS-327

Soundings:

808 Fathometer

Control:

Sextant fixes on shore signals  
Shoran

Chief of Party - R.F.A. Studds and R. W. Knox  
Surveyed by - E.C. Baum, J.C. Mathisson, E.M. Sheridan,  
A.L. Wardwell and H.S. Cole  
Protracted by - C.N. Hillman and Ship Personnel  
Soundings plotted by - C.N. Hillman and Ship Personnel  
Verified and inked by - A. R. Stirni and R. K. DeLawder  
Reviewed by - T. A. Dinsmore, 7 March 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 unevenness of much of the bottom, depths at crossings are in good agreement. Some adjustments were made to correct slight disagreements between depths obtained in 1949 and those in 1947-48.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated.

This offshore survey covers a large portion of Kvichak Bay. Except over the shoals at the northeastern limits of the survey, depths generally range from 24 to 80 feet. The bottom for the most part is very uneven.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with the following surveys:

H-7671 (1948) on the north

H-7165 (1946-48) on the northeast  
H-7666 (1947-48) on the east  
H-7672 (1948-49) on the southeast  
H-7768 (1949) on the west  
H-7767 (1949) on the northwest

A few discrepancies appear in the junctional area between depths on H-7671 (1948) and the present survey. These discrepancies, however, are considered unimportant in view of the irregularities and instability of the bottom.

The junction with H-7770 (1949) on the southwest will be considered in the review of that survey. Project surveys on the south are not yet registered in this office.

5. Comparison with Prior Surveys

There are no prior surveys of this area. However, a few soundings from Field Examination No. 5, 1947 (scale 1:1,023,188) fall within the area covered by the present survey. No important differences are noted between the depths on the field examination and those on the present survey. The present survey, however, entirely supersedes the field examination within the common area.

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

A. Hydrography

Charted hydrography originates with the boat sheet of the present survey supplemented by partial application of the present smooth-sheet soundings subsequent to verification but prior to review. A few differences of 1 to 3 ft. are noted between the charted soundings and those on the present smooth sheet. The present survey supersedes the charted information.

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 1949 work on 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 covering the 1949 work. Sounding volumes were provided for the 1947-48 work. The Descriptive Report covers all matters of importance.

- b. The smooth plotting was satisfactory except that in plotting the 1947-48 work, adequate consideration was not given to the selection of representative soundings in such an irregular bottom. Soundings were plotted at even intervals without regard to sharp changes in the fathogram profile. Necessary revisions were made during verification in this office to define many irregular sand ridges which had been omitted.
- c. Discrepancies of 3 to 4 ft. occurred between depths on parallel sounding lines at the junctions of several tide zones. These discrepancies were eliminated by the application of revised tide reducers derived from sections of tide curves of adjoining tide zones.
- d. Erroneous echo corrections from bar checks were entered in the sounding records for "F" day, 8 July 1948. The error was detected and corrected in the Washington Office. The corrected depths eliminated discrepancies between this days work and adjoining hydrography.


8. Compliance with Project Instructions

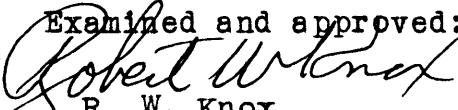
The survey adequately complies with the Project Instructions.


9. 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-7667

## Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
1/23/50	9051	J. G. McGraw	<del>Before</del> <b>After</b> Verification and Review. <sup>before</sup> additional plotting to be added.
1-19-55	9051	J. H. Eaton	<del>Before</del> <sup>Comp. applied</sup> <b>After</b> Verification and Review. <i>Partially applied.</i>
2-23-61	8802	F. M. Albert	<del>Before</del> <b>After</b> Verification and Review <i>via chrt 9051</i>
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			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.