

7668

Diag'd. on Diag. Ch. No. 8502-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF-2148 Office No. H-7668

LOCALITY

State Alaska

General locality Bristol Bay

Locality Nushagak River

1948

CHIEF OF PARTY

R.F.A. Studds

LIBRARY & ARCHIVES

DATE March 28, 1949

7668

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. H-7668

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.

REGISTER No. H. 7668

Field No. PF 2148

for title

State Alaska

General locality Bristol Bay

Locality Nushagak River, above Wood River confluence.

Scale 1/20,000 ✓ Date of survey July-September 1948 ✓

Instructions dated 20 June 1946

Vessel Ship PATHFINDER

Chief of party R.F.A. Studds

Surveyed by E. H. Sheridan and J. C. Tribble

Soundings taken by ~~fathometer~~ graphic recorder, hand lead, wire

Fathograms scaled by Flowers, J. J. O'Laughlin, and Whitaker

Fathograms checked by JRP, GDS, NET, and JOP

Protracted by G. D. Scott

Soundings penciled by C. R. Lehman

Soundings in ~~fathoms~~ feet at MLLW

REMARKS: Positions plotted on Ship.

Soundings plotted in Seattle Processing Office.

Retyped in Washington Office

DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SURVEY H-7668 FIELD NO. PF-2148

A - PROJECT

Project No. CS-327. General instructions were issued to Commanding Officer, Ship PATHFINDER under date of 20 June 1946. ✓

B - SURVEY LIMITS AND DATES

Area covered by this survey is Nushagak River. Area extends from a junction with Sheet H-7669 (PF-2248) (1948) at $59^{\circ} 02' N$ and $158^{\circ} 21' W$ Eastward to $58^{\circ} 58' N$ and $158^{\circ} 04' W$. ✓

Hydrography was executed during the period from July 23 to September 10, 1948. ✓

C - VESSELS AND EQUIPMENT

Launches 2 and 4 operating from a shore camp at Kanakanak established by the Ship PATHFINDER were used on this survey. Hydrography was done using model 808A fathometer No's. 61 and 68. The transceiver units were mounted in the bilge of the launches alongside the keel. ✓

D - TIDE AND CURRENT STATIONS

A portable automatic tide gage at Snag Point ^{westward of this sheet} was established and operated for the duration of the survey. Tide reducers for the Boat Sheet were obtained by correcting the observations from the above tide gage with data obtained from launch fathometer tide stations close to the immediate vicinity of this survey. Final tide reducers for the Smooth Sheet were obtained in accordance with Special Tide Report of Commanding Officer, Ship PATHFINDER, dated 17 November 1948. ✓

No current stations were occupied. ✓

E - SMOOTH SHEET

The smooth sheet was protracted by personnel of the Ship PATHFINDER and completed by personnel of the Seattle Processing Office. ✓

F - CONTROL

Control was from the following sources:
Triangulation by the party of Curtis LeFever in 1947. (1948)
Topographic stations located by graphic control Sheet T-7086a (PF-D-48) by personnel of Ship PATHFINDER in 1948.

G - SHORELINE AND TOPOGRAPHY

The shoreline will be taken from air photo control prints by the party of A. Newton Stewart in 1947 and to be supplemented by graphic control by personnel of the Ship PATHFINDER in 1948. (Review, par. 1.) ✓

H - SOUNDINGS

All soundings were recorded in feet and tenths, using the Model 808A fathometer except where bottom samples were taken, when a hand lead was used. ✓

I - CONTROL OF HYDROGRAPHY

Sounding lines were controlled, using standard sextant fix methods. ✓

J - ADEQUACY OF SURVEY

The area covered by this survey is well out of the main ship channels in Nushagak Bay and is only used by local small craft to reach various Indian villages up river. There are numerous bars, bare at low water, composed of sand and gravel. Their intricate pattern makes channel navigation difficult and navigation above Lewis Point should not be attempted without a local pilot. ✓

Satisfactory junctions were obtained with Sheet H-7669 (PF-2248) to the West of this area. Review, par. 4. (1948) ✓

K - CROSSLINES

About 5 percent crosslines were run and were in satisfactory agreement with the regular sounding lines. (after adjustments were made during verification in the Wash. Office) Review, par. 7 ✓

L - COMPARISON WITH PRIOR SURVEYS

There are no prior surveys of this area. ✓

M - COMPARISON WITH CHART

At present there are no large scale charts covering this area. ✓

N - DANGERS AND SHOALS

This section of the Nushagak River covered by this survey, especially the upper part, abounds with shoals, flats, and bars, all of which are well known to operators of local small craft. ✓

O - COAST PILOT INFORMATION

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

P - AIDS TO NAVIGATION

There are no floating aids to navigation in the area covered by this survey. ✓

Q - LANDMARKS FOR CHARTS

The positions of the landmarks to be charted are reported on Form No. 567. chart Letter 70 (1949) ✓

R - GEOGRAPHIC NAMES

This subject is 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 corrections.
3. List of signals.

(b) To be submitted to Washington Office under separate cover - ✓

1. Report on tides submitted 17 November 1948.
2. Geographic names.
3. Landmarks for charts.

Respectfully submitted,

(Signed) GORDON D. SCOTT
GORDON D. SCOTT
Ensign, USC&GS
Ship PATHFINDER

Approved and Forwarded:

(Signed) ROBERT W. KNOX

ROBERT W. KNOX, Commander, USC&GS
Commanding Officer
Ship PATHFINDER

SUMMARY OF VELOCITY CORRECTIONS 1948

<u>FATHOMETER</u>	<u>A SCALE</u>	<u>B SCALE</u>
No. 61	0.0' to 15' +0.5' to 48' +1.0' to 82'	-1.0' to 48' -0.5' to 82'
No. 68	0.0' to 72'	-0.5 to 72'

T & S (THEORETICAL) CURVE

0.0' to 20'
-0.5' to 48'
-1.0' to 79'
-1.5' to 109'

LIST OF SIGNALS - SHEET H-7668 (PF-2148)

<u>NAME OF SIGNAL</u>	<u>SOURCE</u>	
BLACK POINT	BLACK POINT 1947	
YEAR	YEAR 1947	
SAND	SAND 1947	
NECK	NECK 1947	
BAG	GRAPHIC CONTROL)
ABE	" ")
YET	" ")
ADD	" ")
BIB	" ")
CAM	" ")
DAY	" ")
IDA	" ")
EAT	" ")
JAR	" ")
LAX	" ")
KEN	" ")
MAL	" ")
HAT	" ")
SIR	" ")
RIM	" ")
PEG	" ")
ODD	" ")
NED	" ")
FAT	" ")
GAG	" ")
ZOO	" ")
ACT	" ")
WIL	" ")
JIM	" ")
WAD	" ")
YAK	" ")
CAB	" ")

T-7086a & b

FATHOMETER CORRECTIONS FOR 1948 SEASON

SHIP PATHFINDER

Project CS-327

Portable 808-type fathometers were used for sounding during the entire 1948 season. Bar check corrections were obtained for each fathometer by meaning 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 meant 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 the Director's letter of 24 December 1947, No. 36-mr.

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 hand lead lines were not re-marked in the field and all hand lead soundings should not be plotted unless corrected.

Processing Office Notes.

H 7668
Pf 2148.

Nushagak River

Picnic Point to Lewis Point.

The projection for this sheet was hand made on Whatman paper in the Seattle Processing Office. Signals were added by the field party and the positions were plotted on the PATHFINDER. Books were reduced and soundings plotted in the processing office.

Crossings. The hydrographers put the reducers in the records. They specified that in the event discrepancies were found at crossings certain lines should be held as a basis for adjustment. They were at or near the time of high water when the heights of tides can more accurately be interpolated in this area. Low tides are confused by sand bars. Near mid tide on the steep slope of the curve interpolations are more uncertain. The basic lines are

Sept. 1 f day Positions ~~70 to 100~~ → (tide reducers revised 92-143 f)
 4 g " " 80 to 140
 5 h " " 80 to 140
 7 j " " 104 to 153

Reducers were to be altered to make crossing lines agree. Accordingly crossing lines were changed at the following positions.

Corrections made in Wash. Office

Review par. 7 b.

<u>Blue.</u> Day.	<u>From</u> Pos.	<u>To</u> Pos.		
a	1	7	no change	{ 1-8, 2 ft. subtracted 9-21, 1 ft. " 92-124, 3 ft. added 125-143, 1 ft. "
d	1	8		
e	24	49	2 ft. added	
f	1	25		{ 1-7, 2 ft. added 8-15, 1 ft. " 15-43, 2 ft. " 43-48, 1 ft. "
g	1	14	no change	
j	14	156	2 ft. subtracted	
k	29	85		{ 1-17, 1 ft. added 17-26, 2 ft. " 1-17, 2 ft. added. 18-44, 5 ft. " 44-50, 2 ft. " 50-54, 1 ft. "
l	9	46	no change	
Green				
b	22	26		

The corrections to the reduced soundings for these positions were made in blue, in the sounding books.

~~red~~

Shoreline.

This was transferred from sheets T 9041, T 9042 and T 9049. (1948)
 Our copy of the latter sheet was distorted and that part of the shore line has not been inked on the smooth sheet. (Shoreline completed in Wash. Office)

Channels.

~~It~~ is possible to carry ten feet along the south bank to Long. 158 12.5. There is a limiting depth of 6 feet at Lat. 59 01 Long. 158 12. Beyond this the channel carries ^{about} seven to ten feet, crosses to the north bank at Lewis Point, and follows along the bank for three-quarters of a mile. Then the channel turns south across the river again.

One or two more sounding lines here would explain this crossing better. The soundings imply that about three feet (and there could be six) can be carried into a deeper channel which turns back to the NE bank at the eastern end of the sheet.

A boat could carry ^{five} ~~five~~ ^{to} six feet along the north side of the river to Long. 158 09. It would then cross to the southern channel over a limiting depth of ^{three to four} ~~two or three~~ feet at Lat. 58 01 Long. 158 08.5

Respectfully submitted.

Edgar E. Smith
Edgar E. Smith
Capt. Engr.

3/17/49

Tidal Note.

H 7668
Pf 2148

Nushagak River, Alaska

A portable automatic tide gage was set up at Snag Point, the confluence of the Nushagak and Wood Rivers, and operated for the duration of the survey. Tide reducers for the boatsheet were obtained by correcting the observations from the above tide gage with data obtained from launch fathometer tide stations close to the immediate vicinity of this survey. Final tide reducers for the smooth sheet were obtained in accordance with Special Tide Report of Commanding Officer, Ship PATHFINDER, dated 17 November 1948.

H 7668
Pf 2148

Nushagak River, Alaska

List of Geographic Names.

Nushagak River

Picnic Point

Lewis Point

STATISTICS FOR HYDROGRAPHIC SURVEY H-7668 (1948)

DATE 1948	DAY	VOL. NO.	NUMBER POSITIONS	STAT. MI. SDG. LINE	H. L. SDGS.
<u>Launch No. 2</u>					
July 23	a	1	25	7.5	0
July 29	b	1	103	27.5	1
Aug. 26	c	1	136	22.5	0
Aug. 27	d	2	106	19.0	0
Aug. 28	e	2	80	13.4	0
Sept. 1	f	2	158	27.4	0
Sept. 4	g	3	163	33.2	0
Sept. 5	h	3	156	29.1	0
Sept. 7	j	3, 4	153	24.5	0
Sept. 9	k	4	134	22.8	4
Sept. 10	l	4	46	7.4	0
		TOTALS	1260	234.3	5
<u>Launch No. 4</u>					
August 9	a	1	38	8.7	0
August 11	b	1	26	5.8	0
August 12	c	1	54	10.4	0
		TOTALS	118	24.9	0
		GRAND TOTALS	1378	259.2	5

Area - 16.1 Square Statute Miles

TIDE NOTE FOR HYDROGRAPHIC SHEET

19 April 1949

~~Division of Hydrography and Topography:~~

Division of Charts: R. H. Carstens

Plane of reference approved in
5 volumes of sounding records for

HYDROGRAPHIC SHEET 7668

Locality Nushagak Bay, Bristol Bay, Alaska

Chief of Party: R.F.A. Studds in 1948
Plane of reference is mean lower low water, reading
4.8 ft. on tide staff at Snag Point
22.7 ft. below B. M. 1 (1948)

Height of mean high water above plane of reference is 18.1 feet

Condition of records satisfactory except as noted below:

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

GEOGRAPHIC NAMES

Survey No. H-7668

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>Nushagak Bay</u> <i>River</i>											3
<u>Pionic Point</u>									USGB		4
<u>Lewis Point</u>									"		5
											6
											7
											8
											9
											10
<u>Snag Point</u>			(location of tide staff)								11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

Names underlined in red are approved.

4/20/49

L. Heck

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. ...^{H-7668}.....

Records accompanying survey:

Boat sheets ¹.....; sounding vols. ...⁵.; wire drag vols.; bomb vols.; graphic recorder rolls ⁶envel. special reports, etc.

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

Number of positions on sheet	.....	1260
Number of positions checked	.....	87
Number of positions revised	.....	5
Number of soundings revised (refers to depth only)	.....	19
Number of soundings erroneously spaced	.....	-
Number of signals erroneously plotted or transferred	.....	-
Topographic details	Time	.....1
Junctions	Time	.....2
Verification of soundings from graphic record	Time	.....4

Verification by *J. A. Evans* Total time .93 hrs. Date 17 June 1949

Reviewed by *J. A. Dismore* Time 18 hrs. Date 28 July 1949

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7668

FIELD NO. PF-2148

Alaska, Bristol Bay, Nushagak River
Surveyed in July - Sept., 1948 Scale 1:20,000
Project No. CS-327

Soundings:

Control:

808 Fathometer

Sextant fixes on shore signals

Chief of Party - R. F. A. Studds
Surveyed by - E. H. Sheridan and J. C. Tribble
Protracted by - G. D. Scott
Soundings plotted by - C. R. Lehman
Verified and inked by - L. V. Evans III
Reviewed by - T. A. Dinsmore, July 28, 1949
Inspected by - R. H. Carstens

1. Shoreline and Signals

The shoreline originates with air photographic surveys T-9041, T-9042 and T-9049 (1948) prior to review.

The signals are from graphic control surveys T-7086a & b (1948).

2. Sounding Line Crossings

Depths at crossings are in good agreement considering the unevenness of much of the bottom.

3. Depth Curves and Bottom Configuration

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

The bottom is generally uneven. Depths along the axis of the river channel range from 3 feet in lat. 58° 59.2', long. 158° 05.3', to 22 feet in lat. 59° 00.9', long. 158° 14.7'. Extensive sand flats, together with many shoals which uncover as much as 13 feet at MLLW constrict the channels and contribute to the hazards of navigation in this area.

4. Junctions with Contemporary Surveys

The junction with H-7669 (1948) on the west (down-stream) will be considered in the review of that survey. On the southeast, the present survey terminates at the project limits where no charted information is available for comparison.

5. Comparison with Prior Surveys

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

6. Comparison with Chart 9050 (Latest print date 4/1/49)

A. Hydrography

No hydrography is charted in the area covered by the present survey.

B. Aids to Navigation

No aids to navigation are charted within the limits of the present survey. The river is used largely by natives having local knowledge of the channels and shoals.

7. Condition of Survey

- a. The sounding records and Descriptive Report are complete and comprehensive.
- b. The smooth plotting was adequate. It is noted in the Descriptive Report (Processing Office Notes) that soundings on several lines were revised during the processing of this survey. However, further revision of soundings was necessary in the Washington Office because of excessive differences of depths at crossings. These differences which amounted to 2-5 feet were eliminated by applying corrections to sounding lines which were run at the lower stages of tide. The corrections were determined from crossings with lines run at or near high tide. This procedure was based on the hypothesis that the tide reducers were more accurately interpolated near high tide. The revised soundings have eliminated the above discrepancies and have greatly improved the delineation of the depth curves.


8. Compliance with Project Instructions


The survey adequately complies with the Project Instructions.

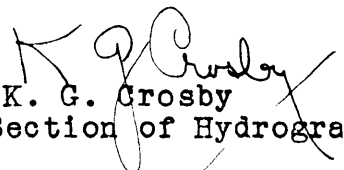
9. Additional Field Work


This is a basic survey and no additional field work is required. However, it should be noted that a more comprehensive program of tidal observations in this area would have furnished more adequate tide reducers and would have obviated the adjustment of soundings mentioned in par. 7b above.

Examined and approved:


H. R. Edmonston
Chief, Nautical Chart Branch


Casper M. Durgin
Chief, Division of Charts


K. G. Crosby
Chief, Section of Hydrography


W. M. Scaife
Chief, Division of Coastal Surveys

