

4035

4035

Form 504
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

State: *Alaska*

11-5613

DESCRIPTIVE REPORT.

H Sheet No. *4035*

LOCALITY:
Cook Inlet
Knit Arm
Vicinity of an -
dorage.

1918

CHIEF OF PARTY:
E O Hand

to accompany hydrographic sheet No. 1, Knik Harbor, Cook Inlet, Alaska.
(surveyed May - July, 1918)

Eoline R. Hand, Hyd. & Geod. Eng'r.
Chief of Party.

This sheet comprises that part of Knik Arm between points Cairn and Woronzof. The area is important, being the harbor for Anchorage which is one of the two ports for the government railroad built and operated by the Alaskan Engineering Commission. The sounding was preliminary to dragging operations called for in my orders of March 15, 1918. The manner of survey, and the difficulties encountered because of the great tidal range (40 ft. at times) are set forth in my Annual Report of June, 1918, and in my season's report dated August 21, 1918. These should assist the verifier to a clear understanding of why the lines are crooked, unequally spaced, and run at times normal to the shore one way only, instead of in and out.

2. The only shoal found of any consequence is the one a half mile N by W from the proposed wharf, having a least depth of 27 feet. It was dragged at 22, and time and conditions would permit of passing over the spot again at greater depth. Close work was done over one or two other spots to which suspicion was directed by the action of the drag, but nothing startling developed. It is known now that in some of the cases where the wire went aground it did so on account of being sucked down by currents when proper strain not on by launches. On the boat sheet will be seen soundings of 15, 18, and 13, in red ink.* They were transferred as carefully as possible from the chart: the 13 and 18 probably exist, or have existed, but I could not find anything like a 15 foot sounding at the point indicated by red arrow. These spots are at the shoals in cove on south side. South of a point midway between points Woronzof and Mackenzie were found some spots of about 39 feet, but all were cleared at 35. But vessels will keep on the north side of this midway point in passing in or out, favoring the Mackenzie side.

3. The signals were determined directly on this smooth sheet, by plane table methods, from the plotted triangulation stations. I also did some revision work on this sheet around Anchorage, determining points by which the blue prints of town and new wharf may be utilized. In accordance with Office letter of March 27 (12 GM) I placed these changes also on bromide print of topographic sheet No. 3038. These blue prints and corrected bromide were received at Washington office on November 8. In this matter of revision I recommend that the name "Woodrow Creek" be removed, and the name "Ship Creek" be restored. The latter is the only name used locally; the other is unknown.

4. The tidal corrections used in the progress of survey operations were obtained from a predicted curve: the reductions for smooth sheet plotting were from the automatic gauge maintained there.

5. I wish to call particular attention to the soundings at the blue ink positions: they are critical depths obtained in the course of dragging, and every one should be charted. They will be found recorded in the back Volume No. 4.

6. With a falling tide a part of the current shows a decided tendency to flow Southwest (true) into the cove between town and Point Woronzof, eddying in a clockwise manner. The shoal there is doubtless maintained by that action; and the fact that in winter great ice cakes become grounded on this shoal instead of passing out between the points indicates a possible menace for vessels. They should bear this current in mind when leaving the wharf.

Eoline R. Hand

Hyd. & Geod. Eng'r.

* The 13 ft. sdg. has been carried forward

Woodrow Creek (R. H. H.)

458
314 327
5123
44035
3200
3044
3200
7 3038
7037

LIST OF STATISTICS

To accompany hydrographic sheet No. 1
 Knik Harbor (Anchorage) Cook Inlet, Alaska.
 Surveyed in June and July, 1918
 May

4035

Colin G. S. Land.
 HYD. & GEOG. ENGR.

Chief of Party.

Date, 1918	Letter	Vol.	Positions	Soundings	Miles Statute	Boats
May 31	A	1	81	78	4.6	Vibenna
June 3	B	1	72	110	7.6	"
" 4	C	1	59	95	5.5	"
" 5	D	1	88	168	8.5	"
" 7	E	1	109	202	12.5	"
" 8	F	1	141	248	19.2	"
" 12	G	1 & 2	83	120	10.3	"
" 15	H	2	43	81	4.7	"
" 19	J	2	11	18	2.5	"
" 24	K	2	116	234	14.4	"
" 25	L	2	93 ⁸⁴⁶	194	15.8	"
" 26	M	2	105	176	15.0	"
" 27	N	2	78	134	12.2	"
" 29	P	2	63	118	11.4	B
July 1	Q	3	66	113	8.5	"
" 2	R	3	72	140	3.5	"
" 5	S	3	132	256	16.0	"
" 6	T	3"	129	230	12.2	"
" 8	U	4	131	337	7.2	"
" 9	V	4	134	354	10.2	"
" 29	W	4	62	87	5.0	"
Totals			1868	3493	2 16.8	

H4035

Remarks

Decisions

	Remarks	Decisions
1		
2		
3		
4	<i>W/S / No further effort</i>	<i>W/S / A USGB decision</i>
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27		

GEOGRAPHIC NAMES

Survey No. 174035

8573
On Chart
No.

8557
On Chart
No.

8502
On Chart
No.

7303
On U. S. Survey
Maps

On U. S. Quadrangle
Maps

From local
information

On local Maps

P. O. Guide or Map

Rand McNally Atlas

U. S. Light List

C.P.
KGE 29. DICT.
of A145114

Name on Survey	A	B	C	D	E	F	G	H	
<u>Knik Arm</u> *	✓	✓		✓			✓	✓	1
<u>Pt. Woronzof</u> *	✓	✓		✓				✓	2
<u>Anchorage</u> *	✓			✓		✓	✓	✓	3
Woodrow <u>Staxx Creek</u>			*	✓					4
<u>Cairn Pt.</u> *	✓	✓	✓	✓					5
<u>Pt. Mackenzie</u> *	✓	✓	✓	✓				✓	6
<u>Chester Cr.</u> *	✓			✓					7
<u>Campbell Cr.</u> *	✓			✓					8
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Names underlined in red approved
by *[Signature]* on 8/21/36

ADDRESS THE SUPERINTENDENT
U. S. COAST AND GEODETIC SURVEY

AND REFER TO NO.

41-2MK

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

HYDROGRAPHY ETC., (11)

May 27, 1919.

Division of Hydrography and Topography: *HCS*

Division of Charts: ✓

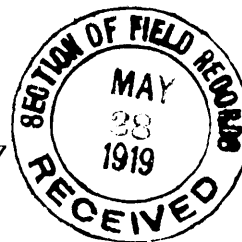
Tidal reductions have been approved in
4 volumes of Sounding records for

HYDROGRAPHIC SHEET 4035

Knik Arm, Cook Inlet, Alaska.
Eoline R. Hand in 1918.

Plane of reference is
Mean lower low water, reading

10.1 ft. on staff at Anchorage.



A. K. Hall
Chief, Section of Tides
and Currents.

Hydrographic Sheet No. 4035
Smith Arm; Cook Inlet Alaska.

The work covered by this sheet taken in connection with the work of the "Horn Drag Party," concerning same area, appears to develop conditions in a satisfactory manner. However in verification many errors were found both in projecting and plotting and these appeared due to lack of experience of the member of the party performing this work. In many cases the positions were found to be numbered wrong which was found to be due to missing a position when numbering. This necessitated replatting the entire line in order to locate the missing position.

The positions are not sufficiently well numbered to follow particularly in the areas of close lines and soundings. In such areas it would be advisable to number every position.

The position number could be much smaller and placed far enough away from the position so as not to be covered by the soundings when inked.

In the closely sounded areas the soundings were plotted so large as in many cases one covered the another and neither could be made out.

J. D. Torney
9/27/19

AND REFER TO NO. 41 BCM

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

WASHINGTON February 19, 1926.

To: Chief, Division of Charts.
From: Chief, Division of Tides and Currents.
Subject: Currents in Knik Arm, Alaska.

In compliance with the verbal request of Captain Ellis, there is submitted the following table of differences for obtaining the approximate phases of the current in Knik Arm, Alaska, (vicinity of Anchorage) from the predicted times of high and low water at Kodiak, Alaska, as published in the tide tables:

Slack Before Flood	Strength of Flood	Slack Before Ebb	Strength of Ebb
High water at Kodiak -10 min.	High water at Kodiak +2 ^h 30 ^m	Low water at Kodiak -30 ^m	Low water at Kodiak +2 ^h 30 ^m

The average strength of both flood and ebb currents is about $4\frac{1}{2}$ knots.



Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Hyd. Sheet No. **4035**

Register No. _____

State **Alaska Territory**

General locality . . . **S.W. Alaska**

Locality **Knik Arm, Cook Inlet.**

Chief of party . . **Eoline R. Hand, Hyd. & Geod. Eng'r.**

Surveyed by **Eoline R. Hand, and Wm. D. Patterson.**

Date of survey . . **May, June, July, 1918.**

Scale **1- 10 000**

Soundings in . . . **Feet**

Plane of reference **Mean lower low water.**

Protracted by **E.M. Wilbur.** . Soundings in pencil by **E.M. Wilbur.**

Inked by **J. D. Torrey** ¹⁹¹⁹ Verified by **J. D. Torrey** ¹⁹¹⁹
J. A. Mc Cormick ¹⁹³⁶ **J. A. Mc Cormick** ¹⁹³⁶

Records accompanying sheet (check those forwarded):

Des. report, _____ Tide books, _____ Marigrams, 1 Boat sheets,

4 Sounding books, _____ Wire-drag books, _____ Photographs.

Data from other sources affecting sheet see the following, mailed from Seattle on Oct. 23, and rec'd at Office Nov. 8;
bromide of old topographic sheet, showing Anchorage improvements.
blueprints of Anchorage, and proposed wharf.

Remarks:

See Refs. 16905 & 16909 inclusions

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. 4035

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

Number of positions on sheet ⁸ <u>186</u>
Number of positions checked <u>27</u>
Number of positions revised <u>0</u>
Number of soundings recorded <u>3493</u>
Number of soundings revised ¹³
Number of signals erroneously plotted or transferred ⁰

Date: August 18, 1936

Verification by J. A. Mc Cormick

Time: 38 hr.

Review by

John G. Rood

Time: 25 hr.

Verifier's Report on H-4035.

This sheet was verified and inked in 1919 by J. D. Farrey. There were so many discrepancies that a new projection was made in 1922 and the entire sheet replotted by F. M. Albert. ✓

This replotted sheet is the one covered by this report. ✓

Instructions from Comdr. Colbert were to ink the soundings which showed some agreement and to leave the others in pencil. ✓

The topography originates with T-3038 with revision work done on the original smooth sheet of H-4035. Topographic signals were located on H-4035. ✓

The original smooth sheet was applied to Chart 8557. The replotting of the smooth sheet has caused changes which will affect the chart. ✓

Celluloid reproduction of a portion of H-3200 accompanies this sheet. ✓

Wreck drag soundings from H-4036 are shown in green although they are recorded in the volumes for this sheet.

August 18, 1936.

Submitted,

J. A. Mc Cormick.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 4035 (1918) FIELD NO. 1

Knik Arm, Vicinity of Anchorage, Cook Inlet, Alaska
Surveyed in 1918
Instructions dated March 15, 1918.

Hand Lead Soundings

3 Point fixes on shore signals

Chief of Party - E. R. Hand
Surveyed by - E. R. Hand and Wm. D. Patterson
Protracted by - F. M. Albert
Soundings penciled by F. M. Albert
Verified and inked by - J. A. McCormick

1. Condition of Records

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

- a. The critical depths obtained in the course of dragging (H-4036) should have been filed with the records for the drag survey and not with those of this survey.
- b. A list of signals used was not contained in any of the records.

The Descriptive Report is satisfactory.

2. Compliance with Instructions for the Project

This survey was made preliminary to a wire drag survey which was the primary object contemplated by the instructions. The numerous rejections by the field party and the discrepancies existing in areas not covered by the wire drag, and also in depths greater than the effective depth of the wire drag, should have had further examinations in the field. (See wire drag survey H-4036 (1918))

3. Shoreline and Signals.

The shoreline originates with T-3038 (1909), T-3039 (1909) and the original H-4035 (1918) now filed as T-3039a. The topographic signals originate with the latter survey only, (see D.R. page 1)

4. Sounding Line Crossings.

The sounding line crossings are only fair. Where the crossing discrepancies were sufficiently large to indicate an impossible condition, the line appearing to be in error was rejected in the office. (In numerous cases similar lines had been rejected by the field party.)

5. Depth Curves.

The usual depth curves may be satisfactorily drawn, including most of the 6 foot and low water curves.

6. Junctions with Contemporary Surveys

There are no contemporary surveys

7. Comparison with Prior Surveysa. H-3044 (1909)

This survey on a 1:100,000 scale contains but two short lines of soundings that come within the limit of the present survey. It contains no information not found on the present survey.

b. H-3200 (1910) and H-3200a (1914)

These two surveys are on a 1:40000 scale and consist of a detailed survey and a partial revision survey, respectively, of the area of the present survey, although on a much smaller scale. A comparison between this and the present survey reveals a number of differences which have been considered in the light of the difficult nature of the area to survey, both for the present as well as the prior field parties. (see D.R. page 1, par. 1.)

The most important differences noted are as follows:

- (1) The $2\frac{1}{2}$ fathom sounding (not charted) shown on H-3200 (1910) at lat. $61^{\circ}13'$, long. $149^{\circ}56.7'$ falls on the present survey in depth of 44 to 49 feet. An examination of the records for that survey shows that $2\frac{1}{2}$ fms. (7 fms. 1 foot unreduced) just precedes several no-bottom soundings and a "miss." The succeeding survey (H3200a) obtained a $6\frac{4}{6}$ fathom sounding at this approximate spot. The development of the spot on the present survey (which is on a scale 4 times as large) shows no evidence of any isolated shoal in this immediate area, and a 44, a 48, and a 49 foot sounding fall practically on the $2\frac{1}{2}$ fathom spot. It is considered that the $2\frac{1}{2}$ fathom depth was an erroneous sounding and was either a recorder's error (recording 7 fms. 1 foot instead of 11 fms. 1 foot) or that bottom was actually not obtained. It has therefore not been carried forward and should be disregarded in charting.
- (2) The 13 foot sounding (charted) shown on H-3200a (1914) at lat. $61^{\circ}12.7'$ Long. $149^{\circ}58'$ falls on the present survey on the edge of a shoal with least depth of 16 feet. The development of this shoal on this present survey is very meager and least depth has not necessarily been obtained, consequently the 13 from H-3200a (1914) has been carried forward to the present survey.

- (3) The rocks awash (charted) on H-3200a (1914) at lat. $41^{\circ}12.35'$ long. $149^{\circ}57.45'$ was located from a detached position when the rock was just bare and the tide was 1 foot. This rock is not shown on the previous hydro. H-3200(1910), nor on the contemporary topo. T-3038(1909). It falls on the present survey in depths of about 11 feet but in an area insufficiently developed to disprove its existence. The sounding lines in this vicinity on the present survey were run during a 12 foot tide. The rock has been carried forward to the present survey as a rock awash, bare 1 foot at M.L.L.W. Showing on H6618
- (4) With the above exceptions the differences are considered to be due to changes having taken place in the area. This conclusion is verified by the Chief of Party who states that in addition to the very strong current, the winter's ice moves boulders about and causes other changes in the bottom.

8. Comparison with Chart No. 8557 (New Print Date Dec. 14, 1934)

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and from other sources as follows;

- (1) A number of U. S. Engineer blueprints of the inshore area at "Anchorage," H-4211(1922) and H-5104(1930) which have not been considered in this review because they are all subsequent to the present survey.
- (2) The original smooth sheet of this survey due to excessive errors in plotting and inking, was rejected and a complete replotting made. (see par. 9 this review) The charted soundings from the rejected sheet, of which there are too many to enumerate, should be removed from the chart, since many of them have been changed in position or altered in value on the present survey (the replotted sheet). The most important of these changed soundings are the charted 66 foot sounding at lat. $61^{\circ}15.72'$ long. $149^{\circ}54.1'$ which on the present survey is a 166 and in a slightly different position, and the 30 foot sounding at lat. $61^{\circ}15.3'$ long. $149^{\circ}55.1'$ which has now been rejected.

9. Field Plotting

The original smooth sheet was plotted by the field party and verified and inked in the office. This sheet was later found to contain so many errors in plotting that it was rejected.

A new projection was constructed in the office in 1922 upon which the work, direct from the sounding records was replotted, verified and inked; and it is this new sheet that is the subject of this review. The old or original smooth sheet was found to contain some original topography in the vicinity of Anchorage and has, therefore, been retained as a topo. sheet and numbered T-3039a.

10. Wire Drag Survey H-4036 (1918)

The depths on the present survey are consistent with the above wire drag survey except in a few instances where the soundings are less than the effective depth of the wire drag. As the wire drag work was the primary object of the survey and there are numerous discrepancies on H-4035 (1918), these soundings were left in pencil on the replotted sheet and they should not be used in future charting.

11. Additional Field Work Recommended.

Because of the lapse of time since the original survey was made and the probable changes resulting from the effects of currents and ice, no additional or supplementary work is recommended but an entirely new survey should be made when work is resumed in this locality.

12. Superseding old Surveys

Within the area covered the present survey with the indicated additions from previous surveys supersedes the following surveys for charting purposes;

H-3200 (1910) In part
H-3200a(1914) "
H-3044 (1909) "

13. Reviewed by - John G. Ladd, Sept. 21, 1936
and
R. J. Christman, Sept. 25, 1936

Inspected by-A. L. Shalowitz

Examined and approved:

C. K. Green
C. K. Green,
Chief, Section of Field Records

L. O. Robert
Chief, Division of Charts

Fred. L. Peacock
Chief, Section of Field Work

G. H. Lee
Chief, Division of H. & T.

Applied to drawing of Chart 8557 - Mar. 16, 1937 - JFW Walker
" " " " 8553 " 17, " JFW Walker