4960

Diag. Cht. No. 8201-3

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

....., *Director*

State: Alaska

DESCRIPTIVE REPORT

~~*Topographic*~~ *Hydrographic* *Sheet No.* 7 4960

LOCALITY

Frederick Sound

Wrangell Narrows

Island Pt. to Green Pt.

1929

CHIEF OF PARTY

H.A. Cotton

GOVERNMENT PRINTING OFFICE

4960

DESCRIPTIVE REPORT

HYDROGRAPHIC SHEET, FIELD NO. 7

S. E. ALASKA

WRANGELL NARROWS

ISLAND POINT to GREEN POINT

1929

E. W. EICKELBERG, CHIEF of PARTY, C. & G. S.

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SHEET

FIELD NO. 7

WRANGELL NARROWS

ALASKA

ISLAND POINT to GREEN POINT

INSTRUCTIONS: This Survey was made under instructions dated, February 19, 1929.

SURVEY METHODS: All soundings were taken from a thirty-five foot sounding launch using a hand lead for all soundings. Signals used were Triangulation Stations (1929) and Topographic Stations (1929).

TIDAL REDUCERS: Reducers on this sheet are from the portable automatic tide gauge at Finger Point.

COMPARISON WITH OLD SURVEYS: After ~~working~~ searching for the 3 fathom spot shown in mid-channel off Rock Point and not finding it, I conferred with Mr. Fruit of the U. S. Engineers, and was told that this had been removed by dredging about two years ago. I was also told that the 3 fathom spot in mid-channel off Green Point had been removed. However, since this shoal was found to exist, there was evidently some mistake about its being removed, or it had since shoaled in. South of Signal RAN considerable dredging has been done, making the soundings different in this area from those shown by Surveys of 1910.

See B.P. 21404

Respectfully submitted,

T. B. Reed, Jr. H. & G. E.

Mr. Reed left before this report was typed.

Approved and forwarded,

E. W. Eickelberg,
Chief of Party, C. & G. S.

TIDE DATA

TO ACCOMPANY HYDROGRAPHIC SHEET - FIELD NO. 7.

Portable automatic tide gauge No. 177.

Location of Finger Point Staff-

Latitude 56° 41' 00"
Longitude 132° 56' 30"

No simultaneous comparisons made. Tide planes previously established.

Plane of Reference is M.L.L.W. = 5.7 on staff

Highest Tide Observed = 18.1 ft. above M.L.L.W.-June 9, 1929.

Lowest Tide Observed = 2.9 ft.above M.L.L.W.-May 8, 1929.

STATISTICS FOR HYDROGRAPHIC SHEET - FIELD NO. 7

Total number of positions..... 756

Total number of soundings..... 4155

Total number of statute miles of sounding lines..... 57.4

REPORT ON PLOTTING OF SMOOTH HYDROGRAPHIC SHEET NO. 7

SOUNDINGS PLOTTED TO HALF FEET.

In accordance with Part 1, Paragraph 153, Page 19, of the Hydrographic Manual, soundings were plotted to the nearest one-half foot from position 1a to position 35b. The remainder of the soundings were plotted to the nearest whole foot to conform with practice arrived at in plotting other sheets of this locality and in accordance with instructions of the Chief of Party.

CHANGE OF NAMES OF SIGNALS IN RECORDS.

Throughout sounding volumes 1, 2, and 3, the name of signal SIG has been changed to BAR, and the name of signal NAL has been changed to LAN.

When work began in the field, the signal now shown on the smooth sheet as BAR was called SIG, and the signal now shown on the smooth sheet as LAN, was called NAL. After the sounding on this sheet was finished, the name of signal SIG was changed to BAR and the name of signal NAL was changed to LAN, but the corresponding changes were not made in the records at the time, and so were made when plotting the smooth sheet. The names SIG and NAL were later given to the two signals now shown at the north end of this sheet.

POSITIONS AND SOUNDINGS REQUIRING SPECIAL ATTENTION.

Position 13 b: The 61 foot sounding on this position is nearly surrounded by 85 foot depths, and indicates a shoaling at this point. The spot was not developed in the field. Investigation of the record, and of the plotting has not indicated any reason for rejecting this sounding.

Position 36d to 37d and position 164 to 165b (50 m. east of Sig. FIN).

The two lines cross, and position 36 d plots very close to position 165 b. A 39 foot sounding between position 36 and 37 d, plots very close to a 29½ foot sounding between positions 164 and 165 b. A 24 foot sounding between positions 36 and 37 d, plots on or very near a 14½ foot sounding between positions 164 and 165 b. It is thought that there may be an error on the line 36 to 37 d, as follows: Between Positions 36 and 37 d, and about at the 39 foot sounding much deeper water was encountered, and it is possible that the speed of the launch was decreased. No such decrease in speed is indicated in the record and the soundings are plotted on time. However, if the speed was decreased, the 24 foot and 39 foot soundings should be plotted farther off shore.

Positions 131 to 132 d.

A 20 foot sounding between these two positions plots well within the 24 foot curve, about at the center of the channel, and indicates a shoal at this point. This spot was not developed. The sounding was not checked when taken. Investigation of the record and of the tide reductions

indicated no error in recording or in the computation of the reducers. However, the tide marigrams had been forwarded to Washington when this investigation was made, and it was only possible to check from a copy of the hourly heights. Photostat No. 3212 of the survey of 1910 shows a 16 foot spot (which on the present tide plane of reference would be a 19 foot spot) about 35 meters north-east of this sounding. However, the two positions seem too far apart to be identical. It seems probable that a one fathom error was made by the leadaman in reading his lead line but further development would be necessary to prove that such an error was made.

Positions 148 to 150 d.

The line 148 to 150 d is a line of shallow soundings between 2 lines of deeper soundings. On position 149 d, a 13 foot sounding comes between a 17 foot and a 20 foot sounding. Between positions 149 and 150 d, a 13 foot sounding comes between a 22 foot, and a 23 foot sounding. Investigation of the records and tide reducers showed no error in this sounding. The tide curves had been forwarded to the Washington office before these soundings were investigated and it was only possible to check from the hourly readings.

Apparently O.K. The 13 foot sounding on position is bolstered up by an 8 foot sounding close by on H-3212
A.L.S.

Position 78 d.

This position was located by two angles without a common center and was plotted at the intersection of lines joining the loci of the separate angles. As shown on the smooth sheet the 29 foot sounding on this position plots between 31 foot soundings. On the boat sheet this position plots about 12 meters eastward of where it plots on the smooth sheet, and there is no discrepancy in soundings. This difference in the same position on smooth sheet and boat sheet is probably due to differences in location of the signals as the same angles were used on both sheets, and the plotting checked on both sheets. It is thought that there is a small error in one of the angles and that the line 77 d to 79 d could be rejected, since lines are spaced very closely in this area.

No solution could be arrived at. As it was a great improbability the position was accepted as recorded.
A.L.S.

Position 81 d.

This position plots very close to the line 1 e to 2 e, and the soundings between 81 d and 82 d, show a jump of about 3 to 4 feet from the soundings between positions 1 e, 2 e, and 3 e. On the boat sheet, position 81 d plots about 12 meters north west of its position on the smooth sheet, and the lines are separated far enough so that the difference between sounding on the line 1 e, 2 e, and 3 e, and the line 81 d to 82 d, seems consistant with the general slope of the bottom. Again the difference between smooth sheet and boat sheet is probably due to differences in location of signals on the two sheets. It is thought that some error exists in the angles for position 81 d, but no evidence has been found which would permit a change in these angles.

Accepted as plotted. Not improbable.
A.L.S.

Junction of Sheets 6 and 7.

At the north end of Sheet 7, where Sheet 7 joins Sheet 6, the depth curves are rather difficult to draw, due to irregularity in bottom. There are differences of 2 to 3 feet in depth on the adjacent sheets on the eastern side of the channel. The 3 fathom shoal shown on chart 8170 in this area now appears to have a depth of 20 feet (or 17 feet on the old tidal datum).

Junction of Sheets 7 and 8.

Junction of Sheet 7 on the south end with Sheet 8, north end, seems satisfactory.

Low water and High water lines.

The Topographic Sheet of this area was done on a different scale and high and low water lines have not been plotted on this sheet.

Respectfully submitted,

B. G. Jones

B. G. Jones,
Jr. H. & G. E.

Approved and forwarded,

E. W. Eickelberg

E. W. Eickelberg,
Chief of Party, C. & G. S.

APPROVAL SHEET

TO ACCOMPANY SHEET NO. 7

WRANGELL NARROWS, ALASKA

The sheet and records have been examined and are approved.

Of the discrepancies noted by the plotter of this sheet, Mr. B. G. Jones, little can be said, as the officer who accomplished the field work was not available for questioning. All of the field work was completed a month before my assuming command. I did, however, make a very careful comparison between all of the Wrangell Narrows Sheets, both with the chart and former survey. Tracings were prepared of all boat sheets for the purpose of comparing the new work readily with the former survey. In regard to the 20 foot sounding between positions 131 and 132 d, this discrepancy was not noted in the comparison because this sounding was not on the tracing, a 25 foot sounding being in its place. This was probably due to the 20 on the boat sheet being blurred by a crease in the paper. The tracing is sent with the sheet. It might be said that both this sounding and the 61 foot sounding at position 13 b were not checked in the record, noting a sudden change in depth.

South-east of Green Point the present survey agrees with chart 8170, but not with the former survey. This is probably due to dredging operations. Noted / dredging work done Prior. A.L.S.

A 16 foot spot on old bromide 3212 (19 feet at M.L.L.W.) is shown 210 meters north-east of station # 34. This spot is not shown on chart 8170, nor on the new survey, and it is assumed was removed by dredging operations.

It might be mentioned here that the only dredging operations carried on in 1929, were on the Petersburg bar, and at the turning point in the dredged channel west of buoy N 8. All other dredging operations referred to in any of this work should be considered as having been done in previous years.

E. W. Eickelberg,
Commanding Officer,
U.S.C. & G.S.S. EXPLORER.

Mar. 3, 1930.

Division of Hydrography and Topography:

Division of Charts: ✓

Tide Reducers are approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 4960

Locality: Wrangell Narrows (Vicinity of Finger Point,) Alaska

Chief of Party: H. A. Cotton, in 1929
Plane of reference is mean lower low water, reading
5.7 ft. on tide staff at Finger Point

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

Chief, Division of Tides and Currents.

H4960

Chief of Party - H. A. Cotton
Surveyed by - T. B. Reed.
Protracted by - B. S. Jones
soundings penciled by - B. S. Jones
Verified and inked by - John G. Reed

1. The record conforms to the requirements of the general instruction with the following exception. The omission of ✓ reference to increase and decrease of speed at incomplete record of ends and beginning of lines.

2. The plan and character of development fulfills the requirements of the General Instructions ✓

3. There are no cross lines on this sheet, which make a check of soundings by this method impossible

4 The usual depths curves could be drawn, showing a very ✓ uniform change of bottom for Alaskan waters, especially for such a unusual passage

(cont.)
4. on Wrangel narrows.

5. The field plotting was complete and very accurately done.

6 no part of the field plotting had to be done over except that the shore line was added by the office drafting by means of a photostat enlargement of the topographic sheet # 44484

7 the junction with sheet no H4961, the only sheet with possible junction at this time (the other junction sheet on lower end of work not having been received from the field at this date) was found to be satisfactory.

8. The 3 ft. sounding between position 9 and 10 of was plotted at a minus 3 ft as per the recomendation of chief of party (see page 44 Vol. 3 of sounding volumes.

8 (Cont.)

The other questionable sounding and positions mentioned in the descriptive report have been investigated and found to be as recorded with no evidence of errors. Such as the 61 ft sounding at position 13 b the 20 ft. sounding between 131d and 132d crossing of lines formed by 164 to 165 b and 36 to 37 d. The 29 ft sounding at position 78 d. the position of line 148 to 150 d. and the position of sounding between 81 d and 82 d. the above mentioned sounding and positions were checked with special care after the usual verification and inking of the sheet had been completed.

John G. Ladd
Jr Asst. Engr.
March 29, 1930

IN REPLY ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND NOT THE SIGNER OF THIS LETTER

AND REFER TO No. 7-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4960

Wrangell Narrows - Island Pt. to Green Pt.

Surveyed in 1929

Instructions dated February 19, 1929 (EXPLORER)

Chief of Party, H. A. Cotton.

Surveyed by T. B. Reed.

Protracted and soundings plotted by B. G. Jones.

Verified and inked by John G. Ladd.

1. The work is in conformity with the specific instructions with the exception that two doubtful soundings (a 61 in lat. 56° 40'.95, long. 132° 56'.4, and a 20 1/2 in lat. 56° 40'.2, long. 132° 56'.0) should have been investigated. These will be discussed in greater detail in succeeding paragraphs.

2. The records conform generally to the requirements of the General Instructions. There have doubtless been increases and decreases of speed on some of the lines and these should have been noted.

3. The usual depth curves can be completely drawn except in one or two cases close inshore. For the purpose of delineating on the chart the limits of the flats, the limits as shown on topographic sheet 4484 can be used to supplement the limits as defined by the hydrography. The topographic limits were transferred to the hydrographic sheets only where there was no conflict between the two. For transferring to the charts the difference is negligible.

4. The usual field plotting was completed and was very accurately done. In this connection Mr. Jones is to be commended for his delving into the details of the work in an attempt to rectify some of the apparent discrepancies.

5. Utilization of old surveys. On account of the detailed nature of the present survey, it will be unnecessary to use any of the old work. Where the 1910 survey shows shoal spots the surrounding soundings on the new survey definitely show that the

area has changed either through natural causes or through dredging. Some of the more important of these will be mentioned specifically:

a. To the southeast of Green Pt. Beacon the 1910 survey (H.3212) shows 18 and 19 foot soundings at M.L.L.W. in mid-channel. The Engineers' survey of 1926 (B.P. 21403) shows a scouring out in this vicinity with a least depth of 3 1/2 fathoms in mid-channel (this is the 3 fathom spot shown on the present edition of chart 8170). The new survey shows a least depth of 20 feet on the shoal. A few more soundings on this important shoal would not have been amiss. Since the chart has already been corrected to conform to the soundings as shown on the Engineers' survey of 1926 it is not necessary to consider at this time the shoal soundings from the 1910 survey.

It should be noted that the statement by Mr. ~~Trent~~ Fruit of the U. S. Engineers (see page 1, Descriptive Report) that the charted 3 fathom spot in this vicinity has been removed by dredging is neither borne out by the actual conditions found to exist nor by the information existing in this office at this time.

b. Approximately west of Rock Point in mid-channel there is a charted 3 fathom spot (3 1/2 at M.L.L.W.) This sounding was first charted from the Engineers' survey of 1926 (B.P. 21403). The present survey shows 32 to 33 feet in this vicinity, which agrees with the depth curves shown on B.P. 21404 made apparently just before dredging was completed. A cross section line was run by the Engineers within 10 feet of the spot where the 3 1/2 fm. sounding was supposed to be and no indication of shoaling was noted. There appears, therefore, abundant evidence that the spot no longer exists and it is recommended that it be removed from the charts. It should be noted, in this connection, that the depths on the 1911 survey (H. 3212) practically agree with the present survey (H. 4960) which makes the correctness of the 3 1/2 fm. spot on the Engineers' survey doubtful. It would be interesting to verify from the Engineers the correctness of this sounding, not so much from the standpoint of the bearing it will have on the new chart, but to possibly bring out the point that wherever important doubtful soundings appear even on the Engineers blue prints they should not be charted until definitely verified. It would seem that the sounding on the original drawing may have been 5 1/2 fm. and in tracing was shown as a 3 1/2.

c. In lat. 56° 40' 393 m., long. 132° 55' 984 m. the 1911 survey shows a 19 foot sounding (at M.L.L.W.) surrounded by 25 foot depths. The sounding has the appearance of being 1 fathom too shoal, although there is nothing in the original record to substantiate this. The new survey (H. 4960) shows depths of 25 feet in the immediate vicinity and neither the Engineers survey of 1926 (B.P. 21403) nor the 1927 survey (B. P. 21404) made after dredging shows any indication of the 19 foot sounding. It should be noted that on the latter survey a cross section line was run about 30 feet from the position of the 19. While a few more soundings over the position of the 19 would have been desirable, it is nevertheless felt that enough information exists to disregard this sounding in all future compilations.

d. In the vicinity of Island Point the shoal soundings on the 1911 survey can be disregarded since the area has been dredged to a depth of 21 feet at M.L.L.W. (see B.P. 22025 and Letter 331-1928). The present survey bears out the project depth.

e. Other differences between old and new survey are not regarded sufficiently important to warrant special consideration.

6. Attention is desired to be called to the following two soundings on this survey that have been disposed of in conformity with the reasoning set out below:

a. The 61 foot sounding in lat. 56° 40' 1746 m., long. 132° 56' 440 m. (position 13 b). An examination of the surrounding depths negatives the existence of a shoal here. The bottom is mud, the 61 falls in practically the deepest portion of the area and subject to the scouring effect of the current from the narrows just above. In addition to this the Engineers survey of 1926 (B.P. 21403) shows an 89 foot sounding close by. It is very probable that the leadline was read 11 fathoms instead of 16 fathoms since both points are marked by a piece of leather and one strip. With the tide reducer of 5 feet the final sounding would have been 91 which is quite comparable to the depth obtained by the Army Engineers. The sounding was therefore omitted from the sheet.

b. The 20 1/2 foot sounding in lat. 56 ° 40' 367 m., long. 132° 55' 1012 m. (position 131-132 d). On account of the possibility of shoaler water existing here, if the sounding is correct, and its corresponding importance to navigation, considerable thought and study were given to the final disposition of this sounding. The 20 1/2 foot sounding falls in an area of very even bottom, the consecutive soundings on the line show a gradual increase in depth, and with the leadline being read to the nearest half foot it is not likely that the leadsman would have made an error of 1 fathom in the reading of the leadline. The error, if any, was probably made in the

recording. A study of the 1911 survey discloses a smooth bottom with no indication of a shoaling and with depths comparable to the depths surrounding the 20 1/2 on the new survey. In addition, the Engineers survey of 1926 (B.P. 21403) shows 27 feet close to this spot and the Engineers survey of 1927 made before dredging (B.P. 21404) shows 25 to 26 foot depth curves in the immediate vicinity with the nearest cross section line about 40 feet away (these cross sections have not been submitted by the Engineers). While the writer feels reasonably certain that the sounding is in error by 1 fathom, the fact that the 20 1/2 would be charted as 3 1/2 fathoms, which is the present project depth in Wrangell Narrows, the channel depth would not be restricted by its use and its importance to navigation is therefore considerably lessened. Furthermore, by retaining it on the sheet, there will be less likelihood of its being overlooked when additional work is considered for this area.

7. * Additional work.

Whenever feasible, the areas discussed in paragraphs 5-c and 6-b should be investigated.

8. The junction with H. 4961 is satisfactory. That with H. 5004 will be considered when that sheet is reviewed.

9. Reviewed by A. L. Shalowitz, July, 1930.

Approved:

A. M. Sobieralski
Chief, Section of Field Records (Charts)

F. S. Borden
Chief, Section of Field Work (H. & T.)

* This work will probably be covered by surveys by U.S.E. ams.

Form 537
11—5812

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4960

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. 7

REGISTER NO. 4960

State ALASKA

General locality ~~WRANGELL NARROWS~~ Frederick Sound

Locality ~~ISLAND POINT TO GREEN POINT~~

Scale 1:5,000 Date of survey May 29, to June 5, 1929

Vessel U.S.C. & G.S.S. EXPLORER

Chief of Party H. A. COTTON

Surveyed by T. B. REED

Protracted by B. G. JONES

Soundings penciled by B. G. JONES

Soundings in ~~fathoms~~ feet

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by

Inked by ~~L. C. JOHNSON~~ John G. Todd

Verified by ~~E. W. EICKELBERG~~ J. G. T.

Instructions dated February 19, 1929

Remarks: Data accompanying this sheet:
3 vols. Sounding Records, Topographic Sheet Field Letter A.
Boat Sheet, Field No. 7.
1 tracing of Boat Sheet.

GPO

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4960.

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

Number of positions on sheet	756
Number of positions checked	156
Number of positions revised	0
Number of soundings recorded	4155
Number of soundings revised	25
Number of signals erroneously plotted or transferred	none

Date: March 29, 1930

Cartographer: John G. Ladd