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Form 504 Ed. June, 1928	
DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY R. S. PATTON, Director	
U. S. COAST AND GEODETIC SURVEY L & A APR 28 1930	
State: ALASKA	
DESCRIPTIVE REPORT	
Topographic Hydrographic	} Sheet No. 8 5004
LOCALITY	
Sumner Strait S. E. ALASKA	
WRANGELL NARROWS	
South Ledge to Island Pt.	
1929	
CHIEF OF PARTY	
H. A. COTTON E. W. EICKELBERG	

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.
5004

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. 8

REGISTER NO. **5004**

State ALASKA

General locality S. E. ALASKA Sumner Strait

Locality WRANGELL NARROWS - South Ledge to Island Pt.

Scale 1:5,000 Date of survey June - October, 1929

Vessel EXPLORER

Chief of Party H. A. COTTON and E. W. Eickelberg

Surveyed by T. B. REED, W. WEIDLICH, E. H. BERNSTEIN

Protracted by K. S. ULM

Soundings penciled by K. S. ULM, B. G. JONES

Soundings in ~~fathoms~~ feet

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by

Inked by *John S. Ladd*

Verified by *John S. Ladd*

Instructions dated February 19th, 1929

Remarks:

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET # 8.

AUTHORITY: The hydrography on this sheet was executed under instructions of the Director of U. S. Coast and Geodetic Survey, dated February 19th, 1929.

SCALE: 1:5,000 and soundings are in feet.

LIMITS: This survey covers the area between $56^{\circ} 37' 30''$ North, $132^{\circ} 57' 30''$ West, and a line drawn east and west off Island Point.

METHODS: Three different sounding parties were engaged in this survey.

The area between Island Point and Anchor Point was covered by Tender # 1, and the work is shown with blue letters. Lines run in northerly and southerly direction, with the exception of the area north of Vexation Point, where the lines run in north-westerly and south-easterly direction. This work was executed under direction of T. B. Reed, Jr. H. & G. Engr. A 10 pound hand-lead was used by this party.

A small area covered by Launch # 69, E. H. Bernstein, H. & G. Engr, in charge, lies between the areas covered by Tender # 1 and Launch "Delta". This work is indicated by green letters. Lines run in northerly and southerly direction, spaced about 15 to 35 meters apart. Soundings were taken with an 8 pound hand-lead.

The southern area was covered by launch "Delta", W. Weidlich, Mate, in charge, and work is indicated by red letters. All lines run in northerly and southerly direction, spaced from 15 to 30 meters apart and soundings were taken with a 10 pound hand-lead.

Position 1 to 14 "j" (red), and 26-27-28-29-46-47 "j" (red), are plotted on smooth sheet # 9. These positions cover an area where a few soundings were very doubtful and were rejected.

CONTROL: Triangulation and topography furnish the necessary control for all the work.

TIDES: Tidal reducers were obtained from a portable automatic tide gauge at Anchor Point which was in operation while the work was in progress.

KELP: During the earlier part of the season little or no kelp was noticed except in places as recorded and shown in smooth sheet. During August, September and October, the shores are fringed with thick kelp, also all rocky areas near the main channel.

DANGERS AND OBSTRUCTIONS:

1. A 15 foot spot lies about 256 meters, $11^{\circ} 40'$ from triangulation station BLACK. Position 74 e. This area was developed a few days later (see positions 136 "f" blue to 149 "f", also Commanding Officer's remark Position 74 "e"). This 15 foot spot lies directly in line between Vexation Rock beacon, and Rock Point, practically in the old channel which was used by vessel before the Wrangell Narrows were dredged.

*Omitted
the 15 foot
sounding
A.L.S*

Author of this report agrees with the Commanding Officer's comment on this sounding and the depth no doubt should be at least 4 feet more than recorded.

2. The 12 foot sounding (9 feet on the photostat) on the 1910 survey, about 160 meters north-west of triangulation station OLD could not be found. Sixteen feet was the least depth found in this section, about 50 meters south-east of this sounding. (Development positions 161 to 168 "f" blue.)

3. The 1910 survey shows a least depth of 14 feet (11 feet on the photostat) about 450 meters, 358° from triangulation station # 45. Least depth found in this survey is 17 feet at M.L.L.W.

A 16 foot spot lies about 395 meters, $352\frac{1}{2}^{\circ}$ from triangulation station # 45, which is about 1 foot less than shown in the survey of 1910.

Another 16 foot spot lies 55 meters west of above position with similar soundings in immediate vicinity. (Development 171 "f" blue to 185 "f").

4. A shoal with a least depth found of 11 feet at M.L.L.W., lies about 500 meters, 221° from triangulation station # 45. The 1910 survey shows a depth of 10 feet in this locality. (Development Positions 186 "f" blue to 199 "f").

5. A Pinnacle Rock with a least depth found of 11 feet at M.L.L.W., lies about 375 meters, 264° from triangulation station # 45.

The launch anchored on this rock and moved around it to obtain the least depths. This rock is very small, only from 5 to 6 feet in extent. (Positions 1-2-3-4 "b" blue).

This rock is marked by a spar buoy which was found to be out of position at the time. The rock was located.

This buoy was shifted into proper position after the Light House Service was notified.

Colorado Reef Light is about 45 feet out in the channel and will be shifted in near future.

The survey of 1910 shows a depth of 14 feet (11 feet on photostat).

A small boat channel was developed east of North Ledge Beacon, and South Ledge Light. No difficulties should be experienced by small boats when negotiating this passage at half tides. ✓

The following obstructions were located in that body of water:

6. The area east and south of North Ledge beacon bares at low tides. This foul area extends about 50 and 55 meters from the beacon and is marked by thick kelp. ✓

The water between North Ledge Light and the beacon is apparently free of obstructions with a controlling depth of about 11 feet, but is covered by thick kelp. ✓

7. A 5 and 6 foot sounding was obtained about 150 meters, 78° from triangulation station GO. This area is undeveloped, but has several 7 and 8 foot soundings in immediate vicinity. ✓

8. A rocky patch with a least depth found of 6 feet at M.L.L.W., lies about 195 meters, 175° from triangulation station GO (South Ledge Light). Bottom is very irregular in immediate vicinity and is marked by kelp. (Positions 103, 105 "f" red). ✓

9. A foul area, covering about 30 square meters with a least depth found of 2 feet at M.L.L.W., lies about 242 meters, 172° from triangulation station GO. This area is marked by kelp and sounding was taken on top of a yellow boulder. (Position 35 "g" red). ✓

10. A boulder with a least depth found of 1 foot at M.L.L.W., lies about 232 meters, $166\frac{1}{2}^{\circ}$ from triangulation station GO. Area is marked by kelp. (Position 36 "g" red). This boulder is of small extent and is surrounded by deeper water. ✓

11. A small rocky patch, marked by kelp, with a least depth found of 6 feet at M.L.L.W., lies about 285 meters, $178\frac{1}{2}^{\circ}$ from triangulation station GO. (Pos. 102 "g" red). There is deeper water around it. ✓

NEW SURVEY:

The area west and north of Bush Top Island is a new survey. Bottom is very irregular. There is a sand bank about 150 meters south of the west tangent of Bush Top Island, with deeper water between, near the rocky shores of the island. ✓

The channel west of Bush Top Island is of no importance, it leads around the island and empties into the main channel south of Colorado Reef.

Current is very strong with an estimated velocity of from 3 to 5 knots. ✓

*W. Meidell
Mate U.S. Survey*

STATISTICS

TO ACCOMPANY HYDROGRAPHIC SHEET # 8

DATE	VOL.	LETTER	STATUTE MILES	POSITIONS	SOUNDINGS	LAUNCH
6-7-29	1	a blue	18.0	217	1385	Tender # 1.
6-8-29	1&2	b "	9.5	109	736	"
6-13-29	2	c "	14.0	163	1168	"
6-14-29	3	d "	15.0	202	1256	"
6-15-29	3&4	e "	8.4	106	715	"
6-17-29	4	f "	10.6	199	1105	"
6-18-29	4&5	g "	3.9	60	307	"
10-9-29	5	h "	1.0	16	56	"
Total-			80.4	1072	6728	
6-14-29	6	a red	8.9	139	980	Delta
6-15-29	6	b "	2.9	42	267	"
6-17-29	6&7	c "	6.8	98	731	"
6-18-29	7	d "	6.4	114	746	"
6-19-29	7	e "	5.1	97	636	"
6-20-29	8	f "	5.1	113	644	"
6-21-29	8	g "	3.6	90	464	"
6-24-29	8	h "	2.5	54	215	"
6-25-29	8	j "	1.5	59	163	"
Total-			42.8	806	4846	
6-17-29	9	a green	8.9	145	762	Launch # 69
6-18-29	9	b "	5.1	98	490	"
6-19-29	9	c "	0.8	16	110	"
Total			14.8	259	1362	
<u>TOTAL ALL LAUNCHES</u>						
Tender # 1 -			80.4	1072	6728	
Delta -			14.8	259	1362	
Launch # 69-			42.8	806	4846	
			138.0	2137	12,936	

TIDAL NOTE

HYDROGRAPHIC SHEET FIELD NO. 8

ANCHOR POINT, WRANGELL NARROWS

Staff # 1 - Port. Auto. Tide Guage at Anchor Point (June 13 - June 25, 1929)

Highest tide = 15.8 (June 24th)

Lowest tide = -1.2 (June 22nd)

M.L.L.W. = 9.5

Plain Staff # 1.....(June 7th - June 13th)

Highest tide = 15.2 (June 7th)

Lowest tide = -3.9 (June 8th) - (rising tide)

M.L.L.W. = 9.5

Plain Staff # 2.....(October 9th, 1929)

M.L.L.W. = 2.2 (No highs or lows observed)

Latitude $56^{\circ} 38.2'$

Longitude $132^{\circ} 55.7'$

NOTES ON PLOTTING

HYDROGRAPHIC SHEET FIELD NO. 8

BUOY N 8

Located June 17th, volume 4, page 56 - Position 169 f day, with check position. Also located October 9th, volume 5, page 13 - Position 16 h, no check position. Both June and October positions were plotted, but only the October position is shown, as there was a difference of 15 meters in the two positions, which difference might be accounted for by scope, although the October position has no check angle.

BUOY N 6a

Position of this Buoy was transferred from the Boat Sheet to the Smooth Sheet, as the position was not recorded.

POSITIONS 31 c to 32 c - VOLUME 2

The 22 foot sounding, 220° , 165 meters from Blind Slough Light, may have a one fathom error in reading lead line, as no other error has been found, and a shoal seems unlikely at this point.

POSITIONS 192 d to 193 d - VOLUME 3

The 16 foot, 16 foot, and 15 foot soundings between these two positions, and the 14 foot sounding on position 193 d, show deeper water and were not plotted.

Positions plotted by K. S. Ulm.

Soundings plotted by B. G. Jones,
and K. S. Ulm.

Respectfully submitted,

B. G. Jones
B. G. Jones,
Jr. Hydrographic & Geodetic Engr.

APPROVAL SHEET

The work on this sheet was principally done by Lieutenant T. B. Reed and Mr. W. Weidlich, Mate. One volume was done by Lieutenant E. H. Bernstein. Some of his work had to be rejected, due to large distances between positions.

The sheet was plotted by K. S. Ulm, Deck Officer, on board ship. It was found very difficult to keep the sheet clean on account of soot being blown into chart room by strong winds. Lieutenant B. G. Jones supervised plotting and closely examined the sheet for discrepancies. His notes are added to the report.

There are quite a number of soundings where Mr. Reed's party failed to check soundings when they made sudden jumps. This is the main cause of any disagreements in his work. In general crossings were good.

The sheet and records have been examined and are approved.



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

FOR FILES OF FIELD RECORD SECTION

Edw.
R.A.C.

May 13, 1930

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
9 volumes of sounding records for

HYDROGRAPHIC SHEET 5004

Locality: Alaska (Wrangell Narrows)

Chief of Party: H. A. Cotton in 1929
Plane of reference is Mean lower low water, reading
9.5 ft. on tide staff No. 1 at Anchor Point
~~ft. below Bench~~
2.2 ft. on tide staff No. 2 at Anchor Point
15.5 ft below Bench Mark 1

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.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. **5004**

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

Number of positions on sheet	.2137
Number of positions checked	..427
Number of positions revised12
Number of soundings recorded	12936
Number of soundings revised15
Number of signals erroneously plotted or transferred	...none

Date:..... **July 14, 1930**

Cartographer:..... **John S. Ladd**

Report

H-5004

Chief of Party - H.A. Cotton, and E.W. Eischeberg
- Surveying - T.B. Reed, W. Weidlick and E.H. Bernstein
Protected by - K.S. Ulm.
Soundings penciled by - K.S. Ulm and B.G. Jones
Verified and inked by - John G. Ladd

1. The records conform to the requirement of the General Instructions, except that all references to speed of the boat were omitted where as the smooth sheet clearly shows evidence of speed changes along with changes of depths, etc.
2. No sounding cross lines were run which eliminates any check of the work by that means.
3. The usual depth curves could be drawn.
4. The field plotting was ~~to~~ complete and accurately done.
5. no part of the work had to be done

5 (cont.) over by the office draftsman.

6. (a) The area west and south of Bush Top Island is a narrow passage and the descriptive report states that a 3 to 5 knot current flows through the area. This current evidently accounts for the irregular appearance of the bottom just west of the island. As this point is the narrowest the current would be at maximum velocity at this point.

(b.) The 15 ft sounding at pos 74e (blue) which was recommended by chief of Party in descriptive report) that it should be at least 4 ft. deeper but which was recorded and plotted by the field party on the smooth sheet as 15 ft. has been left as such with the recommendation that the sounding be changed

to 19 ft as original recorded. The investigation having clearly disproved the existence of the 15 ft. spot.

c. all the other irregularities with the chart have been taken up and accounted for in the descriptive report.

Jah & Lady
in Capt. Eq.

July 14th 1930

Notes on H-#5004

By. A. Z. Shalant

a. In lat 56-37-30-330m long 132-57-50m

the 18 foot curve makes a sudden point that prevents the appearance of some linear sandings. The adjacent lines and reads were examined but no was could be found. The 17 foot depth at this small spit agrees with a 17 foot depth on H-3313 (surveyed in 1911). The sandings were retained as recorded.

b. The sandings between positions 52 and 53 g_A were omitted due to lack of agreement

(approx lat. 56-38-485m. long 132-56-30-300m.)

with adjacent sandings. Position 53 g appears to be in error and should probably be further inshore towards the flats. The position as recorded does not check the ~~line between 51 and 52 does not check the~~ ^{type}

~~line~~
~~between~~
based on positions 51 to 52 g. Furthermore, ~~series~~

appears to be no reason why the line should have turned right when depths of 2 fms. etc were being obtained.

the line turned hard right at position 539
the next position would be expected to be
approximately at right angles and not as far
to the northward as the plotting indicates. ~~It~~
~~we for this reason that the soundings have~~
~~been omitted~~

in addition the existence of a shoaling ^{outside} between the
~~two~~ 6 ~~foot~~ foot curve is negatived by the general appearance
of the bottom in this particular area. It was for this
reason that the soundings have been omitted.

c. The 17 and 18 foot spots in ^{approx.} lat. 56-38-385 m. long
132-58-285 m. are verified by the depths on H-3213, ^{only} but
they are about 1 foot shoaler. since they are outside
the limits of the dredged channel, no further work
is necessary.

d.

The line 43-45 C has been rejected as being manifestly in error. The retention of the line would have caused irregularities in the curves not justified by the general surrounding formation. Positions 44 and 45

~~appear to be out of position~~
~~if plotted with the recorded angles~~ would have been ^{it} inconsistent with the recorded time intervals. ~~Further~~

appear that both of these positions should be moved further inland. This would ^{explain the} ~~the reason for~~ ending his line at 45 C when ~~he was getting to feet of a~~ ^{still = 10 feet of water} ~~depth~~

~~of 10 feet depth~~
~~would have been assumed that~~
of the recorded position ~~was~~ was accepted it would mean that the surveyor ended his line when he was still 70 meters from the beach in 10 feet of water and with deeper water on other lines further inland. This does not seem likely and ∴ the soundings were rejected.

English to SPV 4

Notes on Triangulation in Magellan

a number of the engineer's triangulation stations

In comparing from ~~plane~~ rectangular

coordinates to geographic co-ordinates ~~the~~ ^{the} ~~find~~ ^{it was}

found that there were differences ranging from 1 foot to 23 feet. No explanation can be advanced

for this difference except that the order of accuracy of the engineer's work is not as great as it should be. There is no reason to ~~do~~ question any of

Eichelberg's work since it is understood from reading to be very good. Some justification for questioning

the engineer's work is found in the fact that ~~the~~ in their old triangulation in the Narrows of 1902 (the computation and observation of which are on sheet 101) some of the triangles failed to close by 3 minutes.

In laying down the channel line on the sheet the conductors should be plotted from

the nearest triangulation point whose identity with

the engineer's point is beyond question.