

4945

C. & G. SURVEY
L & A
JAN 9 1930
Acc. No.

D. & G. Cht. No. 8201-3

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

State *SE* Alaska

11-5613

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 3 4945

LOCALITY:
Kupreanof I.
~~S. E. Alaska~~

Keku Strait

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

1929.

CHIEF OF PARTY:
E. W. Eickelberg, H. & G. E.

100
100
100

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET # 3

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

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

LIMITS: The whole navigable area between Latitudes $56^{\circ} 39' 30''$ and $56^{\circ} 42' 30''$ was covered by this Survey and is practically a new survey.

METHODS: The greater part of the work was done in the launch Delta, and is shown in records and on sheets with red letter days.

The work done during 1927 was rejected and the lines were re-run at the close of the season by Mr. T. B. Reed, Jr. H. & G. Engineer, using Tender # 1. This work is shown by blue letters.

In order to disprove the existence of a rock as located by topography in 1927, and to verify my statements, Mr. E. H. Bernstein, H. & G. Engineer, and a small party took numerous soundings in the dinghy and his work is shown by green letters. (Dangers and Obstructions). ✓

A special survey was made by the Commanding Officer and party at minus tides, using motor dinghy and sounding pole. This survey covers three distinct important areas in the vicinity of the Summit. Range stakes were established and cut in by topographic methods. Lines run in Easterly and Westerly direction. This work is shown on a separate projection.

The approved methods of the Service were used throughout. An eight pound sounding lead was used from the bow of the launch. A strong detachable sounding platform was installed and is quite an improvement over the old arrangement, the sounding belt. A similar sounding platform was also installed on Tender # 1, and Launch # 69.

All soundings are up and down and no difficulties were experienced to obtain correct soundings. When running with the current the speed of the launch was reduced to a minimum, just sufficient to have steerage way. When running against the current, the launch was speeded up again, but never exceeded the usual sounding speed, which is from $1\frac{1}{2}$ to 2 knots.

Practically all lines are channel lines and were run parallel, or nearly so, to those run in 1927. Had the work of 1927 been rejected at the beginning of the season, an entirely new system would have been adopted and the area near the Summit would have been sounded out at slack tides only or at times when the current runs at its minimum.

There is quite a difference between the low water lines established by the topographer and the hydrographer. In fact, numerous sounding lines were run across the low water line as established by topography. In order to expedite the work and obtain better results, on "k", "j", "l", and "p" days, positions and soundings were taken near the low water lines. On "j" day an improvised sounding pole was used, a boat hook graduated into feet. Unfortunately it was not long enough and in some instances, although the boat was aground at the bow, the depths amidship were often more than 5 and 6 feet, and in some cases the depth was estimated to be about 12 feet. (See positions # 57, 58, and 59 i.).

These estimated soundings were verified later on, by regular sounding lines and then the launch passed the obstructions as close as safety would permit.

On account of the irregularity of the bottom, the launch Delta grounded on numerous occasions but by going very slow in close quarters, no damage was done. Very little time was lost on account of these groundings, as the launch hit mostly with rising tides.

CHARACTERISTICS OF THE BOTTOM:

Keku Straits, or better said, Rocky Pass, (locally known as such), no doubt derived its name from the numerous rocks which obstruct the very constricted passages.

The bottom is very irregular, alternating rocky, muddy, hard, sticky, and sandy.

The author of this report visited this area quite frequently at low and minus tides, while signal building and sounding. While signal building, a set of pictures were taken from station SIT, showing obstructions and rocks at low tides, South of that station.

The area between Beacon # 17 and station GUT was covered by the author on foot at minus and low tides. Walking was very difficult on account of the thick mud, which is studded by numerous boulders. The elevation of the bottom changes suddenly from 6 to 8 feet. The boulders are of small extent, about 3 and 4 feet in diameter and from 5 to 6 feet high. There is no doubt that the same conditions exist in areas covered at all times. All soundings should be accepted as recorded and as shown on the sheets, although it is practically impossible to draw a regular and well developed sounding curve.

In order to be in position to give proof of the natures of the bottom, several sets of pictures were taken from Beacon # 17, station SET, and station GUT, and same are forwarded with this report.

On "p" day a set of pictures were taken from position 2 p. showing the low water line from station BIM as far as station ALL. This set was taken at low tides. Later during minus tide another set was taken, showing several rocks which bare only at minus tides.

Two pictures were taken from the north point of the island on which station MOST is located. These pictures show very plainly the low water line in the vicinity of station JUG also the rock which bares at minus tides east of Beacon # 17.

KELP: Little or no kelp was encountered at the beginning of the season, but the kelp is known to be very thick during the summer months or late in the fall. (See Descriptive Reports, 1927).

Practically all obstructions are marked by very thick kelp which makes navigating at low tides very difficult, especially when launches have to run across the kelp patches against the current.

At high tides and in areas with swift currents the kelp is towed under and is not visible.

Kelp was especially thick during the season of 1927, between Beacons # 13 and # 8.

CURRENT: (See Descriptive Report, 1927)

In addition to this report it may be said that the current at the Summit is known to attain a velocity of about 5 knots. On May the 8th, about 5:30 A.M., at low tide, it took the motor skiff about 30 minutes to negotiate a distance of about 350 yards from station FAST to Beacon No. 4. At times the skiff did not make any headway and the current also had a tendency to carry the boat toward the channel which branches off Westward from Beacon No. 4.

A strong current was also experienced in the vicinity of station MUR and station RUM. A long spit extends westward from a group of islands and islets. Bottom is very irregular and causes swirls and tide-rips. The estimated velocity of the current is from 2 to 3 knots and apparently the flood is much stronger than the ebb.

Tides meet approximately south of the Summit in the vicinity of the island on which station MOST is located.

No current stations were occupied in Keku Strait.

TIDES: An automatic portable tide gauge was established at Entrance Island at the North Entrance to Keku Strait, and was in operation while the work was in progress.

A tidestaff was also erected near station SET, and comparative readings were taken with the Entrance Island tide gauge on July 29, 30, and 31st.

DANGERS AND OTHER OBSTRUCTIONS:

Numerous rocks and shoals were located in this survey in addition to the work done in 1927, and they are listed as follows:

1. A rock which bares 3 feet at M.L.L.W. lies about 100 meters, 347° from station REP. (position # 54 e. red). This rock was located before, in 1927, and is marked by kelp in season. ✓

2. A six foot sounding, but not developed, lies about 215 meters, $333\frac{1}{2}^{\circ}$ from station REP. This sounding is east of a rock which was located in 1927. (position 10 - 11 c. blue). ✓

3. A rocky patch which covers about 100 square meters, lies about 595 meters, 347° from station REP. Least depth obtained is one foot at M.L.L.W. Numerous soundings were taken in this locality but only least depths recorded and plotted. ✓

4. A rocky patch with a least depth found of 3 feet at M.L.L.W., lies about 285 meters, $354\frac{1}{2}^{\circ}$ from station YOU. There is much deeper water west of this rocky patch. (position 1p. and 101 - 102 d. red). ✓

5. A rock of small extent with the depth of $\frac{1}{2}$ foot over it at M.L.L.W. lies about 305 meters, 83° from station DUN. (position 41 f.). ✓

6. A rock of small extent, awash at M.L.L.W. lies about 103 meters, $74\frac{1}{2}^{\circ}$ from Beacon No. 15. (position # 4.p.) ✓

7. The line between 87 and 88 d. red. should be rejected. Current was rather strong with little or no control over the launch. There is comparatively deep water alongside the island on which station MOST is located, but the 6 foot sounding between positions # 2 and 6 and 7 p. does not exist, as the author of this report walked from position # 2.p. to the other positions at minus tides, May 8, 1929. ✓

Attention is also called to the low water line as located by topography on the east side of the island, there is hardly any difference in low and high water line horizontally. The shores on this side of the island are steep too and the elevation estimated to be about 18 feet. The launch grounded within a few feet of the steep shores on sounding line between 31 and 32 e. No fixes were available. ✓

The passage east of the island is of no importance although used frequently by the Delta at high tides. ✓

what island?
The island on which
△ MOST is located.
New

west?

8. A shallow sounding, rocky bottom, awash at M.L.L.W. lies about 317 meters, $55\frac{1}{2}^{\circ}$ from station JUG. This patch is not developed, but as bottom is very irregular and heavy swirls were observed in this vicinity it is recommended that this sounding be accepted as recorded and plotted.

✓ now dredged away see BR-59439

9. The small wooded islet which lies east of the islets on which stations CAD and TAKE are located was found to be out of position. On "e" day the islet was left about 6 feet on port hand, and the fact was duly recorded (see position 44-45 e.). Position 54 c. ends about 5 meters from rocky shore. Fix is rather weak but was the only one available at that time. Station BER was built and located later, on account of the scarcity of signals. While locating low water line on "k" day, Mr. J. C. Partington, Jr. H. & G. Engineer, took three fixes at the north, east, and south end of the islet. These fixes shifted the islets toward Beacon # 4, which proves that the islet was located wrong originally. The approximate location of the islet is sketched on smooth sheet in broken line, according to sextant fixes. (See Position 44-45-46 K').

} stopping
42

The rock south of this islet was also found to be out of position. A sextant fix was taken on the rock, (position 43. K'), by Mr. J. C. Partington.

✓ ok

10. A rock of small extent lies about 100 meters, 306° from station FAST and about 18 meters, 290° , from a rock which was located in 1927 by topography. These two rocks are the principal obstructions in the Summit in the vicinity of Beacon # 17. Launch grounded on this position and least sounding obtained is 0 feet at M.L.L.W. (position 26 f. red.).

✓ ok - locate summit BR.

11. A $7\frac{1}{2}$ foot sounding was obtained on line 2 - 3k. This area was developed on "m" day. Numerous soundings were taken but in order to avoid confusion on smooth sheet, only least were plotted. Least depth found during development was 8 feet (position 216 m.).

✓ 216 f. red.

This $7\frac{1}{2}$ foot spot lies about 165 meters, 286° from Beacon # 6. Rocky bottom.

✓

12. A seven foot sounding was obtained on sounding line 83 - 84 f. about 135 meters, $42\frac{1}{2}^{\circ}$ from station ROCK, and about 60 meters, 61° from a rock which bares at low tides. Through an oversight this spot is not developed. There is deeper water around the shallow sounding, but it is possible that this 7 foot spot is the submerged extension of a group of rocks with deeper water between.

✓ edge of rocks between 83 f and 84 f.

13. A reef awash at M.L.L.W. lies about 250 meters, $56\frac{1}{2}^{\circ}$ from Beacon # 8. This reef covers an area of about 50 square meters and is practically connected with mudflats and a group of islets north-east of it. ✓ *could be at hands*

14. A rock which bares about one foot at M.L.L.W. lies about 210 meters, 346° from station ROCK. This rock is surrounded by deeper water. (position 7 f.). ✓

15. The rock south of station HUM, located by topography is connected with the islet at low tides and should not be shown as a separate rock. ✓ *ok*

16. The rock south of Beacon # 10, located by topography is also connected with the island at low tides. There was a 4 foot tide when the low water line was located on "j" day, yet the dinghy negotiated the rocky area only with difficulties. This area was seen to bare at low tides on several occasions and consequently no soundings were taken there. ✓

17. A reef which covers an area of about 80 square meters lies about half ways between stations SIT and TUG. This reef is awash at M.L.L.W. Bottom rocky, sticky, and hard, and not visible when the range of tide was eleven feet. ✓ *ck*

18. The channel which runs W.N.W. from Beacon # 4 is foul and closed to navigation at low tides. Bottom is very irregular and there are numerous 1 and 2 foot spots in the center of the channel. The continuation of the channel leads into a foul area studded with numerous rocks, located previously by topography. In addition to these rocks there are numerous 1, 2, and 3 foot spots in this locality, making navigation rather difficult. ✓ *ok*

19. A rock which bares one foot at M.L.L.W. lies about 175 meters, 350° from station OVER, Position 157 h. This rock marks the eastern end of a rocky patch which covers an area of about 25 square meters. ✓ *ck*

20. A rocky patch with a least depth found of 3 feet at M.L.L.W. lies about 550 meters, 3° from station OVER. East of a reef which bares at low tides. (Position 154). ✓ *ck*

21. A rock located by topography in 1927, does not exist. This area was examined by three different parties at low and minus tides and numerous soundings were taken to disprove the existence of the rock. (Shown on sheet 450 meters, 334° from station OVER.)

4 ✓

The none existence of this rock was quite apparent at the very beginning of the work. While sounding and passing close to the supposed rock, a sharp lookout was kept in order to avoid the obstruction. On "h" day with a three foot tide, two rocks were visible, but in an entire different location, much farther to the North.

4 ✓

22. A rock located by topography in 1927 lies about 505 meters, 345° from station OVER. This position was found to be correct. Two zero soundings were obtained a few meters west of the rock. (See Pos. 129 h. and 121 m.)

4 ✓

Foul area extends well north of these positions. A rock which bares 3 feet at M.L.L.W. lies about 580 meters, $345\frac{1}{2}^{\circ}$ from station OVER, (position 130 h.). Area between position 129 and 130 h. is foul, launch was drifting in order to avoid striking too hard. Position 112 n. determines the northern end of the reef.

4 ✓
corrected forward
to H-9097 as X(13)
AKM

The extreme end of the reef lies about 605 meters, 352° from station OVER. (See position 112 h. and 123 n.).

4 ✓

23. A reef with a least depth found of 3 feet at M.L.L.W. lies about 217 meters, 115° from station MUR. This area is well developed, numerous soundings were taken and only least depths recorded and plotted.

4 ✓
corrected forward
to H-1007 as
3
AKM

24. A long funnel shaped spit extends from a group of islands and islets in a westerly direction towards station MUR. This spit is very narrow at the extreme point, about 15 feet wide at the most. Position 11 j. marks the extreme end. This spit is studded with numerous rocks and the most prominent and sharp pointed will be found at positions # 21 and 22 b. red).

4 ✓

25. A group of rocks located by topography, bare at M.L.L.W. lies about 80 meters south of station TOR. The rocks are practically connected with the island, least depth found, about 2 feet.

4 ✓

160?

26. A five foot spot was located north-east of above mentioned island. See position 232 m. Numerous soundings were taken and only least depths recorded and plotted. This five foot spot lies about 110 meters, 39° from station TOR.

27. A shoal with a least depth found of 12 feet at M.L.L.W. lies about 500 meters north of station TOR. This area is well developed although only least depths were recorded and plotted. The bottom in the immediate vicinity is very irregular and another rock with a least depth of 4 feet over it at M.L.L.W. lies about 700 meters north of this shoal. See descriptive report for sheet # 4.

28. The west shores of the island on which station TOR and RIT are located may be approached close to, as the water is comparatively deep. Position # 109 j., about 15 meters from Low Water Line, shows a depth of 14 feet. Position 58 j. is the location of a rock with a depth of 13 feet alongside. The depth on "j" day was estimated to be 12 feet. (See Characteristics of Bottom).

Position 57 j. gives the position of a rock which bares about 4 feet at M.L.L.W. There is deeper water alongside.

CHANNELS: The main channel is well defined and Aids to Navigation are maintained by the Light House Bureau. The main channel is described in Descriptive Report of 1927. Beacon # 6 does not mark the extreme westerly end of the reef and vessels passing same should give the spindle a berth of at least 25 yards.

The narrow passages between Beacon No. 4 and station FAST are used a great deal by small fishing vessels, owned by natives. There is nothing gained by using these passages. They are narrow in places, pass between numerous obstructions and course has to be changed continuously in order to avoid grounding.

The author of this report is inclined to believe that personal pride of the natives induces them to use the channels and again it is possible they use these passages in order to reach the various streams on the east shores of Kuiu Island, south of station MUR during salmon season.

The Summit should not be crossed at less than half tide and then only by vessels drawing not more than five feet.

The Light House Tender "Fern" used the main channel on several occasions, but since the work is completed nothing can induce the Commander of that vessel to use the passage again and a small motor boat tends to the beacons.

ANCHORAGES:

While the work was in progress the Steamer EXPLORER anchored west of the island on which station POR is located and this anchorage was approached from the north entrance of Keku Strait.

The ship anchored on following ranges; Left tangents of islands and islets on which stations BOT and HUM are located on range and right tangent of island on which station RIT is located on range with station RUM. Suitable anchorage may be had for fishing vessels in numerous places near the main channel, depending on depth desired.

W. Heilich

TIDAL NOTE

TO ACCOMPANY HYDROGRAPHIC SHEET # 3

All tides were taken directly from the Entrance Island staff, in Latitude $56^{\circ} 48.6'$, and Longitude $133^{\circ} 45.7'$, except for April 24, 25, and 30th., on which days the tides observed at the Monte Carlo Island station, in Latitude $56^{\circ} 32.0'$, and Longitude $133^{\circ} 45.7'$, were corrected to the Entrance Island guage.

M.L.L.W. at Entrance Island guage	= 5.2 feet
M.L.L.W. at Monte Carlo Island guage	= 4.0 "
M.L.L.W. at Monte Carlo Island guage from September 24, to October 14th.	= 4.2 "

Highest tide referred to M.L.L.W. observed at Entrance Island, was 15.1 feet on July 24th., lowest tide observed, was -0.4 feet on July 24th.

Highest tide at Monte Carlo Island, was 14.7 feet observed on October 3rd., lowest tide observed was -1.4 feet on April 25th.

COAST PILOT CORRECTIONS, KEKU STRAITS, S. E. ALASKA,

TO NOTES OF 1927 BY LIEUTENANT COTTON.

Page 7 - second paragraph - add the following: "a rocky area with one foot at M.L.L.W., located 635 yards, 10° true from Beacon # 13; a rocky shoal with nine feet at M.L.L.W., located 547 yards, 244° true from Beacon # 15.

Fourth paragraph, page 7, should read "Beacon # 15 should..
.....east, and a rock awash at Mean Lower Low Water, 220 yards,
74 degrees true from Beacon # 15.

J. W. E. Kelley

APPROVAL SHEET, 1:5,000, SUMMIT, KEKU STRAIT, SHEET 3.

A comparison of this sheet with the 1927 work shows discrepancies at several places. Whether this is due to displacement of signals or faulty work can not be definitely stated as we did not have the original records. New topographic locations made changes ranging from five to thirty meters in some stations. (See Topographic Descriptive Report, Sheet "F", 1927).

EXAMPLES OF DISCREPANCIES:

The 1 and 3 foot soundings, 220 meters S. W. of station BIM on 1927 work are only 180 meters S. W. of station BIM, a discrepancy of 40 meters.

A one foot sounding, 273 meters, 250° true from station BIM on work of 1927, Sheet No. 4765, (2 feet on 4764) is probably the same as the three foot sounding shown on sheet 3 in this vicinity. The discrepancy in depth may be due to difference in method of tidal reductions in 1927 and 1929. According to Mr. Weidlich, Captain Cotton sounded on this rock at a -2.5 foot tide, (see sounding record, volume 7, Sheet 3). I would therefore recommend that Mr. Weidlich's least depth of 3 feet be used as correct.

The 2 foot sounding, 240 meters ^{SW}~~S. E.~~ of station BIM, is 225 meters on the 1929 sheet.

Discrepancy in location of small island north west of BN. # 4. This was apparently an erroneous topographic location in 1927.

Rock shown 550 meters northeast of station DUB does not exist. Several new rocks, shoals located, not previously shown in 1927 work.

When the field work on this sheet was started, the hydrographer was told to fill in the area and vacancies left by the 1927 work. Later orders requested an entire resurvey. This accounts for the irregularity of the lines and the apparent lack of system in carrying out the work.

J. H. Kurling
Hydrographer

APPROVAL SHEET FOR SHEET 3a, KEKU STRAIT, S. E. ALASKA.

The work on this sheet was done by Captain Cotton and the methods are described in Volume Nine, Sheet Three.

This work was plotted up on a separate smooth sheet and a tracing was made of the same. The work compares favorably and agrees with that done by approved methods by the regular hydrographic party with one notable exception in the vicinity of station DAD. It is my opinion that the work of the regular hydrographic party should be accepted and that the work on Sheet 3a be rejected. I believe this would also have been Captain Cotton's opinion as he told me that he did not think his work would be better than that done by regular hydrographic methods and had not intended sending in this work as finished hydrography.

Mr. Weidlich's work on Sheet No. 3, agrees with that of 1927 and his low water line agrees with that determined by the topographer, Field Sheet K, 1927. In the descriptive report of this latter sheet the following statement is made, "All details in the main boat channel between Beacon No. 19 and triangulation station MOST were determined at zero tides. A special effort was made to do this."

The one foot sound 145 yards, 105° true from Beacon No. 15 should be accepted as correct. There is an open area on Sheet 3 by Mr. Weidlich in the vicinity of this sounding and it is entirely possible that this sounding exists. A note in Volume 7 by Captain Cotton states that the area, 5p to 9p, is foul ground. The one foot sounding is included in this area.

There are other differences in depths amounting to three feet which can be expected in Keku Strait and can be accounted for by the presence of boulders.

J. E. Eckelburg,
Hydrographer.

STATISTIC

te	Vol.	Day	Boat	Sta.Mi.	Pos.	Soundings	Miles to & from Work.
4-19-29	1	a	red Delta	14.7	134	681	2.60
4-20-29	1	b	" "	8.6	83	453	2.00
4-22-29	1&2	c	" "	16.7	168	853	.50
4-23-29	2&3	d	" "	15.5	161	1082	2.25
4-24-29	3	e	" "	13.5	163	1023	1.00
4-25-29	3&4	f	" "	12.6	146	771	2.00
4-30-29	4	g.	" "	11.5	163	1057	5.50
5- 1-29	5	h	" "	12.4	189	833	1.30
5- 2-29	5	j	" Dinghy	4.0	82	82	1.25
5- 3-29	5	k	" Delta & Din.	13.0	244	867	4.00
5-04-29	6	l	" Delta	3.0	68	352	2.10
5-05-29	6	m	" "	15.0	234	1050	0.60
5-07-29	7	n	" "	7.5	123	560	3.50
5-08-29	7	p	" Skiff	1.0	13	23	4.00
				149.0	1971	9387	32.60
5-08-29	7	a	green Dinghy	0	8	8	
7-29-29	1	a	blue Tender	1.8	29	120	
7-30-29	1	b	" "	13.8	169	855	4.5
7-31-29	1	d	" "	1.6	17	93	3.0
				17.2	215	1068	7.5
4-22-29	8	a	blue Dinghy	0.5	32	173	4.0
4-23-29	8	b	" "	1.2	34	231	4.0
4-24-29	8	c	" "	1.8	36	349	5.0
4-25-29	8	d	" "	0.9	26	171	4.0
				4.4	128	924	17.0
Total	Statistic			365.0	2322	11387	57.1

DESCRIPTIVE REPORT

TO ACCOMPANY

Hydro
~~TOPOGRAPHIC~~ SHEET NO. 4945

(FIELD LETTER "F")

KEKU STRAITS

S. E. ALASKA

U. S. S. EXPLORER

SEASON OF 1929

SCALE 1:5,000

AUTHORITY:

This work was done under authority contained in instructions to the Commanding Officer, U.S.C. & G.S. SHIP EXPLORER, dated February 19, 1929.

EXTENT:

This sheet includes the location of signals in Keku Straits from Lat. $56^{\circ} 39' 30''$ to Lat. $56^{\circ} 42' 30''$ and from Long. $133^{\circ} 42' 30''$ to Long. $133^{\circ} 46' 00''$. The location of the signals in this area as taken from the photostat were found to be in error and were relocated on this sheet by planetable. This was done for use on the hydrographic sheet of this vicinity.

SURVEY METHODS:

The triangulation stations shown were used for control on this work and the survey was accomplished by the usual plane-table methods.

Signals SET, TAK, BER, and JUG were located by rod readings from triangulation stations. Signal HIR was located by two cuts and its location should not be considered of standard accuracy. The remainder of the signals were located by two cuts and a rod reading or by three or more cuts. No traverses were run.

Some magnetic disturbance was noticed during the progress of the survey as shown by the magnetic arrows at the triangulation stations. Seven observations were made with the declinoire with a variation of from $28^{\circ} 31'$ east to $34^{\circ} 14'$ east. A comparison between declinoire No. 110 and magnetic declinometer No. H-12 was obtained at triangulation station FAST.

The index correction was found to be $+0^{\circ}14.2'$. A comparison was also made at station DEVIL Sheet "G" which gave an index correction of $+0^{\circ}07.3'$. Declination values on sheet are uncorrected for diurnal variation and index correction.

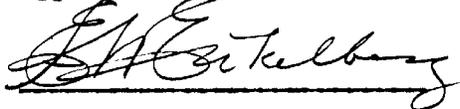
The signals on this sheet were recovered and rebuilt by W.Weidlich,Mate, and are identical with the signals of the survey of 1927, except signal DOT. The location of DOT (1927) is shown enclosed in a pencil circle and is about 15 meters northwest of DOT (1929). DOT (1929) was used for the hydrography accomplished in 1929.

List of signals and list of aids to navigation accompany this report.

Respectfully submitted,


Jr. H. & G. E.

Approved and forwarded



H. & G. E.

LIST OF PLANETABLE POSITIONS

KEKU STRAITS

STATION	LAT.	D. M.	LONG.	D. P.	DESCRIPTIONS
FER	56° 39'	(1067) 789	133° 43'	(75) 947	Whitewash
BO	56 39	(1005) 851	133 43	(522) 500	Rag on bush
REP	56 39	(1073) 783	133 43	(1006) 16	Whitewash
BN #13	56 39	(1073) 783	133 43	(751) 271	Aid to navigation
HIR	56 39	(876) 980	133 43	(172) 850	Whitewash
SHE	56 39	(470) 1386	133 44	(866) 156	Whitewash
GE	56 39	(515) 1341	133 43	(238) 794	Rag on tree
DEL	56 39	(84) 1772	133 42	(462) 560	Whitewash
OK	56 40	(1853) 3	133 42	(221) 801	Whitewash
BIM	56 40	(1751) 105	133 43	(366) 656	Whitewash
BN #15	56 40	(1526) 330	133 44	(866) 156	Aid to navigation
JUG	56 40	(1045) 811	133 43	(32) 990	Flag in cairn of rocks
BER	56 40	(864) 992	133 44	(961) 61	Flag
BN #4	56 40	(875) 981	133 43	(177) 845	Aid to navigation
SUG	56 40	(744) 1112	133 44	(764) 258	Whitewash
TAK	56 40	(706) 1150	133 44	(965) 57	Whitewash

STATION	LAT.	D.M.	LONG.	D.P.	DESCRIPTIONS
CAD	56° 40'	(672) 1184	133° 44'	(1002) 20	Whitewash
NUT	56 40	(764) 1092	133 44	(530) 492	Whitewash
MIT	56 40	(803) 1053	133 44	(13) 1009	Whitewash
FOR	56 40	(607) 1249	133 44	(755) 267	Whitewash
IT	56 40	(484) 1372	133 44	(722) 300	Whitewash
GID	56 40	(539) 1318	133 44	(910) 112	Whitewash
SET	56 40	(446) 1410	133 44	(943) 79	Whitewash
BN #17	56 40	(417) 1439	133 43	(49) 973	Aid to navigation
DAD	56 40	(212) 1644	133 43	(216) 807	Prominent white- washed rocks
GUT	56 41	(1836) 20	133 44	(770) 253	Flag on islet
BUS	56 40	(96) 1760	133 44	(303) 720	Center of bush on islet
SIT	56 41	(1555) 301	133 44	(535) 487	Flag on islet
BN #6	56 41	(1512) 344	133 44	(982) 41	Aid to navigation
BIL	56 41	(1721) 134	133 45	(563) 460	Highest point of rocks
COP	56 41	(1844) 12	133 45	(217) 806	Whitewash
DUB	56 41	(1576) 280	133 45	(139) 884	Rag on bush

STATION	LAT.	D.M.	LONG.	D.F.	DESCRIPTIONS
KER	56° 41'	(982) 874	133° 45'	(264) 760	Prominent white-washed rocks
TUG	56 41	(1029) 827	133 44	(76) 947	Lone branch of fallen tree on islet
BN #6A	56 41	(1117) 739	133 44	(913) 109	Aid to navigation
LAF	56 41	(1124) 732	133 43	(173) 848	Flag
BN #8	56 41	(831) 1025	133 43	(52) 970	Aid to navigation
ASS	56 41	(874) 982	133 44	(750) 272	Flag
ROK	56 41	(654) 1202	133 44	(887) 135	Flag
DOT	56 41	(526) 1330	133 44	(355) 667	Top of lone pine tree, not identical with DOT of 1927
MUR	56 41	(612) 1244	133 45	(465) 557	Flag
RUM	56 41	(443) 1413	133 45	(476) 546	Whitewashed tree stump
HUM	56 41	(115) 1741	133 43	(50) 972	Whitewash
PUS	56 41	(356) 1500	133 43	(519) 503	Flag
BOT	56 42	(1826) 30	133 44	(955) 67	Whitewash
BN #10	56 42	(1562) 294	133 43	(117) 905	Aid to navigation
TAL	56 42	(1049) 807	133 43	(580) 443	Flag
RUT	56 42	156	133 44	(538) 484	Prominent brown trunk of splintered tree
POR	56 42	901	133 44	(560) 462	Whitewash

STATION	LAT.	D.M.	LONG.	D.P.	DESCRIPTIONS
RIT	56° 42'	245	133° 45'	(847) 176	Whitewash
TOR	56 42	188	133 45	(924) 98	Flag
HEL	56 42	627	133 45	(249) 773	Whitewash
BN #19	56 42	1069	133 44	(929) 92	Aid to navigation

APPROVAL SHEET FOR TOPOGRAPHIC SHEET "F"

This topographic sheet was accomplished after the hydrography was completed, and was for the purpose of relocating the signals on a sheet of the same scale as the revised hydrography. The original topographic sheet was not at hand and the only comparison that could be made of previous locations of signals was with scaled values from the bromide of the hydrographic sheet. For convenience of comparison these are shown on the same typewritten sheet herewith. The largest discrepancy is in signal RUM which was in error by 30 meters. There were other differences ranging from 3 meters to 20 meters, between the two locations. In scaling these positions allowance was made for distortion.

There was no uncertainty in the recovery of any of the stations showing discrepancies. There was no difficulty in recovering the old topographic stations, in many cases the white wash was still showing. The stations were recovered and rebuilt by Mr. Weidlich and the Boatswain's Mate, who were familiar with the 1927 work.


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

Scaled from Topo. Sheet "F" (1 - 5,000)

Scaled from Photostat # 4765 (1 - 10,000)

	LAT.	D.M.	LONG.	D.P.	LAT.	D.M.	LONG.	D.P.
BIM	56° 40'	(1751) 105 ✓	133° 43'	(366) 658 ✓	56° 40'	(1753) 103 ✓	133° 43'	(364) 658 ✓
BN. 15	56 40	(1526) 330 ✓	133 44	(866) 156 ✓	56 40	(1518) 338 ✓	133 44	(867) 155 ✓
JUG	56 40	(1045) 811 ✓	133 43	(32) 990 ✓	56 40	(1036) 820 ✓	133 43	(31) 991 ✓
BN. 4	56 40	(875) 981 ✓	133 43	(177) 845 ✓	56 40	(870) 986 ✓	133 43	(172) 850 ✓
SUG	56 40	(744) 1112 ✓	133 44	(764) 258 ✓	56 40	(741) 1115 ✓	133 44	(767) 255 ✓
TAK	56 40	(706) 1150 ✓	133 44	(965) 57 ✓	56 40	(703) 1153 ✓	133 44	(961) 61 ✓
CAD	56 40	(672) 1184 ✓	133 44	(1002) 20 ✓	56 40	(668) 1188 ✓	133 44	(1000) 22 ✓
NUT	56 40	(764) 1092 ✓	133 44	(530) 492 ✓	56 40	(758) 1098 ✓	133 44	(526) 496 ✓
MIT	56 40	(803) 1053 ✓	133 44	(13) 1009 ✓	56 40	(808) 1048 ✓	133 44	(3) 1019 ✓
FOR	56 40	(607) 1249 ✓	133 44	(755) 267 ✓	56 40	(604) 1252 ✓	133 44	(775) 247 ✓
IT	56 40	(484) 1372 ✓	133 44	(722) 300 ✓	56 40	(481) 1375 ✓	133 44	(731) 291 ✓
SFT	56 40	(446) 1410 ✓	133 44	(943) 79 ✓	56 40	(444) 1412 ✓	133 44	(948) 74 ✓
BN.17	56 40	(417) 1439 ✓	133 43	(49) 973 ✓	56 40	(414) 1442 ✓	133 43	(46) 976 ✓
LA	56 40	(212) 1644 ✓	133 43	(216) 807 ✓	56 40	(209) 1647 ✓	133 43	(209) 814 ✓
GUT	56 41	(1836) 20 ✓	133 44	(770) 253 ✓	56 41	(1839) 17 ✓	133 44	(775) 248 ✓
BUS	56 40	(96) 1760 ✓	133 44	(303) 720 ✓	56 40	(104) 1752 ✓	133 44	(301) 722 ✓

	LAT.	D.M.	LONG.	D.P.	LAT.	D.M.	LONG.	D.P.
SIT	56° 41'	(1555) 301	133° 44'	(535) 487	56° 41'	(1549) 307	133° 44'	(549) 473
BN. 6	56 41	(1512) 344	133 44	(982) 41	56 41	(1515) 341	133 44	(983) 40
COP	56 41	(1844) 12	133 45	(217) 806	56 41	(1856) 00	133 45	(220) 803
DUB	56 41	(1576) 280	133 45	(139) 884	56 41	(1575) 281	133 45	(143) 880
KER	56 41	(982) 874	133 45	(262) 760	56 41	(978) 878	133 45	(257) 765
TUG	56 41	(1029) 827	133 44	(76) 947	56 41	(1029) 827	133 44	(72) 951
BN.6N	56 41	(1117) 739	133 44	(913) 109	56 41	(1114) 742	133 44	(918) 104
LAT	56 41	(1124) 732	133 43	(173) 848	56 41	(1119) 737	133 43	(169) 853
BN.8	56 41	(831) 1025	133 43	(52) 970	56 41	(830) 1026	133 43	(52) 970
ROK	56 41	(654) 1202	133 44	(887) 135	56 41	(657) 1199	133 44	(889) 133
DOT	56 41	(526) 1330	133 44	(355) 667	56 41	(515) 1341	133 44	(342) 680
MUR	56 41	(612) 1244	133 45	(465) 557	56 41	(614) 1242	133 45	(461) 561
PUM	56 41	(443) 1413	133 45	(476) 546	56 41	(472) 1384	133 45	(484) 538
HUM	56 41	(115) 1741	133 43	(50) 972	56 41	(124) 1732	133 43	(48) 974
JS	56 41	(356) 1500	133 43	(519) 503	56 41	(368) 1488	133 43	(516) 506
BOT	56 42	(1826) 30	133 44	(955) 67	56 42	(1814) 42	133 44	(962) 60
TAL	56 42	(1049) 807	133 43	(580) 443	56 42	(1058) 798	133 43	(572) 450

	LAT.	D.M.	LONG.	D.P.	LAT.	D.M.	LONG.	D.P.
RUT	56° 42'	156	133° 44'	(538) 484	56° 42'	(1711) 145	133° 44'	(530) 492
POF	56 42	901	133 44	(560) 462	56 42	(969) 887	133 44	(565) 457
RIT	56 42	245	133 45	(847) 176	56 42	(1615) 241	133 45	(847) 176
TOR	56 42	188	133 45	(924) 98	56 42	(1671) 185	133 45	(924) 98
HEL	56 42	627	133 45	(249) 773	56 42	(1242) 614	133 44	(258) 764
BN.19	56 42	1069	133 44	(929) 92	56 42	(789) 1068	133 44	(925) 97

LIST OF AIDS TO NAVIGATION

KEKU STRAITS

STATION	LAT	D.M.	LONG.	D.P.	DESCRIPTION
BN #13	56° 39'	(1073) 783	133 43	(751) 271	Beacon # 13
BN #15	56 40	(1526) 330	133 44	(866) 156	Beacon # 15
BN #4	56 40	(875) 981	133 43	(177) 845	Beacon # 4
BN #17	56 40	(417) 1439	133 43	(49) 973	Beacon # 17
BN #6	56 41	(1512) 344	133 44	(982) 41	Beacon # 6
BN #6A	56 41	(1117) 739	133 44	(913) 109	Beacon # 6A
BN #8	56 41	(831) 1025	133 43	(52) 970	Beacon # 8
BN #10	56 42	(1562) 294	133 43	(117) 905	Beacon # 10
BN #19	56 42	1069	133 44	(929) 92	Beacon # 19

Jan 18, 1930

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
9 volumes of sounding records for

HYDROGRAPHIC SHEET 4945

Locality: Keku Strait (Vicinity of Summit Island) Alaska

Chief of Party: H. A. Cotton and E. W. Zickelberg
Plane of reference is mean lower low water reading
5.2 ft. on tide staff at Entrance Island
ft. below B. M.

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.

Paul G. Whitney

Chief, Division of Tides and Currents.

Section of Field Records.

Report on Hydro. sheet No 4945

Report Blunt, Alaska
Surveyed in 1929

Chief of party - H. A. Cotton - E. W. Eickelberg

Surveyed by - Field Party

Protracted by - W. Weidlich

Soundings plotted by - W. Weidlich.

Verified and inked by - H. E. MacEwen

1. The records conform to the requirements of the general instructions except in the case of notes relative to the boat's compass courses, which ^{were} omitted in practically all cases.
2. The plan and character of the development fulfil the requirements of the general instructions.
3. The specific instructions called for additional development supplemental to the survey made in 1927 covering this area. The Field Party made a complete new survey of the area which seems to be justified by the discovery of several important shoal areas and spots not brought out by the 1927 survey. (see remarks - below). Attention is called to paragraph 6-7b, page 4 of the specific instructions. "The sheet should..... include the areas on both sides of Summit Island." The channel east of the island was not surveyed by the Field Party but a note concerning this area is contained in the Descriptive Report.

Report on H 4975 (cont.)

- accompanying this sheet (paragraph 18 - page 6.)
4. There were few crossings of sounding lines since most lines were run parallel to the channels. Where crossings occur however the agreement is good.
 5. There is sufficient development to allow the usual depth curves to be completely drawn.
 6. The field plotting was completely and carefully done.
 7. No overlap has been applied to this sheet since it does not join but completely covers the previous work.
 8. No further surveying is required to fully develop important areas within the limits of this sheet, except possibly the channel N.E. of Summit Island.
 9. Remarks:
 - a. Some little difficulty was encountered by the cartographer in checking up the dangers especially the rocks provisionally located. Because the conspicuous dangers had been located and investigated in the previous survey apparently no attempt was made by the party making the survey to enter complete notes concerning rocks and shoals ^{in the records}. While it is the opinion of the cartographer that nothing important was omitted from the survey, complete notes in the remarks column of the sounding record noting the proximity of rocks and other dangers with distances and bearings, as required in section (b)

Report on H 4945 (cont.)

paragraph 75 in the Hydrographic Manual, would have assisted materially in checking the previous work and establishing newly developed dangers.

b. Attention is called to Commanding Officer Eickelberg's report on additional channel development submitted as field sheet 3a. While some of this work was in poor agreement with the existing work, the bulk was considered accurate enough to retain and was therefore plotted on the smooth sheet, only those lines which were obviously in error being rejected.

(See also volume 9 of the sounding records respecting the reasons for rejecting certain lines.)

c. Two rocks shown on the Boat Sheet south of Br. 6A do not appear on Tops sheet 4341 nor Hydro sheet 4765. A reef extends about 35 meters south of this beacon (see H 4945) which these rocks were no doubt meant to represent.

d. South of 6 Tor the 6 foot shelf extends to a point 256 meters south of the signal or 60 meters further into the channel than shown on H-4765

d. In the same channel (Lat $56^{\circ}41'58''$ Long $133^{\circ}44'59''$) a least depth of 9 feet was obtained while on the previous survey 11 feet is shown as the shallowest depth.

e. In Lat $56^{\circ}42'22''$ Long $133^{\circ}45'06''$ a 12 foot spot was developed in mid channel where 26 feet is the least depth shown near it on 4765-H.

Report on H 4745 (cont.)

- f. In Lat $56^{\circ}39'57''$ Long. $133^{\circ}43'49''$ a least depth of 3 feet was found while H-4764 shows 8 feet.
- g. East of Beacon 15 and Δ Dum rocky ledges were developed 50 and 70 meters respectively outside the low water curve as shown on H. 4764
- h. In Lat. $56^{\circ}39'44''$ Long $133^{\circ}43'09''$ a shoal area yielding 1 foot was developed in an area that on the previous survey (H-4764) shows 13 feet as the least depth within 100 meters. This least sounding occurs on the edge of the 30 foot curve as shown on H. 4764.
- i. A detailed account of the dangers developed on this survey is found in the descriptive report, pages 3 to 8 inclusive.
- 10 Rating of work:
- Character and scope of surveying - Excellent
 - Field drafting - Excellent.

Respectfully submitted

H. E. MacEwen
Cartographer

March 6, 1930

A. M. Dolieralski

Call attention of Field Record to fact that
line's point of Summit 2 on Hyd 4764 and
Hyd 4765 should be rejected.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4945

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. 3

REGISTER NO. 4945

State SE ALASKA

General locality Kupreanof Island
S. E. ALASKA

Locality KEKU STRAIT

Scale 1:5,000 Date of survey APRIL, MAY - JULY, 1929

Vessel DELTA, TENDER #1, DINGHY

Chief of Party H. A. COTTON & E. W. EICKELBERG

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

Protracted by W. WEIDLICH

Soundings penciled by W. WEIDLICH

Soundings in ~~fathoms~~ feet

Plane of reference

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated FEBRUARY 19, 1929

Remarks:

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. H. 4945

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. "F"

REGISTER NO. To accomp. H. 4945

State Alaska

General locality S. E. Alaska

Locality Keku Strait

Scale 1:5,000 Date of survey July, 1929

Vessel U. S. S. EXPLORER

Chief of Party E. W. Eickelberg

Surveyed by J. C. Partington

Inked by J. C. Partington

No heights determined
~~Heights in feet above~~ to ground--to tops of trees

~~Contour, Approximate contour, Form line interval~~ feet

Instructions dated February 19, 1929

Remarks: Survey accomplished for location of signals only.