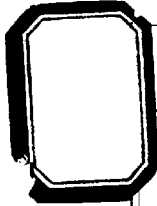


4955

Diag. Cht. No. 8201-3



Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

FEB 12 1930

Acc. No.

State: Alaska

11-5613

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 5 **4955**

LOCALITY:

S. E. Alaska - Wrangell Narrows

North end - Wrangell Narrows.

1919

CHIEF OF PARTY:

E. J. Eickelberg, H. G. G. E.

4955

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET No. 5

PETERSBURG, ALASKA

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

SURVEY METHODS: All soundings, except a few around Petersburg docks labeled "a" day (red), were taken with a 35 foot sounding launch using a hand lead line for all except the deeper soundings in Frederick Sound. Due to the strong currents in this area soundings were taken near slack waters only.

At the time of the first part of this survey (April - May) it was planned to dredge Petersburg Bar, which had shoaled considerably, so that the western part of this sheet was left till after the dredging had been completed and sounded in September. (The dredging was done in August). The sounding from position 1-B to 64-B and from position 124-h to 155-h were taken for the U. S. Engineers to enable them to estimate the amount of dredging necessary in this area. These were plotted on tracing vellum and sent to the U. S. Engineer office in Juneau. As this area was later dredged, these soundings were not plotted on the smooth sheet.

TIDAL REDUCERS: A portable automatic tide gauge was operated on the Public Wharf in Petersburg for tidal reducers for this sheet. No correction was applied to any reducers.

AIDS TO NAVIGATION: All lights and beacons were located by triangulation. All buoys were located by sextant fixes at the buoys in September at the close of work. This position should be used instead of the topographic location earlier in the season as all the buoys in the vicinity of Petersburg Bar were removed when dredging was in progress. Buoy N-22 was almost directly in the center of the channel at the beginning of the survey but was replaced to its proper place after the dredging. The location of all buoys on the smooth sheet is from the September location.

COMPARISON WITH 1910 SURVEY: Attention is called to the fact, when comparing the two sheets, to the three feet difference in datum.

Between position 23j and 24j there is an $18\frac{1}{2}$ foot sounding of which there is no indication on the 1910 survey, and which is thought to be a one fathom error in reading the lead line as the line between 2m and 3m passes directly over this spot with a sounding of 24 feet. It is recommended that the $18\frac{1}{2}$ foot sounding be rejected.

The section of Topeka Rock south of Topeka Rock Light (signal BLACK on this sheet) has been blasted away to obtain a least depth of 21 feet at M.L.L.W. Lines 1p to 20p were run over this area to disprove the $16\frac{1}{2}$ foot sounding on position 70m. (See note in sounding record regarding this sounding.) I consulted with Mr. Truit, field engineer

for the U. S. Engineers who had charge of this dredging, regarding the existence of this sounding, and was informed that they had dragged this area with a railroad rail for a drag after the blasting and that the drag had just barely cleared at 21 feet. Since a $20\frac{1}{2}$ foot sounding was obtained on either side of position 143g, it is recommended that this channel be charted with a least depth of $20\frac{1}{2}$ feet. The bottom in this area is quite uneven, due to the blasting. It is recommended that the $16\frac{1}{2}$ foot sounding on position 70-m be rejected.

A least depth of $10\frac{1}{2}$ feet was found on position 49-m on the bank, 300 meters north-east of signal LITE. This is $1\frac{1}{2}$ feet shoaler than shown on the previous survey.

A 17 foot sounding was found between 69-m and 70-m, close to the 15 foot sounding (12 feet on the photostat) of the old survey. It is recommended that this be charted as 15 feet from the old survey. In the area on Topeka Rock and immediately to the northward, it is recommended that any soundings on the 1910 survey that are shoaler than found on the present survey be charted, as the bottom in this section is rocky and irregular.

The shoal extending offshore off signal BOAT was found to be practically the same as that shown on the 1910 survey. Twenty feet was the least depth found in the vicinity of the 17 foot sounding (14 feet on photostat) 325 meters west of signal BOAT.

The shoal area to the south west of signal OLD was found to be about the same as in 1910. The two 20 foot soundings and the 19 foot (17, 17, and 16 on the photostat) 110 meters west-north-west of station 5, were not found. It is believed that this shoal area has been washed away by the strong currents which run by this point.

The shoal point extending about 250 meters to the southward of signal BEAK appears to be about the same as in 1910.

The 22 foot spot (19 feet on the photostat) shown on the old survey, 550 meters north-north-east of station 7 was searched for, but could not be found. A 25 foot sounding was obtained about 75 meters south-west of this, however.

Practically the whole area at the south end of this sheet has changed since the old survey, due to the dredging of a channel through Petersburg Bar. The submerged rocky point extending north-westward from station 9 is still in existence. There is a rocky ledge covered 2 feet at M.L.L.W., 125 meters north-west of station 9.

125 meters east of signal RED, there is a bank with 6 feet at M.L.L.W. This area is composed of a very fine loose sand which shifts easily with the current and can be seen washing over into the dredged channel with the current, on minus tides. In August, while dredging the channel through Petersburg Bar, the dredge removed a large amount of sand from upon this flat, to prevent its washing in and filling up the dredged channel.

The rocky ledge lying 125 meters offshore halfway between stations 10 and 12, shown with a minus 2 and minus 3 on the old survey, is still in existence.

CURRENTS: Maximum currents follows about the center of the channel. Generally on flood tides an eddy exists off Petersburg docks which forms a counter current running north along the face of Petersburg docks. This counter current is seldom stronger than $\frac{1}{2}$ to 1 knot, however. On ebb tides a very strong current often sets northerly along the face of Petersburg docks. The current, both on ebb and flood is a maximum in the north entrance, about at Topeka Rock Light. On the flood there is a strong set to the westward at Topeka Rock Light, and a strong set to the eastward on the ebb. The channel between Topeka Rock Light and the two red buoys is dangerous to navigate in a strong current because the current does not run fair with the channel.

INSERT: The insert on this sheet shows an enlargement of the congested area in the vicinity of Topeka Rock Light, and is on a scale of 1:2,500.

Respectfully submitted,

Thomas B. Reed.

NOTE: There is no signature due to Mr. Reed having been ordered away before this report was typed.

APPROVAL SHEET

TO ACCOMPANY SHEET # 5

WRANGELL NARROWS, ALASKA

The field work and plotting of this sheet were done by Lieutenant T. B. Reed, who was detached from this party after completing the plotting of the sheet. No other officer was in his hydrographic party, left angle having been taken by the boatswain's mate. In the review of this sheet it was impossible to discuss with Mr. Reed any of the questions arising. The same holds true for three other smooth sheets on which Mr. Reed did the field work, but no office plotting whatever.

The sheet is approved and all records have been examined and approved.

In the area around Topeka Rock Light, Mr. Reed first plotted all the closely developed work which I think is legible and does not need a plotting on a larger scale. The enlargement he made of the area is not in accordance with the hydrographic manual requirement, even though this officer was particularly warned to follow the manual in this enlargement. The manual requires that the work can be directly plotted on the enlargement. The apparently erroneous soundings which Mr. Reed recommends to be rejected ought to be rejected inasmuch as his considerable efforts to disprove them resulted in not finding the same. Some of these errors are no doubt due to failure to properly check the leadsmen when it is heard that soundings change suddenly.

On the whole the work is very thorough and should be accepted in preference to the older survey, where any differences arise. The old surveys were compared with new ones by making tracings of boat sheets and laying them over the old bromides. The differences which occur on this sheet, as for instance, the 22 foot spot on bromide 635m, south-east of # 8 is very likely an error of one fathom on the old survey as this area is densely covered with soundings taken this year. The 19 foot spot, 100 meters north-west of # 5 is also probably an error as this area is of such large extent on the old work that it could not possibly have been missed by the close developments of this seasons work. 250 meters south-west of # 4 are two 22 foot spots which is probably slight misplacement of old line as there are soundings of 20 and 21 feet just inside of this on the new work. The 17 foot sounding, 320 meters west of BOAT may have been missed as the bottom here is rocky and the presence of a boulder would easily account for the difference. The 15 foot spot, 270 meters north-north-west of signal BOAT is probably the same as the 17 foot spot shown 290 meters off.

APPROVAL SHEET (CONTINUED).

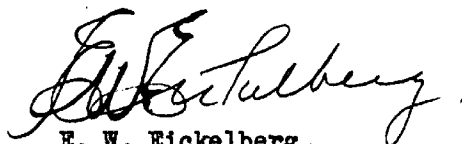
The depth was slightly reduced on the bar east of Topeka Rock Light.

On examination of penciled depth curves by Ensign J. N. Jones, I notice that some of these are slightly displaced. Instead of making corrections, I thought it best to let them stand as they are on account of the danger of erasing other important work while erasing depth curves.

The low water line was not transferred from the old bromide sheets due to a change in datum from -3 feet to M.L.L.W.

Mr. Reed inked in the buoys on this sheet instead of leaving them in pencil.

As stated before, I was unable to discuss any discrepancies with Lieutenant Reed, due to his transfer before completion of the sheet.



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

STATISTICS

TO ACCOMPANY HYDROGRAPHIC SHEET # 5

PETERSBURG, ALASKA

OL.	DAY	DATE	BOAT USED	No. OF POSITIONS	No. OF SOUNDINGS	STAT.MILES	MILES TO AND FROM WORK
1	a	5-13-29	Tender # 1	136	842	11.6	0
1	b	5-14-29	"	105	610	8.8	.5
1 & 2	c	5-15-29	"	81	507	6.7	1
2	d	5-16-29	"	100	734	7.1	1
2 & 3	e	5-17-29	"	119	793	7.8	1
3	f	5-18-29	"	38	239	3.1	2
3	g	5-20-29	"	172	839	13.1	2
3 & 4	h	5-22-29	"	155	774	11.9	1.5
4	j	5-23-29	"	114	631	9.6	2
4 & 5	k	5-24-29	"	81	329	6.6	3.5
5	l	5-27-29	"	17	72	.8	3
5	m	6- 5-29	"	88	450	4.1	2
5	n	6- 6-29	"	127	577	7.5	1
5	p	6-10-29	"	26	126	1	.5
5 & 6	q	6-12-29	"	74	324	2.5	1
7	r	9-17-29	"	134	636	9.7	.75
7	s	9-18-29	"	49	316	4.7	.5
7	t	9-19-29	"	43	236	4.7	.5
7 & 8	u	9-20-29	"	141	788	11.4	.5
8	v	9-21-29	"	33	170	1.5	1
* 6	a	6- 6-29	Skiff	39	112	.3	0

* Note: Soundings taken off Petersburg docks.

TIDAL NOTE - SHEET # 5

All soundings reduced from observations at City Dock,
Petersburg.

Portable Automatic Tide Guage # 177.


Plane of Reference = M.L.L.W.

M.L.L.W. on Staff = 4.96'

Latitude $56^{\circ} 48.8'$ Longitude $132^{\circ} 57.7'$

Highest Tide = 19.0' @ M.L.L.W. - June 8th.

Lowest Tide = -4.0' @ M.L.L.W. - May 11th.


J. N. Jones. Aid.

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

AND REFER TO No. 11-DEM

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

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4955

Wrangell Narrows, Southeast Alaska

Surveyed in 1929

Chiefs of Party, E. W. Eickelberg, H. A. Cotton

Surveyed by T. B. Reed

Protracted and soundings plotted by T. B. R. and H. O. Fortin

Verified and inked by H. E. MacEwen

1. The records conform to the requirements of the General Instructions.
2. The plan and character of the development fulfill the requirements of the General Instructions.
3. The specific instructions were followed in a satisfactory manner.
4. Because of strong currents, lines were all run parallel to the shore. No system of cross lines was run but wherever sounding lines cross, except in a few instances (see remarks), the agreement is good.
5. The usual depth curves, with the exception of the low water curve, can be completely drawn.
6. The field plotting was complete in every detail.
7. The office draftsman did not have to do over any part of the work done on the sheet by the field party.
8. The junction with sheet H. 4961 is satisfactory.
9. No further surveying is required to fully develop important areas within the limits of this sheet.

10. Remarks:

- (a) An 18 1/2 foot sounding between positions 24j and 23j was rejected by the field party as being an error of one fathom in reading the lead line. While this spot was not examined to disprove the theory it was allowed to stand rejected due to the natural close development made at this spot, and the fact that a line run subsequent passes directly over this point, developing a depth of 24 feet. The scale of this sheet (1:5,000) allows a fairly close development in this area. The survey made in 1910 does not show any indication of such a depth here.
- (b) A sounding of 16 1/2 feet at position 70m was rejected in the field. This sounding was searched for in a later close development and 20 1/2 feet was the least depth found. This together with the fact that the U. S. Engineers dragged this area with an improvised drag clearing the spot at 21 feet seems proof that the sounding is in error.
- (c) Attention is called to the remarks in the descriptive report under the heading "Comparison with 1910 survey", concerning dangers that remain in existence and areas that have changed due to natural causes and the operations of the U. S. Engineers in dredging a channel through Petersburg bar.
- (d) 100 meters east of signal Old , between 88h and 89h, three soundings, 22, 23 and 24 feet, were obtained and were found to be in disagreement with all surrounding depths. In view of the slight cartographic value of these soundings and the apparent excessive depth that they express, they were rejected.
- (e) The following investigations cannot be considered complete until a final record is received in the office from the U.S. Engineers Corps concerning the extent to which dredging operations were carried out in the area covered by this survey:
- (1) A 16 1/2 foot sounding appearing on chart No. 8170 and falling about 300 meters west of A Boat was investigated. There is no indication on this survey of a shoal developing on the lines that cross this spot. There is no indication of such a depth on the survey of 1918 in which season an improvised drag was constructed and a development in addition to the lead line work, executed. This drag development apparently covered this spot with a least depth of 18 feet.
 - (2) 310 meters north of signal Chim appears a 23 foot sounding in a relatively deep area. While this sounding appears to be one fathom in error it was allowed to remain as recorded since no irregularity could be discovered on investigation.

- (3) A close development around the spot is a strong indication that the 21 foot sounding from Chart 8170, located in Lat. $56^{\circ} 48' 39''$, Long. $132^{\circ} 58' 18''$ does not exist. This sounding is close to the area designated, on Blue Print 22266 of our files, to be dredged by the U. S. Engineers and since this survey was made after the dredging was completed (see descriptive report) it is possible that this sounding was removed in the deepening of the channel.
 - (4) In the close development around the spot (340 meters east of Δ Beak) where a sounding of 21 feet appears on chart 8170 no indication of a shoaling appears. This sounding plots outside the main channel.
 - (5) Appearing on chart 8170, 200 meters N. by W. of signal Tall, is an 18 foot sounding. This sounding appears originally on the survey of 1910 as part of a shoal 60 meters by 30 meters. There is no indication of this shoal on the 1918 survey (H. 4037) or on this sheet. In 1918 four lines of soundings were run directly over this shoal spot and the least depth obtained was 24 feet. Four lines of soundings were also run over this apparent shoal in 1929 with a least depth of 23 feet. In addition to this a rather complete development with an improvised drag in 1918 failed to discover this shoal. The drag covered the spot at a least depth of 21 feet. A thorough investigation of the original records failed to disclose any clue to the authority for the shoal soundings. It was found, however, that one line identified and plotted (31f' - 32f') falls exactly on the line in question and three of the soundings of that line coincide in spacing with the three soundings in question. In the records it will be noticed that just preceding the line that can be identified and plotted the same combination of soundings appears as on the shoal. It is possible that a transposition of figures was made causing the shoal to be entirely fictitious. In view of this possibility and together with the fact that this shoal is disproved by two different hydrographic surveys with lead line and one drag development, it is recommended that this shoal be removed from the chart as non-existent.
If this area has been dredged by the U. S. Engineers the present survey 1929 should be used as correct.
- (f) In developing the shoal making out into Frederick Sound 270 meters east of Topeka Rock Lighthouse, a sounding of 10 feet was obtained. Chart 8170 shows a least depth of 12 feet on this shoal.

(g) A sounding of 28 1/2 feet appears on Chart 8170 250 meters northwest of Tepeka Rock Lighthouse. This sounding was obtained on the 1918 survey (H. 4037). The least depth on the present survey (1929) is 31 feet. A comparison with previous work indicates no change in this immediate locality. The bottom characteristics show rocky. Unless the area has been dredged this sounding should be retained.

11. Rating of the work:

(a) Character and scope of the surveying - excellent.

(b) Field drafting - excellent.

12. Reviewed by H. E. MacEwen, April 12, 1930.

Approved:

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

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

Inspector E. P. Egan

(COPY FOR FIELDS FIELD RECORDS SECTION)

February 26, 1930

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
volumes of sounding records for

8

HYDROGRAPHIC SHEET

4955

Locality:

Wrangell Narrows (Vicinity of Petersburg) Alaska

Chief of Party:

Plane of reference ~~ft.~~ W. Nickelberg and H. A. Cotton, in 1929
ft. on tide staff ~~at~~ ~~mean~~ lower low water, reading

5.0 ft. below B. M. Petersburg.

~~XXXXXXXXXXXX~~

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.

JAW
Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4955

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. 5

REGISTER NO. 4955

State S. E. ALASKA

General locality ~~WRANGELL NARROWS~~ Frederick Sound

Locality NORTH END, WRANGELL NARROWS

Scale 1:5,000 Date of survey May June and Sept., 1929

Vessel U.S.C. & G.S.S. EXPLORER; Wire Drag Tender # 1

Chief of Party E. W. Eickelberg, Hydro. & Geod. Engineer

Surveyed by T. B. Reed

Protracted by T. B. Reed and H. O. Fortin

Soundings penciled by T. B. Reed and H. O. Fortin

Soundings in fathoms feet

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated February 19, 1929

Remarks: Data forwarded - 8 volumes soundings - 1 ea. Smooth Sheet and Boat Sheet - Tracing of preliminary dredged channel Survey - 1 ea. Topographic Sheet.

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

AND REFER TO No. 11-1781

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

SECTION OF FIELD RECORDS
Report on Hydrographic Sheet No. 4955
Wrangell Narrows, Southeast Alaska
Surveyed in 1929

Chiefs of Party, E. W. Eickelberg, H. A. Gotton

Surveyed by T. B. Reed

Protracted and soundings plotted by T. B. R. and H. O. Fortin

Verified and inked by H. E. MacEwen

1. The records conform to the requirements of the General Instructions.
2. The plan and character of the development fulfill the requirements of the General Instructions.
3. The specific instructions were followed in a satisfactory manner.
4. Because of strong currents, lines were all run parallel to the shore. No system of cross lines was run but wherever sounding lines cross, except in a few instances (see remarks), the agreement is good.
5. The usual depth curves, with the exception of the low water curve, can be completely drawn.
6. The field plotting was complete in every detail.
7. The office draftsman did not have to do over any part of the work done on the sheet by the field party.
8. The junction with sheet H. 4961 is satisfactory.
9. No further surveying is required to fully develop important areas within the limits of this sheet.

10. Remarks:

- (a) An 18 1/2 foot sounding between positions 24j and 23j was rejected by the field party as being an error of one fathom in reading the lead line. While this spot was not examined to disprove the theory it was allowed to stand rejected due to the natural close development made at this spot, and the fact that a line run subsequent passes directly over this point, developing a depth of 24 feet. The scale of this sheet (1:5,000) allows a fairly close development in this area. The survey made in 1910 does not show any indication of such a depth here.
- (b) A sounding of 16 1/2 feet at position 70m was rejected in the field. This sounding was searched for in a later close development and 20 1/2 feet was the least depth found. This together with the fact that the U. S. Engineers dragged this area with an improvised drag clearing the spot at 21 feet seems proof that the sounding is in error.
- (c) Attention is called to the remarks in the descriptive report under the heading "Comparison with 1910 survey", concerning dangers that remain in existence and areas that have changed due to natural causes and the operations of the U. S. Engineers in dredging a channel through Petersburg bar.
- (d) 100 meters east of signal Old , between 88h and 89h, three soundings, 22, 23 and 24 feet, were obtained and were found to be in disagreement with all surrounding depths. In view of the slight cartographic value of these soundings and the apparent excessive depth that they express, they were rejected.
- (e) The following investigations cannot be considered complete until a final record is received in the office from the U.S. Engineers Corps concerning the extent to which dredging operations were carried out in the area covered by this survey:
- (1) A 16 1/2 foot sounding appearing on chart No. 8170 and falling about 300 meters west of Boat was investigated. There is no indication on this survey of a shoal developing on the lines that cross this spot. There is no indication of such a depth on the survey of 1918 in which season an improvised drag was constructed and a development in addition to the lead line work, executed. This drag development apparently covered this spot with a least depth of 18 feet.
 - (2) 310 meters north of signal Chim appears a 23 foot sounding in a relatively deep area. While this sounding appears to be one fathom in error it was allowed to remain as recorded since no irregularity could be discovered on investigation.

- (3) A close development around the spot is a strong indication that the 21 foot sounding from Chart 8170, located in Lat. 56° 48' 39", Long. 132° 58' 18" does not exist. This sounding is close to the area designated, on Blue Print 22266 of our files, to be dredged by the U. S. Engineers and since this survey was made after the dredging was completed (see descriptive report) it is possible that this sounding was removed in the deepening of the channel.
- (4) In the close development around the spot (340 meters east of Beak) where a sounding of 21 feet appears on chart 8170 no indication of a shoaling appears. This sounding plots outside the main channel.
- (5) Appearing on chart 8170, 200 meters N. by W. of signal Tall, is an 18 foot sounding. This sounding appears originally on the survey of 1910 as part of a shoal 60 meters by 30 meters. There is no indication of this shoal on the 1918 survey (H. 4037) or on this sheet. In 1918 four lines of soundings were run directly over this shoal spot and the least depth obtained was 24 feet. Four lines of soundings were also run over this apparent shoal in 1929 with a least depth of 23 feet. In addition to this a rather complete development with an improvised drag in 1918 failed to discover this shoal. The drag covered the spot at a least depth of 21 feet. A thorough investigation of the original records failed to disclose any clue to the authority for the shoal soundings. It was found, however, that one line identified and plotted (31f' - 32f') falls exactly on the line in question and three of the soundings of that line coincide in spacing with the three soundings in question. In the records it will be noticed that just preceding the line that can be identified and plotted the same combination of soundings appears as on the shoal. It is possible that a transposition of figures was made causing the shoal to be entirely fictitious. In view of this possibility and together with the fact that this shoal is disproved by two different hydrographic surveys with lead line and one drag development, it is recommended that this shoal be removed from the chart as non-existent.
- If this area has been dredged by the U. S. Engineers the present survey 1929 should be used as correct.
- (f) In developing the shoal making out into Frederick Sound 270 meters east of Topeka Rock Lighthouse, a sounding of 10 feet was obtained. Chart 8170 shows a least depth of 12 feet on this shoal.

(e) A sounding of 28 1/2 feet appears on Chart 8170 250 meters northwest of Topoka Rock Lighthouse. This sounding was obtained on the 1918 survey (H. 4037). The least depth on the present survey (1929) is 31 feet. A comparison with previous work indicates no change in this immediate locality. The bottom characteristics show rocky. Unless the area has been dredged this sounding should be retained.

11. Rating of the work:

- (a) Character and scope of the surveying - excellent.
- (b) Field drafting - excellent.

12. Reviewed by H. E. MacEwen, April 12, 1930.

Approved:

Chief, Section of Field Records (Charts)

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

Inspector E. P. Egan