

5085

Diag. Cht. No. 8502-2 & 8552

5085

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton, Director

U. S. COAST & GEODETIC SURVEY
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State: Alaska
Acc. No. _____

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } Sheet No. 41 5085

LOCALITY

Kenai Peninsula
~~Chiswell Islands~~
Aialik Bay Entrance to
Seal Rocks

1930

CHIEF OF PARTY
F. B. T. Siems

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5085

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. 41REGISTER NO. 5085State ~~Territory of~~ AlaskaGeneral locality Kenai PeninsulaLocality ~~Chiswell Islands~~ Aialik Bay Entrance to Seal Rocks
May 13, andScale 1:40,000 Date of survey Aug. 6 to Aug. 22, 1930Vessel M. V. WESTDAHL, S. DISCOVERER & Stbd. Motor Sailer $\frac{1}{2}$ day
May 16, 1930Chief of Party F. B. T. SiemsSurveyed by F. B. T. Siems, L. D. Graham & G. A. NelsonProtracted by R. A. EarleSoundings penciled by R. A. EarleSoundings in fathoms ~~feet~~Plane of reference M. L. L. W.Subdivision of wire dragged areas by —Inked by L. S. StrawVerified by L. S. S.Instructions dated March 21, 19 30

Remarks: _____

DESCRIPTIVE REPORT

to

Accompany Hydrographic Sheet No. 41

Scale 1:40,000

Chiswell Islands, Alaska

Project No. 57

U.S.C. & G.S.M.V. WESTDAHL

L. D. Graham, H. & G. Engineer
In Charge

Surveyed by L. D. Graham

August 6, 1930 to August 22, 1930

Instructions dated March 21, 1930

LIMITS:

This sheet covers an area outside and adjacent to Sheet H - 3421. This survey connects with Sheet 2760 on the north; Sheets 4724 & 4731 on the east; Sheets 4731 and Field Sheet No. 81 on the south; and with Sheet 4836 on the west. ✓

SURVEY METHODS:

The Tender WESTDAHL took all the soundings on this sheet with the exception of a few taken on May 13, 1931 by the S. DISCOVERER, F.B.T. Siems, in charge; and the starboard motor sailer, G.A. Nelson, in charge. The soundings taken by the S. DISCOVERER were taken with the fathometer; all other soundings on this sheet were vertical casts taken by standard methods. ✓

The control for this survey was excellent and was based on triangulation stations; with a few topographic and hydrographic signals which were accurately located.

DISCREPANCIES:

The position of Tomahawk Rock, as located on topographic sheet T-3302, was found to be in error about ^{? 50m} 25 meters. This rock was re-located from the M. V. WESTDAHL by sextant cuts. ✓

The position of the rock, awash at $\frac{1}{2}$ tide, which lies about 500 meters to the north of Tomahawk Rock, was found, after comparison with Sheet T-3302, to be about 90 meters in error. The WESTDAHL, assuming the former position was correct, came dangerously near this rock before it could be seen. It was later cut in accurately by sextant cuts. ✓ OK, L.S.

There is a rock shown on Chart 8529 at approximate Lat 59 35.8', Long. 149 37.6' which is not shown on topographic sheet 3302. As no evidence of this rock could be seen; soundings were taken as near to its position on the chart as possible, but no evidence of said rock was found. ✓

Several soundings were taken around the outer of the two rocks awash (shown on Chart 8529) off Aialik Cape, Lat. 59 42', Long. 149 37.6; and no indication of said rock was found. ✓ see Review A.L.S.

DANGERS:

There are no dangers on this sheet when the weather is clear as all the isolated rocks have deep water nearly adjacent to them ; however in foggy weather, it would be well to give the area around and directly to the north of Seal Rocks a wide berth, due to these isolated rocks. ✓

CURRENTS:

The general trend of the current south of Chiswell Islands is southwest.

ANCHORAGES:

No anchorages are on the area covered by this sheet. For anchorages in vicinity see report of Sheet H-3421. ✓

COMPARISON WITH PREVIOUS SURVEYS:

Soundings on all adjacent sheets agreed well with those obtained while surveying this area.

L. D. Graham

L. D. Graham
H. & G. Engineer
Hydrographer

NOTE:

A number of topographic signals determined on T 3302 were used in 1930 hydrography. A list of their geographic positions is attached to the sounding record. These positions are assumed to be based on datum originally derived by the 1906 triangulation. Very little change in the positions of 1906 stations was brought about in revising the main scheme triangulation in 1928 and 1930. (see position of Aialik given on T 3302 and its 1928 position.)

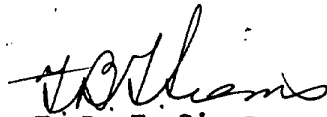
approved & forwarded
J. W. Adams

STATISTICS
for
Sheet, Field No. 41

| Date 1930 | Letter | Volume | Positions | Soundings | | Sta. Miles |
|------------------------|--------|--------|------------|------------|---------------|----------------|
| | | | | Wire | Echo | Sounding Lines |
| S. DISCOVERER | | | | | | |
| May 13 | A | 2 | 29 | | 96 | 12.7 |
| Starboard Motor Sailer | | | | | | |
| May 13 | a | 1 | 25 | 35 | 22 | 4.8 |
| M. V. WESTDAHL | | | | | | |
| Aug. 6 | b | 1 | 23 | 23 | | 2.8 |
| Aug. 11 | c | 1 | 146 | 146 | | 35.4 |
| Aug. 12 | d | 1 | 248 | 248 | | 56.1 |
| Aug. 13 | e | 1 & 2 | 245 | 245 | | 57.8 |
| Aug. 14 | f | 2 | 226 | 226 | | 58.7 |
| Aug. 15 | g | 2 | 154 | 154 | | 54.0 |
| Aug. 19 | h | 2 | 41 | 41 | | 11.8 |
| Aug. 22 | j | 3 | <u>105</u> | <u>105</u> | | <u>33.9</u> |
| | | Totals | 1242 | 1319 | | 328.0 |

APPROVAL
of
CHIEF OF PARTY.

Sheet No. 41 and accompanying records have been inspected and approved by me. Both the field work and office work were done under my supervision. No further hydrography is considered necessary in the area covered.



F. B. T. Siems
Chief of Party, C. & G. Survey

5085

COMPUTATION OF TRIANGLES

State: S. W. Alaska

11-9121

| | NO. | STATION | OBSERVED ANGLE | CORR'N | SPHER'L ANGLE | SPHER'L EXCESS | PLANE ANGLE AND DISTANCE | LOGARITHM |
|-----------------------------|-----|---|-------------------------------------|--------|---------------|----------------|--------------------------|--|
| | | 2-3 1 Rk. off Arlik 2 Slope 3 L. H. Rock 1-3 1-2 | (24-58-45) 115-57-39 39-03-36 | | | | | 3.393 129 0.374 390 9.953 805 9.799 433 3.721 324 3.566 952 |
| | | 2-3 1 2 3 1-3 1-2 | | | | | | |
| Do not write in this margin | | 2-3 1 2 3 1-3 1-2 | | | | | | |
| | | 2-3 1 2 3 1-3 1-2 | | | | | | |

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

| | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|------------|-------|-------------------|-----------|--------------------------------|-----------------|----------|----------------|-------------------|--------------|-----------------|------------|-------|-------------------|-----------|--------------------------------|-----|----------|-------|-------------------|------|
| α | 2 | Slope | to 3 | L.H. Rock | 253 | 59 | 18 | α | 3 | L.H. Rock | to 2 | Slope | 74 | 01 | 29 | | | | | | |
| $2^d \angle$ | | | | & | +115 | 57 | 39 | $3^d \angle$ | | | | & | -39 | 03 | 36 | | | | | | |
| α | 2 | | to 1 | Rock | 09 | 56 | 57 | α | 3 | | to 1 | Rock | 34 | 57 | 53 | | | | | | |
| $\Delta\alpha$ | | | | | | | | $\Delta\alpha$ | | | | | | | | | | | | | |
| | | | | | 180 | 00 | 00.0 | | | | | | 180 | 00 | 00.0 | | | | | | |
| α' | 1 | Rock | to 2 | Slope | | | | α' | 1 | Rock | to 3 | L.H. Rock | | | | | | | | | |
| FIRST ANGLE OF TRIANGLE | | | | | 24 | 58 | 45 | " " " " | | | | | | | | | | | | | |
| ϕ | 59 | 44 | 01.04 | 2 | Slope | λ | 149 | 31 | 04.07 | ϕ | 59 | 44 | 23.06 | 3 | L.H. Rock | λ | 149 | 28 | 31.94 | | |
| $\Delta\phi$ | - | 1 | 57.42 | | | $\Delta\lambda$ | + | | 40.76 | $\Delta\phi$ | - | 2 | 19.40 | | | $\Delta\lambda$ | + | 3 | 12.88 | | |
| ϕ' | 59 | 42 | 3.62 | 1 | Rock off side | λ' | 149 | 31 | 44.83 | ϕ' | 59 | 42 | 3.66 | 1 | Rock | λ' | 149 | 31 | 44.82 | | |
| s | Logarithms | | Values in seconds | | $\frac{1}{2}(\phi+\phi')$ | | 59 | | 43 | 04.7 | s | Logarithms | | Values in seconds | | $\frac{1}{2}(\phi+\phi')$ | | 59 | | 43 | 13.4 |
| $\cos \alpha$ | 9.993419 | | | | s | | 3.566949 | | Values in seconds | | $\cos \alpha$ | 9.913552 | | | | s | | 3.721324 | | Values in seconds | |
| B | 8.509379 | | | | $\sin \alpha$ | | 9.237479 | | | | B | 8.509379 | | | | $\sin \alpha$ | | 9.758209 | | | |
| h | 2.069750 | | 1st term | | A' | | 8.508629 | | | | h | 2.144255 | | 1st term | | A' | | 8.508629 | | | |
| s^2 | | | | | $\sec \phi'$ | | 0.297128 | | | | s^2 | | | | | $\sec \phi'$ | | 0.297128 | | | |
| $\sin^2 \alpha$ | | | | | $\Delta\lambda$ | | 1.610185 | | 40.76 | | $\sin^2 \alpha$ | | | | | $\Delta\lambda$ | | 2.285290 | | 192.88 | |
| C | | | 2d term | | $\sin \frac{1}{2}(\phi+\phi')$ | | | | | | C | | | 2d term | | $\sin \frac{1}{2}(\phi+\phi')$ | | | | | |
| h^2 | | | + | | $-\Delta\alpha$ | | | | | | h^2 | | | + | | $-\Delta\alpha$ | | | | | |
| D | | | | | | | | | | | D | | | | | | | | | | |
| | | | 3d term | | | | | | | | | | | 3d term | | | | | | | |
| | | | + | | | | | | | | | | | + | | | | | | | |
| | | | $-\Delta\phi$ | | | | | | | | | | | $-\Delta\phi$ | | | | | | | |

computed by AFS

3/16

April 25, 1931

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 5085

Locality Aialik Bay Entrance to Seal Rocks, Kenai Penin., S. W. Alaska

Chief of Party: F. B. T. Siems in 1930
Plane of reference is mean lower low water, reading
2.6 ft. on tide staff at Seward
14.9 ft. below B. M. 1a

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 Whitney
Chief, Division of Tides and Currents.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. *5085*

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

| | |
|--|-------------|
| Number of positions on sheet | <i>1242</i> |
| Number of positions checked | <i>298</i> |
| Number of positions revised | <i>20</i> |
| Number of soundings recorded | <i>1319</i> |
| Number of soundings revised | <i>3</i> |
| Number of signals erroneously plotted or transferred | <i>2</i> |

Date: *June 11-1931*

Cartographer: *L. S. Stewart*

Section of Field Records
Surveyed in 1930

Sheet N-5085

Chief of Party F. B. Siems.

Surveyed by F. B. Siems, J. Graham & J. A. Nelson.

Retracked by R. A. Earle

Soundings plotted by R. A. E.

Verified and Inked by L. S. Stearn.

1. The records conform to the requirements of the General Instructions.
2. The Plan and Character of the development fulfills the requirements of the General Instructions.
3. No cross sounding lines were run with the exception of thorough investigation where shoaling was indicated.
4. Due to the rapidly changing depth close inshore the 20 fathom curve is not completely delineated.
5. The field plotting was completed to the extent prescribed in the General Instructions.
6. The shore line was not put on the SMOOTH Sheet by the Field Party and was therefore put on in this office.
7. Further survey ~~of the area within~~ the limits of this sheet (N-5085) to fully develop important areas does not seem necessary.

8. Remarks.

The shore lines of the islands upon which triangulation stations Slope (1905) and Out (1930) were established were taken from Topographic Sheet 2718 (1905). These islands are not shown on Topographic Sheet 3302 upon which the greater portion of the shore line of this Hydrographic Sheet (5085) is based.

Discrepancies.

The triangulation Station Lo. 1930 is about 180 m. to the north and east on the island between Long. $149^{\circ}36'$ and Long. $149^{\circ}38'$; and Lat. $59^{\circ}38'$ and Lat. $59^{\circ}40'$. The location of Lo. 1930 according to the corrected Geographic Position is Long. $149^{\circ}36'07.11''$ (111.4) and Lat. $59^{\circ}38'36.9''$ (114.9).

In checking the Geographic Position of Lo. 1930; ^{the computation for} Triangulation station White (1930) ^{also} was found to be in error and has been moved on the Smooth Sheet to the true position (Long $149^{\circ}36'02.92''$ (45.7)) and Latitude $59^{\circ}39'16.46''$ (509.4). This slight adjustment did not ^{materially} affect Smooth Sheet plotting.

There is no check in the Computations on the triangulation stations to 1930 and White 1930.

A description of Lo and White by the field has not been received by this office.

Signal TER (Topographic) was moved 20 m. west of the position plotted on the Smooth Sheet so that it falls on the southernmost island off Dialik Cape (Long $149^{\circ}32'$ and Lat. $59^{\circ}42'$) There are two rocks awash south and west of TER.

There is a rock awash 148 m. north and 60 m. east of Lone Rock (Δ) (Long. $149^{\circ}38'$; Lat $59^{\circ}34'$) definitely located by means of cuts. The Topographic Sheet 3302 (912) shows a rock awash ($\frac{3}{4}$ tide) about 220 m. north and 130 m. west of Lone Rock. This rock awash also appears in this position on charts 8529, 8530 and new chart 8552. This rock is charted as being awash at $\frac{3}{4}$ tide and since the records show that there is 1 fathom tide at

position 203d which is about 100m. north west of the rock. it would seem that the rock in question should be visible when running this line on "d" day. However it is noted too that only 37 minutes previous to the time at position 203d the tide was 1 1/2 fathoms at position 187d. at this position (187d) they were in range with a rock awash and Low Rock which is in very good agreement with cuts taken from various positions.

Therefore, the existence of a rock awash north west of Low Rock is doubtful; inas much as there is conclusive evidence of the existence of a rock awash north east of Low Rock.

The Hydrographic Signals TOM; BIT; WELL, & YAP are well located by cuts taken at well chosen positions.

The Hydrographic signals YAP and WELL^{are} apparently in deep water — This does not seem probable. TOM (Hydro) is located on Tomahawk Rock. (See Page 2 Description Report.)

5 - H 5085.

Other discrepancies have
been adequately treated on
page 2 of the Descriptive Report
of H 5085.

Respectfully Submitted,

June 11-1931

L. B. Straw

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

AND REFER TO No. 80-DRM

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5085

Aialik Bay Entrance to Seal Rocks, Kenai Peninsula, Alaska

Surveyed in 1930

Instructions dated March 21, 1930 (DISCOVERER)

Vertical casts and some fathometer work - three point control

Chief of Party, F. B. T. Siems

Surveyed by F.B.T.S., L. D. Graham and G. A. Nelson

Protracted and soundings plotted by R. A. Earle

Verified and inked by L. S. Straw

1. Records:

The records conform to the requirements of the Hydrographic Manual with the following exceptions:

- (a) The same lack of conformity with the sample page given on page 116 of the Hydrographic Manual for recording stop soundings was noted in the work of the WESTDAHL just as was found to be the case with the records of H. 5093.
- (b) The corrections applied to inclined sextant angles for angles greater than 90° were applied ~~by~~^{as} a minus correction instead of a plus correction as indicated on the graph, page 87 of the Hydrographic Manual. The correctness of this graph still holds good where one of the objects sighted on is in the same horizontal plane with the observer, and should not be confused with the amendment submitted by G. R. Shelton (page 47, Association Bulletin, December 1930) which applies to cases where neither of the two objects is in the same plane with the observer.
- (c) Greater care should be exercised in the recording of notes pertaining to rocks awash. A rock should never be described as "rock awash" unless it is actually awash at the time the note is entered. If it is desired to refer to the same rock at a lower stage of

the tide, it would be better to designate it as "rock near \odot Al" or by some other identifying term instead of "rock awash near \odot Al". This always leads to confusion and where a number of cuts are taken all of which do not intersect, it frequently raises the question whether one or two rocks exist in such locality. On the present survey the rock awash near \triangle Lone has been referred to as rock awash at three different stages of the tide, namely, at 0 tide (pos. 7e), at 1 fm. tide (pos. 203d), and at 1 1/2 fm. tide (pos. 185d). Fortunately all the cuts intersect at one point, and the same rock was doubtless being referred to.

2. Specific Instructions:

The work conforms to the requirements of the specific instructions with the exception that a few split lines should have been run in the vicinity of the 20 fathom sounding about 1400 meters northeast of Aialik Cape.

3. Control:

The control for this survey consisted of triangulation stations (old and new), topographic stations from the 1912 survey (T. 330E) and hydrographic stations located by sextant cuts to well defined topographic features. When the old topography was transferred in the office to the hydrographic sheet it was found that the hydrographic locations of the rocks differed by as much as 140 meters from the topographic locations of ^{the} supposedly ~~the~~ same rocks. As no mention was made of these discrepancies in the descriptive report except the case of \odot Tom located on Tomahawk Rock, it became necessary to study all the available data bearing on the possibility of additional rocks existing that were overlooked by the topographic party. The conclusions reached in the various cases are detailed in the following paragraphs and dispositions made in conformity with these conclusions:

- (a) \odot Yap is described on the boat sheet as the "highest point on small rock." The rock is evidently one bare at high water since the signal was used on numerous occasions at high tide. Since the several excellent sextant cuts to this rock placed it about 140 meters to the northwest of the rock indicated on the topographic survey of 1912 (T. 3302) the question arose as to whether there was one or two bare rocks in this locality. No statement appeared in the descriptive report relative to this matter. A study was therefore made of all the available information and the conclusion reached that only one bare rock exists here and the correct location is that indicated by \odot Yap. This conclusion is based on two factors: First, the descriptive report of ^{the} old topographic

sheet T. 3302 states that a rock about 30 feet above high water exists here. An angle of elevation taken at pos. 32d on \odot Yap on the new survey also gives the elevation of Yap to be about 30 feet above high water. In addition to this the existence of another rock (30 feet high) in the position shown on the old topographic sheet is discredited by the fact that the rock is ~~really~~ exactly on range with Seal Rock (278 feet high) and pos. 32d. If there ~~were~~^{was} a rock in the old location it would have cut off Seal Rock from view and the latter could not have been used as the left object.

T. 3302 has therefore been corrected and now shows the correct position of the rock in red.

- (b) \odot Well was noted on the boat sheet as the highest point of small rock. The hydrographic location places the rock about 100 meters southeast of the old topographic determination (on T. 3302). There were numerous cuts taken to locate the signal and an excellent intersection obtained. The hydrographic location was therefore accepted as correct and the rock and rocks awash close by were adjusted on the topographic sheet to conform to the new location and are now shown in red on the topographic sheet, T. 3302.
- (c) \odot Tom is described on the boat sheet as the center of a small rock (The Tomahawk). The position as located by the hydrographic party differs from the old topographic location by about 50 meters. Due to the excellent intersection obtained with the sextant cuts this position is accepted as the location for The Tomahawk. A correction has been made in red on T. 3302 to conform to this determination.
- (d) \odot Bit. A slight discrepancy is noted between the hydrographic location of \odot Bit and the bare rock (from T. 3302) on which it is presumably located. The difference is not considered sufficient to justify a change on the topographic sheet, particularly in view of the acute cuts by which \odot Bit was located.
- (e) \odot Ter. This signal was noted on the smooth sheet as a "small outlying rock transferred from bromide of T. 3302." A careful transfer of the rock from the original sheet placed it about 80 meters N by W of the field plotting. Unless there was an extremely large distortion in the bromide, the only way that I can account for the difference is that the field party assumed that \triangle Pin was located on the northern part of the large rock off Aialik Cape and so adjusted the position of the outlying rock to conform to the location of \triangle Pin.

A "rock off Aialak Pt." was cut in by triangulation from stations Pilot Rock and Slope and from the list of directions it appears probable that this rock is the same as the outlying rock shown on T. 3302 which the hydrographic party called \odot Ter. The position of the rock was therefore computed (computations attached to descriptive report) and found to be slightly to the north of the field party's position. The agreement is considered purely a coincidence. The position of \triangle Pin (1930) agrees fairly closely with the rock on which \odot Lik (T. 3302) is located. It is described in the triangulation records as "large rock off Aialak Pt." and would seem to agree with the rock described in the descriptive ~~report~~ report, T. 3302, as "bearing a resemblance to a camel lying down, the highest part of the rock being 115 feet." It is believed that the high part of the rock is at the southern end and that \triangle Pin is the highest part of the rock and that \odot Lik (1912) is on the same portion of the rock but near the waters edge (noted in descriptive report, T. 3302 as water surface elev.). This is borne out by the fact that the hydrographic party when in the immediate vicinity of \triangle Pin did not use it for control (it being presumably too high an elevation) but used \odot Ter instead. This matter could be settled by reference to the field party.

With the two rocks (\triangle Pin and \odot Ter) definitely located, the other rocks in the vicinity as shown on T. 3302 were adjusted to conform to these, at the same time having due regard for the theodolite cut obtained from \triangle Pilot Rock L.H. to the "rock awash off Aialak Capt." The correct positions of these rocks have been indicated in red on the old topographic sheet, T. 3302.

- (f) \triangle Lo (1930). This position plots about 120 meters to the northwest of the outermost rock off the point nearby. The station is not described and it is uncertain whether there is an additional rock here, whether the \triangle determination is incorrect (no check on this position) or whether the topography in this area is erroneous. No mention is made of this discrepancy in the descriptive report. It should ~~therefore~~ be referred to the field party for further information.

4. Other discrepancies:

Besides the above mentioned differences in the hydrographic control points there were other differences that had to be ironed out. The following disposition was made of these:

- (a) Rock awash 500 meters to north of The Tomahawk. This rock was found to differ from the rock shown on T.3302 by about 90 meters. Inasmuch as the hydrographer was in this vicinity at low water it is unlikely that another rock would have escaped his notice, particularly since the old rock is supposed to cover at 3/4 tide. In view of the excellent butts obtained on the present survey, the latter determination is accepted as correct and the note "awash at 1/4 tide" (see descriptive report page 2) will replace the old note "covers at 3/4 tide." The old topographic sheet (T. 3302) has been corrected accordingly.

It should be mentioned here that this is the same rock that is shown on H. 3421 and noted in the sounding records for that sheet (pos. 99*) as a "submerged rock 20 meters on starboard beam" and corroborates generally the present hydrographic location.

- (b) Rock awash 160 meters north of Lone Rock. This rock was located by the present hydrographic party and differs in position from the rock which "covers at 3/4 tide" (as located on T. 3302) by about 200 meters. And the query arises whether one or two rocks awash exist here. Two factors tend to negative the existence of two rocks: First, the fact that the rock which the recent hydrographic party located is awash at nearly high water, the topographic party in 1912 (T. 3302) would have seen this rock when the rock which they located was cut in, the latter being "awash at 3/4 tide." Second, when a cut was taken to the rock by the present hydrographic party at position 7e, the stage of the tide was low water, and the boat was so situated that both rocks would have been clearly visible. At this position the boat was only 200 meters away from the ^{old} location of the ~~old~~ rock. It seems therefore reasonable ~~to believe~~ that only one rock awash exists here. As to which location is correct, the evidence favors the later determination, considering the fact that five cuts were taken that give an excellent intersection and also the fact that other discrepancies noted in previous paragraphs indicate weakness^s in the old topography. The later location also agrees closer with the rock shown on H. 3420 (scale 1:100,000). The notation "awash at 3/4 tide" would seem to be an appropriate note for this rock as far as can be determined from the notes in the sounding records and the actual height of the tide at the time. The new location of the rock has been indicated in red on the old topographic sheet.

- (c) Outer rocks awash off Aialik Cape shown on chart 8529
 This rock was not found by the present hydrographic party although the Westdahl passed directly over its supposed location (see pos. 10-11b). The authority for this rock is H. 3421 (pos 1-0) where it is noted that "Line begins 100 m. off submerged rock 1/2 tide 10 m. off ☉ Lik (East)". The height of the tide at the time was 6.6 feet which is about the same as the tide when the Westdahl passed over it. If this note is correct pos. 1-0 should plot approximately 110 m. off ☉ Lik. Instead it plots about 360 meters away. The verified at that time evidently tied the rock in to the beginning of the line as determined by the observed angles instead of tying the beginning of the line to the rock which was 10 m. off ☉ Lik. That no rock awash exists at the position shown on H. 3421 would seem to be further borne out by the fact that at pos. 88 ee (H. 3421) 500 meters to the northward of the supposed location a "heavy swell" was noted in the record. The stage of the tide was 4.5 feet. It would seem that if the party could have seen a submerged rock at pos. 1-0 when 100 meters away with the tide at 6.6 feet, this rock would surely be breaking in a heavy swell with a 4.5 foot tide. Being well off the Cape the party could not have failed to notice such a break. The fact that nothing to that effect is mentioned in the records, while not conclusive, is nevertheless corroborative of the finding by the present hydrographic party that no such rock exists in the charted location (see page 2, descriptive report, H. 5085). This conclusion has been accepted and the rock should therefore be expunged from the chart.
- (d) Bare rock 1/2 mile southeast of Chiswell Islands. This rock was formerly carried on chart 8529 and originated with H. 3420 where it is clearly shown as a bare rock. The topographic survey of the same period fails to disclose any such rock in the area and it is believed that the sheet from which H. 3420 was traced may have contained a fly speck which was interpreted as a bare rock. This is mentioned here merely as a matter of record since the rock has already been expunged from the charts on advice of Captain Siems in his Coast Pilot notes of October 6, 1930.

5. Junctions with surveys.(a) Contemporary surveys.

An adequate junction was effected with the contemporary surveys H. 4724, H. 4731 and H. 4836 (surveyed in 1927 and 1928) that border this survey. The depths are in generally good agreement.

The junction with H. 5100 surveyed in 1930 will be taken up in the review of that sheet.

(b) Old surveys.1. H. 3420 (surveyed in 1912).

This survey was made on a 1/100,000 scale and contains many Bassnett tube soundings of doubtful accuracy. The sheet is fully covered by the present survey and by other surveys of greater reliability. Since no dangers nor indications of dangers are involved that are not taken care of by the later surveys and ~~by~~ the larger scale sheet of 1912 (H-3421) the old work (H.3420) should be superseded in its entirety by those surveys.

2. H.3421 (surveyed in 1912).

There is a satisfactory agreement between this sheet and the new survey at the upper half of the sheet except just southwest of Chat I., where differences are noted. The depths, however, are not critical.

The detached development in the vicinity of Seal Rocks has been covered by the new survey. While the old work is in somewhat greater detail, there was a lack of adequate control ~~at~~ ^{to} the westward and as a result many of the positions in the vicinity of the rocks are very weak. A comparison was made with the new survey and several soundings were found to plot on bare rocks. The only depth of importance on the old survey in this locality is the $6\frac{1}{2}$ fathom sounding near \triangle Seal. According to a note in the record (p. 37-38 r) this sounding is located midway between Seal and a rock (presumably the rock close to Seal). It has ~~no~~ ^{no} navigational
 therefore

significance. The development on the new survey will be adequate for the 1/80,000 scale chart and should supersede the old work in this area (an appropriate note to this effect has been added on the sheet). Whenever a larger scale chart becomes desirable for this area, a more detailed survey should then be made.

3. H.2760 (surveyed in 1905).

A proper junction was established with this sheet at the northeast corner.

6. Additional Work.

(a) Hydrographic

The only additional hydrographic work necessary within the limits of this survey is a further development of the 20 fathom spot about 1400 meters northeast of Aialik Cape.

(b) Topographic

From the many discrepancies in the 1912 topographic work that the present hydrographic survey has brought to light, it seems reasonable to conclude that other discrepancies exist on the old work that did not come within the purview of the new survey. Furthermore the old work is on a scale of 1/40,000. It is therefore recommended that a new topographic survey be made on a scale of 1/20,000 to replace those portions of T 3302 that are not covered by later surveys.

7. Information for Compiler.

For the guidance of the compiler the pertinent portion of the previous paragraphs will be summarized. A reference to these paragraphs are indicated.

(a) Use revised locations of certain rocks shown on T-3302. Correct positions are shown in red on the topographic sheet (par. 3,a,b,c,e. par. 4, a,b).

(b) Omit from charts the outer rock awash off Aialik Cape (par. 4,c).

(c) Do not use H.3420 for charting purposes (par. 5,b,1).

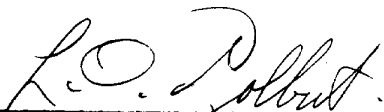
(d) Omit the soundings in the vicinity of Seal Rocks on H. 3421. (par. 5,b,2).

8. Conclusion.

In closing this report I wish to recommend that a copy of the same be sent to the field party concerned for the purpose of acquainting them with the many details frequently connected with the disposition of a hydrographic survey. A survey is not complete unless it can be properly harmonized with existing data of equal accuracy. Where conflicting information is disclosed during the prosecution of a survey, an effort should be made, as far as practicable, to ascertain which is correct and a definite statement to that effect embodied in the descriptive report. Even in cases where through the availability of original data the office is in a somewhat better position to make the final decision, it will nevertheless be of invaluable assistance to the reviewer if in his decisions he has the benefit of the positive statement of the surveyor.

9. Reviewed by A. L. ShalXowitz, July 1931.

Approved:



Chief, Field Records Section



Chief, Field Work Section.

DEPARTMENT OF COMMERCE

AND REFER TO No. 80-DRM

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5085

Aialik Bay Entrance to Seal Rocks, Kenai Peninsula, Alaska

Surveyed in 1930

Instructions dated March 21, 1930 (DISCOVERER)

Vertical casts and some fathometer work - three point control

Chief of Party, F. B. T. Siems

Surveyed by F.B.T.S., L. D. Graham and G. A. Nelson

Protracted and soundings plotted by R. A. Earle

Verified and inked by L. S. Straw

1. Records:

The records conform to the requirements of the Hydrographic Manual with the following exceptions:

- (a) The same lack of conformity with the sample page given on page 116 of the Hydrographic Manual for recording stop soundings was noted in the work of the WESTDAHL just as was found to be the case with the records of H. 5093.
- (b) The corrections applied to ~~inclined~~^{inclined} sextant angles for angles greater than 90° were applied ~~by~~^{as} a minus correction instead of a plus correction as indicated on the graph, page 87 of the Hydrographic Manual. The correctness of this graph still holds good where one of the objects sighted on is in the same horizontal plane with the observer, and should not be confused with the amendment submitted by G. R. Shelton (page 47, Association Bulletin, December 1930) which applies to cases where neither of the two objects is in the same plane with the observer.
- (c) Greater care should be exercised in the recording of notes pertaining to rocks awash. A rock should never be described as "rock awash" unless it is actually awash at the time the note is entered. If it is desired to refer to the same rock at a lower stage of

the tide, it would be better to designate it as "rock near \odot Al" or by some other identifying term instead of "rock awash near \odot Al". This always leads to confusion and where a number of cuts are taken all of which do not intersect, it frequently raises the question whether one or two rocks exist in such locality. On the present survey the rock awash near \triangle Lone has been referred to as rock awash at three different stages of the tide, namely, at 0 tide (pos. 7e), at 1 fm. tide (pos. 203d), and at 1 1/2 fm. tide (pos. 185d). Fortunately all the cuts intersect at one point, and the same rock was doubtless being referred to.

2. Specific Instructions:

The work conforms to the requirements of the specific instructions with the exception that a few split lines should have been run in the vicinity of the 20 fathom sounding about 1400 meters northeast of Aialik Cape.

3. Control:

The control for this survey consisted of triangulation stations (old and new), topographic stations from the 1912 survey (T. 3302) and hydrographic stations located by sextant cuts to well defined topographic features. When the old topography was transferred in the office to the hydrographic sheet it was found that the hydrographic locations of the rocks differed by as much as 140 meters from the topographic locations of ^{the} supposedly the same rocks. As no mention was made of these discrepancies in the descriptive report except the case of \odot Tom located on Tomahawk Rock, it became necessary to study all the available data bearing on the possibility of additional rocks existing that were overlooked by the topographic party. The conclusions reached in the various cases are detailed in the following paragraphs and dispositions made in conformity with these conclusions:

- (a) \odot Yap is described on the boat sheet as the "highest point on small rock." The rock is evidently one bare at high water since the signal was used on numerous occasions at high tide. Since the several excellent sextant cuts to this rock placed it about 140 meters to the northwest of the rock indicated on the topographic survey of 1912 (T. 3302) the question arose as to whether there was one or two bare rocks in this locality. No statement appeared in the descriptive report relative to this matter. A study was therefore made of all the available information and the conclusion reached that only one bare rock exists here and the correct location is that indicated by \odot Yap. This conclusion is based on two factors: First, the descriptive report of ^{the} old topographic

sheet T. 3302 states that a rock about 30 feet above high water exists here. An angle of elevation taken at pos. 32d on \odot Yap on the new survey also gives the elevation of Yap to be about 30 feet above high water. In addition to this the existence of another rock (30 feet high) in the position shown on the old topographic sheet is discredited by the fact that the rock is ~~exactly~~ exactly on range with Seal Rock (278 feet high) and pos. 32d. If there ~~was~~^{was} a rock in the old location it would have cut off Seal Rock from view and the latter could not have been used as the left object.

T. 3302 has therefore been corrected and now shows the correct position of the rock in red.

- (b) \odot Well was noted on the boat sheet as the highest point of small rock. The hydrographic location places the rock about 100 meters southeast of the old topographic determination (on T. 3302). There were numerous cuts taken to locate the signal and an excellent intersection obtained. The hydrographic location was therefore accepted as correct and the rock and rocks awash close by were adjusted on the topographic sheet to conform to the new location and are now shown in red on the topographic sheet, T. 3302.
- (c) \odot Tom is described on the boat sheet as the center of a small rock (The Tomhawk). The position as located by the hydrographic party differs from the old topographic location by about 50 meters. Due to the excellent intersection obtained with the sextant cuts this position is accepted as the location for The Tomhawk. A correction has been made in red on T. 3302 to conform to this determination.
- (d) \odot Bit. A slight discrepancy is noted between the hydrographic location of \odot Bit and the bare rock (from T. 3302) on which it is presumably located. The difference is not considered sufficient to justify a change on the topographic sheet, particularly in view of the acute cuts by which \odot Bit was located.
- (e) \odot Ter. This signal was noted on the smooth sheet as a "small outlying rock transferred from bromide of T. 3302." A careful transfer of the rock from the original sheet placed it about 80 meters N by W of the field plotting. Unless there was an extremely large distortion in the bromide, the only way that I can account for the difference is that the field party assumed that \triangle Pin was located on the northern part of the large rock off Aialik Cape and so adjusted the position of the outlying rock to conform to the location of \triangle Pin.

A "rock off Aialak Pt." was out in by triangulation from stations Pilot Rock and Slope and from the list of directions it appears probable that this rock is the same as the outlying rock shown on T. 3302 which the hydrographic party called \odot Ter. The position of the rock was therefore computed (computations attached to descriptive report) and found to be slightly to the north of the field party's position. The agreement is considered purely a coincidence. The position of \triangle Pin (1930) agrees fairly close with the rock on which \odot Lik (T. 3302) is located. It is described in the triangulation records as "large rock off Aialak Pt." and would seem to agree with the rock described in the descriptive ~~report~~ report, T. 3302, as "bearing a resemblance to a camel lying down, the highest part of the rock being 115 feet." It is believed that the high part of the rock is at the southern end and that \triangle Pin is the highest part of the rock and that \odot Lik (1912) is on the same portion of the rock but near the waters edge (noted in descriptive report, T. 3302 as water surface elev.). This is borne out by the fact that the hydrographic party when in the immediate vicinity of \triangle Pin did not use it for control (it being presumably too high an elevation) but used \odot Ter instead. This matter could be settled by reference to the field party.

With the two rocks (\triangle Pin and \odot Ter) definitely located, the other rocks in the vicinity as shown on T. 3302 were adjusted to conform to these, at the same time having due regard for the theodolite cut obtained from \triangle Pilot Rock L.H. to the "rock awash off Aialak Capt." The correct positions of these rocks have been indicated in red on the old topographic sheet, T. 3302.

- (f) \triangle Lo (1930). This position plots about 120 meters to the northwest of the outermost rock off the point nearby. The station is not described and it is uncertain whether there is an additional rock here, whether the \triangle determination is incorrect (no check on this position) or whether the topography in this area is erroneous. No mention is made of this discrepancy in the descriptive report. It should ~~however~~ be referred to the field party for further information.

4. Other discrepancies:

Besides the above mentioned differences in the hydrographic control points there were other differences that had to be ironed out. The following disposition was made of these:

- (a) Rock awash 500 meters to north of The Tomahawk. This rock was found to differ from the rock shown on T.3302 by about 90 meters. Inasmuch as the hydrographer was in this vicinity at low water it is unlikely that another rock would have escaped his notice, particularly since the old rock is supposed to cover at 3/4 tide. In view of the excellent cuts obtained on the present survey, the latter determination is accepted as correct and the note "awash at 1/4 tide" (see descriptive report page 2) will replace the old note "covers at 3/4 tide." The old topographic sheet (T. 3302) has been corrected accordingly.

It should be mentioned here that this is the same rock that is shown on H. 3421 and noted in the sounding records for that sheet (pos. 990) as a "submerged rock 20 meters on starboard beam" and corroborates generally the present hydrographic location.

- (b) Rock awash 160 meters north of Lone Rock. This rock was located by the present hydrographic party and differs in position from the rock which "covers at 3/4 tide" (as located on T. 3302) by about 200 meters. And the query arises whether one or two rocks awash exist here. Two factors tend to negative the existence of two rocks: First, the fact that the rock which the recent hydrographic party located is awash at nearly high water, the topographic party in 1912 (T. 3302) would have seen this rock when the rock which they located was out in, the latter being "awash at 3/4 tide." Second, when a cut was taken to the rock by the present hydrographic party at position 7e, the stage of the tide was low water, and the boat was so situated that both rocks would have been clearly visible. At this position the boat was only 200 meters away from the ^{old} location of the ~~old~~ rock. It seems ~~therefore reasonable to believe~~ that only one rock awash exists here. As to which location is correct, the evidence favors the later determination, considering the fact that five cuts were taken that give an excellent intersection and also the fact that other discrepancies noted in previous paragraphs indicate weakness^{cs} in the old topography. The later location also agrees closer with the rock shown on H. 3420 (scale 1:100,000). The notation "awash at 3/4 tide" would seem to be an appropriate note for this rock as far as can be determined from the notes in the sounding records and the actual height of the tide at the time. The new location of the rock has been indicated in red on the old topographic sheet.

- (c) Outer rock/ awash off Aialik Cape shown on chart 8529
 This rock was not found by the present hydrographic party although the Westdahl passed directly over its supposed location (see pos. 10-11b). The authority for this rock is H. 3421 (pos 1-o) where it is noted that "Line begins 100 m. off submerged rock 1/2 tide 10 m. off \odot Lik (East)". The height of the tide at the time was 6.6 feet which is about the same as ~~the tide~~ when the Westdahl passed over it. If this note is correct pos. 1-o should plot approximately 110 m. off \odot Lik. Instead it plots about 360 meters away. The verifier at that time evidently tied the rock in to the beginning of the line as determined by the observed angles instead of tying the beginning of the line to the rock which was 10 m. off \odot Lik. That no rock awash exists at the position shown on H. 3421 would seem to be further borne out by the fact that at pos. 88 ee (H. 3421) 500 meters to the northward of the supposed location a "heavy swell" was noted in the record. The stage of the tide was 4.5 feet. It would seem that if the party could have seen a submerged rock at pos. 1-o when 100 meters away with the tide at 6.6 feet, this rock would surely be breaking in a heavy swell with a 4.5 foot tide. Being well off the Cape the party could not have failed to notice such a break. The fact that nothing to that effect is mentioned in the records, while not conclusive, is nevertheless corroborative of the finding by the present hydrographic party that no such rock exists in the charted location (see page 2, descriptive report, H. 5085). This conclusion has been accepted and the rock should therefore be expunged from the chart.
- (d) Bare rock 1/2 mile southeast of Chiswell Islands. This rock was formerly carried on chart 8529 and originated with H. 3420 where it is clearly shown as a bare rock. The topographic survey of the same period fails to disclose any such rock in the area and it is believed that the sheet from which H. 3420 was traced may have contained a fly speck which was interpreted as a bare rock. This is mentioned here merely as a matter of record since the rock has already been expunged from the charts on advice of Captain Siems in his Coast Pilot notes of October 6, 1930.

5. Junctions with surveys.(a) Contemporary surveys.

An adequate junction was effected with the contemporary surveys H. 4724, H. 4731 and H. 4836 (surveyed in 1927 and 1928) that border this survey. The depths are in generally good agreement.

The junction with H. 5100 surveyed in 1930 will be taken up in the review of that sheet.

(b) Old surveys.1. H. 3420 (surveyed in 1912).

This survey was made on a 1/100,000 scale and contains many Bassnett tube soundings of doubtful accuracy. The sheet is fully covered by the present survey and by other surveys of greater reliability. Since no dangers nor indications of dangers are involved that are not taken care of by the later surveys and ^{by} the larger scale sheet of 1912 (H-3421) the old work (H.3420) should be superseded in its entirety by those surveys.

2. H.3421 (surveyed in 1912).

There is a satisfactory agreement between this sheet and the new survey at the upper half of the sheet except just southwest of Chat I., where differences are noted. The depths, however, are not critical.

The detached development in the vicinity of Seal Rocks has been covered by the new survey. While the old work is in somewhat greater detail, there was a lack of adequate control ^{to} the westward and as a result many of the positions in the vicinity of the rocks are very weak. A comparison was made with the new survey and several soundings were found to plot on bare rocks. The only depth of importance on the old survey in this locality is the 6½ fathom sounding near Δ Seal. According to a note in the record (par. 37-38 r) this sounding is located midway between Seal and a rock (presumably the rock close to Seal). It has ^{no} _{therefore} navigational

Significance. The development of the new survey will be adequate for the 1/80,000 scale chart and should supersede the old work in this area (an appropriate note to this effect has been added on the sheet). Whenever a larger scale chart becomes desirable for this area, a more detailed survey should then be made.

3. H.2760 (surveyed in 1905).

A proper junction was established with this sheet at the northeast corner.

6. Additional Work.

(a) Hydrographic

The only additional hydrographic work necessary within the limits of this survey is a further development of the 20 fathom spot about 1400 meters northeast of Aialik Cape.

(b) Topographic

From the many discrepancies in the 1912 topographic work that the present hydrographic survey has brought to light, it seems reasonable to conclude that other discrepancies exist on the old work that did not come within the purview of the new survey. Furthermore the old work is on a scale of 1/40,000. It is therefore recommended that a new topographic survey be made on a scale of 1/20,000 to replace those portions of T 3302 that are not covered by later surveys.

7. Information for Compiler.

For the guidance of the compiler the pertinent portion of the previous paragraphs will be summarized. A reference to these paragraphs are indicated.

(a) Use revised locations of certain rocks shown on T-3302. Correct positions are shown in red on the topographic sheet (par. 3,a,b,c,d. par. 4, a,b).

(b) Omit from charts the outer rock awash off Aialik Cape (par. 4,c).

(c) Do not use H.3420 for charting purposes (par. 5,b,1).

(d) Omit the soundings in the vicinity of Seal Rocks on H. 3421. (par. 5,b,2).

8. Conclusion.

In closing this report I wish to recommend that a copy of the same be sent to the field party concerned for the purpose of acquainting them with the many details frequently connected with the disposition of a hydrographic survey. A survey is not complete unless it can be properly harmonized with existing data of equal accuracy. Where conflicting information is disclosed during the prosecution of a survey, an effort should be made, as far as practicable, to ascertain which is correct and a definite statement to that effect embodied in the descriptive report. Even in cases where through the availability of original data the office is in a somewhat better position to make the final decision, it will nevertheless be of invaluable assistance to the reviewer if in his decisions he has the benefit of the positive statement of the surveyor.

9. Reviewed by A. L. Shalkowitz, July 1931.

Approved:

Chief, Field Records Section

Chief, Field Work Section.