4635

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton, Director

State: Alaska

DESCRIPTIVE REPORT

Topographic
~~Hydrographic~~

Sheet No. 4635
#A

LOCALITY

Behm Canal

Bell Island and Vicinity

1931

CHIEF OF PARTY

E. W. Eickelberg

U. S. GOVERNMENT PRINTING OFFICE: 1930

4635

DESCRIPTIVE REPORT

TO ACCOMPANY TOPOGRAPHIC SHEET "A"

BELL ARM - ANCHOR PASS

BEHM CANAL, S. E. ALASKA

SEASON 1931

- o -

E. W. EICKELBERG - CHIEF OF PARTY

DESCRIPTIVE REPORT

TO ACCOMPANY TOPOGRAPHIC SHEET "A"

BELL ARM - ANCHOR PASS

BEHM CANAL, S. E. ALASKA

INTRODUCTION:

Sheet "A" is the junction sheet connecting the topography of Sheet "F", executed by Mr. B. G. Jones (Captain E. W. Eickelberg, Chief of Party) during the latter part of the field season of 1930, to the topography done during the first of the field season of 1931.

PURPOSE:

The purpose of this topographic survey was to locate the topographic signals for use in controlling the hydrography within the limits of the sheet. Also to locate the high and low water lines, islands, rocks, reefs, the nature of the shore lines, and the nature of the adjacent topography along the shore lines.

INSTRUCTIONS:

The date of the instructions covering the work done on this and also on the remaining sheets executed during the season of 1931 is March 7th, 1930 and March 24th, 1931.

EXTENT:

The shore line topography on Sheet "A" embraces Bell Arm, Short Bay and Anchor Pass. The form line topography covers not only this vicinity but also the vicinity south of Behm Narrows.

CHARACTER OF SHORE LINE:

The shore line along both sides of Bell Arm is rocky, consisting of steep ledges, principally at the prominent projections, while the shore line in most of the bights gradually changes from ledges to small irregular shaped bowlders along the back part of the bights. The shore line contains several steep rocky bluffs, as shown on Sheet "A".

At the expansion at the head of Bell Arm the shore line is different, becoming gravelly and grassy as shown on Sheet "A", with mud, gravel and lagoons at the head of the arm.

Both sides of Short Bay are rocky, the east shore being somewhat steeper and containing larger bluffs than the west shore.

The upper end of the bay is marshy and almost flat, making the location of the high water line somewhat difficult to locate. A large group of bowlders lie between the low and high water lines at the north-east head of the bay.

Several streams enter the head of the bay, and have deposited so much sand, gravel, etc. at their mouths that the low water line is quite a distance out. An examination of same showing it to project out in points at several places.

The western shore line of Anchor Pass is rocky and steep. The eastern shore line is less steep and not so rocky, the shore line being mostly grassy except at the north and south ends.

Along practically all of the shore line of Bell Arm, Short Bay and Anchor Pass, the thick forests extend all the way to the shore, with the exception of where the shore is not so steep and contains a narrow grassy strip between the woods and the water's edge. Most of the shore line is so steep that the difference between the high water line and low water line, where not shown, is too close to be plotted on the sheet.

CHARACTER OF CONTROL USED:

The thirteen triangulation stations located and established during the field season of 1930 were used. These extended from stations GRIN, 1930 and LYE, 1930, near the south-west end of Bell Arm to station ANCHOR, 1930 and ELSIE, 1930, at the south end of Anchor Pass.

This triangulation scheme was started from and controlled by the main triangulation scheme executed throughout Behm Canal in 1929, by Mr. J. M. Smook, Chief of Party, based on the North American Datum.

SURVEY METHODS USED:

The occupation of control stations and cutting in of signals was used largely along the south-west end of Bell Arm, from Short Bay to the limits of the new topography. Three point fixes and numerous resections were used. From Short Bay north-eastward to the south-west end of the narrow constriction of Bell Arm a combination of traverse and three point fixes was used, the latter being used as a check on the former. Through the narrow part of the arm to triangulation station OPE, 1930, a traverse only was used, checking this, when possible, by a resection on triangulation station OPE, 1930. This traverse closed by 5 meters on this station.

For the control of Short Bay a double traverse line of 15 stations was run from triangulation station BOLT to the head of the bay and back, the traverse stations having been previously located and flagged. This traverse was begun from an orientation on triangulation station TIX, with a check on triangulation station BOAT. It closed back on triangulation station BOLT within 6 meters, but the azimuth on triangulation station TIX failed to check by almost 2°, although BOAT had previously been occupied and control azimuth cuts taken to several traverse and topographic signals up the bay.

The return traverse from the head of the bay was rerun, but in the opposite direction, beginning off triangulation station BOLT again, orienting on triangulation TIX. The topographic signals had been previously located from the first traverse. These positions were used on the boat sheet the next day so that the hydrographic party would not be delayed. A new and final location of these signals was determined when the second half of the traverse line was rerun to the head of the bay, where the adjustment was made. These correct locations are the ones on the topographic sheet. Upon investigation the sheet was found to have distorted, having expanded slightly over 1/2 of one per cent horizontally, but only 1/3 of one percent vertically at that time, this accounting for most of the trouble. Where the two positions of the stations differed materially, the mean of the two positions was taken as final.

For the control of the signals and shore line of Anchor Pass a plane table traverse was run from triangulation station ANCHOR to triangulation station OPE, consisting of nine traverse stations, previously located and flagged. The average distance observed with the alidade on these 10 lines was 572 meters, the maximum distance being 768 meters. Due to an excessive amount of rainy weather at the time this survey was made, and also the necessity of getting it made without delay, a separate topographic sheet was used, and the stations and shore line transferred. The azimuth checked on triangulation station OPE almost exactly, but the distance fell short by 34 meters on the new sheet, which corresponded to 28 meters on topographic sheet "A" when traced and transferred. This being on a 1:10,000 scale, and the error of closure well beyond the allowable limit of 4 meters per mile. The traverse was rerun in the opposite direction which checked the first running. To be absolutely sure that the telemeter rods were not in error, a check sight was obtained between triangulation stations CUB2, 1929 and DYE, 1891, which rod reading checked exactly with the computed distance between them. This error of closure was evidently due principally to distortion. The necessary traverse

adjustment was made and the signals and shore line located accordingly, and transferred to topographic sheet "A".

PREVIOUS SEASON'S WORK:

All work done during the season of 1930 is uninked, but shown in pencil to properly differentiate it from the work done during the following season.

FORM LINES:

The form lines for topographic sheet "A" were done by Mr. Kenneth S. Ulm, Aid, using a separate topographic sheet, onto which the shore line triangulation and topographic stations previously established had been transferred. This work was done at the beginning of the field season, while the other topography on this sheet was in progress.

Much fog, rain, and low lying clouds were encountered while this work was in progress. The work was done in accordance with instructions in the Topographic Manual.

ROCKS AND REEFS:

The north-eastern entrance to Anchor Pass is shallow and rocky. The least depth over the shoalest reef located in the middle of the northern end of the narrow part of the entrance is 1-1/2 feet at M.L.L.W. A sunken rock is located about midway between the south end of this reef and the north-east shore line. This rock is covered about 3 feet at M.L.L.W. Another reef extends in a northerly direction from the south-west shore line at the south end of the narrow part of the entrance. This reef is covered from 3 to 4 feet at M.L.L.W.

These are the only rocks and reefs sufficiently important to be mentioned herein, all others found being close inshore. Mid-channel courses are recommended throughout Bell Arm, Short Bay and Anchor Pass, except at the neck of the pass.

DECLINATION:

The magnetic declination in this vicinity is slightly over 30° Easterly.

No local attraction was noticed in this locality.

LIST OF STATISTICS

No. of Statute miles of highwater line..... 28.5

No. of Statute miles of lowwater line..... 5.0

No. of elevations determined.....226

Respectfully submitted,

Chas. M. Thomas,
Hydro. & Geod. Engineer,
U.S.C. & G.S.S. EXPLORER.

Approved and forwarded,

~~G. C. Jones,~~
Commanding Officer,
U.S.C. & G.S.S. EXPLORER.

Form 537a
Ed. Nov., 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4635

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. "A"

REGISTER NO. 4635

State ALASKA

General locality ~~SOUTHEASTERN ALASKA~~ Behm Canal

Locality ~~BELL ARM & ANCHOR PASS~~ Bell Island and Vicinity

Scale 1:20,000 Date of survey APRIL, 1931
& 1:10,000 insert

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

Chief of Party E. W. EICKELBERG

Surveyed by CHAS. M. THOMAS

Inked by CHAS. M. THOMAS

Heights in feet above M.H.W. to ground ~~to tops of trees~~

~~Contour~~, ~~Approximate contour~~, Form line interval 100 feet

Instructions dated March 7, 1930 & March 24, 1931

Remarks: Work was done from chartered launch "Elsinore".

GPO