

4564

Form 504 Ed. June, 1923	
DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY R. S. Patton, Director	
<div style="border: 1px solid black; width: 100px; height: 80px; margin: 0 auto;"></div>	
State: <u>Alaska</u>	
<b>DESCRIPTIVE REPORT</b>	
Topographic <del>Hydrographic</del>	Sheet No. <b>4564</b> Field # <u>A</u>
LOCALITY	
<u>Behm Canal, S. E. Alaska</u>	
<u>Caamano Pt. to Port Stewart</u>	
 <u>1930</u>	
CHIEF OF PARTY	
<u>E. W. Eickelberg</u>	

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4564

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. 4564

State ~~S. E.~~ ALASKA

General locality BEEM CANAL, S. E. ALASKA

Locality CAAMANO POINT to PORT STEWART

Scale 1/20,000 Date of survey May - June, 1930

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

Chief of Party E. W. Eickelberg

Surveyed by B. G. Jones

Inked by B. G. Jones

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

~~Contours Approximate Interval~~ Form line interval 100 feet

Instructions dated March 7, 1930

Remarks:

AUTHORITY: Authority for this survey was the Director's Instructions for Project No. 56 to the Commanding Officer, Ship EXPLORER, dated March 7th, 1930.

CONTROL: Control for this survey was furnished by triangulation established by J. M. Smook in 1929, supplementary third order triangulation established by the party during the season, and triangulation station Casmano 1921, Jay 1922, and Pen 1915 in Clarence Strait.

METHODS:

(a) The shore line was surveyed by the usual plane table stadia methods and no unusual difficulty was encountered. Traverse lines were run between triangulation stations. A list of traverse lines, closures, and adjustments is given in the next paragraph. In Helm Bay, plane table triangulation methods were used when running traverse line to locate signals along the opposite shore. There was little distortion of the sheet in this area and the plane table triangulation worked out very well. Trouble was had along the traverse line between triangulation stations RAY and POY, due to distortion of the sheet and the necessity of using a back orientation when starting the line. This traverse was rerun, and was adjusted satisfactorily. Elevations and Form lines are discussed under a separate paragraph.

TRAVERSE LINES, CLOSURES AND ADJUSTMENTS:

(1) Triangulation Station MUG to  
Triangulation Station GUM.

This traverse was run from station MUG along the north-east shore of Smugglers Cove to the head of the cove. Signals along the south-west shore of the cove were located by intersections and were used for surveying the shore line along that side. The traverse was continued from station TA (located by intersections) to triangulation station GUM, and closed to about 4 meters, which was not adjusted.

(2) Triangulation station GUM to  
Triangulation station BOND.

This traverse closed to about 5 meters and was not adjusted,

(3) Triangulation station BOND to  
Triangulation station MAN<sub>2</sub>.

Traverse closed to about 8 meters in distance and was adjusted. The closing error as taken up

along the traverse line in amounts proportional to distance of the respective points from the starting point.

(4) Triangulation Station MAN 2 to Triangulation station CAAMANO.

This traverse closed to about 6 meters in azimuth and was adjusted by swinging the line hinged at MAN<sub>2</sub> onto the true point at CAAMANO.

(5) Triangulation station CAAMANO to Triangulation station JAY.

Traverse closed to about 4 or 5 meters and was not adjusted.

(6) Triangulation station JAY to Station NIB.

Traverse was run from station JAY to station NIB, and from station NIB back to station JAY, and closed to about 5 meters which was not adjusted. Triangulation station PEN was used for the point on which to orient for starting this line.

(7) Triangulation station HELM to Triangulation station MUG in Helm Bay.

Traverse closed.

(8) Triangulation station MEL to Triangulation station BAY in Helm Bay.

The survey was controlled by three point fix position from station MEL to station NOV, where a traverse was started from a three point fix position and run to station BAY. This traverse closed to 12 meters in azimuth and was adjusted.

(9) Triangulation station BAY to Triangulation station HEDD.

Traverse closed.

(10) The surveying along the west shore of Helm Bay from triangulation station HELM to head of the Bay was controlled by stations established along the traverse lines already run and established by intersections from points on those traverse lines.

(11) Triangulation station MEL to Triangulation station MIKE.

Traverse closed to about 3 meters and was not adjusted.

(12) Triangulation station MIKE to  
Triangulation station RAY.

Traverse closed to about 4 meters  
and was not adjusted.

(13) Triangulation station RAY to  
Triangulation station POY.

This traverse closed to about 25 meters and was rerun, and the second time closed to about 12 meters, which was adjusted. The trouble was caused partly by distortion of the sheet in it's north-east corner, and the necessity of back orienting, and also by an erroneous rod reading which was corrected when the traverse was rerun. The final error of twelve meters was taken up by taking in the distance error proportionally over the traverse line and by swinging the line hinged on the starting point to take up the error in azimuth.

(14) Triangulation station STEWART to  
Triangulation station POY.

Traverse closed to about 4 meters  
which was not adjusted.

#### CONNECTION WITH PREVIOUS SURVEYS:

Shore line from south end of Bond Bay to Caamano Point and from Caamano Point north-west to Triangulation station PEN, 1915, was transferred from photostat copy of Sheet T 4002, to this sheet and was tested in the field. This survey differed somewhat in regard to detail in the bight just west of Triangulation station MAN<sub>2</sub>. The shore line was entirely re-surveyed up to station HUS on Caamano Point where a good connection was obtained between this and the previous survey. Where the shore line was re-run, those points which differed somewhat from the previous survey were carefully located to avoid possibility of error.

The High Water Rock about 450 meters west-south-west of Caamano Point was relocated and it's position changed somewhat from that shown on Sheet T 4002.

Traverse lines were run from Caamano Point north-west to station NIB and signals located for hydrographic purposes. These signals were also used as test points to check up on the shore line. No differences between the two surveys were noted and it was not thought necessary to re-survey any of the shore line.

#### ELEVATIONS AND FORM LINES:

Elevations shown on this sheet were computed from vertical angles taken from plane table set-ups.

Elevations indicate elevation of the ground above Mean High Water and are expressed in feet.

Where elevations were taken on the tops of the trees, the elevation of the ground is shown on the sheet and just above it is given in parenthesis the height of the trees. The sum of the two numbers is the actual elevation obtained by the topographer on the highest visible point. On small islands elevation of highest point of the ground is given in parenthesis to one side with height of trees just above in smaller figures and not in parenthesis.

Where elevations were taken on the tops of the trees the elevation of the ground was computed as follows: Whenever a rift in the trees could be seen, or whenever it was in any way possible to select the approximate highest point of the ground beneath the trees, a vertical angle was taken on the top of the highest tree, and a second vertical angle taken on the approximate position of the top of the ground. The difference in the elevations computed from the two vertical angles and corrected for curvature refraction, and height of instrument was taken as the value for the height of the tree. The height of the tree was then subtracted from the elevation of the top of the tree to get the elevation of the ground, which is shown on the sheet. This second vertical angle with which to compute the height of the tree was usually taken from only one station for any one elevation. Where it was not possible to get such a vertical angle on the approximate top of the ground the height of the trees was simply estimated from general appearances.

Those peaks listed in the Geographic Positions furnished from Lieutenant Smooks work in 1929 which come within the area covered by this sheet, are plotted.

The Geological Survey Map enlarged to a scale of 1:80,000 was used as follows: Stream lines and form lines were further enlarged to a scale of 1:20,000, and were transferred to this sheet for possible use in the Field.

For any particular area in which the form lines were to be sketched, elevations were first computed and plotted. The stream lines as plotted from the Geological Survey Map were then checked in the Field. These stream lines were generally correct but were changed somewhat to their true positions as seen by the topographer in relation to the elevations on his sheet. This was to be expected since the stream lines were enlarged from an original scale of 1:250,000. Additional stream lines were also sketched on the sheet in the Field.

The stream lines sketched on the sheet formed a frame work of the drainage lines and main valley lines around which the form lines were more easily sketched.

The form lines transferred from the Geological Survey Sheet indicated the main ridge and valley lines and when checked in the Field were generally correct as to elevation, and the most important larger topographical detail, that is the important ridges and valleys. They were changed considerably, in some cases, as to minor detail when sketching the smaller elevation and depressions. This was to be expected since a scale of 1:20,000 must show considerable detail which is not possible to show on a scale of 1:250,000.

It is to be understood that the form lines of 200 feet interval transferred from the Geological Survey Map were in no case accepted as correct and merely filled in to obtain the work on this sheet. They were used simply as a sketch of the more important aspects of the country which the topographer used to compare with, and check up on his own work to be sure that no detail coming within the limits of this sheet was passed over. The form lines on this sheet represent a complete survey in themselves.

The topographer found the Geological Survey Map more useful as a general comparison with his own work for the purpose of finding ways of improving his own sketching so as to show a complete and natural picture of the country represented.

The form lines transferred from the Geological Survey Map to this sheet were not particularly useful in the field for the reason that a map on a scale of 1:20,000 must show more detail than one on a scale of 1:250,000, and form lines enlarged from the small scale must be altered considerably in filling in the larger amount of detail consistent with a scale of 1:20,000. However, it is thought that the form lines as shown on the Geological Survey Map give an accurate picture of all detail important to the navigator. All important ridge and valley lines, the general formation and character of the country, and all detail that can be seen, except on close inspection at short distances, is shown on that map. The topographer had an opportunity during the season to be with Mr. Sergeant of the Geological Survey while both parties were working in Spacious Bay, Behm Canal. Mr. Sergeant's methods of field work were observed and his field sheets were gone over carefully. It was noted that Mr. Sergeant obtained elevations on all small hills, humps, shoulders, and land marks as well as on the more important peaks and ridges. His sheet had on it per unit area surveyed (that is, per square mile) as many or more elevations than would be required for the same area on our larger scale field sheets.

The difference between the Geological Survey Sheet and our own, was not in the number of elevations obtained, but in the detail shown. The Geological Survey Sheet on a small scale with a form line interval of 200 feet, showed only the more important and larger detail, whereas our sheet on a scale of 1:20,000 with 100 foot interval, showed considerable small detail.

The Geological Survey Sheet had one great advantage in that it reached inland far enough to get prominent land marks which our sheet often missed.

After comparison of the field sheets, it is not believed that the greater amount of small detail obtained on the scale of 1:20,000 is of much consequence to the Navigator, nor is the amount of detailed sketching necessary to that scale always consistent with the number of elevations possible to obtain.

#### MAGNETIC OBSERVATIONS:

Observations for magnetic variation were taken with the declinoire at triangulation station MAN<sub>2</sub> in Latitude 55° 30', and triangulation station HEDD in Latitude 55° 40'. Comparison with the declinometer value for variation at station MAN<sub>2</sub> in 1930, gives a correction of plus 46minutes for the declinoire used at both of these stations. The value obtained without correction is shown on the sheet and below it is given the correction to be applied.



## GENERAL DESCRIPTION OF THE COUNTRY

Approaching the Western Entrance of Behm Canal from the South or East:

Caamano Point is marked by a beacon.

The shore line from Caamano Point north to the north point of Bond Bay is low and generally flat. The small indenture west of triangulation station MAN<sub>2</sub> has extensive reefs and off-lying rocks and has no value as an anchorage. Bond Bay has extensive low water flats. It has little value as an anchorage as it is open to south-east winds.

From Bond Bay north to triangulation station GUM the shore line is steep and trees extend about to High Water.

Between Caamano Point and Smugglers Cove the country back from the beach is wooded and the hills have a fairly gentle slope. Most prominent is the ridge beginning with the prominent twin wooded peaks of about 2200 feet elevation in Latitude 55° 33', Longitude 131° 58', and extending north-west for about four miles. The west one of these twin peaks has a prominent spot of grass and rock outcrop on its southern face. This spot is green in summer, brown in early spring and in the fall, and is probably covered with snow in winter. It shows clearly for at least six or seven miles to the south and south-east, and makes a good land mark for charts.

A small cliff at the south-east end of this ridge is prominent when in the sun and at other times shows on near approach. This cliff is recommended as a land mark for charts.

Smugglers Cove has extensive shoals at its head. The edge of the tide flats is marked by the east one of three piles shown. The Cove is used for laying up floating fish traps during the winter and spring. It has little value as an anchorage. Vessels using the cove should carefully avoid the group of rocks just off the point which makes south-south-east from the north shore about 0.4 mile from the north entrance.

On the south-west side of Helm Bay, about one and one fourth miles from the south side of the entrance is a small narrow island which is low and bare except for a small clump of bushes, and two trees on its south end. The highest of these two trees (Station TOP) is dead and has an elevation of 68 feet. A long narrow reef extends north-west from this island for about 0.4 mile to a second narrow wooded island. Entering from the south and

passing on the west side of the first island, good anchorage is found at a point about mid-way between the second island and the west shore of the Bay. A second anchorage is in the small indentation on the west side of the Bay and about four and a half miles from the south side of the entrance and just south of the abandoned mining camp at station CHIM.

The country back from the shore is generally wooded except for the two bare topped ridges on the west side near the head of the Bay.

The two bare areas on the slopes of the hills on the north-east side (marked logged areas on the sheet) in Latitude  $55^{\circ} 39'$  to  $55^{\circ} 40'$ , Longitude  $131^{\circ} 57'$  to  $131^{\circ} 59'$ , are areas that have been logged over and are bare except for underbrush and a few scattered dead trees. In contrast with the heavily wooded areas surrounding them, these bare spots show prominently and can be seen when rounding Betton Island entering Behm Canal. They are prominent land marks for charts.

Helm Bay to Point Francis:

A low flat country, wooded and with extensive tundra areas, extends from the shore back for one to two and a half miles to the first fringe of hills. This area appears to the Navigator to be heavily wooded but extensive tundra flats are seen when looking down from an airplane. These tundra areas are also seen on the airplane photographs of this area.

The hills beginning at the head of Helm Bay extending south-east and then north-east to Point Francis are heavily wooded and have fairly steep slopes which are marked by numerous small ravines and drainage lines.

The shore line from Wadding Cove to about one half mile north of Raymond Cove is low and flat with extensive low water areas of rock ledge. The beach between the trees and High Water line is composed of low flat rock ledge which covers nearly to the tree line on extreme tides.

CONNECTION WITH TOPOGRAPHIC SHEET FIELD LETTER "D"

The shore line on this sheet connects with that on Sheet Field Letter "D" at triangulation station STEWART. Form lines connect along parallel of Latitude  $55^{\circ} 42'$ .

Respectfully submitted,

*B. G. Jones*

B. G. Jones,  
Jr. Hydro. & Geod. Engineer.

Examined, approved and forwarded,

*E. W. Eickelberg*

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

PLANE TABLE POSITIONS

OBJECT AND DESCRIPTION	LAT	D.M.	LONG	D.P.	HEIGHT	REMARKS
Tall dead tree-one of the two trees on south tip of small narrow island, $1\frac{1}{4}$ miles inside south side entrance to Helm Bay.	55°36'	550 m (1306)m	131°56'	696 m (355)m	68 ft.	Signal TOP
Chimney of largest of two frame houses of mining camp on west side of Helm Bay.	55°39'	134 m (1722)m	131°59'	680 m (369)m		Signal CHIM

STATISTICS.

Sheet Field Letter "A"

Caamano Point to Port Stewart

Statute Miles of shore line, high water	60.4
Statute Miles of shore line, low water	42.4
Area form lines - square statute miles	23.5
Number of elevations	100
Number of permanently marked stations determined by Planetable	2
Number of permanent land marks for charts located by Planetable	3

APPROVAL SHEET

TO ACCOMPANY TOPOGRAPHIC SHEET "A"

This descriptive report and accompanying sheet are forwarded and approved.

The sheet represents an excellent survey of the area covered, and has been very carefully done. There were no apparent difficulties between hydrography and topography at any time.

The contours connect with the Geological Survey Map of this area.



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