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Diag Cht. No. 8102-2 & 8201-3

5144

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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FEB 5 1932

State: Alaska Acc. No. \_\_\_\_\_

DESCRIPTIVE REPORT

*Topographic* } Sheet No. 5144  
*Hydrographic* } Field #1

LOCALITY

Behm Canal

Bell Arm and Anchor Pass

1931

CHIEF OF PARTY

E. W. Fickelberg

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET NO. 1

BELL ARM - ANCHOR PASS

BEHM CANAL, S. E. ALASKA

SEASON 1931

- o -

E. W. EICKELBERG, CHIEF OF PARTY.

## DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET NO. 1.

### AUTHORITY:

Director's Instructions dated March 7, 1930, Project  
No. 56.

### SCALE:

The scale of Bell Arm and Short Bay is 1:20,000, and  
that of Anchor Pass 1:10,000. All soundings are plotted in fathoms  
and fractions thereof.

### EXTENT AND GENERAL DESCRIPTION:

This sheet includes the hydrographic survey of a narrow arm  
of Behm Canal, six and one half miles long, one half mile wide at its  
widest part, and Short Bay, which is one and three quarters miles in  
length. The limits in longitude and latitude respectively are 131°25'  
to 131°35' West longitude, 55°56.8' to 56°00.3' North latitude. The  
general direction of the Arm lies in a Southwesterly Northeasterly  
direction. The Southwestern end of Bell Arm connects with hydrographic  
sheet No. 6 of the 1930 season.

Anchor Pass lies in a Northwesterly, Southeasterly to a  
Southern direction. The Pass is two and one half miles long, one half  
mile wide at its Southern entrance and one hundred and fifty meters  
wide at its Northern entrance. Anchor Pass connects with the North-  
eastern end of Bell Arm, and to Behm Canal at Latitude 55°57.6' North.  
Its location in latitude and longitude respectively is 55°57.6' to  
55°59.9' North latitude, 131°23.5' to 131°25.8' West Longitude. The  
Southern entrance connects with hydrographic sheet No. 6 of the 1930  
season.

### CONTROL:

Triangulation and topography furnished the necessary control.

### METHODS:

The approved methods of the Service were used throughout.  
Soundings were taken from the gasoline sounding launch Tender No. 1,  
which worked from the chartered launch "Elsinore", which in turn was  
one of the several units of the U.S.C. & G.S.S. EXPLORER. All machine  
soundings were taken by means of a gasoline power driven sounding  
machine which was located aft. A fourteen pound lead attached to

regular stranded sounding wire was used in all vertical casts in depths over fifteen fathoms. Hand lead soundings were taken at the beginning and end of each line and especially in important or critical places in depths of water under fifteen fathoms. The distance between where the positions were taken and the vertical position of the sounding wire varies from four to six feet.

Sounding lines were run parallel to the meridians, and spaced two hundred meters apart, with splits between out to the seventy-five fathoms curve, to the South end of Short Bay. One hundred meter lines were run parallel to the meridians up to the Narrows at longitude  $131^{\circ} 28'$  West, where one hundred meter lines were run parallel to the shoreline in the remaining part of the Arm and in the head of Short Bay.

In Anchor Pass sounding lines were run parallel to the shoreline and fifty meters apart, with splits between in the Narrows, to latitude  $55^{\circ} 58.5'$ , where the lines were run parallel to the meridians and fifty meters apart to latitude  $55^{\circ} 58'$ , where the lines were spaced one hundred meters apart.

#### CHARACTERISTICS OF THE SHORE LINE AND BOTTOM:

The shore line along both shores of Bell Arm is rocky and rather abrupt except at the Northeastern head of the Arm and at the head of Short Bay, where the shore line is quite level due to creek flats. The West shore line of Anchor Pass is rocky and rather abrupt, but the Eastern shore line is in general rather flat and grassy.

The bottom of the Southwestern end of the Arm is rocky and sandy to the entrance of Short Bay, where the bottom is muddy for the remainder of the Arm, including Short Bay. In Anchor Pass, the nature of the bottom is muddy throughout except in the Narrows, where the bottom is rocky.

The bottom in general is fairly irregular.

#### CURRENTS:

No current observations were taken in this locality, except from observations while sounding, and from the anchored launch "Elsinore".

Through the Northwest entrance of Anchor Pass and just North of it, a two to three knot current runs in a Northwesterly direction during the period from about two hours after low until about two hours before the next low tide. From two hours before until two hours after low tide the current runs in a Southeasterly direction with a velocity of about one knot.

TIDES:

A portable automatic tide gauge was in operation in Fitzgibbon Cove, and all tide reducers were taken from its record covering the period during which the soundings were taken, except for one letter day on July 27th, when the tide gauge at Fitzgibbon Cove had been dismantled and the one at Shoalwater Pass was out of commission, when the standard automatic tide gauge at Ketchikan was used. Soundings were of such nature that the difference of time and stages of tide between the standard tide gauge at Ketchikan and the portable tide gauge at Fitzgibbon Cove were not taken into consideration.

ANCHORAGES:

A very good anchorage may be obtained towards the head of Short Bay in seventeen fathoms of water, muddy bottom, free from all winds.

A fair anchorage may be obtained in the expansion at the head of Bell Arm, but care should be taken in anchoring near the Northwestern entrance to Anchor Pass on account of the current which is encountered there at or near high tide. The best anchorage is 600 meters West by North of the entrance, 15 fathoms of water, muddy bottom.

A good anchorage may be had in Anchor Pass, mid-channel, 500 meters Northwest of Latitude  $55^{\circ}59'$ , in seventeen fathoms of water, muddy bottom.

DANGERS AND OBSTRUCTIONS:

The entire length of Bell Arm, Short Bay, and Anchor Pass, except at its Northwestern entrance is free from all obstructions.

The Northwest entrance is obstructed by sunken rocks and should not be crossed at low tide and only with local knowledge.

1. A 23 fathom shoal  $266^{\circ}$ (true) 160 meters from triangulation station "LYE". This in all probability is the end of the sunken ledge that extends out from triangulation station "LYE".

2. A small ledge between positions 9a and signal "AB".

3. A rock baring 9-1/2 feet at M.L.L.W.,  $266^{\circ}$ (true), 80 meters from signal "DAD".

4. A ledge baring 13-1/2 feet at M.L.L.W. 45 meters West of signal "DAD".

*Adjoining Sheet  
445163 shows a  
17 fath. sounding  
in this shoal  
S.N.T.*

5. Ledge of small extent just Southwest of signal "AL". ✓
6. Rock covered 2 feet at M.L.L.W.  $120^{\circ}$ (true), 100 meters from signal "MAD", Short Bay. ✓
7. Ledge of small extent between signal "EAT" and position 20 f. ✓
8. Sunken rock covered 1-1/2 feet at M.L.L.W.,  $279^{\circ}$ (true), 60 meters from signal "DIG" on position 12 l, Anchor Pass. ✓ ✓
9. Sunken reef in Anchor Pass covered 3-1/2 feet at M.L.L.W.  $275^{\circ}$ (true) 80 meters from signal "DIG" on position 9 l. ✓ ✓
10. Sunken rock covered 7 feet at M.L.L.W.,  $269^{\circ}$ (true), 30 meters from signal "DIG" on position 5 l.
11. Sunken ledge covered 7-1/2 feet at M.L.L.W.,  $5^{\circ}$ (true), 80 meters from signal "GEM". ✓
12. Shoal area, least depth 16 fathoms,  $85^{\circ}$ (true) 335 meters from signal "ZONE", on position 37 k, hard bottom. ✓
13. Rock bares 2-1/2 feet at M.L.L.W.,  $160^{\circ}$ (true), 60 meters from signal "CITY". ✓

Respectfully submitted,

*Henry O. Fortin*  
Henry O. Fortin,  
Jr. H. & G. Engr.,  
U.S.C. & G.S.S. EXPLORER.

FORWARDED:

*F. H. Hardy*  
F. H. Hardy,  
Commanding Officer,  
U.S.C. & G.S.S. EXPLORER.

STATISTICS SHEET NO. 1.

Date	Vol.	Day	Boat	Sta.Mi.	Pos.	Soundings. Hand Mach.		Naut. miles to & from work.
April 22	1	a	Tender #1	14.7	117	42	178	5.3
April 23	1	b	"	10.4	90	29	131	5.0
April 24	1	c	"	10.9	95	35	133	5.0
April 25	1	d	"	4.8	30	25	66	5.4
April 29	1&2	e	"	17.1	139	274	191	3.8
April 30	2	f	"	3.2	54	33	54	5.1
May 1	2	g	"	10.9	113	308	126	1.5
May 4	2	h	"	9.0	85	32	169	1.4
May 6	3	j	"	9.3	129	254	117	1.5
May 7	3	k	"	3.7	46	5	54	4.4
May 8	3	l	"	1.0	18	47	-	8.8
May 9	3	m	"	10.3	101	207	142	0.9
May 12	3	n	"	1.6	20	58	18	0.3
July 27	3	p	"	3.2	38	7	59	0.2
Total				110.1	1075	1356	1438	48.6

Capt. Ellis.

February 20, 1932.

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in  
3 volumes of sounding records for

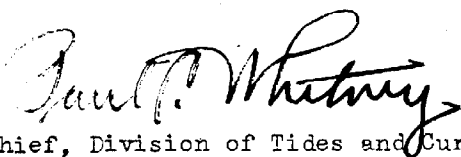
HYDROGRAPHIC SHEET 5144

Locality Bell Arm and Anchor Pass, S. E. Alaska

Chief of Party: E. W. Mickelberg in 1931  
Plane of reference is Mean lower low water, reading  
4.1 ft. on tide staff at Fitzgibbon Cove  
17.4 ft. below B. M. 1  
4.2 ft. on tide staff at Ketchikan  
18.3 ft. below B.M. 22

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.

  
Chief, Division of Tides and Currents.



SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5144  
Bell Arm and Anchor Pass, Behm Canal, Alaska.  
Surveyed in 1931  
Instructions dated March 7, 1930 (U.S.S. Explorer)

Chief of Party - E. W. Eickelberg  
Surveyed by - H. O. Fortin.  
Protracted and soundings plotted by - H. O. Fortin.  
Verified and inked by - J. D. Torrey.

1. The records conform to the provisions of the Hydrographic Manual and the plan and extent of the survey satisfies the specific instructions.
2. Soundings.- A few of the lines were run normal to the shore, the majority, parallel with the meridians. The crossings are consistent. All dangers disclosed by the survey are close inshore with the exception of the northwest entrance to Anchor Pass where there is a rocky ledge near mid-channel with least depths of  $1\frac{1}{2}$  and  $3\frac{1}{2}$  feet at mean lower low water.
3. Depth curves.- The information is sufficient to define the depth curves but owing to the steep side slopes only the more characteristic curves were drawn on the sheet.
4. Adjacent and overlapping surveys. The junction with contemporary survey sheet H. 5103 is satisfactory.

A comparison with T. 2063 (surveyed 1891) shows no great change in details. A bank of 16 fathoms least depth in Anchor Pass latitude  $55^{\circ}58'$  longitude  $131^{\circ}24'$  was found by the new survey. The rocky ledges, shown on the previous topographic survey by "rock awash" symbol were confirmed by the present survey.

Chart 4105 and T. 2063 show the rock in the northern entrance to Anchor Pass by the "rock awash" symbol. The present survey shows the highest point of the rock covered by  $1\frac{1}{2}$  feet of water at M.L.L.W. Inasmuch as this area is not subject to heavy seas that the tidal range is more than 14 feet and that the rock shows only at extreme low tide, it would seem desirable to show the rock by depth rather than by the rock awash symbol.+

5. Recommendation: The present survey (H. 5144) shows a much greater development of the area and should supersede the former survey (T. 2063) for all charting purposes.

No further surveys in this area are deemed necessary. The plotting of the hydrography in the Northern entrance to Anchor Pass shows approximately 90% of the soundings taken during the survey and shows the area in sufficient detail for the proposed chart.

6. Reviewed by - R. J. Christman, April 1932.

Inspected: E. P. Ellis.

+ This recommendation is in accordance with present charting practice, but leads to frequent reports of "rocks awash" in areas where we show soundings.

A. M. S.

Approved: A. M. Sobieralski (Signed)

Section of Field Records.

Report on Hydrographic Sheet No. 5144

Behm Canal, Alaska.

Bell Arm and Anchor Pass.

Surveyed in 1931

Instructions dated March 7, 1930 (Explores)

Chief of Party, E. N. Eickelberg.

Surveyed by H. O. Fortin

Protracted and soundings plotted by H. O. Fortin

Verified and inked by J. D. Torrey.

1. The records conform to the requirements of the General Instructions.
2. The plan and character of development conform to the requirements of the General Instructions.
3. The plan and extent of development satisfy the specific instructions.
4. Sounding line crossings are adequate.
5. The information is sufficient for drawing the depth curves.
6. The junction with sheet H-5103 is satisfactory.
7. The protracting and plotting by the Field Party is satisfactory.
8. The surveying is excellent and no additional surveying appears necessary.

J. D. Torrey.

March 15, 1932

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. 5144  
FEB 2 1932  
U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES

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. 1.

REGISTER NO. 5144

State Alaska

General locality Behm Canal

Locality Bell Arm and Anchor Pass

Scale 1:20,000 Date of survey April - May, 1931.  
Insert 1:10,000

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

Chief of Party E. W. Eickelberg

Surveyed by Henry O. Fortin

Protracted by Henry O. Fortin

Soundings penciled by Henry O. Fortin

Soundings in fathoms ~~last~~ and fractions of fathoms.

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by J. D. Torrey

Verified by J. D. T.

Instructions dated March 7th, 1930.

Remarks: