

4398

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

SOUTHWEST  
State: *Alaska*

JAN 80

11-5613

DESCRIPTIVE REPORT.

*Hydrographic* Sheet No. *4398*

LOCALITY:

~~*SW Alaska*~~

*Shelikof Strait*

*Portage and Wide Bays-Offshore*

1924

CHIEF OF PARTY:

*Clem L. Gorner*

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DESCRIPTIVE REPORT  
To Accompany  
HYDROGRAPHIC SHEET "A", SHELIKOF STRAIT, SOUTHWEST ALASKA.  
Instructions dated March 11, 1924

GENERAL.

The hydrography as shown on this sheet covers an area of about 475 square statute miles in the southwest end of Shelikof Strait and embraces all work from a distance of approximately two miles from the coast to a distance of 15 miles from the general coast line. This is in geographic position between latitudes  $57^{\circ} 10'$  and  $57^{\circ} 35'$  and longitude  $156^{\circ} 20'$  and  $156^{\circ} 15'$ .

This sheet is joined on the north by Hydrographic Sheets 1, 2, and 3; scales 1:20,000, 1924, vicinity of Cape Unalishagook, Cape Igvak and Cape Kayakliut respectively.

COAST LINE.

The coast line is very rocky and is bordered in most places, except at or near the heads of the bays, with rocky bluffs from 15 to 100 feet high. The inshore area is mountainous and in the vicinity of Cape Igvak and the peninsula of which it is a part there are many sharp peaks and in general a very rugged terrain. Where there is sufficient soil and moderate slopes grass is abundant and mosses and alders are found in many places. There are no trees in this section of Alaska.

OUTLYING DANGERS.

The only outlying dangers related to the work on this sheet are Kilolak Rocks the position of which has been determined by sextant cuts from the DISCOVERER during the course of the hydrography and is shown by signal KIL about 5 miles west of the western-most hydrography. Several shoal soundings near the western limits of the sheet indicate a very rugged bottom and await developments at a time when work can be extended to the westward of the limits of this sheet. It should be mentioned here that the correct positions of these rocks, which are not more than 100 meters apart is considerably different from the position as shown on the chart.

INSHORE DANGERS.

The inshore dangers have been mentioned in the descriptive reports covering hydrographic sheets Nos. 1, 2, and 3, scales of 1:20,000 for the 1924 season, and in reports of 1923 work for the work inshore of the limits of this sheet. These will be reviewed briefly:

The reef making out from Channel Rock, Wide Bay, 1.3 miles south and southeast breaks at all stages of the tide but is entirely covered at high water and is not very conspicuous unless there is a heavy swell outside.

Cape Igvak is clear of outlying dangers except a rock 0.3 mile south of the extreme southeast point of the Cape. This is much too close inshore for any large boats to approach.

Cape Unalishagvak is clear of dangers as far as the examination has been made and the indications to the eastward are that it is clear.

A reef borders the Small Islands at the entrance to Island Bay, and should be given a good berth when navigating in that area.

At the western limits of this sheet in the vicinity of Cape Kayakliut, Titeliff and Pond Islands the coast line should not be approached closer than two miles except with extreme caution as there are numerous indications of pinnacle rocks and a very broken

## INSHORE DANGERS. Contd:-

bottom in general. Some rocks on sheet #3 were seen at low water, otherwise they would not now be located. This section of the coast is not of great importance to navigation. There are no industries in this immediate vicinity and the entrance to Wide Bay should be made to the eastward.

## CHARACTER OF BOTTOM.

The soundings give no indications of real dangers to navigation in this area but for a distance of about 8 miles off the coast the bottom is uneven, contains several small deeps and in general seems to be characterized by the same features as the nearby land surfaces. Outside of the 100 fathom curve the bottom is very regular and is almost flat. The 100 fathom curve is about  $\frac{5}{2}$  miles off the coast at Cape Unalishagvak while off Wide Bay it is about twice that distance.

All work from position 1 to 20 "C" day, July 3 (Vol. 1) is rejected because it is believed that all soundings taken during that time are 10 fathom too small. They were made with a trolley arrangement as follows: A 40 lb. lead with a hard lead line marked in the ordinary way was bent on to the stranded wire from the sounding machine located on the boat deck just forward of the pilot house. The ship was kept underway at a speed of from 40 to 50 revolutions according to the depth of the water obtained and at times these revolutions made about 4 and 5 knots respectively. The hard lead line was lead from below the sounding boom, where it was attached to the stranded wire, to a sounding chair secured to the starboard whaleboat abeam of the office and about 18 fathoms from the lead itself to where the leadsman stood. At regular intervals the sounding was made by releasing the machine and allowing the wire to run out. At the same time the leadsman payed out his lead line until bottom was reached and held the line taut until up and down under him when he read out the sounding to the recorder on the bridge. With this method it was possible to secure soundings up to 40 fathoms while underway and without the use of tubes.

The sounding line in question was the first one run within several miles of the same locality and the depths encountered were not at all surprising in view of the fact that the bottom was very uneven. The soundings were several times checked from the bridge because the even 10 fathom marks on the lead could be seen from the bridge and the sounding checked in this way. The same plan was followed on this day and there was no doubt as to the correctness of the soundings until other soundings on adjacent lines were taken and ~~were~~ found to be considerably deeper. This lead to re-running this line two times with the result that no one sounding was secured nearer than about 10 fathoms of the previous depth, and it is believed that the lead line was read 10 fathoms too small.

In position about  $5\frac{1}{2}$  miles southeast of station PIN extra soundings were made to verify work done during the early part of the season when it was not certain whether or not a 29 fathom sounding had been obtained. In this case it is believed that the reel began to turn faster than the lead was sinking, a condition often obtained when the lead is near the surface and there is not much resistance, and was stopped for bottom when it was not really on bottom. Later soundings near the same place failed to reveal any indication of such a depth.

See check  
Sundings 1-36 m  
#32-50V  
J. na.

5B 2  
02-102 R

**CURRENTS.**

No current observations were made during the season but from general observation while engaged in the work it is believed that the maximum current during spring tides is not more than 2 knots while the average is less than one mile per hour. Tide rips are noticeable around both Cape Unalishagvak and Cape Igvak but are not particularly bad except for small boats and when there is considerable wind. During calm weather small boats navigate these waters at any stage of the tide.

**LANDMARKS.**

All headlands along this section of the coast are bold mountains and while they are quite prominent in clear weather there are no particular characteristics to make them much different from other headlands in the same general vicinity.

**METHODS.**

All positions were determined by sextant fixes on triangulation stations and topographic and hydrographic signals which were checked in position. In the case of signals located by sextant cut intersection it should be said that always three cuts and usually many more were taken to insure rigidity of location.

The sounding lines were run approximately normal to the trend of the general coast line and were spaced in accordance with instructions covering the work dated March 11, 1924. These called for the following spacing of sounding lines.

Shore line to 20 fathoms, lines spaced 300 meters apart.							
20 fathom to	50	"	"	"	600	"	"
50	"	100	"	"	1200	"	"
100	"	300	"	"	2400	"	"

**TIDAL OBSERVATIONS.**

During the season of 1923 a tide staff was maintained near Lee's Cabin on Wide Bay but was so exposed that it was carried away once and because of its distance from the edge of the water was quite unsatisfactory. For this reason some time was spent at the beginning of the season to locate a proper site for a portable field gauge. The site selected was in Portage Bay Lagoon or Kanatak Lagoon at the location of the 1923 tide staff. While this was farther than desirable from some sections of the hydrography it controlled it is also quite certain that any other location of tide staff or gauge would have caused so many gaps in the observed tides as to make an even less desirable condition. The only places with suitable protection for a tide gauge in Wide Bay were in shallow water and could not be used for that reason.

This report is accompanied by the usual statistical sheet.

Respectfully submitted,



CLEM L. GARNER.  
Lieut. Comd'r.

STATISTICS SHEET "A"

DATE		Vol.		MILES			
1924	Letter	No.	Positions	Soundings	Statute	Vessel	
July	1	A	1	42	144	115.0	Str. DISCOVERER
"	2	B	1	67	95	60.6	do
"	3	C	1	105	235	81.0	"
"	12	D	1	117	414	40.4	"
"	17	E	2	111	314	36.0	"
"	18	F	2	24	73	5.4	"
"	19	G	2	74	226	22.8	"
"	23	H	2	126	390	44.6	"
"	24	J	3	89	220	32.5	"
Aug.	1	K	3	33	94	14.0	"
"	2	L	3	70	217	27.5	"
"	8	M	3	46	149	15.5	"
"	9	N	3	81	277	34.5	"
"	11	P	4	85	144	41.6	"
"	12	Q	4	132	221	65.0	"
"	13	R	5	122	198	55.8	"
"	14	S	5	68	122	27.0	"
"	15	T	5	59	59	69.0	"
"	16	T	6	18	18	21.0	"
"	25	U	6	45	55	38.5	"
"	26	V	6	53	105	33.0	"
T O T A L S			1567	3770	780.7		

Sq. miles (Statute) on Sheet = 489.

February 14, 1925.

Section of Field Records

~~Division of Hydrography and Topography~~

Division of Charts:

Tide reducers are approved in  
6 volumes of sounding records for

HYDROGRAPHIC SHEET 4398

Locality: Shelikof Strait, S. W. Alaska

Chief of Party: Glen L. Garner in 1924

Plane of reference is mean lower low water

6.3 ft. on tide staff at Kanatak Lagoon, Portage Bay, Shelikof St., S.W. Alaska

For reduction of soundings, 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 wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each 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.

Report on Inking and Verifying H4398

The protracting and plotting of soundings were well done. The field drafting was excellent and completed to the extent required by the General Instructions.

The area is very broken and soundings of considerable differences exist side by side.

The 29 fathom spot mentioned on page 2 of the descriptive report was disproved by subsequent soundings. No depth less than 100 fathoms was found on 92-102 R day.

The records were well kept and sufficient notes made.

Feb. 24, 1925

F. M. Albert, Draftsman,  
Section of Field Records.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON February 27, 1925.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4398

Portage and Wide Bays, Offshore, Shelikof Strait

Surveyed in 1924

Instructions dated March 11, 1924.

Chief of Party, C. L. Garner.

Surveyed by C. L. Garner, R. L. Schoppe, M. O. Witherbee, H. W. Hemple,  
W. Weidlich.

Protracted and soundings plotted by M. O. Witherbee.

Verified and inked by F. M. Albert.

1. The records conform to the requirements of the General Instructions, except that bottom characteristics are omitted on at least three-fourths of the pages of the sounding records. Although practically all of the bottoms noted have been plotted there is an average of only one bottom to eight square miles of area surveyed. Moreover those given cannot be considered as representing the average character of the bottom.
2. The plan and character of development conform to the requirements of the General Instructions, except that correction curves were not prepared and used for tube soundings. An examination of the tube graphs submitted shows that no corrections that might have been applied would have exceeded 5% of the recorded depths, and it was therefore decided to use the tube depths as recorded.
3. The plan and extent of development satisfy the specific instructions. The scale of the survey was left to the judgement of the Chief of Party and that adopted, 1:80,000, is so small that only about 80% of the soundings could be plotted, and the work will have to be enlarged for use on the (existing chart)\* A scale of 1:60,000 would have permitted plotting all the soundings and paper 42 inches wide would have been large enough.
4. The sounding line crossings are adequate considering the uneven character of the bottom.
5. The information is sufficient for drawing the usual depth curves.
6. The usual field plotting was done by the field party.

\* Blueprints of chart not received in field until after work had begun on sheet. R-113

*Instructions provide for scale as large as practical to include contour (approx. 1/100,000) R-113*



7. The junctions with adjacent sheets are satisfactory.
8. There are no indications of dangers within the area of this survey and no further surveying is required, except on the two banks 3 miles and 7 miles southeast of Pond Island.
9. Fischer-Rude sounding tubes were extensively used on this survey. The methods used conform to the requirements, and the results are highly satisfactory.
10. The character and scope of the surveying (except for omission of bottom characteristics) and field drafting are excellent.
11. Reviewed by E. P. Ellis, February, 1925.

*A.P.*

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. (A) 4398

State . . . S. W. Alaska . . . . .

General locality . SHELIKOF STRAIT . . . . .

Locality . . . . . PORTAGE AND WIDE BAYS, — Offshore . . . . .

Chief of party . . . CLEM L. GARNER . . . . .

Surveyed by . . . Steamer DISCOVERER . . . . .  
*C. L. Garner W. Weidlich  
R. L. Schoppe M. O. Witherbee  
H. W. Temple*

Date of survey . . . July and August 1924 . . . . .

Scale . . . . . 1 : 80,000 . . . . .

Soundings in . . . Fathoms . . . . .

Plane of reference M.L.L.W. . . . .

Protracted by M. O. Witherbee soundings in pencil by M. O. Witherbee

Inked by F.M. Albert . . . . . Verified by F.M.A. . . . .

Records accompanying sheet (check those forwarded):

Des. report,  Tide books,  Marigrams,  Boat sheets,

Sounding books,  Wire-drag books,  Photographs.

Data from other sources affecting sheet . . . . .

Remarks: