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Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: Alaska

DESCRIPTIVE REPORT.

Hyd. Sheet No. 3551

LOCALITY:

Approached ¹⁰⁰⁰⁰⁰ to
Kuskokwim
River

191

CHIEF OF PARTY:

11-4645

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DEPARTMENT OF COMMERCE

Coast and Geodetic Survey

O. H. Tittmann, Sup't.

Hydrographic Sheet No. _____

Approaches to Kuskokwim River,

A L A S K A

Steamer EXPLORER

R. S. Patton, Assistant, Chief of Party.

Begun June 10, 1913

Completed Sept. 10, 1913.

Scale 1-100000

Boats..EXPLORER, YUKON, & Launch # 46.

Hydrography in charge of R. S. Patton, Ass't.,

R. R. Lukens, Ass't. & A. R. Hunter, W. O.

Positions plotted by H. A. Cotton, & A. R. Hunter.

Soundings plotted by R. S. Patton, A. Joachims & H. A. Cotton.

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DESCRIPTIVE REPORT.

To accompany Hydrographic Sheet # 3551
Survey of Approaches to Kuskokwim River.

Scale 1-100000.

This, the offshore sheet of the survey, is joined on the east by two other sheets on a scale of 1-60000; the southern one surveyed by the EXPLORER and the northern one by Ass't. Hardy, commanding the YUKON.

At the beginning of the season, it was arranged between Capt. Hardy and myself that he should work with the YUKON, from the latitude of Δ Head northward, and that the EXPLORER should work south of that line.

Owing to the large area to be covered, and the limited number of days of good weather on which it would be possible to do offshore work, it was deemed advisable to make the sounding in the nature of a reconnaissance rather than a finished survey. The sounding lines were therefore spaced one mile apart, and indications of shoaling noted were left for detailed examination later.

In this area of mile spaced lines, it will be noted that a small area abreast of Cape Newenham has not been developed. This was for the reason that during the greater part of the season the only signals available for hydrography followed the curve of the shore between Cape Newenham and Goodnews Bay. This area in question was on the circle of all available fixes. During the season, therefore, the topography was run between

Cape. Newenham and Cape Peirce, in order that the latter might be available for use as a right hand object for this work. As it happened, however, there was ^{no} unfavorable opportunity for doing the work after the signals had been located.

It was very desirable that the main channel into the river should be developed if possible before the end of the season. Therefore, after the work above described had progressed to the point shown on the sheet, I decided to take up work to the northward of the first limit, rather than try to carry the survey any farther to the westward.

As it was evident that this new work would be in the immediate vicinity of the area of shoals and channels off the mouth of the river, the sounding lines were spaced one half mile apart instead of a mile, as below. The lines were carried to the northward as far as possible; that is, until they entered shoal water, or until the only fixes available became too weak to be used any further. At the time this work was done \triangle Last was the northernmost signal on the sheet and it was therefore impossible to get good fixes in the area north of the latitude of the signal itself.

During the latter part of the season, triangulation was carried from Goodnews Bay northward to the town of Quinhagamut. By this means additional peaks in the distant range north of the point where the mountains recede to the eastward, were located for use in the hydrography. It being now possible to carry fixes well to the northward by means of these new signals.

I decided, at the first opportunity, to make an effort to follow the channel already developed northward into the river proper. From all information gathered from those having local knowledge of the country, this northernmost work of the EXPLORER should be in the main channel from the river. This channel, we had been told by one man, lay about sixteen miles, by log, west from Carter Spit, and by another, about fifteen or twenty miles west from Quinhagamut. This description, especially the first, agreed very closely with the area in which the good water had been followed up the greatest distance to the northward.

Owing to the danger of attempting such work with the EXPLORER, it was decided that the YUKON should undertake it. Therefore, as soon as the peaks above mentioned had been computed, Capt. Hardy only waited for a good day to undertake this work. No good days occurred, however, until early September. At this time both vessels were busied in Goodnews Bay with the work of building ways for hauling out the YUKON. Early in September came a period of clear weather, but with fresh northerly winds, and too big a sea to permit of sounding. On the ninth, however, this wind died out, and conditions seemed favorable for good weather on the following day. After consulting with Capt. Hardy, therefore, it was decided that I should take the YUKON and attempt to reach the river, leaving Capt. Hardy aboard the EXPLORER to continue work on the ways. The YUKON left Goodnews Bay that evening and ran to the northward, arriving at the scene of work in time to begin sounding at daylight.

The results of the day's work are shown on the sheet.

The good water was carried well to the northward, but was finally lost. My own opinion is that the channel, in the latitude of Quinhagamut, lies to the eastward of the YUKON'S position in that latitude. This opinion is based on the statement, made by the man apparently most familiar with the region, that when in the main channel of the river and abreast Quinhagamut, the church at that place can be seen. We saw no sign of the church, and that in spite of the fact that the seeing was excellent, with an unusually large refraction. The channel is said to be narrow, and to have at least one abrupt turn in it, and I therefore conclude that we lost it somewhere in the course of the day's work.

Two points should be noted in connection with the plotting of this day's work:

(1) The two peaks used as left objects for the work (signals Thumb and Nol.) fall so far off the sheet that it was feared they could not without undue distortion be plotted on a wing added to the sheet.

They were therefore plotted on a separate piece of boat sheet paper, secured in position before the projection was made, and not disturbed until after the hydrography had been plotted. It should also be noted that \odot Nol. in the hydrographic record is identical with the peak called "Round Mt." in the triangulation.

(2) The tide readings to reduce this day's work were taken on the staff at Goodnews Bay. Owing to the difference in time and range between the two places, these soundings have

not been reduced by the field party.

In approximate latitude 59-08, longitude 162-26 will be found some sounding lines on which the soundings have not been plotted. This work properly belongs on the 1-60000 sheet, but was done on this one for lack of signals on the other. The positions have been transferred to the 1-60000 and the soundings there plotted.

Soundings in deep water were taken with a trolley, tubes being used only for a few hours on one day. The speed of the vessel was so regulated as to get up and down soundings in the prevailing depth. Thus, although the mileage of a good day's sounding was considerably in excess of the number usually run, (we did not consider that we had done a good days work unless we had made better than a hundred miles, while the best day's work exceeded one hundred and forty) the speed was carefully watched, and never allowed to become too great to get good up and down soundings. This is verified by the ^{which were uniformly good except for two crossings} crossings on one line. It is true that at such a speed the soundings are widely spaced, but on the other hand, the bottom is all sand or mud, with no evidence, in the entire area, of rocky foundation, and the shoals so extensive that even at such a speed they could not well be crossed without getting some indication of their presence. Finally the limited amount of good weather made it imperative to accomplish as much as possible when a good day did come.

As already stated, I consider this work, in the nature of a reconnaissance, and that additional work will be required on it before it can safely be considered complete.

In my opinion the mile spaced lines should be split, and the whole should be traversed by east and west lines spaced two or three miles apart. This latter work seems to me particularly desirable. The one most prominent shoal found was long and narrow, and might readily have been missed by north and south lines a mile apart (in fact, it was missed by similar lines spaced only half that distance apart) and it may well be that similar shoals have been missed which could readily be picked up by the east and west lines.

In the reduction of soundings, reducers are derived from two tidal stations; one at Goodnews Bay and the other at Carter Spit. Soundings south of latitude 59-10 are referred to the Goodnews Bay station; north of that latitude (except for one day's work already mentioned) to the Carter Spit station. For the records of this latter station, see the work of Ass't F. H. Hardy.

Current stations have been plotted in position.

The scope of this report has been limited to technical matters relating to the survey itself. General information, sailing directions, recommendations for future work etc., which properly refer to the entire area rather than anyone sheet, will be made the subject of a special report prepared by the two chiefs of party in conjunction.

A tabular statement of ^X statistics follows.

Respectfully submitted,

R. S. Patton

Chief of Party.

RSP/CR.

^X Attached to the Sheet

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Date	Letter	Vol.	Positions	Soundings	Miles (stat.)	Vessel
June 10, 1913	C	1	95	128	59.50	Ship
" 14 "	D	1	31	140	14.75	"
" 16 "	E	1	18	49	8.00	"
" 19 "	F	1	88	208	49.50	"
" 23 "	H	1	179	562	123.25	"
" 24 "	J	2	179	823	123.00	"
July 15 "	Q	2	148	456	115.00	"
" 18 "	R	2	27	125	9.50	"
" 29 "	U	3	163	674	96.00	"
Aug. 1 "	V	3	13	53	4.60	"
" 2 "	W	3 & 4	151	906	123.25	"
" 4 "	X	4	53	174	33.50	"
" 5 "	Y	4	137	310	77.00	"
" 5 "	b	1	67	365	33.00	Launch #46
Sept. 10 "	BB	5	147	1227	63.00	YUKON
		Total ...	1529	6703	939.55	

Soundings taken in fathoms: plotted in feet.

Tide gauges.

- (1) At Goodnews Bay. P. of R. reads 1 ft. on staff.
- (2) At Carter Spit. See records of Ass't. Hardy.

VEC
Mar. 6, 1914.

HYDROGRAPHIC SHEET 3551.

RECEIVED
MAR - 6 1914
ASSISTANT IN CHARGE

Kuskokwim Bay, Alaska, by Assistant
R. S. Patton in 1913.

TIDES.

	Goodnews Bay North Spit ft.	Carter Spit Staff 2 ft.
Mean lower low water, or plane of reference on staff	1.0	2.9
Lowest tide observed " "	-0.1	1.7
Highest " " " "	12.1	15.4
Mean range of tide	6.3	8.0

Hyd. Sheet # 3551 #

The work on this sheet represents the offshore hydrography of the Approaches to Kuskokwim River-Alaska.

The plotting was done in the field and finally inked and verified in the office.

All through the survey very few cross lines, which would afford a check on the work, were taken.

The work cannot be considered as completed, and on consulting the Descriptive Report of the Chief of the party (page 6) sufficient reasons will be found, that tend to show that the work is to be looked upon as a reconnaissance, and that additional work in this locality will be required.

Soundings were plotted in feet.

J. B. Shklem

April - 13 - 1914