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Department of Commerce and Labor  
COAST AND GEODETIC SURVEY

*O. H. Pittman*  
Superintendent.

State: *Alaska*

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DESCRIPTIVE REPORT

*Hyd.* Sheet No. *3200a*

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LOCALITY:

*Three Islands to  
Ship Creek*

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191*4*

CHIEF OF PARTY:

*A. S. Patton*

11-4045

H. 3200<sup>a</sup>.

Supplementary work in Cook Inlet, Alaska.  
Sheet appears satisfactory.

Sheet examined in Div.  
of Study & Top'y.

DESCRIPTIVE REPORT

HYDROGRAPHIC SHEET NO. 3200<sup>a</sup>

FIRE ISLAND TO SHIP CREEK.

The object of this survey was to afford a further development of the edge of the shore flats from Ship Creek to Point Woronzof, and of the shoal area off Point Woronzof, and north of Fire Island, it having been reported by the master of the "Admiral Sampson" that these areas had shoaled since the making of the original survey. The work was done by the ship and launch, the launch developing the shore flats and the ship the shoals in the channel. The area to be covered was small in extent, but the work necessary to develop it was difficult and tedious, because of the great range of the tide and of the strong currents encountered. Thus with a six fathom range, it was impossible at or near high water to place soundings as close together as they should be to furnish a thorough development of an area which has three fathoms or less at low water. Also, in the current resulting from such a range of tides, a current attaining a maximum velocity of at least four knots per hour, it was impossible to run an evenly spaced system of lines or to obtain soundings which would be free from <sup>an</sup> error caused by the current carrying away the bight of the lead-line before the lead had reached bottom. To overcome as far as possible these difficulties, the following system of work was adopted on the mid-channel shoal area:

First - The area was covered as uniformly as possible by a system of lines normal to the channel. In this

system the spacing of the lines would necessarily be irregular, but the soundings would be affected by the current less than on any other, except lines run with the current.

Second - To fill gaps left in the first system and to furnish a check upon the accuracy of the soundings, a second system of lines was run normal to the first- in other words, in the direction of the channel. Of these lines, the half which were run with the current furnish soundings free from error, as the ship practically drifted with the current, making only sufficient progress through the water to maintain steerage way. On the other half of the lines, run against the current, the error in the soundings would attain a maximum, as here the ship must run at about three-fourths speed- seven knots- in order to make three or four over the ground.

Third - Finally, in order to attain a development of the desired closeness and accuracy, the launch ran an additional system of lines over those portions of the area in which the ship's work had developed indications of shoals. This work by the launch was confined to the short period of time immediately preceding and following low water, when the depth would be least and the current weakest.

To recapitulate:- Although every possible care was exercised, it is not believed that the soundings as taken were free from error and will cross properly. It is believed, however, that sufficient data has been obtained for deducing the necessary corrections to all soundings.

- (A). Soundings on lines run with the current should be free from error.
- (B). Soundings on lines run across the current are probably subject to a slight error varying with the depth, an error which may be determined by comparing with system "A".
- (C). Soundings on lines run against the current are subject to a maximum error which, in turn, may be determined by comparing with system "B".

It may be added that the above is not written with a view to instructing the draftsman in the proper method of doing his work, but rather to make clear the reasoning which led to the adoption of this particular method of work in the field. Systems of lines run at right angles to each other, with the lines of the second system spaced practically the same distance apart as are those of the first, give a closer development than is usually considered necessary. In this particular case, however, the importance of the area surveyed seems such that the work could scarcely be too close. In planning the work it was anticipated that there would be considerable difficulty, when developing this area, in obtaining soundings free from error. (It might have been done by sounding with the current only; at the end of one line running back up stream against the current before beginning another. But this, it seemed, would require an excessive expenditure of time and money). The method outlined above was therefore adopted as being the one by which the work

could most readily be accomplished, while at the same time it involved no errors which could not be eliminated.

The correctness of this theory remains to be tested. As this report is being written the soundings are not yet reduced, so that it is not yet known how great the discrepancies between the different lines will be, or whether the error will be found to be systematic.

So much for the development of the mid-channel shoal area: the work along the shore flats contains no detail which requires special mention.

It should be noted that the object of this work was merely to develop the shoals. Near Fire Island, therefore, the sounding lines have not been carried all the way across the channel, but merely well into deep water. This fact also accounts for the large number of "no-bottom" soundings found in the record. As the area had already been surveyed, it was not considered necessary to stop for sounding in places too deep to reach bottom with the hand lead.

AIDS TO NAVIGATION:

In view of the extensive traffic which may be expected in this region in the near future, it is highly desirable that the shoal here developed be properly buoyed. Buoys are recommended rather than leading marks on shore, for the reason that strong currents render it difficult to make good a course, even with the assistance of such marks.

Vessels entering make Race Point about one half mile on the starboard hand and then shape a course between the shoals. Such a course sets diagonally across the current, and there is, therefore, a constant tendency for the vessel to set to the northward toward the more dangerous shoal. The one disadvantage to the use of buoys is that, because of the ice, they would have to be planted each Spring and taken up again in the Fall.

CURRENTS:

As already indicated, strong currents will be encountered in this vicinity. These attain an estimated maximum velocity of four knots per hour. Current observations have been taken at Ship Creek and will be forwarded later with other records. In connection with these observations, however, it should be noted that they were taken at the anchorage close in shore, where the velocity of the current is considerably less than in mid-channel.

ANCHORAGE:

The usual anchorage in this vicinity is off Ship Creek, the most favorable position being a little above the mouth of the creek, where good water will be found close in shore. The advantage of anchoring close in is that one escapes somewhat from the full strength of the current. These currents, however, are everywhere so strong that the security of a vessel demands heavy ground tackle and a long scope of chain.

ICE:

In view of the probable importance of Ship Creek in the near future as a landing place for material and supplies for the contemplated government railroad and, possibly, later, as a shipping point for coal brought from the interior, the question whether this vicinity is open to navigation throughout the entire year becomes of the utmost importance. Opinions on this subject, expressed by various residents of the locality, differ widely. As a rule they are optimistic, due, no doubt, to a very natural desire to see Ship Creek profit as much as possible from the building of the railroad. The optimistic maintain that there was never sufficient ice to obstruct navigation. The most pessimistic opinion expressed was that one could count on unobstructed navigation from the First of May to the First of December; whereas, during the remainder of the year, one must expect delays in getting above Fire Island, although the ice would not be heavy enough to offer serious menace to vessels. Personally, I am inclined to the latter view, based, not so much on the thickness of the ice alone, as on the combination of moderately thick ice with strong currents. To my mind, there can be no doubt that a vessel would have to pick a favorable opportunity to reach Ship Creek at all and could not count on remaining there with safety for any length of time.

Respectfully submitted,

*R. S. Patton*  
Chief of Party.



STATISTICS OF HYDROGRAPHIC SHEET NO. \_\_\_\_\_

FIRE ISLAND TO SHIP CREEK.

Date. 1914.	Letter.	Vol.	Positions.	Soundings.	Miles, Statute.	Vessel.
July 17	A	1	125	538	40.8	Ship.
" 21	B	1	128	562	41.5	"
" 31	C	1	125	478	37.9	"
" 31	C	2	71	272	21.6	"
Aug. 4	D	2	105	580	31.0	"
July 16	n	1	124	614	23.0	Launch.
" 17	p	1	172	957	39.0	"
" 21	q	2	148	798	33.0	"
" 22	r	2	55	259	12.0	"
Aug. 1	v	2	71	330	12.0	"
" 3	w	2	22	106	3.5	"
" 3	w	3	49	236	7.5	"
" 5	x	3	71	353	17.5	"
" 6	y	3	132	616	24.0	"
" 10	z	3	41	180	3.0	"
Totals -			<u>1439</u>	<u>6879</u>	<u>347.3</u>	

Soundings in fathoms: reductions in feet.

Plane of Reference: Mean Lower Low Water.

Tide gauge at Cairn Point, Knik Arm, Cook Inlet, Alaska.

Plane of Reference reads, 3.4 on gauge.

Lowest tide observed " 0.1 " "

Highest " " " 36.1 " "