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Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. H - 3765 *Office No.* H - 3764

LOCALITY

State WASHINGTON

General locality PUGET SOUND

Locality APPROACHES TO RICH'S PASSAGE

194~~7~~5

CHIEF OF PARTY

R. S. Patton

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DATE

B-1870-1 (1)

Special Report.

Wire-drag Survey of Rich's Passage, Washington.

March 3rd to April 22nd, 1915.

The reasons which led to a recommendation by the Inspector at Seattle that this survey be made, were threefold. First and most important, Rich's Passage is the main thoroughfare leading to the Puget Sound Navy Yard at Bremerton. It is a narrow passage of irregular depths, having at least one known reef constituting a menace to its navigation. Moreover, in recent years the tendency in the Navy has been to build larger and larger ships, until at present the draught of some of them has almost reached the limit of the depth which may be carried through this passage at low water. When we think of the millions of dollars expended in the construction and equipment of these vessels, we readily see how important it is that this Service should be able to assure them that in a passage so much used, there are no menaces not shown on the Charts. Subordinate to this need, was the further necessity of obtaining more accurate information regarding the currents in the Passage and also of furnishing the authorities at Fort Ward accurate and detailed information of the prevailing depth in the area included within the scope of their mine planting operations.

Secondly, it was deemed advisable to undertake this

work in the spring, before the beginning of the Alaska season in order to furnish training in Wire-drag Work to the younger men of the Survey who later in the season would be engaged in similar work in Alaska. It would also afford the vessel undertaking the work an opportunity to assemble the nucleus of a crew trained in survey methods and thus make possible an immediate and efficient beginning of the work in the North, without the loss of time and effort in breaking in a green crew after our arrival on the working ground.

The Party was organized in Seattle on March 3rd, on which date the various Officers detailed for the work, reported aboard the Explorer. From March 3rd to March 15th was spent in preparation for the work and on the latter date the Explorer proceeded to Rich's Passage to begin operations. The towing launches consisted of Launch 46, belonging to the Explorer and Launch 47 furnished by the Patterson. One of the Patterson's motor-dories was used as a tender. Immediately upon beginning the work, we found that Launch 47 was in too poor condition to give effective service and it was impossible to repair her, owing to the delay in the arrival of a new set of boiler tubes ordered from the East. Finally therefore, after repeated efforts to use her by cutting out defective tubes, we gave up the effort and from then on used the Explorer in her place. For that reason the work proved slow and laborious, particularly inside the Passage where the strong currents and restricted waters made it extremely difficult to properly

handle a vessel the size of the Explorer at the end of a short drag. For this reason, the work took much longer than was originally anticipated; in fact, although the entire area was covered by the drag, I feel that the work is still incomplete; in that the five fathom area in the vicinity of Point Glover should be given a more thorough examination with a short drag towed by launches which can be readily maneuvered. There are also a few splits which should be covered.

The outside work between Blake Island and Bainbridge Island was done after the conventional method of drag work; that is, the work being controlled entirely from the guiding launch. In the Passage proper, however, where we were dragging close to the bottom and near the shores, this method to my mind did not prove satisfactory and it was abandoned in favor of the Hydrographic method where each launch took its own fixes following a line previously laid down on a boat sheet.

The results of the survey consist in the discovery of a rock about 350 meters East of the South Beach wharf; of further shoal patches close to Orchard Rocks, and of a rock close inshore, Southwest of Point Glover. No obstructions were found in the mid-channel track followed by vessels through the Pass. As already stated however, I feel that before the work can be considered complete, the area where the chart shows five to five and one-half fathoms, should be given a further and more detailed examination.

It has already been stated that it was hoped to obtain accurate information as to currents and as to the prevailing

depths in the vicinity of Fort Ward. The necessity of using the Explorer, however, made it impossible to undertake this part of the work and it was accordingly post-poned until a more favorable opportunity.

On a separate sheet will be found a statement of the statistics of the work and a list of the Officers engaged on it.

Respectfully submitted,
R. S. Patton.
Chief of Party, C. & G. S.

Statistics.

Number of Miles, 51.5
" " Angles, 3013

Officers of Party.

R. S. Patton, Asst. Commanding.

L. O. Colbert, " Ex. Officer.

Jack Senior, Aid.

M. E. Levy, "

G. C. Jones, D. C.

L. H. Zeman, D. C.

Wm. Kearns, D. C.

ADDRESS
U. S. COAST AND GEODETIC SURVEY
WASHINGTON, D. C.

REFER TO NO.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

SURVEYS IN RICH'S PASSAGE, WASHINGTON.

An attempt to drag this passage was made in 1915 by the party of the Steamer EXPLORER. The conditions under which the work was done, however, were so unfavorable that the results were far from satisfactory, and in my report as Chief of Party, I recommended that certain portions of the work be done over.

These conditions were, briefly, as follows:

(1) Lack of equipment: Because of the lack of launches, one end of the drag was towed by the EXPLORER. It was manifestly impossible to work to advantage with a vessel of this size in such restricted waters with currents having a velocity of from 2 to 4 knots. For this reason certain important areas were not adequately covered. Also, with that vessel, it was impossible to use a very short drag to cover the various critical depths in detail. Therefore, a longer drag was used, to give scope for maneuvering, and in some cases,"hook-ups"of excessive length were made in the attempt to cover the unequalities of the bottom but I feel that the drag depths resulting from this method must be subject to considerable uncertainties.

(2) The party was lacking in the experience necessary to successfully carry out such an important piece of work . Mr. L. O. Colbert was the only man in the party with previous experience; in fact, the project was undertaken partly with a view to training field officers who would later be assigned to such work in Alaska.

Since drag work in this vicinity is to be taken up this winter by an experienced party, adequately equipped, I earnestly recommend further work in this most important passage; in fact, I suggest that the entire passage westward from a line between Orchard Point and Bainbridge Shoal, be re-dragged, since that could be done, by an experienced party, in about the same time which it would take them to cover the various isolated spots requiring further development.

Respectfully yours,

R. S. Patton,

Chief, Coast Pilot Section.

VEC
Oct. 16, 1915

L. & A.
N.C.

HYDROGRAPHIC SHEET 3764.

Richs Passage, Puget Sound, Washington, by Assistant R. S. Patton in 1915.

TIDES.

	Pleasant Beach ft.
2 feet below Mean lower low water, or plane of reference on staff	2.2
Lowest tide observed " "	2.2
Highest " " " "	17.4
Mean range of tide	7.8

VEC
Oct.16,1915

L.P.J
H Cl.

HYDROGRAPHIC SHEET 3765.

Riche Passage, Puget Sound, Washington, by Assistant R. S. Patton in 1915.

TIDES.

	Pleasant Beach ft.
8 feet below Mean lower low water, or plane of reference on staff	2.2
Lowest tide observed " "	2.2
Highest " " " "	17.4
Mean range of tide	7.8

Hyd° 3764.

Wire-drag Survey of Rich's Passage, Wash.

On verifying this work the geographic positions could not be checked as the latter have not been computed at the time the work was verified and were accepted as correct. Positions 62"F" to 64"F" have not been plotted by the party, and reason for omitting them not stated. When plotted this area partially covers a split W. of △ Blake.

At the end of day "N" there is a remark "F" aground. End launch sounding over shoal. No soundings were, however, recorded.

On the End Launch record (page 4) a 17 ft. sounding recorded. Judging from the note accompanying this sounding, the shoalest depth has not been determined.

At $\frac{23}{V}$K line begins; drag curves to N^{d}. As plotted by the party with the drag curving N^{d} a 5¾ fm. shoal near the red buoy appears to have been covered by the drag at 63'. From the sounding record it appears, that at $\frac{20}{V}$K the drag struck at buoy "6", the drag curving S^{d}. The next position, which was rejected by the party, indicates that the guiding launch was reversed and the end launch not towing, the drag still curving S^{d}. At $\frac{22}{V}$K the guiding launch moving to its position to the S. while

the End launch receding to the N. This movement tending to place the sag of the drag in the form of a compound curve, the central part of which would still sag to the S. At 24 VK the End launch is reported "not towing". It was evidently caught near 20 VK, where it previously stuck. The End launch drifting there, while the guiding launch moved to positions 25, 26, & 27. At these positions the "F" end should plot close to one another, but as plotted the end launch appears to have moved forward to positions 26 & 27 "K". The readings on the "F" buoy were probably +39° instead of +49° & +59°. The above would indicate that between positions 22K and 27K, the most important spot, the results were not as satisfactory, as would have been desirable. The drag was not working smoothly, and additional work will be required to determine the safe depth over the shoal. On the final tracing this part of the drag work was plotted in a manner as to exclude the doubtful area.

At 28 VK line begins. The movement of the end launch would seem to indicate that ~~(the end launch)~~ it was trying to keep outside of the shoal area and for this reason the trace of 28-29K of the "F" end was shown on the tracing as curving towards the guiding launch.