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Diag. Cht. No. 1107

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: Mass

DESCRIPTIVE REPORT.

Hyd c *Sheet No.* 3201

LOCALITY:

Nantucket Shoals
Phelps Banks & Fishing Rip

1901

CHIEF OF PARTY:

H. C. Hodgkins

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Department of Commerce and Labor

Report on Hyd. Sheet 3201

Massachusetts

Nantucket Shoals

from Orion Shoal to Phelps Bank

W. C. Hodgkins, Chief of Party

July to Oct. 1910

1—80,000

Plotted and inked
by C.H.D.

The soundings are expressed in fathoms
and show the depth at mean low water,
the plane of reference

April 18, 1911

While plotting the work on this sheet, both the Chief Draftsman and Chief of Dr. E. Div. were consulted from time to time as to the proper adjustment of the lines so that the only verification thought necessary is to see that no shoal soundings have been omitted in the plotting.

Verified in accordance with the above
by H. Simmons

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The important features of this survey may briefly be summarized as follows:

1. The discovery of an important shoal of considerable extent between Phelps Bank and Fishing Rip in a locality not covered by previous surveys.

This shoal has a least depth of 4½ fathoms and covers an area about 6½ miles in a north and south direction and 1½ miles in an east and west direction inside the 10 fathom curve.

The shoalest part is in latitude 40° 56½ to 40° 57½ and longitude 69° 22', about 2 miles distant from the reported position of the Persia in 1863 and the Kentucky in 1906.

No less than 28 fathoms was found in the reported position of the Manitou in 1910 and 14 fathoms in the position of the Chelston in 1910

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2. A shoal spot with 3¾ fathoms was found on the eastern side of Davis Bank in approx. lat. 41° 13', long. 69° 33' 20'. This depth is given on a single line of soundings and is one fathom less than the shoalest sounding on the chart about one mile southwestward.

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3. A shoal spot with but 2 fathoms over it was found north of Old South Shoal in approx. lat. 41° 07', long. 69° 49' 30. The chart indicates a depth here of about 10 fathoms.

This place like the one just mentioned did not receive any special development.

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4. In lat. 41° 27½' and long. 69° 27½, the sounding 12 fathoms is probably an error for 22 fathoms This sounding was taken towards the end of the last line of the season with no check on it except a few isolated soundings from a previous survey.

Insufficiently sounded

A small section about 2½ miles southwest of Phelps Bank shows a number of discordant soundings in the several previous surveys and it is to be regretted that the new work happened to miss this particular area.

Likewise a little additional work would have been desirable in the unsurveyed area two miles southwest of the reported striking of the Chelston as indications of shoaler water can be inferred from a note in the sounding book of C day, position 84 where mention is made of "tide rips on port side", approx. lat. 41° 19 3/4' long. 69° 29 3/4, recorded depth 9 fathoms.

The current at that time was N x E, velocity 1½ kn., wind South, force 1, both forces indicating shoaler water to the southward of the line of soundings.

This locality is 13 miles distant from the outer whistling buoy and 140° magnetic from it.

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Field records

The field party failed to turn in a boat sheet, which fact caused much annoyance especially in regard to the changes in position of barrel buoys marking temporarily the locality intended to be developed.

The records were very incomplete in giving necessary information as to whether a buoy was actually "picked up" and replaced in a new position or whether it was merely sighted

The expression "stopped and picked up" barrel buoy is not suited to survey work.

The lack of a boat sheet also made it a matter of more or less guess work in the prediction of currents.

Discrepancies were noted in ship's courses, the log book indicating changes in courses not noted in the sounding volumes while numerous bearings were found scattered among the different installments of astronomics and other records which should all have been noted in their proper order in the sounding volumes. A number of these records were turned in at intervals of several months after the plotting had been started, thus necessitating revision upon revision of previous plotting. The Ship's log was not received until Feb. 1911

Too frequently the personnel of the ship occupied a space in the sounding volumes which should have been reserved for bearings, the latter being crowded out of their proper position leaving in doubt the exact

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time at which they were taken

Sextant angles should have been taken whenever possible in preference to bearings.

Inaccuracies which cannot be accounted for were noted in numerous bearings, an example being the bearing of buoy No. 5 to Nantucket Shoals Light Vessel. This was used as a range and the recorded bearing is in error 2½ degrees.

The ship's heading was not always noted at turning points which made it impossible to apply the correct deviation.

Sumner lines

At least a hundred of the Sumner lines were of no value whatever and frequently in error by 5 to 20 miles. Likewise the observations for latitude, excepting noon observations, indicated such discrepancies as to make them worthless, seven observations from one anchorage indicating a difference in latitude of 8½ miles.

Current observations

The current observations also more than doubled the time required in plotting the field records and it is doubtful whether the work was strengthened to any considerable amount as many lines had closing errors of 5 to 8 miles and more.

A check on currents as obtained by plotting positions by bearings on line 5', position 63, and comparing

this plotting with course and distance by log with current correction. This comparison indicated that the interpolated current was in error by nearly 2 knots per hour and that it should have been a maximum instead of a minimum velocity.

The current velocities change so much in crossing shoals and channels that it makes very little difference whether the lines are plotted with or without current corrections, the closing error being about the same either way.

Ends of Lines

Many of the longer lines were started too late in the day to enable the ships to return before night, and consequently the area of triangulation buoys was passed over without a determination of the ships position. At any event the ships position should have been accurately established on the following morning instead of continuing on another long run before tieing up the line.

The distribution of error on account of this double line work weakened the lines in the centre where their exact position was most essential

The position of Nantucket Shoals Lt. Vessel dippers from that determined by Mr. Walker in 1908 by less than 1/16 of a mile.

Chas. H. Deetz, Apr. 16, '11.

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FORM 167.

Department of Commerce and Labor

COAST AND GEODETIC SURVEY

Washington, Mar. 21, 1911

Respectfully { returned / ~~referred~~ / ~~forwarded~~ } to

11—683

Assistant in charge

Tide note for hyd. sheet 3201 herewith.

L. P. S.

RECEIVED
BY ASSISTANT IN CHARGE
AND REFERRED TO
MAR 21 1911
D. & E. DIV.

VEC
Mar.20,1911.

HYDROGRAPHIC SHEET 3201.

Vicinity of Nantucket Shoals, Massachusetts,
Between Nantucket Shoals Light Vessel and northern
end of Cape Cod, by Asst. W. C. Hodgkins, 1910.

TIDES.

Predicted tides were used for reduction of soundings.

Plane of reference is mean low water.

Mean rise and fall of tides 2 feet to 6 feet.