3773

U. S. C. & G. SURVEY
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DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: New Jersey

11—5613

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 3773

LOCALITY:

Coast of New Jersey
Near Barnegat Lighthouse

1915

CHIEF OF PARTY:

O.C. Whitney, R.F. Luce & W.M. Stirnagle

3773

Hyd. 3773.

General locality:- Coast of New Jersey.

Special locality:- Near Barnegat Lighthouse, N. J.

Chiefs of Party:- P. C. Whitney, R. F. Luce, and W. M. Steirnagle.

In charge of Sounding:-

P. C. Whitney, Asst., Bache.

R. F. Luce, Asst., Isis.

W. M. Steirnagle, Asst., Bache.

R. P. Strough, Asst., Isis.

H. Rae Bartlett, Asst., Bache.

T. J. Shack, Aid, Bache.

C. A. Egner, D. O. Bache.

E. Harsh, D. O., Isis.

F. E. Okeson, Mate, Isis.

Vessels:- Bache and Isis.

Date:- Sept. 17 to Oct. 18 1915.

Scale:- 1: 50,000.

DESCRIPTIVE REPORT

to accompany Hydrographic Sheet No. Field "A"

Locality - Coast of New Jersey.

Area - The field work on this sheet was performed between September 17 and October 18, 1915. The work lay off the coast of New Jersey in two sections; that performed by the Steamer Bache including an area of 30 square miles (statute) extending from latitude 40° 07' to latitude 40° 12' and from approximately the three fathom curve (one-half mile from shore) to longitude 73° 45', to include the generalized ten fathom curve; that performed by the Steamer Isis, an area approximately 180 square miles (statute), the most southerly line beginning inshore at latitude 39° 39' (one mile from shore) and extending in an E.S.E. direction about six miles, thence east (true) to the limits of the sheet, about fifteen miles off shore, the northern limit of the area being approximately a line running E.S.E. from latitude 39° 50' at the shore line to longitude 73° 18', same distance off shore. The total area covered by soundings is therefore in the neighborhood of 210 square miles (statute). The sounding lines were spaced one-half mile apart from three fathoms to include the generalized ten fathom curve. Beyond that depth the lines are one mile apart. All lines were run in a true east and west direction except a few of the most southerly which run normal to the

shore line. At many places where soundings indicated shoals, further development was made by running additional lines over the area in question.

Control of the work

See two Vols. Log. comparisons and Angles by R F Luce Str. Isis
Wm Steinagle Str. Bache

In order to carry fixed positions as far off shore as possible, all prominent objects such as large hotels, stacks, water towers, standpipes, etc. were used to angle upon, many of them being located by taking several cuts upon them from successive anchorages of the ship. A great many such signals were available at the northern part of the sheet but toward the southern part satisfactory ones were few and far between.

In addition, to carry fixed positions beyond the range of the shore objects, several buoys of the "can" and "whistle" type were loaned by the Lighthouse Department and were placed about four miles apart in a line about ten miles off shore. These were located by "cuts" from successive anchorages of the ship and were found very satisfactory. Superstructures were added to them to increase their range of visibility and frequently angles were taken upon them at a distance of six miles. All buoys used by the Isis were of the "whistle" type, the superstructure being of extra heavy gas pipe arranged in the form of a quadropod fastened to the buoy and carrying

black flags. Those used by the Bache were all of the "can" type with superstructures in most cases of the extra heavy gas pipe arranged as noted above. A departure from this kind of structure was made in one case and found very satisfactory. Angle iron one and one-half inches by one and one-half inches by three-sixteenth inch was used in place of the gas pipe and fastened in the form of a quadropod to the buoy by bolts. A comparison of the two favors the angle iron in strength, elasticity, weight, and slightly in cost in addition to ease and security of fastening to the buoy.

Methods of Sounding

The methods of sounding used by both ships were almost identical. To a depth of about thirteen fathoms the hand lead was used exclusively. Beyond that depth soundings were taken with a trolley rigged along the side of the vessel, the lead being carried forward by gravity, tripping by striking a boom and the sounding being taken the instant the ship came over the lead upon the bottom, that point being indicated by the vertical leadline. The intervals of sounding were regulated to the various depths of water, sufficient time being given in each case for a vertical sounding.

Survey Methods

The work consisted of: (1) Inshore hydrography, (2) Off-

shore hydrography.

(1) The former consisted of all work wherein sextant angle fixes were used in the location of the ship, extending offshore to a short distance outside of the buoys. The hand lead was used exclusively for this work and the speed of the ship regulated as nearly as possible to four and one-half miles per hour.

(2) Offshore hydrography consisted of all work not classed under "1", being lines run by dead reckoning on that part of the area between the buoys and longitude 73° 40'. Each line began and ended with a sextant angle fix or departure from a buoy. Current observations were made at the beginning and end of each line and at intervals of about two hours on the line. The course for each successive two-hour period was made taking into account current, wind, and sea action. The current was obtained approximately by means of a current pole used in connection with a pelorus or quarterdeck compass; the drift due to wind and sea being estimated from wind velocities obtained by estimation in the case of the Isis and from anemometer readings with the ship at anchor in case of the Bache. Favorable weather was selected for dead reckoning work whenever possible. The patent logs used were tested and calibrated for sounding speed; in the case of the Isis on a buoyed course laid out on the New Jersey coast; in the case of the Bache values obtained during the

previous season's work were assumed to be correct. The deviations of all compasses were determined by means of ship swings, the sum being used for comparison. Values for variation were taken from recent charts of the locality. Log readings and engine revolutions were taken at intervals of fifteen minutes on line, thus giving a check upon the ship's speed.

Plotting

The course steered and corrected log distance for a two-hour run between anchorages were first plotted. This was then corrected for leeway and current, the average current being determined by making a graph of the current at the start and end of the two-hour run, taking a common initial from which each value obtained plotted in true direction and amount and passing a curve through their ends. A mean was then estimated and used for the current drift during the two hours. The line being thus corrected, the new course was laid from the assumed true point, and this process ~~being~~ continued throughout the line. The final error of closure was then adjusted in proportion to the true distance covered and the final adjusted line plotted. Various colors of ink were used in plotting the lines to obviate confusion, particularly about Buoy B.

Other details

The conditions of weather throughout the work were variable. A great many hazy days were encountered, making seeing difficult, but clear days were generally remarkably clear, facilitating the necessary operations such as "cutting in" buoys. The prevailing winds were from no particular direction.

Tidal observations to cover this hydrography were obtained from the Captain of Coast Defenses, Fort Hancock, New Jersey, where the Artillery has an automatic gauge running. The tidal data was taken off the manogram and upon request these monograms were returned to Fort Hancock.

Respectfully submitted,

Paul C. Whitney
Chief of Party,
Commanding Bache.

Plotted and assembled

C. A. Egner
Aid, C. & G. Survey.

Note: These pages (1 to 6) are a duplicate of pages 1 to 6 in D.R. proper.

DESCRIPTIVE REPORT

to accompany Hydrographic Sheet No. Field No. 3773

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Respectfully submitted,

Paul C. Whitney

Chief of Party,
Commanding Bache.

Plotted and assembled

C. A. Egner

Aid, C. & G. Survey.

POST-OFFICE ADDRESS:

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

------STATISTICS OF HYDROGRAPHY--------

Coast of New Jersey
1915.

Steamer "Isis"

Date	Day Letter	Positions	Soundings	Statute Mi.	No. Current Sta.
Sept.17	A	153	691	55.1	1
" 18	B	38	210	13.2	
" 20	C	78	369	28.2	1
" 23	D	57	200	18.5	1
" 24	E	157	802	68.7	3
" 25	F	3	19	1.0	
" 28	G	89	505	45.5	4
" 29	H	70	347	40.7	2
Sept.30	J	134	524	59.2	2
Oct. 4	K	154	789	67.1	3
" 7	L	40	265	32.1	4
Totals:		973	4521	429.3	21

Currents were also observed on Sept. 13,14,15,16, making total current sta. 25.

------- Steamer "Bache"--------

Sept.17	A	73	273	19.0	
" 18	B	122	406	31.3	
" 23					1
" 24					1
" 25	C	54	252	21.0	
Oct. 18	D	47	214	30.4	4
Totals:		296	1145	101.7	6

Attach to Descr. Rep. on Tide Books

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

REFER TO NO. 5-VEC

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

February 29, 1916.

CHIEF, DIV. OF HYD'Y & TOPY
FEB 29 1916
RECEIVED

Chief, Division of Hydrography and Topography:

I have had tidal reductions revised for 5 volumes of soundings for Hydrographic sheet 3773, for Coast of New Jersey, by parties of Assistants R. F. Luce, W. M. Steirnagle and P. C. Whitney, in 1915.

FIELD RECORDS (H)

The tide note for 3773 is transmitted herewith.

The original records have been returned to the Archives.

R F Luce

Chief, Section of Tides and Currents.

VEC
Feb.29,1916

HYDROGRAPHIC SHEET 3773.

Coast of New Jersey, by Assistants R. F. Luce, W. M. Steirnagle and P. C. Whitney in 1915.

TIDES.

	Staff of 1915 Sandy Hook ft.
Mean low water, or plane of reference on staff	0.2
Lowest tide observed " "	-3.8
Highest " " " "	8.7
Mean range of tide	4.7

Hyd. Sheet No. 3773

This sheet is in an unfinished condition, only a portion of it having been covered.

Within the limits of the work, the ground is very well covered, with the exception of a gap, caused by rejecting the line from pos. 134 K to pos. 149 K on account of uncertainty about the lead line correction. This line should be rerun.

Signal "Gable" was shown in a wrong position on the sheet and was corrected. In the protracting however, the correct position of "Gable" was used, so the error was evidently made in inking the sheet and does not affect the hydrography.

The curves were left in pencil, as they may be effected by future work.

The plotting of the lines run by dead reckoning was assumed to be correct, only the points of "departure" and "arrival" were checked.

R. L. Johnston

Hyd Sheet No 3773a, scale 1-20,000, was made for the sole purpose of locating signals.

Soundings shown in feet.

Protracted and plotted by field party
Soundings plotted and inked by R.L.J.
Verified by J.D.J.