

4176

G. & G. SURVEY  
L. & A.  
SEP 26 1921  
ADD. No.

Diag. Cht. No. 1232-1

4176

Form 504

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

State: *North Carolina*

11-5613

DESCRIPTIVE REPORT.

*Hyd* Sheet No. **4176**

LOCALITY:

*Cape Hatteras —*  
*Vicinity of Cape*  
*Hatteras Light House*

1921

CHIEF OF PARTY:

*H. W. Humple*

REPORT TO ACCOMPANY HYDROGRAPHIC SHEET NUMBER 4176

LIMITS:

The work shown on this sheet to a scale of 1:5,000, comprises the hydrography from the beach out to the three fathom curve, and from a line three-fourths of a mile south to a line three-fourths of a mile north of the Cape Hatteras Light-House. The work was done under instructions dated August 8, 1921.

CONTROL:

Excellent control was furnished by triangulation stations:  $\Delta$  Cape Hatteras Life Saving Station (Life);  $\Delta$  Cape Hatteras Light-House (Hat);  $\Delta$  Cape Hatteras Wireless Station (Wire); and  $\Delta$  Shore. These were supplemented by the following topographic stations:  $\circ$  Ex,  $\circ$  Old,  $\circ$  Bux,  $\circ$  Ton.

METHOD:

Marks consisting of pieces of rough pine 2"x2"x3' were driven at intervals of about fifty yards for one-quarter mile each side of the Light-House, and at intervals of 100 yards beyond that to a distance of three-quarter mile each side of the Light-House. These marks were set in a line approximately parallel to the shore-line. About ninety yards toward the sea from this line of stakes, another set of stakes were driven using the same spacing as on the previous line, and setting them so that a line connecting the respective front and back stakes would be normal to the shore-line. These stakes served as the location of the range marks, which as the hydrography progressed were moved from one set of stakes to another. The front range mark consisted of a tripod about four feet high built of light lumber, on the front face of which white cloth was stretched. The rear range mark was also a tripod built of light lumber, the two front legs of which were extended above the crotch, which was about four feet high, forming the shape of a "V", over which white cloth was stretched. When these two marks were in juxta-position, the effect was that of an hour glass. The position of the stakes is shown on the sheet by red circles.

An eighteen foot dory was used for the hydrography, which when not in use was run thru the surf and beached. The party consisted of two officers, a recorder, leadman, coxswain, three oarsmen, tide observer, and man to move the range marks. Of the oarsmen, two pulled at sweeps, while the third man sculled. An eight pound lead was used, and the soundings were read to the nearest lesser half-foot. Soundings were taken every twenty seconds, and a position obtained every two minutes. The positions were obtained by sextant fixes, the officer in charge taking the right angle and plotting, the other officer taking the left angle and watching the correctness of the leadman and recorder. The lines were run as close inshore as it was possible to, and still keep out of breakers.

CHARACTER OF THE BOTTOM:

Mud bottom was generally found in depths greater than twenty-four feet, in the region inside the outer bar. In all other places the bottom was found to be hard sand. Just inside the inshore ends of the lines, the bottom comes up very quickly, and in some cases forms a bar about 100 feet wide, which bares at low water. Inside this bar a narrow slue is sometimes found, with depths of water constantly varying, but seldom exceeding six to eight feet. These slues are constant

ly changing, and sometimes disappear altogether. The sea no matter how smooth it may be outside always breaks inshore, and for this reason and because of the fact that they are continually changing, no attempts were made to survey these slues.

TIDES:

Tide readings were taken every fifteen minutes during the time sounding was under way, on a staff erected about 100 yards outside of the high-water mark, in a direction about EXN of the Light-House.

CURRENTS:

The velocity of the currents were determined at the station shown, for a period of twenty-five consecutive hours, readings for the most part being obtained every fifteen minutes. The currents run parallel to the coast, the maximum velocity attained being one-half knot per hour. These velocities were determined during a period when there was not much wind and the sea was comparatively smooth; the results therefore probably give the tidal currents only. During the flood tide, the currents run north erly, and in a southerly direction during the ebb tide.

Respectfully submitted,

*H. W. Stemple,*  
*Jr. H. & H., C. S. S.*

STATISTICS SHEET NO.....

Date 1921	Letter	Volume	Positions	Soundings	Miles Statute	Vessels
August 30	a	1	124	674	5.1	Dory
August 31	b	1	156	801	8.5	Dory
Total.....			280	1475	13.6	

Soundings in fathoms and feet.  
 Plane of reference mean ~~sea level~~, low water.

COPY TO FIELD RECORDS.

Sept. 27, 1921.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in  
~~One~~ volumes of sounding records for

HYDROGRAPHIC SHEET 4176

Locality: Cape Hatteras, N. C.

Chief of Party: M. W. Hemple in 1921.

Plane of reference is mean low water, reading

2.8 ft. on tide staff at Cape Hatteras, N. C.

Condition of records: Satisfactory.



Chief, Division of Tides and Currents.

Section of Field Records

Sheet No. H-4176

Surveyed in 1921

Chief of Party - H. W. Humpale  
Protracted by - H. L. Bloomberg  
Edges plotted by - H. W. Humpale  
Verified & checked by - H. E. MacEwan

1. The records conform ~~with~~ <sup>to</sup> the requirements of the General Instructions.
2. The plan and character of the development does not fulfil the requirements of the general instructions. — The cross lines were run.
3. The usual depth curves can be drawn
6. The field plotting was completed to the extent prescribed by Genl inst.
7. Junction with sheet adjacent not entirely satisfactory.
8. (a) Character and scope of surveying good.  
(b) Field drafting excellent.

Oct. 6 1921

H. E. MacEwan

AND REFER TO NO. 9-VEC

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

SECTION OF FIELD RECORDS

REPORT ON HYDROGRAPHIC SHEET 4176

Surveyed in 1921

Chief of Party: H. W. Hemple. Surveyed by - - - H.W.Hemple.  
Protracted by: H.L.Bloomberg. Soundings plotted by H.W.Hemple.  
Verified & Inked by: H. E. MacEwen.

1. The records conform to the requirements of the General Instructions.
2. The plan and character of development fulfill the requirements of the General Instructions except that no check sounding lines were run across the main system of lines.
3. The plan and extent of development satisfy the specific instructions.
4. While there are no intersecting sounding lines which will enable the work to be checked by the crossings, the lines are close enough to each other to afford a fair check. A comparison of parallel soundings and study of the curves show eccentricities in the bottom that are difficult to understand, in view of the fact that the shoreline in the locality is straight and the curves might reasonably be expected to be approximately parallel to the beach. All the positions that appear to be abnormally placed were replotted.
5. As intersecting sounding lines constitute one of the best checks on the accuracy of the work, it would appear wise to always include them in the hydrographic development.
6. The field plotting was completed to the extent prescribed in the General Instructions, and none of it had to be done over again by the office draftsman.
7. No further surveying is required within the limits of the sheet.
8. The field surveying and drafting are excellent.
9. Reviewed by E. P. Ellis, October, 1921.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

**HYDROGRAPHIC TITLE SHEET**

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. 4176

State . . . North Carolina . . . . .

General locality . Cape Hatteras . . . . .

Locality . . . <sup>Vicinity</sup>~~1/4 mile each side~~ of Cape Hatteras Light-house.

Chief of party . H.W.Hemple, Jr. Hyd. & Geod. Engr. . . . .

Surveyed by . . H.W.Hemple, Jr. Hyd. & Geod. Engr. . . . .

Date of survey . August 18, 1921 to September 8, 1921 . . . . .

Scale . . . 1:5,000 . . . . .

Soundings in . Feet . . . . .

Plane of reference . Mean low water . . . . .

Protracted by H.L.Bloomberg Soundings in pencil by H.W.Hemple

Inked by . . . . . Verified by . . . . .

Records accompanying sheet (check those forwarded):

Des. report,  Tide books,  Marigrams,  Boat sheets,

Sounding books,  Wire-drag books,  Photographs.

Data from other sources affecting sheet  record of Current observations.

Remarks: