

2259 - 2260

2260

2259

Diag. Chart No. 1240-2

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*  
Field No. *2259* Office No. *2260*

LOCALITY  
State *South Carolina*  
General locality *Port Royal*  
Locality *Sound.*

1896

-194

CHIEF OF PARTY

*St. Louis A. Dunlap.*

LIBRARY & ARCHIVES

DATE

U. S. COAST AND GEODETIC SURVEY.

*Gen. W. W. Duffield*, Superintendent.

State: *South Carolina.*

DESCRIPTIVE REPORT.

*Hydrographic* Sheets Nos. *2259,*  
*2260.*

LOCALITY:

*Port Royal Sound.*

*1896.*

CHIEF OF PARTY:

*Lieut. Comdr. A. Dunlap, U. S. N.*

# 2260

Diag. Cht. No. 1240-2

Department of Commerce and Labor  
COAST AND GEODETIC SURVEY

*W. W. Duffield*  
Superintendent.

State: *S. C.*

## DESCRIPTIVE REPORT.

*Hyd<sup>e</sup>* Sheet No. *2260*

LOCALITY:

*See*

*2259*

*1896*  
~~*190*~~

CHIEF OF PARTY:

*A. Dunlap*

2260

Archives

AUG 15 1896

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FORM 65.—Field Letter.

Write me at:

*Gloucester, Mass.*

Telegraph me at:

"

My Express Office is:

*Assistant in Charge*

U. S. COAST AND GEODETIC SURVEY,

*Traverse Block,*

#63.

*15<sup>th</sup> August 1896*

2-547

*Descriptive Report.*

*To the Superintendent*

*U. S. Coast and Geodetic Survey,*

*Washington, D.C.*

*Sir:*

1. I have the honor to submit the following descriptive report of hydrographic work executed by the party on board of this vessel in the vicinity of the channels leading into Port Royal Sound, S.C., under your instructions, dated December 20<sup>th</sup>, 1895, and the detailed instructions of the Hydrographic Supervisor, dated December 26<sup>th</sup>, 1895.

2. The following projections were sent for the execution of the work:

*One projection, scale  $\frac{1}{20000}$ , Port Royal Sound Entrance, S.C.*

*One tracing, Port Royal Sound for examination of shoal off Skull Creek.*

*Two copies—descriptive of triangulation stations on projection and tracing.*

One sheet (Form 28) Geographical positions.

One scheme showing limits of projection on a copy of chart no. 155.

One projection, scale  $\frac{1}{20000}$ , Port Royal Sound, S. C., and numbers 2.

3. The party was under the command of Lt. Louis Colby, U. S. N., until the 20<sup>th</sup> April, then under the command of Lieut. J. A. Mearns, U. S. N., till the 21<sup>st</sup> May; and under my command until 30<sup>th</sup> June, when the work was closed by your direction.

4. The Blazer arrived at Bay Point, Port Royal Sound, the evening of the 27<sup>th</sup> January last and began work next day.

5. The difficulties of the situation were many owing to the great numbers of 1893, accompanied by a tidal wave, which swept over the sea-islands obliterating nearly every mark employed in former surveys.

The triangulation points, Brooklyn and Perry; the hydrographic stations, Raetz, Range and Ten were all that

could be found. Each one of these was occupied in succession and also taken on each of the others and their positions found to be correct. Signals were made at Bay Point along the beach of St. Phillips Island and on Hillin Head Island. Water signals were found necessary and were put down from below Fishing Reef to off the bar at both entrances. In addition to these signals the Martins Indicator, Light Vessel and the Buoys were used.

6. Still the work was most difficult owing to the distances being great, no appliances for hauling lumber, and with the water signals the prevalence of strong southerly and south-westerly winds which soon made a rough sea. This sea prevented boats from to a great extent and the draught of the Blake was too great to allow her to pass over the shoals, outside of the channels, without endangering her safety.

7. I would, therefore, recommend that, when the work is to be finished, a light draught steamer, not

drawing over from 6 to  $7\frac{1}{2}$  feet, be employed for that purpose. A vessel of that character could go almost everywhere at any stage of the tide and this is important on account of the strong prevailing winds and currents which make boat work almost impossible.

8. In this connection I would call attention to the fact that the steam cutter of this vessel, #32, is too lively a boat for most surveying purposes, owing to the sharpness of her under-water body giving a very unstable platform for standing purposes.

9. Another difficulty occasionally gave some trouble and that was at times men became ill or met with accidents in the working rooms necessitating the return of the vessel to the Naval Station at Port Royal, 14 miles distant, on account of there being no Surgeon attached at the time.

10. The examination of the shore of Egg Hill

Chart 12 was indistinct, but given us on information from the office that the main sheet Port Royal Entrance was of much greater importance and should be finished first.

11. The information called for under General Instructions for Hydrographic Parties, Paragraph 209, articles 2, 3, 4, etc., is very fully treated in Coast Pilot, Atlantic Coast, Part VII, pages 73, 74, 75 and 76. Whenever there are changes they are noted as follows:

a. The appearance of the coast from seaward is such that no distinguishing marks are useful to a stranger on account of the broken and distant of the coast line, therefore, it is necessary to mark the Martin's Industry Light vessel on approaching the entrance. The entrance buoy to the South-East Channel (can, black and white perpendicular stripes, mark 25 "P.R.") lies to by  $2\frac{1}{2}$  E, 2 miles 350 meters from the light vessel. The entrance buoy to the North Channel



(*mur*, white and black perpendicular stripes, marked "P.R.")  
 lies N. S.  $74\frac{1}{2}$  W, nearly, 2 miles 1550 metres from the light  
 vessel.

b. Changes in Channels. There have been great  
 changes in the South-East and South Channels, but no  
 exact information on this point can be given until the  
 curves are plotted. The shoal known as North-East  
 Breaker has, apparently, grown to the Southward about  
 one third of a mile and Martin's Sediment Shoal having  
 been cut away on the North-East portion and grown on  
 the Western portion about the same amount. The  
 channels hold the same relative positions, the South-East  
 Channel being farther South and the South Channel farther  
 West.

c. The necessary changes of lights and buoys  
 have been made, from time to time, by the Light House  
 Establishment so that it is safe to follow the di-  
 rections given in Part VIII of the Coast Pilot to which  
 reference has already been made.

d. It has been reported to have shoaled about Hillier Head, to the southeast and eastward, and this is thought to be due to the dredging and washing of phosphates in Broad River.

e. The lead should invariably be used in approaching the shoals as the depth of water is an unfailing guide.

f. The Rules and Bylaws of the Board of Pilot Commissioners for Port Royal and St. Helena Bay, the Rules and Regulations to Control the Quarantine Service at the several ports, as adopted by the State Board of Health for North Carolina, and the Port Regulations for Port Royal are herewith submitted.

g. Anchorage. In addition to the anchorage at the mouth of Beaufort River good ones can be found in Broad River and one, about one quarter of a mile north of the Naval Station Wharf, where vessels of moderate draught can lie with perfect safety.

h. Fogs. Light fogs prevail from the 1<sup>st</sup> of November till the 1<sup>st</sup> of April. Always very light and they

may come and go two or three times in 24 hours. There was only six days of actual fog from January 28<sup>th</sup> to June 30<sup>th</sup>, but it was frequently so misty about the horizon as to make objects too indistinct for good observations. During the spring before planting the rice and other fields are burned over and the smoke therefrom adds to the indistinctness of the atmosphere frequently giving it the appearance of fog. The Master of the Merchants Industry Light vessel states that the longest continuous fog in the past 30 years, of which he has record, is 27 hours. The light vessel is filled with a 17<sup>th</sup> Steam fog whistle, which is of great assistance to vessels bound either to Port Royal or Savannah.

i. The Prevailing Winds are southerly for spring and summer and from E and S & W for fall and winter. From January 28<sup>th</sup> to June 30<sup>th</sup> they were from S E to W & N.

j. The heaviest and most dangerous gales are from E. Cyclones make them. In winter gales generally last 3 or 4 days; and, if wet and rainy, longer. A dry north-

Euxine does not last long but soon gets up a nasty  
 sea and shifts to the S<sup>W</sup>. There are occasional South-  
 westerly gales but they are moderate in force and the  
 sea is smoother as the entrance is practically sheltered  
 by the coast line in that direction. The only heavy  
 gale experienced was on the 6<sup>th</sup> of February, while an-  
 chored in Broad River. It came from S by E and haul-  
 ed to the Westward and was strongest from W by S. A  
 very heavy rain & squall occurred on the 12<sup>th</sup> of June  
 while anchored in South Channel observing tides.

ii. Wrecks near involve a storm. Vessels generally  
 get on the shoals by not using the lead.

c. No Cautionary signals are displayed except at  
 Port Royal when a storm of unusual violence is ap-  
 proaching, but this is not very prominent and is hard  
 to find.

iii. The principal towns are Port Royal and Beau-  
 fort, the latter being the larger and of the more commer-  
 cial importance. Port Royal is the nearest port of call and

Telegraph Station, although the Naval Station is connected by telephone with each place.

12. The coal supplied at Port Royal is a bituminous coal from Tennessee and is not equal to that from Pennsylvania, Maryland and Virginia; and, as the only dealer is an English company called The Port Royal Coal Company, there is practically no competition as regards price.

13. There is Railroad communication with the coast and interior by the Port Royal and Augusta Railroad.

A light draught side wheel steamer makes regular trips from Savannah three times a week, Mondays, Wednesdays and Fridays, by the inner passage, touching at Port Royal, Beaufort, the Naval Station and intermediate points. Irregular trips are made by a similar vessel from Beaufort, Port Royal and the Naval Station to Charleston. All classes of vessels are employed in the carrying trade. One line of English freight steamers, the Johnson line, makes regular trips to Liverpool and Bremen. They bring in fertilizing salts, sulphur and sulphuric acid, for use in the manure

facture of fertilizers from pre-historic bones, which are mined and dredged from the bottom of the rivers. Flour, coal, lumber and cotton are exported by this line, with phosphates as ballast.

12. The manufacture of phosphates and the raising of cotton and rice are the principal industries.

13. At this time no harbor improvements are in progress, but it is believed to be the intention of the government to deepen the channel, where necessary, from the sea to the Naval Station. At this station is situated the only dry dock in the Atlantic <sup>Coast</sup> of the U. S. which will take in the first class battleships.

14. Dimensions of the Union Dry Dock at Naval Station.

Depth of water over sill at Mean Low Water	26 ft.
Length of dock on floor, caisson in inner groove	428½ "
" " " " " " " " outer "	448½ "
Width " " at bottom	54 "
" " " " Top	126 "
" " " " Entrance in bottom	66 "

Width of dock at entrance on top . . . . . 97 ft.

5. There are no life saving stations, nor hospitals for Hawaii. In case of emergency four beds can be provided at the Quarantine Station.

7. It is not considered advisable to use the water on shore for drinking purposes on account of malarial troubles. After the middle of May the weather becomes very hot and it is not deemed prudent to continue work in this locality.

### 12. Tide Stations.

Three tide stations were established but the data of only two was used in the completion of the work.

No. 1, Naval Station Wharf, Pearl Islands. A box gauge located in the boat house of the Naval Station. A description of this gauge and its location is found in Tide Book, No 1, Naval Station, and a complete set of observations for one lunar month was taken, but as the cord of the gauge stretched about four tenths of a foot during the observation they have not been used in any compar-

islands and no description is considered necessary here.

No. 2, Station Cuetz. The gauge is a staff, 15 feet long with a small glass tube, containing a colored float, set into its face. It is secured to a frame work of piles located in Station Cuetz near its mouth on the north-west bank. The numbers increase with the rise of the tide. The Bench mark is 14.83 feet above the zero of the gauge, and is a stone set into the ground on the north side of the middle one of three palmetto trees, the location of which is fully described in Field Book No. 1 of Station Cuetz.

Observations were taken through two lunar months to obtain the plane of reference and the latter is the mean of 112 low waters and corresponds to tide gauge reading 2.622 feet.

Highest and lowest tides were run at the station.

Date of highest, April 26<sup>th</sup>, 1896, and corresponds to 12.275 feet on tide gauge.

Date of lowest, March 30<sup>th</sup>, 1896, and corresponds to



0.675 feet in tide gauge.

Sto. 3, @ mid. This gauge is a staff with a glass tube let into its face and is secured to @ mid on Martin's Industry Shoal, near the junction of South-east and South Channels. The number increases with the tide.

This gauge was used only to compare tides in the shoals with those at Station Burtz. It was extremely difficult to obtain observations at this point owing to bad weather and rough seas, but observations were continued until a complete and satisfactory set was taken between 5 a.m. June 17<sup>th</sup> and 7:30 a.m. June 18<sup>th</sup>. These were used in the comparisons.

A curve with all the numbers is herewith submitted.

\* 13. The Tidal Currents in the channels set in the direction of the channels, though in the South Channel, near @ mid, the general direction is ebb-tide for the flood and S E for the ebb. At @ mid the flood runs from 10 to 50 minutes after high water and ebb runs from 15 to 40 minutes after low water.

14. The Strength of the current at  $\odot$  Head in the South Channel is from 0.6 to 1.2 knots per hour, the ebb being from one to three times the strength. The tidal currents increase in strength going up the Sound and into Pleasant River: opposite the Naval Station the maximum strength of the ebb is 2 knots and the flood one or two knots less.

15. The Master of the Martin's Industry light-vessel states as follows in regard to tides there: the flood tide runs to half tide due S.W. At half tide in moderate weather and when unimpeded by heavy winds it runs directly into the channel until the beginning of ebb. With strong easterly winds the flood runs directly across to the Hillier Head side. Going in with a boat at half flood the tide will take it directly in. Just the reverse occurs with the ebb tide.

16. From these days observations, at this point, the strength of the flood was found to be 0.9 of a knot and the ebb, one or two knots less.

17. All tides are greatly influenced by the winds. With strong easterlies or with easterly winds

The Saugossa weed is brought in past the light  
vessel.

18. The manner of the data will be sub-  
mitted shortly with the projection which is  
not quite ready.

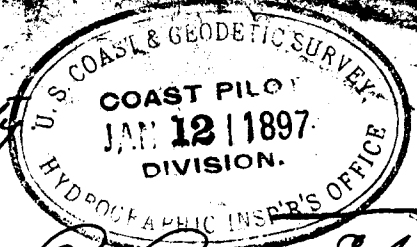
Very respectfully,

A. S. S. S.

J. C. S. S. S. S.

Three enclosures, the curves under  
separate cover by registered mail

In files of C.S. party



- 1 Copy - Port Regulations, Port Royal S.C.
- 1 " - Rules & By laws - Pilots " "
- 1 " - Rules & Regulations Quarantine S.C.

cut up for copy  
July 1900.  
J. Ross.