C. & G. SURVEY
L. & A.
AUG 4 1917
Acc. No.

3964

Diag. Cht. No.

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: Florida

11—5613

DESCRIPTIVE REPORT.

Hyd. Sheet No. 3964

LOCALITY:

East Coast.

St. Johns River to

St. Augustine

Inlet

1917

CHIEF OF PARTY:

G. T. Rude

3964

SURVEY
AUG 4 1917

DEPARTMENT OF COMMERCE

U. S. COAST & GEODETIC SURVEY

E. LESTER JONES, SUPERINTENDENT.

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DESCRIPTIVE REPORT

to accompany

INSHORE HYDROGRAPHIC SHEET ("A") 3964

EAST COAST OF FLORIDA

St. John's River L. H. to St. Augustine L. H.

February 1. 1917 to April 30, 1917.

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U S C & G S Steamer ISIS,

GILBERT T. RUDE,

Commanding.

Descriptive Report

to accompany

Inshore Hydrographic Sheet("A") 3964

East Coast of Florida

St. Johns River L.H. to St. Augustine L.H.

Feb. 1st, 1917 to April 30th, 1917.

U.S.C. & G.S.S. ISIS. Gilbert T. Rude, Commanding.

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Instructions.

Instructions for this work were issued to the Commanding Officer on December 28th, 1916.

The area of hydrography covered bythis sheet is roughly included between parallels of Latitude 29 degrees, 47.5 minutes N, and extends from approximate ½ mile from the beach to about 24 miles offshore. The area embraced is about 1050 square statute miles.

Signals: The scale of projection is 1:60,000.

High signals as described in my Season's Report of May 20th, 1917, were built by Signalman J.S. Bilby at intervals of about three and one-half to four miles, and located by him. Several small signals were also built and located at desirable intermediate positions for use in close inshore work. Theseare also listed in my Season's Report. The following names are objects along the coast cut in by sextant angles from the ISIS. Most of them were used as signals.

"Dune"-- A small scrub palm prominent on sand dune south of the jetties at the entrance of the St. Johns River.

"Right Dome"--Roof peak of pavilian at the north end of Atlantic Beach.

"Left Dome"--Roof peak of pavilian at the north end of Atlantic Beach.

"Red Dome"--Red dormer gable on house at the north end of Atlantic Beach.

"Square"--Center line of front of large square building on the beach near the Continental Hotel.

"Atlantic"--Most southern house, Atlantic Beach.

"House"-- " northern " Pablo " .

"Small"--Prominent ~~chimney~~ chimney of power house, Pablo.

Also four 1st class can buoys and two whistle buoys equipped with superstructure, target and flags, loaned by the Lighthouse Inspector at Charleston, fitted for surveying purposes by the crew of the ISIS, and planted and shifted as required by the Lighthouse tender CYPRESS.

The buoy line paralleled the coast line at a distance of about 11 miles. The average distance between buoys was about 3½ miles.

The positions of the buoys were determined by sextant angles from the ISIS connecting them with the tall signals along the coast. These angles were recorded and form a part of the records which accompany this sheet.

Methods and Instruments.

Navigating sextants and the large telescope sextant No.358 were employed for the angle work.

Sounding was done with the ordinary hand lead on the fixed position work and with trolley on the dead reckoning.

Lines were spaced, one quarter mile apart in depths of less than eight fathoms, and where bottom appeared broken in greater depths; one half mile apart in depths less than 10 fathoms and from one to two miles apart in depths over 10 fathoms.

The sounding speed varied from 4½ to 5½ nautical miles per hour. The soundings were taken at regular intervals varying from 45 seconds to 1½ minutes.

The current observations for plotting the dead reckoning work were made every two hours when on a sounding line. The vessel was anchored with her own ground tackle and observations made with submerged current pole and stop watch. A detailed report of the method of making these observations and of new precautions and devices used as aids to accuracy is given in my Season's Report of May 20th, 1917.

On the dead reckoning work, the position of the vessel for each anchorage was corrected for an estimated leeway of .15 miles per hour for each 10 miles of wind velocity on the beam. When the wind was not abeam, that component of the velocity normal to the course of the ship was used. This velocity was measured by an anemometer; correction was also made for set and drift of current, the resultant of the observations observed at each anchorage and the one preceeding being used.

Altho much broken ground was encountered, no dangers to navigation were discovered in this area.

Tide Gauge.

The record of the automatic tide gauge at St. Augustine was used for tidal reduction. Correction to these reading for outside was made from data supplied by the office.

Ship Swings and Log Tests:

Three ship swings and four log tests were made during the progress of the work, and were used in the dead reckoning work as described in my Season's Report of May 20th, 1917.

PLOTTING:

Tide reducers and lead line corrections were entered and checked, and soundings reduced by the ships officers, including Messr's. Peacock, Olsen, G. Luce, Green and Nyland. The fair sheet was plotted and soundings penciled by Mr. F.L. Peacock, Assistant and Mr. C.K. Green, Deck Officer. The soundings are expressed in feet. It was impossible to show all the soundings that were obtained but such were selected as would show clearly the character of the bottom and the shoaler depths .

Table of Statistics.

Date	Letter Day	Positions	Soundings	Statute Miles
Feb.14	A	131	603	47.3
Feb.15	B	95	668	41.7
Feb.16	C	150	666	39.7
Feb.20	D	19	73	3.5
Feb.21	E	119	819	56,3
Feb.21	F	123	654	54.1
Feb.26	G	77	414	30.5
Feb.27	H	145	729	54.1
Feb.28	J	88	469	28.8
Mar.1	K	64	305	23.6
Mar.2	L	95	423	37.0
Mar.2	M	128	477	53.5
Mar.7	N	126	622	51.1
Mar.12	O	20	130	21.7
Mar.13	P	183	1123	86.2

Hydrographic Statistics.(Cont.)

Table of Statistics.

Date	Letter Day	Positions	Soundings	Statute Miles
Mar.14	Q	24	129	30.2
Mar.16	R	136	652	46.0
Mar.19	S	17	60	4.2
Mar.20	T	157	832	59.0
Mar.21	U	18	112	8.2
Mar.22	V	121	697	60.4
Mar.23	W	131	706	51.9
Mar.26	X	49	312	31.6
Mar.27	Y	88	476	37.5
Mar.28	Z	93	487	36.6
Mar.29	A'	166	777	64.4
Mar.30	B'	102	492	29.8
Apr.3	C'	166	814	65.5
Apr.4	D'	151	836	59.6
Apr.5	E'	83	432	36.5
Apr.16	F'	194	959	89.4
Apr. 17	G'	170	914	92.0
Apr. 18	H'	195	929	80.7
Apr. 19	J'	195	944	93.0
Apr. 20	K'	158	883	74.5
Apr. 23	L'	18	63	6.3
Apr. 24	M'	20	155	22.7
Apr. 25	N'	187	851	75.4
Apr. 26	O'	44	139	34.2
Apr. 27	P'	115	518	50.7
Totals		4361	22,326	1,859.6

Table of Statistics.(Cont.)

Area equals: 915 square statute miles.

Respectfully submitted,

Gilbert D. Rude

Commanding, U.S.C.& G.S.S. ISIS.

Hydrographic Sheet 3964. 2 sheets

Protracted by Field Party. Sdgs. plotted by Field Party. Verified and inked by S.L.R.

This survey is an unusually good one, the area being well covered, the sdg lines well run, the crossings good in spite of the uneven character of the bottom, all the indications of shoals closely developed and all the data necessary for plotting the sheet carefully recorded.

From the shoreline out to about five miles beyond the limits of the buoys, the work is controlled by sextant angles. The positions were protracted by the Field Party and were accepted as correct except where the positions appeared at all doubtful or where the time interval and the distance covered did not correspond when they were checked and corrected if found in error.

The remainder of this survey (that is, from 4 or 5 miles east of the buoys to the eastern limits of the sheet) was entirely by dead reckoning and all of the plotting of it was carefully verified. Starting from a sextant angle fix or a departure from a buoy, the compass course (corrected for variation and deviation) was plotted, the corrected log distances laid off and the corrections for current and wind applied. This method was repeated for ~~the~~ every position at which stops for current and wind observations were made, to the end of the line and back again until a fixed point was reached, when the closure was made and the error apportioned among the different current observation positions according to the time intervals. This reduced the error to a minimum and it is believed that the work is as nearly accurate as it is possible for an offshore survey of this character to be.

No allowance for either wind or current was made on the old off-shore sheets, therefore an effort to compare this sheet with them would have been useless and was not even attempted.

The old inshore surveys covering most part of the work west of the buoys and shown on Hyd. Sheets 1224 and 1226, were carefully examined and compared with this work and were found to agree with a closeness that leads to the conclusion that there have been practically no changes in depth since 1874 when the old surveys were made. Therefore a tracing showing a combination of the old and new hydrography would give a complete sheet, thoroughly developed, that could be relied upon for perhaps a hundred years without the necessity for a resurvey.

However, owing to the fact that the photographic section is busily engaged with important war work for the Army, it is impossible to have a reduction of the old sheets made at this time. A pantographic reduction was commenced, but it is readily apparent that this is a very slow and cumbersome method, and the making of the combination tracing was deferred until such time as the urgent pressure of the War department work upon the photographic section has been relieved.

No provision for a 48 foot curve is made in the instructions for plotting hydrographic surveys, but as a curve of this depth reveals the character of the bottom better than any other, it was drawn with a hard pencil on this sheet, and when the combination tracing is completed, it is suggested that this curve be inked. Perhaps a study of the combination tracing may develop the advisability of including a 42 foot curve as well, although it does no seem necessary at this stage of the work.

Samuel L. Rosenberg

Mar. 4, 1918

U.S.S.J.

LIBRARY
Place with descriptive report
of hydrographic sheet No. 3964
Drawing Section.

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

October 11, 1917.

Division of Hydrography and Topography:

Division of Charts:

Tidal reductions are approved in
14 volumes of Sounding records for

HYDROGRAPHIC SHEET 3964

East Coast of Florida
G.T.Rude in 1917.

Plane of reference is
Mean low water, reading

3.6 ft.on tide staff at St.Augustine.*

*Allowance made for difference in
tide at place of sounding.

L. P. Shidy

Acting Chief, Section of
Tides and Currents.