

6056

Rec'd June 21, 1934.

U. S. COAST & GEODETIC SURVEY
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DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton, Director

State: South Carolina

DESCRIPTIVE REPORT

Topographic

~~Hydrographic~~

Sheet No. 1

6056

LOCALITY

Charleston

Stone River, Rantowles Creek

Eastward.

19 34

CHIEF OF PARTY

Lt. Benjamin H. Rigg

U. S. GOVERNMENT PRINTING OFFICE: 1920

6056

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

Rec'd June 21, 1934

REG. NO. 6056

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. I

REGISTER NO. 6056

State South Carolina

General locality Charleston

Locality Stono River, Rantowles Creek Eastward

Scale 1:10,000 Date of survey January & February ~~1933~~ 1934.

Vessel Shore Party No. 19

Chief of Party Lt. Benjamin H. Rigg

Surveyed by W. N. Martin

Inked by W. N. Martin

Heights in feet above.....to ground to tops of trees

Contour, Approximate contour, Form line interval.....feet

Instructions dated October 10, ~~1933~~ 1933.

Remarks: Aluminum mounted graphical control sheet.

DESCRIPTIVE REPORT TO ACCOMPANY ALUMINUM
MOUNTED GRAPHICAL CONTROL SHEET I

Outline of Report

1. Date of Instructions.
2. Scope of Survey.
3. Limits of Sheet.
4. General description of Territory.
5. Landmarks.
6. Character of Control Used.
7. Surveying Methods Used.
8. Discrepancies.
9. New Names.
10. Changes in Shoreline.
11. Character of Marshes.
12. Permanent Hydrographic Stations.
13. Field Inspection.
14. Graphical Control for Air-Photo Compilation.
15. Azimuths of Navigating Ranges.
16. Location of Fixes for L.H.S.
17. Shoreline Located.

Descriptive Report to Accompany
Graphical Control Sheet I

1. DATE OF INSTRUCTIONS - Work on this sheet was executed under instructions dated October 10, 1933.
2. SCOPE OF SURVEY - The purpose of the sheet is to furnish control for photo-compilation sheets, to locate topography not clear on the photographs, to locate and re-mark stations of other bureaus, notably the U.S. Engineers' Department, to establish permanent stations for future topographic or hydrographic work, to locate the beacons, navigating ranges, and other aids to navigation, to locate natural objects for fixes for use of U.S. L.H.S. in locating floating aids to navigation, and to locate signals for present hydrographic work.
3. LIMITS OF SHEET - This sheet extends from N. Lat. $32^{\circ} 44' 37''$ to N. Lat. $32^{\circ} 47' 46.5''$ and from W. Long $80^{\circ} 02' 15.7''$ to W. Long. $80^{\circ} 07' 11.5''$, and includes the Stono River from a N. & S. line 730 m. E. of Parkers Box Factory on the East to the entrance to Rantowles Creek on the West.
4. GENERAL DESCRIPTION OF TERRITORY - The section of the Stono River shown on this sheet is bordered by high marsh grass except for stretches of higher ground covered with trees on the S. shore between hyd. sta. Dark and the first S.A.L. Ry. bridge and again between Sta. Not and a point S.W. of Bn No. 3.

The territory on the N. shore between sta. Board and Hyd. sta. Corn is composed of small ridges and creeks formed by phosphate strip mining in the past. This all shows up from the water as marsh. There are two bridges on the sheet, with a few houses at intervals on the S. bank.

5. LANDMARKS - All beacons and ranges were listed in the list of landmarks. Natural objects listed include the E. stack of Box Factory which can be seen from Johns Island bridge to the Stono River H.W. bridge. It is the E. of 3 stacks and is 142' high. The W. semaphore signal of the S.A.L.R.R. bridge is listed and also the center light of the Johns I. Bridge.

6. CHARACTER OF CONTROL USED - Control was furnished by triangulation established in 1933.

7. SURVEYING METHODS USED - Either setups on triangulation stations or strong three point fixes could be obtained in all except two cases, at the E. and W. ends of the sheet respectively. In both of these instances, strong resections were used and the sheet was tied in on the East with Sheet F by stations Tent and Ed, and with sheet J on the West by stations Bat and Bird. All stations and permanent objects were located by three strong cuts or by two cuts and a stadia distance. Points of the shoreline and docks were rodded in by stadia where it was thought necessary to supplement the aerial compilation sheets.

8. DISCREPANCIES - It was found that a triangulation intersection station had been misnamed on the list of G.P.'s. This station was formerly listed as Rear Range Bn No. 3, 1933. It was renamed Rock Cut Range, Front, 1933 after consulting the L.H.S. (See recovery card).

9. NEW NAMES.-

10. CHANGES IN SHORELINE -

11. CHARACTER OF MARSHES - The marsh in this vicinity is covered with salt marsh grass about 3' high and the ground

11. CHARACTER OF MARSHES (Cont.) -

proper is about the level of Mean High Water, interspersed with small creeks. Although the marsh is covered from a few inches to a foot by spring tides and storm waters, there is still a definite shoreline caused by the marsh grass extending above the water. This line is shown on the graphical control and celluloid sheets with a heavy line. The inner limit of the marsh, usually higher ground grown up with trees is shown by a fine line.

12. PERMANENT HYDROGRAPHIC STATIONS -

(a) All data possible was obtained from the U.S. Engineers Department to help in locating their stations. Co-ordinates and descriptions were obtained for a few stations and these were reduced to geodetic positions and plotted upon the sheets before field work was started to aid in recovering them. The approximate location of other stations was obtained by transferring them from Engineers' map to C. S. chart. These stations were sought for in the field in the course of operations. Some U.S.E.D. stations were permanently marked by 5" C.I. pipe filled with concrete. Others were 6"x6" posts driven in the ground, or 6" x6" wooden blocks supported by a timber tripod. These wooden stations were re-marked by stand Hyd. disks set in concrete blocks.

~~(b) Cases where U.S.E.D. stations were located and the correct name was indefinite were Cut ref. No. 2 and U.S.E.D. XXIII.~~

12. PERMANENT HYDROGRAPHIC STATIONS (Cont.) -

(c) U.S.E.D. stations recovered, remarked with std. hyd. disks, and described on form 524:

U.S.E.D. - 6
BLOCK
MARSH
CANAL

(d) U.S.E.D. stations recovered and described on form 524
(5" C.I. pipe):

U.S.E.D. 1 (See desc. of Asta. U.S.E.D. 1, 1934)
U.S.E.D. 2

(e) U.S.E.D. stations recovered and described on form 524:

JOHNS I. RANGES, FRONT & REAR

(f) U.S.E.D. stations recovered:

FRONT & REAR RANGE 5

(g) Aids to Navigation located & described on form 524
for future control:

Johns I. Ranges, Front & Rear
Rock Cut range, rear.

Many other permanent objects such as gables, chimneys, poles, etc. were located and described on the sheet.

13. FIELD INSPECTION - A peculiarity of the region is the definition of the H.W.L., L.W.L. and storm H.W.L., explained in Par. 2. Photographs were carried by the photo party and data was obtained over the period the party was in the field for the use of the compilers. Also points located by topography and triangulation points inaccessible to the regular field inspection party were located on the photographs.

14. GRAPHICAL CONTROL FOR AIR PHOTO COMPILATION - The positions of two points located by topography were supplied the air photo

14. GRAPHICAL CONTROL FOR AIR PHOTO COMPILATION - (Cont)

compilers, the S.E. cor. of dock W. of sta. E. Stack of Box Factory, and hyd sta. Tall near the W. limit of sheet.

15. AZIMUTHS OF NAVIGATING RANGES - The azimuths of three sets of ranges were located, Ranges 5, Rock Cut Ranges, and Johns I. Ranges, by locating the ranges themselves and also points on range as far away as possible. *

16. LOCATION OF FIXES FOR L.H.S. - There were three floating aids to navigation on this sheet. The location of permanent objects supplied the L.H.S. for locating or re-locating the buoys by sextant fixes included the station E. Stack of Box Factory 1933, station E. Gable of House 1933 and topographic locations, C. Light Johns I. Bridge, N. W. Cor. John L Seabrook Barn, and W. Railroad semaphore.

17. SHORELINE LOCATED - Miles of shoreline rodded in and compared with celluloid sheet, $5\frac{1}{2}$ miles.

*The azimuth of the No. 5 ranges was computed mathematically, being $303^{\circ} 23' 11.1''$. However, as these were located a year previously as triangulation intersection stations and were liable to a slight shift, being close together, the azimuth, $303^{\circ} 15'$, found by topography was lettered on the sheet.

The azimuth of the Rock Cut Ranges was found by topo to be $134^{\circ} 27'$ compared with 132° , found in the Local Light List of the L.H.S.

The azimuth of the Johns Island Range was found to be $79^{\circ} 45'$ as compared with 81° , found in the Local Light List of the L.H.S.

Respectfully submitted by,

W. N. Martin
W. N. Martin

Forwarded by,

Benjamin H. Page
Lt. Benjamin H. Page
Chief of Party
H. & G. Engineer

INVERSE POSITION COMPUTATION

$$s_1 \sin \left(\alpha + \frac{\Delta\alpha}{2} \right) = \frac{\Delta\lambda_1 \cos \phi_m}{A_m}$$

$$s_1 \cos \left(\alpha + \frac{\Delta\alpha}{2} \right) = \frac{-\Delta\phi_1 \cos \frac{\Delta\lambda}{2}}{B_m}$$

$$-\Delta\alpha = \Delta\lambda \sin \phi_m \sec \frac{\Delta\phi}{2} + F(\Delta\lambda)^2$$

in which $\log \Delta\lambda_1 = \log (\lambda' - \lambda)$ —correction for arc to sin*; $\log \Delta\phi_1 = \log (\phi' - \phi)$ —correction for arc to sin*; and $\log s = \log s_1 +$ correction for arc to sin*.

NAME OF STATION									
1. ϕ	32	47	01.41	Front Range No. 5	λ	80	05	50.79	
2. ϕ'	32	47	02.98	Rear Range No. 5	λ'	80	05	53.61	
$\Delta\phi (= \phi' - \phi)$	+(00 -- 01.57)			$\Delta\lambda (= \lambda' - \lambda)$	+(00 - 02.82)				
$\frac{\Delta\phi}{2}$	+(00 -- 00.78)			$\frac{\Delta\lambda}{2}$	+(00 - 01.41)				
$\phi_m (= \phi + \frac{\Delta\phi}{2})$	32	47	02.19						
$\Delta\phi$ (secs.)	1.57			$\Delta\lambda$ (secs.)	2.82				
$\log \Delta\phi$	0.195900			$\log \Delta\lambda$	0.450249				
cor. arc—sin				cor. arc—sin					
$\log \Delta\phi_1$				$\log \Delta\lambda_1$					
$\log \cos \frac{\Delta\lambda}{2}$				$\log \cos \phi_m$	9.924650				
$\text{colog } B_m$	1.488618			$\text{colog } A_m$	1.490705				
$\log s_1 \cos \left(\alpha + \frac{\Delta\alpha}{2} \right)$	1.684518			$\log s_1 \sin \left(\alpha + \frac{\Delta\alpha}{2} \right)$	1.865604				
	(opposite in sign to $\Delta\phi$)			$\log s_1 \cos \left(\alpha + \frac{\Delta\alpha}{2} \right)$	1.684518				
$\log \Delta\lambda$	0.450249			$\log \tan \left(\alpha + \frac{\Delta\alpha}{2} \right)$	0.181086				
$\log \sin \phi_m$	9.733577			$\alpha + \frac{\Delta\alpha}{2}$	123 23 11.8				
$\log \sec \frac{\Delta\phi}{2}$				$\log \sin \left(\alpha + \frac{\Delta\alpha}{2} \right)$	9.921674				
$\log a$	0.183826			$\log \cos \left(\alpha + \frac{\Delta\alpha}{2} \right)$	9.740588				
a	1.53			$\log s_1$	1.943930				
b				cor. arc—sin	+				
$-\Delta\alpha$ (secs.)	+01.53			$\log s$	87.888				
$\frac{\Delta\alpha}{2}$	+00.76								
	+(00 - 00.8								
$\alpha + \frac{\Delta\alpha}{2}$	123	23	11.8	* Use the table on the back of this form for correction of arc to sin.					
α (1 to 2)	123	23	12.6						
$\Delta\alpha$	-(00 01.5)								
	180								
α' (2 to 1)	303	23	11.1						

NOTE.—For $\log s$ up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10', omit all terms below the heavy line except those printed (in whole or in part) in heavy type or those underscored, if using logarithms to 6 decimal places.

11-0810

U. S. GOVERNMENT PRINTING OFFICE: 1931

Comp. by J.A.M.
H.E.B.

Table of arc-sin corrections for inverse position computations

$\log s_1$	Arc-sin correction in units of seventh decimal of logarithms	$\log \Delta\phi$ or $\log \Delta\lambda$	$\log s_1$	Arc-sin correction in units of seventh decimal of logarithms	$\log \Delta\phi$ or $\log \Delta\lambda$	$\log s_1$	Arc-sin correction in units of seventh decimal of logarithms	$\log \Delta\phi$ or $\log \Delta\lambda$	
4.177	1	2.686	5.223	124	3.732	5.525	497	4.034	
4.327	2	2.836	5.234	130	3.743	5.530	503	4.039	
4.415	3	2.924	5.243	136	3.752	5.534	519	4.043	
4.478	4	2.987	5.253	142	3.762	5.539	530	4.048	
4.526	5	3.035	5.260	147	3.769	5.543	541	4.052	
4.566	6	3.075	5.269	153	3.778	5.548	553	4.057	
4.599	7	3.108	5.279	160	3.788	5.553	565	4.062	
4.628	8	3.137	5.287	166	3.796	5.557	577	4.066	
4.654	9	3.163	5.294	172	3.803	5.561	588	4.070	
4.677	10	3.186	5.303	179	3.812	5.566	600	4.075	
4.697	11	3.206	5.311	186	3.820	5.570	613	4.079	
4.716	12	3.225	5.318	192	3.827	5.575	625	4.084	
4.734	13	3.243	5.326	199	3.835	5.579	637	4.088	
4.750	14	3.259	5.334	206	3.843	5.583	650	4.092	
4.765	15	3.274	5.341	213	3.850	5.587	663	4.096	
4.779	16	3.288	5.349	221	3.858	5.591	674	4.100	
4.792	17	3.301	5.356	228	3.865	5.595	687	4.104	
4.804	18	3.313	5.363	236	3.872	5.600	702	4.109	
4.827	20	3.336	5.369	243	3.878	5.604	716	4.113	
4.857	23	3.366	5.376	251	3.885	5.608	729	4.117	
4.876	25	3.385	5.383	259	3.892	5.612	743	4.121	
4.892	27	3.401	5.390	267	3.899	5.616	757	4.125	
4.915	30	3.424	5.396	275	3.905	5.620	771	4.129	
4.936	33	3.445	5.403	284	3.912	5.624	785	4.133	
4.955	36	3.464	5.409	292	3.918	5.628	800	4.137	
4.972	39	3.481	5.415	300	3.924	5.632	814	4.141	
4.988	42	3.497	5.422	309	3.931	5.636	829	4.145	
5.003	45	3.512	5.428	318	3.937	5.640	845	4.149	
5.017	48	3.526	5.434	327	3.943	5.644	861	4.153	
5.035	52	3.544	5.440	336	3.949	5.648	877	4.157	
5.051	56	3.560	5.446	345	3.955	5.652	893	4.161	
5.062	59	3.571	5.451	354	3.960	5.656	909	4.165	
5.076	63	3.585	5.457	364	3.966	5.660	925	4.169	
5.090	67	3.599	5.462	373	3.971	5.663	941	4.172	
5.102	71	3.611	5.468	383	3.977	5.667	957	4.176	
5.114	75	3.623	5.473	392	3.982	5.671	973	4.180	
5.128	80	3.637	5.479	402	3.988	5.674	989	4.183	
5.139	84	3.648	5.484	412	3.993	5.678	1005	4.187	
5.151	89	3.660	5.489	422	3.998				
5.163	94	3.672	5.495	433	4.004				
5.172	98	3.681	5.500	443	4.009				
5.183	103	3.692	5.505	453	4.014				
5.193	108	3.702	5.510	464	4.019				
5.205	114	3.714	5.515	474	4.024				
5.214	119	3.723	5.520	486	4.029				

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

LANDMARKS FOR CHARTS

Charleston, S. C.

March 19, 1934

DIRECTOR, U. S. COAST AND GEODETIC SURVEY:

The following determined objects are prominent, can be readily distinguished from seaward from the description given below, and should be charted.

Benjamin H. Rigg

Chief of Party.

DESCRIPTION	POSITION					METHOD OF DETERMINATION	CHARTS AFFECTED
	LATITUDE		LONGITUDE		DATUM		
	°	'	°	'			
		D. M. METERS		D. P. METERS			
E. Stack Box Factory, Black E. & highest of 3 stacks	32-46	1164.7	80-02	1130.3	N.A. 1927	Schoppe 1933 A	1239, 3256
W. Bridge semaphore, 1st. S.A.L.Ry. bridge, 41' high	32-46	747.8	80-04	766.6	" Planetable	1934	" "
Rock Cut, Range Rear S.E. of Bn No. 3	32-46	1175.0	80-05	469.3	"	"	" "
Rock Cut, Range Front S.E. of Bn No. 3	32-46	1237.6	80-05	530.2	"	Schoppe 1933 A	" "
Johns Island, Range Rear N. of No. 5 Range	32-47	469.8	80-05	1287.3	" Planetable	1934	" "
Johns Island, Range Front N. of No. 5 Range	32-47	436.6	80-05	1485.2	"	"	" "
Rear Range No. 5	32-47	88.6	80-05	1399.1	"	Schoppe 1933 A	" "
Front Range No. 5	32-47	40.2	80-05	1325.7	"	"	" "
30' - High C. Light Johns I. Bridge	32-47	247.5	80-06	651.3	" Planetable	1934	" "
Bn. No. 3	32-46	1317.1	80-05	632.0	"	Schoppe 1933 A	" "
Aids to Navigation as listed above are all pile structures. All under 2.							

A list of objects carefully selected because of their value as landmarks as determined from seaward together with individual descriptions, must be furnished in a special report on this form, and a copy of such report must be attached by the Chief of Party to his descriptive report.

The selection, determination, and description of these points are an important factor in the value of the chart. Landmarks selected at appropriate intervals can be clearly charted. However, when none is outstanding, a group of two or three objects may by their interrelationship provide positive identification. A group so selected should be indicated.

The description of each object should be short, but such as will clearly identify it; for example, a standpipe, elevated tank, gas tank, church spire, tall stack, red chimney, radio mast, etc. Assign numerals to landmarks to indicate: (1) offshore, (2) inshore, (3) harbor, 1, 2, 3 would be a mark useful on all charts. Generally, flagstaffs and like objects are not sufficiently permanent to chart.