



3434

C. & G. SURVEY,
LIBRARY AND ARCHIVES
MAY 1 - 1913
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Diag. Ch. No. 4116

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: N.C.

DESCRIPTIVE REPORT.

Hyd. Sheet No. 3434

LOCALITY:

Off Cape Lookout

1913

CHIEF OF PARTY:

J. B. Bontelle

11-4925

3434

Acc. No. 3434
MAY 1 - 1913
LIBRARY AND ARCHIVES
U.S. SURVEY

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Descriptive Report to Accompany Hydrographic Sheet No.

Beaufort, N.C., April 24th, 1913.

EXAMINATION OF REPORTED SHOAL OFF CAPE LOOKOUT, N.C., AND DETERMINATION OF POSITION OF BUOY No. 8 AND CAPE LOOKOUT LIGHT VESSEL.

-----c0c-----

Method of Survey: The Steamer "Endeavor" was anchored at position number one and determined by theodolite angles from New Macon Ast. Station and Cape Lookout Light House and sextant angles at the ship. The Steamer "Hydrographer" at position number two and at Buoy No. 8 and the Steamer "Endeavor" at position number three, the reported location of the shoal, were determined by theodolite angles from the light house and sextant angles from the ships. The "Endeavor" at position four was determined by sextant angles at position three and Buoy No. 8. The angle on number four from number three is more or less doubtful on account of the ship at number four having considerable motion.

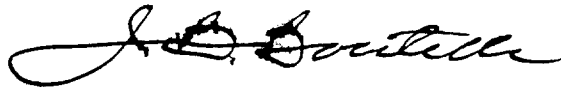
A black spar buoy was placed at position three and the two ships sounded over an area for a radius of about two miles around the buoy, the officers on deck and a man in the crow's nest keeping a lookout for anything that looked like a shoal.

A buoy was also placed on the charted position of a wreck two miles south of position number three and this locality also sounded over but nothing was found that would indicate the presence of a shoal. All courses given in the sounding record are magnetic.

Cape Lookout Light Ship was determined by a theodolite angle from Cape Lookout Lighthouse and by sextant angles from positions three, four and Buoy No. 8. The position plots about three miles east and one-half mile north of

its charted position.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "J. B. Suttle".

Ass't. C. & G.S., Chief of Party,

Commanding Steamer "Endeavor".

3434

11-606

State:

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C. & G. SURVEY,

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPHER'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGS ARITHMS.
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Computation of Position
of
Cape Lookout Shoals Buoy No. 8
and
Cape Lookout Lightship
1913

Chief of Party
J. B. Buntelle
Comd. U. S. S.

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11-606 State :

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPHER'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.

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11-606

State: _____

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPHER'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
	Pos 1 New Macon Lt. Ho.	(76 34 ±?) 35 53.0 67 25.2	LH N.M.			76° 41.8	4.213 19 ✓ 0.011 81 ✓ 9.768 00 ✓ 9.965 36 ✓ 3.993 00 ✓ 4.190 36 ✓
	Pos 2 " 1 Lt. Ho.	25 58 ✓ 129 26 ✓ 24 37 ✓	-1 ✓ ✓ 0	57 ✓ 26 ✓ 37 ✓			3.993 00 ✓ 0.358 94 ✓ 9.887 82 ✓ 9.619 66 ✓ 4.239 76 ✓ 3.991 60 ✓
	Pos 3 " 2 Lt. Ho.	29 22 ✓ 135 51 ✓ 14 46 ✓	+1 ✓ 0 ✓ 0	23 ✓ 51 ✓ 26 ✓			4.239 76 ✓ 0.309 23 ✓ 9.842 95 ✓ 9.406 34 ✓ 4.391 94 ✓ 3.955 33 ✓
	Buoy No 8 Pos " 3 Lt. Ho.	97 24 ✓ 54 21 ✓ 28 28 ✓	-5 ✓ -6 ✓ -2 ✓	19 ✓ 15 ✓ 26 ✓			4.391 94 ✓ 0.003 55 ✓ 9.909 33 ✓ 9.677 73 ✓ 4.304 82 ✓ 4.073 22 ✓
		150 13					

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COMPUTATION OF TRIANGLES.

11-606

State: _____

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L. ANGLES.	SPHER'L. EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.	
	Light ship Pos 3 Lt Ho	96 42 ✓ 38 08 ✓	L A 3			45 10 21471	4.39194 ^v 0.14926 ^v 9.99702 ^v 9.79063 ^v 4.53822 ^v 4.33183 ^v	
	Light ship Pos 3 Buoy no. 8	42 21 ✓ 104 48 ✓	Buoy X 8 3			32 51 21098	4.07322 ^v 0.26565 ^v 9.82844 ^v 9.98535 ^v 4.16731 ^v 4.32422 ^v	

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POSITION COMPUTATION, SECONDARY TRIANGULATION.

a		to			
L		&			
a	3	to	1	120	04 41.1
Δa				—	05 15.9
				180	00 00.00
a'	1	to	3	299	59 25.2

ϕ	34	37	21.730	³ Cape Lookout Light House	λ	76	31	29.206
$\Delta\phi$	+	04	25.375	s=	$\Delta\lambda$	+	09	15.472
ϕ'	34	41	47.105	¹ New Mason	λ'	76	40	44.678

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$\frac{1}{2}(\phi+\phi')$	34	39.467	34.4	$\frac{s}{\cos a}$	3.9131845	$\frac{s}{\sin a}$	8.30076	h^2	4.8489
1st term		-265.727		B	8.5112512	C	1.24416	D	2.3629
2d and 3d terms		+ 0.352		h	-2.4244857		9.54492		7.2118
$-\Delta\phi$		-265.375							
					10.339				
					.001				
					.339				

$s \sin a = 4.1503791$
 $s \cos a = 3.9131845$
 $\tan a = 0.2371946$
 $s. 4.2131907$
 $s. 4.2121909$

$\frac{s}{\sin a}$	4.1503791		
A	8.5092498	$\Delta\lambda$	2.7446622
$\sec \phi'$	0.0850333	$\sin \frac{1}{2}(\phi+\phi')$	9.7548825
			2.4995447
			"
$\Delta\lambda$	+ 555.472	$-\Delta a$	+ 015.9

N. B.—Take out A from table for ϕ' .

POSITION COMPUTATION, SECONDARY TRIANGULATION.

a	2 Lt. Ho.	to 3 New Mason	120	04	41
L		&	* 106	48	00
a	2	to 1 Pos. 3	13	16	41
Δa				-2	06
			180	00	00.00
a'	1 Pos 3	to 2 Lt. Ho.	193	14	35

Third Angle of Triangle

φ	34	37	21.73	2 Lt. Ho.	λ	76	31	29.21
$\Delta\varphi$	-	12	58.92	s=	$\Delta\lambda$		+3	41.74
φ'	34	24	22.81	1 Pos 3	λ'	76	35	10.95

$\frac{1}{2}(\varphi+\varphi')$	34	30	52	s	4.39194	s^2	8.7839	h^2	5.783
1st term	+778.790			Cos a	9.98823	Sin ² a	8.7222	D	2.363
2d and 3d terms	+ .070			B	8.51125	C	1.2442		8.146
$-\Delta\varphi$	+778.920			h	2.89142		8.7503		.0562
									.0140

s	4.39194	$\Delta\lambda$	2.34584
Sin a	9.36112	Sin $\frac{1}{2}(\varphi+\varphi')$	9.75329
A	8.50926		2.09913
sec φ'	0.08352	$-\Delta a$	+125.6
	2.34584		
$\Delta\lambda$	+221.74		

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N.B.—Take out A from table for φ' .

POSITION COMPUTATION, SECONDARY TRIANGULATION.

a	Pos 3	to Lt Ho	193	14	35
L		&	+ 96	42	
a	3	to 1 Light-ships	289	56	35
Δa					
			180	00	00.00
a'	1	to 3			

φ	34	24	22.81	3 Pos. 3	λ	76	35	10.95
Δφ		- 3	56.28	s = Cape Lookout	Δλ	-	13	02.71
φ'	34	20	26.53	1 Lightships	λ'	76	22	08.24

$\frac{1}{2}(\varphi + \varphi')$		s	4.32802	s'	8.6560	h'	4.744
1st term	+ 235.58	Cos a	9.53286	Sin ² a	9.9463	D	2.362
2d and 3d terms	+ .76	B	8.51127	C	1.2407		
-Δφ	+ 236.28	h	2.37215		9.8430		7.106
					0.697		

s	4.32802	Δλ	
Sin a	9.97314	Sin $\frac{1}{2}(\varphi + \varphi')$	
A	8.50926		
sec φ'	0.08318		
	2.89360		
Δλ	- 782.71	-Δa	

N. B.—Take out A from table for φ'.

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POSITION COMPUTATION, SECONDARY TRIANGULATION.

a	Buoy No 8	to Lt. Ho.	164	50	57
L		&	+202	12	
a	2	to 1 Light Ship	322	38	57
Δa			180	00	00.00
a'	1	to 2			

Third Angle of Triangle

φ	34	26	49.78	2 Buoy No. 8	λ	76	28	02.21
$\Delta\varphi$		-6	19.39	=	$\Delta\lambda$		-5	48.92
φ'	34	20	30.41	1 Light Ship	λ'	76	22	13.29

$\frac{1}{2}(\varphi+\varphi')$		s	4.16734	s'	8.3347	h'	5.158
		Cos a	9.90032	Sin' a	9.5659	D	2.362
		B	8.51126	C	1.2412		
1st term	+379.23	h	2.57890		9.1418		7.520
2d and 3d terms	+ .14				.1386		.0033
- $\Delta\varphi$	+379.39						

s	4.16734	$\Delta\lambda$	
Sin a	9.78297	Sin $\frac{1}{2}(\varphi+\varphi')$	
A	8.50926		
sec φ'	0.08318		
	2.5427		
$\Delta\lambda$	-348.92	- Δa	

N. B.—Take out A from table for φ' .

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POSITION COMPUTATION, SECONDARY TRIANGULATION.

a	Lt Ho	to New Mason	120	04	41.
L		&	-135	15	42.
a	3	to 1 Buoy no. 8	344	49	00.
Δa				+1	57.
			180	00	00.00
a	1 Buoy no 8	to 3 Lt. Ho.	164	50	57.

φ	34	37	21.72	3 Lt. Ho.	λ	76	31	29.21
Δφ		+10	31.95	s=	Δλ		-3	27.00
φ'	34	26	49.78	1 Buoy no. 8	λ'	76	28	02.21
			+1.24	Ship at				3.82
			50.98 = Buoy					58.58
								Buoy = 76 27 58.58

$\frac{1}{2}(\phi + \phi')$	34 32 06.	s	4.304 82	s'	8.609 7	h'	5.601
1st term	+ 631.890	Cos a	9.984 57	Sin ² a	8.836 3	D	2.363
2d and 3d terms	+ .058	B	8.511 25	C	1.244 2		
--Δφ	+ 631.948	h	2.800 64		8.690 2		7.964
					.049		.049

s	4.304 82	Δλ	2.315 96
Sin a	9.418 15	Sin $\frac{1}{2}(\phi + \phi')$	9.753 51
A	8.509 26		2.069 47
sec φ'	0.083 73		
	2.315 96		
Δλ	-207.00	-Δa	-117.

N. B.—Take out A from table for φ'.

* Ship about 100 miles W.S.W. of Buoy no. 8.

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POSITION COMPUTATION, SECONDARY TRIANGULATION.

a	Lt. No.	to New Mason	120	04	41.±
∠		&	144	55	42.±
a	2 " "	to 1 Lightship	335	09	00.✓
Δa				+ 5	21.✓
			180	00	00.00
a'	1	to 2	155	14	21.✓

Third Angle of Triangle

φ	34	37	21.73	2 Lighthouse	λ	76	31	29.21
Δφ		- 16	57.27	s= Cape Lookout	Δλ		- 9	27.76
φ'	34	20	24.46	1 Lightship	λ'	76	22	01.45

$\frac{1}{2}(\varphi+\varphi')$	34 28 53.	s	4.538 22	s'	9.0765	h'	6.015
1st term	+1016.88	Cos a	9.957 80	Sin ² a	9.2470	D	2.563
2d and 3d terms	+ .39	B	8.511 25	C	1.2442		
-Δφ	+1017.27	h	3.007 27		9.5677		8.378
					.3696		
					239		
					2935		

s	4.538 22	Δλ	2.754 16
Sin a	9.623 50	Sin $\frac{1}{2}(\varphi+\varphi')$	9.752 92
A	8.509 26		2.507 08
sec φ'	0.083 18		
	2.754 16		
Δλ	- 567.76	-Δa	- 321.

N. B.—Take out A from table for φ'.

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POSITION COMPUTATION, SECONDARY TRIANGULATION.

a		to			
\angle		&			
a	3	to	1		
Δa				1.80	00
a'	1	to	3		00.00

φ				3	λ				
$\Delta\varphi$					$s=$	$\Delta\lambda$			
φ'				1	λ'				

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$\frac{1}{2}(\varphi+\varphi')$		s	s^2	h^2
1st term		$\cos a$	$\sin^2 a$	
2d and 3d terms	+	B	C	D
$-\Delta\varphi$		h		

Cape Lookout Light-ship

Lat. $34^{\circ} 20'$ } 24.46
 26.53
 30.41 } $27''$

s		$\sin a$		$\sin \frac{1}{2}(\varphi+\varphi')$	
A	8.50				
$\sec \varphi'$	0.				
$\Delta\lambda$				$-\Delta a$	

Long. $76^{\circ} 22'$ } 01.45
 08.24
 13.29 } $08''$

N. B.—Take out A from table for φ' .

POSITION COMPUTATION, SECONDARY TRIANGULATION.

a		to			
\angle		&		+	
a	2		to 1		
Δa					
a'	1		to 2		
				180	00
					00,00

Third Angle of Triangle

φ				2	λ			
$\Delta\varphi$				$s=$	$\Delta\lambda$			
φ'				1	λ'			

$\frac{1}{2}(\varphi+\varphi')$			s		s^2		h'
			$\text{Cos } a$		$\text{Sin}^2 a$		D
1st term			B	8.5	C		
2d and 3d terms	+		h				
$-\Delta\varphi$							

s			
$\text{Sin } a$			
A	8.50	$\Delta\lambda$	
$\text{sec } \varphi'$	0.	$\text{Sin } \frac{1}{2}(\varphi+\varphi')$	
$\Delta\lambda$		$-\Delta a$	

N. B.—Take out A from table for φ' .

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Hyd. Sheet # 3434 #

The plotting was done by the party in the field. The work of investigating the approximate location of the chartered 2 fath. shoal got and wreck off Cape Lookout, N.C. has been carefully executed by the parties, but no trace of either the shoal, or wreck was located.

The log readings had to be adjusted and the lengths of the sounding lines will be found not to agree with those recorded by the log.

J. B. Shkemi

Sept. -17-1913