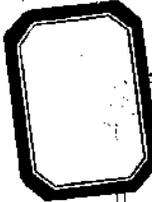


# 4322

Diag. Cht. No. 1236-1



C. & G. SURVEY  
I. & A.  
FEB 25 1924  
Acc. No.

Treasury Department,  
U. S. COAST AND GEODETIC SURVEY.

E. Lester Jones

Superintendent  
Director

State: North Carolina

## DESCRIPTIVE REPORT.

Hydrographic Sheet No. **4322**  
**41**

### LOCALITY:

East of Cape Fear

Eastward of

~~Scale 1:40,000~~

Cape Fear and Frying Pans Shoals

~~U. S. S. LYDONIA~~

1923

### CHIEF OF PARTY:

A. M. Sobieralski, H. & G. Eng'r

# 4322

DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY  
E. LESTER JONES, DIRECTOR.

\* \* \* \* \*  
\* \* \* \* \*  
\* \* \* \* \*

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 111

East of Cape Fear,

NORTH CAROLINA.

SCALE 1:40,000

SEASON OF 1923

Steamer LYDONIA

A. M. Sobieralski, H. & G. E., Chief of Party.

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 111

East of Cape Fear,

NORTH CAROLINA.

SCALE 1:40,000

\* \* \* \* \*

\* \* \* \* \*

\*\*\*\*\*

This sheet shows the fixed position work done by the Str. LYDONIA ~~west~~<sup>east</sup> of Cape Fear, N.C., from Lat.  $33^{\circ}-59'$  to Lat.  $33^{\circ}-44'$ .

2. The lines were spaced, in accordance with the instructions dated May 7, 1923, 1/4 mile apart out to the 10 fathom curve, and 1/2 mile apart from the 10 fathom curve out to the limit of visibility of the signals. Cross lines were spaced approximately two miles apart. The crossings were practically all good, only one discrepancy being found. In the latter case the line was rerun (see positions 95A to 102A, which were rejected, and positions 6M to 12M).
3. Floating signals were located in the usual way with cuts from the ship at anchor. In a few cases, it was possible to get a position at the signal, but these positions were later checked by cuts. The signals at the southern end of the sheet were observed with a theodolite from  $\Delta$  Fear. These directions are recorded in a volume of Horizontal Angles accompanying Sheet No. 110, which adjoins this sheet to the southward. All the buoys south of Lat.  $29-46'$  were first plotted on Sheet 109, and then transferred to this sheet.
4. A list of the floating signals is attached to this report, giving their positions as determined by cuts. The cuts for locating the signals are recorded in a separate volume of "Angles".
5. There are slight differences in the positions of the floating signals as determined on the smooth sheet and those on the boat

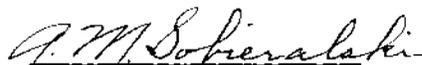
sheet, and consequently there are some differences in the plotting, especially near the southern end of the sheet. There is a considerable jump when shifting from one set of buoy signals to another set, especially from the set Hay, Gob, Fre to the set Fear, Yap, Buz. There is probably some error in the location of Hay or Gob, as the position of these two signals depend on the positions of Yap, Buz and Cap. The plotting of the signals has been checked but no error could be found, so it is presumed that the discrepancy is due to unadjusted errors corresponding to triangle closures etc. in triangulation. However, these errors are very slight compared to the errors that are likely to occur in dead reckoning, so that they can be disregarded.

6. The depth curves agree very closely with the curves shown on the charts.

7. A shoal in Lat.  $33^{\circ}-51'$  Long.  $77^{\circ}-56'$ , about 1.7 miles  $67^{\circ}$  true from Cape Fear Light House, with 17 feet on it, was developed on Sheet 21, 1-20,000. A few splits were also run by the launch on the 5 fathom bank in Lat.  $33^{\circ}-58.2'$  Long.  $77^{\circ}-52.8'$ .

8. A few small spots with depths from 6 to 7 fathoms were examined, but no dangerous shoals were found.

Respectfully submitted,



A. M. Sobieralski,  
Commanding Officer Str. Lydia.

STATISTICS SHEET No. 41

Vol.	Date 1923	Miles	Soundings	Positions	Angles	Letter Day
1	June 18	41.7	578	132	257	A
1&2	June 19	69.5	953	237	462	B
2	June 20	57.2	836	202	399	C
2	June 21	22.3	318	68	128	D
2&3	July 11	51.7	593	140	274	E
3	July 12	68.3	832	206	413	F
3&4	July 13	54.4	768	156	314	G
4	July 14	46.5	693	124	236	H
4&5	July 16	38.2	256	131	244	J
5	July 17	6.1	84	12	24	K
5	July 24	12.7	279	52	104	L
5&6	July 26	47.5	832	154	307	M
6	July 27	37.1	618	104	208	N
6	July 30	28.0	424	93	182	P
7	July 31	31.0	347	93	181	Q
7	Aug. 1	43.2	702	134	264	R
7&8	Aug. 2	35.3	554	114	224	S
8	Aug. 16	45.0	735	140	280	T
8&9	Aug. 20	26.1	362	76	147	U
9	Aug. 21	56.5	772	176	347	V
9&10	Aug. 22	56.8	724	138	269	W
10	Aug. 23	39.1	563	111	222	X
10	Aug. 29	32.2	568	145	287	Y
10	Aug. 30	3.0	47	12	24	Z
TOTALS		949.4	13,438	2,950	5,797	

LIST OF FLOATING SIGNALS DETERMINED BY HYDROGRAPHIC PARTY.

(SHEET NO. 41)

XX	OBJECT	LATITUDE	D.P.	LONGITUDE	D.M.	REMARKS	XX
✓	Cap	33° - 40'	1575	77° - 51'	374		
✓	Cape	33 - 40	1658	77 - 51	230	Used instead of Cap on and after August 28.	
✓	Hog	33 - 43	286	77 - 45	269	Used instead of Hay on and after August 31.	
✓	Hay	33 - 43	238	77 - 45	188		
✓	Nut	33 - 41	1164	77 - 57	238		
✓	Zip	33 - 44	1038	77 - 57	640		
	Yap	33 - 46	40	77 - 53	1534		
✓	Buz	33 - 42	1696	77 - 52	671		
✓	Awk	33 - 45	269	77 - 51	1066		
	Fat	33 - 48	721	76 - 45	81		
	Fre	33 - 48	582	76 - 45	178		
	Eel	33 - 50	701	76 - 46	679		
	Ern	33 - 50	364	76 - 45	1375		
	Doe	33 - 52	998	76 - 43	971		
	Elk	33 - 50	704	76 - 43	1391		
	Axe	34 - 00	816	76 - 42	1336		
	Call	33 - 55	617	76 - 44	1008		
	Can	33 - 55	9	76 - 43	1442		
✓	Gob	33 - 45	1121	76 - 44	1432		
	Bay	33 - 57	1435	76 - 43	1221		
	Dix	33 - 52	1612	76 - 45	849		

TIDAL-SHEET  
to  
accompany

HYDROGRAPHIC SHEET No. 41

Locality of gage, - - - - - Port Caswell  
Type of gage, - - - - - Automatic  
Reading of gage for M.L.W., - - - - - 5.0 ft.  
Highest tide observed, - - - - - June 27, 1923.  
7.00 P.M.

Gage readings, - - - - - 10.8  
Lowest tide observed, - - - - - Oct. 12, 1923.  
3.00 A.M.  
Oct. 13, 1923.  
4.00 A.M.  
Gage readings, - - - - - 4.0

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Note: Gage readings increased 1/10 of range for tide  
reducers.  
Time: 20 minutes earlier for all work to westward of  
a line extended to the eastward of Cape Fear  
Light House, and outside of the mouth of the  
Cape Fear River.

LIST OF DIRECTIONS  
to accompany

4322

4323

HYDROGRAPHIC SHEETS NO. 41 & 42.



Frying Pan Shoals, N.C.  
and vicinity.

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\* \* \* \* \*  
\* \* \* \* \*

4322

-----  
ECCENTRIC STATION "A"

	Observations.	Comp.	
Circumference of Lt. House.	42'-9"	13.0302	Meters.
Eccentric station to Lt. Ho. Tower	1'-11-1/8"	0.5873	Meters.
Radius of Lt. House tower		2.0738	Meters.
Eccentric station to Lt. House tower		0.5873	Meters.
Eccentric station to center of Lt. Ho.		2.6611	Meters.

-----  
ECCENTRIC STATION "B"

	Observed.	Comp.	
Eccentric station to Lt. House tower	2' 11 1/4"	0.8954	Meters.
Radius of Lt. House tower		2.0738	Meters.
		2.9692	Meters.

NOTE.

The enclosed directions are used in conjunction with sextant angles for locating temporary floating signals and are not used in the computation of triangles or geographic positions.

State: North Carolina 1st. set 2nd. set

Comp. from observations ecc. sta. "A"

Comp. from ecc. sta. "B"

Station Cape Fear L.H. center computed by C.D.M.

Station Cape Fear L.H. center computed by C.D.M.

Observer R.F.A.S.

Checked by A.M.S.

Observer R.F.A.S.

Checked by A.M.S.

11-768

Do not write in this margin.

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS	STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS
	"	"	"			"	"	"	
Corn	00	00	00		Corn	00	00	00	
Ern	81	10	18.2		Ern	81	09	02.2	
Fre	90	47	10.4		Fre	90	46	23.4	
Gob	103	14	31.1		Gob	103	14	26.2	
Hay	113	32	31.1		Hay	113	33	10.7	
Ike	117	03	31.0		Ike	117	04	15.4	
N 2	133	00	16.8		N 2	133	03	30.7	
Yap	133	02	44.6		Yap	133	04	02.8	
Buz	133	25	40.		Buz	137	26	25.4	
Cap	138	20	17.8		Cap	138	24	53.6	
Pan	141	09	06.5		Pan	141	09	56.1	
					Othermost of LV orbuoy				
N 4	147	29	28.1		N 4	147	43	02.7	
Nut	163	28	42.3		Nut	163	35	00.3	
Zip	163	28	43.3		Zip	163	31	26.8	
Wik	165	41	29.2		Wik	165	43	56.9	
N 6	185	57	08.1		N 6	186	13	53.5	

*State: Kansas.*

Station Chase  
Observer A. T. M.

Computed by A. T. M.  
Checked by A. R. L.

This form, properly filled out and checked, must be furnished by field parties. *To be acceptable it must contain every direction observed.*

It is to be used for observations with repeating theodolites, as well as direction theodolites.

Start each new station at the head of a new column.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial 0° 00' 00."00, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regard-

less of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting directions at the center. If the reduction is not made for some directions, they should be entered in pencil, with a footnote to that effect.

Directions in the main scheme should be entered to hundredths of seconds in primary triangulation; otherwise, to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in primary and secondary triangulation, and in tertiary triangulation to even seconds only. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. Measure no sum angles. Follow each measurement of every angle immediately by a measurement of its complement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS
	°	'	"	"
Central .....	0	00	00.00	Do not write in this column. It is for Office computation only.
White church spire, 8 miles.....	6	28	56.4	
Chase M. E. church, white spire....	18	10	11.9	
Little River.....	18	20	10.78	
Lyons, salt works, center hoist.....	24	33	53.0	
Lyons, white spire, short.....	27	19	39.7	
Lyons, courthouse.....	27	55	34.2	
Lyons, white spire, slim.....	28	02	54.2	
Gilmore.....	58	32	38.44	
Savage.....	83	59	57.32	
Reference mark distant 66.65 meters.	171	34		
Section 3, T. 20, R. 10 W., NW. corner stone, distant 252.6 meters.	290	37	36	
Bossing.....	314	52	23.61	

LIST OF DIRECTIONS

State: North Carolina

Station Cape Fear (center) Sta. B 3rd. set Computed by C.D.M. Station Cape Fear (center) Mean of 3 sets. Computed by C.D.M.  
Observer R.F.A.S. Checked by A.M.S. Observer R.F.A.S. Checked by A.M.S.  
11-708

Do not write in this margin.

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS	STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS
	o	i	"			o	i	"	
Corn									
Ern	81	07	30.3		Ern	81	08	56.9	
Fre	90	45	39.0		Fre	90	46	24.3	
Gob	103	13	13.6		Gob	103	14	03.6	
Hay	113	03	36.9		Hay (Mean of 2 sets 3rd set)	113	32	50.8	
Ike					Ike	113	03	36.9	
N 2	133	01	33.8		Ike	117	03	53.2	
Yap	133	02	48.4		N 2	133	01	47.1	
Buz	137	27	11.6		Yap	133	03	11.9	
Cap	138	19	59.8		Buz	137	26	29.0	
Pan	141	09	42.9		Cap	138	21	43.7	
					Pan	141	09	35.2	
N 4									
Nut	163	31	35.3		N 4	147	36	15.4	
Zip					Nut	163	31	46.0	
Wik	165	42	56.3		Zip	163	30	04.6	
N 6					Wik	165	42	47.5	

State: North Carolina

Station Cape Fear Lt. Ho. <sup>"A"</sup> Computed by C.D.M. Station Cape Fear Lt. Ho. <sup>"B"</sup> Computed by C.D.M.

Observer R.F.A. Studds Checked by A.M.S. Observer R.F.A. Studds Checked by A.M.S.

11-758

Do not write in this margin.

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS	STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS
	"	"	"			"	"	"	
Corn	00	00	00		Corn	00	00	00	
Ern	81	11	10.6		Ern	81	10	12.5	
Fre	90	48	08.1		Fre	90	47	37.5	
Gob	103	15	34.3		Gob	103	15	43.8	
Hay	113	38	38.1		Hay	113	34	30.0	
Ike	117	04	38.1		Ike	117	05	32.5	
N 2	133	03	34.4		N 2	133	08	32.5	
Yap	133	04	15.6		Yap	133	05	56.3	
Buz	133	27			Buz	137	28	00.0	
Cap	138	21	35.6		Cap	138	26	21.3	
Pan	141	10	16.8		Pan	141	11	12.5	
Othermost of L V or buoy					Othermost of LV or buoy	141	10	51.0	
N 4	147	33	35.6		N 4	147	48	28.8	
Nut	163	30	12.5		Nut	163	36	35.0	
Zip	163	30	28.1		Zip	163	33	18.7	
Wik	165	42	54.4		Wik	165	45	25.0	
N 6	188	03	23.1		N 6	188	19	40.0	
Fish factory Eliz. River					Fish factory Eliz. river	300	06	48.8	
" " Black stack					" " Black stack	2300	07	52.5	
Yellow tank on Smith Building					Red brick chimney	300	59	51.2	
Tall black stack					Yellow tank on Smith Bldg.	301	06	27.5	
Yellow tank					Tall black stack	301	10	06.8	
Red brick conical Chim.					Red brick Chim. conical	307	12	37.5	
L. Tang. Cape Fear Lt. Ho.	224	45			L. Tang. Cape Fear Lt. Ho.	196	29		
R. Tang. Cape Fear Lt. Ho.	327	34			R. Tang. Cape Fear Lt. Ho.	285	57		
Cape Fear Lt. Ho. (center comp.)	276	09			Cape Fear Lt. (center comp)	(241 13)			

State: North Carolina

Station Cape Fear L.H. 900 <sup>118"</sup> Computed by C.D.M. Station Cape Fear L.H. (center) Computed by C.D.M.  
Observer H.F.A. Studds Checked by \_\_\_\_\_ Observer \_\_\_\_\_ Checked by \_\_\_\_\_  
11-788

Do not write in this margin.

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS	STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT			FINAL SECONDS
	0	1	"			"	0	1	
Corn	00	00	00						
Ern	81	08	40.6						
Fre	90	46	53.1						
Gob	103	14	31.2						
Hay	113	04	56.2						
Ike									
Yap	133	06	35.6						
N 2	133	04	41.9						
Buz	137	28	46.2						
Cap	138	21	27.5						
Pan	141	10	59.3						
N 4	147	35	41.8						
Zip									
Nut	163	33	10.0						
Wik	165	44	24.4						
N 6	186	04	38.1						

Obs. 8-21-23  
Second observations.

REDUCTION TO CENTER

Eccentric Station: Cape Fear Lt. House "A"

$\text{Log } d = 0.42522$

$\text{Colog } \sin 1'' = 5.31443$

$d = 2.6611$  meters

Sum = 5.73965

STATIONS	a		LOG SIN a	Log s	LOG $\frac{\sin a}{s}$	LOGARITHM OF REDUCTION IN SECONDS	REDUCTION = c
Cape Fear Lt. House (center)	00	00					
Corn	83	51	9.99749	3.95770	6.03979	1.77944	- 60.18
Ern	165	06	9.41016	4.27184	5.13832	0.87797	- 7.78
Fre	174	39	8.96960	4.31040	4.65920	0.39885	- 2.50
Gob	187	07	9.09304	4.34651	4.74653	0.48618	- 3.06
Hay	197	25	9.47613	4.38274	5.09339	0.83304	- 6.81
Ike	200	56	9.55268	4.45148	5.10120	0.84085	- 6.93
N 2	216	55	9.77862	3.38021	6.39841	2.13806	-137.4
Yap	216	55	9.77862	4.03006	5.74856	1.48821	-30.78
Buz	217	18	9.78246	4.22490	5.55756	1.29721	-19.83
Cap	222	13	9.82733	4.32147	5.50586	1.24551	-17.60
Pan Othermost of L V or buoy	225	01	9.84961	4.54481	5.30480	1.04445	-11.08
N 4	231	25	9.89304	3.36002	6.53302	2.27267	-187.36
Nut	247	21	9.96514	4.226725	5.73839	1.47804	- 30.06
Zip	247	22	9.96520	4.05492	5.91028	1.64993	- 44.66
Wik	249	34	9.97178	4.31370	5.65808	1.39773	- 24.99
N 6	269	54	1.00000	3.24155	7.75845	3.49810	-314.85

Computed by: C.D.M.

The required reduction to center is, in seconds,  $c = \frac{d \sin \alpha}{s \sin 1''}$ , in which  $d$  is the distance from the eccentric station to the true station, and  $s$  is the length in meters of the line between the true stations involved, and, therefore,  $\log s$  is taken directly from the computation of triangle sides.  $\alpha$  is the direction of the distant station involved, reckoned in a clockwise direction as usual, but referred to the direction from the eccentric to the true station, or center, taken as zero. This definition of  $\alpha$  is true for the case in which the object pointed upon is eccentric, as well as for the case in which the instrument is eccentric.

Carry  $\alpha$  to minutes only and all logarithms to five decimal places only. Do not in any case carry the derived reductions to more than two decimal places. There is no advantage in carrying them to more decimal places than the directions to which they are to be applied are carried on Form 24 A.

The preceding paragraph fixed the maximum number of decimal places to be used. In some cases a smaller number may be used as indicated in the following table:

IF LOGARITHM OF SHORTEST LINE CONCERNED IS MORE THAN—	AND $d$ IS LESS THAN VALUE STATED BELOW IN METERS—			
	USE LOGARITHMS TO FOUR DECIMAL PLACES AND $\alpha$ TO MINUTES		USE LOGARITHMS TO THREE DECIMAL PLACES AND $\alpha$ TO DEGREES	
	Primary Triangulation	Secondary or Tertiary Triangulation	Primary Triangulation	Secondary or Tertiary Triangulation
2.5		0.6		0.02
3.0		3		0.06
3.5	0.6	6	0.02	0.2
4.0	2	20	0.06	0.6
4.5	6		0.2	2
5.0	20		0.6	6

### REDUCTIONS FOR AN ECCENTRIC INSTRUMENT.

If the instrument is eccentric the first column of this form should contain the names of the stations observed from that eccentric position of the instrument.

The values in the fifth column are derived by subtracting those in the fourth column from those in the third. The values in the fourth column may need to be derived by successive approximations from the triangle side computations if the eccentric reductions are large. The values in the sixth column are obtained from those in the fifth by adding  $\log \frac{d}{\sin 1''}$  derived as indicated in the heading of the form, if  $d$  is expressed in meters. If  $d$  is expressed in feet, to the other two logarithms add also 9.48403 to convert to meters. To obtain a direction as shown on Form 24 A, subtract the reduction  $c$  for the station which is the initial on Form 24 A from the reduction  $c$  for the required direction and apply the difference to the observed direction. Similarly, the correction to any angle is the difference of the reductions on this form to the two directions involved in that angle.

### REDUCTIONS FOR AN ECCENTRIC OBJECT OBSERVED.

If the object observed is eccentric the heading "Eccentric Station —" should be changed to "Eccentric Observed Object at Station —," the first column should contain the names of the stations from which this eccentric object was observed, and in each case  $\alpha$  is the direction from the eccentric object to the distant station involved, reckoned in a clockwise direction as usual, but referred to the direction from the eccentric object to the true station, or center, taken as zero. (No distinction need be made between the direction from the eccentric object to the distant station and the direction from the true station to the distant station except when the eccentric reduction is more than one minute.) The remainder of the computation on this form is made in the manner indicated above with reference to an eccentric instrument. The reductions to directions are, however, to be applied to observed directions, at the stations named in the first column, to the eccentric object at the station named in the heading. The directions to which these reductions are to be applied are therefore found in various of the lists of directions on Form 24 A, not all in one list as is the case when the instrument is eccentric.

Compare the following example with that given on Form 24 A.

### REDUCTION TO CENTER.

Eccentric Station: Chase.

$\log d = 1.04088$   
 $\text{Colog } \sin 1'' = 5.81443$   
 Sum 6.85531

$d = 10.987$  meters.

STATIONS	$\alpha$	$\log \sin \alpha$	$\log s$	$\log \frac{\sin \alpha}{s}$	LOGARITHMS OF REDUCTION IN SECONDS	REDUCTION = $c$
Center	0 00					
Central	234 27	9.84528	4.40254	5.44274	1.79805	- 62.81
Little River	242 47	9.94904	4.51928	5.42976	1.78507	- 60.96
Lyons, salt works	249 02	9.97025	4.30616	5.66409	2.01940	-104.57
Bossing	179 18	8.08696	4.49198	3.59498	9.95029	+ 0.89

REDUCTION TO CENTER

Eccentric Station **Cape Fear Lt. Ho. "B"**

Log  $d = 0.47264$

Colog  $\sin 1'' = 5'.31443$

$d = 2.9692$

Sum = ~~5~~.78707

STATIONS	a		Log sin a	Log s	Log $\frac{\sin a}{s}$	LOGARITHM OF REDUCTION IN SECONDS	REDUCTION -- C "
Cape Fear Lt. Ho. (center)	00	00	0.80000				
Coro	118	47	9.94273	5.95770	5.98503	1.77210	- 59.17
Ern	199	57	9.53301	4.27194	5.26117	1.04924	- 11.17
Fra	209	35	9.69745	4.31040	5.38705	1.17412	- 14.93
Gob	222	08	9.82593	4.34651	5.47942	1.26642	- 18.47
Hay	232	22	9.89889	4.38274	5.51595	1.30302	- 20.09
Ike	235	53	9.91798	4.45148	5.46650	1.25357	- 17.93
N 2	251	56	9.97804	4.28021	5.59783	2.39490	-242.6
Yap	251	53	9.97792	4.03006	5.94786	1.73493	- 54.32
Bus	256	15	9.98737	4.22490	5.76247	1.54954	- 35.44
Cap	257	13	9.98910	4.22147	5.68763	1.45470	- 28.49
Far	259	52	9.99331	4.54481	5.44850	1.23557	- 17.20
Othermost of LH. or buoy	259	58	9.99331				
N 4	266	35	9.99923	3.36002	6.63921	2.42638	-266.9
Hut	282	24	9.98975	4.22675	5.76300	1.55007	- 35.49
Zip	282	20	9.98985	4.05492	5.93494	1.72201	- 52.72
Wlk	283	32	9.98777	4.31870	5.67407	1.46114	- 28.92
N 6	305	07	9.91274	3.24155	6.67119	2.45826	-287.3
Fish factory Eliza South River	58	54	9.93261				
Black stack	58	55	9.93269				
Red brick chimney	59	47	9.93568				
Yellow tank on Smith Bldg.	59	53	9.93702				
Tall black stack	59	57	9.93731				
Red brick chimney control	66	00	9.96073				
Computed:							
by C. D. H.							

REDUCTION TO CENTER

Eccentric Station: **Cape Fear Lt. House "A"**

Log  $d = 0.42522$

Colog  $\sin 1'' = 5.31443$

$d = 3.6611$  meters

Sum = **5.75965**

STATIONS	$\alpha$		Log sin $\alpha$	Log $s$	Log $\frac{\sin \alpha}{s}$	LOGARITHM OF REDUCTION IN SECONDS	REDUCTION = $\frac{c}{\rho}$
Cape Fear Lt. House (center)	00	00					
Corn	83	51	9.99749	3.95770	6.03979	1.77944	- 69.18
Sam	165	66	9.41016	4.27184	5.13832	0.97797	- 7.78
Fre	174	39	9.96960	4.31040	4.65920	0.39665	- 2.50
Gob	187	07	9.09304	4.34651	4.74653	0.48618	- 3.06
Hay	197	25	9.47513	4.38274	5.09339	0.95304	- 6.81
Ike	200	56	9.55268	4.45148	5.10120	0.84065	- 6.93
M 2	216	55	9.77862	3.88021	5.39841	2.13806	-157.4
Yap	216	55	9.77862	4.03006	5.74866	1.48821	-30.78
Bus	217	18	9.78246	4.22490	5.56756	1.29721	-19.83
Cap	222	13	9.82733	4.32147	5.50586	1.24551	-17.60
Pan Othermost of I V or buoy	225	01	9.84961	4.54481	5.30480	1.04445	-11.08
M 4	231	25	9.89304	3.55002	5.53302	2.27267	-187.36
Nut	247	21	9.96514	4.226725	5.73839	1.47804	- 50.08
Zip	247	22	9.96520	4.05492	5.91028	1.64993	- 44.66
Wik	249	34	9.97178	4.31570	5.56808	1.39773	- 24.99
M 6	269	54	1.00000	3.24153	7.76845	3.49810	-314.85

Computed by: C.D.M.



March 27, 1924.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
11 volumes of sounding records for

HYDROGRAPHIC SHEET 4322

Locality: Vicinity of Cape Fear, North Carolina.

Chief of Party: A. M. Sobieralski in 1923.

Plane of reference is mean low water reading

5.0 ft. on ~~hydrographic~~ automatic gauge at Fort Caswell.

4.6 ft. on tide staff at Corn Cakes Inlet

For reduction of soundings, condition of records satisfactory  
except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks. -- Reducers not entered to nearest half-foot when depths are between three and seven fathoms.



Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

May 31, 1924.

Preliminary Report On Hyd. 4322

Verified and inked by H. E. MacEwen.

1. The records conform to the requirements of the General Instructions.
2. The plan and character of the development fulfill the requirements of the General Instructions.
3. The ground is well covered and sounding line crossings are adequate.
4. The usual depth curves can be completely drawn.  
(Note: On inshore edge of work the adjoining sheet will be needed to complete the 30-foot curve.)
5. The field protracting is excellent. The field plotting is complete. In a few instances there were indications of carelessness in spacing soundings between positions accurately by time interval. The plotting was, however, generally very good.
6. The adjoining sheet to the south and one on the west are not completed. 4313 adjoining this sheet on the west is in the Director's office. Until this material is available the junctions cannot be made.
7. No further surveying is required for full development.
8. Remarks: It will be noticed on several east and west lines that jogs occur in the courses. This occurs only when control was switched from the offshore floating signals to the shore triangulation stations or vice versa. This is an indication of faulty location of offshore control. The floating signals check with material available and the lines affected agree closely with boat sheet plottings and field protracting on smooth sheet checked exactly in every case but two (slightly in error). In view of the distance off shore, the even depth of the water, the difficulty under which the field party operated and the little practical value that would result in a smoothing out of this discrepancy, I suggest that the plotting of offshore signals be accepted together with the plotting as shown on the smooth sheet which agrees closely with the boat sheet and checks field plotting exactly.
9. (a) Character and scope of surveying - excellent.  
(b) Field drafting - excellent.

~~Attached is a list of doubtful items.~~

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON May 31, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4322

Frying Pan Shoals, Cape Fear, N. C.

Surveyed in 1923

Instructions dated May 7, 1923.

Chief of Party, A. M. Sobieralski

Surveyed by party of Steamer Lydonia

Portracted by G. L. Anderson, E. M. Denbo and H. J. Patterson.

Soundings plotted by W. I. Brown.

Verified and inked by H. E. MacEwen.

1. The records conform to the requirements of the General Instructions.
2. The plan and character of development conform to the requirements of the General Instructions.
3. The plan and extent of development satisfy the specific instructions.
4. The sounding line crossings are adequate.
5. The information is sufficient for drawing the usual depth curves.
6. The field plotting was completed to the extent prescribed in the General Instructions and the office draftsman did not have to do any of it over.
7. The adjoining contemporary surveys have not been completed with the exception of H. 4313, the junction with which is satisfactory.
8. No further surveying is required within the limits of this sheet.
9. Where the sounding lines were switched from shore signals to floating signals jogs are noticed which are probably due to slight errors in the floating signals. As these jogs do not introduce any errors of consequence and the locating of these signals was done with the utmost care by the field party, the slight errors should be disregarded.
10. The character and scope of the surveying and field drafting are excellent.
11. Reviewed by E. P. Ellis, May, 1924.

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. 44322

State . NORTH CAROLINA . . . . .

General locality . CAPE FEAR . . . . .

Locality . . . . . Eastward of Cape Fear & Frying Pan Shoals  
~~CAROLINA BEACH~~

Chief of party . . A. M. SOBIERALSKI, COM'DG. . . . .

Surveyed by <sup>Party of</sup> . . . . . U. S. S. LYDONIA, A. M. SOBIERALSKI, COM'DG. . . . .

Date of survey . . June 18, 1923 - Aug. 30, 1923 . . . . .

Scale . . . . . 1/40000 . . . . .

Soundings in . . . . . feet . . . . .

Plane of reference . . . . .

Projected by G. L. Anderson . . . . . Soundings in pencil by W. I. Brown  
H. J. Petersen

Inked by H. J. M. . . . . . Verified by H. J. M. . . . . .

Records accompanying sheet (check those forwarded):

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

10  Sounding books,  Wire-drag books,  Photographs.

Data from other sources affecting sheet . . . . .

Remarks: 1 Angle book cuts to buoys.  
1 Sounding book, (Motor sailed work copied into a separate volume to be plotted on this sheet instead of sheet 21)