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Diag. Cht. No. 1001-2 & 1336-1

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4306

Form 504
 DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY

State: N. Carolina

11-5613

DESCRIPTIVE REPORT.

Hydrog. Sheet No. 4306

LOCALITY:

Vicinity of C. Fear

Offshore

23
191

CHIEF OF PARTY:

A. M. Sobieralski

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

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D E S C R I P T I V E R E P O R T

to accompany

HYDROGRAPHIC SHEET NO. 1101

Off Shore Dead Reckoning.

East of Cape Fear, N. C.

Lat. $33^{\circ}59'$ to Lat. $33^{\circ}39'$.

Str. LYDONIA

SEASON OF 1923

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

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 101

This sheet shows the off-shore hydrography in the vicinity of Cape Fear, N.C. executed by the Str. Lydonia during the season 1923, and extends from Lat. $33^{\circ}-59'$ to Lat. $33^{\circ}-39'$, joining fixed position work to the westward and extending to the eastward so as to include the 15 fathom curve.

The usual methods for precise dead reckoning were followed. Current observations were taken every two hours or less, by anchoring the ship and observing with the current pole. The current diagrams were drawn on a large scale, and are given in a separate cahier accompanying the sheet.

The log factors as determined in April were used for A, B, C, and D days. The details of this log test on April 6, 1923 are given in the Descriptive Report accompanying Hyd. Sheet "C", East Coast of Florida. The values then determined were as follows:

| | | |
|-------------|-----------------|-------|
| Log No. 80. | Sounding Speed: | 1.117 |
| | Full Speed: | 1.066 |

Another log test was made on Oct. 31, the details of which are given on another page. The values derived on this date were as follows:

| | | |
|-----------------|-------------|--------------|
| | Log No. 80. | Log No. 173. |
| Sounding Speed: | 1.253 | 1.113 |
| Full Speed: | 1.145 | 1.071 |

The latter values were used on E, F and G days.

Current observations were made at intervals not exceeding two hours. As the depths on this sheet do not exceed 20 fathoms, the observations were taken by anchoring the ship and using the current pole. As the current diagrams indicate, the currents generally are rotary. On one occasion, position 10A, it was very difficult to determine the direction of the current,--the wind was S.W. and the ship's head would keep swinging from West to South. The drift of the current on such occasions was checked by watching chips or other drift alongside the

ship, in order to guard against the large errors which might be introduced by the fact that the stern of the ship is swinging through an arc of large radius. The direction of the current in the above case was deduced from the current diagram, by interpolating between the preceding and the following observations.

The allowance for leeway used was 0.4 knots per hour for a 20 mile breeze abeam, and the correction was always applied at right angles to the course; in other words, the component of the force exerted by the wind at right angles to the ship was computed, and the resultant leeway applied.

The value for leeway was derived from observations made in Florida as given in my report accompanying Hyd. Sheet "C". The value may appear large, but further observations, both at rest and underway, seem to indicate that the value is fairly accurate, in fact, if anything, it is too small. In plotting the work originally, a smaller value was used, and when this corrected value was applied, it distorted the lines, which explains why the lines are not more regular.

As most of the work on this sheet was done in cloudy weather when conditions were unfavorable for fixed position work, there was little opportunity for sights. On E and F days a number of sights were taken on the sun and stars. Both the Latitude and Longitude observations checked within $1/4$ of a mile.

The run to the southward indicated on F day was made to avoid collision. A tug with a barge in tow was bearing down on us, and as wind and a considerable current were with him, I hove up the anchor just in time, for we were at very close quarters. I could not ascertain the name of the vessel, and cannot explain his actions in any way except that he did not see us or our signals, and firmly believe that he would have run us down if we had remained at anchor. He was at such close quarters when the anchor was aweigh that he would have had difficulty in avoiding a collision, considering the direction of current and wind. There are always a great number of vessels passing in this vicinity and I recommend that in future when the vessel is operating in this vicinity that a caution be published in the Notice to Mariners and that the position of the vessel when anchored at night be broadcasted at intervals either from the ship or from the lightvessel.

While the 15 fathom curve on this sheet is irregular, there is no indication of the 12 and 13 fathom spots shown on the chart, except perhaps the 12 fathom spot in Lat. $33^{\circ}-49.4'$ Long. $77^{\circ}-23.4'$ which plots near a peculiar projection of the 15 fathom curve, which might indicate a shoal, although there is only a very slight change of depth--not enough to warrant a more thorough development.

Besides the sounding mentioned above, the chart shows the following shoals:

| | | |
|---------------|------------------|-------------------|
| 12 fathoms in | Lat. 33° - 54.5' | Long. 77° - 22.3' |
| 12 " " " | 33 - 53.0 | " 77 - 23.4 |
| 12 " " " | 33 - 43.9 | " 77 - 24.5 |
| 13 " " " | 33 - 41.6 | " 77 - 28.3 |

No indication of any of the above spots were found, being surrounded by uniform depths of 15-17 fathoms.

While anchored in Lat. ^{33° R} 29° 46' Long. 77°-18 brought up a piece of coral rock about 8 inches square with a fan shaped piece of branch coral attached. The chart shows rd wh Co in this vicinity which this specimen confirms. In other places sandy bottom was found.

The records accompanying this sheet consist of 1 cahier Current diagrams, 1 cahier Form 612 "Precise Dead Reckoning", 1 vol. "Angles" in which are recorded the observations for Log. Tests.

Respectfully submitted,

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

LOG TESTS

NEAR CAPE FEAR RIVER, N.C.

Oct. 31, 1923.

CURRENT OBSERVATIONS.

| At East end of line. | | | At West end of line. | | | Mean. |
|----------------------|------------|--------|----------------------|--------|-----------|-------|
| Time. | Direction. | Drift. | Direction. | Drift. | Direction | Drift |
| 8:21 | 315 | .08 | | | 315 | .08 |
| 8:40 | 292 | .08 | | | 292 | .08 |
| 9:00 | 295 | .21 | | | 300 | .14 |
| :10 | | | 305 | .08 | | |
| :20 | 305 | .24 | 305 | .09 | 305 | .16 |
| 19:40 | 317 | .12 | 310 | .06 | 312 | .09 |
| 10:00 | 317 | .03 | 305 | .06 | 312 | .04 |
| 10:20 | 317 | .10 | 310 | .04 | 315 | .07 |
| 10:40 | 315 | .13 | | 00 | 315 | .06 |
| 11:00 | 317 | .10 | | 00 | 317 | .05 |
| 11:20 | 322 | .13 | | 00 | 322 | .06 |
| 11:40 | 312 | .19 | | 00 | 312 | .10 |
| 12:00 | 305 | .10 | | 00 | 305 | .05 |
| 12:20 | 295 | .10 | | 00 | 295 | .05 |
| 12:40 | 292 | .10 | 170 | .01 | 289 | .06 |
| 1:00 | 262 | .12 | 180 | .09 | 228 | .10 |
| 1:20 | 235 | .18 | | 00 | 235 | .09 |
| 1:40 | 220 | .11 | | 00 | 220 | .06 |
| 2:00 | 202 | .16 | 200 | .20 | 200 | .18 |
| 2:20 | 212 | .23 | | | | |
| 2:40 | 220 | .24 | | | | |

STATISTICS SHEET 101.

| DATE | LETTER DAY | VOLUME | MILES | SOUNDINGS | CURRENT OBSERVATIONS |
|----------------|---------------|--------|-------|-----------|-------------------------|
| June 15 & 16 | A | 1 | 54.6 | 416 | 7 |
| July 10 | B | 1 | 43.0 | 360 | 5 |
| Aug. 15 | C | 1 | 42.6 | 319 | 5 |
| Aug. 17 | D | 1 | 39.3 | 319 | 6 |
| Oct. 11 & 12 | E | 2 | 51.2 | 383 | 7 |
| Oct. 12 & 13 | F | 2 | 51.5 | 406 | 7 |
| Nov. 15 | G | 2 | 21.0 | 194 | 7 |
| TOTAL- - - - - | | | 303.2 | 2397 | 44 |

Hyd. Sheet No. 4306

In the verification of this work, the plotting of each line was tested.

Two fairly large errors were found in the line from post D to pos. 20D, which was therefor taken out and replotted.

In some of the other lines a few minor differences were noted, but the lines were not replotted as the final lines, adjusted for closure, would remain practically the same.

R L Johnston

E.R.

ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND REFER TO No. 4-DRM

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON May 1, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4306
Offshore, Vicinity of Cape Fear River, N. C.

Date of Survey, June - Nov., 1923

Instructions dated May 7, 1923

Chief of Party, A. M. Sobieralski.

Surveyed by A. M. Sobieralski.

Protracted by E. H. Bernstein.

Soundings plotted by E. H. Bernstein.

Verified and inked by R. L. Johnston.

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 field plotting was completed as required by the General Instructions.
5. The entire D-day line had to be replotted on account of two large errors.
6. The sheets adjacent to this survey have not yet been completed and hence it is impossible to tell whether there are adequate junctions.
7. No additional work will be required within the area surveyed on this sheet, as there are no indications of any shoals. The 12-fathom soundings shown on the chart near the outer limits of this sheet were taken from Hydrographic sheet H. 686. The lines on this sheet were located by dead reckoning. In view of the closer development and the more refined methods of running lines by dead reckoning on the present sheet, it would seem that either the bottom has changed or else the original line was poorly located.
8. Rating of the work (Character and scope of the surveying : excellent
(Field drafting : good.

Reviewed by A. L. Shalowitz, April, 1924.

February 25, 1924.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
2 volumes of sounding records for

HYDROGRAPHIC SHEET 4306

Locality: Cape Fear, North Carolina.

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

Plane of reference is mean low water reading
50 ft. on tide staff Ft. Caswell (Ft. Caswell)

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.



Chief, Division of Tides and Currents.

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. **4306** (101) Field Number.

State . . . North Carolina.

General locality . . . Vicinity
~~East of Cape Fear.~~

Locality . . . Offshore
~~Lat. 33° 59' to Lat. 33° 39'~~

Chief of party . . . A. M. Sobieralski.

Surveyed by . . . A. M. Sobieralski.

Date of survey . . . June-Nov. 1923.

Scale . . . 1-100,000

Soundings in . . . Feet.

Plane of reference . . . M.L.W.

Protracted by E.H.B. . . Soundings in pencil by E.H.B. *ernster*

Inked by *PLJ* . . . Verified by *PLJ*

Records accompanying sheet (check those forwarded):

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

2 Sounding books, Wire-drag books, Photographs.

Data from other sources affecting sheet

2 Vols. Current observations.

1 cahier Current diagrams.

1 cahier Form 612 "Precise Dead Reckoning"

Remarks: 1 Vol. Angles in which are recorded Log Tests.

2 Vols. Current observations taken during Log tests.

Tidal reducers obtained from auto. tide gauge at Port Caswell, allowing a correction of -20 min. and increasing the range 1/10.