

4364

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Diag. Cht. No. 1007-2

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. _____ Office No. H-4364

LOCALITY

State LOUISIANA

General locality GULF OF MEXICO

Locality APPROACHES TO SABINE PASS

194 / 24

CHIEF OF PARTY

F. S. Borden

LIBRARY & ARCHIVES

DATE _____

4364

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SHEET

No.
(Field Sheet 3)

APPROACHES TO SABINE PASS

LOUISIANA

1924

Str. Bachs

F. S. Borden, Comdg.

EXTENT.

This sheet comprises an area in the eastern approaches to Sabine Pass and includes all of the shoals on Sabine Bank east of the lighthouse. It adjoins recent inshore surveys of the Str. HYDROGRAPHER to the westward and northward and recent offshore surveys of the Str. BACHE to the southward. No recent surveys have been made to the eastward.

SHOALS.

The general outline of the eastern half of Sabine Bank is similar to that shown on the present charts. Although no new shoals were uncovered by the survey considerable less water was found on the shoals now charted. Furthermore the existence of several reported shoals was disproven.

The most dangerous menace to navigation in approaching Sabine Pass from the eastward is a 23' sand bottom shoal lying 4.6 miles 162 degrees true from Sabine Bank East End Gas and Whistling Buoy. The chart shows 28 feet in this locality as the least depth.

The shoal lying 6 miles east north east from Sabine Bank Lighthouse was found to have a least depth of 18 feet whereas the present chart shows 22 feet.

*The 18 foot spot 14.5 miles 80 degrees true from Sabine Bank Lighthouse does not exist.

In addition to the sounding lines shown on the sheet additional lines were run over the important shoals at slow speed, the leadsman sounding as rapidly as possible.

CONTROL.

As the area included on the sheet is beyond the limit of visibility of the 100 foot shore signals the entire area was controlled by buoys and by the Sabine Bank Lighthouse. As considerable difficulty has heretofore been experienced in accurately locating the outer row of buoys from the inner row a somewhat different method was used in locating control buoys for the survey of this area. The gas and whistling buoy at the east end of Sabine Bank was first located very carefully by cuts from three anchorages from which the shore signals were visible. A three point computation was made for the position of each anchorage. Inverse computations was made for the three bases between anchorages and the position of the gas and whistling buoy computed. The three common sides in the triangles checked within a few meters. The position of the gas and whistling buoy (O FOG) thus determined was held fixed and used as a main control point at the east end of the work while Sabine Bank Lighthouse, which is a triangulation station acted as a main control point at the west end of the work. An inverse computation was made of the distance and azimuth between FOG and BANK and using this distance which practically extends across the entire sheet the position of an anchorage "X", almost at the extreme outer end of the work was computed from a measured angle at "X" and a sun azimuth obtained at sunset by measuring the angle between the sun and O Fog.

From the anchorage at "X" cuts were taken to the buoys in

* This statement is incorrect as the 18 ft spot on the chart was found on the main survey. The 24 ft spot charted 2 miles n.w. of the 18 ft sounding has been disproven by the main survey. G.K.B.
E.V.E.

the outer row. Other cuts were obtained from anchorages near the inner row of buoys, the positions of the anchorages being obtained from computation of three point shore fixes. Generally the cuts were plotted as azimuths rather than from the angles. Other cuts to the outer row of buoys were obtained by sun azimuths computed from measuring the angle between the sun on the horizon and the range, buoy to Θ Fog or, buoy to Δ Bank.

The results obtained in locating buoys by this method were much more satisfactory than by the method of locating the outer row of buoys from the inner row which method invariably results in a lack of coordination in the positions of adjacent buoys and consequently results in a jump of the sounding line when passing through a line of buoys. The strongest test of the position of buoys as regards the azimuth of the row at least is experienced when the angles become excessively large and small while passing through the line of buoys.

TIDES AND CURRENTS.

Soundings were reduced from tidal observations made at Sabine Pass Coast Guard Station and from the Calcasieu Pass Lighthouse Station. The tidal curve at Galveston was also drawn with the other curves.

On May 6 a small tidal wave was noticed. The curve at Galveston shows that the wave reached that gauge before it reached Sabine Pass indicating that the wave approached from the westward.

The prevailing current in this locality is westerly. While running lines over the bank it appeared that there was less current on the bank proper than there was immediately north and south of it. The shoals undoubtedly act as a barrier and divide the current into two streams which flow along each side of the bank.

SECTION OF FIELD RECORDS MEMORANDUM FOR CARTOGRAPHER.

In inspecting the plotted smooth sheet it is found that while the lines in general cross within a foot, there is one cross line which is undoubtedly in error by several feet.

On investigation it is found that this line (N Day) was started when a fresh Northeast wind was blowing causing a moderately heavy sea, the wind ^{however} gradually lessened down and the seas flattened within an hour or so after work was started. It has been found that the tendency of the average leadsman is to obtain less water than actually exists when sounding in a seaway. This is undoubtedly due to the fact that the leadsman, unless he is a very experienced one, will read the lowest level on the leadline regardless of the sea. The leadline is generally practically up and down in the water for each cast long enough to pass through at least one crest and one trough of each wave and the leadsman reading the leadline in the trough of the sea obtains a sounding which is too small by half the ^{height} length of the wave.

From position 1 N to 20 N the soundings were obtained on the windward side of the vessel and due to the moderately heavy sea are undoubtedly in error. This error however decreased as the sea flattened out and from 21 N where the direction of the line placed the leadsman on the lee side of the vessel they are without doubt correct.

It is recommended for reasons above stated that the line 1 N - 20 N be rejected and that no weight be attached to the soundings on this line.

Respectfully Submitted

Frank S. Borden

STATISTICS Sheet No. - - - -

Steamer Bache, April 23 to May 29, 1924.

| Date 1924 | .Letter | . Volume | .Positions | .Soundings | Miles | |
|------------------|---------|----------|------------|------------|----------|-----------|
| | | | | | .Statute | .Vessel . |
| April 23 | A | 1 | 62 | 499 | 38.2 | Ship |
| April 24 | B | 1 | 81 | 660 | 46.0 | " |
| April 30 | C | 1 | 43 | 329 | 25.8 | " |
| May 1 | D | 1 | 17 | 124 | 9.0 | " |
| May 1 | D | 2 | 88 | 653 | 45.0 | " |
| May 2 | E | 2 | 92 | 723 | 43.0 | " |
| May 5 | F | 2 | 27 | 265 | 14.0 | " |
| May 5 | F | 3 | 25 | 224 | 14.3 | " |
| May 6 | G | 3 | 125 | 1112 | 63.5 | " |
| May 7 | H | 3 | 40 | 394 | 19.5 | " |
| May 7 | H | 4 | 24 | 179 | 11.0 | " |
| May 8 | J | 4 | 113 | 855 | 65.6 | " |
| May 9 | K | 4 | 85 | 644 | 51.3 | " |
| May 9 | K | 5 | 33 | 246 | 20.0 | " |
| May 13 | L | 5 | 108 | 870 | 71.2 | " |
| May 14 | M | 5 | 52 | 392 | 36.5 | " |
| May 14 | M | 6 | 57 | 459 | 40.0 | " |
| May 15 | N | 6 | 48 | 392 | 33.0 | " |
| May 16 | P | 6 | 79 | 753 | 44.8 | " |
| May 16 | P | 7 | 55 | 541 | 31.5 | " |
| May 19 | Q | 7 | 86 | 845 | 54.0 | " |
| May 20 | R | 7 | 16 | 132 | 10.0 | " |
| May 20 | R | 8 | 81 | 664 | 53.8 | " |
| May 21 | S | 8 | 82 | 704 | 49.5 | " |
| May 22 | T | 8 | 34 | 135 | 22.5 | " |
| May 22 | T | 9 | 26 | 260 | 24.0 | " |
| May 27 | U | 9 | 23 | 217 | 9.5 | " |
| May 28 | V | 9 | 35 | 253 | 14.5 | " |
| May 29 | W | 9 | 53 | 386 | 29.0 | " |
| TOTALS | | | 1690 | 13910 | 990.0 | |

October 5, 1924.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
9 volumes of sounding records for

HYDROGRAPHIC SHEET 4344

Locality: Approaches to Sabine Pass, Gulf of Mexico.

Chief of Party: F. S. Borden in 1924.

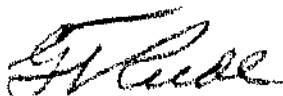
Plane of reference is Mean low water reading.

2.9 ft. on tide staff at Calcasieu Pass.

2.7 " " " " " Coast Guard, Sabine Pass.

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 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.

Report on Verifying and Inking H. 4364.

The records were in excellent shape and the notes sufficient. The plotting of positions was excellent and the only fault with the plotting of soundings was the failure to show the shoaler sounding where lines crossed.

In accordance with the recommendation by the Chief of Party in the descriptive report, the line 1-20 N was not inked.

The method of locating buoys as described in the descriptive report should be used wherever feasible. The accurate control in running the lines more than repaid for any additional time required, if any, in locating the buoys.

The junctions with adjoining sheets are good and sufficient.

F. M. Albert, Draftsman
Section of Field Records.

Nov. 13, 1924.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

WASHINGTON November 17, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4364

Approaches to Sabine Pass, Texas

Surveyed in 1924

Instructions dated October 13, 1922 and July 27, 1923.

Chief of Party, F. S. Borden.

Surveyed by F. S. Borden and W. D. Patterson.

Protracted and soundings plotted by L. C. Wilder.

Verified and inked by F. M. Albert.

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. The only criticism of it was the failure to show the shoaler soundings at the crossings.
7. The junctions with adjacent surveys are satisfactory.
8. No further surveying is required within the area covered by the sheet.
9. The methods of control used on this survey have given such good results that they should replace the Precise Dead Reckoning method whenever conditions permit. It should be noted also that the method of locating the survey buoys (as stated in the Descriptive Report) should be followed.
10. The character and scope of the surveying is excellent and that of the field drafting is good.
11. Reviewed by E. P. Ellis, November, 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.

Field Sheet No. 3

Register No. 4364

State Louisiana

General locality Gulf of Mexico

Locality Approaches to Sabine Pass, Texas.

Chief of party Frank S. Borden

Surveyed by Frank S. Borden, W.D. Patterson

Date of survey . . April 23 to May 29, 1924.

Scale 1:40,000

Soundings in feet

Plane of reference . . Mean Low Water

Protracted by L.C. Wilder . Soundings in pencil by L.C. Wilder

Inked by F.M. Albert Verified by F.M.A.

Records accompanying sheet (check those forwarded):

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

 9 Sounding books, _____ Wire-drag books, _____ Photographs.

Data from other sources affecting sheet

*Tide reduces from observations made
by party on the S.V. Hydrographer.*

Remarks: