

5424

5424

Form 504  
Ed. June, 1928

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
R. S. Patton, Director

State: Texas

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DESCRIPTIVE REPORT

~~Hydrographic~~ } Sheet No 12 5424  
Hydrographic

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LOCALITY

Galveston Bay.

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Galveston Entrance

---

1934  
1933

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CHIEF OF PARTY

Earl O. Heaton.

U. S. COAST & GEODETIC SURVEY  
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DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5424

HYDROGRAPHIC TITLE SHEET

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

Field No. 12

REGISTER NO. 5424

State Texas

General locality Galveston Bay

Locality Galveston Entrance

Scale 1:10,000 Date of survey Oct.-Jan. 1933-4

Vessel Project HT-118

Chief of Party Earl O. Heaton, Lieut.

Surveyed by W.C. Russell, Ensign; J.L. Hale, Observer; G.S. Tinsley, Observer.

Protracted by W. K. Doolittle, Surveyor

Soundings penciled by W. K. Doolittle

Soundings in fathoms feet

Plane of reference Mean Lower Low Water

Subdivision of wire dragged areas by

Inked by ~~W. K. Doolittle~~ A.H. YEDMANS

Verified by ~~Earl O. Heaton~~ A.H.Y.

Instructions dated Nov. 5, 1932

Remarks:

1

*Landmarks attached - H. W. M.*

DESCRIPTIVE REPORT  
TO ACCOMPANY HYDROGRAPHIC SHEET 12  
GALVESTON ENTRANCE

Date of Instructions:

Instructions for this work were dated Nov. 5, 1932.  
(Project HT-118)

Survey Methods:

Most of the work was done with a launch using a lead line graduated in feet, however, for inshore work in depths of 10 ft. and less a sounding pole graduated in feet and having a plate about six inches in diameter on the bottom was used from a skiff propelled by an outboard motor.

For sounding on the outer bar a temporary buoy was placed, located by sextant angles and removed at the end of the day. This served for right or left object.

No sounding was done in the main channel since it is adequately surveyed by the Army Engineers and dredged to maintain minimum depths. For this reason soundings over 36 ft. occurring on the edge of the channel are marked C and neither recorded nor plotted.

Occasional soundings will be found in the sounding volumes for this sheet without a recorded time. These soundings serve as check soundings and were taken whenever a sudden change of depth was noticeable. They follow as closely as possible to the sounding which is being checked.

Location of Buoys:

Buoy positions on this sheet are all hydrographic locations with the exception of 2A and 4 in Bolivar Roads. These latter two were transferred from the topographic sheet.

Locations of buoys in the channel were checked on March 15, 1934 by taking sextant fixes at the buoys. With the exception of #4 they all checked the topographic location as near as a floating object could be expected to. Number 4 had apparently been shifted 180 meters SE x E.

*Buoy #4 removed from sheet as they are and by H-5412 on the next page*

Discrepancies:

The following discrepancies were found, corrected as noted for the reasons assigned and corrections noted in record:

\*On E day it was found that the swift outgoing tidal current made the soundings apparently too deep on the lines with launch headed West. Therefore four such lines were rejected, namely 53-58, 62-67, 72-78, and 82-86, all inclusive. The effect of the current was to make a bight in the line.

\*On K day pos. 47-48, this portion of line plots off of sheet and was rejected because the area was well covered on Sheet #24.

\*On R day pos. 34-38, soundings were misread by leadman but the error was caught and the soundings rejected.

\*On d day (blue, skiff) pos. 34-35 rejected because shown to be too deep and covered by 70-71 c.

\*On B day pos. 134-137 are rejected as being too deep. This is probably due to current making a bight in the lead line.

*on B day 57-71b on sheet 23*

*\* On items marked thus - \* - field party's decision accepted - H. W. M.*

\* on items so marked, field party's decisions accepted. - *Harris*

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\*On C day pos. 4-5 and 24-25 do not check well, but the bottom is quite irregular and they cannot logically be rejected.

\*On F day 27-28, <sup>1100</sup> apparently too deep, but there is no basis for rejection.

\*On M day pos. 42-43, soundings were shown by adjacent soundings on M and G day to be 5 ft. too deep, probably leadsman's error. *FR subtracted 5 ft and plotted*

\*On Q day pos. 11-12, discrepancies on crossings with F day lines are probably due to irregularity of bottom and should not be rejected. In case of the 6 ft. sounding near pos. 18, probably the fault is in a slight time misplacement of the 12 ft. <sup>1100</sup> sounding between 55 and 56 F. In this area there are other examples of a foot change in 10 m. The Q day line should be preserved at any rate, since it was taken with a pole.

\*On R day pos. 34-38 show soundings too deep and are rejected since the area is covered by other lines. See note by hydrographer in record book. *see note on previous page*

\*On a day (blue, skiff) pos. 9-10, three soundings taken with lead line seem to have been misread by the leadsman and are rejected since the area is covered by the line 82-83 L.

\*On T day pos. 27-28, two 6½ ft. soundings. These data were obtained on Mar. 15, 1934, whereas the soundings near ~~28A~~ (green) were obtained on Nov. 25, 1933. Both were taken by the same leadsman under same sea and weather conditions, using a pole. The only conclusion seems to be that this bottom is changing rapidly. Successive issues of chart No. 520 and reference to U. S. Engineers survey of July and August 1933, support this conclusion, since the shoalest point seems to be moving gradually toward the gulf. *55A, Feb 29 1934, Log 19443.0*

Depth curves shown as overlays in red differ from those shown on the sheet in pencil but are undoubtedly more nearly correct for the later date Mar. 15. *seem to agree fairly well*

#### Dangers:

There is a four foot spot <sup>4½ plotted</sup> not marked by a beacon or buoy on the bar midway between the jetties in vicinity of lat. 29°-20'-32"; long. 94°-42'-27", which is dangerous for small boats. Soundings obtained at 49-F and 46F, bottom is hard sand.

In the neighborhood of Fort Travis on Bolivar Pt. midway between positions 96 and 97 B <sup>(red)</sup> is a 2" iron pipe bare 3½ ft. at M.L.W., 4 ft. of water.

An old wreck bare <sup>4½</sup> lies in 3 ft. of water (M.L.W.). Noted at pos. 16 B and 34 c.

#### Channels:

The main Galveston entrance channel is used by all shipping for Galveston, Galveston Bay cities and Houston. The least width shown by soundings on this sheet is about 260 m. with a depth of 32 ft. near the edge. The least depth found over the outer bar which is East and SE of the North Jetty Light and does not block the entrance except from Eastward is 31 ft. <sup>31</sup> found in vicinity of 29°20' lat. and 94°59'7 longitude. The entrance to Galveston channel is safe from the main channel toward the South. The controlling channel depth from the chart was 34 ft. in 1933. *Several 31 ft. are here. Harris*

*The chart (1934) lists 34½ ft. over outer bar and 33' on inner bar. - Harris*

Comparison with Previous Surveys:

The number of soundings per unit area is greater for this survey than for any of the previous surveys, and therefore, the forms of the depth curves are more closely determined.

On the chart a 9 ft. sounding is shown about 1400 m. N xW from South Jetty Light. The depth at this spot was found to be 12-13 (14) ft., but about 75 m. south a sounding of 11 1/2 ft. was obtained. The 9 ft. sounding should be removed from the chart, This area is subject to rapid changes.

The detached 4 ft. sounding nearest to South Jetty at lat. 29°-20'-20", long. 94°-43'-09", should be removed from the chart. The 6 1/2" sounding just east of this spot was the nearest shoal sounding. When the U. S. Engineers made their survey the 4 ft. sounding was undoubtedly correct, but the bottom has changed considerably in this area since the date of their survey. (See also note regarding T day covered in Discrepancies paragraph of this report).

The 30 ft. soundings seaward from bell buoy #2 should be removed and soundings of 31 ft. selected to replace them. This area is affected considerably by hurricane weather nearly every year.

The lights shown on chart 520 buoys 5, 7, and 7a were timed and found to be flashing, (having the lighted interval shorter than the interval of darkness), not occulting as shown. This was called to the attention of the lighthouse service and they have been corrected so that they are now occulting lights.

The cable signs on each side of the channel near meridian 94°-45' no longer exist.

Buoys shown on chart #520 are generally correct, as they agree with topographic and hydrographic locations in all cases within 150 meters. Either the hydrographic or topographic positions are satisfactory for charting purposes with the exception of buoy #4 previously noted in this report. Hydrographic position should be used for this buoy.

*Hydro. pos. should be given preference at this buoy located at a later date.*

Geographic Names:

No new geographic names.

Statistics for Sheet, Field No. 12:

Number of positions	1,816
Number of soundings	11,409
Statute miles of sounding lines	359.5

Men in Charge of Hydrography:

Ensign W. C. Russell was the officer in charge of most of this hydrography with the exception of a small portion south of the South Jetty in charge of G. S. Tinsley, Observer, and a single days work between the jetties in charge of J. L. Hale, Observer.

Inspected and approved by  
*Earl O. Heaton*  
Earl O. Heaton,  
Chief of Party, C. & G.S.

*W.K. Doolittle*  
W. K. Doolittle,  
Surveyor.

POST-OFFICE ADDRESS: 230 Nixon Bldg.; Corpus Christi, Texas.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

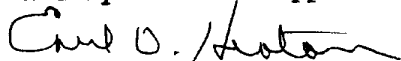
April 9, 1934.

To: The Director,  
Coast and Geodetic Survey,  
Washington, D. C.

From: Earl O. Heaton, Lieut., C. & G. S.

Subject: Inspection and approval of Hydrographic  
Sheet #12.

Hydrographic sheet number 12 and the accompanying records have been inspected and approved.



Earl O. Heaton,  
Chief of Party, C. & G. S.





Mr. Ellis

Rac

August 30, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in  
8 volumes of sounding records for

HYDROGRAPHIC SHEET 5424

Locality Galveston Entrance, Texas

Chief of Party: Earl O. Heaton in 1933

Plane of reference is mean low water reading

1.7 ft. on tide staff at South Jetty.

3.1 ft. below B. M. 1

2.3 ft. on tide staff at Bolivar Point

8.0 ft. below B. M. 1

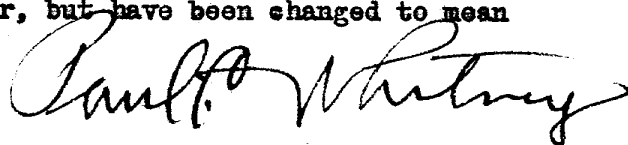
3.0 ft. on tide staff at Galveston (20th Street)

6.5 ft. below B. M. 28a

Height of mean high water above plane of reference is  
1.4 ft. at South Jetty; 1.1 ft. at Bolivar Point; 1.0 ft. at Galveston  
(20th Street).

~~Condition of records satisfactory except as noted below:~~

Soundings were reduced in field according to instructions to  
the plane of mean lower low water, but have been changed to mean  
low water.



Chief, Division of Tides and Currents



Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5424

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet	1816
Number of positions checked	19
Number of positions revised	0
Number of soundings recorded	11409
Number of soundings revised	9000 (approx)
Number of signals erroneously plotted or transferred	0

Date: Oct. 22, 1934

Cartographer: A.H. VERMANS

Verification of protracting Verification & inking of rocks and shoals)	by AHY	} Time: 93 hrs.
Verification of inking by	AH.Y	
Review by	H.W. Murray	Time: 132 "

Oct 22, 1934

REPORT ON H-5424.

Chief of Party--E. O. Heaton.

Protracted by--W. K. Dolittle.

Verified and inked by A. H. Yeomans.

Surveyed in Oct--Jan. 1934.

Surveyed by W. C. Russell, J. L. Hale, G. S. Tinsley.

Soundings plotted by W. K. D.

1. The records conform to the requirements of the General Instructions *draft - as noted in the report.* ✓
2. The usual depth curves were completely drawn. ✓
3. The field plotting was completed to the extent prescribed in the Hydrographic Manual. ✓
4. The office draftsman had to change most of the soundings on the sheet due to a change of the plane of reference after the sheet was sent to the office. ✓
5. The junctions with adjacent sheets ~~H-5594~~-5511--5462 and 5522 could not be made because these sheets have not been completed. ✓
6. *all soundings are now shown on the larger scale inserts - Hym.* There were four overlaps included with this sheet, around the wharves of the Mexical Petroleum Corporation and the Bolivar Slips shown in large scale, the deeper soundings that could not be shown on the large scale were put on the regular scale drawing. Bottom characteristics on this sheet were used as follows: \*"sft" meaning soft blue clay, and "hrd" meaning hard sand and blue clay as was also done in the sounding records. ✓

*\* These items were corrected to show the correct end field characteristics. 11/5/34*

Submitted by, *Hym.*

A. H. Yeomans.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5424 (1933-34).

Galveston Entrance, Galveston Bay, Texas.

Instructions dated November 5, 1932 (E. O. Heaton).

Surveyed - Oct. 1933 - <sup>Mar.</sup> Jan. 1934.

Hand Lead and Pole Soundings - 3 Point Control on Shore Signals.

Chief of Party - Karl O. Heaton.

Surveyed by - W. C. Russell; J. L. Hale and G. S. Tinsley.

Protracted and soundings penciled by - W. K. Doolittle.

Verified and inked by - A. H. Yeomans.

1. Condition of Records.

The records are neat, legible and conform to the requirements of the Hydrographic Manual with the exception that no chart containing location of Aids to Navigation for the Lighthouse Bureau was forwarded to this office. Also it would have been more desirable if the actual soundings over 36 feet near the limits of the dredged channel had been recorded in the records instead of using the letter "C" to indicate them (see D. R. - Survey Methods).

2. Compliance with Instructions for the Project.

The sheet and descriptive report are evidence that many important points were well considered by the field party.

The plan, character and extent of the survey generally satisfy the instructions for the project with the following exceptions.

a. Inasmuch as it was found necessary to resurvey the area between the jetties (excluding the dredged channel) the work should have been extended to the limits of the dredged channel throughout. This would have simplified compilation by eliminating the need for using the engineer's survey other than for the dredged channel.

b. A closer development should have been made of the entrance channel to the Yacht Club on Galveston Island. (Approx. lat.  $29^{\circ}20'$ , long.  $94^{\circ}45'$ ).

c. The Ferry Channel in approx. lat.  $29^{\circ}21'.5$ , long.  $94^{\circ}45'.7$  should have been developed upon finding discrepancies. The U. S. Engineer's survey of 1933 (B.P. 26947) shows a controlling depth of 10 feet near the entrance. The few soundings that fall within the channel limits on the present survey indicates a deepening of about 5 feet. The complete extent of the changes, however, are uncertain. The controlling depths as shown on the engineer's survey will, therefore, have to be used for charting.

3. Sounding Line Crossings.

Agreement of soundings at crossings and with adjacent lines are generally satisfactory, however, discrepancies of 2 to 6 feet exist in --

- |    |      |                     |       |                     |
|----|------|---------------------|-------|---------------------|
| a. | Lat. | $29^{\circ}20'.5$ , | Long. | $94^{\circ}45'.0$ . |
| b. | "    | $29^{\circ}20'.4$   | "     | $94^{\circ}42'.9$ . |
| c. | "    | $29^{\circ}20'.5$   | "     | $94^{\circ}42'.5$ . |
| d. | "    | $29^{\circ}20'.5$   | "     | $94^{\circ}42'.4$ . |

These differences are due to the running of some of the sounding lines in a very changeable area, 1 to 3 months apart. In each case, the shoaler soundings were obtained at the later date and should be selected for charting purposes.

4. Within the limits of the survey, the usual depth curves may be satisfactorily drawn with the exception of the 12 foot <sup>curve</sup> area in the Ferry channel, lat.  $29^{\circ}21'.3$ , long.  $94^{\circ}45'.7$  and the 6 foot curve at the Yacht Club entrance, lat.  $29^{\circ}20'.1$ , long.  $94^{\circ}45'.0$  and in the general vicinity of lat.  $29^{\circ}19'.5$ , long.  $94^{\circ}44'.5$ .

5. Junctions with Surveys.

- a. The junctions with H. 5511 (1933), H. 5462 (1933-34) and H. 5522 (1933-34) will be considered in the review of those surveys.

- b. The junctions with U. S. Army Engineer's surveys B. P. Nos. 26947 and 26948 (1933) near the channel limits, as prescribed in the Instructions, are generally satisfactory.

- c. No offshore field work to the southeastward is contemplated at this time.

6. Comparison with Prior Surveys.

Prior surveys made in the vicinity of H. 5424 (1933-34) are as follows:

- a. H. 247 (1850).
- b. H. 264 (1851).
- c. H. 265 (1851).
- d. H. 471 (1855).
- e. H. 906a (1867).
- f. H. 906b (1867).
- g. H. 918b (This is a tracing showing natural changes from 1851 to 1867).
- h. H. 919 (1867).
- i. H. 1530 (1883).
- j. H. 1556a (1883).
- k. H. 1597a (1884).
- l. H. 1597b (1884).

Comparison of all surveys mentioned above with H. 5424 (1933-34) show considerable changes. On account of the general changeable character of the area, it is unnecessary to consider these surveys from the standpoint of carrying forward information to the new survey.

7. Comparison with Chart No. 520.

- a. Soundings on this chart originate with U. S. Army Engineer's surveys made at various times. A general comparison shows considerable changes of 1 to 4 feet, shoaling in some vicinities and deepening in others: The following are some of the changes:

1. The charted group of seven 30 foot soundings in the vicinity of lat.  $29^{\circ}20'.0$ , long.  $94^{\circ}40'.0$  and northeastward originate with B. P. Nos. 24572 (1931) and 25642 (1932) and fall in closely developed depths of 31 to 32 feet on the present survey. A general deepening appears to have taken place over these shoals and they should be discontinued in future charting.

2. The charted 29 foot sounding in lat.  $29^{\circ}20'.6$ , long.  $94^{\circ}45'.1$ , originating with B.P. No. 26947 (1933) is representation of a shoal 250 m. in length and falls in depth of 31 to 35 feet on the present survey. Comparison of soundings shows a general deepening and the 29 ft. sounding may be disregarded in future chartings.

3. The area immediately to the southward of Bolivar Point Light and west of the Ferry Channel has changed considerably and the present survey should completely supersede the present charted delineation.

4. The charted 9 foot shoal in lat.  $29^{\circ}20'.4$ , long.  $94^{\circ}41'.7$ , originating with B. P. No. 26948 (1933) falls in closely developed depths of 12 and 13 feet on the present survey. A deepening appears to have taken place in the immediate vicinity with 11 feet ~~on~~ the least depth. The 9 should not be used in future charting.

5. The charted 4 foot shoal (actually  $4\frac{1}{2}$ ) in lat.  $29^{\circ}20'.5$ , long.  $94^{\circ}42'.6$ , originating with B.P. No. 26948 (1933) falls in depths of 6 to 7 feet on the present survey. General changes are indicated in the vicinity and the present survey shows a  $4\frac{1}{2}$  foot shoal about 270 m. eastward.

6. The charted 4 foot shoal (actually  $4\frac{1}{2}$ ) in lat.  $29^{\circ}20'.3$ , long.  $94^{\circ}45'.1$ , originating with B. P. No. 26948 (1933) falls in closely developed depths of 9 to 10 feet on the present survey. The shoal has evidently shifted about 280 m. E.S.E. where a least depth of 6 feet was obtained in an insufficiently developed area. The 6 ft. sounding of the present survey should supersede the charted 4 foot sounding.

b. Aids to Navigation.

Buoy N4A near the jetty limits has been removed since the present survey was made and N4 has been moved approximately 640 m. N.W. (Authority - L.H.N. to M. No. 41 of 1934). Buoy N2A, long.  $94^{\circ}46'.2$ ; bell buoy No. 7, long.  $94^{\circ}42'.9$ ; and whistle buoy, long.  $94^{\circ}39'.2$  are unchanged in position whereas all other buoys shown on the present survey are in positions varying from 30 to 140 m. away from the present charted position.

8. Field Protracting.

Field protracting and plotting were accurate and conform to the requirements of the Hydrographic Manual. A change of plane of reference from MLLW to MLW in the office necessitated the changing of a considerable portion of the soundings.

9. Additional Field Work Recommended.Immediately necessary.

Because of the changing character of the area, it is advisable that the additional work recommended in the following paragraphs be accomplished immediately.

- a. An additional line or lines should be run in the Ferry Channel discussed in paragraph 2c of this review to ascertain present conditions.
- b. A complete development should be made in the vicinity of the Yacht Club entrance channel discussed in paragraph 2b of this review to determine controlling depths and to afford more accurate delineation of the depth curves.
- c. A further examination should be made of the new 17 foot shoal in lat.  $29^{\circ}20'.9$ , long.  $94^{\circ}46'.2$  which is but a short distance north of the main channel.
- d. The 6 foot shoal in lat.  $29^{\circ}20'.3$ , long.  $94^{\circ}43'.0$ , discussed in paragraph 7a (6) of this review should be examined <sup>and</sup> at the least depth ascertained.

10. Superseding Previous Surveys.

Within the area covered the present survey supersedes the following surveys for charting purposes:

H. 247 (1850)	In part.	H. 918b (1851-67)	In part.
H. 264 (1851)	" "	H. 919 (1867)	" "
H. 265 (1851)	" "	H. 1530 (1883)	" "
H. 471 (1855)	" "	H. 1556a (1883)	" "
H. 906a (1867)	" "	H. 1597a (1884)	" "
H. 906b (1867)	" "	H. 1597b (1884)	" "

11. Note to Compiler.

- a. The two charted "cable signs" just west of the  $94^{\circ}45'$  meridian have been removed. (See Descriptive Report, page 3).
- b. Within its limits the present survey supersedes previous chartings from U. S. Army Engineer's surveys except as follows:
  1. In blank areas, soundings of the engineer's surveys may be used to supplement those of the present survey.
  2. In the Ferry Channel; lat.  $29^{\circ}21'.3$ , long.  $94^{\circ}45'.7$ , the controlling depths as given on the present chart should be continued for the present.

12. Reviewed by - Harold W. Murray, November 3, 1934.

Inspected by - A. L. Shalowitz.

Examined and approved:

*G. K. Green*  
G. K. Green,  
Acting Chief, Section of Field Records.

*L. O. Tolbut*  
Chief, Division of Charts.

*J. B. Borden*  
Chief, Section of Field Work.

*G. Hude*  
Chief, Division of H. & T.

Do not believe the six fath spot  
mentioned paragraph "9 d" needs  
further development due to  
unimportance of area and  
the fact that this is in  
a rapidly changing region.

*J.S.B.*

Suggest paragraph 9 be  
headed "Field work recommended  
when field party is in this locality."  
J.H.S.

Applied to new compilation of chart #520 of J. Fleming.  
May 27, 1935  
J.H.S.

518 New Lht - applied bottoms and few sounds to Supplement new  
19-62-1963 hydro by 0065. and USE. after 2/24/64