

4332

Diag. Cht. No. 1007-2, 1116-2, 1279

Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

State: La-Texas

11-4413

DESCRIPTIVE REPORT.

Hydrog. Sheet No. 4332

LOCALITY:

Gulf of Mexico

Approaches to Sabine Pass

1922-23

CHIEF OF PARTY:

F.S. Borden, G.C. Jones

4332

POST-OFFICE ADDRESS: U.S. COAST AND GEODETIC SURVEY STR. HYDROGRAPHER PORT ARTHUR TEXAS

TELEGRAPH ADDRESS:

Do

EXPRESS OFFICE:

Do

MAR 19 8 45 AM '24



DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

OFFICE
LINDSEY

Port Arthur, Texas
March 15, 1924

4332

*Return to Charts
for files*

Chart

To: The Director
U. S. Coast and Geodetic Survey

From: The Commanding Officer
Steamer Hydrographer

Subject: Smooth sheet B 4332

For your information it is desired to call attention to two details in which the plotting of smooth sheet B, transmitted to office on March 14th, is incomplete.

These details were found by the Commanding Officer when plotting soundings and notes made for the use of the officer who had protracted the sheet. Later believing the adjustments to have been made the records were forwarded to the office but on making a final inspection before forwarding sheet it was discovered that such was not the case.

H^m day which consists of a single line, rerun after rejection of the first line, close by the East side of Sabine Pass Jetties is only partially plotted. In plotting it was found that some of the positions would not plot, due it is believed to the wrong fix being recorded. It was left for later adjustment and as stated above was not done.

Beginning at position 104 D^m (or 104 D'), between latitudes 29° 22' and 29° 23', and about five miles from the western edge of the sheet the spacing of the soundings clearly indicated some error in plotting. It was thought that this may be due to having used incorrect buoys, possibly so recorded, in plotting. The soundings were erased in order not to be misleading. A careful investigation by the draftsman will, not doubt, disclose the cause of error.

G. G. Jones
G. G. Jones
Cmdr.

9-DRM

March 19, 1924.

To: Commanding Officer,
U. S. Coast and Geodetic Survey,
Steamer HYDROGRAPHER,
Port Arthur, Texas.

From: The Director, U. S. Coast and Geodetic Survey.

Subject: Hydrographic Sheet B.

Receipt is acknowledged of your letter of March 15 calling attention to certain uncompleted portions of your hydrographic sheet B, recently forwarded to this office.

These matters will be taken care of when the sheet is verified in this office.

(Signed) E. Lester Jones

Director

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SHEET

NO.

(SHEET B)

APPROACHES TO SABINE PASS

S. R. HYDROGRAPHER

F. S. Borden, Comdg.

EXTENT.

This sheet includes the area in the approaches to Sabine Pass extending from the shoreline southward to latitude $29^{\circ}-22'$ N and from longitude $93^{\circ}-40'$ westward to longitude $93^{\circ}-58'$ except as described below.

A small area between the outer end of the jetties and the sea buoy as well as the area inside of the three fathom curve west of the jetties are not shown on this sheet. When field work was being done in this immediate locality dredging operations were in progress and it was deemed advisable to hold the survey of this area until dredging operations had been completed. These areas are shown on the adjacent sheet to the westward (Sheet A)

In order to show the entire passage through Sabine Pass (locally known as the "Hole in the Wall") on one sheet the work was carried two miles farther to the eastward in the locality of the passage than it was farther inshore.

CHANGES SINCE LAST SURVEY

By far the most important change which has taken place in the area covered by this sheet is the building out of the shoal west of the jetties. This undoubtedly is due to the effect the jetties have on the deposit of sediment which is brought down the pass or is dumped by the dredges. The prevailing westerly set carries the sediment to the westward where it is deposited when coming in contact with the eddy caused by the jetties protruding into the Gulf. It will be seen that the shoal is encroaching on the much used lane between Galveston and Sabine Pass. While working in this locality

at least three vessels have been seen aground on this shoal. Due to the nature of the bottom however the vessels seldom experience difficulty in clearing themselves.

The report that the passage through Sabine Bank, locally known as the "Hole in the Wall" has shoaled to 30 feet is incorrect. It is possible that the master of the vessel making this report obtained a 30 foot sounding in the passage but as this occurred on a minus tide during a "Norther" the water level at that time was probably as much as three feet below the reference plane. The present survey shows 33 feet as the least depth in the locality of the reported shoaling; chart No. 1279 shows very ^{clearly} depths as they now exist but chart No. 1116 shows 6 fathoms half way between the two buoys.

The report of the Master of the Ward Line Steamer "Agwisesa" under date of March 2, 1922 is also incorrect. It is probable that the bearing he thought he was taking on the sea buoy was taken on East Jetty L. H. If this were the case his cross bearings would place him in about the depth of water he stated he found.

The very severe criticisms of our charts contained in the letter of the Master of the British S.S. "Kemuta" under date of Dec. 16, 1921 are entirely unfounded except for the area west of the jetties mentioned in a preceding paragraph. The numerous lines of soundings which were run over the area by this master show depths that are ridiculously low. It is probable that he was either using a very poor leadline or had an incompetent leadsman. In most cases his soundings are at least a fathom too low even assuming an abnormally low tide.

CONTROL

The survey was controlled by tall hydrographic signals 100 feet high and spaced approximately four miles apart. All of the tall signals were in the triangulation scheme and had at least three cuts taken to them. A few small signals were erected between the tall ones to control the launch work close inshore. These were located either by sextant cuts or by the topographic party.

The tall signals controlled the work for a distance of approximately twelve miles offshore. As it was necessary to carry the fixed position work from 19 to 23 miles offshore the shore signals were supplemented with two rows of buoys, the outer row being near the outer limit of the fixed position work and the inner row from 4 to 6 miles inside of the outer row. The buoys in general were placed in rows parallel to the shore line, the distance between two adjacent buoys in the same row being approximately three miles.

Some difficulty was experienced in obtaining perfect checks on the positions of the buoys, particularly those in the outer row due no doubt to the scope of anchor cable and to the distortion of the sheet. It will be noted on the sheet that in the case of a few buoys two positions are shown. These positions resulted from two independent sets of cuts the first taken when the buoys were first located and the second when work had been nearly completed on them. In all cases the more easterly of the two positions was the first location. The discrepancy between the two positions is so small however that it does not appreciably effect the positions taken on sounding lines except in the case of weak fixes. The discrepancy is not due to the dragging of the buoys but to the distortion of the sheet and the scope of the anchor cable.

TIDES AND CURRENTS

Attached hereto and forming a part of this report is a report on the tidal work done in connection with this survey. The original of the tidal report will be forwarded with the tidal records and data.

Currents have considerable strength in the area between the five fathom curve and Sabine Bank. This prevailing set which is slightly south of west and parallel to the axis of Sabine Bank is increased greatly by winds from the east, northeast and southeast. South and southwest winds tend to counterbalance the prevailing set and if strong enough set up a current to the eastward. While running north and south sounding lines west of Sabine Pass with a gentle easterly breeze it has been found necessary to allow as much as 25° for current setting to the westward. This at sounding speed would correspond to a current of 2.2 knots setting to the westward and it is probable that with the southerly component the actual current would approach 3.0 knots. With easterly gales this current is undoubtedly increased to 4.0 or 5.0 knots.

It is recommended that some indication of the current to be expected in the area between Sabine Bank and Jetties be shown on the charts.

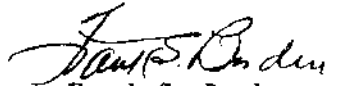
CONCLUSION

On account of the comparatively shallow depth of the water in this area and on account of its use by deep draft vessels very close inspection was made of the work each day. The soundings on the boat sheet were reduced from actual observations and discrepancies in crossings were investigated. As a rule the crossings are very good. A few lines however will be found where a discrepancy of two feet occurs in one line while adjacent lines cross within a foot. Due to the close proximity of the sounding lines and the great number of soundings it can be told which line is in error.

Considerable difficulty was experienced in obtaining good crossings just west of the jetties. In this locality the bottom is so soft that it was difficult for the leadsmen to ascertain when the lead had touched the surface of the oily slime which constitutes the bottom. The strong currents coupled with the very soft bottom made it necessary to use the greatest care in this locality and then it was found necessary to rerun a few lines which showed discrepancies on crossings.

All soundings were made with braded waterproof bronze centered tiller rope. The leadlines altered very slightly throughout the period. A flattened lead was used to advantage in areas where the bottom was extremely soft.

Two lines were run across the dredged channel between the sea buoy and the outer end of the jetties. Soundings on these should not be considered as necessarily correct as the dredge was at that time working in the channel. Less water will probably be shown on these lines than will be shown by the Engineers Survey which was made after dredging had been completed.


Frank S. Borden.

OUTLINE OF TIDAL
WORK DONE IN THE VICINITY
OF SABINE PASS
IN CONNECTION WITH
HYDROGRAPHIC SURVEYS

(to accompany hydrographic sheet B)

When hydrographic work was started in the approaches to Sabine Pass a tidal station was established at Sabine Pass Lighthouse. Simultaneous observations were made for 105 consecutive hours at this station with the station at Galveston, Texas and from these observations a reference plane was established from which to reduce soundings. Later due to the fact that a trustworthy observer could not be obtained at the Lighthouse station, a second station was established across the pass at the U. S. Coast Guard Station. Simultaneous observations between these two stations showed, as was expected, that the time and range of tide at the two stations were the same. The staff at the Coast Guard Station was set at the same level as the staff at the Lighthouse Station.

Soon after hydrographic work had been started it was found that under normal conditions the range of tide in the Gulf was considerably greater than the range in the Pass. A staff was then placed on the East Jetty beacon and sufficient observations made on this staff to obtain the relation between the range in the Gulf and the range in the Pass. It was found that the Gulf range was 1.5 larger than the range in the Pass under normal conditions but it was also found that the water level in the Pass was affected greatly during the freshet season by flood water and that true reducers were not being obtained during flood periods. For this reason it will be found that the curves drawn for the sounding area based on observations in the Pass are not always on a 1.5 ratio basis. In some cases the actual observations at Sabine Pass are used while on two or three days when it was observed that the level of the water in the pass was approximately six inches higher than the Gulf level an allowance of this much was made.

Although the tides are small in this locality the fact that the area covered by this survey is of comparatively shallow depth and is used by deep draft vessels made it essential that tidal reducers be obtained very closely. The fact that the cross lines run east and west check the soundings on the system of north and south lines so closely show that the tidal reducers used are not far in error.

Unfortunately Sabine Bank Lighthouse is now an unwatched light. A tidal station there would have been centrally located for obtaining correct reducers direct for the area sounded. A few observations were made at

Sabine Bank Lighthouse to check the reducers obtained from the Sabine Pass Stations. However to use an observer from the party which necessitated considerably delay in the field work made it impractical to secure many observations at this station. (See note in front of Sabine Bank Tide Record)

From the results of tidal observations made in this locality it is not believed that the standard gauge at Galveston is well located as a station on which to base tides for this portion of the Gulf. The tides at Galveston appear almost diurnal in character whereas observations in the Gulf in this locality show that there are two distinct tides a day, each of which is approximately twice as large in range as those shown at Galveston.

The rates of ranges between Sabine Pass and Galveston was found to be 1.4 and the ratio of range between the Gulf and Sabine Pass was found to be 1.5. Consequently for a tide of 1.0 which is the Mean range at Galveston the corresponding tide in the Gulf would be 2.1 feet.



Frank S. Borden.

STATISTICS OF FIELD WORK

Sheet B

Date	1922	Letter	Volume	Positions	Soundings	Miles Statute	Vessel
December	28	A	1	98	714	31.2	Ship
"	29	B	1	126	777	39.2	Ship
Date 1923							
January	2	C	1	4	27	1.0	Ship
"	3	D	1	40	251	11.7	Ship
"	3	D	2	103	729	34.3	Ship
"	4	E	2	183	1096	59.1	Ship
"	5	F	3	107	856	36.0	Ship
"	9	G	3	155	1106	51.7	Ship
"	9	G	4	12	105	4.0	Ship
"	11	H	4	142	1066	42.5	Ship
"	16	J	4	8	62	2.0	Ship
"	16	A	1	89	664	24.5	Launch
"	17	K	4	26	239	7.6	Ship
"	18	L	4	26	227	6.6	Ship
"	18	L	5	148	1011	45.9	Ship
"	19	M	5	115	783	41.0	Ship
"	24	N	6	137	867	47.1	Ship
"	25	P	6	141	921	50.6	Ship
February	7	Q	7	143	916	47.4	Ship
"	8	R	7	133	1046	42.0	Ship
"	8	R	8	14	116	2.8	Ship
"	19	S	8	153	1133	44.8	Ship
"	20	T	8	105	657	32.0	Ship
"	20	T	9	38	245	12.7	Ship
"	21	U	9	106	795	33.0	Ship
March	1	V	9	48	319	12.5	Ship
"	2	B	1	26	167	5.8	Launch
"	7	W	9	54	355	13.2	Ship
"	7	W	10	91	618	30.5	Ship

FORWARD

2571

17858

812.7

Date	1923	Letter Volume		Positions	Soundings	Miles	Vessel
		Brought	For'd			Statute	
				2571	17858	612.7	
March	8	X	10	198	1300	72.0	Ship
"	13	Y	11	111	831	46.0	Ship
"	20	Z	11	110	713	36.0	Ship
April	10	A'	11	47	273	15.4	Ship
"	10	A'	12	30	168	14.4	Ship
"	17	B'	12	150	809	60.0	Ship
"	18	G'	12	141	877	49.0	Ship
"	18	G'	13	14	73	4.3	Ship
"	19	D'	13	87	559	33.2	Ship
"	24	C	1	90	780	22.7	Launch
"	26	E'	13	136	1013	48.5	Ship
"	27	F'	14	159	914	60.5	Ship
"	30	G'	14	137	816	54.3	Ship
May	3	H'	15	192	1169	70.6	Ship
"	7	D	1	32	229	8.7	Launch
"	7	D	2	78	629	21.0	Launch
"	8	J'	15	106	736	42.6	Ship
"	8	J'	16	63	445	27.0	Ship
"	9	K'	16	86	590	35.0	Ship
"	10	L'	16	132	863	49.5	Ship
"	10	L'	17	47	299	17.0	Ship
"	16	M'	17	109	726	37.0	Ship
"	17	N'	17	72	545	29.3	Ship
"	21	P'	17	38	247	14.0	Ship
"	21	P'	18	120	801	47.5	Ship
"	22	Q'	18	180	1152	64.5	Ship
"	22	Q'	19	22	141	9.0	Ship
"	28	R'	19	63	433	22.0	Ship
June	4	S'	19	146	938	54.3	Ship
"	5	T'	20	197	1262	74.5	Ship
"	6	U'	20	102	665	39.5	Ship
"	6	U'	21	98	672	39.0	Ship
"	7	V'	21	15	88	4.5	Ship
"	12	W'	21	105	667	35.3	Ship
"	13	X'	21	55	332	18.8	Ship
"	13	X'	22	111	704	40.9	Ship
"	14	Y'	22	181	1243	67.4	Ship
"	22	Z'	23	120	821	41.7	Ship
"	25	A"	23	119	702	36.0	Ship
"	26	B"	23	43	293	15.8	Ship
"	26	B"	24	178	1112	59.0	Ship
"	27	C"	24	120	780	40.0	Ship

FORWARD

6911

46268

2390.4

Date	1923	Letter Volume		Positions	Soundings	Miles		Vessel
		Brought	Forward			6911	45268	
July	12	D"	25	186	1242	69.0		Ship
"	13	E"	25	103	618	35.0		Ship
August	28	F"	26	11	67	3.0		Ship
"	31	G"	26	6	40	2.4		Ship
September	7	H"	26	9	50	2.0		Ship
TOTAL				7226	48285	2501.8		

TIDE STAFF AT COAST GUARD STATION, SABINE PASS.

Plane of Reference	M.L.W.	Reading	2.7
Lowest tide observed		"	1.6
Highest tide observed		"	6.1

April 28, 1924.

C. H. C.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
volumes of sounding records for

HYDROGRAPHIC SHEET 4332

Locality: Approaches to Sabine Pass, Texas.

Chief of Party: F. S. Borden in 1923.

Plane of reference is	mean low water reading
2.0 ft. on tide staff at	U.S. Coast Guard Station
2.7 " " " " "	East Jetty Beacon.
2.8 " " " " "	Sabine Pass Lighthouse
1.8 " " " " "	East side of Sabine Bank Lighthouse.

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.

ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY

AND REFER TO NO.

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

August 15, 1924.

Report on Hydrographic Sheet No. 4332

The sounding books and notes were complete with the exception of how Δ Cam was located and plotted on the smooth sheet.

~~It is assumed that~~ This station (Cam) was located graphically and used on the smooth sheet for plotting the positions.

It was later included in the triangulation scheme and inked on the smooth sheet according to the new location, which was about sixty meters to the east.

The sheet was inked with the positions ^{using Δ Cam} as plotted by the field party.

The kind of bottom was not indicated on the sheet at all.

About half of the sheet was penciled with as many soundings as possible to get between positions regardless of the number taken, *as many as first soundings being plotted in spaces of those taken.*

"H" day, which is the subject of the letter of March 15, 1924, was replotted using the correct fixes.

The positions on "D" day were numbered wrong, making the sounding come one position too far north. These positions were replotted.

The development is complete.

The sheet was clean and the sounding books well kept.

H. R. Edmonston

H. R. Edmonston

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

August 20, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4532

Approaches to Sabine Pass, Gulf of Mexico, La. & Texas.

Surveyed in 1922 and 1923

Instructions dated October 13, 1922

Chiefs of Party, F. S. Borden and G. C. Jones (7 miles only).

Surveyed by party of Steamer HYDROGRAPHER.

Protracted by F. S. Borden, A. R. Jessup & C. M. Thomas.

Soundings plotted by R. R. Moore and G. C. Jones.

Verified and inked by H. R. Edmonston.

1. The records as well as the plan and character of the development conform to the requirements of the General Instructions.
2. The plan and extent of development satisfy the specific instructions. Letters 412 of 1921 and 62 of 1922 should be considered by the cartographer when charting this and the adjacent surveys.
3. The sounding line crossings are adequate.
4. The information is sufficient for drawing the usual depth curves.
5. The field plotting was completed to the extent prescribed by the General Instructions.

About one-half of the sheet was penciled with as many soundings as could be plotted between positions regardless of the number recorded, as many as five soundings being plotted between positions in excess of those taken.

△ Cam was used in fixing about one-tenth of the ship's positions. A preliminary location of Cam was put on the sheet and used in plotting which is about 60 meters west of the computed position of the point. This erroneous position of the signal was accepted in inking the sheet as the resulting errors were not serious.

In constructing the projection where the lines are shown for alternate minutes the even minute should have been used rather than the odd minute.

A poor quality of paper was used, but the field party, presumably cannot be held responsible for this.

6. The junctions with adjacent sheet H. 4334 is satisfactory. The other adjoining sheets are not yet completed.
7. No further surveying is required within the area covered by this sheet.
8. The character and scope of the surveying are excellent, and the field drafting is fair.
9. Reviewed by E. P. Ellis, August, 1924.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

4332

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. (B) 4332

State . . . LA. - TEXAS

General locality . Gulf of Mexico

Locality . . . Approaches to Sabine Pass

Chief of party . . F. S. Borden - G. C. Jones

Surveyed by . . . F. S. Borden - G. C. Jones

Date of survey . . December 28, 1922, September 7, 1923

Scale . . . 1-40,000

Soundings in . . . Feet

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

Plotted by FSB-ARJ-CMT^{sup} Soundings in pencil by RRM^{sup}-GCJ

Inked by Verified by

Records accompanying sheet (check those forwarded):

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

Sounding books, Wire-drag books, Photographs.

Data from other sources affecting sheet

Remarks:

Records forwarded March 8, 1924.