6184
6185

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } Sheet No.s 81 and 82

State LOUISIANA

LOCALITY

GULF OF MEXICO

SHIP SHOAL TO SOUTHWEST PASS, LA.

*193*6

CHIEF OF PARTY
Frank S. Borden

U.S. GOVERNMENT PRINTING OFFICE: 1934

Form 537
Ed. Dec., 1930

REG. NO.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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. 81

REGISTER NO. H6184

State Louisiana

General locality Gulf of Mexico

Locality Southeast of Ship Shoal

Scale 1 : 80,000 Date of survey June to Aug. & Oct. 1936

Vessel HYDROGRAPHER

Chief of Party F. S. Borden

Surveyed by P. C. Doran

Protracted by G. L. Anderson, V.M.Gibbens, F.R.Gossett, R.A.Gilmore

Soundings penciled by R. A. Gilmore

Soundings in fathoms ~~Feet~~ and fathoms and sixths on part of sheet.

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by W.R.Jackson

Verified by W.R.Jackson

Instructions dated Mar. 23, 1936- Supplemental Instr. May 20, 1936.

Remarks: See Director's letter dated March 6, 1937, Ref. # 22/MEK 1995 Hy 4

This title sheet executed in Office, April 27, 1937.

KWH 12/8/42

U. S. GOVERNMENT PRINTING OFFICE: 1931

Form 537
Ed. Dec., 1930

REG. NO.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

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. 82

REGISTER NO. H6185

State LOUISIANA

General locality GULF OF MEXICO

Locality SOUTH OF BARATARIA BAY

Scale 1:80,000 Date of survey August & October, 1936

Vessel Ship HYDROGRAPHER

Chief of Party F. S. Borden

Surveyed by Officers attached to ship (R.W. Woodworth)

Protracted by G. L. Anderson, V.M.Gibbens, F.R.Gossett, R. A. Gilmore

Soundings penciled by Ross A. Gilmore

Soundings in fathoms ~~feet~~ and fathoms and sixths on part of sheet *

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by G. C. McGlasson

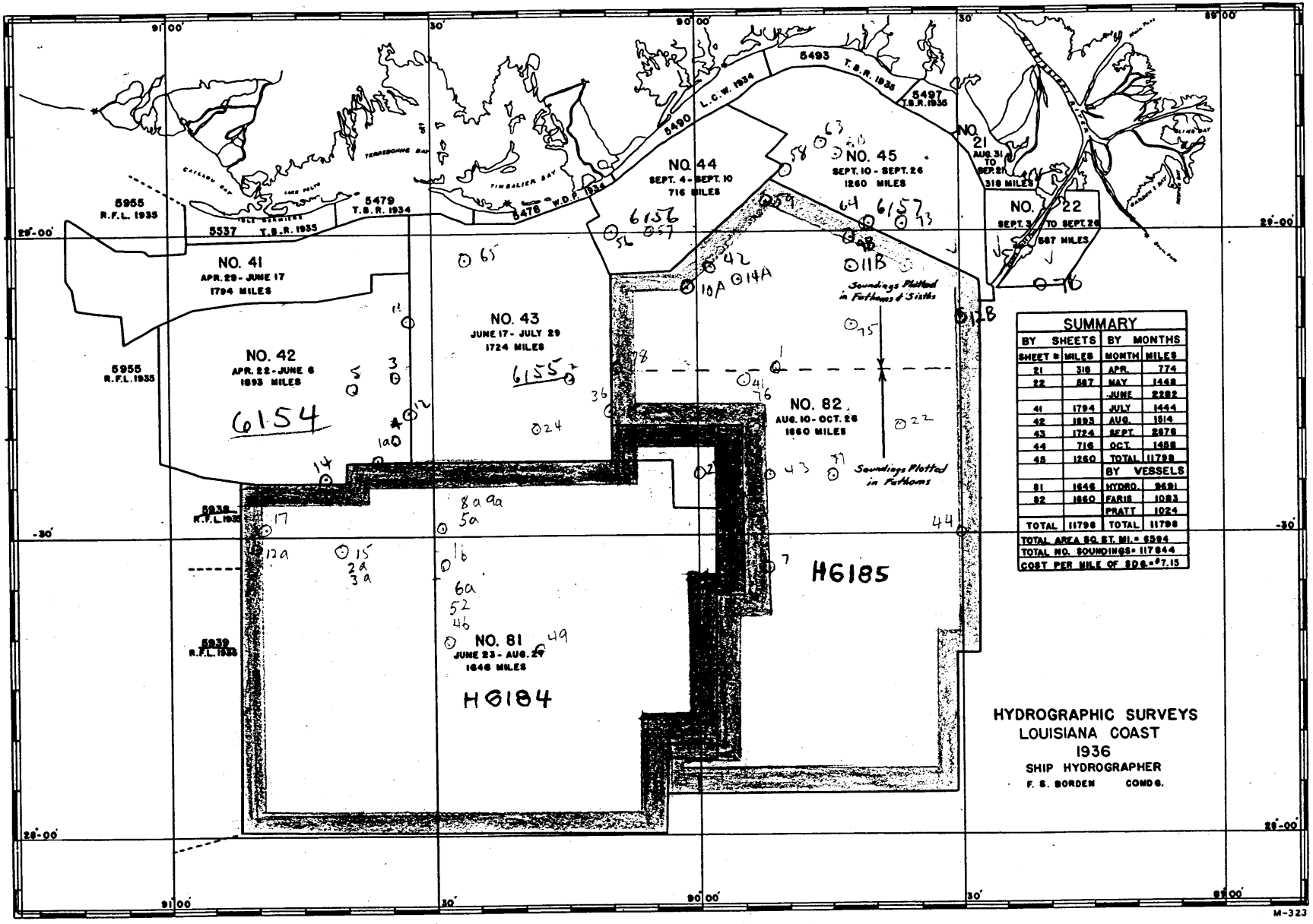
Verified by G. C. McGlasson

Instructions dated March 23, 1936 - Supplemental Instr. May 20, 1936.

Remarks: * See Director's letter dated March 6, 1937, Ref. No. 22/MEK 1995 Hy 4 (attached to D.R.)

KWH 12/8/92

U. S. GOVERNMENT PRINTING OFFICE, 1932



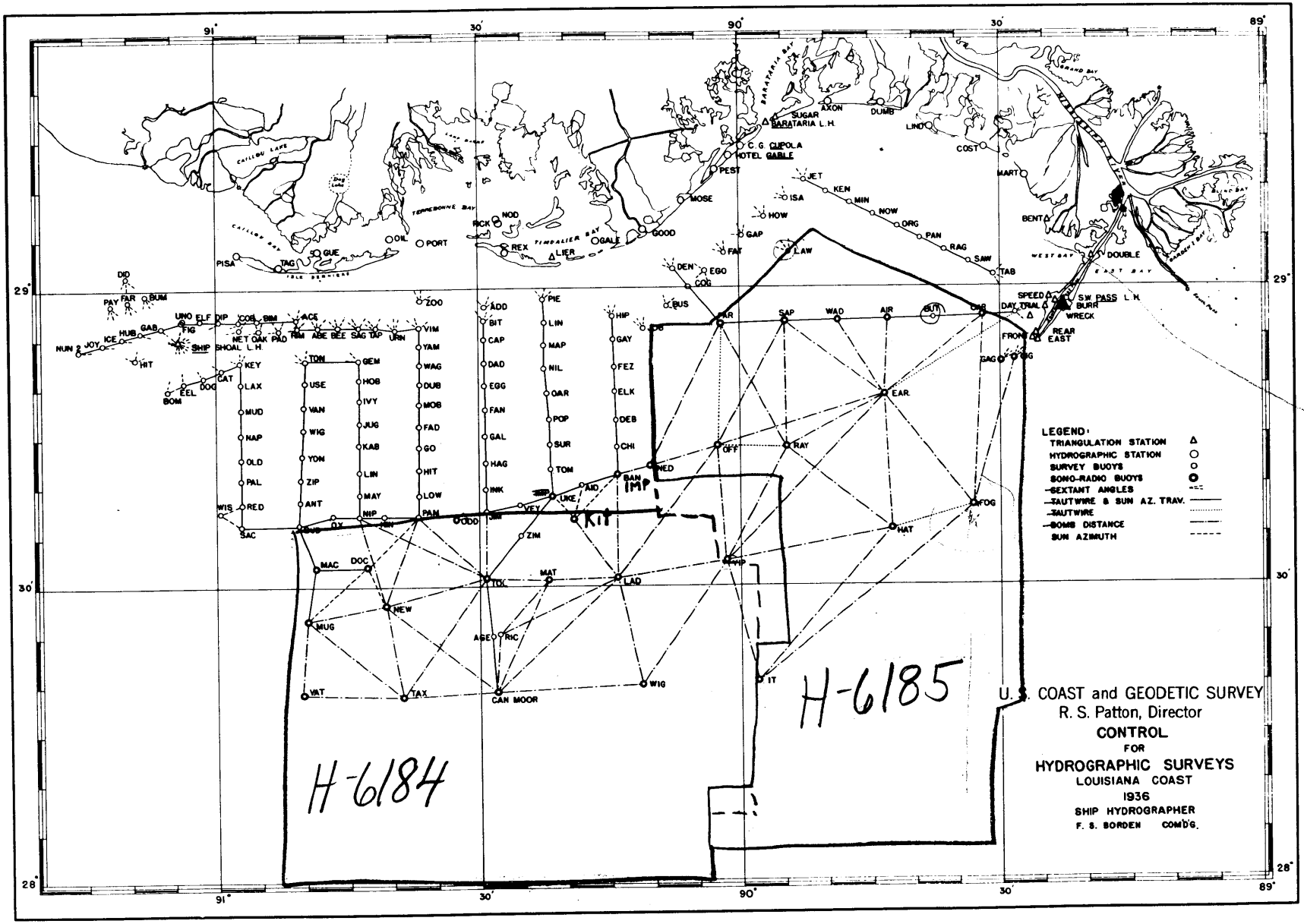
SUMMARY

BY SHEETS		BY MONTHS	
SHEET #	MILES	MONTH	MILES
21	318	APR.	774
22	687	MAY	1448
		JUNE	2282
41	1794	JULY	1444
42	1893	AUG.	1514
43	1724	SEPT.	2878
44	716	OCT.	1458
45	1260	TOTAL	11798
		BY VESSELS	
81	1646	HYDRO.	9691
82	1660	FARIS	1083
		PRATT	1024
TOTAL	11798	TOTAL	11798

TOTAL AREA SQ. ST. MI. = 6584
TOTAL NO. SOUNDINGS = 117844
COST PER MILE OF SDG. = $7.15

HYDROGRAPHIC SURVEYS
LOUISIANA COAST
1936
SHIP HYDROGRAPHER
F. S. BORDEN COMDG.

M-323


91°
30'
90°
30'
89°
29°
30°
28°
H-6184
H-6185
LEGEND:
TRIANGULATION STATION
HYDROGRAPHIC STATION
SURVEY BUOYS
SONO-RADIO BUOYS
SEXTANT ANGLES
TAUTWIRE & SUN AZ. TRAV.
TAUTWIRE
BOMB DISTANCE
SUN AZIMUTH
U. S. COAST and GEODETIC SURVEY
R. S. Patton, Director
CONTROL
FOR
HYDROGRAPHIC SURVEYS
LOUISIANA COAST
1936
SHIP HYDROGRAPHER
F. S. BORDEN COMD'G.

TEMPERATURE AND SALINITY CORRECTIONS

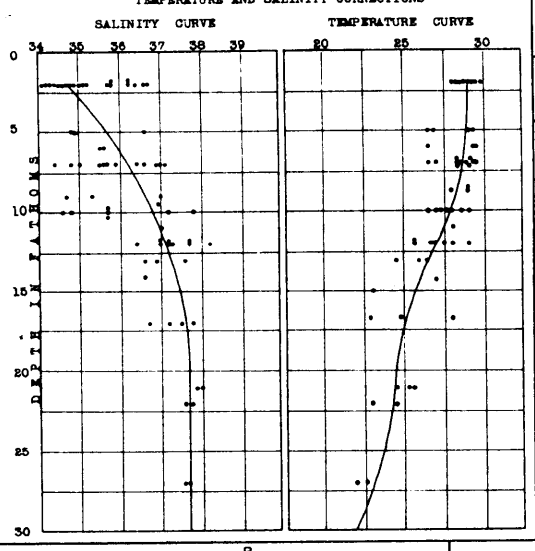


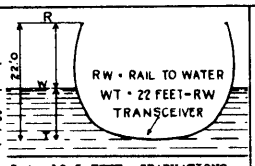
TABLE 1

CORRECTIONS TO DORSEY FATHOMETER

LOUISIANA COAST PROJECT HT-210 SHIP HYDROGRAPHER

DEPTH FMS.	CURVE TEMP.	MEAN TEMP.	CURVE SALINITY	MEAN SALINITY	TABLE FACTOR	CORR. FEET
2	29.0	--	34.7	--	--	--
4	28.9	28.9	35.4	35.0	0.0274	+ 0.66
6	28.7	28.8	35.9	35.3	0.0274	+ 0.99
8	28.3	28.7	36.4	35.6	0.0275	+ 1.32
10	27.8	28.5	36.8	35.8	0.0273	+ 1.64
12	27.0	28.3	37.1	36.0	0.0272	+ 1.96
14	26.1	28.0	37.4	36.2	0.0268	+ 2.26
16	25.4	27.7	37.6	36.4	0.0265	+ 2.54
18	24.8	27.3	37.7	36.6	0.0261	+ 2.82
20	24.4	27.0	Do	36.7	0.0257	+ 3.08
22	24.0	26.7	Do	36.8	0.0253	+ 3.34
24	23.5	26.5	Do	Do	0.0249	+ 3.59
26	23.0	26.2	Do	36.9	0.0246	+ 3.84
28	22.5	26.0	Do	37.0	0.0244	+ 4.10
30	22.0	25.7	Do	Do	0.0239	+ 4.30
32	21.6	25.4	Do	37.1	0.0235	+ 4.51
34	21.1	25.2	Do	Do	0.0232	+ 4.73
36	20.6	24.9	37.8	Do	0.0227	+ 4.90
38	20.2	24.7	Do	37.2	0.0224	+ 5.11
40	19.7	24.4	Do	Do	0.0220	+ 5.28

DRAFT CORRECTION



TRANSCEIVER OF FATHOMETER IS 22.0 FEET BELOW TOP OF RAIL. DEPTH OF WATER OVER TRANSCEIVER IS OBTAINED BY MEASURING THE DISTANCE FROM RAIL TO WATER SURFACE AND SUBTRACTING THIS FROM 22.0 FEET. THIS DEPTH VARIES FROM 11.5 to 12.5 FEET. GRADUATIONS ON THE DIAL HAVE BEEN CHANGED TO ACCOUNT FOR A DRAFT OF 12 FEET. THE DRAFT CORRECTION THEREFORE RANGES FROM +0.5 TO -0.5 FOOT. MEASUREMENTS OF RAIL TO WATER DISTANCES SHOULD BE TAKEN ON BOTH SIDES OF THE VESSEL TO ELIMINATE EFFECT OF LIST. THEY SHOULD ONLY BE TAKEN WHEN THE SEA IS SMOOTH. A FEW CAREFUL MEASUREMENTS WELL DISTRIBUTED BETWEEN FUELINGS WILL PROVIDE A GRAPH FROM WHICH ACCURATE CORRECTIONS CAN BE TAKEN.

SETTLEMENT CORRECTION

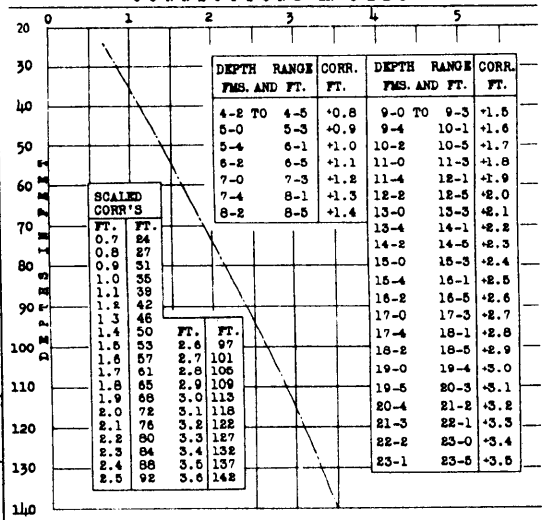
ALL COMPARISONS WITH THE LEADLINE ARE MADE WITH THE VESSEL DEAD IN THE WATER. THE AMOUNT OF SETTLEMENT AT SOUNDING SPEED MUST THEREFORE BE DETERMINED. THE SETTLEMENT OF THE HYDROGRAPHER AT FULL SPEED VARIES FROM 0.7 FOOT IN DEPTH OF 10 FATHOMS TO 0.9 FOOT IN DEPTH OF 4 FATHOMS. THIS CORRECTION IS OBTAINED BY COMPARING FATHOMETER SOUNDINGS TAKEN WHEN VESSEL IS DEAD IN THE WATER WITH FATHOMETER SOUNDINGS TAKEN WHEN VESSEL IS RUN AT FULL SPEED OVER THE SAME SPOT. COMPARISONS SHOULD ONLY BE MADE OVER LEVEL BOTTOM WITH SMOOTH SEA.

INITIAL CORRECTION

IT IS DESIRABLE WHEN SETTING THE FATHOMETER TO ALLOW FOR AN INITIAL CORRECTION TO OFFSET THE COMBINED AVERAGE SETTLEMENT CORRECTION AND THE DRAFT CORRECTION. THIS INSURES THAT, EXCEPT FOR THE VELOCITY OF SOUND CORRECTION, PRACTICALLY TRUE DEPTHS ARE OBTAINED AT SOUNDING SPEED. ON THE HYDROGRAPHER THE INITIAL CORRECTION IS MINUS 1 FOOT WHILE THE COMBINED AVERAGE DRAFT AND SETTLEMENT CORRECTION IS PLUS 1 FOOT. INITIAL CORRECTION IS OBTAINED BY COMPARING VERTICAL CAST, OBTAINED WHEN SHIP IS DEAD IN THE WATER, WITH FATHOMETER SOUNDING CORRECTED FOR VELOCITY OF SOUND AND DRAFT.

PROJECT HT-210 — TEMPERATURE AND SALINITY CORRECTIONS 1936 — SHEET NO. 43

CORRECTIONS IN FEET



DEPTH RANGE FMS. AND FT.		CORR. FT.	DEPTH RANGE FMS. AND FT.		CORR. FT.
4-2 TO	4-5	+0.8	9-0 TO	9-3	+1.5
5-0	5-3	+0.9	9-4	10-1	+1.6
5-4	6-1	+1.0	10-2	10-5	+1.7
6-2	6-5	+1.1	11-0	11-3	+1.8
7-0	7-3	+1.2	11-4	12-1	+1.9
7-4	8-1	+1.3	12-2	12-5	+2.0
8-2	8-5	+1.4	13-0	13-3	+2.1
			13-4	14-1	+2.2
			14-2	14-5	+2.3
			15-0	15-3	+2.4
			15-4	16-1	+2.5
			16-2	16-5	+2.6
			17-0	17-3	+2.7
			17-4	18-1	+2.8
			18-2	18-5	+2.9
			19-0	19-4	+3.0
			19-5	20-3	+3.1
			20-4	21-2	+3.2
			21-3	22-1	+3.3
			22-2	23-0	+3.4
			23-1	23-5	+3.5

SCALED CORR'S	
FT.	FT.
0.7	24
0.8	27
0.9	31
1.0	35
1.1	38
1.2	42
1.3	46
1.4	50
1.5	53
1.6	57
1.7	61
1.8	65
1.9	68
2.0	72
2.1	76
2.2	80
2.3	84
2.4	88
2.5	92
2.6	97
2.7	101
2.8	105
2.9	109
3.0	113
3.1	118
3.2	122
3.3	127
3.4	132
3.5	137
3.6	142

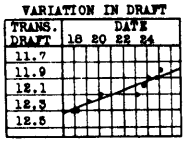
DETERMINATION AND APPLICATION OF DORSEY FATHOMETER CORRECTIONS

FATHOMETER COMPARISON

FATHOMETER	5 FMS	1.2 FT
CORR. DRAFT		+0.5
CORR. VEL.		+0.8
TOTAL	5 FMS	2.5 FT
VERTICAL CAST	5 FMS	1.5 FT
INITIAL CORR.		-1.0 FT

ABOVE COMPARISON WAS TAKEN WITH VESSEL DEAD IN THE WATER. THE SETTLEMENT CORRECTION FOR THE DEPTH SHOWN IS +0.9 FT. THEREFORE COMBINED CORRECTION FOR INITIAL, DRAFT, AND SETTLEMENT IS +0.4 FEET.

VARIATION IN DRAFT



DRAFT CORRECTION CAN BE TAKEN FROM GRAPH PLOTTED WITH RAIL TO WATER MEASUREMENTS OBTAINED NEAR TRANSCEIVER.

ENTER VELOCITY OF SOUND CORRECTION IN THE COLUMN MARKED "ECHO". ENTER THE COMBINED DRAFT, INITIAL AND SETTLEMENT CORRECTION IN THE COLUMN MARKED "SLOPE" SOUNDINGS SHOULD BE RECORDED IN FATHOMS AND FEET. THEY SHOULD BE REDUCED IN FEET AND TENTHS.

THE DORSEY FATHOMETER IS A PRECISION INSTRUMENT AND ALL DATA USED IN DETERMINING CORRECTIONS SHOULD BE RECORDED TO TENTH OF FOOT.

CORRECTIONS TO DORSEY FATHOMETER

SHEET 43, 1936

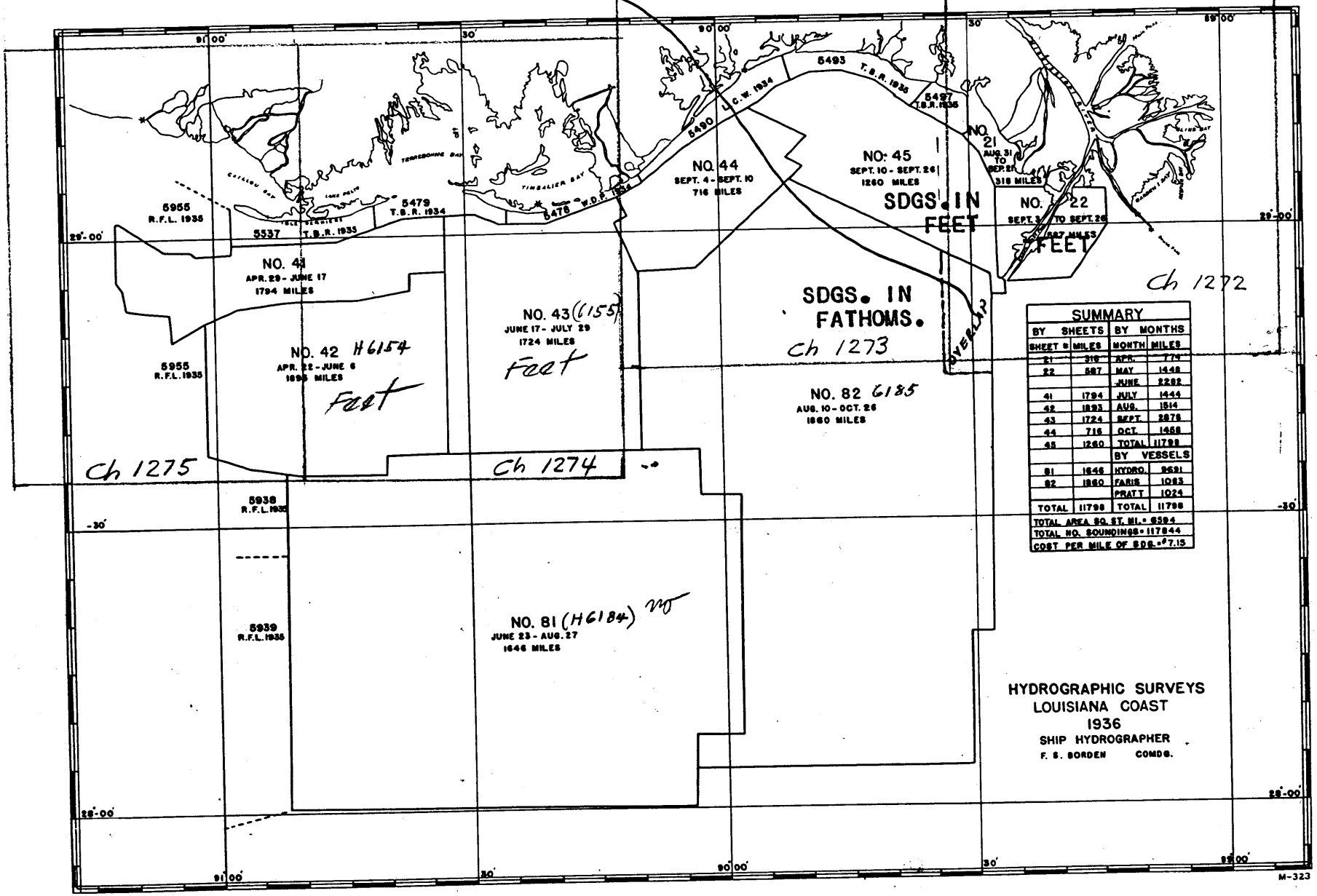
COAST OF LOUISIANA

U.S. COAST AND GEODETIC SURVEY

SHIP HYDROGRAPHER

F. S. BORDEN COMD'G.

OVERLAP OF 1:80000 SHEET ON WHICH SOUNDINGS ARE PLOTTED IN FATHOMS WITH CHART NO. 1272 ON WHICH SOUNDINGS ARE PLOTTED IN FEET



SUMMARY			
BY SHEETS		BY MONTHS	
SHEET #	MILES	MONTH	MILES
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44	716	OCT.	1468
45	1260	TOTAL	11798
		BY VESSELS	
81	1646	HYDRO.	9691
82	1860	FARIS	1083
		PRATT	1024
TOTAL	11798	TOTAL	11798
TOTAL AREA SQ. ST. MI. = 6394			
TOTAL NO. SOUNDINGS = 117844			
COST PER MILE OF SDG. = $7.15			

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC
SHEETS NOS. 81 and 82
H-6184 H-6185

AUTHORITY

These surveys were made in accordance with the Director's Instructions dated March 23, 1936, for Project No. HT 210 and Supplemental Instructions dated May 20, 1936, authorizing reduction in the number of cross lines.

GENERAL STATEMENT

These sheets embody all the offshore R.A.R. hydrography accomplished during the season 1936. A sketch is appended showing the limits of the sheets and their junction with previous surveys as well as surveys of this season.

SURVEY METHODS

This work was essentially controlled by R.A.R. methods, supplemented by gyro bearings, and dead reckoning. Several three point visual fixes on hydrographic buoys and single angle and bearing fixes were used.

The R.A.R. work was accomplished by using the Launches FARIS and PRATT as hydrophone stations and the recently developed SONO-RADIO buoys. A complete report by Dr. C. G. McIlwraith in Field Engineers Bulletin No. 10 on the SONO-RADIO buoy describes this later method. Considering the short time that this type of sonic equipment has been in use, the results were satisfactory. It was noted that in most cases when bombing close to the SONO-RADIO buoys, the distances fell short of the dead reckoning distance which would indicate that a greater velocity of sound occurs in these cases. At times it is probably forced through the soft mud which overlays the bottom in this region.

The relationship of the launch hydrophone to the buoy anchor was taken into consideration in plotting bomb distances from the launch stations except in those cases where the launches were tied up directly to the buoy. This data was recorded on Form No. 721 and has been submitted in a separate folder with the sheets. In the case of the SONO-BUOYS, bomb distances were plotted directly from the station center as no practical value was available to apply for the lead of the buoy.

Velocities for these sheets were computed taking into consideration the mean depth along each bomb distance from the boat sheets. The bottom velocity for this mean depth was used. See special report, "Report on Temperatures and Salinities, Fathometer Corrections, and Velocities, Ship HYDROGRAPHER, Season 1936", for details. Library No. S 142

In plotting the smooth sheets, a divergence from usual practice was made. Due to the fact that numerous strays and bad returns were received, both from the launch hydrophone stations and the SONO-RADIO buoys, it was decided to smooth plot the work in sections on aluminum mounted sheets and then transfer the resulting positions to a regular smooth sheet projection. This system helped to minimize distortion and also gave the plotter an opportunity to plot all of the voluminous data so that it could be evaluated properly and the doubtful portion could be rejected. All R.A.R. smooth plotting was done in this manner and it is believed that the final location of all positions as shown on the smooth sheets are well within the required accuracy and are the result of a careful study of all available data. The aluminum mounted sheets, on which the initial smooth plotting was done, were retained on the ship as it was thought unnecessary to submit them. The transfer of the positions from the aluminum sheets to the smooth sheet was made by two

See Rev. par. 1c of H-6185 for adq'l comments.

officers working together which gave a check on the work. A sub-plan is included on Sheet #82 H-6185 embodying a 40,000 scale development of the subterranean knoll in the vicinity of "FOG". Lat. 28° 38' Long 89° 33'

All control for these sheets is included in the special report on control for this project titled, "Hydrographic Control, Ship HYDROGRAPHER, Season 1936". A sketch is appended showing the general location of the control. A list of all signals and their geographic positions which were used on these sheets is appended. Signals used on Sheet No. 81 H-6184 are underlined in red and those used on Sheet No. 82 H-6185 in blue.

Library No. S-1421

As it was thought that some of the work (Lines 70-86 D, 27-87 P, 43-58 Q and 1-18 R) done on Sheet No. 82 H-6185 in the vicinity of "YIP" Lat. 28° 33' Long. 90° 02' would be shown to better advantage on Sheet No. 81, H-6184 it was transferred to the latter and is shown in blue day letters. This work was also transferred in the sounding records with sufficient notes to show the changes made. Lat. 28° 49' Long 89° 43' Signal "EAR" (one of the stations used in plotting this portion of the work) does not come on Smooth Sheet No. 81 H-6184. It was deemed not necessary to extend the length of this sheet to include "EAR" considering the method of plotting the final smooth sheet. This signal is shown on Smooth Sheet No. 82 H-6185. Blue day letters were used on the north-east corner of Sheet No. 82 H-6185 because of the repetition of day letters. This work was originally planned for a 40,000 inshore sheet.

Bottom specimens were obtained in the usual manner when stops were made for fathometer comparisons and at each control buoy when it was picked up. Numerous bottom characteristics were obtained from the serial temperature data forms and plotted on the sheets, thus greatly amplifying this information. These data can be found included in the special report on temperatures and salinities. Library No. S 1421 (1936)

None found for southern portions of H-6184 & H-6185. H.W.M.

All soundings on these sheets were taken with either the Dorsey

or #312 type fathometers and corrections made to these soundings as outlined in the special report, "Report on Temperatures and Salinities, Fathometer Corrections, and Velocities, Ship HYDROGRAPHER, Season 1936" and the report for Hydrographic Sheet No. 6155. A special report on corrections to the Dorsey Fathometer can be found in Field Engineer's Bulletin No. 10. A plate showing the corrections to the Dorsey Fathometer is appended. Soundings were reduced for tides as per appended tidal note. On Sheet H-6185 No. 82 soundings were plotted in fathoms and sixths from north of Lat. 28° 46' and in whole fathoms below this line. This was done in accordance with Director's letter dated March 6, 1937, ref. 22/MEK 1995 HY 4. All soundings on Sheet H-6184 No. 81 are in whole fathoms except a few that are under 11 fathoms. Letter attached to this D.R.

DISCREPANCIES (See Approval Sheet for partial explanation of discrepancies)

Note: Field recommendations accepted except as noted. HWM.

SHEET NO. 81 H-6184

The 50 fathom curve at Lat. 28° 10', Long. 90° 33' seems to be slightly in error. The soundings from position 7 - 9Q seem to be too shoal. As evidenced by several misses in the sounding record, it appears the fathometer was not working properly at this time. Soundings from 8Q to 9Q inclusive could well be rejected. S'd'g's retained. Note par. 8a in Rep. HWM.

Although the Dorsey 55 fathom sounding two minutes after position 86R looks in error, it is believed to exist. This line was run for the purpose of investigating the 62 and 63 fathom soundings near position 63R. Unfortunately both the fathometer and R.A.R. distances were somewhat doubtful at this time and the area could not be developed as desired. and a series of "misses" S'd'g accepted H.W.M. found 41 when plotted on H-6546 Lat. 28°05.4 Long. 90°41.4

The soundings from 12S until two minutes after 14S are questionable. Fathometer was not functioning properly, and they should be rejected. vary 2 fms deeper and (one "miss" noted in the records, pos. 13-14S) Rejected Lat. 28°23.5 Long. 90°18.7

The sounding 121 fathoms two minutes after position 59T looks too deep and has been rejected. 10 fms Lat. 28°04.7, Long. 90°25.4 OK

The soundings from 8 minutes after 62T until 7 minutes after 63T are evidently 10 to 20 fms. too deep and have been rejected. Fathometer (312 type) was not operating well. Lat. 28°02.4' Long. 90°24.8'

The soundings from 60 to 62V were questioned as being too shoal (approx. 20 fms.) when taken. Only those that looked consistent with adjoining soundings were plotted. Lat. 28°28.4' Long. 89°56.8'

Soundings 161 and 157 between positions 55 and 56Q (blue day letters) are about 12 fms. too deep and are questioned. Rejection is recommended. Lat. 28°33.4' Long. 89°57.0' Rejected

The 57 fathom Dorsey sounding between 7 and 8R (blue day letters) appears about 25 fms too shoal and is questioned. Rejection is recommended. Lat. 28°36.0' Long. 89°59.7' adg Accepted. See Rev. par. 4

All Dorsey soundings from positions 39W until 2 minutes after position 43W are as much as 40-45 fms. too shoal and have been rejected. Lat. 28°30.0' Long. 89°56.0'

Several other individual soundings have been rejected where a careful examination of conditions warranted it.

Several gyro bearings were rejected or questioned during the plotting. These were probably taken when the ship was yawing or taken at an impractical distance from the object sighted.

SHEET NO. 82 H-6185

The Dorsey soundings from Pos. 67 to 74F appear consistently 3 to 6 feet too shoal in comparison with those on surrounding lines. There is sufficient development here to permit elimination of these soundings. Rejection is recommended. Lat. 29°03' Long. 89°51'

The Dorsey soundings from 5 minutes after Pos. 64G to 69G have been rejected as the fathometer was reading 1 to 5 fms. too deep -- Another line (L day) was run purposely to check against these soundings. Lat. 28°42' Long. 89°47'

The Dorsey soundings from 1 minute after Pos. 15H to 17H have been rejected as being 1 to 4 fms. too deep. Lat. 28°41' Long. 89°44'

The Dorsey soundings from 21 to 23H appear 1 to 10 feet too shoal in view of the depths on adjacent lines. Lat. 28°49' Long. 89°43'

The soundings 22 and 23L are 8 to 10 fms too deep and have been rejected. Lat. 28°37' Long. 89°37'

Soundings from 23 to 25L (using Dorsey Fathometer) appear 1 to 5 fms. too deep. Retained. Appear to be borne out by other deeper depths to southward.

The crossing at 45L and 66 to 67N (#312) is not in very good agreement. The soundings appear correct. The position of the lines may be out in relation to each other enough to account for the poor crossing. #312 S.R.L. Replotting of line 43-51L and 65-69N using different azimuths and other data as log and course eliminated this discrepancy. Lat. 28°33' Long. 89°45'

The Dorsey soundings from 5 minutes after Pos. 9N to 3 minutes after 10N are 2 to 4 fms too deep as evidenced by surrounding soundings and have been rejected. Lat. 28°40' Long. 89°34'

The Dorsey soundings from 4 minutes after 34N through 36N have been rejected as being 2 to 7 fms too deep as evidenced by surrounding soundings. Lat. 28°41', Long. 89°51'

The 126 fathom #312 F.R.L. sounding 1 minute before 48N has been rejected as well as the next four soundings between 48 and 49N which were obtained after a series of misses and are 10 fms too deep. Lat. 28°40', Long. 89°50'

Several other individual soundings have been rejected after a careful examination of surrounding depths. All rejections made are believed to be justified in view of the frequent unsatisfactory operation of the 312 Fathometer. See Rev. par. 1d of H-6185 for addl comments on this statement.

LEAST DEPTH ON SUBTERRANEAN KNOLLS H-6185

A least depth of 92 fathoms was found in Lat. 28° 27.8' Long. 89° 50.8'W at position 85 R. This depth was found while maneuvering in this vicinity to obtain a core speciman for Dr. Shepard.

A least depth of 102 fathoms was found in Lat. 28° 37.5'N Long. 89° 51.0'.

A least depth of 34 (2/6) fathoms was found in Lat. 28° 38.2' Long. 89° 33.4'. not plotted

COMPARISON WITH PREVIOUS SURVEYS

The junction with the 1935 season's work on the western limits of Sheet No. 81 H-6184 is in good agreement. The northern limits of Sheets No. 81 H-6184 and 82 H-6185 make an excellent junction with Sheets No. 42 H-6154, 43 H-6155, 44 H-6156, and 45 H-6157 of this present season's work. A comparison of existing soundings in the area covered by Sheet No. 81 H-6184 and 82 H-6185 is in fair agreement considering the method of control and the closeness of detail of the older surveys. See Reviews par. 6 for more detailed comparisons.

from Letter 160(1911)
" Bp. 13790(1911)

Two soundings, 30 and 31 fathoms, as shown on Chart No. 1116 in Lat. 28° 10', Long. 90° 34', appear too shoal in comparison with the new survey. No indication was found of the 10 fathom spot shown in Lat. 28° 31', Long. 90° 30' on Chart No. 1116. Considerable difference in depth was noted in several places in comparing Sheet No. 82 with Chart No. 1116

H-6184 H-6184 H-6185

See Rev., par. 8a of H-6184 for discussion of these sdgs.

The following cases were particularly noted:

ITEM No.	Position Lat.	Long.	Charted depth Chart No. 1116	Comparative depth Sheet No. 82 H-6185	Authority:
1.	29° 01.3'	89° 42.0'	12 fms.	21 fms.	Not known. See Rev. Par. 8a
2.	29 02.0	89 44.0	13	20	
3.	29 02.3	89 52.2	25	16	
4.	28 59.2	89 40.8	19	25	
5.	28 55.0	89 42.6	18	31	H-599(1857-58)
6.	28 50.6	89 44.7	23	33	H-1350(1875-77)
7.	28 49.1	90 01.8	12	21	Not known. See Rev. Par. 8a
8.	28 44.4	89 48.0	28	45	
9.	28 20.7	89 40.0	268	375	H-1351a(1875-76)

Respectfully submitted,

Ross A. Gilmore

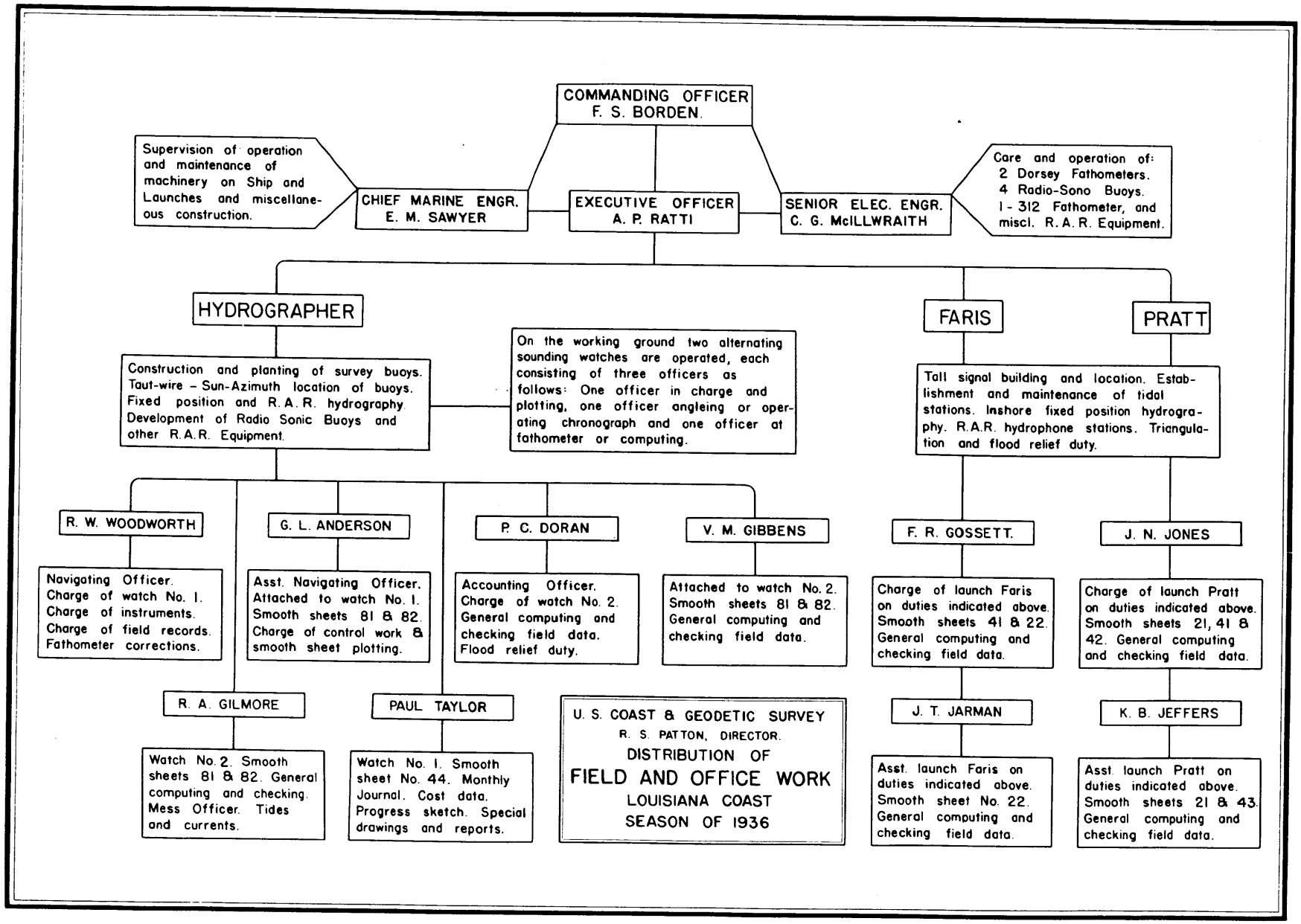
Ross A. Gilmore, Jr. H. & G. Eng.,
U. S. Coast and Geodetic Survey.

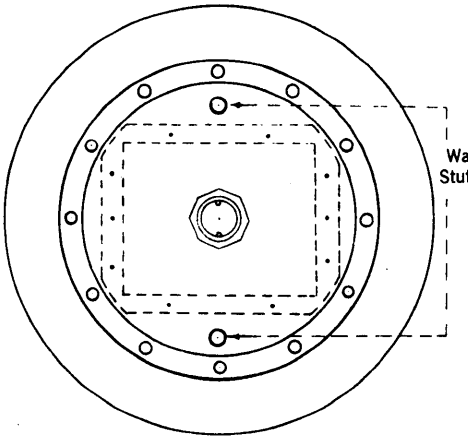
STATISTICS FOR SHEET NO. 81

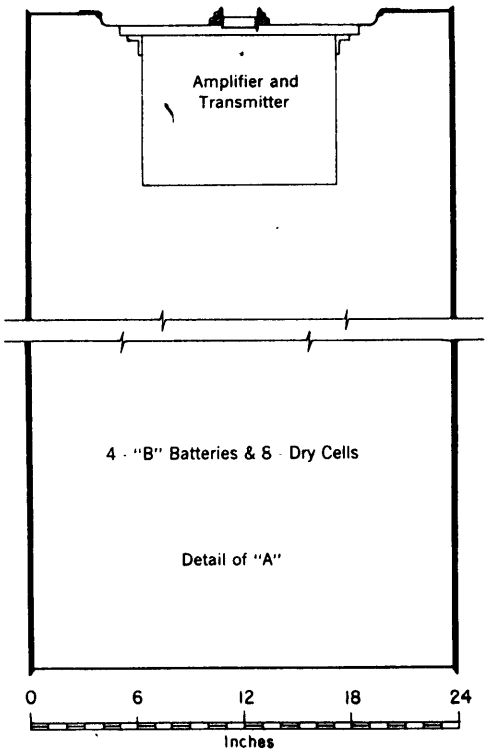
Number of Volumes of Soundings,	6
Number of Volumes of Bomb Records,	3
Number of Positions	1489
Number of Soundings,	9466
Statute Miles of Sounding Lines,	1796

STATISTICS FOR SHEET NO. 82

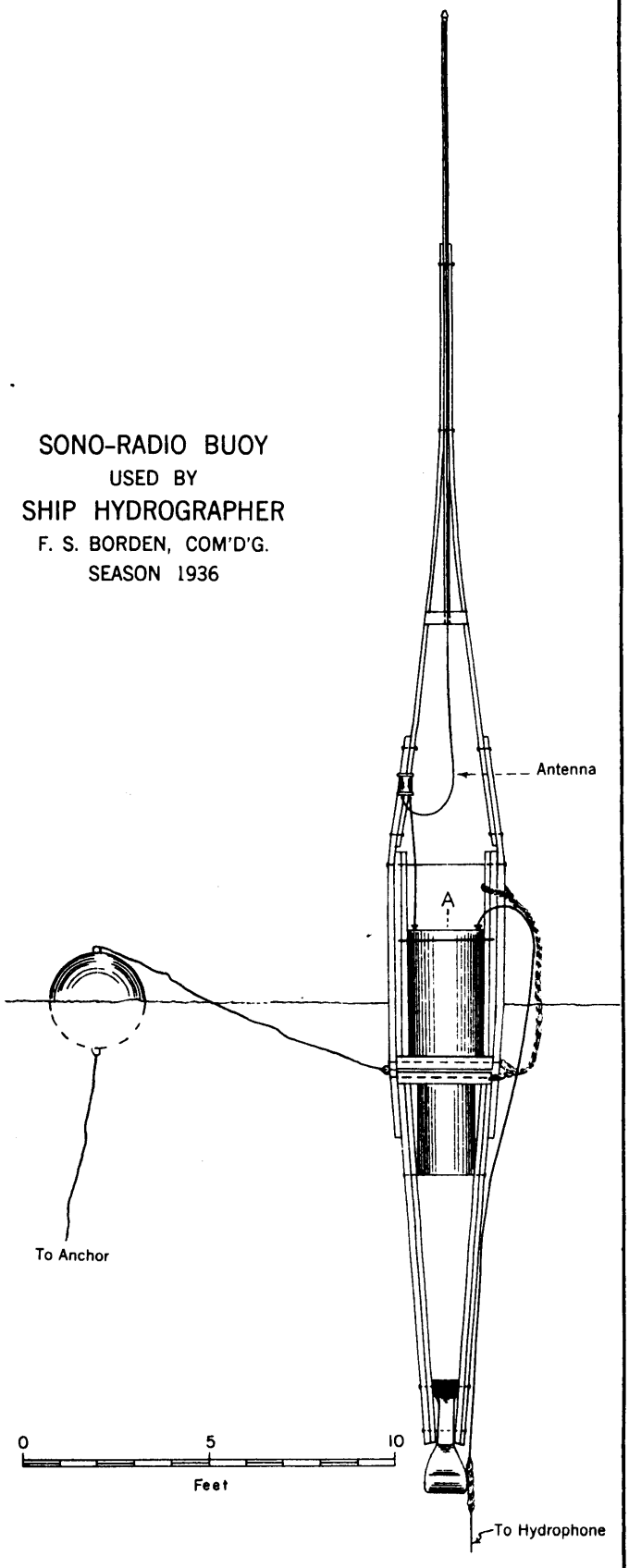
Number of Volumes of Soundings,	6
Number of Volumes of Bomb Records,	4
Number of Positions,	1129
Number of Soundings,	8326
Statute Miles of Sounding Lines,	1578


COMMANDING OFFICER
F. S. BORDEN.
Supervision of operation and maintenance of machinery on Ship and Launches and miscellaneous construction.
CHIEF MARINE ENGR.
E. M. SAWYER
EXECUTIVE OFFICER
A. P. RATTI
SENIOR ELEC. ENGR.
C. G. McILLWRAITH
Care and operation of:
2 Dorsey Fathometers.
4 Radio-Sono Buoys.
1 - 312 Fathometer, and miscl. R. A. R. Equipment.
HYDROGRAPHER
FARIS
PRATT
Construction and planting of survey buoys. Taut-wire - Sun-Azimuth location of buoys. Fixed position and R. A. R. hydrography. Development of Radio Sonic Buoys and other R.A.R. Equipment.
On the working ground two alternating sounding watches are operated, each consisting of three officers as follows: One officer in charge and plotting, one officer angleing or operating chronograph and one officer at fathometer or computing.
Tall signal building and location. Establishment and maintenance of tidal stations. Inshore fixed position hydrography. R.A.R. hydrophone stations. Triangulation and flood relief duty.
R. W. WOODWORTH
G. L. ANDERSON
P. C. DORAN
V. M. GIBBENS
F. R. GOSSETT.
J. N. JONES
Navigating Officer. Charge of watch No. 1. Charge of instruments. Charge of field records. Fathometer corrections.
Asst. Navigating Officer. Attached to watch No. 1. Smooth sheets 81 & 82. Charge of control work & smooth sheet plotting.
Accounting Officer. Charge of watch No. 2. General computing and checking field data. Flood relief duty.
Attached to watch No. 2. Smooth sheets 81 & 82. General computing and checking field data.
Charge of launch Faris on duties indicated above. Smooth sheets 41 & 22. General computing and checking field data.
Charge of launch Pratt on duties indicated above. Smooth sheets 21, 41 & 42. General computing and checking field data.
R. A. GILMORE
PAUL TAYLOR
J. T. JARMAN
K. B. JEFFERS
Watch No. 2. Smooth sheets 81 & 82. General computing and checking. Mess Officer. Tides and currents.
Watch No. 1. Smooth sheet No. 44. Monthly Journal. Cost data. Progress sketch. Special drawings and reports.
Asst. launch Faris on duties indicated above. Smooth sheet No. 22. General computing and checking field data.
Asst. launch Pratt on duties indicated above. Smooth sheets 21 & 43. General computing and checking field data.
U. S. COAST & GEODETIC SURVEY
R. S. PATTON, DIRECTOR.
DISTRIBUTION OF
FIELD AND OFFICE WORK
LOUISIANA COAST
SEASON OF 1936





SONO-RADIO BUOY
USED BY
SHIP HYDROGRAPHER
F. S. BORDEN, COM'D'G.
SEASON 1936



Bill of Material

1 - 65 gal. 16 gauge galvanized steel drum.
1 - 35 gal. 16 gauge galvanized steel drum.
1 - 65 gal. 10 gauge galvanized steel drum, spherical.
Counterweight - 1 car coupler - approx. wt. 200 lbs.
Frame: Bottom section 4 x 4 white pine.
Upper section 1 x 4 .
Anchor: 4 car couplers - approx. wt. 800 lbs.
Cable: wire rope - galv. plow steel 6 x 24.

In my book there are included a number of tables, drawings, examples. In this way it suggests American direction.

All the tables referring to dimensions of the earth are recalculated according to the Bessel ellipsoid and given in metric measurements.

Part of the tables have been borrowed in their entirety from the books of Beregova, the Geodetic Survey, and others; part of them have been recalculated and amplified. Some tables are entirely new."

ASSOCIATION OF FIELD ENGINEERS
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

September 29, 1936.

Lieutenant Commander Frank S. Borden,
U. S. Coast and Geodetic Survey
Ship HYDROGRAPHER,
New Orleans, Louisiana.

Dear Commander Borden:

Upon your detachment from this office for sea duty I want to express my appreciation and that of the Executive Committee of the Association of Field Engineers of the Coast and Geodetic Survey for your excellent work in the development of the FIELD ENGINEERS BULLETIN during the period that you served in this office as Chief, Section of Field Work.

This unofficial publication, sponsored by our Association, has been well received throughout the technical world and we all feel that its evolution from a few mimeographed pages to its present format has been due almost wholly to your vision and efficient editorship.

Sincerely,

G. T. Rude

President,
Association of Field Engineers,
U. S. Coast and Geodetic Survey

THE SONO-RADIO BUOY

Charles G. McIlwraith
Senior Electrical Engineer
U. S. Coast and Geodetic Survey

Foreword by Commanding Officer of Ship HYDROGRAPHER:

Radio Acoustic Ranging as a method of determining the position of a surveying vessel was first used successfully by the U. S. Coast and Geodetic Survey on the Pacific Coast of the United States in 1924. R. A. R. stations on the west coast have always been shore stations. When its use was attempted on the east coast difficulties were encountered in obtaining results with shore stations and in order to overcome these difficulties mobile offshore stations were used by having the R. A. R. equipment on surveying vessels or large launches anchored well offshore. This method brought satisfactory results but, of course, at an increased cost.

The advantage of automatic radio buoys to replace the station ships became apparent in 1931 during the first season's survey on Georges Bank when Radio Acoustic Ranging with floating hydrophone stations was successfully accomplished, as had been predicted from results of experiments made by the LYDONIA and Launch ECHO in September, 1929. Actual work on the circuits for the buoy was started in the winter of 1932 and 33 during which it was demonstrated that dry batteries could be used to furnish the power. An experimental unit operated for 57 days without change of batteries. This work was stopped for the development of the Dorsey Fathometer but resumed again in July, 1935 and continued intensively during the fall and winter, culminating in the first official report of operation at sea from the LYDONIA on June 13, 1936.

Several automatic buoys were made available to the party on the HYDROGRAPHER during the 1936 field season. These were tested thoroughly and used successfully on the Louisiana Coast Project. The development proceeded so satisfactorily that by the latter part of the season it was possible to dispense with one of the station launches. Only one launch will be needed during the 1937 season. While there are a few minor difficulties to be overcome I believe that after next season station launches can be replaced entirely by Sono-Radio Buoys for the off-shore surveys on the Gulf Coast. The advantages, in decreasing the risk to personnel on the launches and in reducing the cost of off-shore surveys are apparent.

The development of the Sono-Radio Buoy was in charge of Dr. Herbert Grove Dorsey assisted by Mr. Thomas J. Hickley, Assistant Electrical Engineer, and Dr. C. G. McIlwraith, Senior Electrical Engineer. The results of one of the tests made on the accuracy of Sono-Radio Buoys are given at the end of the article by Dr. McIlwraith.

F. S. Borden, Commanding Ship HYDROGRAPHER.

A Sono-Radio Buoy (abbreviated "SRB") consists of a floating structure which supports the RAR equipment. The buoy itself is similar to the ordinary hydrographic buoy except that it is somewhat larger and of heavier construction. The electrical gear, designed and built in the Washington Office, is contained in a 65 gallon steel drum with a removable head. This drum is a standard type used for shipping semi-fluid substances, and costs only $5.00 complete. The head, pressed from the same material as the drum, is secured with 12

1/4 inch cap screws and is made water-tight by a tubular rubber gasket. A 35 gallon drum is secured in the frame below the larger drum to provide additional buoyancy. The frame is made of 2" x 4" lumber, doubled, and extends 14 feet below the water line. A superstructure of 1" x 4" lumber is carried to a height of 23 feet above the water line. A large car coupler is bolted to the bottom of the frame as a counter weight.

The R. A. R. equipment of the buoy consists of a hydrophone, amplifier, radio transmitter, antenna, and the necessary batteries.

The hydrophone is one designed and built in the office. It uses a small Baldwin unit and the outer diaphragm is sufficiently heavy to obviate the use of internal air pressure. It is suspended at a depth of 10 fathoms and is connected to the amplifier by Tyrex cable.

The amplifier uses two type 32 and one type 30 tubes. Its voltage gain is between 95 and 100 decibels and it is tuned so that the gain is a maximum at a frequency of 100 cycles per second and falls off rapidly with increasing frequency, being only 47 decibels at 500 cycles per second. This is quite different from the R. A. R. amplifier ordinarily used, which has rather uniform gain from 200 to 1500 cycles per second.

The transmitter consists of a type 33 tube in a crystal controlled circuit. A type 30 tube, used as a keying tube, controls the operation of the transmitter by varying the voltage applied to the screen grid of the 33 tube. The type 30 keying tube takes the place of the thyratron or relay generally used. It permits the type 33 tube to oscillate only so long as the output of the voltage amplifier is above a definite level, determined by the bias on the keying tube. Hence, the SRB gives a return as long as the sound of the bomb at the hydrophone. This is rather a nuisance when two SRB's are at about the same distance. A change in the keying circuit can be made which will make the return uniformly short for any duration of sound, and such a change may be desirable in the future.

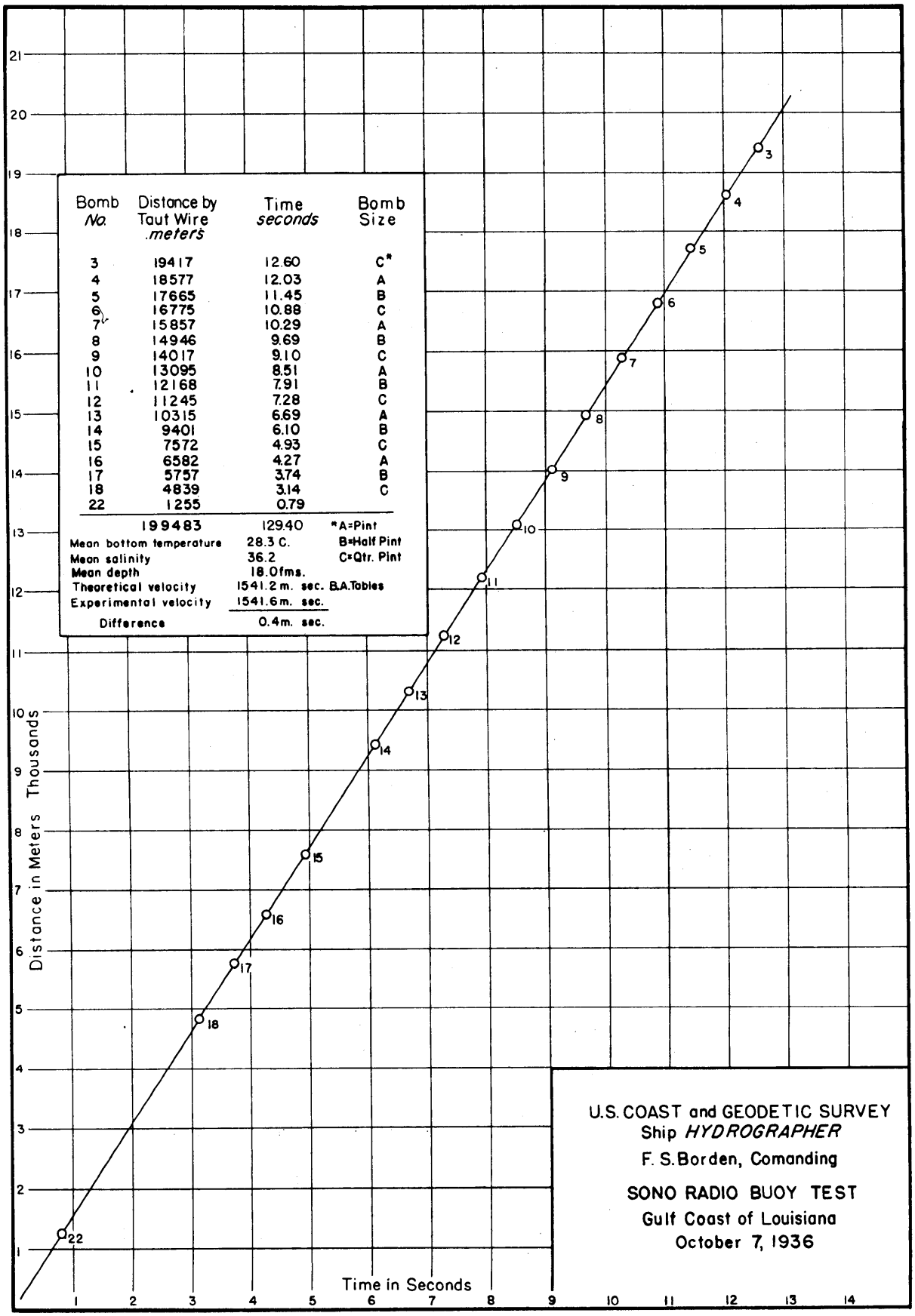
The antenna is a 19 foot piece of 3/8" copper tube, supported on the superstructure by small stand-off insulators. Its lower end is 3 feet above the water line, and connects to a tuning unit enclosed in a shield of pipe fittings. The antenna is fed by a low impedance transmission line (Tyrex cable) from the transmitter. This arrangement is necessary because waves, washing over the top of the drum, would detune an antenna fed directly from the transmitter.

The amplifier and transmitter are enclosed in a bakelite box 11" x 9" x 8" which is bolted to the under side of the head of the drum. An opening, about 2" in diameter, closed by a screw plug, gives access to the controls, which permits the apparatus to be turned on or off, or tuned, without removing the head of the drum.

The batteries used include a special 3 volt dry battery for filaments, four 45 volt heavy duty B batteries, four dry cells, and two 22-1/2 volt C batteries. The C batteries are contained in the bakelite box, the others are packed in the bottom of the drum. A can of calcium chloride is used to absorb excess moisture.

The complete buoy weighs about 500 pounds, and while its great length makes it rather clumsy, it has been handled with the ship's gear without difficulty.

The hydrophone is suspended by Manila line directly under the SRB. No difficulty, while setting out the SRB, has been encountered keeping the hydrophone from fouling the moorings, and in no case has a hydrophone ever fouled after the SRB was planted.


Bomb No. | Distance by Taut Wire meters | Time seconds | Bomb Size
3 | 19417 | 12.60 | C*
4 | 18577 | 12.03 | A
5 | 17665 | 11.45 | B
6 | 16775 | 10.88 | C
7 | 15857 | 10.29 | A
8 | 14946 | 9.69 | B
9 | 14017 | 9.10 | C
10 | 13095 | 8.51 | A
11 | 12168 | 7.91 | B
12 | 11245 | 7.28 | C
13 | 10315 | 6.69 | A
14 | 9401 | 6.10 | B
15 | 7572 | 4.93 | C
16 | 6582 | 4.27 | A
17 | 5757 | 3.74 | B
18 | 4839 | 3.14 | C
22 | 1255 | 0.79
199483 | 129.40
*A=Pint B=Half Pint C=Qtr. Pint
Mean bottom temperature 28.3 C.
Mean salinity 36.2
Mean depth 18.0fms.
Theoretical velocity 1541.2 m. sec. B.A.Tables
Experimental velocity 1541.6 m. sec.
Difference 0.4m. sec.
Distance in Meters Thousands
Time in Seconds
U.S. COAST and GEODETIC SURVEY
Ship HYDROGRAPHER
F. S. Borden, Comanding
SONO RADIO BUOY TEST
Gulf Coast of Louisiana
October 7, 1936

The anchor used was made of four car couplers secured together. (Note: Scrap car couplers are used for anchor and counterweight, the average weight of a coupler being about 200 pounds). The anchor line was made from both chain and wire rope. The weight of the moorings was carried by a relieving buoy and the SRB floated at the end of a four fathom bridle. Some ingenuity was required to make the connection to the relieving buoy quiet since in the rattling of the moorings was discovered a fertile source of stray returns. No attempt was made to use more than one anchor.

Twp SRB's were anchored in depths of 60 fathoms, one with 120 and the other with 140 fathoms of chain and wire rope. In these cases two relieving buoys were used with each. The second buoy was not necessary, however, for the support of any of the weight of the moorings, but was only added as a safety precaution. The two SRB's in 60 fathoms were picked up without difficulty during moderately rough weather.

Four Sono-Radio Buoys, numbers 7 to 10 inclusive, were used during the 1936 season. One of these, number 8, was lost in a storm after but four days use. The others have survived and have given very satisfactory service. The three were used for a total of 108 buoy-days, number 7 leading with 53 days. One set of batteries was in use a total of 45 days, the others about 30 days each. In no case did the B batteries show serious loss of voltage, but in the buoys that were in use 45 days it was evident that the filament batteries were approaching the end of their useful life.

In general, it appears that at the same time and place, an SRB will give satisfactory returns from a distance about 75% of that which may be expected from a manned RAR station. This difference is not surprising, since the SRB is on all the time, and must have its sensitivity low enough that it will not be actuated by the average water noises; while the operator of an RAR station can adjust the sensitivity to the noise conditions of the moment. The longest distance from which returns were received from an SRB was 41.18 seconds (equal to about 34.2 nautical miles) with a quart bomb.

As for reliability, during this season at least, the launch RAR stations had more technical troubles than did the SRB's. Most of the difficulties with the SRB's were due to noisy tubes or imperfectly soldered connections. It must be admitted, however, that a launch RAR station which is having trouble is silent, while the commonest ailment of an SRB is the emission of a steady series of chirps, which can interfere very seriously with returns from other stations. If that occurs, the offending SRB can only be silenced by personal attention from the survey ship.

Measurements made in the office show that with the keying circuit used on these SRB's there is a constant lag of 0.01 second in the return. With other keying circuits the lag may be appreciable.

It is occasionally necessary to moor an SRB in a position where there is danger of its being struck by passing ships. It is suspected that such an accident may have happened to the one which was lost. To diminish that risk, experiments were made with a light on the superstructure. A small 6 volt light in a Fresnel lens was mounted on the top of the antenna frame and lighted from dry cells within the drum. A relay was arranged so as to turn on the light whenever the transmitter was actuated. Since the noise of the propellor of any ship within about a mile will actuate the SRB, an almost steady light will be shown from the buoy which should prevent the ship's collision with it. Two SRB's were equipped with such lights. It was necessary to install choke coils in the wires to the light to avoid detuning the antenna. Type B1 telephone relays were used and they worked reasonably well.

It is difficult to estimate the money saving resulting from the use of SRB's. With no real data on the cost of the units, it is estimated that the value of material and labor in each buoy would not exceed $150. A set of batteries costs about $15.00 and will probably last all season.

Against these low costs must be set the fact that an SRB can not be ordered from station to station as can a launch but must be carried to its station by an otherwise unproductive trip made by the survey ship.

Before the present season and the development of the automatic SRB, station launches have been used as R. A. R. stations and since these launches must be large enough to be anchored on exposed offshore stations, it seems reasonably certain that statistics will show that the use of SRB's substantially reduce the cost of R. A. R. operations with no sacrifice in accuracy of control.

SONO-RADIO BUOY

George D. Cowie, H. and G. Engineer
U. S. Coast and Geodetic Survey

This new type of buoy was first tested in actual field work in 1936 on the Atlantic and Gulf Coasts. It was hoped that their performance would be so successful that sono-radio buoys could replace station ships for R. A. R. work at a considerable saving in cost of operation, and would eliminate the necessity of such dangerous assignments for the smaller vessels of the service.

The buoy as now constructed on the Ship LYDONIA is similar to a two drum survey buoy, minus the target. The purpose of the lower drum is to furnish buoyancy only, the upper one containing the radio parts. An antenna coupler in a capped water-tight pipe is located on the buoy frame just above the drum and this is connected to an eighteen foot copper tube antenna mounted on insulators on the buoy upright. The same type of hydrophone used on the Atlantic Coast station ships was used with the buoy. It was mounted, however, on a triangular frame with rubber suspension and secured to the buoy anchor cable about 30 feet down from the buoy itself.

A counter weight of two car-couplers was necessary to keep the buoy upright. This increased the weight of the sono-radio buoy to approximately 750 pounds, about all that the LYDONIA's boom could safely handle. The buoy was anchored with the usual survey-buoy ground tackle.

The operation of the buoy is similar to the operation of a station ship. The bomb signal is picked up by the hydrophone, causing an electrical wave to be conducted to the audio amplifier, passing through a keying-tube and put on the air through a crystal-controlled transmitter tube. The power (about 5 watts) is supplied by dry batteries whose life is about 2½ months.

As the OCEANOGRAPHER and the LYDONIA were working in adjoining areas it was necessary that each ship use crystals of different frequencies in their sono-radio buoys to avoid interference. The frequency used by the LYDONIA was 4160 kilocycles.

Before the buoy is placed on station the sensitivity of the bomb amplifier is adjusted so that it will not be actuated by ordinary water noises. This degree of sensitivity is determined by experimentation with a buoy in the water and subsequently by electrical measurements.

The radio signal strength of the buoy is such that it can be recorded regularly by chronograph at distances of seventy-five miles.

During the 1936 field season in the approaches to New York Harbor the LYDONIA, using four sono-radio buoys, anchored them in 19 different locations. At no time however were more than three buoys in simultaneous operation. These buoys were anchored in depths of from 10 to 20 fathoms and were used to control R. A. R. work in the areas outside that which could be surveyed by visual fix control on a single line of survey buoys located approximately ten miles off shore.

The operation of the Sono-Radio buoys was fairly successful. A few buoys remained in operating condition for over a month without attention. A few others failed immediately after they were placed on station, due to leakage or tubes burning out. At no time did the LYDONIA attempt to get bomb returns for distances over fourteen miles, it being unnecessary for the work assigned. Results indicated however that quarter pint bombs could not be relied upon for results at distances greater than ten miles, but that at this distance quart bombs would generally give results. It is presumed that ridges and valleys in this reasonably shoal water cut down the range of bombs considerably. The OCEANOGRAPHER bombed successfully at distances of 22½ miles in greater depths of water, and received returns on ¼ pint bombs at distances up to 20 miles.

The accuracy of the distances obtained when using the Sono-Radio buoy was not all that could be desired. With the present type of buoy errors as great as 0.3 miles may be obtained when ¼ pint bombs are used at distances of ten miles. While sufficient tests have not been made to warrant positive statements regarding the probable errors which may be encountered our experience in 1936 indicated roughly the following results: ¼ pint bombs are generally satisfactory up to distances of 4 or 5 miles, ½ pint bombs up to distances of 7 to 8 miles, and quart bombs for distances up to at least 10 miles, with the probability that all these distances can be increased in water deeper than 20 fathoms, where there are no intervening shoals nor deep valleys. On a very few occasions when bombing close to the son-radio buoys there have been indications that velocities of sound as great as 1575 meters per second would have to exist to make the bomb distance check the dead reckoning position. (This may be due to the sound passing through the mud bottom for part of the distance, as was found by Commander Swainson.)

Where ¼ pint bombs have been used at distances of ten miles they have frequently given too long a distance. The explanation may be that there is a lag in the radio buoy apparatus when the received sound is weak. Even at shorter distances returns are frequently received which are found subsequently to be in error. This condition may be due to incorrect tape recording, interference by static, unaccountable lags, wrong velocity of sound, possibly an indirect sound wave path, bottom conditions, i.e. shoals, valleys, mud bottom, etc., hence it is necessary to plot the returns from several bombs in order to be reasonably certain which results can be relied upon and which must be rejected. The courses steered and speed of the ship must be considered in connection with the R. A. R. distances. This makes it difficult to decide promptly what course the ship is making good, and just when to change course to cover the working area economically.

The cost of the material used in the buoys is quite small. Omitting labor costs it is approximately $200. per buoy, with small operating costs. With such a small investment there is no great need to skimp on the number of sono-radio buoys to be used during a season. As they are almost as easily established on station as survey buoys, using them at distances of ten miles or more apart calls for only a small expenditure in time in placing and locating them. On the LYDONIA's project they

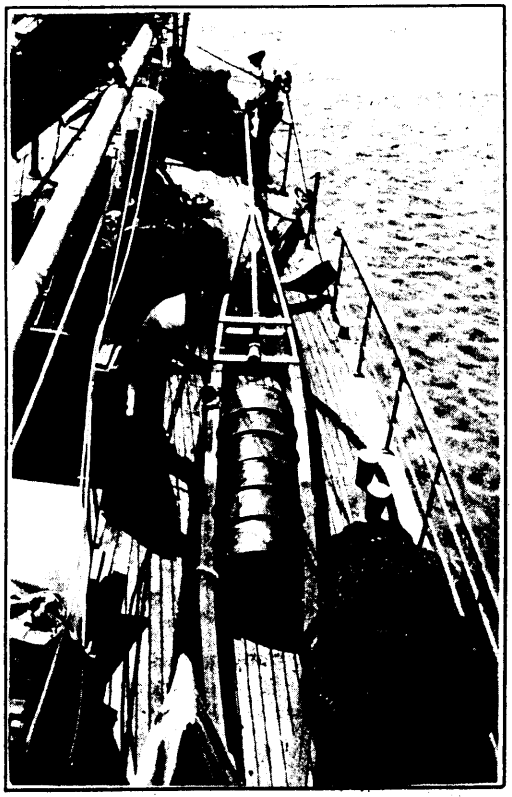
were generally anchored within 500 yards of a located survey buoy and tied into the control by a range-finder distance, or depression angle, and compass bearing.

Those planted ten miles further seaward were generally located by bombed distances from two other located sono-radio buoys. Experience showed that this method was not the best, or that only quart bombs should have been used. In one case an extra line of survey buoys was extended to join up with an off shore radio buoy which was then located by taut wire distance and sun azimuth. As suspected from the errors indicated by the bomb arcs from the three radio buoys it was found that the bombed location of this buoy was about 0.3 mile in error.

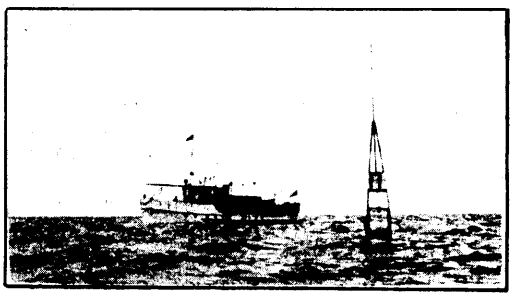
As a preliminary plan for control of an area such as surveyed by the LYDONIA this season it is suggested that a row of survey buoys be established parallel to the shore about ten miles off, sono-radio buoys at ten mile intervals along the line of buoys, and spur lines of survey buoys running to off-shore radio buoys (10 miles seaward) at intervals of 20 miles. As improvements in these buoys are made, or additional proof is given that quart or other sizes of bombs are accurate over longer distances the intervals between radio buoys may be gradually increased.

One of the principal advantages in the use of radio buoys is the fact that work in foggy or hazy weather, or at night if personnel is available, can be accomplished when no other field work can be done, and without the use of station ships and their personnel.

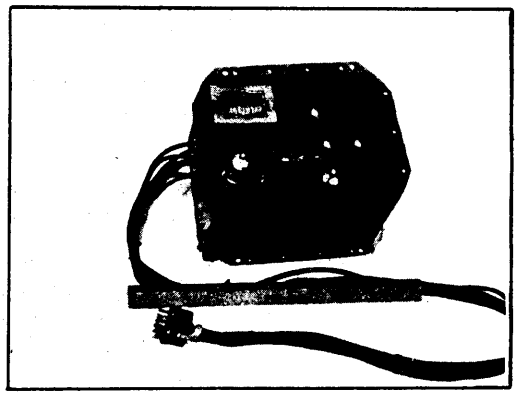
When sufficient proof of the reliability of these buoys has been obtained it may be possible to avoid the use of the usual survey buoys and survey that area immediately beyond shore control by R. A. R. buoy control.



Preparing a buoy on deck of LYDONIA



Motor Vessel GILBERT and Sono Radio Buoy



Radio and Audio Parts

SONO RADIO BUOY

SUBMARINE VA...EYS

Paul A. Smith, Jr. H. & ... En...
U. S. Coast and Geodetic ...

The past several years have seen a revival of int... subject of submarine valleys which occupied some space in ... literature over a generation ago. This has been due in ... the tireless efforts of Professor Francis P. Shepard of t... of Illinois, who for a number of years has devoted a ... time and energy to the subject and has published ma... also been due to the improved methods of hydrograp... U. S. Coast and Geodetic Survey and ot... which ... to map these features ... tely for ...

It is now about ... tion to the Hudson ... formed by subaerial ... for some years, and it ... Society ... and ... period ... through ... and ... along th... coasts of the United St... gave ... gists and oceanographe... Unfortunately, however, the majori... coast of the United States are at such ... and in such deep wa... that the hydrogr... last few years were inadequate to supp... tails, and the exact physiography coul... true even of the great Hudson submarin... to that of the present year seemed to ... that the inaccuracies in locations of the ear... interpretation which connected the part of the valle... the 50 fathom curve with the lower part of what ... accurate work of the present season, to be an ... marine valley.

Thus, with the passing of time ... developed so that it is now possibl... curate and thoro... at great dista... veys with their weal... of detail ... merous heretofore unk... details of those whi... example, the present ... marine valley is but one of a number of en...

(1) F. P. Shepard: Changes in Sea Level as th... Geol. Soc. Am. 48th An. Meeting (1935) p. ...

(2) Dana's Manual of Geo... ...

(3) J. W. Spencer: Submarine Va... Atlantic, Geol. Soc. Am. Bul. ... other papers).
A. ... Watch: Development of ... Coastal Plain, U. S. Geol. Sur...
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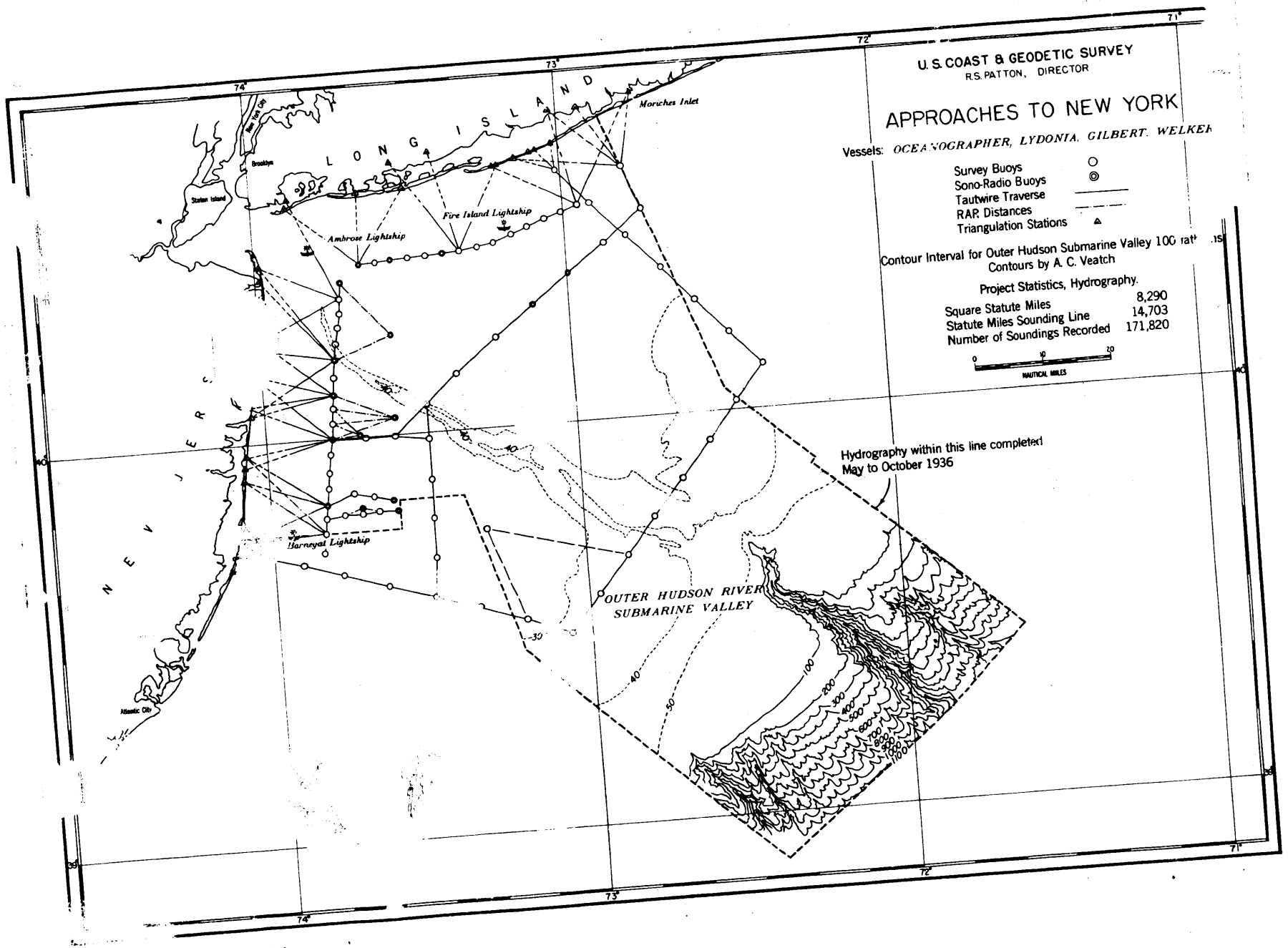
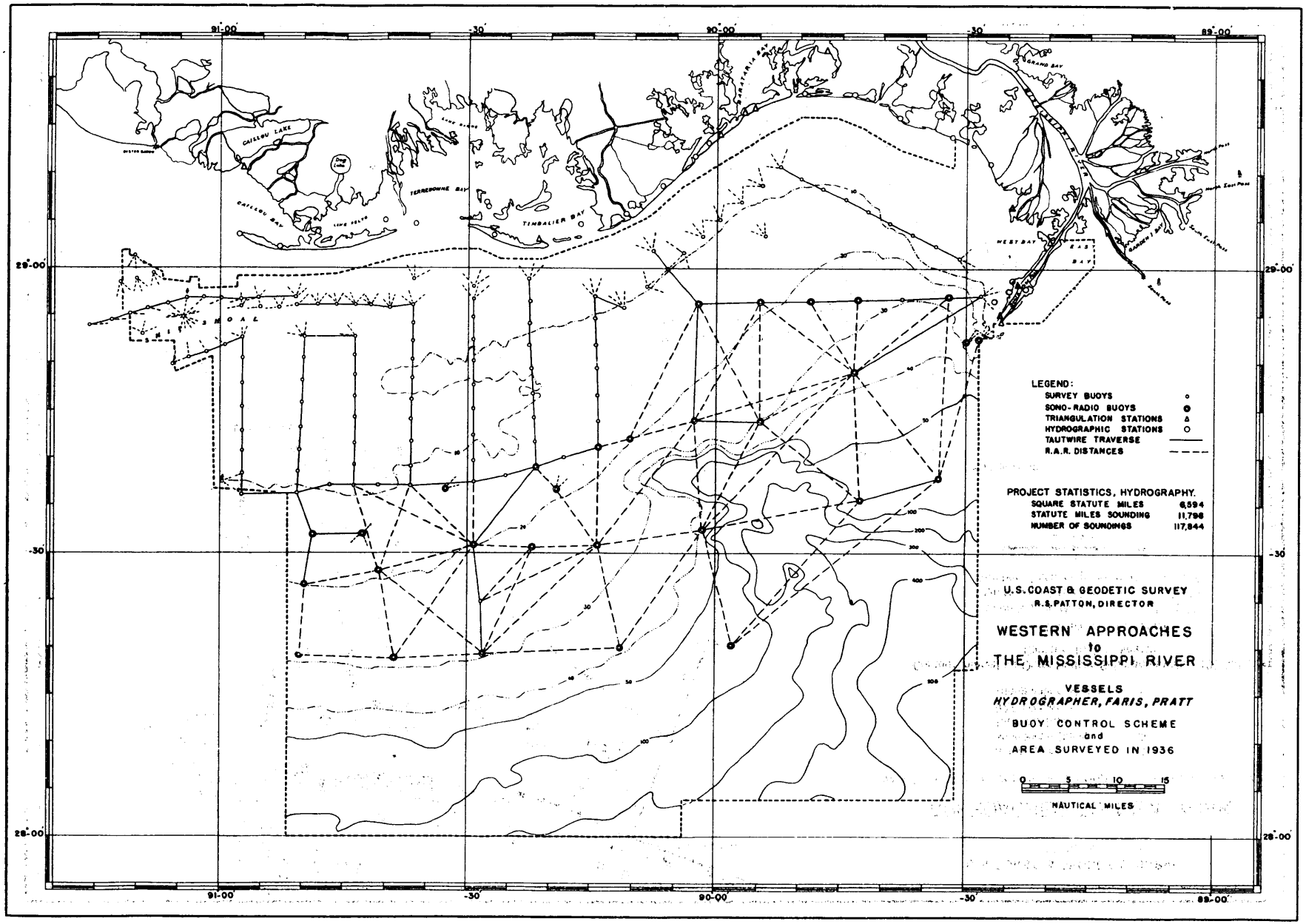
(5) A. Lindenkohl: Geology of the Sea Bottom ... U. S. ... Geod. Sur. Repo... Am. ... Ser. ... 1885, pp. 475-480.


U. S. COAST & GEODETIC SURVEY
R.S. PATTON, DIRECTOR
APPROACHES TO NEW YORK
Vessels: OCEANOGRAPHER, LYDONIA, GILBERT, WELKER
Survey Buoys
Sono-Radio Buoys
Tautwire Traverse
RAP. Distances
Triangulation Stations
Contour Interval for Outer Hudson Submarine Valley 100 fath
Contours by A. C. Veatch
Project Statistics, Hydrography.
Square Statute Miles 8,290
Statute Miles Sounding Line 14,703
Number of Soundings Recorded 171,820
0 10 20
NAUTICAL MILES
Hydrography within this line completed May to October 1936
LONG ISLAND
NEW JERSEY
Moriches Inlet
Brooklyn
Staten Island
Ambrose Lightship
Fire Island Lightship
Barnegat Lightship
Atlantic City
OUTER HUDSON RIVER SUBMARINE VALLEY
74°
73°
72°
71°
40°
39°
30
40
50
100
200
300
400
500
600
700
800
900
1000
1100


91-00
30
90-00
30
89-00
29-00
30
28-00
CALCASIEU LAKE
CALCASIEU BAY
TERREBONNE BAY
TIMBALIER BAY
WEST BAY
EAST BAY
SOUTH PASS
SOUTH EAST PASS
LEGEND:
SURVEY BUOYS
SONO-RADIO BUOYS
TRIANGULATION STATIONS
HYDROGRAPHIC STATIONS
TAUTWIRE TRAVERSE
R.A.R. DISTANCES
PROJECT STATISTICS, HYDROGRAPHY.
SQUARE STATUTE MILES 6,594
STATUTE MILES SOUNDING 11,796
NUMBER OF SOUNDINGS 117,844
U.S. COAST & GEODETIC SURVEY
R.S. PATTON, DIRECTOR
WESTERN APPROACHES
to
THE MISSISSIPPI RIVER
VESSELS
HYDROGRAPHER, FARIS, PRATT
BUOY CONTROL SCHEME
and
AREA SURVEYED IN 1936
0 5 10 15
NAUTICAL MILES

GEOGRAPHIC POSITIONS

SIGNALS USED ON HYDROGRAPHIC SHEETS

SHIP HYDROGRAPHER 1936

F. S. Borden, Comdg.

Signals underlined with red ink were used on Sheet No. 81 H-6184

Signals underlined with black ink were used on Sheet No. 82 H-6185

APPROVAL SHEET

Field Sheets Nos. 81 (H-6184) and 82 (H-6185), covered by this report, embrace all of the offshore work for the 1936 season. All R.A.R. control and all soundings taken with the "Deep Water" Fathometer (Type No. 312) are included on these two sheets.

An attempt to start R.A.R. controlled hydrography earlier in the season than usual proved conclusively that water conditions in the Gulf are not favorable for the horizontal transmission of sound until August. A considerable portion of the sheets however were surveyed before August with the result that only short distances could be obtained. Also some of the distances obtained were erroneous, due it is believed, to the sound wave traveling through the mud bottom at abnormally high velocities. Furthermore the Sono Radio Buoy was being tested and experimented with during this period and this caused some additional questionable distances.

Despite these discouraging factors I believe the positions of the sounding lines as finally adjusted and submitted have very little error. In fact I feel that the principal weakness of the sheets results from the use of the 312 Fathometer which often gave unsatisfactory depths. Many soundings have had to be rejected and many of the soundings in the deeper water (over 100 fathoms) are subject to errors of two or more fathoms due to the inability to keep the dial of this instrument rotating constantly at the correct speed. Furthermore, strays were troublesome and several sections of lines were rerun to check doubtful soundings particularly in depths between 100 and 140 fathoms. Had the No. 312 Fathometer soundings been more reliable less trouble would have been experienced in adjusting the positions of the lines. *

See Add'l comments in Rev. of H-6185

While many problems arose in surveying this area and in plotting the smooth sheets, the surveys, as adjusted and submitted, are substantially correct and are approved by me. Much conscientious effort has been devoted to the plotting and adjustment by Messrs. Anderson, Gibbens, Gossett and Gilmore, the major portion of the work having been performed by Mr. Gilmore who in my opinion has accomplished a hard job in a very creditable manner.

Frank S. Borden

Frank S. Borden

Chief of Party

* Note: Discrepancies listed in the D. R. (pages 4 and 5) and applying to H-6184 include Dorsey Fathometer work but are of minor importance.

H.W.M.

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

TRIANGULATION (previous to 1936)

Name	Latitude o ' m	Longitude o ' m	Page No. GP,La.
Barataria L.H. 1911	29 16 751.8	89 56 1142.2	76
Burrwood Iron Tank 1921	28 57 1801.6	89 22 1349.1	191
NE Front Range 1936 (His)	28 57 305.3	89 22 715.2	226
NE Rear Range 1936 (Speed,Rey)	28 58 1040.7	89 24 553.9	226
Old Tower 1921 (TO)			
Ship Shoal L.H. 1886	28 54 1585.8	91 04 433.0	163
Sugar,Central,Chimney,1927	29 16 1644.6	89 55 740.3	90
SW Pass L H 1904	28 58 546.6	89 25 843.9	115
SW Front Range 1936 (If)	28 56 695.5	89 25 235.1	225
SW Rear Range 1936(Trial,Ran)	28 57 1188.6	89 24 1410.6	225
Tank,Freeport Sulphur Co.1934	29 22 1389.9	89 46 1418.6	148
TIMBALIER L.H. 1928	29 02 1741.7	90 21 565.9	109

TRIANGULATION (1936)

Bent 1936	29 06 636.8	89 24 759.9	
Double 1936	29 02 1122.4	89 19 586.5	
Oil Derrick, Red Pass 1936	29 14 26.6	89 25 1041.4	
Oil Derrick,E.of S.Pass 1936	29 05 1756	89 09 1421	
Rain 1936	29 09 977.8	89 26 481.6	
SW Pass Entrance,West Jetty Rear Range Light 1936(Age)	28 54 1622.2	89 25 1490.8	
SW Pass Entrance,West Jetty Front Range Light 1936	28 54 1173.3	89 25 1491.7	
SW Pass East Jetty End Light and Fog Signal 1936(End)(East)	28 54 452.1	89 25 1307.2	
SW Pass Light "6" 1936	28 59 181	89 21 1401	
SW Pass Light "7" 1936	29 01 452	89 20 904	

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

TRIANGULATION (1936)(continued)

Name	Latitude ° ' m	Longitude ° ' m
SW Pass Light "8" 1936	29 05 245	89 16 1362
Double Bayou Light "9" 1936	29 02 1510	89 19 255
Scotts Canal Light "13" 1936	29 06 216	89 17 286
Stack, Wreck, 1936(Rec)	28 56 1091.1	89 26 995.8

SHORE SIGNALS (Located by Theodolite cuts, sextant angles or traverse)

			Location	
Axon	29 18 970	89 49 754	11*	
Cost	29 13 1519	89 31 1045	*14	*Refers to page No. of Special Report "Computation of Shore Signals".
Cupola, C.G. Tower, Grand Isle	29 14 39	89 59 1412	11	
Dumb	29 18 606	89 43 990	12	
Gale	29 04 964	90 16 882	8	
Good	29 05 1330	90 10 1580	9	
Gue	29 03 1461	90 48 575	3	
Lind	29 15 1697	89 57 1528	13	
Mart	29 10 1812	89 27 145	14	
Mose	29 08 1166	90 06 889	10	
Nod (North Oil Derrick)	29 06 1642	90 27 1462	6	
Oil (Oil Derrick)	29 05 51	90 39 1595	4	
Pest	29 11 1339	90 02 1281	10	
Pisa	29 03 1022	90 57 1096	1	
Port	29 04 1195	90 36 989	5	
Rex	29 03 1030	90 26 1570	7	
Rick (Derrick)	29 06 867	90 27 801	6	

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1966

SHORE SIGNALS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location
SE Gable (Tourist Inn)	29 15 234	90 01 158	10
Seaward Gable Grand Isle Inn	29 15 327	89 57 1023	11
Sod(South Oil Derrick)	29 06 1415	90 27 1464	6
SW Pass Inner Front Range Lt.	28 55 158	89 25 796	15
Stack, Freeport Sulphur Co.	29 22 1512	89 46 1408	11
SW Pass Inner Rear Range Lt.	28 55 811	89 25 516	15
SW Pass Dike "A"	28 54 609	89 25 1505	15
SW Pass Lt. 1	28 56 365	89 24 1080	15
SW Pass Lt. 2	28 56 483	89 24 840	15
SW Pass Lt. 3	28 57 1761	89 23 493	15
SW Pass Lt. 4	28 57 184	89 23 1023	15
SW Pass Lt. 5	28 58 1592	89 22 815	15
SW Pass Lt. 11	29 03 1228	89 18 1071	16
Tag	29 02 658	90 52 1101	2

BUOYS

Name	Latitude ° ' m	Longitude ° ' m	Locations	Abstract BP Sh. No.	
Abe	28 55 1586	90 48 576	S40	21	*C-Computed from taut wire & sun azimuth traverse.
Ace	28 56 1441	90 50 1054	S40	1,14	
Add	28 58 1799	90 29 726	S40	22	S40-Graphic determination on 1/40,000 scale Aluminum sheet.
AID	28 59 1783	90 18 562	C	30	
Ail	28 56 1286	89 42 1510	C	44	
Ant	28 58 777	90 50 564	C	5	S80-Graphic determination on 1/80,000 scale aluminum sheet.
Ban	28 41 112	90 14 165	C	30	
Bee	28 55 1629	90 46 56	S40	21	

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location	Abstract BP Sh. No.
Bim	28 56 1151	90 55 433	[redacted]	1
Bit	28 56 1235	90 29 615	S40	22
Bom	28 49 1075	91 05 1014	S40	
Bud	28 56 231	90 50 790	C	26,5
Bud(Marker)	28 56 427	90 50 772	C	5
Bum	28 59 452	91 06 87	S40	
Bus	28 58 58	90 06 660	S40	41,40
But	28 56 1550	89 57 1014	C	44
Can	28 19 697	90 28 262	C	27
Can(Moor.)	28 19 396	90 28 127	C	39,36,27
Cap	28 54 1152	90 29 662	C	22
Car	28 56 1811	89 51 1822	C	46,45,44
Cat	28 51 1461	90 59 323	S40	7
Chi	28 45 1462	90 14 312	C	30
Cob	28 56 905	90 57 668	S40	1
Cog	29 00 95	90 06 1552	C	40
Dad	28 52 575	90 29 651	C	22
Day	28 57 215	89 28 531	S40	46,44
Deb	28 46 1042	90 14 429	C	30
Den	29 01 1459	90 07 1029	S40	40
Did	29 01 517	91 10 185	S40	1a
Dip	28 56 1158	90 59 1285	S40	1,11
Doe (Semie)	28 52 207	90 42 1011	S80	26

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location*	Abstract BP Sh.No.
Dog	28 50 1811	91 01 869	S40	7
Dub	28 50 723	90 56 1515	C	15
Ear	28 48 1818	89 48 605	S80	44
Eel	28 50 509	91 03 969	S40	7
Egg	28 49 1763	90 29 582	C	22
Ego	29 01 1082	90 04 66	S40	40
Elf	28 56 1163	91 01 1453	S40	1,11
Elk	28 49 594	90 14 586	C	30
Fad	28 46 156	90 37 36	C	15
Fan	28 47 892	90 29 584	C	22
Far	28 58 1415	91 10 216	S40	
Fat	29 05 532	90 01 1387	S40	40
Fox	28 51 1572	90 14 678	C	30
Fig	28 56 1192	91 04 128	S40	1
Fog	28 38 42	89 53 851	S80	45
Gab	28 56 110	91 06 528	S40	1,11
Gag (Hydrophone Pos.)	28 52 400	89 29 1402	S40	45
Gal	28 44 1718	90 29 577	C	22
Gap	29 05 216	89 59 842	S40	41
Gay	28 54 1145	90 14 416	C	32,30
Gem	28 52 1245	90 45 1040	S40	8,9
Gig	28 52 809	89 28 577	S40	45
Go	28 45 1592	90 37 37	C	15
Hag	28 42 569	90 29 522	C	22

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location	Abstract BP Sh.No.
Hat	28 35 1220	89 42 960	S80	46
Hip	28 57 219	90 14 982	S40	31,30
Hit(ship)	28 41 1210	90 37 122	C	15
Hit(launch)	28 52 1782	91 09 515	S40	1a
Hob	28 50 1048	90 43 996	C	8
How	29 07 19	89 57 98	S40	41
Hub	28 55 893	91 08 946	S40	2,11
Ice	28 54 1758	91 10 1814	S40	2,11
Imp	28 41 40	90 14 126	C	31
Imp Marker	28 41 350	90 14 121	C	32
Ink	28 39 1298	90 29 414	C	25
Isa	29 08 1545	89 54 1192	S40	41
It	28 20 871	89 58 84	S80	46
Ivy	28 48 1188	90 43 1011	C	8
Jet	29 10 1153	89 52 565	S40	42
Jim	28 37 712	90 29 335	C	25
Job	28 55 1809	90 11 255	S40	31
Joy	28 54 634	91 15 189	S40	2,11
Jug	28 46 644	90 43 987	C	8
Kab	28 43 1719	90 43 969	C	8
Ken	29 09 954	89 49 1465	C	42
Key	28 52 891	90 57 376	S40	3,7
Kin	28 37 5	90 40 1483	C	14
Kit	28 36 1066	90 18 1389	S80	33

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location	Abstract BP Sh.No.
Lad	28 50 1210	90 14 254	SBO	33
Lad(Moor)(Solo)	28 50 1380	90 14 384	SBO	33
Law	29 05 826	89 54 253	SBO	42
Lax	28 50 358	90 57 316	C	3
Lin(Sheet 42)	28 41 994	90 43 942	C	8
Lin(Sheet 43)	28 56 649	90 22 748	C	28
Low	28 39 266	90 37 124	C	16
Mac	28 51 1433	90 48 1043	SBO	26
Map	28 54 162	90 22 711	C	28
Mat	28 50 800	90 21 1615	SBO	34
May	28 39 550	90 43 982	C	8
Min	29 08 620	89 47 72	C	45
Mob	28 48 367	90 36 1587	C	16
Mud	28 47 1440	90 57 305	C	3
Mug	28 27 965	90 49 1368	SBO	24
Mug(Moor)	28 27 1200	90 49 1425	SBO	24
Nap	28 45 340	90 57 247	C	3
Ned	28 41 1733	90 10 217	SBO	35
Net	28 55 1428	90 53 584	SBO	17
New	28 28 233	90 40 854	SBO	36,27,25
New(Moor.)	28 28 518	90 40 760	SBO	25
Nil	28 51 1322	90 22 400	C	28
Nip	28 36 1839	90 43 1005	C	8
Nip(Marker)	28 37 227	90 43 955	C	9,15

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location	Abstract BP Sh.No.
Now	29 07 397	89 44 684	C	43
Nun 2, 1936	28 53 1475	91 15 963	S40	2,11
Oak	28 55 1496	90 55 80	S40	17
Oar	28 49 422	90 22 251	C	28
Odd	28 36 1153	90 32 911	S80	28
Off	28 43 1737	90 02 984	S80	35
Old	28 42 1455	90 57 246	C	3
Org	29 06 160	89 41 1277	C	43
Ox	28 37 63	90 46 1227	C	8
Pad(Sheet 41)	28 55 1555	90 52 1335	S40	17
Pop	28 46 1038	90 22 94	C	28
Pal	28 40 938	90 57 239	C	3
Pam	28 36 1833	90 37 189	C	16,23,43
Pam(Marker)	28 37 187	90 37 228	C	15
Pan	29 04 1596	89 39 72	C	43
Par	28 56 500	90 02 374	C	35
Pay	28 58 680	91 12 164	S40	35
Pie	28 58 1244	90 22 810	S40	28
Rag	29 03 1198	89 36 515	C	43
Ray	28 43 1767	89 54 1269	S80	35
Red	28 38 482	90 57 205	C	4
Rie	28 24 1380	90 28 373	S80	27
Rim	28 55 1585	90 50 862	S40	17
Sac	28 36 141	90 57 178	C	4,24

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude o	'	m	Longitude o	'	m	Location	Abstract BP Sh.No.
Sac(Marker)	28	56	408	90	57	154	C	4,24
Sag	28	55	1669	90	45	1079	S40	17
Sap	28	56	493	89	54	1093	C	44
Sap(Marker)	28	56	642	89	54	1098	C	55
Saw	29	02	759	89	33	874	C	43
Sea Buoy, SW/ Pass	28	52	1564	89	26	00	S40	
Sur	28	44	95	90	21	1572	C	28
Tab	29	01	308	89	30	1128	S40	43
Tap	28	55	1703	90	41	1165	S40	17
Tax	28	18	1381	90	38	1491	S80	37
Tol	28	30	1251	90	29	95	C	25,33,25
Tol(Marker)	28	30	1136	90	29	341	C	33,34
Tom	28	41	1054	90	21	1410	C	29
Ton	28	52	971	90	49	962	S40	6
Uke	28	39	129	90	21	1282	C	38,29
Uke(Marker)	28	38	1689	90	21	1348	C	29
Und(Nun Buoy)	28	56	1572	91	03	1471	S40	2
Urn	28	55	1687	90	39	971	S40	17
Use	28	50	626	90	49	1162	C	6
Van	28	48	77	90	49	1364	C	6
Vat	28	18	1813	90	50	216	S80	37
Vey	28	38	227	90	25	220	C	29
Vim	28	55	1725	90	36	1372	S40	18
Wad	28	56	853	89	48	895	C	44

GEOGRAPHIC POSITIONS
of
ALL SIGNALS USED ON HYDROGRAPHIC SHEETS
SHIP HYDROGRAPHER 1936

BUOYS (continued)

Name	Latitude ° ' m	Longitude ° ' m	Location	Abstract BP Sh.No.
Wag	28 52 382	90 36 1464	C	19
Wig(Sheet 42)	28 45 1007	90 49 1581	C	5
Wig(Sonic)	28 19 1671	90 11 722	S80	37
Wis(Fl.W "2")	28 37 308	90 59 851	C	4
Yam	28 54 81	90 36 1462	C	19
Yip	28 32 858	90 01 1059	S80	37
Yon	28 43 187	90 50 158	C	5
Zip	28 40 1324	90 50 365	C	5
Zoo	28 58 1140	90 36 1351	S40	20

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6184

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

Number of positions on sheet	1489
Number of positions checked	0
Number of positions revised	0
Number of soundings recorded	9466
Number of soundings revised	21
Number of signals erroneously plotted or transferred	0

Date: May 22, 1937.

Verification by W. R. Jackson Time: 69 hrs.

Review by Harold W. Murray Time: 14 "

Ver. Cor. by " 2½ "

HYDROGRAPHIC SURVEY NO. H6184

Smooth Sheet Yes

Boat Sheet Yes

Sounding Records 6 Vols. Vols.
Bombing Records 3 Vols.

Descriptive Report Yes

Title Sheet Yes (Executed in Office)

List of Signals Vol. #1

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service (Circular Nov. 30, 1933) None

Remarks

HYDROGRAPHY
Total Days 21
Last Date Aug. 27, 1936

705

Verification Report on H-6184

1. The records conform to the requirements of the General Instructions except as noted elsewhere in this report and in the review.
2. No drafting was done over. Control was taken care of in a special report from the field.
3. Sounding line crossings are satisfactory, except (a) in Lat. 28-28 Long. 89-56 where the soundings that are questionable have been left in pencil. Other questionable soundings on the sheet have been circled in pencil. disposed of in Review Hours
4. The usual depth curves were drawn.
5. There are no aids to navigation on the sheet.
6. The junctions with contemporary adjacent surveys is satisfactory except as noted in the review.

   Attention is called to the difference in interpretation for the 20 fm. curve between sheets H-5938 and H-5939. disposed of. Hours.

   Junctions were made with H-6185
   H-6155
   H-6154
   H-5938
   H-5939
7. No actual plotting was done on this sheet. The plotting of positions was done on an aluminum sheet, adjustments made, and then the positions transferred to this sheet.

7. (Cnt'd).

This system gives the verifier no definite means of checking the positions and makes it almost impossible to make an office adjustment.

The verifier has been instructed to call the attention of the reviewer to the lack of distance arcs, and this matter is to be taken up with the Chief of the Section. Will be disposed of in Rev. of H-6185 Hydrm.

Respectfully submitted,
William R. Jackson

May 22, 1937.

	Remarks	Decisions
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M 234		

GEOGRAPHIC NAMES

Survey No. H6184

Name on Survey	On Chart No. 1116 A,	On previous survey No. B,	On U. S. quadrangle Maps C,	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Gulf of Mexico	✓									1
Louisiana	✓									2
										3
										4
										5
										6
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										27

Names underlined in red approved
by [illegible] on 4/28/37

M 234

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6185

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

Number of positions on sheet	1129
Number of positions checked	0
Number of positions revised	0
Number of soundings recorded	8326
Number of soundings revised	92
Number of signals erroneously plotted or transferred	0

Date: 19 May, 1937

Verification by E.C. McGlasson Time: 6 days 6 hours

Review by Harold W. Murray Time: 3 " 6 3/4

Ver. Cor. by .. Time: 0 " 3 1/2

HYDROGRAPHIC SURVEY NO. H6185

Smooth Sheet Yes

Boat Sheet Yes

Sounding Records 6 Vols Vols.
Bombing Records 4 ~~3~~ Vols

Descriptive Report Yes

Title Sheet Yes

List of Signals Vol. #1

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service (Circular Nov. 30, 1933) None

Remarks

HYDROGRAPHY

Total Days 18

Last Date October 26, 1936

	Remarks	Decisions
1	For Title	
2	For Title	
3	not on sheet.	
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M 234

GEOGRAPHIC NAMES

Survey No. H6185

Name on Survey	A, On Chart No. 1272	B, On previous survey No.	C, On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Gulf of Mexico	✓ app'd									1
Louisiana	✓ app'd									2
S. W. Pass ↩	✓ app'd									3
Inland passage.										4
										5
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Names [illegible] Approved

by [illegible] on 4/28/37

M 234

FAE

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. Feb. 1935

TIDE NOTE FOR HYDROGRAPHIC SHEET

April 29, 1937

Division of Hydrography and Topography:

✓ Division of Charts: **Attention Mr. E. P. Ellis**

Tide Reducers are approved in
6 volumes of sounding records for

HYDROGRAPHIC SHEET **6184**

Locality **Southeast of Ship Shoal, Gulf of Mexico**

Chief of Party: **F. S. Borden in 1936**
Plane of reference is **mean low water, reading**
2.8 ft. on tide staff at **Barataria Bay Lighthouse**
11.0 ft. below B.M. **2**

Height of mean high water above plane of reference is 1.2 feet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE

RAC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. Feb. 1935

TIDE NOTE FOR HYDROGRAPHIC SHEET

April 29, 1937

Division of Hydrography and Topography:

✓ Division of Charts: **Attention Mr. E. P. Ellis**

Tide Reducers are approved in
6 volumes of sounding records for

HYDROGRAPHIC SHEET **6185**

Locality **South of Barataria Bay, Gulf of Mexico**

Chief of Party: **F. S. Borden in 1936**
Plane of reference is **mean low water, reading**
2.8 ft. on tide staff at **Barataria Bay Lighthouse**
11.0 ft. below B.M. **2**

Height of mean high water above plane of reference is 1.2 feet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE

19 May, 1937.

Verification
Report on H 6185
Verifying and Inking

1. The records conform to the requirements of the General Instructions except as noted in the review.
2. The usual depth curves can be completely drawn within the limits of the sheet.
3. The field plotting was completed to the extent prescribed in the Hydrographic Manual.
4. The office draftsman did not have to do over any part of drafting done by the field party except as noted on the Statistic sheet.
5. The junctions with contemporary adjacent sheets are satisfactory. See Rev. for discrepancies.
6. This is an off shore sheet and no shoreline is shown. The control of the

sheet will be found in a special report submitted by the Chief of Party.

7. In lat. 29°02', long. 89°52', The Chief of Party recommends the rejection of soundings from position 67 to 74 F. These soundings were left in pencil by the ~~reviewer~~ verifier for disposition, by higher authority.

8. In lat 28°47', long 89°44'. The Chief of Party states that the soundings from position 21 to 23 H appear shoal in view of the surrounding hydrography. These soundings were left in pencil for disposition by higher authority.

9. In lat 28°36', long 89°37' The chief of Party states that the soundings from 23 to 25 L appear to deep. These soundings were left in pencil for disposition by higher authority.

10. In lat 28°32.5', long 89°45'. This crossing is not in good

See Rev. for disposition items

agreement. Captain Ellis recommends rejection of sounding 208 after 66 N to sounding 146 after 68 N. These sounding appear to have been taken with 312 fathometer, which frequently was unsatisfactory and the reported soundings conflict with adjoining hydrography and cross lines. Part of these soundings were left in pencil awaiting final disposition by higher authority. See Rep. for disposition. H.W.M.

11. In lat 28° 39' long 89° 47' The 74 fathom sounding between positions 60 and 61 N was questioned in the records. It appears to ~~be~~ deep but was inked on the smooth sheet. Questioned at time of entry Rejected. H.W.M.

12. The following positions and sounding were plotted on smooth sheet H 6184: transferred, copy checked and by the field party.

70 D - 86 D	Volume #1
27 P - 87 P	Volume # 4.
43 Q - 58 Q	Volume # 4
1 R - 18 R	Volume # 4

Respectfully submitted,

E. C. McGlasson

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6184 (1936) FIELD NO. 81

Southeast of Ship Shoal, Gulf of Mexico, Louisiana
Surveyed in 1936, Scale 1:80,000
Instructions dated March 23 and May 20, 1936 and letter dated March 6, 1937 (HYDROGRAPHER)

Type 312 and
Dorsey Fathometer Soundings. RAR control on Sono-Radio buoys.

Chief of Party - F. S. Borden.
Surveyed by - P. C. Doran.
Protracted by - G. L. Anderson, V. M. Gibbens, F. R. Gossett and R.A. Gilmore.
Soundings plotted by - R. A. Gilmore.
Verified and inked by - W. R. Jackson.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

(a) The position numbers and day letters on the title page and cover label of the sounding records were in black ink instead of the colors used to designate the various vessels. (Par. 138). These were corrected in the office.

(b) The plotting of depths in fathoms and sixths of fathoms in the area northward and westward respectively of latitude 28° 35' and longitude 90° 11', and the remainder of the sheet in whole fathoms is for the convenience of the compiler in large scale charting and is authorized by the Special Instructions dated March 6, 1937, attached to this Descriptive Report.

(c) The type of fathometer soundings recorded was not indicated at the beginning of B, G, H, P. Q, R. S. and T day's work, and in addition it was not always possible to determine from notes in the records how long a particular type of fathometer was being used. It is suggested that where two fathometers are used, notations such as "using Dorsey from 12:30 to 14:50" or similar references be used in lieu of such references as "*#312". The latter is confusing since it is uncertain whether the note applies to a single sounding or to all soundings subsequent to that reference.

(d) For remarks concerning the omission of RAR distance arcs on the smooth sheet, see Review of H-6185 (1936).

The Descriptive Report is clear and comprehensive and satisfactorily covers all items of importance. Discussion of specific matters such as questioned soundings, however, should be consistently referenced by latitude and longitude values rather than position number only, to facilitate identification on the smooth sheet.

2. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project except that the south and southeastern portion of the present survey is deficient in bottom characteristics and that split lines should have been run in the vicinity of the 30 fathom sounding discussed in paragraph 8a of this review.

3. Shoreline and Signals.

(a) This is an offshore survey and no shoreline is shown.

(b) The control is mainly furnished by RAR and the recently developed Sono-Radio buoys, and has been supplemented by a number of three point fixes on buoy signals.

The Sono-Radio marker stations and buoy signals were located by Bomb Distances, Sun Azimuths, and Taut Wire and Sun Azimuth Traverses, the data being filed in cahier marked "Hydrographic Control" (HYDROGRAPHER, F. S. Borden, 1936 - Library No. S-1421.)

4. Sounding Line Crossings.

Generally speaking, such cross lines as were run or result from the work are excellent. A number of 2 to 45 fathom discrepancies, however, are listed in the Descriptive Report (pages 4 and 5). These are generally attributed to unsatisfactory operation of the Type 312 Fathometer and in some cases, the Dorsey Fathometer, (type uncertain, see par. 1c, this review). The field rejections and recommended rejections were mainly accepted in the office except in the case of the 57 fathom Dorsey Fathometer sounding (line 7 to 8R, blue) in latitude 28° 36.0', longitude 89° 59.7' (4th par., page 5 of Descriptive Report). A study of other crticial depths in the general vicinity such as the 111 fathoms (latitude 28° 36.0', longitude 89° 58.4'), three 46 fathoms (latitude 28° 35.5', longitude 90° 00.1'), and 124 fathoms (latitude 28° 37.4', longitude 90° 00.0') indicates that additional hydrography would probably confirm the extension of the 50 and 100 fathom depth curves in this area. In the absence of such hydrography there is a possibility that the 57 fathoms is reasonably accurate and it is, therefore, being retained.

5. Depth Curves.

The usual depth curves may be satisfactorily drawn. (See par. 4, this review).

6. Junction with Contemporary Surveys.

(a) The junctions on the west with H-5939 (1935) and H-5938 (1935) and on the northwest with H-6154 (1936) are satisfactory.

(b) The junction on the north with H-6155 (1936) is generally satisfactory. Several soundings on the present survey, however, vary about 2 fathoms deeper in average depths of 80 to 90 fathoms. In latitude 28° 37.0', longitude 90° 12.2'; portions of soundings on line 65 to 66J and 8 to 10N on the present survey vary about 4 feet shoaler in depths of 155 to 185 feet. Depths on both surveys are Dorsey Fathometer but those on H-6155 (1936) are controlled by 3 point fixes on buoy signals whereas those on the present survey are controlled by RAR. It is noted that a 300 m. shift to the westward of the present survey soundings would bring both surveys in good agreement, however, since no particular charting difficulties will be encountered, no changes in smooth sheet plotting have been made.

(c) The junction on the northeast and east with H-6185 (1936) is generally satisfactory. It is probable, however, that the irregularities in the 100 and 200 fathom depth curves in the vicinity of latitude 28° 25', longitude 89° 55' is partly attributable to a small displacement in the RAR controlled sounding lines on both surveys since differences of 5 to 10 fathoms in general depths of 200 fathoms are noted in the crossings in the common area.

(d) There are no contemporary surveys to the southward of the present survey at the present time. A fair junction, however, is made with the charted soundings here originating with H-1351a (1875-76).

7. Comparison with Prior Surveys.

(a) H-1350 (1875-77).

This survey is on a scale of 1:600,000, is controlled by dead reckoning and is of reconnaissance value. The few soundings that cover most of the present survey generally agree within 1 to 3 fathoms in the broad, flat areas except in the vicinity of latitude 28° 40', longitude 90° 05' where the old survey depths vary 9 to 40 fathoms shoaler than the present survey depths. The larger differences are undoubtedly due to discrepancies in the control of the old survey. The present survey should supersede this survey in future charting.

(b) H-1351a (1875-76) and H-1351b (1875-76 and 77).

These two surveys represent but one survey of the area covered, H-1351b (1875-76 and 77) containing all the soundings shown on the other sheet and in addition, some additional sounding lines run in 1877. They are on scales of 1:400,000, controlled by dead reckoning and cover the southeast portion of the present survey. The old survey depths with the exception of two soundings in latitude 28° 18', longitude 89° 58' which are in good agreement, consistently vary 18 to 60 fathoms shoaler than the present survey depths, the differences increasing as the depths deepen. These excessive differences are probably due to discrepancies in control on the old survey. The present survey should supersede these surveys in future charting.

(c) H-2069 (1891).

A few soundings from this 1:80,000 scale survey fall within the limits of the present survey in the vicinity of latitude 90° 37', longitude 28° 36' and indicate that very little if any change has taken place. The present survey should supersede this survey in future charting.

8. Comparison with Chart No. 1116 (New Print dated Feb. 20, 1937).

a. Hydrography.

Depths shown on the chart originate with surveys discussed in preceding paragraphs of this review except as follows:

Sounding in fms.	Latitude	Longitude	Present survey Depths in fms.
10	28° 31'	90° 30'	21
19	28° 36'	90° 27.5'	16 1/4
20	28° 33'	90° 35'	17
25	28° 26'	90° 21'	27
30	28° 10'	90° 35'	51 } H-6546
31	28° 09'	90° 34'	56 }

The authority for the 10, 19, 20 and 25 fathoms could not be ascertained. They appear on the first edition of Chart 1116 (1918) but do not appear on the superseded Chart 19. In view of their uncertain origin and in the case of the 10 fathoms, the even bottom and absence of any possible shoal indication on the present survey, these soundings should be superseded in future charting.

The 30 and 31 fathoms originate with Chart Letter No. 160 (1911) and blueprint No. 13790 (copy of Chart 1007, received in 1911) respectively. The 31 fathoms is spotted on the blueprint and falls 1/2 mile west of a sounding line on the present survey. The absence of any shoaling indication on this line is considered sufficient evidence that the shoal spot does not exist in the position as reported and that this 31 fathom spot should be disregarded in future charting. The geographic position of the 30 is listed in the above chart letter which accompanied the blueprint. The letter received from assistant Isaac Winston, states that the soundings were ascertained from the Captain of a large fishing schooner owned by the "Gulf Fisheries Company" and although accurate in depth, the positions are approximate and yet of sufficient accuracy to permit revisitation of these spots by various other fishing vessels.

It should also be noted that a 32 fathom spot approximately 24 miles W X S of the 30 fathoms was reported by the same Captain and was verified on H-5939 (1935), a least depth of 29 fathoms being found. In addition, a number of other charted shoal spots in the vicinity of the 50 to 100 fathom curve and extending westward from this area originate with similar sources and were verified by other surveys. Because of the general reliability of these reported shoal spots and because of insufficient development on the present survey the reported 30 fathoms in lat. 28° 10', long. 90° 35' (referred to in the paragraph above) should be retained on the chart until more definitely disproved. Similar shoal spots on the sheet to the westward of the present survey have been treated in a like manner (see par. 8a, review of H-5939).

b. Aids to Navigation.

There are no aids to navigation in the area covered by the present survey.

9. Field Plotting.

Field plotting is excellent.

10. Additional Field Work Recommended.

This is an excellent survey and no additional field work is required. Attention is called, however, to the insufficient development of the reported 30 fathom sounding discussed in paragraph 8a, this review and the 55 fathoms discussed inthe Descriptive Report (page 4, par. 2).

Confirmed on H-6546(1940)
41 fms. found first inst.
10/15/43 HWM.

Comments on the methods used and results obtained for the whole project will be included in the review of a subsequent survey of this series.

11. Note to Compiler.

Attention is called to the 30 fathom sounding discussed in paragraph 8a of this review which should be retained on the chart.

12. Superseded Previous Surveys.

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

H-1350	(1875 - 77)	In part
H-1351a	(1875 - 76)	" "
H-1351b	(1875-76 and 77)	" "
H-2069	(1891)	" "

13. Reviewed by - Harold W. Murray, June 10, 1937.

Examined and approved:

C. K. Green, C. K. Green
Chief, Section of Field Records.

L. O. Colbert
Chief, Division of Charts.

Fred. L. Peacock
Chief, Section of Field Work.

G. Rude
Chief, Division of H. & T.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6185 (1936) FIELD NO. 82

South of Barataria Bay, Gulf of Mexico, Louisiana
Surveyed in 1936, Scale 1:80,000
Instructions dated March 23 and May 20, 1936 and
Letter dated March 6, 1937 (HYDROGRAPHER)

Type 312 and Dorsey Fathometer Soundings. RAR control on Sono-Radio buoys.

Chief of Party - F. S. Borden.
Surveyed by - R. W. Woodworth and various officers.
Protracted by - G. L. Anderson, V. M. Gibbens, F.R. Gossett, and R. A. Gilmore.
Soundings plotted by - R. A. Gilmore.
Verified and inked by - G. C. McGlasson.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

a. The plotting of depths in fathoms and sixths of fathoms in the area northward of lat. 28° 46' and in whole fathoms southward of this line is for the convenience of the compiler in large scale charting and is authorized by the Special Instructions dated March 6, 1937, attached to the Descriptive Report.

b. On the cover label of the sounding records the position numbers and day letters were in black ink instead of the colors used to designate the various vessels. All data on the title page of each sounding record was in pencil instead of ink. (Par. 138). These were changed in the office.

c. Distance arcs and position intersection arcs were omitted from the sheet. For office comments and recommendations see memorandum by A. L. Shalowitz, attached to this review.

The Descriptive Report is clear and comprehensive and satisfactorily covers all items of importance except the following:

d. The statement that "all rejections made are believed to be justified in view of the frequent unsatisfactory operation of the 312 fathometer"(see page 6, Descriptive Report, middle of page) could not be verified. As near as can be determined from notations in the sounding volumes, the rejections listed on pages 5 and 6 of the Descriptive Report pertaining to the present survey involve in almost all cases Dorsey Fathometer soundings. Also in practically all cases, the rejected lines fail to cross adequately other Dorsey

fathometer lines. (See par. 4, this review for further discussion of crossing discrepancies).

e. It is desirable that all references to specific soundings or lines on the smooth sheet should be given by latitude and longitude. This simplifies all future handling of the sheet.

2. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the Instructions for the Project, except that there is a deficiency of cross lines in the sheet. (Par. 2 of Instructions dated May 20, 1936) and a lack of bottom characteristics on ~~xxx~~ the southern portion of the sheet. There is also a lack of comparative soundings. Only ten vertical cast comparisons were made on the entire sheet.

3. Shoreline and Signals.

a. This is an offshore survey and no shoreline is shown.

b. The control is mainly furnished by R.A.R. and the recently developed Sono-Radio buoys and has been supplemented by a number of three point fixes on buoy and triangulation signals.

The Sono-Radio station markers and buoy signals were located by three point fixes on shore signals, Taut Wire, Bomb Distances and Taut Wire and Sun Azimuth Traverses, the data being filed in cahier marked "Hydrographic Control" (HYDROGRAPHER, F. S. Borden, 1936 - Library No. S 1421).

4. Sounding Line Crossings.

Of the cross lines that were run or those that result from the work, the agreement with the main system of lines is generally satisfactory. In a number of cases, however, differences are noted, the discrepancies involving principally Dorsey Fathometer soundings.

The discrepancies are listed on pages 5 and 6 of the Descriptive Report and dispositions made are noted therein. (See also par. 10 this review, for discussion of Dorsey Fathometer Soundings).

5. Depth Curves.

Within the limits of the survey the usual depth curves may be completely drawn.

6. Junctions with Contemporary Surveys.

a. The junction on the west with H-6155 (1936) is satisfactory.

b. The junction on the northwest with H-6156 (1936) is generally satisfactory, the average sounding agreement being within 1 to 2 feet.

c. The junction on the northeast with H-6157 (1936) is satisfactory except that several lines on the present survey in the vicinities of lat. 29° 04.7', long. 89° 50.7', latitude 28° 59.3', long. 89° 36.7', and lat. 28° 58.0', long. 89° 34.6' consistently vary 2 to 5 feet deeper than the soundings on H-6157 (1936). The differences are probably due to discrepancies in RAR control on the present survey because a shift in these lines would bring the soundings into agreement. Since the discrepancies involved are small, no re-study of the R.A.R. control was made. These deeper soundings have been retained on the present survey but have not been transferred as overlap to H-6157 (1936). For charting the common area preference should be given the soundings on H-6157 (1936).

d. The junction on the west with H-6184 (1936) is satisfactory. It is probable, however, that the irregularities in the 100 and 200 fathom curves in the vicinity of latitude 28° 25', long. 89° 55' are partly attributable to a small displacement in the R.A.R. controlled sounding lines on both surveys since differences of 5 to 10 fathoms in general depths of 200 fathoms are noted in the crossings in the common area.

e. There are no contemporary surveys to the south and southeastward of the present survey. For charting purposes, however, no difficulty will be had in effecting junctions with the charted hydrography originating with H-1351b (1875-77).

f. Junctions on the east between lat. 28° 34' and lat. 28° 53' will be considered when that work (contemplated in Instructions for the Project) is received from the field.

7. Comparison with Prior Surveys.

a. H-483 (1854-55), H-599 (1857-58), H-1116 (1871), H-1350 (1875-77), H-1351a (1875-76), H-1351b (1875-77) and H-1965 (1874-75).

These surveys are on scales of 1:40,000 to 1:600,000. They are of a reconnaissance nature, are mostly controlled by dead reckoning and are the authority for most of the soundings on the charts. Agreement with the present survey is fair and in view of the lapse of time since these surveys were made and the more rigid control used on the present survey, a detailed comparison will serve no useful cartographic purpose. The present survey should supersede these surveys in future charting.

b. H-2069 (1891) Scale 1:80,000.

A few soundings from this survey fall just within the northwest limits of the present survey and vary 3 to 4 feet shoaler than the present survey depths. The present survey should supersede this survey in future charting.

c. H-4175 (1921-22), Scale 1:40,000.

This survey covers the vicinity of Southwest Pass. The depths (machine soundings) generally vary 1 to 6 fathoms deeper than the present survey depths. These differences are greater in the vicinity of the mouth of Southwest Pass and gradually decrease as the distance from the mouth increases. In the vicinity of lat. 28° 47', long. 89° 34', however, a few of the old survey depths vary 1 to 2 fathoms shoaler. In view of the changes noted the present survey should supersede this survey in future charting.

d. H-4213 (1921-22).

A few soundings from this sparsely covered 1:80,000 scale survey fall within the limits of the present survey in the general vicinity of lat. 28° 40', long. 89° 35'. Comparison with the present survey indicates little or no changes in depths, however, in the vicinity of lat. 28° 34', long. 89° 36' several old survey soundings vary 33 to 50 fathoms deeper than the present survey depths. These large differences are probably due to discrepancies in the Dead Reckoning control used on the old survey. The present survey should supersede this survey in future charting.

8. Comparison with Charts 196 (New Print dated Oct. 16, 1936)
197 (New Print dated Oct. 7, 1936)
1272 (New Print dated Mar. 24, 1937)
1273 (New Print dated Jan. 19, 1937)
1116 (New Print dated February 20, 1937.

a. Hydrography.

Soundings shown on the charts originate with surveys discussed in preceding paragraphs of this review, except the following which are shown on Chart 1116:

	Depths in fms.	Latitude	Longitude	Present survey Depths in fms.
(1)	16	29° 02.3'	89° 46.1'	19
(2)	17	02.2'	48.0'	18
(3)	20	02.1'	49.9'	18
(4)	25	02.3'	52.4'	16
(5)	20	02.8'	55.2'	13-1/2
(6)	10	28° 52.7'	90° 08.2'	15
(7)	12	46.0'	08.6'	18
(8)	22	46.7'	03.0	22

	Depths in fms.	Latitude	Longitude	Present survey Depths in fms.
(9)	14	28° 53.3'	90° 03.9'	17
(10)	23	47.4'	89° 57.5'	24-3/4
(11)	20	52.0'	53.8'	23-1/2
(12)	26	49.7'	51.5'	27-1/2
(13)	27	52.3'	46.6'	30
(14)	35	47.6'	42.3'	41
(15)	Items 1 to 4 inclusive, and items 7 and 8 in Descriptive Report (page 7).			

The authority for these soundings could not be readily ascertained. They appear on the first edition of Chart 1116 (1918) but do not appear on the then superseded Chart 19 nor are they shown on the present large scale Charts: 196, 197, and 1273. In view of their uncertain origin, questionable accuracy and the even bottom shown in the respective areas on the present survey, they should be superseded in future charting.

b. Aids to Navigation.

There are no aids to navigation in the area covered by the present survey.

9. Field Plotting.

Field protracting and plotting were accurate and conform to the requirements of the Hydrographic Manual, except as noted in paragraph 1c, this review.

10. Dorsey Fathometer Soundings.

A study of the various sheets comprising the 1936 season's work in this area shows that, in general, excellent results have been obtained with the Dorsey Fathometer, especially in areas shoaler than 20 fathoms. However, it appears from a comparison of sounding line crossings in various places, particularly in areas deeper than 20 fathoms, that the instrument did not function properly at a few times during the 1936 season.

On the sheets under consideration the best results were obtained in depths up to ten or twelve fathoms, except in the vicinity of Southwest Pass where trouble was experienced with fathometer operation (see Review of H-6174 for comments). The lines in these areas were controlled by three point fixes on buoys or shore signals and the cross lines generally agree within a foot.

In the deeper areas which include the present survey and H-6184 (1936) the lines were controlled by R.A.R. A number of poor crossings, which varied from 1 to 7 fathoms in depths of 15 to 70 fathoms, were obtained between Dorsey Fathometer lines. (For

details see pages 5 and 6 of Descriptive Report). While some of these discrepancies may be due to the control it appears that some are due to the faulty operation of the Dorsey Fathometer.

It is noted that in all the cases of poor crossings, the field party's rejections or recommended rejections were based on a study of the plotted depths and not on any known faulty operation of the Dorsey Fathometer at the time the soundings were taken. Pending a study of the results obtained with the Dorsey Fathometer during the 1937 field season no conclusions will be made as to the reasons for the apparent faulty operation at various times. It appears desirable, however, that more comparisons be made. It is also suggested that when discrepancies in crossings occur on R.A.R. sheets, the question of control should first be eliminated in order that this source of error will not be attributable to the fathometer.

With the accumulation of more data from the various field parties using the Dorsey Fathometer, a standard practice will be adopted.

11. Additional Field Work Recommended.

This survey is complete and no additional field work is required.

12. Note to Compiler.

Attention is called to the treatment of junctions discussed in paragraph 6c of this review.

13. Superseded Previous Surveys.

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

H-483	(1854-55)	In part
H-599	(1857-58)	" "
H-1116	(1871)	" "
H-1350	(1875-77)	" "
H-1351a	(1875-76)	" "
H-1351b	(1875-77)	" "
H-1965	(1874-75)	" "
H-2069	(1891)	" "
H-4175	(1921-22)	" "
H-4213	(1921-22)	" "

14. Reviewed by - Harold W. Murray, June 5, 1937.

Inspected by - A. L. Shalowitz.

Examined and approved:

K. T. Adams
K. T. Adams,
Asst. Chief, Division of Charts.

L. O. Colbert
Chief, Division of Charts.

Fred. L. Peacock
Chief, Section of Field Work.

G. Rude
Chief, Division of H. & T.

MEMORANDUM REGARDING PLOTTING OF R.A.R. SHEETS.

After carefully considering the practice of plotting certain R.A.R. smooth sheets, without showing distance arcs and position intersection arcs, I am of the opinion that certain distinct advantages accrue from showing such information on the final sheet. Among these may be mentioned the following:

1. It enables one to determine at a glance what portion of the survey was controlled by R.A.R. without having to refer back to the original records. This may be of particular value when copies of surveys are sent to our field officers or other interested parties.

2. It facilitates the office verification of the sheet. No matter how carefully the sheet is smooth plotted in the field, experience has proved that a certain amount of office verification of positions is still desirable. Without the bomb or distance arcs shown the time factor on this phase of the office work would be materially increased.

3. It frequently happens that poor crossings are not discernible until the sheet has been inked. An analysis of the data might show that if a different combination of arcs had been used a better agreement at the crossings could have been obtained. This would be greatly simplified if the arcs are all shown on the sheet.

4. In comparing surveys it is important to know the quality of the bomb fixes obtained, what portion of the R.A.R. data was used in the final plotting of the positions and from what stations returns were received, before a proper evaluation of the data can be made. A case in point recently arose in connection with additional work on an R.A.R. sheet. The additional work was controlled by three point fixes and when superimposed on the R.A.R. work disagreed by varying amounts at all the crossings. A study of the bomb arcs as plotted on the sheets showed that two of the three stations were always favored. By using the rejected station in combination with one of the other two stations perfect crossings were obtained and the revised line was in good agreement with the dead reckoning data. Without the position intersection arcs on the sheet it is doubtful whether the study would have been undertaken because of the time factor involved. With the arcs already on the sheet it was simple to visualize what a different combination of arcs would do.

Pending a standardization of the practice of plotting R.A.R. sheets for both shore and floating hydrophones, the following procedure is considered satisfactory:

1. Distance arcs shall be drawn with black pencil and shall not be inked. It will be necessary to use a fairly hard pencil for this purpose in order that excessive smudging will not take place while plotting the survey. The appropriate station names should be pencilled along the various arcs as frequently as needed for identification as well as the distances in meters or times in seconds, whichever the case may be.

2. The station symbols and names shall be inked; preferably using a different color for each station occurring on any one sheet. Where necessary to duplicate colors because of the large number of stations, stations given the same color should be selected with a view to eliminating confusion in so far as possible.

3. Position intersection arcs shall be inked in the color of their respective stations.

A. L. Shalowitz,
In charge of Reviewing Section.

6185 Applied to Chart 1030 May 1937 Chas O'Brien
6184 + 6185 Applied to chart 1116 March 1938 HHE
6185 Applied to Ch. 1273, Mar. 1938, PBC.

6184 applied to chart #1274 10/8/71 O.W.

6185 Appl'd to chart #1273 12/27/71 O.W. (Appld in area 28°46'-28° 50' +- 89° 36' 90°05' +- to fill up area previously occupied by Title and etc.

Applied to new chart 11366 10-30-91 John Pierce