9340 WIRE DRAG

9340 WIRE DRAG

Diag. Cht. No. 1117.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey WIRE DRAG

Field No. RH-40-1-72 *Office No.* H-9340WD

LOCALITY

State TEXAS

General locality GALVESTON

Locality SOUTHWEST SAFETY FAIRWAY

19 72

CHIEF OF PARTY

CDR JAMES COLLINS

LIBRARY & ARCHIVES

DATE April 11, 1978

USCOMM-DC 37022-P66

- applied GS 5-11-78

FORM C&GS-537 (5-66)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

REGISTER NO.

H-9340WD

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - 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.

RH-40-1-72

State TEXAS

General locality GALVESTON

Locality SOUTHWEST SAFETY FAIRWAY

Scale 1:40,000 Date of survey 11 OCT. 72 - 18 OCT. 72

Instructions dated 9 MAY 72 28 JULY 71 7 SEPT. 72 Project No. OPR-479

Vessel NOAA SHIPS RUDE & HECK

Chief of party CDR JAMES COLLINS

Surveyed by CDR J. COLLINS

Soundings taken by echo sounder, hand lead, ~~rodex~~

Graphic record scaled by

Graphic record checked by

Protracted by Automated plot by

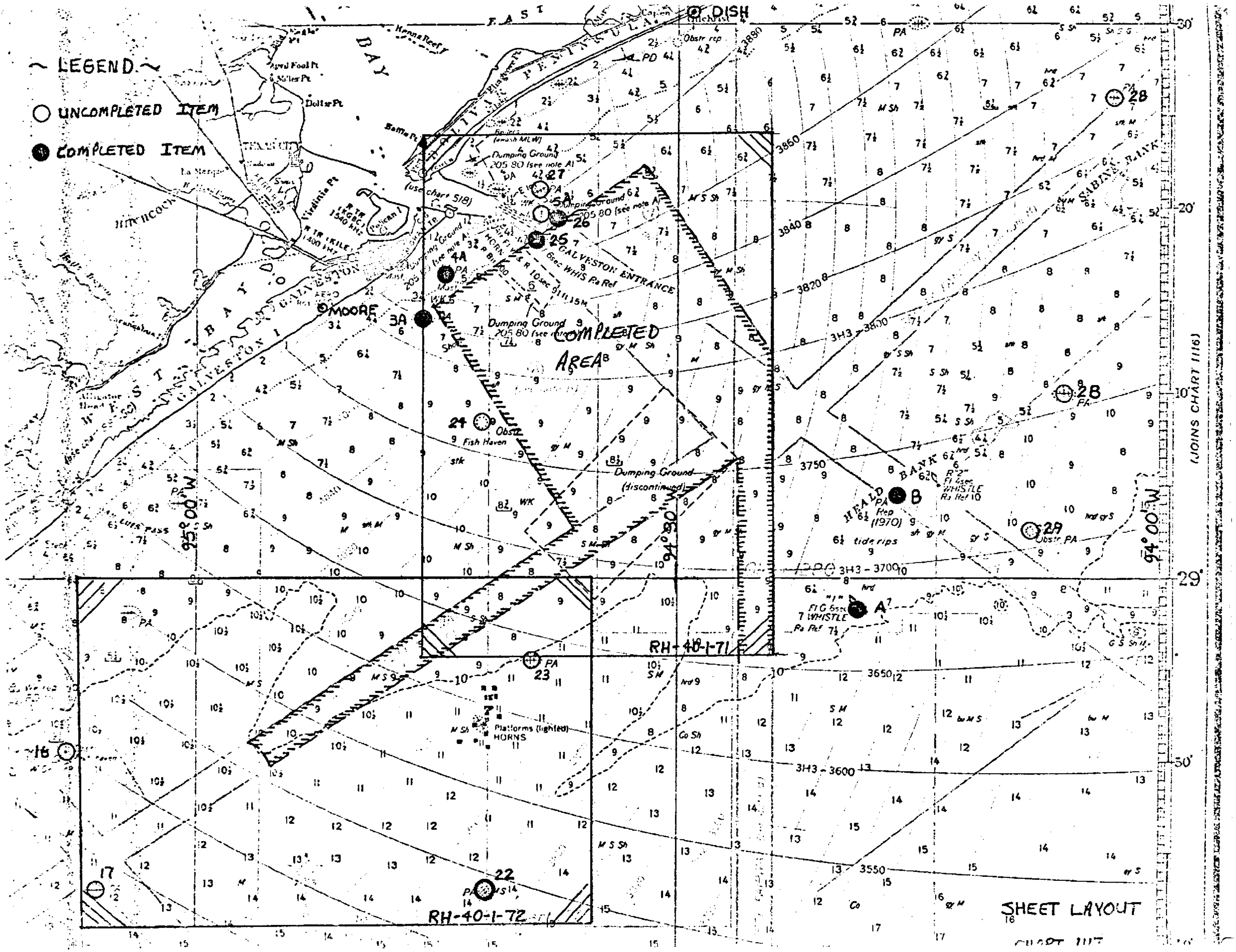
Soundings penciled by

Soundings in ~~fathoms~~ feet at MLW ~~XXXX~~ BASED ON PREDICTED TIDES

REMARKS: Verification to this survey was limited, no further processing is planned, reference should be made to the attached Verifier's Report/Addendum for data on limitations, modifications, corrections, and recommendations.

Applied to atds 4/12/78
CAB

USCOMM-DC 37009-P66


~ LEGEND ~
UNCOMPLETED ITEM
COMPLETED ITEM
COMPLETED AREA
RH-40-1-71
RH-40-1-72
95°00'W
94°30'W
94°00'W
GALVESTON ENTRANCE
Dumping Ground (discontinued)
Platforms (lighted) HORNS
HEALD BANK
SABINE BANK
DISH
MOORE
3A
4A
5A
22
23
24
25
26
27
28
29
16
17
A
B
(JOINS CHART 1116)
SHEET LAYOUT

DESCRIPTIVE REPORT
TO ACCOMPANY
WIRE DRAG FIELD NUMBER RH-40-1-72
PROJECT OPR-479
GALVESTON SOUTHWEST SAFETY FAIRWAY
1972
CDR JAMES COLLINS
NOAA SHIPS RUDE & HECK

A. AUTHORITY

This project was authorized under Project Instructions OPR-479-RU/HE-71, Sea Lanes, Gulf of Mexico, dated 28 July 1971; Project Instructions OPR-479-RU/HE/72, Safety Fairways, Gulf Of Mexico, dated 9 May 1972; and Priorities for Projects OPR-479, Wire Drag of the Safety Fairways, Gulf of Mexico, dated 7 September 1972.

B. CHARACTER AND LIMITS OF THE WORK

The purpose of this project was to clear the Galveston Anchorage Area and the Safety Fairways leading to Galveston Harbor. A first priority status was assigned to depths up to and including ten (10) fathoms.

The locality of the survey, covered by C&GS Chart 1282 is as follows: Sheet layout is from Latitude 28°40'N to 29°00'N and from Longitude 95°08'W to 94°35'W, and covers the Safety Fairway approaching from the Southwest corner of the Galveston Anchorage. This Safety Fairway was wire dragged only out to the ten (10) fathom curve.

The entire survey was conducted on a scale of 1:40,000 using RAYDIST DR-S Range-Range control. The effective depths, based on predicted tides, range from a minimum depth of ~~39~~ 40 ft. to a maximum depth of ~~58~~ 57 ft.

C. CONTROL AND SHORELINE

Raydist DR-S Range-Range control was utilized. The Raydist was operating on a frequency of 3300.4 Khz giving a lane width of 45.39904 meters. There was no shoreline on the sheet.

Two Raydist shore stations, DISH and MOORE, were utilized for control. DISH, located in Gilchrist, Texas, served as the Red Station. MOORE, located near the West end of Galveston Beach, served as the Green Station.

Upon completion of the survey the stations were dismanteled, but both stations are recoverable. Station DISH is marked by a piece of concrete, approximately 1 ft. by 2 ft. left on the ground at

the station site. Station MOORE is presently marked by a metal pipe (used for a ground connection) driven in the ground at the station site. These station markers can both be located by measuring known distances from permanent objects. Both stations Located by 3rd order traverse by AMC Operations Div. in 1971

A listing of all signals used is given in Attachment I.

D. DATE OF SURVEY

Operations were begun on Sheet RH-40-1-72 on 11 October 1972 and completed on 18 October 1972.

E. TIDAL REDUCERS

Preliminary reduction of each days data was made using predicted tides for the standard gauge at Pier #21 in Galveston Channel (LAT. 29°19'N, LONG 94°48'W.). The predicted tides were corrected for both time and height according to the correctors listed for the Galveston Pleasure Pier (LAT 29°17'N, LONG 94°47'W).

These correctors applied to the standard gauge at Pier #21 are as follows:

1) A -66 minute time corrector was applied to the time of both high and low water.

2) The predicted tides were corrected for height by multiplying the heights of both high and low water by a factor of 1.50.

This information was submitted to AMC computer division and a printout of predicted tide correctors was computed and used in lieu of actually drawing the tide curves.

Actual tidal data has been furnished by the Rockville office for the gauge at Pleasure Pier. This smooth tidal data consists of hourly heights, and the determining of smooth tide correctors has been done by ships personnel.

F. JUNCTIONS

Sheets RH-40-1-72 and H-9340 W.D RH-40-1-71 H-9298 W.D. junction satisfactorily.
The junction is on the Northwest of H-9340 W.D.

G. SPLITS

No splits exist on Sheet RH-40-1-72.

H. GROUNDINGS AND HANGS

See Attachment II.

I. GENERAL NOTES

Morning and evening Raydist calibrations were generally made by running one of two possible ranges and turning an angle to a third known signal.

Range 1 consisted of Bolivar Point Lighthouse (Rear) and Texas City Channel, Cut A, Outer Range Rear Light (Front). A right angle was turned from this range to South Jetty Light to determine ships position.

Range 2 was the Galveston Bay Entrance Channel Range and ships position was determined by turning a left angle to South Jetty Light.

In addition to morning and evening calibrations, frequent lane count checks were made on navigation buoys as well as on fixed oil towers whenever practicable.

The distance from the Raydist antenna to the end buoy varied as follows: for an 800 ft. towline, 265 meters; for a 1,000 ft. towline, 326 meters.

The following occurances should be noted when verifying these surveys:

A Day (11 October 1972)
The line ended at fix #8 with a hang in sections 3-4. Sections 11-F were untested at this point and were not claimed. The hang, which divers later found to be an oil well head that raises to within ~~49'~~ 47' of the surface in ~~58'~~ 56' of water, parted the drag shortly after position #8. The wire was picked up and followed back to the hang where a Raydist position was taken. One intermediate buoy and weight were lost. Least depth was determined by Bryson Gage

B Day (16 October 1972)
A small drag was set to clear hang of "A" day. Drag hung on well head; however, data was ~~retained~~ rejected. A second small drag was set after raising the uprights and hang considered cleared to ~~41'~~ 40'. A third drag was attempted but rejected due to excessive lifts. The data from this drag is questionable, the testing is substandard and excessive sag is shown in some sections. Also the data complicated with other strips. For these reasons and the fact that the strip is not needed for effective depth, it was rejected.

C Day (17 October 1972)
A large drag, starting below the 10 fathom curve and running from the Southwest to the Northeast was used. The area from N to 7, positions 21.8 to 28.2, had higher than normal lift possibly due to cross currents at depth, resulting in a cleared effective depth of 55'. Tides were not apparent: fathometers on RUDE, HECK and launch agreed with charted depths.

D Day (18 October 1972)
Tides again were not apparent: fathometers on both RUDE & HECK agree with charted depth. Large drag was set to clear remaining area of fairway in a S.W. to N.E. direction. At position 17 buoys began to ground; however, this was the last position and constituted an overlap area which had been previously cleared.
No note as to grounding or buoys affected in the Volume, only a statement in the daily journal that at pos. 17 some buoys began to drag in the mud.

J. CURRENTS

It was noted that the general trend of tidal currents in this area was to flow from Northeast to Southwest. Taking this into account, the vast majority of strips were run in this direction.

Occassionally, when the winds were out of the South for a period of several days, the currents would shift and drag strips were then run in the reverse direction.

no record of what surveys were used in comparison.

K. DISCREPANCIES AND COMPARISON WITH RECENT SURVEYS AND CHARTS

Charts: 11323 (formerly 1292); 39th Ed.; Apr. 9/77
11300 (formerly 1117); 19th Ed.; Oct. 23/76

In general, charted depths from the most recent charts were found to be quite reliable and were used daily in planning drag depths. } in conflict with statements in Section M.

The following obstruction was located and is considered to be a hazard to navigation. Quotes are from the Daily Journals and are the divers description of the hang.

"Divers found obstruction to be an (oil) well head in ~~58'~~ 56' of water that raises to within ~~49'~~ 47' of surface." Charted depth, 56' cleared to effective depth of ~~41'~~ 40'. Location: Ø 28° 55.4', y 94° 46.0'. Position and day letter: 8A. This obstruction was reported to the Coast Guard and was listed in Eighth Coast Guard District, Local Notice to Mariners No. 86 of 24 October 1972.

L. PERSONNEL AND EQUIPMENT

During this survey the RUDE & HECK acted as guide vessel and end vessel respectively. Both vessels and their launches were equipped with Raytheon DE-723 fathometers. Normally the launches alternated as drag tenders except on calm days when skiffs were also utilized.

Bearings to end buoys and opposite vessels were made on the Sperry Gyro Repeaters. Special care should be exercised in checking the HECK's bearings as its gyro repeaters tended to malfunction quite often.

Standard wire drag equipment was used throughout the survey.

Officers aboard during work on this survey included:
CDR James Collins, LCDR L.E. Pickens, LTJG S.H. Manzo, LTJG B.L. Wescott, and ENS H.B. Arnold.

M. MISCELLANEOUS

Much of the work done was planned by taking soundings with fathometer prior to dragging and then setting uprights accordingly. Due to the flat bottoms encountered in Texas this method worked very well. Planning drags by using charted depths and predicted tides was less successful because in many cases the tides were not apparent in the offshore areas that were being surveyed.

in conflict with section K.

In some cases it may appear that an area was not cleared to within the specified number of feet off the charted bottom depth. However, this in many cases may be due to applying tides corrector when no tide was actually apparent.

The fact that most areas were cleared very close to the bottom, when planned by using soundings, is demonstrated by the number of hangs that were found as close as 10" off the bottom in the adjoining anchorage area under similar conditions. In addition, the many T.O.B. - tester on bottom - verified that the drag on most occassions was within 2 feet of the bottom.

These two paragraphs are important as an explanation of discrepancies refered to in the Verifier's Report. This should be considered when evaluating the necessity of recommendations made in the Verifier's Report.

APPROVAL SHEET

All records of this survey prior to smooth plotting are hereby approved. Some work remains to be done on items and additional work is recommended on the A day hang; however, it is felt the primary objective was attained, i.e., clearing the safety fairway to the ten fathom curve. The 1972 field work was personally supervised by the undersigned and the boat sheet and records were inspected daily. This survey is considered complete and adequate for charting.

for Leonard E Peters

CDR James Collins
Commanding Officer
NOAA Ships RUDE & HECK

SHEET 40-1-72

LIST OF ATTACHMENTS

I Control Signals

II List of Groundings and Hangs

III A) Daily Raydist Corrections

B) Electronic Calibration Data

IV Aids to Navigation

V Statistics

VI Revised Projection Parameters

VII Revised Electronic Control Parameters

ATTACHMENT I

SHEET 40-1-72

CONTROL SIGNALS

RAYDIST CONTROL SIGNALS

STATION NAME	LATITUDE	LONGITUDE	REMARKS
MOORE	29° 14' 03.520"	94° 52' 54.136"	Green Station
DISH	29° 30' 41.625"	94° 29' 13.880"	Red Station

Stations located by 3rd Order Traverse by AMC Operations Division in 1971

VISUAL CONTROL SIGNALS

NAME	STATION	SOURCE	YEAR	REMARKS
CITY	Texas City Channel, Cut A Outer Range Rear Light	G-13298	1963	Front, #1 Range
LIVE	Bolivar Point Lighthouse	G-1252	1900 thru 1931	Rear, #1 Range
SOUTH	South Jetty Light	G-2122	1933	Right , #2 Range Left , #2 Range
REAR	Galveston Bay Entrance Channel, Rear Range Light			Used for Raydist Calibration. See Note Below.
FRONT	Galveston Bay Entrance Channel, Front Range Light			Used for Raydist Calibration. See Note Below.

No records of computations were included in the survey records.

(NAME) STATION	LATITUDE	LONGITUDE	REMARKS
C MAL	29° 08.65'	94° 40.75'	See Attachment IV for additional information on C MAL and C BIG.
C BIG	29° 09.3'	94° 40.55'	
REAR*	29° 22'18.334"	94° 44'53.326"	REAR, #2 Range
FRONT*	29° 21'16.821"	94° 42'56.635"	FRONT, #2 Range

*NOTE: REAR & FRONT located by ships personnel, verified by AMC, and Raydist calibration lanes determined by computer.

ATTACHMENT II
LIST OF GROUNDINGS & HANGS
SHEET 40-1-72

POSITION NO. AND DAY LETTER	LATITUDE	LONGITUDE	GROUNDED EFFECTIVE DEPTH	CLEARED BY STRIP NUMBER	CLEARED EFFECTIVE DEPTH	SOUNDING	CHARTED DEPTH	ITEM NUMBER	REMARKS
8A	28° 55.4'	94° 46.0'	—	B-1~~2~~	40 ~~41'~~	47' (Bryson Gage)	56'		Drag from N.W. to S.E. Divers found hang to be oil "Christmas Tree"
28D	28° 55.4'	94° 46.0'	54'	B-1~~2~~	40 ~~41'~~	—	56'		Drag from S.W. to N.E. to fill holiday. Hang same as "A" day.

ATTACHMENT III
DAILY RAYDIST CORRECTIONS
SHEET 40-1-72

DAILY RAYDIST CORRECTIONS

DATE	DAY LETTER	SHIP RUDE RED	SHIP RUDE GREEN	SHIP HECK RED	SHIP HECK GREEN
11 OCT. 72	A	+0.2	0.0	-0.2	+0.2
16 OCT. 72	B	+0.3	-0.1	-0.1	0.0
17 OCT. 72	C	+0.3	-0.1	-0.1	0.0
18 OCT. 72	D	+0.3	-0.1	-0.1	0.0

GALVESTON CALIBRATION DATA — RANGE #1 SHEET 40-1-72

ATTACHMENT III

STATION DISH (RED)
ELECTRONIC CALIBRATION DATA
RIGHT ANGLE TO SOUTH JETTY LIGHT

35 DEG	0 MIN =	767.67	LANES
36 DEG	0 MIN =	765.56	LANES
37 DEG	0 MIN =	763.57	LANES
38 DEG	0 MIN =	761.70	LANES
39 DEG	0 MIN =	759.93	LANES
40 DEG	0 MIN =	758.25	LANES
41 DEG	0 MIN =	756.66	LANES
42 DEG	0 MIN =	755.14	LANES
43 DEG	0 MIN =	753.70	LANES
44 DEG	0 MIN =	752.33	LANES
45 DEG	0 MIN =	751.02	LANES
46 DEG	0 MIN =	749.76	LANES
47 DEG	0 MIN =	748.56	LANES
48 DEG	0 MIN =	747.41	LANES
49 DEG	0 MIN =	746.31	LANES
50 DEG	0 MIN =	745.25	LANES
51 DEG	0 MIN =	744.22	LANES
52 DEG	0 MIN =	743.24	LANES
53 DEG	0 MIN =	742.29	LANES
54 DEG	0 MIN =	741.37	LANES
55 DEG	0 MIN =	740.48	LANES
56 DEG	0 MIN =	739.63	LANES
57 DEG	0 MIN =	738.80	LANES
58 DEG	0 MIN =	737.99	LANES
59 DEG	0 MIN =	737.21	LANES
60 DEG	0 MIN =	736.45	LANES
61 DEG	0 MIN =	735.71	LANES
62 DEG	0 MIN =	734.99	LANES
63 DEG	0 MIN =	734.29	LANES
64 DEG	0 MIN =	733.61	LANES
65 DEG	0 MIN =	732.94	LANES
66 DEG	0 MIN =	732.29	LANES
67 DEG	0 MIN =	731.66	LANES
68 DEG	0 MIN =	731.04	LANES
69 DEG	0 MIN =	730.43	LANES
70 DEG	0 MIN =	729.84	LANES
71 DEG	0 MIN =	729.25	LANES
72 DEG	0 MIN =	728.68	LANES
73 DEG	0 MIN =	728.12	LANES
74 DEG	0 MIN =	727.57	LANES
75 DEG	0 MIN =	727.03	LANES
76 DEG	0 MIN =	726.50	LANES
77 DEG	0 MIN =	725.97	LANES
78 DEG	0 MIN =	725.46	LANES
79 DEG	0 MIN =	724.95	LANES
80 DEG	0 MIN =	724.45	LANES
81 DEG	0 MIN =	723.95	LANES
82 DEG	0 MIN =	723.47	LANES
83 DEG	0 MIN =	722.99	LANES
84 DEG	0 MIN =	722.51	LANES
85 DEG	0 MIN =	722.04	LANES
86 DEG	0 MIN =	721.57	LANES
87 DEG	0 MIN =	721.11	LANES
88 DEG	0 MIN =	720.66	LANES
89 DEG	0 MIN =	720.21	LANES
90 DEG	0 MIN =	719.76	LANES

STATION MOORE (BLUE)
ELECTRONIC CALIBRATION DATA
RIGHT ANGLE TO SOUTH JETTY LIGHT

35 DEG	0 MIN =	389.53	LANES
36 DEG	0 MIN =	387.96	LANES
37 DEG	0 MIN =	386.52	LANES
38 DEG	0 MIN =	385.19	LANES
39 DEG	0 MIN =	383.97	LANES
40 DEG	0 MIN =	382.83	LANES
41 DEG	0 MIN =	381.79	LANES
42 DEG	0 MIN =	380.82	LANES
43 DEG	0 MIN =	379.92	LANES
44 DEG	0 MIN =	379.08	LANES
45 DEG	0 MIN =	378.31	LANES
46 DEG	0 MIN =	377.59	LANES
47 DEG	0 MIN =	376.92	LANES
48 DEG	0 MIN =	376.29	LANES
49 DEG	0 MIN =	375.71	LANES
50 DEG	0 MIN =	375.16	LANES
51 DEG	0 MIN =	374.66	LANES
52 DEG	0 MIN =	374.18	LANES
53 DEG	0 MIN =	373.74	LANES
54 DEG	0 MIN =	373.33	LANES
55 DEG	0 MIN =	372.94	LANES
56 DEG	0 MIN =	372.58	LANES
57 DEG	0 MIN =	372.24	LANES
58 DEG	0 MIN =	371.93	LANES
59 DEG	0 MIN =	371.63	LANES
60 DEG	0 MIN =	371.36	LANES
61 DEG	0 MIN =	371.11	LANES
62 DEG	0 MIN =	370.87	LANES
63 DEG	0 MIN =	370.64	LANES
64 DEG	0 MIN =	370.43	LANES
65 DEG	0 MIN =	370.25	LANES
66 DEG	0 MIN =	370.07	LANES
67 DEG	0 MIN =	369.91	LANES
68 DEG	0 MIN =	369.76	LANES
69 DEG	0 MIN =	369.62	LANES
70 DEG	0 MIN =	369.49	LANES
71 DEG	0 MIN =	369.38	LANES
72 DEG	0 MIN =	369.27	LANES
73 DEG	0 MIN =	369.18	LANES
74 DEG	0 MIN =	369.09	LANES
75 DEG	0 MIN =	369.02	LANES
76 DEG	0 MIN =	368.95	LANES
77 DEG	0 MIN =	368.89	LANES
78 DEG	0 MIN =	368.85	LANES
79 DEG	0 MIN =	368.81	LANES
80 DEG	0 MIN =	368.78	LANES
81 DEG	0 MIN =	368.76	LANES
82 DEG	0 MIN =	368.74	LANES
83 DEG	0 MIN =	368.73	LANES
84 DEG	0 MIN =	368.74	LANES
85 DEG	0 MIN =	368.74	LANES
86 DEG	0 MIN =	368.76	LANES
87 DEG	0 MIN =	368.79	LANES
88 DEG	0 MIN =	368.82	LANES
89 DEG	0 MIN =	368.86	LANES
90 DEG	0 MIN =	368.90	LANES

RANGE #2 ATTACHMENT III SHEET 40-1-72

ELECTRONIC CALIBRATION DATA FOR GALVESTON BAY ENTRANCE
CHANNEL RANGE A. LEFT ANGLE TO SOUTH (SOUTH JETTY LIGHT)

PAGE 1

RED STATION (DISH)					GREEN STATION (MOORE)				
20	DEG	0 MIN =	583.23	LANES	20	DEG	0 MIN =	536.99	LANES
21	DEG	0 MIN =	583.68	LANES	21	DEG	0 MIN =	534.91	LANES
22	DEG	0 MIN =	584.13	LANES	22	DEG	0 MIN =	532.08	LANES
23	DEG	0 MIN =	584.57	LANES	23	DEG	0 MIN =	529.96	LANES
24	DEG	0 MIN =	584.99	LANES	24	DEG	0 MIN =	528.02	LANES
25	DEG	0 MIN =	585.40	LANES	25	DEG	0 MIN =	526.24	LANES
26	DEG	0 MIN =	585.79	LANES	26	DEG	0 MIN =	524.60	LANES
27	DEG	0 MIN =	586.17	LANES	27	DEG	0 MIN =	523.08	LANES
28	DEG	0 MIN =	586.53	LANES	28	DEG	0 MIN =	521.67	LANES
29	DEG	0 MIN =	586.88	LANES	29	DEG	0 MIN =	520.36	LANES
30	DEG	0 MIN =	587.22	LANES	30	DEG	0 MIN =	519.14	LANES
31	DEG	0 MIN =	587.54	LANES	31	DEG	0 MIN =	517.99	LANES
32	DEG	0 MIN =	587.86	LANES	32	DEG	0 MIN =	516.92	LANES
33	DEG	0 MIN =	588.16	LANES	33	DEG	0 MIN =	515.91	LANES
34	DEG	0 MIN =	588.45	LANES	34	DEG	0 MIN =	514.95	LANES
35	DEG	0 MIN =	588.73	LANES	35	DEG	0 MIN =	514.05	LANES
36	DEG	0 MIN =	589.01	LANES	36	DEG	0 MIN =	513.20	LANES
37	DEG	0 MIN =	589.27	LANES	37	DEG	0 MIN =	512.39	LANES
38	DEG	0 MIN =	589.53	LANES	38	DEG	0 MIN =	511.61	LANES
39	DEG	0 MIN =	589.78	LANES	39	DEG	0 MIN =	510.88	LANES
40	DEG	0 MIN =	590.02	LANES	40	DEG	0 MIN =	510.18	LANES
41	DEG	0 MIN =	590.25	LANES	41	DEG	0 MIN =	509.51	LANES
42	DEG	0 MIN =	590.48	LANES	42	DEG	0 MIN =	508.87	LANES
43	DEG	0 MIN =	590.70	LANES	43	DEG	0 MIN =	508.25	LANES
44	DEG	0 MIN =	590.91	LANES	44	DEG	0 MIN =	507.66	LANES
45	DEG	0 MIN =	591.12	LANES	45	DEG	0 MIN =	507.09	LANES
46	DEG	0 MIN =	591.32	LANES	46	DEG	0 MIN =	506.55	LANES
47	DEG	0 MIN =	591.52	LANES	47	DEG	0 MIN =	506.02	LANES
48	DEG	0 MIN =	591.72	LANES	48	DEG	0 MIN =	505.51	LANES
49	DEG	0 MIN =	591.91	LANES	49	DEG	0 MIN =	505.02	LANES
50	DEG	0 MIN =	592.09	LANES	50	DEG	0 MIN =	504.54	LANES
51	DEG	0 MIN =	592.27	LANES	51	DEG	0 MIN =	504.08	LANES
52	DEG	0 MIN =	592.45	LANES	52	DEG	0 MIN =	503.64	LANES
53	DEG	0 MIN =	592.62	LANES	53	DEG	0 MIN =	503.20	LANES
54	DEG	0 MIN =	592.79	LANES	54	DEG	0 MIN =	502.78	LANES
55	DEG	0 MIN =	592.96	LANES	55	DEG	0 MIN =	502.37	LANES
56	DEG	0 MIN =	593.13	LANES	56	DEG	0 MIN =	501.97	LANES
57	DEG	0 MIN =	593.29	LANES	57	DEG	0 MIN =	501.59	LANES

RANGE # 2 ATTACHMENT III SHEET 10-1-72

ELECTRONIC CALIBRATION DATA FOR GALVESTON BAY ENTRANCE CHANNEL RANGE A. LEFT ANGLE TO SOUTH (SOUTH JETTY LIGHT)

PAGE II

RED STATION (DISH)					GREEN STATION (MOORE)				
58	DEG	0	MIN =	593.45 LANES	58	DEG	0	MIN =	501.21 LANES
59	DEG	0	MIN =	593.60 LANES	59	DEG	0	MIN =	500.84 LANES
60	DEG	0	MIN =	593.76 LANES	60	DEG	0	MIN =	500.48 LANES
61	DEG	0	MIN =	593.91 LANES	61	DEG	0	MIN =	500.12 LANES
62	DEG	0	MIN =	594.06 LANES	62	DEG	0	MIN =	499.78 LANES
63	DEG	0	MIN =	594.21 LANES	63	DEG	0	MIN =	499.44 LANES
64	DEG	0	MIN =	594.35 LANES	64	DEG	0	MIN =	499.11 LANES
65	DEG	0	MIN =	594.50 LANES	65	DEG	0	MIN =	498.78 LANES
66	DEG	0	MIN =	594.64 LANES	66	DEG	0	MIN =	498.46 LANES
67	DEG	0	MIN =	594.78 LANES	67	DEG	0	MIN =	498.15 LANES
68	DEG	0	MIN =	594.92 LANES	68	DEG	0	MIN =	497.84 LANES
69	DEG	0	MIN =	595.06 LANES	69	DEG	0	MIN =	497.53 LANES
70	DEG	0	MIN =	595.19 LANES	70	DEG	0	MIN =	497.23 LANES
71	DEG	0	MIN =	595.33 LANES	71	DEG	0	MIN =	496.94 LANES
72	DEG	0	MIN =	595.46 LANES	72	DEG	0	MIN =	496.65 LANES
73	DEG	0	MIN =	595.60 LANES	73	DEG	0	MIN =	496.36 LANES
74	DEG	0	MIN =	595.73 LANES	74	DEG	0	MIN =	496.08 LANES
75	DEG	0	MIN =	595.86 LANES	75	DEG	0	MIN =	495.80 LANES
76	DEG	0	MIN =	595.99 LANES	76	DEG	0	MIN =	495.52 LANES
77	DEG	0	MIN =	596.13 LANES	77	DEG	0	MIN =	495.24 LANES
78	DEG	0	MIN =	596.26 LANES	78	DEG	0	MIN =	494.97 LANES
79	DEG	0	MIN =	596.39 LANES	79	DEG	0	MIN =	494.70 LANES
80	DEG	0	MIN =	596.52 LANES	80	DEG	0	MIN =	494.44 LANES
81	DEG	0	MIN =	596.64 LANES	81	DEG	0	MIN =	494.17 LANES
82	DEG	0	MIN =	596.77 LANES	82	DEG	0	MIN =	493.91 LANES
83	DEG	0	MIN =	596.90 LANES	83	DEG	0	MIN =	493.65 LANES
84	DEG	0	MIN =	597.03 LANES	84	DEG	0	MIN =	493.39 LANES
85	DEG	0	MIN =	597.16 LANES	85	DEG	0	MIN =	493.13 LANES

ATTACHMENT IV
AIDS TO NAVIGATION
SHEET 40-1-72

AIDS TO NAVIGATION

NAME	LATITUDE	LONGITUDE	REMARKS
HU-HI	29° 06.37'	94° 23.80'	Used to check lane count.
C & K 101 WELL*	29° 08.65'	94° 40.75'	Called "C MAL" in Volume #I
C&K 102 WELL*	29° 09.3'	94° 40.55'	Called "C BIG" in Volume #I

*NOTE: Additional data may be found on C&K Wells ~~1011~~ 101 and 102 on page 200 of U.S.C.G. SPECIAL LOCAL NOTICE TO MARINERS entitled "Offshore Oil Well Structures and Submerged Wells" dated 1 June 1972. C&K Wells ~~1011~~ 101 and 102 were called "C MAL" and "C BIG", respectively, in Volume I, and were used to check lane count and as additional visual control.

ATTACHMENT V
STATISTICS
SHEET 40-1-72

STATISTICS

DATE	DAY LETTER	STRIP NUMBER	VOLUME NUMBER	NUMBER OF POSITIONS	L.N.M.	S.N.M.	
11 OCT. 72	A	1	I	8	2.2	4.8	
16 OCT. 72	B	1	I	6	1.2	0.8	strip rejected
16 OCT. 72	B	2	I	5	0.8	0.5	
17 OCT. 72	C	1	I	37	9.1	20.0	
18 OCT. 72	D	1	I	17	5.0	8.5	
18 OCT. 72	D	2	I	11	2.8	2.5	
	TOTAL			84	21.1	37.1	

Total survey positions = 168
Total smooth plotted positions = 156

CFN3-1
4-6-71

See Revised Form — Attachment VI

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

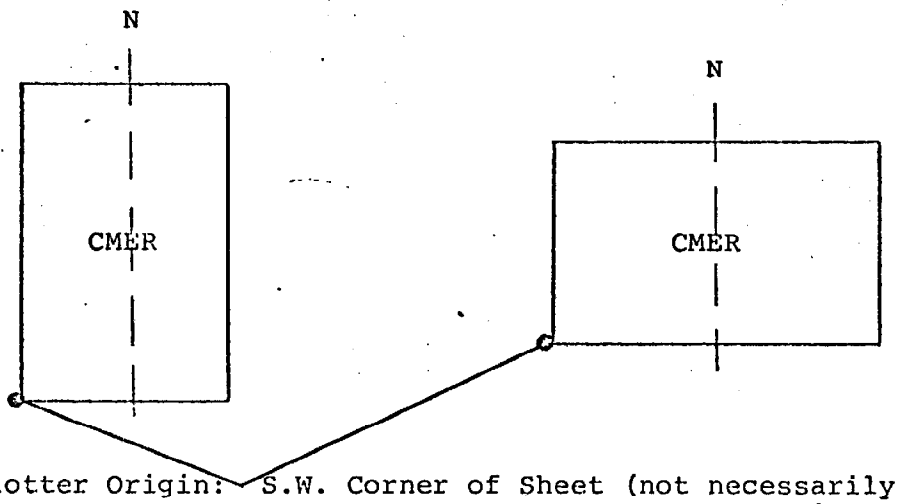
1. Project No. OPR-479
2. Reg. No. H-9340WD
3. Field No. RH 40-1-72
4. Requested By CO RUDE/HECK Thru AMC
5. Ship or Office RUDE & HECK
6. Date Required ASAP

7. Polyconic [X] Modified Transverse Mercator [ ]
8. Central Meridian of Projection 94 ° 51 ' 00W "
9. Survey Scale: 1: 40,000
10. Size of Sheet (check one):

36 x 54 [ ] 36 x 60 [ ] Other [X] Specify 42 X 54

11. Sheet Orientation (check one):

NYX = 1 [ ] NYX = Ø [X]



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)

Latitude 28 ° 40 ' 30 "
Longitude 95 ° 08 ' 30 "

13. G.P.'s of triangulation and/or signals attached. [ ]
14. Material Desired: Tracing Paper [ ] Mylar [X]

Smooth Sheet [ ] Other [ ] Specify

15. Remarks: 4 each, request latitude values be printed out along central meridian (94°52'00") in addition to both sides of boatsheet.

CFN3-2
4-6-71

See Revised Form - ATTachment VII

ATLANTIC MARINE CENTER

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR- 479 2. Reg. # H- 9340WD 3. Field # Rh-40-1-72

4. Type of Control RAYDIST (Hi-Fix, Raydist, EPI, etc.)

5. Frequency 3300.4 (for conversion of electronic lanes to meters)

6. Mode of Operation (check one):

Range-Range [ ]

Range One (R_1)
Station I.D. DISH , 1971
Range Two (R_2)
Station I.D. MOORE , 1971

Range-Visual [ ]

Lat. 29 ° 30 ' 41.625 "
Long. 94 ° 29 ' 13.880 "
Lat. 29 ° 14 ' 03.520 "
Long. 94 ° 52 ' 54.136 "

Hyperbolic (3-station) [ ]

Slave One
Station I.D. _____
Master
Station I.D. _____
Slave Two
Station I.D. _____

Hyper-Visual [ ]

Lat. ____ ° ____ ' ____ "
Long. ____ ° ____ ' ____ "
Lat. ____ ° ____ ' ____ "
Long. ____ ° ____ ' ____ "
Lat. ____ ° ____ ' ____ "
Long. ____ ° ____ ' ____ "

7. Location of Survey:

Range-Range [X] Imagine an observer is standing at R_1 Station and looking directly at R_2 (check one):

Survey area is to observer's Right [ ] A=Ø

Survey area is to observer's Left [X] A=1

Hyperbolic [ ] Looking from survey area toward Master Station:

Slave One must be to observer's Left.

Slave Two must be to observer's Right.

8. [X] This form is submitted as an aid in preparing a boat sheet.

[ ] This form applies to all data on this survey.

[ ] This form applies to part of the data on this survey.

Vessel EDP #	From Time	From Day	To Time	To Day	Position Numbers (inclusive)
					to
					to
					to

9. Remarks: MAKE THE TWO COLORS RED & BLUE

CAM3-1
1/31/74

Attachment VI

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

1. Project No. OPR-479
2. Reg. No. H-9340 WD
3. Field No. R/H-40-1-72
4. Requested By ----------
5. Ship or Office Verification
6. Date Required ----------

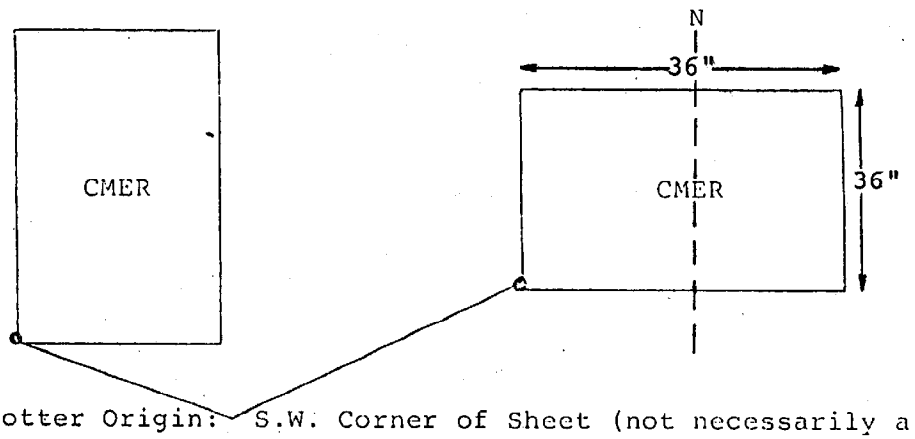
7. Polyconic [X] Modified Transverse Mercator [ ]
8. Central Meridian of Projection 94 ° 50 ' 00 "
9. Survey Scale: 1: 40,000
10. Size of Sheet (check one):

36 x 54 [ ] 36 x 60 [ ] Other [X] Specify 36" x 36"

11. Sheet Orientation (check one):

NYX = 1 [ ] NYX = Ø [X]

N



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)

Latitude 28 ° 43 ' 30 "

Longitude 95 ° 01 ' 30 "

13. G.P.'s of triangulation and/or signals attached [ ]
14. Material Desired: Tracing Paper [ ] Mylar [ ]

Smooth Sheet [X] Other [ ] Specify _____

15. Remarks: _____

CAM3-2
1/31/74

Attachment VII

ATLANTIC MARINE CENTER

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR- 479 2. Reg. # H- 9340WD 3. Field # R/H-40-1-72

4. Type of Control: Raydist (Hi-Fix, Raydist, EPI, etc.)

5. Frequency 3300.4 (for conversion of electronic lanes to meters)

6. Mode of Operation (check one):

Range-Range [X] Range-Visual [ ]

Range One (R_1) Station I.D.	Moore 1971 (Green)	Lat.	29 ° 14 ' 03.520"
		Long.	94 ° 52 ' 54.136"
Range Two (R_2) Station I.D.	Dish 1971 (Red)	Lat.	29 ° 30 ' 41.625"
		Long.	94 ° 29 ' 13.880"

Hyperbolic (3-station) [ ] Hyper-Visual [ ]

Slave One Station I.D.		Lat.	° ' "
		Long.	° ' "
Master Station I.D.		Lat.	° ' "
		Long.	° ' "
Slave Two Station I.D.		Lat.	° ' "
		Long.	° ' "

7. Location of Survey:

Range-Range [X] Imagine an observer is standing at R_1 Station and looking directly at R_2 (check one):

Survey area is to observer's Right [X] A=Ø

Survey area is to observer's Left [ ] A=1

Hyperbolic [ ] Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. [ ] This form is submitted as an aid in preparing a boat sheet.

[X] This form applies to all data on this survey.

[ ] This form applies to part of the data on this survey.

Vessel EDP #	From Time	From Day	To Time	To Day	Position Numbers (inclusive)
					to
					to
					to

9. Remarks: Plot station Moore (R_1) in Green Liquid Ink.
Plot station Dish (R_2) in Red Liquid Ink.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

Date: SEP 7 19[illegible]

Reply to Attn of: C3231

Subject: Priorities for Project OPR-479, Wire Drag of the Safety Fairways, Gulf of Mexico

To: Commanding Officer
NOAA Ships RUDE and HECK

Thru: Director, Atlantic Marine Center

A recent review of the wire drag work in the Gulf of Mexico has led to the establishment of the following priorities:

1. Safety fairways of the approaches to the major ports and the associated anchorage areas out to 10 fathoms.

2. Approaches to the minor ports and the safety fairways along the coast between ports out to 10 fathoms.

3. Approaches to major ports from 10 to 20 fathoms and in the vicinity of any proposed or constructed offshore terminals.

These priorities should be used as a guide for planning operations this year as well as future years. Future project instructions will reflect these priorities.

While working in a first or second priority area it may be more practical to continue into a second or third priority area for a brief period of time due to shore station locations or other operational considerations. The judgment of the Commanding Officer shall rule in these cases.

Your comments and recommendations during the last debriefing session have been noted and are under consideration by this Office.

Good luck and smooth sailing.

Robert C. Munson

Robert C. Munson
Associate Director
Marine Surveys and Maps

2 Attachments

1st ENDORSEMENT 11 September 1972
Noted and forwarded.

Alfred C. Holmes
Director, Atlantic Marine Center

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

MAY 9 1972

Commanding Officer
NOAA Ships RUDE and HECK

PROJECT INSTRUCTIONS: OPR-479-RU/HE-72, Safety Fairways, Gulf of Mexico

GENERAL

1. All previous instfuctions for this project are hereby superseded.

2. Plan of Operation: Work on this project shall resume upon completion of operations on OPR-480-R/H-72, Delaware Bay Wire Drag, about July 1, 1972.

First priority is assigned to the fairway and anchorage at the entrance to Galveston Harbor. A sketch showing the project limits is attached.

3. The purpose of this project is to clear Safety Fairways, including the anchorage area.

WIRE DRAG

4. Prior surveys that cover the project area have been furnished to be used in planning wire drag operations.

5. Advance notice shall be provided to the Coast Guard before wire drag operations begin to permit publication of planned survey activities in Notice to Mariners.

6. Wire drag work shall be in accordance with the Wire Drag Manual except for modifications indicated in these instructions.

7. A project limit sketch is attached.

8. The project area at the entrance to Galveston shall be surveyed at 1:40,000 scale. Boat Sheets C, D, E, and F cover this area. All boat sheets will be furnished with Raydist arcs applied.

9. Drag Strips in one direction are considered adequate for establishing effective cleared depths when no hangs are encountered.

10. Overlap of adjacent drag strips on the 1:40,000 scale sheets shall be at least 600 feet. Splits shall be cleared as work progresses.

11. All hangs and temporary groundings shall be adequately cleared by subsequent drag strips. All hangs are to be cleared to within two feet. All hangs, other than temporary grounds or anticipated groundings in shoal water at the beginning and ends of drag strips, shall be investigated by divers, if practicable before attempting to clear with subsequent drag strips. Obtain lead line soundings, if practicable, in order to determine the drag depth for clearance. Where wreckage is suspected or found by divers, hangs shall be cleared by two strips from opposite directions in accordance with Section 4-19, Wire Drag Manual. Clearing from one direction will suffice where divers are able to determine that there is no sloping protrusion smooth enough to allow the ground wire to slip over without catching.

12. Navigation buoys within the project limits shall be hung from opposite directions to insure that no unknown obstruction exist in their vicinity.

13. The drag shall be set to clear within 2 feet of general bottom in depths less than 40 feet, to within 3 feet of the bottom in depths between 40 and 60 feet, and to within 5 feet of the bottom in depths between 60 and 80 feet. In depths deeper than 85 feet, the effective depth of the drag shall be at least 80 feet. Wire drag operations need not cover areas where bottom depths exceed 20 fathoms, except where a charted wreck of obstruction has been designated for specific investigation.

14. Wire drag work shall be controlled by Raydist. Triangulation data for the project area has been furnished.

15. A permanent record shall be made of all fix angles and geographic positions of objects used for calibration. A report on Raydist calibration and calibration checks shall be made as outlined in Section 3-61 of the Hydrographic Manual.

16. All hydrographic data records that involve time shall be recorded in Greenwich Mean Time.

17. Preliminary tidal data for reduction of soundings and for determining proper upright lengths shall be by predicted tides.

18. The standard gage at Pier #21, Galveston, Texas, will serve as the reference station for operations in that area. Servicing of the gage will not be necessary, but the satisfactory operation shall be checked periodically to insure continuous records during periods of wire drag. The latest inspection report and description of the tide station will be furnished by AMC. A minimum of three bench marks shall be leveled to the staff. Tidal bench mark data has been furnished.

19. Hourly heights to be used to determine final tide reducers will be furnished by the Rockville Office upon request. When requesting hourly heights, the times of operation involved should be submitted in order that the proper time and height may be applied.

PRE-SURVEY REVIEW

20. The portion of the above project area covered by Chart 1116 has been examined for additional Pre-Survey Review items subsequent to the last update of June 23, 1971.

21. The following new items should be added for investigation during the course of the project:

Chart 1116

Chart 1278

Primary Item #14A: The M/V CAROL reported sunk September 1971 in lat. 29°29', long. 93°13' about 3/4 mi. NNE of Calcasieu Ship Channel in approx. 42 ft. of water with a least depth of 20 ft. over it. The wreck was reportedly marked with a white can buoy. (L.N.M. No. 80 of 1971).

Chart 1274

Primary Item #15A: The double bottom section of a Liberty Ship (formerly the SS William Beaumont) 445 ft. long, was reported sunk July 1971 in 36 ft. of water in lat. 29°34'30", long. 93°49'06". A least depth of 30 ft. was reported over the wreck. The wreck was marked (L.N.M. No. 66 of 1971), with a lighted buoy showing a quick-flashing red light.

Chart 1116 or 1117 not recent

Secondary Item #5B: The sunken tanker V.A. FOGG, 472-ft. long, was reported sunk in 97 ft. of water in lat. 28° 35'54", long. 94°49'03". A portion of the superstructure of the vessel was reported at or near the surface. Lighted Buoy "ERA", ("WR2??) black and red horizontal bands, was established in February 1972, reportedly 30 yards 180° from the wreck in its last known position.

22. With the addition of the above items, the Pre-Survey Review of Chart 116 dated January 31, 1968 previously updated to November 28, 1969 and June 23, 1971 can now be considered updated to April 19, 1972.

23. Investigations to resolve pre-survey items can be made in conjunction with routine area dragging with supplemental drag strips used as required to prove or disprove the existence of each item and to obtain final cleared depths over obstructions.

24. Any supplemental drag strips used to investigate review items shall extend over the area within a radius of 1/2 mile from the charted positions. In case of doubtful positions, investigations shall cover the area within one mile from reported positions except that investigations shall not exceed the limits of safe navigation and need not be extended extensively outside of the project limits.

25. All pre-survey review items shall be identified by divers, if possible, and cleared from two directions if not hung to eliminate the possibility of the ground wire passing over a slanting object. All hangs on obstructions shall be cleared as specified in Section 3-20, Wire Drag Manual. Obtain least depths by diver's hand lead to determine clearance drag depth.

26. Liaison shall be maintained with local fishermen and military authorities for the purpose of coordinating activities and determining additional reported obstructions to navigation. Any such additional items shall be made a part of these instructions. No work shall be done in restricted areas against the advice of military officials.

27. Results of the investigation for each item shall be reported to AMC along with specific charting recommendations as soon as practicable after investigation is completed.

MISCELLANEOUS

28. An investigation shall be conducted of the following items:

A. 1972 The 33-foot shoal charted at latitude 28° 58.3'N, longitude 94° 18.7'W, is reported to be non-existent by the U.S. Coast Guard. You will ascertain the existence and present least depth by the best means available.

B. 1972 The 6 1/2-fathom, PA, Rep (1970), in the fairlane at latitude 29° 04.5'N, longitude 94° 16.2'W shall be cleared by wire drag to the specifications for other work in this project area.

29. The investigation of these two items should be completed this year provided it will not materially hamper the progress of scheduled work on this project.

30. You will report your survey results on items A and B to Chief, Marine Chart Division, C32, through the Director, AMC.

31. A monthly progress sketch with a boat sheet layout indicated, shall be submitted at the scale of Charts 1272 and 1282. Submit reports as appropriate in accordance with Sections 2-36 through 2-48 of the Hydrographic Manual.

32. Work Identification Code 0132050 shall be used on NOAA Form 12-8b (8-71).

33. Submit recommendations if it appears advisable to amend these instructions.

34. Receipt of these instructions shall be acknowledged.

Robert C. Munson
Robert C. Munson
Associate Director
Office of Marine Surveys and Maps

- -

R E C E I P T

TO: Associate Director, Office of Marine Surveys and Maps

THROUGH: Director, Atlantic Marine Center

Receipt of Project Instructions OPR-479-RU/HE-72, Safety Fairways, Gulf of Mexico, is acknowledged.

_____
Commanding Officer
NOAA Ships RUDE & HECK

_____
Date

NATIONAL OCEAN SURVEY (NOAA)
TIDES, HOURLY HEIGHTS (FEET)

GALVESTON PLEASURE PIER TEXAS OCT 1972 TM 90.00W

DAY OF MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11
0	5.45	5.76	5.34	5.30	5.15	4.88	4.19	4.36	4.30	4.65	5.57
1	5.43	5.93	5.37	5.44	5.28	5.06	4.28	4.46	4.31	4.79	5.78
2	5.27	5.92	5.34	5.54	5.30	4.99	4.27	4.51	4.46	4.76	5.75
3	5.18	5.70	5.23	5.26	5.26	4.88	4.13	4.58	4.50	4.81	5.74
4	5.11	5.47	5.00	5.07	5.00	4.81	3.92	4.41	4.43	4.73	5.48
5	5.13	5.34	4.86	4.96	4.74	4.56	3.71	4.27	4.24	4.50	5.45
6	5.04	5.10	4.56	4.75	4.42	4.24	3.34	3.96	3.93	4.24	5.27
7	5.09	5.05	4.57	4.58	4.29	4.02	3.03	3.70	3.58	3.92	4.95
8	5.14	5.13	4.54	4.59	4.34	3.87	2.87	3.53	3.35	3.61	4.65
9	5.03	5.15	4.69	4.72	4.29	3.95	2.82	3.42	3.21	3.47	4.39
10	5.05	5.30	4.89	4.75	4.39	4.00	3.00	3.46	3.22	3.45	4.21
11	4.95	5.26	5.04	5.21	4.73	4.21	3.26	3.61	3.34	3.42	4.22
12	4.76	5.09	5.17	5.29	5.02	4.60	3.68	3.80	3.62	3.57	4.24
13	4.55	4.99	5.10	5.35	5.13	4.91	4.06	4.21	3.99	3.91	4.43
14	4.34	4.48	4.96	5.49	5.25	5.22	4.58	4.65	4.38	4.28	4.47
15	4.09	4.19	4.68	5.28	5.29	5.30	4.80	4.96	4.72	4.63	5.00
16	3.95	3.98	4.40	4.95	5.27	5.18	4.73	5.03	5.04	5.14	5.03
17	3.86	3.78	4.33	4.68	4.98	5.10	4.70	5.13	5.19	5.35	5.38
18	3.93	3.76	4.18	4.44	4.73	4.80	4.50	4.90	5.26	5.45	5.55
19	4.05	3.74	4.02	4.35	4.61	4.43	4.37	4.66	5.12	5.54	5.61
20	4.35	3.94	4.12	4.35	4.53	4.36	4.15	4.53	4.94	5.47	5.70
21	4.82	4.34	4.32	4.40	4.51	4.25	4.14	4.41	4.76	5.40	5.74
22	5.09	4.67	4.65	4.59	4.49	4.17	4.20	4.27	4.64	5.41	5.74
23	5.51	5.09	5.00	4.85	4.65	4.19	4.20	4.33	4.65	5.42	5.79

DATUM IS 2.46' below MLW

NATIONAL OCEAN SURVEY (NOAA)
TIDES, HOURLY HEIGHTS (FEET)

GALVESTON PLEASURE PIER TEXAS OCT 1972 TM 90.00W

DAY OF MONTH

HOUR	12	13	14	15	16	17	18	19	20	21	22
0	5.74	5.56	5.43	5.22	4.92	5.19	4.85	4.58	4.95	5.87	6.24
1	5.65	5.46	5.34	5.04	4.78	5.18	4.81	4.57	5.15	5.87	6.29
2	5.53	5.54	5.15	4.97	4.67	4.95	4.75	4.52	5.10	5.89	6.14
3	5.36	5.34	5.12	4.91	4.61	4.73	4.56	4.39	4.89	5.75	6.04
4	5.10	5.35	5.15	4.80	4.55	4.50	4.38	4.08	4.73	5.87	5.44
5	5.11	5.19	4.96	4.62	4.41	4.33	4.24	3.86	4.39	5.31	5.22
6	4.86	4.86	4.73	4.49	4.22	4.23	4.16	3.78	4.34	4.96	4.74
7	4.76	4.87	4.66	4.45	4.29	4.09	4.08	3.82	4.37	4.69	4.35
8	4.53	4.59	4.44	4.28	4.23	4.16	4.03	3.70	4.30	4.70	4.54
9	4.26	4.29	4.24	4.14	4.22	4.23	4.23	3.81	4.53	4.56	4.49
10	4.09	4.05	3.98	3.96	4.18	4.18	4.34	4.10	4.75	4.97	4.59
11	4.02	4.00	3.79	3.73	4.00	4.04	4.43	4.39	5.18	5.47	5.17
12	3.93	3.77	3.61	3.54	3.87	3.97	4.39	4.60	5.53	5.96	5.45
13	4.13	3.81	3.52	3.53	3.79	3.89	4.31	4.74	5.71	6.28	6.09
14	4.29	3.85	3.48	3.34	3.59	3.61	4.16	4.68	5.65	6.24	6.11
15	4.58	4.23	3.61	3.37	3.54	3.49	3.88	4.29	5.87	6.40	6.28
16	5.00	4.47	3.86	3.43	3.54	3.45	3.59	3.96	5.64	6.14	6.62
17	5.40	4.83	4.11	3.73	3.78	3.36	3.48	3.95	5.53	5.85	6.04
18	5.57	5.12	4.32	3.83	3.96	3.47	3.47	3.99	5.26	5.64	5.75
19	5.82	5.42	4.60	4.23	4.15	3.56	3.45	4.06	5.03	5.37	5.95
20	5.91	5.57	4.86	4.56	4.44	3.87	3.64	4.22	4.91	5.40	5.66
21	5.94	5.56	5.04	4.81	4.75	4.23	3.81	4.37	5.11	5.31	5.30
22	5.86	5.53	5.11	4.86	4.88	4.53	4.14	4.64	5.30	5.51	4.98
23	5.69	5.56	5.10	4.89	5.11	4.80	4.39	4.79	5.56	6.00	5.32

DATUM IS 2.46' below MLLW

NATIONAL OCEAN SURVEY (NOAA)
TIDES, HOURLY HEIGHTS (FEET)

GALVESTON PLEASURE PIER TEXAS OCT 1972 TM 90.00W

DAY OF MONTH

HOUR	23	24	25	26	27	28	29	30	31
0	5.26	4.86	5.01	5.78	5.50	4.78	5.57	5.60	5.71
1	5.07	4.89	4.87	5.77	5.19	4.75	5.47	5.55	5.62
2	5.04	4.99	5.04	5.65	5.28	4.81	5.31	5.29	5.45
3	4.78	4.51	5.03	5.71	5.52	4.52	5.24	5.27	5.25
4	4.26	4.61	5.03	5.60	5.34	4.43	5.13	5.05	4.86
5	3.98	4.41	4.65	5.57	5.03	4.56	4.97	5.02	4.78
6	3.47	3.65	4.30	5.52	4.71	4.55	4.99	4.99	4.48
7	3.06	3.15	3.86	5.08	4.66	4.46	5.07	5.00	4.61
8	2.31	2.90	3.43	4.88	4.41	4.36	5.04	5.26	4.69
9	2.53	2.72	3.24	4.68	3.86	4.26	4.95	5.18	4.71
10	2.70	2.78	2.76	4.42	3.09	3.95	4.80	5.28	4.88
11	2.98	2.97	2.94	4.31	2.79	3.63	4.50	5.32	4.96
12	3.65	3.33	2.95	4.57	2.42	3.45	4.41	5.17	5.00
13	4.32	3.79	3.45	4.80	2.57	3.36	4.02	4.88	4.76
14	4.99	4.18	3.88	5.07	2.75	3.26	3.74	4.63	4.55
15	5.47	4.91	4.37	5.34	2.92	3.48	3.72	4.45	4.45
16	5.87	5.19	5.07	5.81	3.37	3.49	3.96	4.38	4.43
17	5.87	5.59	5.41	6.11	3.76	4.07	4.07	4.26	4.39
18	5.71	5.81	5.95	6.00	4.17	4.43	4.24	4.38	4.30
19	5.24	5.78	6.06	6.20	4.59	4.81	4.65	4.61	4.24
20	4.98	5.60	5.97	6.18	5.01	5.19	4.94	4.91	4.50
21	4.83	5.32	5.93	6.12	5.07	5.47	5.26	5.28	4.85
22	4.76	5.21	5.73	5.84	4.92	5.68	5.64	5.55	5.14
23	4.93	5.06	5.84	5.72	4.96	5.63	5.78	5.79	5.23

DATUM IS 2.46' below MLW

MSL 4.63

D 9000W 31 1 31 -19.39 22388.0 * ( ) ARE INFERRED

SMOOTH TIDE CORRECTORS-PARABOLIC INTERPOLATION

SURVEYS IDENTIFICATION NUMBERS
WIRE DRAG DPR-479

REFERENCE STATION
GALVESTON PLEASURE PIER, GALVESTON, TEXAS

LOCATION
NONE USED

october 1972

CORRECTORS
0 0 0 0 0 0 0 0 0.0 0.0 1.00 1.00

TIME MERIDIAN OF OUTPUT - WEST AND YEAR
0 1972

OUTPUT IN FEET = 0, FATHOMS = 1, METERS = 2
0

INTERVAL
0.200

DATUM
2.460

HR	MIN	TIDE CORR	TIME MER	DAY	TIDE LAT	TIDE LON	GAGE LAT	GAGE LON
8	44	-3.4	0	276	0	0	0	0
9	42	-3.2						
10	42	-3.0						
11	38	-2.8						
14	39	-2.6						
17	43	-2.8						
19	5	-2.6						
19	30	-2.4						
19	53	-2.2						
20	24	-2.0						
21	10	-1.8						
22	9	-1.6						
0	17	-1.4	0	277	0	0	0	0
1	27	-1.2						
2	10	-1.4						
2	40	-1.6						
3	9	-1.8						
3	39	-2.0						
4	8	-2.2						
4	37	-2.4						
5	14	-2.6						
6	25	-2.8						
7	31	-3.0						

9 12	-2.8							
10 27	-2.6							
11 26	-2.4							
13 17	-2.2							
14 23	-2.0							
15 16	-2.2							
16 36	-2.4							
17 45	-2.6							
18 35	-2.8							
20 9	-2.6							
20 49	-2.4							
21 25	-2.2							
22 17	-2.0							
0 9	-1.8	0	278	0	0	0	0	
2 23	-1.6							
3 9	-1.8							
3 39	-2.0							
4 11	-2.2							
4 51	-2.4							
5 29	-2.6							
6 28	-2.8							
8 46	-3.0							
9 40	-2.8							
11 13	-2.6							
12 9	-2.4							
15 44	-2.2							
16 24	-2.4							
16 54	-2.6							
18 36	-2.8							
20 47	-3.0							
21 29	-2.8							
22 8	-2.6							
22 48	-2.4							
23 24	-2.2							
3 50	-2.0	0	279	0	0	0	0	
4 33	-2.2							
5 10	-2.4							
5 50	-2.6							
9 31	-2.8							
10 8	-2.6							
10 48	-2.4							
11 25	-2.2							
12 15	-2.0							
15 44	-1.8							
16 34	-2.0							
17 10	-2.2							
17 50	-2.4							
19 16	-2.6							
22 31	-2.8							
23 7	-2.6							
23 46	-2.4							
1 20	-2.2	0	280	0	0	0	0	

4 25	-2.0							
5 0	-2.2	0	280	0	0	0	0	
6 28	-2.2	0	284	0	0	0	0	
9 31	-2.4							
10 44	-2.2							
11 29	-2.0							
12 8	-1.8							
12 48	-1.6							
13 25	-1.4							
14 15	-1.2							
17 51	-1.0							
18 34	-1.2							
19 9	-1.4							
19 39	-1.6							
20 12	-1.8							
20 52	-2.0							
21 19	-2.2							
21 43	-2.4							
22 9	-2.6							
22 49	-2.8							
5 50	-3.0	0	(285)	0	0	0	0	
6 45	-3.2							
8 31	-3.4							
9 40	-3.2							A-Day
11 46	-3.0							3.0
12 29	-2.8							
13 8	-2.6							2.5
13 48	-2.4							
14 26	-2.2							
15 9	-2.0							
18 49	-1.8							2.0
20 6	-2.0							
20 30	-2.2							
20 55	-2.4							2.5
22 25	-2.6							
22 54	-2.8							
23 41	-3.0							
4 42	-3.2	0	286	0	0	0	0	
5 0	-3.4	0	286	0	0	0	0	
7 24	-2.4	0	(290)	0	0	0	0	
10 14	-2.2							
11 9	-2.0							2.0
16 13	-1.8							B-Day
17 20	-1.6							
19 12	-1.4							1.5
20 17	-1.2							
22 13	-1.0							1.0
22 53	-1.2							
23 46	-1.4							

0 48	-1.6	0 291	0	0	0	0	
1 50	-1.8						
2 23	-2.0						
2 53	-2.2						C-Day
4 18	-2.4						
5 28	-2.6						
7 16	-2.8						
8 8	-2.6						
8 48	-2.4						
9 40	-2.2						
10 40	-2.0						
12 17	-1.8						
13 39	-1.6	1.5					
16 12	-1.8	2.0					
18 35	-1.6						
19 28	-1.4	1.5					
20 15	-1.2	1.0					
0 42	-1.0	0 292	0	0	0	0	
1 34	-1.2						
2 12	-1.4						
2 52	-1.6						D-Day
3 32	-1.8						
4 10	-2.0						
4 50	-2.2						
8 14	-2.4						
9 12	-2.2						
10 9	-2.0						
12 27	-1.8	2.0					
14 50	-1.6	1.5					
16 32	-1.8						
18 27	-2.0	2.0					
20 9	-1.8						
20 49	-1.6						
21 25	-1.4	1.5					
22 15	-1.2						
1 42	-1.0	0 293	0	0	0	0	
2 50	-1.2						
3 33	-1.4						
4 12	-1.6						
4 52	-1.8						
5 0	-2.0	0 293	0	0	0	0	
7 19	-2.4	0 298	0	0	0	0	
8 4	-2.6						
8 28	-2.4						
8 52	-2.2						
9 44	-2.0						
10 26	-2.2						
11 3	-2.0						
11 22	-1.8						
11 39	-1.6						
11 55	-1.4						
12 14	-1.2						
12 38	-1.0						
13 6	-0.8						
13 45	-0.6						
14 34	-0.4						
15 46	-0.2						
16 50	-0.4						
17 35	-0.6						
18 7	-0.8						
18 31	-1.0						
18 55	-1.2						
19 25	-1.4						
19 54	-1.6						
20 13	-1.8						
20 30	-2.0						
20 47	-2.2						
21 9	-2.4						
21 49	-2.6						
22 23	-2.8						
22 53	-3.0						
23 41	-3.2						
1 16	-3.4	0 299	0	0	0	0	
2 7	-3.2						
2 47	-3.0						
4 24	-2.8						
5 0	-2.6	0 299	0	0	0	0	

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9340 WD

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	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	
										1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
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										25

NOAA FORM 76-156 SUPERSEDES C&GS 197

☆ U.S. G.P.O. 1972-769-565/516 REG.#6

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUM.

WIRE DRAG ~~HYDROGRAPHIC~~ SURVEY STATISTICS

H-9340 WD

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	45
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	1

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACT SOURCE DOCUMENTS
ENVELOPES	X		1			23-strip data
CAHIERS	1-strip charts					
VOLUMES	2					
BOXES						

T-SHEET PRINTS (List): 1-Cht.mark-upa

SPECIAL REPORTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS PRE-VERIFICATION	VERIFICATION	TOTAL
POSITIONS ON SHEET			168
POSITIONS CHECKED	87	7	94
POSITIONS REVISED	2	0	2
SOUNDINGS REVISED	NA	NA	NA
SOUNDINGS ERRONEOUSLY SPACED	NA	NA	NA
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED	0	0	0
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	9	0	9
VERIFICATION OF CONTROL	34	2	36
VERIFICATION OF POSITIONS	48	2	50
VERIFICATION OF SOUNDINGS (eff. depths-strips)	156	12	168
COMPILATION OF SMOOTH SHEET (A&D)	0	16	16
~~APPLICATION OF TOPOGRAPHY~~ Compilation of Smooth Pos. Overlay	0	9	9
APPLICATION OF ~~PHOTOBATHYMETRY~~ Topography	0	0	0
JUNCTIONS	0	2	2
COMPARISON WITH PRIOR SURVEYS & CHARTS	0	3	3
VERIFIER'S REPORT	0	11	11
OTHER	80	4	84
TOTALS	327	61	388

Pre-Verification by J. B. Wilson	*Beginning Date* 07/16/77	*Ending Date* 09/01/77
Verification by M. B. Hickson	*Beginning Date* 09/06/77	*Ending Date* 09/19/77
Verification Check by R. D. Sanocki	*Time (Hours)* 4	*Date* 03/21/78
Marine Center Inspection by [signature]	*Time (Hours)*	*Date* 3-24-78
Quality Control Inspection by	*Time (Hours)*	*Date*
Requirements Evaluation by	*Time (Hours)*	*Date*

ATLANTIC MARINE CENTER
VERIFIER'S REPORT/ADDENDUM TO THE DESCRIPTIVE REPORT

REGISTRY NO. H-9340 WD FIELD NO. R/H-40-1-72

Texas, Galveston, Southwest Safety Fairway

SURVEYED: October 11 through October 18, 1972

SCALE: 1:40,000 PROJECT NO.: OPR-479

SOUNDINGS: Wire Drag CONTROL: Raydist (Range-Range)

Chief of Party ..... J. Collins
Surveyed by ..... L. Pickens
..... S. Manzo
..... B. Wescott
..... H. Arnold
Automated Plot of Preliminary
Plotter Strips by ..... CALCOMP-618 Plotter (AMC)
Verified and Inked by ..... M. B. Hickson
September 19, 1977

1. Introduction

The purpose of this survey is to clear a section of the southwest Galveston Approach Safety Fairway between where the 1971 (H-9298 WD) work ceased and the ten fathom curve. The general boundaries of the surveyed area, for each of the four corners, are as follows:

Latitude 29° 58.2'N, Longitude 94° 44.8'W
Latitude 29° 56.4'N, Longitude 94° 44.2'W
Latitude 29° 51.2'N, Longitude 94° 57.0'W
Latitude 29° 49.3'N, Longitude 94° 55.7'W

2. Control and Shoreline

a. The control is adequately described in the Descriptive Report. Raydist in the range-range mode was used for the position control throughout the survey. Calibration data may be found in both the Descriptive Report and in the survey's volumes.

b. There is no shoreline on this survey.

3. Condition of the Survey

a. Field Work

The field work is satisfactory except as noted below:

(1) Tests for this survey were substandard, inadequate, and not in accordance with the Wire Drag Manual. Often sections were not tested or if one satisfactory test was obtained no further testing of that section was accomplished for the duration of the drag. A majority of the tests were T.O.B. (tester on the bottom) tests which are normally rejected, but due to the scarcity of tests and a large percentage of T.O.B. tests, these were included in lift computations.

(2) The charted bottom was not cleared within the required specifications. Sections 6 and 7 of this report also denote this deficiency.

b. Records

The field records are complete and comprehensive with the exception of the tender tester records which are of poor legibility and often difficult to interpret and evaluate.

c. Descriptive Report

The Descriptive Report is complete and comprehensive except as noted below:

(1) There is no Table of Contents in the Descriptive REport.

(2) Section K, "Discrepancies and Comparisons with Recent Surveys and Charts" - Neither any surveys nor charts used for comparisons were listed.

(3) The contents of Sections K and M of the Descriptive Report are in conflict in regard to comparison with charted depths.

(4) Attachment I - The source of both Raydist control stations was not listed. The computations for the positions of the visual control/calibration stations located by the field were not included in either the Descriptive Report or the survey records.

(5) The Hang/Grounding Abstract - Attachment II - is not complete.

(6) Attachment IV - "Aids to Navigation" - Lists one floating aid and two oil platforms which were not located by this survey and are not within the survey area.

(7) There is no mention in the Descriptive Report of Presurvey Review items. There were none within the surveyed area, however PSR items #17, 22, and 23 are contained within the project sheet limits. These items were neither located nor searched for on this survey.

(8) Corrections and notes required during verification are shown in red pen in the Descriptive Report.

d. Field Plotting

Field plotting was adequate except as follows:

(1) The field boat sheet was not plotted in ink, no color coding, no effective depths, no explanatory/marginal notes, and the hang was not plotted.

(2) The field Area and Depth Sheet was not constructed in ink, no color coding, no marginal notes, and the hang was not plotted.

(3) The strips were satisfactory with the exception of some differences in data interpretation and application. Such items as the claiming of a deep section between two shoaler adjacent sections, and improper methods of applying lifts were corrected.

e. Office Plotting

The survey was neatly and accurately smooth plotted in accordance with instructions outlined in the letter of Richard H. Houlder, Associate Director, Office of Marine Surveys and Maps; dated February 23, 1977; titled "Processing Wire-Drag Surveys on Safety Fairways".

4. Junctions

This survey junctions on the northeast with H-9298 WD (1971), R/H-40-1-71. The junction is satisfactory.

5. Comparison With Hydrographic Surveys

Comparison with hydrographic surveys was not accomplished during verification.

6. Comparison With Charts 11323 (39th Edition, April 9, 1977)
11300 (19th Edition, October 23, 1976)

a. Hydrography

There is no conflict between the charted depths and the wire-drag effective depths on the present survey. However, general harmony cannot be claimed because the effective depths range from two to eight feet shoaler than charted depths. Section M of the Descriptive Report makes claim that the ground wire was, in most cases, within the prescribed limits due to the high percentage of T.O.B. tests; however, the testing is considered inadequate and therefore could contribute to the lack of harmony. See Section 8 of this report for recommendations.

b. Aids to Navigation

There were no aids to navigation within the surveyed area. See Section 3.c.(6) of this report for note on the aids listed in the Descriptive Report.

7. Compliance With Project Instructions: OPR-479-RU/HE-72, Safety Fairways, Gulf of Mexico, dated May 9, 1972

This survey adequately complies with the project instructions except as noted below:

a. Presurvey Review items were neither identified, discussed, nor even mentioned in any way in the Descriptive Report. There are no Presurvey Review items within the surveyed area, but three items were within the project sheet limits. No investigation was done on any item.

b. Bottom clearances are not in accordance with Section 13 of the project instructions.

8. Recommendations

This survey is considered only a supplemental wire drag survey, due to the deficiencies in bottom clearances as per charted depths and possibly caused by an inadequate, incomplete, and substandard program of testing. However, the Descriptive Report makes claim to the proper bottom clearances as evidenced by the high percentage of T.O.B. tests. Therefore, at a future date, some hydrographic work is recommended in order to verify the charted depths. No immediate additional work is recommended.

9. Miscellaneous

a. There are no splits on this survey.

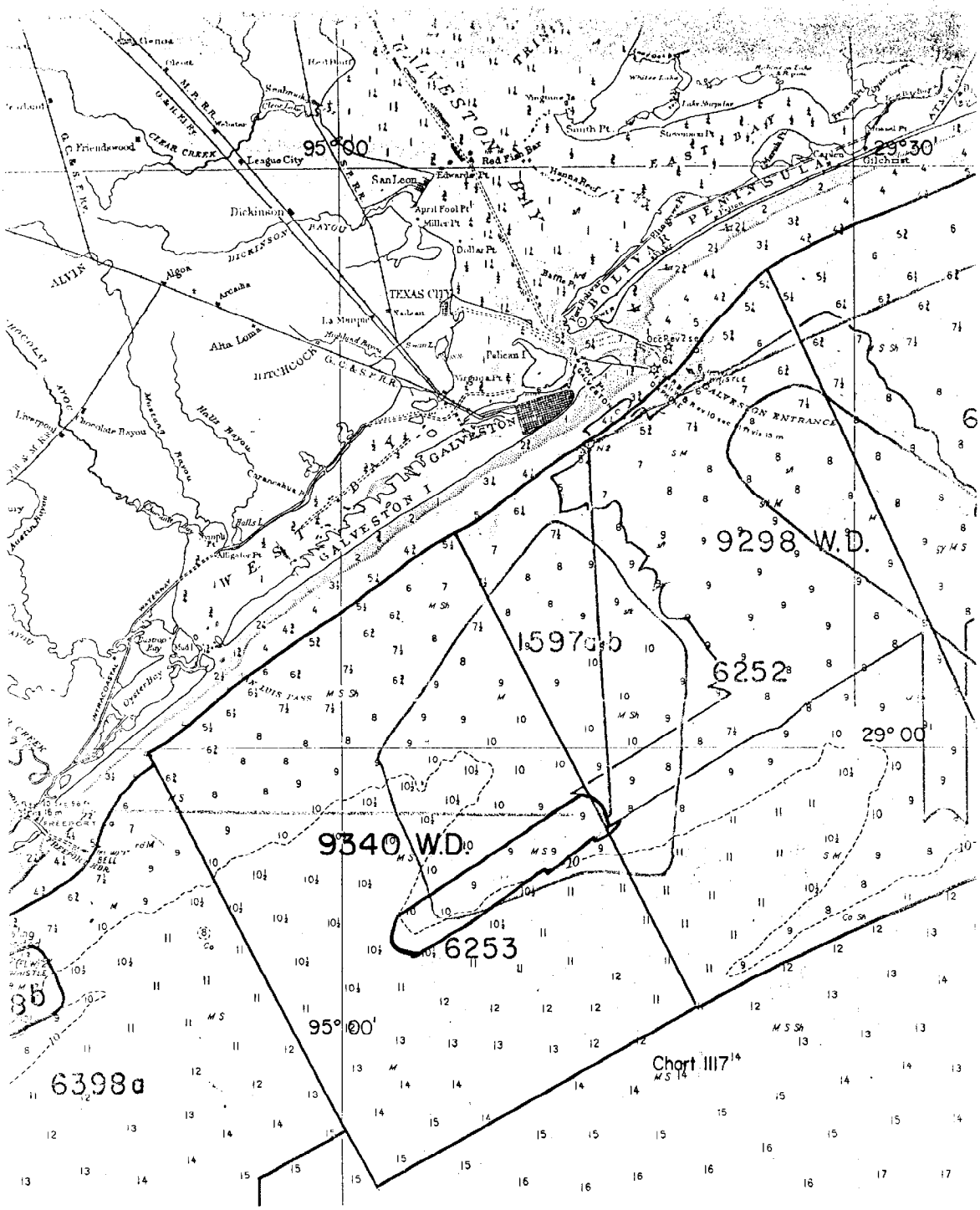
b. There were six wire-drag strips run on this survey; one of these strips was rejected and not used in smooth plotting. There are five strips on the smooth position number/control overlay and used in construction of the smooth Area and Depth Sheet.

c. It was necessary to plot all strips on rough plotting overlays so that each strip could be properly evaluated. The rough overlays contain notes of the smooth plotter/verifier listing the problems encountered and the disposition of these problems. Other notes, comments, corrections, and evaluations may be found in the survey's volumes and in the Descriptive Report.

d. The five strips plotted on the smooth sheet cover two hangs on the same obstruction with the maximum clearance of the hang. No buoy groundings were encountered during this survey.

e. The plotting of individual strips was aided by the automated plot of both vessels' positions, the "N" and "F" buoys' positions, and the latitude and longitude grid ticks. The projections, control arcs, signals, distortion points, and stamp on the smooth position number/control overlay and the smooth Area and Depth Sheet were also automated plots. All other work was accomplished manually.

f. This survey has been processed in accordance with the letter referenced in Paragraph 3.e. of this report. With the aforementioned exceptions and modifications, this survey is considered complete and no further processing is planned.


GALVESTON BAY
TRINITY BAY
EAST BAY
BOLIVAR PENINSULA
GALVESTON ENTRANCE
WEST BAY
GALVESTON I.
TEXAS CITY
LEAGUE CITY
DICKINSON
ALGOA
ARCADIA
ALTA LOMA
HITCHCOCK
SAN LEON
EDWARDS PT.
GILCHRIST
CLEAR CREEK
DICKINSON BAYOU
HALLS BAYOU
CHOCOLATE BAYOU
OYSTER BAY
PELICAN I.
95° 00'
29° 30'
29° 00'
9298 W.D.
9340 W.D.
6252
6253
6398a
Chart 1117

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9340 WD

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
1117	5-11-78	J. OWYANG	Full ~~Part Before~~ After Verification Review ~~Inspection~~ Signed Via
			Drawing No. 35 revised one sounding
11321	5/22/79	D. Wilson	Full Part ~~Before After~~ Verification Review ~~Inspection~~ Signed Via
			Drawing No. No correction
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63