9298

WIRE DRAG

Diag. Cht. Nos. 1117, 1280 & 1282-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

(HYDROGRAPHIC)

Type of Survey: WIRE DRAG

Field No.: RH-10-1-71

Office No.: H-9298WD

LOCALITY

State: TEXAS

General Locality: GALVESTON

Locality: OFF GALVESTON BAY ENTRANCE

1971-72

CHIEF OF PARTY
James Collins

LIBRARY & ARCHIVES

DATE: 8/10/77

☆ U.S. GOV. PRINTING OFFICE: 1975—668-353

9298
WIRE DRAG

Dia ✓
c/r
518 ✓
1525 ✓
1280 ✓
1282 ✓
1117
1116

FORM C&GS-537 (5-66)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-9298WD

FIELD NO. RH-40-1-71

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

State TEXAS

General locality GALVESTON

Locality OFF GALVESTON ~~ANCHORAGE~~ BAY ENTRANCE

Scale 1:40,000 Date of survey 29 Sept. 1971 - 2 Nov. 1971, 7 Aug. 1972 - 10 Oct. 1972

Instructions dated 28 July 1971, 9 May 72, 7 Sept. 1972 Project No. OPR-479

Vessel NOAA Ships RUDE & HECK

Chief of party CDR. JAMES COLLINS

Surveyed by ~~CDR. JAMES COLLINS~~ L.E. Pickens, A.Y. Bryson, M.M. Etheridge, S.H. Manzo, B.L. Westcott and H.B. Arnold

Soundings taken by echo sounder, hand lead, ~~pole~~ XXXX

Graphic record scaled by

Graphic record checked by

~~Protracted~~ Inked by M.W. Johnson Automated plot by Partial CALCOMP 618

Soundings penciled by

Soundings in ~~XXXXX~~ feet at MLW ~~XXXXX~~ ~~BASED ON PREDICTED TIDES~~

REMARKS:

Applied to stds 12/6/77
668

USCOMM-DC 37009-P66

CFN3-1
4-6-71

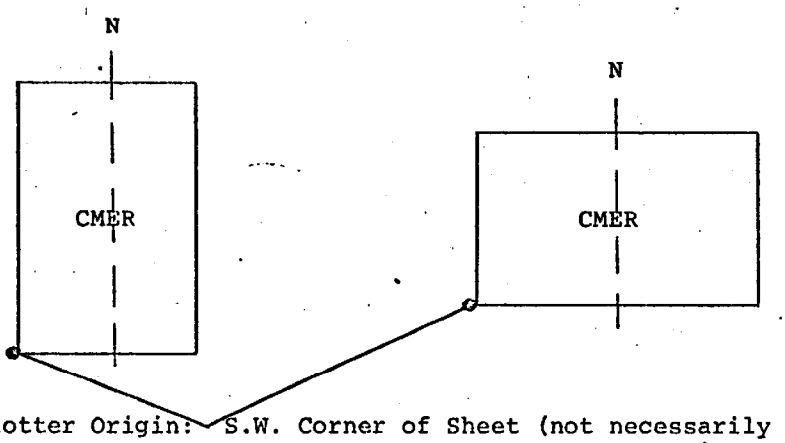
ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

1. Project No. OPR-479
2. Reg. No. _____
3. Field No. RH-40-1-71
4. Requested By A.M.C.
5. Ship or Office RUDE & HECK
6. Date Required 9-24-71

7. Polyconic [X] Modified Transverse Mercator [ ]
8. Central Meridian of Projection 94 ° 35 ' 00 "
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 [X] NYX = Ø [ ]



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)
    Latitude 28 ° 55 ' 30 "
    Longitude 94 ° 47 ' 50 "
13. G.P.'s of triangulation and/or signals attached. [ ]
14. Material Desired: Tracing Paper [ ] Mylar [X]
    Smooth Sheet [ ] Other [ ] Specify _____
15. Remarks: 2 Each

CFN3-2
4-6-71

ATLANTIC MARINE CENTER

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR- 479 2. Reg. # H-9298WD 3. Field # RH 40-1-71

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. DISH
Range Two (R_2) Station I.D. MOORE

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

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

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

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.

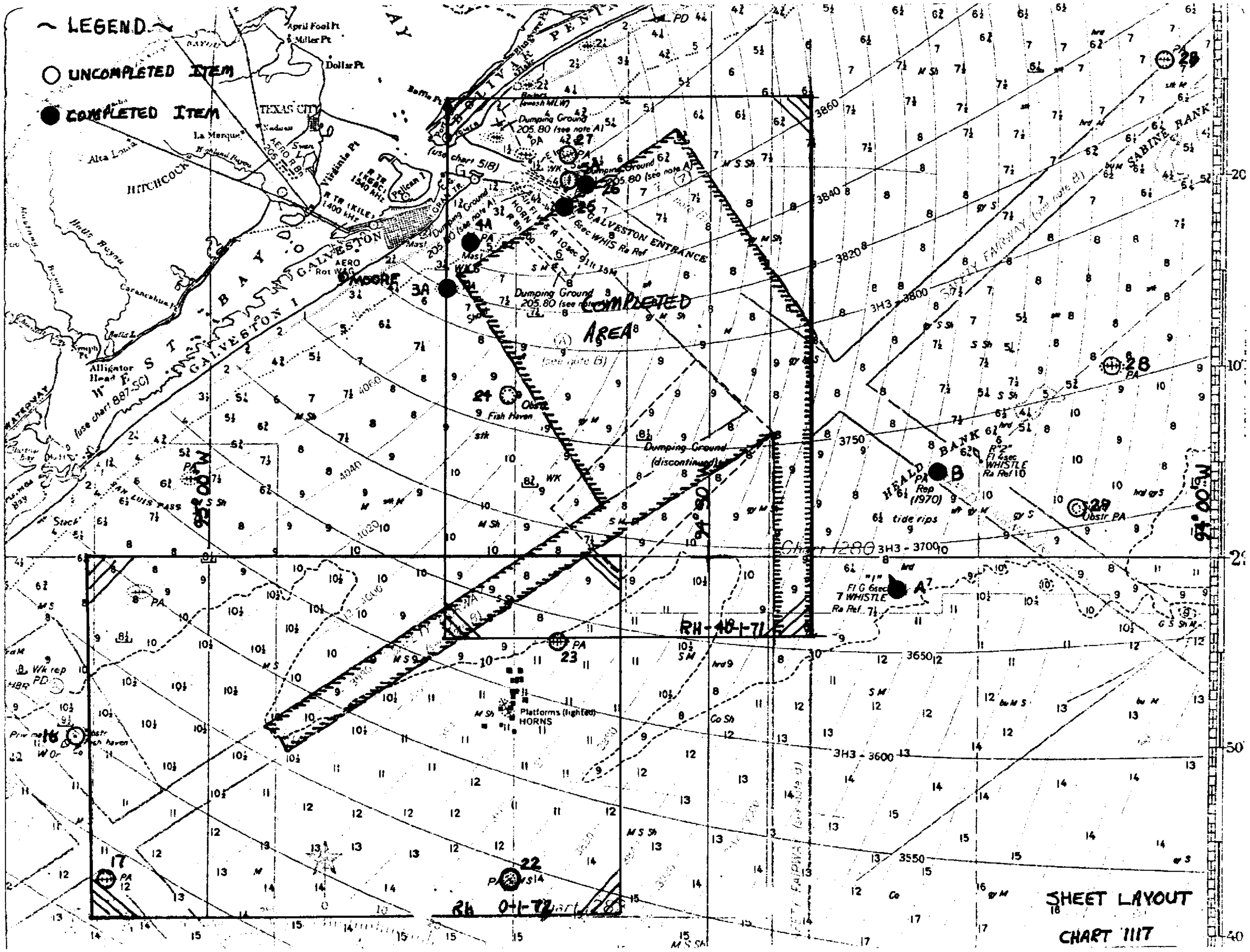
8. [X] This form is submitted as an aid in preparing a boat sheet.

[ ] 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


~ LEGEND ~
UNCOMPLETED ITEM
COMPLETED ITEM
COMPLETED AREA
GALVESTON ENTRANCE
GALVESTON I
HEALD BANK
SABINE BANK
SAFETY FAIRWAY
Dumping Ground
Platforms (lighted) HORNS
RH-40-1-71
94°30'
94°00'W
SHEET LAYOUT
CHART 1117

DESCRIPTIVE REPORT
TO ACCOMPANY
WIRE DRAG FIELD NUMBER RH-40-1-71
PROJECT OPR-479
GALVESTON ANCHORAGE AREA
1971-1972
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 Charts 1280 and 1282 is as follows: Sheet layout is from Latitude 28°56'N to 29°24'N and from Longitude 94°~~16~~12'W to 94°~~24~~22'W, and covers the Galveston Anchorage as well as sections of the Safety Fairways approaching from the Southwest and from the South.

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 ~~25~~18 feet to a maximum depth of 57 feet.

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.
Shoreline is not required for 1:40,000 scale Offshore Wire Drag sheets and there is no current shoreline available.
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 dismantled, 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.

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

D. DATE OF SURVEY

Dragging for OPR-479 on sheet RH-40-1-71 was begun on 29 September 1971 and stopped on 2 November 1971. Operations were resumed on 7 August 1972 and completed on 10 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 presented 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-40-1-71 and RH-40-1-72 junction satisfactorily.
Survey H-9340 W.D.(1972) RH-40-1-72 has not been processed and therefore no junction can be accomplished.
" H-9341 WD (1972) RH-40-2-72 " " " " " " " " " " "
" H-9342 WD (1972) RH-40-3-72 " " " " " " " " " " "

G. SPLITS

~~No splits exist on sheet RH-40-1-71.~~
There is one (1) split in the survey, located at Latitude 29° 08.60', Longitude 94° 40.80'

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 (29 September 1971)
Both ships ran reconnaissance hydrography to verify charted depths and showed good agreement with the charts. The ships circle calibrated several oil platforms and noted that the charted platform at Lat. 29°05'42"N, Long. 94°35'36"W has been removed. Deleted from chart

D Day (4 October 1971)
The operation departed from normal procedure in that there was a deeper section set between two shoaler sections. This was done to clear a previous hang and still get an acceptable effective depth in the area beyond the obstruction. Realizing that one can normally only claim the effective depth of the shoaler adjacent sections, this deep section was carefully tested and retested, each time giving consistent results. On this basis, the deeper depth was claimed. During verification the shoaler adjacent section was used for effective depth in the deep section. Testing not considered adequate to override the violation of the W.D. Manual.

E Day (7 October 1971)
Guide Vessel ran RAYDIST control while End Vessel ran visual control using 4th order signals located by ships personnel(LAKE, HUMM, NONE). Realizing that these signals were not precisely located, adjacent drag strips were run with extra overlap to insure adequate coverage.

F Day (8 October 1971)
The drag ended with a hang of a small anchor which was in turn hung on an underwater cable. Neither the cable nor the small anchor represent hazards to navigation, but it is recommended that this area be charted as a "CABLE AREA" to prevent future anchoring near the cable. The location of the hang was at Lat. 29°13'38"N, Long. 94°45'02"W.

R Day (27 October 1971)
The End Vessel lost 3 Green Lanes after fix #11, so 3 lanes must be added to all End Vessel Green readings beginning at fix #12. Also, the End Vessels gyro repeaters were as much as 10° high on all of strip 1 and on positions 17-20 of strip 2.

T Day (1 November 1971)
Ship Heck acted as Guide Vessel with RAYDIST control, Heck launch acted as End Vessel with visual control and Heck skiff acted as tester. The Guide Vessel gained 1 Green Lane prior to beginning the strip. Fixes #1,2,3 are rejected due to excessive maneuvering so that line begins at fix #4 and ends at fix #19.

U Day (2 November 1971)
Ship Heck acted as Guide Vessel with RAYDIST control and Heck launch acted as End Vessel with visual control. When fog set in, single vessel control was attempted, but fixes were considered to be poor, so this strip was rejected to be redone at a later date. This ended 1971 work on sheet RH-40-1-71. *Strip rejected.*

V Day (7 August 1972) *(previously located on "C" Day)*
This day was spent relocating the 26 ft. obstruction at Lat. 29°15.51'N, Long. 94°41.68'W which was previously located in 1971. The purpose of relocating this obstruction was to mark it with a buoy so that it could be permanently buoyed by the Coast Guard (or removed by the Corps of Engineers). The strip was plotted directly on C&GS Chart 1282, using visible charted objects for control. The obstruction was successfully relocated and later buoyed by the Galveston Coast Guard. *Strip rejected, poor control, area covered adequately by other strips.*

W Day (9 August 1972)
The End Vessel used RAYDIST Red reading plus one visual angle for control. We also noted on this day that tides seemed to be less than predicted. This phenomenon was noted throughout the 1972 field season as explained in section M (Miscellaneous) of this report.

X Day (10 August 1972)
The whole drag was set at 53 ft., but we claimed more lift on the Guide Vessel side than on the End Vessel side. All sections were carefully tested and the results showed that there was considerably less lift in sections 10-F than in sections N-10. In many cases, sag was noted in sections 10-F. *As per standard procedure, the maximum lift was applied to the whole drag.*

X Day (10 August 1972) con't.
This phenomenon was noted fairly regularly on subsequent drags and as yet we are unsure on an explanation. In any case, due to the results of the tests, we claim a deeper effective depth in sections 10-F even though the whole drag was set at one depth. Handled in accordance with the W.D. Manual and claimed max. lift.

Z Day (16 August 1972)
Early in the drag strip it was noted that the gyro bearings taken from ship to ship were not exactly reciprocals. These bearings can be corrected by comparing them with the true bearings as taken off the boatsheet from the plotted RAYDIST positions of the two ships.

One minute before fix #18, the End Vessel Red receiver malfunctioned. Subsequent fixes were taken by 1) taking a Green reading and 2) intersecting this reading with a corrected* gyro bearing from the Guide Vessel. (The gyro bearing from the Guide Vessel was corrected by shooting a bearing to South Jetty Light and comparing this bearing with the true bearing as determined by plotting the Guide Vessel position on the boatsheet and reading the true bearing to South Jetty Light. To insure adequate coverage, adjacent sections were run with extra overlap.

* AA Day

DA Day (24 August 1972)
Weather conditions were marginal, swells were 2-3 Ft. and winds gusted to 20 knots. Only 4 tests were obtained out of 17 sections and much of the drag was not claimed for this reason. The drag was saved, however, for the following reasons: 1) It successfully covered a split left from EA Day and 2) It ended in a hang.

For the split that was covered, an effective depth of 49 ft. was claimed [54 ft. minus 2.5ft. lift, minus 2 ft. ~~predicted~~ actual tide, ~~minus 2 ft. swell corrector for added safety due to lack of tests~~].

The position of the hang was saved to be investigated on a better day. This strip was handled as per recommended

MA Day (12 September 1972)
Seas were slightly heavier than normal causing difficulty in seeing the intermediate buoys. When the drag was picked up, buoy #14 and its weight were missing. We considered this a 2,000 ft. section from buoy # 13 to buoy #15 for the entire drag.

VA Day (26 September 1972)
Note that all End Vessel gyro bearings have been corrected by comparing the bearing to the Guide Vessel with the plotted bearing using RAYDIST fixes. Also, section 6-F was rejected for excessive lift, so the drag was claimed only for sections N-6.

* AA Day - Rejected Strip - Recorded a hang on pipes but no D.P. was taken, a G.P. for this hang is recorded in the Journal (See Vol. VII). However because no D.P. was taken this hang is not smooth plotted. An obstruction appears on the chart at the corresponding G.P. ~~and has a depth of 49'~~ This feature should remain charted ~~but with a P.A. notation~~ Cleared by 50'
- Strip #1 - Hang at 49' cleared on CA Day by ~~50'~~ 52'. ~~Unable to resolve this error with the data supplied.~~ The section that hung (2-3) was only treated once early in the drag. CA Day Clearing strip had steering difficulties while clearing this hang, the ~~was~~ manuvering could have caused unrecorded High Lifts. Recommend charting this obstruction at 49'

WA Day (28 September 1972)
Strip 2 was run using RAYDIST control, but since the intersection of the arcs was less than 30°, a check angle from Bolivar Point Lighthouse to South Jetty Light was taken by both ships to insure accuracy.

YA Day (3 October 1972)
Strip 1 ended with a hang of a metal object approximately 10 inches off the bottom. Due to insufficient tests, a lift of 2 feet was claimed to save the strip.

Strip 2 ended hanging a large anchor extending approximately 3 ft. off the bottom. Leadline showed a least depth of 26 ft. minus 2 ft. predicted tide equals 24 ft. MLW. However, it is felt that 23 feet would be a safer estimate since currents were strong, making it very difficult to get a good leadline reading. The hang occurred in section 5-6, an inclined section that was untested.

All work done on YA day included a check angle to insure accuracy since the intersection of the RAYDIST arcs was less than 30°.

ZA Day (4 October 1972)
At fix #8.8, we began lowering the drag, starting in the middle and working toward the Guide Vessel. Since one cannot claim a deep between two shoals, this greater depth cannot be claimed until fix #9.8 when N buoy was lowered.

At fix #26, N buoy parted its upright wire and began to drift away (its weight was left,however). From this point forward, bearings were shot to #1 buoy, which was normally within a degree or two of N buoy (as the drag was being towed nearly astern of the Guide Vessel). The strip was plotted as if the N buoy was still attached although the bearings to N buoy will be very slightly off on the high side.

K. DISCREPANCIES AND COMPARISONS WITH RECENT SURVEYS AND CHARTS

Note: See verifier's report for Chart Comparisons
Comparisons with Prior Surveys was not accomplished during verification

In general, charted DEPTHS from the most recent charts were found to be quite reliable and were used daily in planning drag depths.

The following obstructions were located while searching for both charted and/or new ITEMS (as provided for in Project Instructions), and constitute discrepancies to existing charts. All quotes are taken from Daily Journals and are the divers description of the obstruction.

1) A "large clump of metal from an uncharted wreck protruding approximately 14 feet above the bottom. Obstruction is vertical." The charted depth is 38 feet and the obstruction has been cleared to an effective depth of 25 feet (Predicted tides).

1282 - APP
RS 3-22-79

Location: Lat. 29°15'32"N, Long. 94°41'~~42~~38"W. Position and dayletter: 53-C. This object has since been charted and buoyed and it is scheduled for removal by the Corps of Engineers.

2) "A solid 'I' beam with a 12 inch flange, driven vertically into the bottom... appears to have been part of an oil platform." This obstruction protrudes approximately 6 feet off the bottom. The charted depth is 46 feet and it has been cleared to 39 feet effective depth (Predicted tides). Location: Lat. 29°17'49"N, Long. 94°31'58"W. Position and dayletter: 46-J. Recommend charting this obstruction.

40' Sdg APPLIED PS 2-22-78 (1282) Add'd NM 12-22-77 (1280)

3) "A steel skeleton tower laying on its side... a 6 ft.x 6 ft. base narrowing to about a 3 ft. x 3 ft. tip... approximately 50 ft. long". The charted depth is 47 ft. and it is cleared to an effective depth of ~~42~~ ft. ~~(Predicted tides).~~ Location: Lat. 29°16'50"N, Long. 94°32'~~31~~"W. Position and dayletter: 42-K. Recommend charting this obstruction.

(1282) APP. PS 2-22-78

4) "A pipe extending upward... approximately ~~4~~6 ft. off the bottom." The charted depth is 57 ft. and it is cleared to an effective depth of ~~50~~ ft. Location: Lat. 29°08.97'N, Long. 94°39.97'W. Position and dayletter: 5-AA. This obstruction was reported to the Coast Guard. Recommend listing in local Notice to Mariners for benefit of fishermen.

1282 - APP PS 2-28-78

5) "A 2 inch diameter pipe extending approximately 6 ft. off the bottom." The charted depth is 57 ft. and it is cleared to an effective depth of ~~49~~50 ft. Location: Lat. 29°09.27'N, Long. 94°39.35'W. Position and dayletter: Detached position AA. This obstruction was reported to the Coast Guard. Recommend listing in local Notice to Mariners. Not smooth plotted (No detached position provided in the records. Chart as an obstruction cleared by 50 ft.

1282 - APP. PS 2-28-78

6) "A concrete block approximately 3'x4'x4'". The charted depth is 54 ft. and it is cleared to an effective depth of ~~48~~49 ft. Location: Lat. 29°09.13'N, Long. 94°37.96~~W~~. Position and dayletter: 18-CA. Recommend ~~l~~listing in local Notice to Mariners. Hung at 52 ft. (See QC Report-item 9)

7) "Chain, shackles, line...junk... 4 ft. off the bottom." The charted depth is 56 ft. and it is cleared to an effective depth of 48 ft. Location: Lat. 29°07.~~8~~4'N, Long. 94°36.~~4~~4'W. Position and dayletter: 22~~±~~JA. Recommend listing in local Notice to Mariners.

44'

8) "A wooden object approximately 3.5 ft. off the bottom... possibly remains of wreck LINDA LOU." Charted depth is 32 ft. Location: Lat. 29°21.~~42~~33'N, Long. 94°38.~~87~~73'W. Position and dayletter: 13-WA. This obstruction was located while searching for Item #27, and still needs additional work.

~~APPLIED~~

9) "Large anchor extending 3 ft. off the bottom." The charted depth is 26 ft. and the least depth was determined as 23 ft. MLW (Predicted Tides). Location: Lat. 29°16.94'N, Long. 94°44.52'W. Position and dayletter: 16-YA. This obstruction was located while searching for Item #4A. Recommend listing in local Notice to Mariners for the benefit of fishermen. (Item hung at 19 ft.) 1282 APP PS 2-22-78

L. PERSONNEL AND EQUIPMENT

During this survey the RUDE and HECK acted as Guide Vessel and End-Vessel respectively (except for exceptions noted in Section I). 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 to opposite vessels were made on the Sperry Gyro Repeaters. Special care should be exercised in checking the Heck's gyro bearings as its 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, Lt. A.Y. Bryson, Ltjg. M.M. Ethridge Ltjg. S.H. Manzo, Ltjg. B.L. Wescott, and Ens. H.B. Arnold.

M. MISCELLANEOUS

Much of the work done in 1972 was planned by taking soundings with a fathometer prior to dragging and then setting the upright wires 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 some cases it may appear that an area was not cleared to within the specified number of feet of the charted bottom depth. However, this in many cases may be due to applying a 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 inches off the bottom. In addition, the many T.O.B. (tester on bottom) tests verified that the drag was, on most occasions, within 2 feet of the bottom.

APPROVAL SHEET

All records of this survey prior to smooth plotting are hereby approved. Some work remains to be done on individual items 5A, 24, and 27. The primary objective was attained of clearing the Galveston Anchorage and Safety Fairways to the ten fathom curve. The field work was personally supervised by the undersigned and the boatsheet and records were inspected daily. This survey is considered complete and adequate for charting.

for Leonard E Pacheco

CDR. James Collins
Commanding Officer
NOAA Ships RUDE & HECK

LIST OF ATTACHMENTS

LIST OF SIGNALS FOR RH 40-1-71
H-9298WD

#1 = 29-21-59.597 (LIVE)
94-46-00.263

#19 = 29-19-55.804 (CITY)
94-44-45.322

#2 = 29-19-39.258 (SOUTH)
94-41-32.887

#28 = 29-18-49.349 (TANK)
94-46-23.510

ATTACHMENT I

RAYDIST CONTROL SIGNALS

STATION NAME	LATITUDE	LONGITUDE	REMARKS
MOORE	29°14'03.520"N	94°52'54.136"W	GREEN STATION
DISH	29°30'41.625"N	94°29'13.880"W	RED STATION

VISUAL CONTROL SIGNALS

NAME	STATION	SOURCE	YEAR	REMARKS
CHECK	CHECKERED TANK NEAR GALVESTON AIR PORT			SEE DESCRIPTION BELOW
CITY (#19)	TEXAS CITY CHANNEL, CUT A, OUTER RANGE REAR LIGHT	G-13298	1963	FRONT, #1 RANGE
LIVE (#1)	BOLIVAR POINT LIGHT-HOUSE	G-1252	1900 1931	REAR, #1 RANGE
SOUTH (#2)	SOUTH JETTY LIGHT	G-2122	1933 1964	RT. ANGLE, #1 RANGE LFT.ANGLE, #2 RANGE
TANK (#28)	GALVESTON MUNICIPAL WATER TANK	G-12293 G-13232	1960 1963	USED FOR VISUAL CONTROL
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

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

STATION NAME	LATITUDE	LONGITUDE	REMARKS
CHECK	29°16.02'N	94°50.95'W	USED FOR VISUAL CONTROL ON V DAY. TAKEN FROM CHART 1282
LAKE	29°27'27.42"N	94°38'10.00"W	USED FOR VISUAL CONTROL - 4th ORDER LOCATION BY SHIPS PERSONEL.

ATTACHMENT I
CONTINUED

VISUAL CONTROL SIGNALS

STATION NAME	LATITUDE	LONGITUDE	REMARKS
C MAL	29°08.65'N	94°40.75'W	SEE ATTACHMENT IV FOR ADDITIONAL INFO. ON C MAL & C BIG.
C BIG	29°09.30'N	94°40.55'W	
REAR*	29°22'18.334"N	94°44'53.326"W	REAR, #2 RANGE
FRONT*	29°21'16.821"N	94°42'56.635"W	FRONT, #2 RANGE

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

	RED	GREEN	
HUMM	355.80	937.35	"HUMM, SUMM, & NONE" WERE LOCATED BY CIRCLE CALIBRATION USING CORRECTED RAYDIST READINGS. ALL THREE TOWERS HAVE SINCE BEEN REMOVED. ORIGINAL REFERENCE IS TO BE FOUND IN FRONT OF VOLUME I.
SUMM	377.33	932.73	
NONE	769.20	490.23	

Note: HUMM and SUMM were not within the area dragged, therefore were neither hung nor cleared NONE was in the area dragged and was hung and then cleared to 46' after removal.

ATTACHMENT II

LIST OF GROUNDINGS AND HANGS

POSITION NO. & DAY LETTER	LATITUDE	LONGITUDE	GROUNDED EFFECTIVE DEPTH	CLEARED BY STRIP NUMBER	CLEARED EFFECTIVE DEPTH	SOUNDING (from predicted tides)	CHARTED DEPTH	ITEM NO.	REMARKS
52 C	29°15'32"	94°41'38"	35'	DI&FI	24'	25' @ M.L.W.	25	--	steel obstruction 14' off bottom
79 F	29°13'38"	94°45'02"	37'	DI	35'	--	36	--	anchor on U.W. cable (no hazard)
46 J	29°17'49"	94°31'58"	41'	PI	39'	40' @ M.L.W.	39'	--	vertical steel I beam
42 K	29°16'50"	94°32'51"	42'	~~MI&~~PI	40'	~~42'~~	~~47'~~ 41	--	tower 6' off bottom
14 W	29°11'20"	94°40'02"	50'	~~WII~~ X1	48'	--	~~55'~~ 46	--	anchor 10" off bottom
24 X	29°10.90'	94°37.34'	48'	YI	46	--	~~55'~~	--	uninvestigated hang
56 AA	29°08.89'	94°39.94'	49'	CAI	49' ~~(50)~~ ++	~~56'~~	~~57'~~ 50	--	pipe 6' off bottom
~~Det Pos~~ AA *	29°09.28	94°39.34'	~~52~~	XI	50'	~~56'~~ (None)	~~57'~~ 49	--	pipe 4' off bottom
20 CA	29°09.12'	94°37.83'	52'	DAI	49'	55	~~48~~	--	block 3'X4'X4'
15 DA	29°09.50'	94°35.16'	48'	TAI	~~50'~~ 48	--	--	--	uninvestigated hang
22 JA	29°07.73'	94°36.44'	53'	SAI	48'	~~55'~~ 49	~~56'~~ 48	--	chain, etc. 4' off btm.
21 TA	29°08.65'	94°40.75'	--	--	--	--	--	--	hang C&K 101 well NE-SW
29 TA	29°09.30'	94°40.55'	--	--	--	--	--	--	hang C&K 102 well SW-NE
11 UA	29°06.35'	94°23.~~80~~77'	--	--	--	--	--	--	hang HU-HI Buoy E-W
7 VA	29°06.35'	94°23.~~80~~77'	--	--	--	--	--	--	hang HU-HI Buoy W-E
15 WA	29°21.38'	94°38.83'	~~30'~~ 29	--	not cleared	31	~~32'~~	27	hang wreck N-S
6 YA	29°17.53'	94°43.79'	21'	YAII	18	26'	--	--	anchor 10" off bottom
16 YA	29°16.94'	94°44.50'	19'	YAIII	18	~~22~~ 23	23	4A	anchor 3' off bottom
20 BB	29°06.35'	94°23.77'	--	--	--	--	--	--	hang HU-HI Buoy W-E
14 R	29° 18.63'	94°38.08'	--	--	--	--	--	--	hang Nav. Buoy WHIS "1"
30 Q	29° 18.63'	94°38.08'	--	--	--	--	--	--	hang Nav. Buoy WHIS "1"
25 K	29° 17' 49"	94°31'58"	38'	PI	39'	--	39'	--	same hang as 46 J, heavy swells caused this to be shoaler hang.
1920m A ▲	29° 01.75'	94° 36.~~37~~54'	49'	QAI	45'	--	50'	--	Grounding
11 VA	29° 07.30'	94° 40.55'	--	--	--	--	--	--	hang C&K well 102
8788 E ▲	29° 17.50'	94° 38.73'	37'	C1	~~39~~ 32'	--	39'	--	Grounding
9 WA ▲	29° 22.08'	94° 38.97'	29'	--	--	--	30'	--	Grounding, not cleared
57 L	29° 15.91'	94° 37.17'	--	PII	46'	--	48'	--	hang platform NONE, later removed and area cleared

* Data from Rejected Material on AA Day ... no actual D.P. was taken, just a G.P. given. This "hang" was not smooth plotted, however this feature is charted and should ~~remain~~ be charted, as an obstruction cleared by 50 ft.

++ Unresolvable ... from data supplied, unable to ~~resolve~~ resolve the hang at 49' being cleared by 50', therefore to consider clear at 49' would appear reasonable. (See notes on AA Day, Section I of this report.) Assumed additional 1ft. lift on strip CA I (As.8-9) to reconcile conflict

▲ Falls on known shoal - Deleted from smooth plot

ATTACHMENT III

SHEET 40-1-71

DAILY RAYDIST CORRECTIONS

DATE	DAY LETTER	SHIP RUDE RED	SHIP RUDE GREEN	SHIP HECK RED	SHIP HECK GREEN
29 Sept. 71	A	0.0	+0.1	-0.1	+0.3
30 Sept. 71	B	0.0	+0.3	0.0	+0.5
1 Oct. 71	C	0.0	+0.3	0.0	+0.2
4 Oct. 71	D	0.0	0.0	-0.1	+0.2
7 Oct. 71	E	+0.1	+0.1	- VISUAL -	
8 Oct. 71	F	+0.1	0.0	- VISUAL -	
12 Oct. 71	G	-0.1	0.0	-0.1	+0.3
13 Oct. 71	H	+0.1	-0.1	+0.1	+0.3
14 Oct. 71	J	-0.1	-0.2	-0.1	+0.3
15 Oct. 71	K	-0.1	-0.2	-0.2	+0.2
18 Oct. 71	L	-0.1	+0.8	-0.1	+0.2
19 Oct. 71	M	0.0	0.0	-0.2	+0.1
20 Oct. 71	N	+0.5	+0.1	-0.1	+0.1
21 Oct. 71	P	0.0	0.0	-0.1	+0.2
22 Oct. 71	Q	+0.1	+0.2	-0.1	+0.3
27 Oct. 71	R	+0.1	0.0	0.0	+0.1
28 Oct. 71	S	+0.1	-0.1	+0.1	+0.1
1 Nov. 71	T	LAUNCH & SHIP W.D.		0.0	-0.8
2 Nov. 71	U	LAUNCH & SHIP W.D.		+0.1	+0.1
7 Aug. 72	V	- VISUAL -		- VISUAL -	
9 Aug. 72	W	-0.2	0.0	0.0	-VISUAL-
10 Aug. 72	X	0.0	0.0	-0.1	-0.1
11 Aug. 72	Y	-0.1	0.0	+0.2	0.0
16 Aug. 72	Z	+0.4	-0.1	-0.4	-0.2
17 Aug. 72	AA	+0.1	+0.1	-0.2	-0.2
21 Aug. 72	BA	+0.1	-0.2	-0.1	+0.1
22 Aug. 72	CA	+0.1	-0.2	-0.1	+0.1
23 Aug. 72	DA	0.0	-0.4	-0.3	-0.1
28 Aug. 72	EA	+0.5	-0.3	0.0	-0.2
29 Aug. 72	FA	+0.4	-0.1	0.0	-0.1
30 Aug. 72	GA	+0.4	-0.1	0.0	-0.1
31 Aug. 72	HA	+0.2	-0.1	0.0	0.0
5 Sept. 72	JA	+1.3	-0.4	-0.1	-0.2
6 Sept. 72	KA	+0.1	-0.4	-0.1	-0.2
7 Sept. 72	LA	+0.1	-0.4	-0.1	-0.2
12 Sept. 72	MA	+0.2	-0.3	-0.1	-0.1
13 Sept. 72	NA	+0.2	-0.3	-0.1	-0.1
14 Sept. 72	PA	+0.2	-0.3	0.0	-0.1
18 Sept. 72	QA	+0.4	+0.1	-0.1	-0.3
19 Sept. 72	RA	+0.4	+0.1	-0.1	-0.3
20 Sept. 72	SA	+0.4	+0.1	-0.1	-0.3
21 Sept. 72	TA	+0.1	+0.2	+0.1	-0.3

ATTACHMENT III
Con't.

SHEET 40-1-71

DAILY RAYDIST CORRECTIONS

DATE	DAY LETTER	SHIP RUDE RED	SHIP RUDE GREEN	SHIP HECK RED	SHIP HECK GREEN
22 Sept. 72	UA	+0.1	+0.2	+0.1	-0.3
26 Sept. 72	VA	+0.1	+0.3	+0.1	-0.5
28 Sept. 72	WA	+0.1	+0.2	-0.1	0.0
2 Oct. 72	XA	+0.2	+0.3	-0.1	+0.2
3 Oct. 72	YA	+0.1	0.0	-0.1	+0.1
4 Oct. 72	ZA	+0.8	0.0	-0.1	+0.3
5 Oct. 72	AB	+1.2	0.0	+0.9	0.0
10 Oct. 72	BB	+0.2	+0.1	-0.2	-0.2

Note: This abstract does not correct for lane loss/gain that occoured on several strips. Corrections for lane jumps were applied as per recommended in the daily journals of the volumes.

GALVESTON CALIBRATION DATA — RANGE 1 — 6-1-71

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 =	371.10	LANES
62 DEG	0 MIN =	370.87	LANES
63 DEG	0 MIN =	370.64	LANES
64 DEG	0 MIN =	370.44	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 10-1-71

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 =	534.41	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

10-1-71

LANES # 2 ATTACHMENT ~~II~~ III

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 =	593.44 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

SHEET 40-1-71

AIDS TO NAVIGATION

NAME	LATTITUDE	LONGITUDE	REMARKS
HU - HI BUOY	29°06.37'	94°23.80'	Used to check lane count
C&K 101 1 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
WHIS "I" buoy	29° 18.60'	94° 38.08'	Galveston Bay Entrance Channel Buoy

*NOTE: Additional data may be found on C&K WELLS 101 1 & 102 on page 200 of U.S.C.G. Special Local Notice To Mariners entitled "Offshore Oil Well Structures & Submerged Wells" dated 2 June 1972. C&K WELLS 101 1 & 102 were called "C MAL" & "C BIG", respectively, in Volume #I, and were used to check lane count and as additional visual control.

ATTACHMENT V

SHEET 40-1-71

STATISTICS

DATE	DAY LETTER	STRIP NUMBER	VOLUME NUMBER	NUMBER OF POSITIONS	L.N.M.	S.N.M.	
29 Sept. 71	A		I	04 — hydrography			
30 Sept. 71	B	I	I	51	6.0	8.4	
1 Oct. 71	C	I	I	52	4.2	5.9	
4 Oct. 71	D	I	I	86	6.4	9.0	
7 Oct. 71	E	I	I & II	88	7.8	10.7	
8 Oct. 71	F	I	II	79	7.9	11.1	
12 Oct. 71	G	I	II	88	8.4	11.8	
13 Oct. 71	H	I	II	82	8.0	11.2	
14 Oct. 71	J	I	III	46	3.7	5.5	
15 Oct. 71	K	I	III	~~25~~ 18	1.2	1.0	
15 Oct. 71	K	II	III	17	1.0	0.8	
18 Oct. 71	L	I	III	57	5.7	7.2	
19 Oct. 71	M	I	III	87	8.8	12.3	
20 Oct. 71	N	I	IV	46	6.0	8.4	
21 Oct. 71	P	I	IV	33	2.9	2.0	
21 Oct. 71	P	II	IV	15	1.6	1.3	
22 Oct. 71	Q	I	IV	30	2.7	1.9	
22 Oct. 71	Q	II	IV	11	1.4	1.1	
22 Oct. 71	Q	III	IV	13	1.4	0.7	
27 Oct. 71	R	I	IV	16	1.4	1.0	
27 Oct. 71	R	II	V	36	2.9	3.2	
28 Oct. 71	S	I	V	47	3.8	5.7	
1 Nov. 71	T	I	VI	16	1.6	0.8	
~~2 Nov. 71~~	~~U~~	~~I~~	~~VI~~	~~34~~	~~2.8~~	~~1.7~~	Rejected
~~7 Aug. 72~~	~~V~~	~~I~~	~~VI~~	~~11~~	~~1.4~~	~~0.5~~	Rejected
9 Aug. 72	W	I	VI	14	2.8	4.7	(See Section I)
9 Aug. 72	W	II	VI	26	4.5	7.2	
10 Aug. 72	X	I	VI	24	3.7	8.2	
11 Aug. 72	Y	I	VI	28	5.7	12.0	
16 Aug. 72	Z	I	VII	29	6.7	14.7	
17 Aug. 72	AA	I	VII	06	1.2	1.2	
21 Aug. 72	BA	I	VII	35	6.7	14.8	
22 Aug. 72	CA	I	VII	~~20~~ 18	4.1	8.5	
22 Aug. 72	CA	II	VII	14	2.7	5.1	
23 Aug. 72	DA		VII	15			
28 Aug. 72	EA	I	VII	32	6.4	14.1	
29 Aug. 72	FA	I	VIII	21	4.5	10.0	
30 Aug. 72	GA	I	VIII	28	8.6	18.9	
31 Aug. 72	HA	I	VIII	36	8.9	19.6	
5 Sept. 72	JA	I	VIII	22	4.5	9.4	
6 Sept. 72	KA	I	VIII	12	2.4	5.3	
6 Sept. 72	KA	II	VIII	18	3.9	8.6	
7 Sept. 72	LA	I	VIII & IX	45	9.9	21.8	

ATTACHMENT V
Cont'd.

SHEET 40-1-71

STATISTICS

DATE	DAY LETTER	STRIP NUMBER	VOLUME NUMBER	NUMBER OF POSITIONS	L.N.M.	S.N.M.
12 Sept. 72	MA	I	IX	21	6.3	13.9
12 Sept. 72	MA	II	IX	8	2.1	1.9
13 Sept. 72	NA	I	IX	16	4.8	8.2
14 Sept. 72	PA	I	IX	12	1.7	2.0
18 Sept. 72	QA	I	IX	28	6.6	10.6
19 Sept. 72	RA	I	IX	32	6.0	12.6
20 Sept. 72	SA	I	X	9	1.9	1.3
21 Sept. 72	TA	I	X	6	1.1	0.7
21 Sept. 72	TA	II	X	9	2.1	1.9
21 Sept. 72	TA	III	X	6	0.6	0.7
21 Sept. 72	TA	IV	X	8	0.7	0.8
22 Sept. 72	UA	I	X	11	2.4	1.9
26 Sept. 72	VA	I	X	7	0.9	0.5
26 Sept. 72	VA	II	X	4	0.7	0.4
28 Sept. 72	WA	I	X	6	1.1	0.9
28 Sept. 72	WA	II	X	9	1.2	0.8
2 Oct. 72	XA	I	X	16	5.6	5.0
3 Oct. 72	YA	I	XI	6	1.1	1.0
3 Oct. 72	YA	II	XI	10	1.6	1.4
3 Oct. 72	YA	III	XI	~~6~~ 7	1.9	1.7
4 Oct. 72	ZA	I	XI	36	10.2	22.4
5 Oct. 72	AB	I	XI	37	7.7	17.7
10 Oct. 72	BB	I	XI	15	2.6	8.3
10 Oct. 72	BB	II	XI	5	.9	0.45
		TOTALS		1760 ~~1804~~	258.0	424.35

Total survey positions = 3524

APPROVAL SHEET
FOR
SURVEY H-9298WD

The verified smooth sheet and the Area and Depth sheet have been inspected, are complete, and meet the requirements of the Wire Drag Manual. Exceptions are listed in the Verifier's Report.

Date: June 2, 1977

Signed: William D. Jones

Title: Chief, Verification Branch

August 16, 1977

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): Galveston Pleasure Pier

Period: September 29-November 2, 1971
August 7-October 10, 1972

HYDROGRAPHIC SHEET: H-9298WD

OPR: 479

Locality: Off Galveston Bay Entrance

Plane of reference (mean ~~lower~~ low water): 2.46 feet

Height of Mean High Water above Plane of Reference is
2.1 feet

Remarks: Zone direct

Don Spillman
Chief, Tides Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9298 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	
GULF OF MEXICO										1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
						APPROVED				18
						Chas. L. Harrington				19
						STAFF GEOGRAPHER			C51X2	20
						15 Sept. 1977				21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

☆ U.S. G.P.O. 1972-769-565/516 REG.#6

NOAA FORM 77-27
(9-72)
(PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-13)

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

WIRE DRAG ~~HYDROGRAPHIC~~ SURVEY STATISTICS

WIRE DRAG ~~HYDROGRAPHIC~~ SURVEY NO. H-9298WD

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	~~2~~ 1*	BOAT SHEETS (3 parts, mylar)	1 ~~2~~
DESCRIPTIVE REPORT	1	OVERLAYS 1-bundle of drag strips	

DESCRIPTION	Wire Drag & DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			2 ~~1~~			~~2~~ 1
CAHIERS	3					
VOLUMES	25					
BOXES						

T-SHEET PRINTS (List) * with A & D sheet, control & 2 extension ovlys.
NONE

SPECIAL REPORTS (List)
NONE

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				3524
POSITIONS CHECKED	1500	365	---	1865
POSITIONS REVISED	90	---	---	90
DEPTH SOUNDINGS REVISED	---	92	2	94
DEPTH SOUNDINGS ERRONEOUSLY SPACED	---	---	---	--
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED	1	---	---	1
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS	---	---	---	---
JUNCTIONS	---	----	---	---
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS	---	---	---	---
SPECIAL ADJUSTMENTS	---	---	---	---
ALL OTHER WORK	378	199	11	588
TOTALS	378	199	11	588

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION ~~BY~~/Smooth Plotting J. Griffin, M. W. Johnson	11/03/74	06/05/75
VERIFICATION BY M. B. Hickson, M. W. Johnson	06/12/76	09/07/76
REVIEW BY M. B. Hickson	05/24/77	05/31/77

QUALITY CONTROL BY HT 18 hrs 9-15-77
K. W. Wellman 96 hrs 11/7/77 Baumgardner 6hrs

Verification Branch, AMC
Addendum to Accompany
H-9298WD (RH-40-1-71) OPR-479

Field work for this survey was plotted on individual mylar and paper strips utilizing predicted tides for the effective depths. The field smooth boat sheet and A&D sheet were plotted by the field on mylar, but neither was plotted in accordance with the Wire Drag Manual. The Verifier's Report, Section F, denotes specific areas of noncompliance.

There were sixty-six (66) wire drag strips run on this survey; two (2) of these strips were rejected and not processed. There are sixty-four (64) strips on the smooth sheet used in construction of the smooth A&D sheet.

It was necessary for this office to plot all strips on rough plotting overlays so that each strip could be properly evaluated. The rough overlays contain notes by both smooth plotter and verifier listing the problems encountered and the disposition of these problems. Other notes, comments, corrections, and evaluations may be found in the Verifier's Report, and in the Descriptive Report denoted in red pen.

The sixty-four (64) wire drag strips plotted on the smooth sheet cover seventeen (17) hangs and three (3) groundings, with maximum clearance on those hangs and groundings cleared.

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, and stamp on the smooth sheet, A&D sheet, and control overlay were also automated plots. All other work was accomplished manually.

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9298WD FIELD NO. RH-40-1-71

Galveston, Texas; Galveston Anchorage

SURVEYED: September 29 through November 2, 1971 and
August 7 through October 10, 1972

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

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

Chief of Party ..... CDR J. Collins
Surveyed by ..... LCDR L. E. Pickens
..... LT A. Y. Bryson
..... LTJG M. M. Etheridge
..... LTJG S. H. Manzo
..... LTJG B. L. Wescott
..... ENS H. B. Arnold
Automated Plot of Preliminary
Plotter Strips by ..... Calcomp Plotter #618 (AMC)
Inked by ..... M. W. Johnson
Verified by ..... M. B. Hickson
June 29, 1977

1. Introduction

The main concern of this survey is to clear the Galveston Anchorage and the safety fairways leading to Galveston Harbor. The general boundaries are from (latitude) 28° 56'N to 29° 24'N and (longitude) 94° 24'W to 94° 46'W.

2. Control and Shoreline

a. The control is adequately described in the Descriptive Report. Raydist was used for position control throughout the survey, except as noted below:

(1) On letter days E, F, T, U, and W; Raydist was used in conjunction with visual control.

(2) On letter day V; visual control only. (V day was rejected, see the Descriptive Report.)

b. There is no current shoreline available.

3. Condition of Survey

a. Field Work

The field work is satisfactory, except as noted below:

(1) The entire survey lacked a sufficient amount of tests. Often when a satisfactory test was obtained in a section it was not retested during the strip.

(2) There were two cases of setting a deep between two shoals, which violates Section 3-20 of the Wire Drag Manual.

(3) There were two cases where the field used an invalid method of applying lifts to claim greater effective depths.

(4) Hangs 20CA, 13WA, 6YA, and ~~16YA,~~ and groundings 19MA, 87E, and 9WA were not cleared within two feet. Refer to Attachment II of the Descriptive Report for further information.

(5) (See Q.C. Report - item 6)

b. Records

The tester records are complete and comprehensive for the 1971 data. The tester records for the 1972 data are in poor condition. They are difficult to read, occasionally mislabeled, or the data does not correlate with other records.

c. Descriptive Report

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

(1) The listing of hangs and groundings (Attachment II) was incomplete.

(2) PSR Items were neither identified nor discussed.

(3) Corrections and notes required during verification are shown in red.

d. Field Plotting

(1) The field smooth boat sheet was neatly and accurately plotted, with the exception of: no colors used, no effective depths assigned, and no marginal notes.

The field A&D sheet was not done in color nor is it complete.

(2) The survey was accurately smooth plotted, except as noted in Section 9 of this report.

4. Junctions

This survey junctions with:

H-9340WD (1972) RH-40-1-72
H-9341WD (1972) RH-40-2-72
H-9342WD (1972) RH-40-3-72

These junctions have not been accomplished, as these junctional surveys have not been processed and it is expected to be several months before processing is started.

5. Comparison with Hydrographic Surveys

Comparison with hydrographic surveys was not accomplished during verification. (See Q.C. Report-item 12)

6. Comparison with Charts 11332 (formerly 1280), 13th Edition, January 3, 1976 and 11323 (formerly 1282), 38th Edition, February 21, 1976 (See Q.C. Report-item 13)

a. Hydrography

Except as noted below, there is general harmony between the charted depths and the effective wire drag depths on the present survey.

The following items are not charted:

(1) The grounding at latitude 29° 17.50'N and longitude 94° 38.~~61~~23'W, buoy grounding at 37 feet in charted depths of 39 feet. This grounding is cleared by 32 feet. Deleted (See Q.C. Report-item 18)

(2) The grounding at latitude 29° 01.~~85~~7'N and longitude 94° 36.~~37~~54'W, buoy grounding at 49 feet in charted depths of 50 feet. This grounding is cleared by 45 feet. Deleted (See Q.C. Report-item 18)

(3) The grounding at latitude 29° 22.0~~8~~3'N and longitude 94° 38.9~~8~~7'W, buoy grounding at 29 feet in charted depths of 30 feet. This grounding is not cleared. Deleted (See Q.C. Report-item 18)

The groundings (1), (2), and (3) listed above appear in conflict with charted depths; however, considering that the buoy weights hang approximately two feet below the upright setting, these depths are not considered in conflict.

(4) The sunken wreck, PA, PSR #27 charted at latitude 29° 20.9'N and longitude 94° 38.6'W was not covered by any drag strips. However, a wreck was located at latitude 29° 21.3~~2~~0'N and longitude 94° 38.~~7~~83'W and a least depth of 31 feet was obtained. This wreck was not cleared.

(5) Noted differences, such as buoys and platforms charted but not located by the survey, are due to the difference in date of survey and chart edition date. A listing of charted objects not located by the survey is provided at the end of this report. (See Q.C. Report-items 13 and 15) (See Q.C. Report-item 14)

b. Aids to Navigation

(1) The floating aid to navigation, WHIS "1" Galveston Bay Entrance Channel buoy, on the present survey is in agreement with its charted position.

(2) The floating aid to navigation, HORN "HU-HI", on the present survey is not charted. The buoy was intended to define a safety fairway boundary. (3) (See Q.C. Report-item 16)

7. Compliance with Project Instructions

Except as noted below, the survey adequately complies with the Project Instructions:

a. There were two uninvestigated hangs that were not hung in two directions.

b. The wreck at latitude 29° 21.3~~2~~0'N and longitude 94° 38.~~7~~83'W was hung in only one direction. This hang and one grounding were not cleared.

c. Effective depths were shoaler than the charted bottom by a range from one foot to eight feet, with the average range being from three feet to six feet. The Project Instructions require two feet clearance in depths less than 40 feet and three feet clearance in depths greater than 40 feet. (Note: Section ~~N~~ M of the Descriptive Report refers to this requirement.)

d. PSR Item #27 was not covered as per paragraph #25 of the Project Instructions. PSR Items #23, 24, 25, and 26 were not investigated by this survey.

8. Additional Field Work

This is considered an adequate wire-drag survey and serves its intended purpose. No immediate field work is recommended. However, at some future date, PSR Item #27 requires additional work and PSR Items #23, 24, 25, and 26 should be investigated if not already done so on another survey.

9. Miscellaneous

a. Several tide and lift change bights were in error positionally by one position. The change to the effective depth by this error is minimal; therefore, it was deemed impractical to make these corrections to the smooth sheet.

b. Data from AA day contains a hang from the rejected strip which was not smooth plotted. The hang was not located by standard methods, only a geographic position was provided. Strip AA #1 contains a hang at 49 feet that was cleared by 50 feet on CA day ~~which cannot be resolved.~~ For further information on both discrepancies of AA day refer to the verifier's remarks in Section I of the Descriptive Report.

c. The reconnaissance hydrography done on A day is not plotted on the smooth sheet. The hydrography is in agreement with the chart and was done only to aid in planning field operations.

d. Wire drag strips RA #1 and UA #1 extend beyond the sheet limits and are shown as an inset. A smooth sheet extension and an A&D sheet extension also accompany this survey.

e. One split exists in this survey, located at latitude 29° 08.6'N, longitude 94° 40.8'W.

f. Due to an error in machine plotting of the electronic control lattice on the smooth sheet for station MOORE, an accompanying electronic control overlay is provided.

g. Three groundings on known shoals were deleted during quality control evaluation (See O.C. Report - Item 18).

Charted Item	Charted Depth	Clearing Depth	Latitude	Longitude	Remarks
PSR #23	-----	-----	28° 55.50'	94° 39.00'	Outside of area dragged
Wreck	53'	-----	29° 03.97'	94° 40.63'	Outside of area dragged
PSR #24	-----	-----	29° 08.41'	94° 42.09'	Outside of area dragged
Obstr.	49'	(50')	29° 09.27'	94° 39.35'	See note on AA day, Attachment II
Buoy W or "C"	-----	-----	29° 11.09'	94° 43.11'	Not found (See Q.C. Report-item 16)
Wreck	-----	32'	29° 13.98'	94° 46.00'	Not found
Wreck	19'	-----	29° 15.38'	94° 46.01'	Area not dragged
Buoy W or "B"	-----	-----	29° 14.16'	94° 38.12'	Not found (See Q.C. Report-item 16)
Buoy W or "A"	-----	-----	29° 15.15'	94° 38.00'	Not found
36' Sounding	36'	33'	29° 16.01'	94° 39.04'	Not found (See Q.C. Report-item 14(5))
Wreck	-----	24'	29° 16.42'	94° 44.17'	Not found (See Q.C. Report-item 14(4))
PSR #25	-----	32'	29° 17.30'	94° 39.00'	Not found
PSR #26	27'	-----	29° 19.56'	94° 38.65'	Area not dragged
34' Sounding	34'	29'	29° 22.00'	94° 32.04'	Not found (See Q.C. Report-item 14(1))
Buoy W or "F"	-----	-----	29° 21.00'	94° 29.00'	Outside of area dragged
Platform	-----	-----	29° 20.82'	94° 28.97'	Outside of area dragged

Charted Item	Charted Depth	Clearing Depth	Latitude	Longitude	Remarks
Buoy W or "E"	-----	-----	29° 21.01'	94° 27.00'	Outside of area dragged
Platform	-----	-----	29° 15.54'	94° 25.23'	Outside of area dragged
Platform	-----	48'	29° 14.86'	94° 26.13'	Not found (See Q.C. Report - item 14 (9))
Platforms	-----	47'	29° 14.25'	94° 25.37'	Not found

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Atlantic Marine Center
439 West York Street
Norfolk, Virginia 23510

File No: D6-5
Ser. No: 77-58

June 27, 1977 CAM3/RAT

TO: RADM Robert C. Munson
Director, Atlantic Marine Center

FROM: CDR Robert A. Trauschke
Chief, Processing Division

SUBJECT: Hydrographic Inspection Team Report, H-9298

This is a wire-drag survey of the sea lanes in the vicinity of Galveston, Texas conducted by the NOAA Ships RUDE and HECK in 1971 and 1972, as per Project Instructions OPR-479-RU/HE-71 and OPR-479-RU/HE-72.

FIELD WORK

This survey is in general compliance with the Project Instructions and the exceptions are noted in the Verifier's Report. The Hydrographic Inspection Team indicated that all strips were not cleared to within the prescribed distance above the bottom, as per the Project Instructions. Also, calibrations were inconsistently logged in sounding volumes, making verification of horizontal control difficult if not impossible.

VERIFICATION

It is apparent from the large number of "exceptions" noted in the Verifier's Report that the survey can only be considered an adequate wire-drag survey. The HIT Team devoted about 18 hours to this survey. Most of this time was spent by the members familiarizing themselves with wire drag and wire drag processing procedures. This is the first Quality Control Wire-Drag Survey processed. The HIT Team members generally felt that they could not attest to the sheet's "compliance with existing standards and procedures". In fact, Commander Carlen did study the survey, but disqualified himself and did not sign the approval sheet.

Therefore, it is absolutely essential that Quality Control be performed and a critique be furnished immediately so that problems can be eliminated on subsequent wire-drag sheets.

Survey H-9298 WD
Examined and Approved:
Hydrographic Inspection Team
Date: June 1,1977

CDR Robert A. Trauschke, NOAA
Chief, Processing Division

CDR Jeffrey G. Carlen, NOAA
Chief, Coastal Mapping Division

C. Douglas Mason, LT, NOAA
Chief, EDP Branch

William L. Jonns
Chief, Verification Branch

Guy F. Trefethen
Verification Branch

Approved/ Forwarded

Robert C. Munson
RADM, NOAA
Director, Atlantic Marine Center

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

C352

September 15, 1977

TO: A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman
Quality Evaluator

SUBJECT: Quality Control Report for H-9298 (1971-72) WD, Texas, Galveston, Off Galveston Bay Entrance

A quality control inspection of H-9298 WD has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, determination of the validity of hangs, groundings, and least depths, validity of cleared effective depths over obstructions in the survey area, A & D sheet, Verifier's Report, decisions and actions by the verifier, and cartographic presentation of data.

The junctions with presently unavailable adjoining surveys H-9340 (1972) WD, H-9341 (1972) WD, and H-9342 (1972) WD will be inspected during their respective quality evaluations.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as follows:

1. The Verifier's Report does not follow the standard format for wire-drag surveys as recommended in section 5-11 of the Wire Drag Manual. (The recommended format is modified by the inclusion of a section addressing the adequacy of the junctions which is to be designated section C. The designation of subsequent sections of the report should be appropriately revised.)

2. Where adjoining wire-drag surveys have been forwarded and are not available to the verifier, it is impossible to effect an adequate junction with wire-drag sheets during their respective verifications. It is therefore recommended that stable-base copies of completed wire-drag surveys be retained to facilitate the completion of junctions on sheets not yet fully processed. In such cases, the Verifier's Report should outline the steps necessary to complete the junction(s) at Headquarters. The wire-drag surveys can then be revised as necessary to complete the formal requirements of an adequate junction (see Wire Drag Manual--section 5-10).

Responsibility for the completion of a formal junction remains with the verifier in cases where adjoining wire-drag sheets are being processed concurrently.

3. No formal tide approval note was included in the Descriptive Report thereby raising the question of whether or not observed tide correctors were applied during verification. The records were submitted to the Tides Branch and a formal tide note was obtained and added to the Descriptive Report during quality control evaluation. A formal tide note should be obtained and added to the Descriptive Report during verification.

4. A leader with arrow head is customarily drawn from a note describing a particular hang or grounding to the immediate vicinity of the hang or grounding (see Wire Drag Manual--section 5-7, page 77). This practice was not followed during the processing of the present survey. It is recommended that such a practice be followed during the processing of future wire-drag surveys. Further, several of the short leaders were not oriented so as to intersect the position of the particular grounding being described. The orientation and extent of the leaders were revised as necessary during quality control evaluation.

5. In several cases the sounding taken at the position of the hang was represented in the note as the effective depth of the hang. This is considered to be misleading, especially when the effective depth of the hang or grounding is shoaler than the least depth obtained (see Wire Drag Manual--section 5-7, page 77). Such misleading notes and depths were revised as necessary during quality control evaluation.

6. Section 3-a of the Verifier's Report is supplemented by the following:

(5) No detached positions were provided for several hangs despite the fact that the particular obstruction was investigated and described by divers. In such cases a detached position taken at the time of investigation would be more precise than the position established by the relative position of the hang as observed from the Guide and End Vessels.

7. The positions provided in attachment II of the Descriptive Report (List of Groundings and Hangs) are inconsistent inasmuch as some positions are expressed in degrees, minutes, and seconds and others are expressed in degrees, minutes, and tenths of minutes. Such listed positions should be expressed consistently throughout the list to avoid possible misinterpretation.

50.4

8. An apparent conflict was found in the vicinity of latitude 29°10.84', longitude 94°37.30' where a 48-foot hang (position 24 x) was ostensibly cleared by 49 feet (DA day). The validity of the cleared effective depth

of 49 feet is questionable due to insufficient lift tests and heavy sea conditions. This inconsistency was not resolved during verification thus necessitating reconciliation of the conflict during quality control evaluation. Appropriate revisions were effected during quality control evaluation.

9. An inconsistency was noted in latitude 29°09.12', longitude 94°38.05' where a least depth of 55 feet (determined by lead line) was obtained by divers on an obstruction (concrete block) hung at an effective depth of 52 feet. During verification, the observed depth of 55 feet was shown as the effective depth of the hang on the smooth and A & D sheets. The effective depth of the hang has been revised to 52 feet inasmuch as it is the shoalest depth obtained on the obstruction (see Wire Drag Manual--section 5-7, page 77). Since general depths in the area appear to be about 56 feet and the block was 3 to 4 feet high, the hang depth is consistent with this information and casts doubt on the accuracy of the lead line depth.

10. A few hangs were annotated as being cleared by more than one depth. This is considered unnecessary. It is sufficient to indicate the maximum effective depth by which a particular hang is cleared.

11. All least depths determined by the effective depth of the drag at the time of grounding or hang are to be encircled in green ink (see Wire Drag Manual--section 5-10). This practice was not consistently followed during verification. The practice of encircling depths of groundings and hangs is intended to indicate that the depth determined by the effective depth of the drag is somewhat less definitive than an actual sounding.

12. The present survey was not compared with any prior hydrographic surveys during verification. This is considered an improper and unjustified disregard of an important verification-review responsibility and should not become an established verification practice (see the Wire Drag Manual--section 5-11, page 82). All future wire-drag Verification Reports should include a discussion of the results of a comparison between the cleared depths and depths on the hydrographic surveys within the common area. The required comparisons were accomplished during the quality control evaluation.

Section 5 of the Verifier's Report is superseded by the following:

Comparison with Hydrographic Surveys and Field Examinations

a.	H-6251	(1937)	1:40,000
	H-6252	(1937)	1:40,000
	H-8751	(1965)	1:20,000
	H-8752	(1965)	1:20,000

Comparison between the present survey effective depths and depths on the hydrographic surveys reveals two 48-foot soundings in the vicinity of

latitude 28°59.00', longitude 94°40.00' (H-6252) and a 43-foot sounding in the vicinity of latitude 29°14.43', longitude 94°41.71' (H-8752) in conflict with present cleared depths of 49 and 44 feet respectively. Inasmuch as the bottom wire could have slid over these shoaler areas without any apparent effect on the buoys, these conflicting soundings are not necessarily disproved by the 1-foot greater cleared depths on the present survey.

There are no other conflicts between the prior surveys' soundings and cleared depths on the present survey.

b. FE No. 1 (1965) WD 1:80,000
FE No. 1 (1966) WD 1:80,000

No formal junctions between the present survey and the field examinations are considered necessary. The larger scale and more completely developed present survey provides generally comparable or greater cleared depths which are considered more reliably positioned than those plotted on the smaller scale chart segments comprising the plotting of the field examination coverage of the common areas.

Attention is directed to the following:

(1) The wreck (least depth 21 feet--FE No. 1 (1966)) located in latitude 29°17.40', longitude 94°38.92' is no longer extant and is not presently charted. The area of the former wreck is cleared by 32 feet on the present survey.

(2) The 45-foot hang (general bottom depth on FE No. 1 (1965)) in latitude 29°13.40', longitude 94°42.37' is cleared by 45 feet on the present survey.

Except as noted in sections 14 (1) and 14 (5) of the Quality Control Report, the larger scale and more completely developed present survey is adequate to supersede the prior field examinations within the common areas.

13. Due care should be exercised when comparing wire-drag surveys to editions of the chart dated subsequent to the date of the survey. Charted obstructions originating with sources dated subsequent to the date of the wire-drag work may be improperly considered cleared and charted accordingly. Specific mention of such items should be included in the Verifier's Report to preclude such erroneous interpretations and revisions of the chart (see Quality Control Report--item 14 (3), below).

Comparisons between wire-drag surveys and editions of the chart(s) current at the time of the survey field work would obviate the necessity of considering charted information from subsequent sources. It is recommended

that such a practice be adopted during the processing of future wire-drag surveys.

14. Section 6 of the Verifier's Report (Comparison with Charts) is considered incomplete. Numerous charted items at variance with the present survey information are not addressed in the Verifier's Report.

Section 6 of the Verifier's Report is supplemented by the following:

(1) The 34-foot cleared depth charted in the vicinity of latitude 29°22.00', longitude 94°32.00' over a reported sunken tank (NM 23/65) originates with preliminary information from FE No. 1 (1966) WD. The present survey shows this item as cleared by 29 feet; however, the chart should be revised to show the maximum cleared depth of 35 feet from FE No. 1 (1966).

(2) The obstruction (cleared by 23 feet) charted in latitude 29°16.95', longitude 94°44.60' originates with the present survey. The least depth of 23 feet was erroneously charted as the cleared depth. The chart should be revised to show a maximum cleared depth of 18 feet for the obstruction.

(3) The following obstructions were charted on the authority of NM 1/74:

Charted Latitude	Charted Longitude	Hang Depth (feet)	Cleared Depth (feet)
29°17.55'	94°43.80'	21	18
29°10.90'	94°37.30'	48	46
29°09.40'	94°35.20'	49	48

The listed obstructions are considered to have originated with preliminary information from the present survey. The chart should be revised to show the cleared depths listed above.

(4) The submerged wreck PA charted in the vicinity of latitude 29°16.40', longitude 94°44.20' originates with NM 44/68. The present survey shows this area as cleared to 24 feet with no indication of the wreck. The cleared depth should be charted.

(5) The 36-foot cleared depth charted in latitude 29°16.00', longitude 94°39.00' originates with FE No. 1 (1966) WD. The cleared depth of 36 feet should be retained as presently charted inasmuch as the present survey only clears the area to an effective depth of 33 feet.

(6) The obstruction (cleared by 41 feet) charted in latitude 29°16.82', longitude 94°32.86' originates with the present survey. It is erroneously charted as cleared by 41 feet. The present survey shows a cleared depth of 40 feet and the chart should be revised accordingly. APP

(7) The wreck (cleared by 25 feet) charted in latitude 29°15.52', longitude 94°41.71' originates with the present survey. The least depth of 25 feet was erroneously charted as the cleared depth. The chart should be revised to show a maximum cleared depth of 24 feet for this wreck. APP

(8) The following charted obstructions originate with preliminary information from the present survey which was revised during subsequent processing.

Charted Cleared Depth (feet)	Latitude	Longitude	Actual Cleared Depth (feet)
a. 36	29°13.61'	94°45.08'	35 1282
b. 46	29°11.32'	94°40.08'	48 1282
c. 48	29°09.11'	94°38.07'	49 1282
d. 49	29°09.25'	94°39.37'	50 1282
e. 50	29°08.95'	94°39.99'	49 1282

Item d above recorded by divers on the present survey without a position fix and described as a pipe 4 feet off bottom should be charted ~~as PA~~ with a cleared depth of 50 feet. All other listed items should be revised on the chart to agree with the actual cleared depths listed above.

(9) The platform charted in latitude 29°14.86', longitude 94°26.13' and the two platforms charted in the vicinity of latitude 29°14.25, longitude 94°25.37' originate with LNM 51/74 and LNM's 2 and 51/75 respectively, subsequent to the date of the present survey. They were not extant at the time of the survey and should be retained as presently charted. 1280

(10) The obstruction charted in latitude 29°21.43', longitude 94°38.81' originates with L 1431/73 (preliminary information from the present survey) and NM 1/74. The present survey shows a wreck approximately 200 meters south of the charted position. The charted position should be revised to agree with the present survey and the notation "obstr" should be replaced with the notation "Wk". N/M 12/78 SEE SECTION K, ITEM 8 1282, 152 SC S10,

15. Reference section 6-a (5) of the Verifier's Report:

Nine of the listed items fall outside the limits of the dragged area on the present survey and are considered irrelevant. Such a list should be

limited to only those charted items falling within the cleared area as shown on the A & D sheet of the wire-drag survey.

16. Section 6-b of the Verifier's Report is supplemented by the following:

(3) The three buoys charted in latitude 29°15.16', longitude 94°38.00', latitude 29°14.15', longitude 94°38.12', and latitude 29°11.11', longitude 94°43.13' originate with LNM 9/75 subsequent to the date of the present survey. They are not shown on the present survey and should be retained on the chart.

17. The plot of the wire-drag survey should have been made on .007-inch drafting film rather than the .004-inch film used on the present survey.

18. Three groundings on known shoals were included on the verified smooth and A & D sheets. This is contrary to common practice of omitting these inasmuch as a shoaler cleared depth is likely to be charted thereby causing a possible loss of significant actual depth information on the chart.

Where hangs and/or groundings occurring on wire-drag surveys on a known shoal are equal to or greater than depths on the latest hydrographic survey(s), the depth of the hang, grounding, or detached sounding may be omitted from the smooth and A & D sheets, except where the wire-drag depth(s) will enhance the development as shown on the hydrographic survey(s). The identification of such hangs, etc., on known shoals presupposes that a detailed comparison with hydrographic surveys is accomplished during verification (see section 12 of this Quality Control Report above).

The unnecessary groundings were deleted during quality control evaluation.

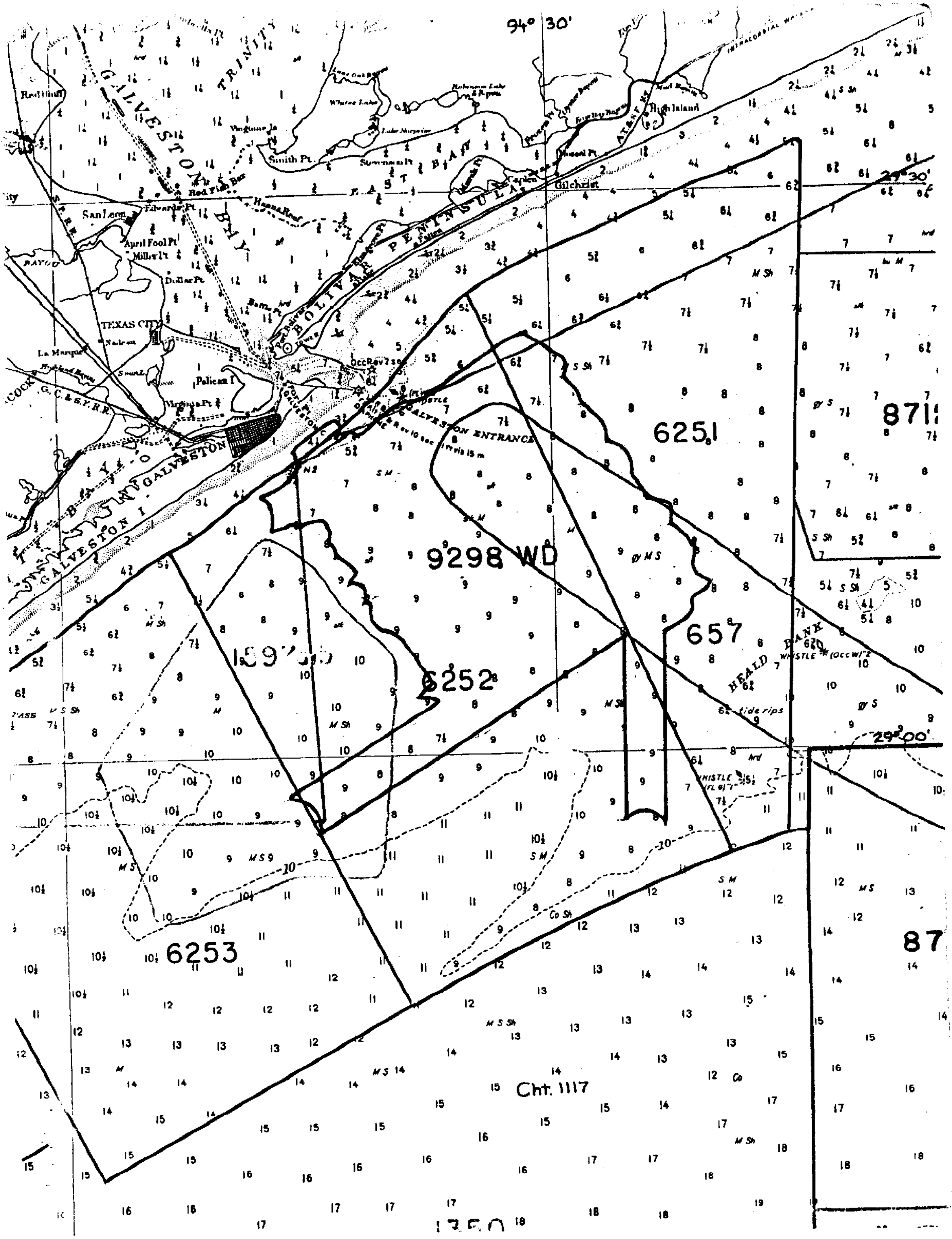
19. The preferred format for notes on the smooth and A & D sheets serving to identify hangs and/or groundings is as follows:

hang at ___ ft)
aground at ___ ft) as appropriate
cleared by ___ ft
shoalest sounding ___ ft
*I-beam - extends ___ ft off bottom

*Entries comprising a brief description of the nature of the obstruction and height above the bottom should be included in the note in cases where such information is known.

Notes on future verified wire-drag surveys should follow the format suggested above.

cc:
C351


94° 30'
29° 30'
29° 00'
GALVESTON BAY
TRINITY
EAST BAY
BOLIVAR PENINSULA
GALVESTON I.
GALVESTON
TEXAS CITY
San Leon
Smith Pt.
Gilchrist
High Island
Pelican I.
GALVESTON ENTRANCE
HEALD BANK
6251
9298 WD
6252
657
6253
8711
87
Cht. 1117

(2-20-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9298 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
1280	12-22-77	Martha Mahmud	Full Part Before After Verification Review Inspection Signed Via
11332			Drawing No. 21
152SC	2-2-78	Paul L. Spence	Full Part Before After Verification Review Inspection Signed Via
1			Drawing No.
1282	2-23-78	Paul L. Spence	Full Part Before After Verification Review Inspection Signed Via
11323			Drawing No.
518	2-27-78	Paul L. Spence	Full Part Before After Verification Review Inspection Signed Via
11325			Drawing No.
1116	3-2-78	Paul L. Spence	Full Part Before After Verification Review Inspection Signed Via
11340			Drawing No.
1117	3-1-78	Paul L. Spence	Full Part Before After Verification Review Inspection Signed Via
11300			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