

# 9627

## WIRE DRAG

Diag. Cht. No. 1278

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. .... 40-1-76 R7H  
Office No..... H-9627 W.D.

#### LOCALITY

State ..... Louisiana  
General Locality ..... Gulf of Mexico  
Locality ..... Vicinity of Calcasieu Pass

1976

CHIEF OF PARTY  
R.A. Ganse

#### LIBRARY & ARCHIVES

DATE ..... June 28, 1978

☆ U.S. GOV. PRINTING OFFICE: 1976-669-441

9627

WIRE DRAG

Area 1  
Chts

11344(1278)  
11344(1278)  
11345(1051)  
11347A(631)  
11348(1112)

HYDROGRAPHIC TITLE SHEET

H-9627-WD

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.

R/H-40-1-76

State LOUISIANA

General locality GULF OF MEXICO

VICINITY of

Locality ^ CALCASIEU PASS

Scale 1:40,000

Date of survey 8 JUNE - 13 AUGUST, 1976

23 FEB. 1976:

Instructions dated CHANGE NO. 1 - 7 MAY 1976

Project No. OPR-479-RU/HE-76

Vessel RUDE (ASV-90) and HECK (ASV-91)

Chief of party CDR R.A. GANSE

Surveyed by CDR GANSE, CDR CROZIER, LTJG RENNINGER, ENS VADNAIS, ENS GROSS

Soundings taken by echo sounder, hand lead, pole \_\_\_\_\_

Graphic record scaled by \_\_\_\_\_

Graphic record checked by \_\_\_\_\_

Protracted by \_\_\_\_\_

Automated plot by \_\_\_\_\_

Soundings penciled by \_\_\_\_\_

Soundings in ~~fathoms~~ feet at MLW ~~XXXXX~~ 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 to the Descriptive Report.

Processed as a Q.C. survey

\* Rec'd June 78, returned immediately to AMC for completion of HIT report. This is a QC survey. Rec'd second time Dec 78 for QC inspection.

Applied to stds 5/14/79

*[Signature]*

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DESCRIPTIVE REPORT

TO ACCOMPANY

WIRE DRAG FIELD NO. 40-1-76

PROJECT OPR-479-RU/HE-76

A. AUTHORITY

This project was authorized under project instructions OPR-479-RU/HE-76, Safety Fairways, Gulf of Mexico. They are dated 23 February 1976, amended by Change No. 1 to Project Instructions dated 7 May 1976 and clarified by the attached letter of 26 August 1976. Also amended by verbal instructions (received after completion of anchorage) from Director, AMC. These verbal instructions were in response to our letter of 19 July 1976, copy attached, and stated not to re-drag areas cleared to within 1/2 foot of specifications.

B. CHARACTER AND LIMITS OF WORK

The work for this project started eastward from the Calcasieu Channel and included the anchorage east of the channel. The anchorage was completed. The Safety Fairway was completed down to latitude 29°24'N. This work is on charts C&GS (1279, 1278, 1051).

C. CONTROL

Raydist DR-S Range-Range control was used, operating on frequency of 3300.4 KHZ, giving a lane width of 45.39 meters. Two shore stations, H-AMC-2-LA and CON were utilized for control. H-AMC-2-LA, the red station was located at latitude 29°47'06.545"N, longitude 93°11'50.585"W. CON the green station was located latitude 29°45'35.541"N, longitude 93°34'31.573"W.

D. DATE OF SURVEY

Work on boatsheet 40-1-76 commenced 8 June 1976 and ended Friday, 13 August 1976.

E. TIDE REDUCERS *Smooth Verified tides have been applied to the verified strips and to the Smooth RFD sheet. The Tide letter and hourly heights are attached to this report. Computed smooth tides are contained in a separate envelope.*  
Tide reduction of each days data was completed using predicted tides. Galveston, Texas was the reference station. Predicted tides were tabulated for Sabine Pass Jetty with correctors of:

TIME		HEIGHT RATIO	
HIGH WATER	LOW WATER	HIGH WATER	LOW WATER
- 1 hr. 26 min.	- 1 hr. 31 min.	1.79	1.79

These predicted tides were used for the entire survey.

#### F. JUNCTIONS

This boatsheet 40-1-76 junctioned with the work done the previous year on boatsheet 40-4-75 (H-9549-WD). *Junction not made... see section 4 of the Verifier's Report/Addendum*

#### G. SPLITS

There were no areas inside the anchorage or fairway that had holidays or splits. However there were a few spots inside the channel that were never cleared due to the fact that the navigation buoys obstructed the drag. In all cases these areas are in the channel and not in areas that were assigned to be dragged. The Corp of Engineers has responsibility for the channel area. The following splits inside the channel are listed below:

Near Buoy #	Reference To Buoy
CC	S
3 and 4	S and N
8	S
9	SE
12	S and W
13	S

*Splits are catalogued in section 7. a. of the Verifier's Report/Addendum*

There were several spots outside the anchorage and fairway where overlapping drags left small splits. Their locations are listed below:

1. A split about 1 1/2 miles long running north-south in a spoil area centered at latitude 29°30'N, longitude 93°14'W.
2. A split in a spoil area running east-west centered at latitude 29°31.5'N, longitude 93°14.5'W.

#### H. CURRENTS

Currents were not a major problem in this area. Most times a small current could be noticed as either slowing or increasing the speed of the drag. Seldom did the current cause a drag to be terminated. Currents were stronger closer to Calcasieu Pass. Quite a few drags were rejected due to high lifts, probably caused by a combination of current and wind.

## I. WAVES

1. Waves were uniform in height in this region. The wave heights reported in the drag information stamps correspond roughly to the average of the upper third waves. There were few rouge waves.
2. Several times large period swell that affected the entire system (both the wire and tester at the same time) was encountered. This was handled individually in each case by adding a new corrector to the effective drag depth. That figure was one-half the amount of large period swell. This large period swell only affected a few drags. *This correction was applied as per recommended.*

## J. DIVING PROCEDURES

Diving procedures for this project consisted on diving on every unknown hang. Drags that hung on navigation buoys were not investigated by divers. In some cases temporary hangs prevented investigation by divers. Visibility varied from 1 foot to about 40 feet.

## K. TESTING

1. Results of the tests are recorded in both the rough and smooth tester record volumes. There is one difference in how these values were recorded. In the rough tester records the actual height of the mark on the tester pole was recorded. No attention was paid to the depth of the tester. In the smooth tender record the test was recorded corrected to the wire depth. The smooth test record shows the actual lift and sag.
2. In the smooth test record launch 20 has an asterisk (\*) next to the section they tested.
3. Definition of a SAG MISS: a test in which the tester rod has definitely been thrown in ahead of the ground wire, and picked up after the ground wire has passed, yet there are no marks on the pole. The wire has passed underneath the pole. Such a test puts an upper limit on the amount of lift. This limit is recorded in the smooth tester record preceded by an algebraic less than symbol. When this value reduces the lift or is the sole test in a given section it is assumed to be the lift. *This is considered a valid test by this branch and applied as per the definition.*
4. Definition of TOB: TOB refers to "tester on bottom". It is a test result that occurs when the tester rod shows signs of having touched the ocean floor. Lifts associated with this type test are generally not accepted because of the uncertainty

as to where the ground wire struck the rod. It is likely that if the tester rod is stuck in the ocean floor the ground wire might first ride up the rod until enough force was generated to push the rod away. NOTE: In some cases tests have been validly recorded with both TOB and SAG MISS. This combination is possible in moderate swell and when the ground wire is close to the bottom.

#### L. CALCOMP PLOTS

Included with the data submitted for this sheet are CalComp plots (computer generated by AMC from tapes prepared by the vessels). These plots have been reviewed onboard. Additional hand draftings have been added for hangs. The plots have been adjusted for the raydist correctors. Hangs have been plotted in by hand. These plots are intended to be used as the finished smooth plot. Only the addition of the effective depth (which must await smooth tides) and the drafting of a composite A&D Sheet remain.

#### M. GENERAL NOTES

##### 1. Saw Tooth Recorder

- a. At the end of each drag it is important to know that the ships are both moving normally. Before Raydist it was not possible to see if the ships were moving normally at the time of the last fix. The Raydist's saw tooth recorder was checked at the end of each drag to ascertain proper ship movement before the drag was aborted.
- b. The saw tooth strip chart shows the path of the ships between fixes. This fact can be important in cases where it is possible that between fixes the proper overlap may not have been met.
- c. Relative Pen Lengths. In most cases the three pens were not exactly the same length. This means that they cannot be read properly without adjusting for the relative pen lengths. On each days strip chart the relative pen lengths are recorded on a rubber stamp.

##### 2. Uprights

- a. At the end of this project all buoy uprights were measured with a measuring tape. The greatest discrepancies found for depths used were two HECK intermediate buoy uprights that were 4 inches off. All other uprights had less than 4 inch discrepancies.

N. DISCREPANCIES AND COMPARISONS WITH RECENT CHARTS

*List charts  
& Pub Dates  
1988*

There were no discrepancies found with the charts used for this boatsheet. Comparisons with the chart seemed very reliable.

O. GYRO ERROR *Charts used for comparison and discrepancies found are listed in section 6. of the Verifier's Report/Addendum.*

a. At the beginning of the survey both vessels gyros were working properly. On R and S days the guide vessels gyro was momentarily turned off. This caused all repeaters to be off 1 1/2° in the same direction. As a result, gyro option B is used for the parameter sheets (see para. C) for R and S days. No other problems were encountered concerning gyros.

b. Gyro error is considered in the computer plots by use of a special notation in column 69 of the parameter sheets. A copy of that notation and its explanation is listed below.

c. Gyro Error Options  
Guide Vessel Options

	1	2	3	
End	1	A	B	C
Vessels	2	D	Blank	*
Options	3	E	*	*

\*not permissible combination

1, 2, and 3 refer to these 3 conditions.

Condition 1. No gyro error, the gyro has been steady and behaving well. It is more likely that any error is observers fault and not the gyro.

Condition 2. Gyro error is the difference between observed bearing to the other ship and the true bearing determined by the ships computed Raydist positions. This condition is used when ships gyro is in error but all electronic data is assumed to be reliable.

Condition 3. Gyro error is the difference between the ships observed bearing to the other ship, and the other ships reciprocal bearing back to the observing ship. Essentially in this case one is using the other ships gyro. This option is used when both the observing ships gyro and electronic data is questionable.



P. PERSONNEL AND EQUIPMENT

During this survey the RUDE & HECK acted as guide and end vessel respectively. Both vessels are equipped with Raytheon DE-723 fathometers. Both launches were utilized as drag tenders. Bearings to the end buoys and opposite vessels were made on Sperry gyro repeaters. Standard wire drag equipment was used throughout this survey. The officers aboard this survey were CDR R.A. Ganse, CDR R. Crozier, LTJG T. Renninger, ENS K. Vadnais and ENS C. Gross.

Q. HANGS

There were two major types of hangs for this boatsheet. One was planned hangs on the navigation buoys in Calcasieu Channel. Of course these did not have clearing strips. The most these hangs show is the position of the buoy and even that isn't very exact as the wire can pull the buoys a short distance plus the position changes with the currents and tide. The second hang was one on obstructions. These are more important, and they have clearing strips. These hangs on obstructions are listed first.

*This statement is relevant to section 6.b.(1) of the Verifiers Report/Addendum*

Hang H1

*Note: For correct hang G.P.'s see the Addendum Appendix I*

Drag H1 hung a piece of metal wreckage at position latitude 29° 34.45'N and longitude 93°13.15'W. Divers found this to be a metal cylindrical obstruction about 8 feet long protruding about 2 feet from the bottom. On one end was a metal plate. This obstruction is probably not equally hangable from all directions. It was cleared in two opposite directions by three strips. Drag H2 (36 feet - W direction), Drag P3 (34 ~~feet~~ - E direction), Drag H3 (35 feet - E direction).

*Awois # 6990*

*NM 41179  
chart 11545*

HANG M1

Drag M1 had a temporary hang at position latitude 29°38.60'N, longitude 93°15.00'W. Divers were not able to get to the hang before it slipped off. The obstruction is small as the bottom was at 32 feet and it was cleared by strips D1 (30 ~~feet~~ feet - W direction) and P2 (31 feet - E direction). ~~and P-1 (31 feet - E dir.)~~

HANG N1

Drag N1 hung an object near the spoil area at position latitude 29°32.31'N, longitude 93°14.89'W. Divers never investigated this due to a storm. However on drag S2 which hung the same obstruction, divers reported the object to be a 6 foot long sloping metal obstruction protruding at the most 3 feet from the bottom.

*NM 41179  
chart 11545*

It definitely was not equally hangable from all sides. It was cleared from opposite directions by drags S1 (36 feet - NW direction) and S3 (33 1/2 feet - SE direction).

clearing strips  
S-1 & P-4 not  
Valid due to the  
Sloping object

#### HANG S2

This obstruction is the same as N1, all information, except for position, is the same. The position for this hang is latitude 29°32.33'N, longitude 93°14.86'W.

#### HANG AC1

Drag AC1 hung a metal cage about 6' x 6' x 4' high at position latitude 29°27.11'N, longitude 93°13.13'W. Rather than clear this obstruction it was hung again (Drag AF2) and buoyed off. Later it was removed using divers, mooring lines and the ships for power. Thus this area was swept in the regular one direction by drag AH1 at 41 feet. The bottom was at 43 feet. (W-8796(1964))

40

#### HANG AF2

Drag AF2 hung the same cage as on drag AC1. All information concerning the obstruction, except for position, is the same as for hang AC1. The position from AF2 is latitude 29°27.13'N, longitude 93°13.14'W.

#### HANG AD3

Drag AD3 had a temporary hang that did not last long enough for a good position. The approximate position was latitude 29°28.2'N, longitude 93°13.6'W. ~~See hang AG4 for more information. Not considered the same hang as AG4. This temp hang is cleared by AG-3 (38 feet - W dir.)~~

#### HANG AG4

& AG-4 (38 feet - E dir.)

Drag AG3 was run to locate the temporary hang from AD3. It cleared and was reversed becoming strip AG4. AG4 hung at position latitude 29°28.07'N, longitude 93°13.43'W. This was not in area assigned us by project instructions, but instead was inside the Calcasieu Channel. Divers reported this as a large sunk navigation buoy. It was buoyed by the divers. The Coast Guard picked it up a few days later.

Considered cleared  
to 39 ft by strip AC-1.

#### HANG AF1

Drag AF1 had a temporary hang. This hang occurred during the process of reversal to begin strip AF2. The wire was slack so it is probably a hang on set out. However it was cleared in two directions. Those clearing strips were not set up from the bottom any more than usual. The object was never found again. Cleared by

Clearing strips AC-1, AG-1, AG-2, and AG-3 not valid due to the sloping object. A least depth (38 feet) was obtained by Bryson Gage. This obstruction is no longer valid due to removal by the U.S.C.G.

strip AG2 (~~38~~<sup>39</sup> feet - SW direction) and strip AJ1 (~~40~~<sup>41</sup> feet - NE direction). Position of hang, latitude 29°27.7'N, longitude 93°13.4'W. Also cleared by AG-1 (39 feet - S dir.) and AC-1 (39 feet - S dir.)

HANG AL1\*

Drag AL1 had a temporary hang that slipped off before a good position was established. The P.A. was latitude 29°24.4'N, longitude 93°14.6'W. The area was probably just outside the fairway. As this drag covered the obstruction in a N direction it was cleared by strip AM1 (43 feet - SW direction). Another strip to the north would not have proved anything new as it was already known to not be hangable from that direction.

HANG AM2\*

\* Effective depths of hangs are comparable to depths on H-8738 (1963). No further consideration is necessary.

Drag AM1 had a temporary hang that prevented divers from investigating the hang and the ships from getting a good position. The P.A. was latitude 29°25.2'N, longitude 93°12.4'W. It was cleared by drags AN1 (~~42~~<sup>43</sup> feet - S direction) and AN2 (~~42~~<sup>44</sup> feet - N direction). and AM-3 (42 feet - S dir.)

The remaining hangs were on navigation buoys. They are listed below.

Drag	Hang at Buoy	Latitude	Longitude	Navigation Buoy #
G1	10	29°36.08'N	93°17.84'N	20
K1	17	29°34.4' N	93°13.3' W	16
N1	7-8	29°32.76'N	93°14.91'W	12
Q2	10-11	29°34.34'N	93°16.35'W	16
R1	4-5	29°34.39'N	93°16.34'W	16
R2	6-7	29°32.69'N	93°15.06'W	11
R2	4-5	29°32.79'N	93°14.88'W	12
S1	2	29°32.70'N	93°15.11'W	11
S3	1-2	29°31.34'N	93°13.75'W	X9
T2	3-4	29°32.76'N	93°14.90'W	12
T2	F	29°32.69'N	93°15.09'W	11
Y1	4-5	29°31.35'N	93°13.76'W	9
Z1	4-5	29°30.90'N	93°13.50'W	7
Z2	5-6	29°30.94'N	93°13.48'W	7
Z3	5-6	29°29.02'N	93°13.59'W	X3
AD1	5-6	29°30.91'N	93°13.48'W	7
AD1	3-4	29°31.12'N	93°13.52'W	8
AD2	7-8	29°29.00'N	93°13.36'W	4
AE1	5-6	29°29.20'N	93°13.59'W	3
AG2	7-8	29°27.34'N	93°13.37'W	CC
AK2	2-3	29°27.32'N	93°13.37'W	CC

## R. GROUNDINGS

Project instructions stated that in areas with under 40 feet of water the effective depth was to come within 2 feet of the bottom. As normal lifts ran 2 to 3 feet, the drags were initially set out at a depth equal to the bottom or even 1/2 foot deeper than the bottom. The buoy weights hang down even lower than the wire, about 15" for the end weights and 9" for the intermediates. Of course this created a problem in the large number of groundings. These groundings were all handled the same way. The areas that grounded were voided. The voided areas were dragged again. It is interesting that many drags that were closer to the shore did not ground out when some groundings should have been noted. This was caused by a mud bottom of ooze that increased closer to shore. This ooze of probably one half mud and water prevented groundings. There is little point to list by position each grounding. The groundings were too common. The drags that had some grounding in them are listed below. B1, J1, K1, L1, U1, V2, W1, X3, AA1, AB1, AB2, AE1, AG1, AH1, AK3, AL1, AM1, AM2, and AN3. *The Verifiers Report / Addendum Appendix II (§ I for two groundings) contains an abstract of all groundings and their clearances.*

## S. CALIBRATION

*Procedures not in accordance with the Provisional Hydro. Manual (Section 5.3.4 F)*  
Frequent thunderstorms which in many cases caused Raydist to lose lock caused problems with our calibration. A range angle calibration run out of Calcasieu Channel was provided by AMC. This was our principal calibration used for this boatsheet. As work progressed farther out from Calcasieu Pass a small oil rig (MO-WC-110-3) was chosen to calibrate on. Throughout the project 15 ties on the red station and 17 ties on the green station were made on the rig. They were corrected by close ties to the Calcasieu range, and were averaged to give true values for the oil rig. This method was done by necessity as the ships were far from the range at the end of the project, and the thunderstorms could come up very quickly. We make no claim that the rig is established to geodetic accuracy, however we have established that all work tied to the rig is consistent with work tied to the inshore calibration source. Further, once having established the mean red and green values of the well head (as tied to the inshore calibration range), a single tie to the well head is equivalent to having calibrated several times inshore over a span of time (including a complete tidal cycle among other variables) and meaning the results. The point here being that the inshore calibration site has a much longer land path than the well head and is more susceptible to conductivity changes, etc.

A final perhaps incidental note. The geographic position determined for the well head from the mean Raydist values (using standard propagation velocities) is about 36 meters or eight tenths of a lane

*Note: The field failed to supply a computed G.P. of the oil rig ... a computation has been made and is attached to Attachment III of this report.*

different from that given in the Special Local Notice to Mariners (a list of offshore oil well structures); however, that publication only gives positions to the nearest second (30 meters N-S, 26 meters E-W). We have no knowledge of how the LNW position was determined. Standard deviation for the ties are red  $-.09$  lanes) and green (.13 lanes). Standard errors (assuming a Gaussian Distribution) are red (.02) and green (.03).

The following days used the oil rig for either or both opening and closing calibrations, Y,Z,AA,AB,AC,AD,AE,AF.

A more serious problem occurred when thunderstorms came up at the end of a drag and caused lock to be lost before any calibration could be made. Fortunately in all cases except AE day, there was a few minutes warning before lock was lost. During this time marker buoys were thrown over. Once the storm had passed and the ships had calibrated these buoys were verified for position. In all cases the whole lanes checked fine. However the buoys were no good for finding tenth of lane correctors. In these cases only opening calibrations were used. Drags with these problems are discussed below. The planted marker buoys appeared to have moved a little at times. This probably being caused by current changes affecting the direction the scope of the line ran. On perhaps the buoy was moved a little during rough weather. Thus one of the most important checks is the agreement between the RUDE and HECK checks taken at the same time. The check on the marker buoys at different times and dates is important also.

A day - HECK lost green station. Single vessel control was utilized. This drag however was never worked up or utilized for this survey.

F day - The RUDE checked lane count on a buoy plant 9 June after F day's work. The lane check was fine. Then the RUDE tied up in Cameron without calibrating and turned off their set. On the next working day the set was turned on and calibration occurred without changing any lanes. Thus the RUDE had two lane checks which agreed. The RUDE's corrector for F day is from F day opening calibration only.

K day - On K day (28 June) a thunderstorm prevented closing calibration for RUDE only. Passes were made on the marker buoy planted 9 June that provided a lane check. K day correctors for RUDE are from opening range calibration only.

W and X days - There was an opening range calibration on W day (13 July). After that calibration a lane check was made on a marker buoy planted 12 July. W day's work was completed and another lane check on the marker buoy was successful. After X day's work

a third lane check on the buoy checked fine. On the morning of 21 July a storm caused lock to be lost. Thus for both W and X days the correctors are from opening W day only.

AA day - Problems with a thunderstorm developed during the one drag on AA day. Both ships dropped buoys at position 8 and at position 16 (the end of the drag). Lock was soon lost. The HECK recalibrated on the oil rig and gave lane checks to the four buoys planted. Of course the important ones are the buoys planted at the end of the drag as the entire drag is saved. AA day correctors are from AA check calibration only. See attachment IV for more information.

AE day - There was one small drag on AE day that cleared a small area before hanging navigation buoy 3 in the Calcasieu Channel. Red station, due to problems at the shore station, lost lock soon after the drag began. This was before a marker buoy could be planted. Green was checked on both the oil rig and range and found to be fine. This drag is kept because; one, the green station is fine. Two, radar ranges between ships give support that red was fine until after the drag. Three, the navigation buoy was located using the Raydist values at the end of the drag and found to be in about the same location (as determined by Z3 drag). The major reason for the drag being kept is the fact that the navigation buoy serves as a check on position at the end of the drag.

#### T. NOTED OCCURRENCES DURING SURVEY

1. There are some noted occurrences regarding calibration that are listed in section S under calibration.
2. B1 drag - Small marker buoy became temporarily tangled in drag.
3. E1 drag - Towline increased to 1200 feet by guide vessel only at position 5. Extended towline was used for remainder of drag.
4. H3 drag - possibly this clearing strip had a short temporary hang on the obstruction being cleared. Repeated by P3 drag.
5. K1 drag - Buoy #12 misset until position 52. At position 23 guide vessel ran a radial arc about hang on navigation buoy #16.
6. P1 drag - It is possible this clearing strip had a temporary hang on the obstruction it was intended to clear. It is repeated by drag P2.

7. R1 drag - After the hang on navigation buoy #16 the drag was run about this hang for one position on the end vessels side.
8. S3 drag - After the hang on navigation buoy #7 the end vessel ran a radial arc about the hang.
9. U1 drag - A swell factor was used in this drag to compensate for a large period swell. At position 8 or 9 the end vessels side picked up a steel grating from the bottom and dragged this along for the remainder of the drag.
10. V1 and V2 drags - A swell factor is applied to the effective depth to compensate for the large period swell.
11. Z1 drag - the end vessel lost steering control. Bridle was used to keep on course.
12. AB1 and AB2 drags - Buoy #17 misset consequently causing some voids in both of these drags.
13. AC1 drag - Metal cage hung on this drag was later picked up intact by the ships.
14. AD3 drag - Buoy #8 fouled 4 feet short.
15. AG1 drag - Drag is voided from section 9-F due to two fouled buoys and high lifts.
16. AG4 drag - The sunk navigation buoy found by divers on this drag was later picked up intact by the Coast Guard.
17. AL2 drag - This drag is not worked up due to high lifts but was saved under the possibility that the area might be needed. At this time it is not felt that this drag is needed.
18. AN3 drag - This drag picked up some obstruction between buoys 9 and 10 around position 22. The obstruction was pulled along for the remainder of the drag. Upon pick up some 1 1/2 inch hose was pulled up between buoys 9 and 10.
19. AP1 drag - Buoy #1 was fouled about 1 foot creating a three section drag rather than a two section as planned.

#### U. RECOMMENDATIONS

It is recommended that after the effective depth computations have been adjusted for the difference between smooth and predicted tides, then those values should be added to the calcomp overlays. An A and D sheet reflecting the smooth plots should be completed, then the results should be verified.

V. APPROVAL SHEET

All records of this survey including smooth plotting, except for the addition of the effective depths, (which must await smooth tides) and the drafting of a composite A&D sheet, are hereby approved. The field work was personally supervised by the undersigned. The boatsheet and records were inspected daily. The survey is considered complete and adequate for charting.

Submitted by:

*T.L. Renninger*

T.L. Renninger  
Operations Officer  
NOAA Ships RUDE & HECK

*R.A. Ganse*

R.A. Ganse  
Commanding Officer  
NOAA Ships RUDE & HECK





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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SURVEY  
Room 4411 20852

C351  
W1

ATTACHMENT IX-A

AUG 26 1976

TO: Director, Atlantic Marine Center *per*  
FROM: Richard H. Houlder *R.H.H.*  
Associate Director  
Office of Marine Surveys and Maps  
SUBJECT: Wire-Drage Surveys Involving Channel Buoys (Telephone  
conversation, LCDR Berman to C351, 8/9/76)

Standard requirements for wire-drag surveys include a provision for hanging navigation buoys within the project limits from opposite directions to ensure that no unknown obstructions exist in their vicinity. This provision remains effective. However, when the navigation buoy is a channel buoy marking a dredged channel which is not required to be swept, the channel buoy need only be hung by a strip from outside the channel, sweeping toward the channel. There will be no requirement for an opposing hang from the channel, sweeping out.



ATTACHMENT IX-B

19 July 1976

Director, Atlantic Marine Center  
Attn: CAM1

CDR Robert A. Gause  
Commanding Officer  
NOAA Ships RUDE & HECK

Request For Change In OPR-479 Project Instructions

I am in the process of ensuring all effective depths in project areas less than 40 feet deep are within 2 feet of the bottom. This involves going back and picking up several areas previously cleared to within 2 1/2 feet of the bottom. Following what I considered to be a somewhat ambiguous answer to my query as to whether this was the intention of the instructions I decided to use my own judgement. The decision I originally came to was to let areas within 2 1/2 feet stand. Since receiving a copy of the Coast Guard proposal for net bottom clearance I have changed my mind. I am somewhat amazed at a proposal for a one half meter NBC (separate letter on this subject follows), but if anywhere justifies such confidence it should be where we have wire dragged. Appalled as I may be at the amount of time it takes to obtain the desired clearance (many areas end up passed over three times before we finish). I can now understand the criterion for shoal water, what I do question is the criterion of being within 3 feet of the bottom in depths greater than 40 feet. It is my observation that no 40 foot vessels use this fairway (using it they are either going up the Calcasieu or Sabine Rivers which doesn't accommodate such drafts). I assume the logic is that these channels may be deepened or deep draft vessels may eventually unload off shore, so why not go ahead and clear to the bottom. I would just like to verify that the instruction writers realize that it is by no means as easy to go ahead and clear to the bottom. What I propose is setting the drags as close to the bottom as I can with confidence that I won't ground out, and redrag only areas cleared to less than 40 feet. I propose that areas of depths less than 40 feet be annotated as cleared to within 2 feet of the charted bottom and that deeper areas be broken in to large segments and annotated as cleared to whatever the data will support. Keep the survey records, and if a deeper clearance is required in the future come back then.

A final supporting remark, the only thing we are logically looking for down here is what man has dropped and after a given amount of time this year's work isn't going to mean much anyway.

Addendum Appendix I  
Abstract of Hangs and Groundings  
Plotted on the Smooth (A#D) Sheet

page I-1

HANG (H) OF GROUNDING (G)	STRIP NO.	D.R. Designation (Designated) POSITION NO.	SECTION OF BUOY NO.	LATITUDE	LONGITUDE	GROUNDING EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	G-1	36G 35G	9-10	29°36'06"	93°17'53"	N.A.			31'	W	Nav. Buoy "20" ✓
H	H-1	36H 16H	15-16	29°34'26"	93°13'09"	38'			38'	W	Metal Wreckage #6990 ✓
							H-2	36'		W	Clearing Strip ✓
							H-3	35'		E	Clearing Strip (not used - man overboard) ✓
							P-3	34'		E	Clearing Strip ✓
H	K-1	28K 27K 29K	17-F	29°34'22"	93°16'20"	N.A.			37'	W	Nav. Buoy "16" (also position for ✓ "Nav. Buoy "15" 29°34'19"/93°16'35") ✓
H	M-1	22M 6M	7-8	29°38'36"	93°15'00"	32'			32'	E	Temporary Hang - Uninvestigated ✓ (possible Grounding)
							P-1	31'		E	Clearing Strip ✓
							P-2	31'		E	Clearing Strip ✓
							D-1	30'		W	Clearing Strip ✓
H	N-1	30N 22N	7-8	29°32'45"	93°14'54"	N.A.			38'	W	Nav. Buoy "12" ✓
H	N-1	31N 22N	12-13	29°32'18"	93°14'52"	38'			38'	W	Metal Wreckage (same as 5-2) ✓
							S-3	33'		SE	Clearing Strip ✓
							S-1	-		NW	} Clearing Strips not valid - sloping object.
							P-4	-		W	
H	Q-2	20Q 19Q	10-11	29°34'22"	93°16'20"	N.A.			37'	SE	Nav. Buoy "16" ✓
H	R-1	24R 12R	4-5	29°34'22"	93°16'20"	N.A.			37'	SW	Nav. Buoy "16" ✓
H	R-2	25R 23R	4-5	29°32'45"	93°14'54"	N.A.			38'	SE	Nav. Buoy "12" ✓
H	R-2	26R 23R	6-7	29°32'42"	93°15'05"	N.A.			39'	SE	Nav. Buoy "11" ✓
H	S-1	26S 7S	2	29°32'42"	93°15'05"	N.A.			39'	NW	Nav. Buoy "11" ✓
H	S-2	27S 12S	3-4	29°32'18"	93°14'52"	36'			38'	SE	Metal Wreckage (same as 11-1) #6989 ✓
							S-3	33'		SE	Clearing Strip ✓
							S-1	-		NW	} Clearing Strips not valid - sloping object.
							P-4	-		W	
H	S-3	28S 25S	1-2	29°31'20"	93°13'43"	N.A.			38'	SE	Nav. Buoy "9" ✓
H	T-2	11T 10T	3-4	29°32'45"	93°14'54"	N.A.			38'	NW	Nav. Buoy "12" ✓
H	T-2	12T 10T	5-F	29°32'42"	93°15'05"	N.A.			39'	NW	Nav. Buoy "11" ✓

HANG (H) OF GROUNDING (G)	STRIP NO.	<sup>Discovered</sup> D.R. Designation POSITION NO.	SECTION OF BUOY NO.	LATITUDE	LONGITUDE	GROUNDED EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	Y-1	8Y 7Y	4-5	29°31'20"	93°19'43"	N.A.			38'	NE	Nav. Buoy "9" ✓
H	Z-1	24Z 7Z	4-5	29°30'54"	93°13'29"	N.A.			38'	SE	Nav. Buoy "7" ✓
H	Z-2	25Z 12Z	5-6	29°30'54"	93°13'29"	N.A.			38'	N	Nav. Buoy "7" ✓
H	Z-3	26Z 23Z	5-6	29°29'01"	93°13'36"	N.A.			40'	S	Nav. Buoy "3" ✓
H	AC-1	30AC 27AC	5-6	29°27'07"	93°13'07"	38'			42"	S	Metal Cage (same as AF-2) ✓ Clearing Strip - Valid, object removed prior to clearing ✓
							AH-1	40'			
H	AD-1	38AD 9AD	3-4	29°31'08"	93°13'27"	N.A.			38'	SW	Nav. Buoy "8" ✓
H	AD-1	37AD 9AD	5-6	29°30'54"	93°13'29"	N.A.			38'	SW	Nav. Buoy "7" ✓
H	AD-2	39AD 18AD	7-8	29°29'00"	93°13'22"	N.A.			37'	SW	Nav. Buoy "4" ✓
H	AD-3	40AD 25AD	11-12	29°28'08"	93°13'35"	38'			40'	S	Temporary Hang - Uninvestigated ✓
							AG-3	38'		W	Clearing Strip ✓
							AG-4	38'		E	Clearing Strip ✓
H	AE-1	10AE 9AE	5-6	29°29'01"	93°13'36"	N.A.			40'	E	Nav. Buoy "3" ✓
H	AF-1	11AF 6AF	<sup>E.V.</sup> Towline	29°27'44"	93°13'20"	—			42'	—	Temporary Hang - Uninvestigated (Hang on outst. deck wire) ✓
							AF-1	41'		NE	Clearing Strip ✓
							AG-1	39'		S	Clearing Strip
							AG-1	39'		S	Clearing Strip
							AG-2	39'		SW	Clearing Strip
H	AF-2	12AF 10AF	4-5	29°27'07"	93°13'07"	38'			42'	S	Metal Cage (same as AC-1) ✓
							AH-1	40'		N	Clearing Strip - Valid object removed prior to clearing ✓
H	AG-2	43AG 23AG	7-8	29°27'19"	93°17'22"	N.A.			41'	SW	Nav. Buoy "8C" ✓
H	AG-4	42AG 41AG	7-8	29°28'03"	93°13'25"	38'			40'	E	Sunken Nav. Buoy - Least depth by Bryson Gage ✓
							AC-1	39'		S	} Clearing Strips not Valid - sloping object. Object removed by the U.S. Coast Guard.
							AG-1	—		S	
							AG-2	—		SW	
							AE-3	—		W	
H	AK-2	30AK 12AK	Z-3	29°27'19"	93°13'22"	N.A.			41'	N	Nav. Buoy "CC" ✓

HANG (H) OR GROUNDING (G)	STRIP NO.	D.P. Designation (if any) POSITION NO.	SECTION OR BUOY NO.	LATITUDE	LONGITUDE	GROUNDED EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	AL-1	30AL BAL	F	29°24'21"	93°14'34"	45'		45'		N	Temporary Hang - Uninvestigated ✓
							AM-1	43'		SW	Clearing Strip
											No further consideration necessary. (Talk in comparable depths on #B73R (1363))
H	AM-2	41 AM 25AM	5-6	29°25'14"	93°12'24"	44'		45'		N	Temporary Hang - Uninvestigated ✓
							AN-2	44'		N	Clearing Strip
							AN-1	43'		S	Clearing Strip
							AM-3	42'		S	Clearing Strip
G	L-1	32L 25L	16-F	29°32'08"	93°15'41"	38'		36'		W	Grounding ✓
							T-1	36'		NW	Clearing Strip ✓
							R-2	35'		SE	Clearing Strip
G	L-1	33L 26L	14-F	29°32'18"	93°15'42"	38'		37'		W	Grounding ✓
							T-1	36'		NW	Clearing Strip ✓
							R-2	35'		SE	Clearing Strip

Addendum Appendix II  
 Abstract of Groundings Not Plotted  
 on the Smooth (A/D) Sheet  
 (Not in conflict with the chart)

page II-1

HANG (H) OF GROUNDING (G)	STRIP NO.	POSITION NO.	SECTION OF BUOY NO.	LATITUDE	LONGITUDE	GROUNDING EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
G	A-1	1A	F	29°41'36"	93°11'58"	27'			27'	W	Not Cleared ✓
G	B-1	3B	10	29°40'48"	93°11'35"	27'			28'	W	Not Cleared ✓
G	B-1	32B	14-F	29°41'12"	93°13'38"	28'			29'	W	✓
							C-2	28'		W	Clearing Strip
G	G-1	32G	17-F	29°35'30"	93°18'12"	36'			36'	W	Not Cleared - In Spoil Area ✓
G	G-1	30G	F	29°35'24"	93°17'51"	36'			36'	W	Not Cleared - In Spoil Area ✓
G	H-1	10H	17-F	29°34'20"	93°13'17"	38'			38'	W	✓
							H-1	37'		W	Clearing Strip
							H-2	36'		W	Clearing Strip
							H-3	35'		E	Clearing Strip (not used - man overboard)
							P-3	34'		E	Clearing Strip
G	J-1	11J	N-F	29°40'32"	93°18'58"	28'			30'	N	✓
							J-2	28'		N	Clearing Strip
G	J-1	11J	I	29°38'54"	93°18'18"	33'			33'	N	
							V-2	31'		NW	Clearing Strip
							C-1	30'		W	Clearing Strip
							D-1	30'		W	Clearing Strip
G	J-2	19J	8	29°41'01"	93°19'27"	28'			28'	N	Not Cleared ✓
G	J-2	19J	4	29°40'57"	93°18'59"	29'			29'	N	✓
							C-2	29'		W	Clearing Strip
G	K-1	24K	11-E	29°34'50"	93°15'53"	37'			38'	W	✓
							R-1	37'		SW	Clearing Strip
							R-2	35'		SE	Clearing Strip
G	K-1	24K	11-F	29°34'36"	93°15'50"	37'			38'	W	✓
							R-1	37'		SW	Clearing Strip
							R-2	35'		SE	Clearing Strip
G	K-1	23K	13	29°34'27"	93°16'07"	37'			37'	W	✓
							R-1	37'		SW	Clearing Strip
G	K-1	22K	F	29°34'18"	93°16'07"	37'			37'	W	✓
							R-1	37'		SW	Clearing Strip

HANG (H) OF GROUNDING (G)	STRIP NO.	POSITION NO.	SECTION OR BUOY NO.	LATITUDE	LONGITUDE	GROUNDING EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
G	L-1	31L	N-1	29° 34' 18"	93° 17' 10"	38'		38'		W	Not Cleared - In Spoil Area ✓
G	L-1	31L	9-11	29° 33' 49"	93° 16' 28"	38'		38'		W	Not Cleared - In Spoil Area ✓
G	L-1	30L	14-F	29° 33' 19"	93° 16' 24"	38'		38'		W	Not Cleared - In Spoil Area ✓
G	U-1	19U	N	29° 26' 07"	93° 12' 00"	43'		45'		N	
							AN-1	40'		N	Clearing Strip
G	U-1	22U	7-B	29° 26' 03"	93° 12' 35"	43'		44'		N	
							AN-1	43'		S	Clearing Strip
							AN-1	40'		N	Clearing Strip
G	V-2	25V	10-F	29° 38' 43"	93° 17' 35"	31'		32'		NW	
							M-1	31'		W	Clearing Strip
							D-1	30'		W	Clearing Strip
G	V-2	22V	9-F	29° 38' 17"	93° 17' 27"	31'		32'		NW	
							M-1	30'		W	Clearing Strip
							D-1	30'		W	Clearing Strip
G	V-2	21V	F	29° 38' 22"	93° 17' 17"	31'		32'		NW	
							D-1	31'		W	Clearing Strip
							M-1	30'		W	Clearing Strip
G	W-1	9W	N-1	29° 37' 07"	93° 17' 14"	34'		35'		NW	
							F-1	34'		W	Clearing Strip
							E-1	31'		W	Clearing Strip
G	W-1	10W	N-4	29° 37' 07"	93° 17' 28"	34'		35'		NW	
							F-1	34'		W	Clearing Strip
							E-1	31'		W	Clearing Strip
G	W-1	11W	N-6	29° 37' 03"	93° 17' 36"	34'		35'		NW	
							F-1	34'		W	Clearing Strip
							E-1	31'		W	Clearing Strip
G	X-3	19X	16	29° 30' 10"	93° 13' 20"	38'		39'		N	
							AB-1	38'		S	Clearing Strip
							AB-2	38'		N	Clearing Strip
							AC-1	38'		S	Clearing Strip

HANG (H) OF GROUNDING (G)	STRIP NO.	POSITION NO.	SECTION OR BUOY NO.	LATITUDE	LONGITUDE	GROUNDING EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
G	X-3	21X	10	29°30'08"	93°12'43"	38'			40'	N	✓
							AB-2	38'		N	Clearing Strip
							AC-1	38'		S	Clearing Strip
G	AA-1	13AA	N	29°30'48"	93°14'12"	39'			39'	N	In Spoil Area ✓
							Y-1	37'		NE	Clearing Strip
G	AB-1	4AB	6	29°31'09"	93°13'01"	39'			39'	S	✓
							X-3	37'		N	Clearing Strip
							AD-1	36'		SW	Clearing Strip
G	AB-1	3AB	10	29°31'24"	93°12'54"	39'			39'	S	✓
							X-3	37'		N	Clearing Strip
							P-4	36'		W	Clearing Strip
G	AB-1	1AB	16	29°31'18"	93°12'05"	39'			39'	S	✓
							X-3	37'		N	Clearing Strip
							P-4	36'		W	Clearing Strip
G	AR-1	7AR	16	29°30'32"	93°12'07"	39'			40'	S	✓
							AB-2	37'		N	Clearing Strip
							AC-1	37'		S	Clearing Strip
							X-3	36'		N	Clearing Strip
G	AE-1	4AE	F	29°29'22"	93°14'17"	40'			40'	E	In Spoil Area ✓
							AA-1	39'		N	Clearing Strip
G	AE-1	5AE	9	29°29'20"	93°14'07"	40'			40'	E	Not Cleared - In Spoil Area ✓
G	AH-1	24AH	F	29°27'54"	93°13'19"	41'			41'	N	✓
							AJ-1	41'		NE	Clearing Strip
							AC-1	39'		S	Clearing Strip
							AA-1	39'		S	Clearing Strip
							AB-2	39'		SW	Clearing Strip
							AG-3	38'		W	Clearing Strip
G	AH-1	28AH	N-E	29°28'02"	93°12'33"	41'			41'	N	✓
							AI-1	41'		NE	Clearing Strip
							AC-1	39'		S	Clearing Strip
G	AH-1	25AH	N-1	29°28'03"	93°11'56"	41'			41'	N	Not Cleared ✓
G	AK-3	13AK	F	29°27'59"	93°14'50"	40'			41'	S	Not Cleared ✓



HANG (H) OF GROUNDING (G)	STRIP NO.	POSITION NO.	SECTION OF BUOY NO.	LATITUDE	LONGITUDE	GROUNDED EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
G	AK-3	14AK	5-12	29°28'17"	93°14'16"	40'			40'	S	✓
							AK-1	39'		N	Clearing Strip
							AK-2	37'		NE	Clearing Strip
G	AK-3	21AK	7	29°27'06"	93°13'59"	41'			42'	S	✓
							AL-3	40'		E	Clearing Strip
							AK-3	39'		NE	Clearing Strip
G	AL-1	18AL	13-F	29°26'02"	93°14'43"	43'			44'	N	✓
							AK-3	42'		E	Clearing Strip
							AK-3	40'		S	Clearing Strip
G	AL-1	12AL	F	29°25'00"	93°14'33"	44'			44'	N	Not Cleared ✓
G	AL-1	18AL	2-7	29°25'51"	93°13'39"	43'			44'	N	✓
							AK-3	42'		E	Clearing Strip
							AK-3	40'		S	Clearing Strip
							AL-2	40'		W	Clearing Strip
G	AL-1	13AL	N	29°25'20"	93°13'20"	43'			44'	N	✓
							AK-1	41'		N	Clearing Strip
							U-1	40'		N	Clearing Strip
G	AL-1	15AL	N	29°25'20"	93°13'20"	44'			44'	N	✓
							AK-1	41'		N	Clearing Strip
							U-1	40'		N	Clearing Strip
							AK-3	40'		S	Clearing Strip
							AL-2	40'		W	Clearing Strip
G	AL-1	17AL	N	29°25'58"	93°13'19"	43'			44'	N	✓
							AK-3	42'		E	Clearing Strip
							U-1	40'		N	Clearing Strip
							AK-1	40'		N	Clearing Strip
							AL-2	40'		W	Clearing
G	AL-1	1AL	6-10	29°22'45"	93°13'49"	42'			42'	N	✓
							AK-4	37'		N	Clearing Strip
G	AM-2	22AM	12-F	29°25'52"	93°13'22"	43'			44'	N	✓
							AK-3	42'		E	Clearing Strip
							AK-3	40'		S	Clearing Strip
							AL-2	40'		W	Clearing Strip

HANG (H) OF GROUNDING (G)	STRIP NO.	POSITION NO.	SECTION OF BUOY NO.	LATITUDE	LONGITUDE	GROUNDED EFF. DEPTH	CLEARING STRIP	CLEARED EFF. DEPTH	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
G	AM-2	30AM	7-12	29°25'55"	93°12'51"	43'			44'	N	✓
							AN-1	42'		S	Clearing Strip
							U-1	40'		N	Clearing Strip
							AN-1	40'		N	Clearing Strip
G	AM-2	31AM	N	29°26'27"	93°12'07"	43'			45'	N	✓
							AN-1	40'		N	Clearing Strip
G	AP-1	2AP	N	29°22'02"	93°11'54"	37'			37'	N	Not Cleared ✓

JUNE 8, 1976

AUG. 13, 1976

Attachment X

11/12/76

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): Freeport, Tx.

Period: June 8 - August 13, 1976

HYDROGRAPHIC SHEET: H-9627-WD

OPR: 479

Locality: Off Cameron, Louisiana

Plane of reference (mean <sup>diurnal</sup> ~~low~~ low water): 3.55 ft.

Height of Mean High Water above Plane of Reference is  
2.0 ft.

Remarks: Recommended zoning:

Time correction

-40 min.

Range ratio

x1.1

*Note: Computed smooth tides  
are contained in a separate  
envelope included with the  
survey records.*

*James R. Ansel*  
for Chief, Tides Branch

GEOGRAPHIC NAMES

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
CALCASIEU PASS											1
GULF OF MEXICO											2
											3
											4
											5
											6
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APPROVED

*Chas. E. Harrington*

CHIEF GEOGRAPHER-C3x5

2 Feb. 1979

APPROVAL SHEET  
FOR  
SURVEY H-9627 WD

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

Date: 9-12-78

Signed: Billy Stephenson

Title, jm Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS

H-9627 WD

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET A&D		1	BOAT SHEETS & PRELIMINARY OVERLAYS		3	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC, EXCESS		1	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES	7		2			3
CAHIERS	2 with Strip					
VOLUMES	17					3-Tender Teeter rec.
BOXES						3-Sawtooth; misc. data

T-SHEET PRINTS (List)

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	TOTALS
POSITIONS ON SHEET			2060
POSITIONS CHECKED	By field	213	213
POSITIONS REVISED	By field	0	0
SOUNDINGS REVISED			
SOUNDINGS ERRONEOUSLY SPACED			
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED	0	1	1
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)			
VERIFICATION OF CONTROL	2	0	
VERIFICATION OF POSITIONS	7	9	
VERIFICATION OF SOUNDINGS		77	
COMPILATION OF SMOOTH SHEET		122	
APPLICATION OF TOPOGRAPHY		35	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		0	
COMPARISON WITH PRIOR SURVEYS & CHARTS		35	
VERIFIER'S REPORT		18	
OTHER	41	37	
TOTALS	50	333	383

Pre-Verification by (Field), M. B. Hickson	Beginning Date 06/03/77	Ending Date 06/11/77
Verification by M. B. Hickson	Beginning Date 06/11/77	Ending Date 08/19/77
Verification Check by R. D. Sanocki (cursor)	Time (Hours) 16	Date 05/23/78
Marine Center Inspection by HIT	Time (Hours)	Date
Quality Control Inspection by X.W. Wellman	Time (Hours) 63	Date 1-31-79
Requirements Evaluation by J.P. [Signature]	Time (Hours) 2	Date 3/4/79

S.H. Meyers 2/26/79 18 hrs.

REGISTRY NO. \_\_\_\_\_

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE \_\_\_\_\_ TIME REQUIRED \_\_\_\_\_ INITIALS \_\_\_\_\_

REMARKS:

REGISTRY NO. H-9627 WD

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE \_\_\_\_\_ TIME REQUIRED \_\_\_\_\_ INITIALS \_\_\_\_\_

REMARKS:

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

REGISTRY NO. H-9627 WD

FIELD NO. R/H-40-1-76

Gulf of Mexico; Louisiana; Calcasieu Pass Anchorage and Fairways

SURVEYED: June 8 through August 13, 1976

SCALE: 1:40,000

PROJECT NO.: OPR-479

SOUNDINGS: Wire Drag

CONTROL: Raydist  
(Range-Range)

Chief of Party ..... R. A. Ganse  
Surveyed by ..... R. L. Crozier  
                  ..... T. L. Renninger  
                  ..... K. G. Vadnais  
                  ..... C. E. Gross  
Automated Plot of Preliminary  
Plotter Strips by ..... CALCOMP-618 Plotter (AMC)  
Verified and Inked by ..... M. B. Hickson *M.B. Hickson*

1. Introduction

The concern of this survey is to clear the Calcasieu Channel, adjacent anchorage, and the safety fairways leading to the Calcasieu Pass. The general boundaries are from latitude 29° 21' to 29° 42' and longitude 93° 11' to 93° 20'.

2. Control and Shoreline

a. The control is adequately described in the Descriptive Report. Raydist was used for position control throughout the survey. Special attention is directed toward Section S of the Descriptive Report on calibrations. This section discusses the usage of an unsurveyed mark (oil rig MO-WC-110-3) for partial lane calibrations. Also, Section 7 of this report makes reference to this discrepancy.

b. There is no shoreline on this survey.

3. Condition of Survey

a. Field Work

The field work is satisfactory, except as noted in Section 7 of this report.

b. Records

The records are complete and comprehensive for this survey.

(See Q. C. Report - item 1)



c. Descriptive Report

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

(1) The listing of hangs and groundings (Attachment V) is incomplete and inaccurate. Appendices I and II of this report replace this data.

(2) The Presurvey Review item was neither identified nor discussed.

(3) A geographic position for the calibration signal MO-WC-110-3 was not supplied.

(4) Corrections and notes required during verification are shown in red ink in the Descriptive Report.  
(See Q.C. Report-item 2)

d. Field Plotting

The field failed to supply a boat sheet. Individual strips and a field A & D sheet were supplied; neither was constructed in accordance with the Wire Drag Manual, colors were improperly used and there were no marginal notes.

e. Office Plotting (Smooth)

(1) The survey was neatly and accurately smooth plotted in accordance with instructions outlined in the letter of Richard H. Holder; dated February 23, 1977, titled "Processing Wire-Drag Surveys on Safety Fairways". (See Q.C. Report-item 3)

(2) Buoy groundings not in conflict with the charts were not smooth plotted (reference Mr. R. Carstens; June, 1977). Appendix II of this report is an abstract of these groundings.

4. Junctions

This survey junctions with H-9549 WD (1975), R/H-40-4-75.

This junction has not been accomplished as this junctional survey has 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 4)

6. Comparison With Charts 11344 (17th Edition, October 30, 1976)  
 11345 (15th Edition, January 8, 1977)  
 11341 (21st Edition, April 2, 1977)

(See Q.C. Report-item 5)

a. Hydrography

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

(1) The grounding at latitude  $29^{\circ} 32' 08''$ , longitude  $93^{\circ} 15' 41''$ , buoy grounded at 38 feet, is in charted depths of 36 feet. This grounding is cleared by 36 feet. NC

(2) The grounding at latitude  $29^{\circ} 32' 18''$ , longitude  $93^{\circ} 15' 42''$ , buoy grounded at 38 feet, is in charted depths of 36 feet. This grounding is cleared by 36 feet. NC

NOTE: Items (1) and (2) indicate the area is possibly deeper than charted.

(3) The charted sounding of 32 feet located at latitude  $29^{\circ} 36' 45''$ , longitude  $93^{\circ} 12' 25''$  was cleared by an effective depth of 33 feet. Retain charted depth. (See pertinent comments in section 4 of the Q.C. Report.) NC

(4) The charted sounding of 31 feet located at latitude  $29^{\circ} 36' 08''$ , longitude  $93^{\circ} 17' 46''$  was cleared by an effective depth of 34 feet. Disregard (See Q.C. Report-item 4) NC

(5) The charted sounding of 36 feet located at latitude  $29^{\circ} 34' 58''$ , longitude  $93^{\circ} 11' 20''$  was cleared by an effective depth of 38 feet. Delete charted 36 ft. sounding NC

(6) The charted sounding of 37 feet located at latitude  $29^{\circ} 34' 13''$ , longitude  $93^{\circ} 16' 04''$  was cleared by an effective depth of 38 feet. Retain charted depth NC

(7) The charted sounding of 37 feet located at latitude  $29^{\circ} 33' 50''$ , longitude  $93^{\circ} 16' 08''$  was cleared by an effective depth of 38 feet. Retain charted depth NC

(8) The charted sounding of 37 feet located at latitude  $29^{\circ} 33' 27''$ , longitude  $93^{\circ} 15' 45''$  was cleared by an effective depth of 38 feet. Retain charted depth NC

(9) The charted sounding of 36 feet located at latitude  $29^{\circ} 33' 10''$ , longitude  $93^{\circ} 15' 42''$  was cleared by an effective depth of 38 feet. Delete charted 36 ft. sounding NC

(10) The charted sounding of 37 feet located at latitude 29° 32' 10", longitude 93° 14' 37" was cleared by an effective depth of 38 feet. Retain charted depth NC

(11) The charted sounding of 37 feet located at latitude 29° 28' 52", longitude 93° 13' 15" was cleared by an effective depth of 38 feet. Disregard - no conflict NC

(12) The effective depth area centered at latitude 29° 33' 35", longitude 93° 16' 10", cleared to 39 feet, and ~~is~~ falls in the vicinity of charted depths of 37 to 38 feet. Disregard. No conflicts noted within area cleared to 39 ft. NC

NOTE: Items (3) through (12) possibly indicate either erroneous individual charted soundings or a deepening of these areas. Conflicts of 1 ft. do not necessarily discredit the charted depths due to the limitations of wire drag field procedures.

(13) The sunken wreck, PA, PRI 38, in charted depths of 39 feet, latitude 29° 33' 00", longitude 93° 15' 00" was cleared by an effective depth of 38 feet. Recommend deletion of this item. *changed to 38, WK*  
Originates with NM 3/1964

(14) Two obstructions located by this survey have been removed and therefore present no hazard. Neither of the two below listed obstructions should be charted.

(a) Hangs AC-1 and AF-2 were hangs on the same metal cage which was removed by the NOAA Ship RUDE. The location of this obstruction was latitude 29° 27' 07", longitude 93° 13' 07". This area was cleared to 40 feet after removal.

(b) Hang AG-4 was a hang on a sunken navigation buoy which was removed by the U. S. Coast Guard. The location of this obstruction was latitude 29° 28' 03", longitude 93° 13' 25". Clearing strips were run prior to removal and are therefore not valid. (See Q.C. Report-item 6) NC

#### b. Aids to Navigation

(1) No fixed aids to navigation were located by this survey. Several floating aids to navigation were located, they are: buoys "CC", "3", "4", "7", "8", "9", "11", "12", "15", "16", and "20". Geographic positions for these buoys may be found in Appendix I of this report.

(2) There are positional differences between the chart and survey for navigational buoys "3", "9", "15", and "20". The greatest difference being 325 meters for buoy "20". Section Q of the Descriptive Report offers an explanation of these discrepancies. The buoys continue to adequately mark the intended features.

## 7. Compliance With Project Instructions

Except as noted below, the survey adequately complies with the Project Instructions OPR-479-RU/HE-76.

a. There are 7<sup>5</sup> splits on the present survey; the location (center) of each is listed below:

- (1) latitude 29° 40' 50", longitude 93° 11' 41"
- (2) latitude 29° 34' 18", longitude 93° 16' 21"
- (3) latitude 29° 31' 21", longitude 93° 14' 30"
- (4) latitude 29° 29' 55", longitude 93° 14' 05"
- (5) latitude 29° 28' 58", longitude 93° 13' 24"
- (6) ~~latitude 29° 27' 48", longitude 93° 14' 38" (Cleared by 39 ft.)~~
- (7) ~~latitude 29° 24' 01", longitude 93° 13' 42" (Cleared by 42 ft.)~~

b. Hangs AC-1, AF-2, and AL-1 were cleared by only one strip. Reference section 2.11 of the project instructions. Hangs AC-1 and AF-2, hung on the same metal cage, were cleared after the obstruction was removed. Hangs N-1, S-2 (same as N-1), and AG-4 were cleared by more than two strips in different directions; however, these hangs were sloping objects and only one clearing can be claimed for N-1 and S-2. Hang AG-4 could claim no valid clearings but a least depth was obtained and the obstruction was removed by the U. S. Coast Guard. (See Q.C. Report-item 6)

c. Buoy groundings on strips L-1, AE-1, AH-1, AK-3, AL-1, and AP-1 were not cleared. Hang S-2 and groundings on strips U-1 and AL-1 were not cleared within the required limits. Reference section 2.12 of the project instructions.

d. Bottom clearance is in accordance with specifications in section 2.13<sup>4</sup> of the project instructions, except in areas south of 29° 28' N. A charted shoal in this area made compliance difficult.

e. Calibration, as discussed in section S of the Descriptive Report, is not in compliance with either the project instructions or section 5.3.4.F of the Provisional Hydrographic Manual.

f. Presurvey Review item No. 38 has been resolved due to the close bottom clearances; however, the field failed to specifically investigate this item and also failed to make any statement concerning Presurvey Review items. Refer to section 4.1 of the project instructions.

#### 8. Additional Field Work

This is considered an adequate basic wire drag survey and serves its intended purpose. No immediate field work is recommended. However, at some future date the following should be considered:

a. Obtain a geodetic position for the calibration station (oil rig MO-WC-110-3). This would reinforce the accuracy of the survey data using this signal.

b. The existing splits should be covered.

c. Fairways should be completed.

#### 9. Miscellaneous

a. There were 75 wire drag strips run on this survey, 4 of these strips were rejected and not used in smooth plotting. There are 71 strips on the smooth position number/control overlay and used in construction of the smooth A & D sheet.

b. 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.

c. The 71 wire drag strips and 1 detached position plotted on the smooth sheets cover 19 plotted hangs, 2 plotted groundings, and 51 no-plot groundings, with maximum clearances on those hangs and groundings cleared.

d. The plotting of individual strips was aided by the automated plot of both vessels' positions, the "N" and "F" buoys' positions, the drag bight catenary, 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 A & D sheet were also automated plots. All other work was accomplished manually.

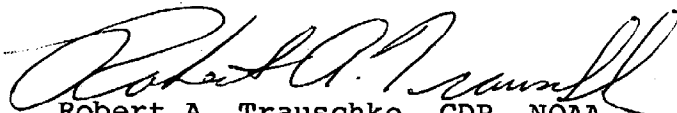
e. This survey has been processed in accordance with the letter referenced in paragraph 3.e.(1) of this report. With the aforementioned exceptions and modifications this survey is considered complete for charting and no further processing is planned.

(See Q.C. Report-item 7)


Inspection Report  
H-9627 WD

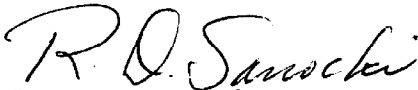
Any verification errors regarding procedures and presentation of survey data detected during inspection by the Hydrographic Inspection Team have been corrected before submission for administrative approval. HIT comments regarding quality of field work, compliance with instructions, and adequacy of the survey have been incorporated within the Verifier's Report.

Examined and Approved:  
Hydrographic Inspection Team  
Date:




Robert A. Trauschke, CDR, NOAA  
Chief, Processing Division

<sup>Asent</sup>  
  
Charles H. Nixon, CAPT, NOAA  
Chief, Operations Division



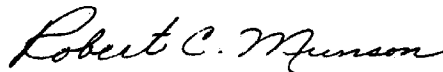
R. D. Sanocki  
Technical Assistant  
Processing Division

  
C. Douglas Mason, LT, NOAA  
Chief, Electronic Data  
Processing Branch



Billy J. Stephenson  
Team Leader  
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

OA/C352:KWW

January 31, 1979

TO: *A. J. Patrick*  
A. J. Patrick  
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*  
Quality Evaluator

SUBJECT: Quality Control Report for H-9627 (1976)WD, Louisiana, Gulf  
of Mexico, Vicinity of Calcasieu Pass

A quality control inspection of H-9627 WD was accomplished to monitor the survey for obvious deficiencies 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.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. Section 3-b of the Verifier's Report is supplemented by the following:

However, ready reference to the guide vessel volumes was hampered by the lack of alphabetic character day letter identification on the covers of the volumes. (See section 5-5 of the Wire Drag Manual, Publication 20-1.)

2. Section 3-c of the Verifier's Report is supplemented by the following:

(5) The charts used during field work were not identified in section N of the Descriptive Report.

(6) The hydrographer failed to make any comparison between the present survey and prior hydrographic or wire-drag surveys.

(7) Section C of the Descriptive Report is considered incomplete. The status and date(s) of the indicated control stations are not referenced as required by section 5-8(c) of the Wire Drag Manual.





3. Reference section 3-e(1) of the Verifier's Report:

The processing of the present survey was also accomplished in accordance with the memorandum dated July 24, 1978, from the Office of Marine Surveys and Maps entitled "Revision to Position Number Overlay H-9627 WD." It appears that the comments pertaining to the requested detached position numbers were misinterpreted. During the processing of the present survey, position numbers were arbitrarily assigned so as to indicate that detached positions were observed. This was not the intended purpose of the request. Detached positions are those in which a fix is obtained to facilitate establishing a position for the observed feature. The hangs and groundings on the present survey are plotted on the basis of the relative positions of the intermediate wire-drag buoys vis-a-vis the positions of the guide and end vessels. The arbitrary assignment of detached position numbers to such items is considered misleading since it implies a higher degree of accuracy than the relative position determination justifies. In the future, detached position numbers should be assigned to only such features where detached positions were observed and a fix is included in the field records.

4. Reference section 5 of the Verifier's Report:

Attention is directed to the memorandum dated July 24, 1978, from the Office of Marine Surveys and Maps entitled "Revision to Position Number Overlay H-9627 WD":

The referenced memorandum refers to the present survey as "... a contemporary survey falling under quality control requirements." Accordingly, it was intended that formal comparisons between the present survey and hydrographic surveys be accomplished during verification. Apparently, the referenced memorandum was misinterpreted during verification and customary comparisons with hydrographic surveys were therefore considered unnecessary. Comparisons were accomplished during quality control inspection.

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

a.	H-5315	(1933)	1:40,000
	H-5418	(1933)	1:40,000
	H-8738	(1963)	1:40,000
	H-8796	(1964)	1:40,000

These surveys cover the area of the present survey. A comparison between the present survey effective depths and depths on the hydrographic surveys reveals a 32-foot sounding on H-8796 (vicinity of latitude 29°36.79', longitude 93°12.40') which falls within an area cleared to 33 feet on the

present survey. This conflict is not considered significant since the bottom wire could have passed over the area without incident. Therefore, the conflicting 32-foot sounding is not necessarily disproved by the 1-foot greater cleared depth on the present survey. In addition, a prior survey (H-5315) depth of 36 feet (vicinity of latitude 29°35.00', longitude 93°11.38') falls within an area cleared to 38 feet on the present survey. This prior depth is considered presently invalid due to the likelihood of change in the bottom configuration since 1933.

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

b. F.E. No. 1 (1966) WD

No formal junction between the present survey and the F.E. is considered necessary. The larger scale and more completely developed present survey provides greater cleared depths within the common area and is considered more reliable than the cleared areas of the F.E. which are plotted on smaller scale chart segments.

A hang with a least depth of 31 feet on the F.E., in the vicinity of latitude 29°36.10', longitude 93°17.88', falls in proximity to a present survey hang on charted buoy "20" and is slightly within an area cleared to 34 feet on the present survey. Due to insufficient overlap, however, the prior 31-foot least depth is not considered disproved by the present survey. The referenced least depth has been carried forward to supplement the present survey and appropriate revisions of the present survey were effected to reconcile the apparent conflict. #6991

5. Reference section 6 of the Verifier's Report:

During verification it is customary to use the edition of the largest scale chart(s) available to the hydrographer at the time of the survey. Additional comparisons with smaller scale charts which also cover the area of the survey are not necessary. (See the memorandum dated March 21, 1977, from the Office of Marine Surveys and Maps entitled "Verifier's Report Format." In addition, see item 13 of the Quality Control Report for H-9298 (1971-72) WD.)

The referenced section of the Verifier's Report does not include any reference to the largest scale chart which covers most of the area of the present survey; i.e., chart 11347. In addition, the listed charts are editions dated subsequent to the date of the present survey. Further, listed chart 11345 was unnecessarily considered during verification.

The listing of charts in section 6 of the Verifier's Report is superseded by the following:

Comparison with Charts 11344, 16th Edition, November 1, 1975  
11347, 9th Edition, May 3, 1975

6. Reference the comments pertaining to the hang on strip AG-4 in sections 6-a(14)(b) and 7-b of the Verifier's Report:

Since the referenced sloping obstruction has been removed, it is considered appropriate to claim the area as cleared to 39 feet by strip AC-1.

7. Section 9 of the Verifier's Report is supplemented by the following:

f. It appears that the hydrographer has adopted an unconventional practice regarding the voidance of portions of entire drag strips due to temporary hangs or groundings in any given section of the drag. Consequently, a portion of the voided areas on strips AD-3 and AL-1 resulted in smooth plotted splits in the vicinities of latitude  $29^{\circ}27.80'$ , longitude  $93^{\circ}14.64'$  and latitude  $29^{\circ}24.00'$ , longitude  $93^{\circ}13.70'$  respectively. The referenced drag strips were appropriately revised so as to effect valid clearances of the referenced splits.

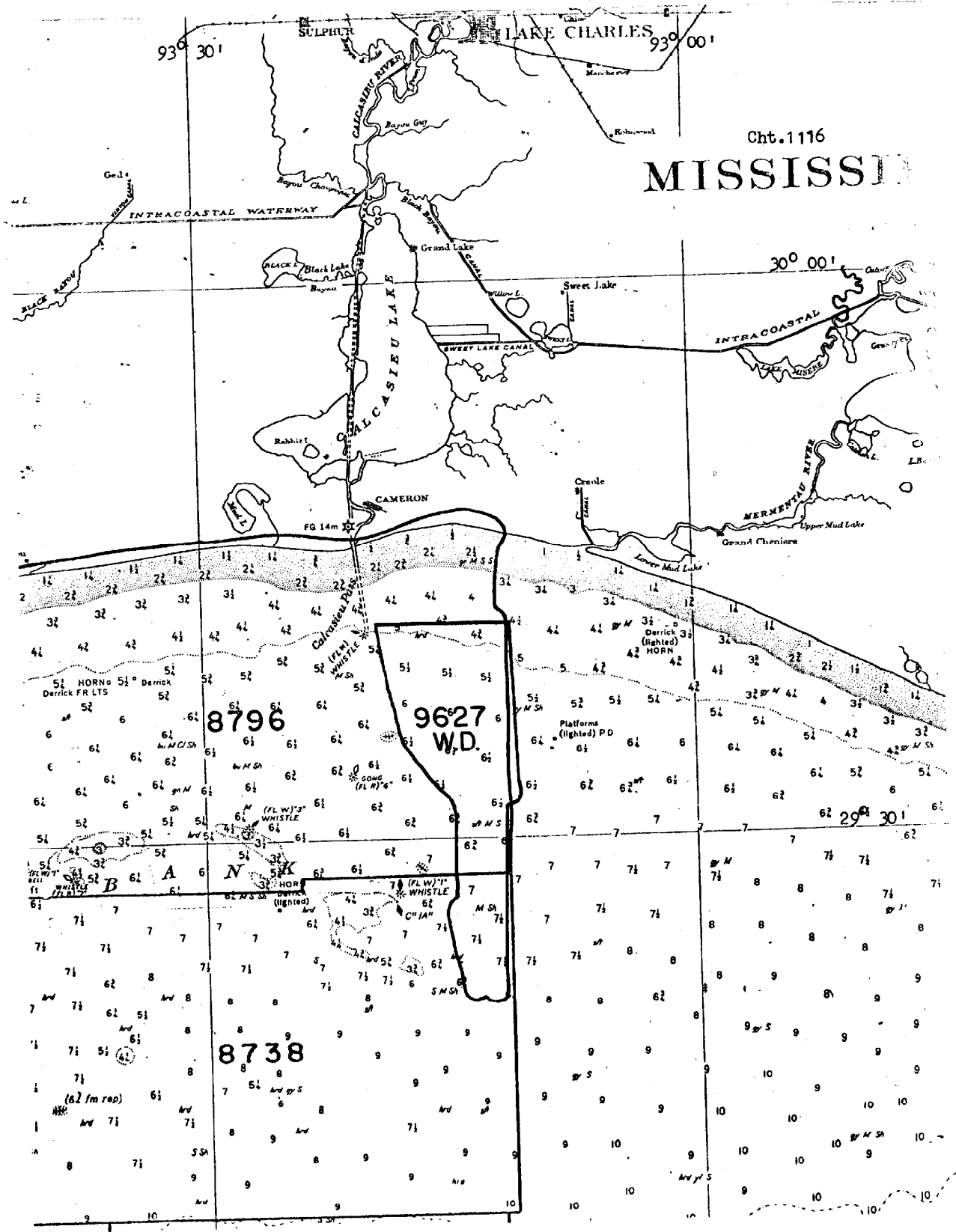
The unconventional field practice is considered unnecessarily conservative and causes a loss of valid significant information. It is the customary practice to disclaim only the section of the drag in which the hang or grounding occurs. In addition, if the hang or grounding occurs at a particular buoy of the drag, then affected adjoining sections of the drag are customarily voided. It is recommended that the voiding of sections of drag strips be in conformance with the customary practice. Such customary practice is considered sufficiently conservative and will minimize the loss of valid information. In addition, it may tend to obviate the need for additional drag strips to cover isolated splits or areas of inadequate clearance.

8. During quality control inspection, it was noted that the color of hachures delimiting areas of splits did not always conform to the color appropriate to the adjoining cleared depth designation. (See section 5-10 of the Wire Drag Manual--Publication 20-1.) Further, attention is directed to the procedure of drawing the hachures delimiting the areas of splits. The Wire Drag Manual is insufficiently definitive in establishing the final placement of the hachures. It is stated therein that areas of splits are to be outlined or surrounded by hachures (reference sections 5-7 and 5-9 of the Wire Drag Manual respectively). It is preferred that hachures be drawn on the outside of a split as though radiating away from the limiting lines. In this manner, undue congestion in relatively small areas of splits is avoided. This practice should be adopted as the standard practice in delimiting areas of splits on smooth plotted wire-drag surveys.

9. The Hydrographic Survey Statistics sheet in the Descriptive Report was not annotated so as to show the date and hours pertaining to the HIT inspection.

cc:  
C35  
C351

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RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9627 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
11341	5/25/79	W. Williams	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. <del>#</del> 39 No correction
11344	6-1-79	A. Wills	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 30 Applied (36) <del>diff</del> , (33) <del>diff</del> changed Pub 8/25/79 DA <del>large of wreck in ED</del>
11347	9-5-79	J. OWYANG	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 14
11345	9-5-79	J. OWYANG	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 33 Reviewed Nov. 9-11-79
11340	9-11-79	J. OWYANG	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 57
411	6-5-80	N.W.	Full Part Before After Verification Review Inspection Signed Via Drawing No. 55 N.C. 3 E Area
			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.
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