

F00418

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey . . . Field Examination  
Field No. . . . . HE-10-6-95  
Registry No. . . . FE-418

### LOCALITY

State . . . . . Texas  
General Locality . . . Gulf of Mexico  
Sublocality . . . . . Heald Bank

19 95

CHIEF OF PARTY  
LCDR G.E. White

### LIBRARY & ARCHIVES

DATE . . . . . July 23, 1996

DIAGRAM 1116-2

**Charts**

CP5  
JON 11323 App 5/12/67 r.w.  
MS 11300 CS  
JR 11340 MG  
SR 11330 MG

HYDROGRAPHIC TITLE SHEET

FE-418

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.

HE-10-6-95

State Texas

General locality Gulf of Mexico

Locality Heald Bank

Scale 1:10,000 Date of survey 25 July 23 Jun 95 - 22 Aug 95

Instructions dated 08 July 1994 Project No. OPR-K353-HE

Vessel NOAA Ship HECK (EDP 9140)

Chief of party Goerge E. White, LCDR, NOAA

Surveyed by LCDR G.E. White, LT Brent Bernard, LTjg Larry Krepp, ENS Jim Crocker  
AST Richard Lee Swing

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

Graphic record scaled by LTjg Larry Krepp, ENS Jim Crocker, AST Richard Lee Swing

Graphic record checked by Ltjg Larry Krepp

Protracted by N/A Automated plot by Zeta 824 Plotter (Field)

Verification by Atlantic hydrographic <sup>Branch</sup> Section, N/CG244 (Mason & Bland) <sup>CS 33</sup> <sup>ENCAD NovaJet III Plotter (AIB)</sup>

Soundings in ~~METERS~~ <sup>Feet</sup> ~~X~~ at ~~Meters~~ <sup>X</sup> MLLW Meters at MLLW

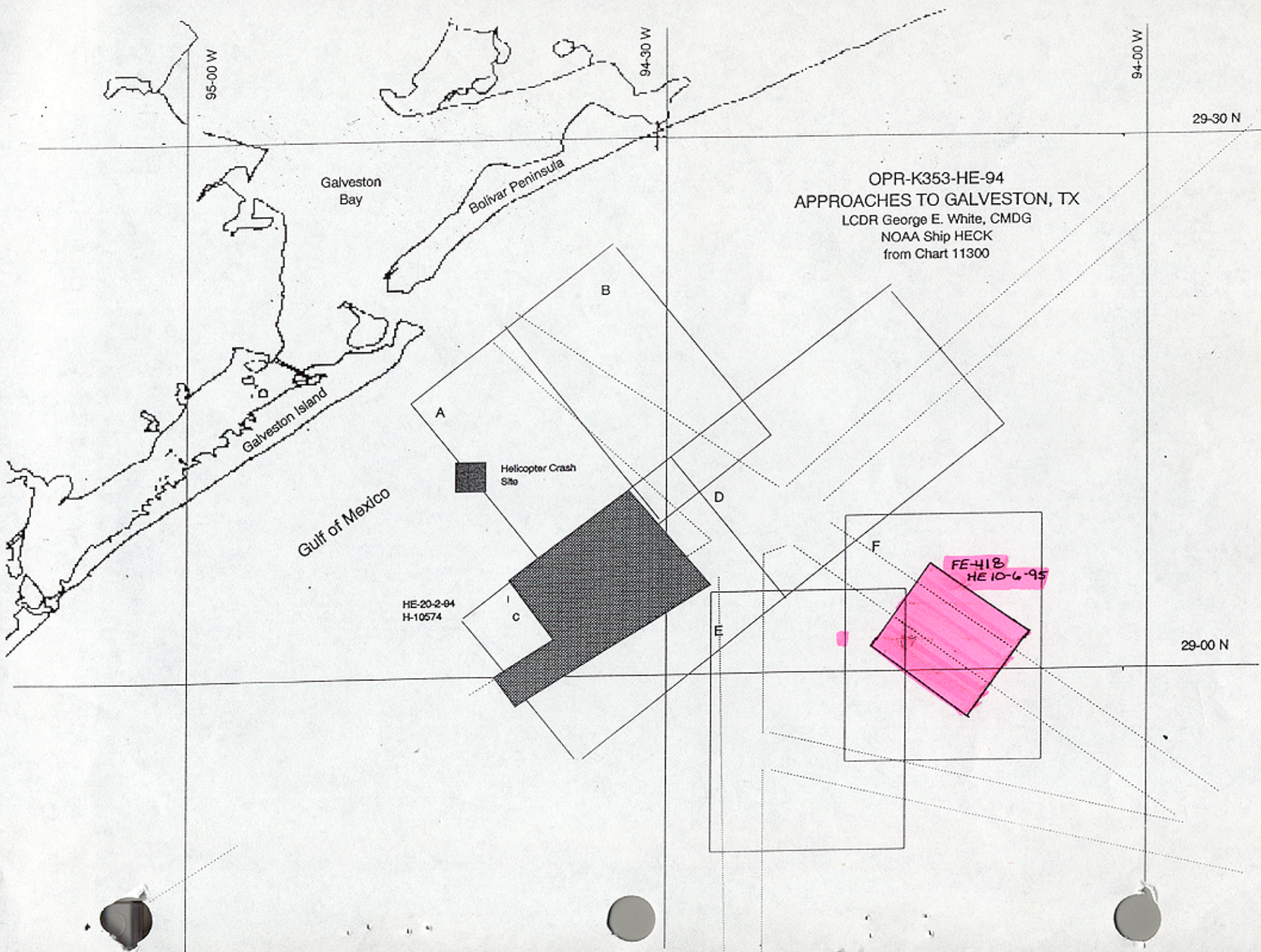
REMARKS: See section A for change to project instruction information.

All times UTC

Notes in the Descriptive Report were made in red during office processing.

AWO/S/SUPP ✓ 8/19/96 - SSV

JUL 23 1996 *[Signature]*



Galveston Bay

Bolivar Peninsula

Galveston Island

Gulf of Mexico

OPR-K353-HE-94  
APPROACHES TO GALVESTON, TX  
LCDR George E. White, CMDG  
NOAA Ship HECK  
from Chart 11300

HE-20-2-84  
H-10574

Helicopter Crash Site

FE-41B  
HE 10-6-95

95-00 W

94-30 W

94-00 W

29-30 N

29-00 N

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**DESCRIPTIVE REPORT TO ACCOMPANY  
SURVEY FE-418  
FIELD NUMBER HE-10-6-95  
TEXAS  
GULF OF MEXICO  
HEALD BANK  
Scale 1:10,000  
NOAA SHIP HECK S-591  
LCDR George E. White, NOAA, CMDG.**

**A. PROJECT**

1. This survey was conducted in accordance with Hydrographic Project Instructions OPR-K353-HE, Approaches to Galveston, Texas.
2. Original Project Instructions are dated July 8, 1994 .
3. Change #1 to the project instructions is dated June 9, 1995.
4. Field sheet #11 comprises this field examination. No official sheet letter designation has been assigned.
5. The purpose of this project is to investigate a shoal area named Heald Bank which is reported to have migrated southwest into one of the approaches to Galveston and the Houston ship channel. The migration of this shoal area would pose a great threat to the large amount of oil tanker traffic transiting in and out of the area.

**B. AREA SURVEYED**

1. The survey area, designated in the Project Instructions, lies in the gulf of Mexico and includes a portion of the northern approach to Galveston, Texas.
2. The approximate survey sheet limits are formed by four AWOIS items listed below.

	<u>Latitude</u>	<u>Longitude</u>	<u>Radius</u>
AWOIS 1325	29°04'18.87"N	094°18'06.65"W	3000m
AWOIS 8914	29°05'00.00"N	094°17'30.00"W	3000m
AWOIS 8915	29°05'54.00"N	094°16'30.00"W	3000m
AWOIS 8969	29°06'33.00"N	094°24'03.00"W	3000m

3. Survey operations began on <sup>July 25</sup> ~~June 23~~, 1995 (DOY <sup>246</sup> 174), and were completed on August 22, 1995 (DOY 234).

### C. SURVEY VESSELS

1. All hydrographic and side scan data were collected by the NOAA Ship HECK (EDP 9140). All offset and layback information is contained in the offset table located in section IV of the separates.\*
2. No unusual vessel configurations were used.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING - See also section D. of the Evaluation Report.

1. Survey data acquisition and processing were accomplished utilizing HDAPS hardware and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24. A listing of actual programs and versions is appended in Appendix VI.\*
2. Program Velocity (Version 2.11) was used to compute velocity corrections.
3. No nonstandard automated acquisition or processing methods were used.

### E. SONAR EQUIPMENT

Side scan sonar was used only on DOY 206 and 207 at the outset of survey operations on the bank area. The hydrographer decided to complete the remainder of the survey using echosounder development with 80 meter line spacing to resolve the shoal sounding items in a more efficient manner.

1. HECK is equipped with an EG&G model 260 slant range corrected Side Scan Sonar (SSS) recorder and model 272 single frequency towfish. Serial numbers and dates of usage are as follows:

Towfish (S/N 106697)	DOY 174 - 234
Recorder (S/N 0010884)	DOY 174 - 234

2. The beam width and down angle are not adjustable on this unit. Grazing angle dip switches are normally set to "01" unless otherwise noted on the sonargram.

\* Filed with original survey records.

3. All SSS data was collected using 100 kHz frequency.
4.
  - a. Line spacing of 160 meters on the 100 meter scale, 120 or 110 meters (depending on weather and steering errors) on the 75 meter scale and 80 meters on the 50 meter scale were used to maintain the required line overlap as determined by the equation in FPM 7.3.2.2. For this field examination, side scan sonar was used only for contact development.
  - b. Confidence checks were obtained, and annotated on the sonagrams, by towing the side scan unit either past known items or linear bottom features. A minimum of one confidence check was obtained on a daily basis as required.
  - c. Required proof of sonar coverage is demonstrated through sonar coverage plots produced as HDAPS swath plots. Quality of bottom coverage to the outer edges of the sonagrams was assured during check scanning to the best of the hydrographer's ability.
  - d. No anomalies were observed.
  - e. The towfish was deployed from the stern. All offset and layback information is provided in the offset table located in section IV of the separates.
5. Eight echosounder spikes and 1 side scan sonar contact (AWOIS 8969) were investigated via side scan sonar developments using a two or three pass "wagon wheel" pattern over the target. No further echosounder developments were required. No side scan sonar contacts were found on DOY 206 or 207.
6. The sonar contact list (Side Scan Sonar Manual 3.1.1.1.) is provided through the HECK's side scan survey contact abstract table and the automated HDAPS contact printout that is produced during the computation and logging of contacts. Depths on HDAPS contact printout are raw, however, depths on the side scan survey contact list are manually corrected for draft (+2.1 meters). Both are located in the separates.\*

\* Filed with original survey records



One (1) contact table was used during this survey for echosounder contacts detected on line. A second contact table, #7 for survey H-10574 contains contact #3439.0 (AWOIS 8969) which was first discovered while working on H-10574 but was later incorporated into FE-418. In order to prevent confusion all items were identified using their position number. Some contacts have more than one target number from successive hits during 200% coverage, developments, and detached positions. In this case the targets plotted on top of each other, however, the recommended charting positions were derived from their DP's. For items that were resolved with echosounder, the recommended charting position was obtained from the HDAPS Post Survey Graphic Edit routine where the least depth was placed as an insert.

Targets to develop were chosen based on contact height, strength of return, shape, depth of surrounding water and the maintained channel depth in the area. All contacts with heights greater than 0.6 meters were chosen for further development with side scan sonar or echosounder. Also chosen were contacts with strong returns, interesting shapes or heights that may pose a threat to the deep draft vessels that frequent the area. Upon development, those contacts still meeting the criteria for significance (1.0 meter height in depths <20m and heights 10% in depths of water over 20 meters) were investigated by divers or developed using echosounder. Least depths were determined by MOD III diver held least depth gauge or echosounder.

Annotations required by section 2.6 of the Side Scan Sonar manual (ship's speed, ship's head, weather/sea state) are on the sonagrams. This information is located in the digital records and can be examined in the "Depth/Position Edit" sub-routine of the Post-Survey routine. Weather information is in the weather logs found in Appendix VI. \*

## F. SOUNDING EQUIPMENT

1. The following Raytheon DSF-6000N echosounders were used during this survey:

S/N A110	DOY 174 - 193
S/N A109	DOY 193 - 207
S/N C066	DOY 207 - 213
S/N A109	DOY 213 -234

2. The MOD III diver held least depth gauge was used to determine least depths. The DLDG DQA data log has been submitted with the survey data.

\* Filed with original survey records.

3. The DSF-6000N failed a few times during the survey due to electronic motor problems. A change out of the entire unit corrected these problems. This resulted in some data being rejected. The failures did not affect the accuracy or quality of sounding data.

4. Both low and high frequency depths were digitized, but only high frequency depths were plotted.

## G. CORRECTIONS TO ECHOSOUNDINGS

1. a. The following table shows dates and locations of velocity casts conducted using the SEACAT CTD (S/N 196723-1251)

<u>CAST#</u>	<u>DATE</u>	<u>LOCATION</u>
2	06/19/95 (DOY 170)	29°07'42"N 094°32'24"W
6	07/19/95 (DOY 200)	29°08'48"N 094°31'18"W
7	07/27/95 (DOY 208)	29°07'00"N 094°24'15"W
<del>8</del>	<del>08/04/95 (DOY 216)</del>	<del>29°04'54"N 094°37'42"W</del>
9	08/14/95 (DOY 226)	29°07'48"N 094°22'18"W

Seacat data was downloaded and processed utilizing the latest suite of cat programs provided by the Nautical Charting Division and program VELOCITY version 2.11.

The Seabird CTD was calibrated on March 17, 1995 by Sea-Bird Electronics Inc. A list of calibration coefficients was loaded into the SEACON program, then copied into the SEASOFT.CFG file and transferred into the SEACAT.CFG file as a .CGS file used by the velocity program. Field checks consisted of comparing the specific gravity of a surface sea water sample to surface measurements made by the seacat.

b. There are no variations in the instrument initial on the DSF-6000N.

c. There are no instrument corrections on the DSF-6000N.

d. On DOY 073 (1995) and DOY 221 (1995) dual leadline comparisons were conducted. A mean difference of 0.04 meter was obtained resulting in a corrector of 0.0 meter. The dual leadline comparison conducted on DOY 221 was conducted over a very muddy bottom which resulted in questionable results with the high frequency beam. The low frequency beam, penetrating the loose layer of mud and silt yielded good results and a 0.0 meter corrector. The hydrographer believed that the 0.24 meter discrepancy between the high frequency beam and the leadline was caused by the loose layer of mud and silt.

e. The computed velocity correctors were applied on line to echosounder depths (both high and low frequency) by entering the correction data into the HDAPS sound velocity table.

f. The static draft of 2.10 meters was applied on line to all echosoundings via the HDAPS offset table.

g. Settlement and squat values for NOAA'S HECK were determined on March 15, 1995 in the vicinity of Craney Island fuel pier in Norfolk, Virginia using the level rod method. These correctors are on file at N/CG244 and are included in separates section IV. Settlement and squat values were applied on line to hydrographic soundings via the HDAPS offset table located in section IV of the separates.

h. Heave is measured by a Datawell B.V. (S/N 19110-C) heave, roll, and pitch sensor (HIPPY) located midships near the transducer. The sensor gathers on line data which is applied to the soundings in near real time. All data have been corrected by applying HIPPY correctors.

2. No unusual methods or instruments were used.
3. No zoning or special correctors were used.
4. The DLDG DQA data log is located in separated section IV.
5. There were no unusual factors affecting DSF records.

\* Filed with original survey records.

6. a. The tidal datum for this survey was mean lower low water (MLLW). The NEXGEN tide station at Galveston Pleasure Pier (877-1510) was the reference station for this field examination. As per project instructions, no opening, closing or bracketing level runs were made on this station. Contact was made with the Atlantic Operations Section and had there been any problems with the NEXGEN tide data, the field unit would have been informed.
- b. All hydrographic depths have been corrected for predicted tides. Tidal correctors were applied on line via the HDAPS predicted tide table. *Approved tides and zoning were applied during office processing.*
- c. For all work offshore Galveston, TX a time corrector of 0.0 was used and a height ratio of x0.94' was used as per project instructions.

#### H. CONTROL STATIONS - *See also section H. of the Evaluation Report.*

1. The horizontal datum for this project is the North American Datum of 1983 (NAD 83).
2. Horizontal control was accomplished using GPS in conjunction with DGPS beacons at Galveston, TX and Port Aransas, TX.
3. Coast Guard DGPS beacons were positioned by N/CG241. All control stations were positioned to Third order, Class 1 standards.
4. No horizontal control stations were installed or maintained by HECK.
5. No Horizontal Control Report for OPR-K353 has been submitted to NOAA Atlantic Hydrographic Section, N/CG244.
6. No known anomalies or unconventional methods were noted.

#### I. HYDROGRAPHIC POSITION CONTROL

1. Position control was by Differential Global Positioning System. Differential Beacon positions were entered into the HDAPS Control Station Table. The first and most commonly used was the Galveston beacon, (296 kHz). The Port Aransas beacon (304 kHz) was also used for performance checks and occasionally for primary positioning. The list of DGPS beacons and their positions appear in Appendix III, LIST OF HORIZONTAL CONTROL STATIONS submitted with this survey.

2. Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual.
3. Equipment serial numbers appear as part of the header information on each day's data print out. The GPS receivers on board are Ashtec OEM sensors (s/n 700417131012 and 70041781195, both outfitted with version 1E89 D-P EPROM's). The differential receivers are Magnavox MX50R receivers. The serial number for DGPS receiver number one is 079. The serial number for DGPS receiver number two is 077.
4. The DGPS beacons used for this survey were the USCG beacons located at Galveston, TX (296 kHz) and Port Aransas, TX (304 kHz).
5. System checks were conducted in accordance with the Field Procedures Manual and appear and appear in the on-line printout as performance checks using the DIM program (ver 2.1). The performance checks compare GPS positions using DGPS correctors from the Galveston and Port Aransas differential beacons.
6. When Differential GPS was used, the maximum allowable HDOP was set at 3.7 for the Galveston beacon and 3.0 for the Port Aransas beacon to avoid EPE's in excess of the allowable 15 meters for this scale survey. Data not meeting these requirements were examined and either accepted, smoothed or rejected.
7.
  - a. No unusual methods were used.
  - b. No equipment malfunctions were witnessed.
  - c. No unusual atmospheric conditions were noted.
  - d. No weak signals or poor geometric configurations were noted.
  - e. No systematic errors were discovered.
  - f. and g. All survey offsets were applied on-line using the HDAPS Offset Table 1.

## J. SHORELINE

A formal shoreline verification was not required or conducted in this survey.

## K. CROSSLINES

1. 17.33nm of crosslines were run perpendicular to mainscheme hydrography lines comprising approximately 4% of the total mainscheme hydrography mileage. Crosslines were run on a day of thunderstorms which resulted in poor reception of the differential signals and many interruptions in data collection. These thunderstorms did not affect the accuracy of positioning data and the total crossline mileage was calculated using only survey data that was acceptable.
2. Comparison of soundings between crosslines and mainscheme hydrography showed good agreement with random differences of  $\pm 0.2$  meters.
3. No significant discrepancies were noted.
4. DSF-6000's were changed between the running of crosslines and mainscheme hydro lines but the changes did not affect the quality of the data collected.

## L. JUNCTIONS - *Saa also section L. of the Evaluation Report.*

Soundings taken on the item investigations within this sheet did not junction with any other sheets related to this project.

## M. COMPARISON WITH PRIOR SURVEYS - *Saa also section M. of the Evaluation Report.*

The Atlantic Hydrographic Section HECK Processing Team is completing survey comparisons as agreed upon at the start of this project.

## N. ITEM INVESTIGATION REPORTS

### N1. SUMMARY OF ITEMS INVESTIGATED

<u>AWOIS NO.</u> <u>TGT #</u>	<u>SECTION</u>	<u>STATUS</u>	<u>RECOMMENDATION</u>
1325	N2	Disproved	Delete Sounding
8914	N3	Disproved	Delete Sounding
8915	N4	Disproved	Delete Sounding
8969	N5	Found	Revise Position

## N2. AWOIS ITEM 1325

### 1. Area of Investigation

Reported Position:  
Latitude: 29°04'18.87"N  
Longitude: 094°18'06.65"W  
Datum: NAD 83  
Depth: 35 feet  
Feature: Sounding

### 2. Description of Item

This item was first reported by the master of the M/V STOLT HINYK, who reportedly observed a 35' shoal area on his echosounder while transiting the area approaching Galveston in 1981. Charted water depths in the area are 40 to 50 feet.

### 3. Survey Requirements

Survey requirements specify determining the existence of this shoal through echosounder development and/or 200% side scan coverage over a 3000 meter radius, or diver investigation.

### 4. Method of Investigation

Coverage with echosounder using 80 meter line spacing was completed over the assigned 3000 meter radius.

### 5. Results of Investigation

No 35' sounding was found within the limits of the assigned search radius. No other shoal areas not indicated on the chart were indicated by depth plots of the area. Survey depths in this vicinity generally range from 44 to ~~47~~ feet. This item is disproved.  
46

**Recommendation:** Delete 35' sounding. - Concur. Chart area as shown on the present survey.

### N3. AWOIS ITEM 8914

#### 1. Area of Investigation

Reported Position:  
Latitude: 29°05'00.00"N  
Longitude: 094°17'30.00"W  
Datum: NAD 83  
Depth: 37'  
Feature: Sounding

#### 2. Description of Item

A 37' depth was observed on the fathometer of an outgoing vessel, the M/V RICHARD G. MATTHIESON of Ocean Ships Inc. in 1986. The charted water depths in the area are 48'.

#### 3. Survey Requirements

Survey requirements specify determining the existence of this item through echosounder development and/or 200% side scan coverage over a 3000 meter radius, or diver investigation.

#### 4. Method of Investigation

Coverage with echosounder using 80 meter line spacing was completed over the assigned 3000 meter radius.

#### 5. Results of Investigation

No 37' sounding was found within the limits of the assigned search radius. No other shoal areas not indicated on the chart were indicated by depth plots of the area. Survey depths in the area generally range from ~~46~~ to 47 feet. This item is disproved.

45  
43

**Recommendation:** Delete 37' sounding. -Concur. Chart area as shown on the present survey.

:



## N4. AWOIS ITEM 8915

### 1. Area of Investigation

Reported Position:

Latitude: 29°05'54.00"N

Longitude: 094°16'30.00"W

Datum: NAD 83

Depth: 32 feet

Feature: Sounding

### 2. Description of Item

This item first appeared in a chart letter in 1986 and is described as a 32' depth observed on the fathometer of an inbound vessel, the M/V RICHARD G. MATTHIESON of Ocean Ships Inc.

### 3. Survey Requirements

Survey requirements specify determining the existence of this item through echosounder development and/or 200% side scan coverage over a 3000 meter radius, or diver investigation.

### 4. Method of Investigation

Coverage with echosounder using 80 meter line spacing was completed over the assigned 3000 meter radius.

### 5. Results of Investigation

No 32' sounding was found within the limits of the assigned search radius. No other shoal areas not indicated on the chart were indicated by depth plots of the area. Survey depths in the area generally range from ~~47~~ to ~~48~~ feet. This item is disproved.

~~46~~ 47  
45

**Recommendation:** Delete 32' sounding. - Concur. Chart area as shown on the present survey.

**N5. AWOIS ITEM 8969** - See section O. of the Evaluation Report.

**1. Area of Investigation**

Reported Position:

Latitude: 29°06'33.00"N

Longitude: 094°24'03.00"W

Datum: NAD 83

Depth: 34 feet

Feature: Wreck

**2. Description of Item**

This item first appeared in LNTM 43/92 and is described as a dangerous submerged wreck of a 95' steel hulled vessel. Least depth 34' reported.

**3. Survey Requirements**

Survey requirements specify determining the existence of this item through salvage documentation, diver investigation or 200% side scan sonar coverage over a 3000 meter search radius.

**4. Method of Investigation**

Within the survey area, the USCG had placed a maintained wreck buoy "B". Side scan sonar was run in the vicinity of the wreck buoy and the wreck was located.

**5. Results of Investigation**

On DOY 174 HECK divers investigated the item and found a 90' steel hulled rig tender boat lying upside down on the bottom. A least depth was taken with a diver held least depth gauge and the wreck was positioned by D.P. #3447. Water visibility was very good at the time of the dive and divers were assured that the shoalest depth was observed on the wreck. Survey depths in the area are 16.8 meters.

D.P.: #3447  
 Date: 23 June 1995  
 Time (UTC): 1425  
 Average Measured Depth: 12.77m  
 Predicted Tide Corrector: ~~-0.40m~~ -  $\phi$ .6  
 Corrected Least Depth: ~~12.37m~~  
 12.2 (4  $\phi$  Ft)  
 LAT: 29°06'43.187"N LON: 094°24'08.458"W  
 E: 67071.2 N: 40123.1  
 DATUM: NAD 83

**Recommendation:** Revise charted symbol from "Dangerous Wreck (34' rep)" to "Dangerous Wreck <sup>40'</sup>41'" based on <sup>actual</sup> predicted tides. Revise charted position to reflect the present survey detached position. This item is outside the sheet limits of this survey. It was incorrectly included in this Descriptive Report by the field. It falls within the limits of H-10574

**0. COMPARISON WITH THE CHART** - See also section O. of the Evaluation Report

1. The Atlantic Hydrographic Section HECK Processing Team is completing comparisons with current editions of the following NOS charts as agreed upon at the start of this project.

<u>CHART</u>	<u>EDITION</u>	<u>DATE</u>	<u>SCALE</u>
11300	33rd	19 Nov 94	1:460,732
11323	54th	<del>20 Jun 92</del> 6 Aug 94	1:80,000

The survey limits fall within all of the charts listed above, which were compared to FE-418.

2. No danger to navigation reports were filed with this survey.
3.
  - a. The charted soundings compare favorably with depths of the present survey.
  - b. No trend, shoaling or deepening, is evident within the survey area. Despite assertions of shoaling in the safety fairway south of Heald Bank, made by the ships masters mentioned in the AWOIS items, the hydrographer sees no evidence of a bank migrating into the fairway from the north. There does appear to be a general rise of the bottom approaching from seaward which is likely related to the bank structure to the north, but no unusual shoaling conditions exist.

c. No extraordinary hydrographic features were noted.

d and e. A portion of the northern safety fairway approach to Galveston and the Houston ship channel falls within the limits of FE-418. Soundings within the channel compare favorably with the charted depths for the area.

4. There are no non-sounding features other than those mentioned in section N of this survey.
5. No changes are recommended to scale coverage or format of published charts within the survey area.

**P. ADEQUACY OF SURVEY** - See also section P. of the Evaluation Report.

1. This survey meets or exceeds 1:10,000 specifications, and is adequate to supersede all prior surveys for the purposes of charting the depths and hazards to navigation within the survey area. All sounding data collected for this field examination should replace all prior charted depths.
2. No portion of this survey has been identified as substandard or incomplete.

**Q. AIDS TO NAVIGATION**

1. No correspondence was initiated with the Coast Guard regarding floating aids to navigation.
2. D.P's were taken on two buoys falling within or near the survey area for FE-418. First, buoy R"2" Fl R 4s Bell was positioned by D.P.# 2360. The charted position of this buoy coincides well with the detached position.\*Second, wreck buoy "B" (black and red horizontally divided) was positioned by D.P.# 2420. Instructions to chart this buoy have not appeared in the Notice to Mariners nor does this buoy appear in the Light List. The hydrographer recommends charting a wreck buoy "B" at the detached position taken at the item location 29°06'33.269"N 094°24'07.056"W (NAD 83). The buoy is 308 meters bearing 172°T from the wreck and is adequate to mark the position of the wreck.  
\*wreck buoy "B" falls outside the limits of this survey. It is on survey H-10574.
3. There were no other aids to navigation not shown in the Light List noted in the survey area.
4. No bridges or overhead cables are close to the survey area.

5. No submarine cables, submarine pipelines, or ferry routes were noted.
6. There are no uncharted ferry terminals within this survey area.

## R. STATISTICS

<u>ITEM</u>	<u>AMOUNT</u>
1. Total No. of Positions	2429 Fixes
2. Lineal NM of Soundings	434.28 NMi
3. Square NM Hydrography	17.82 NMi <sup>2</sup>
4. Days of Production	11 Days
5. Bottom Samples	3 Samples
6. Tide Stations Established	None
7. Current Stations Established	None
8. Velocity Casts Performed	5 Casts
9. Magnetic Stations Established	None
10. Detached Positions	6 D.P.'s

## S. MISCELLANEOUS

1. a. No unusual silting conditions were observed in the survey area.
- b. No unusual submarine features were noted.
- c. No unusual tidal conditions were observed.
- d. No current observations were made, no unusual current conditions were observed.
- e. No magnetic anomalies were noted.
2. <sup>Two</sup>~~Three~~ representative bottom samples were collected in support of this field examination. The composition of the samples agreed well with the charted bottom types for the area.

## T. RECOMMENDATIONS

1. No additional field work is recommended.

2. No salvage or dredging operations should interfere with the results of this survey.

3. No further investigation of unusual features or sea conditions is recommended.

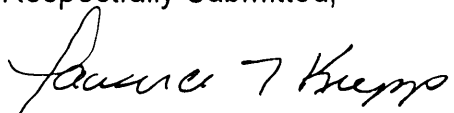
#### **U. REFERRAL TO REPORTS**

1. A User Evaluation Report was submitted to N/CG241 and N/CG244 at the end of the project.

2. A Coast Pilot Report was submitted to N/CG241, N/CG244 and N/CG221 at the end of the project.

3. No Horizontal Control Report or Electronic Control Report will be submitted for this survey.

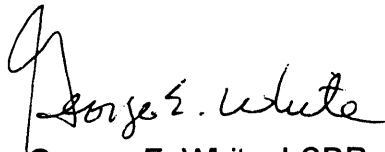
Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Larry Krepp". The signature is written in a cursive, slightly slanted style.

Larry Krepp, LTjg, NOAA  
Operations Officer  
NOAA Ship HECK

## VII. LETTER OF APPROVAL

Field operations contributing to the accomplishment of this survey were conducted under my direct supervision with daily personal checks of progress and data quality. This report, field sheets, and data records have been closely reviewed and are complete and adequate for charting.



George E. White, LCDR, NOAA  
Commanding Officer  
NOAA Ship HECK



## DESCRIPTIVE REPORT APPENDICES

- I. DANGER TO NAVIGATION REPORT
- II. NON-FLOATING AIDS AND LANDMARKS FOR CHARTS \*
- III. LIST OF HORIZONTAL CONTROL STATIONS
- IV. GEOGRAPHIC NAMES \*
- V. TIDES AND WATER LEVELS \*
- VI. SUPPLEMENTAL CORRESPONDENCE \*
- VII. APPROVAL SHEET

\* Removed from Descriptive Report; filed with original survey records

**I. DANGER TO NAVIGATION REPORT**

*There were no danger to navigation reports filed in conjunction with this field examination.*

### **III. LIST OF HORIZONTAL CONTROL STATIONS**



**VII. APPROVAL SHEET**



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 19, 1996

HYDROGRAPHIC SECTION: Atlantic

HYDROGRAPHIC PROJECT: OPR-K353-HE

HYDROGRAPHIC SHEET: FE-418

LOCALITY: Texas, Gulf of Mexico, Heald Bank

TIME PERIOD: June 23 - August 22, 1995

TIDE STATION USED: 877-1510 Galveston Pleasure Pier, Tx.  
Lat.  $29^{\circ} 17.1'N$  Lon.  $94^{\circ} 47.3'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.71 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.9 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Galveston Pleasure Pier, Tx.  
(877-1510).

**Note:** Relative sea level trends show that the Galveston Bay, Texas area is undergoing substantial land subsidence. The relative sea level trend observed at Galveston, Pier 21 for the time period 1950 through 1993 is +0.025 ft./yr. with a standard error of 0.002 ft./yr. As a result of high rate of sea level change, the 1960 to 78 Tidal Epoch value of Mean Lower Low Water (MMLW) used as chart datum and reference datum for NOS tidal predictions does not reflect present conditions. The data are under review to determine an updated value of MLLW. Even though the 1960-78 Epoch value of MLLW is not the most current, the error is in the direction that is safe for navigation purposes.



page 2 of 2 for FE-418

- Notes:
1. Times are tabulated in Greenwich Mean Time.
  2. Data for Galveston Pleasure Pier, Tx. (877-1510) are temporarily stored in file #677-1510.

*William T. H. H. H.*

CHIEF, DATUMS SECTION

GEOGRAPHIC NAMES

FE-418

Name on Survey

ON CHART NO. 11323, 11330, 11340  
ON PREVIOUS SURVEY NO.  
CON U.S. QUADRANGLE MAPS  
FROM LOCAL INFORMATION  
ON LOCAL MAPS  
P.O. GUIDE OR MAP  
RAND McNALLY ATLAS  
U.S. LIGHT LIST

	A	B	C	D	E	F	G	H	K
HEALD BANK	X								1
MEXICO, GULF OF	X		X						2
TEXAS (title)	X		X						3
									4
									5
									6
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Approved:

*Chris C. Long*  
Chief Geographer

APR 29 1996



07/17/96

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: FE-418

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	2429
NUMBER OF SOUNDINGS	16791

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	21	05/20/96
VERIFICATION OF FIELD DATA	42	06/20/96
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	3	
FINAL INSPECTION	8	06/20/96
COMPILATION	27	07/10/96
TOTAL TIME	101	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		06/26/96

:

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR FE-418 (1995)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System (HPS)  
NADCON, version 2.10  
AutoCAD, Release 12  
QUICKSURF, version 5.1  
MicroStation, version 5.0  
MicroStation, version 5.0  
I/RAS B, version 5.01

The smooth sheet was plotted using an ENCAD NovaJet III plotter.

**H. CONTROL STATIONS**

7. Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27 datum move the projection lines 0.873 seconds (26.876 meters or 2.69 mm at the scale of the survey) north in latitude, and 0.653 seconds (17.653 meters or 1.76 mm at the scale of the survey) west in longitude.

All geographic positions listed in this report are on NAD83 datum unless otherwise specified.

**L. JUNCTIONS**

There are no junctional surveys. Present survey depths are in harmony with the charted hydrography in the junctional areas.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not performed. This is in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

O. COMPARISON WITH CHART 11323 (54<sup>th</sup> Edition, Aug 6/94)  
11300 (33<sup>rd</sup> Edition, Nov 19/94)

The hydrographer makes adequate chart comparisons in Sections N. and O. of the Descriptive Report.

AWOIS Item #8969, a charted wreck with a reported depth of 34 feet (10<sup>4</sup> m), in Latitude 29°06'33"N, Longitude 94°24'03"W, originates with Local Notice to Mariners 43 of 1992 (LNM 43/92). This item was searched for and located by the field unit. This item does not fall within the limits of the present survey and is shown on the smooth sheet and addressed in the Descriptive Report for H-10574 (1994).

The charted note, Shoaling rep 1993, in Latitude 29°03'49"N, Longitude 94°18'25"W, was investigated during survey operations. No indication of a shoal was noted. Present survey depths in this area range from 40 to 44 feet (12<sup>2</sup> to 13<sup>4</sup> m). It is recommended that the shoal note be deleted from the chart and that the area be charted as shown on the present survey.

The charted note 41 (Rep 1982), in Latitude 29°04'36"N, Longitude 94°16'09"W, was investigated during survey operations. No indication of a shoal was noted. Present survey depths in this area range from 41 to 48 feet (12<sup>5</sup> to 14<sup>6</sup> m). It is recommended that the shoal note be deleted from the chart and that the area be charted as shown on the present survey.

The charted platform, "POC-HI-232-A" in Latitude 29°03'30"N, Longitude 94°16'55"W, was not located by the field unit. A line of hydrography was run in the approximate position of the platform. It appears that this platform no longer exists in this position. It is recommended that it be removed from the chart unless other information indicates otherwise.

The present survey is adequate to supersede the charted hydrography within the common area.

P. ADEQUACY OF SURVEY

3. This is an adequate side scan sonar survey; no additional field work is recommended.

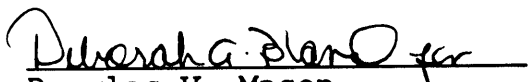
Q. Aids to Navigation

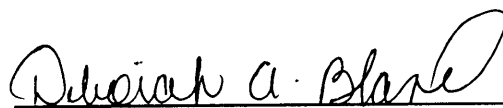
2. Wreck buoy "B" addressed in the Descriptive Report for the present survey is not located within the present survey area. This buoy is located near the wreck addressed in section O. of this report.

S. MISCELLANEOUS

Chart compilation using the present survey was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data has been forwarded to Marine Chart Division, Silver Spring, Maryland.

HECK PROCESSING TEAM

  
 Douglas V. Mason  
 Cartographic Technician  
 Verification of Field Data

  
 Deborah A. Bland  
 Cartographer  
 Evaluation and Analysis

:

APPROVAL SHEET  
FE-418

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson Date: 26 JUNE 1996  
Robert G. Roberson  
Cartographer  
Chief, Cartographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Nicholas E. Perugini Date: 26 JUNE 1996  
Nicholas E. Perugini  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Andrew A. Armstrong Date: Sept 9, 1996  
Andrew A. Armstrong, II  
Captain, NOAA  
Chief, Hydrographic Surveys Division

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