

H11061

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* Hydrographic /  
Side Scan Sonar / Multibeam

*Field No.* Sheet A

*Registry No.* H11061

### LOCALITY

*State* Texas

*General Locality* Gulf of Mexico

*Locality* Galveston to San Luis Pass

2001 - 2002

CHIEF OF PARTY  
Jennifer Peacock

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DATE

H11061

**HYDROGRAPHIC TITLE SHEET**

FIELD NUMBER: Sheet A

State: Texas

General Locality: Gulf of Mexico

Locality: ~~Offshore~~ Galveston to San Luis Pass

Scale: 1:40,000 Date of Survey: <sup>NOV.</sup> ~~July - October~~, 2001 & January, 2002

Instructions Dated: August, 2001 Project Number: OPR-K379-KR

Vessels: M/V Moana Wave

Chief of Party: Jennifer Peacock

Surveyed by: J.Peacock, P. Melancon, R. Larsen, J. Lynch, M. Stelly, S. Alleman, D. Fontenot

Soundings taken by echosounder, hand lead line, or pole: Simrad EM3000 Multibeam Echosounder

Graphic record scaled by: N/A

Graphic record checked by: N/A

Protracted by: N/A Automated plot by: HP 1055 Plotter (FIELD)

Verification by: ~~G&C Technologies Personnel~~ ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in: Feet: X Fathoms:        Meters:        at MLW:        MLLW: X

**Remarks:** Multibeam Hydrographic Survey of Sheet A

- Data collection in meters, referenced to MLLW, later converted into feet
- 200% side scan sonar coverage
- UTC time was used exclusively
- Grab samples were taken
- Tidal Zones: WGM635, WGM636, WGM637, WGM647, WGM648
- Tidal Station: 877-1510

*HAND WRITTEN NOTES IN THE DESCRIPTIVE REPORT WERE MADE DURING OFFICE PROCESSING.*

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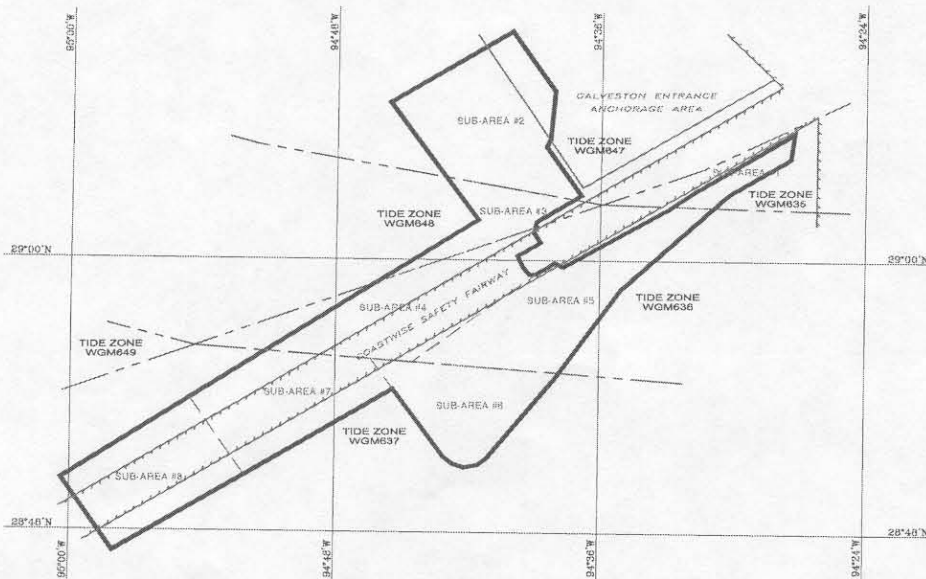
### SEPARATES

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## A. AREA SURVEYED

The survey area is located Offshore of Texas from Galveston to San Luis Pass in the Gulf of Mexico. The following sketches show the layout of the Project (OPR-K379-KR) and the Sheet (H11061). Water depths in the survey area range from 48 feet Mean Lower Low Water (MLLW) to 73 feet MLLW.

The survey area was broken down into eight sub-areas to allow for more efficient data processing and data management. The sub-areas were based primarily on tidal zoning and secondly on data management concerns. As shown in the diagram of the Sheet, sub-area 1 is in tide zone WGM635, sub-area 2 is in tide zone WGM647, sub-area 3 is in tide zone WGM648, sub-areas 4 and 5 are in tide zone WGM636, and sub-areas 6, 7 and 8 are in tide zone WGM637.







# GALVESTON TO RIO GRANDE

## SUMMARY BY SECTION

SECTION NUMBER: 101  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 102  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 103  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 104  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 105  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 106  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 107  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 108  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 109  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 110  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 111  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 112  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 113  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 114  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 115  
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SECTION NUMBER: 116  
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SECTION NUMBER: 117  
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 PROJECT: GALVESTON TO RIO GRANDE

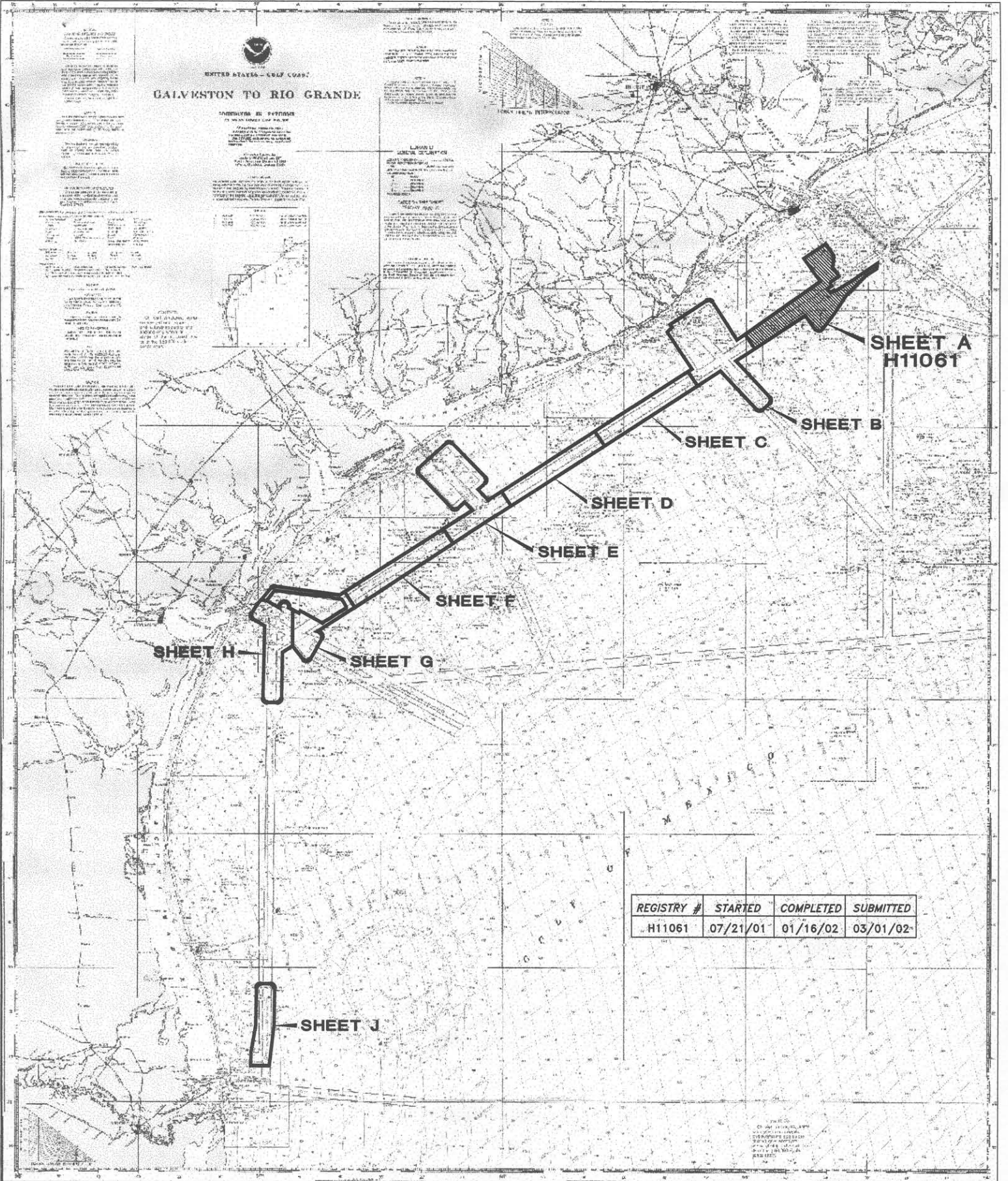
SECTION NUMBER: 125  
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 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 126  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 127  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 128  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE

SECTION NUMBER: 129  
 DATE: 07/21/01  
 PROJECT: GALVESTON TO RIO GRANDE



SHEET A  
H11061

SHEET B

SHEET C

SHEET D

SHEET E

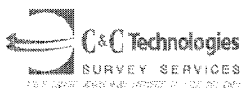
SHEET F

SHEET H

SHEET G

SHEET J

| REGISTRY # | STARTED  | COMPLETED | SUBMITTED |
|------------|----------|-----------|-----------|
| H11061     | 07/21/01 | 01/16/02  | 03/01/02  |



**B. DATA ACQUISITION AND PROCESSING** *SEE ALSO THE EVALUATION REPORT*

**B.1 EQUIPMENT**

| System                        | Manufacturer | Model       |
|-------------------------------|--------------|-------------|
| Multibeam Sonar               | Simrad       | EM3000      |
| Side Scan Sonar               | Klein        | 5500        |
| Single Beam Sonar             | Echotrac     | 3200        |
| Motion Sensor                 | Applanix     | POS/MV      |
| Primary Positioning System    | Applanix     | POS/MV      |
| Secondary Positioning System  | Satloc       | SLXG        |
| Tertiary Positioning System   | Trimble      | 4000 Series |
| Quaternary Positioning System | C-Nav        | C-Nav       |
| Sound Speed at Transducer     | Endeco       | YSI         |
| Sound Velocity Profile        | Seabird      | SBE19       |

See Data Acquisition and Processing Report\* for a detailed description of the equipment used for hydrographic operations.

The M/V *Moana Wave* was the vessel used as the platform for all hydrographic operations. The *Moana Wave* is a 210-foot research vessel. The vessel is 33 feet wide and the draft averages between 6 and 10 feet. A detailed vessel diagram can be found in the Data Acquisition and Processing Report.\*

No deviations from the vessel or equipment configurations as described in the Data Acquisition and Processing Report were made.\*

*\* FILED WITH THE ORIGINAL FIELD RECORDS*



## B.2 QUALITY CONTROL

### B.2.1 ERROR BUDGET ANALYSIS

Depth must meet the accuracy requirements indicated in section 5.2 of "Specifications and Deliverables". In addition some of the individual errors that contribute to depth measurement error are further limited as per section 5.4.5 of "Specifications and Deliverables".

Error budget analysis of the system shows that the system is capable of meeting the accuracy requirements even when spatial and temporal variations in the sound velocity are quite large. This is due to both the high accuracy of the various components and the relative immunity to upper water column velocity errors of the unit.

This error budget assumes a near flat seafloor of constant backscatter.

Vertical errors are composed of the vertical component of range measurement errors, vertical error resulting from pointing errors and errors in vessel altitude due to tide, draft, squat, or heave error.

Range errors give a vertical component of:

$$\Delta z = \text{Range Error} \times \text{Cos}(\text{Swath Angle}/2)$$

Pointing errors give a vertical component of:

$$\Delta z = \text{Xtrack distance} \times \text{Sin}(\text{Pointing Error})$$

System ranging errors are normally determined by the pulse length and sample rate, however in practice the value is limited by bottom roughness so that it is never less than about 0.001(depth).





$$\text{Range Error} = \text{Max}[\{( \text{Sample Range}/2)^2 + (\text{Pulse length}/4)^2\}^{0.5}, 0.001 \times \text{Depth}]$$

System pointing errors are determined by the beam open angles and the bottom detect algorithm. When amplitude detect is used a moderate gain can be expected due to the sinh function of beam gain. When phase detect is used, pointing errors are decreased by an increase in the number of samples. Phase detect can be assumed when the echogram is long enough to assure 12 samples.

For Amplitude Detect:

$$\text{Pointing Error} = \text{Beam Open Angle}/12$$

For Phase Detect:

$$\text{Pointing Error} = 0.2 \times \text{Beam Open Angle}/\# \text{ Samples}^2$$

Surface velocity pointing errors are a result of the surface velocity monitor accuracy limitations:

$$\text{Pointing Error} = \text{asin}[\sin(\text{swath half angle}) / (1500 + \text{Monitor Accuracy}) / 1500] - \text{swath half angle}$$

The EM 3000 uses the surface velocity for both beam steering and refraction correction. When the transducer is horizontal these two errors are equal in magnitude and opposite in sign and so cancel out. When the transducer becomes tilted from horizontal due to roll, the error increases due to the magnitudes of the errors becoming different in magnitude. The error used in the error budget for surface pointing error is the net error assuming a roll of +/- 10°.

Velocity Profile range errors are:

$$\text{Range Error} = (1500 + \text{Sound Speed Error}) / 1500 \times \text{Range}$$

Velocity Profile pointing errors are due to limitation of the profiler to gather perfect information for the ray bending corrections:

$$\text{Pointing Error} = \text{Arcsin}(2 \times \Delta c/c \times \text{Tan}(\text{Swath Angle}/2)).$$



Transducer roll misalignment and roll measurement errors are direct pointing errors and can be converted to depth errors with the equation for pointing errors.

Tidal errors, draft error, heave error, and settlement/squat errors are direct altitude errors.

The Total Sounding Error is the root-sum-squared of the six classes of errors. All error estimates are required to be at the 95% confidence level. To comply with these requirements fundamental error sources are adjusted to the 95% confidence level and grouped together as follows:

- (1) Transducer alignment errors, sonar pointing errors, sonar ranging errors, roll error, and surface velocity pointing errors are combined together as Measurement error.
- (2) Draft error is used directly.
- (3) Settlement and squat error is used directly.
- (4) Velocity profile ranging errors, velocity profile pointing errors, and velocity profile variations are combined together as sound velocity error.
- (5) Heave error is used directly.
- (6) Tide and water level errors are used directly.

The combination of these six classes of error into a Total Sounding Error is further restrained in that each of the six classes of errors cannot be assumed to be less than a specified value when calculating the Total Sounding Error.

The following three tables show the six classes of errors and the Total Sounding Error at the 95% confidence level at various water depths. These tables indicate that the echosounder system complies with all accuracy requirements in the water depths of the survey area.

Descriptive Report to Accompany Hydrographic Survey H11061



EM 3000D Error Budget, NOAA Format, 95% Confidence Interval  
Water Depth = 10 meters

| Cross Track Distance, meters       | 0.00 | 5.00 | 10.00 | 15.00 | 20.00 | 30.00 | 40.00         |
|------------------------------------|------|------|-------|-------|-------|-------|---------------|
| Predicted Measurement Error        | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20          |
| Allowable Measurement Error        | 0.80 | 0.80 | 0.80  | 0.80  | 0.80  | 0.80  | 0.80          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Transducer Draft Error   | 0.05 | 0.05 | 0.05  | 0.05  | 0.05  | 0.05  | 0.05          |
| Allowable Transducer Draft Error   | 0.15 | 0.15 | 0.15  | 0.15  | 0.15  | 0.15  | 0.15          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Settlement & Squat Error | 0.08 | 0.08 | 0.08  | 0.08  | 0.08  | 0.08  | 0.08          |
| Allowable Settlement & Squat Error | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Sound Speed Error        | 0.30 | 0.30 | 0.30  | 0.30  | 0.31  | 0.33  | 0.39          |
| Allowable Sound Speed Error        | 0.80 | 0.80 | 0.80  | 0.80  | 0.80  | 0.80  | 0.80          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Heave Error              | 0.10 | 0.10 | 0.10  | 0.10  | 0.10  | 0.10  | 0.10          |
| Allowable Heave Error              | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Tide/Water Level Error   | 0.25 | 0.25 | 0.25  | 0.25  | 0.25  | 0.25  | 0.25          |
| Allowable Tide/Water Level Error   | 0.45 | 0.45 | 0.45  | 0.45  | 0.45  | 0.45  | 0.45          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK            |
| Predicted Total Sounding Error     | 0.46 | 0.46 | 0.46  | 0.46  | 0.46  | 0.48  | 0.52          |
| Allowable Total Sounding Error     | 0.52 | 0.52 | 0.52  | 0.52  | 0.52  | 0.52  | 0.52          |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | Exceeds Limit |

Descriptive Report to Accompany Hydrographic Survey H11061



EM 3000D Error Budget, NOAA Format, 95% Confidence Interval  
Water Depth = 20 meters

|                                    |      |      |       |       |       |       |       |
|------------------------------------|------|------|-------|-------|-------|-------|-------|
| Cross Track Distance, meters       | 0.00 | 5.00 | 10.00 | 15.00 | 20.00 | 30.00 | 40.00 |
| Predicted Measurement Error        | 0.20 | 0.20 | 0.22  | 0.20  | 0.20  | 0.20  | 0.20  |
| Allowable Measurement Error        | 1.30 | 1.30 | 1.30  | 1.30  | 1.30  | 1.30  | 1.30  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Transducer Draft Error   | 0.05 | 0.05 | 0.05  | 0.05  | 0.05  | 0.05  | 0.05  |
| Allowable Transducer Draft Error   | 0.15 | 0.15 | 0.15  | 0.15  | 0.15  | 0.15  | 0.15  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Settlement & Squat Error | 0.08 | 0.08 | 0.08  | 0.08  | 0.08  | 0.08  | 0.08  |
| Allowable Settlement & Squat Error | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Sound Speed Error        | 0.30 | 0.30 | 0.30  | 0.30  | 0.30  | 0.31  | 0.32  |
| Allowable Sound Speed Error        | 1.30 | 1.30 | 1.30  | 1.30  | 1.30  | 1.30  | 1.30  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Heave Error              | 0.10 | 0.10 | 0.10  | 0.10  | 0.10  | 0.10  | 0.10  |
| Allowable Heave Error              | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Tide/Water Level Error   | 0.25 | 0.25 | 0.25  | 0.25  | 0.25  | 0.25  | 0.25  |
| Allowable Tide/Water Level Error   | 0.45 | 0.45 | 0.45  | 0.45  | 0.45  | 0.45  | 0.45  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Total Sounding Error     | 0.46 | 0.46 | 0.47  | 0.46  | 0.46  | 0.46  | 0.47  |
| Allowable Total Sounding Error     | 0.56 | 0.56 | 0.56  | 0.56  | 0.56  | 0.56  | 0.56  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |

Descriptive Report to Accompany Hydrographic Survey H11061



EM 3000D Error Budget, NOAA Format, 95% Confidence Interval  
Water Depth = 30 meters

| Cross Track Distance, meters       | 0.00 | 5.00 | 10.00 | 15.00 | 20.00 | 30.00 | 40.00 |
|------------------------------------|------|------|-------|-------|-------|-------|-------|
| Predicted Measurement Error        | 0.20 | 0.20 | 0.22  | 0.20  | 0.20  | 0.20  | 0.20  |
| Allowable Measurement Error        | 1.80 | 1.80 | 1.80  | 1.80  | 1.80  | 1.80  | 1.80  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Transducer Draft Error   | 0.05 | 0.05 | 0.05  | 0.05  | 0.05  | 0.05  | 0.05  |
| Allowable Transducer Draft Error   | 0.15 | 0.15 | 0.15  | 0.15  | 0.15  | 0.15  | 0.15  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Settlement & Squat Error | 0.08 | 0.08 | 0.08  | 0.08  | 0.08  | 0.08  | 0.08  |
| Allowable Settlement & Squat Error | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Sound Speed Error        | 0.30 | 0.30 | 0.30  | 0.30  | 0.30  | 0.30  | 0.31  |
| Allowable Sound Speed Error        | 1.80 | 1.80 | 1.80  | 1.80  | 1.80  | 1.80  | 1.80  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Heave Error              | 0.10 | 0.10 | 0.10  | 0.10  | 0.10  | 0.10  | 0.10  |
| Allowable Heave Error              | 0.20 | 0.20 | 0.20  | 0.20  | 0.20  | 0.20  | 0.20  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Tide/Water Level Error   | 0.25 | 0.25 | 0.25  | 0.25  | 0.25  | 0.25  | 0.25  |
| Allowable Tide/Water Level Error   | 0.45 | 0.45 | 0.45  | 0.45  | 0.45  | 0.45  | 0.45  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |
| Predicted Total Sounding Error     | 0.46 | 0.46 | 0.47  | 0.46  | 0.46  | 0.46  | 0.47  |
| Allowable Total Sounding Error     | 0.63 | 0.63 | 0.63  | 0.63  | 0.63  | 0.63  | 0.63  |
| Test                               | OK   | OK   | OK    | OK    | OK    | OK    | OK    |



### B.2.2 SURVEY SPECIFICS

Main lines were oriented roughly northeast-southwest. The lines were laid out to parallel the southern sheet boundary, which parallels approximately the safety fairway. The line spacing was set at 90 meters. This was based on the side scan criteria of 200 percent coverage using Technique 1 as set forth in Section 6.1 of the "Specifications and Deliverables" document. The side scan sonar was operated at a 100 meter per channel range. The multibeam swath coverage amounted to a little over 50 % coverage. Swath widths varied between approximately 44 meters and 50 meters, depending on water depth. The angular sector was set so that the criterion of two times water depth as well as all accuracy, resolution, and detection criteria as set forth in Sections 5.2 and 5.3 of the "Specifications and Deliverables" document were met.

The internal consistency is quantified in the cross line statistics that were performed at the end of each main line. Cross lines were run prior to the collection of main scheme line data so that quality control statistics could be performed on the data after each line. The total cross line miles was 196.21 nm, while the total main scheme lines consisted of 3833.93 nm of data. The cross lines comprised about 5.11% as compared to the main scheme lines. As can be seen in the sample statistics found in Separates V,\* the tie lines and cross lines showed very good agreement. Each main line was compared to all cross lines for which there was overlapping data. The graphs shown in Separates V\* are a random sample of the graphs which were produced for each line. The graphs show the mean difference, RMS difference, and confidence interval for each beam. The results show that the multibeam data was repeatable with 90% of the soundings within about 8 to 10 centimeters across the entire swath.

Below is a histogram of the selected soundings for the smooth sheet. The chart shows the number of soundings that were selected per beam number. The

*\* FREQ WITH THE ORIGINAL FIELD RECORDS*

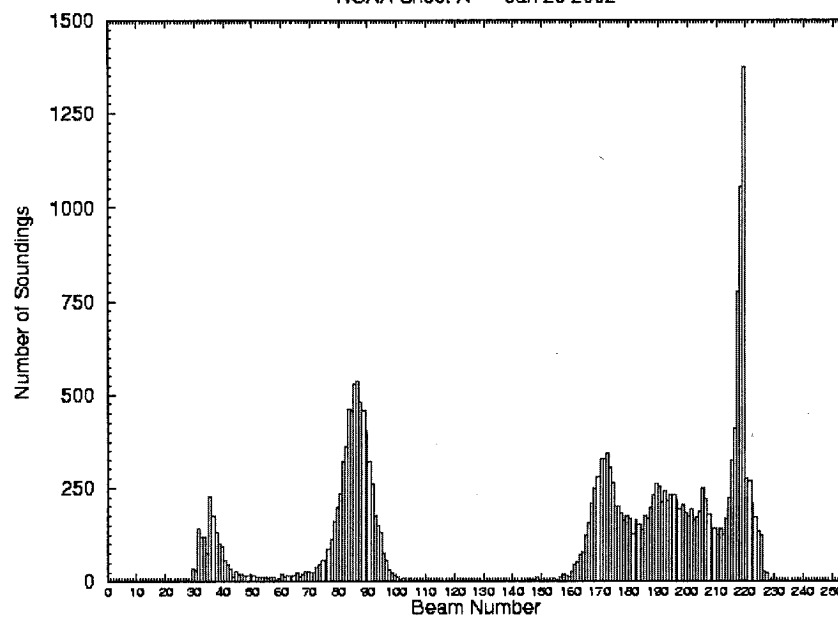


sounding distribution on the port head is dominated by the spatial distribution of soundings on the seafloor. The probability of a sounding from a particular beam making its way to the smooth sheet is inversely proportional to its corresponding density on the seafloor. The sparser soundings near the inner and outer edges of the swath are more likely to be selected because there are fewer to choose from.

The sounding distribution on the starboard head is more complex. An outstanding peak appears near beam 218, caused by a consistent 2 - 3 cm shoal bias in that portion of the swath in conjunction with extremely flat seafloor topography. Because only the shoalest of the shoals are selected for the smooth sheet, very minor biases in areas of swath data can lead to uneven beam distributions.

Beam Count vs Beam Number

NOAA Sheet A — Jan 28 2002







Multibeam quality control procedures are outlined in Section B.1 of the accompanying Data Acquisition and Processing Report.\*

No unusual conditions that would downgrade or otherwise affect the operational effectiveness of the survey equipment were encountered. No deficiencies that would affect the accuracy or quality of the sounding data occurred.

Sea state during the survey was such that data quality was more than adequate. No unusual currents, turbidity, salinity, or thermal layering in the water column were encountered.

**B.3 CORRECTIONS TO ECHO SOUNDINGS**

No deviations from the Correction to Echo Soundings section in the Data Acquisition and Processing Report\* occurred.

**C. VERTICAL AND HORIZONTAL CONTROL** *SEE ALSO THE EVALUATION REPORT*

Tide and water level corrections were determined and applied in accordance with Attachment #7 of the Statement of Work. Data from the Galveston Pleasure Pier tide station (8771510) was used. The following table lists the tidal zones and their corresponding correctors that were used for this sheet.

| Tide Zone | Time Corrector (min) | Range Corrector |
|-----------|----------------------|-----------------|
| WGM635    | 0                    | 0.99            |
| WGM636    | 0                    | 0.92            |
| WGM637    | +6                   | 0.87            |
| WGM647    | -6                   | 0.99            |
| WGM648    | 0                    | 0.92            |

The sheet was broken down into sub-areas based on tide zone boundaries. The data from each tide zone was processed separately so that a single tide file could be applied. After tidal

*\* FILED WITH THE ORIGINAL FIELD RECORDS*



corrections had been applied the data was cropped at the tide zone boundaries and then merged together.

The horizontal datum for the survey is the North American Datum of 1983 (NAD 83). The projection is Universal Transverse Mercator (UTM) Zone 15 North. The vertical datum for the soundings is Mean Lower Low Water (MLLW).

The Galveston and English Turn stations were used for Coast Guard beacon signals.

**D. RESULTS AND RECOMMENDATIONS** *SEE ALSO THE EVALUATION REPORT*

**D.1 CHART COMPARISON**

**D.1.1 CHARTS AND NOTICES TO MARINERS**

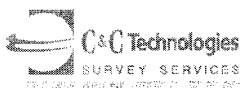
The following charts were used for comparison purposes.

| Chart Number | Scale     | Edition | Edition Date       |
|--------------|-----------|---------|--------------------|
| 11300        | 1:460,732 | 37      | June 24, 2000      |
| 11321        | 1:80,000  | 28      | September 11, 1999 |
| 11323        | 1:80,000  | 58      | June 24, 2000      |
| 11330        | 1:250,000 | 13      | April 21, 2001     |
| 11340        | 1:458,596 | 66      | June 8, 2001       |

The Local Notices to Mariners were reviewed through Notice Number 06/02 dated February 5, 2002. No changes that would affect the chart comparison were listed.

**D.1.2 CHARTED SOUNDINGS**

Overall the survey depths generally agreed with the charted depths to within 1 to 2 feet. There were several cases where the difference was greater but overall the depths appeared not to have changed much since the last survey. The most notable differences were seen in the southwestern portion of the survey area



where in several places the survey depths were found to be 3 to 4 feet shoaler than the charted depths. Those locations are listed below. *CONCUR*

| Position      |               | Charted Depth (ft) | Survey Depth (ft) | Difference (ft) |
|---------------|---------------|--------------------|-------------------|-----------------|
| Latitude      | Longitude     |                    |                   |                 |
| 28°52'51.36"N | 94°49'02.62"W | 66                 | 62 - 63           | 3 - 4           |
| 28°49'38.11"N | 94°55'16.73"W | 66                 | 63                | 3               |
| 28°57'11.39"N | 94°39'46.09"W | 57                 | 54                | 3               |

D.1.3 SHOALS AND HAZARDOUS FEATURES

All charted shoals and hazardous features are addressed in Sections D.1.4 through D.1.7. *CONCUR*

D.1.4 AWOIS ITEMS

Item 286

Description: Wreck (Cleo Sue) *PA*

Charted Position: 28°52'00.89"N, 94°42'00.69"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: Within the search radius of this item there has been much oil/gas field development and operation. There are a lot of debris, several significant contacts, numerous pipelines, several existing oil/gas field platforms, and numerous abandoned well sites within this area. Although none of the targets seem to represent the wreck described in the AWOIS listing, there is not enough evidence to remove the item from the chart or the AWOIS database.

Charting Recommendation: It is recommended that the item be retained as charted. *DO NOT CONCUR. DELETE DANG. WK (PA) PRESENT SURVEY SHOW NO SIGNIFICANT CONTACTS*



Item 300

Description: Wreck (Sandra F)

Charted Location: 28°55'30.88"N, 94°39'00.69"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: No evidence of the wreck was found during the survey.

Charting Recommendation: It is recommended that the item be removed from the chart and that the AWOIS database be updated to reflect the results of this

hydrographic survey. *CONCUR. DELETE DANG. SUNKEN WK. (AA)*

Item 322

Description: Wreck (Roseina)

Charted Location: 29°03'58.87"N, 94°40'36.69"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: No evidence of the item was found.

Charting Recommendation: It is recommended that this item be removed from the chart and that the AWOIS database be updated to reflect the results of this

hydrographic survey. *CONCUR. DELETE DANG. WK WITH A CLEARANCE OF 53 FT.*

Item 332

Description: Unknown (*WRECK AA*)

Charted Location: 29°08'00.87"N, 94°41'00.69"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder



Position Determined By: Differential GPS

Investigation Summary: No evidence of the item described in the AWOIS listing was found in this search radius. Several other AWOIS items and their search radii lie within or in overlapping sections of this search radius. The presence of most of those other items was confirmed. None of the contacts seen within this search radius seem to represent the item described in this AWOIS listing.

Charting Recommendation: It is recommended that this item be removed from the chart and that the AWOIS database be updated to reflect the results of this hydrographic survey. *CONCUR. DELETE DANG. SUNKEN WK, AA*

Item 333

Description: Wreck (Capt Doc)

Charted Location: 29°08'48.86"N, 94°41'00.69"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: With additional investigation work, the entire search radius was covered and no evidence of the item was found (See Investigation Item 12). *PG 26*

Charting Recommendation: It is recommended that the item be removed from the chart and that the AWOIS database be updated to reflect the results of this hydrographic survey. *NOT CHARTED ON LATEST EDITION. NO CHANGE IN CHARTING IS RECOMMENDED.*

Item 335

Description: Obstruction (Pipe)

Charted Location: 29°08'59.74"N, 94°39'55.26"W

Search Radius: 100 meters

Investigation Method: 400% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS



Investigation Summary: During the initial survey, no evidence of this item was detected. Additional investigation lines were run over the reported location of this item (See Investigation Item 13). <sup>pg 26</sup> The item was detected by side scan sonar during the investigation work. The item was too small to be detected by the multibeam system.

Charting Recommendation: It is recommended that the item be retained as charted. *CONCUR. RETAIN (54) OBSTN.*

Item 2653

Description: Obstruction (Collapsed Platform)

Charted Position: <sup>28</sup>29°55'24.88"N, 94°45'59.50"W

Search Radius: 500 meters

Investigation Method: 400% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: Additional investigation was required to determine an accurate least depth over two significant contacts found within the search radius of this item (See Investigation Item 4). <sup>pg 23</sup> Three pieces of debris were found.

Charting Recommendation: It is recommended that the item be charted as a 55 foot obstruction. *DO NOT CONCUR. SEE SECTION D.1.4.a. OF THE EVALUATION REPORT.*

Item 10499

Description: Obstruction

Charted Position: 29°08'13.10"N, 94°40'15.40"W

Search Radius: 100 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: The presence of the item was confirmed during survey operations. The target had a measured height of between 0.3 and 0.7 meters.



Charting Recommendation: It is recommended that the item be retained as charted. *CONCUR. SEE ALSO SECTION D.1.4.B. OF THE EVALUATION REPORT.*

Item 10501

Description: Obstruction

Charted Position: 29°07'57.96"N, 94°39'58.80"W

Search Radius: 100 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: The presence of the item was confirmed during survey operations. The target had a measured height of between 0.3 and 1.7 meters.

Charting Recommendation: It is recommended that the item be retained as charted. *CONCUR. SEE ALSO SECTION D.1.4.C. OF THE EVALUATION REPORT.*

Item 10937

Description: Wreck (Miss Jennie) *AA*

Charted Position: 29°05'48.87"N, 94°43'12.70"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: No evidence of the wreck was found.

Charting Recommendation: It is recommended that the item be removed from the chart and that the AWOIS database be updated to reflect the results of this hydrographic survey. *CONCUR. DELETE DANG. SUNKEN WRECK AA*





Item 10938

Description: Wreck (John Mayo) *PA*

Charted Position: 29°05'48.87"N, 94°42'36.70"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: No evidence of the wreck was found.

Charting Recommendation: It is recommended that the item be removed from the chart and that the AWOIS database be updated to reflect the results of this hydrographic survey. *CONCUR. DELETE DANG. SUNKEN WX, PA*

Item 10939

Description: Wreck (Sea Gull)

Charted Position: 28°58'11.40"N, 94°39'39.60"W

Search Radius: 2000 meters

Investigation Method: 400% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: Additional investigation was required for this item (See Investigation Item 2). <sup>*29 29*</sup> The wreck was detected by side scan sonar during the initial survey, however it was not covered entirely by the multibeam swath coverage. Investigation work resulted in a least depth determination of 13.68 meters (45 feet).

Charting Recommendation: It is recommended that the item be charted as a 45 foot deep wreck. *CONCUR. DELETE DANG. SUNKEN WX, PA (20 Ft sep 1993) CHART (45) WX*



Item 10940

Description: Fish Haven

Charted Position: 29°08'25.46"N, 94°42'06.33"W

Search Radius: 500 meters

Investigation Method: 400% Side Scan Sonar, 100% Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: Although the target was detected during the initial survey, it was recommended that additional coverage be attained in order to determine an accurate least depth in the area (See Investigation Item A11).

Most of the debris/outcrops were located to the west of the charted location of this item. It also appears that the debris covers a wider area than that charted for this item.

Charting Recommendation: It is recommended that the item be charted as a 1000

meter square fish haven centered about <sup>29</sup>28°08'18.06"N, 94°42'17.4"W. *CONCUR. SEE ALSO INVESTIGATIONS A9 AND A11, PGS 25, 26, AND SECTION D.1.4. & ANDE. OF THE EVALUATION REPORT. DO NOT CONCUR. REVISION MUST COME FROM AUTHORIZED SOURCE (USCOE)*

Item 10974

Description: Fish Haven

Charted Position: 29°08'34.40"N, 94°40'50.10"W

Search Radius: 700 meters

Investigation Method: 400% Side Scan Sonar, 100% Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: Although the target was detected during the initial survey, it was recommended that additional coverage be attained in order to determine an accurate least depth in the area (See Investigation Item A10). *pg 25*

The debris that comprises the fish haven is much more concentrated than is indicated on the chart.

Charting Recommendation: It is recommended that the item be charted as a 500

meter square fish haven centered at 29°08'38.46"N, 94°40'48.84"W. *DO NOT CONCUR. RETAIN AS CHARTED. USCOE IS SOURCE FOR REVISION*



Item 11025

Description: Wreck (Unknown Vessel) *PA*

Charted Position: 29°07'00.00"N, 94°39'30.00"W

Search Radius: 2000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: No evidence of the wreck was found.

Charting Recommendation: It is recommended that the item be removed from the chart and that the AWOIS database be updated to reflect the results of this hydrographic survey. *CONCUR. DELETE DANG. SUNXEN WH, PA*

D.1.5 OTHER CHARTED FEATURES

The only charted features that do not appear in the AWOIS list are two buoys. The first is located at 28°58'23.57"N, 94°39'46.89"W (See Significant Contact S6 in Section D.1.8). <sup>*7 pg 29.*</sup> The apparent purpose of the buoy is to mark the location of the charted wreck *Sea Gull*, AWOIS Item 10,939. The other is located at the center of the fish haven designated as AWOIS Item 10,974. *CONCUR.*

D.1.6 ITEMS OF INVESTIGATION

Additional investigation work was required for thirteen significant sonar contacts detected during the initial survey. The investigation work was carried out between January 13 and 15, 2002. The results of the investigation work are detailed below. *SEE ALSO APPENDIX D FOR ADDITIONAL INFORMATION APPENDED TO THIS REPORT*

Descriptive Report to Accompany Hydrographic Survey H11061



Item A1

|                          |  |
|--------------------------|--|
| Description              | A piece of debris with up to 2 m of relief. The target lay outside of the original multibeam swath coverage.                                       |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | Upon investigation, it was determined that the object was no longer there or had become buried. There were no targets with any relief in the area. |
| Least Depth              | N/A  |
| Charting Recommendation  | Although the original sonar contacts are still depicted on the sonar contact drawing, there is no need for this item to be charted. <i>CONCUR</i>  |

Item A2

|                          |   |
|--------------------------|---|
| Description              | Wreck, AWOIS Item 10,939. Additional investigation was necessary to determine least depth.  |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder   |
| Results of Investigation | The presence of the item was confirmed.   |
| Least Depth              | 13.68 meters (45 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a wreck with a least depth of 45 feet at 28°58'10.55"N, 94°39'37.97"W. <i>CONCUR. SEE ALSO Pg 19.</i> |

Item A3

|                          |  |
|--------------------------|--|
| Description              | A rope or cable, attached to a buoy of some sort, floating in the water column.  |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | Upon investigation, it appears that the rope/cable has been cut and is for the most part lying on the ocean floor. Part of it may still be floating to some extent, however it appears to be attached to the seafloor somehow. |
| Least Depth              | 20.58 meters (67 feet)   |
| Charting Recommendation  | Judging by the information gained from the additional work, the item does not rise enough above the seafloor to be charted. <i>CONCUR. DO NOT CHART.</i>   |

Descriptive Report to Accompany Hydrographic Survey H11061



Item A4

|                          |   |
|--------------------------|---|
| Description              | AWOIS Item 2653 - two significant contacts. The target lay outside of the original multibeam swath coverage.  |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder   |
| Results of Investigation | The presence of the targets was confirmed. A maximum relief of 2.4 meters was measured on one of the targets. The object was too small for an accurate least depth to be determined. The least depth as determined from the multibeam is listed below, however judging from the side scan shadow the least depth is probably 47 feet. |
| Least Depth              | 16.82 meters (55 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a 47 foot obstruction with the (A) symbol to designate that it is a side scan determined depth at 28°55'26.10"N, 94°45'58.98"W.   |

*DO NOT CONCUR. SEE pg. 17 AND SECTION D.1.4.a. OF THE EVALUATION REPORT*

Item A5

|                          |   |
|--------------------------|---|
| Description              | Possible anchor block.  |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder   |
| Results of Investigation | The object was not as prominent during the investigation as it was during the original survey. It appears that it may have sunk into the seabed somewhat although it still expressed up to 1 meter of relief as calculated from the side scan sonar shadow. |
| Least Depth              | 18.14 meters (59 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a 59 foot obstruction at 28°51'26.14"N, 94°55'29.71"W.  |

*DO NOT CONCUR. 59-60 FT DEPTHS IN THE IMMEDIATE AREA, CHART PRESENT SURVEY DEPTHS:*

Descriptive Report to Accompany Hydrographic Survey H11061



Item A6

|                          |  |
|--------------------------|--|
| Description              | Circular debris.   |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | The presence of the object was confirmed however the object was too small for the multibeam sonar to detect an accurate least depth. The object showed a maximum height of 2.1 meters as measured from the shadow on one of the side scan lines. The least depth as determined from the multibeam is listed below, however judging from the side scan shadow the least depth is <u>probably</u> 52 feet. |
| Least Depth              | 17.98 meters (59 feet)   |
| Charting Recommendation  | It is recommended that the item be charted as a 52 foot obstruction with the (A) symbol to designate that it is a side scan determined least depth at 28°59'11.65"N, 94°45'38.80"W. <i>Do NOT CONCUR.</i>  |

*CHART PRESENTS SURVEY DEPTHS. THE SIDE SCAN DETERMINED DEPTH OF 52 FT IS NOT CONSIDERED ADEQUATE FOR CHARTING*

Item A7

|                          |  |
|--------------------------|--|
| Description              | Wreck – probable sunken barge. Investigation was necessary to determine an accurate least depth.                             |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | The presence of the object was confirmed and a least depth was determined.   |
| Least Depth              | 17.20 meters (56 feet)   |
| Charting Recommendation  | It is recommended that the item be charted as a 56 foot deep wreck at 29° <del>01</del> <sup>02</sup> 37.5"N, 94°41'47.76"W. |

*CONCUR. CHART DANG. 56 WK.*

Item A8

|                          |   |
|--------------------------|---|
| Description              | Wreck – possible sunken barge. Investigation was necessary to determine an accurate least depth.    |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder   |
| Results of Investigation | The presence of the object was confirmed and a least depth was determined.                          |
| Least Depth              | 16.94 meters (55 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a 55 foot deep wreck at 29°02'30.20"N, 94°41'31.67"W. |

*CONCUR. CHART (55) WK*



Item A9

|                          |   |
|--------------------------|---|
| Description              | Three 5 by 5 by up to 2.9 meter contacts. Investigation was necessary to determine accurate least depths over the contacts.   |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder   |
| Results of Investigation | The presence of the contacts was confirmed and a least depth was determined. An additional contact was discovered. The additional contact was similar in characteristics as the original three. |
| Least Depth              | 16.57 meters (54 feet)  |
| Charting Recommendation  | It is recommended that the items be charted as a 54 foot obstruction at 29°08' <sup>25.25</sup> 39.12"N, 94°40' <sup>47.16.73</sup> 48.81"W. This sounding covers all four of the contacts.     |

*DO NOT CONCUR. SEE SECTION D.1.4.d OF THE EVALUATION REPORT*

Item A10

|                          |   |
|--------------------------|---|
| Description              | AWOIS Item 10,974 – fish haven. Additional investigation consisted of acquiring 100% multibeam coverage to determine accurate least depths. |
| Investigation Method     | 400% Side Scan Sonar, 100% Multibeam Echosounder  |
| Results of Investigation | The area was imaged well by both side scan and multibeam sonar. Accurate least depths were established.                                     |
| Least Depth              | 15.27 meters (50 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a 500 meter square fish haven centered at 29°08'38.46"N, 94°40'48.84"W.                       |

*DO NOT CONCUR. REMAIN AS CHARTED.  
RECOMMEND THAT THE 50 FT. OBST. SHOWN ON THE PRESENT SURVEY NOT BE CHARTED BECAUSE IT IS DEEPER THAN THE AUTHORIZED MINIMUM DEPTH OF 48 FT.*



Descriptive Report to Accompany Hydrographic Survey H11061



Item A11

|                          |   |
|--------------------------|---|
| Description              | AWOIS Item 10,940 – fish haven. Additional investigation consisted of acquiring 100% multibeam coverage to determine accurate least depths. |
| Investigation Method     | 400% Side Scan Sonar, 100% Multibeam Echosounder  |
| Results of Investigation | The area was imaged well by both side scan and multibeam sonar. Accurate least depths were established.                                     |
| Least Depth              | 16.21 meters (53 feet)  |
| Charting Recommendation  | It is recommended that the item be charted as a 1000 meter square fish haven centered at 28°08'18.06"N, 94°42'17.4"W.                       |

*DO NOT CONCUR. SEE ALSO SECTION D.1.4.E. OF THE EVALUATION REPORT USCOB IS SOURCE TO REVISE LIMITS*

Item A12

|                          |  |
|--------------------------|--|
| Description              | AWOIS 333 – wreck.   |
| Investigation Method     | 200% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | The remaining portion of the search radius was surveyed. No evidence of the wreck was found. |
| Least Depth              | N/A  |
| Charting Recommendation  | It is recommended that the item be removed from the chart.                                   |

*NOT CHARTED. NO CHANGE IN CHARTING IS RECOMMENDED.*

Item A13

|                          |  |
|--------------------------|--|
| Description              | AWOIS Item 335. The item was not detected during the initial survey. Additional side scan lines were run at a range scale of 50 meters. Multibeam data was also collected.         |
| Investigation Method     | 400% Side Scan Sonar, Multibeam Echosounder  |
| Results of Investigation | The item was detected and appears to be a piece of pipe extending from the bottom as described in the AWOIS listing. The item was too small to be detected by the multibeam sonar. |
| Least Depth              | N/A  |
| Charting Recommendation  | It is recommended that the item be retained as charted.  |

*CONCUR. SEE ALSO PAGES 16, 17.*



### D.1.7 SIGNIFICANT CONTACTS

This section addresses only significant contacts that have not been addressed previously, either in the AWOIS Item section or the Items of Investigation section.

#### Item S1

Sonar contacts 207/054356S and 207/024528P represent a small piece of debris which may actually be a piece of pipe sticking out of the bottom. The object has a height of 2.5 meters as measured from the side scan sonar shadow. A least depth of 17.53 meters (57 feet) was obtained from the multibeam sonar data.

It is recommended that this item be charted as a 57 foot obstruction located at 28°59'27.97"N, 94°35'17.66"W.

*Do NOT CONCLUDE. LOCATED IN DISCONT. DUMP SITE. CONSIDERED INSIGNIFICANT WITH SURROUNDING DEPTHS. CHART PRESENT SURVEY DEPTHS.*

#### Item S2

Sonar contacts 214/180651P(a) and 214/162757P represent a piece of debris likely associated with oil/gas field operations. The item is next to an oil/gas platform. An accurate least depth for the target was not determined and investigation work was not conducted. Due to its proximity to the platform, it is not considered a separate danger to navigation. Once the platform is removed a site clearance is conducted, which should result in the removal of the debris.

No charting recommendation is made for this contact. *CONCLUDE. Do NOT CHART.*

#### Item S3 *28-58-01N, 94-41-50W*

Sonar contacts 211/235211P and 212/014053P represent another piece of debris likely associated with oil/gas field operations. Like Item S2, the item is located next to an oil/gas platform. An accurate least depth for the target was not



determined and investigation work was not conducted. Due to its proximity to the platform, it is not considered a separate danger to navigation. Once the platform is removed a site clearance is conducted, which should result in the removal of the debris.

No charting recommendation is made for this contact. *CONCUR. DO NOT CHART*

Item S4

Sonar contacts 226/175703P and 232/085717S represent an area of disturbed seafloor with areas of hard return on the side scan sonar image. A least depth of 16.87 meters (55 feet) was obtained from the multibeam sonar data.

It is recommended that the item be charted as a <sup>57</sup>33 foot obstruction at 29°01'15.24"N, 94°40'21.79"W. *DO NOT CONCUR. SHOALER DEPTH IN THE IMMEDIATE AREA. CHART PRESENT SURVEY SOUNDINGS.*

Item S5

Sonar contacts 235/204953S and 235/224448P represent an uncharted wreck. The position of the wreck lies outside of the search radii of AWOIS items 332 and 11025. The wreck showed a relief of up to 1 meter as measured from the shadow on the side scan sonar record. A least depth of 18.39 meters (60 feet) was obtained from the multibeam sonar data.

It is recommended that the item be charted as a 60 foot wreck at 29°04'28.25"N, 94°43'08.69"W. *CONCUR. CHART AS A NON DANGEROUS WRECK 60 Wx*



Item S6

Sonar contacts 209/140032S, 209/140035S(a,b,d), 209/154201S, 209/154303S, 209/154305S, and 209/154306S are located at the charted buoy location just north of AWOIS Item 10,939. There are four sonar contacts clustered together. They likely represent the buoy block and possibly old buoy blocks.

With the buoy and the wreck already charted it is unlikely that additional charting be required for this item. *CONCUR. DO NOT CHART.*

D.1.8 DANGER TO NAVIGATION REPORTS

On August 8, 2001 a Danger to Navigation Report was issued for a 2.5-foot diameter cut-off well pipe which extended 14 feet out of the water and was not marked by a light or a buoy. The report and a figure showing the item on the nautical chart are included in Appendix I.

*APPENDED TO THIS REPORT  
ITEM FALLS OUTSIDE THE LIMITS OF THE PRESENT SURVEY*

D.2 ADDITIONAL RESULTS

D.2.1 PRIOR SURVEYS *SEE ALSO THE EVALUATION REPORT*

Comparison with prior surveys was not required under this Task Order. See Section D.1 for comparison to nautical charts.

D.2.2 AIDS TO NAVIGATION

Other than the two buoys indicated in Section D.1.6, no other aids to navigations were present in the survey area.

D.2.3 EXISTING INFRASTRUCTURE

The first chart on the next page compares the position of charted drilling structures and productions platforms with the survey positions. The second chart lists platforms/structures that were present during the survey but that were not

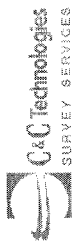
Descriptive Report to Accompany Hydrographic Survey H11061



previously charted. It is recommended that all platforms/structures be charted as shown on the smooth sheet and as listed in the following tables.

*CONCUR  
MCD ACTION RECOMMENDED.*

Descriptive Report to Accompany Hydrographic Survey H11061



| Charted Structure/Platform Name | Survey Structure/Platform Name | Charted Location |               | Survey Location           |            | Difference (m) |
|---------------------------------|--------------------------------|------------------|---------------|---------------------------|------------|----------------|
|                                 |                                | Latitude         | Longitude     | Latitude                  | Longitude  |                |
| N/A                             | N/A                            | 28°51'29.03"N    | 94°53'06.66"W | Not Present During Survey |            | *              |
| N/A                             | BDE-GA-296B                    | 28°52'03.09"N    | 94°41'58.31"W | 28°52'02"N                | 94°41'53"W | 148 *          |
| N/A                             | N/A                            | 28°52'41.38"N    | 94°41'57.85"W | Not Present During Survey |            | *              |
| N/A                             | VDE-GA-288A & BDE-GA-288A      | 28°53'25.63"N    | 94°41'48.99"W | 28°53'28"N                | 94°41'42"W | 200 *          |
| N/A                             | N/A                            | 28°54'50.48"N    | 94°41'46.81"W | Not Present During Survey |            | *              |
| WOG-GA-239-1                    | N/A                            | 29°01'07.16"N    | 94°39'34.96"W | Not Present During Survey |            | * *            |
| WOG-GA-239-3                    | WOG-GA-239-3                   | 29°02'43.90"N    | 94°39'54.95"W | 29°02'45"N                | 94°39'59"W | 115 * *        |
| TRI-UNION-GA-211-A              | TU-GA-190                      | 29°06'50.65"N    | 94°38'26.11"W | 29°06'52"N                | 94°38'26"W | 42 * *         |
| BASIB-GA-213-1                  | SEC-GA-213-1-ST                | 29°05'40.43"N    | 94°44'08.88"W | 29°05'44"N                | 94°44'11"W | 123 * *        |
| N/A                             | THEC-GA-190                    | 29°08'29.27"N    | 94°40'12.13"W | 29°08'33"N                | 94°40'14"W | 125 * *        |
| MEC-GA-189-B,C,D                | N/A                            | 29°08'35.06"N    | 94°40'47.39"W | Not Present During Survey |            | * *            |

\* \* PLATFORMS REFER TO CHART 11390 ONLY

\* \* PLATFORM SHOWN ON CHART 11383, BUT NOT ON 11380

| Structure/Platform Name | Position   |            |
|-------------------------|------------|------------|
|                         | Latitude   | Longitude  |
| APACHE-GA-301A          | 28°51'21"N | 94°56'34"W |
| BD-GA-288C              | 28°53'38"N | 94°42'16"W |
| Platform (Abandoned)    | 28°51'59"N | 94°41'52"W |
| Platform (Abandoned)    | 28°53'24"N | 94°41'42"W |
| WOG-GA-225-4            | 29°03'04"N | 94°39'38"W |
| WOG-GA-23905-5          | 29°02'13"N | 94°39'33"W |

2 PLATFORMS  
- SHOWN ON CHART 11381  
- NOT ON 11380  
- SHOWN ON 11380  
- NOT SHOWN ON 11380  
- NOT SHOWN ON 11380  
- NOT CHARTED  
- NOT CHARTED



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#### D.2.4 OTHER PERTINENT INFORMATION

The seafloor was covered in most places by shells. The descriptions shown on the smooth sheet show the sediment type. In most cases this sediment was covered by a thin layer of broken shells.

Seaweed was plentiful in the survey area, however it seemed to be predominantly in the upper level of the water column and at the surface. The presence of the seaweed had little if any effect on the multibeam data. The seaweed is evident on the side scan records in some areas but did not affect the quality of the data or the ability to detect targets.



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**LETTER OF APPROVAL**

REGISTRY NUMBER H11061

This report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of the survey H11061 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and smooth sheet have been closely reviewed and are considered complete and adequate as per the Statement of Work.

This report is accompanied by the Data Acquisition and Processing Report for project OPR-K379-KR submitted February, 2002. The accompanying Vertical and Horizontal Control Report will be submitted upon completion of the project.

A handwritten signature in blue ink that reads 'Jennifer Peacock'.

---

Jennifer Peacock  
Chief of Party  
C&C Technologies  
February 22, 2002



**APPENDIX A**  
**DANGER TO NAVIGATION REPORT**

## REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11061

Survey Title:           State:           Texas  
                          Locality:        Gulf of Mexico  
                          Sub-locality:   37 Miles SE of Galveston

Project Number:        OPR-K379-KR-2001

Field Unit:            C & C Technologies

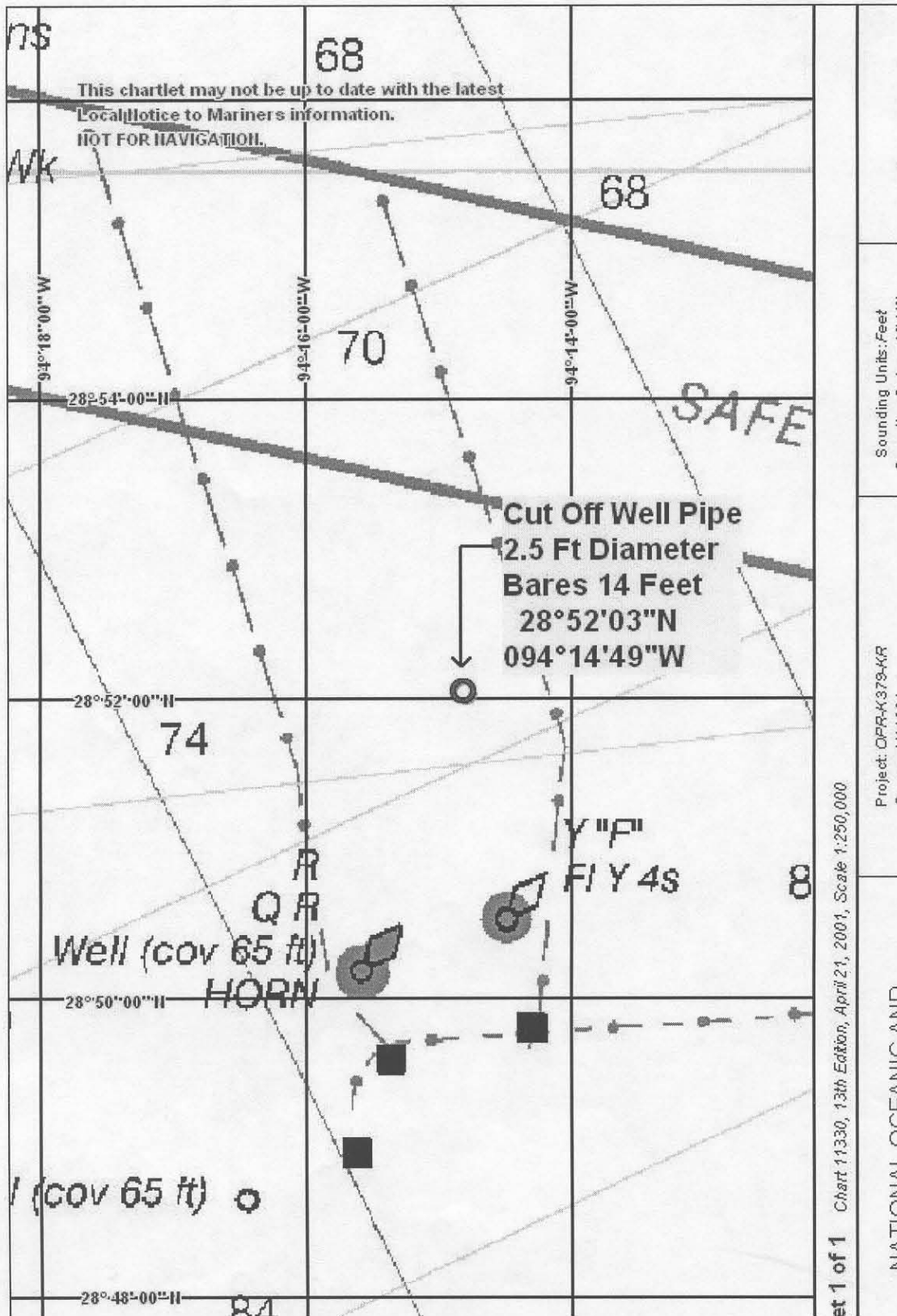
Charts affected:       11330, 13<sup>th</sup> Edition, April 21, 2001, Scale 1:250,000  
                          11300, 37<sup>th</sup> Edition, June 21, 2000, Scale 1:460,732

### DANGERS TO NAVIGATION

Preliminary survey investigation revealed a 2.5 foot diameter cut-off well pipe. Feature bares 14 feet above water level with no light or buoy marking the pipe.

| <u>Feature</u> | <u>Depth (FT)</u> | <u>Latitude (N)</u> | <u>Longitude (W)</u> |
|----------------|-------------------|---------------------|----------------------|
| Pipe           | -14 feet          | 28°52'03"           | 094°14'49"           |

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

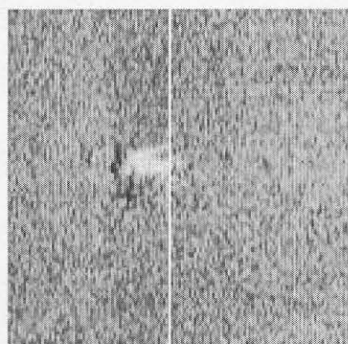


**APPENDIX D**  
**SUPPLEMENTAL RECORDS**

Items Recommended for Investigation – Sheet A (H11061)

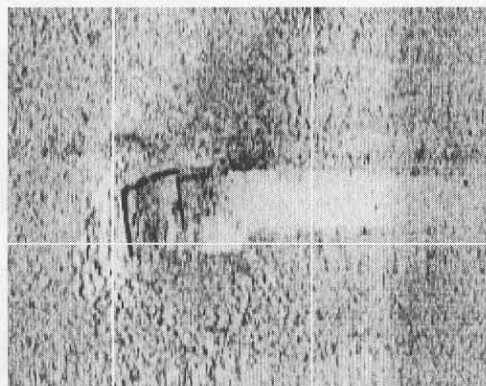
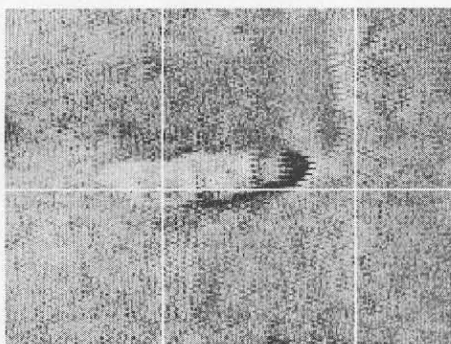
- (1) Sonar contacts 207/070210P and 207/035556S are located at 28°58'49"N, 94°36'07"W. The target lays outside of the multibeam swath coverage. Surrounding water depth are 57 feet.

It is recommended that four multibeam lines be run over the target to determine an accurate least depth. As the target size may approach the detection limits of the system, it is recommended that diver investigation be performed to determine the least depth if needed.



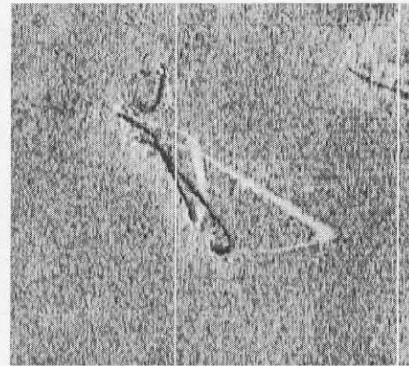
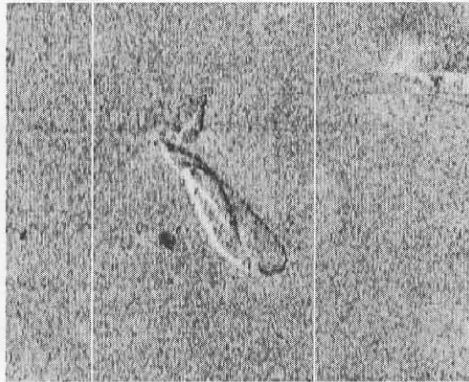
- (2) Sonar contacts 209/093338P and 209/054751S are located at 28°58'09"N, 94°39'40"W and correspond to AWOIS item 10,939 (F/V *Sea Gull*). The item has dimensions of 22 m by 10 m with 2 to 6 meters of relief as calculated from the shadow on the side scan sonar record. The surrounding water depths are 54 feet. The item lies outside of the multibeam swath coverage and an accurate least depth could not be determined.

It is recommended that a set of four lines be run over the target with the multibeam in order to attain a least depth.



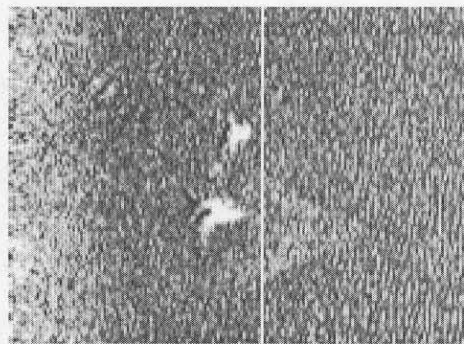
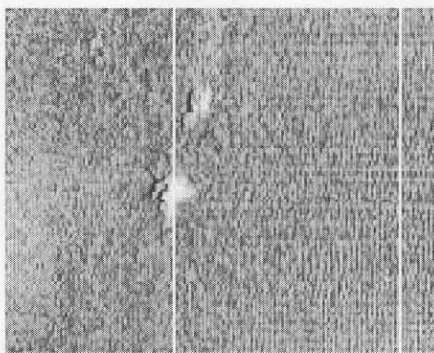
- (3) Sonar contacts 212/204629P and 212/185136S are located at  $28^{\circ}51'53''\text{N}$ ,  $94^{\circ}42'27''\text{W}$ . The item appears to be a floating rope that is attached to an anchor of some sort. The surrounding water depths are 67 feet. The rope is about 40 meters long and is folded in half. If extended vertically by the water column the top of the rope would be close to the water surface.

It is recommended that item be recovered as it is in an area of high vessel traffic due to its proximity to oil/gas platforms. This would likely be best done by diver operations.



- (4) Sonar contacts 215/183627S and 225/174301S are located at  $28^{\circ}55'27.27''\text{N}$ ,  $94^{\circ}45'56.69''\text{W}$  and correspond to the location of AWOIS item 2653. There are two targets at the location. The targets lay outside of the multibeam swath coverage. Surrounding water depth are 57 feet. The target lies fairly close to the safety fairway.

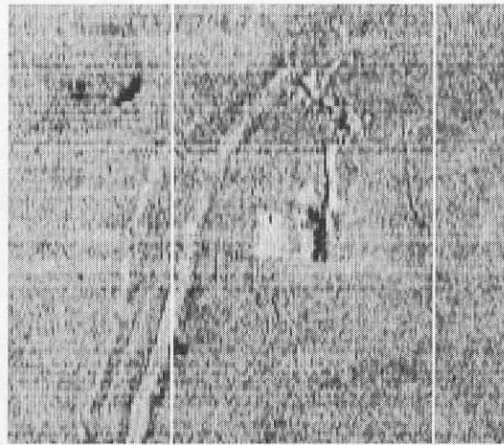
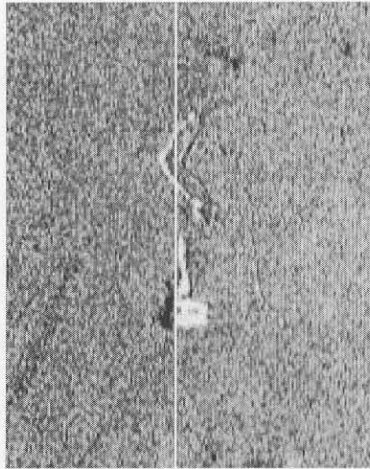
It is recommended that four multibeam lines be run over the target to determine an accurate least depth. As the target size may approach the detection limits of the system, it is recommended that diver investigation be performed to determine the least depth if needed.





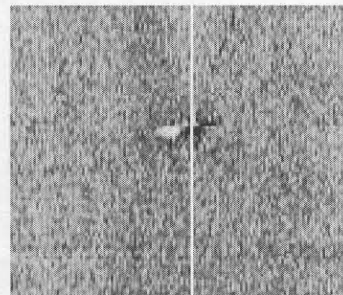
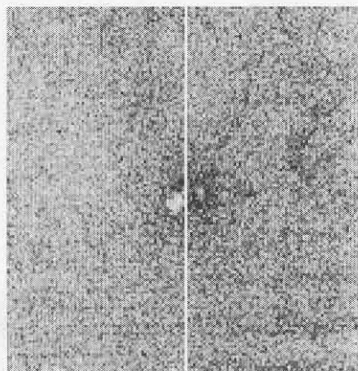
- (5) Sonar contacts 221/011158S and 221/035718P are located at  $28^{\circ}51'25''\text{N}$ ,  $94^{\circ}55'32''\text{W}$ . The target lies within the safety fairway and surrounding depths are 61 feet. The target is at the end of a large drag scar and may be an anchor block. There may be some rope or chain extending from the target. A relief of 1.7 meters was calculated from the shadow on the side scan sonar record. The item lies outside of the multibeam swath coverage.

It is recommended that four multibeam lines be run over the target in order to determine an accurate least depth.



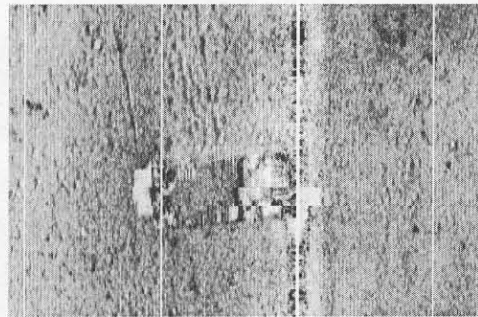
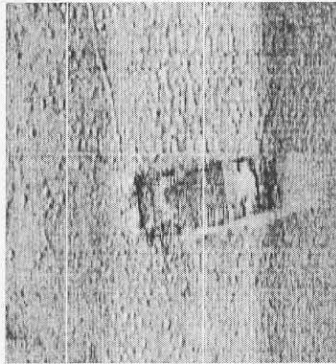
- (6) Sonar contacts 223/004948P and 232/225658P are located at  $28^{\circ}59'10''\text{N}$ ,  $94^{\circ}45'41.28''\text{W}$ . The target is a circular object that expresses up to 2 meters of relief as calculated from the side scan sonar shadow length. The object did not fall within the multibeam swath coverage. Surrounding depths are 59 feet.

It is recommended that four multibeam lines be run over the target to determine an accurate least depth. As the target size may approach the detection limits of the system, it is recommended that diver investigation be performed to determine the least depth if needed.



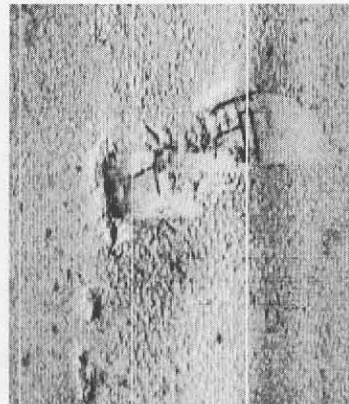
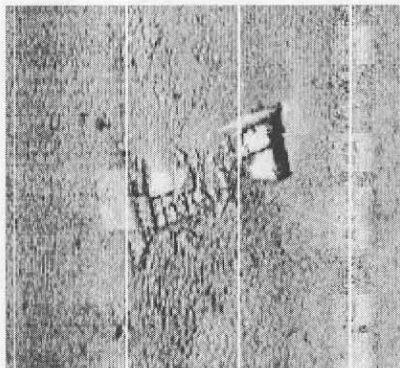
- (7) Sonar contact numbers 233/071128P and 233/063149S are located at  $29^{\circ}02'36''\text{N}$ ,  $94^{\circ}41'50''\text{W}$ . The item appears to be a sunken barge with dimensions of 27 m by 18 m with at least 3 meters of relief as calculated from the shadow on the side scan sonar record. The surrounding water depth is 60 to 61 feet. The multibeam swath does not cover the entire object therefore an accurate least depth could not be determined.

It is recommended that a set of four lines be run over the target with the multibeam in order to attain a least depth.



- (8) Sonar contacts 233/064352P and 233/072322S are located at  $29^{\circ}02'32''\text{N}$ ,  $94^{\circ}41'30''\text{W}$ . The item is a rectangular object with linear features along both axes. The item has dimensions of 37 m by 16 m with at least 3 meters of relief as calculated from the shadow on the side scan sonar record. The surrounding water depth is 60 feet. The multibeam swath does not cover the entire object therefore an accurate least depth could not be determined.

It is recommended that a set of four lines be run over the target with the multibeam in order to attain a least depth.





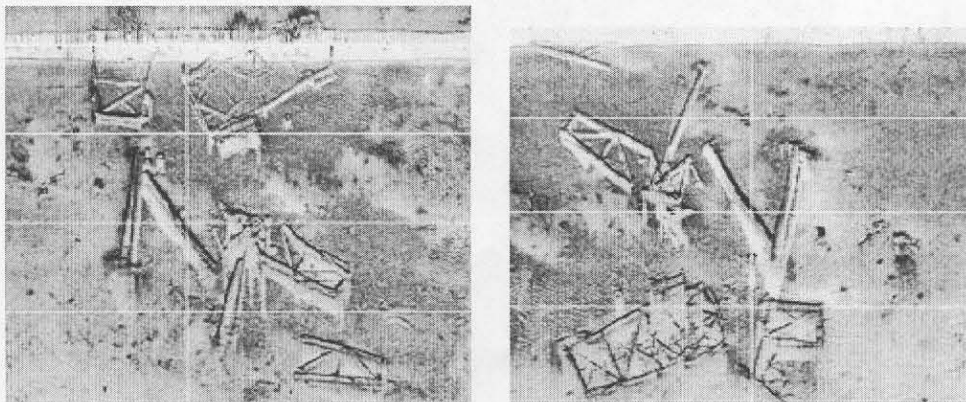
- (9) Sonar contacts 296/195648P, 296/195651P, 296/195654P, 296/213409S, 296/213413S, and 296/213415S, located at 29°08'24"N, 94°42'19"W, represent a cluster of three targets. The items are roughly 5 meters by 5 meters in dimension each. As calculated from the side scan sonar shadow lengths, heights of the targets range from 1.6 meters to 2.7 meters. The items did not lie within the multibeam swath coverage and therefore accurate least depths could not be determined. Surrounding water depths are 57 feet.

It is recommended that a set of four to six lines be run with the multibeam sonar to determine least depths over the targets.



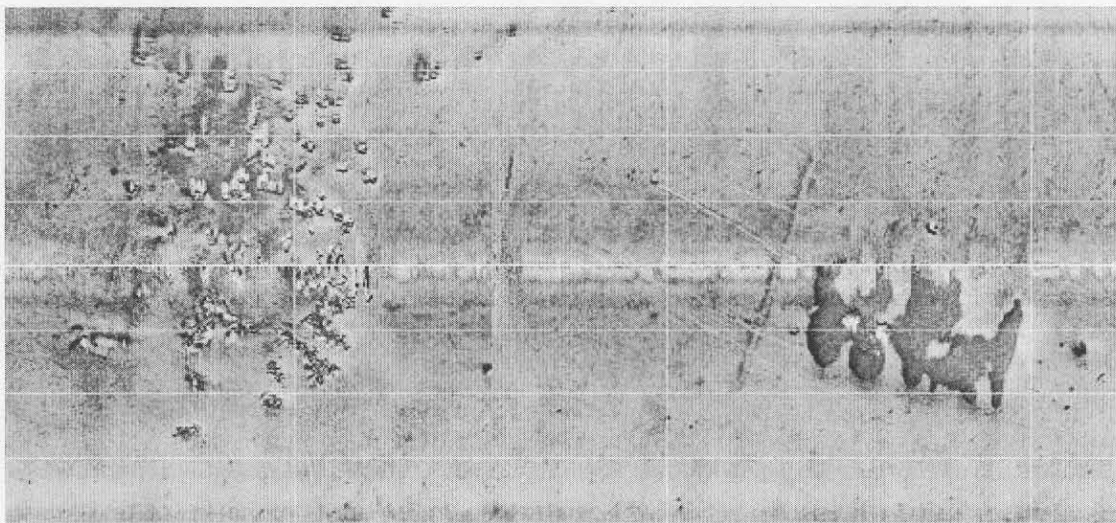
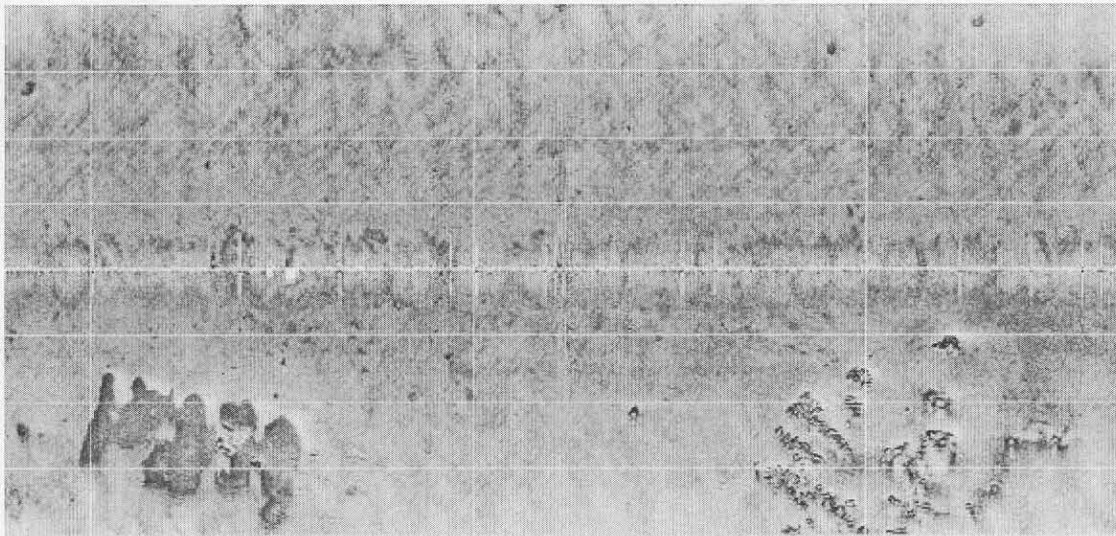
- (10) AWOIS item 10974, a fish haven, was imaged on several side scan sonar and multibeam lines. However, since 100% multibeam coverage was not achieved it is impossible to say whether an accurate least depth was attained.

It is recommended that 100% multibeam coverage is collected for a 200-meter square block centered on the target. It is proposed that side scan sonar data also be collected for extra data.

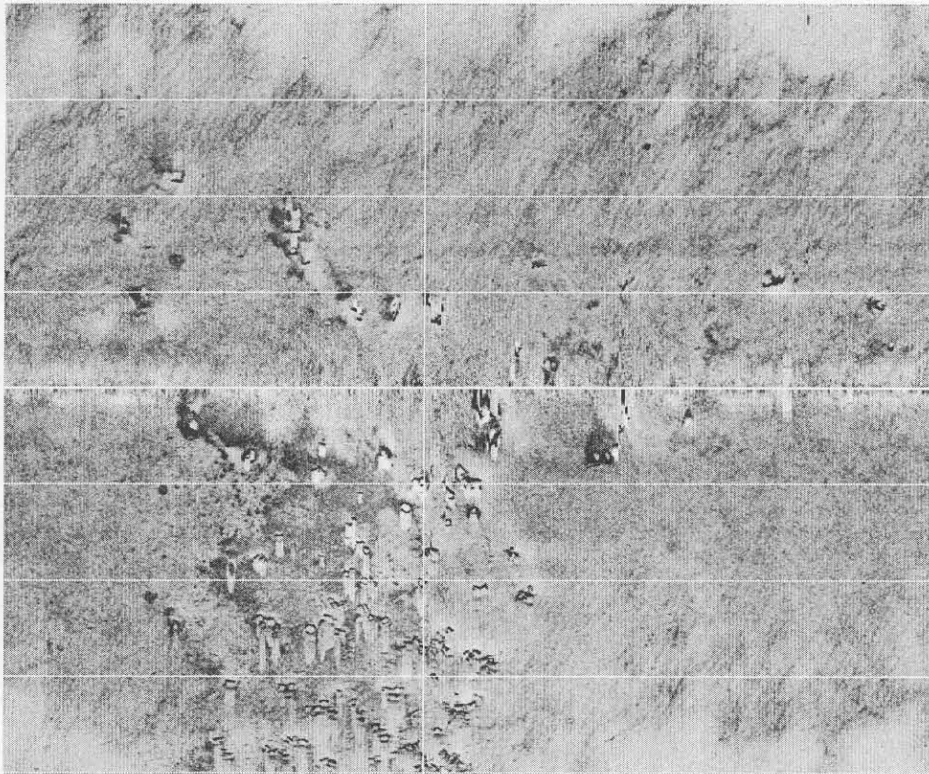


- (11) AWOIS item 10940 is charted as a fish haven. The AWOIS listing states that this item is not longer visible and should be considered for removal from the chart. During the survey this was found not to be the case. There is a cluttered area of very highly concentrated pinnacles of some sort. There is also a zone of three to four fairly hard contacts in an area of different sediment type.

It is recommended that a four line multibeam survey, possible followed by a dive investigation be performed on the items which lay in the area of different sediment type and that a 100% multibeam survey of a 300 meter square block surrounding the pinnacle-like area be performed to determine depths in the area.





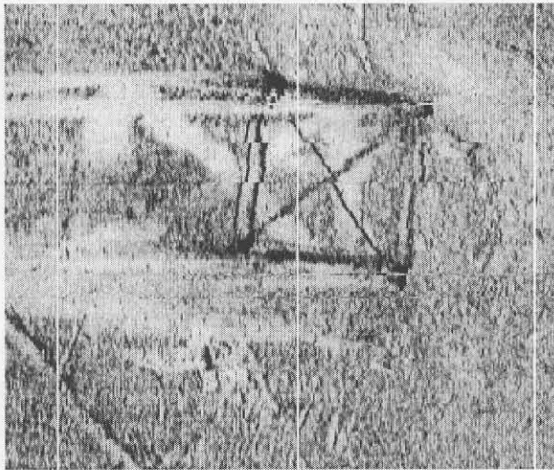


- (12) It is recommended that the remaining portion of the search radius for AWOIS item 333 be completed with 200% side scan sonar and multibeam so that the item can be either proved or disproved. No evidence of the item was found during the original survey operations.
- (13) AWOIS item 335 is described as a pipe extending from the bottom. The position of the pipe was confirmed during a hydrographic survey during 1999 however no evidence of the object was detected during the present survey.

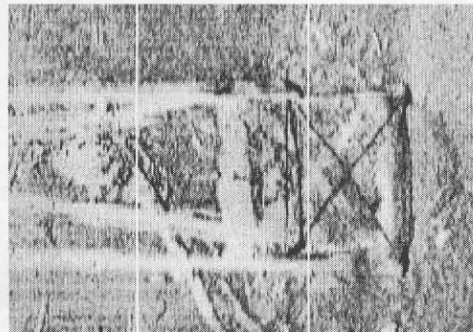
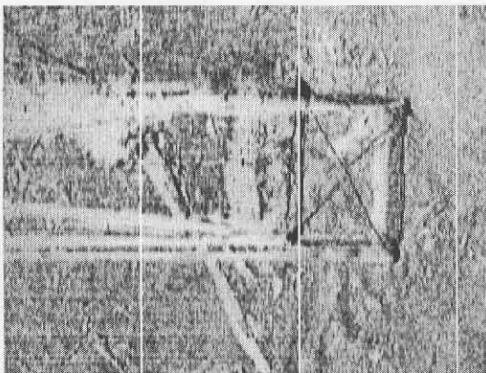
It is recommended that four side scan lines be run over the charted/reported location of the AWOIS item at a 50-meter range scale. If the target is found the multibeam system will be used to determine a least depth over the target.

The following items lie in close proximity to oil/gas platforms. Usually upon removal of these platforms, site clearances are required and the debris would likely be removed at that time. However, in the mean time there could be high crew boat/supply boat type traffic in the area. (Note the views shown below are from different lines but are from the same direction. The vessel had to go offline to avoid the structure and covered the area with the same channel twice.)

- (14) Sonar contacts 211/235211P and 212/014053P, located at  $28^{\circ}52'01''N$ ,  $94^{\circ}41'50''W$ , represent a piece of debris which exhibits approximately 3 meters of relief. The target is located 20 to 25 meters away from a oil/gas platform and the debris is likely associated with those operations. The surrounding water depths are 68 feet. *ITEM 53, pg 27*



- (15) Sonar contacts 214/162757P and 214/180651P(a), located at  $28^{\circ}53'27''N$ ,  $94^{\circ}41'39''W$ , represent a hard contact approximately 45 meters away from an oil/gas platform. The surrounding water depths are 69 feet. *ITEM 52, pg 27*



**LETTER TRANSMITTING DATA**

DATA AS LISTED BELOW WERE FORWARDED TO YOU  
BY (Check)

- ORDINARY MAIL       AIR MAIL  
 REGISTERED MAIL       EXPRESS  
 GBL (Give number) \_\_\_\_\_

**TO:**

NOAA/National Ocean Service  
 Chief, Data Control Group, N/CS 3x1  
 SSMC3, Station 6715  
 1315 East-West Highway  
 Silver Spring, MD 20910-3832

DATE FORWARDED      06/09/2003

NUMBER OF PACKAGES      2

**NOTE:** A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H11061, Texas, Gulf of Mexico, Galveston to San Luis Pass

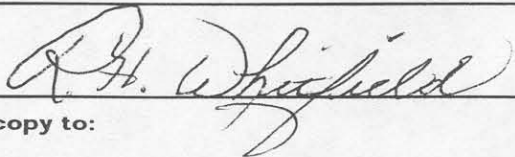
1 Tube Containing:

- 1 Original Smooth Sheet for H111061
- 1 Mylar H-Drawing of H11061 for chart 11330
- 1 Mylar H-Drawing of H11061 for chart 11323
- 1 Mylar H-Drawing of H11061 for chart 11321
- 1 Hydrographer's field smooth sheet of H11061

1 Box Containing:

- 1 Original Descriptive Report for H11061

FROM: (Signature)



**RECEIVED THE ABOVE**  
(Name, Division, Date)

**Return receipted copy to:**

Richard H. Whitfield  
 NOAA, NOS, Atlantic Hydrographic Branch, N/CS33  
 439 West York St.  
 Norfolk, VA 23510

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H11061 (2002)**

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.

**B. AUTOMATED DATA ACQUISITION AND PROCESSING**

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

MicroStation J, version 7.1  
I/RAS B, version 5.01  
NADCON, version 2.10  
MapInfo, version 6.5  
CARIS HIPS/SIPS 2000

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

**C. VERTICAL AND HORIZONTAL CONTROL**

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, move the projection lines 0.887 seconds (27.294 meters or 0.68 mm at the scale of the survey) north in latitude, and 0.704 seconds (19.057 meters or 0.48 at the scale of the survey) west in longitude.

**D. COMPARISON WITH CHARTS 11321 (29<sup>th</sup> Edition, DEC. 15/01)  
11323 (59<sup>th</sup> Edition, MAR. 30/02)  
11330 (13<sup>th</sup> Edition, APR. 21/01)**

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report. Attention is directed to the following:



A charted dangerous 56 obstruction (Obstns) in Latitude 29°06'48.88"N, Longitude 94°38'27.25"W was not discussed by the hydrographer. It is recommended that the dangerous 56 Obstns be retained as charted.

The charted discontinued Dumping Ground in the vicinity of Latitude 29°04'00.00"N, Longitude 94°34'00.00"W has been partially covered by the present survey. It is recommended that the charted notations be revised to "Dumping Ground (discontinued) Depths from surveys of 1979, 1994 and 2002".

It is recommended that the charted notation *Obstn Fish Haven (cov 48ft)* in the vicinity of Latitude 29°08'34.40"N, Longitude 94°40'50.10"W on chart 11330 be revised to *Obstn Fish Haven (auth min 48ft)* as shown on chart 11323.

#### D.1.4 AWOIS ITEMS

a. AWOIS item #2653 is a charted dangerous obstruction (collapsed platform) with a wire drag clearance of 40 feet in Latitude 28°55'24.88"N, Longitude 94°45'59.50"W. An obstruction with a depth of 55 feet was located by the hydrographer in Latitude 28°55'26.10"N, Longitude 94°45'58.90"W. The obstruction is shown on the present survey. Shoaler depths of 51 to 52 feet, probably an old pipeline, are in the immediate vicinity of the obstruction. It is not recommended that the 55-ft obstruction be charted. It is recommended that the obstruction with a clearance depth of 40 feet be deleted from the chart and present survey depths be charted as shown on the present survey.

It should be noted that the side scan determined depth of 47 feet recommended by the hydrographer is not considered adequate for charting.

b. AWOIS item #10499 is a charted dangerous 53-ft obstruction in Latitude 29°08'13.10"N, Longitude 94°40'15.40"W that originates with prior survey H10805 (1998-99). The obstruction has been confirmed with 200% Side Scan Sonar by the hydrographer. A least depth was not obtained. It is recommended that the 53-ft obstruction be retained as charted.

c. AWOIS item #10501 is a charted dangerous 53-ft obstruction in Latitude 29°07'57.96"N, Longitude 94°39'58.80"W that originates with prior survey H10805 (1998-99). The obstruction has been confirmed with 200% Side Scan Sonar by

the hydrographer. A least depth was not obtained. It is recommended that the 53-ft obstruction be retained as charted.

d. Item A9 is a 54-ft obstruction located by the hydrographer and shown on the present survey in Latitude 29°08'25.28"N, Longitude 94°42'16.93"W. Because of the chart scale and the close proximity of a charted fish haven with an authorized depth of 50 feet, it is recommended that the 54-ft obstruction not be charted.

e. Item A11 is a 53-ft obstruction in Latitude 29°08'16.14"N, Longitude 94°42'25.28"W. The obstruction, shown on the present survey, is located immediately outside the limits of a Fish Haven with an authorized depth of 50 feet. It is recommended that a dangerous obstruction with a depth of 53-ft be charted should the scale of the chart allow.

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

#### **D.2.1. PRIOR SURVEYS**

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

#### **JUNCTIONS**

##### H11087 (2002) to the west

A standard junction could not be effected between the present survey and H11087 (2002). The junctional survey has not been completed and submitted to this office. Any adjustments to the depth curves in the junctional areas will be made on the chart during compilation.

There are no junctional surveys to the north, south or to the east. Present survey depths are in harmony with the charted hydrography to the north, south, and to the east.



**ADEQUACY OF SURVEY**

This is an adequate hydrographic/side scan sonar/multibeam survey. No additional field work is recommended.

**MISCELLANEOUS**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. The following NOS Charts were used for compilation of the present survey:

11321 (29<sup>th</sup> Edition, DEC 15/01)  
11323 (59<sup>th</sup> Edition, MAR 30/02)  
11330 (14<sup>th</sup> Edition, NOV/02) Corrected through NM Nov 9/02  
Corrected through LNM Oct 22/02

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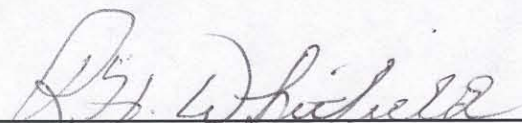
Robert Snow

**Robert Snow**

Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

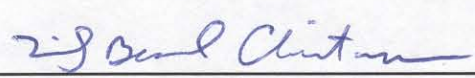
APPROVAL SHEET  
H11061

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof 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.

  
Richard H. Whitfield  
Cartographer,  
Atlantic Hydrographic Branch

Date: 6/3/03

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.

Approved:   
Emily B. Christman  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

Date: 6/5/03

AWOIS ✓ SURF ✓ 6-17-03 by MBH



