

H10485

| | |
|--|---------------------------------|
| NOAA FORM 78-35A | |
| U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE | |
| DESCRIPTIVE REPORT | |
| Type of Survey | Hydrographic Side Scan Sonar |
| Field No. | MI-10-3-93 |
| Registry No. | H-10485 |
| LOCALITY | |
| State | Louisiana |
| General Locality | Gulf of Mexico |
| Sublocality | Southwest Pass |
| 19 93 | |
| CHIEF OF PARTY CAPT D.B. MacFarland | |
| LIBRARY & ARCHIVES | |
| DATE | JUN 1 1995 |

Diagram 1272-3

Chs
P5
N3614isset
N366
N360
N340
1006

HYDROGRAPHIC TITLE SHEET

H-10485

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.

MI-10-02-93

State Louisiana

General locality Gulf of Mexico

Locality Southwest Pass, LA

Scale 1:10,000 Date of survey 08 JUL - 15 SEPT, 1993

Instructions dated April 6, 1993 Project No. OPR-SK904-MI-93

Vessel NOAA Ship MT MITCHELL S-2220

Chief of party CAPT David B. MacFarland
J.C. Gardner, N.D. Weston, K.A. Pavelle, M.P.M. Soracco, J.D. Swallow, S.R. Williams,

Surveyed by S.A. Shaulis, U.L. Gardner, P.G. Lewit, M.E. Ahern, R.L. Harris, R.C. Baumgartner

Soundings taken by echo sounder, hand lead, pole DSF-6000N

Graphic record scaled by MT MITCHELL survey personnel

Graphic record checked by MT MITCHELL survey personnel

Protracted by N/A Automated plot by Zeta 936 Plotter (FIELD)
XYMETICS 1201 PLOTTER (MHS)

Verification by ATLANTIC HYDROGRAPHIC SECTION PERSONNEL

Soundings in ~~XXXXXX~~ MLLW meters

REMARKS: Field Examination of AWOIS item #'s 8364, 8365, 8366, 8367, 8369, 8370,
8371, 8372, 8373, 8374

Time zones used: 0 (UTC) for data collection, +6 (CST) for tidal data

Hydrography, 200% and 400% side scan sonar coverage

NOTES IN RED WERE MADE DURING OFFICE PROCESSING





AWOIS/KURFZ 6/12/95 SSJ

SP 6-2-95

PROJECT SKETCH
S-K904-MI-93
NOAA SHIP MT MITCHELL
CAPT. DAVID B. MACFARLAND

SEPTEMBER 1993

LEGEND:

- MAINSCHHEME HYDRO 
- 100% COVERAGE 
- 200% COVERAGE 
- AVOIS ITEMS AND SEARCH RADIUS 

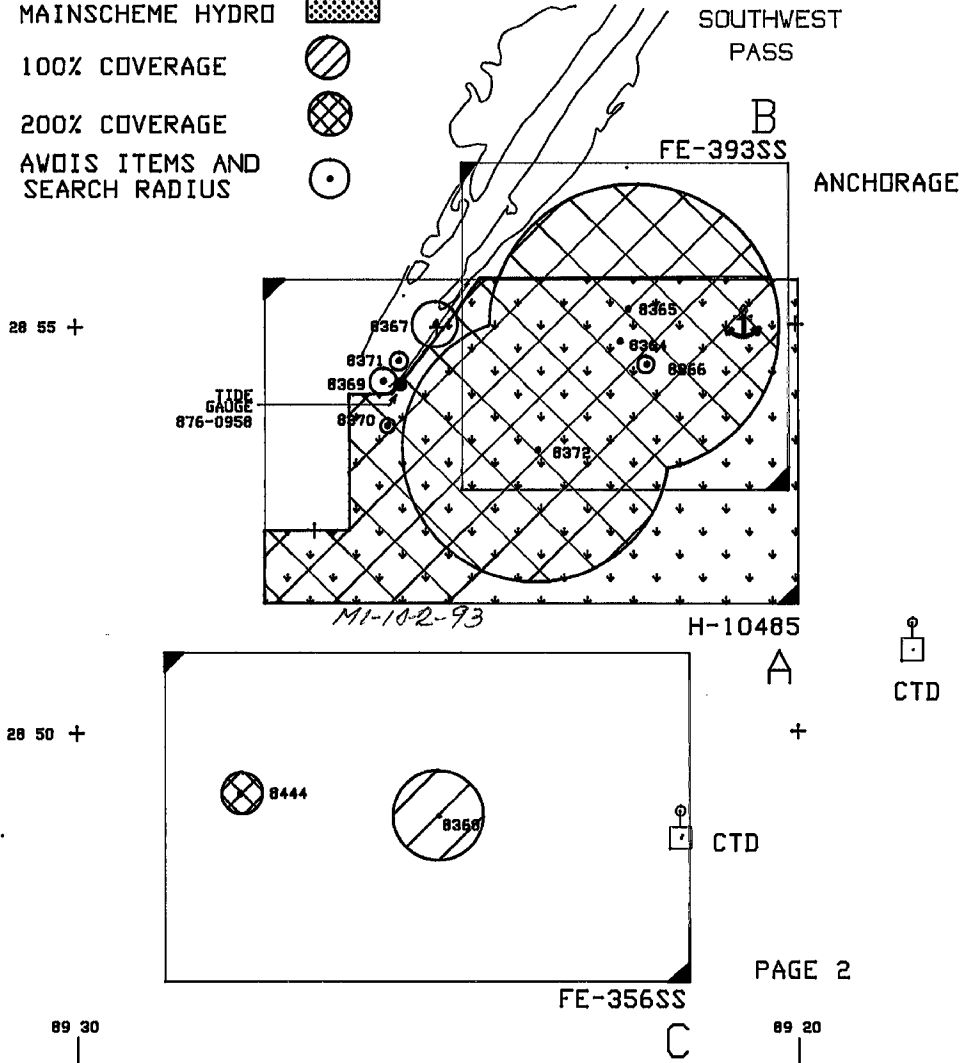


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** FILED WITH THE ORIGINAL SURVEY RECORDS.*

A. PROJECT

A.1 This survey was conducted in accordance with Project Instructions OPR-SK904-MI-93, Louisiana Coast Item Investigation, Louisiana.

A.2 The original date of the instructions is April 6, 1993.

A.3 The following changes to the original instructions are relevant to this survey:

June 3, 1993 - An amendment to the project instruction was received from the Director, Atlantic Marine Center. This amendment instructed MT MITCHELL to monitor both the New Orleans DGPS beacon and the NOAA HF DGPS transmitter with the NOS program *SHIPDIM*. The *OUTLIER.SUM* file from this program is to be forwarded to N/CG241.

July 23, 1993 - Change #1. Tide gage installation on Gulf of Mexico side is not required. Loran-C chart verification not required.

A.4 A sheet letter was not specified in the project instructions. This sheet was designated by the ship as "Southwest Pass A."

A.5 Project OPR-SK904-MI-93 responds to a request by the Mississippi River Bar Pilots to survey the mouth of Southwest Pass. The pilots want to use this area as a maneuvering or holding location. They report the area is deeper than shown on NOS charts.

B. AREA SURVEYED

B.1 This survey is located in the vicinity of the Safety Fairway and Anchorage at the entrance to Southwest Pass of the Mississippi River. Existing depths are between 2.5 and 69 meters (8.2 to 226 feet). AWOIS Items 8366, 8367, 8369, 8370, 8371, 8372, 8373, and 8374 are covered on this sheet.

The frequent traffic in the area includes oil tankers, container ships, rig tending / supply transports, tug / barge traffic, and small trawling vessels.

B.2 The survey sheet is rectangular and delineated to the north and south by latitudes $28^{\circ} 55' 38''$ N and $28^{\circ} 51' 38''$ N respectively, and to the east and west by longitudes $089^{\circ} 19' 56''$ W and $089^{\circ} 27' 23''$ W.

B.2 (cont.)

Hydrography was run in the region bounded by the following coordinate pairs:

| | |
|--------------------|--------------------|
| 28° 52' 43.417" W | 28° 52' 43.426" W |
| 089° 27' 05.950" W | 089° 25' 58.785" W |
| 28° 54' 07.228" W | 28° 51' 26.110" W |
| 089° 25' 58.792" W | 089° 27' 05.931" W |
| 28° 55' 18.686" W | 28° 55' 18.576" W |
| 089° 24' 40.528" W | 089° 19' 59.942" W |
| 28° 51' 26.008" W | |
| 089° 20' 00.146" W | |

The primary requirement on this survey sheet was basic hydrography. This area was also covered by 200% side scan sonar in depths up to 30 meters. Beyond the 30 meter curve, only the areas within AWOIS radii were covered with side scan sonar. The charted positions and search radii for the AWOIS items on this sheet are as follows:

| <u>Item</u> | <u>Charted Position</u> | <u>Search Radius</u> |
|-------------|---|----------------------|
| AWOIS 8364 | 28° 54' 48.850" N 089° 22' 24.170" W | 3000 meters |
| AWOIS 8365 | 28° 55' 12.850" N 089° 22' 18.170" W | 3000 meters |
| AWOIS 8366 | 28° 54' 31.850" N 089° 22' 04.170" W | 200 meters |
| AWOIS 8367 | 28° 55' 00.850" N 089° 25' 00.170" W | 500 meters |
| AWOIS 8369 | 28° 54' 04.850" N 089° 25' 42.170" W | 200 meters |
| AWOIS 8370 | 28° 53' 48.860" N 089° 25' 42.170" W | 200 meters |

B.2 (cont.)

| | | |
|------------|---|-------------|
| AWOIS 8371 | 28° 54' 35.850" N 089° 25' 30.170" W | 200 meters |
| AWOIS 8372 | 28° 53' 30.850" N 089° 23' 36.170" W | 3000 meters |
| AWOIS 8373 | 28° 54' 30.860" N 089° 26' 24.170" W | 500 meters |
| AWOIS 8374 | 28° 54' 18.350" N 089° 25' 46.170" W | 500 meters |

B.3 Data acquisition began on July 08, 1993 (DN 189) and concluded on September 15, 1993 (DN 258).

C. SURVEY VESSELS

C.1 The following vessels were used during this project:

| <u>VESSEL</u> | <u>ELECTRONIC DATA PROCESSING NUMBER</u> | <u>PRIMARY FUNCTION</u> |
|------------------------------|--|--|
| MT MITCHELL | 2220 | Side Scan Operations, CTD Casts, Bottom Sampling |
| JENSEN LAUNCH 1017 (MI-3) | 2223 | Hydrography/Side Scan Operations, CTD Cast, Bottom Sampling |
| JENSEN LAUNCH 1002 (MI-4) | 2224 | Hydrography/Side Scan Operations, Tide Gage Support |
| BOSTON WHALER (MI-1) | N/A | Tide Gage Support |
| SEA ARK (MI-5) | N/A | Tide Gage Support |

C.2 There were no unusual vessel configurations used in this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

D.1 Survey data acquisition and processing were accomplished using the HDAPS system with the following software versions:

| <u>Program Name</u> | <u>Version</u> | <u>Installation Date (1993)</u> |
|---------------------|-------------------|---------------------------------|
| AUTOST | 3.01 | 17 MAY |
| BACKUP | 2.00 | 23 JUL |
| BASELINE | 1.14 | 23 JUL |
| BIGABST | 2.05 | 23 JUL |
| BIGAUTOST | No Version Listed | 23 JUL |
| BLKEDIT | 2.02 | 23 JUL |
| CARTO | 2.09 | 15 AUG |
| CONTACT | 2.09 | 15 AUG |
| CONVERT | 3.54 | 23 JUL |
| DAS_SURV | 6.42 | 15 AUG |
| DIAGNOSE | 3.03 | 23 JUL |
| DISK_UTIL | 1.00 | 23 JUL |
| DP | 2.14 | 23 JUL |
| EXCESS | 4.11 | 23 JUL |
| FILESYS | 3.10 | 15 AUG |
| GRAFEDIT | 1.04 | 23 JUL |
| HIPSTICK | 1.01 | 23 JUL |
| HPRAZ | 1.26 | 23 JUL |
| INSTALL | 4.02 | 23 JUL |
| INVERSE | 2.01 | 23 JUL |
| LISTDATA | 1.02 | 23 JUL |
| LOADNEW | 2.05 | 15 AUG |
| LSTAWOIS | 3.03 | 23 JUL |
| MAINMENU | 1.10 | 15 AUG |
| MAN_DATA | 2.01 | 23 JUL |
| NEWPOST | 6.01 | 23 JUL |
| PLOTALL | 2.11 | 23 JUL |
| POINT | 2.10 | 23 JUL |
| PREDICT | 2.01 | 23 JUL |
| PRESURV | 7.04 | 15 AUG |
| PRINTOUT | 4.03 | 23 JUL |
| QUICK | 2.04 | 28 JUL |
| RAMSAVER | 1.02 | 25 JUL |
| REAPPLY | 2.03 | 23 JUL |
| RECOMP | 2.02 | 23 JUL |
| REFTIDE2 | 1.00 | 28 JUL |

D.1 (Cont.)

| | | |
|----------|------|--------|
| SCANNER | 1.00 | 23 JUL |
| SELPRINT | 2.03 | 23 JUL |
| SYMBOLS | 2.00 | 15 AUG |
| ZOOMEDIT | 2.12 | 23 JUL |

To conduct DGPS performance checks a *LOTUS 1-2-3* spreadsheet was used. A copy of the spreadsheet is included in the **Electronic Control Report**.

D.2 Two programs were used to determine velocities: *VELOCITY* (Ver. 2.00, Module *CATCRE.EXE* updated June 02, 1993) and *CAT* (Ver. 2.00), both dated December 18, 1992.

D.3 There were no nonstandard automated acquisition or processing methods used.

E. SIDE SCAN SONAR EQUIPMENT

E.1 Side scan sonar operations were conducted using an EG&G Model 260-TH slant range corrected side scan recorder and a Model 272-T (single frequency) towfish. All side scan operations were conducted from MT MITCHELL, Launch MI-3 or Launch MI-4 (Vessel Numbers 2220, 2223 and 2224). The following list shows the equipment serial numbers and corresponding dates used for each vessel:

| <u>Vessel Number</u> | <u>Equipment Type</u> | <u>Serial Number</u> | <u>Dates Used</u> |
|----------------------|-----------------------|----------------------|-------------------|
| 2220 | Recorder | 016673 | 26 AUG - 15 SEPT |
| | Towfish | 016700 | 26 AUG |
| | Towfish | 011591 | 11 SEPT - 15 SEPT |
| 2223 | Recorder | 016672 | 08 JUL - 15 SEPT |
| | Towfish | 016699 | 04 AUG - 15 SEPT |
| 2224 | Recorder | 016669 | 08 JUL - 15 SEPT |
| | Towfish | 016700 | 08 JUL - 22 JUL |
| | Towfish | 016696 | 03 AUG - 15 SEPT |

E.2 All side scan sonar towfish were configured with a 20° beam depression, which is the normal setting.

E.3 The 100 kHz frequency was used throughout the entire survey.

E.4 a) In sufficiently deep water the 100 meters range scale was used for main scheme coverage. In shallower areas of the sheet (less than 10 meters water depth) the 75 meters or 50 meters range scale was used.

Line spacing for main scheme coverage was determined using the formula provided in section 7.3.2.2 of the Field Procedures Manual ($LS_{max} = 2RS - 2EPE_{max}$). The predicted maximum estimated position error (EPE) did not exceed 15 meters within the survey area, so a maximum line spacing of 170 meters was established for the 100 meters range scale and a 120 meters line spacing for the 75 meters range scale, and 70 meters line spacing for the 50 meters range scale. Line spacing was adjusted to ensure sufficient overlap with adjacent lines.

b) Daily opening and closing confidence checks were obtained either by towing the towfish past the anchor of a nearby oil rig, or by towing it past the pipes going to one of the nearby well heads, or past MT MITCHELL's anchor. Confidence checks are also possible throughout the day because of the numerous trenches on the bottom.

c) AWOIS Items 8366, 8369, and 8370 were covered with 400% side scan coverage. AWOIS Item 8364, 8365, and 8372 were covered with 200% side scan coverage.

d) All side scan sonar lines ran in the 060° and 240° directions parallel with the bottom contour. This permitted launches to gather data with minor adjustments to side scan sonar cable length.

At shallower depths interference from the DSF-6000N appears on side scan traces as short diagonal dashes on the outer edges. The interference results from the towfish 100 khz transducers being positioned close to the fathometer 100 khz transducer.

Currents from the Mississippi River and the freshwater / saltwater boundary affected the side scan trace. Traces gathered in Southwest Pass Channel and within the dump site showed numerous dark patches and washed out areas, preventing clear side scan coverage (Example: DN 240, Fix 7247). See section G.1a for a more detailed discussion on the freshwater / saltwater boundary.

Reliable towfish bottom tracking was also difficult to maintain in these areas because of the frequent dredging of the river channel and the subsequent dumping into the dump site. The turbidity in the water column prevented quality side scan traces in these areas.

E.4 e) The towfish were deployed from the sterns of MT MITCHELL (2220), Jensen Launch (2223), and Jensen Launch (2224) during the entire survey.

E.5 Any contact appearing significant was entered into the contact tables. The tables were reviewed and correlating contacts examined. Adjacent side scan sonar coverage was scanned for each contact to see if it appeared on multiple traces. Contacts which occurred only once and appeared insignificant were labeled as such; those appearing multiple times were closely examined and calculated heights compared.

E.6 Overlap was checked on-line using the real-time plot and the edited swath plot for gaps. All gaps were filled in by running additional side scan sonar lines.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon 6000N digital survey fathometer (DSF). The following list shows the equipment serial numbers and corresponding dates used for each boat:

| <u>Vessel Number</u> | <u>Manufacturer's Serial Number</u> | <u>Dates Used</u> |
|----------------------|---|---|
| 2220 | A110N | 24 AUG - 15 SEPT |
| 2223 | B051N A122N B051N | 08 JUL -15 JUL 16 JUL - 24 AUG 24 AUG - 15 SEPT |
| 2224 | B047N | 08 JUL - 15 SEPT |

F.2 System checks on launch fathometers were performed using two lead lines in the area of survey at depths less than 30 meters. These lines were calibrated as per instructions in the Hydrographic Manual section 7.2.1.2.

F.3 Interference on the DSF-6000N trace was caused when the side scan towfish was operated at a short cable length in water less than 10 meters in depth. The interference appears as dashed line segments and did not distort the fathometer trace.

F.4 Both the high (100 kHz) and the low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were digitized and selected for plotting. Low frequency sounding data were examined for spikes indicating nearby items. These spikes were also inserted and plotted.

G. CORRECTIONS TO SOUNDINGS

G.1 a) Detailed information and tables used to determine all corrections to soundings can

(G.1a cont.)

be found in the **Sounding Equipment Calibration and Corrections Report**.

The velocity of sound through water was determined by a Seacat conductivity, temperature and density gage (serial number 192472-0284). The sensors on this CTD unit were last calibrated on 7 August and 28 October, 1992. On 24 August, 1993, a simultaneous independent test was made with this CTD and CTD unit 192472-0285, calibrated on 25 June, 1993, in 33 meters of water. Using the comparison utility of the *VELOCITY* program, the percent difference between the two casts was 0.01.

A Data Quality Assurance test was run before each velocity cast to ensure the meter was within tolerance. The DQA test was performed using hydrometers manufactured by H-B Instrument Company. CTD casts 6 and 14 did not pass the DQA test. This may have been caused by a surface layer of low salinity water from the Mississippi River. Based on numerous other casts taken with this CTD unit and results of the direct comparison with CTD unit 285, it is believed that velocity cast 6 and 14 were accurate.

The surface layer of low salinity was well defined by the CTD unit. Between 1 and 4 meters from the surface, the salinity changed from 22 ppt to 35 ppt as compared with the change from 35 ppt to 36 ppt between 5 and 70 meters of water depth. Although measurements were not taken at the mouth of the river, it was believed that the freshwater concentration would be higher and mixing at lower depths more likely to occur. The combination of current and salinity would produce significant gradients and turbulent flow preventing a quality side scan trace.

All data were processed using *VELOCITY* Version 2.00 and *CAT* Version 2.00 software. The computed velocity correctors were entered into the HDAPS sound velocity tables and applied on-line to digitized high frequency soundings.

The HDAPS Velocity Tables cited below were computed for a launch transducer draft of 0.6 meters, except for Tables 15 and 18 which were computed for the MITCHELL's transducer draft of 4.6 meters.

| <u>Cast Number</u> | <u>Date</u> | <u>Latitude</u> | <u>Longitude</u> | <u>HDAPS Table #</u> | <u>Applied To Day #'s</u> |
|--------------------|-------------|-----------------|------------------|----------------------|---------------------------|
| 06 | 14 JUL 93 | 28° 51.10' N | 089° 18.64' W | 6 | 189-203 |
| 11 | 04 AUG 93 | 28° 51.10' N | 089° 18.40' W | 11 | 215-217 |
| 12 | 11 AUG 93 | 28° 51.10' N | 089° 18.80' W | 12 | 223-231 |
| 14 | 24 AUG 93 | 28° 48.45' N | 089° 21.50' W | 14 | 226, 237-245 |
| | | | | 15 | 238 |
| 16 | 08 SEPT 93 | 28° 47.30' N | 089° 22.20' W | 17 | 258 |
| | | | | 18 | 254-258 |

(G.1 cont.)

b) There was no variation in the DSF-6000N instrument initial.

c) No instrument correctors to the DSF-6000N were required.

d) No instrument corrections were determined from direct comparison of bar checks. Lead line comparisons with the DSF-6000N were made for each vessel on day numbers 209, 213, 240, 242, 254, and 255. Result were as follows:

| <u>VN</u> | <u>DN</u> | <u>Fathometer Serial Number</u> | <u>Corrected Lead LineDepth</u> | <u>Corrected Digital Depth (m)</u> | <u>Δd (m)</u> |
|-----------|-----------|-------------------------------------|-------------------------------------|--|---------------|
| 2220 | 213 | A110N | 19.9 | 19.9 | 0.0 |
| | 242 | A110N | 18.35 | 18.6 | -0.25 |
| 2223 | 209 | A122N | 15.4 | 15.5 | -0.1 |
| | 240 | B051N | 9.3 | 9.1 | 0.2 |
| | 254 | B051N | 7.9 | 7.9 | 0.0 |
| 2224 | 209 | B047N | 7.1 | 7.3 | -0.2 |
| | 240 | B047N | 8.6 | 8.7 | -0.1 |
| | 255 | B047N | 7.2 | 7.2 | 0.0 |

See Separates IV for copies of the Lead Line Comparison forms.

Daily bar checks were attempted on each launch. A comparison of digital and analog readings was also done in the check. Strong current and rough weather conditions at the working grounds prohibited dependable bar checks.

e) All sounding correctors were applied to both the narrow (100 kHz) and the wide (24 kHz) beams.

f) The static draft of launches MI-3 (VesNo 2223) and MI-4 (VesNo 2224) was determined in April, 1993 while the launches were out of the water at the Atlantic Marine Center, Norfolk, Virginia. A calibrated steel tape was used to measure the distance from the transducer to a reference line on the launch above the waterline. The launches were then put in the water and the distance from the waterline to the reference line was measured. Static drafts of 0.6 meters were used in HDAPS Offset tables for both launches (refer to Separate III).

The static draft of MT MITCHELL's DSF-6000N transducer was determined while the ship was alongside Pier 'B' at Naval Air Station Pensacola, Florida. The static draft, measured by pneumofathometers, was 4.6 meters. This result was applied on-line and during processing in the HDAPS offset table.

(G.1 cont.)

g) Settlement and squat correctors for each launch were determined, using procedures outlined in the Hydrographic Manual, on the Elizabeth River on April 30, 1993. An observer, stationed with a level on a pier, measured changes in relative height as each launch ran toward and away from the observer at various speeds.

The dynamic draft of the MT MITCHELL was determined on 1 August 1993 off the Louisiana coast in approximately 15 m of water. The method used in measuring the dynamic draft was the "buoy and flat bottom" method described in Chapter 7 of the Hydrographic Manual. The results of the measurement are applied on-line and during processing in the HDAPS offset table.

Settlement and squat correctors were applied to soundings through the HDAPS offset table. Refer to the **Sounding Equipment Calibrations and Corrections Report** for a more detailed description of static and dynamic draft determinations.

h) Neither launch is equipped with a heave, roll and pitch indicator. The MT MITCHELL is equipped with a Datawell HIPPY 120CS Heave, Roll, and Pitch sensor (serial number 19079-CS). Sea/wave action has been meaned out for this sheet.

G.2 The HDAPS program "Reapply" was frequently used for data from the first or second day of each leg. Velocity casts were performed at the start of each leg. Launches ran on Velocity Table 0 on the first day of a leg, and on the appropriate table once it had been installed on the HDAPS system. The data run on Velocity Table 0 was reapplied accordingly.

G.3 Problems were encountered in obtaining a satisfactory DQA for velocity casts taken in the vicinity of Southwest Pass as described in section G.1a. At Southwest Pass, the Mississippi River meets the Gulf of Mexico resulting in a surface layer of very low salinity. Approximately 3 to 5 meters below the surface the salinity of the water increases drastically. It is believed that this surface effect compromised the DQA test which is a comparison of readings, obtained at the surface, of the CTD unit and of the hydrometer. Propeller wash and motion of the ship may serve to disturb this fresh water layer, creating pockets of high and low salinity water.

G.4 Pneumatic depth gauges were not used during this survey.

G.5 Sea conditions greater than one meter affected the fathogram, creating a trace of constant peaks and deeps. Launches are not equipped with heave, pitch and roll indicators, so MITCHELL personnel scanned the sea action out of the fathograms and edited the selected soundings accordingly.

G.6 a) The tidal datum for this project is mean lower low water. The operating tide station at Grand Isle, Louisiana (876-1724) served as reference station for predicted tides, and a tide station at East Isles Dernieres (876-2888) was established by ship's personnel as the direct control for datum determination. Predicted tidal data for Grand Isle tides was provided on floppy magnetic disk before the start of the project.

b) The height and time correctors listed below were provided in the Project Instruction for the project area, and applied to the Grand Isle predicted tides to generate an on-line predicted tide table: *APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.*

| HYDROGRAPHIC AREA | TIME CORRECTION | | HEIGHT RATIO |
|--|-----------------|--------------|--------------|
| | High Water | Low Water | |
| East of 089°30.0' W and West of 089°10.0' W | -1 hr 00 min | -1 hr 00 min | * 1.17 |

The tide tables were applied on-line and during processing of sounding data. For a more detailed overview of tidal information refer to Appendix V. *FILED WITH THE ORIGINAL SURVEY RECORDS*

c) No zoning was required for this project.

H. CONTROL STATIONS *SEE ALSO THE EVALUATION REPORT.*

H.1 The horizontal datum for this project is the North American Datum of 1983 (NAD 83).

H.2 The list of Horizontal Control Stations is *APPENDED TO THIS REPORT* located in ~~Appendix III.~~

H.3 Two DGPS reference stations were used to control this survey and are listed below. A NOAA HF "Flyaway" DGPS reference station was established at horizontal control station Muench as the primary beacon, and the USCG New Orleans DGPS beacon was used as a check. Station Muench was established by Coastal Survey Unit, Field Photogrammetry Section, Photogrammetry Branch, in 1989 for a NOAA Ship Whiting project. The Third Order Class I position for station Muench was obtained from the Field Photogrammetry Section and verified by MT MITCHELL personnel using the NOS *MONITOR* program. The position for the USCG New Orleans beacon was published via memo from Hydrographic Surveys Branch on July 16, 1993 and was a B-Order position.

| Reference Station | Latitude | Longitude | Frequency |
|---|------------------------------------|------------------------------------|----------------------------|
| Muench 1989, Grand Isle, LA | 29° 15' 57. ²⁸⁹ 30111"N | 089° 57' 17. ⁸ 39008" W | 2.7745 MHz & 6.9790 MHz |
| <i>ROWL, 1993</i> USCG Beacon, New Orleans, LA | 29° 52' 43. ⁹ 87808"N | 089° 56' 31. ⁴ 38025" W | 293 kHz |
| NOAA Ship MT MITCHELL | Survey: H-10485 | | Page: 12 |

H.4 No horizontal control stations were established by the MT MITCHELL during this survey.

H.5 Refer to the **Electronic Control Report** submitted with this survey for a description of station recovery and verification procedures of station Muench.

H.6 No problems or anomalies were encountered in positioning control of this survey. There were times when thunderstorm activity reduced or dictated station use. Generally, the NOAA HF station at Grand Isle served as the primary control. When the HF station could not be received the launches were forced to use the USCG New Orleans beacon. A table showing which launch used which reference stations is included in section I.6b.

I. HYDROGRAPHIC POSITION CONTROL

I.1 The primary method of sounding position control was Differential Global Positioning System (DGPS).

I.2 The estimated position error did not exceed 15 meters (1.5 mm at the survey scale). On occasion, DGPS correctors would not be received for a few seconds at a time. When this happened HDAPS entered "DR Mode" and began estimations of the vessel's position. If HDAPS is in "DR Mode" for several seconds and a failure to receive DGPS correctors continues, HDAPS forces a fix at the next selected sounding and breaks the survey line, thereby preventing questionable positioning data.

I.3 On each launch there is a DGPS receiver, a beacon receiver for U.S.C.G. differential radiobeacons, and a receiver for our own HF beacon. The units used are as follows:

| <u>VESSEL #</u> | <u>MODEL</u> | <u>S/N</u> | <u>DATES USED</u> |
|-----------------|--------------------------------|-------------|-------------------|
| 2220 | LRD-1 HF Receiver | 205 | 24 AUG - 15 SEPT |
| 2220 | Beacon Receiver | 316 | 24 AUG - 15 SEPT |
| 2220 | Ashtech DGPS Receiver | 700417B1196 | 24 AUG - 15 SEPT |
| 2220 | Ashtech DGPS Receiver | 700417B1182 | 24 AUG - 15 SEPT |
| 2220 | GPS Antenna | 700378A0461 | 24 AUG - 15 SEPT |
| 2220 | GPS Antenna | 700391A0504 | 24 AUG - 15 SEPT |
| 2223 | Ashtech DGPS Receiver | 700417B1197 | 08 JUL - 15 SEPT |
| 2223 | Magnavox MX50R Beacon Receiver | 313 | 08 JUL - 15 SEPT |
| 2223 | LRD HF Beacon Receiver | 204 | 08 JUL - 15 SEPT |
| 2223 | GPS Antenna | 700391A0520 | 08 JUL - 15 SEPT |

I.3 (cont.)

| | | | |
|------|--------------------------------|-------------|------------------|
| 2224 | Ashtech DGPS Receiver | 700417B1190 | 08 JUL - 15 SEPT |
| 2224 | Magnavox MX50R Beacon Receiver | 207 | 08 JUL - 15 SEPT |
| 2224 | LRD HF Beacon Receiver | 206 | 08 JUL - 15 SEPT |
| 2224 | GPS Antenna | 700378A0468 | 08 JUL - 15 SEPT |

I.4 As stated in section H.3, two DGPS reference stations were used: USCG New Orleans, and a NOAA HF Flyaway system at Grand Isle, LA. To ensure EPE's of less than 15 meters the following HDOP_{max}'s were determined using the formula from FPM section 3.4.2:

| <u>Station</u> | <u>ESE</u> | <u>EDE</u> | <u>HDOP</u> |
|------------------|------------|------------|-------------|
| NOAA HF | 4 | 1.17 | 3.6 |
| USCG New Orleans | 4 | 1.54 | 3.5 |

DGPS performance checks were performed daily prior to data collection by comparing positioning of two independent DGPS stations. The inverse distance between the two independent stations' computed positions was computed to ensure it did not exceed the EPE_{max} of 15 meters. Two methods were used. For the "two boats in the water method", both launches departed the ship and brought up HDAPS using different DGPS reference stations. As the launches came together the OIC's simultaneously marked their position and printed it out. The Easting and Northing values from each boat, along with the HDOP and number of satellites were entered into a spreadsheet for computation of position error. The other method, the "two boats in the davit method", is identical, except that the launches are in the davits operating under shore power. In the davits the launches GPS antennae are at a known distance and bearing away; these are taken into consideration in the spreadsheet.

MITCHELL DGPS performance checks were conducted at least once a day using the *SHIPDIM* program. The *OUTLIER.SUM* file from this program is to be forwarded to N/CG241.

A copy of the spreadsheet and formulas, along with a more precise description of performance check techniques, can be found in the **Electronic Control Report**.

I.5 No calibration data is applied to the DGPS raw positioning data.

I.6 a) No unusual methods of operation were employed with the DGPS equipment.

I.6 b) The following table summarizes which launch used which DGPS reference stations each day. The primary control was the NOAA HF beacon.

| <u>DN</u> | <u>2220</u> | <u>2223</u> | <u>2224</u> | <u>Comments</u> |
|-----------|-------------|------------------|------------------|-----------------|
| 189 | --- | HF Fly Away | HF Fly Away | |
| 196 | --- | HF Fly Away | HF / New Orleans | Meteorological |
| 197 | --- | HF Fly Away | HF Fly Away | |
| 198 | --- | HF Fly Away | HF Fly Away | |
| 203 | --- | New Orleans / HF | HF Fly Away | Meteorological |
| 215 | --- | HF Fly Away | HF Fly Away | |
| 216 | --- | New Orleans | HF Fly Away | |
| 217 | --- | HF Fly Away | HF Fly Away | |
| 223 | --- | HF Fly Away | HF Fly Away | |
| 230 | --- | --- | HF Fly Away | |
| 231 | --- | --- | HF Fly Away | |
| 236 | --- | HF / New Orleans | HF / New Orleans | Meteorological |
| 237 | HF Fly Away | HF Fly Away | --- | |
| 238 | New Orleans | --- | --- | Meteorological |
| 239 | --- | HF Fly Away | HF Fly Away | |
| 240 | --- | HF Fly Away | HF Fly Away | |
| 243 | --- | --- | HF Fly Away | |
| 244 | --- | --- | HF Fly Away | |
| 245 | --- | HF Fly Away | HF Fly Away | |
| 254 | HF Fly Away | --- | --- | |
| 255 | HF Fly Away | --- | --- | |
| 258 | New Orleans | HF Fly Away | --- | Meteorological |

c) On several occasions thunderstorms in the vicinity would block the incoming DGPS beacon signal. When this happens, HDAPS immediately starts to DR positions. When the beacon signal was lost for ten seconds or more, data was considered unacceptable, the line was broken and was rerun when good correctors returned. If the signal was lost for only a few seconds, that data was not rejected.

d) No weak signals or poor geometric configurations were observed.

e) No adjustment or systematic errors were discovered.

f) Antenna positions were corrected for offset and layback, and referenced to the position of the DSF-6000N transducer. These correctors were located in the HDAPS Offset table, and applied on-line to the positioning algorithm. MT MITCHELL (VesNo 2220) used Table 1; Launch MI-3 (VesNo 2223) used offset tables 3 and 7; MI-4 (VesNo 2224) used tables 4 and 8. Refer to Separate III for a copy of offset tables used during this survey.

** FILED WITH THE ORIGINAL SURVEY RECORDS*

NOAA Ship MT MITCHELL Survey: H-10485 Page: 15

L.6 g) Offset and layback distances for the A-frame (tow point) were located in the HDAPS Offset table and applied on-line. These offsets, along with the cable length, towfish height, and depth of water, were used by the HDAPS system to compute the position of the towfish. Offset Tables 3 and 4 were used from the beginning of this survey until July 25, 1993 (DN 206). After that day, Tables 7 and 8 were used due to a modification in the launch A-Frame configurations. Refer to Separate III for offset tables.

** FILED WITH THE ORIGINAL SURVEY RECORDS*

J. SHORELINE *SEE ALSO THE EVALUATION REPORT*

Verification of shoreline was not required for this survey. Hydrographic lines were run parallel 10 to 50 meters on the east side of the Southwest Pass Channel jetty. The jetty within the H-10485 survey area consists of rocks, but turns to soil as it extends northeast.

K. CROSSLINES

K.1 Crosslines on survey H-10485 equaled 9.4% of the total main-scheme sounding lines. All crosslines were run at 90 degrees intersections across the north / south main-scheme lines.

K.2 In general, the bottom slope of the Mississippi River Delta is gentle (0.7%). The bottom texture is smooth with depths gradually decreasing towards the southeast amidst interspersed bottom trenches 2 to 10 meters deep.

The main-scheme soundings were run nearly perpendicular to the slope of the bottom resulting in a gradual increase or decrease on the fathometer trace. The crossline soundings were run at 90 degrees to the main-scheme and experienced sharp gradients more frequently than main-scheme lines.

Of the approximate 570 crossline / main-scheme intersections, 98% of the crossline / main-scheme selected soundings agreed within 0.3 meters for depths less than 30 meters and within 1.0 meter for depths greater than 30 meters. The remaining 2% of the crossline / main-scheme soundings were further analyzed as described below. Only the main-scheme hydrography was considered for crossline analysis. Soundings collected during side scan sonar were not compared to the crosslines. *CROSSLINES ARE IN ADEQUATE AGREEMENT*

K.3 An intersection was considered a discrepancy if a crossline selected sounding on or near a main-scheme selected sounding differed by more than the standards stated in Section K.2. The 2% of the crossings which did not meet these standards were investigated further by viewing the fathometer traces at the actual point of intersection between these two lines. In one-half of these cases this investigation proved that an acceptable comparison did occur between the main-scheme and the crossline hydrography.

K.3 (cont.)

The other half of the 2% discrepancies occurred near dramatic changes in depths due to the numerous trenches throughout the delta bottom. Crossline / main-scheme comparisons in the area of steeply sloping trenches is meaningless.

Examination of the fathometer traces in these regions showed an uneven bottom with sharp gradients. Side scan sonar records were also reviewed and revealed trenches. An example of a trench occurs between hydrographic fix numbers 6396.5 - 6396.7, 5727.2 - 5727.3, and side scan sonar fix number 2227³. Other graphic side scan examples include fix numbers 2251.0⁴, 6767.4⁵, and 6772.0⁶.

- 1. 28° 53' 35" N, 89° 24' 35" W
- 2. 28° 53' 35" N, 89° 24' 24" W
- 3. 28° 54' 14" N, 89° 23' 38" W
- 4. 28° 54' 12" N, 89° 23' 19" W
- 5. 28° 53' 27" N, 89° 24' 30" W
- 6. 28° 53' 36" N, 89° 24' 21" W

K.4 The vessel and sounding equipment used to run crosslines was also used in the main-scheme.

L. JUNCTIONS

L.1 Survey H-10485 junctions with survey FE-393SS (1:10,000, August 1993) to the north. *AN ADEQUATE JUNCTION WAS EFFECTED.*

L.2 All soundings in the overlap areas between these surveys agreed within 0.2 meters.

L.3 There were no discrepancies at the junction of the surveys.

L.4 Adjustments are not recommended for the junction of these surveys.

M. COMPARISON WITH PRIOR SURVEYS *SEE ALSO THE EVALUATION REPORT*

M.1 The following survey was used for comparison:

| <u>Registry #</u> | <u>Scale</u> | <u>Date</u> |
|-------------------|--------------|-------------|
| H-6553 | 1:40,000 | 1940 |

M.2 In general, the soundings of H-10485 were 3 meters deeper than the soundings of H-6553. Two exceptions were in the Southwest Pass Channel and the dredge spoils dump site immediately to the west of this channel. These areas were shallower by 7-10 meters. *CONCUR*

M.3 No significant features in the survey area are present on H-6553.

M.4 In general, the trend of the bottom slope of H-6553 agree with the trend of H-10485. The northern half of the dredge spoil dump site was not surveyed because of the frequency of dumping (daily); however, the area that lies south of the current spoil dump site was

M.4 (cont.)

surveyed and was found to be shallower by 10 meters when compared to the survey of 1940. Similarly, the Southwest Pass Channel was shallower by 7 meters. *CONCUR, THE PRESENT SURVEY IS ADEQUATE TO SUPERSEDE THE PREVIOUS SURVEY IN THE COMMON AREA.*

M.5 Comparisons with non-NOS surveys were not conducted.

N. ITEM INVESTIGATION REPORTS

There were six AWOIS items surveyed. AWOIS Items 8364 and 8365 were investigated partially on this survey and partially on FE-393SS.

AWOIS ITEM 8364

State and Locality: Louisiana, Southwest Pass

Charted Position: 28° 54' 48.850" N Position Approximate
089° 22' 24.170" W Search Radius: 3000 meters
Datum: MLLW Reported Depth: 40 feet

Type of Feature: Fishing Vessel

Source: LNM96/70--F/V John Kurt reported sunk in approximate position 28-54-48N, 89-22-24W in 40 feet, unmarked and exact location unknown. Item 12A for OPR-479-RU/HE

Survey Requirements: 200% side scan sonar coverage, diver investigation, salvage documentation

Method of Investigation: A 3000 meter search radius was covered by 200% side scan sonar coverage. Approximately 50% of this search radius was covered by side scan sonar on survey FE-393SS and the rest on this survey.

Results of Investigation: The search radius for AWOIS Item 8364 overlaps the radius for AWOIS Item 8365. There were no significant contacts within the search radius on this survey or on FE-393SS.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

Recommendation: Delete the ^{CHARTED SUNKEN} Submerged Wreck PA at: 28° 54'48.850" N ✓
089° 22' 24.170" W
Concur.

AWOIS ITEM 8365

State and Locality: Louisiana, Southwest Pass

Charted Position: 28° 55' 12.850" N Position Approximate
089° 22' 18.170" W Search Radius: 3000 meters
Datum: MLLW Reported Depth: Unknown

Type of Feature: Fishing Vessel

Source: NM51/65-- F/V Miss Pat reported sunk as a result of collision with large sunken object in approximate position 28-55-12N, 089-22-18W. Presurvey review item 9A for OPR-479-RU/HE.

Survey Requirements: 200% side scan sonar coverage, diver investigation, salvage documentation

Method of Investigation: A 3000 meter search radius was covered by 200% side scan sonar coverage. Approximately 50% of this search radius was covered by side scan sonar on FE-393SS. Shoal waters on FE-393SS prevented running a small portion of the search radius in the NW corner of the circle.

Results of Investigation: The search radius for AWOIS 8365 overlaps the radius for AWOIS Item 8364. There were no significant contacts within the search radius on this survey or on FE-393SS.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

Recommendation: Delete the ^{CHARTED SUNKEN} Submerged Wreck PA at: 28° 55' 12.850" N ✓
089° 22' 18.170" W

CONEDR. THE CHARTING RECOMMENDATION CAN BE FOUND IN THE DESCRIPTIVE REPORT FOR FE-393SS (1993), PAGE 18.

AWOIS 8366

State and Locality: Louisiana, Southwest Pass

Charted Position: 28° 54' 31.850" N Search Radius: 200 meters
089° 22' 04.170" W

Datum: MLLW Reported Depth: Unknown

Type of Feature: Obstruction

Source: H9256WD/71-- OPR-479-RU/HE; NM16/76-- Add obstruction in LAT 28-54-31N, LONG 089-22-04W (from H9256WD/71).

Survey Requirements: 400% side scan sonar coverage, diver investigation, salvage documentation

Method of Investigation: A 200 meter search radius was covered by 400% side scan sonar coverage.

Results of Investigation: No significant contacts within the search radius were found.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

Recommendation: Delete Obstruction from chart. Position: 28° 54' 31.850" N
Concur. 089° 22' 04.170" W

AWOIS 8369

State and Locality: Louisiana, Southwest Pass

Charted Position: 26° 54' 04.850" N Search Radius: 200 meters
089° 25' 42.170" W

Datum: MLLW Reported Depth: 26 feet

Type of Feature: Obstruction

Source: H9256WD/71-- OPR-479-RU/HE; CL1134/71-- NOAA Ship RUDE reports underwater obstruction with a least depth of 26 feet. This is 750 yards north of Item 8370.

LNM69/71-- Underwater Obstruction with a least-depth of 26 feet at MLW reported in LAT 28-54-04N, LONG 089-25-41W.

NM16/76 substitute obstruction symbol without depth for same symbol with depth.

Survey Requirements: 400% side scan sonar coverage, 200 meter search radius, diver investigation, salvage documentation

Method of Investigation: A 200 meter search radius was covered by 400% side scan sonar coverage.

Results of Investigation: The search revealed two items within the radius only 50 meters from the reported AWOIS Item. On DN 244, the contacts were first seen at fix numbers 7372.34 and 7372.46 during 100% side scan sonar coverage. Additional side scan sonar coverage revealed the same objects:

| <u>History:</u> | <u>DN</u> | <u>REF. FIX #'S</u> | <u>ACTIVITY</u> |
|-----------------|-----------|---------------------|-----------------|
| | 244 | 7414.74 | SSS 200% |
| | 245 | 7514.72, 7514.57 | SSS 300% |
| | 245 | 7536.7 | SSS 400% |

Contacts with a shadow were entered into the contact tables; the maximum heights, as calculated by HDAPS, were 0.5 and 0.7 meters.

Since the 300% and 400% side scan sonar lines were run at a range scale of 50 meters and at ninety degrees from each other, further ensonification was not deemed necessary. A Dive Investigation was not conducted because of excessive currents, zero visibility, vessel traffic, and water contamination.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

AWOIS 8369 (cont.)

Recommendation: These items are not considered hazards to navigation.
Delete Obstruction symbol from chart at position: 26° 54' 04.850" N ✓
Concur. 089° 25' 42.170" W

AWOIS 8370

State and Locality: Louisiana, Louisiana, Southwest Pass

Charted Position: 28° 53' 48.860" N Search Radius: 200 meters
089° 25' 42.170" W

Datum: MLLW Reported Depth: 30 feet

Type of Feature: Obstruction

Source: *NOTICE TO MARINERS 8, FEB. 22, 1958*
~~H0256WD/71~~ OPR 479-RU/HE; Obstruction covered 30 feet located in LAT 28-53-48N, LONG 089-25-42W.

Survey Requirements: 400% side scan sonar coverage, 200 meter search radius, diver investigation, salvage documentation

Method of Investigation: A 200 meter search radius was covered by 400% side scan sonar coverage.

Results of Investigation: No significant contacts within the search radius were found.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

Recommendation: Delete "30 OBSTR" from chart at position:
28° 53' 48.860" N ✓
Concur. 089° 25' 42.170" W

AWOIS 8372

State and Locality: Louisiana, Southwest Pass

Charted Position: 28° 53' 30.850" N 3000 meters
089° 23' 36.170" W

Datum: MLLW Reported Depth: 9 fathoms

Type of Feature: Fishing Vessel: *Captain R. J. Sandras*

Source: NM47/67 Fishing Vessel *Captain R. J. Sandras* reported capsized and sunk in 9 fathoms. Wreck is unmarked. OPR-479 (1971) NOAA Ship RUDE / HECK cleared area to 68 feet without locating wreck. Chart inspection 1979: Revised to non-dangerous wreck, PA.

Survey Requirements: 200% side scan sonar coverage, 1000 meter search radius, diver investigation, salvage documentation

Method of Investigation: A 3000 meter search radius was covered by 200% side scan sonar coverage.

Results of Investigation: No significant contacts within the search radius were found.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O.

Recommendation: Delete ^{SUNKEN} Wreck PA from charted position:
CONCUR, 28° 53' 30.850" N ✓
089° 23' 36.170" W

⁸³⁶⁷
AWOIS ITEMS 8371, 8373, 8374 SEE ALSO THE EVALUATION REPORT

These items were not investigated in survey operations since they are within the dikes in Southwest Pass channel. Currents, ship traffic, and water conditions prevented the successful use of side scan sonar equipment in this area. The channel at Southwest Pass is dredged and surveyed regularly and the water depths outside the channel within the dikes decreases rapidly to less than 2 meters preventing launch work. Mr. Fred ^{Shilling} of New Orleans District, Corps of Engineers has stated that they (Corps of Engineers) survey and dredge this area regularly and have not found any obstructions or hazards within the channel area at Southwest Pass. (804) 862-2321

Other Contacts

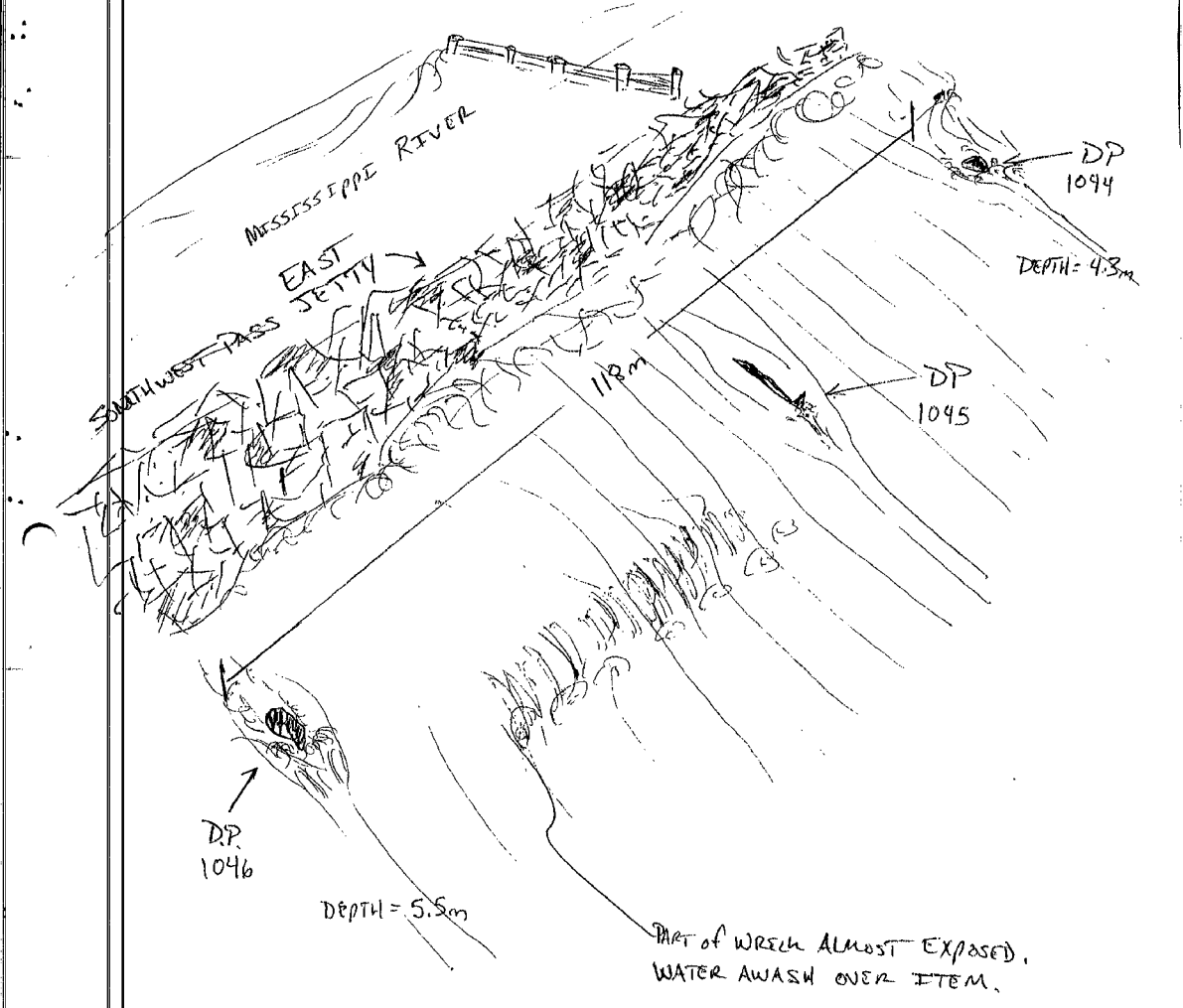
A total of twenty contacts were entered into the HDAPS contact utility program. None of the contacts found were considered to be significant. Each contact was investigated by reviewing both 100% and 200% side scan sonar records covering the area containing the contact. All of the contacts were dismissed as bottom texture features, fish, or solid contact which did not have a significant height off the bottom to warrant charting. CONCUR

New Item

On DN189 a visible wreck (see Sketch N.1) was discovered laying on the east jetty. Detached Positions (Fix Numbers 1044, 1045, and 1046) were taken to accurately determine a vessel length of 118 meters. The wreck appeared to be a metal barge uncovered 0.2 meters at the time of the Detached Positions (Awash corrected to MLLW). It lies parallel with the jetty positioned 15 meters off of the jetty. ^{Surrounding} raw depths ranged from 4.3 to 5.5 meters. Strong currents and jetty rocks did not allow further launch investigation of the wreck.

It is recommended that a Wreck Awash be charted at: 28° 55' 05.863" N ✓
089° 24' 51.853" W
DO NOT CONCUR - SEE THE EVALUATION REPORT

Sketch N.1



O. COMPARISON WITH THE CHART *SEE ALSO THE EVALUATION REPORT*

O.1 The following charts are affected by this survey:

| <u>Chart #</u> | <u>Edition</u> | <u>Date</u> | <u>Scale</u> |
|----------------|----------------|--------------------|--------------|
| 11340 | 55th | September 12, 1992 | 1:458,596 |
| 11360 | 33th | May 9, 1992 | 1:458,596 |
| 11361 | 58th | October 17, 1992 | 1:80,000 |
| 11361* | 59th | July 17, 1993 | 1:80,000 |

Chart 11361 had a new edition released while the survey was conducted. There has been a Notice to Mariners update issued in NM 27, 1993. ~~A copy of this update is included in Section VI of the appendices.~~

O.2 There have been no danger to navigation reports filed for this survey.

O.3 a) Soundings from Chart 11361 were compared to this survey. On average, soundings from this survey were 3.8 meters deeper than the charted depths.

b) General trends depicted on Chart 11361 were in agreement with this survey.

c) There were no hydrographic findings of special note.

d) The project depth for Southwest Pass Channel is 12.2 meters.

e) The north / south section of Southwest Pass Channel was surveyed by running hydrographic survey lines along the left, center, and right range lines. Two additional lines were run 50 meters beyond the left / right range lines parallel to the channel. Crosslines were run for the length of the channel with 50 meter spacing. Channel depths varied but were consistently 4.7 meters deeper than the project depth of 12.2 meters. *CONCERN*

O.4 The following non-sounding features were found in the survey area:

| <u>Item</u> | <u>Designation</u> | <u>DP Fix #</u> | <u>Height</u> | <u>Appearance</u> | <u>Charted</u> | <u>Latitude</u> <i>19.15</i> | <u>Longitude</u> <i>12.63</i> |
|--------------|------------------------|-----------------|---------------|----------------------|----------------|------------------------------|-------------------------------|
| Platform | P.C. S.P-57-A ✓ | 6169 | 35 meters | light, horn | YES | 28° 51' 45.200" N | 089° 24' 00.800" W ✓ |
| Mooring Buoy | --- | 6172 | 1 meter | white w/ red stripes | NO | 28° 54' 48.800" N | 089° 23' 51.200" W ✓ |
| Wellhead | <i>POC</i> SP-41-B-1 ✓ | 6173 | 20 meters | light, horn | YES | 28° 53' 34.300" N | 089° 25' 18.500" W ✓ |
| Wellhead | <i>POC</i> SP-41-A ✓ | 6178 | 30 meters | light, horn | YES | 28° 54' 02.400" N | 089° 24' 40.800" W ✓ |
| Wellhead | POC-SP-42C-1 ✓ | 6179 | 10 meters | light | YES | 28° 54' 30.900" N | 089° 24' 30.000" W ✓ |
| | SL 12967-1 | | | | | <i>28.72</i> | <i>08.84</i> |
| Wellhead | <i>POC</i> SP-42A ✓ | 6181 | 8 meters | light, horn | YES | 28° 54' 36.400" N | 089° 22' 53.400" W ✓ |
| Wellhead | <i>POC</i> SP-42B ✓ | 6183 | 50 meters | light, horn | YES | 28° 54' 08.401" N | 089° 21' 53.998" W ✓ |
| | SL 2554-17 | | | | | <i>08.59</i> | <i>56.94</i> |
| | SL 8431-113 | | | | | | |
| Wellhead | <i>POC</i> SP-42-2 ✓ | 6184 | 10 meters | light, horn | YES | 28° 53' 21.999" N | 089° 22' 53.800" W ✓ |

The platform "Offshore Taurus" was stationed over this wellhead for most of the survey

THE ABOVE WELLHEADS ARE CONSIDERED PLATFORMS
 NOAA Ship MT MITCHELL Survey: H-10485

O.4 (cont.)

Charted features in the survey area are accurately charted. The designations on some wellheads were difficult to read due to weathering; but, of those names that were readable several differed in their leasing identifier. For example, Wellhead "FOC-SP-42-B" was charted as "EDC-SP-42-B." ✓

O.5 No changes to the scale or coverage of the published charts of the survey are recommended.

P. ADEQUACY OF SURVEY *SEE ALSO THE EVALUATION REPORT*

P.1 The H-10485 survey is sufficiently complete to supercede prior surveys. Four AWOIS Items have been resolved on this sheet. AWOIS Items 8364 and 8365 were also resolved with work from this survey and contemporary survey FE-393SS.

P.2 This survey is complete and adequate for the purpose of updating the charted sounding data. *CONCUR*

Q. AIDS TO NAVIGATION

Q.1 The MT MITCHELL conducted correspond^{ENCE} by phone, with the U.S. Coast Guard Station Venice, Louisiana, regarding the fixed aids to navigation discussed below, on October 12, 1993. Detached Positions were taken on all floating aids and navigational aids accessible by survey launch.

Q.2 **Floating Aids** Chart 11361 depicts four floating aids to navigation in the Southwest Pass Channel. A comparison between charted locations and survey locations revealed that all aids are charted within 55 meters of the detached position locations and agree with their respective charted light characteristics. The floating aids serve their intended purpose of marking Southwest Channel limits. *CONCUR*

Non-floating Aids All non-floating aids were investigated and found to adequately serve their intended purpose. If the aid was accessible, a detached position was taken; all others were investigated visually. *CONCUR. FOUR WERE LOCATED.*

All markers and lights were present except for; the starboard (east) "Q R Fl 4s 31ft" fore range marker on Southwest Pass Range A and the "Iso R 6s 50ft '4' Bell PA," which was charted on the east jetty entrance. Chief Crane, the Chief of the Aids-to-Navigation Section at USCG Station Venice reported that contracts have been issued to replace both the range marker and the missing light at their charted positions.

Q.2 (cont.)

The following aids are listed in the current *Light List*:

| Number | Name / Location | Position | Charact. | Height |
|---------------|--------------------------------------|----------------------|-----------------------|---------------|
| 450,12650 | Southwest Pass Entrance Light | 28-54.3N 89-25.7W | Fl W 10s | 85 ft |
| 465,12595 | Southwest Pass Entrance Buoy 'SW' | 28-52.7N 89-25.9W | Mo (A) W Fl W 2.5s | |

Q.3 No additional aids were located during the survey.

Q.4 No bridges, overhead cables or pipelines were within the survey limits.

Q.5 a) No submarine cables crossing to shore were present within the survey limits.

b) No pipelines crossing to shore were present within the survey limits.

c) There were no ferry routes in the survey area.

Q.6 There were no ferry terminals in the survey area.

R. STATISTICS

| | <u>VN 2220</u> | <u>VN 2223</u> | <u>VN 2224</u> | <u>Total</u> |
|--|----------------|----------------|----------------|--------------|
| R.1 a) Number of positions: | 322 | 1763 | 1223 | 3308 |
| b) Lineal nautical miles of SSS/sounding lines: | 56.5 | 152.0 | 137.6 | 346.1 |
| R.2 a) Total square nautical miles of hydrography: | 9.11 | 18.21 | 20.83 | 48.15 |
| b) Total days of production: | 4 | 20 | 19 | 22 |
| c) Detached positions: | 0 | 34 | 21 | 55 |
| d) Bottom Samples | 16 | 26 | 0 | 42 |
| e) Tide stations: | | | | 1 |
| g) Velocity casts: | | | | 5 |

S. MISCELLANEOUS

- S.1 a) No unusual silting was noted during this survey.
- b) All unusual submarine features have been discussed previously.
- c) No anomalous tidal conditions were encountered.

S.1 (cont.)

d) There is a current running in an East-West direction in the project area. The current can be as strong as 2 knots.

e) No magnetic anomalies were encountered during this survey.

S.2 Bottom samples were submitted to the Smithsonian Institution.

T. RECOMMENDATIONS

T.1 No inadequacies have been noted.

T.2 There is no present or planned construction or dredging that will affect results of this survey.

T.3 The hydrography is adequate to update charted soundings. The side scan sonar coverage is adequate to remove items stated within this report. No further investigation of this area is recommended. *Concure*

U. REFERRAL TO REPORTS

Descriptive Report for FE-393SS

MT MITCHELL Electronic Control Report - Project OPR-SK904-MI-93


Sounding Equipment Calibrations and Corrections Report - Project OPR-SK904-MI-93

User Evaluation Report

Coast Pilot Report

SUBMITTAL SHEET
Survey H-10485

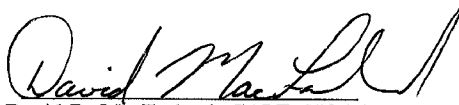
This descriptive report accurately describes all activities pertaining to the control, collection and processing of data for this survey, and is respectfully submitted by:


Ensign Michael P. Soracco, NOAA

Letter of Approval

Registry No. H-10485

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for updating charts and the AWOIS database.



David B. MacFarland, CAPT, NOAA
Commanding Officer
NOAA Ship MT MITCHELL

APPENDIX III
List of Horizontal Control Stations

Station 001 - MUENCH 1989

LAT: 29° 15' 57.²⁸⁹~~30141~~" N
LONG 089° 57' 17.³⁸⁰~~39008~~" W

ANTENNA ELEVATION: -22.555 meters

CARTOGRAPHIC CODE: ²⁵⁰~~890~~

SOURCE: Coastal Survey Unit, from a 1989 Whiting survey.

Station 002 - ^{RowL, 1993}~~United States Coast Guard, English Turn, Louisiana Differential Beacon~~

LAT: 29° 52' 43.87808" N
LONG 089° 56' 31.38205" W

ANTENNA ELEVATION: -23.85 meters

CARTOGRAPHIC CODE: ²⁵⁰~~890~~

SOURCE: Hydrographic Surveys Branch, July 16, 1993.



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: November 16, 1993

MARINE CENTER: Atlantic

HYDROGRAPHIC PROJECT: S-K904E

HYDROGRAPHIC SHEET: H-10485

LOCALITY: Gulf of Mexico, Southwest Pass, Louisiana

TIME PERIOD: July 8 - September 15, 1993

TIDE STATION USED: 876-0958 Southwest Pass, La.
Lat. $28^{\circ} 54.0'N$ Lon. $89^{\circ} 26.0'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 9.07 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.2 ft.

TIDE STATION USED: 876-0551 South Pass, La.
Lat. $28^{\circ} 59.4'N$ Lon. $89^{\circ} 8.4'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.71 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.4 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Southwest Pass, La. (876-0958).
When data is not available for this station, apply a +6 minute time
correction, and a X 0.87 range ratio to all heights using South
Pass, La. (876-0551).

Note: Times are tabulated in Central Standard Time.


CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

H-10485

| Name on Survey | ON CHART NO. 11361 FROM PREVIOUS SURVEY ON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP RING MCNALLY ATLAS U.S. LIGHT LIST | | | | | | | | | | | |
|-----------------------|---|---|---|---|---|---|---|---|---|--|--|----|
| | A | B | C | D | E | F | G | H | K | | | |
| EAST JETTY (cultural) | X | | | | | | | | | | | 1 |
| LOUISIANA (title) | X | | | | | | | | | | | 2 |
| MEXICO, GULF OF | X | | | | | | | | | | | 3 |
| SOUTHWEST PASS | X | | | | | | | | | | | 4 |
| WEST JETTY (cultural) | X | | | | | | | | | | | 5 |
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Approved:

Charles E. Harrison
Chief Geographer - N/CG 2x5

NOV 23 1994

05/31/95

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10485

| | | |
|---------------------------------------|------------|----------------|
| NUMBER OF CONTROL STATIONS | | 2 |
| NUMBER OF POSITIONS | | 4441 |
| NUMBER OF SOUNDINGS | | 34038 |
| | TIME-HOURS | DATE COMPLETED |
| PREPROCESSING EXAMINATION | 202 | 01/18/94 |
| VERIFICATION OF FIELD DATA | 437 | 10/27/94 |
| ELECTRONIC DATA PROCESSING | 91 | |
| QUALITY CONTROL CHECKS | 37 | |
| EVALUATION AND ANALYSIS | 26 | 12/06/94 |
| FINAL INSPECTION | 19 | 11/15/94 |
| TOTAL TIME | 812 | |
| ATLANTIC HYROGRAPHIC SECTION APPROVAL | | 12/31/94 |

**ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT FOR H-10485 (1993)**

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.

H. 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 sheets have 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 0.859 seconds (26.43 meters or 2.64 mm at the scale of the survey) north in latitude, and 0.171 seconds (4.62 meters or 0.46 mm at the scale of the survey) west in longitude.

J. SHORELINE

Shoreline for the present survey originates with the 1:40,000 scale inset on National Ocean Service (NOS) chart 11361 (58th Ed., Oct. 17/92) and was enlarged using a KARGL reflecting projector and applied to the smooth sheet. The shoreline is shown in brown and is for orientation purposes only.

M. COMPARISON WITH PRIOR SURVEYS

1. Hydrographic

H-6174 (1936) 1:20,000

Prior survey H-6174 (1936) is common to the northwest section of the present survey. Present survey soundings generally range from 2 to 5 meters (6 to 16 ft) deeper than prior survey soundings. The following should be noted:

A pile, charted in Latitude 28°54'42"N, Longitude 89°25'06"W, originating with the prior survey was not discussed by the hydrographer. No indication of a pile was detected on the side scan sonagrams. It is recommended that the pile be deleted from the chart.

The differences in depths between the above prior survey, the prior survey discussed in section M. of the Descriptive Report and the present survey can be attributed to natural causes, improved hydrographic surveying methods and equipment, and to subsidence due to the withdrawal of gas and oil from the region.

2. Wiredrag

H-9256WD (1971) 1:20,000

Twenty one uncharted groundings and two charted hangs originate with prior survey H-9256WD (1971). No indication of the groundings were detected on side scan sonargrams during present survey operations. The two charted hangs have been assigned Automated Wreck and Obstruction Information System (AWOIS) numbers and are adequately discussed in section N., pages 21-23, of the Descriptive Report.

There are numerous conflicts between the present survey and the wire drag effective depths on the prior wire drag survey west of Longitude 89°29'00"W in the common area of the present survey. This is attributed to the continuous disposal of dredged material over the years in the charted dump site where these conflicts occur. There are no other conflicts between the present survey depths and the wire drag effective depths shown on the prior wire drag survey.

The present survey is adequate to supersede the prior surveys in the common area.

N. ITEM INVESTIGATIONS

1. During office processing four AWOIS items, #8367, #8371, #8373, and #8374, were discussed during a telephone conversation with Mr. Fred Schilling of the Corps of Engineers (COE), New Orleans, LA, (504) 862-2321. Mr. Schilling stated there were no wrecks or obstructions within the channel at Southwest Pass because the channel in that area is dredged regularly. He also stated there were no visible wrecks along or inside the East Jetty. Because of his familiarity and knowledge of the area, charting recommendations for the following AWOIS items should be noted:

AWOIS item #8367 is a charted visible wreck in Latitude 28°55'00.85"N, Longitude 89°25'00.17"W. It is recommended this feature be deleted from the chart.

AWOIS item #8371 is a charted dangerous sunken wreck in Latitude 28°54'35.85"N, Longitude 89°25'30.17"W. It is recommended this feature be deleted from the chart.

AWOIS item #8373 is a charted submerged piling in Latitude 28°54'30.86"N, Longitude 89°26'24.17"W. This item was not investigated by the hydrographer and is charted outside the present survey limits. It is recommended that the submerged piling be retained as charted.

AWOIS item #8374 is a charted dangerous submerged obstruction, PA in Latitude 28°54'18.35"N, Longitude 89°25'46.17"W. This item is two 20,000 pound sinkers and chain. The item was neither verified nor disproved by the hydrographer and its removal cannot be confirmed at this time. It is recommended that the dangerous submerged obstruction, PA be retained as charted.

2. The hydrographer located an uncharted wreck awash, in Latitude 28°55'06.7"N, Longitude 89°24'52.9"W, 15 meters outside the East Jetty. According to Mr. Fred Schilling, part of the wreck has been cut up and removed. The remainder of the wreck the hydrographer located has been filled in and is now a part of the East Jetty. This wreck is not a danger to navigation. The wreck awash is not shown on the smooth sheet. It is also recommended that the wreck awash not be charted.

O. COMPARISON WITH CHARTS 11361 (58th Ed., Oct. 17/92)

The charted hydrography originates with the previously discussed prior surveys, miscellaneous and unknown sources not readily available. The following should be noted:

1. Charted soundings within the limits of the dump site on the west side of Southwest Pass Channel, south of latitude 28°52'15"N originate with an unknown source. Present survey soundings within this area are in excellent agreement with the charted soundings.

2. The hydrographer located seven platforms within the limits of the present survey. These platforms fall within close proximity of charted platforms. It should be noted that five of the charted company names "EDC" are not the same as noted by the hydrographer. The company name noted for these platforms during present survey operations is "POC". This is in agreement with the company names in the January 1991 *Listing of Offshore Oil, Gas, Mineral and Related Structures*. Refer to the legend shown on the present survey for the charting name of these platforms. It is recommended that the platforms within the common area be retained as charted unless other information indicates otherwise.

3. A charted visible wreck PA in Latitude 28°53'00"N, Longitude 89°26'00"W is shown on the latest edition of NOS chart 11361 (59th ED., July 17/93). Mr. Fred Schilling of the Corp of Engineers, New Orleans, Louisiana, stated that the wreck has been removed. It is recommended that the visible wreck PA be removed from the chart.

The present survey is adequate to supersede the chart in the common area.


P. ADEQUACY OF SURVEY

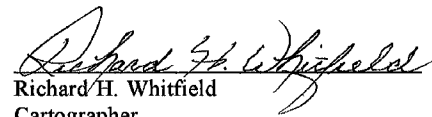
This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

S. MISCELLANEOUS

Chart compilation using the present survey was done by Atlantic Hydrographic Section personnel in Norfolk, Va. Compilation data will be forwarded to Mapping and Charting Division upon completion of survey.

MT MITCHELL Processing Team

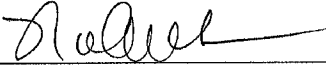

Reginald L. Keene Sr.
Cartographic Technician
Verification of Field Data


Richard H. Whitfield
Cartographer
Evaluation and Analysis

APPROVAL SHEET
H-10485

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 magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Date: April 17, 1995

Norris A. Wike
Cartographer
Atlantic Hydrographic Section

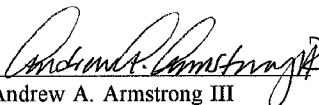
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.



Date: April 17, 1995

Nicholas E. Perugini, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: 

Date: June 7, 1995

Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Branch

