FE393

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

Field No. MI-10-6-93

Registry No. FE-393SS

LOCALITY

State Louisiana

General Locality Gulf of Mexico

Sublocality Southwest Pass

19 93

CHIEF OF PARTY
CAPT D.B. MacFarland

LIBRARY & ARCHIVES

DATE July 27, 1994

FE393

*U.S. GOV. PRINTING OFFICE: 1967---756-980

Master Diagram 1272-2

A/C

CHARTS

CPS
11361
11366
11360
11340
11006 NC

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

FE-393SS

FIELD NO.

MI-10-6-93

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

State: Louisiana

General locality: Gulf of Mexico

Locality: ~~3 nm East of~~ Southwest Pass ~~Entrance, LA~~

Scale: 1:10,000 Date of survey: August 31 - September 16, 1993

Instructions dated: April 6, 1993 Project No.: OPR-S-K904-MI-93

Vessel: NOAA Ship MT MITCHELL

Chief of party: CAPT David B. MacFarland

Surveyed by: J.C. Gardner, N.D. Weston, K.A. Pavelle, M.P.M. Soracco, J.D. Swallow, S.R. Williams, S.A. Shaulis, U.J. 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: XYNETICS 1201 PLOTTER (AHS) Zeta 936 Plotter (FIELD)

Verification by: ATLANTIC HYDROGRAPHIC SECTION PERSONNEL

Soundings in ~~fathoms feet at MLW~~ MLLW: meters

REMARKS: Field Examination of AWOIS item #'s 8364 and 8365.

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

200% side scan sonar coverage

NOTES IN RED WERE MADE DURING OFFICE PROCESSING.

AWOIS/SURF ✓ 7/29/94 SJS ✓

RWW 8/8/94

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

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

SEPTEMBER 1993

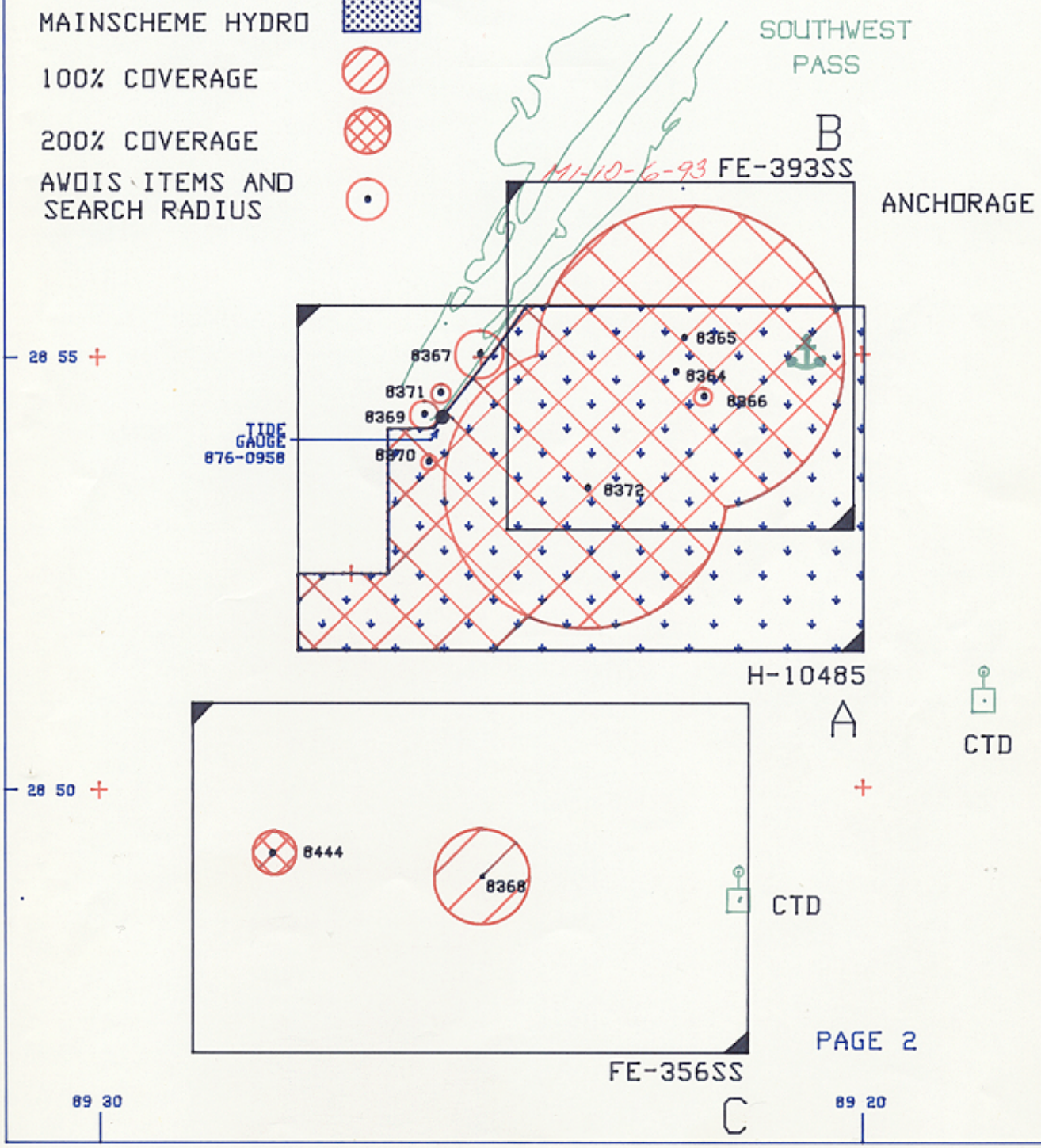
LEGEND:

MAINSCHEME HYDRO

100% COVERAGE

200% COVERAGE

AWOIS ITEMS AND
SEARCH RADIUS



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* FILED WITH THE ORIGINAL FIELD DATA.

A. PROJECT

A.1 This hydrographic survey was conducted in accordance with Project Instructions OPR-S-K904-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. The ship assigned the letters "SW Pass B" to this sheet.

A.5 Project OPR-S-K904-MI-93 responds to concerns expressed by the Mississippi River Pilots Association that the charted anchorage was not accurate. Their experience indicated the water was deeper in the anchorage than shown on Chart 11361. MT MITCHELL was also assigned to resolve several AWOIS items in the area. The survey addresses two AWOIS items which lie in the anchorage.

B. AREA SURVEYED

B.1 This survey is located 3.0 nautical miles E (east) of the southern tip of Southwest Pass Entrance, Southern Louisiana Coast. Sheet FE-393SS junctions with sheet H-10485 to the south at Lat. 28° 55.~~40~~48N. Approximately 50% of the search radius for AWOIS items 8364 and 8365 are covered on sheet FE-393SS and the other 50% on sheet H-10485.

The primary traffic in the area are freighters, tankers, oil rig tenders, tug and barge traffic, and small shrimp trawling vessels. The traffic consists of both deep and shallow draft vessels.

B.2 The PRESENT SURVEY area is delineated to the north and south by latitudes 28° 5~~7~~6' ~~20~~40" N and 28° ~~52~~55' ~~46~~48" N respectively, and to the east and west by longitudes 089° 20' 14.7" W and 089° 24' ~~54~~53" W respectively. Only the search radii for AWOIS items 8364 and 8365 were surveyed; they were covered with 200% side scan coverage. These AWOIS items exist on both survey H-10485, "SW Pass A", and this sheet. Approximately one half of their search radii were

B.2 (cont'd)
covered with 200% side scan from H-10485 and one half from this survey. The charted positions and search radii for the AWOIS items on this sheet are as follows:

Item	Charted Position	Search Radius
AWOIS 8364	28° 54' 48.85"N 089° 22' 24.17"W	3000 meters
AWOIS 8365	28° 55' 12.85"N 089° 22' 19.17"W	3000 meters

B.3 Data acquisition began on August 31, 1993 (DN 243) and concluded on September 16, 1993 (DN 259).

C. SURVEY VESSELS

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

VESSEL	ELECTRONIC DATA PROCESSING NUMBER	PRIMARY FUNCTION
JENSEN LAUNCH 1017 (MI-3)	2223	Hydrography/Side Scan Operations
JENSEN LAUNCH 1002 (MI-4)	2224	Hydrography/Side Scan Operations
MT MITCHELL	2220	CTD Casts
BOSTON WHALER (MI-1)	N/A	Tide Gage Support

C.2 The Jensen launches, 1002 and 1017, did not employ any unusual vessel configurations.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

D.1 Hydrographic Data and Processing System (HDAPS) software was used to gather and process the project data. The component versions are listed below in Table D.1.

Table D.1: Applied HDAPS Software Versions

Program Name	Version	Installation Date (1993)
AUTOST	3.01	17 May
BACKUP	2.00	23 July
BASELINE	1.14	23 July
BIGABST	2.05	23 July
BIGAUTOST	No Version Listed	23 July
BLKEDIT	2.02	23 July
CARTO	2.09	15 Aug
CONTACT	2.09	15 Aug
CONVERT	3.54	23 July
DAS_SURV	6.42	15 Aug
DIAGNOSE	3.03	23 July
DISK_UTIL	1.00	23 July
DP	2.14	23 July
EXCESS	4.11	23 July
FILESYS	3.10	15 Aug
GRAFEDIT	1.04	23 July
HIPSTICK	1.01	23 July
HPRAZ	1.26	23 July
INSTALL	4.02	23 July
INVERSE	2.01	23 July
LISTDATA	1.02	23 July
LOADNEW	2.05	15 Aug
LSTAWOIS	3.03	23 July
MAINMENU	1.10	15 Aug
MAN_DATA	2.01	23 July

Table D.1: Applied HDAPS Software Versions (Cont'd)

Program Name	Version	Installation Date
NEWPOST	6.01	23 July
PLOTALL	2.11	23 July
POINT	2.10	23 July
PREDICT	2.01	23 July
PRESURV	7.04	15 Aug
PRINTOUT	4.03	23 July
QUICK	2.04	28 July
RAMSAVER	1.02	25 July
REAPPLY	2.03	23 July
RECOMP	2.02	23 July
REFTIDE2	1.00	28 July
SCANNER	1.00	23 July
SELPRINT	2.03	23 July
SYMBOLS	2.00	15 Aug
ZOOMEDIT	2.12	23 July

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) 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 either Launch MI-3 or Launch MI-4 (VesNo 2223 and 2224). The following list shows the equipment serial numbers and corresponding dates used for each boat:

E.1 (cont.)

Vessel Number	Equipment Type	Serial Number	Dates Used
2223	Recorder	016672	Aug 31 - Sep 16, 1993
2223	Towfish	016673	Aug 31 - Sep 16, 1993
2224	Recorder	016669	Aug 31 - Sep 16, 1993
2224	Towfish	016700	Aug 31 - Sep 16, 1993

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 this entire survey.

E.4 a) In sufficiently deep water the 100 meter range scale was used for main scheme coverage. On the shoal areas of the sheet (under 10 meters water depth) the 75, 50 and 25 meter range scales were used.

Line spacing for main scheme coverage was usually 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 meter range scale, a 120 meter line spacing for the 75 meter range scale, 70 meter line spacing for the 50 meter range scale and 20 meter line spacing for the 25 meter range scale.

E.4 b) Daily opening and closing confidence checks were obtained either by towing the side scan sonar past the anchor of a nearby oil rig, or by towing it past the pipes going to one of the nearby well heads.

E.4 c) Two hundred percent side scan sonar coverage was obtained over all AWOIS search areas except in the extremely shallow area near the river jetty. Side scan coverage was carried inshore until the water became less than 3 meters deep. The operational limitations of the side scan sonar prevented further investigation into waters shoaler than 3 meters.

The side scan sonar lines were run on a bearing of 045° and 225° throughout this survey due to the orientation of the contours. The second 100% side scan sonar coverage was run parallel to the first 100% coverage because of the relatively steep sloping bottom in the area.

E.4 d) There is quite a bit of "noise" on the side scan traces. On several occasions schools of fish were observed both in the water and on the trace. The reflection of the patches of Sargasso weed floating on the surface appeared as large black blotches on the sonar record. Other vessels approaching created turbulence in the water resulting from their wakes, restricting side scan visibility through those areas. Whenever we felt we could not

see through the noise data was rejected and the lines run again. We are confident that any

E.4 d) (cont.)
accepted data with noise still affords full swath width visibility. Additional interference was introduced by the currents and the extremely shallow waters. There was not any significant variability in the salinity and temperature in the area.

E.4 e) The side scan sonars were deployed from the sterns of both launches during the entire survey period.

E.5 Any contact thought to be significant was entered into the contact tables. Once 200% coverage was achieved the contact tables were compared to see which contacts were rediscovered. Based on rediscovery and shadow heights, all of the contacts were judged to require no further investigation.

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. Contacts were selected if (1) an object with a connecting shadow was detected on the sonar trace, and (2) the shadow indicated an object with significant height above the bottom.

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:

Vessel Number	Manufacturer's Serial Number	Dates Used
2223	B051N	Aug 31 - Sep 16, 1993
2224	B047N	Aug 31 - Sep 16, 1993

F.2 No other sounding equipment was used on this survey.

F.3 No faults were found in the DSF 6000 recorder.

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

G.1.a.1) 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 m 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 cast 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 14 is accurate.

All data were processed using *VELOCITY* version 2.00 and *CAT* version 2.0 software. The computed velocity correctors were entered into the HDAPS sound velocity tables and applied on-line.

G.1.a.2) Sound velocity correctors applied to this survey were obtained on the dates and positions listed in Table G.1.A.2.

Table G.1.A.2: CTD Sounding Correction Casts

Cast No	Date	Latitude (N)	Longitude (W)	HDAPS Table	Applied to Day No.
14	24 Aug 93	28° 48.45'	089° 21.50'	14	243
16	8 Sept 93	28° 47.30'	089° 22.20'	17	251-259

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 launch on DN's 209, 240, 254 and 255. Results are as follows:

VN	S/N	Corrected Lead Line Depth (m)	Corrected Digital Depth (m)	Δd (m)
2223	A122N	15.4	15.5	-0.1
2223	A122N	9.3	9.1	0.2
2223	B051N	7.9	7.9	0.0
2224	B047N	7.1	7.3	-0.2
2224	B047N	8.6	8.7	-0.1
2224	B047N	7.2	7.2	0.0

Conversations with cartographer Rick Whitfield of the Hydrographic Survey Section (N/CG2441) helped us determine that these comparisons are within accuracy requirements.

Daily bar checks were attempted on each launch. A comparison of digital and analog readings was also done at times. Strong current and rough weather conditions at the working grounds prohibited dependable bar checks. As the weather improved the bar-checks became more reliable.

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). *
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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. 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 the static and dynamic draft determinations.

h) Neither launch is equipped with a heave, roll and pitch indicator.

G.2 The HDAPS program "Reapply" was frequently used for data from the first day of each leg. Velocity casts were performed at the start of each leg. On that first day the launches ran on velocity table 0, and on the appropriate one thereafter. Once the new

G.2 **(cont'd)** HDAPS velocity table became available the data was reapplied correspondingly.

G.3 No need for special sounding correctors exists.

G.4 Pneumatic depth gages were not used.

G.5 Occasionally, 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. To compensate for this effect, the sea action was scanned out and the selected soundings were edited by survey personnel aboard MT MITCHELL.

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 installed at Southwest Pass entrance light (876-0958) 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 Southwest Pass 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		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 please refer to Appendix V. FILED WITH THE ORIGINAL FIELD RECORDS

c) No zoning is 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 located in Appendix III. *
* APPENDED TO THIS REPORT

H.3 Three DGPS reference stations were used to control this survey. These are listed below. The position for the USCG Galveston beacon was provided by Hydrographic Surveys Branch on April 12, 1992 and is a Second Order Class I position. The position for the

H.3 (cont.)
USCG New Orleans beacon was published via memo from Hydrographic Surveys Branch on July 16, 1993 and is a B Order position. 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.

Reference Station	Latitude	Longitude	Frequency
~~USCG Beacon~~, Galveston, TX GPS	29° 19' 45.09171" N	094° 44' 10.48430" W	296 kHz
~~USCG Beacon, New Orleans, LA~~ (B Order) 1993	29° 52' 43.~~87808~~ 894 "N	089° 56' 31.~~38025~~ 344 " W	293 kHz
Muench 1989, ~~Grand Isle, LA~~	29° 15' 57.~~30111~~ .289 "N	089° 57' 17.~~39008~~ .380 " W	2.7745 MHz & 6.9790 MHz

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 three independent DGPS stations available for use. There were times when thunderstorm activity reduced or dictated which station could be used. In general, the NOAA HF station at Grand Isle served as the primary control. When a failure of the HF receiver occurred the launches were forced to use the USCG Galveston beacon. The USCG New Orleans beacon was used only as a backup when both NOAA HF and USCG Galveston correctors were not available. 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 At no time in this survey did the estimated position error consistently 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 happens HDAPS goes into "DR Mode". Only when this occurred for 10 seconds or more, and when course steered was uncertain, did we reject 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:

I.3 (cont.)

VESSEL #	MODEL	S/N	DATES USED
2223	Ashtech DGPS Receiver	700417B1197	Aug 31 - Sep 16
2223	Magnavox MX50R Beacon Receiver	313	Aug 31 - Sep 16
2223	LRD HF Beacon Receiver	204	Aug 31 - Sep 16
2223	GPS Antenna	700391A0520	Aug 31 - Sep 16
2224	Ashtech DGPS Receiver	700417B1190	Aug 31 - Sep 16
2224	Magnavox MX50R Beacon Receiver	207	Aug 31 - Sep 16
2224	LRD HF Beacon Receiver	206	Aug 31 - Sep 16
2224	GPS Antenna	700378A0468	Aug 31 - Sep 16

I.4 As stated in section H.3, three DGPS reference stations were used: USCG Galveston, 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:

Station	ESE	EDE	HDOP
NOAA HF	4	1.17	3.6
USCG Galveston	4	5.15	2.3
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 a known bearing and distance away; these are taken into consideration in the spreadsheet.

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.

I.6 b) (cont.)

DN	2223	2224	Comments
243	HF	-	
251	HF	HF	
254	HF	HF	
255	HF	HF	
258	HF	HF	
259	New Orleans	HF	Weather

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, and the OIC felt that the course was steady through the period, that data would not be rejected.

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

e) No systematic errors were noted.

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. Launch MI-3 (VesNo 2223) used offset table 3; MI-4 (VesNo 2224) used table 4. Refer to Separate III* for a copy of offset tables used during this survey.

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. For stern-tow configuration offset tables 3 and 4 were used. Refer to Separate III* for offset tables.

J. SHORELINE

a) No shoreline is present within the limits of the AWOIS search radii.

K. CROSSLINES

Crosslines were not used for this AWOIS item investigation.

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L. JUNCTIONS

a) Survey FE-393SS junctions with Survey H-10485 (1:10,000 July 1993) to the south.

b) All soundings in the junction area agree to within two tenths of a meter.

c) There were no discrepancies at the junction of the surveys.

d) Adjustments are not recommended for the junction of these two surveys.

M. COMPARISON WITH PRIOR SURVEYS

SEE THE EVALUATION REPORT FOR THE FOLLOWING DISCUSSION DOES NOT APPLY TO THIS SURVEY

M.1 The following surveys serve as a basis for charted depths in the survey area:

Registry #	Scale	Date
H-6154	1:40,000	1936
H-6155	1:40,000	1936

H-6155 was not included in the project instructions as a relevant survey, and hence was not available for comparison.

M.2 Soundings from H-6154 were compared to observed depths. Almost all soundings from this survey are deeper than those from H-6154. On average the observed depths are 1.1 meters deeper.

M.3 No significant features in the survey area are present on H-6154.

M.4 The general area is approximately 1.1 meters deeper than the 1936 depths. The deepening is more apparent in the southern, deeper waters. Depths in the shoaler area are roughly 0.8 meters deeper than soundings from H-6154, while they are as much as 2.5 meters deeper in the Southern area.

M.5 There are no contemporary non-NOS surveys in this area.

N. ITEM INVESTIGATION REPORTS

There were two AWOIS items in the survey area. Descriptions are as follows:

AWOIS 8364 SEE THE DESCRIPTIVE REPORT FOR H-10485 (1993)

State and Locality: Louisiana, Southwest Pass

Charted Position: 28-54-48.85N 089-22-24.17W Position Approximate

Datum: MLLW Reported Depth: Unknown

Type of Feature: F/V John Kurt reported sunk and submerged.

Source: LNM 96/70 -- Reported sunk in approx. position Lat. 28-~~55-30~~ 54-48N, Long. ~~90-33-42~~ 89-22-24W in 40 feet. Unmarked and exact location unknown.

Survey Requirements: Visual investigation, 200% side scan sonar coverage, 3000 meter search radius, 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 H-10485 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 H-10485.

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O. A danger to navigation report has not been filed for this AWOIS item.

Recommendation: Delete the Submerged Wreck PA at from the chart. Lat. 28-54-48.85N Long. 089-22-24.17W

AWOIS 8365

State and Locality: Louisiana, Southwest Pass.

Charted Position: 28/55/12.85 N 089/22/~~19.70~~ 18.17 W Position Approximate

Datum: MLLW Reported Depth: Unknown

Type of Feature: F/V Miss Pat reported sunk and submerged.

Source: NM 51/65 -- F/V Miss Pat reported sunk as a result of a collision with a large sunken object in approx. position Lat. 28-55-12N, Long. 89-22-18W.

Survey Requirements: 200% side scan sonar coverage, 3000 meter search radius, diver investigation, salvage documentation

Method of Investigation: A 3000 meter search radius was covered by 200% side scan sonar coverage. Shoal waters prevented running a small portion of the search radius in the NW corner of the circle (See section E.4.c). Approximately 50% of this search radius was covered by side scan sonar on H-10485 and the rest on this survey.

Results of Investigation: The search radius for AWOIS 8365 overlaps the radius for AWOIS 8364. There were no significant contacts within the search radius on this survey or on H-10485. CONCUR

Comparison with Prior Surveys: Refer to section M.

Comparison with Chart: Refer to section O. A danger to navigation report has not been filed for this AWOIS item.

Recommendation: Delete the ~~Submerged~~ DANGEROUS SUNKEN Wreck PA at Lat. 28-55-~~12~~12.85N
from the chart. CONCUR Long. 089-22-~~18~~18.17W

Other Contacts

There were no other significant side scan sonar contacts developed within the survey area.

O. COMPARISON WITH THE CHART SEE ALSO THE EVALUATION REPORT

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

Chart #	Edition	Date	Scale
11340	55	Sep 12, 1992	1:458,596
11360	33	May 09, 1992	1:456,394
11361	59	July 17, 1993	1:80,000

There have been no notice to mariner updates from the above charts affecting this survey area.

O.2 a) The investigation revealed no dangers to navigation.

O.2 **b)** No danger to navigation reports were filed.

O.3 **a)** Soundings from chart 11361 were compared to depths within the boundaries of the survey area. Almost all soundings from this survey are deeper than those from H-6154. *

O.3 **b)** The general trend of soundings on this survey show a deepening trend over H-6154 * by an average of 1.1 meters deeper. * CHARTED SOUNDINGS WITHIN THE COMMON AREA OF THE PRESENT SURVEY DO NOT ORIGINATE WITH PRIOR SURVEY H-6154 (1936).

O.3 **c)** No other hydrographic findings are noted other than those in section N.

O.3 **d)** No maintained channels lie within this survey area.

O.3 **e)** No fairway or traffic schemes lie within the survey area.

O.4 The following non-sounding features were present in and around the survey area. Their characterisitcs are listed below:

Item	Designation	DP Fix #	Height	Charted	Lat./Long.
PLATFORM ~~Well head~~	None	1354	2.5 (m)	No	28-56-33.5N, 089-23-16.0W
~~Well head~~ PLATFORM	None	1355	2.0 (m)	No	28-56-32.6N, 089-23-16.9W

These two features are not displayed on chart 11361 and need to be charted. CONCUR

O.5 No changes to the scale or coverage of the published charts of the survey are recommended. We discovered that the when referring to positions for navigation use, all local people use the offshore oil and gas leasing block coordinate system created by the Bureau of Land Management. This includes oil rig and platform tenders, Department of Minerals, and the U.S. Coast Guard. Either the overprinting of block designations on the charts, or two sided charts with block descriptions on one side, will increase the suitability of the charts for the local community.

P. ADEQUACY OF SURVEY SEE ALSO THE EVALUATION REPORT

P.1 All AWOIS items reported on this sheet have been resolved.

P.2 This survey is complete and adequate for the purpose of updating the wrecks, obstructions and fixed objects in the survey area, as well as the updating of the charted sounding data.

Q. AIDS TO NAVIGATION

Q.1 The MT MITCHELL conducted no correspondence with the U.S. Coast Guard

Q.1 (cont.)
regarding floating aids to navigation.

Q.2 There were no aids to navigation located within the survey boundaries.

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

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

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

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

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

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

R. STATISTICS

		VN 2223	VN 2224	Total
R.1	**a)** Number of positions:	573	473	1046
	b) Lineal nautical miles of SSS/sounding lines:	100.0	91.61	191.61
R.2	**a)** Total square nautical miles of hydrography:	6.19	6.78	12.97
	b) Total days of production:	6	4	6
	c) Detached positions:	2	0	2
	e) Tide stations:			1
	g) Velocity casts:			2
	j) Dives:	0	0	0

No bottom samples, current stations, magnetic stations or XBT drops were established or performed.

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.

d) During the period that the survey was conducted, a current ran Northeast to Southwest through the project area. The current was wind driven and poses no danger.

e) No magnetic anomalies were encountered during this survey.

S.2 No 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 This survey should supersede all other prior AWOIS reports. No further investigation of this area is recommended.

U. REFERRAL TO REPORTS

Descriptive Report to accompany H-10485 for additional information on AWOIS items # 8364 and 8365.

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 FE-393SS

This descriptive report accurately describes all activities pertaining to the control, collection and processing of data for this survey.

Respectfully Submitted,

Neil D. Weston
LT(jg), NOAA

APPENDIX III
List of Horizontal Control Stations

Station 001 - MUENCH 1989

LAT: 29° 15' 57.~~30111~~ 289" N
LONG089° 57' 17.~~39008~~ 380" W ANTENNA ELEVATION: -22.555 meters
CARTOGRAPHIC CODE: ~~890~~ 250

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~~ 894" N
LONG089° 56' 31.~~38205~~ 344" W ANTENNA ELEVATION: -23.85 meters
CARTOGRAPHIC CODE: ~~890~~ 250

SOURCE: Hydrographic Surveys Branch, July 16, 1993.

Station 003 - GALVESTON, TX GPS, 1993 ~~United States Coast Guard, Galveston, Texas Differential Beacon~~

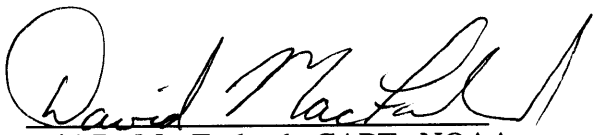
LAT: 29° 19' 45.09171" N
LONG094° 44' 10.48430" W ANTENNA ELEVATION: -20.154 meters
CARTOGRAPHIC CODE: ~~890~~ 250

SOURCE: Hydrographic Surveys Branch, April 12, 1992.

Letter of Approval

Registry No. FE-393SS

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 the AWOIS database.



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

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: FE-393SS

LOCALITY: Gulf of Mexico, Southwest Pass, Louisiana

TIME PERIOD: August 31 - September 16, 1993

TIDE STATION USED: 876-0958 Southwest Pass, La.
Lat. 28° 54.0'N Lon. 89° 26.0'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 9.07 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.2 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Southwest Pass, La. (876-0958).

Note: Times are tabulated in Central Standard Time.

William M. Hubbard

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

FE-393 SS

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 11361	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
LOUISIANA (title)	X									1
MEXICO, GULF OF (title)	X									2
SOUTHWEST PASS (title)	X									3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
				Approved:						15
										16
				Charles L. Harrington						17
				Chief Geographer NOS/CG2x5						18
				JUN 20 1994						19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

07/19/94

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-393SS

NUMBER OF CONTROL STATIONS	3
NUMBER OF POSITIONS	1006
NUMBER OF SOUNDINGS	7293

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	91	02/18/94
VERIFICATION OF FIELD DATA	174	06/15/94
ELECTRONIC DATA PROCESSING	35	
QUALITY CONTROL CHECKS	47	
EVALUATION AND ANALYSIS	43	07/11/94
FINAL INSPECTION	4	07/07/94
TOTAL TIME	394	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 07/15/94

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
N/CG244-31-94

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 Branch
N/CG243, Station 6815, SSMC3
1315 East-West Highway
Silver Spring, MD 20910

DATE FORWARDED
20 July 1994

NUMBER OF PACKAGES
2 Boxes, 1 Tube

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.

FE-393SS

Louisiana, Gulf of Mexico, Southwest Pass

1 Tube Containing:
- 1 Original Smooth sheet for FE-393SS
- 1 **Original Descriptive Report for FE-391SS**

1 Box Containing:
- 1 Envelope containing original Separates removed from the original Descriptive Report
- 1 Envelope containing original Appendices removed from the original D.R.
- 2 Accordian files with field printouts, fathograms and sonargrams for: VESNO 2223 for JDs: 243, 251, 254, 255, 258, and 259

1 Box Containing:
- 1 Cahier containing final Sounding by Depth Listing, Control File, and Listing of Cartographic Features
- 1 CD Tape for **FE-393SS** and **FE-384SS** (no L-file) (FE-384SS will be shipped separately)
- 1 Accordian file with field printouts, fathograms and sonargramsfor: VESNO 2224 for JDs: 251, 254, 255, and 258

FROM: *(Signature)* R. H. Whitfield
Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT FOR FE-393SS (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 0.852 seconds (26.22 meters or 2.62 mm at the scale of the survey) north in latitude, and 0.174 seconds (4.70 meters or 0.47 mm at the scale of the survey) west in longitude.

M. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

There were no hydrographic prior surveys available at the time of the survey for comparison.

b. Wire Drag

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

Prior wire drag survey H-9256WD (1971) is common to a small portion of the southeast part of the present survey. There are no conflicts between the effective depths on the prior survey and the present survey depths.

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

O. COMPARISON WITH CHARTS 11340 (55th Ed., Sep. 12/92)
11360 (33rd Ed., May 09/92)
11361 (59th Ed., Jul. 17/93)

1. Approximately one half of the present survey falls within the limits of a charted spoil area west of a line from Latitude 28°57'00"N, Longitude 89°21'30"W to Latitude 28°55'00"N, Longitude 89°23'15"W. Present survey depths within the limits of the spoil range from 2^9 meters to 11^6 meters (9 to 38 feet). The charted hydrography east of the spoil area within the common area of the present survey ranges from 3 to 5 meters (10 to 16 feet) shoaler than the present survey. This can be attributed to subsidence due to the

withdrawal of gas and oil from the region

2. The hydrographer located two uncharted platforms (lighted) in Latitude 28°56'33.5"N, Longitude 89°23'16.0"W and Latitude 28°56'32.6"N, Longitude 89°23'16.9"W. The platforms are in close proximity to a charted platform, in Latitude 28°56'32.0"N, Longitude 89°23'16.0"W, listed as CHEVRON CH SP 40 E6 on page 69 of the January 1991 *Listing of Offshore Oil, Gas, Mineral and Related Structures.* It is recommended that the charted platform be deleted and the two uncharted platforms (lighted) be charted as shown on the present survey unless other information indicates otherwise.

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

P. ADEQUACY OF SURVEY

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

MT MITCHELL Processing Team

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

Richard H. Whitfield
Cartographer
Evaluation and Analysis

APPROVAL SHEET
FE-393SS

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.

Leroy G. Cram Date: 07/11/94

Leroy G. Cram
Supervisory 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.

Nicholas E. Perugini Date: 7/15/94

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

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Final Approval:

Approved: J. Austin Yeager Date: Aug. 8, 1994

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. _____

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
13366	8/25/94	Dan Glock	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 2
13340	10/18/94	Mark D. Griffin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 75
11361	1/12/95	John Barker	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 73 PS
11360	5-3-95	L. Stannard	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 48 - 3 EA MM
11006	6-19-95	L. Stannard	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 39 - 3-E AKM
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES CAGS FORM 8352 WHICH MAY BE USED