H10915

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic/ Multibeam/Side Scan Sonar

Field No. Sheet "O"

Registry No. H10915

LOCALITY

State Texas

General Locality Gulf of Mexico

Locality 34 NM Southwest of Sabine Pass

1999 - 2000

CHIEF OF PARTY
Jana L. DaSilva, OIC

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DATE Sept 20, 2001

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H10915

FIELD NO. Sheet O

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: Texas

General locality: Gulf of Mexico

Locality: 34 Miles Southwest of Sabine Pass

Scale: 1:20,000 Date of survey: August 19, 1999 - February 16, 2000

Instructions dated: July 16, 1999 Project No.: OPR-K171-KR

Vessel: M/V Geodetic Surveyor

Chief of party: Jana L. DaSilva (Fugro GeoServices, Inc.)

Surveyed by: M. Taylor, C. Reed, C. Pastor, J. Walling, K. Gabik, M. White, D. Barron, J. Fuselier, W. Smith, M. Blaes, S. Belaire, K. Deshotel, B. Gans L. Wootan, S. St. Julien, J. Guillory, M. Duos, E. Whitley, M. Harris, J. Boudreaux, K. Swart, G. Collins, J. Loftin, T. Trahan

Soundings taken by echo sounder, hand lead, pole: Reson 8101 Seabat Multibeam

Graphic record scaled by: Survey Personnel

Graphic record checked by: Survey Personnel

Protracted by: Automated plot by: HP 2500CP (Office) HP DESIGNJET 750C (Field)

Verification by: Atlantic Hydrographic Branch

Soundings in fathoms feet at MLW MLLW

REMARKS: Contract Number : 50 -DGNC -8-90026

Contractor Name: Fugro GeoServices, Inc. (formerly John E. Chance & Associates, Inc.)

Contractor Address: 200 Dulles Drive Lafayette, LA 70506

Time Reference: UTC

Horizotal Datum: NAD83

Positioning: John E. Chance Starfix

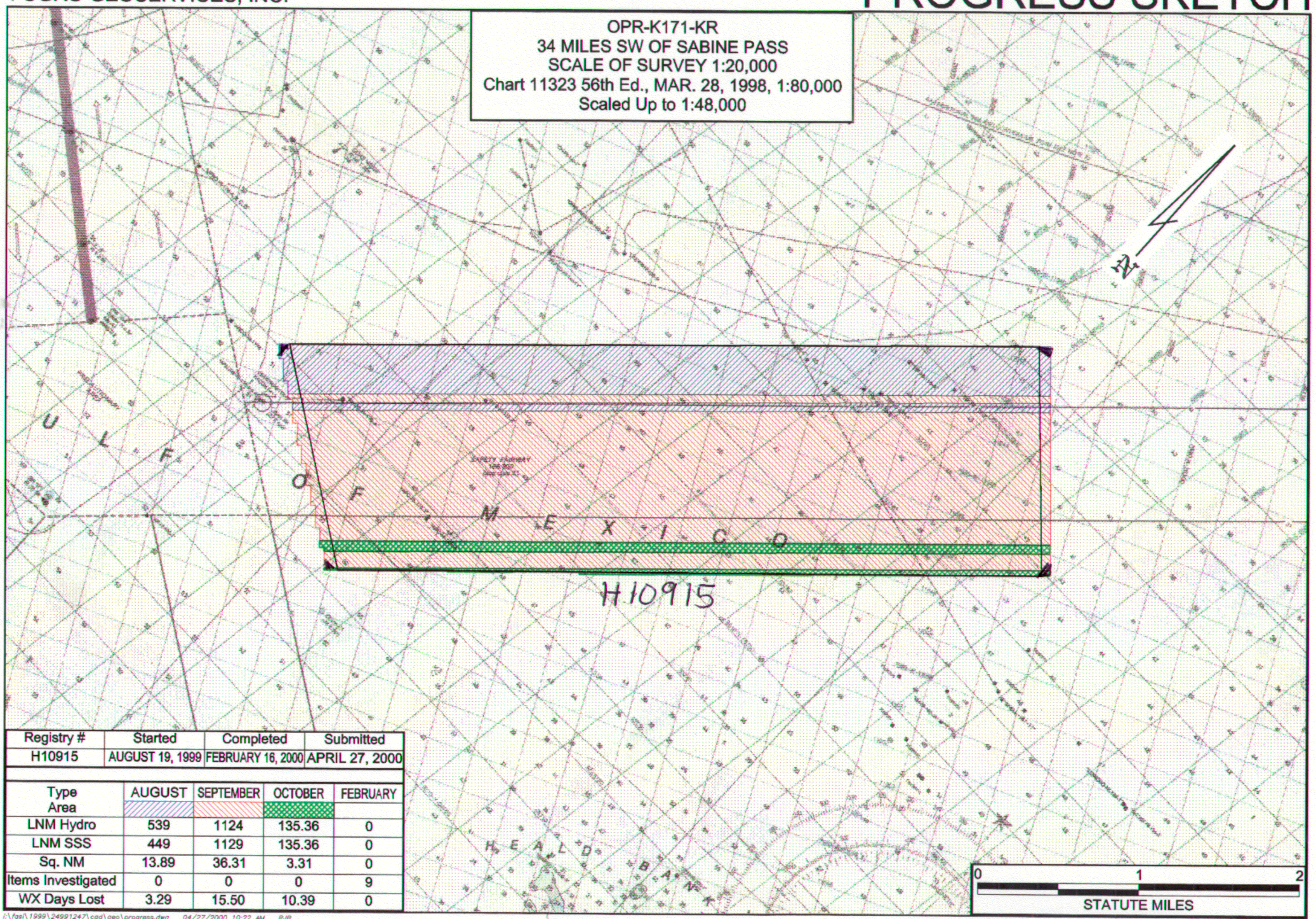
Handwritten notes in the Descriptive Report were made during office processing.

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

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

FUGRO GEOSERVICES, INC.

PROGRESS SKETCH



Registry #	Started	Completed	Submitted
H10915	AUGUST 19, 1999	FEBRUARY 16, 2000	APRIL 27, 2000

Type / Area	AUGUST	SEPTEMBER	OCTOBER	FEBRUARY
LNM Hydro	539	1124	135.36	0
LNM SSS	449	1129	135.36	0
Sq. NM	13.89	36.31	3.31	0
Items Investigated	0	0	0	9
WX Days Lost	3.29	15.50	10.39	0

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Fugro GeoServices, Inc. (FGSI) and John E. Chance & Associates, Inc. guarantee only that the survey data collected by FGSI, delivered to NOAA under Contract 50-DGNC-8-90026, reflect the state of the seafloor in existence on the day and time of data acquisition.

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*Data filed with field records.

Descriptive Report to Accompany Hydrographic Survey H10915

Sheet O
Scale 1:20,000
August, 1999 - February, 2000
Fugro GeoServices, Inc.
M/V Geodetic Surveyor/ M/V Universal Surveyor
Chief of Party: Jana L. DaSilva, Fugro GeoServices, Inc.

A. PROJECT

Project number: OPR-K171-KR
Contract number: 50-DGNC-8-90026
Sheet letter: O
Registry number: H10915

Dates of Instructions:

20 November, 1997 Original Instructions
05 January, 1998 Modification of Contract
04 March, 1998 Modification of Contract
07 April, 1998 Modification of Contract
28 April, 1998 Modification of Contract
18 June, 1998 Modification of Contract
01 February, 1999 Modification of Task Order
24 March, 1999 Modification of Contract
16 June, 1999 Modification of Contract
22 June, 1999 Modification of Contract
16 July, 1999 Award of Task Order #5
04 February, 2000 Award of Task Order #7

See Appendix F for copies of modifications to Contract 50-DGNC-8-90026.

Purpose: The purpose of this contract is to provide NOAA with modern, accurate hydrographic data acquired using shallow water multibeam and side scan sonar technology with which to update the nautical charts of the assigned area. Numerous obstructions have been reported in this area. Side scan sonar shall be used to locate these obstructions and a shallow-water multibeam sonar system shall be used to determine the least depth over the obstructions as well as determine the depths over the entire project area.

B. AREA SURVEYED

The survey area is located in the Gulf of Mexico, 34 miles southwest of Sabine Pass, Texas. The survey area is somewhat regular in shape. The four outer corners follow:

Latitude	Longitude
29° 20' 36.4" N	094° 11' 25.1"W
29° 17' 38.4" N	094° 08' 14.8"W
29° 09' 14.4" N	094° 18' 49.9"W
29° 11' 36.2" N	094° 22' 37.6"W

The dates of data acquisition are:

M/V Geodetic Surveyor

08/19/99 - 08/22/99 JD 231 - 234
08/25/99 - 09/01/99 JD 237 - 244
09/05/99 - 09/13/99 JD 248 - 256
09/18/99 - 09/21/99 JD 261 - 264
09/24/99 - 09/28/99 JD 267 - 271
10/12/99 - 10/16/99 JD 285 – 289

M/V Universal Surveyor

02/08/00 - 02/10/00 JD 039 – 041
02/14/00 - 02/16/00 JD 045 – 047

The survey that covers Sheet O consists of 126 parallel northeast-southwest primary tracklines spaced approximately 60 meters apart, 20 northwest-southeast crosslines spaced approximately 1,250 meters apart, 50 lines to investigate man-made structures, 40 investigation lines, and 12 infill lines. Survey lines plotted on the enclosed maps are post-plotted as surveyed. Survey lines were run with distinct starting and ending points. Each individual line contains fix marks, or shot points, which were logged every 150 meters. This methodology of line numbering and annotating allows for quick comparison between adjacent lines. This is extremely useful in the comparison between side scan sonar lines.

The survey grid, running both side scan sonar and multibeam at 60-meter line spacing, was designed to provide 200 percent lateral coverage with the sonar system and a maximum 50 meter gap between the portion of the multibeam swath meeting specifications. The survey grid was designed to meet or exceed side scan sonar and multibeam specifications. Infill lines were run to provide coverage in areas where the specifications were not met. All aspects of the fieldwork were carried out to meet or exceed NOAA specifications.

The following line numbering conventions were used during this survey:

Lines 1 – 126 are the primary northeast-southwest lines. Both side scan sonar and multibeam data were collected.

Lines 127 – 146 are the primary northwest-southeast crosslines. Only multibeam was collected on these lines.

Lines 500 - 547 are run at headings of 138° and 318° to provide additional data coverage around man-made obstructions in the survey area. Both side scan sonar and multibeam date were collected.

Reruns of primary lines or lines continued after a line break will be prefaced by a 1 or 2 in three digit numbers (e.g. the rerun of line 103 would be 1103; the rerun of 1103 would be 2103). Two digit line numbers, with the exception of line 11, would be prefaced with 10 or 20 (e.g. the rerun of line 64 would be 1064; the rerun of 1064 would be 2064, etc.). Line 11 is annotated as 11A, 11B, 11C and 11D, after the first, second, third, and fourth line breaks, respectively. All lines that were broken overlapped at least three shot points with the previous segment.

Infill lines begin with 5000. Reruns and line breaks of infill lines add 1000 for each rerun (e.g. a reruns of line 5113 would be 6113 and 7113).

Please see the geophysical logs, which contain detailed information pertaining to the data collected during the project, for additional documentation. The geophysical logs are found in Separate 1, which is included with the survey data.

C. SURVEY VESSELS

M/V Geodetic Surveyor

The *M/V Geodetic Surveyor* (ID # 637873) was used for primary and infill multibeam, single beam, side scan sonar, and sound velocity data collection. All data acquisition, post-processing, and plotting hardware was mounted in the vessel operations room.

Basic vessel descriptors follow:

Length (LOA):	122'
Beam:	30'
Draft:	7'-10'
Gross Tonnage:	97
Power:	1,300 Hp

Additional vessel specifications for the *M/V Geodetic Surveyor* are in * Separate 2 (filed with survey data).

The Reson 8101 Seabat multibeam transducer was mounted on the starboard side of the vessel at the end of a 9-inch diameter swivel pole. The pole mount and the alignment bracket were welded to the ship. The pole was located 9.14 m from the stern of the vessel. The one MHz model DF3200 Odom Hydrographics single beam transducer was mounted 0.33-m starboard of the multibeam transducer on the same pole. The navigation antenna location was assigned to the center of the multibeam transducer (see vessel diagram on page 5).

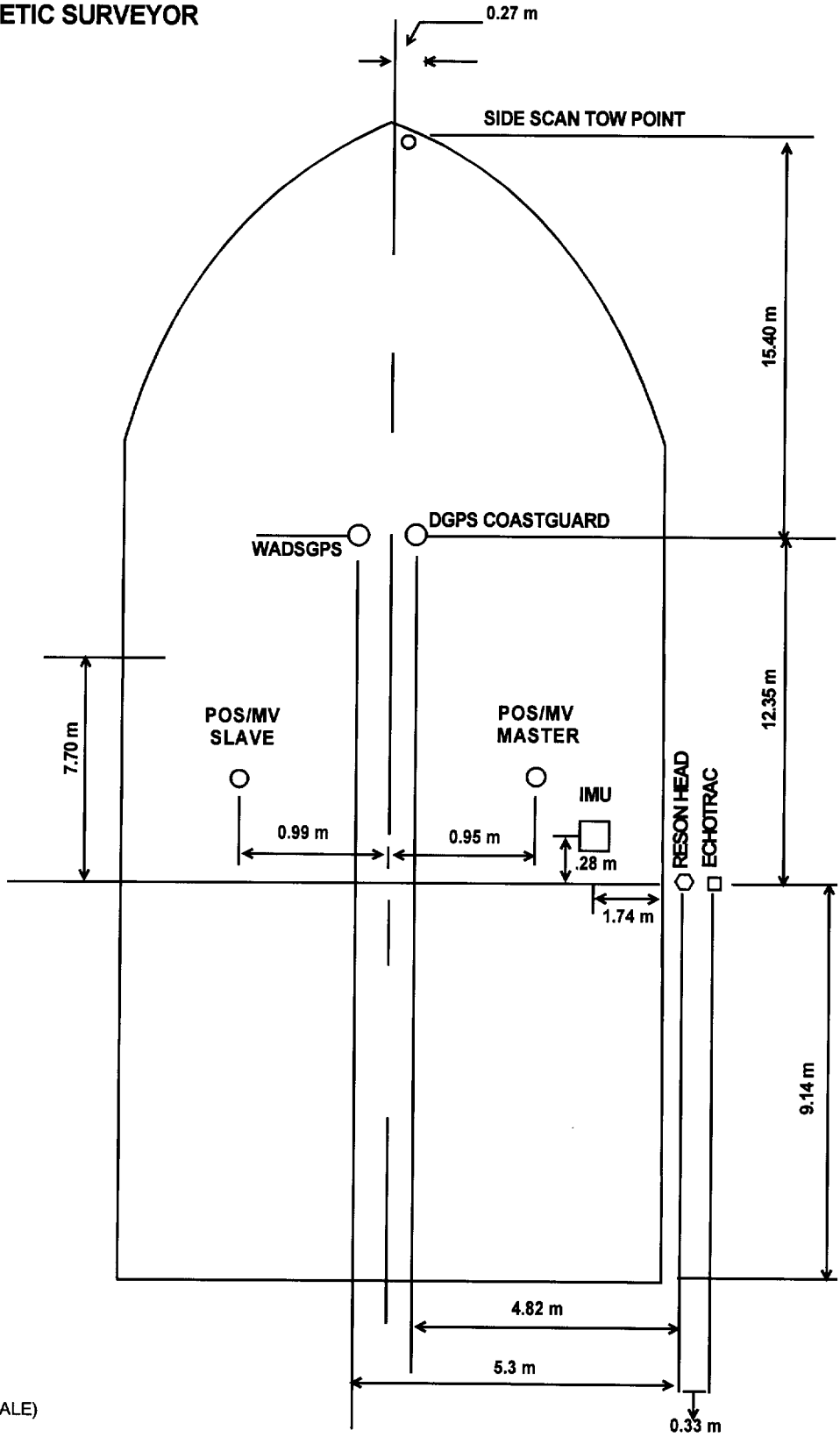
The side scan sonar was towed from the bow of the vessel from August 19, 1999 to 0848 on October 14, 1999. From 1014 on October 14, 1999 to the end of survey operations, the side scan sonar was towed from the stern of the vessel. An armored cable deployed manually was used for the bow configuration (see vessel diagram on page 6). An armored cable deployed from a hydraulic winch was used for the stern configuration.

When the Reson 8101 Seabat was originally mounted on the M/V Geodetic Surveyor, the multibeam transducer head was cocked with the port side up. The displacement was not visually evident. When the patch test determined that the transducer was cocked, a decision was made to collect data because all beams were correctly positioned. The outer port beams, however, produce very noisy data due to the increased water column and increased angle of incidence with the seafloor.

To decrease editing time, the outer port beams were automatically cut prior to processing. Beams 000-002 and 094-100 were automatically clipped on every line due to their historic nature of being noisy. In addition, other beams were clipped during processing. The exact number of beams varies with local conditions, such as sea state, velocity, and current. It is the responsibility of the data processor to edit these beams from the data set. See * Separate 4 (filed with the survey data) for multibeam processing log.

* Data Filed with field records.

M/V GEODETIC SURVEYOR



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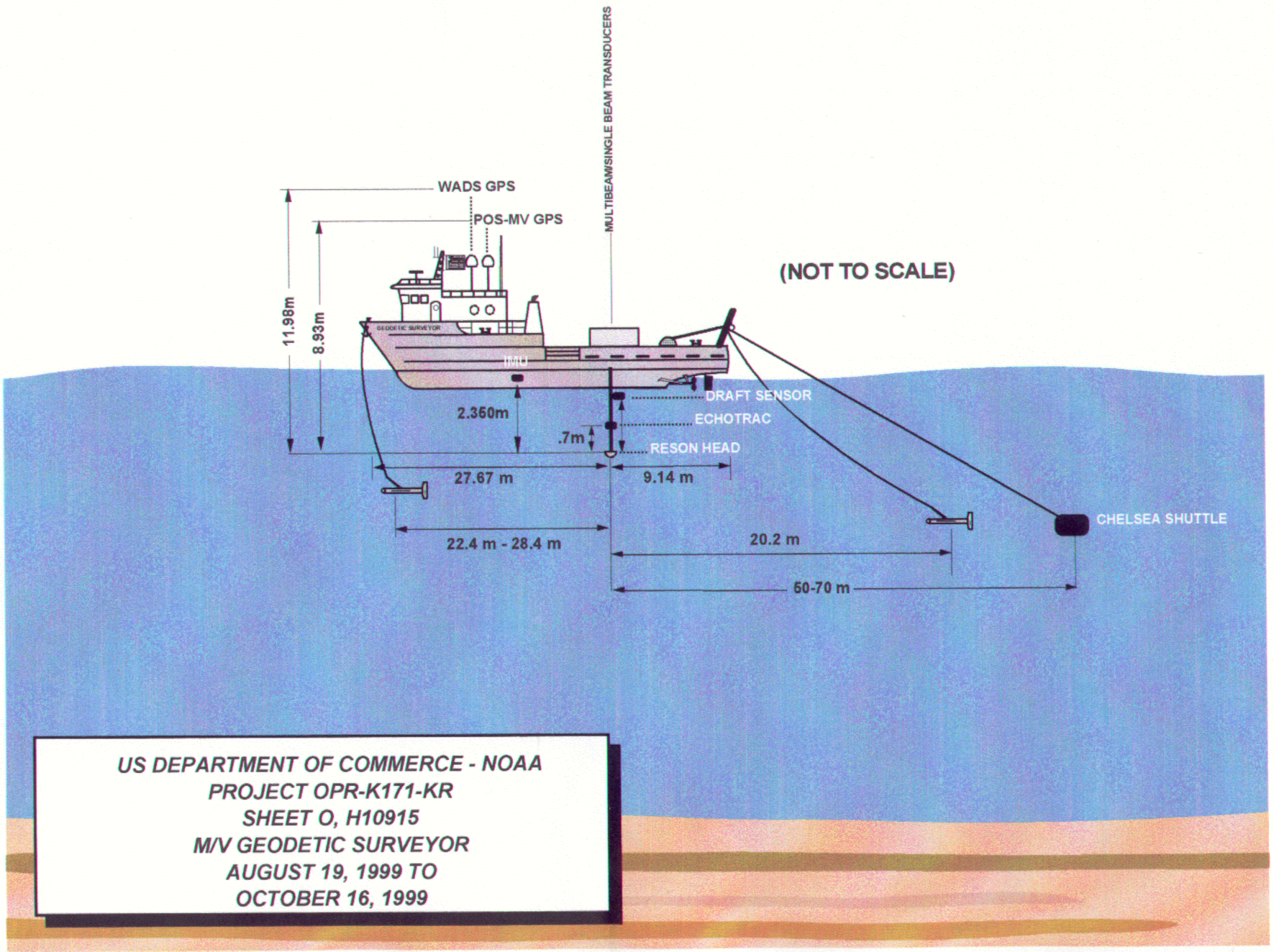


US DEPARTMENT OF COMMERCE - NOAA
PROJECT OPR-K171-KR
SHEET O, H10915
M/V GEODETIC SURVEYOR
AUGUST 19, 1999 TO
OCTOBER 16, 1999

M/V Universal Surveyor

The *M/V Universal Surveyor* (ID # 627510) was used for side scan infill, multibeam and side scan sonar investigation data collection. All side scan sonar, single beam depth sounder, and velocity data acquisition and plotting hardware was mounted in the vessel operations room. All multibeam data acquisition, post-processing, and plotting hardware was mounted in an operations van on the back deck of the survey vessel.

The Reson 8101 Seabat multibeam transducer was mounted on the starboard side of the vessel at the end of a 9-inch diameter swivel pole. The pole mount and the alignment bracket were welded to the ship. The pole was located 8.57 m from the stern of the vessel. The model DF3200 Odom Hydrographics single beam transducer was mounted 0.32-m starboard of the multibeam transducer on the same pole. The navigation antenna location was assigned to the center of the multibeam transducer (see vessel diagram on page 8).

The side scan sonar tow position was located at the center of the aft "A" frame. An armored cable, remotely operated with a hydraulic winch, was used for stern deployment (see vessel diagram on page 9).

Basic vessel descriptors follow:

Length (LOA):	122'
Beam:	30'
Draft:	7'-10'
Gross Tonnage:	94
Power:	1,200 Hp

Additional vessel specifications for the *M/V Universal Surveyor* are in *Separate 2 (filed with survey data).

Coordinate Systems

The Reson 8101 Seabat and the IP400 acquisition and processing software have similar coordinate systems. They refer to the Positive X value to the Starboard, the Positive Y value to the to the bow, and the Positive Z upward. This coordinate system differs from the POS/MV coordinate system, which designates Positive X to the bow, Positive Y to starboard, and Positive Z down. The importance of these differences must be stressed to avoid confusion when entering offset values (see page 10 for related figure).

The following vessel configuration values are based upon the CARIS coordinate system: Y is Positive to the bow, X is Positive Starboard, Z is Positive Down.

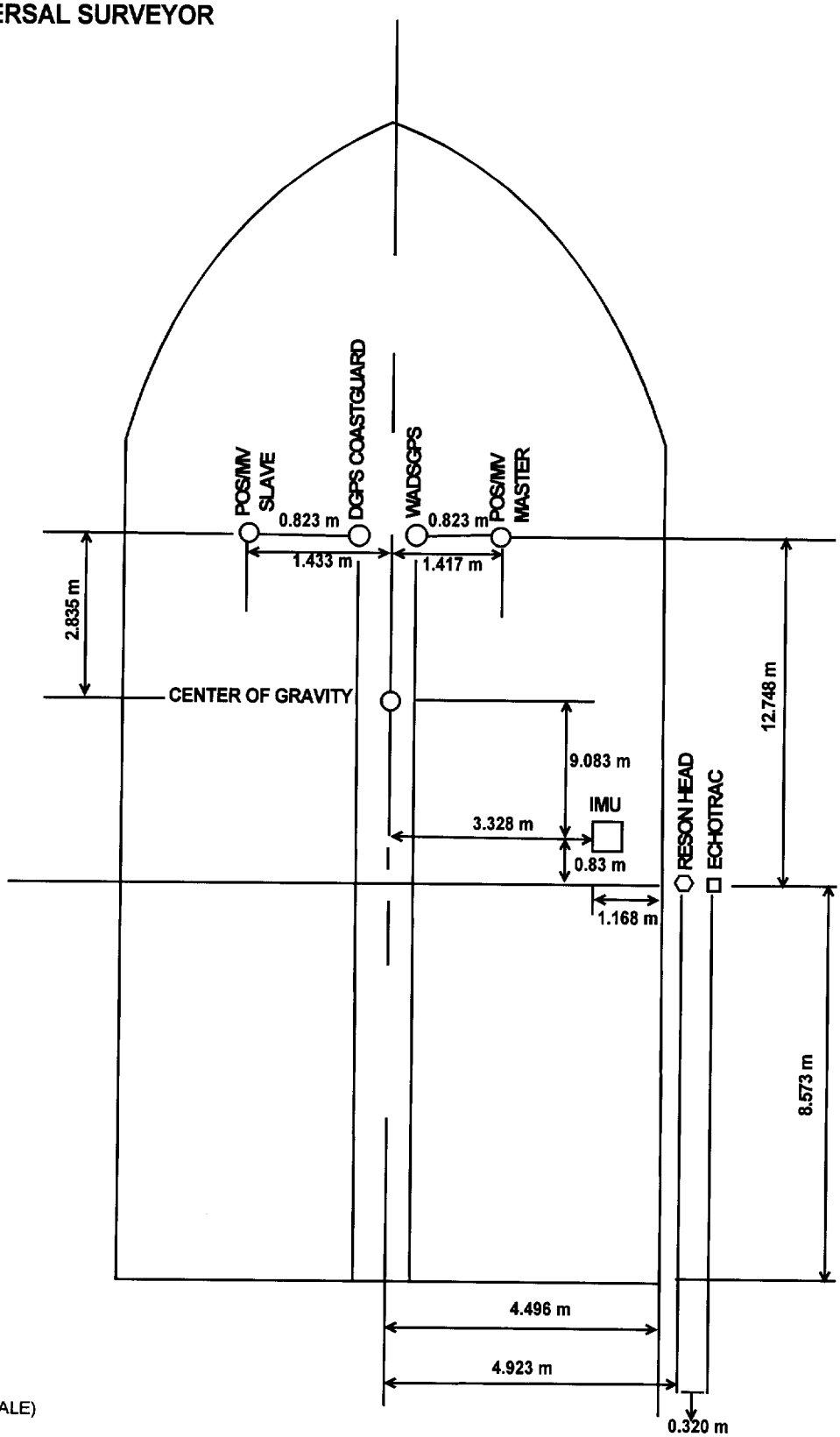
M/V Geodetic Surveyor

- The vessel attitude is relative to the POS IMU. The POS IMU relative to the CG in meters is:
  X= +2.80 Y= -12.28 Z= +1.66

- The vessel position is relative to the Seabat transducer unless noted in the geophysical logs (found in *Separate 1). The Seabat transducer relative to the CG in meters is:
- X= +5.06 Y= -12.56 Z= +4.04

* Data filed with field records.

M/V UNIVERSAL SURVEYOR



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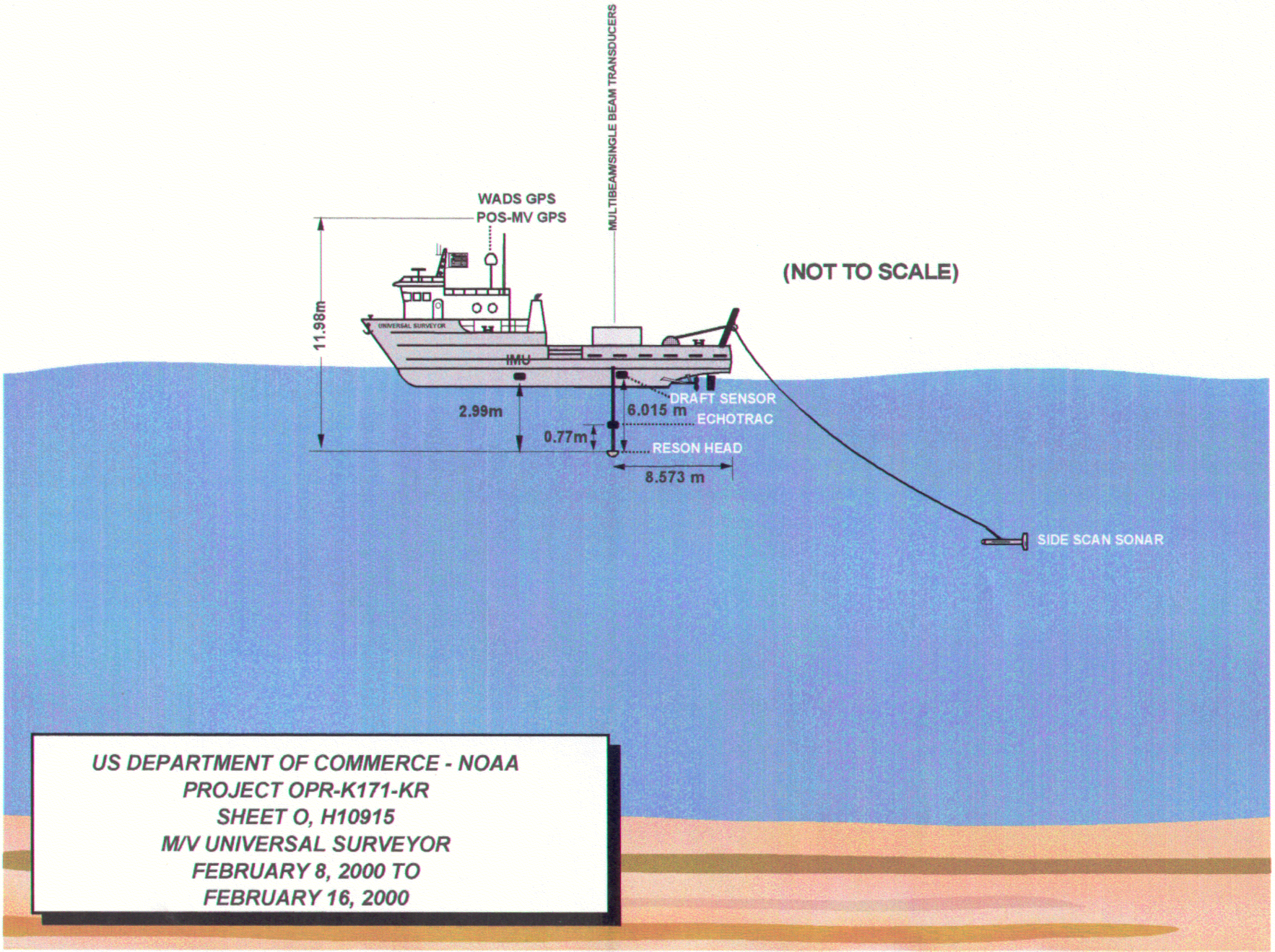
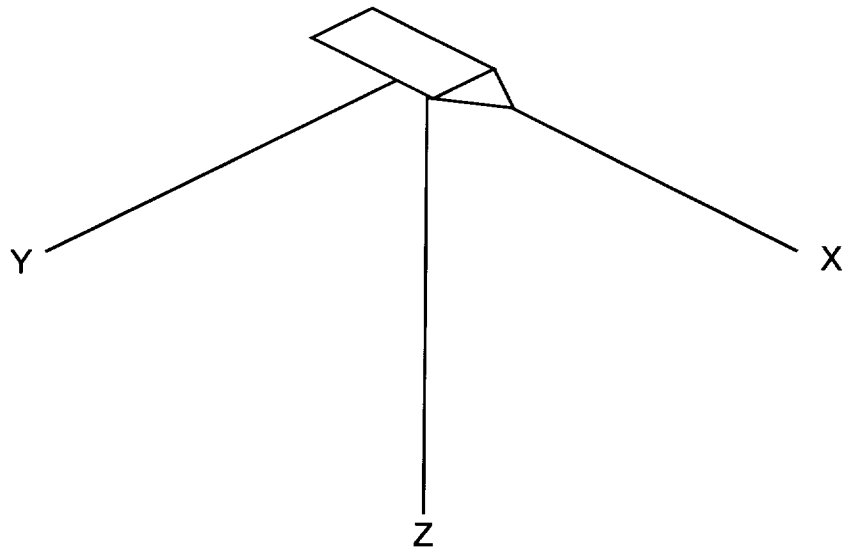


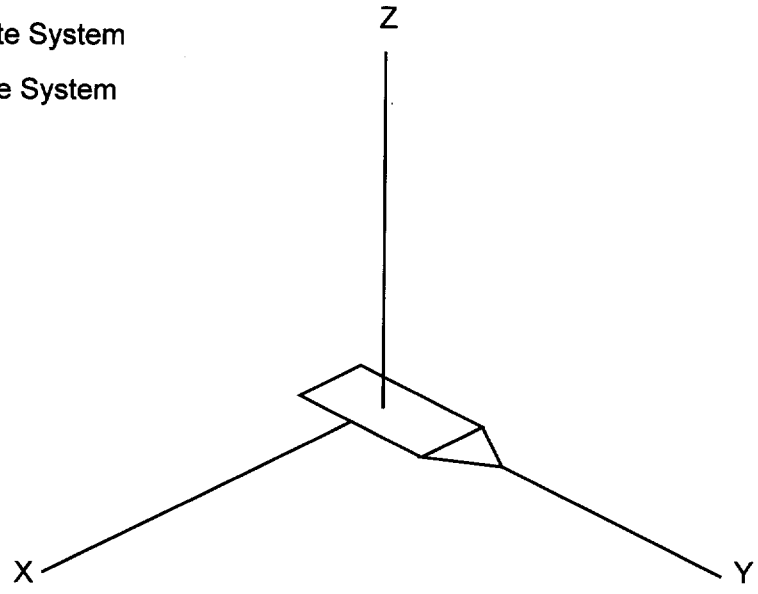
US DEPARTMENT OF COMMERCE - NOAA
PROJECT OPR-K171-KR
SHEET O, H10915
M/V UNIVERSAL SURVEYOR
FEBRUARY 8, 2000 TO
FEBRUARY 16, 2000

POS/MV Coordinate System



Reson Coordinate System

IP400 Coordinate System



- The waterline relative to CG is: Z= +0.15

M/V Universal Surveyor

- The vessel attitude is relative to the POS IMU. The POS IMU relative to the CG in meters is:
  X= +3.328 Y= -9.083 Z= +1.71

- The vessel position is relative to the Seabat transducer unless noted in the geophysical logs (found in Separate 1). The Seabat transducer relative to the CG in meters is:
- X= +4.923 Y= -9.913 Z= +4.70

The waterline relative to CG is: Z= +0.821

The navigation center for the multibeam data provided to NOAA is the Reson transducer head. Therefore, the XTF data are already corrected for offsets, and a zero (0) value should be entered into CARIS.

D. AUTOMATED DATA ACQUISITION AND PROCESSING- See also Evaluation Report

Hardware/Software:

The software used for data acquisition and processing was an "in-house" FUGRO software package entitled IP400, version 6.01.01. This software possesses a data acquisition package (DAP), a post processing package (PPROC), a charting package (CHART), and a digital terrain-modeling package (DTM). The software is UNIX driven and runs on GML scripts, IP400 programs, and basic UNIX scripts. TerraModel version 9.4 software packages by Spectra Precision Software, in Atlanta, Georgia were used to manually edit the data of noise spikes.

Hardware used for data acquisition and processing consisted of three Pentium II 333MHz Unix computers with 384 megabytes of memory, and 18 gigabyte hard drives for data transfer and storage applications. These computers were used for data acquisition, processing, charting, and quality control measures while onboard the vessel. Three (3) external 9 gig hard drives were also used for data storage.

The IP400 software was used to apply velocity corrections to the data. The software referenced the velocity file for the line, and applied the corrections accordingly.

Processing Methods:

The multibeam data were collected utilizing a Reson 8101 Multibeam transducer and monitored on the Reson Console during data acquisition. During collection, the data were brought into the IP400 software, stored on a Data Acquisition computer (DAP) in raw format, and time tagged. The data were then sent to the Post Processing Computer (PPROC) via a network connection (see *Appendix I for additional information).

Once the data were transcribed to the PPROC computer, processing of the raw data occurred. Immediately following processing, the data were reduced using the ReduceXYZ IP400 script, and were then imported into TerraModel for manual cleaning and for a visual check of data quality (see *Appendix I for additional information).

*Data Filed with field records.

Cleaning Filters:

During data processing, the data were sent through several cleaning filters within the IP400 software as a means of cleaning "noise" and "out-of-specification" beams out of the data. To achieve data cleaning, the batching routine used the Clipscanpolar, Tracescan, Three-point trace, and Four-point trace IP400 scripts that used predetermined parameters that were manually inserted (see*Appendix I for additional information).

E. SIDE SCAN SONAR

From August 19, 1999 (DN 231) to September 6, 1999 (DN 249), side scan sonar operations were conducted using two DataSonics Model SIS-1500 side scan sonars in TTV-195 tow bodies, two EPC model GSP1086-2 thermal paper recorders, a DataSonics model DSP-661 processing computer running Triton/Elics digital acquisition software version 4.32, and an Exabyte model 960 8-mm tape drive. From September 6, 1999 (DN 249) to October 16, 1999 (DN 289), side scan sonar operations were conducted using two Edgetech Model 272-TD side scan sonars, an Edgetech 260TH side scan sonar console, a DataSonics model DSP-661 processing computer running Triton/Elics digital acquisition software version 4.32, and an Exabyte model 960 8-mm tape drive. Investigation side scan sonar data were collected with a DataSonics Model SIS-1500 side scan sonar one EPC model GSP1086-2 thermal paper recorder, a DataSonics model DSP-661 processing computer running Triton/Elics digital acquisition software version 4.32, and an Exabyte model 960 8-mm tape drive.

M/V Geodetic Surveyor

The side scan sonar was towed from the bow from August 19, 1999 (DN 231) to 08:48 on October 14, 1999 (DN 287). At 10:14 on October 14, 1999 (DN 287), the side scan sonar was moved to the stern of the vessel, where it remained until October 16, 1999 (DN 289). The navigation center was assigned to the center of the multibeam transducer pole for all side scan sonar work. The setback information specified in the geophysical logs*(Separate 1) is based upon a setback value, which is the distance measured from the navigation center to the towfish. Negative setback values indicate that the towfish is ahead of the navigation center, while positive setback values indicate that the towfish is astern of the navigation center. A block was mounted on a swing-arm at the bow of the vessel. When deployed from the bow, the side scan sonar fish, attached to an armored cable, was manually deployed and the amount of cable deployed was noted from markings on the cable. When deployed from the stern, the side scan sonar was attached to an armored cable and a winch was used to control cable length.

	Serial Number	Day Number
DataSonics TTV-195 Towfish	414 (Bow)	231 - 249
DataSonics Processor	945	231 – 249
EPC Recorder 1086	354	231 – 249
Edgetech 272-TD Side Scan Sonar	16600 (Bow)	249 - 287
Edgetech 272-TD Side Scan Sonar	15097 (Stern)	287 – 289
Edgetech 260TH Sonar Console	15734	249 – 289

* Data Filed with field records.

M/V Universal Surveyor

All side scan sonar data collected aboard the *M/V Universal Surveyor* during the investigation work has been set back corrected. The side scan sonar towfish was towed from the stern, attached to an armored cable, and a winch was used to control cable length.

	Serial Number	Day Number
DataSonicsTowfish	438 (Stern)	041 - 047
DataSonics Processor	945	041 - 047
EPC Recorder 1086	354	041 - 047

The vertical beam width of the DataSonics SIS-1500 side scan sonar was 55 degrees at 3dB. A depression angle of 20 degrees was used on the towfish. The vertical beam width of the EdgeTech 260TH side scan sonar was 50 degrees. A depression angle of 20 degrees was used on the towfish. Throughout the survey, the 200 kHz frequency was used with the DataSonics side scan sonar and the 100 kHz frequency was used with the EdgeTech side scan sonar.

All side scan sonar data were collected using a 75-meter range scale, with a towfish depth off seafloor between 8 and 14 meters. Side scan sonar operations were run at a speed 6.5 knots or slower. Side scan sonar coverage was run in a northeast-southwest direction on primary lines and in a northwest-southeast direction on lines run to provide additional coverage around man-made obstructions. Shot points on side scan sonar data are off by one shot point. As the shot points decrease along track one shot point needs to be added to the value (e.g. shot point 140 should be shot point 141).

The side scan sonar was towed from the bow on the *M/V Geodetic Surveyor* from August 19, 1999 to October 14, 1999 at which point it was towed from the stern of the vessel until the end of survey operations. The navigation center was assigned to the center of the multibeam transducer pole for all side scan sonar work performed aboard the *M/V Geodetic Surveyor*. The setback information is specified in the geophysical logs* (Separate 1, filed with survey data). On the *M/V Geodetic Surveyor* a block was mounted on a swing-arm at the bow of the vessel. The side scan sonar fish, attached to a Kevlar cable, was manually deployed. The amount of cable deployed was noted from markings on the cable. An armored cable deployed from a hydraulic winch was used for the stern configuration.

Aboard the *M/V Universal Surveyor* the side scan sonar tow position was located at the center of the aft "A" frame. An armored cable, remotely operated with a hydraulic winch, was used for stern deployment. The side scan sonar data were set back corrected during data collection.

Side scan sonar recorder gain was adjusted to provide the best image of the seafloor. Confidence checks were performed at least twice daily, but more often several times daily. Drag scars and platforms were used as confidence checks. Where possible, drag scars were traced across the record, checking both port and starboard channels. However, if that was not possible, confidence checks were performed separately. Interim coverage plots were created utilizing the Triton/Elics Isis system coverage command. Final coverage plots were created in AutoCAD.

*Data filed with field records

At least 200 percent coverage was obtained over the entire survey area. Lines were rerun where system malfunctions or weather noise prevented collection of acceptable side scan sonar data. Infill lines were run in areas that were disrupted by noise which included boat wakes, thermocline noise, marine life, other noise in water column, losing bottom track, and data glitches. On several occasions when a boat wake obscured the record, the vessel immediately circled around to collect data to fill the gap, and continued on with the line.

The analog data records were manually scanned by at least two people. All contacts were recorded, adjacent lines were compared, and heights were calculated from shadows measured on the analog records. Questionable contacts were compared with multibeam data where possible to determine the significance (as defined in section 5.6.2 of the SOW) of the item. Significant contacts were labeled and recorded to the side scan sonar contact list (see *Separate 3, filed with survey data) and side scan sonar contact plot. If a contact fell out of the multibeam range, it was flagged for further investigation.

Three Dangers to Navigation were found during this survey. The Danger to Navigation Reports are found in *Appendix A of this report. Six objects discovered during survey operations were investigated and discussed in Section N of this report. [Data appended to this Report]

Digital side scan sonar data were acquired using Triton/Elics ISIS version 4.32 software. The software was run on a Pentium II 300 MHz computer with 96 megabytes of memory and a 4 gig and 18 gig internal hard drive. Digital data were recorded in XTF format and backed up to AIT tape using UNIX tar command.

Digital side scan sonar data were acquired using Triton/Elics ISIS version 4.32 software. The software was run on a 300 Megahertz Pentium II computer (serial number RK-MT-071) with 128 Megabytes of RAM and 4.3 and 13 Gigabyte hard drives. Digital data were recorded in XTF format and backed up to AIT tape using UNIX tar command.

F. SOUNDING EQUIPMENT

A Reson 8101 Seabat system was utilized for the multibeam source. The Reson 8101 transducer head serial number is 049702. The Reson 8101 Seabat has 101 beams labeled 001-101. It runs at a frequency of 240 kHz. There were no depth limits used during data collection. A ping rate of 7 pings per second and a range scale of 50m were also utilized. An average velocity was applied to the data online. The IP400 system numbers the beam numbers starting at 000, so the beam numbers on the raw data will be one value greater than the data that have been processed. Reson console serial number 13984 was used during the entire project.

From August 19, 1999 (DN 231) to August 27, 1999 (DN 239), a one MHz Odom Hydrographics single beam echosounder (model DF3200, serial number 3371) was used to check the multibeam data. From August 28, 1999 (DN 240) to September 1, 1999 (DN 244), an Airmar single beam echosounder was run at a frequency of 24 kHz. From September 5, 1999 (DN 248) to October 16, 1999 (DN 289) the single beam echosounder was run at a frequency of one MHz. On February 8, 2000 (DN 039) and February 9, 2000 (DN 040), a one MHz Odom Hydrographics single beam echosounder (model DF3200, serial number 3436) was used. Single beam and multibeam data were compared daily to provide a depth confidence check as required in section 4.11.4 of the SOW. The results of these comparisons are provided in *Appendix G. The SOW does not require delivery of single beam data; therefore, no single beam records are included with this survey.

* Data filed with field records.

G. CORRECTIONS TO SOUNDINGS

1. Speed of Sound

M/V Geodetic Surveyor

Four velocimeters were used aboard the *M/V Geodetic Surveyor.* The Applied Microsystems Ltd. SVP16, serial number 3045, was calibrated May 4-6, 1999 (DN 124-126). The Applied Microsystems SVP-16, serial number 3047 was calibrated on June 23, 1999 and July 27-28, 1999 (DN 174, 208, 209). The Applied Microsystems SVP-16, serial number 3062, was calibrated on May 13, 1999 (DN 133). The Applied Microsystems SVP-16, serial number 3038, was calibrated on April 8-9, 1999 (DN 98, 99). Calibration values were applied to the data through the AML processing software.

The velocimeters were utilized in the Chelsea undulating shuttle, as a pole mounted velocimeter near the multibeam transducer head, and as primary and secondary velocimeters during any static casts that were taken. The Chlesea undulating shuttle, serial number 151018, was calibrated on August 8, 1999 (DN 220). The Chelsea Servo Assembly, serial number 132046 was pressure tested on April 20, 1999 (DN 110).

The table below correlates the velocimeter serial number with its assigned function by date.

DN	Date	Chelsea	Primary	Secondary	Pole Mount
231	08/19/99		3038	3045	3047
232	08/20/99		3038	3045	3047
233	08/21/99		3038	3047	3045
234	08/22/99		3038	3047	3045
237	08/25/99		3038	3045	3047
238	08/26/99		3038	3047	3045
239	08/27/99		3038	3047	3045
240	08/28/99	3045			3047
241	08/29/99	3045			3047
242	08/30/99	3045			3047
243	08/31/99	3045			3047
244	09/01/99	3045			3047
249	09/06/99	3045			3062
250	09/07/99	3045			3062
251	09/08/99	3045			3062
252	09/09/99	3045			3062
253	09/10/99	3045			3062
254	09/11/99	3045			3062
255	09/12/99	3045			3062
256	09/13/99	3045			3062
261	09/18/99	3045			3062
262	09/19/99	3045			3062
263	09/20/99	3045			3062
264	09/21/99	3045			3062
268	09/25/99		3038	3045	3062
269	09/26/99		3038	3045	3062
270	09/27/99		3038	3045	3062
271	09/28/99		3038	3045	3062
285	10/12/99	3045			3062
286	10/13/99	3045			3062
287	10/14/99	3045			3062
288	10/15/99	3045			3062
289	10/16/99	3045			3062

While the Chelsea undulating shuttle was being used, velocity casts were obtained approximately every 15 minutes during data collection. The velocimeter data from the SVP16 velocimeter housed inside of the Chelsea undulating shuttle were loaded into the IP400 system. The downcast profile was applied during post-processing. The user could redefine the frequency of velocity casts whenever degradation of the multibeam outer beams became visually apparent. Degradation of the multibeam outer beams was monitored real-time by observing the Reson monitor and the real-time velocity display on the DAP computer. In addition, the swath profiles were visually inspected in TerraModel as a velocity QC.

The undulating real-time velocimeter was run continuously at 80% of the water depth, and was dropped 95 percent of the water depth at least once during every line. To provide complete depth coverage, the velocity data were extrapolated by taking ten percent of the deepest depth and adding that value to the deepest depth. The velocity data were extended to the extrapolated depth based upon the velocity curve above the extrapolated depth values. On August 19-27 and September 25-28,1999 (DN 231-239, 268-271) a static cast was used to correct the multibeam data due to malfunctions experienced with the Chelsea undulating shuttle.

While the Chelsea undulating shuttle was not being used, static velocity casts were obtained at least twice per day during data collection. The frequency of velocity casts was increased if necessary. The data from a single velocity cast were applied to the to the multibeam data collected subsequent to the velocity cast. Degradation of the multibeam outer beams was monitored real-time by observing the Reson monitor and the smart sensor data. An observed difference of more than 2 meters/second was used as a guide when observing the Smart Sensor. In addition, the swath profiles were visually inspected in TerraModel as a velocity QC.

See*Appendix J for table containing additional velocity information tables.

M/V Universal Surveyor

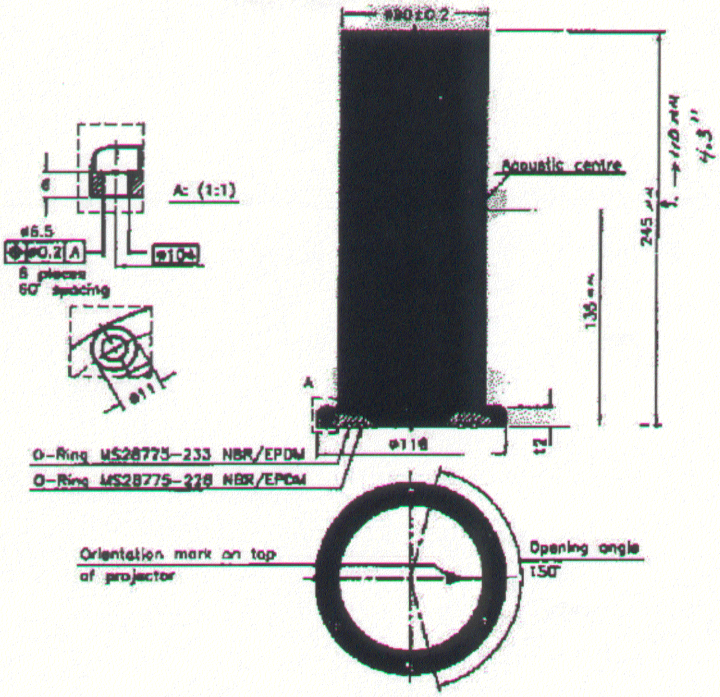
Three velocimeters were used aboard the *M/V Universal Surveyor.* The Applied Microsystems Ltd. SVP16, serial number 3038, calibrated on November 12, 1999 (DN 316) the primary velocimeter used to take a static cast in the investigation area on February 8, 2000 (DN 039). Calibration values were applied to the data through the AML processing software. The Applied Microsystems SVP-16, serial number 3062, calibrated on August 12, 1999 (DN 224) was the secondary velocimeter used to take a static cast in the investigation area on February 8, 2000 (DN 039). The Applied Microsystems SVP-16, serial number 3079, calibrated on October 5, 1999 (DN 279) was the velocimeter mounted on the Reson transducer pole on February 8-9, 2000 (DN 039-040).

2. Instrument Corrections

The vertical reference point that has been used for the Reson 8101ER system is not measured to the correct reference point on the Reson head. The term "acoustic centre" was interpreted to mean the absolute vertical reference. Reson's "acoustic centre" refers to the center of the projector (sound source).

Our misunderstanding was based on the diagram below:

*Data Filed with field records.



Our surveys depict the water depth deeper than the true value. The total correction that is needed to correct this data set is 10.95 cm or 4 5/16 inches. Both the edited data set and smooth sheet have been corrected for this error.

3. Corrections determined from bar checks and vertical casts.

As mentioned in G.1, velocity casts were applied to the data within the IP400 software.

4. Static Draft

The real time draft sensor developed by Fugro GeoServices, Inc. incorporates the use of a 52 kilohertz acoustic transducer mounted inside of a three inch diameter pipe. The three-inch pipe is inside of a six-inch pipe, which in turn is inside of an eight-inch pipe. Holes were drilled at one, three, and five foot intervals below the water line to allow for proper water inflow. The three pipe configuration was designed to damp as much wave action as possible. The draft pipes were welded directly to the Reson transducer pole to get as accurate as possible a reading of the draft effects introduced to the multibeam data. The distance from the reference point of the draft sensor to the Reson transducer reference point is four meters. The draft sensor pings at a rate of 20 per second and measures the distance from the fixed draft transducer reference point to the surface level of the water inside of the pipe. As the vessel squats in the water, the water level inside the pipe rises, resulting in a difference in the draft sensor reading.

The draft sensor was calibrated on June 2, 1999. Tick marks were manually drawn on the exterior of the draft pole at 5 centimeter intervals so that a visual draft value could be ascertained for comparison with the digital readings. To accurately calibrate the draft sensor, the readings had to be compared with the actual change of the vessel position in the vertical plane. To achieve this, a GPS antenna mounted directly over the transducer head

was used. While the vessel was stationary (0 knots), a GPS reading and a digital draft reading was taken. A visual draft reading was also taken to double-check the digital draft value.

The vessel then traveled at various speeds (1-7 knots), the GPS and draft monitor values were recorded. Once the test was complete, the recorded values were processed. Processing these values consisted of first subtracting the static values, both from the GPS and draft sensors, from the values obtained while the vessel was in motion. After this was done, the draft sensor readings then had to be subtracted from the four meter offset to that the draft at the Reson transducer could be derived.

During data acquisition for a particular line, the draft sensor readings are stored in the IP400 stor directory for that line. After completion of the line, the data are processed during batching procedures. The draft data are cleaned of erroneous spikes, then all the draft readings for that line are averaged into a single draft value to be used for that line.

A visual draft reading was taken aboard the *M/V Universal Surveyor.*

The draft table located in* Appendix G provides a column containing draft values that have been corrected with the 10.95 cm offset.

5. Settlement and Squat

M/V Geodetic Surveyor

A squat/settlement survey was performed on the *M/V Geodetic Surveyor* on June 2, 1999 (DN 153) to meet requirements set in section 4.9.1 of the NOAA Statement of Work. The vessel was mobilized at the Survey Boats, Inc. dock in Patterson, LA. The test was performed in Bayou Teche, in water depths ranging from 4 to 8 meters. Before mobilization, a current GPS almanac was downloaded and consulted in order to perform the survey when the maximum number of GPS satellites were available.

The vessel was mobilized with two Ashtech Z-12 dual channel GPS receivers: one mounted at the stern and the other mounted approximately mid ship. Both receivers were mounted along the starboard side of the vessel. A third Ashtech Z-12 GPS receiver was set at the dockyard to be used as a base station. All receivers were set with consideration of 360 degrees of visibility in order to make best use of available GPS satellites.

Data were logged by the receivers at one-second intervals with an elevation mask of 10 degrees. GPS data were downloaded using Ashtech's Prism software and processed into xyz coordinates using John E. Chance and Associates version of On the Fly (OTF) software. This software takes collected L1 and L2 RINEX formatted GPS data strings and solves for position by differentiating carrier phase observations between the base and each rover. The OTF refers to the ability to resolve the ambiguities, while the rover is in motion without returning to the reference sight for reinitialization. The solutions were then read into a spreadsheet and averaged and compared for each separate speed run.

The results of the test and comparison indicate that squat and settlement based on vessel motion will be a very small factor in determining the dynamic draft of the *M/V Geodetic Surveyor* at normal survey speeds. Settlement and squat test data are included in* Appendix G.

* Data filed with field records

M/V Universal Surveyor

A squat/settlement survey was performed on the *M/V Universal Surveyor* on February 3, 2000 (DN 34) to meet requirements set in section 4.9.1 of the NOAA Statement of Work. The vessel was mobilized at Survey Boats, Inc. dock in Patterson, LA. The test was performed in the Bayou Teche, in water depths ranging from 4 to 8 meters. Before mobilization, a current GPS almanac was downloaded and consulted in order to perform the survey when the maximum number of GPS satellites were available.

The vessel was mobilized with two Ashtech Z-12 dual channel GPS receivers: one mounted at the stern and the other mounted approximately mid ship. Both receivers were mounted along the starboard side of the vessel. A third Ashtech Z-12 GPS receiver was set at the dockyard to be used as a base station. All receivers were set with consideration of 360 degrees of visibility in order to make best use of available GPS satellites.

Data were logged by the receivers at one-second intervals with an elevation mask of 10 degrees. GPS data were downloaded using Ashtech's Prism software and processed into XYZ coordinates using John E. Chance and Associates version of On the Fly (OTF) software. This software takes collected L1 and L2 RINEX formatted GPS data strings and solves for position by differentiating carrier phase observations between the base and each rover. The OTF refers to the ability to resolve the ambiguities, while the rover is in motion without returning to the reference sight for reinitialization. The solutions were then read into a spreadsheet and averaged and compared for each separate speed run.

The results of the test and comparison indicate that squat and settlement based on vessel motion will be a very small factor in determining the dynamic draft of the *M/V Universal Surveyor* at normal survey speeds. Settlement and squat test data are included in* Appendix G.

6. Heave, Roll, and Pitch

The TSS POS/MV Model 320 serial number 005 was used as the multibeam motion sensor. The accuracy of the sensor is better than 0.05 for roll, pitch measurement, 5% of heave amplitude for periods up to 10 seconds, 0.05 for true heading, and 0.75-5 meters circular error of probability (CEP) depending on reference station.

Calibration of Multibeam echo sounder

The Reson multibeam echo sounder was calibrated using the IP400 software by sailing several lines in opposite directions, using different speeds, over a distinct feature. Roll, pitch, heading, and time delay biases were determined by running a patch test over a fish haven south of the field area (see details in* Appendix G).

M/V Geodetic Surveyor

Multibeam calibration (patch test) at 'Fish Haven', August 19, 1999 (DN 161), position Northing = 3241550, Easting = 413704

System	Time Delay	Pitch	Roll	Yaw
WADS	-0.65	-1.05	-1.35	+1.25
POS/MV	-0.65	-1.05	-1.35	+1.25

* Data filed with field records.

Multibeam calibration (patch test) at 'Fish Haven', October 12, 1999 (DN 285), position Northing = 3241550, Easting = 413704

System	Time Delay	Pitch	Roll	Yaw
WADS	-0.65	-3.95	-1.10	+1.25
POS/MV	-0.65	-3.95	-1.10	+1.25

M/V Universal Surveyor

Multibeam calibration (patch test) at 'Fish Haven', February 8, 2000 (DN 039), position Northing = 3241550, Easting = 413704

System	Time Delay	Pitch	Roll	Yaw
WADS	-0.84	+0.80	-0.05	-5.08
POS/MV	-0.84	+0.80	-0.05	-5.08

The XTF data provided to NOAA is corrected for patch test offsets; an offset value of zero (0) should be applied to the data in CARIS.

Tide Correctors

As specified in the SOW, predicted tides from Galveston Pleasure Pier 8771510 were used as preliminary tide values. Sheet O fell within three of the final tidal zones found on the Final Zoning Map dated August 4, 1998. FGSI proposed to NOAA that Zone G323, a small segment located in the southwest corner of the survey area, be incorporated into the larger Zone 322. A comparison between the zones showed that zone G323 tidal values had a difference range of only 0 to 7 centimeters from zones G322.

FGSI also proposed using the Galveston Pleasure Pier tide gauge for final tide applications. As specified in a memorandum from Cary Wong, final verified tides from the Galveston Pleasure Pier (8771510) located at 29°17.1'N, 94°47.3'W were utilized for Sheet O. Acceptance of this proposal was obtained on August 18, 1999 (see *Appendix F). As a result, only zones G321 and G322 were used to tide correct the multibeam data for Sheet O.

As a result of this acceptance, Sheet O fell within two tidal zones: G321 and 322, as outlined above. The correctors used are located in the table below.

Station Number	Tidal Zone	High Water Correction	Low Water Correction	Average Time Correction	Range Correction
8771510	G321	0 mins.	-18 mins.	-12 mins.	x1.08
8771510	G322	+6 mins.	-18 mins.	-6 mins.	x0.99

The verified six-minute tide data from the Galveston Pleasure Pier tide gauge were downloaded from the NOAA Oceanographic Products and Services Division (OPSD) web page (http://www.co-ops.nos.noaa.gov). The tide information was applied to the data using the IP400 data processing software.

H. CONTROL STATIONS — See also Evaluation Report

The Horizontal datum for the survey is North American Datum of 1983 (NAD-83). The John E. Chance and Associates, Inc. StarFix® system provided primary navigation. StarFix® is a

* Data filed with field records.

satellite navigation system developed by CHANCE. The CHANCE Multi-Site DGPS is the first system in the industry that implements the concept of Wide Area DGPS (WADS). The CHANCE system uses the MX 4200 GPS receiver and differential corrections from the CHANCE DGPS network transmitted via StarFix®. The current CHANCE DGPS network covers the continental United States.

The basic idea of Long-Range or Wide Area Multi-Site DGPS is to extend the range of operation of typical stand-alone DGPS systems from 300 km to at least 1000 km. The degradation of accuracy with distances longer than 300 km occurs due to the decorrelation of errors. These errors do not cancel out in the differencing process. However, the errors tend to be a linear function of the distance and frequently tend to affect the individual DGPS position solutions with opposite signs, depending on relative location of DGPS stations, with respect to satellite passes. Therefore the combined solution of several DGPS baselines has an advantage of canceling out most of the systematic errors that are present in individual stand-alone DGPS solutions. An additional important advantage of Multi-Site DGPS is a redundancy necessary for monitoring integrity of pseudo-range corrections from DGPS stations.

Correctors were computed using the Gulf Coast network of StarFix® OMNISTAR sites. These sites included Mercedes, TX, Houston, TX, Pensacola, FL, and Cocoa Beach, FL. The United States Coast Guard Differential Station at Galveston, TX was used for secondary navigation in this survey. The POS/MV & CGDGPS positioning was not applied to the survey data.

Please see *Appendix C for a list of horizontal control stations.

I. HYDROGRAPHIC POSITION CONTROL

The method of sounding position control was exclusively Differential GPS (DGPS) using the CHANCE StarFix® system mentioned above.

1. The hydrographic position control met or exceeded specifications. A minimum of five satellites was used to compute positions. The mask on the GPS receivers was configured to accept data from satellites that were 10 degrees above the horizon. The age of navigation corrections never exceeded 20 seconds for the primary system and no data were collected while dead reckoning.

Hourly comparisons between the primary and secondary positioning systems were recorded and printed. Differences were typically sub-meter. Daily comparisons, as required by Section 4.11.2 of the SOW, are included in *Appendix H.

M/V Geodetic Surveyor

Primary positioning system:

WADS Magnavox T-4000	S/N 10
Starfix II differential receiver	S/N 023, 138

Correctors were computed using the Gulf Coast network of OMNISTAR sites mentioned above. The correctors were computed using CHANCE's Wide Area Differential (WADS) software, version 2.1.

Secondary positioning system:

Leica 12 channel GPS receiver	S/N 2232

*Data filed with field records

CSI differential receiver (USCG DGPS) S/N X20-020

M/V Universal Surveyor

Primary positioning system:

Trimble antenna	S/N 0220166564
WADS Magnavox T-4000	S/N 0595101
Starfix II differential receiver	S/N 630307 and 630101

Correctors were computed using the Gulf Coast network of OMNISTAR sites mentioned above. The correctors were computed using CHANCE's Wide Area Differential (WADS) software, version 2.1.

Secondary positioning system:

Trimble antenna	S/N 0080108376
Trimble 4000	S/N 0395101
CSI differential receiver (USCG DGPS)	S/N X20-012

2. No malfunctions affecting the accuracy or operation of the positioning system occurred during the survey. PDOP (position dilution of precision) and HDOP (horizontal dilution of precision) were monitored throughout the survey. The system was set to sound an audible alarm whenever a PDOP value of 6.0 was exceeded. Survey operations were then suspended until the PDOP value became acceptable (< 6.0). On all occasions the HDOP value stayed below 2.5.

3. No unusual atmospheric conditions were noted.

4. There were no instances of weak signal or poor geometric configurations encountered during the survey.

5. No systematic errors were discovered during the survey.

6. Aboard the *M/V Geodetic Surveyor*, Line Run an in-house navigation program was used. The multibeam transducer was the navigation center. The side scan sonar offsets varied depending on the amount of cable deployed. The offsets from the navigation center to the side scan sonar tow points are shown on the figures on pages 5 and 6. Aboard the *M/V Universal Surveyor*, StarFix.Nav an in-house Fugro navigation program was utilized. The multibeam transducer was the navigation center. The side scan sonar data were setback corrected. The offsets from the navigation center to the side scan sonar tow points are shown on the figures on pages 8 and 9.

J. SHORELINE

Not Applicable

K. CROSS LINES

In accordance with section 4.11.3 of the SOW, the lineal kilometers of crosslines were approximately 5% of the planned total kilometers. Crosslines were run at angles of approximately 90°. For 10% of all mainscheme lines, evenly spaced throughout the dataset, the nadir beam of each crossline was compared to each of the nearest unsmoothed soundings contained within the mainscheme line. For all crosslines, the nadir beam of 5%

of the mainscheme lines, evenly spaced throughout the dataset were compared to each of the nearest unsmoothed soundings of the crosslines. Separate statistical analyses were performed as a function of beam number for each of the mainscheme lines and crosslines used for comparison. See the processing logs in *Separate 4, included with the survey data for the beams numbers omitted in the final data set.

All comparisons fell within 15 centimeters (see page 24 for figure). It should be noted that Reson beams 000-003, and 092-100 were automatically clipped prior to data processing. These beams have been historically noisy, so clipping of these beams took place prior to processing. No data from these beams are represented in the edited data or smooth sheet.

Crossline comparison data can be found in *Separate 5, included with the survey data.

L. JUNCTIONS

OPR-K171-KR, Sheet O, H10915 junctions with the southwest border of OPR-K171-KR, Sheet N, H10894. H10804 is a 1:20,000 scale survey submitted on April 28, 2000. It overlaps at the northeast border of the present survey. Both data sets were processed using verified tides. OPR-K171-KR, Sheet O, H10915 also junctions with the northeast border of OPR-K171-KR, Sheet R. This sheet was completed by another contractor and no comparison was made between the two data sets. H10850 Does not Junction

Agreement between H10915 and H10894 is very good. The soundings generally agree within 0.30 meters. The differences in the depths may possibly be attributed to the variations in the tidal data. Concur

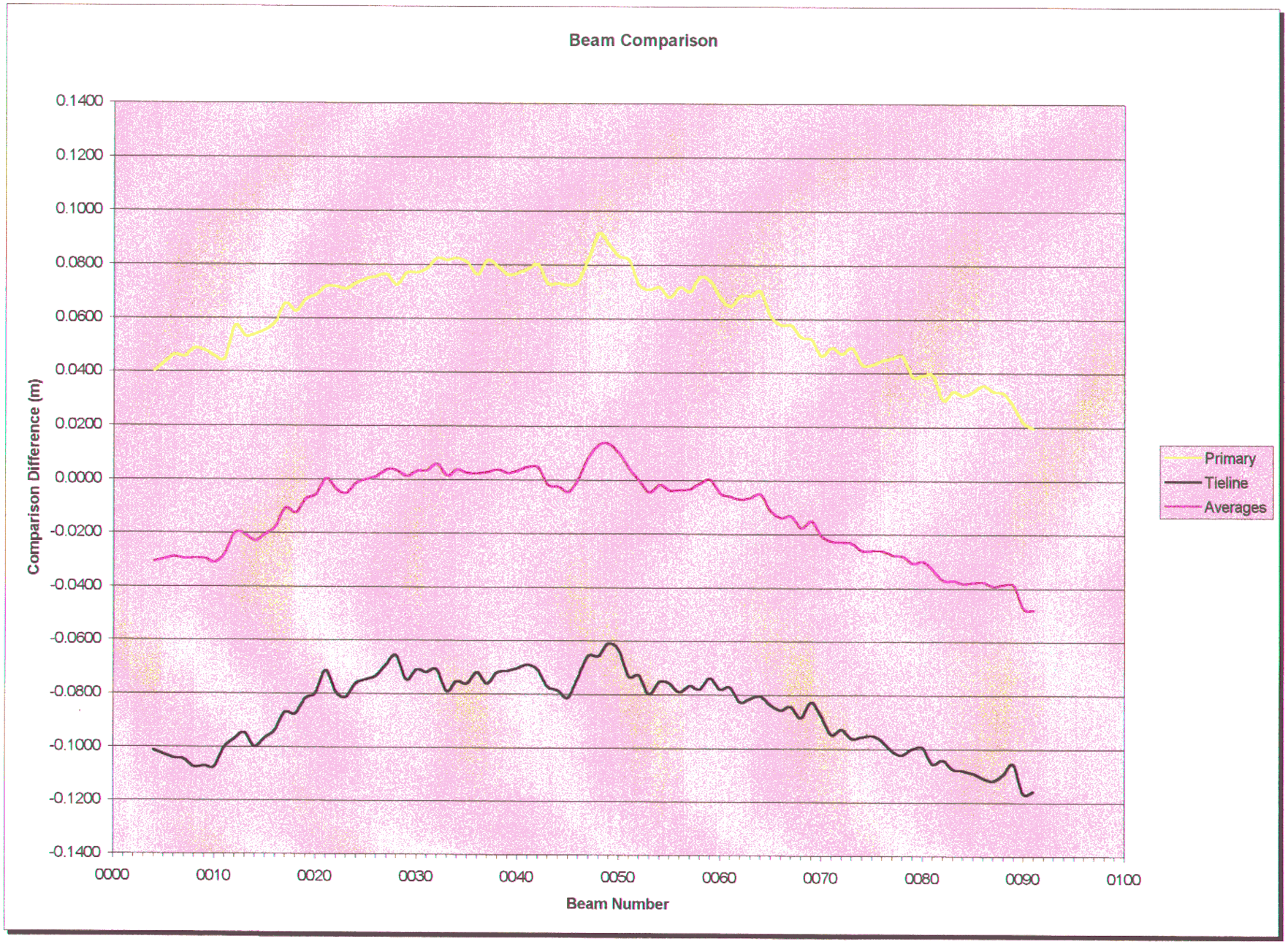
No adjustments to soundings, features, or depth curves are recommended. Concur

M. COMPARISON WITH PRIOR SURVEYS – See also Evaluation Report

Comparison with prior surveys was not required under this contract. However, we requested prior surveys after finding up to a three foot discrepancy between our data values and the charted values (see Section N for comparison to the nautical charts). Prior survey H-8712 was collected in 1962 and survey H-9775 was collected in 1978. The present survey H10915 matches very well (0 to 1 foot difference) with prior survey H-9775, but matches poorly with prior survey H-8712 (1 to 3 foot difference). The junction between H-8712 and H-9775 is at approximately 94° 14' W. This junction displays a difference of 1-2 feet. This boundary is reflected within the comparison of H10915 to nautical chart 11323 (see Section N for comparison to the nautical charts). The descriptive report for the 1978 survey H-9775 states that the agreement of 1 to 2 feet is acceptable. The verifier's report stated that the bottom configuration and general depths were in good agreement. Changes in depths were attributed to natural causes and less accurate horizontal control. The H-9775 descriptive report attributed the junction differences between H-9775 and H-8712 to variations between real and predicted tides. In the verifier's report, the junction was not considered because survey H-8172 was not considered contemporary for junctioning purposes.

* Data filed with field records

OPR-K171-KR
Sheet O
H10915



N. COMPARISON WITH THE CHART See also Evaluation Report

This survey was compared with the following charts:

Chart	Scale	Edition	Date
11323	1:80,000	~~57th~~ 58th	~~March 27, 1999~~ JUN 24, 2000
11332	1:80,000	27th	April 3, 1999
11330	1:250,000	12th	August 8, 1998

Three Dangers to Navigation were found during the survey. These Danger to Navigation Reports were submitted to NOAA via email on September 22, 1999 (DN 265). NOAA submitted all three Dangers to Navigation to the USCG on September 24, 1999 (DN 267). All reports are based upon Galveston Pleasure Pier predicted tides. All documentation pertaining to the Dangers to Navigation is included in *Appendix A. The obstructions were documented in the Local Notice To Mariners 39/99 dated September 28, 1999, which is included in *Appendix F. Concur

Appended to this Report

One contact was seen near a platform. This contact showed relief of 1 meter above the seafloor on side scan sonar data. Multibeam data run over the contact were inconclusive. There appeared to be numerous fish in the area. This contact was not charted. Concur

Charts 11323 and 11332 were compared to each other. Chart 11330 is not used for comparison because it is at such a small scale. Smooth sheet sounding values were superimposed onto a raster image of nautical chart 11323 at a 1:20,000 scale. A line at approximately 94° 14' W splits the survey area into two different zones. In the southwest zone, the majority of the data from the present survey either compares exactly to the chart or the values fall within 150 meters of the charted value. The present survey data located to the northeast of 94° 14' W are one to three feet deeper than the values on nautical chart 11323. From the discussion within Section M, it appears that the sounding data on nautical chart 11323 are taken from the 1978 survey H-9775 (southwest area) and the 1962 survey H-8712 (northeast area). The differences in depths could indicate possible sediment movement due to storms, dredging of the fairway, or increased precision in navigation since the original data were collected. Concur

When it was discovered that the H10915 survey values differed by three feet from charted values in many portions of the Sheet O survey area, lead line values were collected from *the M/V L'Arpenteur* to provide an additional QC of the collected multibeam. Lead lines were dropped at two locations that showed a three foot discrepancy between the nautical chart and survey data. The results of this test follow:

Point Number	Latitude	Longitude	Charted Value	Multibeam Value	Lead Line Value	Echotrac Raw Data	Echotrac Heave Comped
19582	29.245	-94.241	44	47	46	46.3	46.7
23315	29.238	-94.220	43	46	46	45.5	44.9

There was a 2-3 foot swell while the test was being performed (*See Appendix F for memo from the *M/V L'Arpenteur*).

*Data Filed with field records

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contact 99249223911S

Charted Position: N/A

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/09/00 / 040 Survey Vessel Name: M/V Universal Surveyor

Investigation Method: Two orthogonal shallow water multibeam lines were run, crossing the contact near nadir centered at Latitude = 29° 17' 29.19" N, Longitude = 94° 12' 29.53" W (N= 3240880.96, E=382648.07).

Surveyed Position (NAD 83): 29° 17' 29.~~17~~13" N, 94° 12' 29.~~56~~53" W (N= 3240880.37, E=382647.58).

Position Determined By: Shallow water multibeam

Investigation Summary: O-1

This object was documented during the original survey on side scan sonar data, but fell in the outer beams of the multibeam swath. It appeared to be a man-made object rising 1.7 meters above the seafloor.

Lines 31 and 32 were run during the investigation. Line 31 produced the best image of the contact, which rose 1.22 meters above the surrounding seafloor. A least-depth value of ~~43~~42 feet is depicted on the Smooth Sheet. The feature was located at 29° 17' 29.17" N, 94° 12' 29.55" W (N= 3240880.37, E=382647.58)). See investigation plate in Separate 3 filed with the survey data.

Recommendation: The object stands 4 feet above the surrounding seafloor. Chart a ~~43~~42 foot obstruction at Latitude = 29° 17' 29.~~17~~13" N, Longitude = 94° 12' 29.~~56~~53" W (N= 3240880.37, E=382647.58) Concur

Retain as charted

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contacts 99242113014S and 99242163847P

Charted Position: N/A

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/09/00 / 040 Survey Vessel Name: M/V Universal Surveyor

Investigation Method: Two orthogonal shallow water multibeam lines were run, crossing the contact near nadir centered at Latitude = 29° 17' 4.63" N, Longitude = 94° 14' 35.78" W (N= 3240160.58, E=379233.69).

Surveyed Position (NAD 83): 29° 17' 4.6~~1~~2" N, 94° 14' 35.8~~1~~2" W (N= 3240160.13, E=379232.77).

Position Determined By: Shallow water multibeam

Investigation Summary: O-2

This object was documented during the original survey on side scan sonar data, but fell in the outer beams of the multibeam swath. It appeared to be a man-made object rising 2.1 meters above the seafloor.

Lines 00331324, 01331325, and 00341323 were run during the investigation. Line 00341323 produced the best image of the contact, which rose 1.32 meters above the surrounding seafloor. A least-depth value of 44 feet is depicted on the Smooth Sheet. The feature was located at 29° 17' 4.61" N, 94° 14' 35.81" W (N= 3240160.13, E=379232.77). See investigation plate in Separate 3 filed with the survey data.

Recommendation: The object stands 4 feet above the surrounding seafloor. Chart a ~~44~~ 43 foot obstruction at Latitude = 29° 17' 4.6~~1~~2" N, Longitude = 94° 14' 35.8~~1~~2" W (N= 3240160.13, E=379232.77).. Concur

Revise to '43' Obstn

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contacts 99242184340P,99242164339S, 99242164340S, 99242164342S, 99242235156P, 99242235201P, 99242265203P

Charted Position: N/A

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/08-09/00 / 039-040 Survey Vessel Name: M/V Universal Surveyor

Investigation Method: Six orthogonal shallow water multibeam lines were run, crossing the three contacts near nadir. The objects were centered at

Latitude = 29° 17' 23.86" N, Longitude = 94° 14' 8.28" W (N= 3240744.77, E=379981.91).
Latitude = 29° 17' 24.84" N, Longitude = 94° 14' 9.14" W (N= 3240775.19, E=379958.92).
Latitude = 29° 17' 23.78" N, Longitude = 94° 14' 7.87" W (N= 3240742.07, E=379992.85).

Surveyed Position (NAD 83): 29° 17' 23.78" N, 94° 14' 7.88" W (N= 3240742.16, E=379992.74).

Position Determined By: Shallow water multibeam

Investigation Summary: O-3

The original side scan sonar data displayed numerous linear contacts that appeared to be several pipes. The shoalest value rose up to 3.6 meters above the seafloor but all data fell in the outer beams of the multibeam swath.

Lines 00351314, 00361317, 00371313, 00381316, 00391315, and 00401318 were run during the investigation. The following contacts were seen:

Contact Number	Latitude	Longitude	Northing	Easting	Height off Seafloor (meters)	Depth (feet)
99242164342S 99242235203P	29° 17' 23.85" N	94° 14' 8.27"W	3240744.44	379982.29	2.13	~~41~~ 36
99242164340S 99242235201P	29° 17' 24.83" N	94° 4' 9.17" W	3240774.7	379958.24	2.12	41
99242184340P	29° 17' 23.96" N	94° 14' 8.27" W	3240747.72	379982.35	1.45	43
99242235202P	29° 17' 23.98" N	94° 14' 8.28" W	3240748.53	379981.96	1.55	43

These objects are spaced closely together, therefore a single least-depth value of ~~41~~ 36 feet is depicted on the Smooth Sheet. The feature was located 29° 17' 23.85" N, 94° 14' 8.27" W (N= 3240744.44, E=379982.29). See investigation plate in Separate 3 filed with the survey data.

Recommendation: The largest object stands 7 feet above the surrounding seafloor. Chart a ~~41~~ 36 foot obstruction encompassing all obstructions in this group at Latitude = 29° 17' 23.78" N, Longitude = 94° 14' 7.88" W (N= 3240742.16, E=379992.74). Concur Revise to (36) Obstn

See also Section N. of the Evaluation Report

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contact 99242132639S

Charted Position: N/A

Charts Affected: 11323, **11332**

INVESTIGATION

Date(s)/ Day Number(s): 2/09/00 / 040 Survey Vessel Name: *M/V Universal Surveyor*

Investigation Method: Two orthogonal shallow water multibeam lines were run, crossing the contact near nadir centered at Latitude = 29° 16' 31.46" N, Longitude = 94° 14' 47.18" W (N= 3239143, E=378915).

Surveyed Position (NAD 83): Item not found

Position Determined By: N/A

Investigation Summary: O-4

This object was documented during the original survey on side scan sonar data, but fell in the outer beams of the multibeam swath. It appeared to be a man-made object rising 1.6 meters above the seafloor.

Lines 00411326 and 00421327 were run during the investigation. No contact was discovered during this investigation.

Recommendation: Do not chart, no further investigation Concur

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contacts 99241172724P, 99241120126S

Charted Position: N/A

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/08/00 / 039 Survey Vessel Name: *M/V Universal Surveyor*

Investigation Method: Two orthogonal shallow water multibeam lines were run, crossing the contact near nadir centered at Latitude = 29° 18' 0.52" N, Longitude = 94° 13' 38.60" W (N= 3241864.7, E=380794.6).

Surveyed Position (NAD 83): 29° 18' 0.49" N, 94° 13' 38.48" W (N= 3241863.65, E=380797.86).

Position Determined By: Shallow water multibeam

Investigation Summary: O-5

This object was documented during the original survey on side scan sonar data, but fell in the outer beams of the multibeam swath. It appeared to be a man-made object rising 0.5 meters above the seafloor.

Lines 00431310, 01431311, and 00441312 were run during the investigation. Line 00441312 produced the best image of the contact, which rose 0.34 meters above the surrounding seafloor. A least-depth value of 46 feet is depicted on the Smooth Sheet. The feature is located at 29° 18' 0.49" N, 94° 13' 38.48" W (N= 3241863.65, E=380797.86). See investigation plate in Separate 3 filed with the survey data.

Recommendation: The object stands approximately 1 foot above the surrounding seafloor. Chart a 46 ~~36~~ foot sounding at Latitude = 29° 18' 0.49" N, Longitude = 94° 13' 38.48" W (N= 3241863.65, E=380797.86). Concur Chart 46 foot depth.

ITEM INVESTIGATION REPORT

Item Description (as charted): N/A

Source: SSS Contact 99241004558P

Charted Position: N/A

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/09/00 / 040 Survey Vessel Name: M/V Universal Surveyor

Investigation Method: Two orthogonal shallow water multibeam lines were run, crossing the contact near nadir centered at Latitude = 29° 18' 50.30" N, Longitude = 94° 12' 46.29" W (N= 3243382.2, E=382221.8).

Surveyed Position (NAD 83): 29° 18' 50.15" N, 94° 12' 46.30" W (N= 3243377.62, E=382221.57).

Position Determined By: Shallow water multibeam

Investigation Summary: O-6

This object appeared to be a 5 m X 1 m rectangular object with a scour on side scan sonar data during the original survey. The contact fell outside of the multibeam swath and was investigated.

Lines 00451321 and 00461322 were run during the investigation. The shoalest point, 14.06 meters, was taken from Line 00461322. The contact rose 0.23 meters above the surrounding seafloor; the scour reached a depth of 14.58 meters. This feature appears to be a sediment pile associated with the scar. The feature is located at 29° 18' 50.15" N, 94° 12' 46.30" W (N= 3243377.62, E=382221.57). See investigation plate in Separate 3 filed with the survey data.

Recommendation: The object stands 0.75 feet above the surrounding seafloor. Do not chart, no further investigation. concur

least depth is a 46' depth in 47' of water

ITEM INVESTIGATION REPORT

Item Description (as charted): Obstn PA (48 ft rep) Nautical Chart 11323

Source: AWOIS 8971

Charted Position: Latitude = 29° 08' 30.0" N, Longitude = 94° 18' 30.0" W

Charts Affected: 11323

INVESTIGATION

Date(s)/ Day Number(s): 2/15-16/00 / 046-047 Survey Vessel Name: *M/V Universal Surveyor*

Investigation Method: The objective of this investigation is to disprove AWOIS item 8971, which is stated to be a lost anchor. This obstruction was reported in 1993. Fifty (50) foot depths exist in the general vicinity of AWOIS 8971. This AWOIS item fell within an adjacent survey area that was completed by a different contractor. To disprove this object, it was necessary to provide 200 percent side scan sonar coverage within a search radius of 1500 meters. To investigate this feature we ran the side scan sonar at a 75-meter range scale with 60-meter line spacing, running northwest-southeast within the area specified by NOAA. The following coordinates define the area surveyed:

29° 09' 13.9" N, 094° 18' 49.6" W
29° 08' 17.9" N, 094° 17' 20.8" W
29° 08' 46.3" N, 094° 16' 56.9" W
29° 09' 40.1" N, 094° 18' 17.9" W
29° 09' 13.9" N, 094° 18' 49.6" W

Surveyed Position (NAD 83): Item not found.

Position Determined By: Item not found

Investigation Summary: O-7

The search area for AWOIS 8971 was completely insonified with 200% side scan sonar coverage at a 75 meter range. Line numbers 1047-1069 and all associated reruns were run during the investigation. No contacts were discovered within the investigated area.

Recommendation: AWOIS item 8971 was not found during this investigation. Item has been disproved by this survey. If previous survey completed by other contractor has also disproved the item, do not chart and delete Obstn PA from chart. Concur

O. <NOT USED BY CONTRACTOR> - See Evaluation Report

P. AIDS TO NAVIGATION - See also Evaluation Rept

There are no aids to navigation on Sheet O, but there are several platforms and pipelines within the survey area. It is required that pipelines in the survey area be buried. There is no evidence that the pipelines on Charts 11332 and 11323 are exposed or suspended. Concur

The *M/V Geodetic Surveyor* was used to confirm platform locations and investigate all platforms found on Charts 11323 and 11332 (see* Separate 7 filed with the survey data for photoimages of the platforms). The center of navigation was moved to the bow of the vessel plus 6 meters. The vessel was nosed as close as possible to the structure, and a fix was taken. All platforms found within the survey area are provided in the tables below. For additional information, see the geophysical logs in* Separate 1 filed with original data.

Platform Name	Owner	Survey Position	Charted Position	Charted Name
HI-176-A	Apache	29° 11 29.6525 N 94 21 5.7594 W	29 11 31.7340 N 94 21 4.9799 W	HHOC HI-176-A Retain as charted
HI-157-A	Aquila	29 13 14.1337 N 94 18 56.3132 W	29 13 14.8055 N 94 18 56.1595 W	WFS HI-157-A Retain as charted
HI-138-A	HEC	29 17 34.3472 N 94 14 7.1695 W	29 17 32.6900 94 14 6.0436 W	BUEC HI-138-A Retain as charted
HI-110-B	TEPI	29 17 56.0690 N 94 13 27.6320 W	29 17 56.2379 N 94 13 25.6504 W	TIP HI-110-B Retain as charted
HI-110-A	TEPI	29 18 49.8478 N 94 13 9.0313 W	29 18 51.6707 N 94 13 7.3263 W	TIP HI-110-A Retain as charted

The feature below was not previously charted. The surveyed position follows:

Feature Name	Surveyed Position
Hang Off Buoy	29 18 28.2894 N 94 13 29.8958 W

Not on SS
No changes in Charting

The platforms in the table below are depicted on Charts 11323 and 11332. The *M/V Geodetic Surveyor* did not find these platforms during the investigation.

Platform Name	Charted Position
APC HI-175-1	29 11 2.3620 N 94 18 11.8909 W
APC HI-175-A	29 10 57.8126 N 94 18 11.2226 W
TIP HI-138-C	29 17 37.7041 N 94 14 42.0331 W
TIP HI-111-1	29 18 5.3181 N 94 13 7.4535 W
TIP HI-111-2	29 19 1.1489 N 94 12 5.0566 W

Retain as charted - See also Section P. & the Evaluation Report

* Data filed with field records.

Q. STATISTICS

	M/V Geodetic Surveyor	M/V Universal Surveyor	Total
Lineal nautical miles of sounding data (side scan sonar acquisition concurrent with multibeam acquisition or side scan sonar acquisition alone)	1713	86	1799
Lineal nautical miles of sounding data (multibeam with out concurrent side scan)	85	16	101
Square nautical miles	53	-	53
Number of velocity casts	947	2	949
Number of supplemental tide stations installed	0	0	0
No. horizontal control stations occupied/established	0	0	0
Number of items investigated	0	~~8~~ 7	7

R. MISCELLANEOUS - See also Evaluation Report

Abundant drag marks throughout the survey area and occasional can holes were documented on the side scan sonar records. These seafloor deformations may rise above the seafloor, but may not necessarily be hazardous to the mariner. A large mound seen on the side scan sonar records as a sediment density variation, showing approximately 2 meters relief off the surrounding seafloor, may be a drill spoil area located at 29° 17' 56.50" N, 94° 13' 27.97" W (N= 3241738.01, E= 381080.02) near the TEPI HI-110-B Platform. Concur

S. RECOMMENDATIONS

While no present construction or dredging will affect the results of this survey, the transient nature of the oil industry in the area may result in the addition of new platforms or removal of existing platforms. Concur

T. REFERRAL TO REPORTS

None noted.

OPR-K171-KR
Sheet O
H10915

List of Horizontal Control Stations

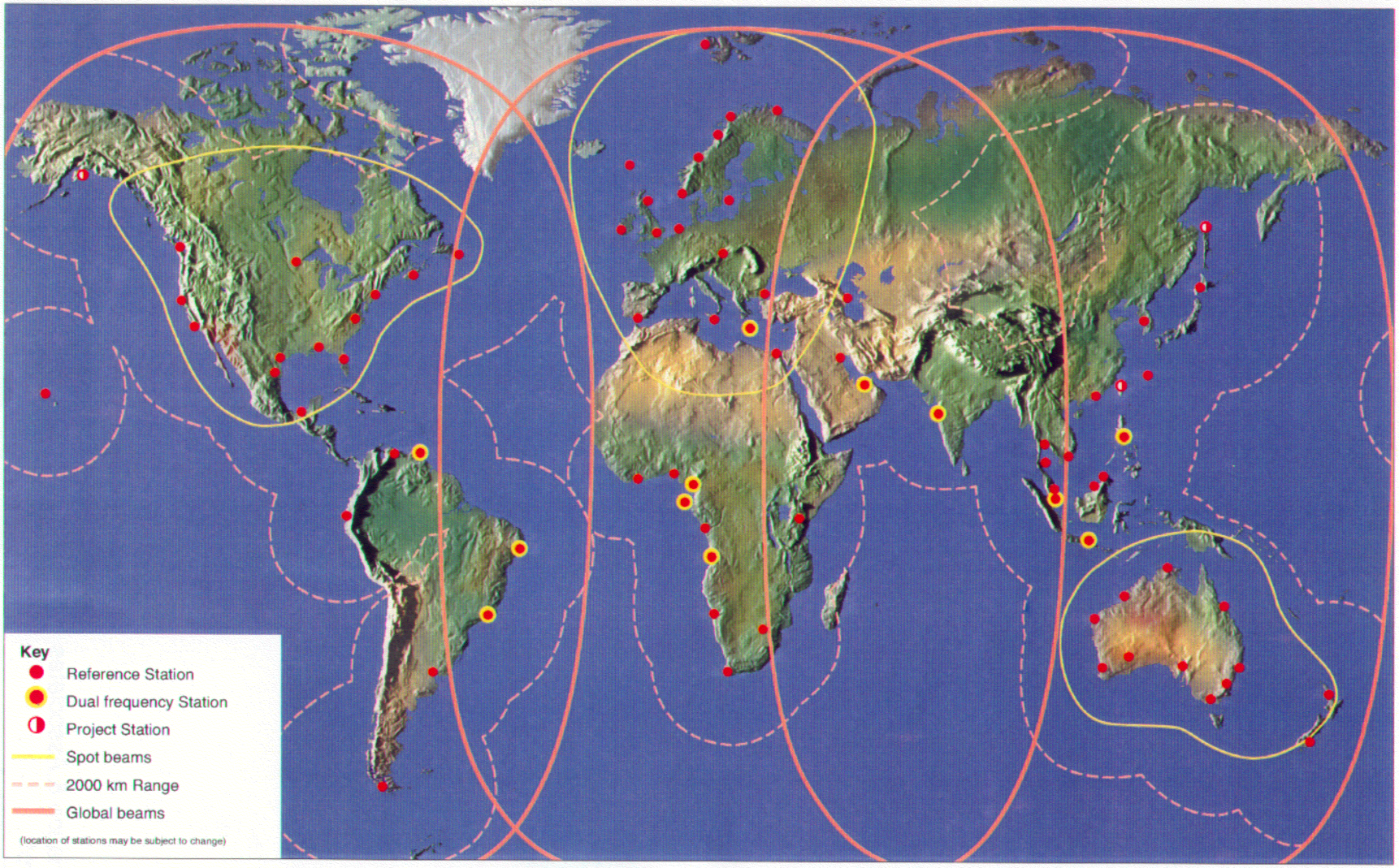
OMNISTAR SITES

Geodetic Station Name	Latitude	Longitude	Station Elevation Ellipsoidal Height	Year Established	Source of Station's Position
HOUSTON	29 35 04.3610 N	95 30 10.7830 W	+0004.700 M	January-96	Surveyed
PENSACOLA	30 28 50.1870 N	87 14 55.3626 W	+0011.543 M	January-96	Surveyed
COCO BEACH	28 07 09.0600 N	80 34 42.2340 W	-020.620 M	January-96	Surveyed
MERCEDES	26 06 10.8446 N	97 51 24.3918 W	-002.830 M	January-96	Surveyed

UNITED STATES COAST GUARD DIFFERENTIAL BEACON

Geodetic Station Name	Latitude	Longitude	Transmission Frequency	Transmission Rate	Source of Station's Position
GALVESTON, TX	29 19.8 N	94 44.2 W	296 KHz	100 BPS	Internet

STARFIX-SPOT COVERAGE



January 2000

John E. Chance & Associates
6100 Hillcroft
Houston, TX 77081

TEL: (713) 773-5670

LETTER OF APPROVAL

REGISTRY NO. H10915

This report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of survey H-10915 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and smooth sheet have been closely reviewed and are considered complete and adequate as per the Statement of Work.

Jana L. DaSilva
Hydrographer
Fugro GeoServices, Inc.
April 27, 2000

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
N/CS33-50-01

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

- [ ] ORDINARY MAIL
- [ ] AIR MAIL
- [ ] REGISTERED MAIL
- [X] EXPRESS
- [ ] GBL (Give number)_____

DATE FORWARDED 09/09/2001

NUMBER OF PACKAGES 1

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

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.

H10915

TEXAS, GULF OF MEXICO, 34 NM SOUTHWEST OF SABINE PASS

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR SURVEY H10915
1 ORIGINAL DESCRIPTIVE REPORT
1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H10915
1 H-DRAWING ON MYLAR FOR NOS CHART 11323
2 COMPOSITE DRAWINGS ON PAPER FOR NOS CHART 11323
~~1 CONTRACTOR SMOOTH SHEET FOR SURVEY H10915~~ [NOT MAILED]

H10835

TEXAS, GULF OF MEXICO

1 SMOOTH SHEET FOR SURVEY H10835

FROM: (Signature) Deborah A Blair

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

09/10/2001

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10915

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	38976
NUMBER OF SOUNDINGS	38976

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	12.0	05/05/2000
VERIFICATION OF FIELD DATA	70.0	10/13/2000
QUALITY CONTROL CHECKS	11.5	
EVALUATION AND ANALYSIS	39.0	
FINAL INSPECTION	5.0	10/29/2000
COMPILATION	40.0	08/16/2001
TOTAL TIME	177.5	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 09/06/2001

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10915

Name on Survey	A ON CHART NO. 11323, 11332, 11330	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	
GULF OF MEXICO	X		X							1
SABINE PASS (title)	X		X							2
TEXAS (title)	X		X	[redacted]						3
										4
				Lenny J. Kaneshiro						5
				Chief Cartographer			JUL 17 2000			6
										7
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NOAA FORM 76-155 SUPERSEDES C&GS 197

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10915 (1999)

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

Hydrographic Processing System
NADCON, version 2.10
MicroStation 95, version 5.05
I/RAS B, version 5.01
Caris HIPS/SIPS
AutoCAD, Release 12

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

H. CONTROL STATIONS

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

To place this survey on the NAD 27, move the projection lines 0.854 seconds (26.300 meters or 1.32 mm at the scale of the survey) north in latitude, and 0.654 seconds (17.670 meters or 0.88 mm at the scale of the survey) west in longitude.

L. JUNCTIONS

H10850 (1998-99) to the south
H10894 (1999) to the north northeast

A standard junction was effected between the present survey and H10850 (1998-99).

A standard junction could not be effected between the present survey and H10894 (1999) because this survey has not reached the smooth sheet stage. The note "ADJOINS" has been shown on the present survey smooth sheet. Any adjustments to the depth curves in the junctional area between the present

survey and H10894 (1997) will have to be made on the chart, during chart compilation.

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

M. COMPARISON WITH PRIOR SURVEYS

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

N. COMPARISON WITH CHART 11323 (58th Edition, Jun 24/00)

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparison in section N. of the Descriptive Report.

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

Dangers to Navigation

One Danger to Navigation report addressing 8 items was submitted for this survey on March 1, 2000.

One Danger to Navigation report containing three items was submitted on September 24, 1999, to Commander(OAN), Eighth Coast Guard District, New Orleans, Louisiana for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of the report is appended to the Descriptive Report.

During office verification the depth of one item was found to be in error. A Danger to Navigation report containing this correction was submitted on October 6, 2000, to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of this report is also appended to the Descriptive Report.

The items listed in the original Danger to Navigation Report have been charted on the 58th edition on NOS Chart 11323, dated June 24, 2000.

P. AIDS TO NAVIGATION

There are no aids to navigation located in the present survey area; however, there are numerous platforms throughout the survey area. These are adequately discussed in section P. of the Descriptive Report. No changes to charting are recommended at this time. It is recommended that the USCG be contacted for further directions concerning charted platforms that were disproved by the present survey.

R. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division, Silver Spring, Maryland. The following National Ocean Survey chart was compiled using the present survey:

11323 (58th Edition, Jun 24/00)

H10915

Deborah A. Bland

Deborah A. Bland
Cartographer
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10915

Initial Approvals:

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

Deborah A. Bland Date: 6 September 2001
Deborah A. Bland
Cartographer
Atlantic Hydrographic Branch

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.

Robert A. Brown Date: 6 SEPTEMBER 2001
James S. Verlaque
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Samuel P. DeBow Date: September 20, 2001
Samuel P. DeBow
Captain, NOAA
Chief, Hydrographic Surveys Division

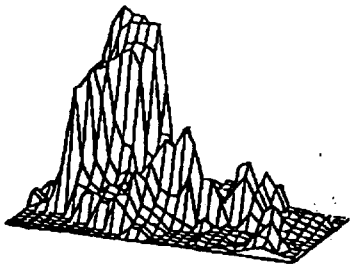
APPENDIX A

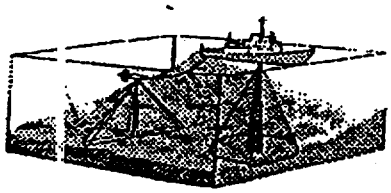
DANGER TO NAVIGATION REPORTS

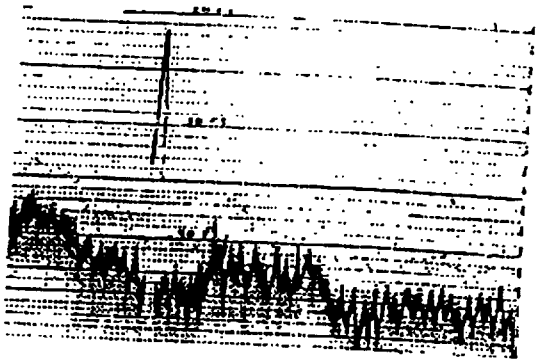
FAX COVER SHEET

NOAA ATLANTIC HYDROGRAPHIC BRANCH
OFFICE OF COAST SURVEY - CS33
439 W. YORK ST
NORFOLK VA. 23510

PHONE 757-441-6696 FAX 757-441-6601







TO: JANA DA SILVA

FAX NUMBER: 318-268-3221 PHONE NUMBER:

FROM: Rick Sipos

DATE: 9-24-99 TIME 1230

Comments

COPY OF DANGER TO NAV REPORT FOR YOUR RECORDS.

Rick

This FAX CONTAINS 6 PAGES INCLUDING COVER SHEET.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE, Office of Coast Survey
Atlantic Hydrographic Branch
439 W. York Street
Norfolk, VA 23510-1114

September 24, 1999

Commander (OAN)
Eighth Coast Guard District
Hale Boggs Federal Building
New Orleans, LA 70130-3396

Dear Sir:

While conducting hydrographic survey operations for NOAA Project OPR-K171, Survey H10915, in the approaches to Sabine Pass, Texas, NOAA Contractor, Fugro Geoservices Inc., discovered three uncharted obstructions. Attached are the three Danger to Navigation Reports and a section of NOS Chart 11332 indicating the position of the respective dangers. A summary of the three dangers follows:

Item	Depth (ft) MLLW	Latitude (NAD 83)	Longitude (NAD 83)	NOAA (AHB) Charting Recommendation	Affected Charts
Man made debris – drag scar with what may be an anchor	41.80	29-17-04.63 N	94-14-35.78 W	42 ft Obstruction	411 11300 11323 11332 11340
A group of four linear contacts – Possibly a pipe	42.36	29-17-23.86 N	94-14-08.28 W	42 ft Obstruction	
Man made debris with associated drag scar	41.86	29-17-29.19 N	94-12-29.53 W.	42 ft Obstruction	

The obstructions were located using side scan sonar, shallow water multibeam echosounder, and differential GPS. The depths were obtained using a shallow water multibeam echosounder in accordance with NOAA hydrographic specifications and standards.

Depths are reduced to feet at MLLW using predicted tides and should be viewed as preliminary information, subject to office review.

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

Sincerely,

Robert L. Roberson
for LCDR Andrew L. Beaver, NOAA
Chief, Atlantic Hydrographic Branch

Attachments: Danger to Navigation Reports (3)
Chartlet

Cc: Fugro Geoservices, Inc.
NOAA Hydrographic Survey Division
NOAA Nautical Data Branch
NIMA

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SSW of Sabine Pass

Project Number: OPR-K171-KR

The following item was found during hydrographic survey operations:

Object discovered: Man-Made Debris - Drag scar with what may be an anchor

Covered 41.80 feet (12.74 meters) corrected to Mean Lower Low Water using predicted tide correctors.

Chart Number	Edition		Reported Depth (ft) MLLW	Charted Horiz. Datum	Geographic Position	
	No.	Date			Latitude	Longitude
11332	27	April 3, 1999	41.80	NAD 83	29° 17' 4.63" N	94° 14' 35.78" W
11323	57	April 18, 1998				
11340	63	Aug 15, 1998				
11300	35	April 11, 1998				
411	47	Oct 24, 1998				

Charting Recommendation: Chart a 42 ft Obstruction at 29° 17' 4.63" N, 94° 14' 35.78" W.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SW of Sabine Pass

Project Number: OPR-K111-KR

The following items were found during hydrographic survey operations:

Object discovered: A Group of Four Linear Contacts - Possibly Pipe

Covered 42.36 feet (12.91 meters) corrected to Mean Lower Low Water using predicted tide correctors.

Chart Number	Edition		Reported Depth (ft) MLLW	Charted Horiz. Datum	Geographic Position	
	No.	Date			Latitude	Longitude
11332	27	April 3, 1999	42.36	NAD 83	29° 17' 23.86" N	94° 14' 08.28" W
11323	57	April 18, 1998				
11340	63	Aug 15, 1998				
11300	35	April 11, 1998				
411	47	Oct 24, 1998				

Charting Recommendation: Chart a 42 ft Obstruction at 29° 17' 23.86" N, 94° 14' 08.28" W.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SW of Sabine Pass

Project Number: OPR-K171-KR

The following item was found during hydrographic survey operations:

Object discovered: Man-Made Debris With Associated Drag Scar

Covered 41.86 feet (12.76 meters) corrected to Mean Lower Low Water using predicted tide correctors.

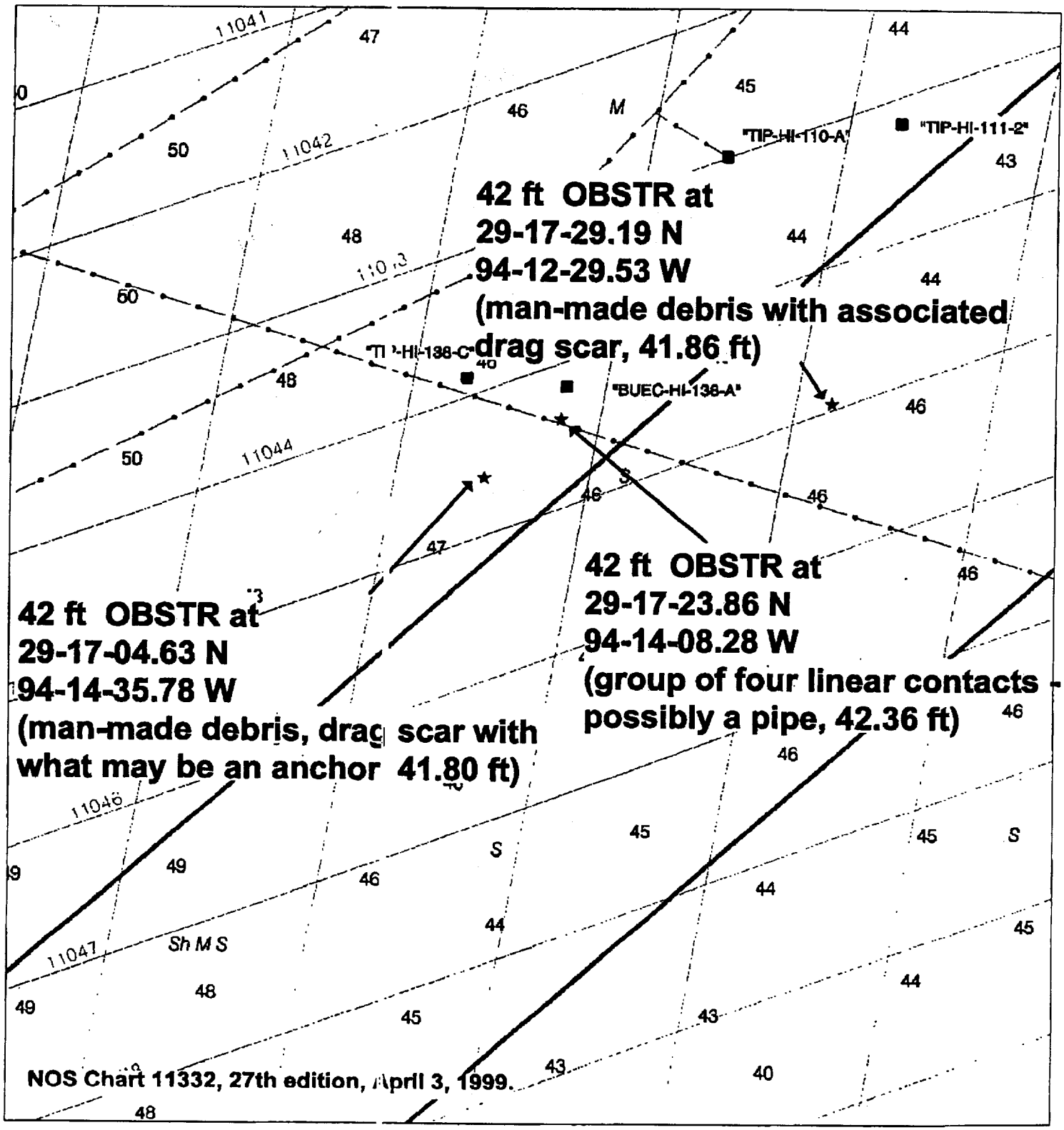
Chart Number	Edition		Reported Depth (ft) MLLW	Charted Horiz. Datum	Geographic Position	
	No.	Date			Latitude	Longitude
11332	27	April 3, 1999	41.86	NAD 83	29° 17' 29.19" N	94° 12' 29.53" W
11323	57	April 18, 1998				
11340	63	Aug 15, 1998				
11300	35	April 11, 1998				
411	47	Oct 24, 1998				

Charting Recommendation: Chart a 42 ft Obstruction at 29° 17' 29.19" N, 94° 12' 29.53" W.

DANGERS TO NAVIGATION

NOS SURVEY: H10915
Located on: September 22, 1999
Positioned with: DGPS

Depths were obtained using Shallow Water Multibeam and corrected to MLLW using predicted tides.



NOS Chart 11332, 27th edition, April 3, 1999.

FUGRO GEOSERVICES, INC.

September 7, 1999

Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510-1114

200 Dulles Drive
Lafayette, Louisiana 70506
Tel : 337-237-2636
Fax: 337-268-3221

Dear Sir,

While conducting hydrographic survey operations in the approaches to Sabine Pass, Texas, Fugro GeoServices, Inc. discovered man-made debris that may constitute a danger to navigation. Attached is the Danger to Navigation Report and a section of chart 11332 indicating the position of this danger.

Differential GPS, side scan sonar, and multibeam sonar were used to determine the position and depth. These data are preliminary and subject to office review.

Sincerely,

Michael Taylor

Enclosures

cc: COTR

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SW of Sabine Pass

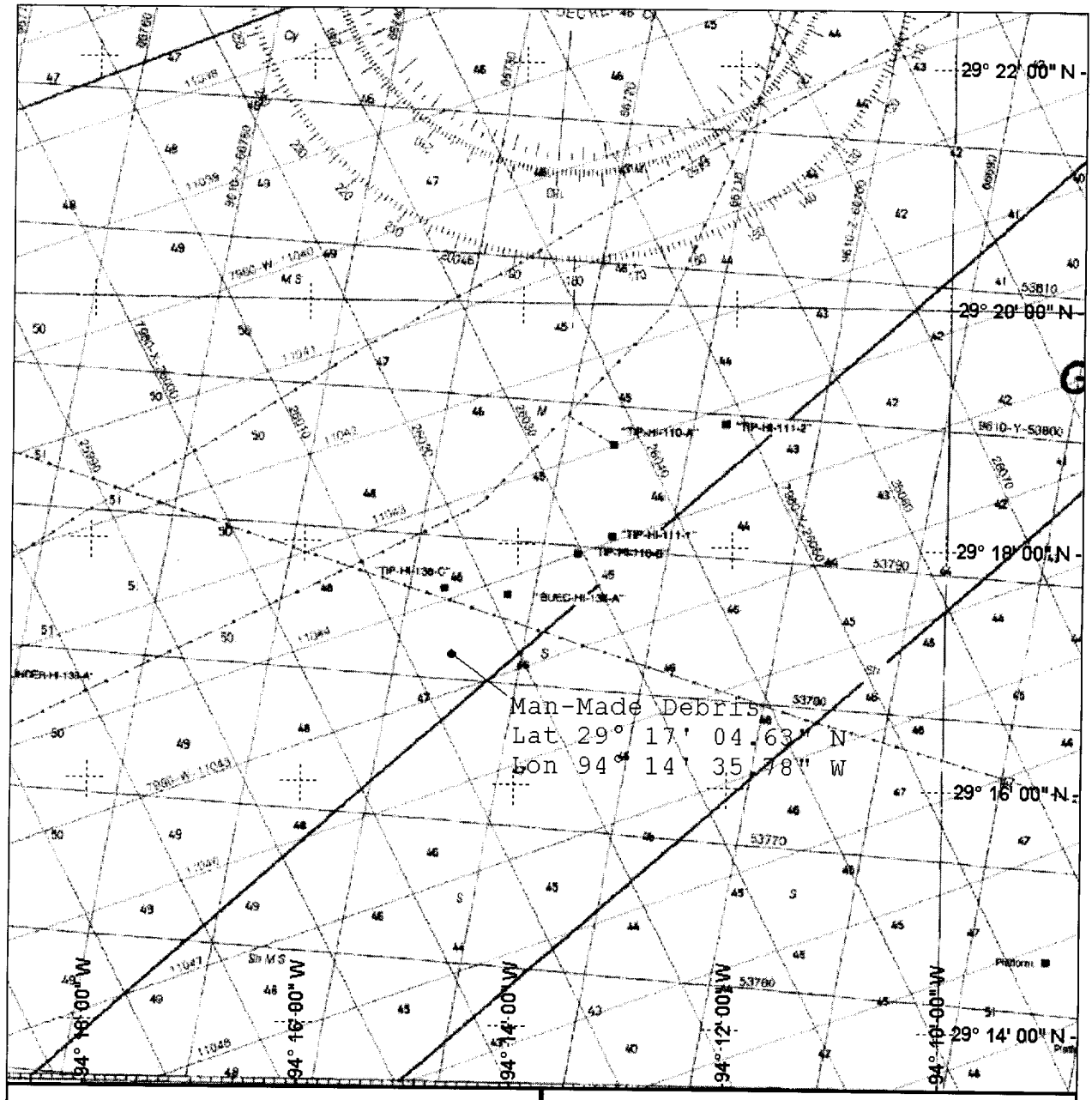
Project Number: OPR-K171-KR

The following item was found during hydrographic survey operations:

Object discovered: Man-Made Debris - Drag scar with what may be an anchor

Covered 41.80 feet (12.74 meters) corrected to Mean Lower Low Water using predicted tide correctors.

Chart Number	Edition		Reported Depth	Charted Horiz. Datum	Geographic Position	
	No.	Date			Latitude	Longitude
11332	25	July 26, 1997	41.80	NAD 83	29° 17' 4.63" N	94° 14' 35.78" W



Project Number OPR-K171-KR
Registry Number H-10915
Sheet O
34 miles SW of Sabine Pass, Texas

JOHN E. CHANCE & ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS - LAFAYETTE, LOUISIANA
A MEMBER OF THE FUGRO GROUP OF COMPANIES

0 800 1600 Meters
GEODETIC DATUM:
SCALE: 1:80000
PROJECTION: UTM
ZONE: ZONE 15
GRID UNITS: METERS

JOB NO.: 24991247	FILE: 24991247.apr (Layout4)	SHEET NO. 1 OF 1
BY: MICHAEL TAYLOR	PRINT: September 8, 1999	

FUGRO GEOSERVICES, INC.

September 22, 1999

200 Dulles Drive
Lafayette, Louisiana 70506
Tel : 337-237-2636
Fax: 337-268-3221

Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510-1114

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Michael Taylor

Enclosures

cc: COTR

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SW of Sabine Pass

Project Number: OPR-K171-KR

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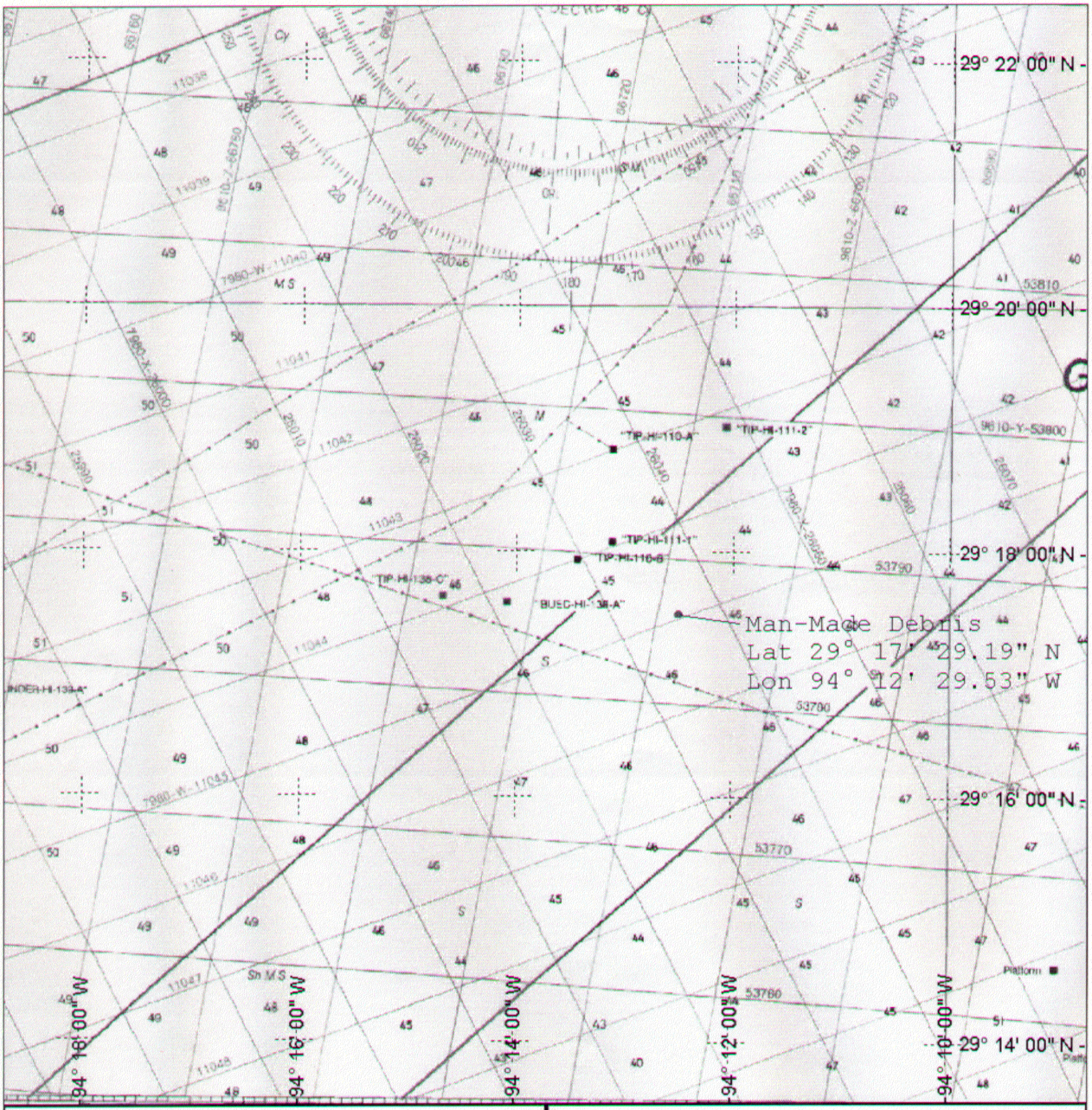

Project Number OPR-K171-KR

Registry Number H-10915

Sheet O

34 miles SW of Sabine Pass, Texas

JOHN E. CHANCE & ASSOCIATES, INC.

CIVIL ENGINEERS & LAND SURVEYORS - LAFAYETTE, LOUISIANA

A MEMBER OF THE FUGRO GROUP OF COMPANIES

0 800 1600 Meters

GEODETIC DATUM:
SCALE: 1:80000
PROJECTION: UTM
ZONE: ZONE 15
GRID UNITS: METERS

JOB NO.: 24991247	FILE: 24991247.apr (Layout4)	SHEET NO. 1 OF 1
BY: MICHAEL TAYLOR	PRINT: September 22, 1999	

FUGRO GEOSERVICES, INC.

September 22, 1999

200 Dulles Drive
Lafayette, Louisiana 70506
Tel : 337-237-2636
Fax: 337-268-3221

Chief, Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510-1114

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Sincerely,

Michael Taylor

Enclosures

cc: COTR

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10915

State: Texas

General Locality: Gulf of Mexico

Sublocality: 34 miles SW of Sabine Pass

Project Number: OPR-K171-KR

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Covered 42.36 feet (12.91 meters) corrected to Mean Lower Low Water using predicted tide correctors.

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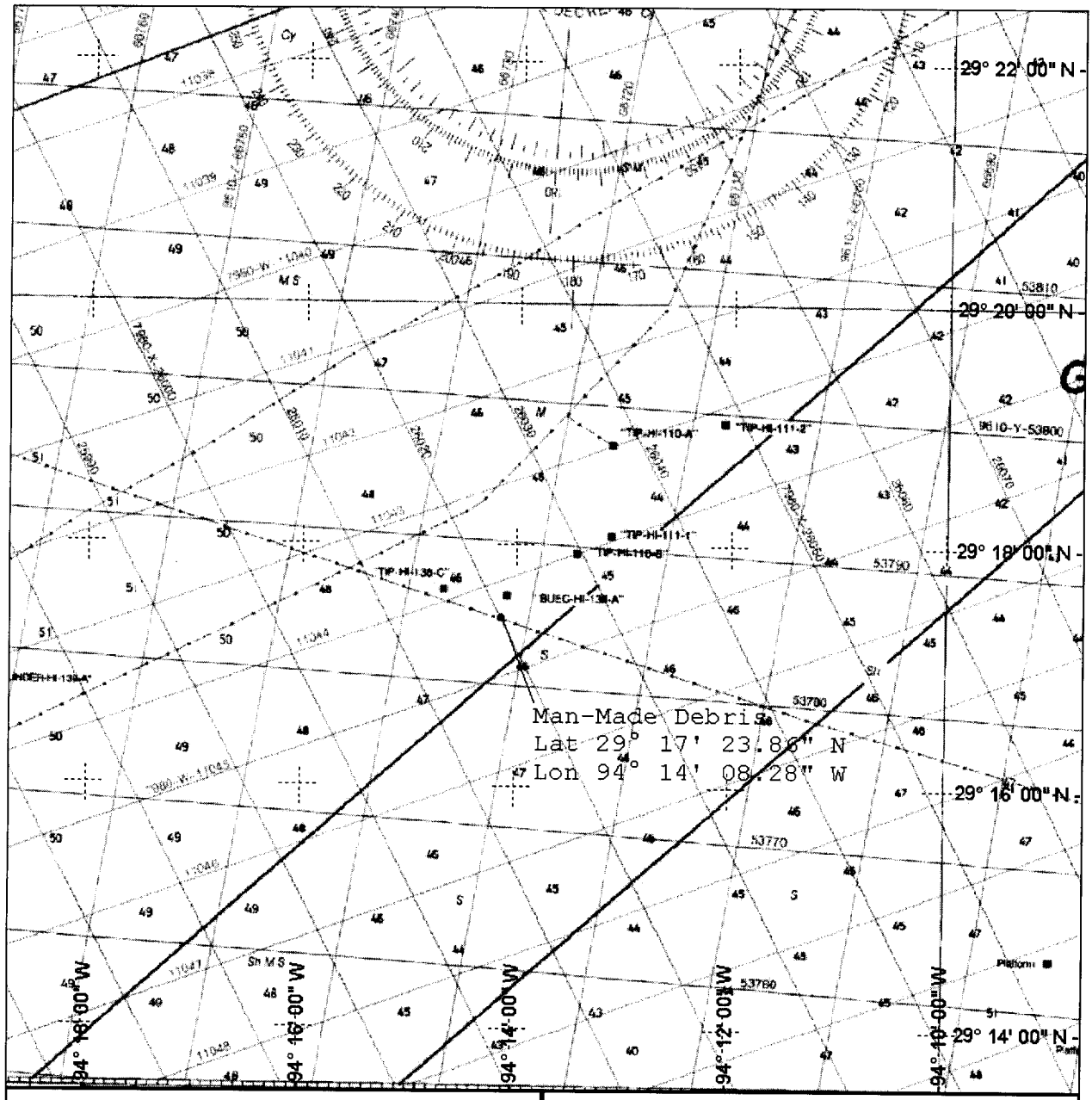


JOHN E. CHANCE & ASSOCIATES, INC.

CIVIL ENGINEERS & LAND SURVEYORS - LAFAYETTE, LOUISIANA

A MEMBER OF THE FUGRO GROUP OF COMPANIES

0 800 1600 Meters

GEODETIC DATUM:
SCALE: 1:80000
PROJECTION: UTM
ZONE: ZONE 15
GRID UNITS: METERS

Project Number OPR-K171-KR

Registry Number H-10915
Sheet O
34 miles SW of Sabine Pass, Texas

JOB NO.: 24991247	FILE: 24991247.apr (Layout4)	SHEET NO. 1 OF 1
BY: MICHAEL TAYLOR	PRINT: September 22, 1999	

Subject: **Danger to Nav H10915**
Date: Fri, 06 Oct 2000 12:16:10 -0400
From: Gene Parker <castle.e.parker@noaa.gov>
Organization: NOS, OCS, HSD, Atlantic Hydrographic Branch
To: Lyn Preston <Lyn.Preston@noaa.gov>,
Andrew Beaver <Andrew.L.Beaver@noaa.gov>,
Don Haines <Don.Haines@noaa.gov>

Please find two attached files with documentation for Danger to Navigation concerning contract survey H10915. Attachment named "DtoN-H10915.wpd" is the WordPerfect letter document. The second attachment named "DtoN-H10915-Chartlet.wpd" is a chartlet image from MapInfo pasted into a WordPerfect document. If there is any problems extracting the documents, please reply to sender and another method of data transmission will be used.

Survey Registry Number: H10915
Survey Location: State: Texas
Locality: Gulf of Mexico
Sub-Locality 34 miles Southwest of Sabine Pass
Project Number: OPR-K171

Thank you for your assistance with this matter.
Sincerely, Castle Eugene Parker

DtoN-H10915-Chartlet.wpd	**Name:** DtoN-H10915-Chartlet.wpd **Type:** WordPerfect (application/wordperfect6) **Encoding:** base64 **Download Status:** Not downloaded with message

DtoN-H10915.wpd	**Name:** DtoN-H10915.wpd **Type:** WordPerfect (application/wordperfect6) **Encoding:** base64 **Download Status:** Not downloaded with message

Castle Eugene Parker <castle.e.parker@noaa.gov>
Physical Scientist
NOAA/NOS/OCS/HSD
Atlantic Hydrographic Branch

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: **H10915**

Survey Location: State: Texas
Locality: Gulf of Mexico
Sub-Locality 34 miles Southwest of Sabine Pass

Project Number: OPR-K171

Survey Date(s): August 19 - October 16, 1999
February 8 - February 16, 2000

Soundings are reduced to Mean Lower Low Water (MLLW) using Verified Water Levels, horizontal datum is North American Datum 1983 (NAD83). The position was determined by Differential Global Positioning System (DGPS).

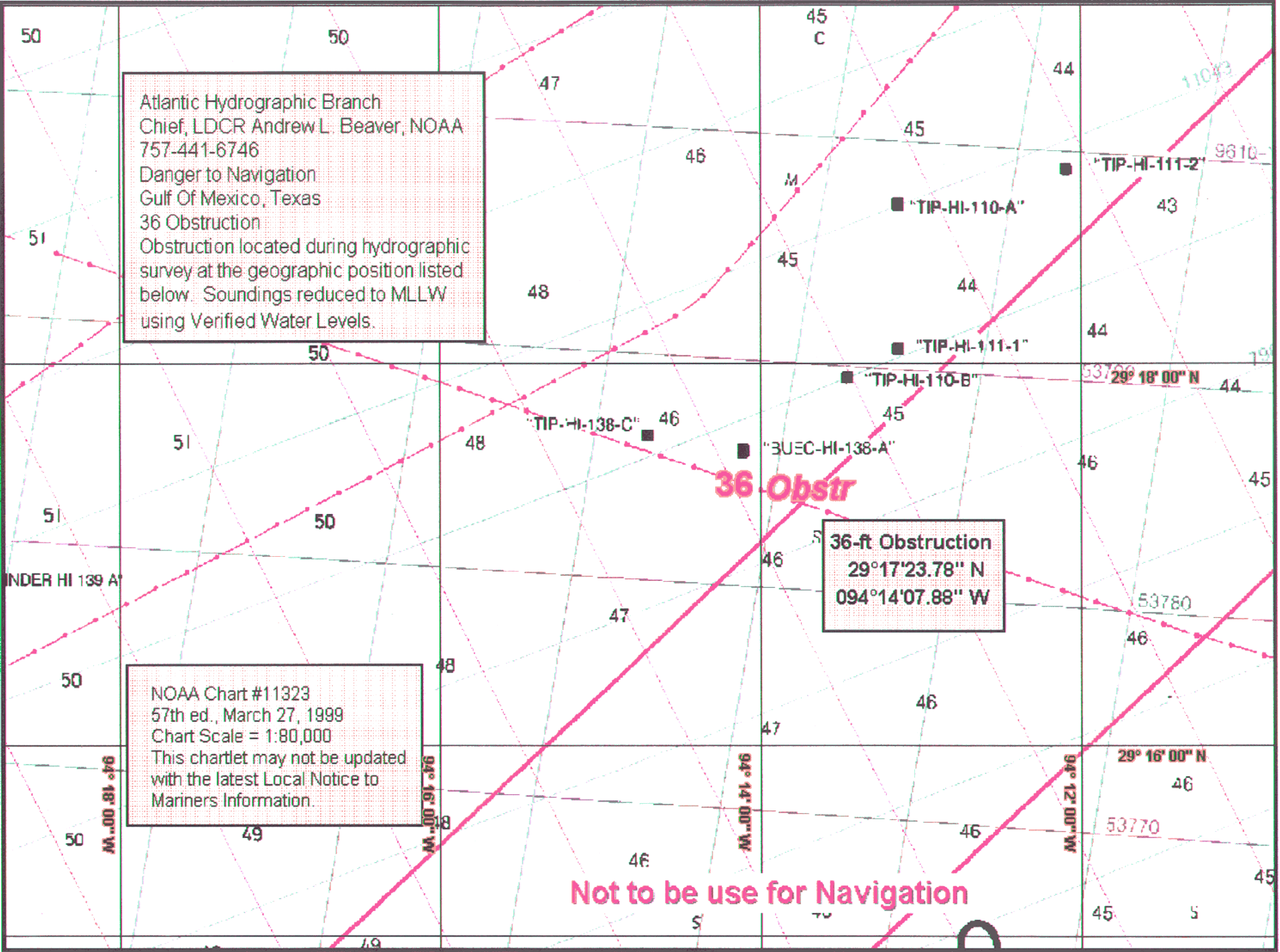
Chart(s) **11323** 57th Edition, March 27, 1999 1:80,000 NAD83
11330 12th Edition, August 8, 1998 1:250,000 NAD83

DANGER TO NAVIGATION

Feature	Depth (ft)	Latitude	Longitude
Obstruction	**36**	**29°17'23.78"N**	**094°14'07.88"W**

The obstruction is an unidentified feature rising off the bottom approximately 6.56 feet (2.0 meters). Least depth acquired was 36.09 feet (11.00 meters) utilizing a swallow water multibeam system.

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


Atlantic Hydrographic Branch
Chief, LDCR Andrew L. Beaver, NOAA
757-441-6746
Danger to Navigation
Gulf Of Mexico, Texas
36 Obstruction
Obstruction located during hydrographic survey at the geographic position listed below. Soundings reduced to MLLW using Verified Water Levels.
"TIP-HI-111-2"
"TIP-HI-110-A"
"TIP-HI-111-1"
"TIP-HI-110-B"
"TIP-HI-138-C"
"BUEC-HI-138-A"
29° 18' 00" N
29° 16' 00" N
36 Obstr
36-ft Obstruction
29°17'23.78" N
094°14'07.88" W
NOAA Chart #11323
57th ed., March 27, 1999
Chart Scale = 1:80,000
This chartlet may not be updated with the latest Local Notice to Mariners Information.
94° 18' 00" W
94° 16' 00" W
94° 14' 00" W
94° 12' 00" W
Not to be use for Navigation

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. H10915

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
11323	12-04-2000	D. A. Blake	Full [redacted] 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
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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED