NOAA FORM 76-35A
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

# DESCRIPTIVE REPORT

Type of Survey: Hydrographic Multibeam & 200% Sidescan

Field No. : Sheet A

Registry No. : F00546

LOCALITY

State: Louisiana

General Locality: Louisiana Safety Fairways

Sublocality: Mississippi River Gulf Outlet

2007

CHIEFS OF PARTY Scott Croft, Joseph Burke

**LIBRARY & ARCHIVES** 

DATE:

LIDRAR

NOAA FORM 77-28	U.S. DEPARTMENT OF COMMERCE	REGISTRY NUMBER:	
(11-72)	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	F00546	
	HYDROGRAPHIC TITLE SHEET		
		FIELD NUMBER:	Sheet A
State: Louisiana			
General Locality: <u>Lo</u>	uisiana Safety Fairways		
Locality: <u>Mississippi</u>	River Gulf Outlet		
Scale: <u>1:40,000</u>	Date of Survey: October 200	7 to November 2007	
Instructions Dated:	luly 11, 2007 Project Number: OPR-K378	-KR-07	
Vessels: <u>R/V Inez M</u>	cCall		
Chiefs of Party: <u>Scott</u>	Croft, Joseph Burke		
Surveyed by: <u>J. Bake</u>	er, C. Taylor, J. Mustian, J. Burke, Scott Croft, J.W. Burke		
Soundings taken by e	chosounder, hand lead line, or pole: Simrad EM3002 Multib	eam Echosounder	
Graphic record scaled	by: <u>N/A</u>		
Graphic record checke	ed by: _N/A		
Protracted by: <u>N/A</u>	Automated plot by: HP 1055	Plotter	
Verification by: <u>C&amp;C</u>	Technologies Personnel		
Soundings in: Feet:	X Fathoms: Meters: at MLW:	MLLW:	<u> </u>
Remarks:	Multibeam Hydrographic Survey of Sheet A, Fairway Investi	gations	
	Data collection in meters, referenced to MLLW, later conver	ted into feet	
	200% side scan sonar coverage UTC time was used exclusively		
	Tidal Zones: CGM 38, 184, 185, 186, 187, 222, 223, 224, 22	25, <u>226, 236, 237, 2</u> 3	8, 239
	Tidal Station: 8745557 (Gulfport Harbor, MS)		

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#### **SEPARATES**

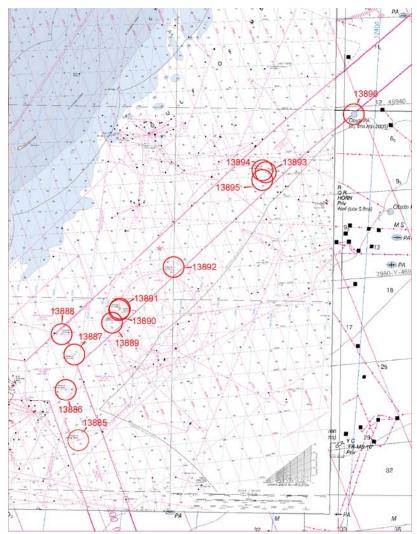
Separates I	Acquisition and Processing Logs
Separates II	Sonar Contact Table
	Side Scan Data Reproductions
Separates III	Sound Velocity Profile Data
Separates IV	Statement of Work
Separates V	Crossline Comparisons





#### A. AREA SURVEYED

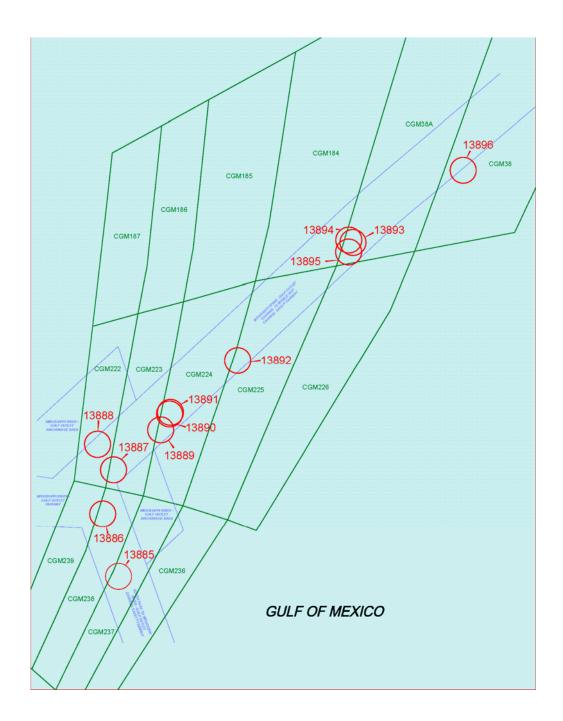
This survey consisted of twelve AWOIS item investigations. These twelve items were located within the bounds of the Louisiana Safety Fairway near the mouth of the Mississippi River Gulf Outlet. The following shows the layout of the Project. Each of the twelve AWOIS items required a one-kilometer search radius. Separate line plans were created for each search area, except when the search areas overlapped. Where there was overlap, line plans were merged, and separate items were investigated using a single set of lines. As a result, the twelve items were investigated using eight separate line plans. Water depths in the survey area range from 49 feet to 74 feet Mean Lower Low Water (MLLW).







The twelve search areas were located within eleven separate tidal zones. The primary tidal gauge for this survey was the Gulfport Harbor Gauge (8745557). The layout of the tidal zones is shown below.







#### **B. DATA ACQUISITION AND PROCESSING**

#### **B.1 EQUIPMENT**

System	Manufacturer	Model
Multibeam Sonar	Simrad	EM3002
Side Scan Sonar	Klein	5000
Single Beam Sonar	Echotrac	3200
Motion Sensor	CODA	F180
Primary Positioning System	CNAV	2050
Secondary Positioning System	CNAV	2050
Tertiary Positioning System	CODA	F180
Sound Speed at Transducer	Endeco	YSI
Sound Velocity Profiler	Seabird	SBE19

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

The RV *Inez McCall*, a 110-foot vessel, was used as the platform for all hydrographic operations. The vessel is 24 feet wide, with an approximate draft of 9 feet. A central reference point was established prior to the survey from which all relevant offsets where measured. The relevant offsets are presented in the following table where X is positive forward, Y is positive starboard, and Z is positive down. *Concur.* 

	EM3002	Side Scan	Port Pos MV	Starboard
	Head	Sonar	Antenna	Pos MV
		Towpoint		Antenna
X Offset	14.8m	-17.97m	2.99m	3.044m
Y Offset	0.0m	0.0m	-0.971m	0.965m
Z Offset	2.475m	-2.722m	-6.50m	-6.48m

Detailed vessel diagrams and patch test results are presented in the Data Acquisition and Processing Report\*. *Concur.* \**Filed with original field records.* 





#### **B.2 QUALITY CONTROL**

In order to most efficiently carry out this survey, the survey lines were oriented roughly east-west throughout the survey area. The line spacing was set at 90 meters based on the criteria of 200 percent side scan coverage using Technique 1 as set forth in Section 6.1 of the "Specifications and Deliverables" document for the majority of the survey. The side scan sonar was operated at a 100 meter per channel range except for investigation lines where the range was typically reduced to 50 meters. The angular sector on the multibeam was set so that the criterion of two times water depth, as well as all accuracy, resolution, and detection criteria as set forth in Sections 5.2 and 5.3 of the "Specifications and Deliverables" document, were met. *Concur.* 

The internal consistency of the multibeam depth values is quantified in the cross line statistics that were performed at the end of each main line. Cross lines were run prior to the collection of main line data so that quality control statistics could be performed on the data after each line. Based on pre-plot calculations, the total cross line miles was 10 nm, while the total main line miles was 241 nm. A single crossline was collected in each of the eight survey areas. No rerun lines needed. As can be seen in the sample statistics found in Separates V\*, the main line was compared to all cross lines for which there was overlapping data. The graphs shown in Separates V\* are a random sample of the graphs that were produced. The graphs show the mean difference, RMS difference, and confidence interval for each beam. The results show that the multibeam data was repeatable with 90% of the soundings within about 8 to 14 centimeters across the swath. *Concur.* 

\*Filed with original Field records.





The multibeam heads placement at the bow of the vessel made the data susceptible to heavier seas. As a result, there are many instances when the swath width of the data was reduced to less than two times water depth. Because the primary data product for this survey was the side scan coverage, the decision was made to continue survey operations despite the reduction in multibeam coverage. *Concur.* 

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

#### **B.3 CORRECTIONS TO ECHO SOUNDINGS**

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

#### C. VERTICAL AND HORIZONTAL CONTROL

Tide and water level corrections were determined and applied in accordance with Attachment #7 of the Statement of Work. Data from the Gulfport harbor, MS (8745557) tidal station was used. Tidal zoning as set forth in the Statement of Work\* was applied. The following table shows the tidal zone and correctors that were used for this sheet. Tidal data were processed using the 1983-01 epoch.

Tide Zone	Reference Station	Time Corrector (min)	Range Ratio
CGM38	8745557	-48	0.82
CGM38A	8745557	-42	0.82
CGM184	8745557	-36	0.82
CGM185	8745557	-30	0.82
CGM186	8745557	-24	0.82
CGM187	8745557	-18	0.82
CGM222	8745557	-18	0.79
CGM223	8745557	-24	0.79
CGM224	8745557	-30	0.79
CGM225	8745557	-36	0.79
CGM226	8745557	-42	0.79

\*Filed with original Field records.

#### Descriptive Report to Accompany Hydrographic Survey F00546





CGM236	8745557	-42	0.79
CGM237	8745557	-36	0.79
CGM238	8745557	-30	0.79
CGM239	8745557	-24	0.79

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

#### **D. RESULTS AND RECOMMENDATIONS**

#### D.1 CHART COMPARISON

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

The areas covered by this survey fall within the bounds of the following charts:

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

Because this survey was limited to only the areas immediately surrounding currently charted obstructions, Local Notice to Mariners were not considered.

#### D.1.2 CHARTED SOUNDINGS

Charts 411, 1115A, 11006, and 11360 were not compared to survey results because their scale prevented any meaningful comparison. *Concur.* 





# <u>11363</u>

Coincidental charted soundings can be found within each of the item investigation areas. Survey soundings agreed well with charted depths in the search areas for items 13885 – 13891. *Concur.* 

Charted soundings did not agree in the search areas for items 13892 - 13895. In these areas, charted soundings ranged between 3 - 5 feet shoaler than survey soundings. *Concur.* 

#### <u>11366</u>

There are only four charted soundings within the survey bounds on chart 11366. Each of these soundings was compared to the current survey depths. Coincidental charted soundings are located with the search radius of items 13885, 13886, 13887, and 13895. *Concur.* 

The sounding at item 13885 is a charted 9.3 fathoms. Survey depths in the vicinity are  $9.8 - \frac{610}{10}$  fathoms. The charted sounding is approximately 0.5 - 0.666 fathoms shoaler than the survey soundings. *Concur.* 

The charted and survey soundings found at items 13886 and 13887 show good agreement. *Concur.* 

The charted sounding at item 13895 is 8.3 fathoms. Survey depths in the vicinity are 9 - 9.2 fathoms. The charted depth is approximately 0.666 - 0.83 fathoms shoaler than the survey soundings. *Concur.* 





#### D.1.3 SHOALS AND HAZARDOUS FEATURES

There were no new shoals or hazardous features identified by this survey. *Concur.* 

#### D.1.4 AWOIS ITEMS

The following twelve AWOIS Items were assigned for full investigation. All of the following charted positions were supplied along with the project instructions.

#### Item 13885

Description: Obstruction

Charted Position: 29.3766670° N, 88.9250000° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. A small contact was investigated inside the search radius of this item, but it was determined to be an insignificant bottom feature. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13886

Description: Obstruction

Charted Position: 29.4200000° N, 88.9383330° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature





be removed from the chart, and the chart be updated with the current survey. *Concur.* 

<u>Item 13887</u>
Description: Obstruction
Charted Position: 29.4508330° N, 88.9303330° W
Search Radius: 1000 meters
Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder
Position Determined By: Differential GPS
Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13888

Description: Obstruction

Charted Position: 29.4683330° N, 88.9433330° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

Item 13889

Description: Obstruction Charted Position: 29.4790000° N, 88.8935000° W Search Radius: 1000 meters





Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13890

Description: Obstruction

Charted Position: 29.4901670° N, 88.8866670° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

Item 13891

Description: Obstruction

Charted Position: 29.4913330° N, 88.8860000° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS





#### Item 13892

Description: Obstruction

Charted Position: 29.5283330° N, 88.8333330° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. A small contact was investigated inside the search radius of this item, but it was determined to be an insignificant bottom feature. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13893

Description: Obstruction

Charted Position: 29.6116670° N, 88.7433330° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13894

Description: Obstruction Charted Position: 29.6133330° N, 88.7466670° W Search Radius: 1000 meters Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder





Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13895

Description: Obstruction

Charted Position: 29.6050000° N, 88.7466670° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. *Concur.* 

#### Item 13896

Description: Obstruction

Charted Position: 29.6633330° N, 88.6566670° W

Search Radius: 1000 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS





#### D.1.5 INVESTIGATION ITEMS

Additional investigation work was performed over three sonar contacts. Upon further investigation, these contacts proved to be insignificant bottom features. *Concur.* 

#### D.1.6 DANGER TO NAVIGATION REPORTS

Anti-DTON reports were issued for all AWOIS items investigated as a part of this survey on January 18, 2008. A copy of these reports can be found in Appendix I\* of this report. *Concur.* 

#### D.2 ADDITIONAL RESULTS

#### D.2.1 PRIOR SURVEYS

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

#### D.2.2 AIDS TO NAVIGATION

There are no aids to navigation within the survey area. *Concur.* 

#### D.2.3 EXISTING INFRASTUCTURE

One charted platform exists within the survey bounds, platform MP30 "A". This abbreviation stands for Main Pass block 30, platform A. This platform was found as charted at the following position. *Concur.* 

Survey Position			
Latitude Longitude			
29.46868°N 88.95050°W			

\*Filed with original Field records.





#### D.2.4 OTHER PERTINENT INFORMATION

All of the side scan data collected for this project has been layback corrected. Data should be imported into Caris using fish position and zero layback correction. *Concur.* 

The Caris project submitted is located within a folder called 073075. This number is the C&C job number associated with this project. *Concur.* 

Due to the short weather windows available for data collection at the time that this survey was performed, data was collected for this survey over two separate two day spans. As a result of this time lag, and the distance from the primary tide gauge, a significant tide bust can be seen in the bathymetry data collected within the search radius of both items 113887 and 113888. The largest difference between adjacent survey lines is found at item 113887, where tide offsets cause a two-foot discrepancy. Tidal differences also cause higher standard deviation values at almost all intersections of mainlines and cross lines. *Concur.* 

There are many instances of reduced swath width in the multibeam coverage. The multibeam transducers location at the bow of the vessel made it more susceptible to higher sea states. Because the focus of this work was to identify the existence of obstructions in the side scan data, and sea state never adversely affected the quality of the side scan data, sections of narrow multibeam swath width were not rerun. *Concur.* 

In addition to cross lines, the accuracy of survey depths was established using daily lead-line comparisons. *Concur.* 

An S57 feature file for platform MP30"A" has been submitted in a Caris Notebook project. This project is named MP30"A". *Concur.* 





# LETTER OF APPROVAL

#### REGISTRY NUMBER F000546

This report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of the survey F000546 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and CARIS project have been closely reviewed and are considered complete and adequate as per the Statement of Work.

This report is meant to be accompanied by the Data Acquisition and Processing Report for project OPR-K387-KR revised and submitted September 2007.

Joseph Burke Chief of Party C&C Technologies February 2008 Descriptive Report to Accompany Hydrographic Survey F00546





# **APPENDIX I**

# DANGER TO NAVIGATION REPORTS





# AWOIS ITEM 13885 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

		AWOIS	Feature	Charted	Charted
Ν	lo.	Item	Туре	Latitude	Longitude
	1	13885	Obstruction	29.3766670° N	88.9250000° W

# Hydrographer's Comments

This item is listed as an obstruction. A small contact was investigated inside the search radius of this item, but it was determined to be an insignificant bottom feature. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey.





# AWOIS ITEM 13886 "ANTI-DTON"

State:	Louisiana
General Locality:	Louisiana Safety Fairways
Sublocality:	Mississippi River Gulf Outlet
Date:	01/18/2008
NOAA Survey:	F00546

# **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

# Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13886	Obstruction	29.4200000° N	88.9383330° W

# Hydrographer's Comments





# AWOIS ITEM 13887 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13887	Obstruction	29.4508330° N	88.9303330° W

# Hydrographer's Comments





# AWOIS ITEM 13888 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No	. Item	Туре	Latitude	Longitude
1	13888	Obstruction	29.4683330° N	88.9433330° W

# Hydrographer's Comments





# AWOIS ITEM 13889 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No	. Item	Туре	Latitude	Longitude
1	13889	Obstruction	29.4790000° N	88.8935000° W

# Hydrographer's Comments





# AWOIS ITEM 13890 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13890	Obstruction	29.4901670° N	88.8866670° W

# Hydrographer's Comments





# AWOIS ITEM 13891 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13891	Obstruction	29.4913330° N	88.8860000° W

# Hydrographer's Comments





# AWOIS ITEM 13892 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

#### **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13892	Obstruction	29.5283330° N	88.8333330° W

# Hydrographer's Comments





# AWOIS ITEM 13893 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No	ltem	Туре	Latitude	Longitude
1	13893	Obstruction	29.6116670° N	88.7433330° W

# Hydrographer's Comments





# AWOIS ITEM 13894 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

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11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No	. Item	Туре	Latitude	Longitude
1	13894	Obstruction	29.6133330° N	88.7466670° W

# Hydrographer's Comments





# AWOIS ITEM 13895 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

# **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

#### **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No	. Item	Туре	Latitude	Longitude
1	13895	Obstruction	29.6050000° N	88.7466670° W

# Hydrographer's Comments





#### AWOIS ITEM 13896 "ANTI-DTON"

State:LouisianaGeneral Locality:Louisiana Safety FairwaysSublocality:Mississippi River Gulf OutletDate:01/18/2008NOAA Survey:F00546

#### **Investigation Method**

200% Side Scan Sonar, Multibeam Echosounder Search Radius: 1000 meters Position Determined By: Differential GPS

# **Charts Affected**

Chart Number	Scale	Edition	Edition Date
411	1:2,160,000	51	December 06
1115A	1:456,394	42	February 07
11006	1:875,000	32	August 05
11360	1:456,394	42	February 07
11361	1:80,000	73	February 06
11363	1:80,000	40	January 05
11366	1:250,000	10	May 06

#### Features

	AWOIS	Feature	Charted	Charted
No.	Item	Туре	Latitude	Longitude
1	13896	Obstruction	29.6633330° N	88.6566670° W

# Hydrographer's Comments

Descriptive Report to Accompany Hydrographic Survey F00546





# **APPENDIX II**

# LIST OF GEOGRAPHIC NAMES





No new geographic names where found within the survey area. No corrections to the currently charted geographic names within the survey area are needed.

Descriptive Report to Accompany Hydrographic Survey F00546

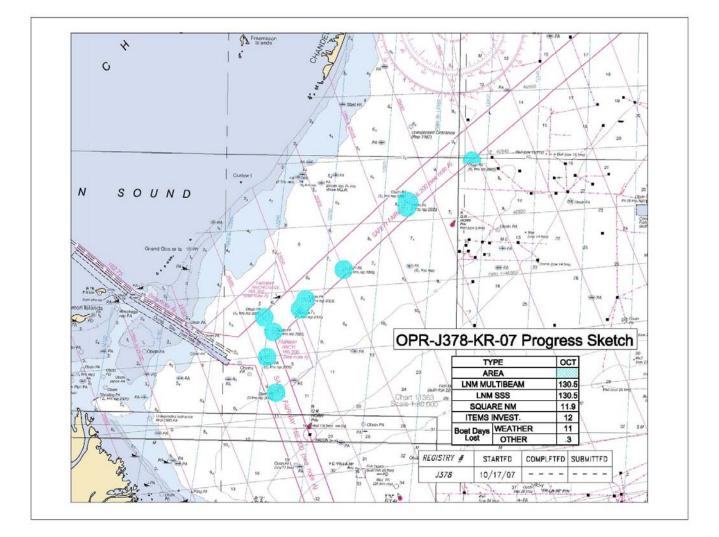




# APPENDIX III PROGRESS SKETCH







Descriptive Report to Accompany Hydrographic Survey F00546





# **APPENDIX IV**

# TIDES AND WATER LEVELS





The tidal data applied to all single beam echosounder data was downloaded from the following website:

http://www.tidesandcurrents.noaa.gov/olddata/data\_retrieve.shtml?input\_code=100111111vwl

Descriptive Report to Accompany Hydrographic Survey F00546





# **APPENDIX V**

## SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDANCE





There are no supplemental survey records or correspondence accompanying this report.

Descriptive Report to Accompany Hydrographic Survey F00546





APPENDIX V

AWOIS





Twelve AWOIS Items were assigned for full investigation. They are discussed in section D.1.4 of this report.

Subject: [Fwd: AWOIS item 13895] Date: Tue, 29 Apr 2008 07:32:02 -0400 From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov> To: Edward Owens <Edward.Owens@noaa.gov>

FYI... email trail. gp

------ Original Message ------Subject: AWOIS item 13895 Date: Fri, 25 Jan 2008 15:00:00 -0600 From: Joseph Burke <joseph.burke@cctechnol.com> To: Castle E Parker <Castle.E.Parker@noaa.gov>,Robert Newton <Robert.Newton@noaa.gov>, Scott Croft <scc@cctechnol.com>

Robert, Gene,

Attached is a new copy of the antiDTON report for AWOIS item 13895. This copy includes a chartlet displaying the location of this item. I do not believe this item was ever displayed on a chart. The source of these item locations, and I understand their history, was a US Navy post Katrina survey. The Navy did not provide any item images or descriptions, only locations.

I have also attached the original zip file that we received from Crescent containing the survey positions that we were responsible for as a part of this project, and the project instructions. All of these positions where to be investigated with 200% side scan over a 1k m radius.

I doubt any of this will provide any real answers for how an uncharted obstruction should be reported, but these are the reasons we surveyed where we did, and why I submitted an antiDTON for all items associated with our project instructions.

If you have any further inquiries regarding this item, I will provided you with whatever information I have available. I expect to submit this completed project in the near future. Thanks,

Joe

Joe Burke

 $file: ///H|/Compilation/F00546\_K378-CC/AHB\_F00546/Reports/DR/F00546\_correspondence\_AHB\_1.txt$ 

NOAA Project Manager C&C Technologies (337) 261 0660

-----

Name: F00546\_SOW.pdf Type: Portable Document Format F00546\_SOW.pdf (application/pdf) Encoding: base64 Download Status: Not downloaded with message

Name: OPR-J378-KR-07 LA Safety

Fairways Obstns.zip

OPR-J378-KR-07 LA Safety Fairways Obstns.zip Type: Zip Compressed Data (application/x-zip-compressed) Encoding: base64 Download Status: Not downloaded with message

Name: AWOIS ITEM 13895.doc

AWOIS ITEM 13895.doc Type: WINWORD File (application/msword) Encoding: base64 Download Status: Not downloaded with message Subject: [Fwd: Re: [Fwd: F00546 Anti-DToN Report #1 submission to MCD]] Date: Tue, 29 Apr 2008 07:31:41 -0400 From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov> To: Edward Owens <Edward.Owens@noaa.gov>

FYI... email trail. gp

----- Original Message ------Subject: Re: [Fwd: F00546 Anti-DToN Report #1 submission to MCD] Date: Fri, 25 Jan 2008 15:34:42 -0500 From: gene\_parker <castle.e.parker@noaa.gov> Organization: NOAA / Atlantic Hydrographic Branch To: "Lyn.Preston" <Lyn.Preston@noaa.gov> References: <4798E585.FAE13F1D@noaa.gov> <479A40F0.607@noaa.gov> Hello Lyn, Rob Newton will be sending you another XML file with only 11 features. AHB had 12 items submitted by contractor. One of the Anti-DtoN items did not match with charted features and we're waiting for additional information. The second submission of XML will be correct with only 11 features. The 12th item is listed as pending and hasn't been resolved.

There are two ways to extract an XML file, one method only exports items that are flagged as DtoN. The other method is to extract the entire XML file from the Pydro PSS compressed file. These two files would be different in content.

Sorry for the mistake.

Regards, Gene

"Lyn.Preston" wrote:

> Robert/Gene:

>

> I left a VMX on Robert's phone this afternoon. The .xml file carries 12

file:///HI/Compilation/F00546\_K378-CC/AHB\_F00546/Reports/DR/F00546\_correspondence\_AHB\_2.txt

> features; the pdf carries 11. Specifically, the feature at 29.36.18 > 88.44.48. Can you check into this? >>LP >> gene\_parker wrote: >> Good Day, >> The previous submission of F00546 on Thursday 1/24/08 contained the >> incorrect DtoN file attachment. Sorry for the wrong file submission. >> H11624 DtoN#1 was submitted on 12/14/2007 to MCD and is not applicable >> to F00546. >>>> The zip file attached named F00546\_AntiDtoN\_#1.zip >> >> If any lingering issues remain, please reply via email or contact me >> directly. >> >> Regards, >> Gene Parker >> >> >>>> >>----- Original Message ------>> Subject: F00546 Anti-DToN Report #1 submission to MCD >> Date: Thu, 24 Jan 2008 09:41:03 -0500 >> From: Robert Newton < Robert.Newton@noaa.gov> >> Organization: NOAA >> To: \_NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov>,Edward Owens >><Edward.Owens@noaa.gov> >> CC: Castle E Parker < Castle.E.Parker@noaa.gov>, Crescent Moegling >> <Crescent.Moegling@noaa.gov>,Doug Baird <Doug.Baird@noaa.gov>, Tim >> Osborn <Tim.Osborn@noaa.gov>,Mark Opdyke <Mark.Opdyke@noaa.gov>, Shep >> Smith <Shep.Smith@noaa.gov> >> >> Good Day, >> >> Please find attached a zip file for survey F00546 Anti-DToN Report #1 >> for submission to Marine Chart Division (MCD). The information submitted >> by the contractor is preliminary and has not been verified; the survey >> is ongoing and has not been submitted to AHB. The item was found during >> hydrographic survey operations. The items are charted obstruction PAs

>> located in the Louisiana Safety Fairways.

>>

>> The contents of the attached WinZip file were generated at Atlantic

>> Hydrographic Branch by Contract Data Section. The attached zip file

>> contains a DtoN Letter (PDF) and a Pydro XML file.

>>

>> If you have any questions, please direct them back to me; email me or >> call 757-441-6413.

>>

>> Thank you for your assistance with this matter,

>>

>>Robert Newton

>>

Subject: [Fwd: [Fwd: F00546 Anti-DToN Report #1 submission to MCD]] Date: Tue, 29 Apr 2008 07:31:03 -0400 From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov> To: Edward Owens <Edward.Owens@noaa.gov>

FYI... email trail. gp

------ Original Message ------Subject: [Fwd: F00546 Anti-DToN Report #1 submission to MCD] Date: Thu, 24 Jan 2008 14:22:45 -0500 From: gene\_parker <castle.e.parker@noaa.gov> Organization: NOAA / Atlantic Hydrographic Branch To: \_NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov> CC: Doug Baird <Doug.Baird@noaa.gov>,Tim Osborn <Tim.Osborn@noaa.gov>,Crescent Moegling <Crescent.Moegling@noaa.gov>,"Shep.Smith" <Shep.Smith@noaa.gov>,"Edward A. Owens" <Edward.Owens@noaa.gov>,Robert Newton <robert.newton@noaa.gov> BCC: Joe Burke <Joseph.Burke@cctechnol.com>

Good Day,

The previous submission of F00546 on Thursday 1/24/08 contained the incorrect DtoN file attachment. Sorry for the wrong file submission. H11624 DtoN#1 was submitted on 12/14/2007 to MCD and is not applicable to F00546.

The zip file attached named F00546\_AntiDtoN\_#1.zip

If any lingering issues remain, please reply via email or contact me directly.

Regards, Gene Parker

------ Original Message ------Subject: F00546 Anti-DToN Report #1 submission to MCD Date: Thu, 24 Jan 2008 09:41:03 -0500 From: Robert Newton <Robert.Newton@noaa.gov> Organization: NOAA To: \_NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov>,Edward Owens <Edward.Owens@noaa.gov> CC: Castle E Parker <Castle.E.Parker@noaa.gov>,Crescent Moegling <Crescent.Moegling@noaa.gov>,Doug Baird <Doug.Baird@noaa.gov>, Tim  $file: ///H|/Compilation/F00546\_K378-CC/AHB\_F00546/Reports/DR/F00546\_correspondence\_AHB\_3.txt$ 

Osborn <Tim.Osborn@noaa.gov>,Mark Opdyke <Mark.Opdyke@noaa.gov>, Shep Smith <Shep.Smith@noaa.gov>

Good Day,

Please find attached a zip file for survey F00546 Anti-DToN Report #1 for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is ongoing and has not been submitted to AHB. The item was found during hydrographic survey operations. The items are charted obstruction PAs located in the Louisiana Safety Fairways.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains a DtoN Letter (PDF) and a Pydro XML file.

If you have any questions, please direct them back to me; email me or call 757-441-6413.

Thank you for your assistance with this matter,

Robert Newton

\_\_\_\_\_

Name: F00546\_AntiDToN\_#1.zip Type: Zip Compressed Data F00546\_AntiDToN\_#1.zip (application/x-zip-compressed) Encoding: base64 Download Status: Not downloaded with message Subject: [Fwd: Re: Request for anti-DTON in LA] Date: Tue, 29 Apr 2008 07:28:54 -0400 From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov> To: Edward Owens <Edward.Owens@noaa.gov>

FYI... email trail. gp

------ Original Message ------Subject: Re: Request for anti-DTON in LA Date: Tue, 22 Jan 2008 13:44:43 -0500 From: gene\_parker <castle.e.parker@noaa.gov> Organization: NOAA / Atlantic Hydrographic Branch To: Crescent Moegling <Crescent.Moegling@noaa.gov> CC: "Shep.Smith" <Shep.Smith@noaa.gov>,Robert Newton <robert.newton@noaa.gov> References: <4790BF2D.6000606@noaa.gov> <4795DC02.78303155@noaa.gov> <47962846.6020607@noaa.gov>

Hey, AHB can process this accordingly. The submission would be similar to DtoN submissions.

One thing that we're questioning is the statement from you .... With the recent change

in our policy on releasing data prior to its approval at the branch, I'm not at liberty

to

disseminate this report but I've attached their preliminary findings as a heads up.

What are ya really saying.... C&C sent each of the AWOIS item reports independently.

We'll include you in the loop with Anti DtoN submission.

Gene

Crescent Moegling wrote:

> Hi Gene,

>

> This was a regular Field Examination not associated with the Marine

file:///HI/Compilation/F00546\_K378-CC/AHB\_F00546/Reports/DR/F00546\_correspondence\_AHB\_4.txt > Debris Project. There has been a big push to have these items removed > from the chart ASAP as the local mariners alter their approach using > these Fairways. I was told the "anti-DTON" was the most expedient way to > do this and this is my first exposure to this method. I am not sure how > it should be submitted to MCD but my initial assumption would be the > same as a DTON. >> Is there more that you would like to see aside from the document I sent > January 18? That document had mosaics of the entire assigned areas > showing no significant contacts for each associated AWOIS item. While > this is not the official data submission, this coupled with the > information from Joe should be sufficient to issue this anti-DTON. > > Let me know if you need anything further and thanks for checking back on > this. >> Crescent >> gene\_parker wrote: >> Good morning, >> Is it your intent for AHB to process these features as in the past with DMP DtoN >> processing? I don't really know that AHB could approve the data as the provided >> documentation is about it. We'll have to take the contents (feature removals) >> for face value. >> >> I'll start Rob and Mark on this today. If AHB is not supposed to work the

>> Anti-DtoN as in the past (XML and letter) let me know. In the meantime,

we'll

>> generate the required files and submit to MCD.

>>

>> Regards, Gene

>>

>>

>> PS: Rob and Mark: The submitted document is located at the following

AHB network

>> path:

>>H:\SAR\NOT LOADED\INCOMING\F00546\_DMP\_-J378-C&C\F00546\_Anti-DtoN#1 >>

>> The file is named "F00546\_partial\_report1.doc"

```
>>
>> Rob, take the letter and create a list of GPs for Pydro Import and show
Mark the
>> Danger submission process.
>> Thanks. gene
>>
>> Crescent Moegling wrote:
>>
>>
>>> Shep and Gene,
>>>
>>> C&C is wrapping up their report for FOO-546 and I've asked they submit
>>> an 'anti dton" to AHB. With the recent change in our policy on
releasing
>>> data prior to its approval at the branch, I'm not at liberty to
>>> disseminate this report but I've attached their preliminary findings as
>>> a heads up. USCG and others that transit this channel on a regular
basis
>>> will be affected by the removal of these items from the chart.
>>>
>>> Regards,
>>>
>>> ---
>>> Crescent Moegling
>>> NOAA Hydrographic Surveys Division
>>> Branch Chief - Data Acquisition Control
>>> 301.713.2700 x111
>>>
>>>
_____
                          Name: F00546_partial_report.doc
>>>
                                    Type: WINWORD File
>>> F00546_partial_report.doc
(application/msword)
                        Encoding: base64
>>>
                    Download Status: Not downloaded with
>>>
message
>>>
>
> ---
> Crescent Moegling
> NOAA Hydrographic Surveys Division
> Branch Chief - Data Acquisition Control
> 301.713.2700 x111
```

Subject: [Fwd: Re: Request for anti-DTON in LA] Date: Tue, 29 Apr 2008 07:19:50 -0400 From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov> To: Edward Owens <Edward.Owens@noaa.gov>

FYI... email trail. gp

------ Original Message ------Subject: Re: Request for anti-DTON in LA Date: Tue, 22 Jan 2008 07:05:22 -0500 From: gene\_parker <castle.e.parker@noaa.gov> Organization: NOAA / Atlantic Hydrographic Branch To: Crescent Moegling <Crescent.Moegling@noaa.gov> CC: Shep Smith <Shep.Smith@noaa.gov>,"Edward A. Owens" <Edward.Owens@noaa.gov>,Robert Newton <robert.newton@noaa.gov>,Mark Opdyke <Mark.Opdyke@noaa.gov> References: <4790BF2D.6000606@noaa.gov>

Good morning,

Is it your intent for AHB to process these features as in the past with DMP DtoN processing? I don't really know that AHB could approve the data as the provided documentation is about it. We'll have to take the contents (feature removals) for face value.

I'll start Rob and Mark on this today. If AHB is not supposed to work the Anti-DtoN as in the past (XML and letter) let me know. In the meantime, we'll

generate the required files and submit to MCD.

Regards, Gene

PS: Rob and Mark: The submitted document is located at the following AHB network path: H:\SAR\NOT LOADED\INCOMING\F00546\_DMP\_-J378-C&C\F00546\_Anti-DtoN#1

The file is named "F00546\_partial\_report1.doc"

Rob, take the letter and create a list of GPs for Pydro Import and show Mark the Danger submission process. Thanks. gene

Crescent Moegling wrote:

> Shep and Gene, >> C&C is wrapping up their report for FOO-546 and I've asked they submit > an 'anti dton" to AHB. With the recent change in our policy on releasing > data prior to its approval at the branch, I'm not at liberty to > disseminate this report but I've attached their preliminary findings as > a heads up. USCG and others that transit this channel on a regular basis > will be affected by the removal of these items from the chart. > > Regards, >> --> Crescent Moegling > NOAA Hydrographic Surveys Division > Branch Chief - Data Acquisition Control > 301.713.2700 x111 >>Name: F00546\_partial\_report.doc >F00546\_partial\_report.doc Type: WINWORD File >(application/msword) Encoding: base64 >Download Status: Not downloaded with message >

#### ATLANTIC HYDROGRAPHIC BRANCH EVALUATION REPORT to ACCOMPANY SURVEY F00546 (2007)

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

#### B. DATA ACQUISITION AND PROCESSING

#### **B.1 DATA PROCESSING**

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

HSTP PYDRO version 8.7 r2368-1 CARIS HIPS/SIPS version 6.1 SP2 HF 1 CARIS Bathy Manager version 2.1 SP 1 CARIS HOM version 3.3 CARIS S57 Composer version 2.0

### **B.2. QUALITY CONTROL**

#### B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product entailed using the field's original 2m grids from which the survey scale selected soundings were extracted. The selected sounding set is approximately 10 to 20 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

The pre-compilation products or components included sounding selections (SOUNDG) and Meta objects (M\_COVR, M\_QUAL, M\_NSYS). The individual SAHOB files were inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC\_CU.000) with all values measured in feet following NOAA sounding rounding rules.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The F00546 CARIS H-Cell final deliverables include the following products:

US400546_CS.000	1:80,000 Scale	F00546 H-Cell with Chart Scale Selected Soundings
US400546_SS.000	1:40,000 Scale	F00546 Selected Soundings (Survey Scale)

### D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON	11363 (41st Edition, June/07)
	Corrected through NM 06/30/2007
	Corrected through LNM 06/26/2007
	Scale 1:80,000
ENC Comparison	US4LA34M
	Chandeleur and Breton Sounds
	Edition 11
	Application Date 2007-11-01
	Issue Date 2008-04-10
	Chart 11363

#### D.1.1 <u>Hydrography</u>

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section "D" and Appendix 1&2 of the Descriptive Report.

### D.2. ADDITIONAL RESULTS

All 12 AWOIS items were disproved during this survey. All twelve were submitted as anti-DtoNs. All have been removed from the chart, no update is recommended.

#### D.3. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey:

### D.4. ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

#### APPROVAL SHEET F00546

#### **Initial Approvals:**

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Sarah M. Eggleston Physical Scientist Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: \_\_\_\_\_

**Shepard Smith** Lieutenant Commander, NOAA Chief, Atlantic Hydrographic Branch