

H12530

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey: Basic Hydrographic Survey

Registry Number: H12530

LOCALITY

State(s): Mississippi

General Locality: Approaches to Mississippi Sound

Sub-locality: 20nm Southeast of Dog Keys Pass

2013

CHIEF OF PARTY
Jonathan L. Dasler, PE, PLS, CH

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12530

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(s): **Mississippi**

General Locality: **Approaches to Mississippi Sound**

Sub-Locality: **20nm Southeast of Dog Keys Pass**

Scale: **40000**

Dates of Survey: **07/09/2013 to 10/09/2013**

Instructions Dated: **03/25/2013**

Project Number: **OPR-J348-KR-13**

Field Unit: **David Evans & Associates, Inc.**

Chief of Party: **Jonathan L. Dasler, PE, PLS, CH**

Soundings by: **RESON 7125**

Imagery by: **EdgeTech 4200-FS**

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

NAD 83, UTM Zone 16, Meters, Times are UTC. The purpose of this contract is to provide NOAA with modern, accurate hydrographic survey data with which to update nautical charts of the assigned area.

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.

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Descriptive Report to Accompany Survey H12530

Project: OPR-J348-KR-13

Locality: Approaches to Mississippi Sound

Sublocality: 20nm Southeast of Dog Keys Pass

Scale: 1:40000

July 2013 - October 2013

David Evans & Associates, Inc.

Chief of Party: Jonathan L. Dasler, PE, PLS, CH

A. Area Surveyed

David Evans and Associates, Inc (DEA) conducted hydrographic survey operations in the Approaches to Mississippi Sound, MS, 20nm Southeast of Dog Keys Pass. Survey H12530 was conducted in accordance with the Statement of Work (April 29, 2013) and Hydrographic Survey Project Instructions (revised) (March 25, 2013). The Hydrographic Survey Project Instructions reference the 2012 Hydrographic Surveys Specifications and Deliverables (HSSD), but the OPR-J348-KR-13 surveys were performed using the 2013 HSSD with the exception of the holiday specification for Set Line Spacing Surveys (Section 5.2.2.3) which uses the 2012 specification of no gaps in the entire multibeam swath greater than 3 nodes along track. This modification was approved by Hydrographic Surveys Division (HSD) staff.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 58" 57.6' N 88° 39" 6.63' W	29° 55" 2.51' N 88° 29" 40.35' W

Table 1: Survey Limits

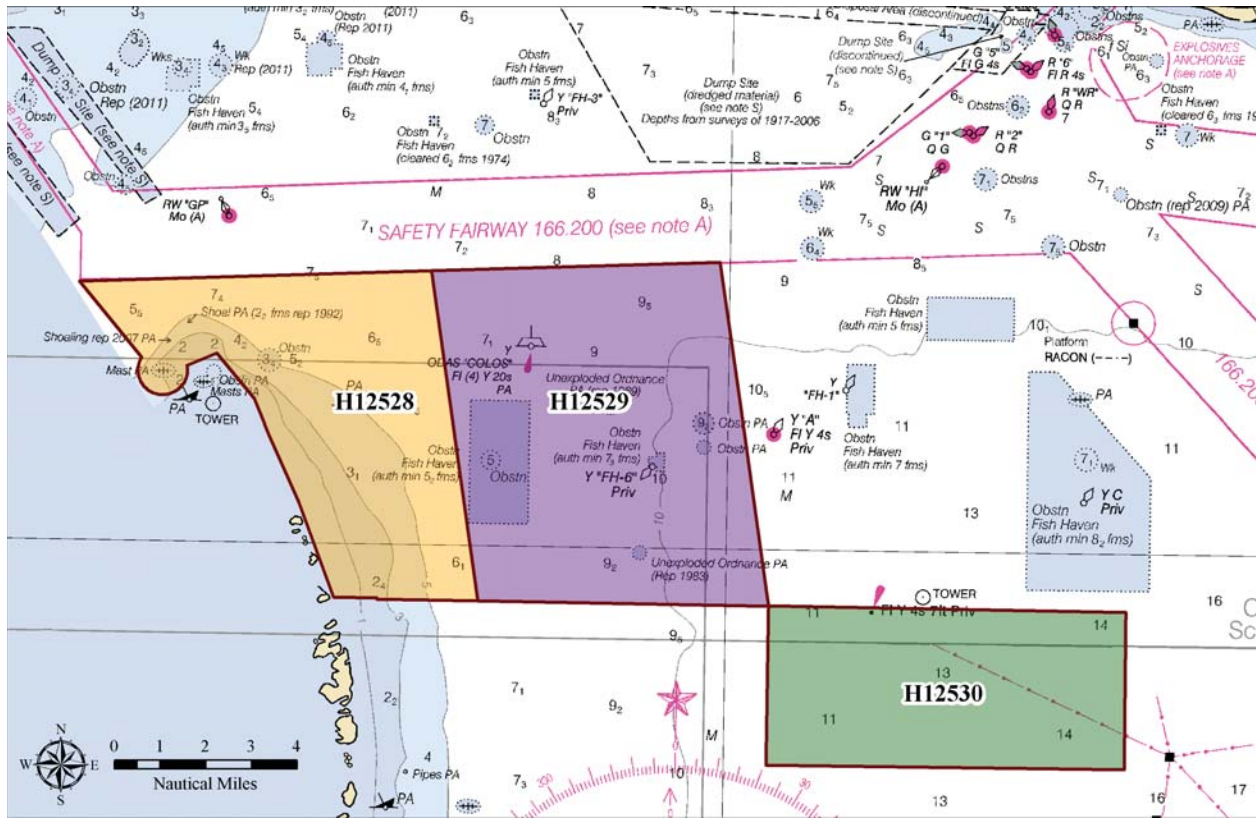


Figure 1: OPR-J348-KR-13 Assigned Survey Areas

Survey Limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The purpose of this survey is to provide National Oceanic Atmospheric Administration (NOAA) with modern, accurate hydrographic survey data with which to update nautical charts of the assigned area.

A.3 Survey Quality

The entire survey is adequate to supersede previous surveys.

A.4 Survey Coverage

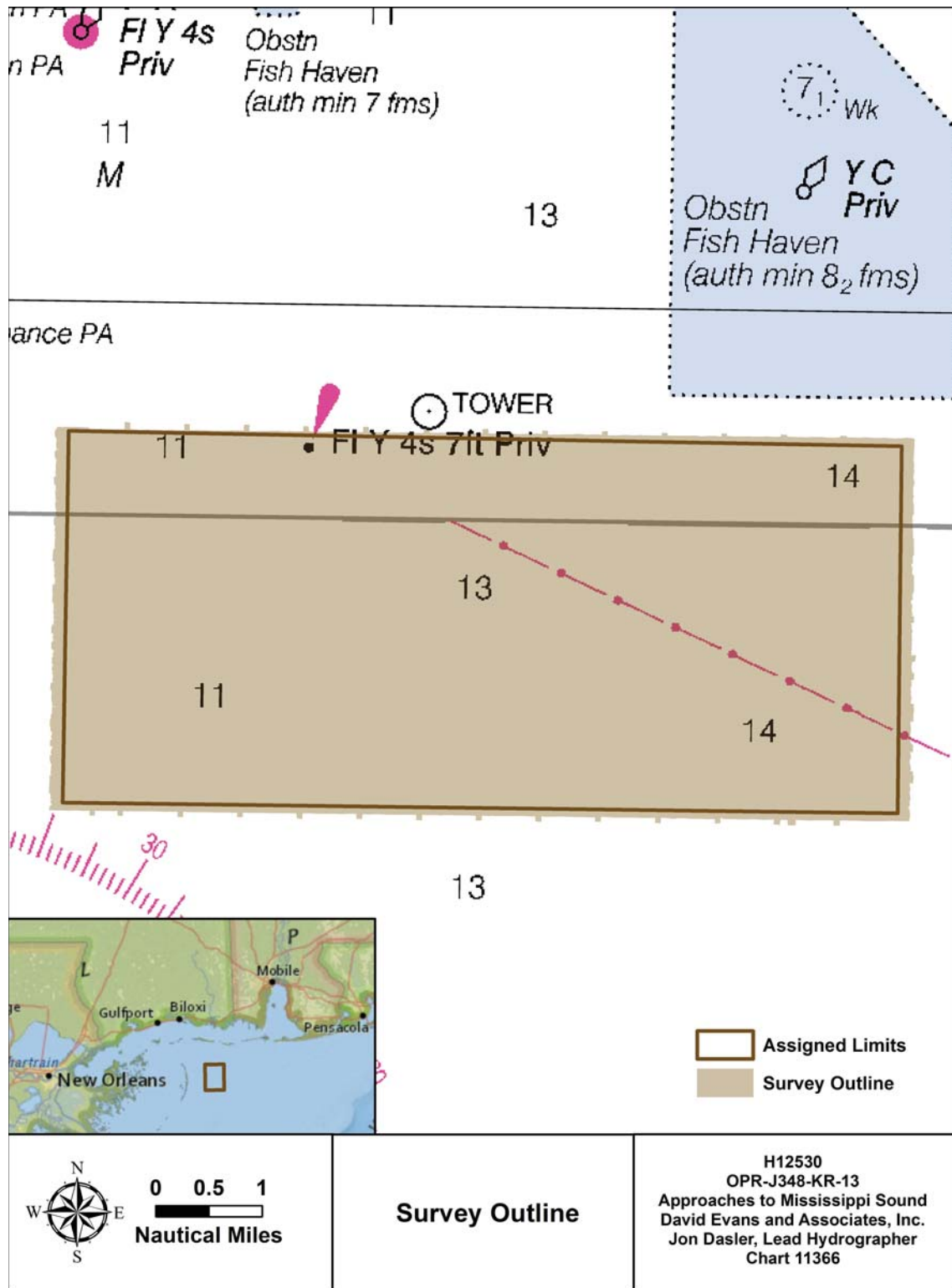


Figure 2: H12530 Survey Outline

The survey consisted of 200% side scan sonar coverage with concurrent multibeam. The survey polygon depicted in the Project Reference File (PRF) OPR-J348-KR-13_PRF.000, which was included with the Hydrographic Survey Project Instructions (March 25, 2013 revised), was used to define the limits for each survey. The survey was conducted over 180-meter set line spacing per 100% coverage (100-meter side scan sonar range). AWOIS items identified by side scan sonar and significant side scan sonar contacts were developed with multibeam sonar to meet object detection coverage requirements for multibeam surveys. The coverage area totaled 29.1 square nautical miles using a combination of side scan and multibeam survey methods.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	Vessel	<i>R/V Westerly</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0
	MBES Mainscheme	0	0
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/MBES Combo Mainscheme	0	0
	SBES/SSS Combo Mainscheme	0	0
	MBES/SSS Combo Mainscheme	603.1	603.1
	SBES/MBES Combo Crosslines	48.6	48.6
	Lidar Crosslines	0	0
	Number of Bottom Samples		3
Number AWOIS Items Investigated		0	
Number Maritime Boundary Points Investigated		0	
Number of DPs		0	
Number of Items Items Investigated by Dive Ops		0	
Total Number of SNM		29.1	

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Julian Day Number
07/09/2013	190
07/14/2013	195
07/15/2013	196
07/18/2013	199
07/25/2013	206
07/31/2013	212
08/01/2013	213
08/02/2013	214
08/04/2013	216
08/05/2013	217
08/06/2013	218
08/13/2013	225
08/14/2013	226
08/15/2013	227
08/16/2013	228
08/21/2013	233
08/27/2013	239
09/25/2013	268
09/26/2013	269
09/30/2013	273
10/01/2013	274
10/09/2013	282

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

The OPR-J348-KR-13 Data Acquisition and Processing Report (DAPR) submitted under separate cover, details equipment and vessel information as well as data acquisition and processing procedures used during

this survey. There were no vessel or equipment configurations used during data acquisition that deviated from those described in the DAPR.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	<i>R/V Westerly</i>
LOA	38 feet
Draft	4.6 feet

Table 4: Vessels Used



Figure 3: R/V Westerly

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
RESON	7125-SV2	MBES
Edgetech	4200-FS	SSS
AML	Micro X / SV Xchange	Surface Sound Speed
Brooke Ocean	MVP-30 with AML Micro SVPT	Primary Sound Speed Profiler
Sea-Bird	SEACAT SBE-19 CTD Profiler	Secondary Sound Speed Profiler
Applanix	POS/MV 320 v4	Positioning & Attitude

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines, acquired for this survey, totalled 8.1% of mainscheme acquisition.

Crosslines were run in a direction perpendicular to main scheme lines across the entire surveyed area, providing a good representation for analysis of consistency. All crosslines were used for crossline comparisons.

Crossline analysis was performed using the CARIS Hydrographic Information Processing System (HIPS) Quality Control (QC) Report tool, which compares crossline data to a gridded surface and reports results by beam number. Crosslines were compared to a 4-meter CUBE surface encompassing mainscheme data for the entire survey area. The QC Report tabular output and plot are included in Separate II Digital Data. The results of the analysis meet the requirements as stated in the 2013 HSSD.

Additional crossline analysis was performed by computing a 4-meter CUBE surface from the crossline data. The surface was then differenced from a 4-meter CUBE surface comprised of all mainscheme, fill, and investigation data. The resultant difference surface was exported using the Base Surface to ASCII function and statistics were compiled on the ASCII data. The crossline analysis included 475,225 node comparisons with an average difference of -0.02 meters and standard deviation of 0.037 meters.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0 meters	0.074 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
R/V Westerly	1.000 meters/second	1.000 meters/second	0.500 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Additional discussion of these parameters is included in the DAPR.

During surface finalization in HIPS, the "greater of the two" option was selected, where the calculated uncertainty from total propagated uncertainty (TPU) is compared to the standard deviation of the soundings influencing the node, and where the greater value is assigned as the final uncertainty of the node. The uncertainty of the finalized surface increased for nodes where the standard deviation of the node was greater than the total propagated uncertainty. The resulting calculated uncertainty values of all nodes in the finalized surfaces range from 0.19 meters to 0.41 meters with a standard deviation of 0.016 meters. The maximum uncertainty value is located over a feature with a high standard deviation in the depth surface caused by gridding data over the steeply sloping feature.

To determine if surface grid nodes met International Hydrographic Organization (IHO) Order 1 specification, a ratio of the final node uncertainty to the allowable uncertainty at that depth was determined. As a percentage, this value represents the amount of error budget utilized by the uncertainty value at each node.

For the 4 meter surface the allowable uncertainty utilized ranges from 30% to 69%. The average allowable uncertainty for the surface is 35% with a standard deviation of 0.027. There are no values exceeding 100% which indicates that all nodes meet specification.

B.2.3 Junctions

Survey H12530 junctions with H12529 from project OPR-J348-KR-13 and with two prior NOAA surveys from project OPR-J348-KR-12 also performed by David Evans and Associates, Inc.

A 4-meter finalized H12530 surface, with no depth thresholds applied, was compared to the prior surveys by generating difference surfaces with CARIS Bathy DataBASE. The H12530 surface surface with no depth thresholds applied was created for quality control purposes and has not been submitted.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12470	1:40000	2012	David Evans and Associates, Inc.	N
H12471	1:40000	2012	David Evans and Associates, Inc.	N
H12529	1:40000	2013	David Evans and Associates, Inc.	NW

Table 8: Junctioning Surveys

H12470

In total 97,052 overlapping nodes were compared with differences ranging from -0.123 meters (H12530 shoaler than prior) to 1.403 meters (H12530 deeper than prior). The average difference was 0.06 meters with a standard deviation of 0.048 meters. The maximum difference of 1.403 meters occurred at an object which was not present during the H12530 survey.

H12471

In total 70,991 overlapping nodes were compared with differences ranging from -0.120 meters (H12530 shoaler than prior) to 0.288 meters (H12530 deeper than prior). The average difference was 0.05 meters with a standard deviation of 0.050 meters.

H12529

At the time of writing, junction analysis with OPR-J348-KR-13 survey H12529 had not been completed. Junction analysis between H12530 and H12529 will be discussed in the H12529 Descriptive Report.

B.2.4 Sonar QC Checks

Quality control is discussed in detail in Section B of the DAPR. The results from the positioning system comparison and bar-to-multibeam comparison are included in Separate I Acquisition and Processing Logs. The sound velocity profile (SVP) sensor weekly evaluation table can be found in Separate II Sound Speed Data of this report.

Multibeam data were reviewed at multiple levels of data processing including: CARIS HIPS conversion, subset editing, and analysis of anomalies revealed in CUBE surfaces. Submerged significant features identified during survey operations were noted in the acquisition logs, saved to Isis cursor log files, and then displayed during HIPS editing to act as a check during feature compilation. In addition to the field interpretation of side scan contacts, two independent post-processing reviews of the side scan data were conducted, and all significant contacts or potentially significant contacts tracked in a custom database.

B.2.5 Equipment Effectiveness

Exist

As discussed in the DAPR, results of routine roll tests were added to the project vessel file to account for a minor instability of the multibeam mount.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Approximately 20-minute intervals.

An ODOM Brooke Ocean Technologies' MVP30 and a SeaBird Electronics SEACAT SBE-19 Conductivity, Temperature, and Depth (CTD) profiler were the primary instruments used to acquire sound speed readings during multibeam operations. Moving vessel profiler (MVP) sound speed readings were measured at approximately 20-minute intervals during survey operations. Additional discussion of sound speed methods can be found in the DAPR.

B.2.8 Coverage Equipment and Methods

Survey speeds were maintained to meet or exceed along track coverage requirements throughout the survey. Demonstration of 200% side scan sonar coverage was achieved by producing two separate 100% 50-centimeter resolution mosaics. Mosaics were thoroughly reviewed for holidays and areas of poor quality coverage due to biomass, vessel wakes, or other factors. A fill plan was created in order to acquire side scan data where holidays and significant poor quality coverage existed.

Multibeam data were acquired in conjunction with side scan sonar collection. A fill plan was created for all multibeam holidays greater than three nodes along track that extended across the entire swath. This requirement corresponds to the along track holiday specification in the 2012 HSSD (Section 5.2.2.3). Significant side scan sonar contacts were developed with multibeam sonar to obtain a least depth of the contact using multibeam object detection coverage requirements.

B.2.9 Density

The sounding density requirement of 95% of all nodes, populated with at least three soundings per node, was verified by exporting the density child layer of each CUBE surface to an ASCII text file and compiling statistics on the density values. More than 99.5% of all final CUBE surface nodes contained three or more soundings.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

Data reduction procedures for survey H12530 are detailed in the DAPR. Multibeam processing logs are included Separate I Acquisition and Processing Logs of this report.

B.3.2 Calibrations

No additional calibration tests were conducted beyond those discussed in the DAPR.

B.4 Backscatter

Multibeam backscatter was logged in Hypack 7K format and included with the H12530 digital deliverables. Data were processed periodically in CARIS HIPS to evaluate backscatter quality but the processed data is not included with the deliverables.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: 5.3.2

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12530_4m_MLLW_1of2_Final	CUBE	4.0 meters	0 meters - 40 meters	NOAA_4m	Set Line Spacing Coverage
H12530_50cm_MLLW_INV_2of2_Fina	CUBE	0.5 meters	0 meters - 20 meters	NOAA_0.5m	Object Detection Coverage
H12530_100Percent	Mosaic	1.0 meters	-	N/A	First 100-percent coverage
H12530_200Percent	Mosaic	1.0 meters	-	N/A	Second 100-percent coverage

Table 9: Submitted Surfaces

Bathymetric grids were created relative to Mean Lower Low Water (MLLW) in CUBE format using set line spacing and object detection resolution requirements as described in the NOS HSSD (April 2013). Depth thresholds were applied during surface finalization as defined in the NOS HSSD (April 2013).

The surface named "_INV," includes data at object detection resolution for a significant feature investigated with multibeam. In addition, a field sheet and surface was submitted for this investigation with the name of the investigation field sheet corresponding to the primary side scan sonar contact name. The least depth for the significant contact investigation was added to the final surface with a designated sounding. Additional designated soundings were added to depth surfaces as necessary in order to accurately represent the seafloor in accordance with the NOS HSSD.

C. Vertical and Horizontal Control

A complete description of the horizontal and vertical control for survey H12530 can be found in the OPR-J348-KR-13 Horizontal and Vertical Control Report (HVCR), submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Pascagoula NOAA Lab, MS	874-1533

Table 10: NWLON Tide Stations

File Name	Status
8741533.tid	Verified Observed

Table 11: Water Level Files (.tid)

File Name	Status
OPSREVISED_J348KR2013CORP	Final

Table 12: Tide Correctors (.zdf or .tc)

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is NAD83 UTM Zone 16 North.

During survey operations, some DGPS outages from the primary beacon (293 kHz) occurred. The system was set up to automatically switch to the secondary beacon (295 kHz) when the primary signal was lost.

The following DGPS Stations were used for horizontal control:

DGPS Stations
English Turn, Louisiana (293 kHz)
Eglin, Florida (295 kHz)

Table 13: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

The majority of the chart comparison was performed by comparing H12530 depths to a digital surface generated from electronic navigational charts (ENCs) covering the survey area. A 50-meter product surface was then generated from a triangular irregular network (TIN) created from the soundings, depth contours, and depth features for each ENC scale. An additional 50-meter HIPS product surface of the entire survey area was generated from the finalized 4-meter CUBE surface. The chart comparison was conducted by creating and reviewing the resultant difference surface.

The raster chart comparison was performed by comparing the raster navigational charts (RNCs) covering the survey area to the corresponding ENCs which were subsequently compared to H12530 using difference surface techniques.

The electronic and raster versions of the relevant charts used during the comparison were reviewed to ensure that all USCG Local Notice to Mariners (LNM) issued during survey acquisition, impacting the survey area, were applied and addressed by this survey.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
11373	1:80000	50	08/2012	09/24/2013	10/05/2013
11366	1:250000	15	08/2012	09/24/2013	10/05/2013

Table 14: Largest Scale Raster Charts

11373

Chart 11373 was compared to US4MS12M within the H12530 survey area. No differences between the RNC and ENC were observed. Charted differences determined by comparing surveyed depths to a digital surface of US4MS12M are discussed in Section D.1.2.

11366

Chart 11366 corresponds to chart US3GC04M within the H12530 survey area. No differences between the RNC and ENC were observed. Charted differences in this area determined by comparing surveyed depths to a digital surface of US3GC04M are discussed in Section D.1.2.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4MS12M	1:80000	21	11/09/2012	08/14/2013	NO
US3GC04M	1:250000	49	04/05/2012	08/15/2013	NO

Table 15: Largest Scale ENCs

US4MS12M

Surveyed depths from H12530 are generally 2 feet shoaler to 2 feet deeper than charted.

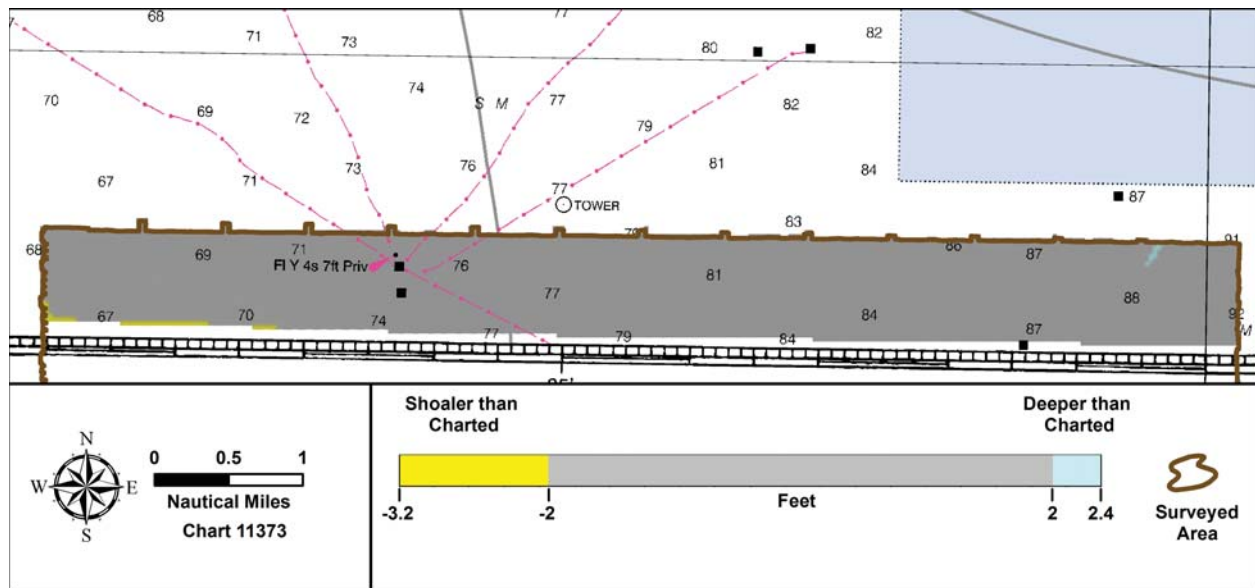


Figure 4: Depth Difference between H12530 and chart US4MS12M

US3GC04M

The difference surface created from the small scale chart shows surveyed depths are generally one fathom deeper than charted. Due to the sparse geographic distribution of soundings on the small scale chart there are no charted soundings that overlap with the H12530 survey area.

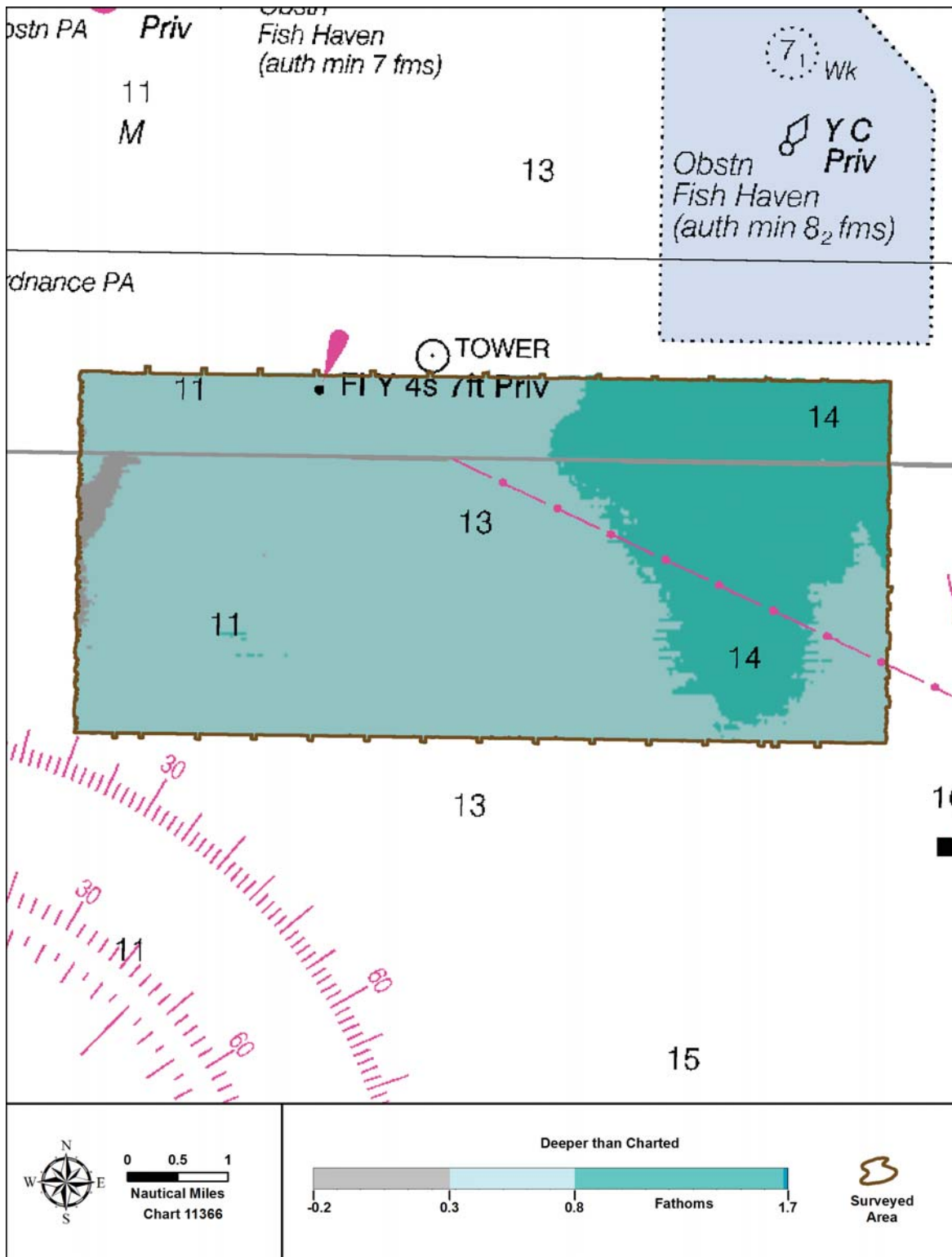


Figure 5: Depth Difference between H12530 and chart US3GC04M

D.1.3 AWOIS Items

There are no Automated Wreck and Obstruction Information System (AWOIS) items assigned for investigation within survey H12530.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

The survey area does not contain any submerged charted features labeled as PA (Position Approximate), PD (Position Doubtful), ED (Existence Doubtful), or Reported. Charted features assigned in the CSF are included in the H12530 File Feature File and denoted with the Assignment Flag of 'Assigned'.

D.1.6 Uncharted Features

One (1) new wreck feature is included in the H12530 Final Feature File and denoted with the Description of 'New'.

D.1.7 Dangers to Navigation

No Dangers to Navigation (Dtons) were reported for this survey.

D.1.8 Shoal and Hazardous Features

No shoals or potentially hazardous features were located within the H12530 survey area.

D.1.9 Channels

The H12530 survey area does not contain any anchorage areas, maintained navigation channels or channel lines.

D.1.10 Bottom Samples

Three (3) bottom samples were acquired on August 27, 2013 (DN 239). Approximate sample locations were included in the file PRF provided by the Hydrographic Surveys Division. The final sampling plan primarily used the provided locations with some modification of position to better characterize changes in bottom type delineated in the side scan imagery and to avoid sampling in the vicinity of submerged infrastructure

such as pipelines or platforms. Results are included in Appendix II Supplemental Survey Records and Correspondence.

D.2 Additional Results

D.2.1 Shoreline

Shoreline investigation was not assigned in the OPR-J348-KR-13 Hydrographic Survey Project Instructions or Statement of Work. The H12530 survey area does not junction with shoreline.

D.2.2 Prior Surveys

Aside from previously discussed comparison to junction surveys H12470 and H12471 no other comparisons with prior surveys were conducted.

D.2.3 Aids to Navigation

The charted special purpose beacon Fl Y 4s 7ft Priv has been disproved by 200 percent side scan coverage and visual disproval by the survey party. This feature has been included in the Final Feature File with the recommendation to 'Delete'. No other Aids to Navigation (AtoNs) were charted or located within the H12530 survey area.

D.2.4 Overhead Features

There were no overhead bridges, cables, or other structures which would impact overhead clearance in the survey area.

D.2.5 Submarine Features

The H12530 survey area contains five (5) charted pipelines. It is recommended that all charted pipelines within the survey area be retained as charted.

D.2.6 Ferry Routes and Terminals

There were no ferry routes or terminals within the survey area.

D.2.7 Platforms

The H12530 survey coverage encompassed three (3) charted platforms. One (1) platform was disproved with side scan coverage and visual disproval by the survey party and has been included in the Final Feature

File with the recommendation to 'Delete'. There is a minor difference between the surveyed and charted positions of the other two (2) platforms. The features are included in the Final Feature File at their surveyed position (recommendation 'New') and charted position (recommendation 'Delete').

D.2.8 Significant Features

There was no additional information of scientific or practical value observed during the survey. There were no unusual submarine features or anomalous tidal or environmental conditions observed during the survey that impacted the quality of the survey or worthy of charting.

D.2.9 Construction and Dredging

There were no construction or dredging activities observed during survey operations.

D.2.10 New Survey Recommendations

No new surveys or further investigations are recommended for this area.

D.2.11 New Inset Recommendations



No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Statement of Work, and Hydrographic Survey Project Instructions. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Jonathan L. Dasler, PE, PLS, CH	NSPS/THSOA Certified Hydrographer, Chief of Party	01/03/2014	 Digitally signed by Jon Dasler DN: cn=Jon Dasler, o=David Evans and Associates, Inc., ou=Marine Services Division, email=jd@deainc.com, c=US Date: 2014.01.17 10:56:55 -08'00'
Jason Creech	Lead Hydrographer	01/03/2014	 Digitally signed by Jason Creech DN: cn=Jason Creech, o=David Evans and Associates, Inc., ou=Marine Services Division, email=jac@deainc.com, c=US Date: 2014.01.17 10:57:28 -08'00'

F. Table of Acronyms

Acronym	Definition
ASCII	American Standard Code for Information Interchange
AtoN	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
CTD	Conductivity Temperature Depth
DAPR	Data Acquisition and Processing Report
DEA	David Evans and Associates, Inc
DGPS	Differential Global Positioning System
DN	Day Number
DtoN	Danger to Navigation
ED	Existence Doubtful
ENC	Electronic Navigational Chart
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Surveys Specifications and Deliverables
HVCR	Horizontal and Vertical Control Report
IHO	International Hydrographic Organization
LNM	Local Notice to Mariners
MBES	Multibeam Echo Sounder
MLLW	Mean Lower Low Water
MVP	Moving Vessel Profiler
nm	Nautical Mile
NOAA	National Oceanic and Atmospheric Administration
NSPS	National Society of Professional Surveyors
NWLON	National Water Level Observation Network
PA	Position Approximate
PD	Position Doubtful
PE	Professional Engineer
PLS	Professional Land Surveyor
PRF	Project Reference File
QC	Quality Control

Acronym	Definition
RNC	Raster Navigational Chart
SSS	Side Scan Sonar
SVP	Sound Velocity Profiler
TIN	Triangular Irregular Network
TPU	Total Propagated Uncertainty
USCG	United States Coast Guard

APPENDIX I
TIDES AND WATER LEVELS

Project: OPR-J348-KR-13 Registry No: H12530

Contractor Name: David Evans and Associates, Inc.

Date: October 9, 2013

Sheet Number: 3

Inclusive Dates: July 9, 2013- October 9, 2013

Time (UTC)

Day Number	Date	Start Time	End Time
190	07/09/2013	14:07:08	21:11:18
195	07/14/2013	14:31:42	14:49:16
196	07/15/2013	13:59:12	16:56:46
199	07/18/2013	12:44:38	20:55:02
206	07/25/2013	12:16:07	21:17:06
212	07/31/2013	13:00:13	20:48:14
213	08/01/2013	12:25:00	20:45:56
214	08/02/2013	17:00:21	18:14:39
216	08/04/2013	13:46:58	20:55:04
217	08/05/2013	12:38:17	20:00:34
218	08/06/2013	13:35:14	20:00:04
225	08/13/2013	16:46:41	20:41:12
226	08/14/2013	12:41:58	20:40:02
227	08/15/2013	12:31:03	20:50:24
228	08/16/2013	12:20:29	21:00:02
233	08/21/2013	14:15:21	21:00:04
268	09/25/2013	12:55:40	21:00:16
269	09/26/2013	14:00:44	20:36:04
282	10/09/2013	12:21:39	12:28:40

H12530

FINAL TIDE NOTE and FINAL TIDE ZONING CHART

DATE: October 9, 2013

PROCESSING BRANCH: Atlantic Hydrographic Branch

HYDROGRAPHIC PROJECT: OPR-J348-KR-13

HYDROGRAPHIC SHEET: H12530

LOCALITY Approaches to Mississippi Sound, Mississippi

SUB-LOCALITY: 20nm Southeast of Dogs Key Pass

TIME PERIOD:	July	9,14-15,18,25,31
	August	1-2,4-6,13-16,21
	September	25-26
	October	9

TIDE STATIONS USED: 8741533, Pascagoula NOAA Lab, MS
Lat. 30° 22.0 N, Lon. 88° 33.7' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF MEAN HIGH WATER (8741533) ABOVE PLANE OF REFERENCE: 0.440 meters¹

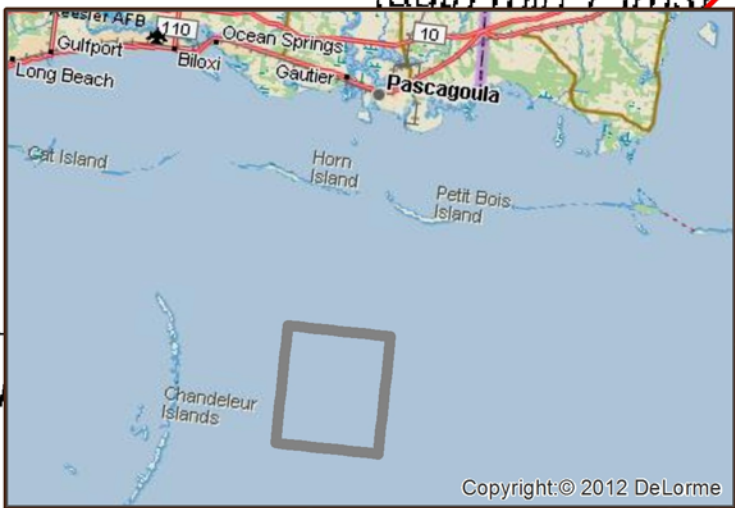
¹ MLLW 6.674m Mean Lower-Low Water
 MHW 7.114m Mean High Water

**FINAL TIDE ZONING
H12530
OPR-J348-KR-13**

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM38A	-42	0.88	8741533
CGM38	-48	0.88	8741533
CGM183	-30	0.88	8741533

NOTE: Final soundings were reduced to chart datum using a revised version of the zoning scheme that was originally provided with the tides project instructions. HSD Operations Branch revised the zoning by adding a new zone (OPS001) so that the zoning scheme would fully encompass the project area.

~~(auth min / tms)~~



Wk
 YC
 Priv
 Obstn
 Fish Haven
 (auth min 8₂ fms)

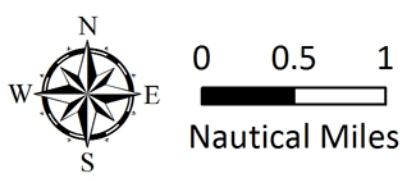
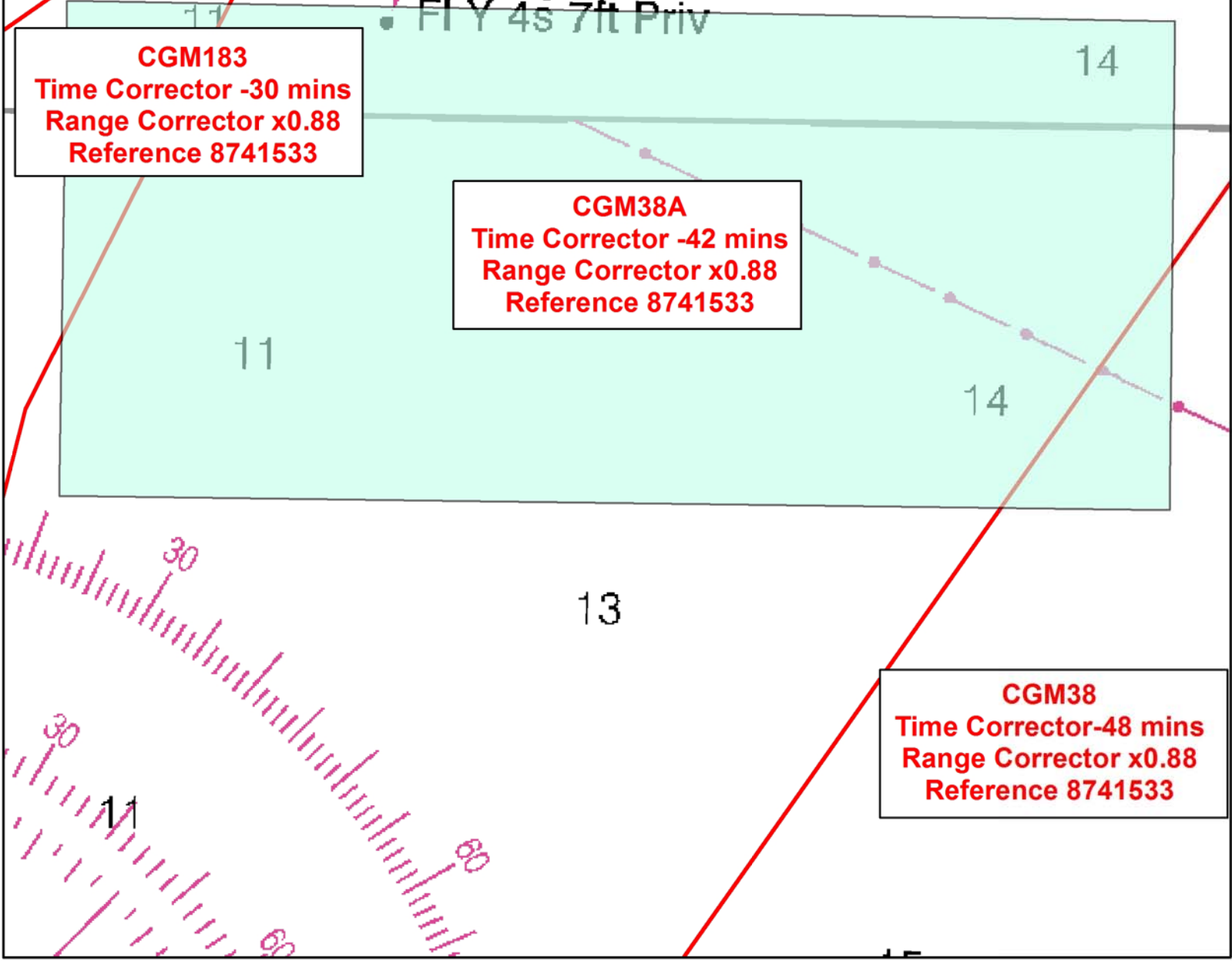
13

TOWER
 FLY 4s 7ft Priv

CGM183
 Time Corrector -30 mins
 Range Corrector x0.88
 Reference 8741533

CGM38A
 Time Corrector -42 mins
 Range Corrector x0.88
 Reference 8741533

CGM38
 Time Corrector -48 mins
 Range Corrector x0.88
 Reference 8741533



H12530
Final Tide Zoning

OPR-J348-KR-13
 Approaches to Mississippi Sound, MS
 David Evans and Associates, Inc.
 Jon Dasler, Lead Hydrographer
 Chart 11366

APPENDIX II

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCE

No Correspondence in survey H12530

APPENDIX III
SURVEY FEATURES REPORT

AWOIS - none
Dangers to Navigation - none
Maritime Boundary - none
Wrecks - one

H12530 Feature Report

Registry Number: H12530
State: Mississippi
Locality: Approaches to Mississippi Sound
Sub-locality: 20NM Southeast of Dog Keys Pass
Project Number: OPR-J348-KR-13
Survey Date: 10/09/2013

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11366	15th	08/01/2012	1:250,000 (11366_1)	USCG LNM: 4/15/2014 (5/13/2014) NGA NTM: 4/6/2013 (5/24/2014)
1115A	43rd	11/01/2008	1:456,394 (1115A_1)	[L]NTM: ?
11360	43rd	11/01/2008	1:456,394 (11360_1)	[L]NTM: ?
11006	32nd	08/01/2005	1:875,000 (11006_1)	[L]NTM: ?
411	52nd	09/01/2007	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	add 11 fm Wreck	Wreck	20.93 m	29° 56' 59.5" N	088° 36' 54.3" W	---

1.1) add 11 fm Wreck

Survey Summary

Survey Position: 29° 56' 59.5" N, 088° 36' 54.3" W
Least Depth: 20.93 m (= 68.67 ft = 11.445 fm = 11 fm 2.67 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2013-282.00:00:00.000 (10/09/2013)
Dataset: H12530_Wreck.000
FOID: 0_ 0000009334 00001(FFFE000024760001)
Charts Affected: 11366_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

WRECKS/remrks: Wreck rising approximately 1.4m above the natural bottom. The approximate dimensions of the wreck, which lies on it's side, is 22m by 10m

Feature Correlation

Source	Feature	Range	Azimuth	Status
H12530_Wreck.000	0_ 0000009334 00001	0.00	000.0	Primary

Hydrographer Recommendations

SAR: Recommend chart as surveyed.

Cartographically-Rounded Depth (Affected Charts):

11ft (1115A_1, 11360_1, 11006_1, 411_1)

11fm (11366_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 QUASOU - 6:least depth known
 SORDAT - 20131009
 SORIND - US,US,graph,H12530
 TECSOU - 3:found by multi-beam
 VALSOU - 20.931 m

WATLEV - 3:always under water/submerged

Office Notes

SAR: Feature was ensonified with object detect SSS and MBES. Feature is considered significant and verified as per survey data. Defer the final charting disposition to AHB Compile Team

Compile - Chart 11 fm Wreck

Feature Images

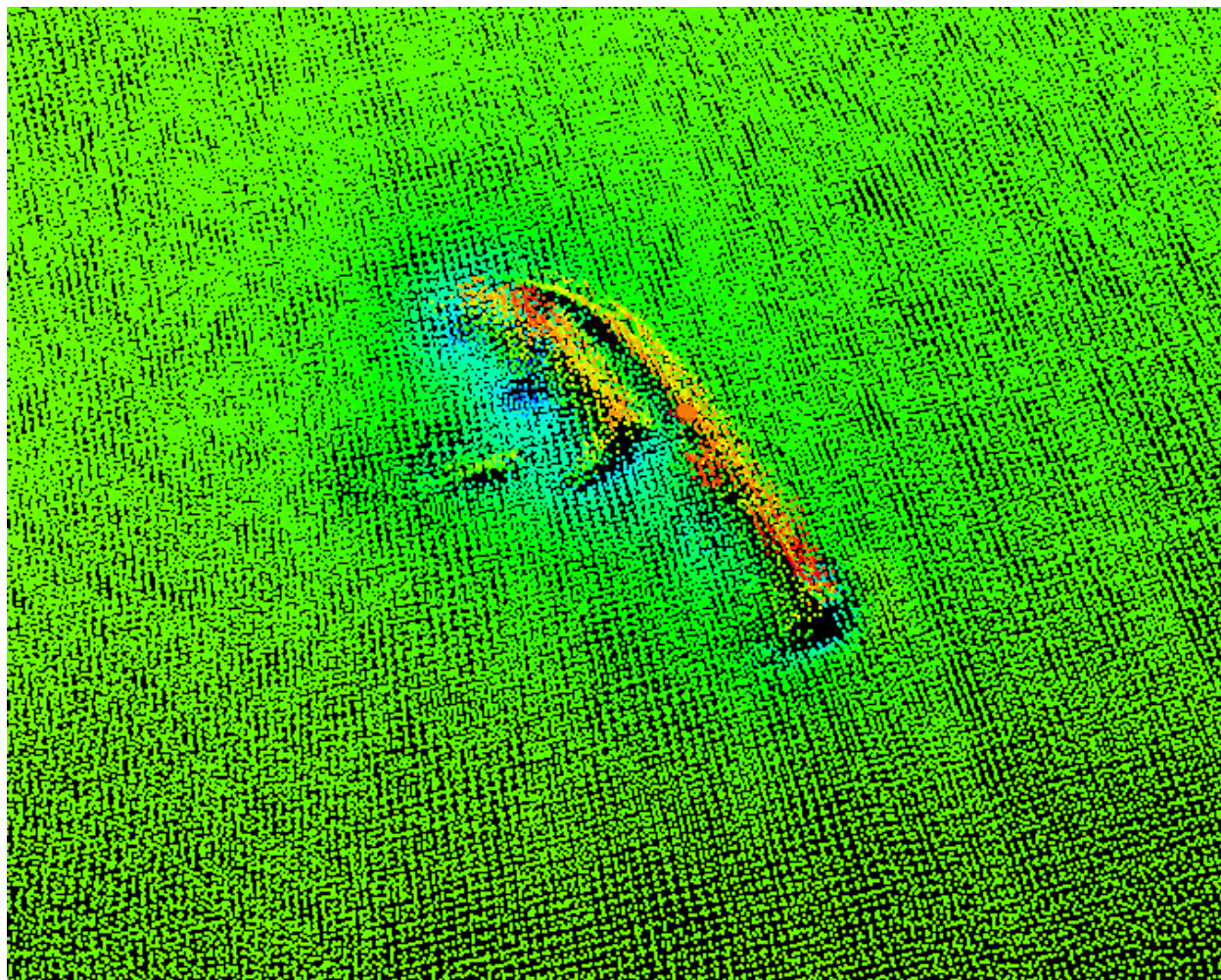


Figure 1.1.1

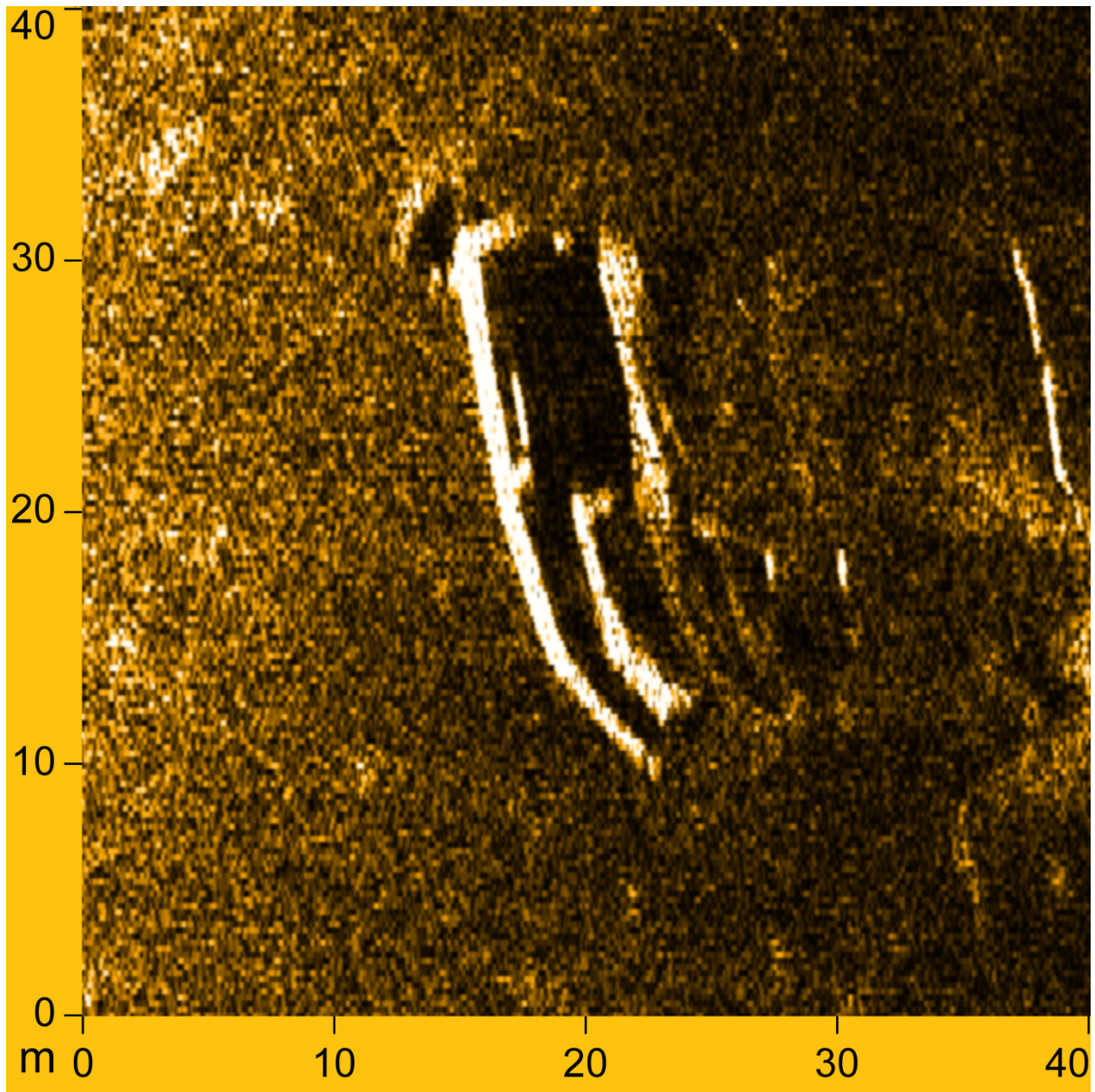


Figure 1.1.2

APPROVAL PAGE

H12530

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- H12530_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12530_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Lieutenant Matthew Jaskoski, NOAA
Chief, Atlantic Hydrographic Branch