

H11546

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Hydrographic / SSS & SWMB**

Registry No. **H11546**

LOCALITY

State **MISSISSIPPI-ALABAMA**

General Locality **Gulf of Mexico**

Sub-locality **4.5 NM South of
Horn Island Pass**

2006

CHIEF OF PARTY
Scott Cholmondeley
TerraSond Ltd

LIBRARY & ARCHIVES

DATE

H11546

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.
ORP-J364-KR-06

State MISSISSIPPI-ALABAMA

General locality GULF OF MEXICO

Sub-Locality 4.5 NM SOUTH OF HORN ISLAND PASS

Scale 1:20,000 Date of survey MAY 30, 2006 – DECEMBER 5, 2006

Instructions Dated JUNE 2006 Project No. OPR-J364-KR-06

Vessel R/V DAIVDSON, BELLE MARIE

Chief of Party SCOTT CHOLMONDELEY

Surveyed by: _____

Soundings taken by (echo sounder) hand lead, pole MULTIBEAM, ECHOSOUNDER

Graphic record scaled by _____

Graphic record checked by _____

Protracted by _____ Automated Plot _____

Verification by ALANTIC HYDROGRAPHIC BRANCH

Soundings in fathoms, (meters,) *feet* at MLW, (MLLW)

REMARKS: **Contract:** DG-133C-05-CQ-1079

Contractor: TERRASOUND LTD.

1617 SOUTH INDUSTRIAL WAY

PALMER, ALASKA 99645

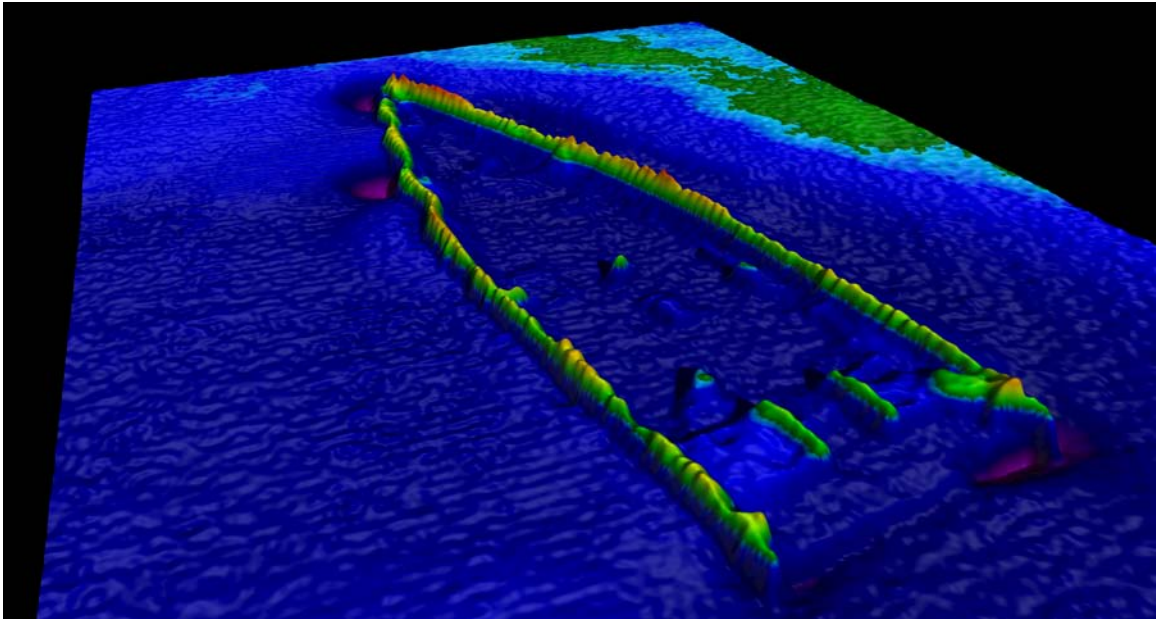
907-745-7215

ALL TIMES ARE RECORDED IN UTC

Bold italic red notes in Descriptive Report were made during office processing.

DESCRIPTIVE REPORT

OPR-J364-KR-06



H-11546

SHEET B

STATE: MISSISSIPPI-ALABAMA

LOCALITY: GULF OF MEXICO

SUBLOCALITY: 4.5 NM SOUTH OF HORN ISLAND PASS

YEAR: 2006

TERRASOND

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- II Sound Velocity Profile Data*
- III Hydrographic Survey Letter Instructions/Statement of Work*
- IV Crossline Comparisons*
- V Side Scan Contact Listings and Images of Significant Contacts*

**Data filed with original field records.*

Descriptive Report to Accompany Hydrographic Survey H-11546

Sheet B

May 30th – December 5th, 2006

TerraSond Ltd.

Lead Hydrographer: Scott Cholmondeley

A. AREA SURVEYED

This survey was conducted in accordance with Statement of Work, Shallow Water Multibeam Sonar and Side Scan Sonar Survey Services, OPR-J364-KR-06, 4.5 nautical miles South of Horn Island Pass, Gulf of Mexico, Mississippi-Alabama; dated February 6th, 2006.

The purpose of this contract is to provide NOAA with modern, accurate hydrographic survey data to update the nautical charts of this area. The project area covers approximately 39.3 square nautical miles and is oriented roughly parallel to Petit Island, a barrier island in the Gulf of Mexico

The project area is approximately 28 nautical miles southeast of the Port of Biloxi, MS. The Port of Biloxi is an important sport fishing center and resort with a large commercial seafood industry. The port has a small craft harbor used by sport fisherman and pleasure craft.

The Port of Pascagoula, MS, is approximately 14 nautical miles to the north of the project area. Pascagoula is ranked as one of the top 20 ports in the United States for short tonnage imports and exports. The Port of Pascagoula has access to U.S. Highway 90 and Interstate 10. The port is also served by the CSXT and Mississippi Export Railroad. The port's main imports are oil and machinery. Pascagoula has several large facilities for ship building and repair, oil refining, and seafood packing and processing. The port exports fertilizers, meat, oil and paper. Pascagoula is also one of the gateway ports to the Mississippi River.

The ports Biloxi and Pascagoula, and the ships that use them, rely heavily on the accuracy of the nautical charts for this area

Full bottom coverage, consisting of 200% side scan sonar, supplemented with shallow-water multibeam was achieved within the limits of hydrography for this survey. The side scan and multibeam imagery was used to locate and determine the least depth over obstructions, wrecks, and shoals as well as to determine the least depths over the entire project area. This survey has a maximum depth of 602 feet and a minimum depth of 10 feet below the Mean Lower Low Water (MLLW) tidal datum.

For complete survey limits, refer to Figure 1.

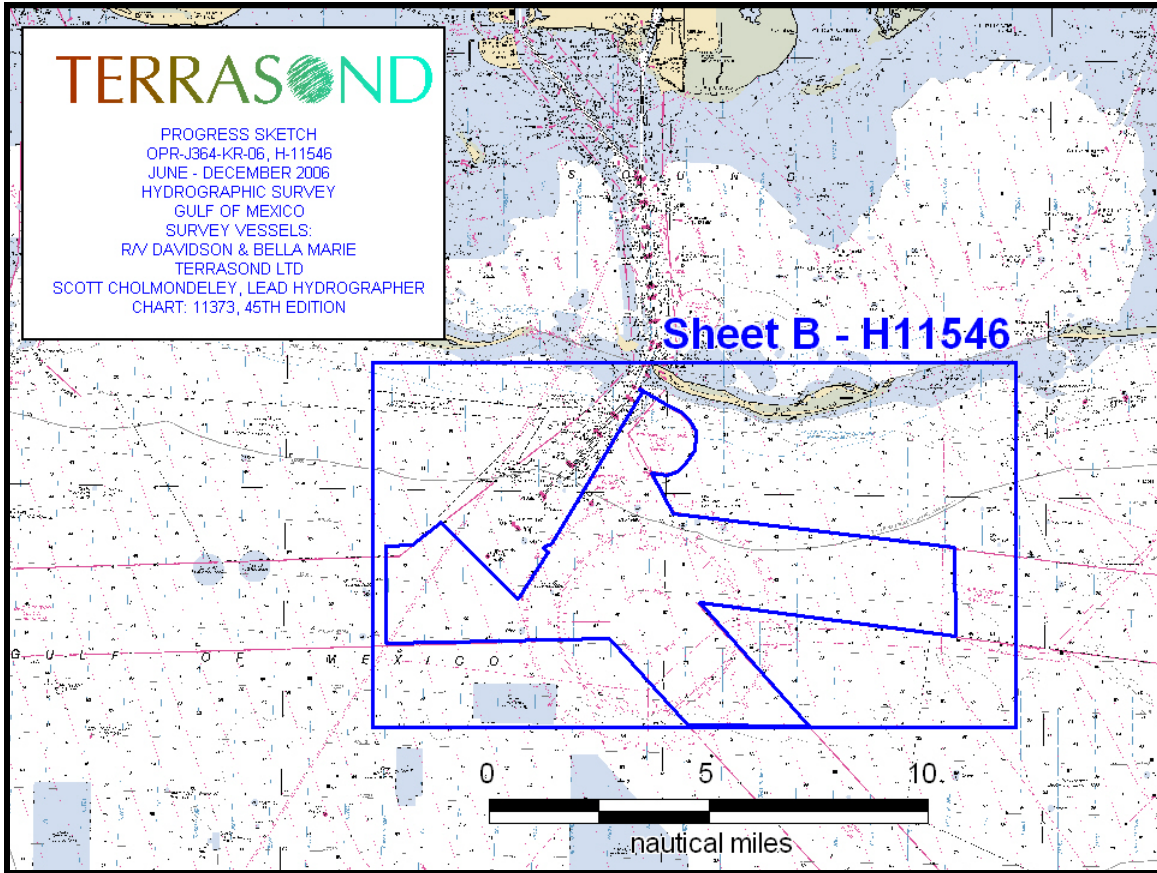


Figure 1 – Overview of H-11546 with Chart 11373, 45th Edition.

B. DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORT.*

B.1 Equipment

Bathymetry and side scan imagery for this survey was acquired using the hydrographic survey vessels *R/V Davidson* and *Bella Marie*.

R/V Davidson

The *R/V Davidson* is a steel hull vessel, 53.3 meters in length overall with an 11.6 meter beam and a 5.4 meter draft. Major systems used on the *R/V Davidson* are listed in the following table.

VESSEL <i>R/V Davidson</i> LOA: 53.3m, BEAM 11.6m, DRAFT: 5.4m	
Equipment	Manufacturer & Model
Multibeam sonar	Reson 8101
Side Scan Sonar	EdgeTech 4200-FS
Positioning	Primary -- Seatex Seapath 200 RTK
Sound velocity	Sea Sciences LTV50 Acrobat Towed Vehicle and Applied Microsystems SV&P Smart Sensor
Vessel attitude	Seatex MRU-5

Equipment performance details are provided in the Data Acquisition and Processing Report (DAPR),* Sections A. Equipment and B. Quality Control.

**Data filed with original field records.*

Bella Marie

The *Bella Marie* is an aluminum hulled catamaran hydrographic survey vessel, 11.9 m in length with a 4.3 m beam and a 0.75 m draft. Major systems used on the *Bella Marie* are listed in the following table.

VESSEL <i>Bella Marie</i> LOA: 11.9m, BEAM 4.3m, DRAFT: 0.75m	
Equipment	Manufacturer & Model
Multibeam sonar	Reson 8124
Side Scan Sonar	EdgeTech 4200-FS
Positioning	Seatex Seapath 200 RTK
Sound velocity	Applied Microsystems SV&P Smart Sensor and Odom Digibar Pro
Vessel attitude	Seatex MRU-5

Equipment performance details are provided in the Data Acquisition and Processing Report (DAPR),* Sections A. Equipment and B. Quality Control.

****Data filed with original field records.***

B2. Quality Control

Side Scan Sonar

Daily confidence checks of the side scan sonar operation were conducted by recording a screen shot of the side scan record which included the side scan image and all operational settings. The confidence checks were performed when distinctive bottom features (e.g. trawl scars, submerged vessels, etc.) were continuously visible in the record from the maximum range of one channel to the maximum range of the other channel. A rub test was performed on both channels of the side scan transducer prior to deployment to ensure adequate signal return.

Data for this sheet were collected at various range scales depending on environmental conditions. Strong thermoclines were common throughout the survey area due to localized heating of the surface waters and freshwater runoff. While surveying with the *R/V Davidson*, the towfish was positioned below the layer when significant thermoclines were encountered whenever practical. This periodically resulted in a towfish height that was less than that required in the specifications for the 100m range scale. When this occurred, adjacent swath records were carefully examined to ensure the side scan coverage specified in the statement of work was achieved. Refer to “Separate I: ACQUISITION AND PROCESSING LOGS” *for range scales for individual lines. While surveying with the *Bella Marie*, which used a fixed-mount side scan array, line spacing and side scan range scale were reduced when thermoclines were encountered to ensure adequate coverage was achieved.

Shallow Water Multibeam

No conditions with the potential for adversely affecting data integrity were encountered with the multibeam suites used during this survey.

Multibeam confidence checks were conducted on the *R/V Davidson* and the *Bella Marie* to verify proper operation of the multibeam suite on a weekly basis, weather permitting. The *R/V Davidson* performed the checks by comparing nadir beam depths with lead line depths. The *Bella Marie* performed the confidence checks using standardized bar check procedures. The results of these comparisons and the line acquisition logs detailing aspects of quality control for each survey line are contained in “Separate I: ACQUISITION AND PROCESSING LOGS” * of this report.

A detailed discussion of multibeam system calibrations, patch tests, data acquisition, and processing is provided in the Data Acquisition and Processing Report (DAPR) * for this project.

Crosslines

305 lines totaling 1,114.1 lineal nautical miles of mainscheme lines and 25 lines totaling 53.9 lineal nautical miles of crosslines were run during the 2006 survey of H-11546. The ratio of the lineal nautical miles of crosslines to the lineal nautical miles of mainscheme lines, at 4.8%, falls slightly under the 5% required by “NOAA Hydrographic Surveys Specifications and Deliverables”, Section 5.5.3. A total of 25 crossings were analyzed

**Data filed with original field records.*

using CARIS HIPS, in conjunction with Microsoft Excel, and comparisons were good. The crossings varied spatially and temporally.

A comprehensive explanation of the crossline analysis process is in the Data Acquisition and Processing Report (DAPR). The reports generated from the crossline analysis are in “Separate V: CROSSLINE COMPARISONS”.*

Contemporary Survey Junctions *See also the Evaluation Report.*

The westerly limits of H-11546 junctions with the easterly limits of H-11545 (2006) and the easterly limits junctions the westerly limits of H-11547 (2006). The soundings are in general agreement between the three surveys. No adjustments or recommendations were made based on the junction analysis.

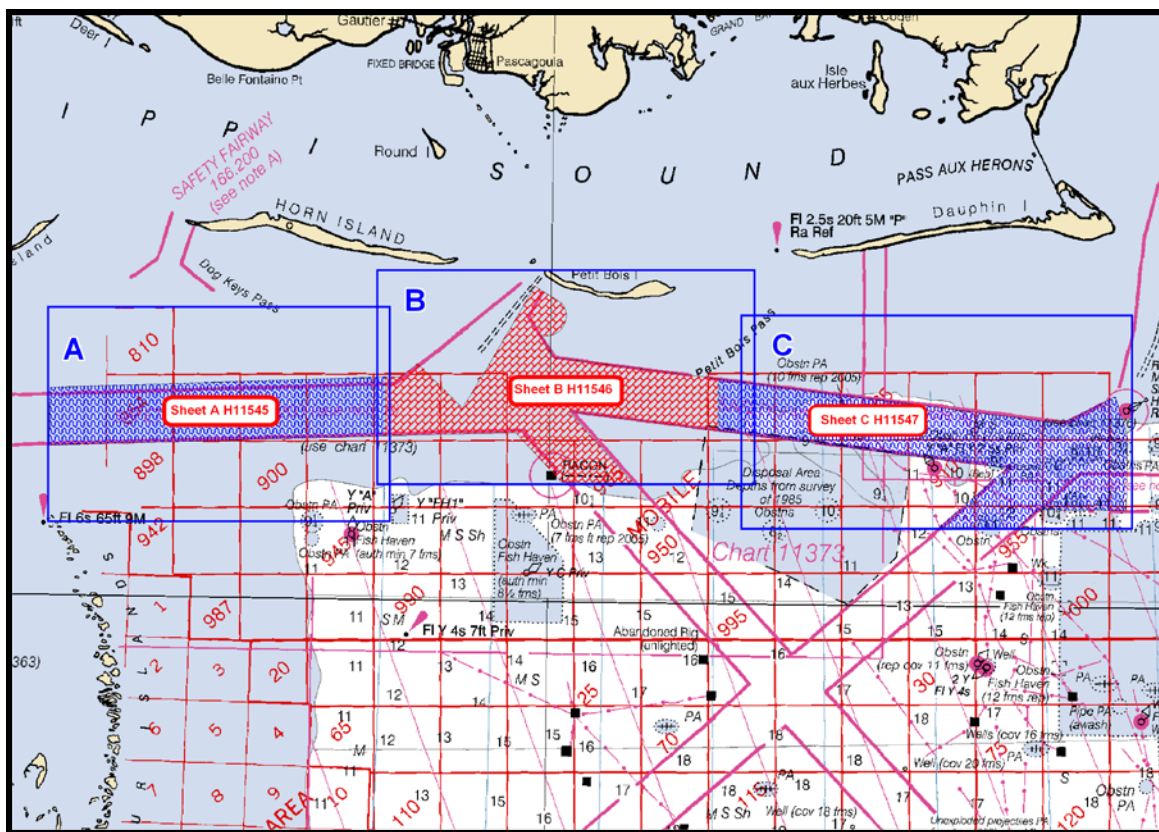


Figure 2 – Overview of survey area showing the junction locations of H-11545, H-11546 and H-11547. Chart 1115A, 41st Edition.

*Data filed with original field records.

B3. Corrections to Echo Soundings

Hydrographic Survey H-11546 was performed in conjunction with nine other surveys in Projects OPR-J364-KR-06 and S-J977-KR-TE. Any change to the corrections to echo soundings affects all surveys in the area and is described in detail in the Data Acquisition and Processing Report (DAPR) *accompanying this report.

Sounding data was reduced using zoning provided by NOAA/CO-OPS under the project instructions and verified tides from the National Water Level Observation Network (NWLON) station at Dauphin Island, AL (873-8151, 873-5180) and the Pascagoula NOAA Lab, MS water level station (874-1533). Refer to the Horizontal and Vertical Control Report (HVCR)* for tidal zoning methods and operations.

B4. Data Processing

The final depth information for this survey was submitted as a collection of CARIS BASE surfaces which best represented the seafloor at the time of the 2006 survey. All possible measures were taken to ensure the data was correctly processed and the appropriate designated soundings, representing the least depth of significant contacts, were selected and retained in the finalized surfaces.

The submittal of several grids of varying resolution was unnecessary for H-11546 due to the shallow depths and relatively flat bottom throughout the survey area. A grid spacing of 2 meters was used for all BASE surfaces and Digital Terrain Models (DTM).

In accordance with the statement of work, line spacing was set to achieve the desired side scan sonar coverage. This was not optimal for shallow water multibeam (SWMB) coverage and resulted in SWMB coverage gaps as the outer beams of adjacent lines did not meet and the use of a grid resolution smaller than two meters resulted in data holidays which could preclude features from inclusion on the surface.

A CARIS BASE uncertainty surface was submitted, which covers the entire survey area, where the finalized uncertainty is the greater of the standard deviation and *a priori* uncertainty. One sun-illuminated DTM created from the final elevation surface was submitted in addition to the BASE surface. The naming conventions for each grid are:

CARIS BASE Uncertainty Surface: H11546_1_OF_1.hns

Sun-Illuminated Elevation DTM: H11546_1_OF_1.tif

The Data Acquisition and Processing Report Sections A: EQUIPMENT – DATA COLLECTION and B: QUALITY CONTROL* contain a detailed discussion of the steps followed when acquiring and processing the 2006 survey data.

****Data filed with original field records.***

C. VERTICAL AND HORIZONTAL CONTROL *SEE ALSO THE EVALUATION REPORT.*

Sounding data was tide adjusted using verified tide levels for the National Water Level Observation Network (NWLON) station at Dauphin Island, AL (873-8151 / 873-8150) and the Pascagoula NOAA Lab, MS water level station (874-1533) tide stations through December 5, 2006. Verified data from the Dauphin Island and Pascagoula gauges were downloaded from the NOAA internet Hydro Hot list (<http://co-ops.nos.noaa.gov/hydro.shtml>). The final zoning methodology is described in detail in the project wide Horizontal and Vertical Control Report. *Approved tides were applied during field processing.*

The horizontal control datum used for this survey is the North American Datum of 1983 (NAD 83). The projection used was UTM, Zone 16 North.

Sounding position control was determined using the Global Positioning System (GPS). The United States Coast Guard differential GPS (DGPS) stations *Mobile Point, AL, StaID 26* and *English Turn, LA, StaID 28*, were used to provide navigation correctors. A summary of weekly DGPS confidence checks is provided in Separate I: ACQUISITION AND PROCESSING LOGS* included with this report.

**Data filed with original field records.*

D. RESULTS AND RECOMMENDATIONS *SEE ASO THE EVALUATION REPORT.*

D1. Chart Comparison

In the absence of a paper smooth sheet, sounding data from the 2006 survey used for chart comparison were produced using CARIS HIPS & SIPS Field Sheet Editor. The final edited data was decimated to a 10m² binned surface and populated with the shoalest sounding value within the limits of each bin. In order to replicate traditional smooth sheet sounding selection criteria, a shoal-biased sounding selection using a 60m radius was applied to each binned surface. The soundings were then compared to the largest scale chart and ENC covering the surveyed area. The results of this comparison are discussed in the following pages.

No Local Notice to Mariners (LNM) affected the survey area. LNM number 06 (Weekly Edition-February 2007) was the last notice reviewed for this project. There was one Danger to Navigation (DTON) report submitted for the 2006 survey. The DTON report is included in Appendix I. to this report. *Concur*

Raster Chart Comparison – Survey H-11546

All charted features were investigated using side scan and multibeam sonar. The survey generally agrees with the largest scale nautical charts covering the survey area. Figure 3 shows the survey limits and the intersection between Chart 11375, 36th Edition and Chart 11373, 45th Edition.

The following pages detail discrepancies found between charted features and the 2006 survey data. The hydrographer recommends that *one feature be added, *seven charted features be removed and *eight soundings be updated to reflect the 2006 survey data. **See the following pages for final charting recommendations.*

The 2006 survey also produced sounding data that support changing the position and orientation of depth contours throughout the survey area.

The 2006 survey data are compared to the following raster charts.

Chart	Scale	Edition Number	Edition Date	Issue Date
11373	1:80,000	45th	2/1/2006	1/27/2007
11375	1:20,000	36th	3/1/2005	1/27/2007

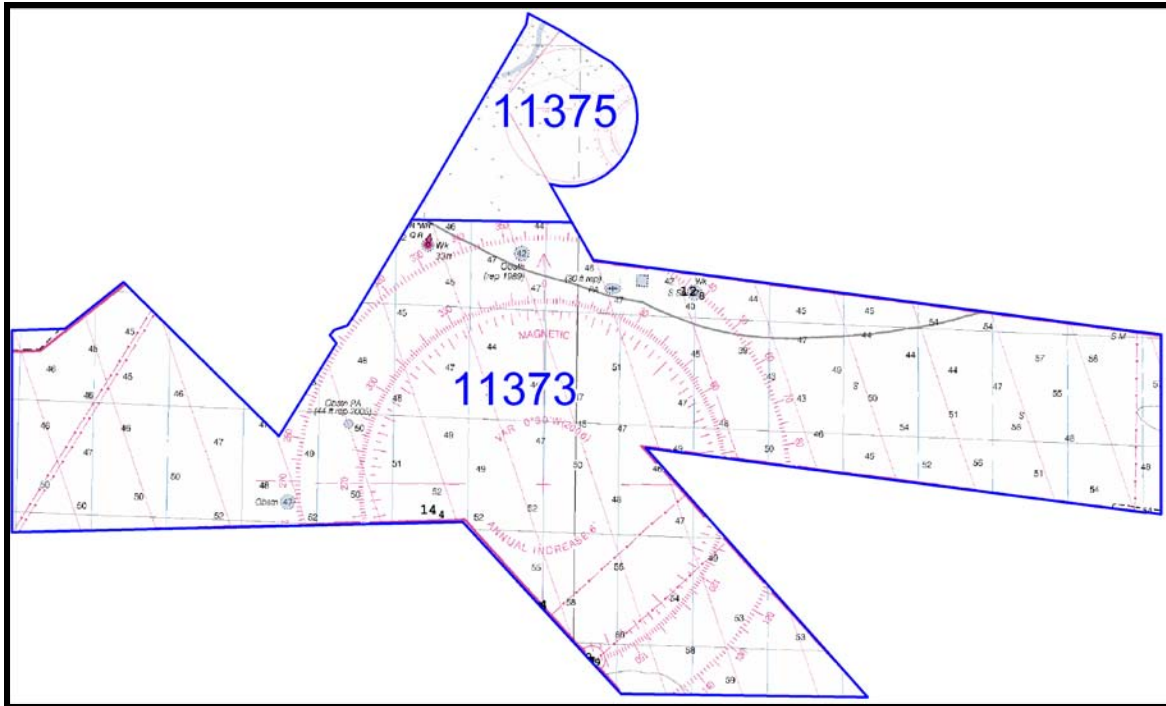


Figure 3 – Survey limits of H-11546 showing the areas covered by Chart 11373, 45th Edition and Chart 11375, 36th Edition.

New Features: Sheet H-11546

The 2006 survey identified one feature not currently included on Chart 11373, 45th Edition. This feature is described in detail in Table 1 and Figure 4. The hydrographer recommends adding the new feature to the chart based on the 2006 survey data. *See the following page for final charting recommendation.*

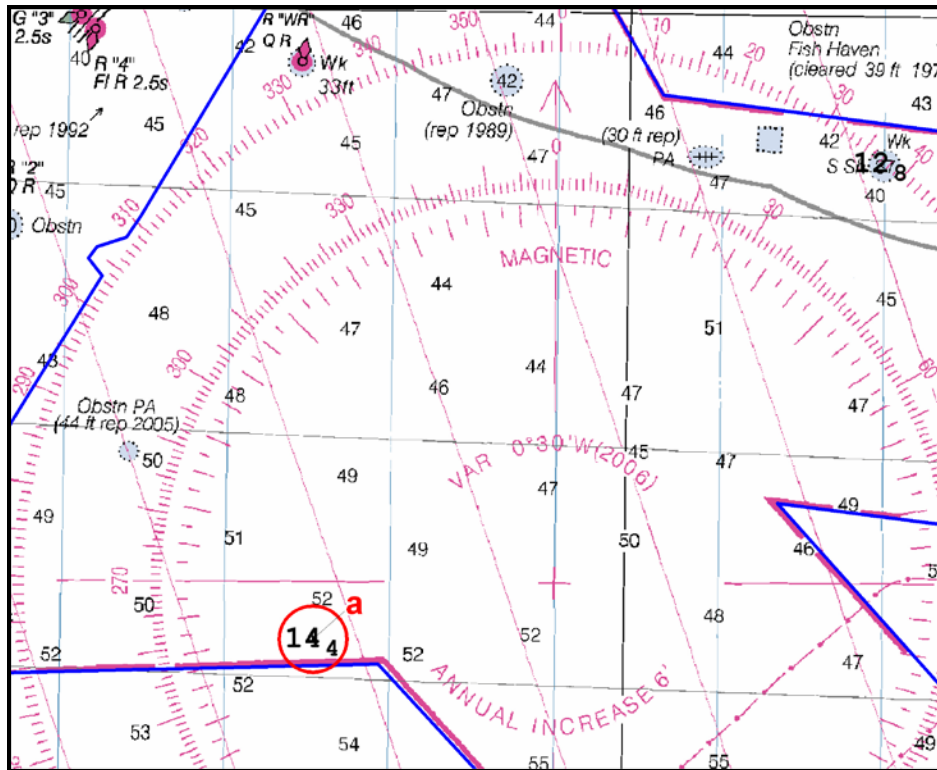


Figure 4 – Overview of survey area H-11546, where an uncharted feature is identified in the 2006 survey. The survey sounding is expressed in meters and the charted soundings are expressed in feet. Chart 11373, 45th Edition.

Table 1 – Uncharted feature identified by the 2006 survey. The feature letter is keyed to the graphical display shown in Figure 4. Chart 11373, 45th Edition.

Feature Letter	Sounding Value (feet)	Latitude N	Longitude W	Chart	Comment
a	47.2	30° 06' 44"	88° 31' 51"	11373	Add OBSTN <i>Chart 47</i> <i>Obstn</i>

Disproved Features: Sheet H-11546

Seven charted features are recommended for removal from the charts covering H-11546. This recommendation is based on side-scan sonar and multibeam data analysis. The position and depth information for these features are shown in Table 2 and Figures 5-6. Three of the seven features were included in the Automated Wreck and Obstruction Information System (AWOIS) listing for this survey.

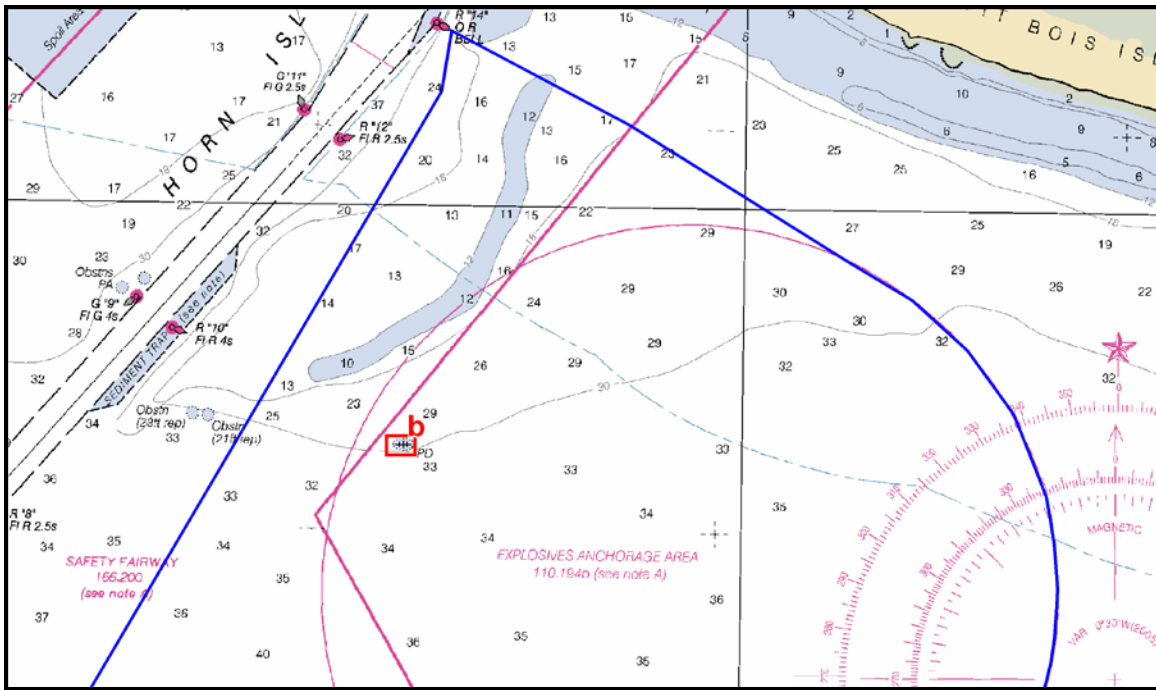


Figure 5 – Overview of survey area H-11546, covered by Chart 11375, 36th Edition, showing one of the seven features not supported by the 2006 survey data. The feature, enclosed by the red square, is recommended for removal from the chart. See next page for final charting recommendation.

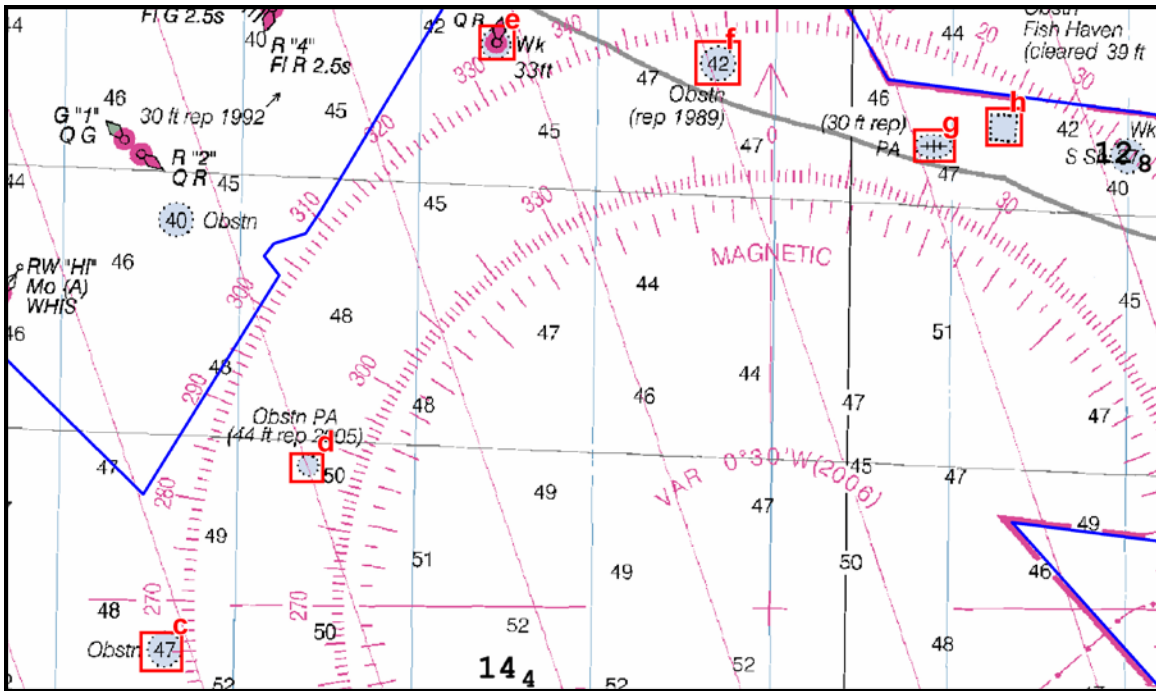
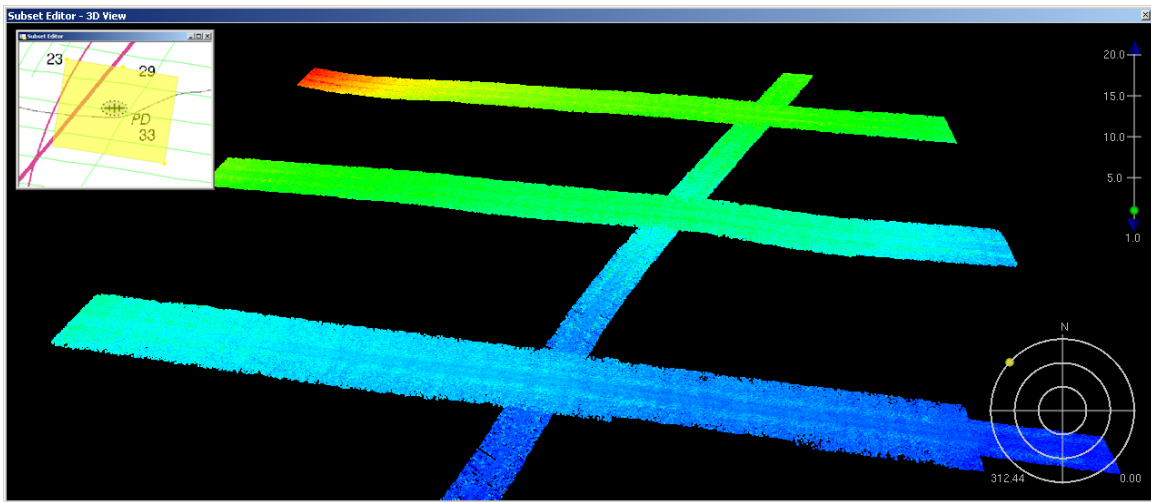


Figure 6 – Overview of survey area H-11546, covered by Chart 11373, 45th Edition, showing six of the seven features not supported by the 2006 survey data. The features, enclosed by red squares, are recommended for removal from the chart. See final recommendation in table below.

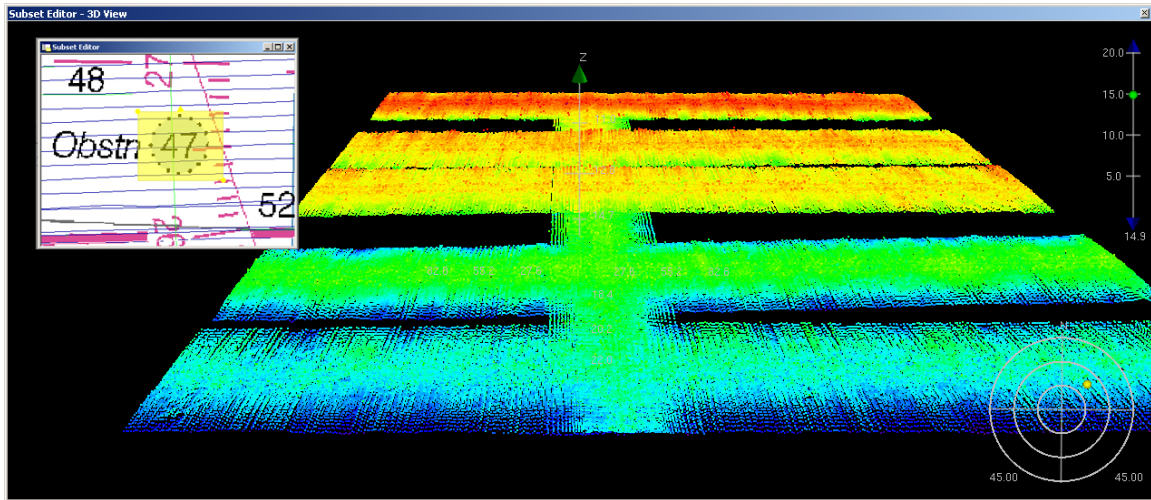
Table 2 – Charted features in H-11546 that are unsupported by the 2006 survey and are recommended for removal from the chart. Each feature letter is keyed to the areas indicated in Figures 5-6. Charts 11375, 36th Edition and 11373, 45th Edition.

Feature Letter	Charted Sounding Value (ft)	Latitude N	Longitude W	Figure	Chart	AWOIS
b	N/A	30°11'30"	88°30'48"	5	11375	N/A <i>Delete dangerous sunken wreck PD</i>
c	47	30°06'49"	88°33'44"	6	11373	7948 – <i>Delete 47 Obstrn</i>
d	44	30°07'42"	88°32'57"	6	11373	13368 – <i>Delete Obstrn PA (44 ft rep 2005) and danger curve.</i>
e	33	30°09'44"	88°31'57"	6	11373	N/A – <i>Delete 33 ft Wk and danger curve.</i>
f	42	30°09'39"	88°30'44"	6	11373	N/A – <i>Delete 42 Obstrn (rep 1989)</i>
g	30	30°09'16"	88°29'32"	6	11373	N/A – <i>Delete dangerous sunken wreck, PA (30 ft rep)</i>
h	N/A	30°09'22"	88°29'10"	6	11373	443 – <i>Disproved by 200% side scan and multibeam survey. Defer to MCD Nautical Data Branch for final charting recommendation.</i>

Figures 7 through 13 include images from CARIS HIPS & SIPS Subset Editor 3D View of the features recommended for removal from Chart 11375, 36th Edition. Each image is keyed to Table 2.



*Figure 7 - CARIS HIPS & SIPS Subset Editor 3D view of feature “b” from Figure 5. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur***



*Figure 8 - CARIS HIPS & SIPS Subset Editor 3D View of Feature “c” from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur***

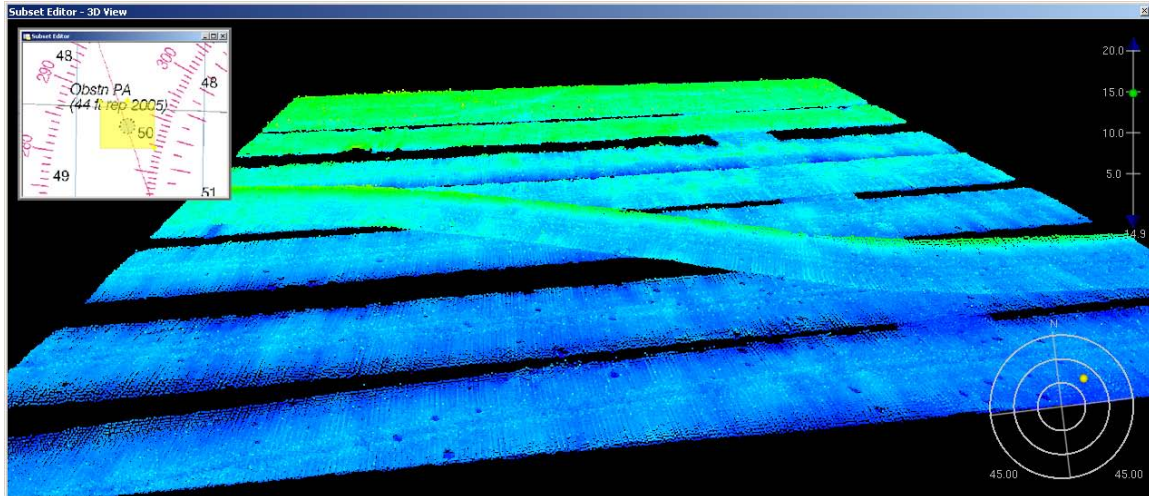


Figure 9 - CARIS HIPS & SIPS Subset Editor 3D View of Feature “d” from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur**

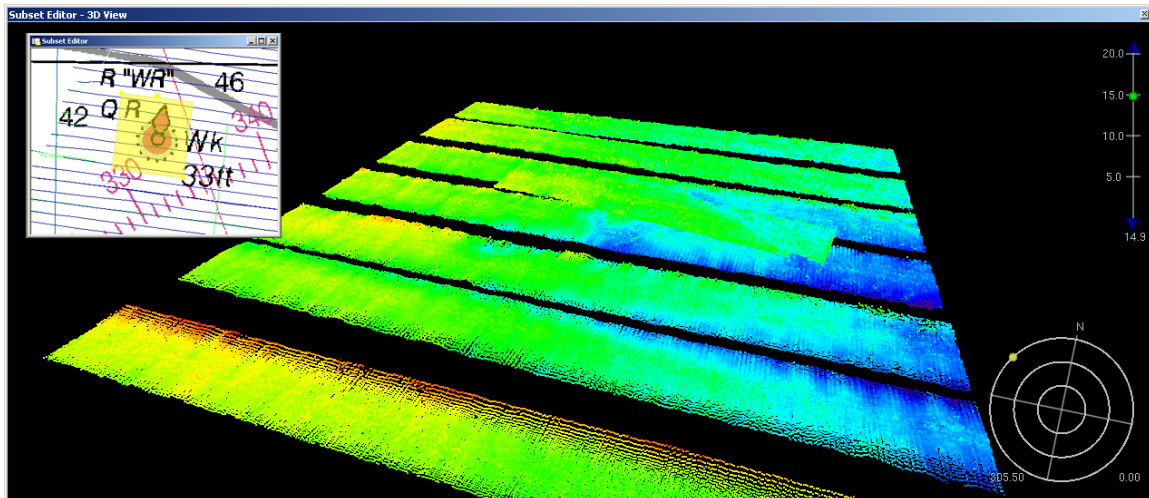


Figure 10 - CARIS HIPS & SIPS Subset Editor 3D View of Feature “e” from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur**

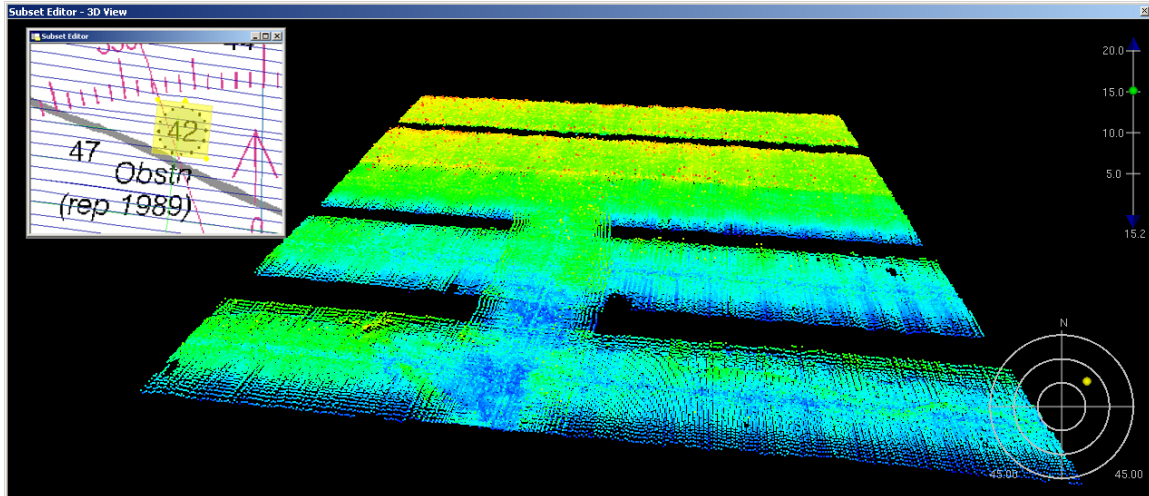


Figure 11 - CARIS HIPS & SIPS Subset Editor 3D View of Feature "f" from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur**

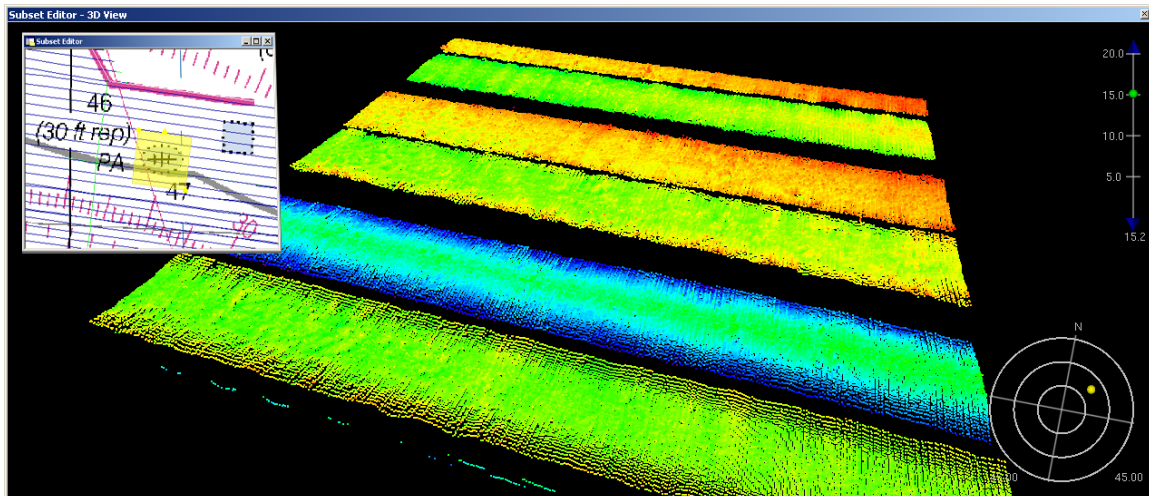


Figure 12 - CARIS HIPS & SIPS Subset Editor 3D View of Feature "g" from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur**

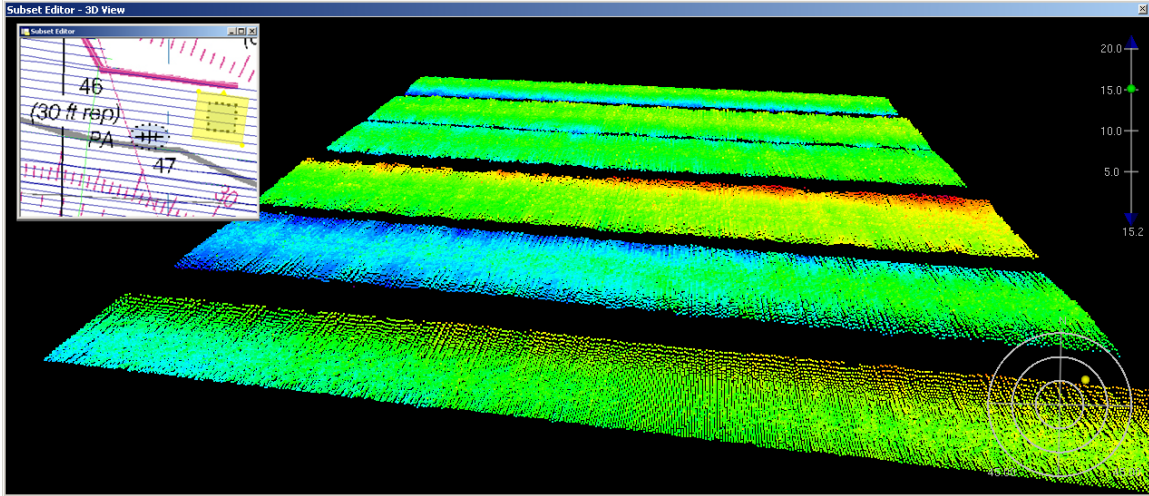


Figure 13 - CARIS HIPS & SIPS Subset Editor 3D View of Feature “h” from Figure 6. The area of the 3D view is represented by the red box. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur**

Soundings: Survey H-11546

The 2006 survey soundings are in general agreement with the charted soundings on the largest scale charts available for survey area H-11546. Table 3 and figures 14 and 15 describe areas in which 2006 survey soundings were significantly shoaler than the charted soundings. The hydrographer recommends updating the chart to reflect the 2006 survey data. **Concur**

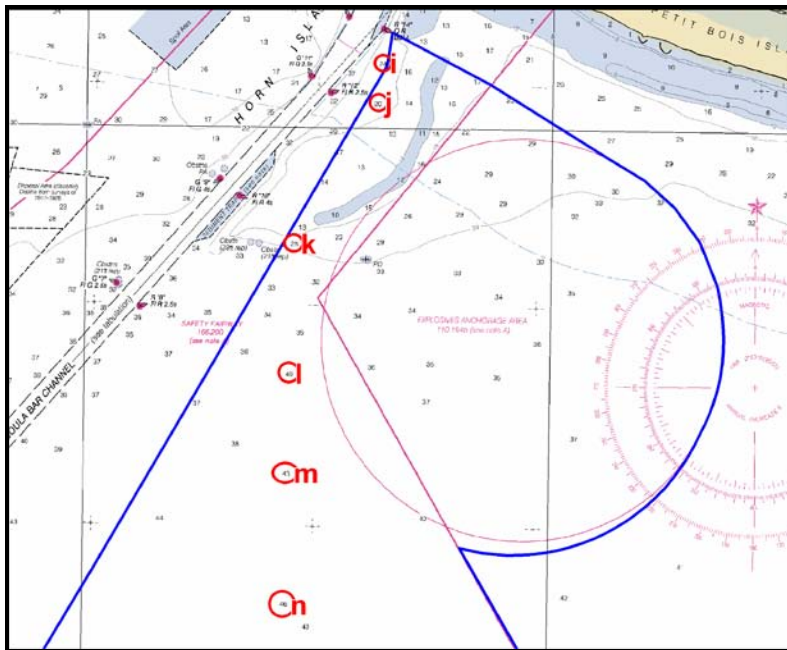


Figure 14 – Overview of survey area H-11546, covered by Chart 11375, 36th Edition, where the 2006 survey soundings are significantly shoaler than the charted soundings.

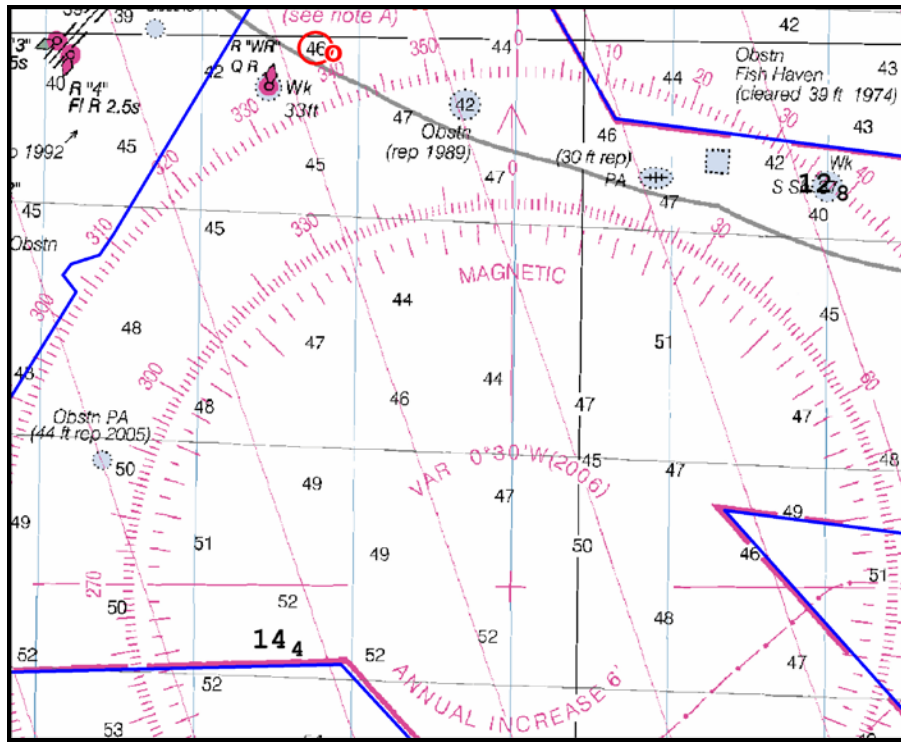


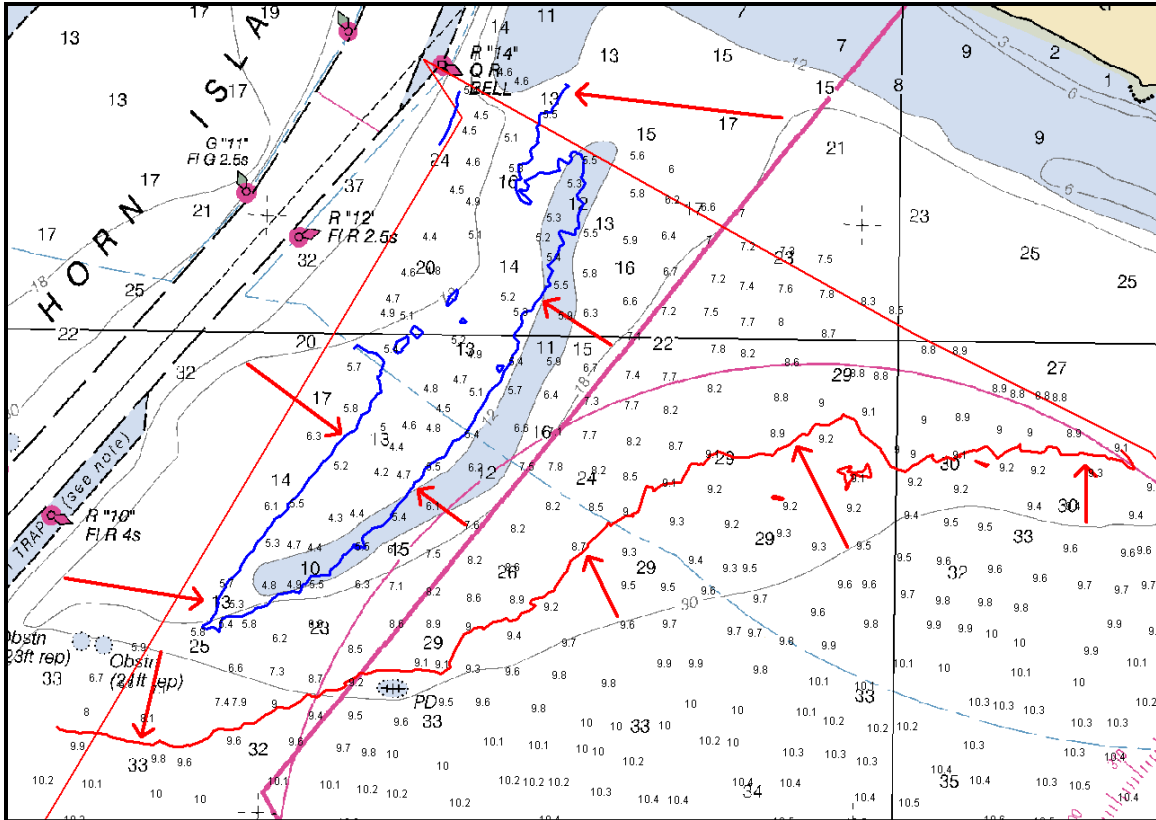
Figure 15 - Overview of survey area H-11546, covered by Chart 11373, 45th Edition, where the 2006 survey soundings are significantly shoaler than the charted soundings.

Table 3 – Sounding data from H-11546 where the 2006 survey soundings are significantly shoaler than the charted soundings. The charted soundings are indexed by their feature letter to their respective figure. **Present survey depths adequate to supersede charted soundings.*

Feature Letter	Charted Sounding (feet)	2006 Survey Sounding	Difference (feet)	Latitude N	Longitude W	Figure	Chart
i*	24	14.8ft (4.5m)	9.2	30° 12' 09"	88° 32' 00"	14	11375
j*	20	14.1ft (4.3m)	5.9	30° 12' 06"	88° 30' 45"	14	11375
k*	25	20.3ft (6.2m)	4.7	30° 11' 34"	88° 31' 06"	14	11375
l*	43	38.7ft (11.8m)	4.3	30° 10' 43"	88° 31' 07"	14	11375
m*	46	41.3ft (12.6m)	4.7	30° 10' 13"	88° 31' 08"	14	11375
n	40	35.8ft (10.9m)	4.2	30° 10' 11"	88° 31' 17"	14	11375 <i>Determine insignificant during office processing.</i>
o*	46	42.0 (12.8m)	4.0	30° 09' 56"	88° 31' 40"	15	11373

Trends and Changeable Areas: Survey Area H-11546

The 2006 survey data were used to generate depth contours for comparison with contours appearing on Chart 11373, 45th Edition and Chart 11375, 10th Edition. Three areas are identified where the charted contours varied significantly from the contours generated by the 2006 survey data (Figures 16-18). The hydrographer recommends updating the chart contours to reflect changes identified by the 2006 survey. *Concur*



*Figure 16- Overview of survey area H-11546, in the vicinity of Latitude N 30°11'56" Longitude W 88°30'33", covered by Chart 11375, 10th Edition. The 30 foot (red) and 18 foot (blue) depth contours based on the 2006 survey soundings migrated 150 to 500 meters from charted positions. Additionally, the charted 12 foot contour in this area cannot be resolved by the 2006 survey soundings. The hydrographer recommends updating Chart 11375 contours with data from the 2006 survey. *Concur**

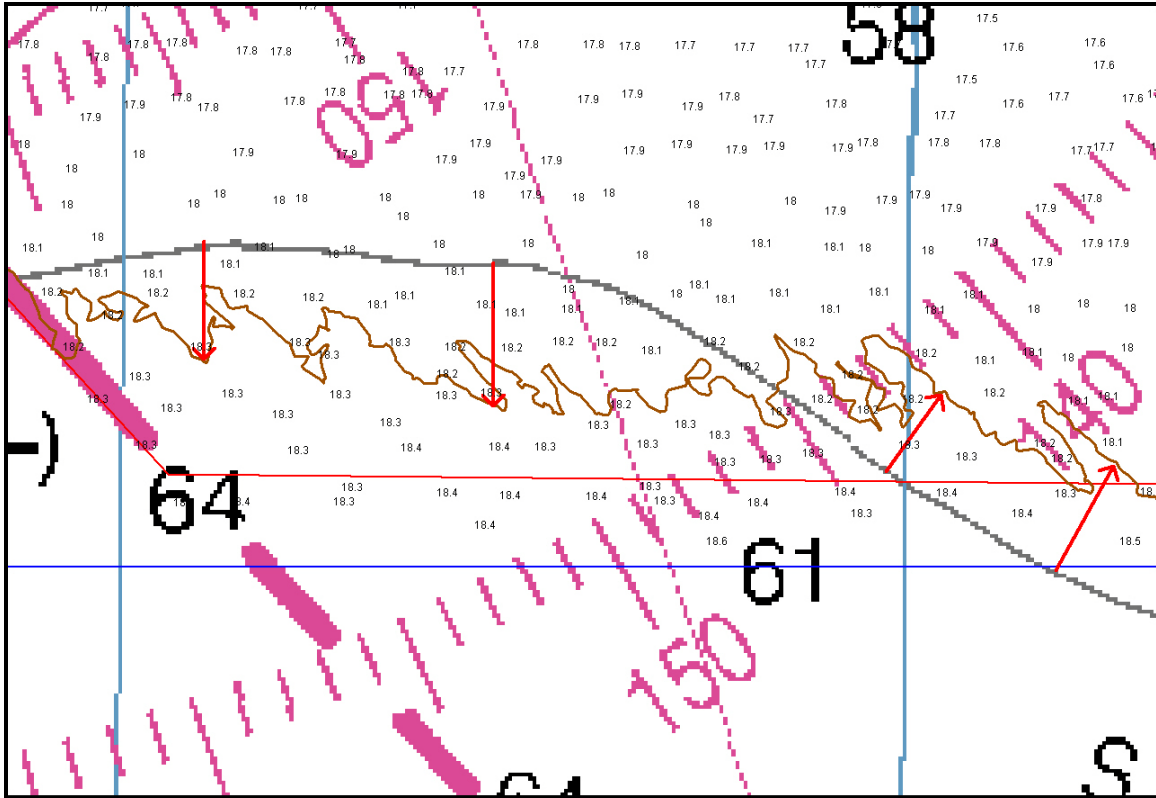
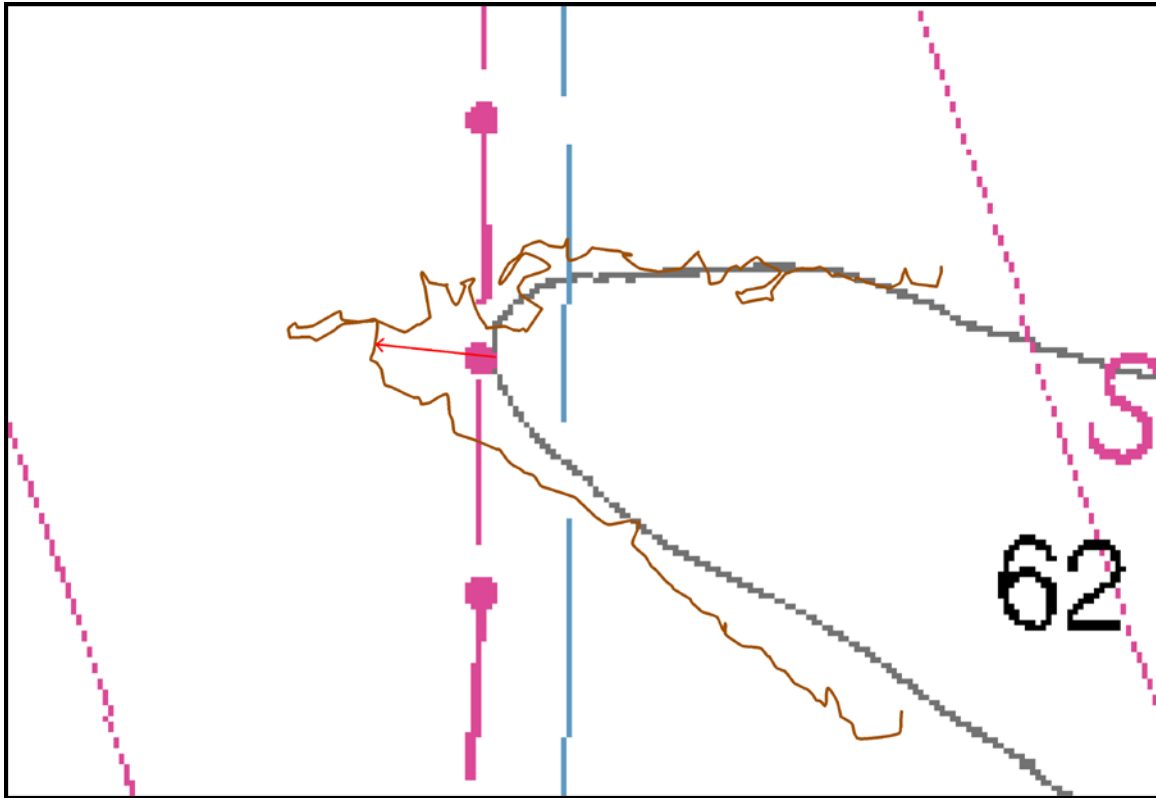


Figure 17- Overview of survey area H-11546, in the vicinity of Latitude N 30°04'51" Longitude W 88°28'48", covered by Chart 11373, 45th Edition. The 60 foot (beige) depth contour based on the 2006 survey soundings migrated up to 350 meters from charted positions. The hydrographer recommends updating Chart 11375 contours with data from the 2006 survey.
Concur



*Figure 18- Overview of survey area H-11546, in the vicinity of Latitude N 30°07'56" Longitude W 88°22'44", covered by Chart 11373, 45th Edition. The 60 foot (beige) depth contour based on the 2006 survey soundings migrated westward up to 190 meters from charted positions. The hydrographer recommends updating chart 11375 contours with data from the 2006/2007 survey. **Concur***

Electronic Navigational Chart (ENC) Comparison - Survey H-11546

All charted features were investigated using side scan and multibeam sonar. The 2006 survey generally agrees with the largest scale electronic navigational charts available for H-11546. Figure 19 shows the survey limits and the intersection between ENC US4MS12M, 8th Edition and ENC US5MS22M, 10th Edition.

The following pages detail discrepancies between charted features and the 2006 survey data. The hydrographer recommends **seven charted features be removed and *eight soundings be updated, based on the 2006 survey data. The 2006 survey also produced sounding data that support changing the position and orientation of depth contours throughout the survey area. *See section D1. Of this report for final charting recommendations.*

The 2006 survey was compared to the following ENC(s):

Cell Name	Chart	Scale	Edition Number	Issue Date
US4MS12M	11373	1:80,000	8	1/05/2007
US5MS22M	11375	1:20,000	10	1/03/2007

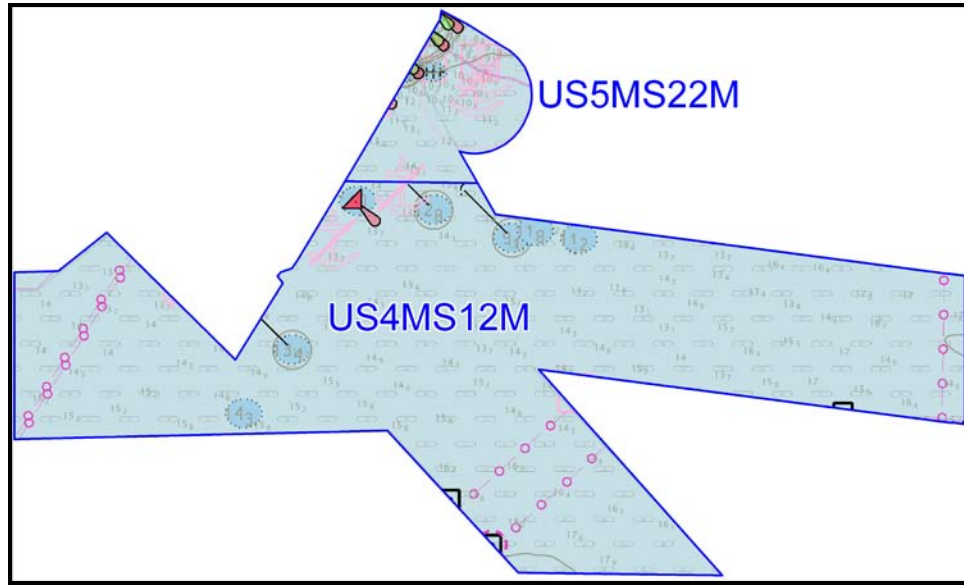


Figure 19 – Survey limits of H-11546 showing the areas covered by ENC’s US4MS12M, 8th Edition and US5MS22M, 10th Edition.

New Features: Survey H-11546

The 2006 survey identified one feature that does not appear on the largest scale ENC covering the survey area. A detailed description of the feature is contained in Table 4 and Figure 20. The hydrographer recommends updating the ENC with data from the 2006 survey. *Concur*

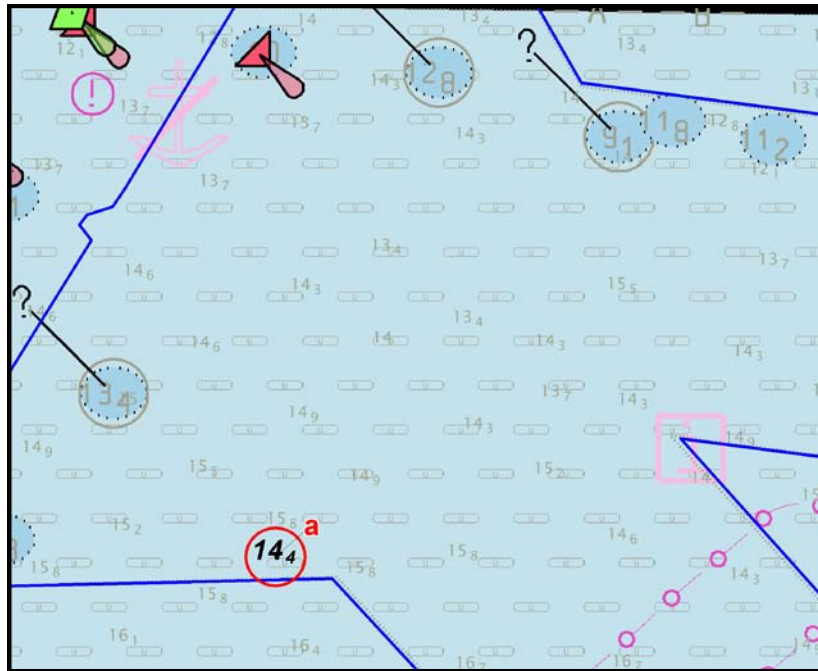


Figure 20 –Overview survey H-11546 where the uncharted feature is identified by the 2006 survey. All soundings are in meters. ENC US4MS12M, 8th Edition.

Table 4 – Uncharted feature in H-11546 identified by the 2006 survey. The feature letter corresponds to the area circled in red on Figure 20. All soundings are in meters.

Feature Letter	Sounding Value (m)	Latitude N	Longitude W	Figure	ENC	Comment
a	14.4	30° 06' 44"	88° 31' 51"	17	US4MS12M	Add OBSTRN*

Changed Features: Survey H-11546

No features found on the largest scale ENC for H-11546 require modification based on the 2006 survey.

See section D1. of this report for final charting recommendation.

Disproved Features: Survey H-11546

There are seven features recommended for removal from H-11546. The recommendation is based on side-scan and multibeam data analysis. The positions and sounding values are listed in Table 5 and displayed in Figures 21-22. See section D1. of this report for final charting recommendation.

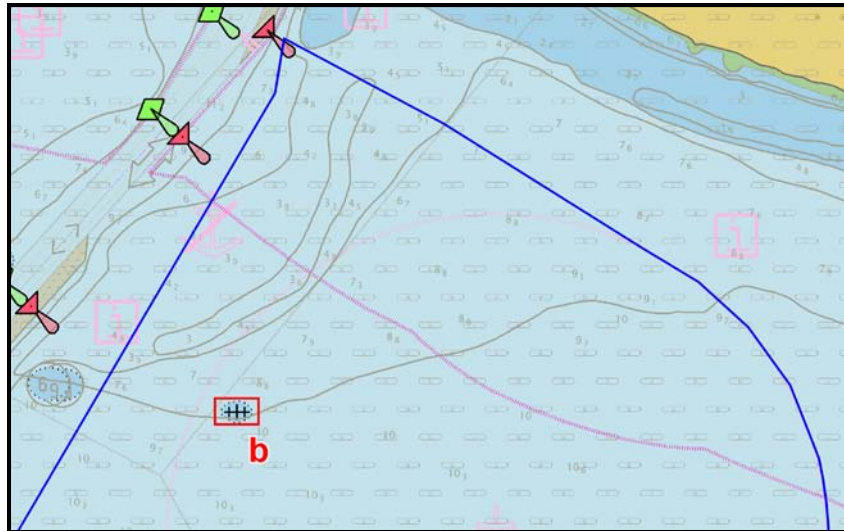


Figure 21 - Overview the northern section of H-11546 showing one of the seven charted features found on ENC US5MS22M, 10th Edition, which is unsupported by the 2006 survey data. The feature, marked by the red square, is recommended for removal. See section D1. of this report for final charting recommendation.

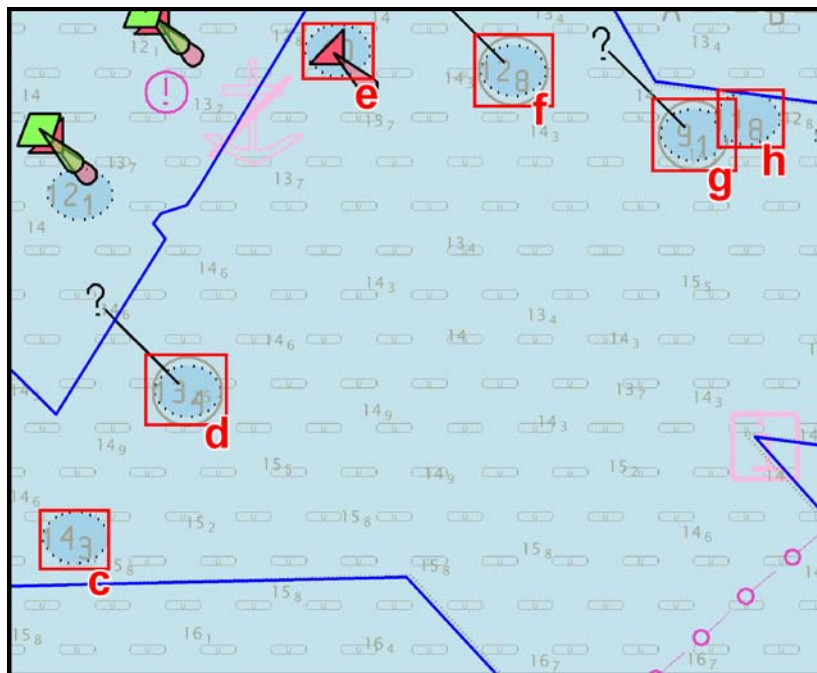


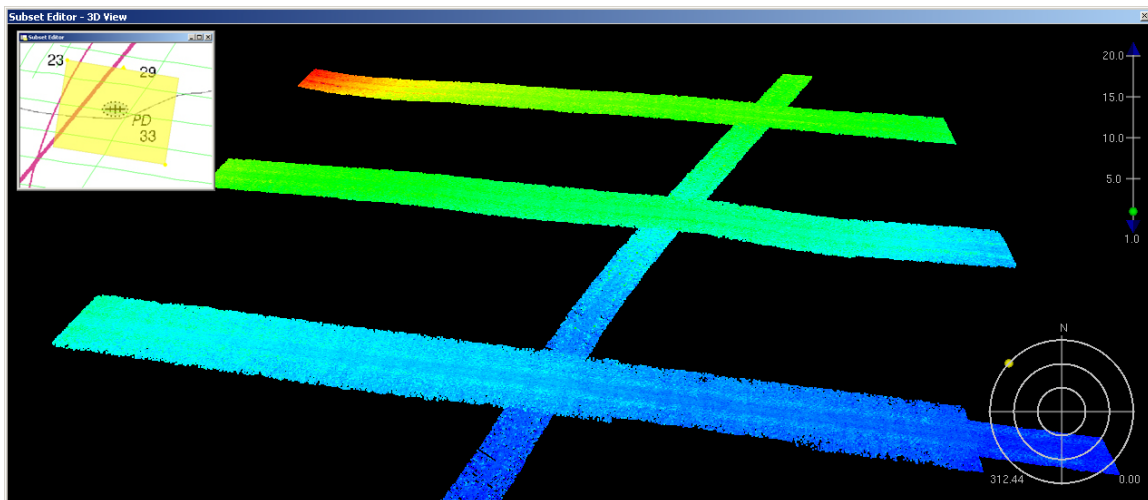
Figure 22 - Overview the southern section of H-11546 showing six of seven charted features found on ENC US4MS12M, 8th Edition, which are unsupported by the 2006 survey data. The features marked by the red squares are recommended for removal. See section D1. of this report for final charting recommendation.

Table 5 – Charted features which are unsupported by the 2006 survey and are recommended for removal from the indicated ENC's. The feature letter is keyed to the graphical display in Figures 21-22.

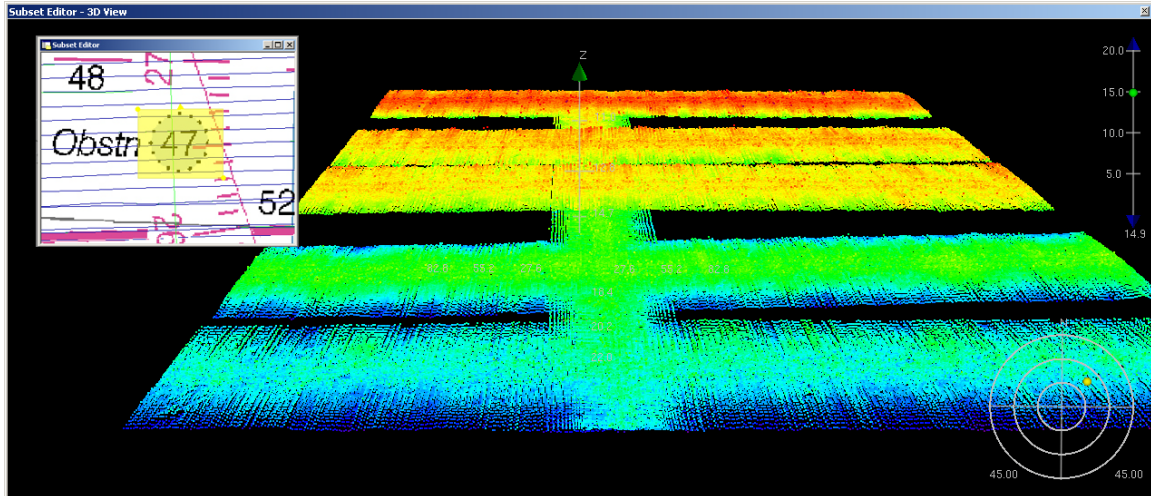
Feature Letter	ENC Sounding Value (m)	Latitude N	Longitude W	Figure	ENC	AWOIS Record No.
b	N/A	30° 11' 30"	88° 30' 48"	18	US5MS22M	N/A*
c	14.3	30° 06' 49"	88° 33' 44"	19	US4MS12M	7948*
d	13.4	30° 07' 42"	88° 32' 57"	19	US4MS12M	13368*
e	10	30° 09' 44"	88° 31' 57"	19	US4MS12M	N/A*
f	12.9	30° 09' 39"	88° 30' 44"	19	US4MS12M	N/A*
g	9.1	30° 09' 16"	88° 29' 32"	19	US4MS12M	N/A*
h	11.9	30° 09' 22"	88° 29' 10"	19	US4MS12M	443*

**See section D1. of this report for final charting recommendation.*

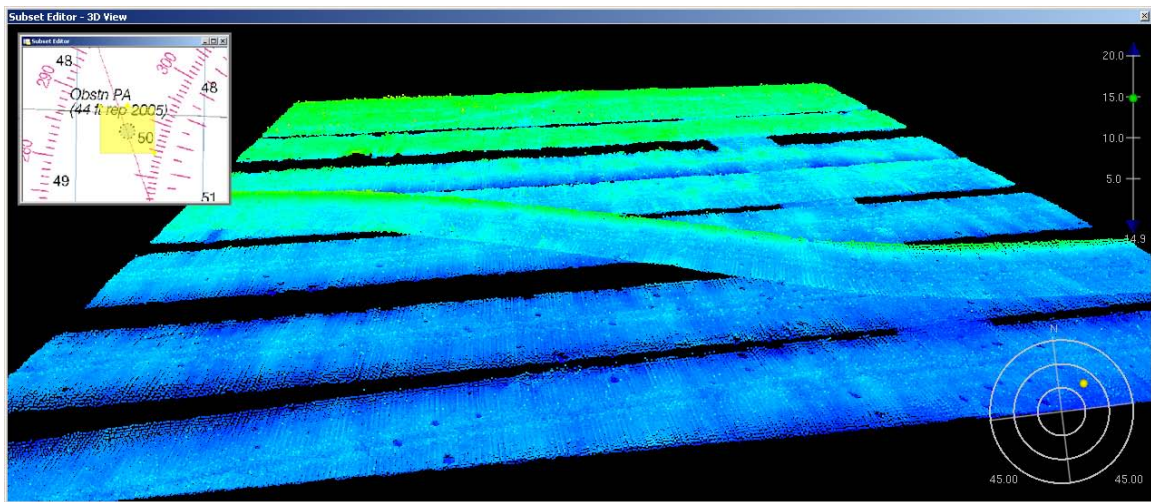
Figures 23 through 29 include images from CARIS HIPS & SIPS Subset Editor 3D View of the features recommended for removal from ENC US4MS12M, 8th Edition and ENC US5MS22M, 10th Edition. Each image is keyed to Table 5.



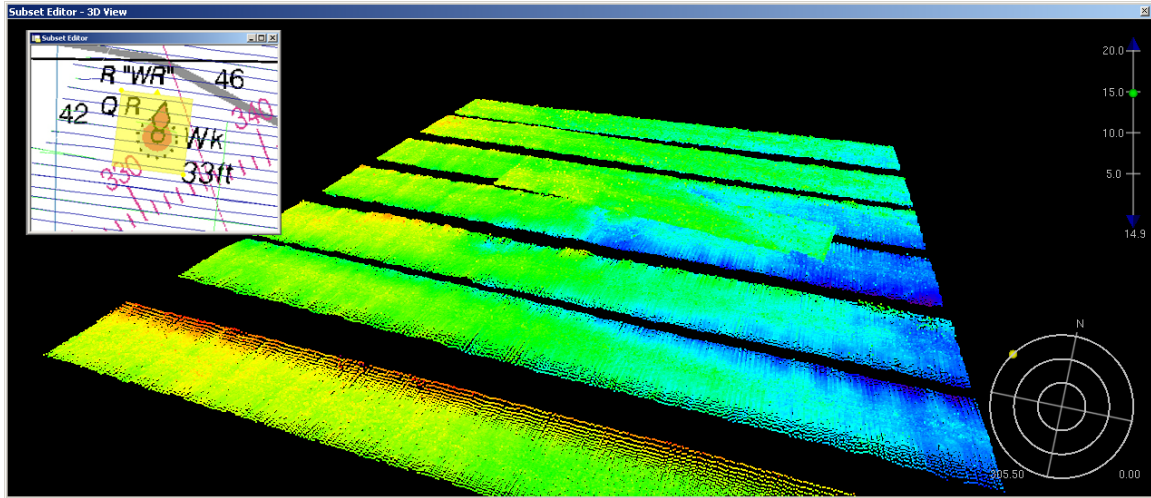
*Figure 23 - CARIS HIPS & SIPS Subset Editor 3D view of feature "b" from Figure 21. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. **Concur***



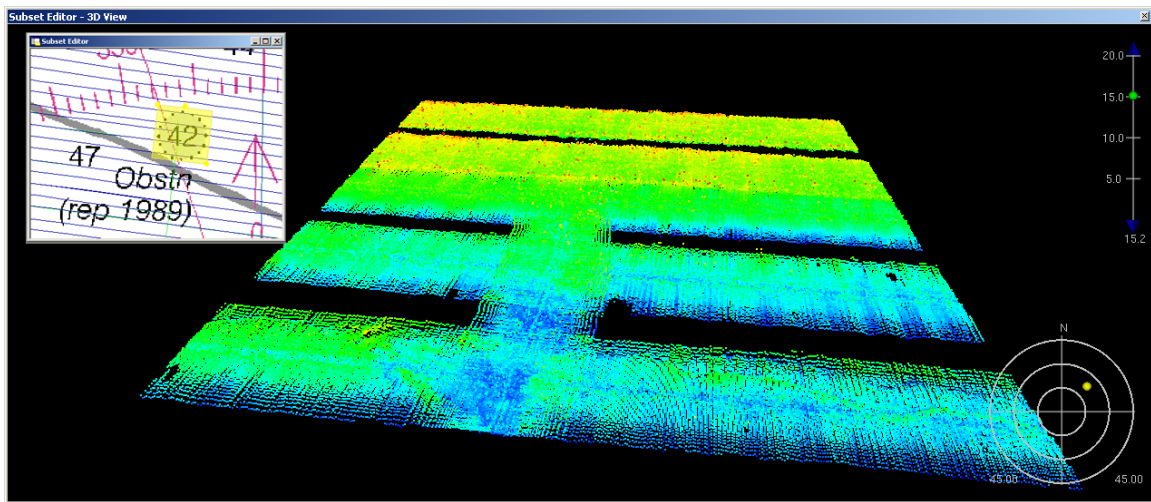
*Figure 24 - CARIS HIPS & SIPS Subset Editor 3D view of feature “c” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***



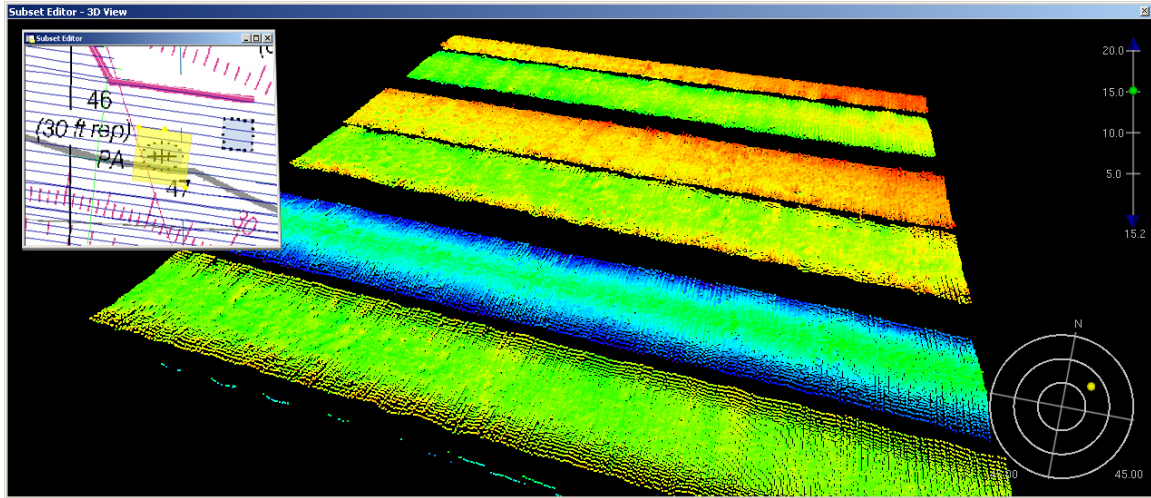
*Figure 25 - CARIS HIPS & SIPS Subset Editor 3D view of feature “d” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***



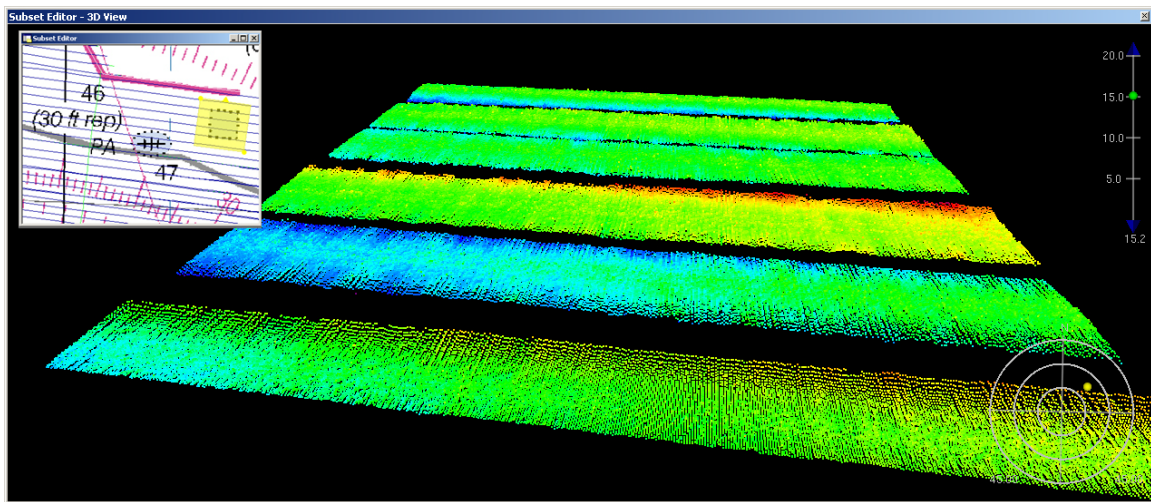
*Figure 26 - CARIS HIPS & SIPS Subset Editor 3D view of feature “e” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***



*Figure 27 - CARIS HIPS & SIPS Subset Editor 3D view of feature “f” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***



*Figure 28 - CARIS HIPS & SIPS Subset Editor 3D view of feature “g” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***



*Figure 29 - CARIS HIPS & SIPS Subset Editor 3D view of feature “h” from Figure 22. The color scale represents depth. The consistency of color and lack of anomalous data in the figure indicate the charted feature is no longer present. . **Concur***

Soundings: Survey H-11546

The 2006 survey soundings are in general agreement with the charted soundings for the largest scale ENC's covering H-11546. Table 6 and Figure 30 describe areas in which the 2006 sounding data are significantly shoaler than the charted soundings.

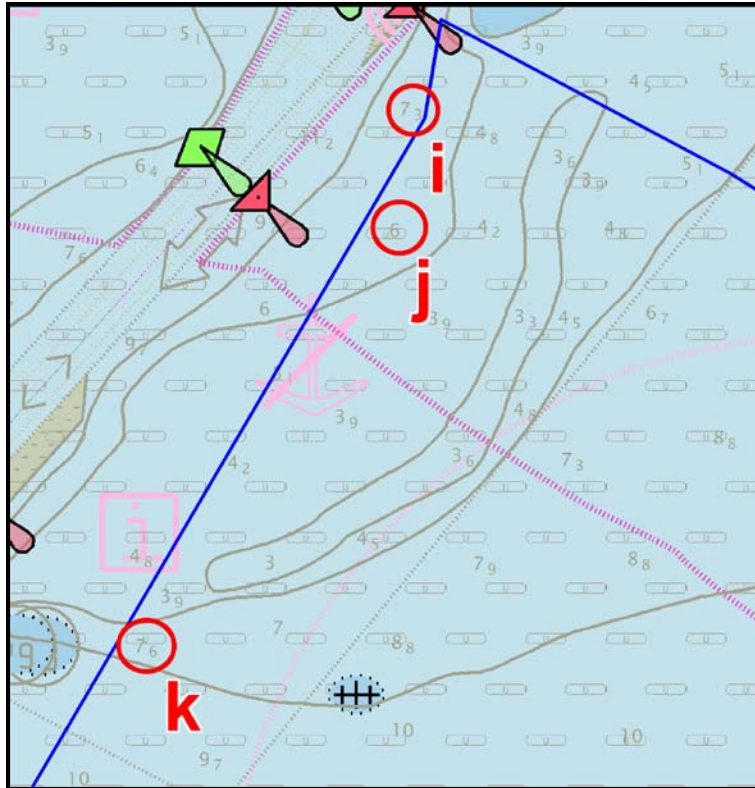


Figure 30 – Overview of the northern section of H-11546, covered by ENC US5MS22M, 10th Edition, where the 2006 survey data are significantly shoaler than the charted soundings.

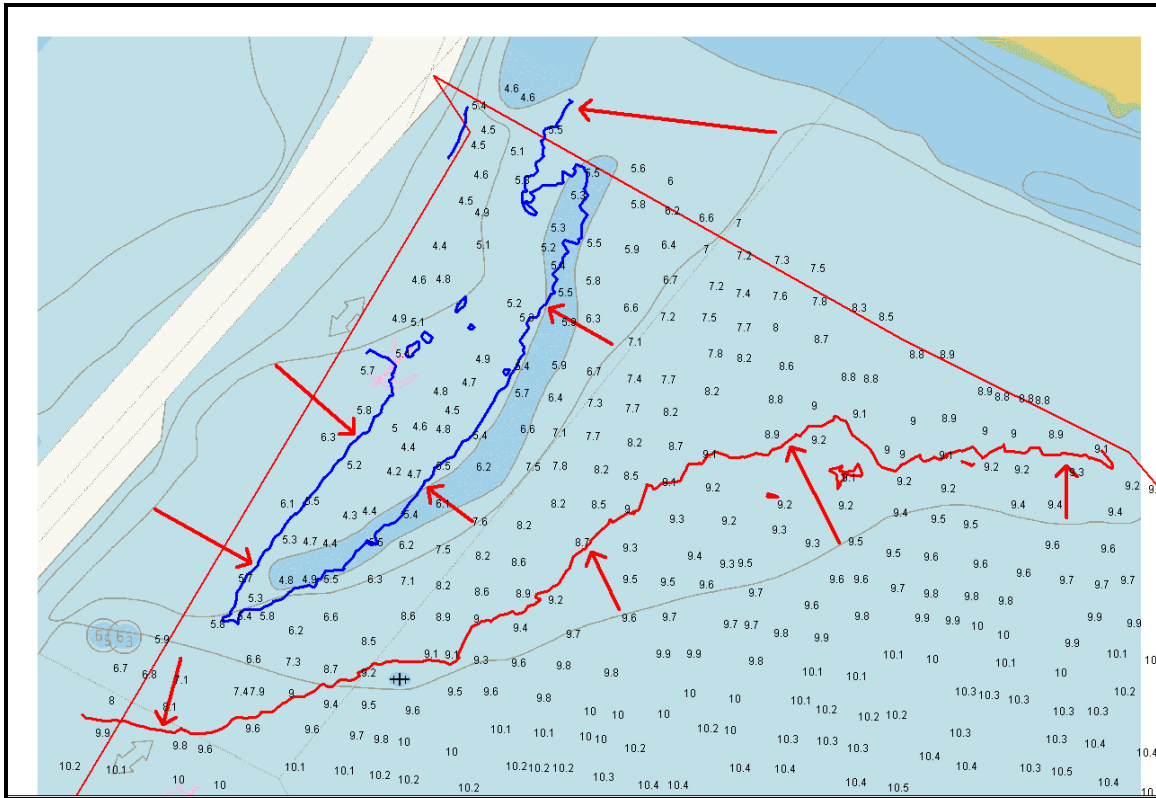
Table 6 – Areas within the survey limits of H-11546 where the 2006 survey soundings are significantly shoaler than the charted soundings. The location of the discrepancies are shown in Figure 30 indexed by feature letter. Soundings are in meters.

Feature Letter	Sounding on Chart (m)	Survey Sounding (m)	Difference (m)	Latitude N	Longitude W	Figure	ENC
i*	7.3	4.5m	2.8	30° 12' 09"	88° 32' 00"	27	US5MS22M
j*	6.0	4.3m	1.7	30° 12' 06"	88° 30' 45"	27	US5MS22M
k*	7.6	6.2m	1.4	30° 11' 34"	88° 31' 06"	27	US5MS22M

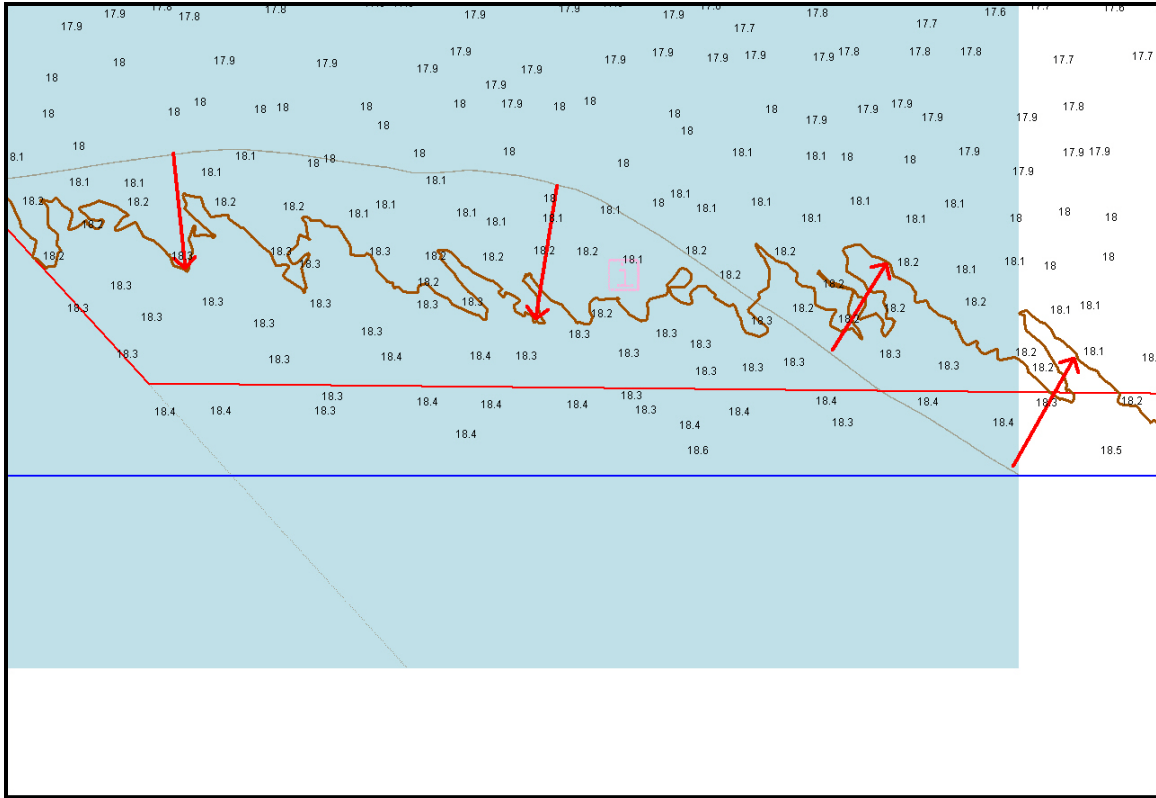
**Present survey depths adequate to supersede charted soundings.*

Trends and Changeable Areas: Survey Area H-11546

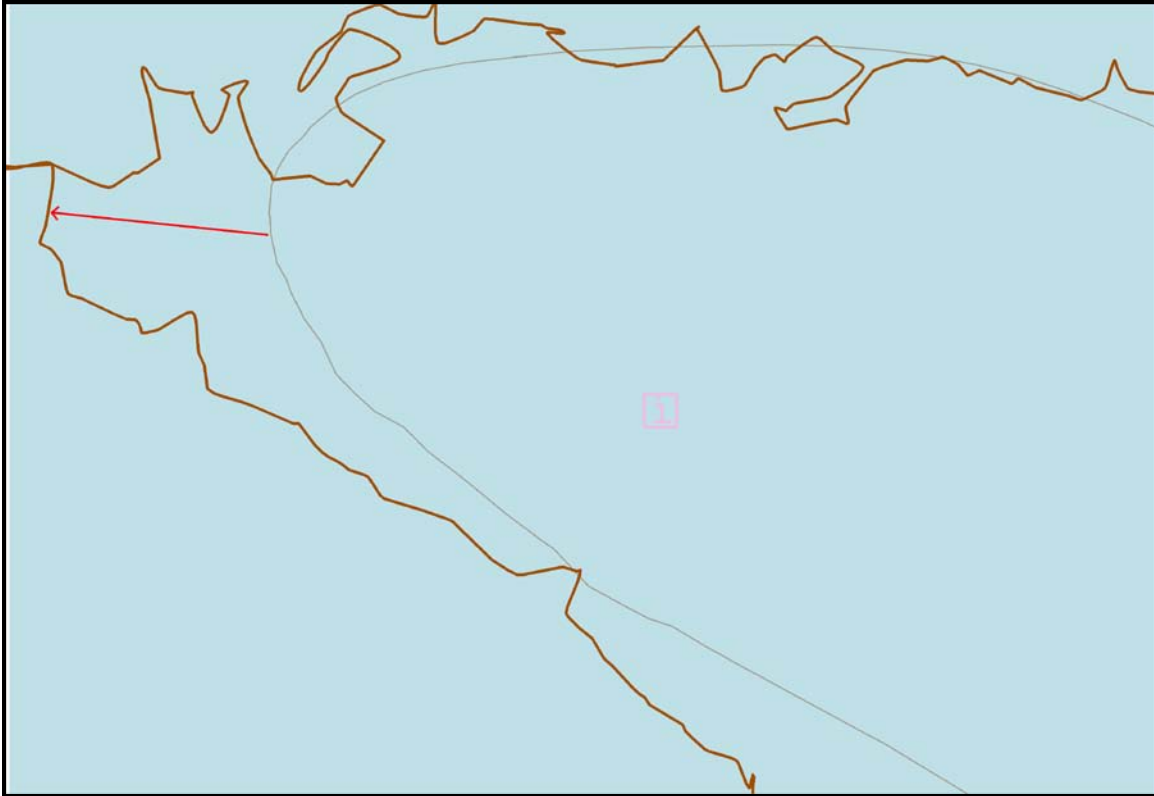
The 2006 survey data were used to generate depth contours for comparison with contours appearing on ENC US4MS12M, 8th Edition and ENC US5MS22M, 10th Edition. Three areas are identified where the charted contours varied significantly from the contours generated by the 2006 data (Figures 31-33). The hydrographer recommends updating the chart contours to reflect changes identified by the 2006 survey. **Concur**



*Figure 31- Overview of survey area H-11546, in the vicinity of Latitude N 30°11'56" Longitude W 88°30'33", covered by ENC US5MS22M, 10th Edition. The 30 foot (red) and 18 foot (blue) depth contours based on the 2006 survey soundings migrated 150 to 500 meters from charted positions. Additionally, the charted 12 foot contour in this area cannot be resolved by the 2006 survey soundings. The hydrographer recommends updating ENC US5MS22M contours with data from the 2006 survey. **Concur***



*Figure 32- Overview of survey area H-11546, in the vicinity of Latitude N 30°04'51" Longitude W 88°28'48", covered by ENC US4MS12M, 8th Edition. The 60 foot (beige) depth contour based on the 2006 survey soundings migrated up to 350 meters from charted positions. The hydrographer recommends updating ENC US4MS12M contours with data from the 2006 survey. **Concur***



*Figure 33- Overview of survey area H-11546, in the vicinity of Latitude N 30°07'56" Longitude W 88°22'44", covered by ENC US4MS12M, 8th Edition. The 60 foot (beige) depth contour based on the 2006 survey soundings migrated westward up to 190 meters from charted positions. The hydrographer recommends updating ENC US4MS12M contours with data from the 2006 survey. **Concur***

AWOIS Items Summary

This survey involved a full investigation of two Automated Wreck and Obstruction Information System (AWOIS) items. The table below is a summary of the items and the investigation results. Refer to Appendix II: SURVEY FEATURE REPORT for AWOIS item investigation reports and associated graphics files. ***Data attached to this report.***

Record	Description	Comment
13368*	Obstruction PA (44 ft rep 2005)	Item not found. Recommend removing Obstn PA (44 ft rep 2005) from the chart.
443*	Obstruction Fish Haven (cleared 39 ft 19740)	No indication of a wreck or rubble field. Least depth for charted Fish Haven is 42 ft from this survey. Recommend removing Obstn (cleared 39 ft) from chart.
7948*	Obstn 47	Item not found. Least depth from the 2006 survey was 50 ft. Recommend removing Obstn 47 from chart <i>*See section D1. of this report for final charting recommendations.</i>

D2. Additional Results

Aids to Navigation

All the floating aids to navigation in this survey appear as charted, match the Light List and chart characteristics and serve their intended purpose. *Concur*

Drilling Structures

There were two drilling structures or production platforms within the survey limits of H-11546.

Description	Latitude	Longitude
UXP-MO-904-1 3 platforms	30° 05' 03.59999 0 05.23 " N	88° 29' 47.90000 0 48 " W*
none oil derrick	30° 05' 41.70001 0 93 " N	88° 30' 26.70001 0 73 " W*

**Revise location of charted platforms.*

Comparison with Prior Surveys

A comparison with prior surveys is not required under this task order. See Section D1 for a comparison to the nautical charts. *Concur*

Bottom Samples

Thirty-three (33) bottom samples were collected in support of the 2006 survey. The samples were distributed geographically to obtain a full representation of the bottom characteristics as specified in NOAA Hydrographic Surveys Specifications and Deliverables, Section 7.1. A table listing the position and description of the bottom samples is included in Appendix V to this report. *Concur*

Bridges and Overhead Cables

There were no bridges or overhead cables in the survey area.

Submarine Cables and Pipelines

There were no charted submarine cables or pipelines located in the survey area and the side scan sonar and multibeam echosounder surveys did not produce any images that indicated the potential presence of any uncharted pipelines or cables. *Concur*

LETTER OF APPROVAL

REGISTRY NO. H-11546

This report and the accompanying digital data are respectfully submitted.

Field operations contributing to the accomplishment of survey H-11546 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report, digital data, and accompanying records have been closely reviewed and are considered complete and adequate as per the Statement of Work. Other reports submitted with this survey include the Data Acquisition and Processing Report and the Horizontal and Vertical Control Report.

I believe this survey is complete and adequate for its intended purpose.



Scott Cholmondeley, Hydrographer
TerraSond Ltd.

Date 06/06/2007



APPENDIX I

Danger to Navigation Reports

Danger to Navigation Report

Report of Danger to Navigation

Sheet: B

Registry No.: H-11546

State: Mississippi – Alabama

General Locality: Gulf of Mexico

Sub locality: Directly 4.5 NM South of Horn Island Pass

Project Number: OPR-J364-KR-06

Survey Dates: May 30th, 2006 – Dec 5th, 2006

Depths are reduced to Mean Lower Low Water (MLLW) using verified tides. Positions are based on the NAD83 horizontal datum.

The DTONs in this report result from comparison of 2006 survey data to the largest scale chart(s) covering the survey area.

Affected nautical charts:

Chart Scale	Edition Number	Edition Date	Charted Horizontal Datum	Issue Date
11375 1: 20,000	36	1/1/2005	NAD83	1/27/2007
11373 1: 80,000	45	2/1/2006	NAD83	1/27/2007

ENC	Chart	Scale	Edition Number	Charted Horizontal Datum	Issue Date
US5S22M 11	375	1:20,000	10	NAD83	1/3/2007
US4M12M 11	373	1:80,000	8	NAD83	1/5/2007

Comments: During office review of H-11546, the following 2006 soundings proved significantly shoaler than charted soundings, and are recommended for update.

**See section D1. of the Descriptive Report for final charting recommendations.*

Feature Letter	Latitude N	Longitude W	Charted Depth (ft)	Survey Sounding (ft)	Difference (ft)
a*	30° 12' 14.76"	-88° 30' 43.92"	24	15	9
b*	30° 12' 05.76"	-88° 30' 45.00"	20	14	6
c*	30° 11' 33.72"	-88° 31' 06.24"	25	19	6
d*	30° 11' 04.92"	-88° 31' 07.32"	40	36	4
e*	30° 10' 42.60"	-88° 31' 07.32"	43	39	4
f*	30° 10' 13.08"	-88° 31' 07.68"	46	41	5
g*	30° 09' 56.16"	-88° 31' 39.72"	46	42	4

Comments: During office review of H-11546 the following 2006 soundings were proved uncharted on Chart 11373 and Chart 11375, and are recommended for addition.

Feature Letter	Latitude N	Longitude W	Sounding Value (feet)	Comment
h*	30° 06' 45.00"	88° 31' 53.40"	47	Obstruction

*See section D1. of the Descriptive Report for final charting recommendation.

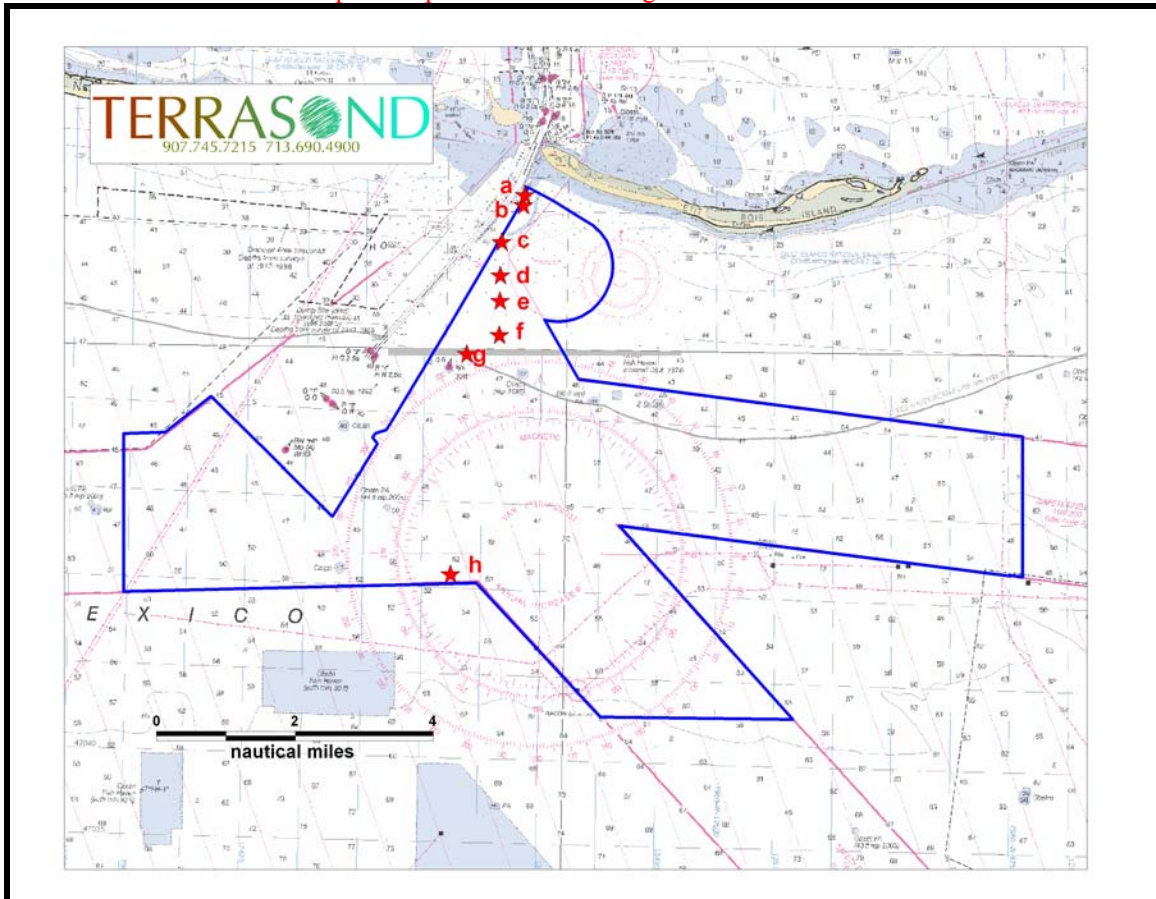


Figure 1 - Overview of H-11546 showing DTON locations, Chart 11375 36th Edition (1:20,000 scale) overlays chart 11373 45th Edition (1:80,000 scale)

Registry Number: OPR-J364-KR-06
State: Mississippi - Alabama
Locality: Gulf of Mexico
Sub-locality: Directly 4.5 NM South of Horn Island Pass
Project Number: H11546
Survey Dates: 05/30/2006 - 06/01/2006

Charts Affected

Number	Version	Date	Scale
11375	36th Ed.	01/01/2005	1:20000
11374	33rd Ed.	10/01/2005	1:40000
11373	45th Ed.	02/01/2006	1:80000
11366	10th Ed.	05/01/2006	1:250000
1115A	41st Ed.	03/01/2005	1:456394
11360	41st Ed.	03/01/2005	1:456394
11006	32nd Ed.	08/01/2005	1:875000
411	51st Ed.	12/01/2006	1:2160000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Sounding 'a' 15ft SOUNDG	GP	4.75 m	030° 12' 14.400" N	88° 30' 43.200" W	---
1.2	Obstruction 'h' 47ft	GP	14.30 m	030° 06' 44.000" N	88° 31' 51.000" W	---

1 - DToNs

1.1) Sounding 'a' 15ft SOUNDG

DANGER TO NAVIGATION

Survey Summary

Survey Position: 030° 12' 14.400" N, 88° 30' 43.200" W
Least Depth: 4.75 m
Timestamp: 2006-150.00:00:00.000 (05/30/2006)
GP Dataset: H11546_import.txt
GP No.: 1
Charts Affected: 11375_1, 11374_1, 11373_1, 11366_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

This sounding DtoN stems comparing 2006 survey data to the largest scale chart covering the survey area during office processing.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11546_import.txt	1	0.00	000.0	Primary

Hydrographer Recommendations

Replace the charted 24 ft sounding at 30°12'14.400", -088°30'43.200" with a sounding value of 15 ft located at the geographic position in Latitude 30°12'14.400"N, Longitude 088°30'43.200".

Cartographically-Rounded Depth (Affected Charts):

- 15ft (11375_1, 11374_1, 11373_1)
- 2 ½fm (1115A_1, 11360_1, 11006_1, 411_1)
- 2fm 3ft (11366_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
 OBJNAM - Sounding 'a'
 QUASOU - 1:depth known
 RECDAT - 20070510

SORDAT - 20060530
SORIND - US,US,surve,H11546
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Depth 15 ft shown on Chart 11375, 36th. Edition, 01/05. No change in charting is recommended.

1.2) Obstruction 'h' 47ft

DANGER TO NAVIGATION

Survey Summary

Survey Position: 030° 06' 44.000" N, 88° 31' 51.000" W
Least Depth: 14.30 m
Timestamp: 2006-152.00:00:00.000 (06/01/2006)
GP Dataset: H11546_import.txt
GP No.: 8
Charts Affected: 11373_1, 11366_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

Depths are reduced to MLLW using verified tides. Positions are based on the NAD83 horizontal datum. The DTONS in this report result from comparison of 2006 survey data to the largest scale chart covering the survey area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11546_import.txt	8	0.00	000.0	Primary

Hydrographer Recommendations

Chart an 47ft obstruction at the surveyed geographic position located in Latitude 30°06'44.000"N, Longitude 088°31'51.000"W.

Cartographically-Rounded Depth (Affected Charts):

- 47ft (11373_1)
- 7 ¾fm (1115A_1, 11360_1, 11006_1, 411_1)
- 7fm 5ft (11366_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - Obstruction 'h' 47ft
 QUASOU - 6:least depth known
 RECDAT - 20070510
 SORDAT - 20060601

SORIND - US,US,surve,H11546

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 14.3 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

See section D1. of the Descriptive Report for final charting recommendation.

Feature Images



Figure 1.2.1

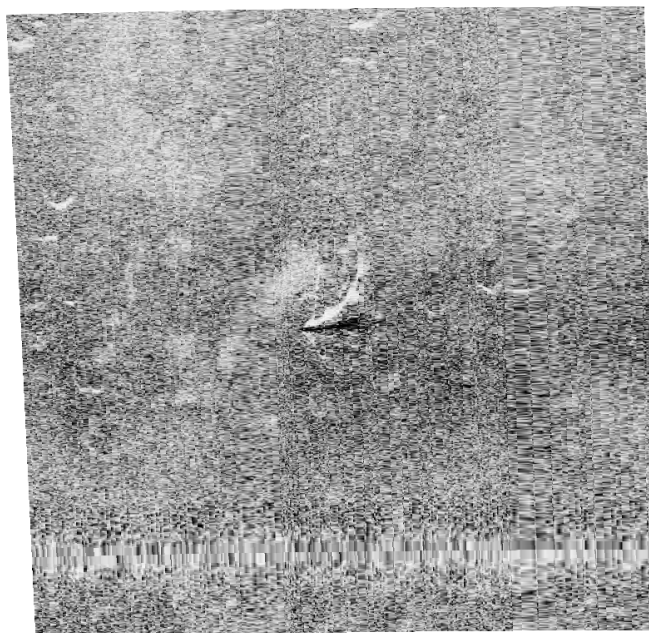


Figure 1.2.2



APPENDIX II

Survey Feature Report

0091B (JD150 17:30-17:33 UTC)

0092B (JD150 18:29-18-30 UTC)

0094B (JD150 21:26-21:28 UTC)

Investigation Method: 200% sidescan sonar; supported by MBES

If Found: Surveyed Position: No item found

(NAD83)

Position Determined By: DGPS

Investigation Summary: No indication of a wreck or rubble field. Least depth for charted Fish Haven is 42 ft from this survey. Recommend removing Obstrn (cleared 39 ft) from chart.

See section D1. of the Descriptive Report for final charting recommendation.

Item Investigation Field Report

Description (as charted): Obstn 47
Source: AWO IS record number 7948
Charted Position: Lat. 30°06'49.18"N Long. 088°33'43.21"W
Charts Affected: 11373 1:80,000, 45th ed. February 2006
11366 1:250,000, 10th ed. May 2006

Investigation

Date(s)/Day Number(s): June 1-2, 2006
Survey Vessel Name: *R/V Davidson*
Position Numbers/Time: Survey lines:
0151B (JD152 09:17-09:20 UTC)
0153B (JD152 11:57-12:00 UTC)
0154B (JD152 13:27-13:30 UTC)
0155B (JD152 14:51-14:54 UTC)
0157B (JD152 17:26-17:28 UTC)
0158B (JD152 18:53-18:56 UTC)
0159B (JD152 19:57-19:59 UTC)
0160B (JD152 21:35-21:38 UTC)
0163B (JD153 00:24-00:27 UTC)
0165B (JD153 02:51-02:54 UTC)
Investigation Method: 200% sidescan sonar; supported by MBES
If Found: Surveyed Position: Item not found
(NAD83)
Position Determined By: DGPS
Investigation Summary: Item not found. Least depth from this survey for area was
50 ft. Recommend removing the Obstn 47 from the chart.
See section D1. of the Descriptive Report for final charting recommendation.

Item Investigation Field Report

Description (as charted): Obstn PA (44 ft rep 2005)

Source: AWOIS record number 13368

Charted Position: Lat. 30°07'42"N Long. 088°32'58"W

Charts Affected: 11373 1:80,000, 45th ed. February 2006
11366 1:250,000, 10th ed. May 2006

Investigation

Date(s)/Day Number(s): June 2, 9, 2006
July 11, 2006

Survey Vessel Name: *R/V Davidson*

Position Numbers/Time: Survey lines:
0176B (JD153 16:26-16:29 UTC)
0179B (JD153 18:35-18:37 UTC)
0180B (JD153 19:18-19:20 UTC)
0182B (JD153 20:37-20:39 UTC)
0183B (JD153 20:55-20:58 UTC)

0187B (JD153 22:35-22:38 UTC)
0311B (JD160 03:51-03:53 UTC)
0312B (JD160 04:33-04:36 UTC)
0313B (JD160 06:04-06:06 UTC)
1011B (JD192 14:56-14:58 UTC)
1014B (JD192 15:34-15:36 UTC)
1016B (JD192 16:10-16:13 UTC)

Investigation Method: 200% sidescan sonar; supported by MBES

If Found: Surveyed Position: Item not found
(NAD83)

Position Determined By: DGPS

Investigation Summary: Item not found. Recommend removing Obstn PA (44 ft rep 2005) from the chart.

See section D1. of the Descriptive Report for final charting recommendation.



APPENDIX III

Progress Sketch

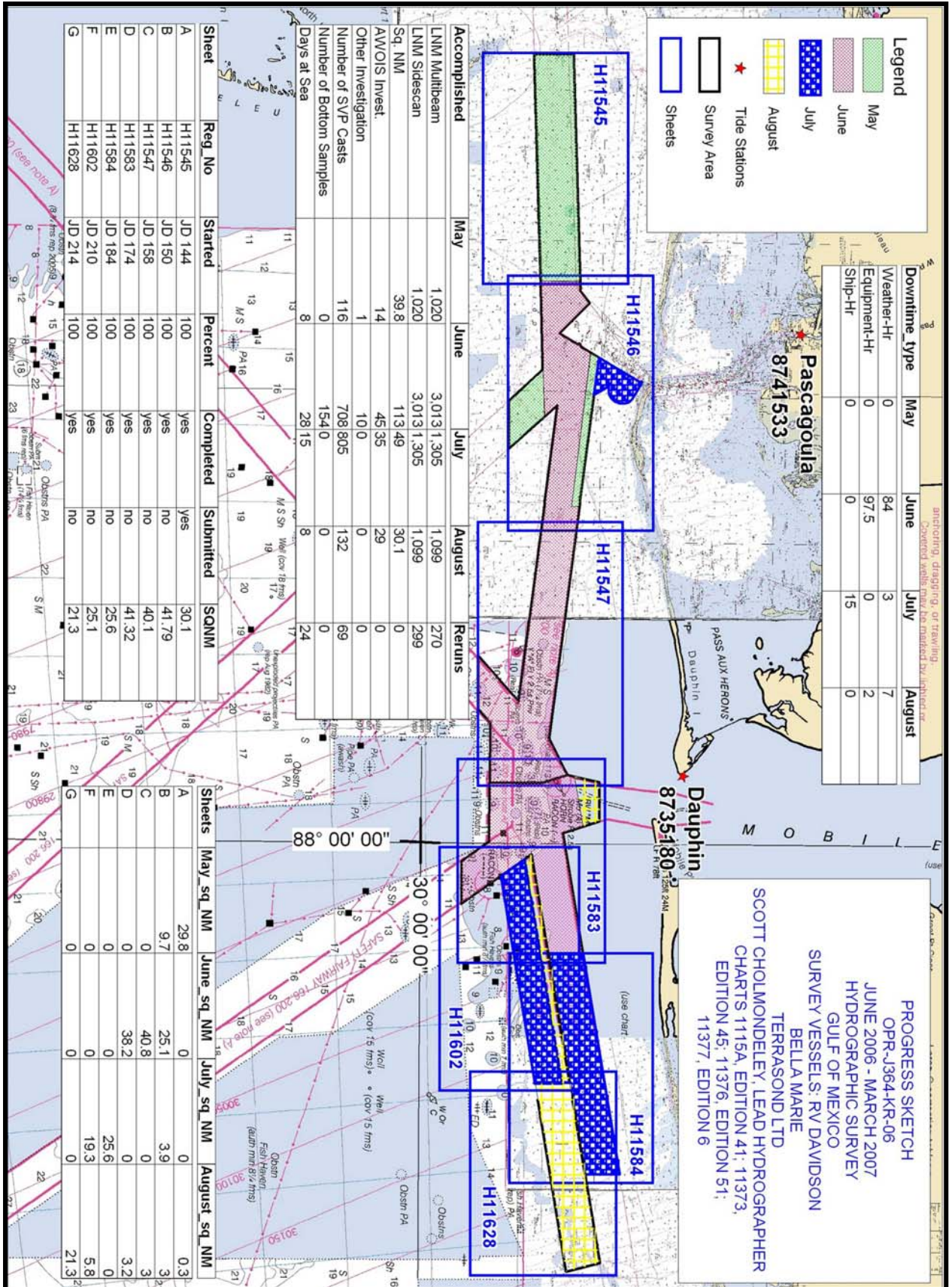


Figure 1: Final Progress Sketch for OPR-J364-KR-06



APPENDIX IV

Tides and Water Levels

Abstract of Times of Hydrography for Smooth Tides

Project: OPR-J364-KR-06

Registry No.: H-11546

Sheet: B

Inclusive Dates: May 30, 2006 – December 5, 2006

START		END	
Day (Julian)	Time (UTC)	Day (Julian)	Time (UTC)
150	9:24:40	150	23:54:39
151	0:45:35	151	23:55:20
152	0:24:28	152	23:59:59
153	0:00:00	153	23:59:59
154	0:00:00	154	23:59:59
155	0:00:00	155	23:59:59
156	0:00:00	156	23:59:59
157	0:00:00	157	23:10:08
158	0:06:14	158	2:40:35
160	2:08:55	160	8:37:48
162	22:54:57	162	23:59:59
163	0:00:00	163	2:32:33
191	15:37:09	191	23:59:59
192	0:00:00	192	23:59:59
193	0:00:00	193	8:57:29
222	2:10:01	222	15:57:51
315	16:58:36	315	19:07:45
333	14:43:29	333	20:59:21
336	14:05:38	336	22:00:14
337	13:24:22	337	21:37:09
339	14:09:24	339	19:12:23



APPENDIX V

Supplemental Survey Records and Correspondence

Bottom Samples

Thirty-three bottom samples were collected in support of the 2006 survey. The samples were distributed geographically to obtain a full representation of the bottom characteristics as specified in NOAA Hydrographic Surveys Specifications and Deliverables, Section 7.1.

Table 1 – Bottom samples obtained in conjunction with survey H-11546 (2006).

Point Number	Date	Time (UTC)	Depth (m)	Latitude	Longitude	Color	Surface Description	Nature of Surface
B01	6/25/2006	15:25	13.7	30° 09' 11.5" N	88° 35' 54.7" W	green	sticky	silt
B02	6/26/2006	13:50	14.0	30° 08' 10.7" N	88° 36' 16.4" W	green	medium	sand
B03	6/25/2006	20:20	14.3	30° 07' 04.0" N	88° 36' 11.6" W	grey	medium	sand
B04	6/26/2006	14:00	15.2	30° 07' 06.9" N	88° 34' 57.9" W	green	medium	sand
B05	6/25/2006	15:10	14.6	30° 08' 11.3" N	88° 35' 02.4" W	green	sticky	sand
B06	6/25/2006	14:50	14.6	30° 07' 09.5" N	88° 33' 43.9" W	grey	medium	sand
B07	6/26/2006	14:15	15.5	30° 06' 39.5" N	88° 32' 31.2" W	green	medium	silt
B08	6/25/2006	14:25	14.6	30° 08' 14.8" N	88° 32' 29.8" W	grey	fine	silt
B09	6/26/2006	14:25	14.9	30° 07' 28.4" N	88° 31' 38.0" W	green	medium	silt
B10	6/26/2006	14:35	15.8	30° 06' 40.9" N	88° 30' 46.7" W	green	sticky	silt
B11	6/26/2006	14:40	17.7	30° 05' 53.5" N	88° 29' 55.4" W	green	medium	sand
B12	6/26/2006	15:00	18.3	30° 05' 06.2" N	88° 29' 04.0" W	green	medium	silt
B13	6/26/2006	15:10	16.7	30° 05' 03.9" N	88° 27' 18.1" W	grey	medium	sand

Point Number	Date	Time (UTC)	Depth (m)	Latitude	Longitude	Color	Surface Description	Nature of Surface
B14	6/26/2006	15:20	15.5	30° 05' 51.3" N	88° 28' 10.4" W	grey	medium	sand
B15	6/26/2006	15:35	14.3	30° 06' 38.4" N	88° 29' 01.0" W	grey	medium	sand
B16	6/26/2006	15:40	15.2	30° 07' 25.7" N	88° 29' 52.8" W	grey	medium	sand
B17	6/26/2006	16:20	13.4	30° 08' 12.8" N	88° 30' 44.6" W	grey	medium	sand
B18	6/25/2006	14:00	13.7	30° 09' 13.1" N	88° 31' 49.9" W	grey	medium	sand
B19	6/22/2006	14:00	12.3	30° 10' 16.9" N	88° 30' 56.8" W	grey	fine	silt
B20	6/22/2006	13:45	10.1	30° 11' 13.4" N	88° 30' 17.8" W	grey	fine	silt
B21	6/22/2006	14:25	13.1	30° 09' 13.8" N	88° 30' 44.2" W	grey	medium	silt
B22	6/22/2006	15:00	13.1	30° 09' 02.9" N	88° 29' 26.9" W	grey	medium	sand
B23	6/26/2006	16:25	15.2	30° 08' 00.3" N	88° 29' 35.6" W	grey	medium	sand
B24	6/26/2006	16:35	14.6	30° 07' 52.7" N	88° 28' 21.5" W	grey	medium	sand
B25	6/22/2006	15:20	12.2	30° 08' 55.5" N	88° 28' 10.9" W	grey	medium	sand
B26	6/22/2006	15:50	13.4	30° 08' 49.7" N	88° 26' 57.9" W	grey	medium	sand
B27	6/22/2006	16:10	13.4	30° 07' 44.1" N	88° 27' 08.2" W	grey	medium	sand
B28	6/22/2006	16:30	14.6	30° 07' 37.5" N	88° 25' 53.6" W	grey	medium	sand
B29	6/22/2006	16:50	13.1	30° 08' 40.4" N	88° 25' 45.0" W	grey	medium	sand
B30	6/22/2006	17:00	15.8	30° 08' 34.5" N	88° 24' 29.6" W	grey	soft	clay

Point Number	Date	Time (UTC)	Depth (m)	Latitude	Longitude	Color	Surface Description	Nature of Surface
B31	6/22/2006	17:15	15.8	30° 07' 29.6" N	88° 24' 39.1" W	grey	soft	clay
B32	6/22/2006	17:30	15.8	30° 07' 22.5" N	88° 23' 24.7" W	grey	medium	sand
B33	6/22/2006	17:55	15.8	30° 08' 26.6" N	88° 23' 14.9" W	grey	soft	clay

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Surveys H11546 (2006)**

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 and review data at the Atlantic Hydrographic Branch (AHB):

CARIS HIPS/SIPS version 6.1
CARIS BASE Manager 2.1
CARIS HOM ENC 3.3
PYDRO, version 8.7
CARIS S-57 Composer 2.0

B.2 QUALITY CONTROL

H-Cells

The AHB source depth grid was generated as a 2m resolution BASE surface. Survey scale soundings were extracted from AHB generated 2m Base surface at a 1:20000 scale using a radius of 2m. Over 19000 soundings were created at the radius. The 1M radius was too dense to perform the compilation. Soundings were selected for charting by hand using the latest raster charts 11373 and 11375. Soundings were then checked for conflicts, corrected to remove conflicts, and edited to allow for proper sounding compilation placement with respect to existing charted depths outside the survey area. The BASE surface was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth curves were drawn from the Base surface. The curves were utilized during chart scale sounding selection at AHB.

The compilation products and Stand Alone HOB Files (SAHOB) are detailed in the Compilation Process Log of this document. All individual SAHOB files were assembled in BASE Editor during H-Cell compilation.

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_CS.000) with all values measured in feet following NOAA sounding rounding rules.

The H11546 CARIS H-Cell final deliverables include the following products:

H11546_CS.000	1:20,000 Scale	H11546 Selected Soundings (Chart Scale)
H11546_SS.000	1:20,000 Scale	H11546 Selected Soundings (Survey Scale)

JUNCTIONS

<u>H11512 (2005)</u>	<u>to the northwest</u>
<u>H11545 (2006)</u>	<u>to the west</u>
<u>H11547 (2006)</u>	<u>to the east</u>

Survey H11512 (2005) junctions with the present survey to the northwest. Present survey soundings are 1 foot deeper than survey H11512 (2005).

Survey H11545 (2006) junctions with the present survey to the west. Present survey soundings are 1 foot shoaler than survey H11545 (2006).

Survey H11547 (2006) junctions with the present survey to the east. Present survey soundings are 1 foot shoaler than survey H11547 (2006).

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional corrections required by Atlantic Hydrographic Branch personnel. The field unit applied verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H11584. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW).

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 16. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. The horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) during CARIS Base Manager processing.

D. RESULTS AND RECOMMENDATIONS

Chart Comparison 11373 (47th. Edition, Oct. /08
 Corrected through NM, Oct. 11/08
 Corrected through LNM, Sep. 30/08
 Scale 1:80,000

Chart Comparison 11375 (36th. Edition, Jan. /05
 Corrected through NM, Jan. 8/05
 Corrected through LNM, Jan. 4/05
 Scale 1:20,000

ENC Comparison US4MS12M
 Mississippi Sound and Approaches
 Edition 13
 Update Application Date 2009-01-30
 Issue Date 2009-03-27
 References: Charts 11373

ENC Comparison US5MS22M
 Pascagoula Harbor Mississippi
 Edition 18
 Update Application Date 2008-01-27
 Issue Date 2009-04-24
 References: Charts 11375

Hydrography

The charted Hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in Section D. of the Descriptive Report. The following should be noted:

A charted dangerous sunken wreck with a depth of 37 feet in the vicinity of Latitude 30°09'14"N, Longitude 88°28'28"W was verified by the present survey. The dangerous sunken wreck was located in Latitude 30°09'14.00"N, Longitude 88°28'29.63"W with a depth of 42 feet. It is recommended that the dangerous sunken wreck

with a depth of 37 feet, (37 Wk) be deleted. Delete 37 Wk and danger curve. It is also recommended that a dangerous sunken wreck with a depth of 42 feet, (42 Wk) be charted in Latitude 30°09'14.00"N, Longitude 88°28'29.63"W. Chart 42 Wk and danger curve.

A charted dangerous submerged obstruction PA, (rep 2009) in the vicinity of Latitude 30°07'56"N, Longitude 88°30'10"W was charted subsequent to present survey operations. Retain as charted.

A charted shoaling 10 to 12 feet running from Latitude 30°12'15"N, Longitude 88°30'29"W to Latitude 30°11'39"N, Longitude 88°31'01"W was disproved by present survey side scan and vertical beam operations. Delete the charted shoaling 10 to 12 feet. Chart present survey depths.

A charted Obstn Fish Haven (cleared 39 ft 1974) in the vicinity of Latitude 30°09'22"N, Longitude 88°29'10"W was disproved by 200% side scan and multibeam investigation. Defer to MCD Nautical Data Branch for final charting recommendation.

A charted buoy (R "WR" Q R) in the vicinity of Latitude 30°09'44"N, Longitude 88°31'57"W is a marker for the a wreck with a depth of 33ft, (33 Wk). The wreck is discussed in section D1. of the Descriptive Report. Defer to MCD Nautical Data Branch for final charting recommendation of buoy (R "WR" Q R).

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 File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further survey requirements recommended by the hydrographer.

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

H11546

the Raster Charts and Electronic Navigation Charts (ENC)
used for compiling the present survey.

APPROVAL SHEET
H11546

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproof 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 review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted.

Norris A. Wike
Cartographer
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: _____
Shep Smith
Commander, NOAA
Chief, Atlantic Hydrographic Branch