H11629

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Hydrographic**

Registry No. **H11629**

LOCALITY

State **Alabama**

General Locality **Perdido Bay**

Sub-locality **Perdido River to Inerarity Point**

2007

CHIEF OF PARTY

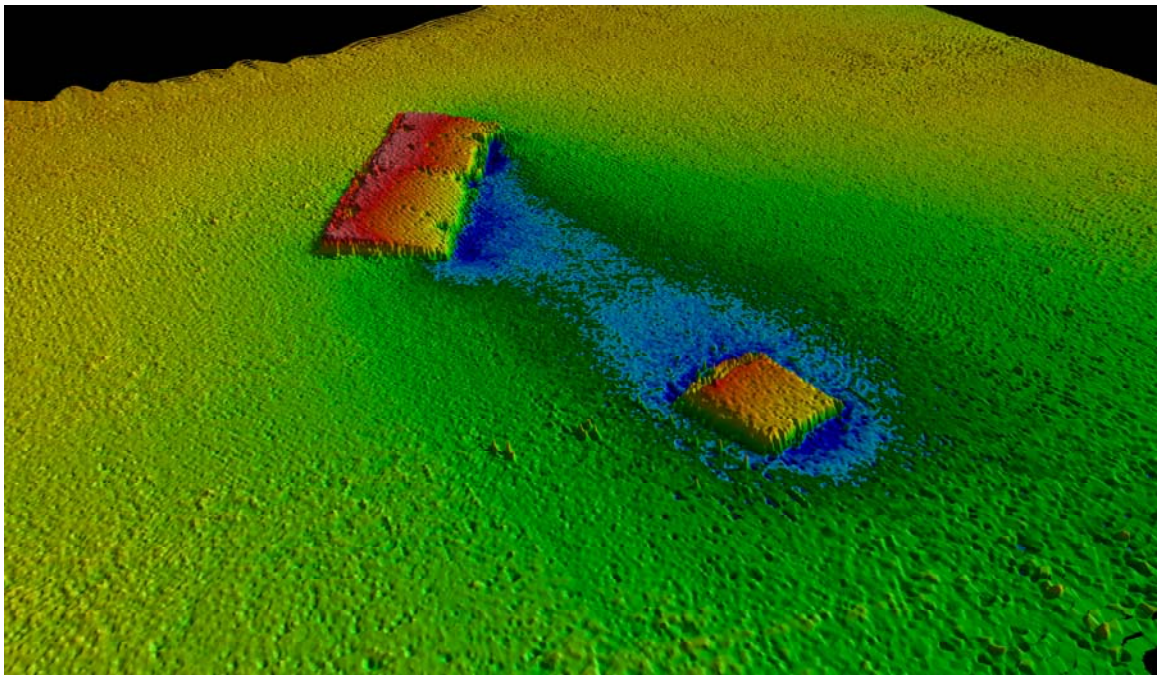
Scott Cholmondeley,
Lead Hydrographer

LIBRARY & ARCHIVES

DATE

DESCRIPTIVE REPORT

S-J911-KR-TE



H-11629

SURVEY J

STATE: ALABAMA

GENERAL LOCALITY: Perdido Bay

SUB LOCALITY: Perdido River to Inerarity Point

YEAR: 2007

TERRASOND

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Descriptive Report to Accompany Hydrographic Survey H-11629

Survey J

October 26th, 2006 – February 6th, 2007

TerraSond Ltd.

Lead Hydrographer: Scott Cholmondeley

A. AREA SURVEYED

This navigable area survey was conducted in accordance with Statement of Work* Side Scan Sonar Survey Services, S-J977-KR-TE, Alabama, Louisiana, Mississippi, Gulf of Mexico; dated September 25th, 2006.

The purpose of this contract is to provide NOAA accurate hydrographic survey data suitable for item detection and debris mapping in the assigned area. The project area is approximately 17.23 square nautical miles. The project area runs from Perdido River to Inerarity Point. Perdido Bay, an irregularly shaped body of water, is 13 miles W of Pensacola Bay entrance and 26 miles E of Mobile Bay entrance. Depths of 2 to 19 feet are found in the bay and in Perdido River, the latter being the river that serves as a boundary between the States of Florida and Alabama.

Full bottom coverage, consisting of 100% side scan sonar and acoustic data using a single beam echo sounder, was used to locate and determine the least depth over the obstructions, wrecks and shoals for the entire project area. This survey area has a maximum depth of 18.7 feet and a minimum depth of 3 feet below the Mean Lower Low Water (MLLW) tidal datum. For complete survey limits, see Figure 1 on the following page.

Filed with original field records at AHB.

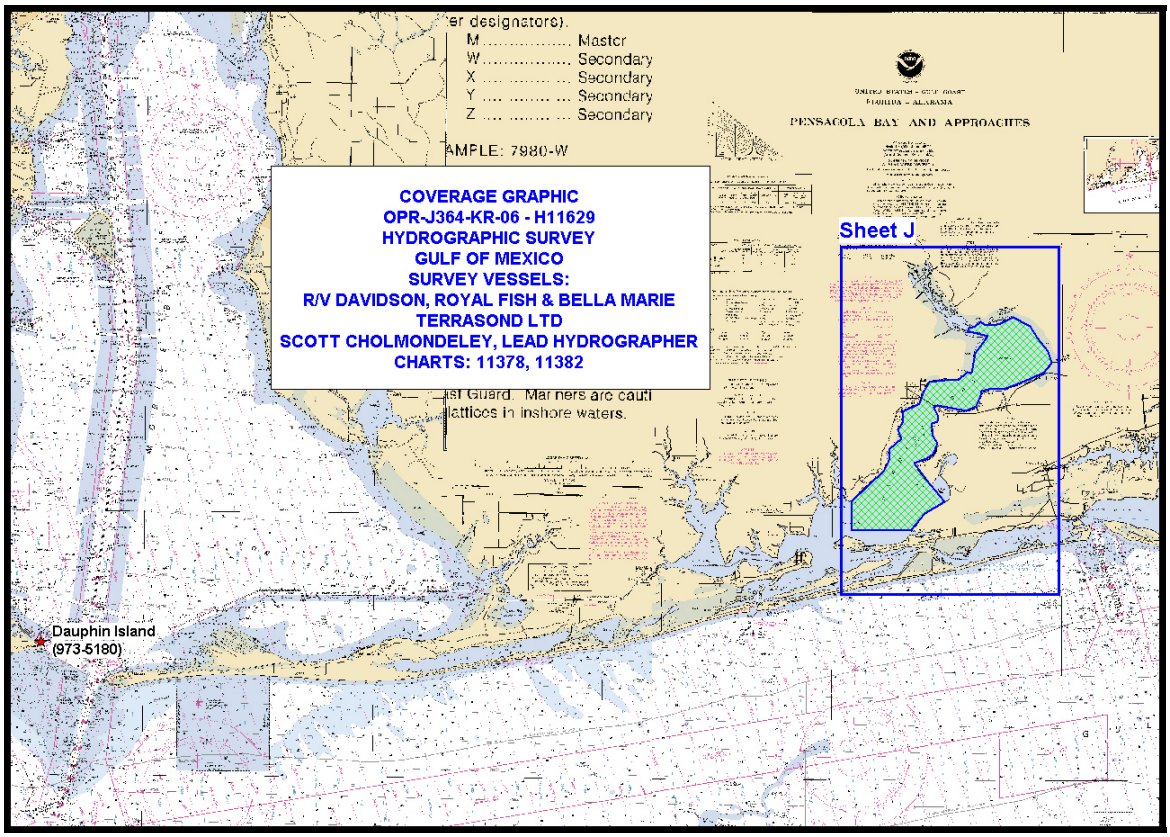


Figure 1- Overview of H-11629 with Chart 11378, 33rd Edition, June 2003, and Chart 11382, 40th Edition, Feb. 2004.

B. DATA ACQUISITION AND PROCESSING *See also the Evaluation Report*

B.1 Equipment

Bathymetry and side scan imagery for this survey were acquired using the hydrographic survey vessel *Royal Fish.*

Royal Fish

The *Royal Fish* is an aluminum hull vessel, 7.62 meters length overall with a 2.43 meter beam and a 0.40 meter draft. The *Royal Fish* is powered by one 460ci Ford Kodiak inboard turbo drive and has a cruising speed of 30 knots. Vessel electrical power is provided by 300 AH deep cycle batteries and a 1.8 KW Trace inverter. *Royal Fish* was outfitted with a bow mounted pole Benthos C3D. Major systems used on the *Royal Fish* are listed in the following table.

VESSEL *Royal Fish* LOA: 7.62m, BEAM 2.43m, DRAFT: 0.40m	
Equipment	**Manufacturer & Model**
Single Beam Sonar	Odom Single Beam Hydrotrac
Side Scan Sonar	Benthos C3D
Positioning	Coda Octopus F-180
Sound velocity	Odom Digibar Pro
Vessel attitude	Coda Octopus F-180

Equipment performance details are provided in the * Data Acquisition and Processing Report (DAPR), Sections A. Equipment and B. Quality Control. ***Filed with original field records at AHB.***

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 *Royal Fish* 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.

Singlebeam

No conditions with the potential for adversely affecting data integrity were encountered with the singlebeam suites used during this survey. Singlebeam echosounder calibration checks were conducted several times per week. The calibration checks were performed by measuring the depth under the ship with a calibrated sounding lead line and comparing the value with the depths recorded by the single beam echosounder. All measurements were corrected to the survey vessel's central reference point (CRP). The lead line used for the calibration checks was constructed from a metric fiberglass survey tape with a 36-ounce lead ball attached to the end. The ball was attached in such a way that the bottom of the ball was at the zero mark of the tape. The lead line and nadir-beam MBES values agreed consistently throughout the survey.

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

Multibeam

Multibeam confidence checks were conducted on the Bella Marie to verify proper operation of the multibeam suite on a weekly basis, weather permitting. 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.

Filed with original field records at AHB.

Crosslines

Survey H-11629 had 928.4 NM of main scheme lines and 74.3 NM of crosslines. This equates to 8.0% of the mainscheme lines. The crossings varied spatially and temporally. Visual comparisons between the crosslines and the mainscheme lines indicate that the two generally agree. The magnitude of discrepancy is consistent throughout the survey area. ***Concur.***

Contemporary Survey Junctions

There are no contemporary survey junctions with which to compare this survey. ***Concur.***

B3. Corrections to Echo Soundings

Survey H-11629 was performed in conjunction with two other surveys in Project S-J977-KR-TE and seven other surveys in Project OPR-J364-KR-06. 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 were reduced using zoning provided by John Oswald & Associates LLC under the project instructions and verified tides from the Millview, Perdido Bay, FL (872-9905). 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 swath angle-dependent, shoal-biased CARIS BASE surface which best represents the seafloor at the time of the 2007 survey. All possible measures were taken to ensure the data were correctly processed. One sun-illuminated, geographically referenced DTM image depicting coverage of the survey area was submitted in addition to the BASE surface. A grid spacing of 5 meters was used for the submitted BASE surface and DTM. All grids are projected to UTM Zone 16 North, NAD 1983.

The submittal of several grids of varying resolution was unnecessary for H-11629 due to the shallow depths and relatively flat bottom throughout the survey area.

Naming conventions for each grid are as follows:

CARIS BASE Swath Angle Surface:	H11629_1_OF_1.hns
Sun-Illuminated Elevation DTM:	H11629_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 2007 survey data.

Filed with original field records at AHB.

C. VERTICAL AND HORIZONTAL CONTROL

Sounding data was tide adjusted using verified tide levels for the Millview, Perdido Bay, FL tide gauge (872-9905). The final zoning methodology is described in detail in the project wide * Horizontal and Vertical Control Report.

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.

Filed with original field records at AHB.

RESULTS AND RECOMMENDATIONS *See also the Evaluation Report*

D1. Chart Comparison

In the absence of a paper smooth sheet, sounding data from the 2007 survey used for chart comparison were produced using CARIS HIPS & SIPS Field Sheet Editor. Sounding were extracted from a finalized 2-meter resolution Swath surface. In order to replicate traditional smooth sheet sounding selection criteria, a shoal-biased sounding selection using a 60m radius was applied. The soundings were then compared the largest scale Electronic Navigational Chart (ENC) covering the surveyed area. The results of this comparison are discussed in the following pages sorted by chart affected.

No Local Notice to Mariners (LNM) affected the survey area. LNM number 12 (Weekly Edition-March 2007) was the last notice reviewed for this project. There are six features and two soundings submitted as Dangers to Navigation (DTON) for the 2007 survey (Appendix I). ***Five of the six submitted DTON Reports were reviewed and submitted to MCD.***

This survey was compared to the following ENC:

Cell Name	Chart	Scale	Edition Number	Issue Date
US5AL12M	11378	1:40,000	10	03/27/2007

All charted features were investigated using side scan and single beam sonar. The 2007 survey generally agrees with the largest scale electronic navigational charts (Figure 2). ***Concur***.

There is a caution area which encompasses the northern half of Perdido Bay. The information on the caution area states “Mariners should be aware that numerous deadheads may be present throughout this area after heavy periods of rainfall”. Within the caution area, there are numerous insignificant side scan contacts; therefore, the hydrographer recommends no changes to the caution area. ***Concur.***

The following pages detail discrepancies between charted features and the 2007 survey data. The hydrographer recommends that six uncharted features be added based on the 2007 survey data. Additionally, two charted soundings and the charted contours are recommended for update. ***Concur with conditions. See comments below.***

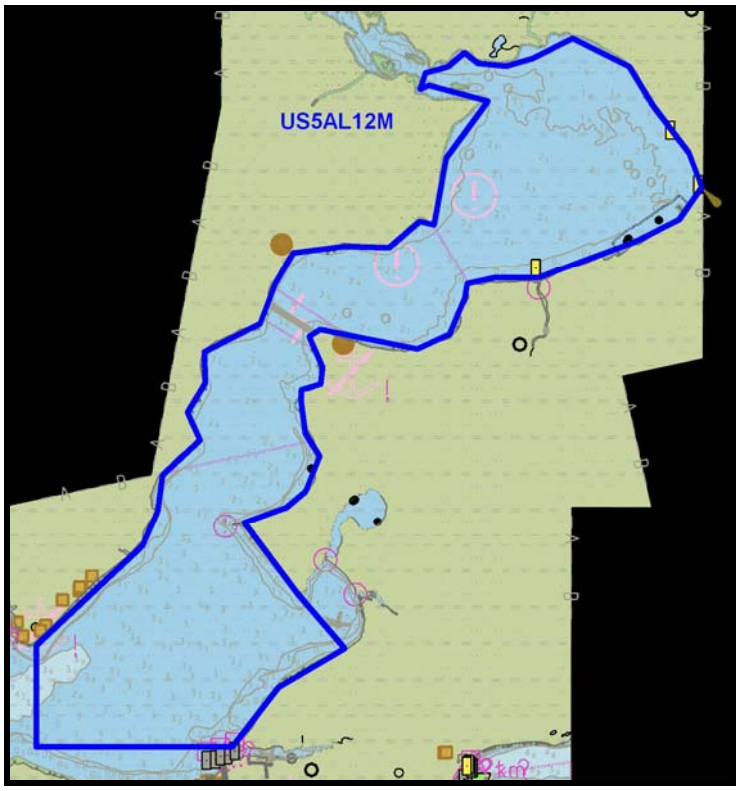


Figure 2 – Survey limits of H-11629 showing the areas covered by ENC US5AL12M, 10th Edition.

New Features: Survey Area H-11629

The 2007 survey identified six features which are not currently charted. A detailed description of the feature is contained in Table 1 and Figure 4. The hydrographer recommends updating the ENC with data from the 2007 survey. ***Concur.***

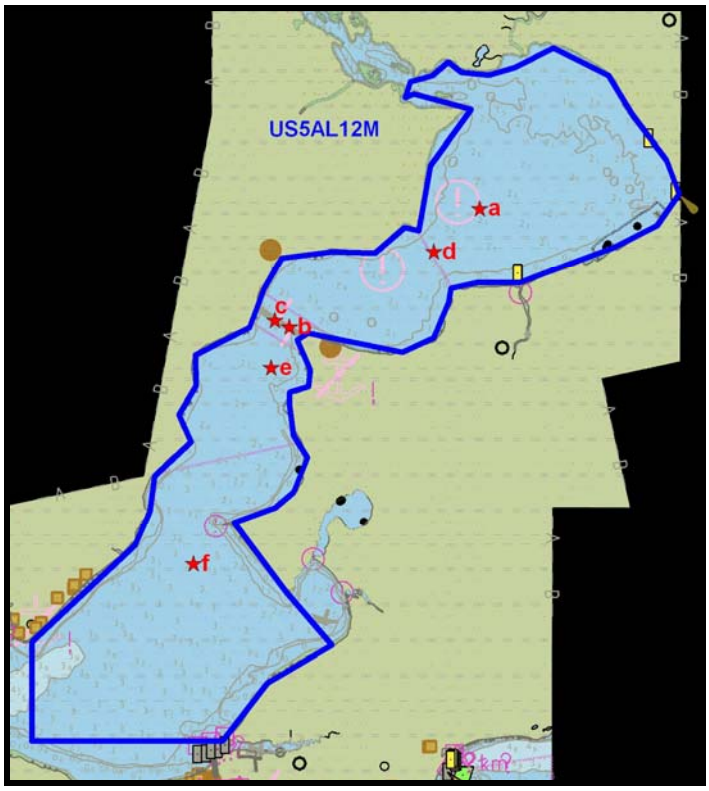


Figure 3- Survey limits of H-11629 showing six uncharted features identified by the 2007 survey. ENC US5AL12M, 10th Edition.

Table 1 – Uncharted features in H-11629 identified by the 2007 survey. The feature letters correspond to the red stars on Figure 3.

Feature Letter	Latitude N	Longitude W	Sounding Value (m)	ENC	Comment
a	~~30.4271536~~ *30°25'37.753"*	~~87.3858986~~ *87°23'09.235"*	1.1	US5AL12M, 10th Edition	~~Add OBSTN~~ *Do Not Concur. Delete charted 3 ft obstn (Rep 2007). See PYDRO Report for details.*
b	~~30.4038997~~ *30°24'14.0389"*	~~87.4285033~~ *87°25'42.6119"*	1.5	US5AL12M, 10th Edition	Add OBSTN *Do not concur. Not submitted as a danger. Update chart with present survey sepths. See Evaluation Report Secton D.1.1.9. for details.*
c	~~30.4052089~~ *30°24'18.75"*	~~87.4317205~~ *087°25'54.19"*	~~0.5~~ *1.975*	US5AL12M, 10th Edition	Add OBSTN *Concur with clarification. Revise to dangerous 6 ft. obstn See PYDRO Report for details.*
d	~~30.4186983~~ *30°25'07.3139"*	~~87.3961556~~ *087°23'46.1602"*	~~0.7~~	US5AL12M, 10th Edition	~~Add OBSTN~~ *Do not concur. Delete 2 ft dang obstn (Rep 2007) See PYDRO Report for details.*

Feature Letter	Latitude N	Longitude W	Sounding Value (m)	ENC	Comment
e	~~30.3959705~~ ***30°23'45.4938"***	~~87.432557~~ ***087°25'57.2052"***	~~0.6~~	US5AL12M, 10th Edition	~~Add OBSTN~~ ***Do not concur. Delete 2 ft dang obstn (Rep 2007) See PYDRO Report for details.***
f	~~30.3578192~~ ***30°21'28.1491"***	~~87.4497941~~ ***087°26'59.2588"***	1.7	US5AL12M, 10th Edition	Add OBSTN ***Concur with clarification. Feature is currently charted as 5-ft Obstn (Rep 2007). Revise to 5-ft dang obstn.***

Changed Features: Survey Area H-11629

The 2007 survey data agree with the currently charted features on ENC US5AL12M, 10th Edition. There are no recommended changes. ***Concur with clarification. See also Evaluation Report.***

Disproved Features: Survey Area H-11629

The 2007 survey data agree with currently charted features on ENC US5AL12M, 10th Edition. There are no recommended removals. ***Concur. See also Evaluation Report.***

Soundings: Survey Area H-11629

Survey depths are in general agreement with the charted depths for the largest scale ENC covering H-11629. There are two soundings on the ENC which are recommended for update by the hydrographer. ***Concur with clarification. Update chart with present survey data.***

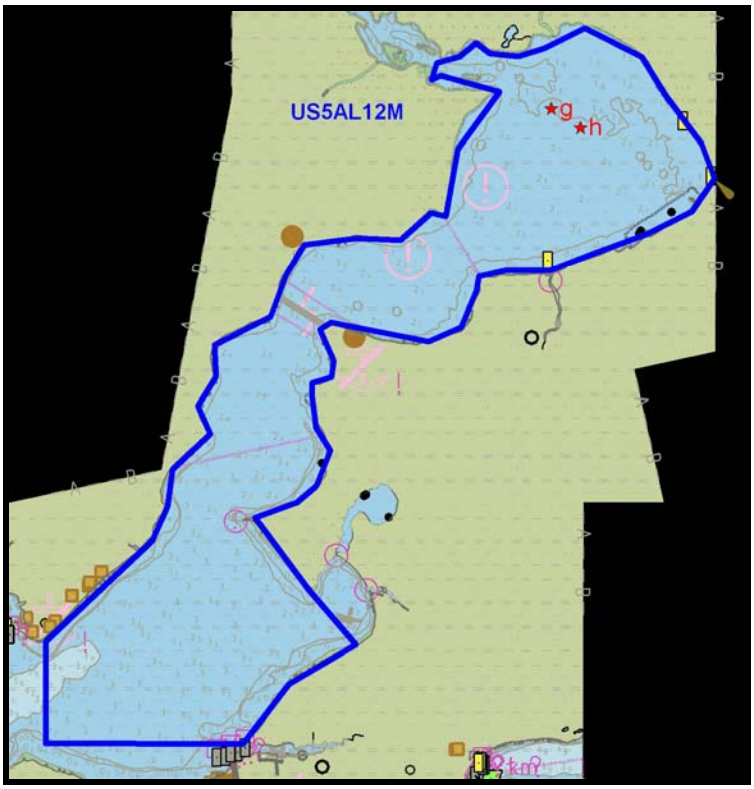


Figure 4- Survey limits of H-11629 showing two locations the 2007 survey soundings are significantly shoaler than the soundings charted on ENC US5AL12M, 10th Edition.

Table 2- Locations within the survey limits of H-11629 where the 2007 survey soundings are significantly shoaler than the charted soundings. The soundings are indexed by their feature letter to 85their location in Figure 4.

Feature Letter	Latitude N	Longitude W	ENC Sounding Value (m)	ENC	2007 Sounding Value (m)
g	30.443113 *30°26'35.2068"*	87.3766776 *087°22'36.0394"*	2.1	US5AL12M, 10th Edition	*1.8* - 1.9
h	30.4395361 *30°26'22.33"*	87.3703304 *087°22'13.1894"*	2.1	US5AL12M, 10th Edition	~~1.9~~ *1.8*

Trends and Changeable Areas: Survey Area H-11629

The 2007 survey data were used to create depth contours for comparison with charted contours (Figure 5). The location of the 1.8m contour which follows the shoreline remains consistent with the currently charted contour on ENC US5AL12M, 10th Edition, except where the Perdido River feeds into the Perdido Bay. The 2007 survey data indicate that the river channel has deepened and widened into the north side of the bay (Figure 6); therefore, the hydrographer recommends updating the 1.8m contour to reflect the migration. Underneath the Lillian Bridge, the channel on the west side of bottlenecked bridge has deepened (Figure 7). Additionally, to the south end of the survey, near Perdido Beach, the channel through the lower bottleneck of Perdido Bay has

lengthened and widened northward (Figure 8). The hydrographer recommends updating the contours in these locations. ***Concur***

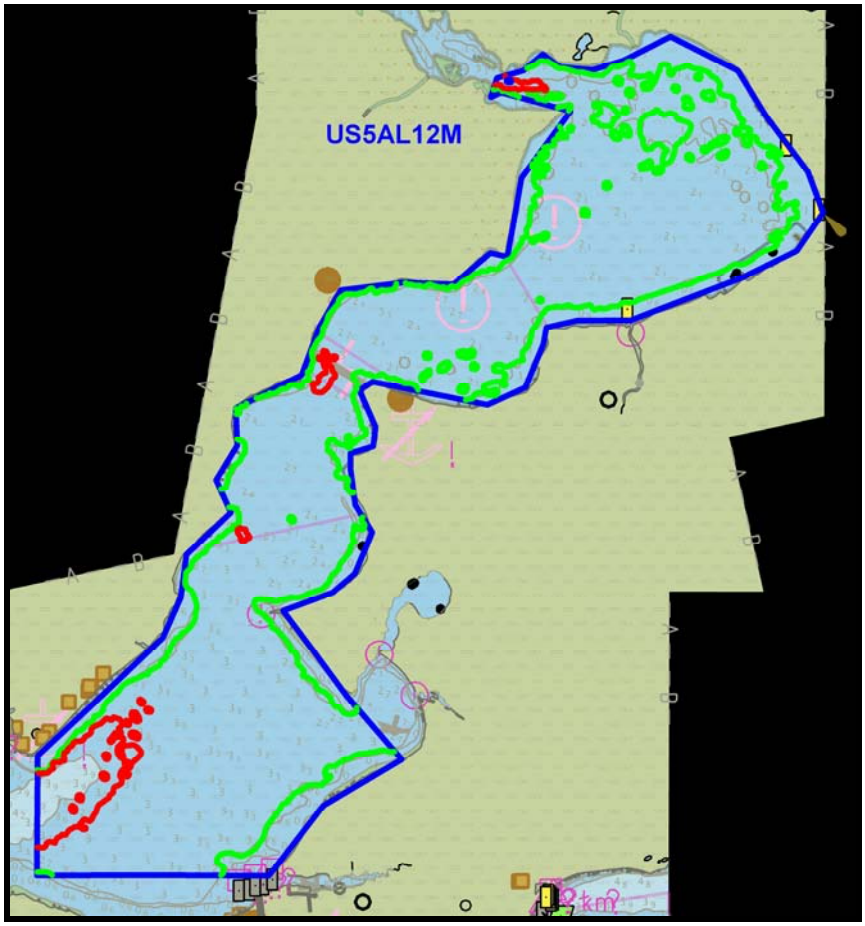


Figure 5 - Survey limits of H-11629, showing the 1.8m (green), 3.6m (red), and 5.4m (blue) 2007 survey contours. ENC US5AL12M, 10th Edition.

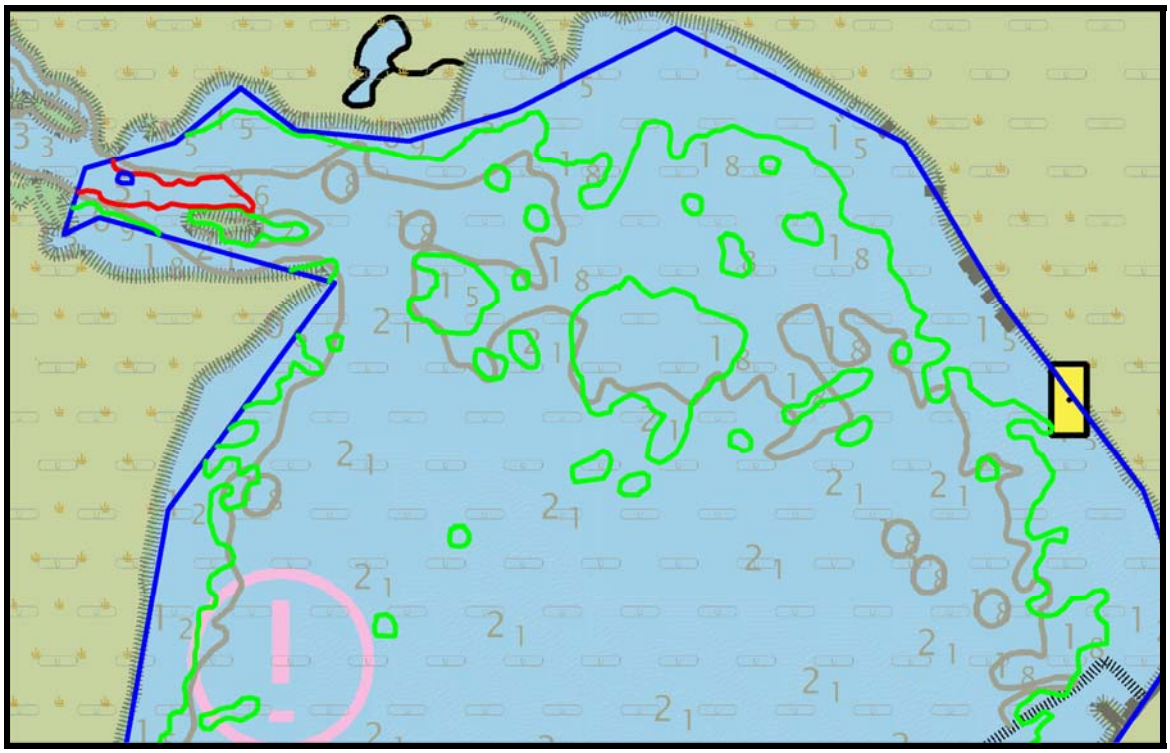


Figure 6 - Survey limits of H-11629, at the north end of Perdido Bay, showing the 1.8m (green), 3.6m (red), and 5.4m (blue) 2007 survey contours. ENC US5AL12M, 10th Edition.

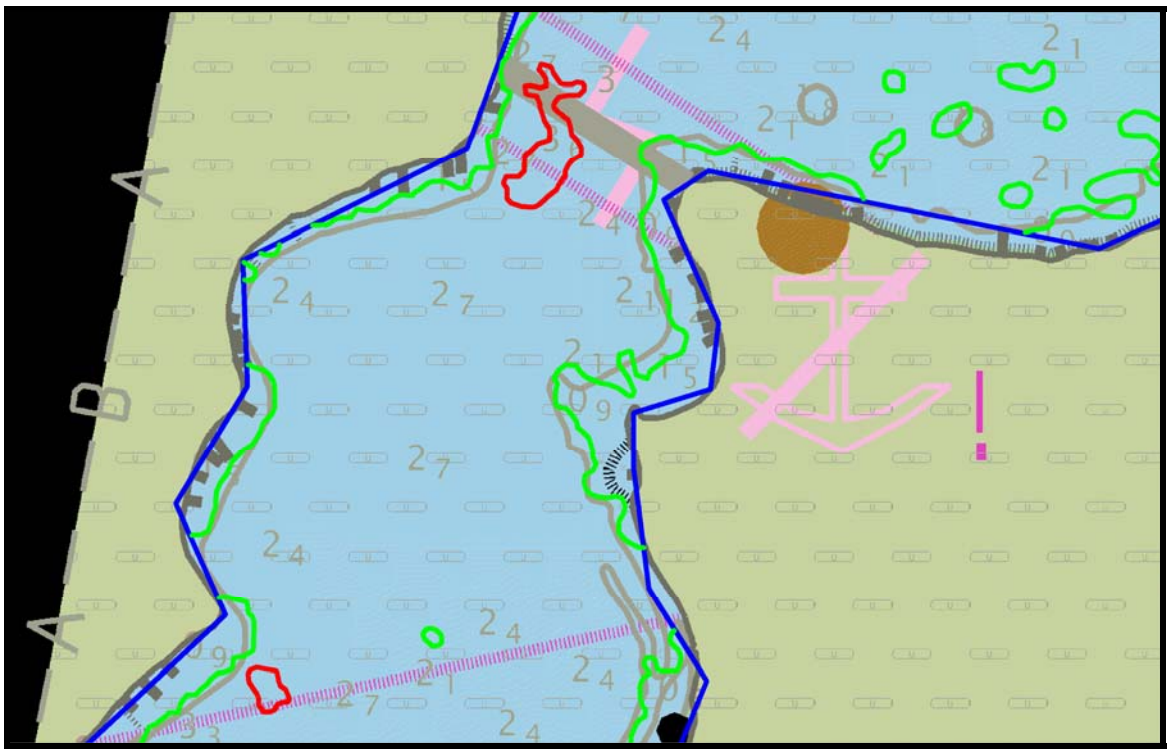


Figure 7 - Survey limits of H-11629, in the middle of Perdido Bay, showing the 1.8m (green) and 3.6m (red) 2007 survey contours. ENC US5AL12M, 10th Edition.

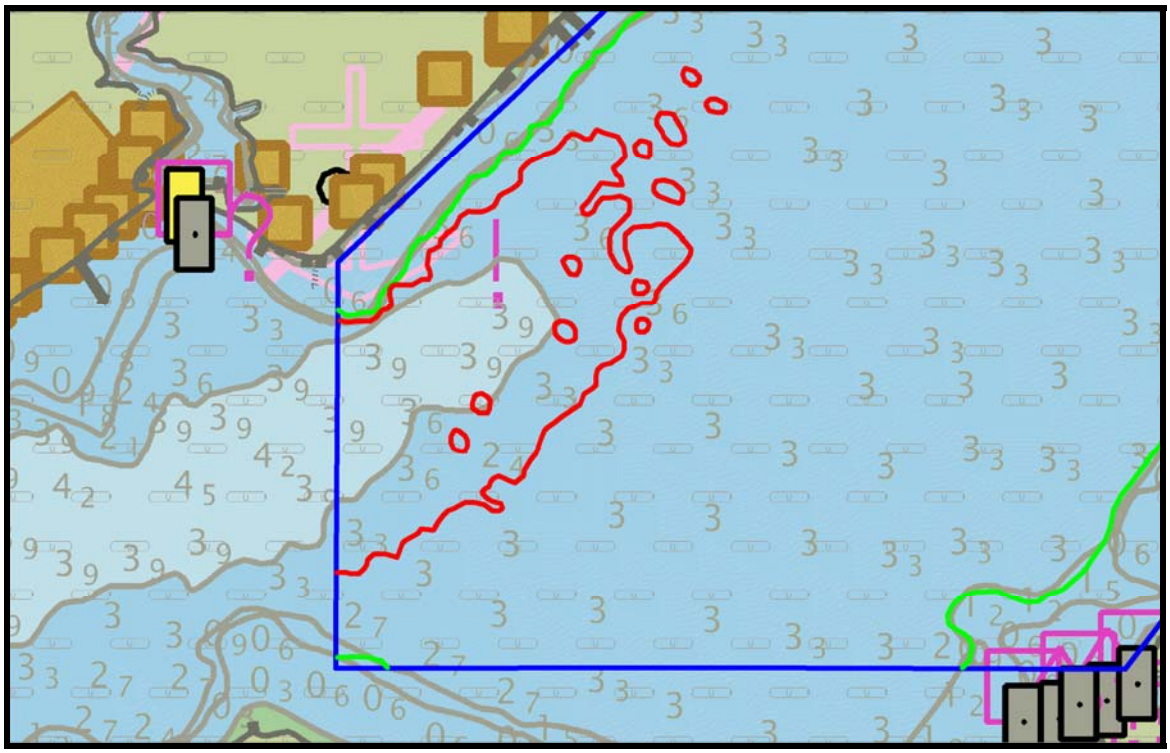


Figure 8 - Survey limits of H-11629, at the south end of Perdido Bay, showing the 1.8m (green) and 3.6m (red) 2007 survey contours. ENC US5AL12M, 10th Edition.

AWOIS Items Summary

Investigation of Automated Wreck and Obstruction Information System (AWOIS) items was not required under this task order. ***Concur***

D2. Additional Results

Aids to Navigation

There were no floating aids to navigation within the survey limits of H-11629. ***Concur***

Drilling Structures

There were no drilling structures, production platforms or well heads within the survey limits of H-11629. ***Concur***

Comparison with Prior Surveys

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

Bottom Samples

~~Thirteen (13)~~ ***Fourteen (14)*** bottom samples were collected in support of the 2007 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 obtained is included in Appendix V to this report. ***Concur, update chart with the present survey sample data.***

Bridges and Overhead Cables

One bridge, the Lillian Bridge, is located within the limits of H-11629. The minimum clearance, reduced to MHW Datum at the Millview, Perdido Bay, FL tide gauge (872-9905) is 12.37m ***(40.58-ft)*** at 30º 24’ 18.5”N and 87º 25’ 52.8”W (Appendix V). ***Concur***

Submarine Cables and Pipelines

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

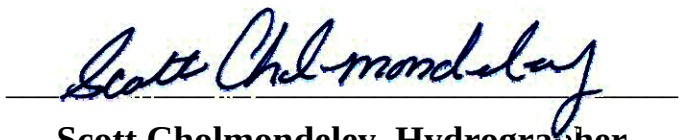
LETTER OF APPROVAL

REGISTRY NO. H-11629

This report and the accompanying digital data are respectfully submitted.

Field operations contributing to the accomplishment of survey H-11629 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

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Scott Cholmondeley, Hydrographer
TerraSond Ltd.

Date 06/06/2007

TERRASOND

APPENDIX I

Danger to Navigation Reports

Registry Number: H11629

State: Alabama

Locality: Perdido Bay

Sub-locality: Perdido River to Inerarity Point

Project Number: S-J977-TERRA

Survey Date: 02/06/2007

Charts Affected

Number	Version	Date	Scale
11378	34th Ed.	02/01/2006	1:80000
11382	40th Ed.	02/01/2004	1:80000
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	Obstruction - a	GP	1.10 m	30° 25' 37.753" N	087° 23' 09.235" W	---
1.2	Obstruction - c	GP	0.50 m	30° 24' 18.752" N	087° 25' 54.194" W	---
1.3	Obstruction - d	GP	0.70 m	30° 25' 07.314" N	087° 23' 46.160" W	---
1.4	Obstruction - e	GP	0.60 m	30° 23' 45.494" N	087° 25' 57.205" W	---
1.5	Obstruction - f	GP	1.70 m	30° 21' 28.149" N	087° 26' 59.259" W	---

**** See Descriptive Report section D.1.***

1 - DToNs

1.1) Obstruction - a

DANGER TO NAVIGATION

Survey Summary

Survey Position: 30° 25' 37.753" N, 087° 23' 09.235" W

Least Depth: 1.10 m

Timestamp: 2007-037.00:00:00.000 (02/06/2007)

GP Dataset: H11629_dton_a-h_pydro.xls

GP No.: 1

Charts Affected: 11378_5, 11382_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

The DToNs in this report result from a comparison of 2007 survey data to the charts for the survey area. During office review, the following obstruction was identified and recommended for addition to the affected nautical chart(s).

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11629_dton_a-h_pydro.xls	1	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 3 ft dangerous obstruction at the given location

Cartographically-Rounded Depth (Affected Charts):

3ft (11378_5, 11382_1)

0 ½fm (1115A_1, 11360_1, 11006_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 9:value reported (not confirmed)

RECDAT - 20070802

SORDAT - 20070206

SORIND - US,US,surve,H11629

VALSOU - 1.1 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do Not Concur. Delete charted 3 ft obstn (Rep 2007). VBES data does not portray a data point with a LD of 1.1. VBES depths were almost 2m. SSS contact list indicates one contact that does not meet significant 1.0 limit. SSS DN2006-310 does indicate something but the bathy doesnt support the contact.

Feature Images

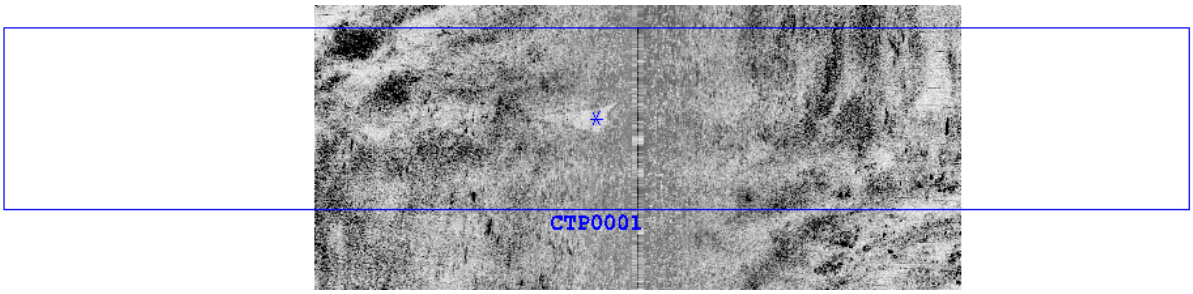

Figure 1.1.1

1.2) Obstruction - c

DANGER TO NAVIGATION

Survey Summary

Survey Position: 30° 24' 18.752" N, 087° 25' 54.194" W

Least Depth: ~~0.50~~ m ***1.975 m 6.47 feet***

Timestamp: 2007-037.00:00:00.000 (02/06/2007)

GP Dataset: H11629_dton_a-h_pydro.xls

GP No.: 3

Charts Affected: 11378_5, 11382_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

The DToNs in this report result from a comparison of 2007 survey data to the charts for the survey area. During office review, the following obstruction was identified and recommended for addition to the affected nautical chart(s).

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11629_dton_a-h_pydro.xls	3	0.00	000.0	Primary

Hydrographer Recommendations

Chart a one foot dangerous obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

1ft (11378_5, 11382_1)

0 ¼fm (1115A_1, 11360_1, 11006_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 9:value reported (not confirmed)

RECDAT - 20070808

SORDAT - 20070206

SORIND - US,US,surve,H11629

TECSOU - 2:found by side scan sonar

VALSOU - 0.5 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Cat an dangerous 6 foot obstruction in the present survey locaiton. The least depth comes from C3D daa and is not documented as such. No data point is represented in the submitted grid. No grid was submitted for the C3D data as it was not edited. AHB was required to edit the data within the common area to find the feature and reference the source data.

Feature Images

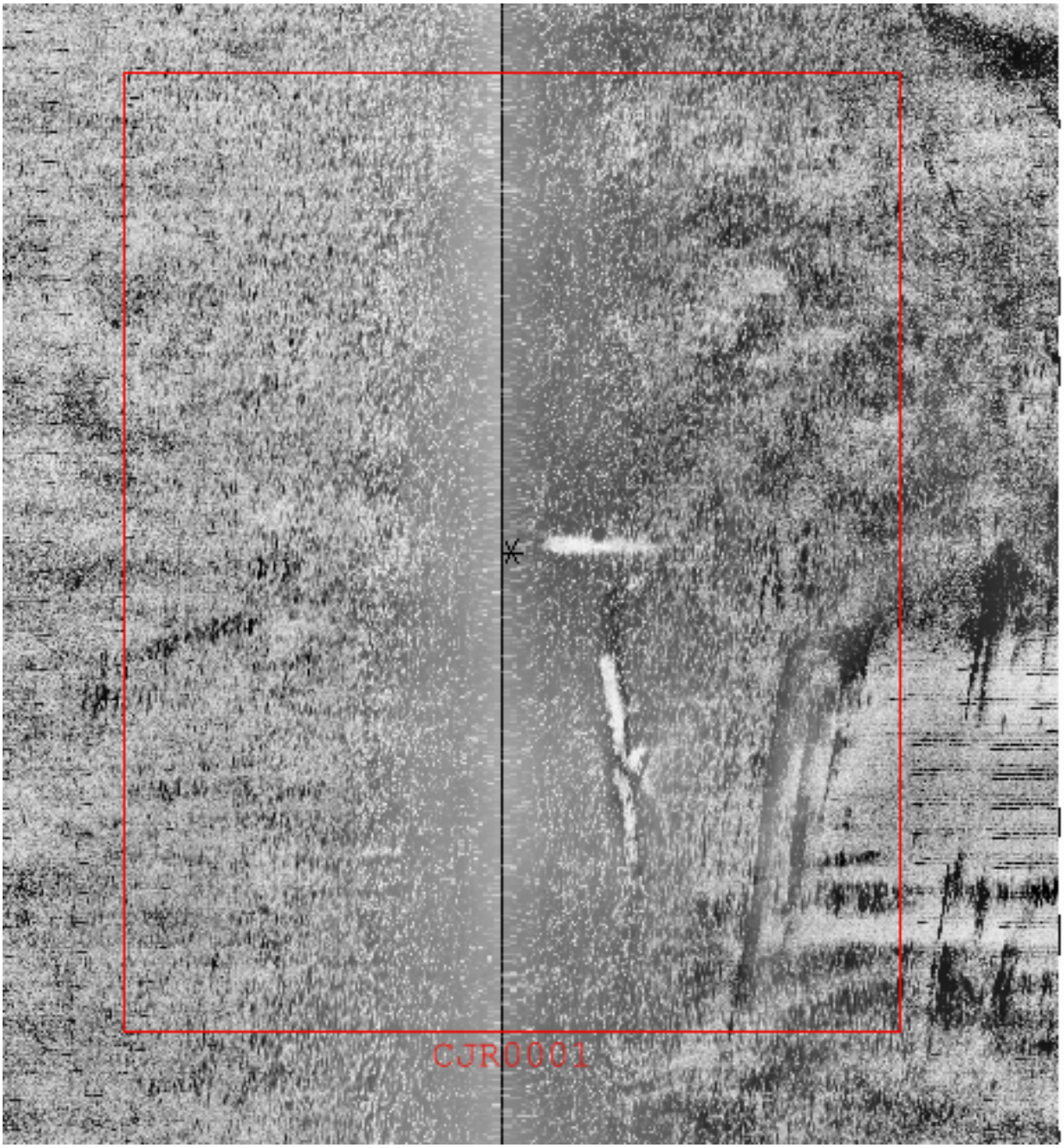

Figure 1.2.1

1.3) Obstruction - d

DANGER TO NAVIGATION

Survey Summary

Survey Position: 30° 25' 07.314" N, 087° 23' 46.160" W

Least Depth: 0.70 m

Timestamp: 2007-037.00:00:00.000 (02/06/2007)

GP Dataset: H11629_dton_a-h_pydro.xls

GP No.: 4

Charts Affected: 11378_5, 11382_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

The DToNs in this report result from a comparison of 2007 survey data to the charts for the survey area. During office review, the following obstruction was identified and recommended for addition to the affected nautical chart(s).

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11629_dton_a-h_pydro.xls	4	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 2 ft dangerous obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

2ft (11378_5, 11382_1)

0 ¼fm (1115A_1, 11360_1, 11006_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 9:value reported (not confirmed)

RECDAT - 20070802

SORDAT - 20070206

SORIND - US,US,surve,H11629

VALSOU - 0.7 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Delete the charted 2 ft Obstn (Rep 2007). Data verification indicates the SS shadow is within the water column ansd was not validated in the two adjacent SS lines. TheVBES does not contain a data point which represents this feature.

Feature Images

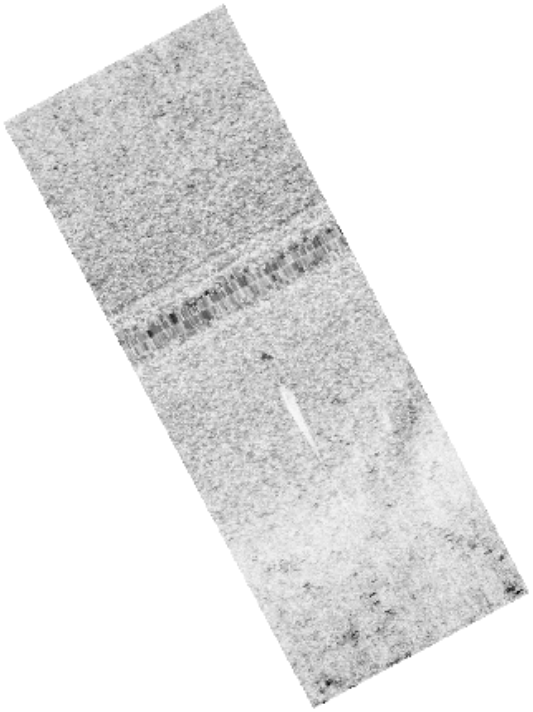

Figure 1.3.1

1.4) Obstruction - e

DANGER TO NAVIGATION

Survey Summary

Survey Position: 30° 23' 45.494" N, 087° 25' 57.205" W

Least Depth: 0.60 m

Timestamp: 2007-037.00:00:00.000 (02/06/2007)

GP Dataset: H11629_dton_a-h_pydro.xls

GP No.: 5

Charts Affected: 11378_5, 11382_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

The DToNs in this report result from a comparison of 2007 survey data to the charts for the survey area. During office review, the following obstruction was identified and recommended for addition to the affected nautical chart(s).

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11629_dton_a-h_pydro.xls	5	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 2 ft dangerous obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

2ft (11378_5, 11382_1)

0 ¼fm (1115A_1, 11360_1, 11006_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 9:value reported (not confirmed)

RECDAT - 20070802

SORDAT - 20070206

SORIND - US,US,surve,H11629

VALSOU - 0.6 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Delete 2 ft dangerous obstn (Rep 2007). Data verification indicates the SS shadow is within the water column and was not validated in the two adjacent SS lines, no common SS coverage. The VBES does not contain a data point which represents this feature.

Feature Images

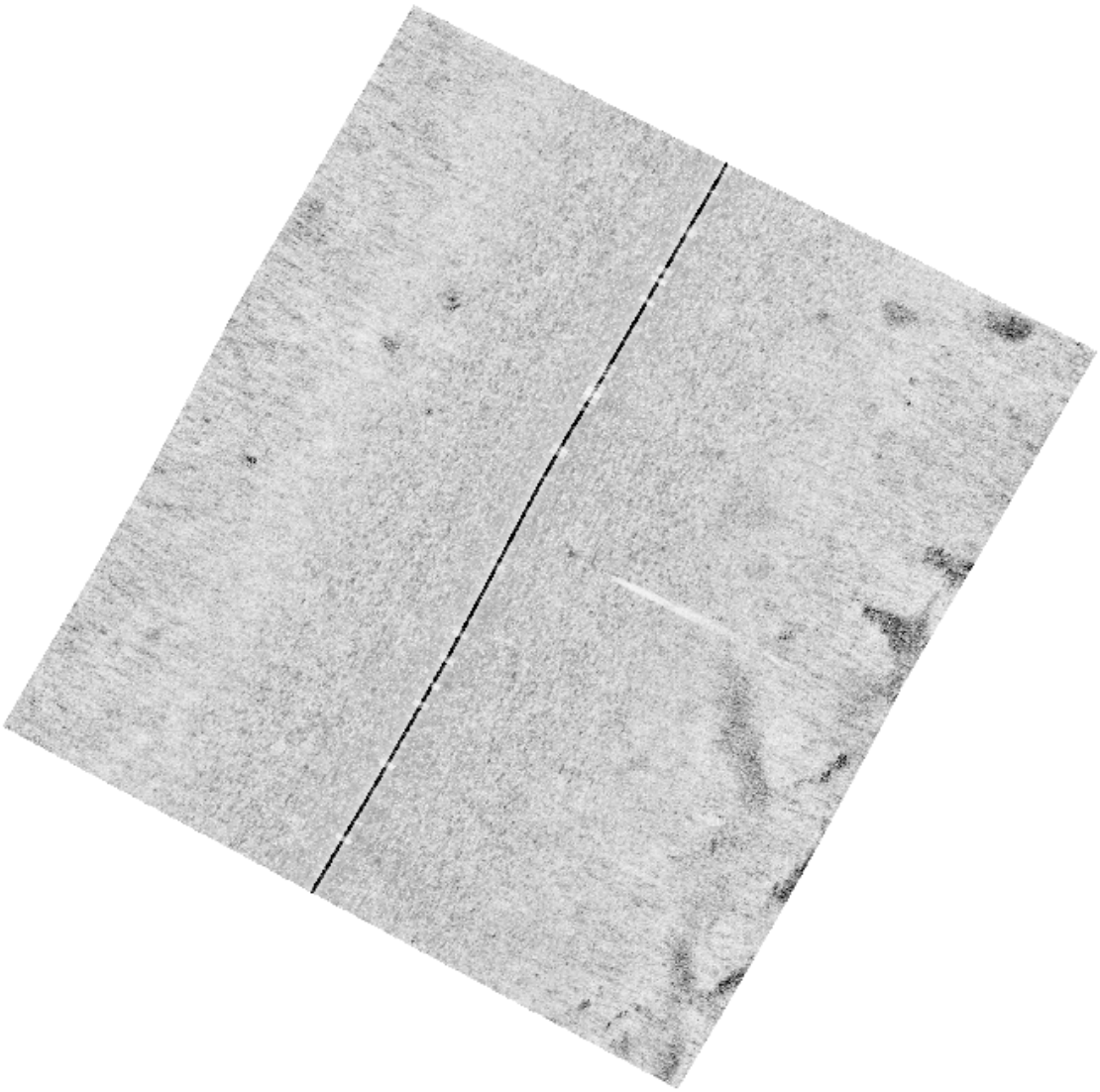

Figure 1.4.1

1.5) Obstruction - f

DANGER TO NAVIGATION

Survey Summary

Survey Position: 30° 21' 28.149" N, 087° 26' 59.259" W

Least Depth: 1.70 m

Timestamp: 2007-037.00:00:00.000 (02/06/2007)

GP Dataset: H11629_dton_a-h_pydro.xls

GP No.: 6

Charts Affected: 11378_1, 11382_1, 1115A_1, 11360_1, 11006_1, 411_1

Remarks:

The DToNs in this report result from a comparison of 2007 survey data to the charts for the survey area. During office review, the following obstruction was identified and recommended for addition to the affected nautical chart(s).

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11629_dton_a-h_pydro.xls	6	0.00	000.0	Primary

Hydrographer Recommendations

Chart a 5 ft dangerous obstruction at the given location.

Cartographically-Rounded Depth (Affected Charts):

5ft (11378_1, 11382_1)

0 ¾fm (1115A_1, 11360_1, 11006_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: QUASOU - 9:value reported (not confirmed)

RECDAT - 20070802

SORDAT - 20070206

SORIND - US,US,surve,H11629

VALSOU - 1.7 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur.with clarification Chart a 5 foot dangerous obstruction at the present survey location.

Feature Images

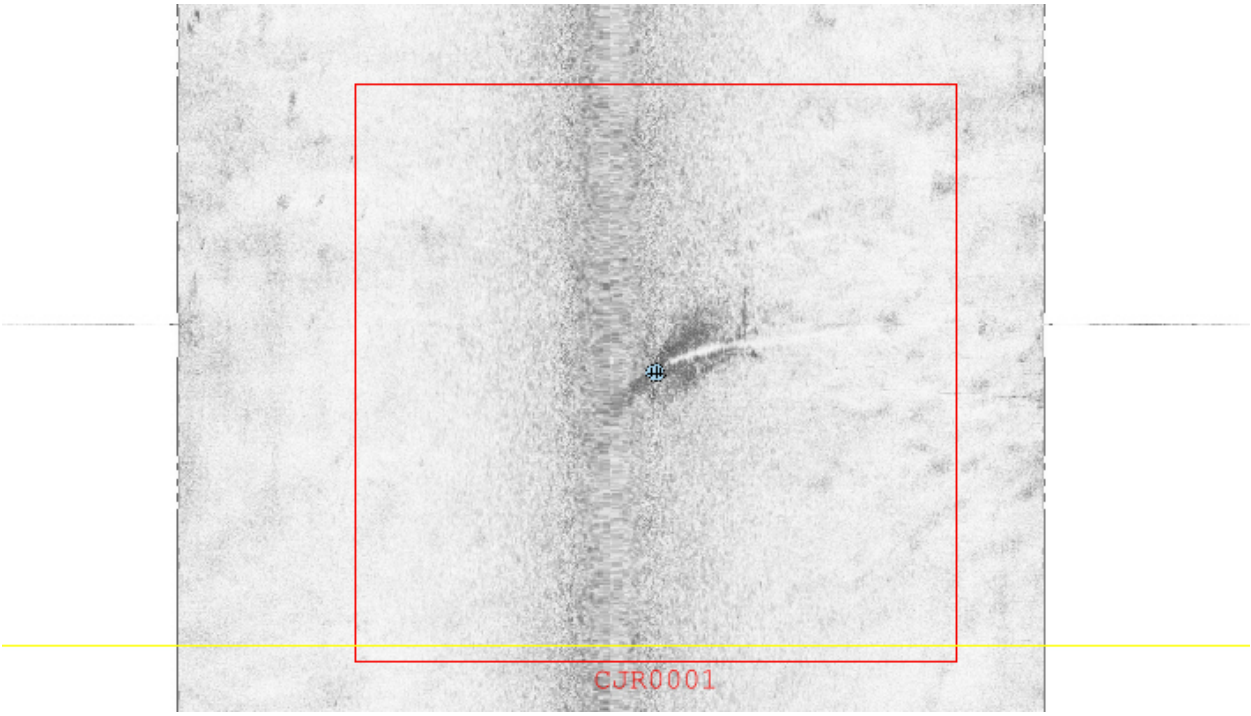

Figure 1.5.1

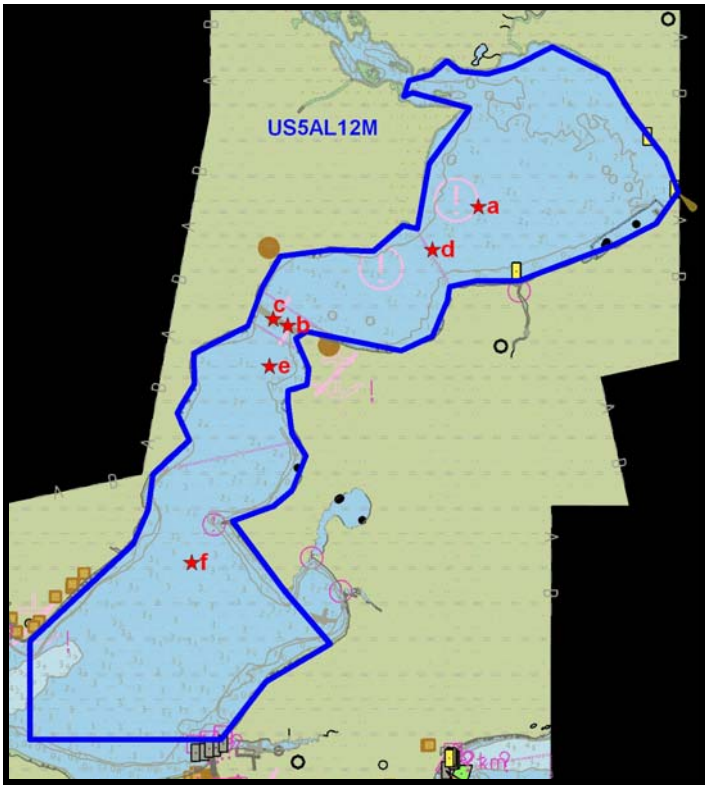

Figure 1 - Survey limits of H-11629 showing the uncharted features identified by the 2007 survey. ENC US5AL12M, 10th Edition.

Danger to Navigation Report

Report of Danger to Navigation
Sheet: J
Registry No.: H-11629
State: Alabama
General Locality: Perdido Bay
Sub Locality: Perdido River to Inerarity Point
Survey Dates: October 26th, 2006 – February 6th, 2007

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 2007 survey data to the largest scale electronic navigational chart(s) (ENC's) covering the survey area (Table 1). During office review of H-11629, six features were identified by the 2007 survey and are recommended for addition (Table 2, Figure 1). There are two areas where the 2007 survey soundings are significantly shoaler than the currently charted soundings (Table 3, Figure 2).

Table 1- The largest scale Electronic Navigational Chart that cover the extents of survey area H-11629.

ENC	Chart	Scale	Edition Number	Issue Date
US5AL12M	11378	1:40,000	10	02/21/2007

Table 2– Uncharted features in H-11629 identified by the 2007 survey. The feature letters correspond to the red stars on Figure 1.

Feature Letter	Latitude	Longitude	Sounding Value (m)	ENC	Recommendation
a	30.4271536	87.3858986	1.1	US5AL12M, 10th Edition	Add OBSTN
b	30.4038997	87.4285033	1.5	US5AL12M, 10th Edition	Add OBSTN
c	30.4052089	87.4317205	0.5	US5AL12M, 10th Edition	Add OBSTN
d	30.4186983	87.3961556	0.7	US5AL12M, 10th Edition	Add OBSTN
e	30.3959705	87.432557	0.6	US5AL12M, 10th Edition	Add OBSTN
f	30.3578192	87.4497941	1.7	US5AL12M, 10th Edition	Add OBSTN

See the Descriptive Report Section D.1.

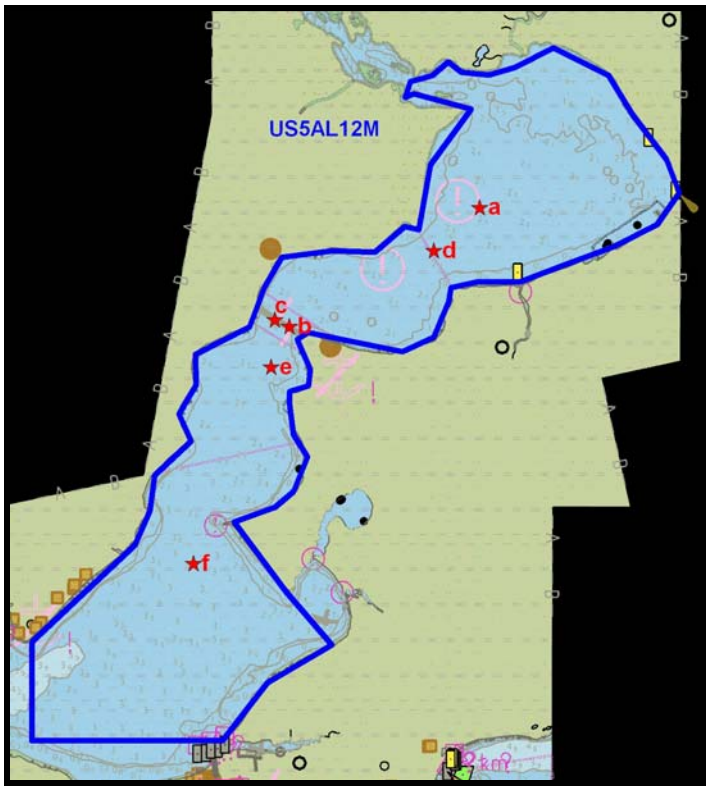

Figure 1 - Survey limits of H-11629 showing the uncharted features identified by the 2007 survey. ENC US5AL12M, 10th Edition.

Table 3– 2007 survey soundings which are significantly shoaler than the corresponding charted soundings.

Feature Letter	ENC Sounding (m)	Survey Sounding (m)	Difference (m)	Latitude N	Longitude W	ENC
g	2.1	1.9	0.2	30.443113	87.3766776	US5AL12M, 10th Edition
h	2.1	1.9	0.2	30.4395361	87.3703304	US5AL12M, 10th Edition

Update chart with present survey data. These depths pose no danger to navigation.

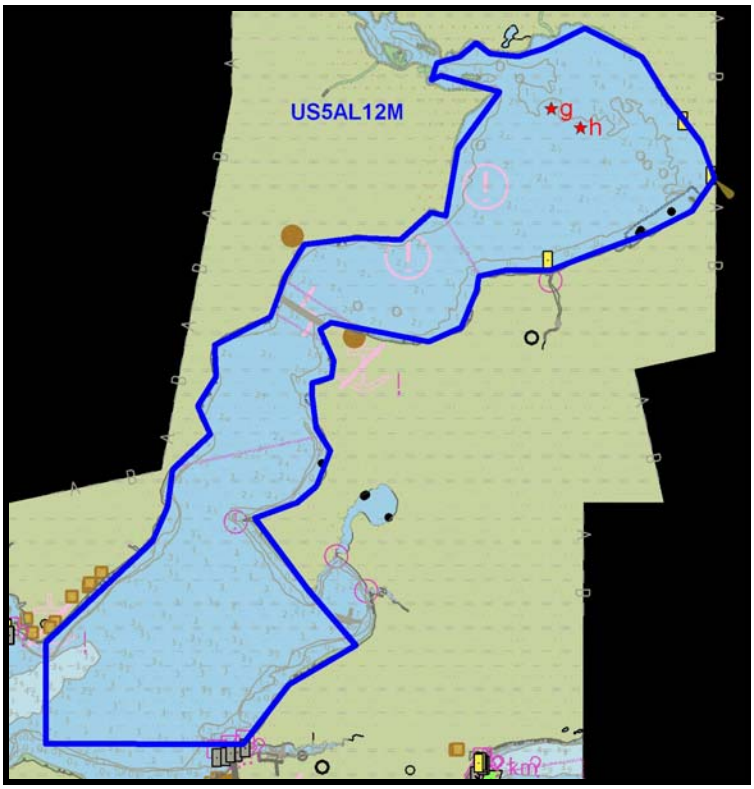

Figure 3– Survey limits of H-11629, showing where 2007 survey soundings are significantly shoaler than charted soundings. ENC US5AL12M, 10th Edition.

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APPENDIX II

Survey Feature Report

There were no AWOIS items for investigation in survey area H-11629.

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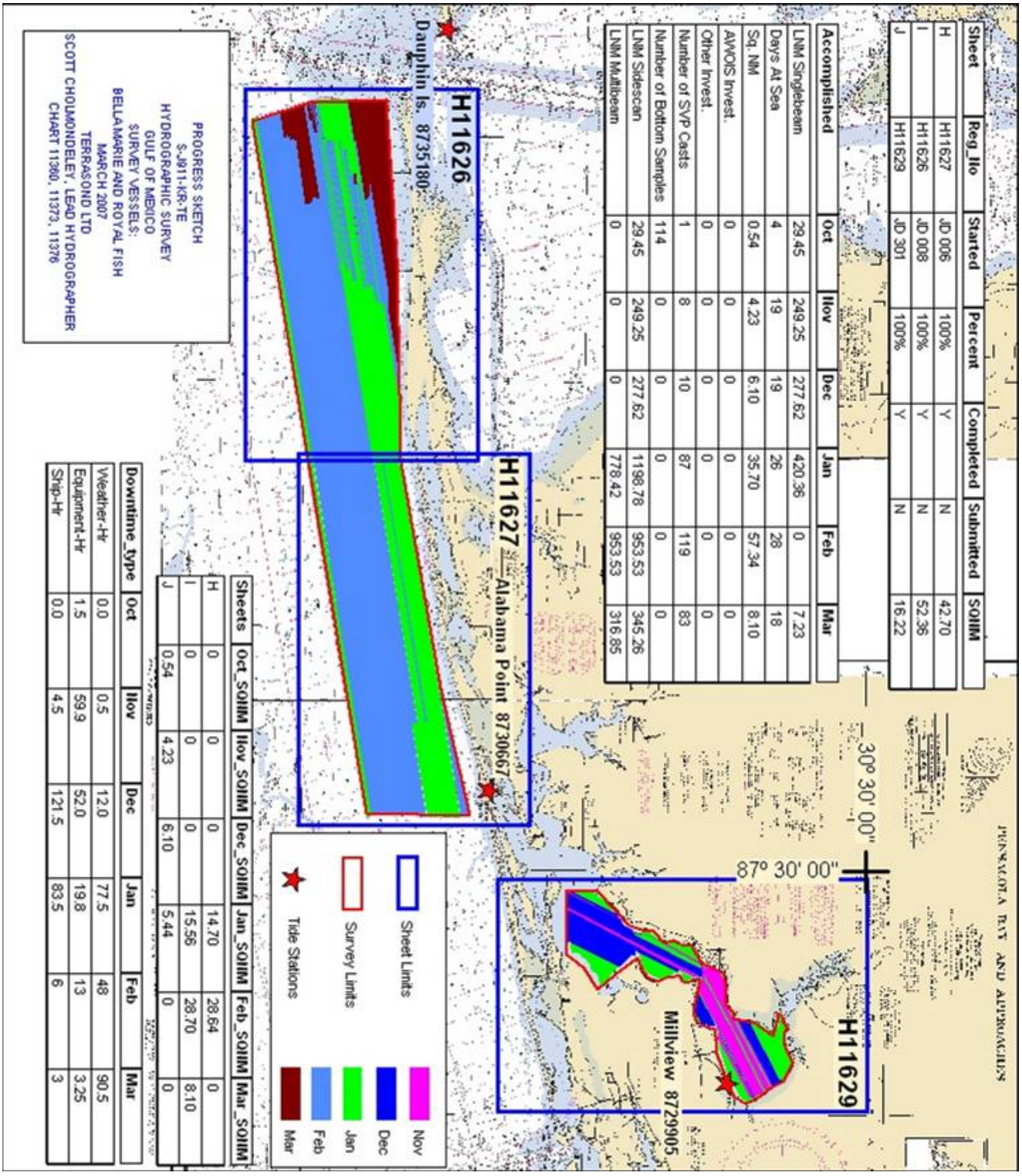
APPENDIX III

Progress Sketch



Sheet	Reg_No	Started	Percent	Completed	Submitted	SQNM
H	H11627	JD 006	100%	Y	N	42.70
I	H11626	JD 008	100%	Y	N	52.36
J	H11629	JD 301	100%	Y	N	16.22

Accomplished	Oct	Nov	Dec	Jan	Feb	Mar
LNM Singlebeam	29.45	249.25	277.62	420.36	0	7.23
Days At Sea	4	19	19	26	28	18
Sq. NM	0.54	4.23	6.10	35.70	57.34	8.10
AWOIS Invest.	0	0	0	0	0	0
Other Invest.	0	0	0	0	0	0
Number of SVP Casts	1	8	10	87	119	83
Number of Bottom Samples	114	0	0	0	0	0
LNM Sidescan	29.45	249.25	277.62	1198.78	953.53	345.26
LNM Multibeam	0	0	0	778.42	953.53	316.85

Sheets	Oct_SQNM	Nov_SQNM	Dec_SQNM	Jan_SQNM	Feb_SQNM	Mar_SQNM
H	0	0	0	14.70	28.64	0
I	0	0	0	15.56	28.70	8.10
J	0.54	4.23	6.10	5.44	0	0

Downtime_type	Oct	Nov	Dec	Jan	Feb	Mar
Weather-Hr	0.0	0.5	12.0	77.5	48	90.5
Equipment-Hr	1.5	59.9	52.0	19.8	13	3.25
Ship-Hr	0.0	4.5	121.5	83.5	6	3

Figure 1: Final Progress Sketch for S-J977-KR-TE.

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APPENDIX IV

Tides and Water Levels

Abstract of Times of Hydrography

Project: S-J911-KR-TE

Registry No.: H-11629

Table 1 – Sheet J Times of Hydrography: Inclusive Dates: October 26th, 2006 – February 6th , 2007

START		END	
Day (Julian)	Time (UTC)	Day (Julian)	Time (UTC)
310	1509	310	1841
311	1636	311	2050
312	1501	312	2142
313	1440	313	1716
314	1922	314	2145
315	1228	315	2013
316	1837	316	2258
317	1653	317	2225
318	1945	318	2142
333	1557	333	2244
334	1528	334	2215
336	1504	336	2228
337	1419	337	2154
340	1827	340	1953
343	1452	343	2135
344	1558	344	2206
345	1439	345	1637
346	1518	346	2225
347	1601	347	1852
351	1555	351	2214
352	1535	352	2138
353	1455	353	1858

START		END	
Day (Julian)	Time (UTC)	Day (Julian)	Time (UTC)
005	1621	005	2241
006	1746	006	2211
007	1404	007	2211
008	1519	008	2139
009	1329	009	2221
010	1409	010	2309
011	1538	011	2151
012	1452	012	2144
013	1414	013	2222
014	1448	014	2213
015	1422	015	2252
016	1541	016	1948
017	1552	017	2326
018	1607	018	2258
019	1352	019	2244
020	1500	020	2316
022	1626	022	2256
024	1614	024	2223
026	1448	026	2132
027	1450	027	2054
028	1413	028	2153
029	1502	029	2334
030	1442	030	2207

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APPENDIX V

Supplemental Survey Records and Correspondence

Bottom Samples

13 bottom samples were collected in support of the 2007 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-11629 (2007).

Point Number	Date	Time (UTC)	Depth (m)	Latitude	Longitude	Color	Surface Description	Nature of Surface
j01	9/22/2006	16:45	3.2	30 19.572	87 28.830	green	medium	mud
j04	9/22/2006	17:40	3.7	30 20.480	87 28.206	black	fine	mud
j07	9/22/2006	17:50	4.2	30 21.369	87 27.557	black	medium	mud
j08	9/22/2006	18:00	4.2	30 20.818	87 26.528	green	medium	mud
j10	9/22/2006	18:25	3.2	30 22.266	87 26.924	green	medium	mud
j13	9/22/2006	18:35	2.6	30 23.165	87 26.282	black	medium	mud
j15	9/22/2006	19:45	1.5	30 24.064	87 25.641	black	fine	sand
j17	9/24/2006	17:55	2.7	30 24.954	87 25.004	green	sticky	mud
j18	9/24/2006	18:00	2.1	30 24.397	87 23.965	green	sticky	mud
j20	9/24/2006	18:10	2.3	30 25.291	87 23.322	green	fine	mud
j23	9/24/2006	18:31	2.1	30 26.193	87 22.676	green	fine	mud
j24	9/24/2006	18:45	2.1	30 25.640	87 21.638	green	fine	mud
j26	9/24/2006	19:20	1.4	30 27.081	87 22.032	green	fine	mud
j27	9/24/2006	19:25	1.4	30 26.530	87 21.000	green	fine	mud

TERRA SURVEYS LLC
Terrestrial and Sea Floor Mapping
1650 SOUTH WHITNO CIRCLE
P.O. BOX 1540
PALMER, ALASKA 99645-1540
PHONE: (907) 746-7205
FAX: (907) 746-7279
EMAIL: terra@terra-surveys.com
WEB SITE: www.terra-surveys.com

DATE: 06/01/07 SHT.: ____ OF ____
PREPARED BY: KellyF
SUBJECT: Lillian Bridge Clearance
PROJECT:

From Scott's Field Book:

Thickness of Bridge = 2.18m
Distance from top of bridge to water line = 18.84 m
Measuring tape offset = 3.99 m
Date + Time of Measurement: 2007 028 18:16 UTC 18:16 = t_0

Bridge Clearance = 18.84 - 2.18 - 3.99 = **12.67 m**

From CARIS 042-Debris-Mapping.zdf and 8729905.tid

Δt = -48 mins ΔR = 0.98m (range corr.) for zone CGIM1651

$t_0' = t_0 + \Delta t$ = 17:28

t_1 = 17:24 T_1 = -.101m (tide) } at MLLW
t_2 = 17:30 T_2 = -0.099 m }

From NOAA webpage "Station Datums"

MLLW: z_{MLLW} = 0.613
MHW: z_{MHW} = 0.839

$\Delta z = z_{MHW} - z_{MLLW}$ = **0.226m**

$T_1' = T_1 - \Delta z$ = -0.327 m } Tide values at the gauge
$T_2' = T_2 - \Delta z$ = -0.325 m } at MHW

$$\Delta T = \frac{T_2' - T_1'}{t_2 - t_1} = \frac{-0.002\ m}{10\ mins} = -8.33 \times 10^{-4}\ m/min$$

$$\Delta T = \frac{T_2' - T_g}{t_2 - t_0'} \Rightarrow T_g = -\Delta T(t_2 - t_0') + T_2' = -\Delta T(2) + T_2' = -0.3256\ m$$

where T_g is the tide at the gauge at t_0'

$T_0 = T_g \Delta R$ = -0.3256 (0.98) = -0.303 m

Bridge clearance: 12.67 + (-0.303) = **12.37 m**

Figure 1- Calculations for the minimum clearance for the Lillian Bridge (Section D2 of the Descriptive Report).

Jun 1 2007 16:45 ELEVATIONS ON STATION DATUM
National Ocean Service (NOAA)

Station: 8729905 T.M.: 90 W
Name: MILLVIEW, PERDIDO BAY, FL Units: Meters
Status: Accepted Epoch: 1983-2001

Datum	Value	Description
MHHW	0.842	Mean Higher-High Water
MHW	0.839	Mean High Water
DTL	0.728	Mean Diurnal Tide Level
MTL	0.728	Mean Tide Level
MSL	0.715	Mean Sea Level
MLW	0.617	Mean Low Water
MLLW	0.613	Mean Lower-Low Water
GT	0.230	Great Diurnal Range
MN	0.223	Mean Range of Tide
DHQ	0.003	Mean Diurnal High Water Inequality
DLQ	0.004	Mean Diurnal Low Water Inequality
HWI		Greenwich High Water Interval (in Hours)
LWI		Greenwich Low Water Interval (in Hours)
NAVD	0.600	North American Vertical Datum
Maximum		Highest Water Level on Station Datum
Max Date		Date Of Highest Water Level
Max Time		Time Of Highest Water Level
Minimum		Lowest Water Level on Station Datum
Min Date		Date Of Lowest Water Level
Min Time		Time Of Lowest Water Level

To refer Water Level Heights to a Tidal Datum, apply the desired Datum Value.

Click HERE for further station information including New Epoch products.

To refer Water Level Heights to either
NGVD (National Geodetic Vertical Datum of 1929) or
NAVD (North American Vertical Datum of 1988), apply the values located at:
National Geodetic Survey

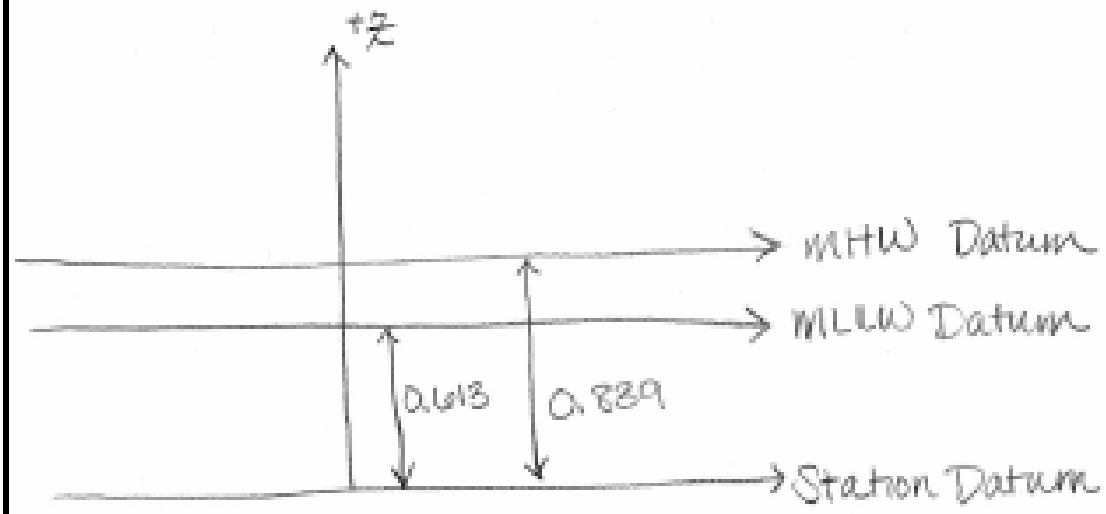


Figure 2 – Calculations for the minimum clearance for the Lillian Bridge (Section D2 of the Descriptive Report).

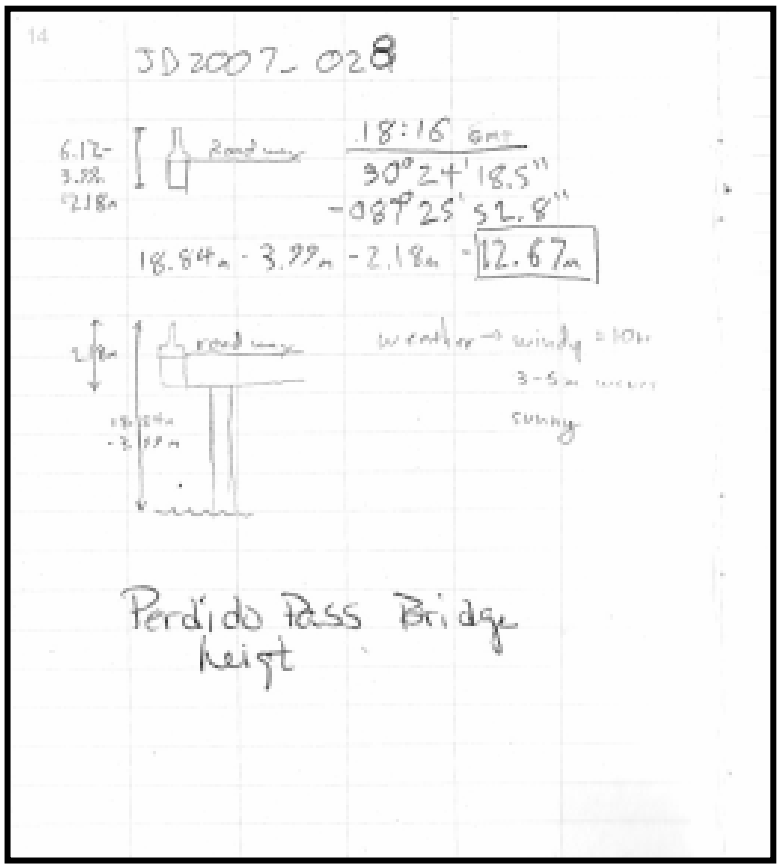


Figure 3 – Field Notes for the calculations for the minimum clearance for the Lillian Bridge (Section D2 of the Descriptive Report).

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey H1629 (2007)

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

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

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

CARIS HIPS/SIPS version 6.1 SP1 HF 1-6
CARIS Bathy Manager version 2.1 SP 1 -7
CARIS S57 Composer version 2.0
CARIS HOM version 3.3.

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product entailed the use of the generated 3 meter Swath angle grid made during the office processing ESAR review. The survey scale selected soundings were extracted from the shoal layer of this grid. The selected sounding set is approximately 10 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

The SAHOB files included depth areas (DEPARE), sounding selections (SOUNDG), features (OBSTRN, SBDARE), Meta objects (M_COVR, M_QUAL, M_CSCL), cartographic Blue Notes and Charted features (BCNSPP, LNDARE, LNDRGN, OBSTN). The individual SAHOB files were inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Pre-Compile Process Log.

The completed H-Cells were 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 (H-Cells US5H11629_CS.000 and US5H11629_SS.000) with all values measured in feet following NOAA sounding rounding rules.

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

The H11629 CARIS H-Cell final deliverables include the following products:

US5H11629_CS.000	1:40,000 Scale	H11629 H-Cell with Chart Scale Selected Soundings
US5H11629_SS.000	1:10,000 Scale	H11629 Selected Soundings (Survey Scale)

B.2.2. Junctions

No contemporary surveys junction with present survey H11629 (2007). Present survey depths are in harmony with the charted hydrography to the north, south, east and west.

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. 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 H11629. 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.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

11378 (35th Edition, MAR/08)
Corrected through NM 03/22/2008
Corrected through LNM 03/18/2008
Scale 1:40,000

ENC Comparison

US5AL12M
Santa Rosa Sound to Wolf Bay
Edition 14
Update Application Date 2008-07-09
Issue Date 2008-08-11
References: Chart 11378

D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section "D" and Appendix 1 of the Descriptive Report. Present survey depths are generally one foot shoaler in the northern section of Perdido Bay in the vicinity of Latitude 30° 26'02"N, Longitude 87°22'32'W. Present survey depths range from 5 to 6 feet in areas that are currently charted with 7 foot depths. The following should be noted:

1. An uncharted *2 foot dangerous obstruction* was found by the present survey in Latitude 30° 19'35.75"N, Longitude 87°29'07.94'W. It is recommended that a *2 ft dangerous obstruction* be charted in the present survey location.

2. An uncharted *6 foot dangerous obstruction* was found by the present survey in Latitude 30° 19'30.52"N, Longitude 87°29'05.96'W. Because of its close proximity to

the above 2 foot dangerous obstruction, it is recommended that a *6 ft dangerous obstruction* be charted in the present survey location if chart scale allows.

3. A *9 foot dangerous obstruction Rep 2007* charted in Latitude 30° 27'05.72"N, Longitude 87°24'01.55'W was submitted by the field as DTON #1. This feature was not included in the KR submitted feature file and AHB was not included in the original submission as per SOW. The KR submitted DR makes no mention of this feature and the KR submitted VBES does not contain any indication of a 9 foot obstruction. No obstructions were viewed on the side scan imagery submitted. It is therefore recommended that the charted *9 foot dangerous obstruction Rep 2007* be deleted from the chart.

4. The *note* in the vicinity of Latitude 30° 26'26.78"N, Longitude 87°25'02.61'W should be revised to read *"Numerous tree stumps, submerged piles, and baring piles lie within 33 feet of shore in all undeveloped shoreline areas, north of highway 98 bridge. Mariners should exercise caution when transiting near shore"*.

5. The *east and west bridge fenders* on the north side of the Highway 98 bridge were positioned by the present survey in Latitude 30° 24'18.7"N, Longitude 87°25'51.17'W and Latitude 30° 24'19.45"N, Longitude 87°25'52.16'W, respectively and are deferred to MCD for final charting disposition.

6. The *shl rep 2003* area charted in Latitude 30° 21'55.17"N, Longitude 87°26'41.09'W was not disproved by the present survey. It is recommended that the note be retained as charted.

7. The *special purpose beacon* charted in Latitude 30° 24'52.17N, Longitude 87°22'38.22'W was neither verified nor disproved by the present survey. It is recommended that the *special purpose beacon* be retained as charted.

8. The *(islet)* and the *obstruction area* surrounding it, charted in the vicinity of Latitude 30° 26'57.03"N, Longitude 87°23'40.62'W was neither verified nor disproved by the present survey. It is recommended that the charted *obstruction (islet)* with an elevation of *12 M* be retained as charted.

9. A *5 foot dangerous obstruction* in Latitude 30° 24'14.04"N, Longitude 87°25'42.61'W was never submitted by the field as a DTON but it is mentioned in the Descriptive Report, Section D.1. New Features Table 1 feature letter b. No VBES data supports the 1.5m feature and the submitted HNS does not contain a node and associated depth of 1.5m located near the Hwy 90 bridge. Update the chart with present survey depths in the area.

10. Numerous shoreline changes were recommended by the field. The information provided is not detailed enough to make the changes in this office, but it is obvious that the piers and structures in the area are out of date and need updating even if only through photos for now.

D.2. MISCELLANEOUS

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

Spring, Maryland. See Section D.1.of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

D.3. 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 recommendations by the hydrographer.

AHB PRE-COMPILATION PROCESS

REGISTRY No.	H11629
PROJECT No.	S-J911-KR-TE
FIELD UNIT	TERRASOUND
PRE-COMPILER	MARK OPDYKE
LARGEST SCALE CHART	11378_1, edition 35, 20080301 11378_5, edition 35, 20080301
CHART SCALE	11378_1 1:40,000 11378_5 1:80,000
SURVEY SCALE	1: 10,000
DATE OF SURVEY	October 26, 2006 to February 6th, 2007
CONTENT REVIEW DATE	

Components	File Names
Product Surface	NA
Shifted Surface	H11629_Shifted_Interpolated_SS_Soundings_20m.hns
Contour Layer	H11629_Shifted_Surface_Contours.hob
Survey Scale Soundings	H11629_SS_Sounding.hob
Chart Scale Soundings	H11629_CS_Soundings.hob
ENC Retain Soundings	NA
Feature Layer	H11629_AHB_Features
Meta-Objects Layer	H11629_MetaObjects.hob
Blue Notes	H11629_BlueNotes.hob

SPECIFICATIONS:

I. COMBINED SURFACE:
   a. File name: NA
   b. Resolution: _____m
   c. Final Grid Location:_____

II. PRODUCT SURFACE (SOUNDINGS):
   a. Scale: 1:_____
   b. Radius:_____m
   c. Resolution: ___m

   d. Depth
      i. Minimum: _____m
      ii. Maximum: _____m

   PRODUCT SURFACE (CONTOURS):
   a. Scale: 1:_____
   b. Radius:_____m
   c. Resolution: ___m

III. SHIFTED SURFACE:
   Single Shift Value:_____ *[-0.229m (feet), (≤ 10 fathoms)]*
   [-1.372m (fathoms), (> 10 fathoms)]

IV. CONTOUR LAYER:

a. Use a Depth List: XXXXXX_NOAA_depth_curves_list.txt
Depth List:

b. Output Options:
i. Create contour lines:
1. Line Object: DEPCNT
2. Value Attribute: VALDCO

V. SOUNDING SELECTION:

a. Selection Criteria:
i. Radius
ii. Shoal biased
iii. Use Single-Defined Radius: ____ distance on ground (m)
iv. Filter: Generalized !=1

VI. FEATURES:

a. Brought in from Survey
Total No. 3

b. Brought in from ENC
ENC: N/A
Total No. 0

VII. META-OBJECTS:

a. M_COVR attributes

Acronym	Value
SORDAT	20070206
CATCOV	Coverage Available
SORIND	US,US,survy,H11629

b. M_QUAL attributes

Acronym	Value
CATZOC	Not Assessed
INFORM	H11629, OPR-S-J977-KR-TE-06, Terrasound
POSACC	10m
SORDAT	20070206
SORIND	US,US,survy,H11629
SUREND	20070206
SURSTA	20061026
TECSOU	VBES and SSS

c. DEPARE attributes

Acronym	Value
DRVALV 1	2.69ft
DRVALV2	19.226ft
SORDAT	20070206
SORIND	US,US,nsurf,H11629

d. M_CSCL attributes

Acronym	Value
CSCALE	80,000
SORDAT	20070206
SORIND	US,US,graph,Chart11378

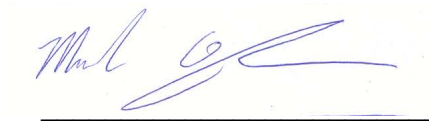
VIII. NOTES:

APPROVAL SHEET
H11629

Initial Approvals:

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

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



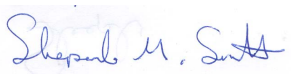
Mark Opdyke
I attest to the accuracy and integrity of this document
2008.10.16 08:53:02 -04'00'

Mark Opdyke
Hydrographic Intern
Atlantic Hydrographic Branch

Deborah A. Bland
I am the author of this document
2008.10.16 08:50:43 -04'00'

Deborah A. Bland
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: 

Shepard Smith
I am approving this document
2008.10.28 17:35:00 -04'00'

Shepard Smith
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Mark Lathrop

Digitally signed by Mark Lathrop
DN: cn=Mark Lathrop, o=NOAA, ou=HSD, email=mark.t.lathrop@noaa.gov, c=US
Reason: AWOIS/Surf Check
Date: 2008.11.20 07:48:12 -05'00'