F00734

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

# DESCRIPTIVE REPORT

| | |
|---|---|
| Type of Survey: | Navigable Area |
| Registry Number: | F00734 |

## LOCALITY

| | |
|---|---|
| State(s): | Texas |
| General Locality: | Port Lavaca, TX |
| Sub-locality: | Matagorda Bay |

## 2019

CHIEF OF PARTY
Andrew Orthmann

LIBRARY & ARCHIVES

Date:

| U.S. DEPARTMENT OF COMMERCE<br>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTRY NUMBER: |
| --- | --- |
| **HYDROGRAPHIC TITLE SHEET** | **F00734** |

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

| | |
| --- | --- |
| State(s): | **Texas** |
| General Locality: | **Port Lavaca, TX** |
| Sub-Locality: | **Matagorda Bay** |
| Scale: | **20000** |
| Dates of Survey: | **08/20/2018 to 02/07/2019** |
| Instructions Dated: | **07/18/2018** |
| Project Number: | **OPR-K376-KR-18** |
| Field Unit: | **Terrasond, Ltd.** |
| Chief of Party: | **Andrew Orthmann** |
| Soundings by: | **Multibeam Echo Sounder Singlebeam Echo Sounder** |
| Imagery by: | **Side Scan Sonar** |
| Verification by: | **Atlantic Hydrographic Branch** |
| Soundings Acquired in: | **meters at Mean Lower Low Water** |

Remarks:

***Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via https://www.ncei.noaa.gov/. Products created during office processing were generated in NAD83 UTM 14N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.***

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# Descriptive Report to Accompany Survey F00734

Project: OPR-K376-KR-18

Locality: Port Lavaca, TX

Sublocality: Matagorda Bay

Scale: 1:20000

August 2018 - February 2019

**Terrasond, Ltd.**

Chief of Party: Andrew Orthmann

# A. Area Surveyed

The survey area is located in SE Texas in Matagorda Bay and includes parts of the Matagorda Ship Channel, a dredged channel which leads to Port Lavaca, TX. Most of the bay is less than 5 meters water depth, though depths as great as 41 meters were found in the channel. Field work was carried out between August, 2018 and February, 2019. Final processing and reporting was carried out between March and May, 2019. Eight other nearby sheets were surveyed concurrently. Work was done in accordance with the Hydrographic Survey Instructions (dated July 18th, 2018) and the NOS Hydrographic Surveys Specifications and Deliverables (HSSD), April 2018 edition.

## A.1 Survey Limits

Data were acquired within the following survey limits:

| Northwest Limit | Southeast Limit |
|---|---|
| 28° 35' 10.1" N<br>96° 31' 22.51" W | 28° 25' 41.12" N<br>96° 11' 27.22" W |

*Table 1: Survey Limits*

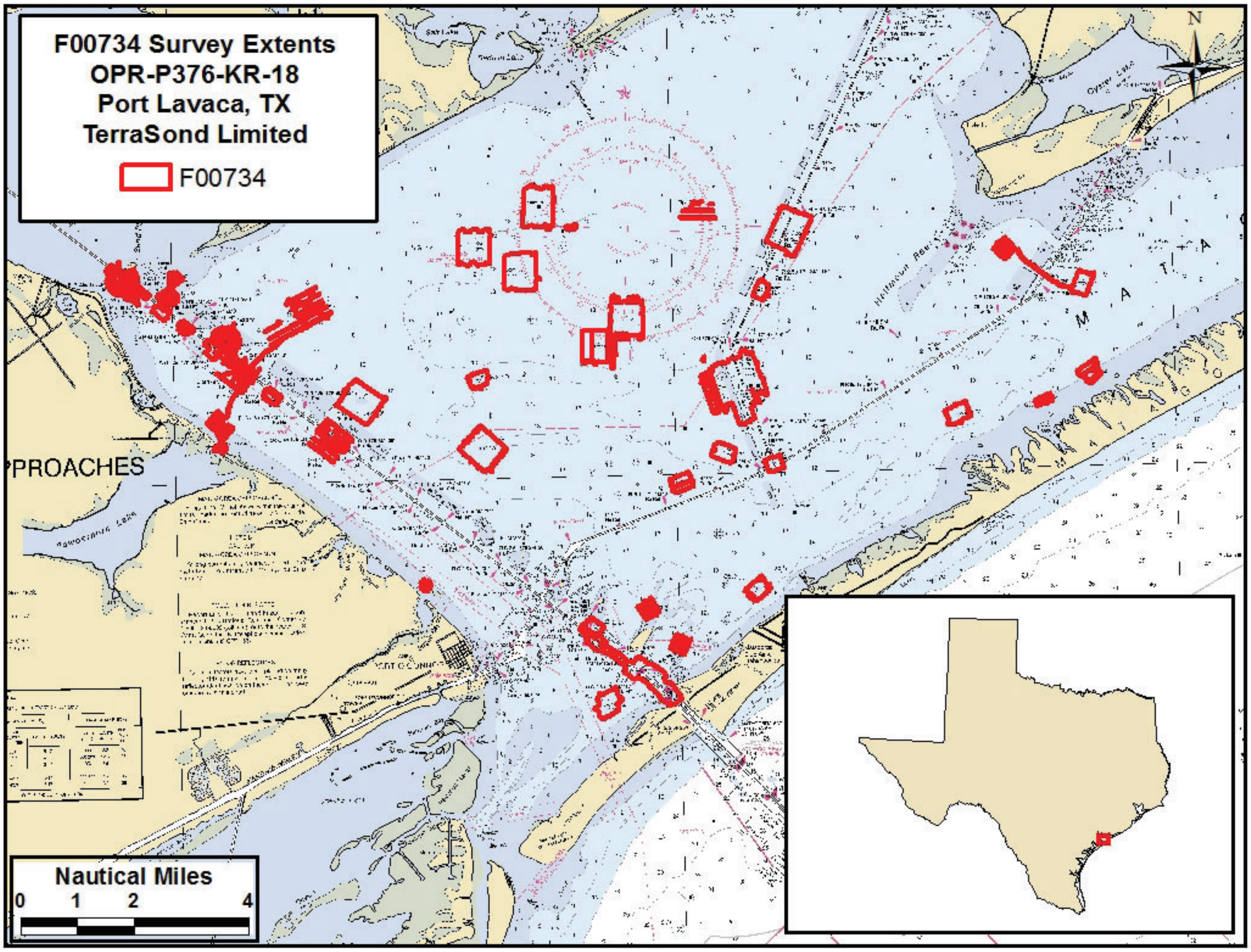


*Figure 1: Graphic showing survey extents.*

The survey limits provided in the PRF consisted of a collection of relatively small search areas, normally about 1 km in diameter, approximately centered on features assigned for investigation in the CSF. All areas were searched for assigned features.

## A.2 Survey Purpose

This project is located in the vicinity of Port Lavaca, which includes the Matagorda Bay Shipping Channel. Port Lavaca is a major sea port that allows shipping to support the fishing, manufacturing, agriculture, tourism, as well as the fishing industries in the state of Texas. As a leader in the shrimp processing industry, Port Lavaca allows million tons of seafood to be shipping through its port yearly. Port Lavaca also supports shipping for Matagorda Bay, which houses several large manufacturing plants and a nuclear station. The U.S. Army Corps of Engineers maintains the Matagorda Bay Shipping Channel which is dredged and there are future plans to expand this dredged channel to 44 ft. in depth and 400 ft. wide. The survey area covers the approaches to the shipping channel in an effort to cover all shipping traffic into the Matagorda Shipping Channel. Recent hurricane activity in 2017 has made previous bathymetry in the area unreliable. This survey will allow shipping activities to continue into the Port of Lavaca.

This survey served as an investigation of charted features inside the bay. It was not a general update of the charts of the bay. However, the data is of sufficient quality to update the charts in common areas.

## A.3 Survey Quality

The entire survey is adequate to supersede previous data.

## A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

| Water Depth | Coverage Required |
|---|---|
| F00734 and H13181 | Object Detection Coverage (Refer to HSSD Section 5.2.2.2) |
| All waters in survey area | LNM no less than 7869 LNM. Report significant shoaling via weekly progress report. COR may adjust survey prioritization based on observed shoaling. |

*Table 2: Survey Coverage*

Approximately 9,103 LNM were collected project-wide, which exceeds the minimum of 7,869 required in the Project Instructions. The 13.5% overage was largely due to unplanned infill/rerun work in areas of marginal data.

Both "Option A: Object Detection Multibeam Coverage" and "Option B: 200% side scan sonar coverage with concurrent multibeam" were used to meet HSSD Section 5.2.2.2 "Object Detection" requirements during this survey. Option B was favored whenever possible and used for most of the area, but Option A was also frequently exercised when the SSS equipment was experiencing issues or SSS data quality had degraded to an unacceptable degree. Infills/reruns on holidays in Option B areas were also frequently MBES-only if MBES was capable of efficiently covering the holiday.

Holidays outside of assigned search areas and inshore of the NALL were normally not infilled. Holidays also exist in a few areas around ATONs which prevented survey.

This survey was broken into two major phases:

First, in August of 2018 all features received a preliminary investigation with a shallow drafted skiff--the Sea Ark--equipped with basic survey equipment that included a Single Beam Echosounder (SBES). The Sea Ark would proceed to the assigned location of each feature. If a feature was found and it clearly matched the attributes of the assigned feature, the position was fixed and the object photographed and the feature considered to be resolved. These areas did not later receive additional MBES/SSS survey regardless of the water depth.

During the preliminary investigations, if a feature was not visually found in the search area or it did not match the attributes of the assigned feature, the Sea Ark conducted a brief SBES search of the area. This served to look for any indication of the feature on the seafloor but also provided recon soundings to determine if the area was deep enough to later receive MBES/SSS survey with a larger vessel, the Bella Marie. In these cases the Sea Ark normally collected SBES data at a variable line spacing centered on the feature location. The inshore limit for safe Sea Ark operations was 1 to 2 m water depth.

Second, following completion of the Sea Ark investigations, the Bella Marie was brought on site in September of 2018 equipped with MBES and SSS systems. The Bella Marie then conducted Object Detection operations to search for features left unresolved following Sea Ark operations, but normally only in depths 3.5 m and deeper.

As a result, final coverage falls into these categories:

1. No Object Detection Coverage -- feature was clearly identified during Sea Ark operations and no additional coverage was necessary, or area was too shallow (generally less than 3.5 m) for Bella Marie operations

2. Object Detection Coverage received -- area was surveyed (at least in to 3.5 m water depth) with Object Detection coverage with the Bella Marie in an attempt to resolve the feature.

Most areas were also transected with SBES during the initial Sea Ark operations.

Investigation results are discussed later in this report.

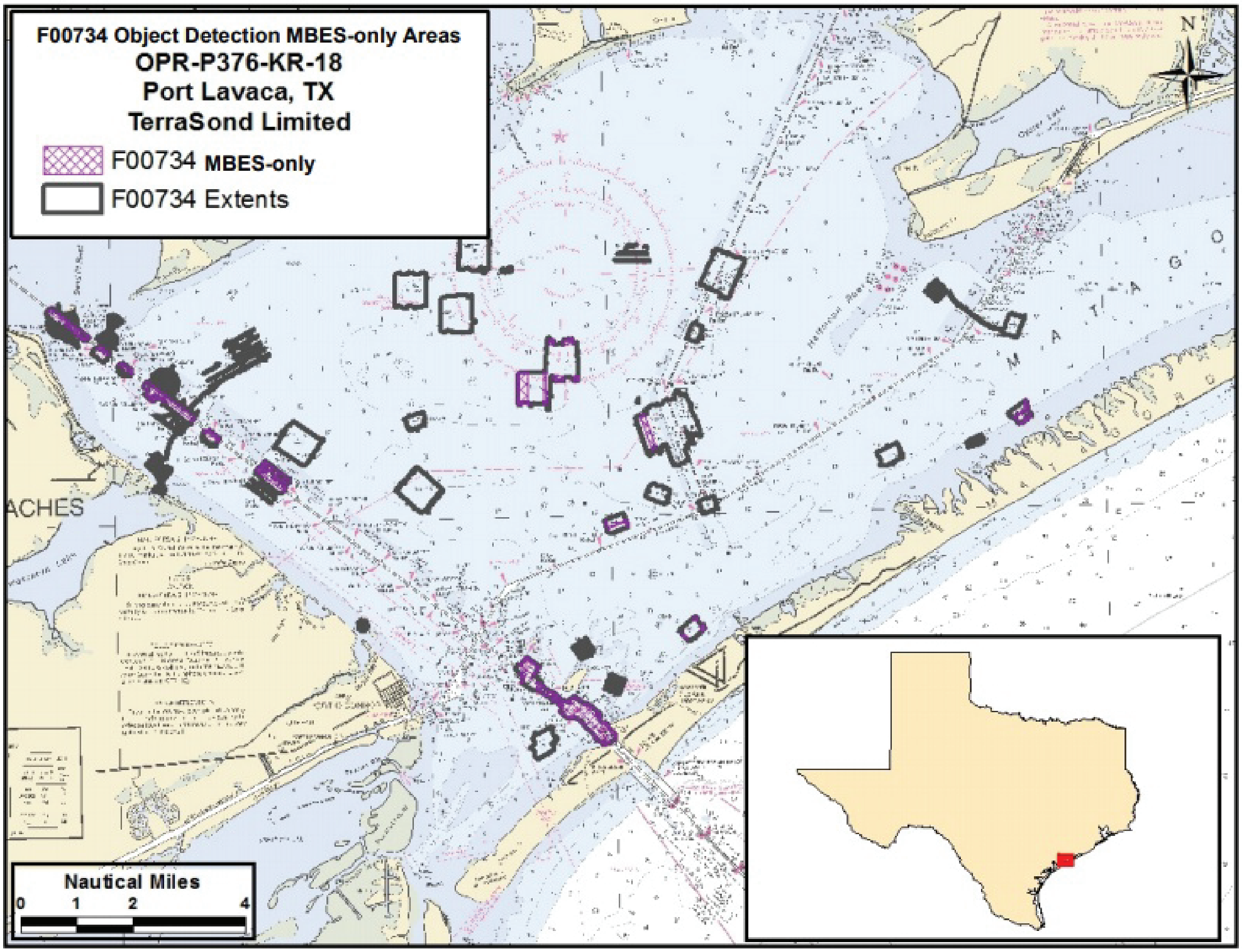


*Figure 2: Graphic showing areas covered with "Option A" Object Detection Multibeam Coverage - only.*

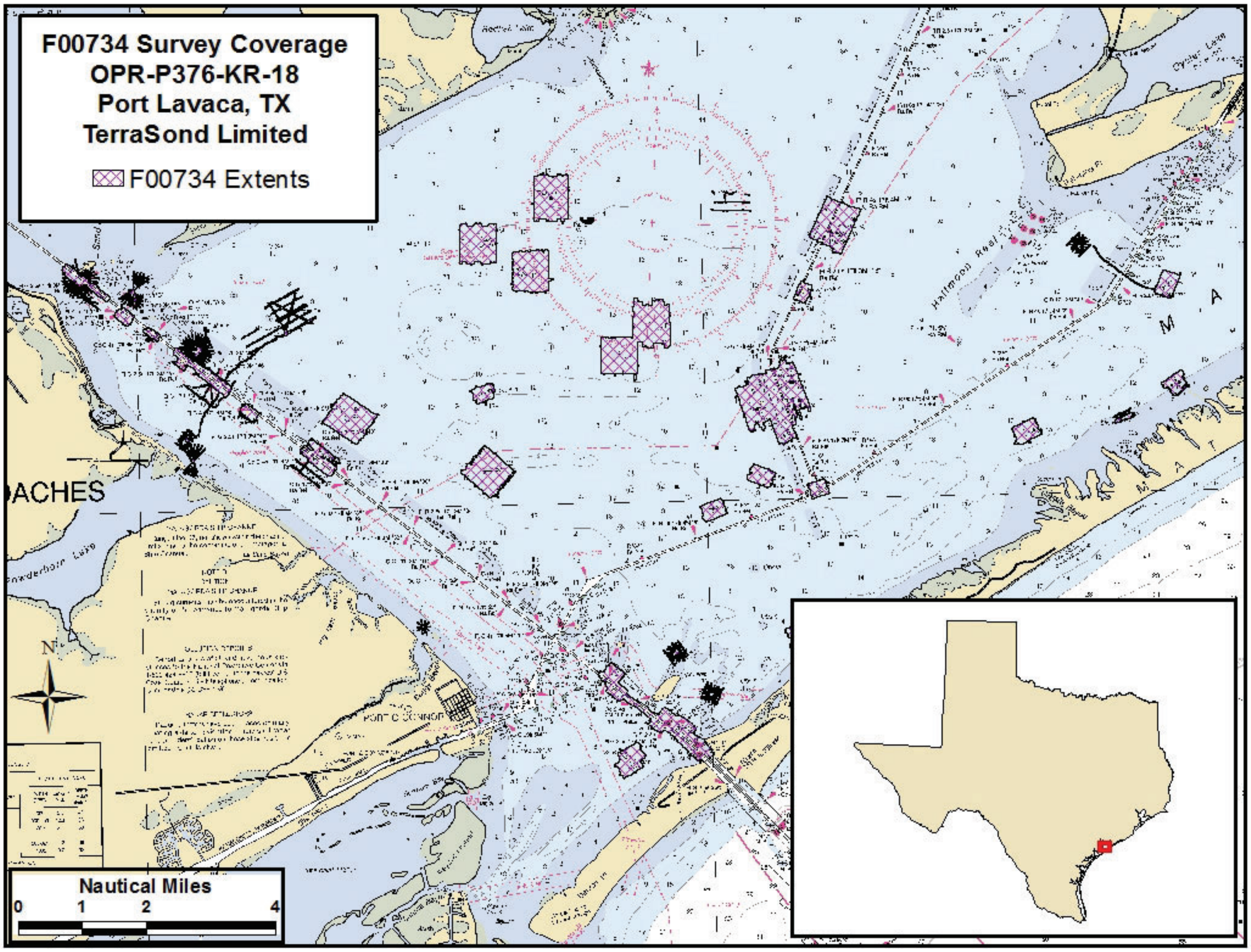


*Figure 3: Graphic showing areas with Sonar Coverage (all types). Areas where items were investigated and visually confirmed are not shown.*

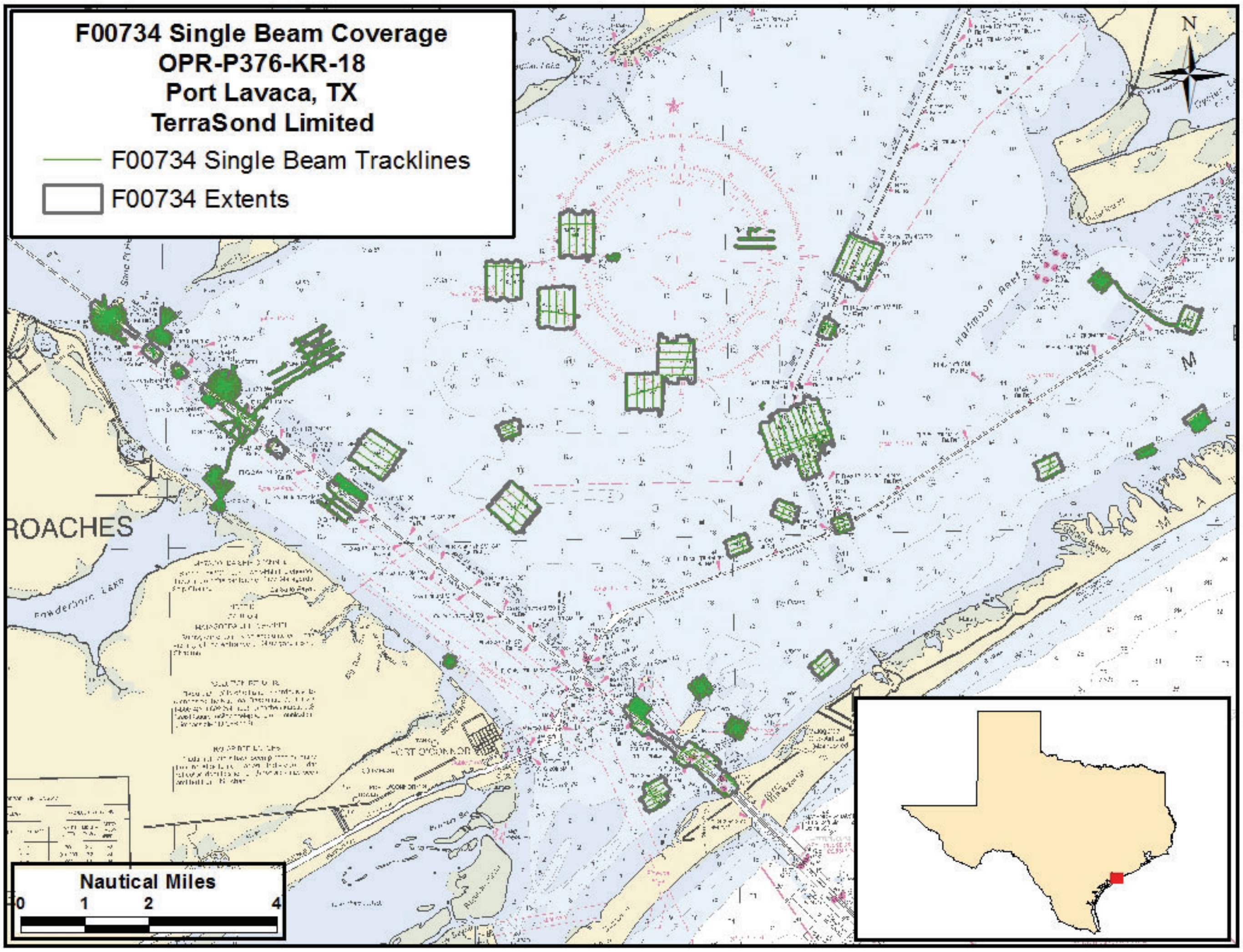


*Figure 4: Graphic showing SBES tracklines.*

## A.5 Survey Statistics

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

| | HULL ID | *Sea Ark* | *Bella Marie* | *Total* |
|---|---|---|---|---|
| LNM | **SBES Mainscheme** | 120.3 | 0 | 120.3 |
| | **MBES Mainscheme** | 0 | 101.9 | 101.9 |
| | **Lidar Mainscheme** | 0 | 0 | 0 |
| | **SSS Mainscheme** | 0 | 0 | 0 |
| | **SBES/SSS Mainscheme** | 0 | 0 | 0 |
| | **MBES/SSS Mainscheme** | 0 | 411.3 | 411.3 |
| | **SBES/MBES Crosslines** | 20.1 | 8 | 28.1 |
| | **Lidar Crosslines** | 0 | 0 | 0 |
| **Number of Bottom Samples** | | | | 0 |
| **Number Maritime Boundary Points Investigated** | | | | 0 |
| **Number of DPs** | | | | 76 |
| **Number of Items Investigated by Dive Ops** | | | | 0 |
| **Total SNM** | | | | 6.5 |

*Table 3: Hydrographic Survey Statistics*

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

| Survey Dates | Day of the Year |
|---|---|
| 08/20/2018 | 232 |

| Survey Dates | Day of the Year |
|---|---|
| 08/21/2018 | 233 |
| 08/22/2018 | 234 |
| 08/23/2018 | 235 |
| 08/24/2018 | 236 |
| 08/25/2018 | 237 |
| 08/26/2018 | 238 |
| 09/05/2018 | 248 |
| 09/06/2018 | 249 |
| 09/07/2018 | 250 |
| 09/08/2018 | 251 |
| 09/10/2018 | 253 |
| 09/11/2018 | 254 |
| 09/12/2018 | 255 |
| 09/13/2018 | 256 |
| 09/25/2018 | 268 |
| 09/26/2018 | 269 |
| 09/28/2018 | 271 |
| 10/05/2018 | 278 |
| 10/06/2018 | 279 |
| 10/10/2018 | 283 |
| 10/11/2018 | 284 |
| 10/13/2018 | 286 |
| 10/14/2018 | 287 |
| 10/19/2018 | 292 |
| 10/30/2018 | 303 |
| 10/31/2018 | 304 |
| 11/14/2018 | 318 |
| 11/18/2018 | 322 |
| 12/15/2018 | 349 |
| 12/19/2018 | 353 |
| 12/21/2018 | 355 |
| 01/20/2019 | 20 |

| Survey Dates | Day of the Year |
|---|---|
| 01/26/2019 | 26 |
| 01/28/2019 | 28 |
| 01/31/2019 | 31 |
| 02/01/2019 | 32 |
| 02/02/2019 | 33 |
| 02/06/2019 | 37 |
| 02/07/2019 | 38 |

*Table 4: Dates of Hydrography*

# B. Data Acquisition and Processing

## B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

### B.1.1 Vessels

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

| **Hull ID** | ***Sea Ark*** | ***Bella Marie*** |
|---|---|---|
| **LOA** | 5.5 meters | 11 meters |
| **Draft** | 0.6 meters | 0.76 meters |

*Table 5: Vessels Used*

*Figure 5: Sea Ark*


*Figure 6: Bella Marie*

Both vessels are owned and operated by TerraSond's Corpus Christi, TX office.

When on site, the vessels worked daylight-only ops (12 hours per day) based out of the nearby town of Port O'Conner, TX. The Sea Ark completed initial feature investigations and collected recon bathymetric data with a pole-mounted SBES system prior to arrival of the Bella Marie.

The Bella Marie was outfit with MBES and SSS systems and conducted searches for assigned features to Object Detection standards using MBES and SSS in depths of 3.5 m and greater.

### B.1.2 Equipment

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

| Manufacturer | Model | Type |
|---|---|---|
| Teledyne Odom Hydrographic | Echotrac CV100 | SBES |
| Teledyne RESON | Seabat 7125 | MBES |
| Teledyne RESON | Seabat T50 | MBES |
| Teledyne RESON | Seabat T50 IDH | MBES |
| EdgeTech | 4200 | SSS |
| Trimble | 5700 | Positioning System |
| Applanix | POS MV 320 v5 | Positioning and Attitude System |
| Hemisphere | V111/V113 GPS Gyrocompass | Positioning and Attitude System |
| AML Oceanographic | Minos-X | Sound Speed System |
| AML Oceanographic | MicroX SVS | Sound Speed System |
| Valeport | RapidSV | Sound Speed System |
| Valeport | SWIFT SVP | Sound Speed System |

*Table 6: Major Systems Used*

Refer to the DAPR for equipment dates of usage.

## B.2 Quality Control

### B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 4.44% of mainscheme acquisition.

Effort was made to ensure crosslines had good temporal and geographic distribution, were angled to enable nadir-to-nadir as well as nadir-to-outer beam comparisons, and that the required percent of mainscheme LNM was achieved. SBES as well as MBES crosslines were counted toward the total crossline LNM achieved.

The crossline analysis was conducted using CARIS HIPS “Line QC Report” process. Each crossline was selected individually and run through the process, which calculated the depth difference between each accepted crossline sounding and a "QC" BASE (CUBE-type, 2 m resolution for MBES, 4 m resolution for SBES) surface’s depth layer created from the mainscheme data. QC surfaces were created with the same parameters by resolution use for final surfaces, with the important distinction that the QC surfaces did not include crosslines so as to not bias the results. Differences in depth were grouped by beam number and statistics were computed, including the percentage of soundings with differences from the QC surface falling within IHO Order 1a.

When at least 95% of the sounding differences exceed IHO Order 1a, the crossline was considered to “pass,” but when less than 95% of the soundings compare within IHO Order 1, the crossline was considered to “fail.” A 5% (or less) failure rate was considered acceptable since this approach compares soundings to a surface (instead of a surface to a surface), allowing for the possibility that noisy crossline soundings that don't adversely affect the final surface(s) could be counted as a QC failure under this process.

For this survey, SBES data collected with the Sea Ark was also used as crosslines to compare against the Bella Marie's mainscheme MBES data. Conversely, select MBES lines from the Bella Marie were also ran against the Sea Ark SBES mainscheme for an inter-vessel comparison. SBES lines have "SeaArk" in the file name, while MBES lines have "Bella" in their filename. Note that the crossline percentage provided for the survey (4.44%) includes only lines run specifically as crosslines -- mainscheme lines used for crosslines is in addition to these.

Lines used as crosslines to compare against the mainscheme MBES surface and their % of soundings passing IHO Order 1a, sorted from highest passing to lowest, are listed below. Note that this includes both Sea Ark SBES lines as well as Bella Marie MBES lines.

0526-028-Bella7125-A47_XL -- 100.0% pass
0565-031-Bella7125-A39_XL -- 100.0% pass
0601-031-Bella7125-A35_XL_1 -- 100.0% pass
0603-031-Bella7125-A31-XL_02 -- 100.0% pass
0615-031-Bella7125-A30_XL_01 -- 100.0% pass
0623-031-Bella7125-A21_XL_1 -- 100.0% pass
0643-032-Bella7125-A20_xl_2 -- 100.0% pass
0649-032-Bella7125-A26_XL_1 -- 100.0% pass
0660-032-Bella7125-A27_XL_1 -- 100.0% pass
0686-032-Bella7125-A18_XL_1 -- 100.0% pass
0706-033-Bella7125-A54_XL_1 -- 100.0% pass
0736-033-Bella7125-A25_XL_01 -- 100.0% pass
SeaArk_238_A18XL -- 100.0% pass
SeaArk_237_28XL -- 100.0% pass
SeaArk_237_A45XL -- 100.0% pass
SeaArk_237_A47XL -- 100.0% pass
SeaArk_235_A51_XL -- 100.0% pass
SeaArk_XL235_A40_XL -- 100.0% pass
SeaArk_XL_235_A39MD-21 -- 100.0% pass

SeaArk_XL_235_A38MD-20_0001 -- 100.0% pass
SeaArk_234_A54MD-4 -- 100.0% pass
SeaArk_XL_234_A53MD-3_0001 -- 100.0% pass
SeaArk_XL234_A30MD-3 -- 100.0% pass
SeaArk_XL_234_A31MD-3 -- 100.0% pass
SeaArk_XL_235_A37MD-3 -- 100.0% pass
SeaArk_235_A32_35_XL -- 100.0% pass
SeaArk_235_NewLine -- 100.0% pass
SeaArk_237_A25_XL -- 100.0% pass
SeaArk_236_A20_XL -- 100.0% pass
SeaArk_236_A19_XL -- 100.0% pass
SeaArk_237_A24_XL -- 100.0% pass
SeaArk_236_A24MD-2 -- 100.0% pass
SeaArk_237_A24MD-1 -- 100.0% pass
SeaArk_237_A24MD-35 -- 100.0% pass
SeaArk_237_A24MD-47 -- 100.0% pass
SeaArk_237_A10_XL -- 100.0% pass
SeaArk_237_A26XL -- 100.0% pass
SeaArk_237_A48XL2 -- 99.9% pass
SeaArk_236_A42_XL1 -- 99.8% pass
SeaArk_236_A42_XL2 -- 99.8% pass
SeaArk_236_A24MD-14 -- 99.8% pass
SeaArk_233_A12M11 -- 99.8% pass
SeaArk_233_A5M4_0001 -- 99.6% pass
SeaArk_233_A6M3 -- 99.6% pass
SeaArk_233_A12M15 -- 99.6% pass
SeaArk_233_A6M5 -- 99.4% pass
SeaArk_237_A16_XL -- 99.4% pass
SeaArk_233_A5M1 -- 99.1% pass
SeaArk_238_A17XL -- 98.9% pass
SeaArk_237_xl46 -- 98.4% pass
SeaArk_236_A21_XL -- 97.9% pass
SeaArk_233_A6M1 -- 97.8% pass
SeaArk_233_A6M4 -- 97.5% pass
Sea_Ark232_A1_7 -- 97.2% pass
0513-028-Bella7125-A50_XL_2 -- 96.4% pass
SeaArk_232_A1_15 -- 93.8% pass

Results:

Agreement between the mainscheme-only MBES surface and crossline soundings is excellent. Compared to the mainscheme-only surface, 55 of 56 crosslines have at least 95% of soundings comparing within IHO Order 1a, with most having 100% of soundings comparing to within IHO Order 1a. One SBES line (SeaArk_232_A1_15) is considered to "fail" with 93.8% of soundings comparing to the mainscheme multibeam line within IHO Order 1a -- this was inspected an found to be in an area showing bottom change (discussed later in this report) with many months between acquisition.

Lines used as crosslines to compare against the mainscheme SBES surface and their % of soundings passing IHO Order 1a, sorted from highest passing to lowest, are listed below. Note that this includes both Sea Ark SBES lines as well as Bella Marie MBES lines.

SeaArk_236_A19_XL -- 100.0% pass
SeaArk_236_A20_XL -- 100.0% pass
SeaArk_XL234_A30MD-3 -- 100.0% pass
SeaArk_237_A24_XL -- 100.0% pass
SeaArk_237_A25_XL -- 100.0% pass
SeaArk_XL_234_A31MD-3 -- 100.0% pass
SeaArk_XL_234_A52M5 -- 100.0% pass
SeaArk_234_A52MD-10 -- 100.0% pass
SeaArk_234_A52MD-18 -- 100.0% pass
SeaArk_234_A52MD-2 -- 100.0% pass
SeaArk_234_A52MD-25 -- 100.0% pass
SeaArk_XL_234_A53MD-3_0001 -- 100.0% pass
SeaArk_XL_234_A56MD-2 -- 100.0% pass
SeaArk_234_A55M6 -- 100.0% pass
SeaArk_234_A55M5 -- 100.0% pass
SeaArk_234_A55M4 -- 100.0% pass
SeaArk_234_A55M3 -- 100.0% pass
SeaArk_234_A55M2 -- 100.0% pass
SeaArk_234_A54MD-4 -- 100.0% pass
SeaArk_XL_235_A38MD-20_0001 -- 100.0% pass
SeaArk_XL_235_A38MD-20_0001 -- 100.0% pass
SeaArk_XL_235_A37MD-3 -- 100.0% pass
SeaArk_235_A32_35_XL -- 100.0% pass
SeaArk_235_NewLine -- 100.0% pass
SeaArk_XL235_A40_XL -- 100.0% pass
SeaArk_235_A51_XL -- 100.0% pass
SeaArk_237_A45XL -- 100.0% pass
SeaArk_237_A47XL -- 100.0% pass
SeaArk_237_xl46 -- 100.0% pass
SeaArk_236_A42_XL2 -- 100.0% pass
SeaArk_236_A42_XL1 -- 100.0% pass
SeaArk_235_A49MD-25 -- 100.0% pass
SeaArk_235_A49MD-19_0001 -- 100.0% pass
SeaArk_235_A49MD-8 -- 100.0% pass
SeaArk_235_A49MD-2 -- 100.0% pass
SeaArk_236_A43MD-2 -- 100.0% pass
SeaArk_236_A43MD-10 -- 100.0% pass
SeaArk_236_A43MD-17 -- 100.0% pass
SeaArk_236_A43MD-25_0001 -- 100.0% pass
SeaArk_237_28XL -- 100.0% pass
SeaArk_237_A26XL -- 100.0% pass

SeaArk_238_A18XL -- 100.0% pass
SeaArk_237_A10_XL -- 100.0% pass
SeaArk_233_A12MD-49 -- 100.0% pass
SeaArk_233_002_1851 -- 100.0% pass
SeaArk_233_A13MD-8 -- 100.0% pass
SeaArk_233_A14MD-5 -- 100.0% pass
SeaArk_233_A14MD-12 -- 100.0% pass
SeaArk_233_A13MD-2_0001 -- 100.0% pass
SeaArk_233_A14M2 -- 100.0% pass
SeaArk_233_A14MD-17 -- 100.0% pass
SeaArk_233_A7M1 -- 100.0% pass
SeaArk_XL232_A1_13 -- 100.0% pass
0686-032-Bella7125-A18_XL_1 -- 100.0% pass
0601-031-Bella7125-A35_XL_1 -- 100.0% pass
0736-033-Bella7125-A25_XL_01 -- 100.0% pass
0623-031-Bella7125-A21_XL_1 -- 100.0% pass
0565-031-Bella7125-A39_XL -- 100.0% pass
SeaArk_236_A21_XL -- 99.5% pass
SeaArk_232_A2_4 -- 99.5% pass
SeaArk_236_A41_XL -- 96.9% pass
SeaArk_238_A17XL -- 93.6% pass
SeaArk_237_A48XL2 -- 87.3% pass

Results:

Agreement between the mainscheme-only SBES surface and crossline soundings is excellent. Compared to the mainscheme-only surface, 61 of 63 crosslines have at least 95% of soundings comparing within IHO Order 1a, with most (58) having 100% of soundings comparing to within IHO Order 1a.

Two SBES lines line (SeaArk_238_A17XL and SeaArk_237_A48XL2) fail with 93.6% and 87.3% of beams passing. These were inspected and determined that the failures are due to sounding-to-surface differences exceeding IHO Order 1a on the steep-sided channel, where a 4 m grid size for the surface smooths the depth over the channel wall and contributes to large differences from specific soundings. However, final surfaces are within allowable TVU.

### B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

| Method | Measured | Zoning |
|---|---|---|
| ERS via VDATUM | 0.104 meters | 0 meters |

*Table 7: Survey Specific Tide TPU Values.*

| Hull ID | Measured - CTD | Measured - MVP | Surface |
|---|---|---|---|
| Sea Ark | 2 meters/second | 0 meters/second | 0 meters/second |
| Bella Marie | 2 meters/second | 0 meters/second | 0.025 meters/second |

*Table 8: Survey Specific Sound Speed TPU Values.*

The surfaces were finalized in CARIS HIPS so that the uncertainty value for each grid cell is the greater of either standard deviation or uncertainty. The surfaces were then ran through NOAA's QC Tools "QA" utility to compare uncertainty values to allowable TVU by depth.

Results:

100% of grid cells in the SBES surface and over 99.5% of grid cells in the MBES surfaces have uncertainty within the allowable TVU. The relatively few grid cells exceeding allowable TVU were found to primarily be on the edges of swaths without overlap, overlap areas exhibiting sound speed refraction error, over features, or in areas exhibiting bottom change.

Refer to the DAPR for more information on derivation of the values used for TPU estimates.

### B.2.3 Junctions

This survey junctions with one Current survey, which was carried out concurrently.

NOAA's "Gridded Surface Comparison V18.4" utility was used to complete the junction comparisons. The utility differences the surfaces of the junctioning surveys and generates statistics, including the percentage of grid cells that compare to within allowable TVU. 1 m-resolution CUBE surfaces were used for all comparisons.

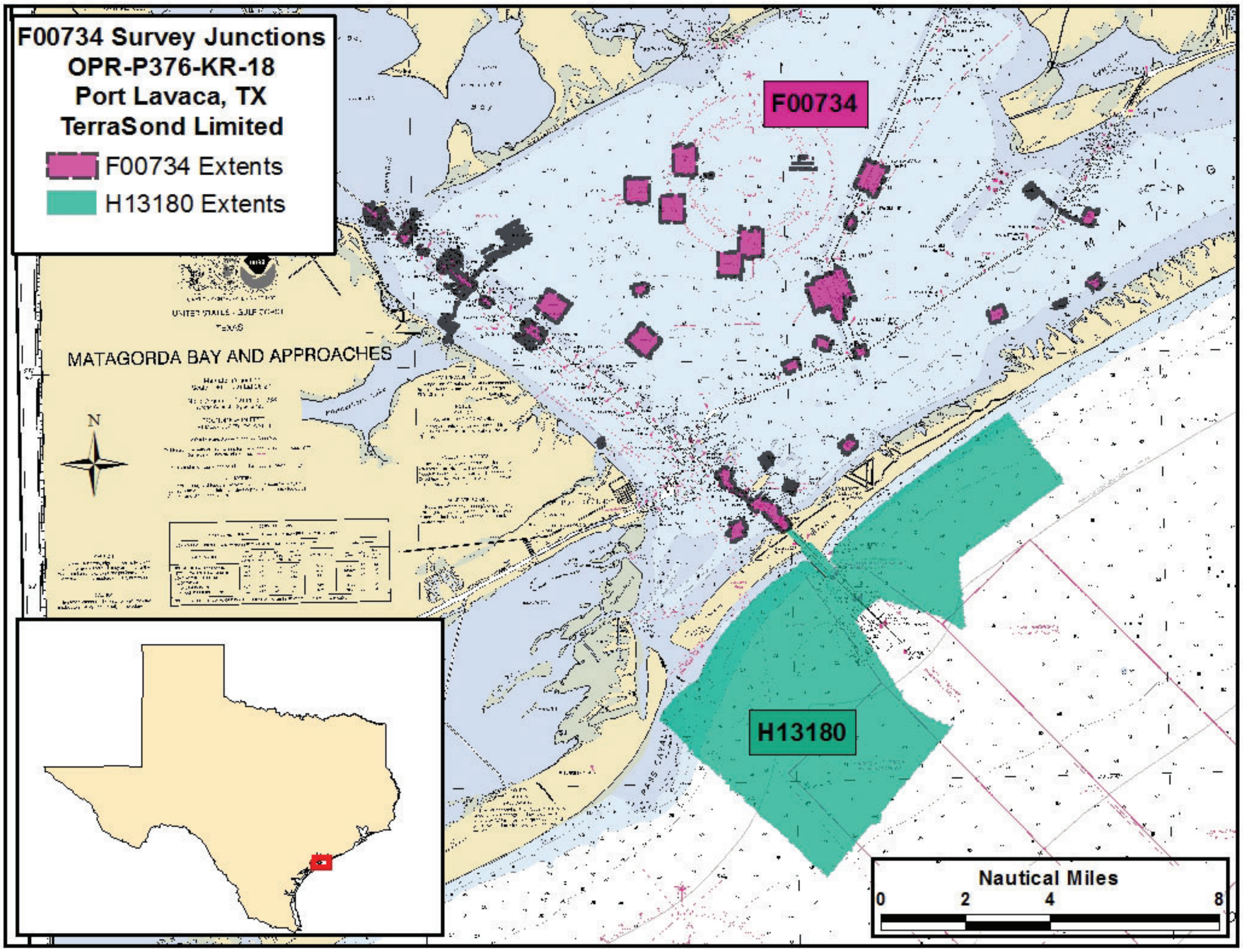


*Figure 7: Graphic showing survey Junctions.*

The following junctions were made with this survey:

| Registry Number | Scale | Year | Field Unit | Relative Location |
|---|---|---|---|---|
| H13180 | 1:40000 | 2019 | Terrasond, Ltd. | SE |

*Table 9: Junctioning Surveys*

H13180

Agreement is fair between the two Current surveys. The mean difference is 0.06 m. 94% of grid cells compare within the allowable TVU, which is slightly below the 95% threshold considered to be good agreement. However, differences are attributable primarily to bottom change: The junction area has a very dynamic bottom and was observed to experience regular change over the course of the survey from both sediment transport due to high currents as well as active dredging in the channel.

### B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

### B.2.5 Equipment Effectiveness

Bella Marie DH Beam Pattern / Noise

A Reson Seabat T50-IDH (integrated dual-head) MBES system was initially installed and operated on the Bella Marie. A near-nadir artifact and excessive noise was experienced with this installation that could not be tuned out. After consultation with the sonar manufacturer it was decided that the likely cause was insufficient sonar deployment depth between the catamaran-style hulls on this vessel causing acoustic reverberation off the twin hulls. Instead of modifying the mount to deploy the MBES deeper and run additional risk of damaging the system on the seafloor, the system was reconfigured to operate as a standard single-head system, which eliminated the issue.

The system was configured as a dual-head from JD2018-247 to JD2018-256 and all data collected during this period exhibits the issue. Noisy data as well as the nadir artifact was manually rejected in either CARIS Swath Editor or Subset mode. Due to the upward curvature at nadir, a nadir artifact of about 5-10 cm adversely affects the data. However, this is within specifications and final surfaces meet TVU requirements.

An example is shown below.

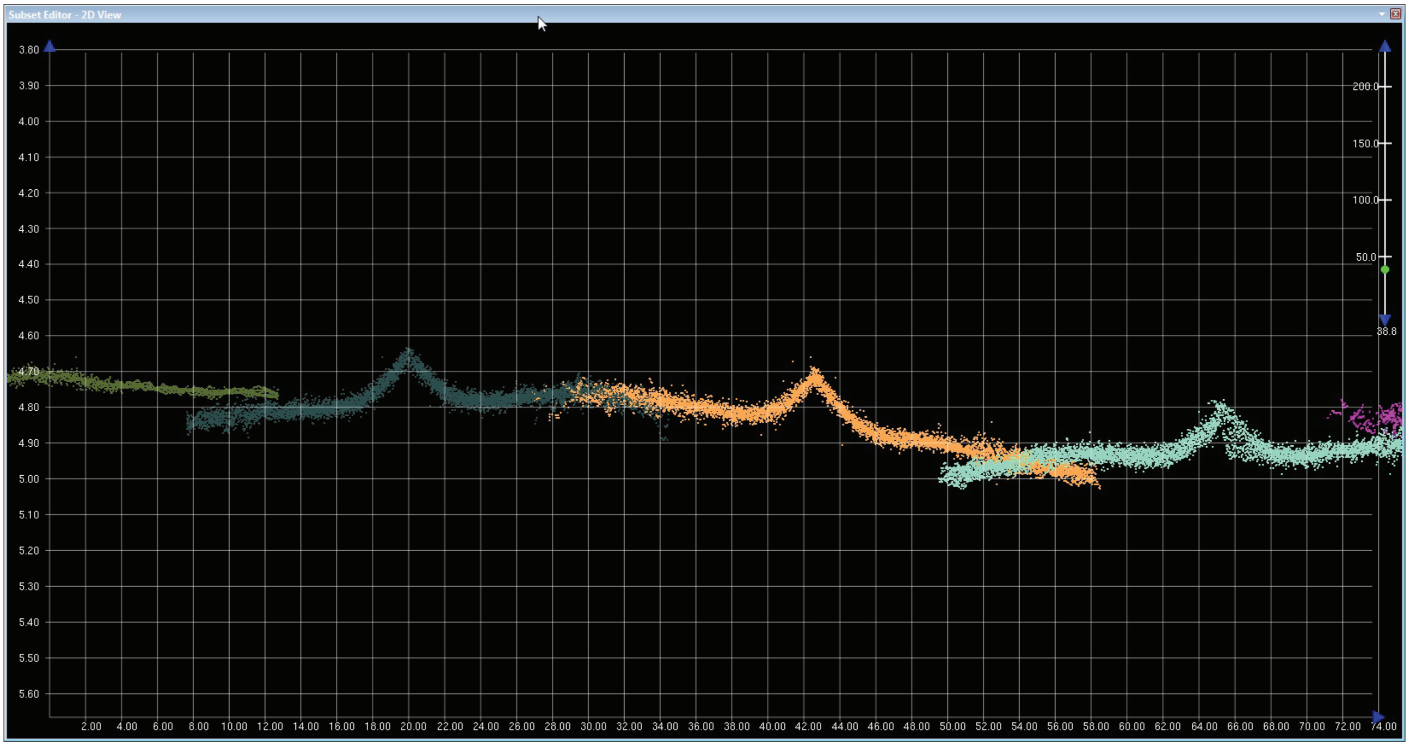


*Figure 8: Bella Marie T50-IDH artifact after manual editing of soundings. Near-nadir soundings are adversely impacted by 5-10 cm.*

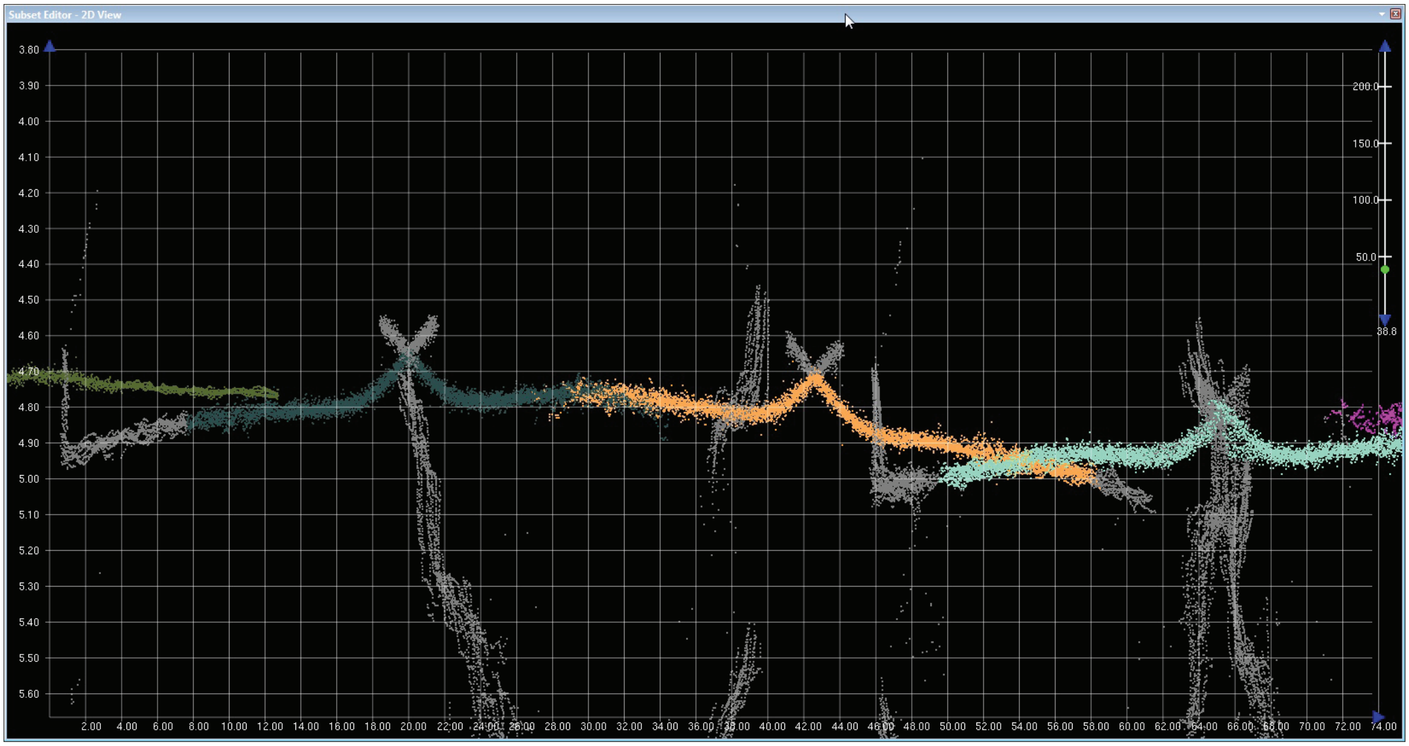


*Figure 9: Bella Marie T50-IDH artifact showing rejected soundings (gray).*

Bella Marie Remote Heave Busts

During the 2019 deployment of the Bella Marie to the survey site, the vessel utilized an alternate MBES and POSMV system compared to what was used in 2018. This included a POSMV IMU mounted well forward of the vessel CoG (and MBES). This resulted in remote heave, where vessel pitch was unintentionally measured by the system as additional heave. The majority of the effect was removed through a remote heave computation in the CARIS HVF as well as the POSMV system. However, some unresolved remote heave effects remains in the data, which appears as vertical busts both above and below previously run T50 data. The effect is usually less than 0.10 m but can approach 0.15m in places. Despite the residual remote heave artifact, final surfaces are within allowable TVU. This affects only data collected on with the Bella Marie in 2019, JD2019-015 to JD2019-038. Refer to the DAPR for more information and offsets. An example is shown below.

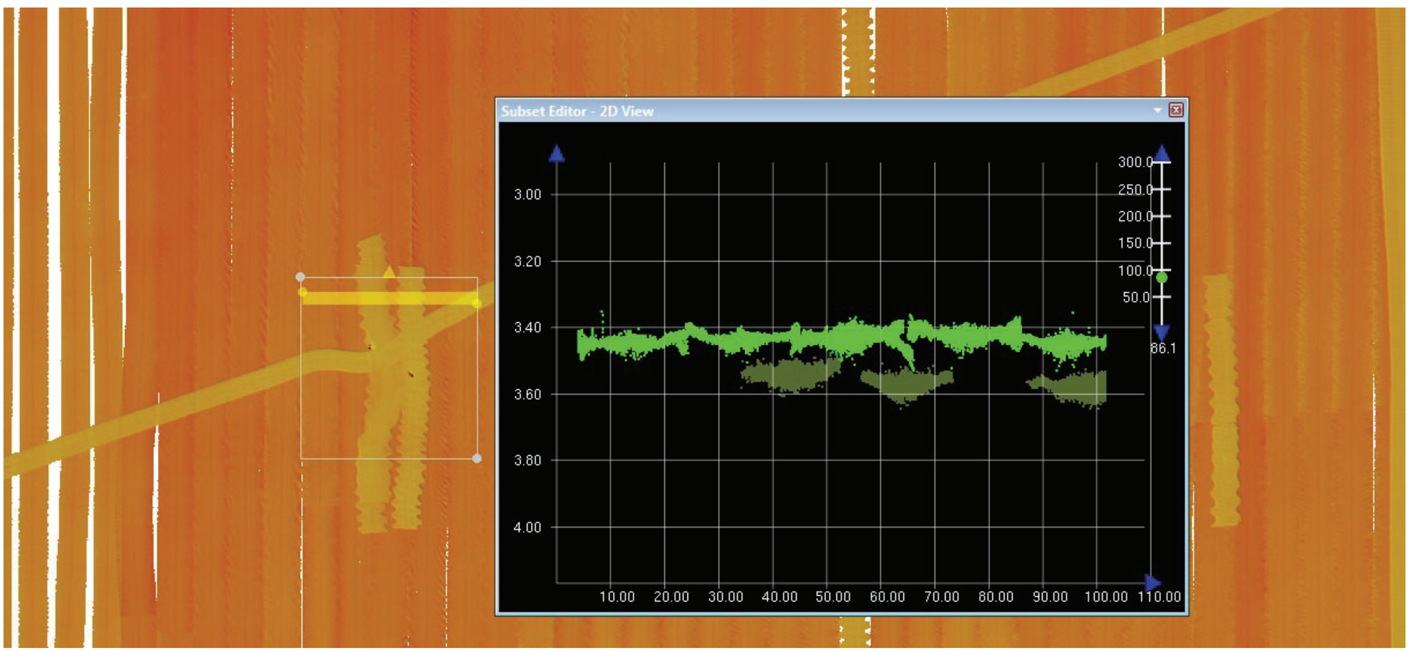


*Figure 10: Example remote heave busts in CARIS Subset and its effect on final surfaces: Dark green data is from 2019 and exhibits the issue. The vertical offset is about 0.12 m in this example. The relatively small bust is readily visible in the final surfaces since the seafloor of the area is generally flat and uniform.*

### B.2.6 Factors Affecting Soundings

Sound Speed Error

Sound speed error or refraction occurred periodically in this data set. This is observed as a general downward or upward cupping ("frowning" or "smiling") of the seafloor MBES profiles. These were addressed as necessary with swath filters as well as manual editing in CARIS subset mode to reject outer beam soundings that appeared to exceed allowable TVU (considered to be greater than 0.5 m from estimated true seafloor based on nadir depth). Manual editing often left isolated nodes or speckled edges in the final surfaces. Crossline analysis, which included crossings of good near-nadir crossline data over outerbeam mainscheme data exhibiting sound speed error, passes within IHO Order 1a indicating final surfaces are within specifications.

SSS Refraction and Surface Noise

The SSS image quality is intermittently affected by thermocline refraction as well as water column noise due to waves at the surface as well as vessel wake or prop noise, leading to variable artifacts in SSS data. SSS image quality was monitored continually during acquisition and SSS operations were stopped when it was determined that imagery quality had degraded to a point that significant objects were unlikely to be resolved. At this time either MBES-only operations were carried out with a tighter line spacing, or vessel downtime due to weather was commenced.

Bottom Change

This survey took place over a 6 month period from August 2018 through February 2019. Evidence of bottom change, characterized by significant horizontal and vertical busts in overlapping bathymetric data run at different times, is common in the dataset in and along the Matagorda Ship Channel.

Bottom change is caused by sediment transport from high currents funneling through the channel as evidenced by sand waves but also from active dredging operations that were observed in the channel at various times during the survey.

Change is most significant at the southern approach to the survey area where the bay funnels into the channel and dredging was also occurring. Note that areas outside the channel were not noticeably affected.

Areas exhibiting bottom change were normally not edited to select a bottom.

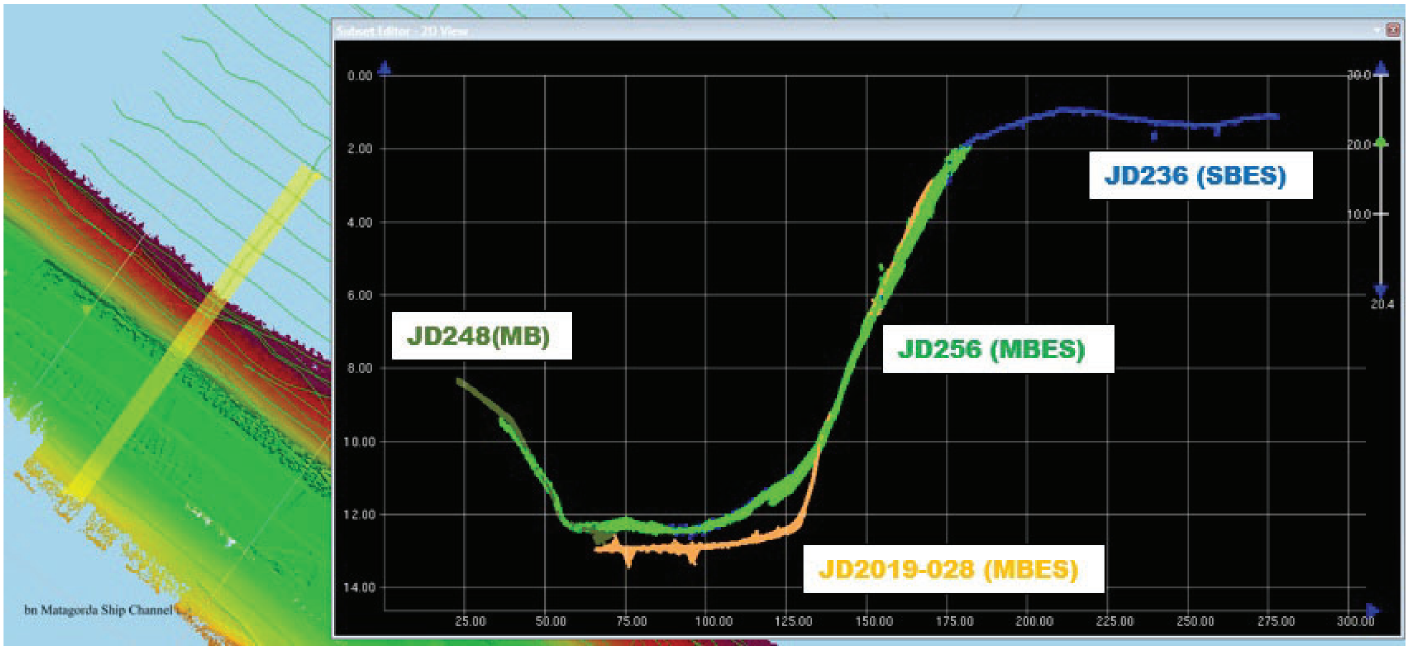


*Figure 11: Example of bottom change in channel: SBES and MBES lines run early in the project from JD236 through JD256 are in good agreement. However, new lines run in 2019 on JD28 agree with older data on the channel wall but not on the channel floor, where there is up to 1.4 m of difference from dredging.*

### B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: 2 hours

On the Bella Marie, sound speed profiles ("casts") were collected at either a slow speed or full stop. A combination of AML Minos-X, Valeport RapidSV, and Valeport SWIFT SVP profilers were used over the course of the project. Changes in sound speed at the MBES sonar head were monitored and a sound speed profile was acquired when the sound speed at the head differed from the sound speed at the depth of the sonar head in the previous profile by greater than 2 m/s. This resulted in an interval of approximately 2 hours between subsequent casts. Casts were taken as deep as possible, usually extending to the seafloor. These were normally applied nearest in distance in time within 4 hours in CARIS HIPS to exclude profiles too outdated or distant from the applicable sounding data.

The Sea Ark collected sound speed casts in a similar fashion. This vessel utilized only an AML Minos-X. Profiles were acquired every 6 to 12 hours for SBES operations, which were applied nearest in time within 12 hours in CARIS HIPS. This vessel was not outfit with a surface sound speed sensor.

Refer to the DAPR for more information on SVP profiling including specific instruments used, SVP confidence checks performed, and processing methodology.

### B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

## B.3 Echo Sounding Corrections

### B.3.1 Corrections to Echo Soundings

1. No SBET / Tides Exception

Lines collected at the start of survey operations on the Bella Marie did not have the correct POSMV records logged to enable POSPac PPK post-processing. In this sheet, only three lines (with prefix "0033" and "0034" ran on JD248, and "0042" on JD249) are affected. Post-processed SBET data is not available, so these lines use WAAS DGPS for horizontal positioning and do not have precise GPS heights. Since these lines only lack PPK positioning and were otherwise of good quality, verified tide data from the nearby NWLON station Port O'Conner (8773701) were applied for tidal corrections. These lines were compared to overlapping lines that did utilize standard SBET positioning and found to compare to 0.10 or better on average.

The Sea Ark also experienced a similar issue: In PPK processing, gaps or drifts in GPS positioning were apparent on some lines. Small gaps or drifts were repaired by interpolating in CARIS HIPS attitude editor. A handful of lines that did not add value to the dataset (for example lines that were entirely covered by the higher quality MBES data set) were rejected from the dataset due to this issue outright. However, 11 other SBES lines were salvaged by application of verified tide data from the nearby NWLON station Port O'Conner (8773701). These lines also used real-time WAAS positioning from the vessel Hemisphere GPS Gyrocompass instead of post-processed Trimble positions. These were compared to overlapping lines that did utilize standard PPK processing and found to compare to 0.10 m or better on average. Affected Sea Ark lines are:

SeaArk_233_A8M10
SeaArk_233_A8M11
SeaArk_236_A21_XL
SeaArk_236_A24MD-14
SeaArk_236_A41MD-10
SeaArk_236_A41MD-6
SeaArk_237_A10MD-14
SeaArk_237_A47MD-14
SeaArk_237_A47MD-7
SeaArk_237_A48MD-10
SeaArk_237_A48MD-2

### B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

## B.4 Backscatter

All equipment and survey methods were used as detailed in the DAPR.

## B.5 Data Processing

### B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile V_5_7.

NOAA Extended Attribute File V5.7 was used as the most current feature file version at the commencement of survey acquisition.

### B.5.2 Surfaces

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

| Surface Name | Surface Type | Resolution | Depth Range | Surface Parameter | Purpose |
|---|---|---|---|---|---|
| F00734_VB_4m_MLLW_Final | CARIS Raster Surface (CUBE) | 4 meters | 0 meters - 80 meters | NOAA_4m | SBES Set Line Spacing |
| F00734_MB_50cm_MLLW_Final | CARIS Raster Surface (CUBE) | 0.5 meters | 0 meters - 20 meters | NOAA_0.5m | Object Detection |
| F00734_MB_1m_MLLW_Final | CARIS Raster Surface (CUBE) | 1 meters | 18 meters - 40 meters | NOAA_1m | Object Detection |
| F00734_MB_4m_MLLW_Final | CARIS Raster Surface (CUBE) | 4 meters | 36 meters - 80 meters | NOAA_4m | Object Detection |
| F00734_SSSAB_1m_400kHz_1of2 | SSS Mosaic | 1 meters | 0 meters - 40 meters | N/A | 100% SSS (pass 1) |
| F00734_SSSAB_1m_400kHz_2of2 | SSS Mosaic | 1 meters | 0 meters - 40 meters | N/A | 100% SSS (pass 2) |

*Table 10: Submitted Surfaces*

The final depth information for this survey was submitted as CARIS BASE surfaces (CSAR format) which best represented the seafloor at the time of the survey. The surfaces were created from fully processed data with all final corrections applied. Surfaces were created using NOAA CUBE parameters and resolutions by depth range in conformance with the 2018 HSSD. Surfaces were finalized, and designated soundings were applied. Horizontal projection was selected as UTM Zone 14 North, NAD83. Non-finalized versions of the CSAR surfaces are also included which do not have a depth cutoff applied. These do not have the "_Final" designation in the filename.

The vast majority of the area is within the 0.5 m resolution surface. The 1 m and 4 m surfaces cover only a very small portion of this survey area in the channel.

Crossline QC surfaces are also included with the surface deliverables ("F00734_XLQC-MS-only_2m" and "F00734_XLQC-MS-only_4m_SeaArk"). These are the 2 m resolution CUBE surface in CSAR format (created from mainscheme MBES only) and 4 m resolution (created from mainscheme SBES only) surfaces discussed previously in the crossline section used to create the crossline QC reports. These exclude crosslines. They are for reference only and should not be used for charting.

SSS mosaics were exported from Chesapeake SonarWiz 7 software at 1 m resolution using a gray scale pallet per the 2018 HSSD. Two were generated to show 100% coverage of each SSS pass, for 200% total. Note that in some cases the near-nadir region of lines may not have 200% SSS coverage but received object-detection MBES coverage instead. These were also projected as UTM Zone 14 North, NAD83.

The SSS gray scale coverages are not the SonarWiz default color pallet, which is a bronze color -- as a result the gray scale images appear rougher and less visually appealing than the bronze images. Therefore, bronze color versions are also included for reference and are recommended for use over the gray scale versions.

An S-57 (.000) Final Feature File (FFF) was submitted with the survey deliverables as well. The FFF contains meta-data and other data not readily represented by the final surfaces, including feature investigation results. An S-57 SSS contact file is also included. Each object is encoded with mandatory S-57 attributes and NOAA Extended Attributes (V#5.7).

# C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

## C.1 Vertical Control

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

ERS Methods Used:

ERS via VDATUM

Ellipsoid to Chart Datum Separation File:

VDATUM_Outline_Shape_xyNAD83-MLLW_geoid12b.csar

Reduction to MLLW was accomplished using ERS methodology via VDATUM, except for any exceptions noted earlier in this report. The VDATUM model was provided by NOAA prior to operations and had an uncertainty specified as 10.4 cm. The VDATUM model was validated during this survey using comparisons with NWLON gauge data and found to be acceptable for tidal reduction. See the HVCR for validation reports.

### C.2 Horizontal Control

The horizontal datum for this project is North American Datum 1983.

The projection used for this project is Projected UTM 14.

The following PPK methods were used for horizontal control:

Smart Base

Applanix Smart Base (ASB) was used as a comparison against Trimble PP-RTX results, and generally compared to 0.10 m or better.

Positions were post-processed in Applanix POSPac MMS software using Trimble PP-RTX as the correction source. RMS errors were generally at 0.10 m or better, both horizontally and vertically.

Except for any exceptions noted earlier in this report, WAAS was used for real-time positioning only, and was replaced in post-processing with PP-RTX solutions for final MBES data. However SSS positions were not post-processed and are therefore based on WAAS positioning.

## D. Results and Recommendations

### D.1 Chart Comparison

The chart comparison was performed by examining the best-scale Electronic Navigational Charts (ENCs) that intersect the survey area. The latest edition(s) available at the time of the review were used. The chart comparison was accomplished by overlaying the finalized BASE surfaces with shoal-biased soundings, and final feature file on the charts in CARIS HIPS. The general agreement between charted soundings and survey soundings was then examined and a more detailed comparison was undertaken for any shoals or other dangerous features. Only the largest scale charts overlapping the area were examined.

USCG LNM and NMs applicable to the survey area issued subsequent to the start of operations and prior to completion of operations were also examined. This consisted of LNM/NMs 35/18 through 07/19. A number of LNMs had items affecting Matagorda Bay during this time but none were found that applied to the assigned survey areas.

Note that since this survey was primarily an item investigation survey, the area of the charts intersected by this survey is relatively small.

When comparing to survey data, chart scale was taken into account so that 1 mm at chart scale was considered to be the valid radius for charted soundings and features.

It is recommended that in all cases of disagreement this survey should supersede charted data. Results are shown in the following sections.

### D.1.1 Electronic Navigational Charts

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

| ENC | Scale | Edition | Update Application Date | Issue Date | Preliminary? |
|---|---|---|---|---|---|
| US4TX31M | 1:80000 | 26 | 03/11/2019 | 05/06/2019 | NO |
| US5TX32M | 1:50000 | 30 | 07/13/2018 | 05/06/2019 | NO |
| US5TX33M | 1:40000 | 41 | 04/17/2019 | 05/06/2019 | NO |

*Table 11: Largest Scale ENCs*

US4TX31M

This is a smaller scale chart (1:80000) covering the area. The two larger scale charts described below were examined instead. Items noted on the larger scale charts are assumed to apply to this chart.

US5TX32M

The northern part of this survey intersects chart US5TX32M. General sounding agreement is excellent, with all soundings comparing to 0.5 m or better, and most soundings agreeing to 0.2 m or better. There are no discernible trends in shoaling or deepening. The images below show soundings from this survey overlaid on this chart.

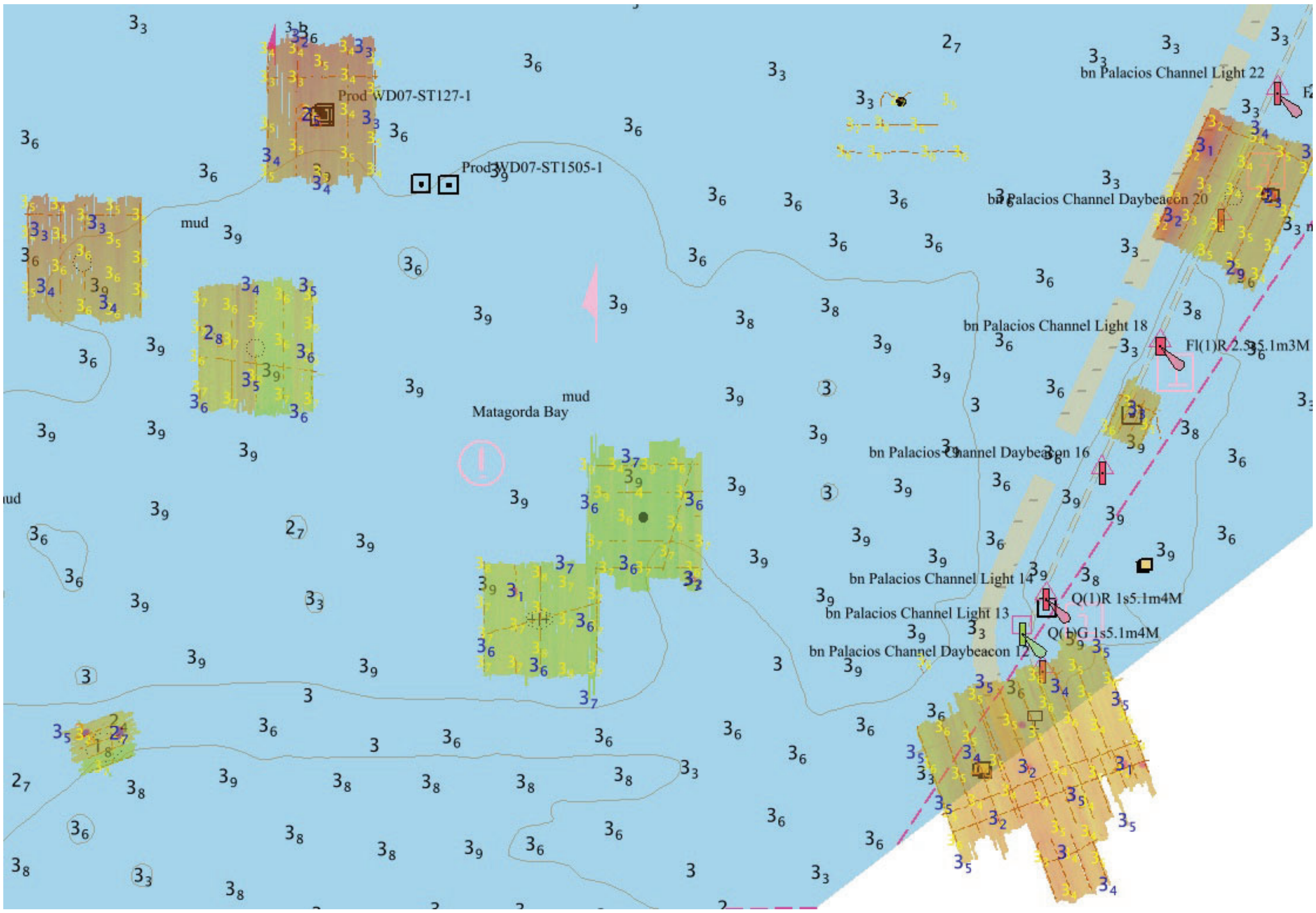


*Figure 12: Soundings from this survey (blue from MBES, yellow from SBES) overlaid on US5TX32M (black). Soundings in meters. NE part of survey area.*

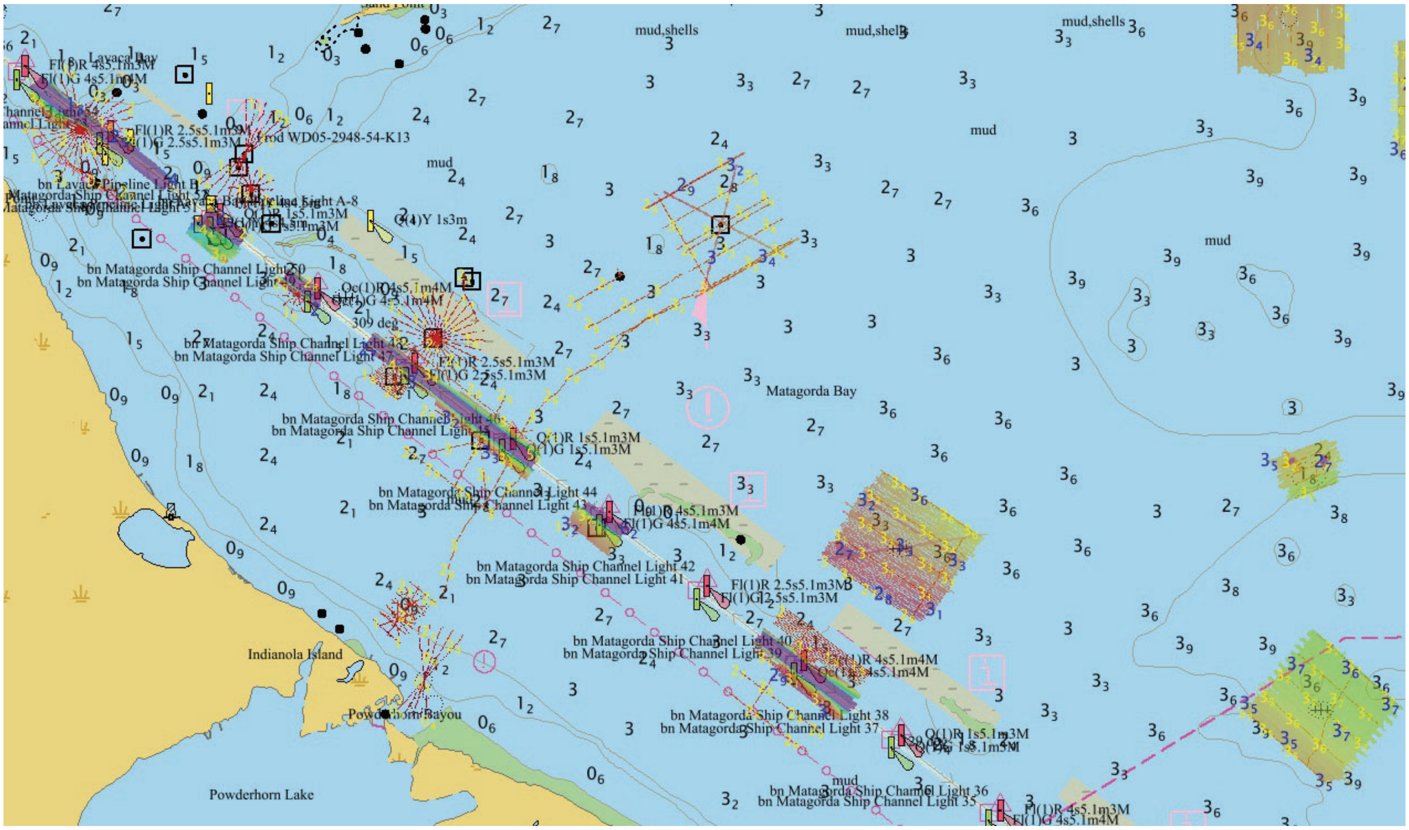


*Figure 13: Soundings from this survey (blue from MBES, yellow from SBES) overlaid on US5TX32M (black). Soundings in meters. NW part of survey area.*

US5TX33M

The southern part of this survey intersects chart US5TX33M. General sounding agreement is excellent, with most soundings comparing to 0.5 m or better, and many agreeing to 0.2 m or better. An exception is the area immediately inside the bay after approaching through the pass, which appears to have deepened by up to 2 meters outside of the channel.

The images below show soundings from this survey overlaid on this chart.

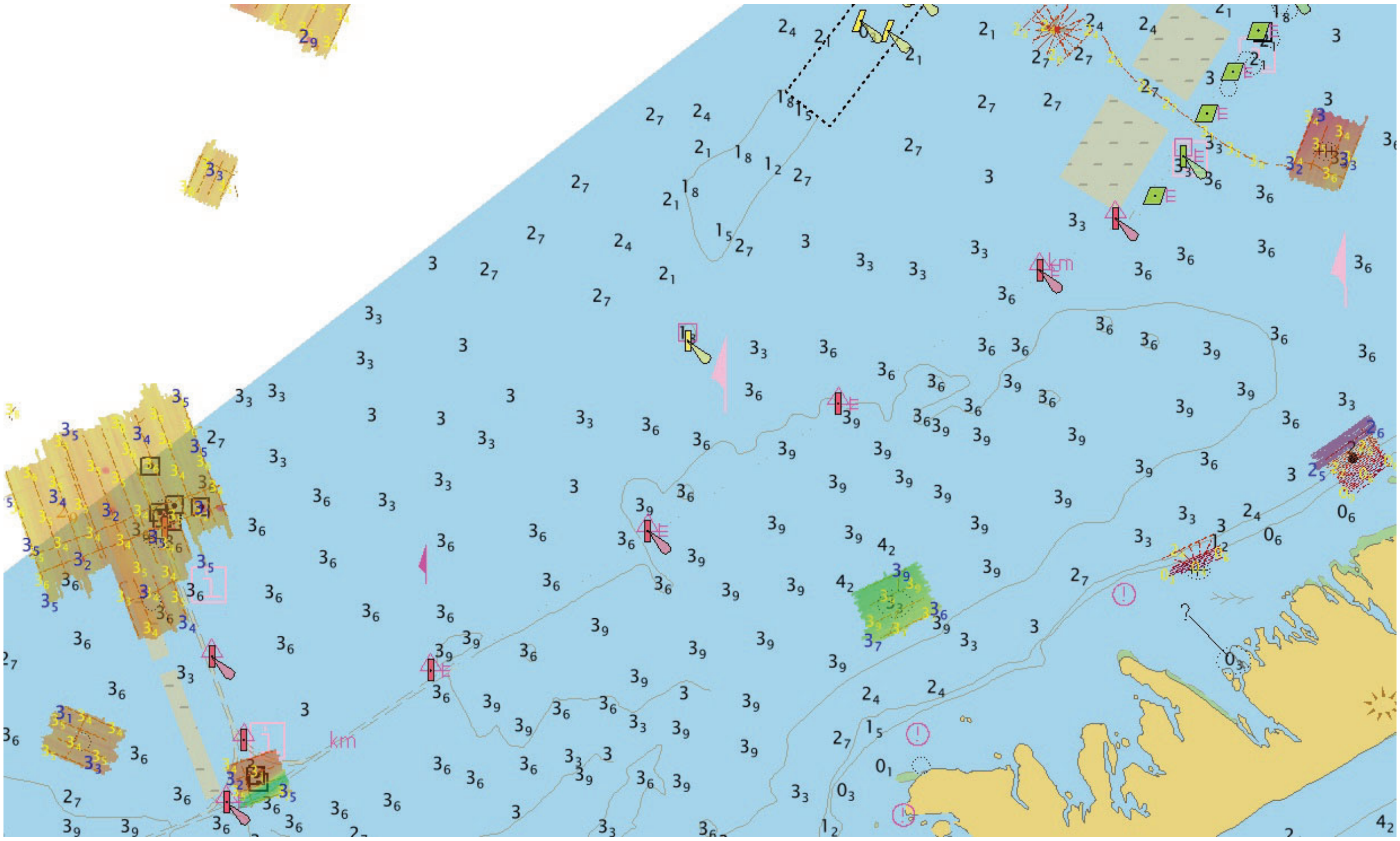

*Figure 14: Soundings from this survey (blue from MBES, yellow from SBES) overlaid on US5TX33M (black). Soundings in meters. SE part of survey area.*

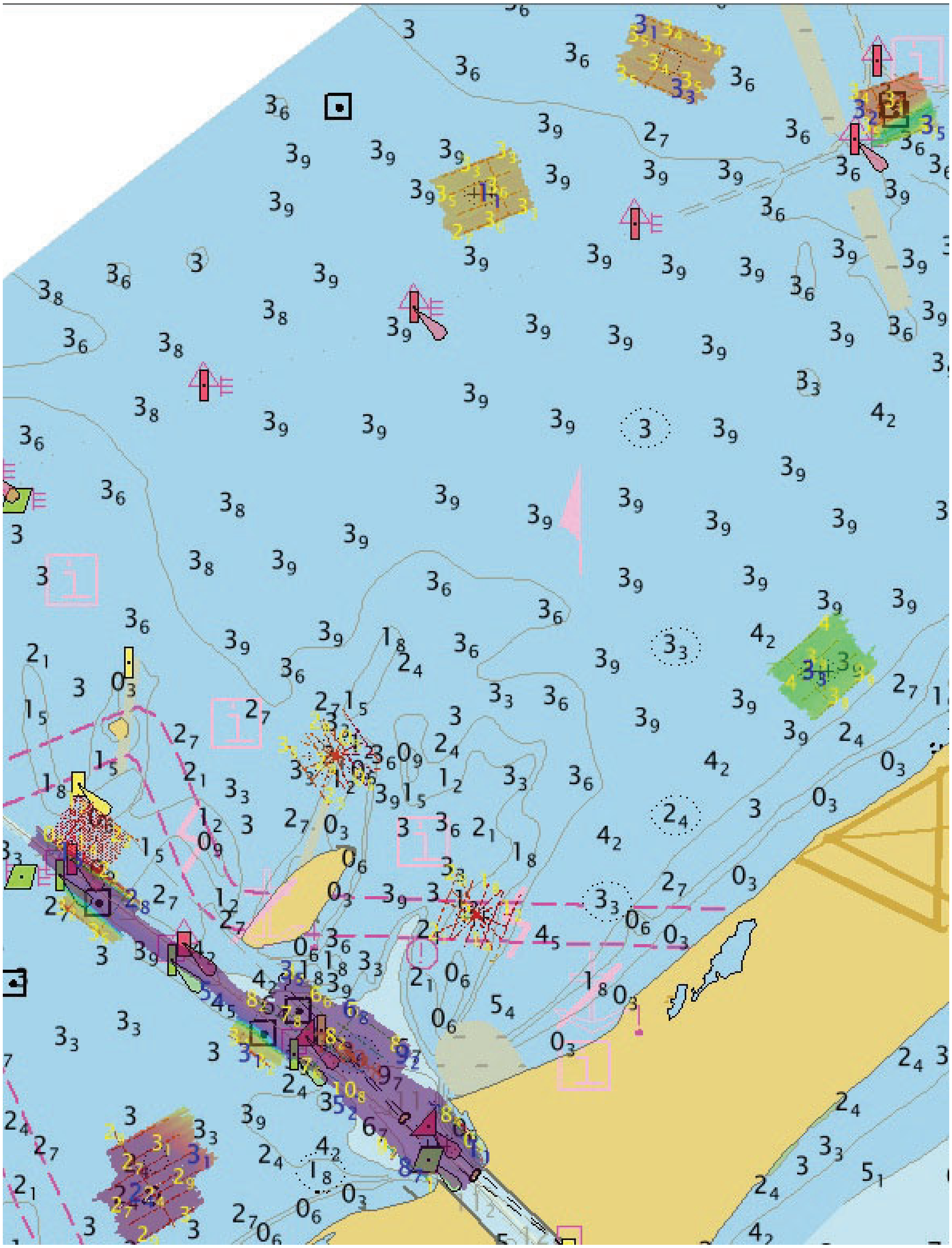

*Figure 15: Soundings from this survey (blue from MBES, yellow from SBES) overlaid on US5TX33M (black). Soundings in meters. SW part of survey area.*

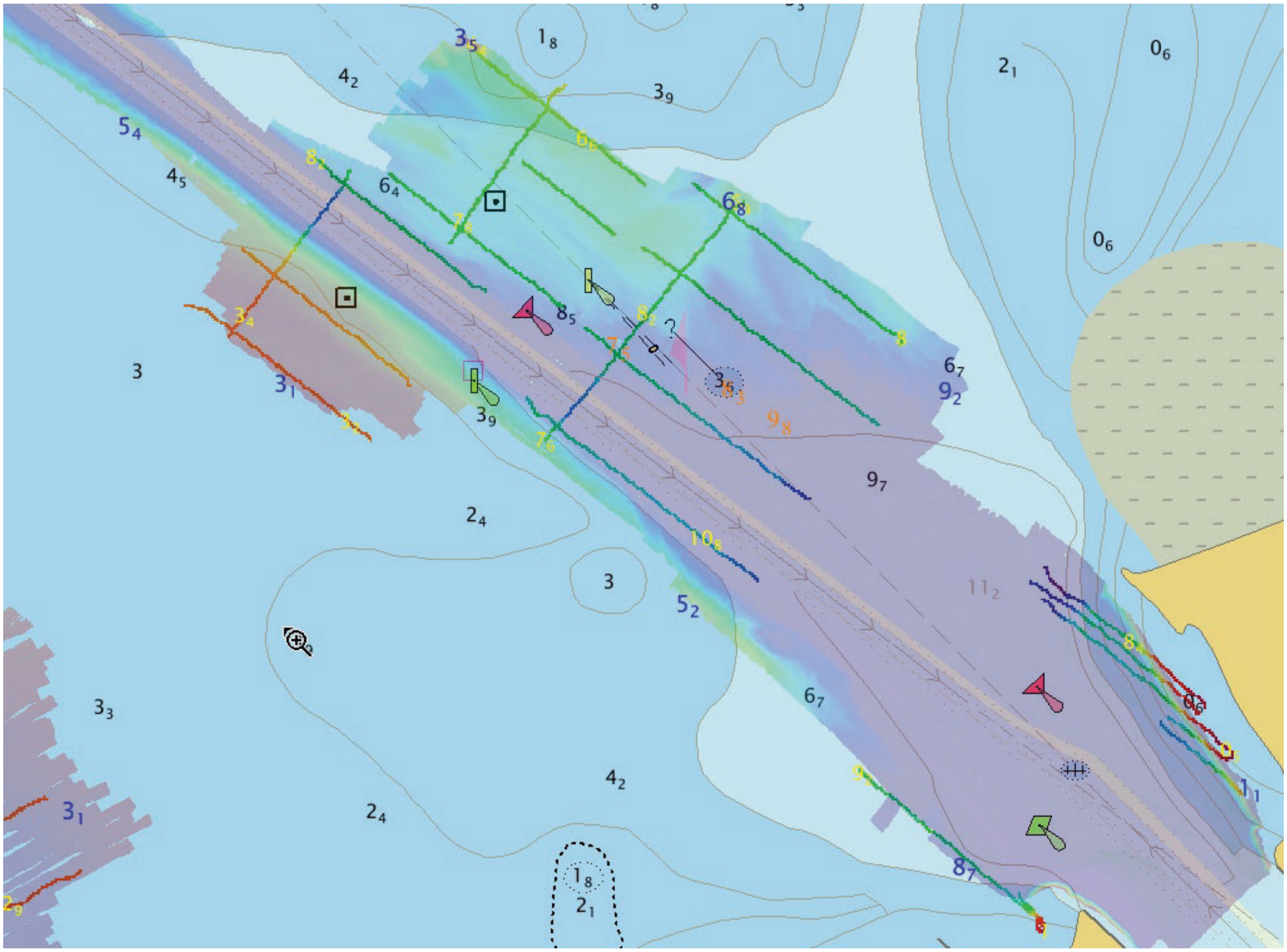

*Figure 16: Soundings from this survey (blue from MBES as well as orange critical soundings, yellow from SBES) overlaid on US5TX33M (black). Soundings in meters. Area immediately inside the bay from the pass, showing deepening by up to 2 m in places.*

### D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

### D.1.3 Charted Features

Features labeled PA, ED, PD, or Rep. were assigned for investigation. Investigation results for all assigned features are available in the accompanying FFF and are summarized in the "Shoal and Hazardous Features" section below.

### D.1.4 Uncharted Features

All new features are described elsewhere in this report. Refer to the FFF for results.

### D.1.5 Shoal and Hazardous Features

76 items were assigned for investigation in the CSF, each with a defined search area (from the PRF).

Prior to the commencement of operations, each area in the PRF was assigned a unique identifier. These were "A1" through "A56" (shown in the figure below). Most areas contained one assigned feature from the CSF, while some contained multiple features in close proximity.

As described earlier in this report, all areas were initially investigated with a skiff (the Sea Ark) outfit with a SBES. Features that were positively identified and whose attributes matched the assigned feature attributes were fixed, photographed, and assumed to be resolved. If a feature was not resolved and depth was sufficient, the Sea Ark collected SBES data to search for the feature as well as obtain recon soundings to determine the feasibility of later collection of MBES/SSS data.

Following completion of the initial skiff-based investigations, the Bella Marie was brought on site and equipped with a SSS and MBES system. In areas with unresolved features, the Bella Marie commenced with collection of Object Detection coverage in an attempt to find the assigned features. Bella Marie Object Detection operations were normally only undertaken in areas of at least 3.5 m water depth.

All features were addressed. Results fall into these categories:

1. Confirmed at assigned position. These are marked as "retain" in the FFF, or "update" if height and new information was obtained.
2. Confirmed but obtained better position. These are marked as "delete" in the FFF, with a "new" feature at the correct position. 5 m was used as the criteria to determine if the existing position was good.
3. Not found but not disproved. These are marked as "retain" in the FFF. These are usually features that were not observed during the Sea Ark investigation but the area was too shallow (in full or in part) for an Object Detection search with the Bella Marie.
4. New features. These features, marked as "new" in the FFF, are either better positions on existing features (category 2 above), or entirely new features found during operations.
5. Disproved. Feature was disproved within the search area with Object Detection coverage. These are marked as "delete" in the FFF.

Note that only Object Detection coverage was considered sufficient to consider a feature disproved. Since Object Detection was generally only undertaken in depths of 3.5 m or deeper, a number of assigned features were too shallow to positively disprove, even though they were not observed during the skiff investigation.

A few items that were too shallow and not readily apparent from the water were also investigated with UAS (unmanned aerial systems).

Most features were found but needed revised positions, with this survey finding them at least 5 m (or more) from their assigned location, with some up to 500 m away.

Full results are available in the FFF. Refer to the DAPR for additional information on equipment and methodology.

A summary of results for all assigned features are as follows:

Area Name Position S57 Feature Type(s) SSS/MBES Coverage Found Disproved Notes
A1 28 33 38.300N, 96 30 59.930W OBSTRN, PILPNT Partial No No 1 OBSTRN and 1 PILPNT not found but not disproved
A2 28 33 20.292N, 96 30 52.213W WRECKS, PILPNT None Yes No 1 wreck confirmed, 1 post confirmed but found better position
A3 28 33 29.811N, 96 30 03.076W OFSPLF None 1 platform confirmed but obtained better position, 1 platform not found but not disproved
A4 28 33 17.205N, 96 30 00.761W OFSPLF None No No Nothing found but not disproved
A5 28 33 05.114N, 96 30 12.595W OFSPLF Full No Yes 1 platform disproved, found 2 new obstructions, 1 new pile outside of search area
A6 28 32 45.305N, 96 29 45.582W OBSTRN Partial No No Nothing found but not disproved
A7 28 32 20.865N, 96 29 12.139W OFSPLF Partial No No Nothing found but not disproved
A8 28 32 31.927N, 96 28 58.247W OFSPLF Partial No No Nothing found but not disproved
A9 28 32 50.193N, 96 28 45.898W OFSPLF None Confirmed 1 platform but obtained better position, retain 1 platform, 1 new obstruction
A10 28 33 04.856N, 96 27 17.401W OFSPLF Partial No No Nothing found but not disproved
A11 28 32 50.450N, 96 27 52.646W PILPNT None Yes No Confirmed feature inside search area but obtained better position
A12 28 32 00.027N, 96 28 43.068W OFSPLF Partial No No Nothing found but not disproved
A13 28 31 09.862N, 96 29 08.537W OBSTRN None No No 1 OBSTRN not found but not disproved
A14 28 31 05.231N, 96 29 13.682W OBSTRN None No No 1 OBSTRN not found but not disproved
A15 28 30 46.451N, 96 29 04.421W OBSTRN None 2 obstructions not found but not disproved, 1 obstruction found but obtained better position
A16 28 31 31.986N, 96 28 03.965W OFSPLF Partial No No 1 platform not found. Not disproved but recommended for deletion.
A17 28 30 44.136N, 96 26 55.019W OBSTRN Partial No No 1 obstruction not found but not disproved
A18 28 31 24.011N, 96 26 17.717W WRECKS Full No Yes 1 wreck disproved, found 1 new obstruction just outside edge of search area
A19 28 34 04.707N, 96 23 57.928W OBSTRN Full No Disproved Disproved obstruction
A20 28 33 38.479N, 96 23 01.471W OBSTRN Full Yes No Confirmed feature inside search area but obtained better position
A21 28 34 46.050N, 96 22 38.355W OFSPLF, PILPNT Full No Yes 3 platforms disproved. 1 pile/pipe disproved but found 2 obstructions
A22 28 34 24.712N, 96 22 07.681W OFSPLF None Yes No Obtained better position on platform
A23 28 34 24.267N, 96 21 54.790W OFSPLF None Yes No Obtained better position on platform
A24 28 32 47.357N, 96 20 55.221W PILPNT Full No Yes Disproved pile/pipe
A25 28 32 18.461N, 96 21 30.784W WRECKS Full No Yes Disproved wreck

A26 28 31 43.787N, 96 23 54.817W OBSTRN Full No Yes Disproved 1 obstruction, found 1 new obstruction outside search area
A27 28 30 31.326N, 96 23 52.159W WRECKS Full No Yes Disproved 1 wreck
A28 28 28 08.166N, 96 25 03.872W OBSTRN None No No 1 obstruction not found but not disproved
A29 28 34 46.404N, 96 19 28.241W PILPNT None Yes No Confirmed feature at assigned location
A30 28 34 16.397N, 96 17 39.328W OBSTRN Full Yes No Confirmed feature inside search area but obtained better position
A31 28 33 13.790N, 96 18 14.150W OFSPLF Full No Yes Disproved platform
A32 28 31 31.718N, 96 19 05.432W OFSPLF, MORFAC Full No Yes Disproved 1 platform, disproved 3 dolphins, found 1 new obstruction
A33 28 31 42.438N, 96 18 49.890W BCNSPP, OFSPLF Full No Yes Disproved 1 platform, 1 notice mark/pole
A34 28 31 45.832N, 96 18 36.134W OFSPLF, OBSTRN Full No Yes Disproved 2 platforms, 1 obstruction
A35 28 31 24.394N, 96 18 35.776W WRECKS, OFSPLF Full Confirmed 1 wreck, disproved 2 platforms
A36 28 31 32.969N, 96 18 20.055W OFSPLF Full No Yes Disproved platform, found new obstruction.
A37 28 31 04.742N, 96 18 38.099W OBSTRN Full No Yes Disproved obstruction.
A38 28 30 09.963N, 96 18 02.645W OFSPLF Full No Yes Disproved 2 wrecks
A39 28 30 22.003N, 96 19 02.284W OBSTRN Full No Yes Disproved 1 obstruction
A40 28 29 52.058N, 96 19 53.473W WRECKS Full Yes No Confirmed feature inside search area but obtained better position
A41 28 27 20.399N, 96 21 45.304W OBSTRN Partial No No 1 obstruction not found but not disproved
A42 28 27 05.478N, 96 21 40.673W OFSPLF Full No Yes 1 platform disproved
A43 28 27 38.664N, 96 20 37.130W OBSTRN None No No Found new feature outside search area
A44 28 26 03.993N, 96 21 27.296W OBSTRN Full No Yes 1 obstruction disproved
A45 28 25 54.989N, 96 21 28.840W OBSTRN Full No Yes 1 obstruction disproved
A46 28 26 33.835N, 96 20 58.483W OFSPLF Full No Yes 1 platform disproved
A47 28 26 38.723N, 96 20 47.935W OFSPLF Full No Yes 1 platform disproved
A48 28 26 28.432N, 96 20 34.043W OBSTRN Full Yes No 1 obstruction found but new position and depth; 2 new obstructions found in search area
A49 28 27 00.847N, 96 20 02.657W WRECKS None No No Nothing found
A50 28 26 06.051N, 96 20 11.919W WRECKS Full No Yes 1 wreck disproved
A51 28 27 57.141N, 96 18 26.424W WRECKS Full Yes No Confirmed feature inside search area but obtained better position
A52 28 33 52.736N, 96 13 21.873W WRECKS None No No Nothing found
A53 28 33 13.933N, 96 11 49.259W WRECKS Full No Yes Disproved wreck
A54 28 30 55.829N, 96 14 22.117W OBSTRN Full No Yes Disproved obstruction
A55 28 31 06.891N, 96 12 36.641W WRECKS None No No Nothing found
A56 28 31 39.820N, 96 11 41.845W PILPNT Partial No No Found new feature outside search area

Two new features were found that were submitted as DTONs. These were:

1. Uncharted obstruction (wellhead) at surface at 28-32-02.68152 N, 96-19-25.81104 W, with a height of approximately 4 m above MHW
2. Uncharted obstruction (debris) at surface at 28-27-32.5224 N, 96-20-29.148 W, with a height of approximately 2 m above MHW

3. Uncharted obstruction (debris), submerged, at 28-33-55.36152 N, 96-17-39.41664 W, with a depth of 2.467 m.

Per recommendation from ops (see included correspondence in Appendix II), additional features were submitted as DTONs with associated anti-DTONs:

1. Obstruction at 28-31-24.02796 N, 96-26-36.83688 W with depth of 2.654 m. This obstruction was over 500 m from a charted feature (a wreck at 28-31-24.24936 N, 96-26-17.54592 W) which was disproved within the search area with object detection coverage and submitted as an anti-DTON.

2. Obstruction at 28-33-43.1712 N, 96-23-15.5148 W with depth of 2.350 m. This obstruction was about 400 m from a charted feature (an obstruction at 28-33-38.92608 N, 96-23-01.81284 W) which was submitted as an anti-DTON.

Finally, an anti-DTON (without associated DTON) was submitted for a charted wreck which was disproved in the assigned search area with object detection coverage. The maintained channel appears to divert around the non-existent wreck at 28-26-06.00792 N, 96-20-12.00012 W.

Images of the two DTON features found at the surface are shown below. Correspondence is included in Appendix II -- note that DTONs were submitted during deliverables compilation and at the time of report submittal DTON (and anti-DTON) acknowledgments had not yet been received.

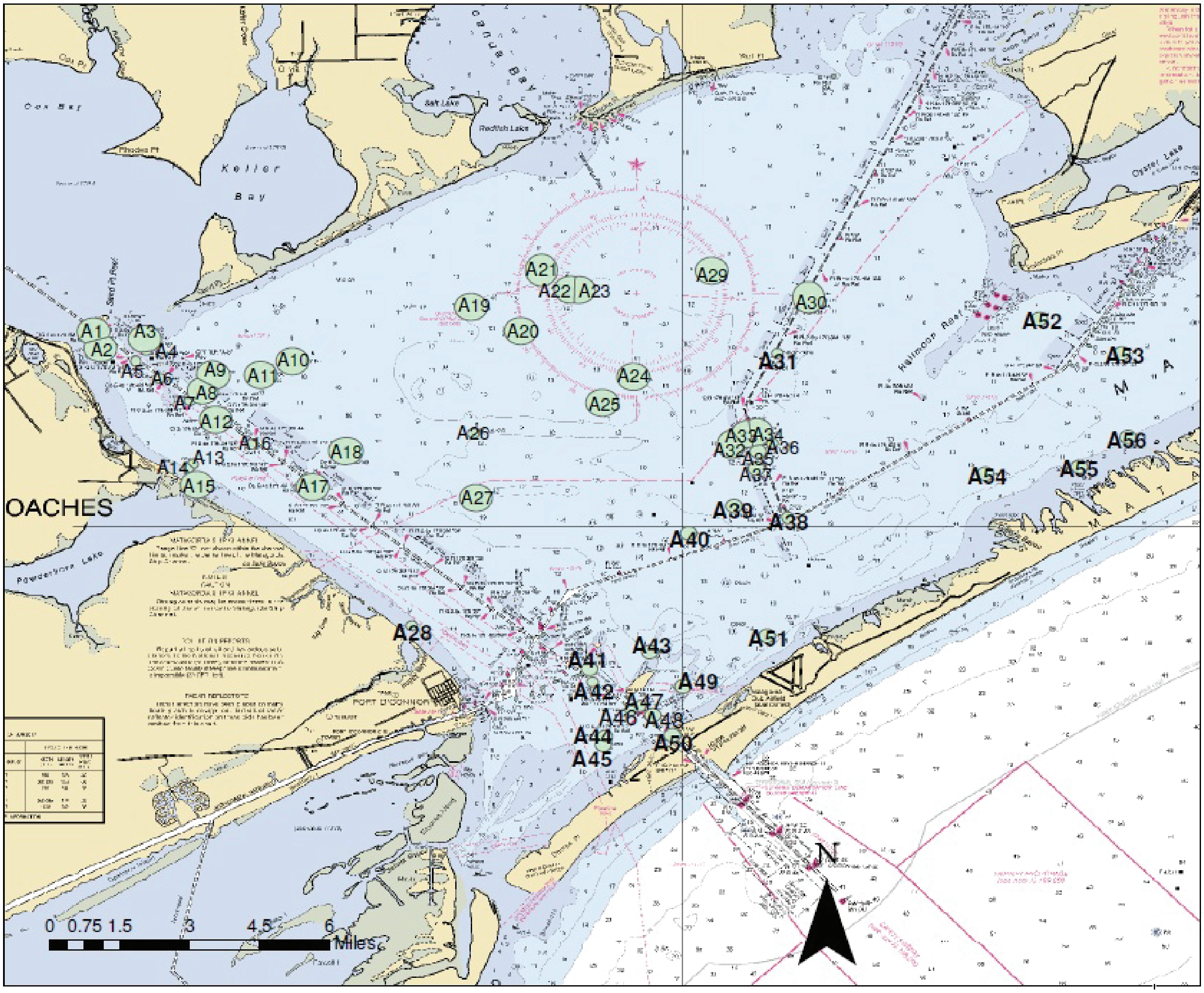


*Figure 17: Chartlet showing the search areas, marked "A1" through "A56" (based on the PRF), which contain all features that were assigned for investigation in the CSF.*

*Figure 18: Uncharted obstruction (wellhead) submitted as a DTON*

*Figure 19: Uncharted obstruction (debris) submitted as a DTON*

**D.1.6 Channels**

This survey covers portions of the the Matagorda Ship Channel. Chart 11317 lists controlling depths (dated September, 2017) for the "Sea Bar and Jetty Channel" as 37 to 39 feet (11.27 to 11.89 m), and "Matagorda Peninsula to Lt 48" as 35 to 36 feet (10.67 to 10.97 m) . This survey found least depths of about 11 m through the channel in common areas.

A Caution Area warning about uncharted Gas and Oil Well Structures is accurate and should be retained.

Charted Fairways, Dredged Areas, Navigation and Recommended Track lines appear accurate in areas overlapping this survey and should be retained.

#### D.1.7 Bottom Samples

No bottom samples were required for this survey.

## D.2 Additional Results

#### D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

#### D.2.2 Prior Surveys

No prior survey comparisons were required for this survey.

#### D.2.3 Aids to Navigation

All ATONs within the assigned survey areas appeared to be on station and serving their intended purpose.

#### D.2.4 Overhead Features

No overhead features exist for this survey.

#### D.2.5 Submarine Features

No submarine features exist for this survey.

#### D.2.6 Platforms

Oil and gas platforms exist within the survey area and were investigated. Most were confirmed but this survey obtained better positions.

Refer to to the FFF for results.

#### D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

### D.2.8 Abnormal Seafloor and/or Environmental Conditions

No abnormal seafloor and/or environmental conditions exist for this survey.

### D.2.9 Construction and Dredging

Present and/or planned construction or dredging exists within the survey limits, but was not investigated.

Active dredging was observed by the field crew inside the Matagorda Ship Channel at various times during operations.

### D.2.10 New Survey Recommendation

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

### D.2.11 Inset Recommendation

No new insets are recommended for this area.

# E. Approval Sheet

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

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

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

| Report Name | Report Date Sent |
|---|---|
| Coast Pilot Report | 2019-04-25 |
| VDatum Validation Report for Port Lavaca | 2019-04-24 |
| NCEI Sound Speed Data Submission | 2019-04-09 |
| Marine Mammal Observers Training Logsheet and Observation Logs | 2019-03-22 |
| Port Lavaca Boat Float Tide Analysis | 2018-09-18 |

| Approver Name | Approver Title | Approval Date | Signature |
|---|---|---|---|
| Andrew Orthmann, C.H. | TerraSond Charting Program Manager | 05/16/2019 | Andrew Orthmann Digitally signed by Andrew Orthmann Date: 2019.05.16 12:11:27 -08'00' |

# F. Table of Acronyms

| Acronym | Definition |
|---|---|
| **AHB** | Atlantic Hydrographic Branch |
| **AST** | Assistant Survey Technician |
| **ATON** | Aid to Navigation |
| **AWOIS** | Automated Wreck and Obstruction Information System |
| **BAG** | Bathymetric Attributed Grid |
| **BASE** | Bathymetry Associated with Statistical Error |
| **CO** | Commanding Officer |
| **CO-OPS** | Center for Operational Products and Services |
| **CORS** | Continually Operating Reference Staiton |
| **CTD** | Conductivity Temperature Depth |
| **CEF** | Chart Evaluation File |
| **CSF** | Composite Source File |
| **CST** | Chief Survey Technician |
| **CUBE** | Combined Uncertainty and Bathymetry Estimator |
| **DAPR** | Data Acquisition and Processing Report |
| **DGPS** | Differential Global Positioning System |
| **DP** | Detached Position |
| **DR** | Descriptive Report |
| **DTON** | Danger to Navigation |
| **ENC** | Electronic Navigational Chart |
| **ERS** | Ellipsoidal Referenced Survey |
| **ERZT** | Ellipsoidally Referenced Zoned Tides |
| **FFF** | Final Feature File |
| **FOO** | Field Operations Officer |
| **FPM** | Field Procedures Manual |
| **GAMS** | GPS Azimuth Measurement Subsystem |
| **GC** | Geographic Cell |
| **GPS** | Global Positioning System |
| **HIPS** | Hydrographic Information Processing System |
| **HSD** | Hydrographic Surveys Division |
| **HSSD** | Hydrographic Survey Specifications and Deliverables |

| Acronym | Definition |
|---|---|
| **HSTP** | Hydrographic Systems Technology Programs |
| **HSX** | Hypack Hysweep File Format |
| **HTD** | Hydrographic Surveys Technical Directive |
| **HVCR** | Horizontal and Vertical Control Report |
| **HVF** | HIPS Vessel File |
| **IHO** | International Hydrographic Organization |
| **IMU** | Inertial Motion Unit |
| **ITRF** | International Terrestrial Reference Frame |
| **LNM** | Linear Nautical Miles |
| **MBAB** | Multibeam Echosounder Acoustic Backscatter |
| **MCD** | Marine Chart Division |
| **MHW** | Mean High Water |
| **MLLW** | Mean Lower Low Water |
| **NAD 83** | North American Datum of 1983 |
| **NAIP** | National Agriculture and Imagery Program |
| **NALL** | Navigable Area Limit Line |
| **NM** | Notice to Mariners |
| **NMEA** | National Marine Electronics Association |
| **NOAA** | National Oceanic and Atmospheric Administration |
| **NOS** | National Ocean Service |
| **NRT** | Navigation Response Team |
| **NSD** | Navigation Services Division |
| **OCS** | Office of Coast Survey |
| **OMAO** | Office of Marine and Aviation Operations (NOAA) |
| **OPS** | Operations Branch |
| **MBES** | Multibeam Echosounder |
| **NWLON** | National Water Level Observation Network |
| **PDBS** | Phase Differencing Bathymetric Sonar |
| **PHB** | Pacific Hydrographic Branch |
| **POS/MV** | Position and Orientation System for Marine Vessels |
| **PPK** | Post Processed Kinematic |
| **PPP** | Precise Point Positioning |
| **PPS** | Pulse per second |

| Acronym | Definition |
|---|---|
| **PRF** | Project Reference File |
| **PS** | Physical Scientist |
| **PST** | Physical Science Technician |
| **RNC** | Raster Navigational Chart |
| **RTK** | Real Time Kinematic |
| **SBES** | Singlebeam Echosounder |
| **SBET** | Smooth Best Estimate and Trajectory |
| **SNM** | Square Nautical Miles |
| **SSS** | Side Scan Sonar |
| **SSSAB** | Side Scan Sonar Acoustic Backscatter |
| **ST** | Survey Technician |
| **SVP** | Sound Velocity Profiler |
| **TCARI** | Tidal Constituent And Residual Interpolation |
| **TPE** | Total Propagated Error |
| **TPU** | Topside Processing Unit |
| **USACE** | United States Army Corps of Engineers |
| **USCG** | United Stated Coast Guard |
| **UTM** | Universal Transverse Mercator |
| **XO** | Executive Officer |
| **ZDA** | Global Positiong System timing message |
| **ZDF** | Zone Definition File |

# APPENDIX I

Tides and Water Levels

Appendix I contains the following documentation.

1. Abstract of Times of Hydrography
2. Correspondence directly relating to tides and/or water levels

Data was reduced to MLLW using a VDATUM grid provided by NOAA. Therefore no Tide Notes, Transmittal Letters, or Request for Approved Tides letters exist.

The VDATUM model received a validation analysis; results are available with the project HVCR.

## Abstract of Times of Hydrography

| | |
|---|---|
| Project: | OPR-K376-KR-18 |
| Registry No.: | F00734 |
| Contractor: | TerraSond Limited |
| Inclusive Dates: | August 20, 2018 – February 7, 2019 |

Field work is complete.

All times UTC.

| Year_DOY | Min Time | Max Time |
|---|---|---|
| 2018_232 | 14:18:42 | 21:57:52 |
| 2018_233 | 13:32:28 | 22:44:56 |
| 2018_234 | 13:33:18 | 22:19:39 |
| 2018_235 | 13:33:00 | 22:26:11 |
| 2018_236 | 14:31:53 | 23:28:43 |
| 2018_237 | 12:41:54 | 22:42:19 |
| 2018_238 | 12:54:19 | 16:34:45 |

| Year_DOY | Min Time | Max Time |
|---|---|---|
| 2018_248 | 01:44:32 | 21:46:09 |
| 2018_249 | 13:24:08 | 21:18:36 |
| 2018_250 | 12:45:01 | 23:20:06 |
| 2018_251 | 12:20:15 | 12:31:15 |
| 2018_253 | 12:42:35 | 12:54:35 |
| 2018_254 | 12:24:09 | 22:42:29 |
| 2018_255 | 12:33:55 | 12:41:55 |
| 2018_256 | 12:57:48 | 21:34:18 |
| 2018_268 | 13:14:45 | 13:39:54 |
| 2018_269 | 15:11:17 | 20:47:43 |
| 2018_271 | 13:13:12 | 17:25:41 |
| 2018_278 | 20:47:18 | 22:02:08 |
| 2018_279 | 13:21:38 | 21:47:58 |
| 2018_283 | 12:56:41 | 22:08:12 |
| 2018_284 | 14:57:37 | 21:11:47 |
| 2018_286 | 12:57:58 | 19:29:04 |
| 2018_287 | 16:43:11 | 21:38:57 |
| 2018_292 | 13:30:57 | 21:20:18 |
| 2018_303 | 14:07:04 | 20:53:25 |
| 2018_304 | 13:54:47 | 21:45:11 |
| 2018_318 | 18:34:37 | 22:23:08 |
| 2018_322 | 13:39:25 | 19:35:08 |
| 2018_349 | 14:39:34 | 22:11:22 |
| 2018_353 | 14:19:59 | 22:16:19 |
| 2018_355 | 14:22:13 | 20:54:24 |
| 2019_020 | 14:00:49 | 23:43:06 |
| 2019_026 | 13:59:22 | 22:04:51 |
| 2019_028 | 18:39:28 | 21:57:44 |
| 2019_031 | 13:45:26 | 18:58:35 |
| 2019_032 | 13:44:45 | 22:17:59 |
| 2019_033 | 14:30:00 | 23:17:09 |
| 2019_037 | 19:10:31 | 21:37:16 |
| 2019_038 | 13:38:07 | 15:48:37 |

## Andrew Orthmann, CH

**From:** Blair Delean - NOAA Federal <blair.j.delean@noaa.gov>
**Sent:** Friday, March 22, 2019 14:53
**To:** Andrew Orthmann, CH
**Cc:** pop.information@noaa.gov; ocs.ecc@noaa.gov; Kathryn Pridgen - NOAA Federal
**Subject:** Re: OPR-K376-KR-18 marine mammal observation logs

Excellent, thank you Andrew for your submission to the marine mammal POP.

Very Respectfully,


LTJG Blair Delean, NOAA
Marine Mammal Laboratory
206.526.4048


On Fri, Mar 22, 2019 at 1:32 PM Andrew Orthmann, CH <aorthmann@terrasond.com> wrote:

Hello,

Attached are the Marine Mammal Observation logs from OPR-K376-KR-18, Port Lavaca, TX.

Andy


Andrew Orthmann, C.H.
Charting Program Manager

**TerraSond**
**Precision Geospatial Solutions ®**
1617 South Industrial Way Suite 3, Palmer, Alaska 99645
(907) 745-7215 Office (907) 745-7273 FAX (907) 982-5231 Cell
aorthmann@terrasond.com www.terrasond.com

List of those who have watched the Marine Species Awareness Training video:

| Printed Name | Signature | Date |
|---|---|---|
| T. Marino | [signature] | 8/22/18 |
| D. Maggio | David Maggio | 9/21/18 |
| P. Kelly | [signature] | 9/21/18 |
| B. Human | [signature] | 9/26/18 |
| S. Udy | [signature] | 10/1/18 |
| H. Mikols | [signature] | 10/1/18 |
| LUCAS BLASS | [signature] | 11/15/2018 |
| Whitney Martin | Whitney Martin | 11/15/18 |
| L. HOLLAHAN | [signature] | ~~1/17/19~~ LH 10/28/18 |
| | | |
| | | |
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| | | |
| | | |
| | | |

## Andrew Orthmann, CH

**From:** Andrew Orthmann, CH
**Sent:** Tuesday, April 09, 2019 13:36
**To:** 'NODC.submissions@noaa.gov'
**Cc:** 'kathryn.pridgen@noaa.gov'
**Subject:** sound speed profile data submission for OPR-K376-KR-18
**Attachments:** OPR-K376-KR-18_20190409.zip

Hello,

Please find attached the sound speed profile data for nautical charting project OPR-K376-KR-18. These were taken by TerraSond near Port Lavaca, TX, during the period August 2018 to February, 2019.

Please note the .nc files are organized in the zip file by the three vessels used on the project. These were the MV Sea Ark (hull id # SOM28799I506), RV Bella Marie (hull # IAR36CATK405), and RV Bunny Bordelon (USCG official number 1113614).

Please feel free to contact me with any questions.

Thank you,

Andy

Andrew Orthmann, C.H.
Charting Program Manager

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aorthmann@terrasond.com www.terrasond.com

## Andrew Orthmann, CH

| | |
|---|---|
| **From:** | Andrew Orthmann, CH |
| **Sent:** | Thursday, April 25, 2019 09:50 |
| **To:** | 'ocs.ndb@noaa.gov'; 'Coast.Pilot@noaa.gov' |
| **Cc:** | 'Kathryn Pridgen - NOAA Federal' |
| **Subject:** | Coast Pilot Review for OPR-K376-KR-18 |
| **Attachments:** | OPR-K376-KR-18_Coast Pilot Review Report.pdf |

Hello,

Please find attached the Coast Pilot Review for the hydrographic survey OPR-K376-KR-18, Port Lavaca, TX. This pertains to Coast Pilot 5, 46th edition.

Feel free to contact me with any questions.

Thank you,

Andy

Andrew Orthmann, C.H.
Charting Program Manager

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(907) 745-7215 Office (907) 745-7273 FAX (907) 982-5231 Cell
aorthmann@terrasond.com www.terrasond.com

## Andrew Orthmann, CH

**From:** Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
**Sent:** Thursday, May 16, 2019 08:08
**To:** Andrew Orthmann, CH
**Subject:** Re: f00734 features / dton question

Andy
I recommend doing a delete and add a new feature on the more accurate position for the features that are off of the charted position.   A new surveyed DtoN feature is considered the DtoN, while the CSF or charted feature will be an Anti-DtoN (if the surveyed features is within a reasonable range of the charted feature, most of your examples were not). I would include an image with the coverage extents such that it would show MCD the actual coverage for disproval.   This would be related to the surveyed new feature that is a larger distance away from the charted feature.

I think it's better to do the Anti-DtoN during the submission as the new surveyed feature may not appear to be an actual DtoN based upon the charted feature and especially if they are in close proximity.

Also, I would submit the Anti-DTON or DTON as an obstruction instead of a wreck (especially for newly surveyed features). The processing branch will determine if it is actually a wreck and reach out to the State Historical Preservation Officer to find out the sensitivity of the wreck and that will determine how it is charted.

I hope this answers some of your questions. Please feel free to reach out the processing branches for help (Gene) just be sure to send me a summary of the discussion afterwards.

Katy

---------------------------------------------------
Kathryn "Katy" Pridgen
Physical Scientist
NOAA-HSD OPS
240-533-0033
kathryn.pridgen@noaa.gov

On Mon, May 13, 2019 at 11:01 PM Andrew Orthmann, CH <aorthmann@terrasond.com> wrote:

> Hi Katy,
>
> A few common examples are attached.
>
> Basically, when we found objects they were almost never exactly at the assigned/charted location, but are usually within the search radius or very close to being inside the search radius. Would you consider any of these to be worthy DTON submissions?
>
> Andy

**From:** Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>
**Sent:** Monday, May 13, 2019 07:28
**To:** Andrew Orthmann, CH <aorthmann@terrasond.com>
**Subject:** Re: f00734 features / dton question

Andy

Can you send me some examples of what your are seeing in the data? Once we look at those we can set up a call to discuss a solution further.

Katy

---------------------------------------------------

Kathryn "Katy" Pridgen

Physical Scientist

NOAA-HSD OPS

240-533-0033

kathryn.pridgen@noaa.gov

On Thu, May 9, 2019 at 1:39 AM Andrew Orthmann, CH <aorthmann@terrasond.com> wrote:

> Hi Katy,
>
> Looking at some of these features in F00734 (Matagorda Bay) as we do the chart comparison: What is the criteria for DTONs on these? For a given feature, how far away from the assigned position do we need to find it before it is considered a DTON? If a feature is found within the assigned search radius, though not at the charted position (almost none are exactly at the charted position) would it be considered a DTON?
>
> Thank you,

## Andrew Orthmann, CH

**From:** Andrew Orthmann, CH
**Sent:** Tuesday, May 14, 2019 19:16
**To:** ahb.dton@noaa.gov
**Cc:** Kathryn Pridgen - NOAA Federal
**Subject:** F00734 DTONs
**Attachments:** F00734_DTON2_051419.zip; F00734_DTON1_051419.zip

Please find attached two DTONs for F00734 found during final processing.

Please let me know if you have any questions. Thank you,

Andy


Andrew Orthmann, C.H.
Charting Program Manager

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1617 South Industrial Way Suite 3, Palmer, Alaska 99645
O: +1 907.745.7215 | M: +1 907.982.5231
aorthmann@terrasond.com www.terrasond.com

## Andrew Orthmann, CH

**From:** Andrew Orthmann, CH
**Sent:** Thursday, May 16, 2019 11:45
**To:** ahb.dton@noaa.gov
**Cc:** Kathryn Pridgen - NOAA Federal
**Subject:** F00734 DTONs & anti-DTONs
**Attachments:** F00734_DTONs_and_AntiDTONs_051619.zip

Hello,

Please find additional DTONs as well as anti-DTONs for F00734.

These were added after consultation with ops (Katy Pridgen, cc'd) regarding objects we confirmed but were not near their charted position (delete charted feature via anti-DTON, add new feature via DTON). Please view the anti-DTONs in context of the DTONs since most have an associated DTON.

Please let me know if you have any questions. Thank you,

Andy

Andrew Orthmann, C.H.
Charting Program Manager

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aorthmann@terrasond.com www.terrasond.com

| | |
|---|---|
| **From:** | Castle Parker - NOAA Federal |
| **To:** | OCS NDB - NOAA Service Account |
| **Cc:** | AHB Chief - NOAA Service Account; Kathryn Pridgen - NOAA Federal; Tim Osborn - NOAA Federal; Andrew Orthmann, CH |
| **Subject:** | F00734 DtoNs 1a,b,d and Anti-DtoNs 1a,b,c Submission to NDB |
| **Date:** | Friday, May 17, 2019 9:10:00 AM |
| **Attachments:** | F00734_DtoNs_1abc_Anti-DtoN_1abc.zip |

Good day,

Please find attached compressed file for F00734 DtoN Report #1a, #1b, and #1c containing two 8ft obstructions and a 7ft obstruction. Also included are three Anti-DtoNs for charted features that were disproved with object detect MBES coverage. Three features are submitted to Nautical Data Branch (NDB) and Marine Chart Division (MCD) and intended for chart application, and three charted features disproved submitted for chart deletion  The uncharted obstructions are located in the vicinity of Matagorda Bay and the Matagorda Bay Entrance, Texas

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review and submission. The contents of the attached file were generated at AHB. The attached file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please contact me via email or phone 757-364-7472. Thank you for your assistance with this matter.

Respectfully,
Gene Parker

*Castle Eugene Parker*
*NOAA Office of Coast Survey*
*Atlantic Hydrographic Branch*
*Hydrographic Team Lead / Physical Scientist*
*castle.e.parker@noaa.gov*
*office (757) 364-7472*

**From:** OCS NDB - NOAA Service Account
**To:** Castle E Parker
**Cc:** AHB Chief; Kathryn Pridgen - NOAA Federal; Tim Osborn; Andrew Orthmann; _NOS OCS PBA Branch; _NOS OCS PBB Branch; _NOS OCS PBC Branch; _NOS OCS PBD Branch; _NOS OCS PBE Branch; _NOS OCS PBG Branch; Charles Porter - NOAA Federal; Chris Libeau; James M Crocker; Ken Forster; Kevin Jett - NOAA Federal; Matt Kroll; Michael Gaeta; NSD Coast Pilot; PHB Chief; Tara Wallace; William Winner
**Subject:** Fwd: F00734 DtoNs 1a,b,d and Anti-DtoNs 1a,b,c Submission to NDB
**Date:** Friday, May 17, 2019 2:02:03 PM
**Attachments:** F00734_DtoNs_1abc_Anti-DtoN_1abc.zip

---

DD-30864 has been registered by the Nautical Data Branch and directed to Products Branch G for processing.

The reported DtoN and anti-DtoN features are in Matagorda Bay, TX.

The following charts have been assigned to the record:
11319 kapp 107
11317 kapp 154
11316 kapp 128

The following ENCs have been assigned to the record:
US4TX1JE
US4TX1KF
US5TX33M
US5TX32M
US4TX31M

References:
F00734
OPR-K376-KR-18

This information was discovered by a NOAA contractor and was submitted by AHB.

Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
National Oceanic and Atmospheric Administration
United States Department of Commerce
Contact: ocs.ndb@noaa.gov

---------- Forwarded message ---------
From: **Castle Parker - NOAA Federal** <castle.e.parker@noaa.gov>
Date: Fri, May 17, 2019 at 9:10 AM
Subject: F00734 DtoNs 1a,b,d and Anti-DtoNs 1a,b,c Submission to NDB
To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>, Andrew Orthmann, CH <aorthmann@terrasond.com>

Good day,

Please find attached compressed file for F00734 DtoN Report #1a, #1b, and #1c containing two 8ft obstructions and a 7ft obstruction. Also included are three Anti-DtoNs for charted features that were disproved with object detect MBES coverage. Three features are submitted to Nautical Data Branch (NDB) and Marine Chart Division (MCD) and intended for chart application, and three charted features disproved submitted for chart deletion  The uncharted obstructions are located in the vicinity of Matagorda Bay and the Matagorda Bay Entrance, Texas

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review and submission. The contents of the attached file were generated at AHB. The attached file contains a DtoN Letter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please contact me via email or phone 757-364-7472. Thank you for your assistance with this matter.

Respectfully,

Gene Parker

*Castle Eugene Parker*

*NOAA Office of Coast Survey*

*Atlantic Hydrographic Branch*

*Hydrographic Team Lead / Physical Scientist*

*castle.e.parker@noaa.gov*

*office (757) 364-7472*

# APPROVAL PAGE

F00734

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

The following products will be sent to NCEI for archive

- Descriptive Report
- Data Acquisition and Processing Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Processed survey data and records
- Geospatial PDF of survey products
- Collection of backscatter mosaics

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

Digitally signed by MCGOVERN.MEGHAN.ELIZABETH.1284020495
Date: 2021.05.10 08:45:27 -04'00'

Approved: ______________________________

**Commander Meghan McGovern, NOAA**
Chief, Atlantic Hydrographic Branch