U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Survey			
]	DESCRIPTIVE REPORT		
Type of Survey:	Basic Hydrographic Survey		
Registry Number:	H13161		
	LOCALITY		
State(s):	Florida		
General Locality:	Florida Keys National Marine Sanctuary and Vicinity	у	
Sub-locality:	11 Nautical Miles East of Dry Torugas		
	2018		
	CHIEF OF PARTY David Neff, ACSM C.H.		
	LIBRARY & ARCHIVES		
Date:			

U.S. DEPARTMENT OF COMMERCE REGISTRY NUMBER: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION					
HYDROGRAP	H13161				
INSTRUCTIONS: The Hydrog	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):	s): Florida				
General Locality:	Florida Keys National Marine Sanctu	ary and Vicinity			
Sub-Locality:	11 Nautical Miles East of Dry Toruga	s			
Scale:	40000				
Dates of Survey:	09/28/2018 to 01/13/2019				
Instructions Dated:	07/19/2018				
Project Number:	OPR-H355-KR-18				
Field Unit:	eTrac Inc.				
Chief of Party:	David Neff, ACSM C.H.				
Soundings by:	Multibeam Echo Sounder				
Imagery by:	Multibeam Echo Sounder Backscatter				
Verification by:	Atlantic Hydrographic Branch				
Soundings Acquired in:	meters at Mean Lower Low Water				

#### Remarks:

All times are UTC. The purpose of this survey is to update existing NOS nautical charts. H13161 will cover approximately 44 square nautical miles of survey area 11 nautical miles east of Dry Tortugas. SUBCONSULTANT: Geodynamics LLC, 310A Greenfield Dr., Newport, NC 98570

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 17N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

# **Table of Contents**

A. Area Surveyed	<u>1</u>
A.1 Survey Limits	<u>1</u>
A.2 Survey Purpose	<u>3</u>
A.3 Survey Quality	<u>3</u>
A.4 Survey Coverage	<u>4</u>
A.5 Survey Statistics	<u>4</u>
B. Data Acquisition and Processing	<u>6</u>
B.1 Equipment and Vessels	<u>6</u>
B.1.1 Vessels	<u>7</u>
B.1.2 Equipment	<u>7</u>
B.2 Quality Control.	<u>8</u>
B.2.1 Crosslines	<u>8</u>
B.2.2 Uncertainty	<u>9</u>
B.2.3 Junctions	<u>11</u>
B.2.4 Sonar QC Checks	. <u>13</u>
B.2.5 Equipment Effectiveness	. <u>13</u>
B.2.6 Factors Affecting Soundings	<u>13</u>
B.2.7 Sound Speed Methods	<u>13</u>
B.2.8 Coverage Equipment and Methods	<u>14</u>
B.2.9 Data Density Evaluation	14
B.3 Echo Sounding Corrections.	<u>16</u>
B.3.1 Corrections to Echo Soundings	<u>16</u>
B.3.2 Calibrations	<u>16</u>
B.4 Backscatter	. <u>16</u>
B.5 Data Processing	<u>17</u>
B.5.1 Software Updates	<u>17</u>
B.5.2 Surfaces	. <u>17</u>
C. Vertical and Horizontal Control	. <u>19</u>
C.1 Vertical Control	. <u>19</u>
C.2 Horizontal Control	<u>20</u>
D. Results and Recommendations	<u>20</u>
D.1 Chart Comparison	. <u>20</u>
D.1.1 Electronic Navigational Charts	. <u>21</u>
D.1.2 AWOIS Items	. <u>25</u>
D.1.3 Maritime Boundary Points	. <u>25</u>
D.1.4 Charted Features	<u>25</u>
D.1.5 Uncharted Features	<u>26</u>
D.1.6 Dangers to Navigation	. <u>26</u>
D.1.7 Shoal and Hazardous Features	<u>26</u>
D.1.8 Channels	<u>26</u>
D.1.9 Bottom Samples	. <u>26</u>
D.2 Additional Results	<u>27</u>
D.2.1 Shoreline	<u>27</u>

D.2.2 Prior Surveys.	27
D.2.3 Aids to Navigation.	
D.2.4 Overhead Features.	
D.2.5 Submarine Features	
D.2.6 Ferry Routes and Terminals	
D.2.7 Platforms	27
D.2.8 Significant Features	
D.2.9 Construction and Dredging	
D.2.10 New Survey Recommendation.	
D.2.11 Inset Recommendation	
E. Approval Sheet	

# **List of Tables**

Table 1: Survey Limits	<u>1</u>
Table 2: Hydrographic Survey Statistics.	<u>5</u>
Table 3: Dates of Hydrography	6
Table 4: Vessels Used	7
Table 5: Major Systems Used.	7
Table 6: Survey Specific Sound Speed TPU Values	9
Table 7: Junctioning Surveys	
Table 8: Submitted Surfaces.	
Table 9: Largest Scale ENCs	
Table 10: DTON Reports	<u>26</u>

# **List of Figures**

Figure 1: Survey Limits Overview (light blue area).	<u>2</u>
Figure 2: Survey Limits (black line).	<u>3</u>
Figure 3: Survey Coverage.	4
Figure 4: H13161 Crossline Comparison.	<u>8</u>
Figure 5: H13161 Finalized 1m Complete Coverage MBES TPU Statistics	<u>10</u>
Figure 6: H13161 Finalized 2m Complete Coverage MBES TPU Statistics	<u>11</u>
Figure 7: H13160 - H3161 Junction Comparison.	<u>12</u>
Figure 8: H13160 - H13161 Difference Statistics.	<u>13</u>
Figure 9: H13161 Finalized 1m Complete Coverage MBES Density Distribution	<u>15</u>
Figure 10: H13161 Finalized 2m Complete Coverage MBES Density Summary	<u>16</u>
Figure 11: Raw backscatter from R/V Marcelle (DN275).	<u>17</u>
Figure 12: H13161 Delivered CUBE weighted Dynamic Surface Coverage Graphic (1m)	<u>18</u>
Figure 13: H13161 Delivered CUBE weighted Dynamic Surface Coverage Graphic (2m)	<u>19</u>
Figure 14: H13161 60ft Contour Comparison (US4FL92M)	<u>22</u>
Figure 15: H13161 Sounding Comparison (US4FL92M)	<u>23</u>
Figure 16: H13161 60ft Contour Comparison (US3FL90M)	<u>24</u>
Figure 17: H13161 Sounding Comparison (US3FL90M)	<u>25</u>

## **Descriptive Report to Accompany Survey H13161**

Project: OPR-H355-KR-18

Locality: Florida Keys National Marine Sanctuary and Vicinity

Sublocality: 11 Nautical Miles East of Dry Torugas

Scale: 1:40000

September 2018 - January 2019

#### eTrac Inc.

Chief of Party: David Neff, ACSM C.H.

# A. Area Surveyed

eTrac Inc. conducted hydrographic survey operations in the Florida Keys National Marine Sanctuary and surrounding vacinity. H13161 covers approximately 44 square nautical miles of survey area. 1052 linear nautical miles were aquired during the survey. H13161 spans from approximately 11 nautical miles east of Dry Tortugas, FL.

Survey was conducted within these limits between September 29, 2018 (DN272) and January 13, 2019 (DN13).

### **A.1 Survey Limits**

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
24° 30' 59.36" N	24° 25' 13.76" N
82° 45' 51.66" W	82° 36' 54.67" W

Table 1: Survey Limits



Figure 1: Survey Limits Overview (light blue area)



Figure 2: Survey Limits (black line)

All data were acquired in accordance with the requirements in the Project Instructions and specifications set forth in the Hydrographic Survey Specifications and Deliverables 2018 Edition (HSSD 2018).

### **A.2 Survey Purpose**

The purpose of this survey is to update existing National Ocean Service (NOS) nautical charts.

### A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Survey H13161 is accurate to International Hydrographic Organization (IHO) Order 1a as required per the HSSD 2018.

## A.4 Survey Coverage

Survey Coverage was in accordance with the requirements in the Project Instructions and HSSD 2018. H13161 was surveyed to Complete Coverage with backscatter standards set forth in the HSSD 2018.



Figure 3: Survey Coverage

# **A.5 Survey Statistics**

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

	HULL ID	Benthos	Taku	Marcelle	Total
LNM	SBES Mainscheme	0	0	0	0
	MBES Mainscheme	79.3	33.3	895.5	1008.1
	Lidar Mainscheme	0	0	0	0
	SSS Mainscheme	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0
	SBES/MBES Crosslines	17.7	2.3	23.7	43.7
	Lidar Crosslines	0	0	0	0
Numb Bottor	er of n Samples				1
Numb Items	er of AWOIS Investigated				0
Numb Bound Invest	er Maritime lary Points igated				0
Numb	er of DPs				0
Numb Invest Dive C	er of Items igated by )ps				0
Total S	SNM				44 <b>46.39</b>

Table 2: Hydrographic Survey Statistics

Γ

Survey Dates	Day of the Year
09/29/2018	272
09/30/2018	273
10/01/2018	274
10/02/2018	275
10/03/2018	276
10/04/2018	277
10/05/2018	278
10/06/2018	279
10/07/2018	280
10/11/2018	284
10/12/2018	285
10/17/2018	290
10/22/2018	295
12/02/2018	336
12/03/2018	337
12/04/2018	338
12/05/2018	339
12/16/2018	350
12/17/2018	351
01/13/2019	13

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

Table 3: 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 are discussed in the following sections.

#### **B.1.1 Vessels**

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

Hull ID	R/V Marcelle	R/V Benthos	R/V Taku
LOA	45 meters	10 meters	10 meters
Draft	0.6 meters	0.6 meters	0.6 meters

Table 4: Vessels Used

The R/V Marcelle is a 45 meter steel-hulled vessel equipped with a custom over-the-side (port) multibeam pole mount.

The R/V Benthos is a 10 meter aluminum catamaran equipped with a custom over-the-side (port) multibeam hydraulic pole mount.

The R/V Taku is a 10 meter aluminum catamaran equipped with a custom stern multibeam pole mount.

#### **B.1.2 Equipment**

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

Manufacturer	Model	Туре
Kongsberg	2040C	MBES
R2Sonic	2024	MBES
Applanix	POSMV 320 V5	Positioning and Attitude System
AML	Base.X	Sound Speed System
AML	Smart.X	Sound Speed System
eTrac	eTrac MVP	Sound Speed System

#### Table 5: Major Systems Used

Note: R/V Marcelle utilized a dualhead Kongsberg 2040C multibeam, an eTrac-built MVP and an AML Base.X for sound speed system and a POSMV 320 V5 for the positioning system. R/V Benthos utilized a dualhead Kongsberg 2040C multibeam echosounder system, an AML Base.X for the sound speed system and a POSMV 320 V5 for the positioning system. R/V Taku utilized a dualhead R2Sonic 2024 multibeam echosounder system, an AML Smart.X for the sound speed system and a POSMV 320 V5 for the positioning system.

## **B.2 Quality Control**

#### **B.2.1** Crosslines

Crosslines acquired for this survey totaled 4% of mainscheme acquisition.

A comparison of crossline mileage to mainscheme mileage yields a crossline percentage of 4.33%, and is noted to be above the required 4%.

A beam-by-beam statistical analysis was performed using the Line QC reporting tool in Qimera. A 2 meter Combined Uncertainty and Bathymetric Estimator (CUBE) weighted dynamic surface was created incorporating only the mainscheme lines and excluded crosslines. The Line QC reporting tool was used to perform the beam-by-beam comparison of the crossline data to the mainscheme surface. Comparisons showed excellent agreement, well above 95% of the allowable TVU.

Note: This surface was created for QC only and is not submitted as a surface deliverable.

The beam-to-beam crossline comparison reports generated through the Qimera QC Reporting tool are included in Separates II.

Below is a graph of the crossline comparison statistics showing IHO Order 1a compliance per beam.



Figure 4: H13161 Crossline Comparison

#### **B.2.2 Uncertainty**

Hull ID	Measured - CTD	Measured - MVP	Surface
R/V Benthos	0.5 meters/second	0 meters/second	0.025 meters/second
R/V Taku	0.5 meters/second	0 meters/second	0.025 meters/second
R/V Marcelle	0.5 meters/second	0 meters/second	0.025 meters/second

Table 6: Survey Specific Sound Speed TPU Values

Standard deviation and uncertainty layers of the Dynamic Surface were utilized during data processing to search for features, water column noise, and systematic errors.

IHO Order 1a uncertainty specification was met by 100% of the nodes.

The final Bathymetric Attributed Grid (BAG) surface's uncertainty was generated through the NOAA QC Tools and an image of the results is located below.

For H13161 the following percentages represent the results of the TPU testing:

Complete Coverage MBES (Finalized 1m CUBE weighted Dynamic Surface in NOAA QC Tools) = + 99.5% of nodes are within the allowable TPU.

Complete Coverage MBES (Finalized 2m CUBE weighted Dynamic Surface in NOAA QC Tools) = + 99.5% of nodes are within the allowable TPU.



Figure 5: H13161 Finalized 1m Complete Coverage MBES TPU Statistics



Figure 6: H13161 Finalized 2m Complete Coverage MBES TPU Statistics

#### **B.2.3 Junctions**

Depth differences between junctioning surveys were evaluated using the JunctionTrac program, developed in-house by eTrac Inc. For each junction, each CUBE weighted dynamic surface's nodes were exported to an ASCII CSV file where the fields were (Easting, Northing, Depth) for each node. A 1 meter difference surface between the junctioning datasets was also created and exported to an ASCII CSV file where the fields were (Easting, Northing, Depth) for each node. A 1 meter difference surface between the junctioning datasets was also created and exported to an ASCII CSV file where the fields were (Easting, Northing, Diff) for each node. The three ASCII CSV files were then loaded into the JunctionTrac program and junction statistics were computed. A file was also created in this process to locate any nodes from the difference surface that exceed the allowable TVU, which was imported into Qimera and any identified points from JunctionTrac were analyzed. Note: the difference surfaces were created for comparison efforts only and are not submitted as surface deliverables.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13160	1:40000	2018	eTrac	N
H13163	1:40000	2018	eTrac	Е

Table 7: Junctioning Surveys

#### <u>H13160</u>

The junction comparison was performed using all overlapping data between H13160 and H13161. Depth differences were evaluated using the JunctionTrac program, developed in-house by eTrac Inc. Below is a histogram of junction comparison statistics showing the difference between the junctioning surfaces and allowable TVU as well as difference statistics. 99.9938% of nodes were within allowable TVU.



Figure 7: H13160 - H3161 Junction Comparison

Criteria	Number of Nodes	Resulting %	
DIFF < 10cm	372082	64.28%	
10cm < DIFF < 20cm	149740	25.87%	
20cm < DIFF < 30cm	42550	7.35%	
DIFF > 30cm	14470	2.50%	
Total	578842	100.00%	

Figure 8: H13160 - H13161 Difference Statistics

#### <u>H13163</u>

The junction comparison between H13161 and H13163 will be submitted with the H13163 DR.

#### **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**

There were no conditions or deficiencies that affected equipment operational effectiveness.

#### **B.2.6 Factors Affecting Soundings**

There were no other factors that affected corrections to soundings.

#### **B.2.7 Sound Speed Methods**

Sound Speed Cast Frequency: SVP casts were generally taken every 2 hours. Ocassionally casts would exceed a 2 hour frequency, however would never exceed a 4 hour frequency. On R/V Marcelle and R/V Benthos casts were applied in both QPS QINSy and Kongsberg SIS acquisition software at the time of the cast. On R/V Taku casts were applied in QPS QINSy acquisition software at the time of the cast. Surface SVP measured at 1Hz was compared to surface speed from the current profile in realtime. If the surface velocity comparison was in excess of 2m/s at any time during survey operations, a new cast was taken.

Surface sound speeds were compared in realtime and profile to profile for each cast on the vessel. Additionally, the processor reviewed profiles in Qimera to remove spurious readings within a cast, compare day-to-day casts, and to check distribution over the surveyed area, in order to better understand trends for efficient acquisition planning.

#### **B.2.8** Coverage Equipment and Methods

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

#### **B.2.9 Data Density Evaluation**

In order to determine if the density of the data met the specified 5 soundings per node, data density was evaluated using DensityTrac in the AmiTrac program, developed in-house by eTrac Inc. Each finalized CUBE weighted dynamic surface's nodes were exported to a BBH file. The BBH file was then loaded into the DensityTrac program and density statistics were computed.

For H13161 the following percentages represent the results of the density query:

Complete Coverage MBES (Finalized 1m CUBE weighted Dynamic Surface) = 99.8015% of nodes are composed from at least 5 soundings.

Complete Coverage MBES (Finalized 2m CUBE weighted Dynamic Surface ) = 99.9755% of nodes are composed from at least 5 soundings.



Figure 9: H13161 Finalized 1m Complete Coverage MBES Density Distribution



Figure 10: H13161 Finalized 2m Complete Coverage MBES Density Summary

## **B.3 Echo Sounding Corrections**

#### **B.3.1** Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

#### **B.3.2** Calibrations

All sounding systems were calibrated as detailed in the DAPR.

#### **B.4 Backscatter**

Backscatter data were collected throughout the survey and are retained in the raw ALL and DB files. Every effort was made in the field to collect quality backscatter data while maintaining the primary mandate of high quality bathymetric data. While no processing or analysis of backscatter was required, eTrac Inc. verified coverage and general quality of the backscatter data collected. A beam intensity window was monitored in Qinsy during aquisiton to ensure backscatter data collection. Raw backscatter data were viewed

in QPS FMGeocoder to further confirm collection criteria had been met. Shown below is an example of the unprocessed backscatter mosaic from H13161 DN275.



Figure 11: Raw backscatter from R/V Marcelle (DN275)

#### **B.5 Data Processing**

#### **B.5.1 Software Updates**

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

The following Feature Object Catalog was used:

No Feature Object Catalog was used. Qimera was used as the primary processing software, which included feature management.

#### **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
H13161_MB_1m_MLLW_Final	CUBE	1 meters	12.06 meters - 20 meters	NOAA_1m	Complete MBES
H13161_MB_2m_MLLW_Final	CUBE	2 meters	18 meters - 37.65 meters	NOAA_2m	Complete MBES

#### Table 8: Submitted Surfaces

A 1m and 2m surface are provided meeting complete coverage MBES with backscatter specifications for H13161.



*Figure* **12**: *H13161 Delivered CUBE weighted Dynamic Surface Coverage Graphic (1m)* 



*Figure* **13***: H13161 Delivered CUBE weighted Dynamic Surface Coverage Graphic* (2*m*)

# **C. Vertical and Horizontal Control**

## **C.1 Vertical Control**

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

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

 $ITRF\_to\_MLLW\_FL\_KEYS.bin$ 

In order to reference soundings to MLLW, a VDatum separation method was applied to the Qinsy DB files and Kongsberg ALL files via a separation file in the aquisition softwares.

Note: The vertical control methods are further addressed in the HVCR and DAPR.

### **C.2 Horizontal Control**

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

The projection used for this project is UTM Zone 17N.

# **D.** Results and Recommendations

### **D.1** Chart Comparison

A chart comparison was conducted for H13161 using Qimera and Caris HIPS and SIPS. Contours and soundings were compared against the largest scale ENC US4FL92M to accomplish the chart comparison. This ENC does not cover the entire survey of H13161 and therefore ENC US3FL90M was included to complete the chart comparison. The methods and results of the comparison are detailed below.

Contour Comparison Method: Using the 2 meter CUBE weighted Dynamic Surface, the 60 foot contour was generated in Qimera and displayed against the charted contour. Additionally, the 2 meter CUBE weighted Dynamic Surface was viewed by a custom color band range based on the contour intervals (6ft, 12ft, 18ft, 30ft, 60ft). The results of the comparison are described below, followed by 1-2 images of example areas.

Sounding Comparison Method: Using the same 2 meter CUBE weighted Dynamic surface, soundings were generated in Caris HIPS and SIPS. Soundings were displayed against the charted soundings and a visual comparison was made. The results of the comparison are described below, followed by 1-2 images of example areas.

#### **D.1.1 Electronic Navigational Charts**

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4FL92M	1:80000	13	10/16/2018	02/14/2019	NO
US3FL90M	1:180000	22	09/18/2018	02/14/2019	NO

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

#### US4FL92M

#### Contour Comparison Results:

In general the 60 foot contour on the eastern side of H13161 has receded inward and east, ranging approximately 0 to 3300 feet from the charted contour. Multiple shoals distinguished by the 60 foot contour have formed in this area, differing from the continuous charted contour.

#### Sounding Comparison Results:

In areas were the contour has changed, as noted above, and where a feature was detected, soundings differ from the charted depths. In general for H13161, the soundings are in variable agreements with the chart. Soundings are generally within 1 to 4 feet from the chart, although there are soundings that differ 5 to 8 feet from the chart. Depth differences are not biased in any particular direction to support a systematic error.

Table 9: Largest Scale ENCs



Figure 14: H13161 60ft Contour Comparison (US4FL92M)



Figure 15: H13161 Sounding Comparison (US4FL92M)

### US3FL90M

Contour Comparison Results:

The 60 foot contour on the eastern side of H13161 has the same contour comparisons results as US4FL92M.

The 60 foot contour in the northern central area of H13161 has migrated north ranging approximately 0 to 2000 feet from the charted contour and has formed into multiple linear shoals distinguished by the 60 foot contour, differing from the charted contour.

The other smalller charted 60 foot contour shoals no longer exist in H13161.

Sounding Comparison Results:

In areas were the contour has changed, as noted above, and where a feature was detected, soundings differ from the charted depths. In general for H13160, the soundings are in variable agreement with the chart. Soundings are generally within 4 to 8 feet from the chart, although there are soundings that differ 1 to 2 feet from the chart, as well as soundings that differ 10 feet from the chart. Depth differences are not biased in any particular direction to support a systematic error.



Figure 16: H13161 60ft Contour Comparison (US3FL90M)



Figure 17: H13161 Sounding Comparison (US3FL90M)

#### **D.1.2 AWOIS Items**

No AWOIS Items were assigned for this survey.

#### **D.1.3 Maritime Boundary Points**

No Maritime Boundary Points were assigned for this survey.

#### **D.1.4 Charted Features**

There were no charted features assigned to this survey.

#### **D.1.5 Uncharted Features**

There was 1 new feature found in H13161 and added to the Final Feature File (FFF). The feature was given a unique identifier in the "userid" field of the .000 S-57 file (format 1XXX). Refer to the FFFfor determinations and recommendations of the feature.

#### **D.1.6 Dangers to Navigation**

The following DTON reports were submitted to the processing branch:

DTON Report Name	Date Submitted	
H13161_DtoN_5	2019-02-27	

#### Table 10: DTON Reports

There was 1 DtoN report submitted for this survey, and added to the Final Feature File (FFF). Refer to the FFF for determinations and recomendations of each feature. Note: All DtoNs were included in the number of new, uncharted features within section D.1.5

#### **D.1.7 Shoal and Hazardous Features**

No shoals or hazardous features exist for this survey.

#### **D.1.8** Channels

No channels exist for this survey.

#### **D.1.9 Bottom Samples**

1 location of drop camera imagery was obtained in accordance with Appendix I of the Project Instructions in areas designated by the feature object class springs (SPRING) in the Project Reference File (PRF). Drop camera imagery was obtained instead of physical bottom samples due to the vincity of the National Marine Sanctuary. Drop camera imagery was used to define the NATSUR but was insuffient for defining the NATQUA and COLOUR.

A brief description of the results is listed below.

B1: sand, coral

Detailed information and images of the bottom samples listed above are located in the Final Feature File (FFF). Each bottom sample has been given a unique identifier in the "userid" field of the .000 S-57 file (format BX).

### **D.2 Additional Results**

#### **D.2.1 Shoreline**

No shoreline exists for this survey.

#### **D.2.2 Prior Surveys**

No prior surveys exist for this survey.

#### **D.2.3** Aids to Navigation

No AtoNs exist for this survey.

#### **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 Ferry Routes and Terminals**

No ferry routes or terminals exist for this survey.

#### **D.2.7 Platforms**

No platforms exist for this survey.

#### **D.2.8 Significant Features**

No significant features exist for this survey.

#### **D.2.9** Construction and Dredging

No construction or dredging exist for this survey.

#### **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 CUBE surfaces, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

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

Approver Name	Approver Title	Approval Date	Signature
David R. Neff, C.H.	VP of Survey, eTrac Inc.	03/06/2019	Digitally signed by David Neff Date: 2019.03.07 08:30:42-08'00'



#### H13161 DtoN 01 - 04

#### Briana Hillstrom - NOAA Federal < Briana. Hillstrom@noaa.gov>

To: Isadora Kratchman <izzy@etracinc.com>

Thu, Jan 17, 2019 at 7:19 AM

Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, "ahb.dton@noaa.gov' (ahb.dton@noaa.gov)" <ahb.dton@noaa.gov>, David Neff <dave@etracinc.com>, Lisa Diamond <lisa@etracinc.com>

Thank you for your email. For your records, this DTON submission won't be processed until after the partial Government Shudown ends.

On Wed, Jan 16, 2019 at 5:45 PM Isadora Kratchman <izzy@etracinc.com> wrote: All,

Please find attached the standard DtoN package detailing H13161 DtoN 01, 02, 03, and 04. H13161 DtoN 01 - 04 are uncharted rocks.

Best regards,

\_\_\_

**Isadora Kratchman** Hydrographic Surveyor Mobile: (301) 706-9246 www.etracinc.com

CDR Briana Welton Hillstrom, NOAA Office of Coast Survey Chief, Atlantic Hydrographic Branch 439 W York St, Norfolk, VA 23510 office: 757-364-7460 cell: 520-227-9269



#### H13161 DtoN 01 - 04

Castle Parker - NOAA Federal <castle.e.parker@noaa.gov> Tue, Jan 29, 2019 at 10:43 AM To: Isadora Kratchman <izzy@etracinc.com> Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, David Neff <dave@etracinc.com>, Lisa Diamond <lisa@etracinc.com>

#### Hello,

Based upon the water depth and the AIS tracks within the common area, the H13161 DtoN 1-4 does not pose a hazard to surface navigation. Going forward, if you would like to submit a preliminary review of potential Dangers, we can now make that happen since we are back at work; at least for now and through the current continued resolution (3 weeks) with the US government budget.

AHB thanks you for your efforts and consideration.

Regards,

Gene

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

From: Briana Hillstrom - NOAA Federal <Briana.Hillstrom@noaa.gov> Sent: Thursday, January 17, 2019 10:20 AM To: Isadora Kratchman <izzy@etracinc.com> Cc: Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>; Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>; 'ahb.dton@noaa.gov' (ahb.dton@noaa.gov) <ahb.dton@noaa.gov>; David Neff <dave@etracinc.com>; Lisa Diamond <lisa@etracinc.com> Subject: Re: H13161 DtoN 01 - 04

Thank you for your email. For your records, this DTON submission won't be processed until after the partial Government Shudown ends.

On Wed, Jan 16, 2019 at 5:45 PM Isadora Kratchman <izzy@etracinc.com> wrote:

All,

Please find attached the standard DtoN package detailing H13161 DtoN 01, 02, 03, and 04.

H13161 DtoN 01 - 04 are uncharted rocks.

Best regards,

---

#### Isadora Kratchman

Hydrographic Surveyor

Mobile: (301) 706-9246

www.etracinc.com

--CDR Briana Welton Hillstrom, NOAA Office of Coast Survey Chief, Atlantic Hydrographic Branch 439 W York St, Norfolk, VA 23510 office: 757-364-7460 cell: 520-227-9269



#### H13161 DtoN 05

1 message

#### Isadora Kratchman <izzy@etracinc.com>

Mon, Feb 25, 2019 at 2:51 PM

To: "'ahb.dton@noaa.gov<sup>'</sup> (ahb.dton@noaa.gov)" <ahb.dton@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> Cc: Lisa Diamond <lisa@etracinc.com>, David Neff <david@etracinc.com>

All,

Please find attached the standard DtoN package detailing H13161 DtoN 05.

H13161 DtoN 05 is an underwater rock.

Best regards,

**Isadora Kratchman** Hydrographic Surveyor Mobile: (301) 706-9246 www.etracinc.com



H13161\_DtoN\_05.zip 375K



### Corrected DtoNs Submission: H13161 DtoN #5 Submission to NDB

#### OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Wed, Feb 27, 2019 at 12:35 PM

To: Castle E Parker <Castle.E.Parker@noaa.gov> Cc: AHB Chief <AHB.Chief@noaa.gov>, Louis Licate - NOAA Federal <louis.licate@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, David Neff <dave@etracinc.com>, Isadora Kratchman <izzy@etracinc.com>, Lisa Diamond <lisa@etracinc.com>, \_NOS OCS PBA Branch <ocs.pba@noaa.gov>, \_NOS OCS PBB Branch <ocs.pbb@noaa.gov>, \_NOS OCS PBC Branch <ocs.pbc@noaa.gov>, \_NOS OCS PBD Branch <ocs.pbd@noaa.gov>, \_NOS OCS PBE Branch <ocs.pbe@noaa.gov>, \_NOS OCS PBG Branch <ocs.pbg@noaa.gov>, Charles Porter - NOAA Federal <charles.porter@noaa.gov>, \_NOS OCS PBG Branch <ocs.pbg@noaa.gov>, Charles Porter - NOAA Federal <charles.porter@noaa.gov>, Chris Libeau <Chris.Libeau@noaa.gov>, James M Crocker <James.M.Crocker@noaa.gov>, Ken Forster <Ken.Forster@noaa.gov>, Kevin Jett - NOAA Federal <kevin.jett@noaa.gov>, Matt Kroll <Matt.Kroll@noaa.gov>, Michael Gaeta <Michael.Gaeta@noaa.gov>, NSD Coast Pilot <coast.pilot@noaa.gov>, PHB Chief <PHB.Chief@noaa.gov>, Tara Wallace <Tara.Wallace@noaa.gov>

DD-30423 has been registered by the Nautical Data Branch and directed to Products Branch B for processing.

The DtoN reported is a rock in the vicinity of the Florida Keys National Marine Sanctuary, east of Dry Tortugas.

The following charts have been assigned to the record: 11439 kapp 356 11434 kapp 373 11420 kapp 374 4148 kapp 420

The following ENCs have been assigned to the record: US4FL1EQ US4FL92M US3FL90M

References: H13161 OPR-H355-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/ Contact: ocs.ndb@noaa.gov



------ Forwarded message ------From: **Castle Parker - NOAA Federal** <castle.e.parker@noaa.gov> Date: Wed, Feb 27, 2019 at 12:10 PM Subject: Corrected DtoNs Submission: H13161 DtoN #5 Submission to NDB To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov> Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Louis Licate - NOAA Federal <louis.licate@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, David Neff <dave@etracinc.com>, Isadora Kratchman <izzy@etracinc.com>, Lisa Diamond  Good day,

Please find the revised and corrected H13161 DtoN submission. The attached compressed file related to H13161 DtoN Report #5 includes one rock that is seaward and shoaler than the common charted depth range. The submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD) is intended for chart application.

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review, processing, 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.

Regards,

Gene

Castle Eug<u>ene</u> Parker

NOAA Office of Coast Survey

Atlantic Hydrographic Branch

Hydrographic Team Lead / Physical Scientist

castle.e.parker@noaa.gov

office (757) 364-7472

**፼ H13161\_DtoN\_5.zip** 754K



#### H13161 DtoN 05

1 message

#### Isadora Kratchman <izzy@etracinc.com>

Mon, Feb 25, 2019 at 2:51 PM

To: "'ahb.dton@noaa.gov<sup>'</sup> (ahb.dton@noaa.gov)" <ahb.dton@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov> Cc: Lisa Diamond <lisa@etracinc.com>, David Neff <david@etracinc.com>

All,

Please find attached the standard DtoN package detailing H13161 DtoN 05.

H13161 DtoN 05 is an underwater rock.

Best regards,

**Isadora Kratchman** Hydrographic Surveyor Mobile: (301) 706-9246 www.etracinc.com



H13161\_DtoN\_05.zip 375K



### Corrected DtoNs Submission: H13161 DtoN #5 Submission to NDB

#### OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Wed, Feb 27, 2019 at 12:35 PM

To: Castle E Parker <Castle.E.Parker@noaa.gov> Cc: AHB Chief <AHB.Chief@noaa.gov>, Louis Licate - NOAA Federal <louis.licate@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, David Neff <dave@etracinc.com>, Isadora Kratchman <izzy@etracinc.com>, Lisa Diamond <lisa@etracinc.com>, \_NOS OCS PBA Branch <ocs.pba@noaa.gov>, \_NOS OCS PBB Branch <ocs.pbb@noaa.gov>, \_NOS OCS PBC Branch <ocs.pbc@noaa.gov>, \_NOS OCS PBD Branch <ocs.pbd@noaa.gov>, \_NOS OCS PBE Branch <ocs.pbe@noaa.gov>, \_NOS OCS PBG Branch <ocs.pbg@noaa.gov>, Charles Porter - NOAA Federal <charles.porter@noaa.gov>, \_NOS OCS PBG Branch <ocs.pbg@noaa.gov>, Charles Porter - NOAA Federal <charles.porter@noaa.gov>, Chris Libeau <Chris.Libeau@noaa.gov>, James M Crocker <James.M.Crocker@noaa.gov>, Ken Forster <Ken.Forster@noaa.gov>, Kevin Jett - NOAA Federal <kevin.jett@noaa.gov>, Matt Kroll <Matt.Kroll@noaa.gov>, Michael Gaeta <Michael.Gaeta@noaa.gov>, NSD Coast Pilot <coast.pilot@noaa.gov>, PHB Chief <PHB.Chief@noaa.gov>, Tara Wallace <Tara.Wallace@noaa.gov>

DD-30423 has been registered by the Nautical Data Branch and directed to Products Branch B for processing.

The DtoN reported is a rock in the vicinity of the Florida Keys National Marine Sanctuary, east of Dry Tortugas.

The following charts have been assigned to the record: 11439 kapp 356 11434 kapp 373 11420 kapp 374 4148 kapp 420

The following ENCs have been assigned to the record: US4FL1EQ US4FL92M US3FL90M

References: H13161 OPR-H355-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/ Contact: ocs.ndb@noaa.gov



------ Forwarded message ------From: **Castle Parker - NOAA Federal** <castle.e.parker@noaa.gov> Date: Wed, Feb 27, 2019 at 12:10 PM Subject: Corrected DtoNs Submission: H13161 DtoN #5 Submission to NDB To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov> Cc: AHB Chief - NOAA Service Account <ahb.chief@noaa.gov>, Louis Licate - NOAA Federal <louis.licate@noaa.gov>, Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, David Neff <dave@etracinc.com>, Isadora Kratchman <izzy@etracinc.com>, Lisa Diamond  Good day,

Please find the revised and corrected H13161 DtoN submission. The attached compressed file related to H13161 DtoN Report #5 includes one rock that is seaward and shoaler than the common charted depth range. The submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD) is intended for chart application.

The information originates from a NOAA contract field unit and was submitted to the Atlantic Hydrographic Branch (AHB) for review, processing, 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.

Regards,

Gene

Castle Eug<u>ene</u> Parker

NOAA Office of Coast Survey

Atlantic Hydrographic Branch

Hydrographic Team Lead / Physical Scientist

castle.e.parker@noaa.gov

office (757) 364-7472

**፼ H13161\_DtoN\_5.zip** 754K



### Corrected DtoNs Submission: H13161 DtoN #5 Submission to NDB

#### OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>

Wed, Feb 27, 2019 at 12:35 PM

To: Castle E Parker <Castle.E.Parker@noaa.gov>

Cc: AHB Chief <AHB.Chief@noaa.gov>, Louis Licate - NOAA Federal <louis.licate@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>, Kathryn Pridgen - NOAA Federal <kathryn.pridgen@noaa.gov>, David Neff<dave@etracinc.com>, Isadora Kratchman <izzy@etracinc.com>, Lisa Diamond <lisa@etracinc.com>, \_NOS OCS PBA Branch <ocs.pba@noaa.gov>, \_NOS OCS PBB Branch <ocs.pbb@noaa.gov>, \_NOS OCS PBC Branch <ocs.pbc@noaa.gov>, \_NOS OCS PBC Branch <ocs.pbc@noaa.gov>, \_NOS OCS PBG Branch <ocs.pbg@noaa.gov>, \_NOS OCS PBC Branch <ocs.pbg@noaa.gov>,

DD-30423 has been registered by the Nautical Data Branch and directed to Products Branch B for processing.

The DtoN reported is a rock in the vicinity of the Florida Keys National Marine Sanctuary, east of Dry Tortugas.

The following charts have been assigned to the record: 11439 kapp 356 11434 kapp 373 11420 kapp 374 4148 kapp 420

The following ENCs have been assigned to the record: US4FL1EQ US4FL92M US3FL90M

References: H13161 OPR-H355-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/ Contact: ocs.ndb@noaa.gov



[Quoted text hidden]



#### APPROVAL PAGE

#### H13161

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
- GeoPDF of survey products
- Collection of Backscatter mosaics

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

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

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