

W00633

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: W00633

LOCALITY

State(s): Florida

General Locality: Cape Canaveral

Sub-locality: Cape Canaveral Air Force Station

2016

CHIEF OF PARTY
David Thompson, USGS

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

W00633

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): **Florida**

General Locality: **Cape Canaveral**

Sub-Locality: **Cape Canaveral Air Force Station**

Scale: **40000**

Dates of Survey: **07/27/2010 to 07/29/2010**

Instructions Dated: **01/01/2022**

Project Number: **ESD-PHB-22**

Field Unit: **US Geological Survey**

Chief of Party: **David Thompson, USGS**

Soundings by: **Unknown Unknown (SBES)**

Imagery by: **N/A**

Verification by: **Pacific 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 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.

DESCRIPTIVE REPORT MEMO

June 01, 2022

MEMORANDUM FOR: Pacific Hydrographic Branch

FROM: Report prepared by PHB on behalf of field unit
David Thompson
Geologist, U.S. Geological Survey

SUBJECT: Submission of Survey W00633

The purpose of the survey was to update bathymetry for change analysis and a numerical wave modeling effort. Data were collected during USGS field activity number (FAN) 10CBS01 and was supported by funding from NASA's Kennedy Space Center under agreement NNK09CB7I.

There were no products created for this survey.

All soundings were reduced to Mean Lower Low Water using VDatum. The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 17.

The original vertical datum of bathymetry was NAVD88. The VDATUM SEP was created to vertically shift data from the NAVD88 datum to MLLW.

Vertical beam data was collected using a Lowrance HDS7 Fishfinder/Chartplotter with a 200 kHz transducer.

GPS Acquisition: A GPS base station was erected within 20 km of the survey area on a pre-existing National Geodetic Survey (NGS) benchmark ("WARD") at Cape Canaveral, Fla. GPS data at the base station were recorded using an Ashtech Z-Xtreme GPS receiver that recorded the 12-channel full-carrier-phase positioning signals (L1/L2) from the satellites via the Dorne/Margolin choke-ring antenna. GPS data on the boat (rover), a 21 foot Predator, were also recorded with an Ashtech Z-Xtreme GPS receiver but with an Ashtech geodetic survey antenna. Both the base and rover recorded positions at one Hertz (Hz).

GPS processing: All static base station sessions were run through On-Line Positioning User Service (OPUS) maintained by the National Oceanic and Atmospheric Administration (NOAA) and the National Geodetic Survey (NGS). The base location results from OPUS were put in a spreadsheet to compute final values and error analysis. Using the OPUS values for each day and the total time that data were collected each day, the average weighted values were calculated for each day for

latitude and longitude (so the longer occupation times held more value than the shorter times). The final value for latitude and longitude was used in GrafNav for the base station value. Error was calculated using UTM output from OPUS (to get error in meters) for each day and was calculated as the absolute value of the final value minus the daily value.

Merging of the GPS and sounding data was done using the MathWorks MATLAB (R2015a) computing environment, to run scripts developed by USGS scientists at the St. Petersburg Coastal and Marine Science Center. First, soundings were converted from feet to meters and then GPS data were interpolated to 10 Hz. The time offset between the GPS altitude and soundings was computed using a cross-correlation with a 10 Hz resolution. Elevation of the seafloor was then computed as, $z = \text{altitude} - R - \text{depth}$, where R was the vertical offset between the GPS antenna and the transducer (2.30 m). Waves were removed by applying a 16-second wide Hanning convolution filter to the seafloor elevation time series.

All data were reviewed for DTONs and none were identified in this survey.

U.S. Geological Survey acquired the data outlined in this report. Data are available at <https://doi.org/10.5066/F75Q4T4N>. Additional documentation from the data provider may be attached to this report.

The survey is partially adequate to supersede previous data.