

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT FL2314-CS-N

Port Canaveral, Florida

Introduction

NOAA Coastal Mapping Program (CMP) Project FL2314-CS-N provides highly accurate digital shoreline data for key areas of change within Port Canaveral, Florida. The Geographic Cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

Project Design

The design of Project FL2314-CS-N was accomplished by the Systems & Quality Assurance Branch (SQAB) of the Remote Sensing Division (RSD) in response to the need for timely updates to the NOAA chart suite within key U.S. ports. Project requirements were formulated as a result of analysis conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA Electronic Navigational Chart (ENC) products are compared to contemporary high-resolution imagery in order to ascertain the need for more current shoreline data. A Chart Evaluation File (CEF) was forwarded to the Applications Branch (AB) of RSD once the change analysis was completed. Refer to the CSCAP memorandum for Project FL2314-CS-N for details of the chart comparison process.

Field Operations

The field operations consisted of collection of static and kinematic Global Positioning System (GPS) data and Inertial Measurement Unit (IMU) data, and the acquisition of aerial imagery. NGS Emergency Response program pre-event natural color oblique imagery for the U.S. East Coast was acquired for project EC2301-OB-N with the NOAA King Air aircraft in February 2023 using an Applanix Digital Sensor System (DSS 6150) aerial camera system at a nominal altitude of 7,500 feet. The port (RGB1) and starboard (RGB2) oblique cameras were oriented at approximate angles of 22 degrees off nadir, resulting in the ground sample distance (GSD) for this imagery ranging from 0.15 to 0.23 meters. For project FL2314-CS-N, portions of two strips of imagery from both cameras were used.

Direct Georeferencing Data Processing

The GPS/IMU data were processed by RSD personnel to yield precise camera positions and orientations for direct georeferencing (DG) of the imagery. The airborne kinematic data for project FL2314-CS-N was processed in March 2023 using Applanix POSPac MMS (ver. 8.8) software, utilizing the IN-Fusion PP-RTX processing mode, which is an implementation of Trimble's *CenterPoint RTX* GNSS correction service. For further information refer to the Airborne Positioning and Orientation Report (APOR) on file with other project data within the RSD Electronic Data Library.

Compilation

Data compilation was accomplished by a member of AB in July 2023. Digital feature data was compiled in stereo from the oblique aerial imagery using the Feature Extraction module of BAE's SOCET SET (ver 5.6) digital photogrammetric software on a Windows-based graphics enabled workstation. Feature identification and attribution within the GC were based on image analysis of the aerial imagery and information extracted from the largest scale NOAA ENC's and other ancillary sources. Feature attribution was assigned in compliance with the Coastal Cartographic Object Attribute Source Table (C-COAST), which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP. Selected features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project FL2314-CS-N were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to meet a horizontal accuracy of 2.0 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is based on a minimum of 20 checkpoints compared to an independent source of higher accuracy, in this case aerotriangulated imagery from previous CMP Project FL1512-CS-N.

The following table provides information on the images used in the project completion:

Date	Time (UTC)	Roll	Flight Line / Images	Tide Level*
22-FEB-2023	16:19 – 16:20	23VC34	44-017 / 80687 – 80692	0.9 m
22-FEB-2023	16:24 – 16:25	23VC34	44-016 / 80693 – 80699	0.8 m

* Tide level is given in meters above MLLW and is based on verified observations recorded at the time of image acquisition by the NOS gauge at Trident Pier, Port Canaveral, FL (#8721604). The elevation of the MHW tidal datum in the project area is 1.09 meters above MLLW.

Quality Control / Final Review

The final review of the project was completed by senior CMP personnel in July 2023, and included analysis of DG results and assessment of the identification and attribution of digital feature data within the GC according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the GC using Esri's ArcMap software. All project data was evaluated for compliance to CMP requirements.

Comparisons of the largest scale NOAA nautical charts with source imagery and compiled project data resulted in creation of the Chart Evaluation File (CEF). The following ENC was used in the comparison process:

- US5FL82M, 49th Ed., Apr. 2023

End Products and Deliverables

The following specifies the location and identification of end products generated during the completion of this project:

Remote Sensing Division Electronic Data Library

- CSCAP evaluation memorandum
- Airborne Positioning and Orientation Report (APOR)
- Project database
- Project Completion Report (PCR)
- GC11955 in shapefile format
- CEF in shapefile format

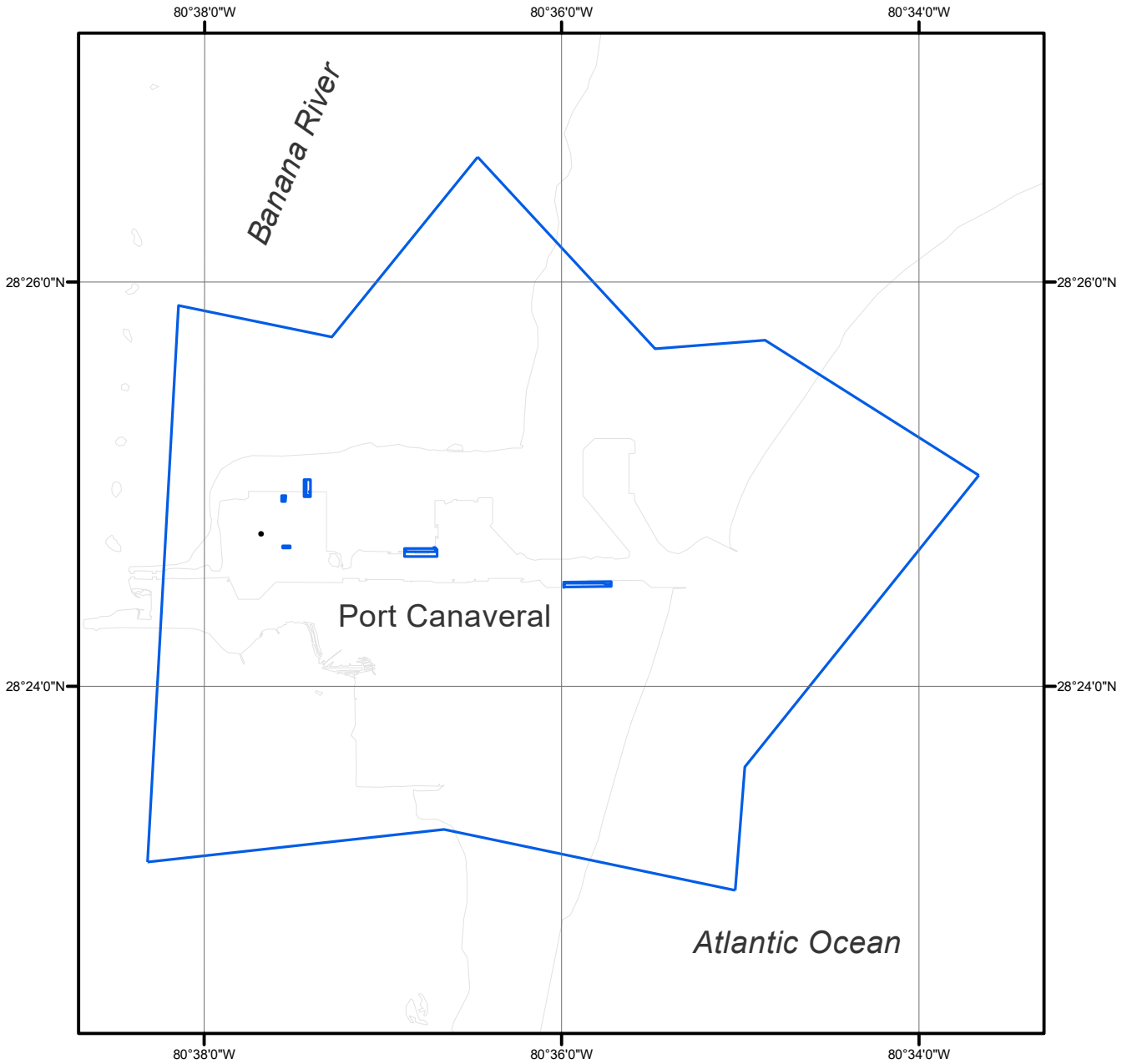
NOAA Shoreline Data Explorer

- GC11955 in shapefile format
- Metadata file for GC11955
- PCR in Adobe PDF format

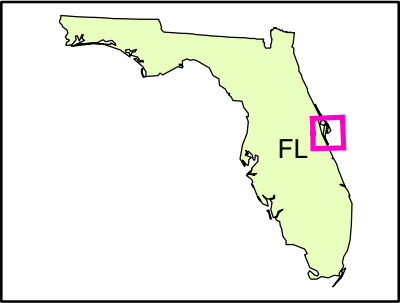
End of Report

PORT CANAVERAL

FLORIDA



Overview



FL2314-CS-N

GC11955