NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT LA1507A-CS-N

Port of New Orleans, Louisiana

Introduction

Coastal Mapping Program (CMP) Project LA1507A-CS-N provides highly accurate digital shoreline data for key areas of change for Port of New Orleans, Louisiana. 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 LA1507A-CS-N was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to the NOAA nautical 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 nautical chart 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 complete. Refer to the RB Memorandum of July 14, 2016 "Results of CSCAP Change Analysis for New Orleans, Louisiana" for details of the chart comparison process.

Field Operations

The field operations consisted of the collection of static and kinematic Global Positioning System (GPS) data, Inertial Measurement Unit (IMU) data and the acquisition of aerial imagery. The photographic mission operations were conducted on April 7, 2016 with the NOAA King Air (N68RF) aircraft. Three strips of color (RGB) digital images were acquired with an Applanix Digital Sensor System (DSS) 580 aerial camera at a nominal altitude of 10,500 feet, resulting in an approximate ground sample distance (GSD) of 0.33 meters. Although imagery was not acquired in strict coordination with local tides, the goal was to collect all imagery below Mean High Water (BMHW).

GPS Data Reduction

The GPS/IMU data were processed by RSD personnel to yield precise camera positions in order to provide a control network necessary for aerotriangulation (AT). The base station's geodetic position was derived using the NGS Online Processing User Service (OPUS), which computed fixed baseline solutions from nearby CORS stations. The kinematic GPS data was processed using Applanix POSPac MMS (ver. 7.1) in May 2016. For further information refer to the Airborne Positioning and Orientation Reports (APOR) on file with other project data within the RSD Electronic Data Library.

Aerotriangulation

The AT phase of project completion was performed in September 2016. Routine softcopy AT methods were applied to establish a network of precise camera positions and other control for mapping, and to provide model parameters and orientation elements required for digital compilation. This work was accomplished by a member of AB utilizing a Digital Photogrammetric Workstation (DPW), which is a configuration of computer hardware, modular software components, and other associated peripheral devices. The digital images were measured and adjusted as a single block using BAE Systems SOCET SET (version 5.6) software. Upon successful completion of this process, the triangulation software provided the standard deviations for each aerotriangulated ground point, which were used to compute a predicted horizontal circular error of 0.4 meters based on a 95% confidence level. An AT Report was written and is on file with other project data within the RSD Electronic Data Library. Positional data is referenced to the North American Datum of 1983 (NAD83).

Compilation

The data compilation phase of this project was accomplished by a member of RSD in October 2016. Digital feature data was compiled using SOCET SET (version 5.6.0) software. Feature identification and attribution within the GC were based on image analysis of the digital photographs and information extracted from the appropriate NOAA nautical charts 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 LA1507A-CS-N were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 0.8 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is derived by doubling the circular error calculated from the AT statistics. Additionally a limited number of shoreline vectors were incorporated into the GC from NOAA ENCs as reference features and attributed accordingly.

The following table provides information on the imagery used to complete this project:

Date	Time (UTC)	Roll #	Photo #s	Water Level*
4-7-2016	20:00 – 20:02	16VC37	8984 - 8995	n/a
4-7-2016	20:20 – 20:22	16VC37	9031 - 9050	n/a
4-7-2016	20:26 – 20:29	16VC37	9051 - 9067	n/a

* Water (river) levels were not calculated for this project.

Quality Control / Final Review

The final review of the project was completed by a member of RSD in October 2016, and included analysis of AT 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 ArcGIS 10.3.1 software. All project data was evaluated for compliance to CMP requirements.

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)
- Aerotriangulation Report
- Project database
- Project Completion Report (PCR)
- GC11275 in shapefile format
- Chart Evaluation File in shapefile format

NOAA Shoreline Data Explorer

- GC11275 in shapefile format
- Metadata file for GC11275
- Digital copy of the PCR

End of Report

PORT OF NEW ORLEANS

LOUISIANA

90°5'0"W

90°0'0"W

30°0'0"N

30°0'0"N

Mississippi River

New Orleans

29°55'0"N

29°55'0"N

90°5'0"W

90°0'0"W

Overview

LA

LA1507A

GC11275