NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

LA0006A
BELMONT to NEW ORLEANS
LOUISIANA

Introduction

Coastal Mapping Program (CMP) Project LA0006A provides a highly accurate database of new digital shoreline data of the Mississippi River covering from about College Point to New Orleans. Project LA0006A is a sub-project of the larger project LA0006 which provided aerial photographs of the Mississippi River from Baton Rouge to New Orleans.

The completion of this project resulted in a densification of the National Spatial Reference System (NSRS), a set of controlled metric-quality aerial photographs, and a Digital Cartographic Feature File (DCFF) of the coastal zone which meet the requirements of the NOAA CMP.

The project database consists of information measured and extracted from digital scans of aerial photographs and metadata related to photogrammetric compilation. Base mapping was conducted in a digital environment using stereo softcopy methods and associated cartographic practices. Project survey data is referenced to the North American Datum 1983 (NAD 83).

Project Design

The Requirements Branch (RB) of the Remote Sensing Division (RSD) formulated the photographic mission instructions for this project following the guidelines of the Photo Mission Standard Operating Procedure Version III (7/01/93). The instructions discussed the project's purpose, geographic area of coverage, scope, and products; photographic requirements; flight line priority; Global Positioning System (GPS) survey data collection procedures and guidelines for both kinematic and static surveys; data recording and handling instructions; and contact and communication information.

The RB created a Project Layout Diagram, flight maps and input files for the aircraft's flight management system. A briefing was held with the mission personnel to discuss overall requirements and to provide them with additional information on airport operations and geodetic control.

Field Operations

No ground control (panels) were established prior to aerial photographic opertaions. To establish a control network necessary for aerotriangulation, airborne kinematic GPS data was collected to determine precise camera positions. GPS data collection operations were conducted in accordance with the GPS Controlled Photogrammetry Field Operations Manual (10/25/99). A GPS Processing Report was written and is on file with other project data within the RSD AB project archive. Aerial photographic survey operations were conducted on November 21st of

2000. The aerial photographic platform was the NOAA Cessna Citation II (N52RF) aircraft which contained a Wild RC-30 camera with the NOS "A" lens cone. Two strips of natural color photographs were acquired at the nominal scale of 1:40,000.

GPS Data Reduction

Global Positioning System (GPS) data was collected and processed to provide precise positions of camera centers for application as photogrammetric control in the aerotriangulation phase of project completion. Static GPS data collected over the airport base station was processed using the Online Positioning User Service (OPUS), available through the NGS web site to provide a reference position for differential processing of the kinematic data. The kinematic GPS data was processed using Applanix POSGPS (ver. 3.00) software by RSD personnel in June 2001. A GPS Data Processing Report was written and is on file with other project data within the RSD AB Project Archive.

Aerotriangulation

Digital aerotriangulation methods were applied to establish the network of precise camera positions and other control for mapping, and to provide model parameters and orientation elements required for softcopy compilation. This work was initiated by the RSD AB CMP personnel in July of 2001. Two strips of aerial photographs were measured and adjusted as one block utilizing a Digital Photogrammetric Workstation (DPW) running LHSystems' Socet Set (ver. 4.3.1), and ORIMA (v.4.0) software to perform the aerotriangulation. The RMS of the standard deviations of the residuals for all ground points were used to compute a predicted horizontal circular error of 1.1 meters based on a 95% confidence level. An Aerotriangulation Report was written and is on file with other project data within the RSD AB Project Archive.

Positional data is based on the North American Datum 1983 (NAD83), and was measured in the Universal Transverse Mercator (UTM) Coordinate System, Zone 15N.

Compilation

Digital compilation consisted of digital base mapping and the construction of supplemental data for the Nautical Charting Program. This work was accomplished by the RSD Applications Branch (AB) in September of 2001. Digital mapping was accomplished using a DPW in conjunction with the SocetSet Feature Extraction module. Feature identification and the assignment of cartographic codes were assigned in compliance with the Features Extraction Specification file (coastal_v5.spc), and based on the image analysis of 1:40,000 scale natural color photographs and information extracted from the appropriate NOAA Nautical Charts, U.S. Coast Guard Light List, and U.S. Geological Survey quadrangles. Cartographic feature attribution was assigned in compliance with the Coastal Cartographic Object Attribute Source Table (C-COAST). Nomenclature was assigned to selected cartographic features to refine general classification.

Cartographic features were compiled to meet a horizontal accuracy of 2.2 meters at the 95% confidence level. This predicted accuracy of compiled, well defined points is derived by

doubling the circular error derived from aerotriangulation statistics.

The following provides information on aerial photographs used in the compilation phase:

Source Data for Compilation

Date	Time (UTC)	Roll #	Photo #	Scale	River Level
11-21-00	1817-1824	00ACN23	0143-0166	1:40,000	1.78 ft-3.34 ft
11-21-00	1835-1845	00ACN23	0175- 0198	1:40,000	1.78 ft-3.34 ft

River Level is given in feet above Average Low Water Plane (ALWP) and was interpolated from actual observations recorded by the NOS gauges at New Orleans and College Point, at 0800 hrs. on Nov. 11, 2000 thru Dec. 01, 2000. The height of the ALWP above the National Geodetic Vertical Datum of 1929 (NGVD29) varies over the project area, from a high of 1.06 ft at College Point, to a low of .48 ft at New Orleans.

Final Review

The final review was completed by a senior AB CMP team member in January of 2002. The Digital Cartographic Feature Files (DCFF) were evaluated for completeness and accuracy. Data review consisted of an on-line and off-line evaluation of digital compilation and hard copy products. The on-line review consisted of reviewing stereo models on a DPW for cartographic feature codes selection, positional accuracies of features, and nomenclature. Digital cartographic feature attribution was judged to conform to C-COAST specification. The offline evaluation compared hard copy plots of the project data with the largest scale nautical charts available and the natural color photographs. A copy of NOAA nautical chart 11368 New Orleans Harbor 1:15,000, 21st ed. and 11370 Mississippi River 1:40,000, 22nd ed. was used for the chart comparison process.

Project Final Data and Products

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

<u>RSD Applications Branch Project Archive</u>
- Hard copy of GPS Processing Report
- Hard copy of Aerotriangulation Report
- Hard copy of the Project Completion Report (PCR)

<u>RSD Electronic Data Library</u>
- Project Database
- Digital Cartographic Feature File (DCFF): GC-10500

- Digital copy of DCFF in ESRI Shapefile format
- Digital copy of the PCR in Adobe Acrobat (pdf) format

NOAA Shoreline Data Explorer

- DCFF: GC-10500
- Metadata file for GC-10500
- Digital copy of the PCR in Adobe Acrobat (pdf) format

End of Report

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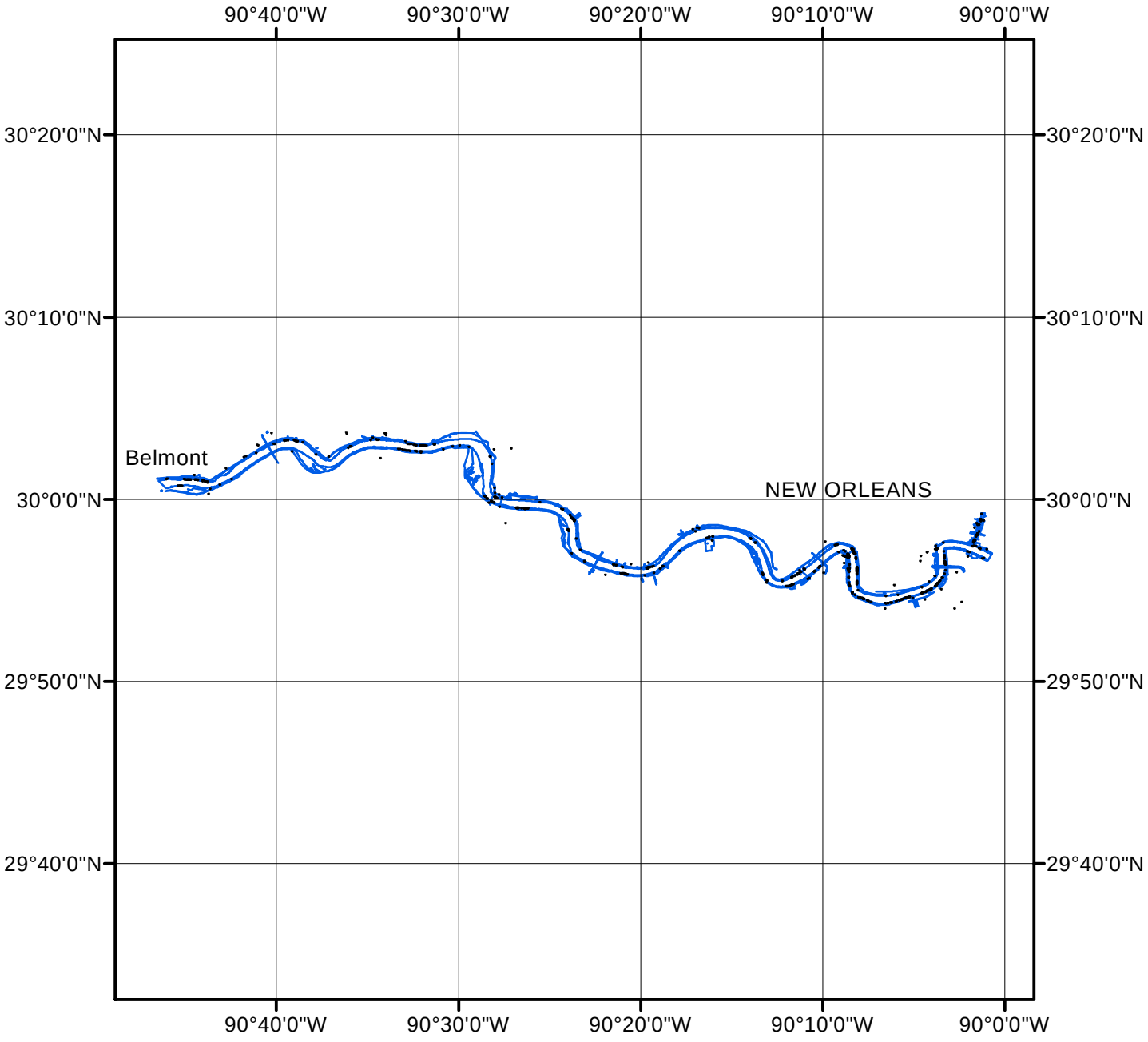
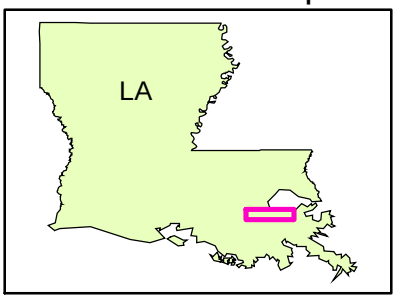


Overview Map



LA0006A

GC10500