CompassData

Logan County, Illinois
Ground Control Project Report for Aerometric
Number: 2592
February 4, 2014

Project Information

CDI Project Number: 2592
Geographic Location: Logan County, Illinois

Project Specifications

Precision (Horizontal/Vertical):	CDI Level-1 (5cm x & y/5cm z)
Coordinate System:	US State Plane
Datum:	NAD83(2011) Epoch 2010
Zone:	Illinois West 1202
Altitude Reference:	HAE (WGS84) & MSL (NAVD88**)**
Units:	US Survey Foot
Number of Points Delivered:	190

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Survey Control

Survey Control Used (NGS monuments NAD83 [2011] Epoch 2010)

Survey Control Type	Survey Control Used
NGS	DG4195
NGS	KB1085
NGS	LC1632

Summary

The purpose of this project was to locate and survey photo-identifiable ground control points (GCPs) in the area of interest of the customer. The GCP coordinates were to be used for the digital orthorectification of the imagery. CompassData visited the project area, found suitable GCPs, and determined accurate coordinates for each GCP according to the customer's specifications.

Equipment

CompassData used a Trimble R6-4 within a VRS network to perform the survey as well 38 static points with a sampling confirmed with OPUS.

Survey Methodology

CompassData has met the required accuracy for this project by using a high-quality GPS receiver with real time corrections provided by the VRSNOW network located close to the project area. The GPS antenna sat atop a bubble-leveled range pole that was placed over the center of the desired GCP. Digital pictures of each GCP location were collected in the field and are available as part of this deliverable.

Quality Control Procedures

CompassData selects GCPs with an unobstructed view of the sky to ensure proper GPS operation. CompassData works to avoid potential sources of multipath error

such as trees, buildings, and fences that may adversely affect the GPS accuracy. Additional quality control comes from the fact that at least 180 GPS positions are collected for each GCP. These positions lay in a "scatter" that has an associated standard deviation. CompassData will only accept GCPs that have a low standard deviation (usually less than 0.05 meters). Standard deviations are typically on the order of 5 centimeters. To ensure accuracy, a GCP will be retaken or moved to a more suitable location if it does not meet these standards.

Computations

CompassData uses Trimble's Business Center Software for all its GPS processing. TBC performs a 3-D geometric average of the positions that make up a point feature and then reports a single averaged position in any coordinate system and datum desired. TBC also makes horizontal and vertical precision estimates based on internal look-up tables derived from empirical data. Factors such as number of positions in the average, the PDOP, the number of satellites, the baseline distance, and the type of receiver and antenna used are all considered in the estimation of precision. These precision estimates are presented in the coordinate sheet provided by CompassData when requested.

Statistical Analysis

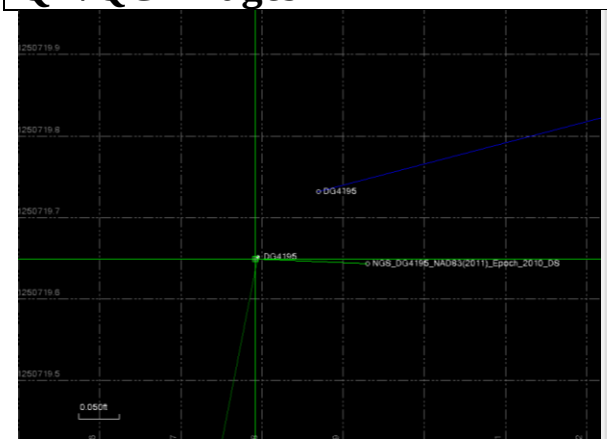
CompassData performs no manual statistical analysis of the GPS data. The VRS network performs the necessary standard deviation calculations on the positions that make up a point feature and also estimates the horizontal and vertical precision of a feature based on experimentally derived look-up tables.

Deliverables

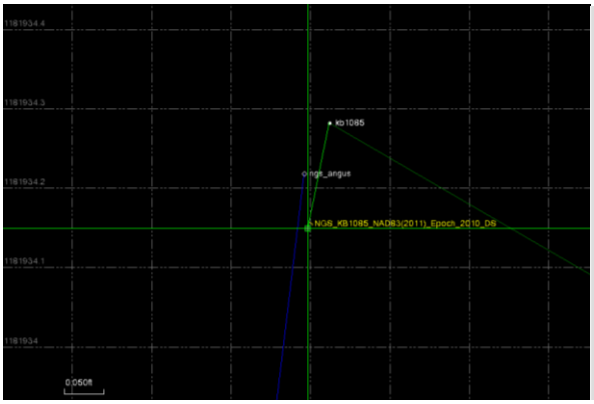
Deliverables for this project include:

- Coordinates (in spreadsheet form)
- Digital Pictures
- QA/QC images

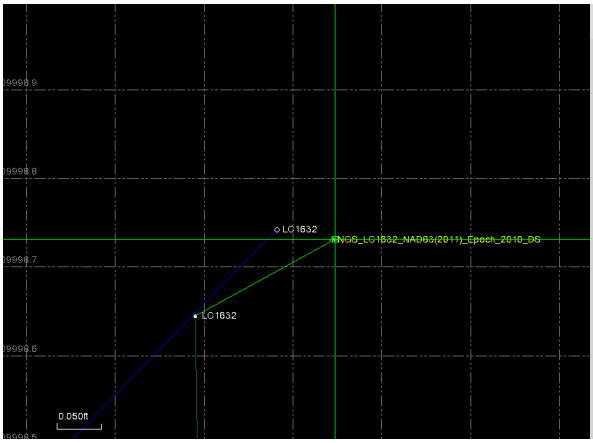
QA/QC Images



Details	
Grid azimuth:	93°36'59"
Grid distance:	0.135 ft
Δ Elevation:	-0.036 ft
Geodetic azimuth	
Forward:	93°59'20"
Backward:	273°59'20"
Ellipsoid distance:	0.135 ft
Ground distance:	0.135 ft
Δ Height:	-0.036 ft



Details	
Grid azimuth:	11°23'28"
Grid distance:	0.130 ft
Δ Elevation:	-0.012 ft
Geodetic azimuth	
Forward:	11°45'44"
Backward:	191°45'44"
Ellipsoid distance:	0.130 ft
Ground distance:	0.130 ft
Δ Height:	-0.012 ft



Details	
Grid azimuth:	240°30'52"
Grid distance:	0.176 ft
Δ Elevation:	0.104 ft
Geodetic azimuth	
Forward:	241°07'46"
Backward:	61°07'46"
Ellipsoid distance:	0.176 ft
Ground distance:	0.176 ft
Δ Height:	0.104 ft

Contact Information

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