Technical Instructions

Georgia 1999 DOQQ Standards

Modifications & Clarifications of USGS DOQQ Standards, 12/96

Georgia Institute of Technology
Center for Geographic Information Systems

PREFACE

Background: In January 1999, USGS began flying the state of Georgia with 1:40,000 Color Infrared (CIR) NAPP (National Aerial Photography Program) imagery. USGS is the federal government agency that manages NAPP, and has contracted with the state of Georgia to produce the 1999 imagery. The 1999 CIR imagery will serve as 2nd generation DOQQs (Digital Orthophoto Quarter Quad) for the state of Georgia. The 1st generation DOQQS for Georgia were developed from 1993 panchromatic (B&W) NAPP imagery.

Purpose: This document establishes the technical criteria to be used in the production of DOQQs within the State of Georgia for the 1999 Georgia 2nd Generation DOQQ Program. Specifications within this document comply with the "Standards for Digital Orthophotos" written by USGS in December 1996 and are foundation of the State of Georgia's standards noted herein. The purpose of the Georgia modifications to the USGS standards is to create a product of a uniform standard and appearance for the state of Georgia. Also included in this document are deliverable, source and ownership statements.

DELIVERABLES

- Original 14 μm scanned imagery in Tiled TIFF on DLT Tape in TAR format.
- DOQQ imagery in the standard DOQQ 3.75 minute format on CD-ROM organized by quad
- Metadata for each DOQQ which follows the FGDC "Digital Orthophoto Quadrangles, Standards for the Preparation of Digital Geospatial Metadata"

DATA SOURCES

- The USGS National Elevation Dataset (NED) for the State of Georgia will be provided to all vendors working on DOQQs under this project. The Georgia NED will be provided in ERDAS IMAGINE file format (.img).
- The 1993 DOQQ B&W images to be used for horizontal control) shall be provided to all vendors working on DOQQs under this project. The 1999 images will be provided in ERDAS IMAGINE file format (.img).

DATA OWERSHIP

All data (digital imagery, raw and ortho-corrected) developed under service agreements entered under this program are public data. The State of Georgia and USGS have the right to distribute data in any manner it sees fit. The State of Georgia and USGS may assign rights to distribute data to a service contractor at the State of Georgia and USGS' convenience.

SECTION 1.4, SOURCES

Vendors are to scan at 14 μm (.6 meter ground resolution) with a photogrammetric quality scanner. The geometric accuracy of the scanner shall be 4 μm RMSE or better. The repeatability of the scanner shall be about 1 μm. The radiometry of the scanner shall not be less than 8-bit (0 – 255). The raw scanned image format shall be delivered in Tiled TIFF, with all colors (bands or layers) in the file registered to one another. The order of the colors shall be:

Photo Sensed Data	Photo Color	TIFF Layer #
Near Infrared	Red	1
Visible Red	Green	2
Visible Green	Blue	3

The scanned image shall be resampled during the ortho-correction process using Bilinear Interpolation to a 1 meter ground resolution (ground sample distance).

SECTION 1.5, DIGITAL ORTHOPHOTO STRUCTURE AND FORMAT

The final Georgia CIR DOQQ file, with required header information will produce a file size of about 150 MB in size.

SECTION 2.2, GEOGRAPHIC EXTENT

The Georgia DOQQs shall have an overedge distance of 300 meters (± 30 meters) beyond the most extreme (furthest from the center) of the datum ticks.

SECTION 2.3, COLLECTION

The 1999 NAPP imagery flown by USGS shall be the source data. Vendors are to scan at 14 μm (.6 meter ground resolution) with a photogrammetric quality scanner as noted in Section 1.4. All DOQQs shall be resampled to a 1 meter ground sampling distance (ground resolution) during ortho-correction.

SECTION 2.5, DATUMS AND COORDINATES

All 1999 Georgia DOQQs shall be to ortho-corrected into the following projections:

	East of Longitude 84 °	West of Longitude 84 °
Projection	UTM	UTM
Zone	17, North	16, North
Spheroid	GRS 1980	GRS 1980
Datum	NAD83	NAD83
Units	Meters	Meters

SECTION 2.6, ACCURACY

The 1999 Georgia DOQQs horizontal (x, y) ground control is based on the 1993 B&W Georgia DOQQs. The horizontal accuracy shall be less than one meter (<1 meter) RMSE, as measured by independent checkpoints.

SECTION 2.8, IMAGE RADIOMETRY

The radiometry of the images shall be 8-bit (0 – 255) per color with no spikes in either end of the image histogram. During the scanning process, enhancements to the data shall be minimal. The imagery in the final product shall approximate the radiometry of the pre-scanned source image film di-positive. The imagery shall not be compressed with any type of compression, such as lossy, that degrades the quality of the image at any step during digital processing.

SECTION 2.10.1, DATA QUALITY – RADIOMETRIC VERIFICATION

See section 2.8.

SECTION 2.10.2, DATA QUALITY – ACCURACY VERIFICATION

Most of Georgia's 1999 DOQQ shall have nine (9) well-defined independent checkpoints.

SECTION 1.11.1, ARCHIVE AND DISTRIBUTION FORMAT – HEADER FORMAT

The USGS 3.75 minute DOQQ format shall be used for all final orthophoto under this project. The data storage format, keyword header format, and naming format shall be used and adhered in all imagery. There is no margin of error in the DOQQ Keyword Header. All Georgia DOQQ imagery will be checked for DOQQ header compliance.