The Security Systems Upgrade Project was a collaborative effort between the University of Alabama’s RCEU Program, UA’s Political Science Department, and the Huntsville Madison County Airport Authority’s Engineering Department. The applied research project had multiple objectives, but foremost was to document all entry/exit points on airport grounds, and in doing so, create a spatial product that could enhance security operations and contribute to the Security Systems Upgrade Project.

**Examples of Training Projects & Deliverables**

- **GIS Tutorial**
  - Using GIS tools
  - Learning how to read and accuracy check archival engineering schematics.
  - Developing
  - Using GPS when possible, or stride measurements when GPS signals were
  - Learning airfield orientation and safety training; the principles were
  - Time
  - Data conversion workflows: How to get data from a variety of sources
  - Seeing how qualitative research can be a valid tool in a researchers
  - Creative thinking and autonomous problem solving. As an example,
  - Software learning through application; specifically ESRI ArcGIS software
  - Workflow diagramming; being
  - Understanding the scope of the security project a

- **Panalpina’s Facility Assessment**
  - Using data in a research project; as an example, where discrepancies were
  - Reinforced in the field resulting in an understanding of professional
  - How to get data from a variety of sources – CAD, GIS, photographs, .PDFs, JPEGs, TIFFs, tables, text – to work on one analytical platform
  - Using GIS tools – such as, geo-referencing and spatial adjustment – to enhance existing data and attach spatial to non-spatial data
  - Using GPS when possible, or stride measurements when GPS signals were

- **Jackson Miller standing in front of President’s Boeing 707-720**

**Future Directions**

The security upgrade project generated a successful deliverable to the engineering department, and demonstrated to other airport departments the utility of a cartographic analyst/research intern. HMCAA’s IT department has extended an offer for Jack to continue working on a part time basis mapping fiber line at the airport. Jack will continue to hone his cartographic skills through application, and further his understanding of spatial databases, research and project management.

**Acknowledgements**

Individual Acknowledgements: Director of Engineering and Facilities Hans McClure/Ron Allen/Chad Baker (showing Jack some of the unique equipment at the airport and kindly treating Jack as if her were a company insider), HMCAA Executive Director Jeremy Green (helping Jack understand the scope of the security project at the airport), HMCAA Jim Hutcheson & Pat Hallisey (arranging a tour and providing Jack with a window into the airport planning world and kindly allowing him to sit in on planning presentations and other airport talks, bi-

**Project Introduction and Objectives**

**Skillset Development & Student Learning Outcomes**

- **Research and Creative Experience**
  - An understanding of what sequential steps should be taken to complete a project
  - How does one back up the data? How does one manage the time intervals for the data back up? Is the use of iterative saving to preserve former file versions for later use.
  - GIS database framing and GIS database management: How should folders and sub-folders be organized? What logical naming sequence should be used? How have I framed my work so as to be useful for others later in the project? How does one back up the data? How does one manage the time intervals for the data back up? Is the use of iterative saving to preserve former file versions for later use.
  - GIS tutorial workflows: How to get data from a variety of sources – CAD, GIS, photographs, .PDFs, JPEGs, TIFFs, tables, text – to work on one analytical platform
  - Using GIS tools – such as, geo-referencing and spatial adjustment – to enhance existing data and attach spatial to non-spatial data
  - Using GPS when possible, or stride measurements when GPS signals were

- **Panalpina’s Facility Assessment**
  - Using data in a research project; as an example, where discrepancies were
  - Reinforced in the field resulting in an understanding of professional
  - How to get data from a variety of sources – CAD, GIS, photographs, .PDFs, JPEGs, TIFFs, tables, text – to work on one analytical platform
  - Using GIS tools – such as, geo-referencing and spatial adjustment – to enhance existing data and attach spatial to non-spatial data
  - Using GPS when possible, or stride measurements when GPS signals were