Executive Summary

The purpose of this report is four fold: 1) To provide guidance in the implementation of *JBPhoto* and AIRINDEX (flight line MDL programs) with the SDS/FMS, 2) To provide an evaluation of the three of the most widely used Aerial Photography Management Systems (APMS) in use today, (ASCOT, T-Flight and CCNS4), 3) To develop a logic for a new mdl program that will combine the best of *JBPhoto* and AIRINDEX, 4) To develop a plan for the creation of a web based query site that will search repositories of historical aerial photography missions and display that information back to the screen.

JBPhoto and AIRINDEX

JBPhoto and AIRINDEX are both MDL programs that place in a design file the flight lines and photo centers of an aerial photo mission. This placement is accomplished by activating the MDL program while in a design file and providing the appropriate information required by the program. This information includes but is not limited to altitude, overlap, coordinate system, etc. Once the required information is provided, the user is then asked to identify or draw an area of coverage for the photo mission. The program will then calculate the flight lines and photo centers and place them in the design file for acceptance by the user. Both programs then provide the user with the ability to generate reports based on the generated flight line data. These reports can be used to provide backup for cost estimating and historical records.

The report also provides guidance in implementing *JBPhoto* and AIRINDEX with the SDS/FMS. *JBPhoto* places elements in the design file using its own symbology and level structure, while AIRINDEX places elements using the symbology and level settings that exist within the design file at the time of placement. These elements can be quickly brought into compliance with the SDS/FMS by changing the symbology and level to that required by the SDS/FMS.

Database information required by the SDS/FMS can also be attached to the flight line features by using a RDBMS of choice (Oracle, Access, SQL, etc.) by an Open Database Connectivity (ODBC) connection. Once the database has been established, a link to the flight line features, tabular information about the flight line, and photo centers can be maintained.

ASCOT, T-Flight, and CCNS4

ASCOT, T-Flight, and CCNS4 are Aerial Photography Management Systems (APMS). Their purpose is to provide the user with the ability to plan, test, and execute an aerial photo mission. This is done by using a computer to help plan the mission. All three APMS packages utilize some sort of Computer Aided Drafting (CAD) package. This CAD package is used to draw the flight lines on a computer screen over a geo-referenced background image or by inputting the coordinates information directly into the system. Once the flight line information is in place, the APMS packages can run routines to test the validity of the data before it is moved to the onboard computers for the actual photo mission. Once the data has been moved to the airplane, the onboard computer system uses the data to tell the pilot when he or she is on course. The onboard computer also uses the data to take the photography at the correct time and place along the flight line. Using the APMS greatly improves the capture of the aerial photography by reducing the number of photographs taken at the wrong time along the flight line.

Enhanced MDL Program

A new MDL program is to be written that will greatly enhance the ability of the planner of an aerial photo mission. This enhancement will be done by giving the planner an MDL program that incorporates the best of *JBPhoto* and AIRINDEX. It will also give the planner the ability to export into an ASCII format information about the flight line and photo centers (beginning and end points, photo centers, coordinate systems, etc.). This ASCII file will then be used by the APMS packages as an input file for the planning modules. Once the information is in the planning modules, it can be tested for validity and then moved to the execution modules on the airplane and used to execute the aerial photo mission.

Information should also be available for export into the Aerial Photography Summary Record System (APSRS). This is a database containing information about aerial photo missions that have been flown in the past. The MDL program should have the ability to export information about the photo mission into a format that can be imported into the APSRS.

Web Based Query

With the advent of World Wide Web (WWW) it is possible to search repositories of data in a very short time. Aerial photo data is no exception. There are many sites, both public and private, that maintain and publish information about aerial photo missions flown in the past. There are also several databases in existence that do not at this time publish their information on the web but do make it available on CD-ROM.

The ability to search all these repositories of historical aerial photo mission data would be of great benefit for those people looking for aerial photography but preferring not to go to the expense of having new photography flown.

A web based browser should have the ability to look at different databases (both across the WWW or on its local system) and return to the screen the requested information if it exists. The browser should be easy to navigate and give the user the ability to search an area with a graphic input or keyed in area or coordinate of the required photo. There are several examples of web based browsers in existence; PhotoFinder, published by the USGS and MicroSoft Terraserver, are excellent examples of this technology.

At this time the best place to start constructing a web based browser for the purpose of searching existing repositories of aerial photography is the USGS PhotoFinder web site. This site provides the user the ability to query both graphically or key-in. Information is then returned as a map showing the area of the requested photograph and also a tabular report describing the photograph. The PhotoFinder web site may be in the public domain. If so, the web site can be used as a template for the construction of a browser that will search across the WWW.

(iTheDataConnection) is a software package specifically designed to access several different sites across the WWW and return the information to the user requesting the information. iTheDataConnection is provided by Instep Software L.L.C and is highly configurable. It is constructed using web technology and can be configured to access the different aerial photo mission repositories that are currently available or will become available on the WWW

Using the PhotoFinder web site as a template and incorporating the iTheDataConnection software from Instep Software should provide a web based browser that can query a local repository or cross the WWW for information about an aerial photo mission and return it to user.

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