FLIGHT PLANNING

The Flight Planning program (FP) integrates aircraft performance characteristics with flight routing information derived from airport data and the data acquisition lines contained in the mission plan for a project. Flights can be based on all the lines in a single mission plan, several mission plans, or a subset of the lines from one plan. The intended users of FP are primarily pilots, although costing and routing information generated is extremely useful for project management, reporting, and bidding purposes.

Data required for flight planning includes pilot information, aircraft data, and routing data.

Pilot information consists of the name and license numbers of the pilot who will be flying a particular mission. This data is used only in generating formal flight plans for submission to air traffic control.

Aircraft data includes descriptive data such as tail registration number and aircraft owner, and performance data such as cruise speed, fuel burn rates, climb and descent rates, and nominal turn radius. Descriptive data is required only for creating formal flight plans. Performance data is used for time, fuel and distance calculations. Data describing a number of different aircraft can be maintained in a data base to simplify data entry.

The route for each flight in a mission is described by the takeoff, landing, and alternate airports, and by the data acquisition performed during the flight. After the airport data are entered or extracted from a NavAids data base, data acquisition lines are imported from a file previously generated by MP. The coordinates of run-in and run-out waypoints are calculated during this process and cruise altitudes above sea level (ASL) established based on ground elevations and sensor geometry altitudes (AGL). Wind speed and direction data can also be incorporated in the route plan. The route can be edited interactively on the map display to modify planned coverage to meet flight dictated constraints.

Output summaries are available to show time, fuel, and distance on a waypoint by waypoint basis, as well as total summaries showing transit time and distance, data acquisition time and distance, and total flight cost. Formal flight plans can be produced in Canadian Department of Transport (DOT), American Federal Aviation Authority (FAA), or International Civil Aviation Organization (ICAO) formats. Operational flight plans are available in a format suitable for in-flight use. Route map outputs can also be produced. As an example, figures 5 and 6 show the route calculated and the formal flight plan for the ice surveillance/coastal patrol mission from figure 4.

CONCLUSIONS

The MISSION software has proven to be extremely useful at Intera. It is being used in all phases of data acquisition projects from the first proposal to the client to the final data acquisition report. It has increased the effectiveness of the project planning and management staff by providing the facilities to generate a number of scenarios which can be compared to rapidly determine the most cost effective method of performing a project.