“Diverter” AI Based Decision Aid

Phases I & II

G. A. Sexton, S. J. Bayles, R. W. Patterson,
D. A. Schulke and D. C. Williams

Lockheed Aeronautical Systems Company
A Division of Lockheed Corporation
Marietta, Georgia 30063

Contract Number NAS1-18029
May 1989
FORWARD

This report discusses the feasibility of using artificial intelligence and algorithm-based decision aids to assist pilots in evaluating and selecting route options dictated by in-flight diversions. The work reported on was performed by the Lockheed Aeronautical Systems Company-Georgia Division (LASC-Georgia) for the National Aeronautics and Space Administration (NASA) Langley Research Center (LaRC) at Hampton, Virginia. The project was funded by NASA under Contract Number NAS1-18029, Task 04. This report is also identified as LG88ER0116 for Lockheed internal control purposes.

Guidance for the program was provided by Cary R. Spitzer, NASA-Langley Technical Representative of the Contracting Officer, and George G. Steinmetz and Michael T. Palmer, NASA-Langley Technical Monitors. George A. Sexton directed the Lockheed effort, which was performed as part of a continuing preliminary design investigation of new aircraft concepts by the Aeronautical Systems Development Department, Charles F. Klusmann, Manager. Other Lockheed contributors were Scott J. Bayles, H. Kyle Collins, Jo Anne Evans, C. Tony Leavitt, Robert W. Patterson, Duane A. Schulke, and Deborah C. Williams.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREWORD</td>
<td></td>
<td>i</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION AND SUMMARY</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PROBLEM</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>APPROACH</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PHASE I</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Determination of Feasibility and Functional Requirements</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Diversions</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Present Flight Replanning Procedures and Equipment</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>FMC Data Base Recommended for Diverter</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Associated Ground Systems</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Time-Based Navigation</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Data Link Communications</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Diverter Functions</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Software and Artificial Intelligence Issues</td>
<td>9</td>
</tr>
</tbody>
</table>
## TABLE OF CONTENTS (CONTINUED)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>PHASE II</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>System Definition and Development</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Airfield Selection</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Route Selection</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>System Functional Flow</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Demonstration</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Hardware Configuration</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Scenario</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Lessons Learned</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>CONCLUSIONS AND RECOMMENDATIONS</strong></td>
<td>22</td>
</tr>
<tr>
<td></td>
<td><strong>APPENDIX A:</strong> Compilation of Relevant Operation Rules</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>APPENDIX B:</strong> Terrain Avoidance Rules for Denver Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>APPENDIX C:</strong> Attribute Data Base with Weightings</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>APPENDIX D:</strong> Sample Diverter Display Screen Images</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FMC Data Base for Diverter</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Diverter Data Flow</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Conceptual Architecture of Diverter</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>Functional Flow of Diverter</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Lab Configuration for the Diverter Demonstration</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>Diverter Display Example: Alternate Airfields, Weights, and Recommendation</td>
<td>23</td>
</tr>
</tbody>
</table>
INTRODUCTION AND SUMMARY

New demands are being placed upon pilots to utilize airspace more effectively, to operate aircraft more efficiently, and to reduce in-flight delays while continuing to operate safely. At the same time, the amount of air traffic is increasing greatly with a relatively small increase in airport facilities. New technologies are being developed which, when properly applied, may help alleviate the overall problem. Artificial intelligence (AI) is one of those new technologies, and its application to airborne systems was the subject of this study. The specific application of AI addressed was its use in providing the pilot with all of the necessary information upon which to base decisions regarding in-flight diversions. Since the system provides information to the pilot to ensure that the aircraft maneuvers through the in-flight diversion to safely arrive at a destination, it was named "Diverter."

It was determined that a system to incorporate artificial intelligence into airborne flight management computers is feasible. The AI functions that would be most useful to the pilot are to perform situational assessment, evaluate systems status, evaluate outside influences on the contemplated rerouting, perform flight planning/replanning, and perform maneuver planning.

A study of the software architecture and software tools capable of demonstrating Diverter was also made. A skeletal planner known as the Knowledge Acquisition Development Tool (KADET), which is a combination script-based and rule-based system, was chosen and used to implement the system. A prototype system was developed which demonstrates advanced in-flight planning/replanning capability.
Pilots of today’s aircraft must obtain information pertinent to their proposed flight profile from a variety of sources. Through extensive preflight activities, they assimilate all necessary data and plan the flight, so that flying the flight plan can be executed in conjunction with other operational procedures. Currently, those flight plans are three dimensional (latitude, longitude and altitude). In the future, however, the fourth dimension (time) will be added to each steerpoint.

When an in-flight diversion is required, the data upon which to base decisions concerning diversions must now come from many sources, some of which are not readily available. In addition to knowing or obtaining the present position, fuel, and maintenance status of the aircraft, the pilot may need to consult aircraft handbooks, aircraft performance data, en route, terminal area, and instrument approach charts, company’s flight operations, and air traffic controllers. Developing a new flight plan to make efficient use of manpower, fuel, and time, while satisfying all applicable constraints, can be time-consuming and labor intensive, particularly when the replanning is during an intensive flight phase. Frequently, there is inadequate time to obtain all data before initiating the diversion, so the pilot bases his decision upon the best information available, which is sometimes incomplete. A system is needed to quickly provide the pilot with complete and accurate information upon which to make decisions concerning in-flight diversions.
APPRAOH

This program was divided into four phases: (1) Determination of feasibility and software tools, (2) Stand-alone demonstrations, (3) Evaluation in the Advanced Concepts Simulator, and (4) Validations in NASA’s 737 Transport Systems Research Vehicle (TSRV) aircraft. This report covers the first two phases.

PHASE I

During Phase I, the feasibility of using artificial intelligence and algorithm based decision aids to assist the pilots in evaluating and selecting route options dictated by in-flight diversions was determined. The feasibility analysis consisted of a sequence of steps or activities. These activities focused analyses on the following:

- Diversion Classification
- Present Flight Replanning Procedures and Equipment
- Flight Management Computer Data Base
- Associated Ground Systems
- Time-Based Navigation
- Data Link Communications
- Diverter Functions
- Software Design and AI Issues

These analysis activities were not performed as discrete steps, but proceeded as an integrated and iterative process.

Through an extensive analysis of flight operations a set of diversion types was defined. The next step involved the detailed functional analysis of existing procedures and equipment used for executing diversions. This analysis identified current practices and needs which could be addressed by Diverter. The current Flight Management Computer (FMC) data base was found to be applicable to Diverter with the addition of aircraft system status and weather information.

Analyses also identified ground-based systems under development by the Federal Aviation Administration (FAA) with which Diverter must be compatible and complementary. A key issue to be considered by Diverter was the development of 4-D (i.e., time-based) navigation using sophisticated AI techniques. A key technology identified as having potential impact on Diverter was data link communications. Diverter must address issues associated with and be compatible with data links.

The integration of the available information resulted in the definition of a set of functions for Diverter. This set of functions is referenced against the current and future aviation environment as well as current and future communications and AI technologies. The development of the Diverter functions in conjunction with IASC-Georgia’s extensive experience with AI resulted in the identification of critical AI technologies and capabilities needed for Diverter development.
Determination of Feasibility and Functional Requirements

Route replanning procedures for present aircraft operating in the current Air Traffic Control (ATC) environment were analyzed and used as the basis for beginning the study. In addition to conducting a literature review, airline pilots, airline training personnel, and air traffic control supervisors and controllers were interviewed. Operational procedures were observed at Atlanta Center, Atlanta Approach Control, and Atlanta-Hartsfield Tower. State-of-the-art equipment was operated in a B-767 flight simulator at the United Air Lines Training Center.

Diversions

Types of diversions were placed in six categories: different departure route, en route change to the same destination, delaying vectors, holding, different arrival route, and alternate destination. The causes for diversions were also placed into six categories: the first three are usually initiated exterior to the aircraft, the next two interior to the aircraft, and the last is initiated either way about equally.

a. Destination traffic is the most frequent cause for diversion because the number of aircraft arriving at busy terminals frequently exceeds the flow capacity. Arriving aircraft are placed in holding patterns or given delaying vectors.

b. Other en route traffic sometimes causes diversions because of conflicting routes of flight, crossing points or altitudes. The diversion could consist of a different departure route, route change to the same destination, or change of altitude or airspeed.

c. When the planned arrival airfield is closed or the arrival runway is closed or changed, the diversion may be to an alternate airfield, a different runway on the same airfield, or may be a delaying tactic such as holding, until the original destination runway is available.

d. An aircraft system malfunction sometimes causes a diversion to a suitable nearby airfield or to an airfield that has adequate repair facilities. Sometimes the aircraft establishes a holding pattern while diagnosing or correcting the malfunction, e.g., an unsafe landing gear indication.

e. Occasionally, pilots must divert their aircraft because a passenger has become very ill or unruly (up to the extreme of committing a hijacking). Usually this type of diversion would be to the nearest suitable airfield; however, in the case of hijacking, it could involve a variety of types of diversions.

f. Diversions due to adverse weather can be initiated by ATC or the pilot. They can involve any one or more of the types of diversions depending upon the kind and extent of the adverse weather.
Present Flight Replanning Procedures and Equipment

In present aircraft the pilot receives the initial indication of a possible diversion from the flight attendants for passengers, or from systems status displays for maintenance or nearby severe weather. Most frequently, however, the indication is received via voice communications from ATC or Company for the variety of other reasons to divert. When the pilot receives a change of ATC clearance, he evaluates it, then either accepts it, questions it, requests a modification to it, or rejects it. The decision is based upon the pilot’s situational awareness, experience, intuition, and discussions with the Company’s Flight Control, if appropriate. The route replanning may consist of following vectors provided by ATC, or the pilot may have to refer to on-board en route or terminal area charts. In aircraft equipped with a flight management computer (FMC), control/display unit (CDU), and navigation data base, the pilot can access required information through those systems. The data base typically contains all navigation aids in the area of operation (such as the US), all airways and named airway intersections, and all applicable airfields for large transport aircraft operations. Airfield data include runways, standard instrument departures (SID), transitions, standard arrival routes (STAR), instrument approaches and missed approaches. Some data bases also contain primary and alternate flight routes used by the Company. Aircraft performance data for climb, cruise, descent and landing are also included.

Aircraft with FMCs and CDUs provide the pilots with a convenient way of replanning for many types of diversions using 3-dimensional navigation. An alternate route can be built and stored in the computer, then executed with no delay. This is a convenient feature if there is a suspicion of a diversion. The alternate route can also be built in real-time, while proceeding along the primary route, then executed immediately. Alternate SIDs, STARs and transitions can be substituted directly into the flight plan from the data base, and either standard or non-standard holding patterns can easily be inserted. These present systems also provide the capability to fly a parallel course with offsets up to 20 nautical miles. This is sometimes convenient for avoiding weather or other traffic. There was no evidence of operational problems with the current FMC/CDU systems, although problems may have been present when those systems were first put into airline operation. This can probably be attributed to some modifications and debugging, and to considerably more training and by the pilots.

FMC Data Base Recommended for Diverter

Expanding the FMC data base to include additional pertinent information is one of the early steps in developing a Diverter system. Many categories of information that should be considered by the pilots prior to executing a diversion can be included. Figure 1 shows present categories and those recommended for the future. Most of the data are static enough in nature that only periodic updates would be required (e.g., each 28 days). The exceptions are: (1) current fuel and aircraft systems status, which must be sensed and updated continuously in

5
real-time; and (2) current and forecast weather for the planned route, diversion route, planned destination, and alternate destination, which must be provided from a data base on the ground through data link.

Associated Ground Systems

The FAA, in its National Airspace System Plan, is working toward more automation in the air traffic control system and instituting a time-based navigation system (4-D Nav) to improve efficiency in the use of airspace. The airborne Divert system complements many of the goals that FAA has established for ground systems which include: to detect potential traffic conflicts and provide resolutions; to implement Mode S data link and generate data link clearances, current weather and winds; and to provide en route metering from departure to arrival. The planned payoffs for automated en route air traffic control are capabilities to: (1) plan and monitor 4-D traffic flow, (2) permit aircraft to fly fuel efficient profiles, (3) increase safety, (4) increase National Airspace System capacity, and (5) increase controller productivity.

Time-Based Navigation

The Divert system must be designed as an enhancement to current FMC to operate in a 4-D navigation environment. While the present FMC/CDU operate well in three dimensions, additional intelligence is required to add the dimension of time, particularly during an in-flight diversion. Conclusions drawn during the study indicate that 4-D navigation will be much more difficult to employ in terminal ATC areas than in center airspace, but it will be useful in both to enhance traffic flow. Until a solution is found to the problem of getting aircraft to the takeoff position in proper sequence and at precise times, 4-D ATC clearances will not be feasible until after the aircraft is airborne. There will also be a tradeoff in operating costs between the reduced delaying or holding time involved with 4-D and the less efficient engine operation caused by flying at non-optimum performance to meet time constraints.

Data Link Communications

Data link was another component which was discussed with ATC personnel and pilots. The advantages of data link are: (1) It will unload the voice communications system which is presently saturated, particularly in high volume terminal areas; and (2) systems can be designed so that direct communication between the aircraft computer and ground-based computers (such as ATC, Company, and weather service) can be accomplished. This could reduce workload considerably, and if hard copy printers are installed, pilots and/or controllers can obtain copies for reference, if desired.

There are several disadvantages of data link. The first is that the pilots will lose a certain amount of situational awareness concerning other air traffic that they now receive through voice communications. This includes trends or predictions on altitude and speed changes when they hear instructions being issued to aircraft that they are following.
<table>
<thead>
<tr>
<th>PRESENT FMC DATA</th>
<th>ADDITIONAL DATA REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAV AIDS</td>
<td>FEDERAL AVIATION REGULATIONS</td>
</tr>
<tr>
<td>AIRFIELDS</td>
<td>WEATHER</td>
</tr>
<tr>
<td>COMPANY ROUTES</td>
<td>COMPANY RULES</td>
</tr>
<tr>
<td>A/C PERFORMANCE</td>
<td>OBSTACLES (ALT CONSTRAINTS)</td>
</tr>
<tr>
<td>FUEL</td>
<td>COMPANY PRIORITIES</td>
</tr>
<tr>
<td>A/C STATUS</td>
<td>SPECIAL USE AIRSPACE</td>
</tr>
<tr>
<td></td>
<td>NOISE ABATEMENT AREAS</td>
</tr>
<tr>
<td></td>
<td>SLOT TIMES</td>
</tr>
</tbody>
</table>

Figure 1. FMC Data Base for Diverter
Pilot reports on voice communications of unusual weather, such as storms, areas of turbulence, windshear, or icing along the planned route would also be lost. The second disadvantage is that see-and-avoid capabilities would be reduced over that for voice communications, if data link information is only presented on a head-down display. This disadvantage might be overcome in the future by converting some visual data link presentations to voice presentations on board the aircraft.

Concerns were expressed by both pilots and controllers that transmitting, receiving and interpreting data link messages would increase workload over voice command and possibly increase communications response time. This is of particular concern in the busy terminal areas. There was also concern that complete messages may not be received due to antenna location, weather phenomenon, or other reasons, and that neither the sender nor the receiver would immediately be aware of missing or incorrect data.

**Diverter Functions**

During Phase I it was determined that Diverter should operate as a flight manager by employing artificial intelligence to provide the pilot with decision aiding information, specifically as it related to in-flight diversions. Based upon the assumption that the prerequisites described earlier (expanded on-board data bases, time-based navigation, and FAA data link systems) will be available, candidate functions for Diverter were developed. The functions were placed into five categories as follows:

a. **Perform situational assessment.** At the time that a diversion is contemplated or directed, the aircraft's position, heading, airspeed, altitude, etc., must be known so that data can be applied in computation of the diversion.

b. **Evaluate systems status.** The maintenance status or present capability of the aircraft, engines, avionics systems, fuel, oxygen, etc., must be known and evaluated.

c. **Evaluate influences on contemplated re-routing.** Numerous factors external to the aircraft must be considered for safe, efficient operation. Weather along the proposed route must be suitable. Conflicts with other air traffic must be resolved. Federal Aviation Regulations must be complied with. Special Use Airspace must not be violated. Noise abatement procedures, company rules and priorities should be followed. And, slot times for arrival and other aircraft slot times should be considered. Weather and traffic information must be obtained in real-time, while the rest can reside in the on-board data base.

d. **Perform flight planning/replanning.** Diverter must evaluate a new route or destination provided by ATC with respect to time, situation, external influences, and systems status, as listed above; or it must plan for a new route or destination as a result of an on-board cause considering the same criteria. In either case, the results of the flight planning/replanning would be
presented to the pilots to aid them in making a decision. Time-based navigation, or 4-D flight plans, will require a considerable increase in calculations over present 3-D navigation.

e. Perform maneuver planning. During the route replanning and execution of a diversion, Diverter must consider aircraft performance capability as it relates to the planned vertical profile, and must maneuver to avoid terrain, other traffic, and adverse weather. Aircraft performance and terrain/obstacle information can be part of the on-board data base; traffic and weather must be obtained in real-time.

The data flow for the Diverter system is shown in Figure 2. Data from those items listed as External Influences, Present Situation, Map (referring to where it may be displayed), Aircraft Performance, and Status will be available to Diverter either from a data base or real-time data link. A diversion may originate from an ATC instruction, an in-flight malfunction, a company directive, or a weather advisory. Diverter will consider all pertinent data and check or plan the new 4-D route and provide the pilot with information on it, including the effect on time constraints, available fuel, en route or destination weather and facilities/capabilities at the destination. The pilot can then approve and select the plan, or reject it, or modify it. In the latter case, Diverter will re-evaluate the flight plan as modified and notify the pilot of any discrepancies.

SOFTWARE DESIGN AND ARTIFICIAL INTELLIGENCE ISSUES

Early in the design process, it was important to define the software architecture and proper software tools that can support the Diverter system from an unsophisticated stand-alone demonstration through actual implementation in an aircraft. Part of this task was to determine the software design and artificial intelligence issues, and to recommend software tools to be used during later phases.

A comparison was made of the expert system building tools that are currently available. Through various ongoing AI projects at LASC-Georgia, a working knowledge has been gained of AI technologies, including those listed in the BBN/NASA report, "An Analysis of the Applications of AI to the Development of Intelligent Aids for Flight Crew Tasks." Intelligent systems have been developed at LASC-Georgia using several expert system development tools. These tools include: Automated Reasoning Tool (ART), Knowledge Engineering Environment (KEE), OPS5 (and other versions of OPS), S1, and the Lockheed Expert System (LES). Smaller programs are also being developed using the logic-based programming language PROLOG. Research was also done for the Metalevel Reasoning System (MRS) and SRL+ (now known as Knowledge Craft) tools. The capabilities of the knowledge representation schemes used by these development systems are basically quite similar for the purposes of this study.

In general, except for OPS5, all of these tools are very expensive and not very transportable; they provide most of the basic operations needed for developing large systems. For large planning systems (like Diverter), however, these rule-based systems are too cumbersome to be efficient (if they can be used successfully at all).
Figure 2. Diverter Data Flow
Rule-based systems were then compared to script-based systems. Script-based systems are constrained to structured sequences of events in a narrow knowledge or problem domain. It is also difficult to recognize when a script has failed or is working incorrectly. Rule-based systems, conversely, are more flexible and can handle both unrelated sets of information and unorganized or unexpected data. Rule-based systems also allow for the prediction of future events. It was determined that it would be much harder to implement Diverter using rule-based systems than using script-based planning systems. However, it was also determined that some kind of rule-based subsystem would be an excellent complement to the overall script-based planner. Using a script-based planner would provide a good representation of the well-defined "scripts" that normally take place during a Diverter mission, while the rules could handle the assertion of facts to any knowledge-base or blackboard, as well as handling the abnormal events that take place, possibly by executing a set of "subscripts."

Thus, a skeletal planner known as the Knowledge Acquisition Development Tool (KADET) was chosen. KADeT is a planner that uses both script-based and rule-based systems and has the capability of executing in real time. KADeT uses prior knowledge to construct scripts or skeletal plans. The details of these scripts/plans are then filled in as the system executes.

KADET's scripts/plans consist of a series of Plan Elements (PEs). The PEs are themselves made up of specific subscripts, and each now has its own blackboard. The blackboard contains assertions of facts with information including the certainty, source, and time of the assertion. There are a series of rule-based functions that work on these PEs. These rules are used to:

- Initialize the PE
- Specialize the PE to the specific domain
- Determine if the PE is applicable to the current situation
- Decompose the PE to satisfy each of its applicable subscripts
- Establish the completion or failure of a script/plan
- Execute a script/plan

KADET also has opportunistic rules, which allow higher priority items to be addressed immediately (e.g., a time-critical malfunction warning).

Valuable knowledge has been (and will continue to be) learned from direct involvement in the Pilot's Associate (PA) program. KADeT is being used in the Tactics Planner, Mission Planner, and System Status modules within the PA. Diverter will apply "lessons learned" from the PA, not only with KADeT but also with the concepts of conflict resolution and coordinating expert systems, which are directly applicable to the Diverter project.

PHASE II

During Phase II a prototype intelligent aid for diversion was developed. Phase II consisted of two major activities:
1. System Definition and Development
   a. Airfield Selection
   b. Route Selection
   c. System Functional Flow

2. Demonstration
   a. Hardware Configuration
   b. Scenarios
   c. Lessons Learned

Based on the information gathered in Phase I the system was defined and developed. Diverter was developed around two sequential decision processes: airfield selection followed by route selection. The overall system functional flow was designed around these two decision processes.

Demonstration of Diverter required the integration of AI technology with a standard aircraft simulation environment through the use of a complex system configuration. Once the hardware configuration was in place, several simulation scenarios were implemented. In the design, development, and demonstration process a number of valuable lessons were learned relating to hardware and software implementation, within the present AI architecture.

The conceptual architecture of the system is shown in Figure 3. This figure illustrates how the Diverter AI-based functional components combine to enhance the pilot’s situational awareness and serve as an aid to the pilot’s decision process. The figure also shows the necessary linkage of the Diverter system to the ATC environment as well as to other on-board intelligent aids. These would include systems based on NASA Langley’s prototype on-board fault monitoring and diagnosis aid (FaultFinder), currently under development. The key functions of the Diverter architecture which have been implemented for this demonstration are:

- the generation of divert options
- the recommendation of diversion
- the flight replanner
- a preliminary explanation facility
- the initial message parser
- the capability for pilot to accept recommendation or select another option

SYSTEM DEFINITION AND DEVELOPMENT

Phase I of this program included an extensive analysis of the functional requirements of an intelligent diversion system. Phase I also examined the existing procedures and techniques used by pilots in diversion situations. Extensive data from the Federal Aviation Regulations (FARs), the Airman’s Information Manual (AIM), and Air Traffic Procedures (ATP) were compiled for use in this project and are presented in Appendix A. Terrain and other obstacles within 35 nautical miles of the Denver airport (the diversion destination used in the prototype demonstration) were plotted, and rules to avoid those obstacles were developed and are presented in Appendix B. The data collected also included what information was used and what decisions were made by pilots.
Figure 3. Conceptual Architecture of Diverter
within the constraints of the prescribed procedures. These analyses defined functions to which artificial intelligence technology could be applied with the most benefit.

The generic scenario for Diverter includes introduction of problem conditions requiring a diversion from the planned flight path. Diverter is capable of two modes of operation depending on the nature of the diversion. The modes available are: (a) Diverter evaluates a suggested diversion plan proposed by ATC and makes a recommendation to the pilot to accept/reject the plan; or (b) Diverter initiates a replanning procedure and then presents the recommendation to the pilot if the diversion is not initiated by ATC. The demonstration includes four different reasons for diversion: weather, cabin pressurization failure, engine failure, and a catastrophic emergency. Each of these situations has a different set of operational impacts as well as a different set of requirements to be addressed. The specific impacts and requirements of each situation were identified and defined through extensive discussion with the pilots.

Based on the functional analyses in Phase I in conjunction with known and available AI capabilities, the present system function was divided into two decision processes: (1) airfield selection; and (2) route selection. The solution for each of these decisions is based on the evaluation of a set of salient characteristics or attributes which effect the outcome of each question. These salient attributes were defined based on the knowledge acquisition process begun during Phase I. This process included in-depth interviews with domain experts who were civilian and military pilots and air traffic controllers, as well as examination of flight manuals, FAA regulations and company guidelines. Each attribute was assigned a numeric weight which reflects its relative importance and is used by Diverter in its computation/evaluation process. The correctness of the decisions and subsequent recommendations made by Diverter are dependent on the weightings. The attributes used by Diverter and their weightings (for the airspace used in the demonstration) are listed in Appendix C. This attribute information would be resident in the FMC for use by Diverter.

Airfield Selection

The first decision made by Diverter is airfield selection. Diverter chooses a set of alternate airfields based on their distance from the current location of the aircraft. This list of airfields is subjected to evaluation based on the weighted attributes. For this task Diverter employs an algorithmic search of a static data base. From this search procedure the best alternate is selected as the new destination. The attributes used in this evaluation procedure are listed below:

Airfield Decision Factors

Safety
  Weather
  Crew Duty Time
  Air Traffic
  Aircraft Operations
  Aircraft Maintenance Status
Airfield
- Airfield Conditions
- Navigation Aids Status
- Communications Status
- Special Operating Hours
- Parking Space Availability
- Maintenance Availability

Facilities
- Emergency Equipment
- Suitable Stairs
- Power Cart Availability
- Relief Crew Availability
- Transportation to Destination
- Hotel Accommodations

Passenger Comfort
- Cabin Altitude Descent Rate
- Turbulence
- Maneuvering

Schedule
- ATC En Route Vectors and Holding
- Delay in Terminal Area
- ATC, Gate, Taxi Delay
- Aircraft Turn Around Time
- Departure Delays
- Wind Effect

Economy
- Fuel
- Landing Fees
- Maintenance
- Crew

Route Selection

Diverter then must select a route to the new destination. Two methods were explored. The first employed a search using a relatively simple algorithm as done for airfield selection. In this case, the search and evaluation were based on a set of static attributes. The attributes that would be used by Diverter for this process are listed below.

Route Selection Factors

Safety
- Weather
- Air Traffic
- Aircraft Operations
- Aircraft Maintenance Status
Routing
Approach Profile
Restricted Areas
Military Operation Areas
Terrain/Obstacles
Terminal Control Area Altitude/Route Restrictions

Schedule/Economy
ATC En Route Vectoring/Holding
Wind
Meeting Slot Time
Route/Approach/Descent Distance

Passenger Comfort
Cabin Altitude Descent Rate
Turbulence
Maneuvering

The definition of alternate routes and the selection of a preferred route in a dynamic, real-time context is a complex problem. This problem cannot be solved adequately using simple strategies, such as those mentioned above, but requires special intelligent programming techniques in order to achieve a flexible, dynamic replanning capability. This programming problem is made more difficult by the need to provide the pilot with a query/explanation facility in order for him to understand and have confidence in the system's advice. Therefore a second more sophisticated replanning method was needed.

To inject the needed flexibility into the replanning process used by Diverter, an algorithm based on the A* search technique was developed. The A* algorithm searches all possible route segments from the aircraft's current location and finds the best possible (minimal "cost") route to the chosen destination based on the weighting scheme. The domain of this search is a map of all of the FAA defined flight segments to a specific airfield from the current location of the aircraft. A flight segment is a straight path between two FAA defined waypoints. This path can be defined for various altitude levels according to the airways depicted in the En Route Low Altitude and En Route High Altitude charts. "Costs" for the segments are determined based on the following factors:

- Environment - This includes any weather problems that may be present and all ground based obstacles such as mountains, towers, etc.
- Distance - This is raw distance in miles of that segment and the total distance of the path currently being considered.
- Current Aircraft Status - For this phase we will only be concerned with an engine failure and a pressurization failure, in which case the maximum altitude for the aircraft is affected. An "extreme" emergency status is also implemented for this phase, which plans an immediate path to the nearest airfield staying within aircraft restraints such as maximum rate of descent and less than 1g turns.
- Altitude - Based on aircraft status and environment, a low "cost" is given if the altitude of the segment is acceptable, and a very high "cost" is given if the segment's altitude is unacceptable.
System Functional Flow

The functional flow of the complete Diverter system is illustrated in Figure 4. All of the functions depicted in this chart are not currently implemented in the prototype. The functional flow reflects activity for a weather diversion, although Diverter is designed as a generic diversion aid for almost any situation. The prototype demonstration assumes that a diversion situation exists at the outset so that specific functions associated with the decision to divert are not currently used. The functions which have been implemented are indicated in Figure 4 by the highlighted boxes. The functional flow presented in this figure illustrates an implicit design criterion which places the pilot as the focal point and ultimate decision maker in the aircraft.

A brief description of the major functions follows. The numbers here correspond to the functional flow diagram.

1. Weather information is received by Diverter from ATC. In the operational system this information will be obtained via data link transmission.

2. Diverter currently displays the information on weather cell location, severity, and movement. The full system will also display expected delay time to destination based on the cell’s rate of movement and weather avoidance rules.

3. Pilot forwards weather information to Company Control either by voice communication or by instructing Diverter to transmit using data link. In the prototype this function is simulated.

4. Diverter compiles a list of possible alternate airfields within a 200 mile range. The content of this list is based on runway length, aircraft configuration and status, and weather. Diverter then ranks the alternates on the basis of their distance from the current location of the aircraft. The completed system will use this information to formulate a recommendation to divert or not to divert.

5. The system can also display the alternates and a recommendation to divert.

6. Diverter computes a ranking of the alternate airfields based on the weightings of the individual attributes, e.g., safety, economy, fuel rules, etc. Diverter then presents the possible alternates and their rankings.

7. In the full system the pilot will be able to select a different range within which to make a selection.

8. The full system will also allow a company recommendation for an alternate or other possibility to be input.
Figure 4. Functional Flow of Diverter
9. The pilot can then query the system for a detailed list of attributes of any of the alternate airfields. The pilot can ask for a side-by-side comparison listing of two of the alternates.

10. The pilot can then enter a different alternate airfield based on the company’s or pilot’s own preference.

11. Diverter will then indicate if the new alternate meets the requirements for fuel remaining, weather and aircraft requirements. The complete system will add the alternate to the list if it meets requirements (NOTAMS, FARS, company rules, etc.).

12. Pilot chooses the alternate to which he will divert.

13. The system will allow the pilot to activate Diverter to select a desired alternate and to develop a route to that alternate.

14. After the alternate is chosen Diverter develops and displays a list of alternate routes with numeric weights. The best route is indicated based on the relevant attributes of each route (e.g., environment, distance, aircraft status, altitude).

15. The pilot may then request modification to Diverter’s route.

16. The pilot can then accept the Diverter’s or his own proposed route.

The following functions illustrated in the flow chart have been defined for the fully functional system, but are not yet implemented.

- If the pilot approves the Diverter recommendation, the route is submitted to ATC for approval. The alternate route is either cleared or modified by ATC.
- If the route is modified, Diverter then presents the modified route to the pilot and evaluates the route for appropriateness. Diverter then makes a recommendation to the pilot to accept or reject the modified route.
- Once a route is chosen and cleared by ATC, the pilot can then instruct Diverter to send the route information to the flight management computer (FMC). The FMC computer automatically tunes the navigation radios to the correct frequencies.
- The pilot can then have Diverter notify, via data link, the company as to arrival information such as ETA and expected fuel needs.
- Diverter displays the cruise flight plan information for the remainder of the diverted flight. This display will incorporate presently implemented and available information regarding the new route, waypoints, ETA to steerpoints, weather, and ETA to destination. Information on horizontal/vertical profiles will also be included as it is developed and implemented.
Diverter receives runway use and approach information via data link from ATC. The specified approach can be used by the pilot or the pilot can request an alternate. After an approach has been agreed upon, Diverter begins presenting descent, approach, and landing information.

DEMONSTRATION

Hardware Configuration

The Diverter prototype is operational and has been demonstrated in the Intelligent Systems Laboratory at IASC-Georgia. The system uses a Symbolics workstation for the intelligent software, interfaced with a VAX 11/780 which drives an Adage display system for presentation of Diverter information. This configuration is shown in Figure 5.

The input/output function for the demonstration was not implemented as a fully developed pilot-vehicle interface. The interface for the prototype was intended to provide a demonstration of capability and as such was relatively simple. For the prototype, text information, including explanation data, was presented via the Symbolics display screen. The map/navigation graphics were presented on a separate display driven by an Adage display system similar to those in NASA's Advanced Concepts Simulator (ACS). During Phase III the system is expected to interface with the Adage display systems and the control display units in the ACS which have touch-sensitive screens and multifunction keyboard input devices.

The interface from the Symbolics to the Adage displays was accomplished using Ethernet. The Symbolics information was transferred to the VAX using Chaosnet protocol. The information was then transferred to the VAX using Decnet protocol. The data was parsed and assembled into its correct form in the appropriate data base locations. The Adage display driver code then accessed these array locations to glean the appropriate display information.

A preliminary explanation capability was developed for this application. It allows the pilot to request more information about specific recommendations made by Diverter. The pilot can request Diverter to show a list of attributes for each alternate airfield or route. This information allows the pilot to review the rationale and to verify the recommendation provided by Diverter. In addition, the pilot may request a list of attributes for two of the alternate airfields or routes proposed by Diverter to allow a side-by-side comparison. This explanation facility, while effective, should be considered as a concept investigation tool rather than a final product.

Scenario

The demonstration was based on the following scenario. A commercial flight is en route from Los Angeles (LAX) to Colorado Springs (COS). A weather system develops over Colorado Springs requiring a diversion of the flight. As previously mentioned, the demonstration assumes immediately that a diversion is necessary because of the weather system. In the fully
Figure 5. Lab Configuration for the Diverter Demonstration
functional Diverter the system will be able to evaluate the situation and decide if a diversion is required. For the demonstration, the data base was constrained to a small number of available or active airfields within a nominal 200 mile range. These constraints were intended to keep prototype development at a manageable level. An example display for a diversion, showing the active airfields with relative weights and Diverter's recommendations, is shown in Figure 6.

In addition to the weather situation, the demonstration includes several additional kinds of diversions: a diversion due to a pressurization failure; a diversion due to an engine failure; and a diversion due to a catastrophic emergency. The airfields are selected from the domain of airfields in the Denver area (restricted for the demonstration). The domain of the route search is a map of all FAA defined flight segments in the Denver area. A flight segment is a straight path between two FAA defined waypoints. This path can be defined for various altitude levels, according to the airway depicted in the En route Low Altitude and En route High Altitude charts. Weights for the segments are determined based on environment, distance, current aircraft status, and altitude. A sample of a variety of actual display screens from the demonstration are included as Appendix D.

Lessons Learned

During the development process of Diverter, a number of lessons were learned relating to the implementation of this type of AI architecture. Some of the most important items are presented below.

- A planning system using 3-D arrays on the Symbolics is unacceptable for any reasonable search space. More research is needed in hardware used for this planning. For the segment data base we used, the A* algorithm worked very well. The problem involved is defining all the segments and calculating the weights in real time. Four factors were used with no trouble, but a larger subset of the factors from Appendix C, obtained dynamically, would be needed to realistically simulate the whole situation.
- The demonstration was driven by software executed on the Symbolics. The navigational map displays used were the Adage displays currently used in the Advanced Concepts Flight Simulator (ACFS) at NASA-Georgia. In the absence of the hardware to simplify the transfer of data from a Symbolics to a VAX and eventually the Adage, we had to write our own software for the hardware we currently had.

Strict use of a good Interface Control Document (ICD), as well as excellent software engineering practices with very skilled software engineers allowed very successful completion of this particular task. This difficult issue should be addressed carefully in future work. Items to be considered include language coordination between programs, common id names, message traffic, compatible transfer protocols, and timing for updates. The trade-offs between performing these tasks or buying expensive hardware (BUSLINK) to solve some of these problems, should be examined.
**Figure 6. Diverter Display Example:**
Alternate Airfields, Weights, and Recommendation

---

### DIVERTER PLANNING CONSOLE

<table>
<thead>
<tr>
<th>CURRENT DESTINATION: KCOS</th>
<th>NASA - <strong>LOCKHEED</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>DIVERTER recommends attempting due to severe weather</td>
</tr>
<tr>
<td>Show Attribute Weights</td>
<td>DIVERTER recommends the final destination to be DENVER</td>
</tr>
</tbody>
</table>

- AC reports severe THUNDERSTORMS on a LINE.
- LIE to ORANGE, requires ENCOUNTER of KCOS moving
- ELY or to ORANGE, may be hard, +45°, HAIL, ICING.
- LIGHTNING air to air may be due to ORANGE, and SCRUB turbulence
- 60% vicinity of the cells.
- The weight of ALAMOSA = 250
- The weight of PUEBLO = 6
- The weight of SANTA-ROSA = 8
- The weight of FARMINGTON = 225
- The weight of ALBUQUERQUE = 6
- The weight of DENVER = 310
- The weight of GRAND-JUNCTION = 3

---

**ORIGINAL PAGE**
BLACK AND WHITE PHOTOGRAPH
The methods used for planning in Diverter, A*-type searches, do not produce a formal trace of rule firings or inferences that were made to arrive at the optimum route. The functions will not currently provide feedback as to why a segment was rejected or accepted but simply gives the path with the lowest "cost." To capture this kind of explanation of the decision process suitable for presentation to a pilot/user will be a difficult task.

Flavors and other object-oriented paradigms are excellent forms for representing data for the Diverter domain. Their flexibility and ease of manipulation are essential for the functions performed in this program. The sophisticated capability demonstrated in Diverter was made possible by the use of software tools such as Flavors which allow for dynamic data representation. Much of the capability of Diverter is related to the exploitation of a blackboard architecture developed with a script-based skeletal planner (KADET), described earlier. This architecture provided an efficient means of overall information management including module management, message passing, interface control as well as global and local data storage.

Driver software for the demonstration simulation must calculate much more than we anticipated. This will not be a problem in the future, since the ACS/ACFS already performs these functions, but the time and subset of tasks needed to develop a driver on the Symbolics was underestimated.

The Diverter Manager module was an integration strongpoint. This module, by using blackboards and strong ICDs, coordinated the other modules very efficiently. Problems were encountered during integration, but approximately 80% of them were anticipated and solutions developed.
CONCLUSIONS AND RECOMMENDATIONS

Artificial intelligence technology can provide pilots with information on which to base decisions concerning many flight management activities including in-flight planning and replanning. Diverter demonstrates the capability of an intelligent flight management system. This system can rapidly assimilate information from aircraft sensors and systems, a large on-board database, real-time inputs from the pilot, or data link from the ground. Diverter evaluates this information to develop planning/replanning guidance for presentation to the pilot. The functions of Diverter are to perform situation assessment, to evaluate influences of current system status, evaluate "influences" on rerouting, to perform flight planning and replanning, and to present this information, and additional explanatory information when necessary, to the pilot.

Future work on Diverter should address two major areas. The first area involves the development and evaluation of a viable, operationally capable pilot-vehicle interface (PVI). This PVI is expected to present text and graphic information, including explanations, and allow pilot input through the multifunction control display unit (MCDU) of the FMC or through other means (such as voice input) in the ACS. Route information in graphics format will be presented on the navigation/map display. The PVI should also provide an expanded and refined explanation capability. The explanations provided should be flexible enough to provide the pilot with information in the appropriate quantity and format for a given situation. Full implementation of a PVI will necessarily require a careful evaluation process to ensure a maximally effective interface.

The second area involves transporting the stand-alone prototype into a full simulation environment such as the ACS at NASA LaRC. This will allow for testing of the capabilities and limitations of the system in a fully dynamic environment. Once the simulator work is completed, efforts can then proceed to place Diverter into an operational environment such as NASA's Boeing 737 Transport Systems Research Vehicle (TSRV).
APPENDIX A

Compilation of Relevant Operation Rules and Regulations

This appendix summarizes the set of aircraft operation rules and regulations relevant for use in Diverter. These rules were extracted from Federal Aviation Regulations (FARs), Airman Information Manual (AIM) and Air Traffic Procedure (ATP) documents. Each rule is referenced for the appropriate source document.
Goals: Aircraft Separation

Category 1: Departures
Category 2: En Route
Category 3: Arrivals (This is the category considered in this Appendix)
   Subcategories: Normal IFR
                  Weather Effects
                  VFR
                  Radio Outage
                  Emergency
                  Aircraft Performance
                  Type of Approach
                  Runway Conditions and Wake Turbulence
                  Fuel Dumping


Assumptions:

(1) Pilot is in a radar environment inside a terminal control area and will remain there.
(2) There is a control tower in operation.
(3) Pilot has all necessary equipment and it is in good operation order except when specified.
(4) No missed approach procedures are considered.
(5) Landing is made at a civil airport (military minima differ somewhat).
(6) Separation standards for helicopters are not considered.
(7) Separation minima are included as well as other factors that may affect separation between aircraft.

Other information that may be required:

Traffic Pattern Information
Current Notams and FIREP Information
MVA's (Minimum Vectoring Altitudes)
Wind Direction and Velocity on Active Runway
Approach Chart Information - Length of runway; MDAs; MSAs; notes and specifications; minimum, maximum, and mandatory altitudes.
Goal: Aircraft Separation

Category 1: Departures

Category 2: En Route

*Category 3: Arrivals


Goal: Noise Abatement

Goal: Terrain Avoidance

Goal: Fuel Conservation

Goal: Weather Avoidance

Goal: Schedule Compliance

*This is the category considered in this first draft.
Assumptions:

1. Pilot is in a radar environment inside a terminal control area and will remain there.
2. There is a control tower in operation.
3. Pilot has all necessary equipment and it is in good operating order except when specified.
4. No missed approach procedures are considered.
5. Landing is made at a civil airport (military minima differ somewhat).
6. Separation standards for helicopters are not considered.
7. Separation minima are included as well as other factors that may affect separation between acft.
Computer may also need other information:

Traffic Pattern Information
Current Notams and PIREP Info
MVA's (Minimum Vectoring Altitudes)
Wind Direction and Velocity on Active Runway
Approach Chart Info - Length of runway; MDA's; MSA's; notes and specifications; minimum, maximum, and mandatory altitudes.
Standard IFR

AIM PP272 1) If aircraft altitude < 10,000 ft then if distance from airport > 20 miles then aircraft speed ≥ 210 kts and ≤ 250 kts else if distance from airport < 20 miles then if aircraft is turbine-powered then speed ≥ 170 kts and ≤ 250 kts else speed ≥ 150 kts and ≤ 250 kts.

AIM 271c 2) If aircraft are at the same altitude then if acft are ≤ 40 miles from the radar antenna site then 3 miles radar separation must exist between them else 5 miles radar separation must exist between them.

AIM 371 3) If a procedure turn is required on the IAP then the procedure turn distance shall be made within the turn distance specified on the IAP and the acft altitude shall not be below the minimum altitude specified.

AIM 371 4) If a holding pattern is specified by the IAP then the holding maneuver must be executed within the published leg length or 1 minute time limitation.

AIM 364b 5) If acft is cleared for an IAP then the acft altitude must be ≥ minimum altitude for that procedure and ≤ the maximum altitude or = mandatory altitude.

AIM 364b, c, d 6) If a vector to the approach is provided by ATC then the acfts altitude must be ≥ minimum safe altitude (MSA) and minimum vectoring altitude (MVA).

FAR 91.87d 7) If acft is turbine-powered or a large acft then the minimum altitude will be ≥ 1,500 ft above the surface of the airport until further descent is required for safe landing.

AIM 84 8) If below 18,000 ft MSL then if magnetic course is 0 degrees and < 179 degrees, then correct altitude = odd thousands, MSL else if magnetic course is > 180 degrees and < 359 degrees then correct altitude = even thousands, MSL.

ATP 5-115 9) If one acft is arriving and another acft is departing on a parallel runway and the departure course diverges by ≥ 30 degrees from the missed approach course, then if runway thresholds are staggered and the arriving acft is approaching the nearer runway and the center lines are ≥ 1000 ft apart and the landing thresholds are staggered at least 500 ft for each 100 ft less than 2,500 the centerlines are separated or if the arriving acft is approaching the further runway, then

if the runway centerline separation ≥ 2,500 ft by at least 100 ft for each 500 ft the landing thresholds are staggered then simultaneous operations are approved.
10) If nonintersecting runways diverge by \( \geq 15 \) degrees and runway edges do not touch, then simultaneous operations are approved.

11) If an acft is vectored to intercept the final approach course, then the acft must intercept the final approach course no closer than the FAF and if for a precision approach, then acft alt \( \leq \) glideslope/glidepath or if for a nonprecision approach, then at an altitude that will allow descent in accordance with the published procedure.

12) If an acft is vectored to a final approach course then if the distance from interception point to the approach gate < 2 miles the maximum intercept angle = 20 degrees else if distance \( \geq 2 \) miles then the maximum intercept angle = 30 degrees.

13) If IFR acft are not separated laterally or by radar minima then 1000 feet vertical separation is required.

14) If an acft is a heavy jet and is flying behind another heavy jet at the same altitude, then 4 miles separation is required.

15) If an acft is a small/large acft flying behind a heavy jet then 5 miles separation is required.
Weather Effects

FAR 135.225 1) If an instrument approach procedure is to be executed then weather conditions must be at or above IFR landing minimums for that airport and for that procedure.

FAR 135.225 2) If pilot has begun the final approach segment of an instrument approach and conditions go below minimum after the acft is on ILS final approach and has passed the FAF or acft is on an ASR or PAR final approach and has turned over to final approach controller or if acft is on a final approach using a VOR/NDB procedure and has passed the FAF or has completed the procedure turn and is established inbound on the final approach course within the distance prescribed in the procedure then if at MDA or DH the weather conditions are ≥ minimums prescribed for the procedure then continue approach and land.

FAR 91.116 3) If approach is not Category II or Category III and the RVR is not reported, then

<table>
<thead>
<tr>
<th>Ground Visibility</th>
<th>RVR (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 stat. mi.</td>
<td>1600</td>
</tr>
<tr>
<td>1/2 stat. mi.</td>
<td>2400</td>
</tr>
<tr>
<td>5/8 stat. mi.</td>
<td>3200</td>
</tr>
<tr>
<td>3/4 stat. mi.</td>
<td>4000</td>
</tr>
<tr>
<td>7/8 stat. mi.</td>
<td>4500</td>
</tr>
<tr>
<td>1 stat. mi.</td>
<td>5000</td>
</tr>
<tr>
<td>1.25 stat. mi.</td>
<td>6000</td>
</tr>
</tbody>
</table>

AIM 381b. 4) If the final approach course of the IAP is within 30 degrees of the runway alignment and normal descent can be made from the IFR altitude on the IAP to the runway then straight in weather minimums are published on the IAP.

5) If normal rate of descent or runway alignment factor of 30 degrees is exceeded, then use the circling minimum and if pilot has runway in sight and has sufficient time to make a normal approach, then the pilot should make a straight-in approach without circling when cleared by ATC.

6) If weather conditions are minimum and circling is required then maneuver the shortest path to the base or downwind leg and make standard left turns unless otherwise cleared by ATC.

AIM 385 7) If ground visibility < 1 stat. mi. then contact approach is not permissible.
AIM 410

8) If ceiling < 500 ft above MVA and visibility < 3 mi. and acft cannot remain in VFR conditions, then visual approach is not permissible.

AIM 512(f)

9) If the approach is nonprecision, then the minimum RVR = 2400 ft.

10) If the approach is Category I, then the minimum RVR = 1800 ft.

or if the approach is Category II then the minimum RVR = 1200 ft.

or if the approach is Category IIIa then the minimum RVR = 700 ft.

or if the approach is Category IIIb then the minimum RVR = 150 ft

or if the approach is Category IIIc then the minimum RVR = 0 ft.

AIM 526

(a) 11) If a thunderstorm is approaching head-on then acft should not land.

12) If a thunderstorm is overhead then the acft should not fly under it.

13) If a thunderstorm is identified as severe then the acft should avoid it by 20 miles.

14) If the area has 6/10 thunderstorm coverage then entire area should be avoided.

15) If acft enters a thunderstorm then fly the straightest path possible.
**VFR**

**FAR 91.105 (a)**

1) If VFR and < 10,000 ft AGL then flight visibility ≥ 3 stat. mi. and distance from clouds = 500 ft below, 1000 ft above, and 2,000 ft horizontal.

2) If acft is operating special VFR then ground visibility = 1 stat. mi. and acft must remain clear of clouds and ceiling must be ≥ 1000 ft.

3) If acft is operating VFR > 3,000 ft AGL then altitude on course of 0 degrees through 179 degrees = any odd thousand ft MSL plus 500 ft or if course is 180 degrees through 359 degrees from altitude = any even thousand ft MSL plus 500 ft.

**AIM 98**

4) If within the TCA then VFR ON TOP is not allowed.

**AIM 165c(6)**

5) If acft is within the TCA then vertical separation from IFR acft = 500 ft or at least 1 1/2 miles radar separation.

**ATP 3-92,93**

6) If conditions are VFR or visual separation is applied and simultaneous operations are being conducted on parallel runways then

   - if acft is a light, single engine prop then 300 ft must exist between runway centerlines
   - else if acft is twin engine prop then 500 ft must exist between runway centerlines
   - else 700 ft must exist between centerlines.

**ATP 7-43**

8) If acft is operating Special VFR then acft altitude must be at least 500 ft below IFR traffic and not below the MSA.

**ATP 7-92b**

9) If acft is VFR then 500 ft must exist between it and all other traffic except for heavy jet where more separation should exist.

**ATP 7-92c**

10) If a Category I or II aircraft is VFR then 1 1/2 mi. must exist between it and other IFR/VFR acft of the same type and between it and Category III IFR/VFR acft only if they are on parallel courses.
Radio Outage

FAR 91.127 1) If clearance limit is a fix from which approach begins then if EFC was issued then begin approach at EFC time else begin approach at ETA.

2) If clearance limit is not a fix from which approach begins then if EFC was issued then depart limit at EFC time else proceed to fix from which approach begins and begin approach at ETA time.

c(4) 3) If holding instructions were issued then if EFC was issued then leave holding fix at EFC time else if EAC was issued then leave holding fix at EAC time.

c(5) 4) If EAC time is received then maintain en route altitude until EAC time else maintain altitude until ETA time.

AIM 205 5) If receiver is inoperative then the following ATC light signals may be used:

- steady green = cleared to land
- flashing green = return for landing
- steady red = give way to other acft & continue circling
- flashing red = unsafe, do not land
- alternating red & green = exercise extreme caution.
Emergency

AIM 364c 1) If approach is NDB or VOR and acft is ≤ 25 miles from the navaid then use the published minimum safe altitude on approach procedure chart.

2) If distress or urgency condition is declared then Direction Finding Instrument Approach procedure may be used.
Aircraft Performance

AIM Glossary

1) If acft's max. T.O. weight ≥ 300,000 lbs then acft is categorized as heavy.

2) If acft's max. T.O. weight > 12,500 and < 300,000 lbs then acft is large.

3) If acft's max. T.O. weight ≤ 12,500 lbs then acft is small.

ATP 5-72e

4) If small acft is landing behind large acft then 4 miles must exist between them when large acft is over landing threshold.

5) If small acft is landing behind heavy acft then 6 miles must exist between them when heavy acft is over landing threshold.

6) If parallel runways are < 2,500 ft apart then the above minima also apply.

ATP 6-64

7) If a small acft is making a timed approach behind a heavy acft then 3 minutes or 6 miles must exist between them.

8) If conditions are VFR or visual separation is applied and simultaneous operations are being conducted on parallel runways then

   if acft is a light single engine prop then 300 ft must exist between runway centerlines else if acft is a twin engine prop then 500 ft must exist between runway centerlines else 700 ft must exist between centerlines.

AIM PP272

9) If ATC issues speed < minimum safe speed of aircraft then pilot should fly speed = minimum safe speed and advise ATC.

FAR 97.3

10) If acft is Category A then landing speed < 91 kts

    else if acft is Category B then landing speed ≥ 91 kts and < 121 kts

    else if acft is Category C then landing speed ≥ 121 kts and < 141 kts

    else if acft is Category D then landing speed ≥ 141 kts and < 166 kts

    else if acft is Category E then landing speed ≥ 166 kts
Types of Approaches:

AIM 376 1) If parallel ILS/MLS approaches are being conducted on parallel runways > 2,500 ft apart then
   - if acft are on adjacent localizer courses then minimum separation between successive acft is 2 miles
   - else if acft are on the same localizer course then minimum separation is 3 miles
   - else if acft are making turn on to localizer course then 1000 ft vertical or 3 miles radar separation must exist

AIM 121 2) If approach is ILS and Category I then
   - if there is no touchdown zone and centerline lighting then
     minimum DH > 200 ft and min. RVR > 2,400 ft else
     if Category IA or IB or IC then
     DH > 200 ft and RVR > 1800 ft else if Category ID then DH > 200 ft and RVR > 2000 ft

3) If approach is ILS and Category II then
   DH > 100 ft and RVR > 1200 ft

4) If approach is ILS and Category III A then
   DH = no minimum and RVR > 700 ft
   else if approach is ILS and Category IIIB then
   DH = no minimum and RVR > 150 ft
   else if approach is ILS and Category IIIC then
   DH = no minimum and RVR = no minimum

AIM 375 5) If simultaneous ILS approaches are being conducted on parallel runways > 4,300 ft apart then acft are laterally separated by a 2000 ft no transgression zone.

AIM 383 6) If pilot is conducting a visual approach and has the other acft in sight then there are no separation minima.

ATP 6-64 7) If successive timed approaches are being conducted then if a small acft follows a heavy acft then 3 mins. or 6 miles radar separation must exist else 2 mins. or 5 miles.

ATP 7-35 8) If a contact approach is being conducted then acft must be cleared at or below an altitude that is at least 1000 ft below IFR traffic, but above the MSA.

ATP 7-34 9) If CVFP approach is being conducted and the pilot has the other acft in sight then there are no separation minima.
### Runway Conditions:

| AIM 552   | 1) If a small acft is landing behind a heavy jet then 6 miles separation is required. |
| AIM 545(b) | 2) If a small acft is landing behind a large acft then 4 miles separation is required. |
| AIM 226b  | 3) If acft is landing after a large/heavy aircraft executes a low approach, missed approach, or touch-and-go then at least 2 minutes should pass before landing. |
| AIM 228a  | 4) If wind velocity > 5 kts then runway most nearly aligned with wind is preferred else "calm wind" runway is preferred. |
| AIM 523   | 5) If braking action is good then land else if braking action is fair then use caution else if braking action is poor or nil use extreme caution or don't land. |
| AIM 523   | 6) If reported wind shear conditions are hazardous for acft type then don’t land. |
Fuel Dumping:

ATP 8-53

1) If acft is dumping fuel then separate other IFR acft from it by 1000 ft above it or 2000 ft below it or 5 miles radar separation or 5 miles lateral separation.

2) If acft is dumping fuel then separate VFR acft from it by 5 miles.
APPENDIX B

Terrain Avoidance Rules for Denver Area.

This appendix lists the terrain avoidance rules for aircraft within 35 nautical miles of Denver VORTAC.
TERRAIN AVOIDANCE

(Terrain avoidance is for aircraft within 35 NM of Denver VORTAC.)

Assumptions:

(1) Aircraft is under radar control.
(2) Rules: a) in non-mountainous areas the MVA must be 1000 ft. above highest obstacle.
    b) in mountainous areas MVA must be 2000 ft. above highest obstacle.
    c) or MVA must be ≥ an established MSA.
(3) Aircraft has ground tracking capability such as INS or RNAV so that its position from the Denver VORTAC can be computer at any time, as well as latitudinal and longitudinal coordinates.

If aircraft is within 25 NM of the airport, then:

(1) If aircraft position is between 0° - 165° radial of the Denver VORTAC the NVA ≥ 8100 MSL.
(2) If aircraft position is between 90° - 180° radial of the Denver VORTAC then the MVA ≥ 10500 MSL.
(3) If aircraft position is between 170° - 325° radial of the Denver VORTAC then the MVA ≥ 12600 MSL.
(4) If aircraft position is between 325° - 340° radial of the Denver VORTAC then the MVA ≥ 10500 MSL.
(5) If aircraft position is between 340° - 360° radial of the Denver VORTAC then the MVA ≥ 8100 MSL.

If aircraft is outside 25 NM of the airport then:

(1) If aircraft position is between 0° - 90° radial of the Denver VORTAC then the MVA ≥ 6200 MSL.
(2) If aircraft position is between 90° - 180° radial of the Denver VORTAC then the MVA ≥ 8500 MSL.
(3) If aircraft position is between 180° - 270° radial of the Denver VORTAC then the MVA ≥ 14300 MSL.
(4) If aircraft position is between 270° - 360° radial of the Denver VORTAC then the MVA ≥ 14700 MSL.
APPROACH CONTROL AIRSPACE

(Approach control airspace is for aircraft within 20 NM of Denver TACAN. These specifications assure aircraft is within Terminal Control Area.)

(1) If aircraft position is from 5° to 10° of Denver TACAN then
   a) If aircraft is within 10 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 9000 MSL and ≤ 11000 MSL.

(2) If aircraft position is from 5° to 10° radial of Denver TACAN then
   a) If aircraft is within 10 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft < 104°47' longitude then altitude ≥ 8000 MSL and ≥ 11000 MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then if aircraft < 104°47' longitude then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(3) If aircraft position is from 10° to 20° radial of Denver TACAN then
   a) If aircraft is within 10 DME of Denver TACAN then if aircraft is < 104°48' longitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(4) If aircraft position is from 20° to 30° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft < 104°47' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL else altitude ≥ 7000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(5) If aircraft position is from 30° to 50° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.
d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(6) If aircraft position is from 50° to 60° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 104°47' longitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(7) If aircraft position is from 60° to 70° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft is > 39°49' latitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(8) If aircraft position is from 70° to 80° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft is > 39°50' latitude then altitude ≥ 8000 MSL and ≤ 11000 MSL else altitude ≥ 7000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then if aircraft is > 39°50' latitude then altitude ≥ 10000 MSL and ≤ 11000 MSL else altitude ≥ 9000 MSL and ≤ 11000 MSL.

(9) If aircraft position is from 80° to 90° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 16 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.
c) If aircraft is from 16 DME to 20 DME of Denver TACAN then if aircraft is \( \geq 39^\circ 44' \) latitude then altitude \( \geq 9000 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq 8000 \) MSL and \( \leq 11000 \) MSL.

(10) If aircraft position is from 90° to 100° radial of the Denver TACAN then
a) If aircraft is within 7 DME of Denver TACAN then altitude \( \geq \) ground and \( \leq 11000 \) MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is \( \leq 39^\circ 44' \) latitude then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq 7000 \) MSL and \( \leq 11000 \) MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft is \( > 39^\circ 44' \) latitude then altitude \( \geq 9000 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq 8000 \) MSL and \( \leq 11000 \) MSL.

(11) If aircraft position is from 100° to 110° radial of Denver TACAN then
a) If aircraft is within 7 DME of Denver TACAN then if aircraft is \( < 39^\circ 44' \) latitude then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq \) ground and \( \leq 11000 \) MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is \( \leq 39^\circ 44' \) latitude then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq 7000 \) MSL and \( \leq 11000 \) MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude \( \geq 8000 \) MSL and \( \leq 11000 \) MSL.

(12) If aircraft position is from 110° to 120° radial of Denver TACAN then
a) If aircraft is within 7 DME of Denver TACAN then if aircraft is \( \leq 39^\circ 44' \) latitude then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq \) ground and \( \leq 11000 \) MSL.

b) If aircraft is from 7 DME to 16 DME of Denver TACAN then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL.

c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude \( \geq 8000 \) MSL and \( \leq 11000 \) MSL.

(13) If aircraft position is from 120° to 130° radial of Denver TACAN then
a) If aircraft is within 7 DME of Denver TACAN then if aircraft is \( \leq 39^\circ 44' \) latitude and \( \leq 104^\circ 48' \) longitude then altitude \( \geq 7500 \) MSL and \( \leq 11000 \) MSL else altitude \( \geq \) ground and \( \leq 11000 \) MSL.

b) If aircraft is from 7 DME to 16 DME of Denver TACAN then altitude \( \geq 7500 \) MSL and \( \leq \) MSL.

c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude \( \geq 8000 \) MSL and \( \leq 11000 \) MSL.
(14) If aircraft position is from 130° to 140° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 104°44' longitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 16 DME of Denver TACAN then altitude ≥ 7500 MSL and ≤ 11000 MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

(15) If aircraft position is from 140° to 150° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 104°48' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 16 DME of Denver TACAN then altitude ≥ 7500 MSL and ≤ 11000 MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

(16) If aircraft position is from 150° to 160° radial of Denver TACAN then
   a) If aircraft if within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is > 39°36' latitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else altitude ≥ 8000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(17) If aircraft position is 160° to 170° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is > 39°36' latitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else altitude ≥ 8000 MSL and ≤ 11000 MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(18) If aircraft position is from 170° to 180° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is > 39°36' latitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else altitude ≥ 8000 MSL and ≤ 11000 MSL.
c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(19) If aircraft position is from 180° to 190° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is ≤ 104°59' longitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else if aircraft is > 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(20) If aircraft position is from 190° to 200° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 104°59' longitude then altitude ≥ ground and ≤ 11000 MSL else altitude ≥ 7000 MSL and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is ≤ 104°59' longitude then altitude ≥ 7500 MSL and ≤ 11000 MSL else if aircraft is > 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(21) If aircraft position is from 200° to 210° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 39°42' latitude and > 104°59' longitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN and aircraft is ≤ 105°11' then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(22) If aircraft position is from 210° to 220° radial of the Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is ≤ 39°42' latitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.
b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN and aircraft is ≤ 105°11' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN and aircraft is ≤ 105°11' longitude then altitude ≥ 10000 MSL and ≤ 11000 MSL.

(23) If aircraft position is from 220° to 230° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is > 39°42' latitude then altitude ≥ ground and ≤ 11000 MSL else altitude ≥ 7000 MSL and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN and ≤ 105°11' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL.

(24) If aircraft position is from 230° to 270° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then altitude ≥ ground and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN and ≤ 105°11' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL.

(25) If aircraft position is from 270° to 280° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is > 39°49' latitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN and ≤ 105°11' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL.

(26) If aircraft position is from 280° to 290° radial of Denver TACAN then

a) If aircraft is within 7 DME of Denver TACAN then if aircraft is > 39°49' latitude and > 104°57' longitude then altitude ≥ 7000 MSL and ≤ 11000 MSL else altitude ≥ ground and ≤ 11000 MSL.

b) If aircraft is from 7 DME to 10 DME of Denver TACAN and altitude ≥ 7000 MSL and ≤ 11000 MSL.

c) If aircraft is from 10 DME to 16 DME of Denver TACAN and ≤ 104°57' longitude then altitude ≥ 8000 MSL and ≤ 11000 MSL.

d) If aircraft is from 16 DME to 20 DME of Denver TACAN and 105°11' longitude then altitude ≥ 10000 MSL and ≤ 11000 MSL.

B-8
(27) If aircraft position is from 290° to 300° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft $\leq 104^\circ57'$ longitude then altitude $\geq$ ground and $\leq 11000$ MSL else altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude $\geq 8000$ MSL and $\leq 11000$ MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN and $< 105^\circ11'$ longitude then altitude $\geq 10000$ MSL and $\leq 11000$ MSL.

(28) If aircraft position is from 300° to 320° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then if aircraft $< 104^\circ57'$ longitude then altitude $\geq$ ground and $\leq 11000$ MSL else altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude $\geq 8000$ MSL and $\leq 11000$ MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude $\geq 10000$ MSL and $\leq 11000$ MSL.

(29) If aircraft position is from 320° to 330° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude $\geq$ ground and $\leq 11000$ MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft is $< 104^\circ57'$ longitude then altitude $\geq 7000$ MSL and $\leq 11000$ MSL else altitude $\geq 8000$ MSL and $\leq 11000$ MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude $\geq 10000$ MSL and $\leq 11000$ MSL.

(30) If aircraft position is from 330° to 340° radial of Denver TACAN then
   a) If aircraft is within 7 DME of Denver TACAN then altitude $\geq$ ground and $\leq 11000$ MSL.
   b) If aircraft is from 7 DME to 10 DME of Denver TACAN then if aircraft is $\leq 104^\circ54'$ longitude then altitude $\geq$ ground and $\leq 11000$ MSL else altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 10 DME to 16 DME of Denver TACAN then if aircraft is $\leq 104^\circ57'$ longitude then altitude $\geq 7000$ MSL and $\leq 11000$ MSL else altitude $\geq 8000$ MSL and $\leq 11000$ MSL.
   d) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude $\geq 10000$ MSL and $\leq 11000$ MSL.
(31) If aircraft position is from $340^\circ$ to $350^\circ$ radial of Denver TACAN then
   a) If aircraft is within 10 DME of Denver TACAN then altitude $\geq$ ground and $\leq 11000$ MSL.
   b) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then if aircraft is $\leq 104^\circ56'$ longitude then altitude $\geq 9000$ MSL and $\leq 11000$ MSL else altitude $\geq 10000$ MSL and $\leq 11000$ MSL.

(32) If aircraft position is from $350^\circ$ to $360^\circ$ radial of Denver TACAN then
   a) If aircraft is within 10 DME of Denver TACAN then altitude $\geq$ ground and $\leq 11000$ MSL.
   b) If aircraft is from 10 DME to 16 DME of Denver TACAN then altitude $\geq 7000$ MSL and $\leq 11000$ MSL.
   c) If aircraft is from 16 DME to 20 DME of Denver TACAN then altitude $\geq 9000$ MSL and $\leq 11000$ MSL.
(Terrain avoidance is for aircraft within 2 1/2 NM from centerline of RWY 26L and RWY 35R and within 10 NM of both ends of RWY 26L and RWY 35R.)

(1) If aircraft position is \( \leq 105°07'30'' \) longitude and \( \geq 104°38' \) longitude and \( \leq 39°48' \) latitude and \( \geq 39°43' \) latitude then:

(a) If aircraft is \( \leq 3 \) NM from \( 39°43' \) latitude and \( 105°08' \) longitude then altitude \( \geq 6900 \) MSL else

(b) If aircraft is \( \leq 3 \) NM from \( 39°47'30'' \) latitude and \( 105°01' \) longitude then altitude \( \geq 6600 \) MSL else

(c) If aircraft is \( \leq 3 \) NM from \( 39°45' \) latitude and \( 105°00' \) longitude then altitude \( \geq 6900 \) MSL else

(d) If aircraft is \( \leq 3 \) NM from \( 39°50' \) latitude and \( 104°57' \) longitude then altitude \( \geq 6600 \) MSL else

(e) If aircraft is \( \leq 3 \) NM from \( 39°49' \) latitude and \( 104°56' \) longitude then altitude \( \geq 6500 \) MSL else

(f) If aircraft is \( \leq 3 \) NM from \( 39°47' \) latitude and \( 104°56' \) longitude then altitude \( \geq 6600 \) MSL else

(g) If aircraft is \( \leq 3 \) NM from \( 39°45' \) latitude and \( 104°59' \) longitude then altitude \( \geq 7000 \) MSL else

(h) If aircraft is \( \leq 3 \) NM from \( 39°44' \) latitude and \( 104°42' \) longitude then altitude \( \geq 6900 \) MSL else altitude \( \geq \) ground.

(2) If aircraft position is \( \leq 39°54' \) latitude and \( \geq 39°36' \) latitude and \( \leq 104°56' \) longitude and \( \geq 104°49' \) longitude then:

(a) If aircraft is \( \leq 3 \) NM from \( 39°48' \) latitude and \( 104°56' \) longitude then altitude \( \geq 6500 \) MSL else

(b) If aircraft is \( \leq 3 \) NM from \( 39°54' \) latitude and \( 104°54' \) longitude then altitude \( \geq 6600 \) MSL else

(c) If aircraft is \( \leq 3 \) NM from \( 39°57' \) latitude and \( 104°51' \) longitude then altitude \( \geq 6400 \) MSL else

(d) If aircraft is \( \leq 3 \) NM from \( 39°40' \) latitude and \( 104°53' \) longitude then altitude \( \geq 6900 \) MSL else

(e) If aircraft is \( \leq 3 \) NM from \( 39°39' \) latitude and \( 104°53' \) longitude then altitude \( \geq 6800 \) MSL else

(f) If aircraft is \( \leq 3 \) NM from \( 39°38' \) latitude and \( 104°54' \) longitude then altitude \( \geq 7000 \) MSL else

(g) If aircraft is \( \leq 3 \) NM from \( 39°37' \) latitude and \( 104°53' \) longitude then altitude \( \geq 6900 \) MSL else

(h) If aircraft is \( \leq 3 \) NM from \( 39°40'30'' \) latitude and \( 104°56' \) longitude then altitude \( \geq 6800 \) MSL else

(i) If aircraft is \( \leq 3 \) NM from \( 39°39' \) latitude and \( 104°49' \) longitude then altitude \( \geq 7100 \) MSL else altitude \( \geq \) ground.
APPENDIX C

Attribute Data Base with Weightings

This appendix lists the attributes relevant for airfield and route selection. Also included, are the applicability of each attribute for the sample of airfields used in the Diverter demonstration and the weights assigned to each attribute.
DIVERTER

KEY TO DATA BASE AND WEIGHTING FACTORS

o For the data bases:

If the block is blank, we have not yet determined how to assign weighting factors, or it is not a factor for a diversion.

O Indicates that the particular factor will not have an impact on DIVERTER'S recommendations.

X Indicates that the factor will be a factor in DIVERTER'S recommendation.

o For weighting factors:

- Indicates that any of the assigned numbers in the stipulated range can be assigned (e.g., for a 1 -10 from 1 to 10 can be assigned)

/ For yes/no questions, a yes answer receives the higher value (e.g., OPERATE > MIN ENROUTE ALTITUDE? 1/10. If yes the assigned value = 10, if no the assigned value is 1). Also, where three specific numbers have been stipulated (e.g., 1/5/10) only one of the three numbers can be assigned.

o Any issue under safety factors or NOTAMS which is assigned a value of 1, eliminates that airfield from consideration.

o An assigned value of 1 for severe turbulence under passenger comfort eliminates the airfield from consideration.

o Weighting factors for destination selection:

Safety = 10
Airfield Status/Facilities = 10
Economy = 6
Schedule = 5
Passenger Comfort = 4

o Weighting factors for route selection:

Safety = 10
Routing = 7
Schedule/Economy = 6
Passenger Comfort = 4
OPERATIONAL PRIORITIES (GLOBAL) (Page 1 of 2)

1. SAFETY
   - Weather
   - Crew Duty Time
   - Air Traffic
   - A/C Operations
   - A/C Maintenance Status

2. AIRFIELD
   - NOTAMS
     - Airfield Conditions
     - Navigation Aids Status
     - Communications Status
     - Special Operating Hours
     - Parking Space Availability
     - Maintenance Availability
   - Facilities
     - Fire and Emergency Equipment
     - Suitable Stairs
     - Power Cart Availability
     - Relief Crew Availability
     - Transportation to Passenger Destination
     - Hotel Accommodations
3. PASSENGER COMFORT

Pressurization Control
Weather (turbulence)
A/C Maneuvering

4. SCHEDULE

ATC Enroute Vectors and Holding
Delay in Terminal Area
ATC Gate Taxi Delays
A/C Turn Around Time
Departure Delays (ATC Clearances/Traffic) From New Destination
Wind Effects

5. ECONOMY

Fuel
Landing Fees
Maintenance
Crew
<table>
<thead>
<tr>
<th></th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEATHER MINIMUMS</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CREW DUTY TIME</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>AIR TRAFFIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENROUTE</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>APPROACH</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>RUNWAY</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>AIRCRAFT OPERATIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIRSPEED LIMITS</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>SEVERE TURBULENCE</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>STRUCTURAL LIMITS</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>ICING CONDITIONS</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MEA</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>AIRCRAFT MAINTENANCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEL</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>SAFETY WRITEUP</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
## SAFETY FACTOR WEIGHTING (Page 1 of 2)

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPROACH MINIMUMS</strong></td>
<td>1/8/10</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Below</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meets</td>
<td>= 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeds</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CREW DUTY TIME (CDT)</strong></td>
<td>4/6/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>CDT + 30 - 60 minutes</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDT + &lt; 30 minutes</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can Be Met</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONFLICTING ENROUTE TRAFFIC</strong></td>
<td>7/10</td>
<td>10</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Some</td>
<td>= 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONFLICTING APPROACH TRAFFIC</strong></td>
<td>7/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Some</td>
<td>= 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONFLICTING RUNWAY TRAFFIC</strong></td>
<td>2/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Some</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STAY WITHIN A/S LIMITS</strong></td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>NO SEVERE TURBULENCE</strong></td>
<td>1/10</td>
<td>10</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
### SAFETY FACTOR WEIGHTING (page 2 of 2)

<table>
<thead>
<tr>
<th></th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WITHIN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STRUCTURAL LIMITATIONS</strong></td>
<td>1/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>ICING CONDITIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeds A/C parameters</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>= 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>OPERATE &gt; MIN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENROUTE ALTITUDE</strong></td>
<td>1/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>REQ. A/C APP/LDG</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EQUIP OPER</strong></td>
<td>1/5/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>AIRFIELD CONDITIONS</td>
<td>ALS</td>
<td>PUB</td>
<td>SAF</td>
<td>FMN</td>
<td>ABQ</td>
<td>DEN</td>
<td>GJT</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Runway</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>Taxiway</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lighting (night)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>Lighting (day, weather)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>NAVIGATION AIDS STATUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILS (scheduled maintenance)</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>VOR</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DME</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marker Beacon</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>Approach Control Radar</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>COMMUNICATIONS STATUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Control</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tower</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ground Control</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SPECIAL OPERATING HOURS</td>
<td>ALS</td>
<td>PUB</td>
<td>SAF</td>
<td>FMN</td>
<td>ABQ</td>
<td>DEN</td>
<td>GJT</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Airfield Closures</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARKING SPACE</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAINTENANCE</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACILITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRE AND EMERGENCY EQUIPMENT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUITABLE STAIRS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POWER CART</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELIEF CREW</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASSENGER TRANSPORTATION</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOTEL ACCOMMODATIONS</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## AIRFIELD WEIGHTING FACTORS (NOTAMS) (Page 1 of 3)

<table>
<thead>
<tr>
<th>AIRFIELD CONDITIONS</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH OF OPEN RUNWAY</td>
<td>1 - 10</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>&lt; 5,000'</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,000'</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6,000'</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,000'</td>
<td>= 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 8,000'</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUNWAY CLOSED/OPEN</td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>RUNWAY CONDITION</td>
<td>1 - 10</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Ice</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slush</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wet or Snow</td>
<td>= 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAXIWAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open to gate</td>
<td>2/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>GATE AVAILABILITY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Available</td>
<td>2</td>
<td>2-10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Available after</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 min</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote stairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>available</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30 minutes</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIGHT (NIGHT)</td>
<td>2/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>LIGHT (day or weather)</td>
<td>2/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>
## Airfield Weighting Factors (Page 2 of 3)

### Navigation Aids Status

<table>
<thead>
<tr>
<th>Instrument Approach Aids OK (weather)</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>1 = ILS &amp; VOR out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 = ILS, DME, &amp; marker beacon out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 = ILS &amp; marker beacon out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 = DME out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 = Marker beacon out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 = All operational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approach Control Radar OK

<table>
<thead>
<tr>
<th>Approach Control Radar OK</th>
<th>5/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>PUB</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

### Communications Status

<table>
<thead>
<tr>
<th>Communications Status</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach Control Comm OK</td>
<td>5/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALS</td>
<td>PUB</td>
<td>SAF</td>
<td>FMN</td>
<td>ABQ</td>
<td>DEN</td>
<td>GJT</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Tower Comm OK</td>
<td>5/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALS</td>
<td>PUB</td>
<td>SAF</td>
<td>FMN</td>
<td>ABQ</td>
<td>DEN</td>
<td>GJT</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Ground Control Comm OK</td>
<td>5/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALS</td>
<td>PUB</td>
<td>SAF</td>
<td>FMN</td>
<td>ABQ</td>
<td>DEN</td>
<td>GJT</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

### Special Operating Hours

<table>
<thead>
<tr>
<th>Special Operating Hours</th>
<th>1 - 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>PUB</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

| Special Operating Hours | ALS  | PUB  | SAF  | FMN  | ABQ  | DEN  | GJT  |
| Closed ETA +/- 60 minutes | 1    |      |      |      |      |      |      |
| Closed ETA +/- 30 minutes | 4    |      |      |      |      |      |      |
| Closed ETA +/- 10 minutes | 6    |      |      |      |      |      |      |
| Closed at ETA + 0 to 10 minutes | 9 |      |      |      |      |      |      |
| No special operating hours | 10   |      |      |      |      |      |      |

### Parking Space Available

<table>
<thead>
<tr>
<th>Parking Space Available</th>
<th>4/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>PUB</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

C-11
### FACILITIES

<table>
<thead>
<tr>
<th>MAINTENANCE/PARTS</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Non-company</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Company</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRE AND EMERGENCY EQUIPMENT</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUITABLE STAIRS</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/8</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POWER CART AVAILABLE</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELIEF CREW AVAILABLE (If req.)</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRANSPORTATION TO PASSENGER DESTINATION</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/4/7</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOTEL ACCOMMODATIONS AVAILABLE IF &gt; 6 HOUR LAYOVER</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/7</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>
# Passenger Comfort Data Base

<table>
<thead>
<tr>
<th></th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cabin Altitude Rate of Descent</strong></td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Turbulence</strong></td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Maneuvering</strong></td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### PASSENGER COMFORT WEIGHTING

<table>
<thead>
<tr>
<th>CABIN ALTITUDE RATE OF DESCENT</th>
<th>1/3/4</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2,000'/min</td>
<td></td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>500 - 2,000'/min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 500'/min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TURBULENCE</th>
<th>1 - 4</th>
<th>4</th>
<th>1</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MANEUVERING</th>
<th>1 - 4</th>
<th>1</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1G +-.7G</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1G +-.2 to -.7G</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1G +-.1 to -.2G</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1G</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank Angle</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30-60 degree bank</td>
<td></td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>&lt; 30 degree bank</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| No large power changes required | 2/4 | 2   | 4   | 4   | 4   | 4   | 4   | 4   |

C-14
<table>
<thead>
<tr>
<th>SCHEDULE FACTORS DATA BASE</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATC ENROUTE VECTORS/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIVERSSIONS/HOLDING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
</tr>
<tr>
<td>DELAY IN TERMINAL AREA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ATC TAXI DELAYS TO GATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A/C TURN AROUND TIME AT GATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DPT. DELAYS - ATC CLEARANCES/TRAFFIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
</tr>
<tr>
<td>ENROUTE WIND TO NEW DESTINATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

C-15
### SCHEDULE FACTOR WEIGHTING (Page 1 of 2)

<table>
<thead>
<tr>
<th>ATC ENROUTE VECTORS/HOLDING</th>
<th>1/3/5</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 20 minutes</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>10 - 20 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10 minutes</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DELAY IN TERMINAL AREA</th>
<th>1/4/5</th>
<th>5</th>
<th>1</th>
<th>5</th>
<th>5</th>
<th>4</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 30 minutes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 30 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10 minutes</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATC GATE TAXI DELAYS</th>
<th>1/3/5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 15 minutes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 15 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 minutes</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A/C TURN AROUND TIME</th>
<th>1 - 5</th>
<th>1</th>
<th>5</th>
<th>3</th>
<th>3</th>
<th>5</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 60 minutes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 - 60 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPARTURE DELAYS FROM NEW DEST (ATC CLEARANCES/TRAFFIC)</th>
<th>2 - 5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 30 minutes</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 30 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### SCHEDULE FACTOR WEIGHTING (Page 2 of 2)

#### WIND EFFECTS

<table>
<thead>
<tr>
<th>Effect</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; - 9</td>
<td>1</td>
</tr>
<tr>
<td>- 60 to - 90</td>
<td>2</td>
</tr>
<tr>
<td>- 30 to - 60</td>
<td>3</td>
</tr>
<tr>
<td>&gt; - 30</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>5</td>
</tr>
</tbody>
</table>

#### ECONOMY FACTORS DATA BASE

<table>
<thead>
<tr>
<th>Factor</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUEL USE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LANDING FEES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>MAINTENANCE</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>CREW COST</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

#### ECONOMY FACTOR WEIGHTING

<table>
<thead>
<tr>
<th>FUEL USE BASED ON DISTANCE/ ENROUTE TRAFFIC DELAYS</th>
<th>ALS</th>
<th>PUB</th>
<th>SAF</th>
<th>FMN</th>
<th>ABQ</th>
<th>DEN</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(to diversion point + next dest)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 5,000 pounds</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,000 - 5,000 pounds</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000 - 2,000 pounds</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1,000 pounds</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### LANDING FEES

<table>
<thead>
<tr>
<th>Category</th>
<th>2/4/6</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>6</th>
<th>2</th>
<th>2</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $500</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100 - $500</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 100</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SCHEDULED MAINTENANCE

<table>
<thead>
<tr>
<th>Category</th>
<th>1/4/6</th>
<th>6</th>
<th>6</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>6</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $5000</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1000 - $5000</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $1000</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### UNSCHEDULED MAINTENANCE

<table>
<thead>
<tr>
<th>Category</th>
<th>2/4/6</th>
<th>2</th>
<th>4</th>
<th>4</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-company</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CREW DUTY TIME

<table>
<thead>
<tr>
<th>Category</th>
<th>3/5/6</th>
<th>6</th>
<th>6</th>
<th>3</th>
<th>5</th>
<th>3</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 30 minutes &gt; original</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 30 minutes &gt; than original</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal to original destination</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 30 minutes &lt; than original</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Proposed Alternate Route Selection Factors Data Base

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Air Traffic</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A/C Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/C Maintenance Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Passenger Comfort</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabin Altitude Descent Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbulence</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maneuvering</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Schedule/Economy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATC Enroute Vectoring/Holding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting Slot Time</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Route + Approach Descent Distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED ALTERNATE ROUTE SELECTION FACTORS DATA BASE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROUTING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPROACH PROFILE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X X X X X X X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESTRICTED AREAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X X X X X X X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MILITARY OPERATION AREAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 X 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TERRAIN/OBSTACLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TERMINAL CONTROL AREA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALTITUDE/ROUTE RESTRICTIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X 0 0 0 X X X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Route Selection Weighting

<table>
<thead>
<tr>
<th>SAFETY</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enroute Weather</strong></td>
<td>1 - 10</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Severe</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>= 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No Enroute Traffic Conflicts</strong></td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td><strong>No Approach Traffic Conflicts</strong></td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Conflicting Runway Traffic</strong></td>
<td>7/10</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>7</td>
</tr>
</tbody>
</table>

## Aircraft Operations

|  | 1/10 | 10 | 10 | 10 | 10 | 10 |
| Stays within A/S limits | | | | | | |
| Within A/C icing parameters | 1/10 | 10 | 10 | 10 | 10 | 10 |
| Operates above MEA | 1/10 | 10 | 10 | 10 | 10 | 10 |

## A/C Maintenance Status

|  | 1/6/10 | 10 | 10 | 6 | 6 | 6 |
| A/C Maintenance Status | | | | | | |
| Causes route to be unsafe | = 1 | | | | | |
| Causes some problems with route | = 6 | | | | | |
| Does not affect route | = 10 | | | | | |

C-21
### ROUTE SELECTION WEIGHTING (Sheet 2 of 4)

#### PASSENGER COMFORT

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABIN ALTITUDE DESCENT RATE</td>
<td>1/3/4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

- > 2,000'/min = 1
- 500-2,000'/min = 3
- < 500'/min = 4

#### TURBULENCE

<table>
<thead>
<tr>
<th></th>
<th>1 - 4</th>
<th>4</th>
<th>3</th>
<th>1</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### MANEUVERING

<table>
<thead>
<tr>
<th></th>
<th>1 - 4</th>
<th>4</th>
<th>3</th>
<th>3</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- 1G +/- .7G         = 1
- 1G +/- .2 to -.7G  = 2
- 1G +/- .1 to -.2G  = 3
- < 1G               = 4

<table>
<thead>
<tr>
<th></th>
<th>3/4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- 30 - 60 degree bank = 3
- < 30 degree bank angle = 4

#### SCHEDULE/ECONOMY

<table>
<thead>
<tr>
<th></th>
<th>1/3/5</th>
<th>5</th>
<th>5</th>
<th>3</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATC ENROUTE VECTORING/HOLDING/DELAYS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- > 40 minutes = 1
- 20 - 40 minutes = 3
- < 20 minutes = 5
## ROUTE SELECTION WEIGHTING (Sheet 3 of 4)

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WIND EFFECTS ON COST</strong></td>
<td>1/3/5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Original cost + &gt; $200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original cost + &lt; $200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; original destination costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MEETING SLOT TIME</strong></td>
<td>3/4/5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>+- 5 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 2 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 5 seconds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROUTE + APPROACH DESCENT DISTANCE</strong></td>
<td>3/4/5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 50 additional miles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= shortest + up to 50 miles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; shortest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROUTING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSTRUMENT APPROACH PROFILE</strong></td>
<td>2/4/6</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Entire instrument approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure turn/track</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enroute descent to straight in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RESTRICTED AREAS</strong></td>
<td>3/4/5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Additional time &gt; 5 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &lt; 5 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C-23
### ROUTE SELECTION WEIGHTING (Sheet 4 of 4)

<table>
<thead>
<tr>
<th>MILITARY OPERATION AREAS</th>
<th>3/4/5</th>
<th>5</th>
<th>4</th>
<th>5</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional time &gt; 5 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &lt; 5 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NO CLIMB REQUIRED FOR TERRAIN/OBSTACLE CONFLICTS**

<table>
<thead>
<tr>
<th>NON-EMERGENCY</th>
<th>6/10</th>
<th>10</th>
<th>10</th>
<th>10</th>
<th>10</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMERGENCY</td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TERMINAL CONTROL AREA</th>
<th>2/4/6</th>
<th>4</th>
<th>6</th>
<th>6</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude/Route Restrictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No descent until 5-10 min out</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No descent until 2-5 min out</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descent unrestricted</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C-24
### DIVERSION FOR LOSS OF PRESSURIZATION

### PROPOSED ALTERNATE ROUTE SELECTION FACTORS DATA BASE

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAFETY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEATHER</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>AIR TRAFFIC</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>A/C OPERATIONS</strong></td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>A/C MAINTENANCE STATUS</strong></td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>PASSENGER COMFORT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CABIN ALTITUDE DESCENT RATE</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>TURBULENCE</strong></td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>MANEUVERING</strong></td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>SCHEDULE/ECONOMY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ATC ENROUTE VECTORING/HOLDING</strong></td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
</tr>
<tr>
<td><strong>WIND</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td><strong>MEETING SLOT TIME</strong></td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td><strong>ROUTE + APPROACH DESCENT DISTANCE</strong></td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
**PROPOSED ALTERNATE ROUTE SELECTION FACTORS DATA BASE**

<table>
<thead>
<tr>
<th>ROUTING</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPROACH PROFILE</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RESTRICTED AREAS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MILITARY OPERATION AREAS</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>TERRAIN/OSTACLES</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>TERMINAL CONTROL AREA</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>ALTITUDE/ROUTE RESTRICTIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAFETY</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>ENROUTE WEATHER</strong></td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Severe</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Enroute Traffic Conflicts</td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>No Approach Traffic Conflicts</td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Conflicting Runway Traffic</td>
<td>7/10</td>
<td>7</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td><strong>AIRCRAFT OPERATIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stays within A/S limits</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Within A/C icing parameters</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Operates above MEA</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>A/C MAINTENANCE STATUS</strong></td>
<td>1/6/10</td>
<td>1</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Causes route to be unsafe</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes some problems with route</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not affect route</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# ROUTE SELECTION WEIGHTING (Sheet 2 of 4)

## PASSENGER COMFORT

<table>
<thead>
<tr>
<th>CABIN ALTITUDE DESCENT RATE</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2,000'/min</td>
<td>1</td>
</tr>
<tr>
<td>500 - 2,000'/min</td>
<td>1 1</td>
</tr>
<tr>
<td>&lt; 500'/min</td>
<td>1 1 1 1</td>
</tr>
</tbody>
</table>

## TURBULENCE

<table>
<thead>
<tr>
<th></th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>3</td>
</tr>
<tr>
<td>Moderate</td>
<td>1</td>
</tr>
<tr>
<td>Light</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
</tr>
</tbody>
</table>

## MANEUVERING

<table>
<thead>
<tr>
<th>Gs</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1G +-.7G</td>
<td>4</td>
</tr>
<tr>
<td>1G +-.2 to -.7G</td>
<td>4</td>
</tr>
<tr>
<td>1G +-.1 to -.2G</td>
<td>4</td>
</tr>
<tr>
<td>&lt; 1G</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank angle</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 - 60 degree bank</td>
<td>4</td>
</tr>
<tr>
<td>&lt; 30 degree bank angle</td>
<td>4</td>
</tr>
</tbody>
</table>

## SCHEDULE/ECONOMY

<table>
<thead>
<tr>
<th>ATC ENROUTE VECTORING/HOLDING/DELAYS</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 40 minutes</td>
<td>5</td>
</tr>
<tr>
<td>20 - 40 minutes</td>
<td>5</td>
</tr>
<tr>
<td>&lt; 20 minutes</td>
<td>3</td>
</tr>
</tbody>
</table>
ROUTE SELECTION WEIGHTING (Sheet 3 of 4)

<table>
<thead>
<tr>
<th>WIND EFFECTS ON COST</th>
<th>1/3/5</th>
<th>5</th>
<th>5</th>
<th>5</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original cost $ &gt; $200</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original cost $ &lt; $200</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; original destination costs</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MEETING SLOT TIME</th>
<th>3/4/5</th>
<th>4</th>
<th>5</th>
<th>5</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>+- 5 minutes</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 2 minutes</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 5 seconds</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROUTE + APPROACH DESCENT DISTANCE</th>
<th>3/4/5</th>
<th>4</th>
<th>5</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 50 additional miles</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= shortest + up to 50 miles</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; shortest</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROUTING</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INSTRUMENT APPROACH PROFILE</th>
<th>2/4/6</th>
<th>6</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire instrument approach</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure turn/track</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enroute descent to straight in</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTRICTED AREAS</th>
<th>3/4/5</th>
<th>4</th>
<th>4</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional time $ &gt; $5 minutes</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time $ &lt; $5 minutes</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ROUTE SELECTION WEIGHTING (Sheet 4 of 4)

<table>
<thead>
<tr>
<th>MILITARY OPERATION AREAS</th>
<th>3/4/5</th>
<th>5</th>
<th>4</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional time &gt; 5 minutes</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &lt; 5 minutes</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NO CLIMB REQUIRED FOR TERRAIN/OBSTACLE CONFLICTS**

<table>
<thead>
<tr>
<th>NON-EMERGENCY</th>
<th>6/10</th>
<th>6</th>
<th>10</th>
<th>10</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMERGENCY</td>
<td>1/10</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TERMINAL CONTROL AREA</th>
<th>2/4/6</th>
<th>4</th>
<th>6</th>
<th>6</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTITUDE/ROUTE RESTRICTIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No descent until 5-10 min out</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No descent until 2 - 5 min out</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descent unrestricted</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C-30
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAFETY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEATHER</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>AIR TRAFFIC</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>A/C OPERATIONS</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>A/C MAINTENANCE STATUS</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>PASSENGER COMFORT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CABIN ALTITUDE DESCENT RATE</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>TURBULENCE</strong></td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>MANEUVERING</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>SCHEDULE/ECONOMY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ATC ENROUTE VECTORING/HOLDING</strong></td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>WIND</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>MEETING SLOT TIME</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>ROUTE + APPROACH DESCENT DISTANCE</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
</tbody>
</table>
## Proposed Alternate Route Selection Factors Data Base

### Routing

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approach Profile</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>Restricted Areas</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td><strong>Military Operation Areas</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Terrain/Obstacles</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Terminal Control Area</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>SAFETY</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>ENROUTE WEATHER</td>
<td>1 - 10</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Severe</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>= 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>=10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Enroute Traffic Conflicts</td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>No Approach Traffic Conflicts</td>
<td>6/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Conflicting Runway Traffic</td>
<td>7/10</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>AIRCRAFT OPERATIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stays within A/S limits</td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Within A/C icing parameters</td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Operates above MEA</td>
<td>1/10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>A/C MAINTENANCE STATUS</td>
<td>1/6/10</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Causes route to be unsafe</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes some problems with route</td>
<td>= 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not affect route</td>
<td>=10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ROUTE SELECTION WEIGHTING (Sheet 2 of 4)

### PASSENGER COMFORT

<table>
<thead>
<tr>
<th>Cabin Altitude Descent Rate</th>
<th>1/3/4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2,000'/min</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500 - 2,000'/min</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 500'/min</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TURBULENCE

<table>
<thead>
<tr>
<th>Turbulence</th>
<th>1 - 4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MANEUVERING

<table>
<thead>
<tr>
<th>Gs</th>
<th>1 - 4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1G ± .7G</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1G ± .2 to -.7G</td>
<td>= 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1G ± .1 to -.2G</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1G</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank angle</th>
<th>3/4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 - 60 degree bank</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30 degree bank angle</td>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SCHEDULE/ECONOMY

<table>
<thead>
<tr>
<th>ATC Enroute Vectoring/ Holding/Delays</th>
<th>1/3/5</th>
<th>5</th>
<th>5</th>
<th>3</th>
<th>5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 40 minutes</td>
<td>= 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 40 minutes</td>
<td>= 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20 minutes</td>
<td>= 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ROUTE SELECTION WEIGHTING (Sheet 3 of 4)

<table>
<thead>
<tr>
<th>Category</th>
<th>Weighting</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WIND EFFECTS ON COST</strong></td>
<td>1/3/5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Original cost + &gt; $200</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original cost + &lt; $200</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; original destination costs</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MEETING SLOT TIME</strong></td>
<td>3/4/5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>+- 5 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 2 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+- 5 seconds</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROUTE + APPROACH DESCENT DISTANCE</strong></td>
<td>3/4/5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 50 additional miles</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= shortest + up to 50 miles</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; shortest</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROUTING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSTRUMENT APPROACH PROFILE</strong></td>
<td>2/4/6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Entire instrument approach</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure turn/track</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enroute descent to straight in</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RESTRICTED AREAS</strong></td>
<td>3/4/5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Additional time &gt; 5 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &lt; 5 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MILITARY OPERATION AREAS</td>
<td>3/4/5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &gt; 5 minutes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional time &lt; 5 minutes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No additional time required</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO CLIMB REQUIRED FOR TERRAIN/OBSTACLE CONFLICTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-EMERGENCY</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMERGENCY</th>
<th>1/10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TERMINAL CONTROL AREA</th>
<th>2/4/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTITUDE/ROUTE RESTRICTIONS</td>
<td></td>
</tr>
<tr>
<td>No descent until 5-10 min out</td>
<td>2</td>
</tr>
<tr>
<td>No descent until 2 - 5 min out</td>
<td>4</td>
</tr>
<tr>
<td>Descent unrestricted</td>
<td>6</td>
</tr>
<tr>
<td>INTERSECTIONS</td>
<td>NAVIGATION POINTS FOR DIVERTER</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>GOSIP</td>
<td>3738N 10434W</td>
</tr>
<tr>
<td>SHREW</td>
<td>3910N 10540W</td>
</tr>
<tr>
<td>BYSON</td>
<td>3922N 10532W</td>
</tr>
<tr>
<td>KINGO</td>
<td>3757N 10336W</td>
</tr>
<tr>
<td>JACOX</td>
<td>3929N 10454W</td>
</tr>
<tr>
<td>GANDI</td>
<td>3945N 10453W</td>
</tr>
<tr>
<td>ACREE</td>
<td>3852N 10604W</td>
</tr>
<tr>
<td>PYNON</td>
<td>3831N 10435W</td>
</tr>
<tr>
<td>MIDAY</td>
<td>3834N 10440W</td>
</tr>
<tr>
<td>PETEY</td>
<td>3841N 10440W</td>
</tr>
<tr>
<td>RAMAH</td>
<td>3910N 10401W</td>
</tr>
<tr>
<td>FRIHO</td>
<td>3525N 10640W</td>
</tr>
<tr>
<td>AWASH</td>
<td>3513N 10659W</td>
</tr>
<tr>
<td>BATTZ</td>
<td>3852N 10818W</td>
</tr>
<tr>
<td>LOMMA</td>
<td>3916N 10847W</td>
</tr>
<tr>
<td>RESER</td>
<td>3654N 10727W</td>
</tr>
<tr>
<td>Town</td>
<td>Latitude</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td>POAKE</td>
<td>3554N</td>
</tr>
<tr>
<td>BOBOW</td>
<td>3546N</td>
</tr>
<tr>
<td>VIGIL</td>
<td>3755N</td>
</tr>
<tr>
<td>CHILT</td>
<td>3910N</td>
</tr>
<tr>
<td>SILOW</td>
<td>3925N</td>
</tr>
<tr>
<td>ENGLE</td>
<td>3938N</td>
</tr>
<tr>
<td>CURLY</td>
<td>3524N</td>
</tr>
<tr>
<td>CABZO</td>
<td>3528N</td>
</tr>
<tr>
<td>BRAZO</td>
<td>3649N</td>
</tr>
<tr>
<td>TURLY</td>
<td>3648N</td>
</tr>
<tr>
<td>NAMBE</td>
<td>3548N</td>
</tr>
<tr>
<td>PEDRA</td>
<td>3526N</td>
</tr>
<tr>
<td>ZIASE</td>
<td>3529N</td>
</tr>
<tr>
<td>BLOOM</td>
<td>3749N</td>
</tr>
<tr>
<td>STAXX</td>
<td>3759N</td>
</tr>
<tr>
<td>ORWAY</td>
<td>3816N</td>
</tr>
<tr>
<td>BLOKE</td>
<td>3725N</td>
</tr>
<tr>
<td>COMBO</td>
<td>3525N</td>
</tr>
</tbody>
</table>
### Navigation Aides (TACAN/VOR)

<table>
<thead>
<tr>
<th>Code</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTJ</td>
<td>3830N</td>
<td>10754W</td>
</tr>
<tr>
<td>DRO</td>
<td>3709N</td>
<td>10746W</td>
</tr>
<tr>
<td>CIM</td>
<td>3630N</td>
<td>10453W</td>
</tr>
<tr>
<td>TBE</td>
<td>3716N</td>
<td>10336W</td>
</tr>
<tr>
<td>OTO</td>
<td>3504N</td>
<td>10556W</td>
</tr>
<tr>
<td>TXC</td>
<td>3932N</td>
<td>10313W</td>
</tr>
<tr>
<td>ABQ</td>
<td>3503N</td>
<td>10648W</td>
</tr>
<tr>
<td>JNC</td>
<td>3904N</td>
<td>10848W</td>
</tr>
<tr>
<td>TAS</td>
<td>3637N</td>
<td>10554W</td>
</tr>
<tr>
<td>COS</td>
<td>3857N</td>
<td>10438W</td>
</tr>
<tr>
<td>FMN</td>
<td>3645N</td>
<td>10806W</td>
</tr>
<tr>
<td>ALS</td>
<td>3721N</td>
<td>10549W</td>
</tr>
<tr>
<td>AIRFIELDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>LAA 3812N 10242W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HGO 3849N 10337W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAF 3533N 10604W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUB 3818N 10425W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEN 3953N 10452W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOC 3926N 10420W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBU 3828N 10702W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KALS 3726N 10552W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KABQ 3512N 10640W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KDEN 3946N 10453W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KFMN 3644N 10814W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KGTJ 3907N 10831W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPUB 3817N 10430W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSAF 3537N 10605W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DIVERTER ROUTES FOR WEATHER DIVERSION

Basic Flight Plan - LAX to COS

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAX</td>
<td>J-60</td>
<td>HEC</td>
<td>031/85</td>
<td>FL290</td>
</tr>
<tr>
<td>HEC</td>
<td>J-6</td>
<td>EED</td>
<td>076/98</td>
<td>FL330</td>
</tr>
<tr>
<td>EED</td>
<td>J-6</td>
<td>DRK</td>
<td>077/99</td>
<td>FL330</td>
</tr>
<tr>
<td>DRK</td>
<td>J-10</td>
<td>FMN</td>
<td>045/247</td>
<td>FL330</td>
</tr>
<tr>
<td>FMN</td>
<td>J-44</td>
<td>ALS</td>
<td>057/115</td>
<td>FL330</td>
</tr>
<tr>
<td>ALS</td>
<td>DIR</td>
<td>GOSIP</td>
<td>041/60</td>
<td>FL210</td>
</tr>
<tr>
<td>GOSIP</td>
<td>V-83</td>
<td>PUB</td>
<td>358/41</td>
<td>18000</td>
</tr>
<tr>
<td>PUB</td>
<td>R-309</td>
<td>PYNON</td>
<td>309/16</td>
<td>14000</td>
</tr>
<tr>
<td>PYNON</td>
<td>R-309</td>
<td>MIDAY</td>
<td>309/5.6</td>
<td>10000</td>
</tr>
<tr>
<td>MIDAY</td>
<td>LOC</td>
<td>PETEY</td>
<td>348/6.7</td>
<td>9000</td>
</tr>
<tr>
<td>PETEY</td>
<td>ILS</td>
<td>KCOS</td>
<td>348/6.0</td>
<td>6172</td>
</tr>
</tbody>
</table>

\[579.3\]
## WEATHER DIVERT TO DENVER ROUTE 1

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>J-44</td>
<td>SHREW</td>
<td>350/109</td>
<td>FL240</td>
</tr>
<tr>
<td>SHREW</td>
<td>J-44</td>
<td>BYSON</td>
<td>033/17</td>
<td>17000</td>
</tr>
<tr>
<td>BYSON</td>
<td>DIR</td>
<td>JACOX</td>
<td>073/24</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>R-341</td>
<td>ACREE</td>
<td>341/94</td>
<td>FL260</td>
</tr>
<tr>
<td>ACREE</td>
<td>J-10</td>
<td>SHREW</td>
<td>033/22</td>
<td>FL210</td>
</tr>
<tr>
<td>SHREW</td>
<td>J-44</td>
<td>BYSON</td>
<td>033/17</td>
<td>17000</td>
</tr>
<tr>
<td>BYSON</td>
<td>DIR</td>
<td>JACOX</td>
<td>073/24</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>

## WEATHER DIVERT TO DENVER ROUTE 2

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>J-206</td>
<td>HBU</td>
<td>306/88</td>
<td>FL310</td>
</tr>
<tr>
<td>HBU</td>
<td>J-10</td>
<td>ACREE</td>
<td>046/55</td>
<td>FL250</td>
</tr>
<tr>
<td>ACREE</td>
<td>J-10</td>
<td>SHREW</td>
<td>033/22</td>
<td>FL210</td>
</tr>
<tr>
<td>SHREW</td>
<td>J-44</td>
<td>BYSON</td>
<td>033/17</td>
<td>17000</td>
</tr>
<tr>
<td>BYSON</td>
<td>DIR</td>
<td>JACOX</td>
<td>073/24</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>

## WEATHER DIVERT TO DENVER ROUTE 3

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>J-102</td>
<td>LAA</td>
<td>057/157</td>
<td>FL330</td>
</tr>
<tr>
<td>LAA</td>
<td>J-168</td>
<td>HGO</td>
<td>298/58</td>
<td>FL260</td>
</tr>
<tr>
<td>HGO</td>
<td>J-168</td>
<td>RAMAH</td>
<td>306/27</td>
<td>FL180</td>
</tr>
<tr>
<td>RAMAH</td>
<td>J-168</td>
<td>IOC</td>
<td>306/23</td>
<td>FL180</td>
</tr>
<tr>
<td>IOC</td>
<td>R-263</td>
<td>JACOX</td>
<td>253/26.2</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>

## WEATHER DIVERT TO DENVER ROUTE 4

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>J-102</td>
<td>LAA</td>
<td>057/157</td>
<td>FL330</td>
</tr>
<tr>
<td>LAA</td>
<td>J-168</td>
<td>HGO</td>
<td>298/58</td>
<td>FL260</td>
</tr>
<tr>
<td>HGO</td>
<td>J-168</td>
<td>RAMAH</td>
<td>306/27</td>
<td>FL180</td>
</tr>
<tr>
<td>RAMAH</td>
<td>J-168</td>
<td>IOC</td>
<td>306/23</td>
<td>FL180</td>
</tr>
<tr>
<td>IOC</td>
<td>R-286</td>
<td>GANDI</td>
<td>286/31</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>

## WEATHER DIVERT TO DENVER ROUTE 5

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST(NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>J-102</td>
<td>LAA</td>
<td>057/157</td>
<td>FL330</td>
</tr>
<tr>
<td>LAA</td>
<td>J-168</td>
<td>HGO</td>
<td>298/58</td>
<td>FL260</td>
</tr>
<tr>
<td>HGO</td>
<td>J-168</td>
<td>RAMAH</td>
<td>306/27</td>
<td>FL180</td>
</tr>
<tr>
<td>RAMAH</td>
<td>J-168</td>
<td>IOC</td>
<td>306/23</td>
<td>FL180</td>
</tr>
<tr>
<td>IOC</td>
<td>R-286</td>
<td>GANDI</td>
<td>286/31</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.7</td>
<td>5333</td>
</tr>
</tbody>
</table>
### WEATHER DIVERT TO ABQ

<table>
<thead>
<tr>
<th>ALS</th>
<th>J-13</th>
<th>FRIHO</th>
<th>187/121</th>
<th>FL310</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRIHO</td>
<td>DIR</td>
<td>AWASH</td>
<td>230/20</td>
<td>FL210</td>
</tr>
<tr>
<td>AWASH</td>
<td>DIR</td>
<td>ABQ</td>
<td>136/16</td>
<td>10000</td>
</tr>
<tr>
<td>ABQ</td>
<td>ILS</td>
<td>KABQ</td>
<td>074/10</td>
<td>5352</td>
</tr>
</tbody>
</table>

**WEATHER DIVERT TO GJT**

<table>
<thead>
<tr>
<th>ALS</th>
<th>J-206</th>
<th>HBU</th>
<th>306/88</th>
<th>FL310</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBU</td>
<td>V-484</td>
<td>BATTZ</td>
<td>280/64</td>
<td>14000</td>
</tr>
<tr>
<td>BATTZ</td>
<td>V-484</td>
<td>JNC</td>
<td>280/26</td>
<td>10000</td>
</tr>
<tr>
<td>JNC</td>
<td>V-187</td>
<td>LOMMA</td>
<td>341/13</td>
<td>8000</td>
</tr>
<tr>
<td>LOMMA</td>
<td>ILS</td>
<td>KGJT</td>
<td>112/16</td>
<td>4858</td>
</tr>
</tbody>
</table>

**WEATHER DIVERT TO FMN**

<table>
<thead>
<tr>
<th>ALS</th>
<th>J-44/V-210</th>
<th>RESER</th>
<th>240/84</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESER</td>
<td>V-210</td>
<td>FMN</td>
<td>240/31</td>
<td>8000</td>
</tr>
<tr>
<td>FMN</td>
<td>ILS</td>
<td>KFMN</td>
<td>255/6</td>
<td>5503</td>
</tr>
</tbody>
</table>

**DIVERT FOR WEATHER TO KSAF**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>TAS</th>
<th>173/45</th>
<th>FL250</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>V-83</td>
<td>NAMBE</td>
<td>174/49</td>
<td>11000</td>
</tr>
<tr>
<td>NAMBE</td>
<td>V-83</td>
<td>SAF</td>
<td>174/15</td>
<td>9000</td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>COMBO</td>
<td>152/13</td>
<td>9000</td>
</tr>
<tr>
<td>COMBO</td>
<td>DIR</td>
<td>SAF</td>
<td>332/8</td>
<td>7800</td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>KSAF</td>
<td>332/4.2</td>
<td>6344</td>
</tr>
</tbody>
</table>

**DIVERT FOR WEATHER TO KPUB**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>GOSIP</th>
<th>061/60</th>
<th>FL180</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOSIP</td>
<td>V-83</td>
<td>VIGIL</td>
<td>358/19</td>
<td>13000</td>
</tr>
<tr>
<td>VIGIL</td>
<td>V-83</td>
<td>PUB 178/10</td>
<td>358/12</td>
<td>11000</td>
</tr>
<tr>
<td>PUB 178/10</td>
<td>ARC</td>
<td>AYNES</td>
<td>VAR/20</td>
<td>7000</td>
</tr>
<tr>
<td>AYNES</td>
<td>DIR</td>
<td>PUB</td>
<td>244/10</td>
<td>5500</td>
</tr>
<tr>
<td>PUB</td>
<td>DIR</td>
<td>KPUB</td>
<td>244/2.1</td>
<td>4726</td>
</tr>
</tbody>
</table>

**123.1**
DIVERT FOR WEATHER TO KALS

<table>
<thead>
<tr>
<th>ALS</th>
<th>DIR</th>
<th>ALS 003/17</th>
<th>003/17</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS 003/17</td>
<td>ARC</td>
<td>DANNE</td>
<td>VAR/12</td>
<td>10000</td>
</tr>
<tr>
<td>DANNE</td>
<td>DIR</td>
<td>ALS 322/11</td>
<td>142/6</td>
<td>9000</td>
</tr>
<tr>
<td>ALS 322/11</td>
<td>DIR</td>
<td>KALS</td>
<td>142/5.2</td>
<td>7535</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40.2</td>
<td></td>
</tr>
</tbody>
</table>
DIVERT FOR PRESSURE LOSS TO DENVER

Route 1

<table>
<thead>
<tr>
<th>FROM</th>
<th>VIA</th>
<th>TO</th>
<th>MH/DIST (NM)</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS</td>
<td>V-484</td>
<td>HBU</td>
<td>326-276/96</td>
<td>15000</td>
</tr>
<tr>
<td>HBU</td>
<td>V-95</td>
<td>CHILT</td>
<td>050/99</td>
<td>17000</td>
</tr>
<tr>
<td>CHILT</td>
<td>V-89</td>
<td>SILOW</td>
<td>005/15</td>
<td>12000</td>
</tr>
<tr>
<td>SILOW</td>
<td>DIR</td>
<td>JACOX</td>
<td>073/6.8</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

Route 2

| ALS   | V-83 | GOSIP | 061/60       | 14000 |
| GOSIP | V-19 | PUB   | 358/41       | 9000 |
| PUB   | V-19 | IOC   | 351/69       | 9000 |
| IOC   | DIR | ENGLE | 275/26       | 9000 |
| ENGLE | LOC | GANDI | 351/5.7      | 7500 |
| GANDI | ILS | KDEN | 351/6.2      | 5333 |

Route 3

| ALS   | V-83 | GOSIP | 061/60       | 14000 |
| GOSIP | V-83 | PUB   | 358/41       | 10000 |
| PUB   | V-81 | COS   | 333/40       | 10000 |
| COS   | V-83 | IOC   | 012/33       | 10000 |
| IOC   | DIR | ENGLE | 275/26       | 9000 |
| ENGLE | LOC | GANDI | 351/5.7      | 7500 |
| GANDI | ILS | KDEN | 351/6.2      | 5333 |

Route 4

| ALS   | V-210 | GOSIP | 061/60       | 14000 |
| GOSIP | V-210 | KINGO | 058/51       | 12000 |
| KINGO | V-169 | HGO   | 347/53       | 9000 |
| HGO   | V-366 | IOC   | 306/50       | 9000 |
| IOC   | DIR | ENGLE | 275/26       | 9000 |
| ENGLE | LOC | GANDI | 351/5.7      | 7500 |
| GANDI | ILS | KDEN | 351/6.2      | 5333 |

C-45
## DIVERT FOR PRESSURE LOSS TO ABQ

### Route 1

<table>
<thead>
<tr>
<th>ALS</th>
<th>FMN</th>
<th>AWASH</th>
<th>ABQ</th>
<th>ILS</th>
<th>KABQ</th>
<th>240/115</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-210</td>
<td>V-187</td>
<td>V-187</td>
<td>ILS</td>
<td>077/9.8</td>
<td></td>
<td>244.8</td>
<td></td>
</tr>
</tbody>
</table>

### Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>TAS</th>
<th>SAF</th>
<th>DIR</th>
<th>AWASH</th>
<th>ABQ</th>
<th>173/45</th>
<th>12000</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-83</td>
<td>V-83</td>
<td>V-83</td>
<td>DIR</td>
<td>V-187</td>
<td>ABQ</td>
<td>173/45</td>
<td>12000</td>
</tr>
</tbody>
</table>

### Route 3

<table>
<thead>
<tr>
<th>ALS</th>
<th>TAS</th>
<th>SAF</th>
<th>DIR</th>
<th>CURLY</th>
<th>AWASH</th>
<th>ABQ</th>
<th>173/45</th>
<th>12000</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-83</td>
<td>V-83</td>
<td>V-83</td>
<td>DIR</td>
<td>V-187</td>
<td>ABQ</td>
<td>173/45</td>
<td>12000</td>
<td></td>
</tr>
</tbody>
</table>

## DIVERT FOR PRESSURE LOSS TO KGTJ

### Route 1

<table>
<thead>
<tr>
<th>ALS</th>
<th>HBU</th>
<th>MTJ</th>
<th>JNC</th>
<th>LOMMA</th>
<th>ILS</th>
<th>KGTJ</th>
<th>112/17.1</th>
<th>4858</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-484</td>
<td>V-26</td>
<td>V-26</td>
<td>V-187</td>
<td>ILS</td>
<td></td>
<td></td>
<td>112/17.1</td>
<td>4858</td>
</tr>
</tbody>
</table>

### Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>HBU</th>
<th>JNC</th>
<th>LOMMA</th>
<th>ILS</th>
<th>KGTJ</th>
<th>112/17.1</th>
<th>4858</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-484</td>
<td>V-484</td>
<td>V-187</td>
<td>ILS</td>
<td></td>
<td></td>
<td>112/17.1</td>
<td>4858</td>
</tr>
</tbody>
</table>
## Route 3

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-210</th>
<th>FMN</th>
<th>240/115</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMN</td>
<td>V-187</td>
<td>JNC</td>
<td>333/142</td>
<td>15000</td>
</tr>
<tr>
<td>JNC</td>
<td>V-187</td>
<td>LOMMA</td>
<td>341/13</td>
<td>9000</td>
</tr>
<tr>
<td>LOMMA</td>
<td>ILS</td>
<td>KGTJ</td>
<td>112/17.1</td>
<td>4858</td>
</tr>
</tbody>
</table>

**DIVERT FOR PRESSURE LOSS TO KFMN**

## Route 1

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-210</th>
<th>RESER</th>
<th>240/84</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESER</td>
<td>V-210</td>
<td>FMN</td>
<td>237/31</td>
<td>9000</td>
</tr>
<tr>
<td>FMN</td>
<td>ILS</td>
<td>KFMN</td>
<td>256/5.9</td>
<td>5503</td>
</tr>
</tbody>
</table>

## Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-484</th>
<th>HBU</th>
<th>326-276/96</th>
<th>15000</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBU</td>
<td>V-95</td>
<td>DRO</td>
<td>190/85</td>
<td>17000</td>
</tr>
<tr>
<td>DRO</td>
<td>DIR</td>
<td>TURLY</td>
<td>170/24</td>
<td>10000</td>
</tr>
<tr>
<td>TURLY</td>
<td>V-368</td>
<td>FMN</td>
<td>252/16</td>
<td>9000</td>
</tr>
<tr>
<td>FMN</td>
<td>ILS</td>
<td>KFMN</td>
<td>256/5.9</td>
<td>5503</td>
</tr>
</tbody>
</table>

## Route 3

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-368</th>
<th>BRAZO</th>
<th>218/51</th>
<th>13000</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAZO</td>
<td>V-368</td>
<td>TURLY</td>
<td>252/54</td>
<td>13000</td>
</tr>
<tr>
<td>TURLY</td>
<td>V-368</td>
<td>FMN</td>
<td>252/16</td>
<td>9000</td>
</tr>
<tr>
<td>FMN</td>
<td>ILS</td>
<td>KFMN</td>
<td>256/5.9</td>
<td>5503</td>
</tr>
</tbody>
</table>

**DIVERT FOR PRESSURE LOSS TO KSAF**

## Route 1

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>TAS</th>
<th>173/45</th>
<th>12000</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>V-83</td>
<td>NAMBE</td>
<td>174/49</td>
<td>11000</td>
</tr>
<tr>
<td>NAMBE</td>
<td>V-83</td>
<td>SAF</td>
<td>174/15</td>
<td>9000</td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>COMBO</td>
<td>152/13</td>
<td>9000</td>
</tr>
<tr>
<td>COMBO</td>
<td>DIR</td>
<td>SAF</td>
<td>332/8</td>
<td>7800</td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>KSAF</td>
<td>332/4.2</td>
<td>6344</td>
</tr>
</tbody>
</table>

**134.2**
### Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>FMN</th>
<th>CABZO</th>
<th>ZIASE</th>
<th>SAF</th>
<th>COMBO</th>
<th>SAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-210</td>
<td>V-187</td>
<td>V-62</td>
<td>V-62</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
</tr>
<tr>
<td>FMN</td>
<td>CABZO</td>
<td>ZIASE</td>
<td>SAF</td>
<td>COMBO</td>
<td>SAF</td>
<td>SAF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALS</th>
<th>FMN</th>
<th>CABZO</th>
<th>ZIASE</th>
<th>SAF</th>
<th>COMBO</th>
<th>SAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>240/115</td>
<td>134/88</td>
<td>075/26</td>
<td>075/27</td>
<td>152/13</td>
<td>332/8</td>
<td></td>
</tr>
<tr>
<td>15000</td>
<td>11000</td>
<td>10000</td>
<td>9000</td>
<td>9000</td>
<td>7800</td>
<td></td>
</tr>
</tbody>
</table>

### Route 3

<table>
<thead>
<tr>
<th>ALS</th>
<th>FMN</th>
<th>PEDRA</th>
<th>ZIASE</th>
<th>SAF</th>
<th>COMBO</th>
<th>SAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-368</td>
<td>V-68</td>
<td>V-62</td>
<td>V-62</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
</tr>
<tr>
<td>FMN</td>
<td>PEDRA</td>
<td>ZIASE</td>
<td>SAF</td>
<td>COMBO</td>
<td>SAF</td>
<td>SAF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALS</th>
<th>FMN</th>
<th>PEDRA</th>
<th>ZIASE</th>
<th>SAF</th>
<th>COMBO</th>
<th>SAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>219-252/121</td>
<td>114-152/81</td>
<td>075/17</td>
<td>075/27</td>
<td>152/13</td>
<td>332/8</td>
<td></td>
</tr>
<tr>
<td>13000</td>
<td>13000</td>
<td>10000</td>
<td>9000</td>
<td>9000</td>
<td>7800</td>
<td></td>
</tr>
</tbody>
</table>

### Route 1

DIVERT FOR PRESSURE LOSS TO KPSUB

<table>
<thead>
<tr>
<th>ALS</th>
<th>GOSIP</th>
<th>VIGIL</th>
<th>PUB 178/10</th>
<th>AYNES</th>
<th>PUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-83</td>
<td>V-83</td>
<td>V-83</td>
<td>ARC</td>
<td>DIR</td>
<td>DIR</td>
</tr>
<tr>
<td>GOSIP</td>
<td>VIGIL</td>
<td>PUB 178/10</td>
<td>AYNES</td>
<td>PUB</td>
<td>KPUB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALS</th>
<th>GOSIP</th>
<th>VIGIL</th>
<th>PUB 178/10</th>
<th>AYNES</th>
<th>PUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>061/60</td>
<td>358/19</td>
<td>358/12</td>
<td>VAR/20</td>
<td>244/10</td>
<td>244/2.1</td>
</tr>
<tr>
<td>14000</td>
<td>9000</td>
<td>7000</td>
<td>7000</td>
<td>5500</td>
<td>4726</td>
</tr>
</tbody>
</table>

### Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>GOSIP</th>
<th>VIGIL</th>
<th>PUB 178/10</th>
<th>AYNES</th>
<th>PUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
</tr>
<tr>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
<td>DIR</td>
</tr>
</tbody>
</table>

## DIVERT FOR PRESSURE LOSS TO KALNS

<table>
<thead>
<tr>
<th>ALS</th>
<th>DIR</th>
<th>ALS 003/17</th>
<th>AL 003/17</th>
<th>VAR/12</th>
<th>142/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>DIR</td>
<td>ALS 322/11</td>
<td>ALS 322/11</td>
<td>KALNS</td>
<td>KALNS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALS</th>
<th>DIR</th>
<th>ALS 003/17</th>
<th>AL 003/17</th>
<th>VAR/12</th>
<th>142/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>DIR</td>
<td>ALS 322/11</td>
<td>ALS 322/11</td>
<td>KALNS</td>
<td>KALNS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALS</th>
<th>DIR</th>
<th>ALS 003/17</th>
<th>AL 003/17</th>
<th>VAR/12</th>
<th>142/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>DIR</td>
<td>ALS 322/11</td>
<td>ALS 322/11</td>
<td>KALNS</td>
<td>KALNS</td>
</tr>
</tbody>
</table>

C-48
DIVERTER ROUTES FOR ENGINE POWER LOSS

DIVERT TO DENVER

Route 1

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-484</th>
<th>HBU</th>
<th>326-276/96</th>
<th>16000</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBU</td>
<td>V-95</td>
<td>CHILT</td>
<td>050/99</td>
<td>16000</td>
</tr>
<tr>
<td>CHILT</td>
<td>V-89</td>
<td>SILOW</td>
<td>005/15</td>
<td>12000</td>
</tr>
<tr>
<td>SILOW</td>
<td>DIR</td>
<td>JACOX</td>
<td>073/6.8</td>
<td>10000</td>
</tr>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

Route 2

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>GOSIP</th>
<th>061/60</th>
<th>17000</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOSIP</td>
<td>V-19</td>
<td>PUB</td>
<td>358/41</td>
<td>16000</td>
</tr>
<tr>
<td>PUB</td>
<td>V-19</td>
<td>IOC</td>
<td>351/69</td>
<td>16000</td>
</tr>
<tr>
<td>IOC</td>
<td>DIR</td>
<td>ENGLE</td>
<td>275/26</td>
<td>9000</td>
</tr>
<tr>
<td>ENGLE</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/5.7</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

Route 3

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>GOSIP</th>
<th>061/60</th>
<th>17000</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOSIP</td>
<td>V-83</td>
<td>PUB</td>
<td>358/41</td>
<td>16000</td>
</tr>
<tr>
<td>PUB</td>
<td>V-81</td>
<td>COS</td>
<td>333/40</td>
<td>16000</td>
</tr>
<tr>
<td>COS</td>
<td>V-83</td>
<td>IOC</td>
<td>012/33</td>
<td>16000</td>
</tr>
<tr>
<td>IOC</td>
<td>DIR</td>
<td>ENGLE</td>
<td>275/26</td>
<td>9000</td>
</tr>
<tr>
<td>ENGLE</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/5.7</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

Route 4

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-210</th>
<th>GOSIP</th>
<th>061/60</th>
<th>17000</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOSIP</td>
<td>V-210</td>
<td>KINGO</td>
<td>058/51</td>
<td>16000</td>
</tr>
<tr>
<td>KINGO</td>
<td>V-169</td>
<td>HGO</td>
<td>347/53</td>
<td>16000</td>
</tr>
<tr>
<td>HGO</td>
<td>V-366</td>
<td>IOC</td>
<td>306/50</td>
<td>16000</td>
</tr>
<tr>
<td>IOC</td>
<td>DIR</td>
<td>ENGLE</td>
<td>275/26</td>
<td>9000</td>
</tr>
<tr>
<td>ENGLE</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/5.7</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

Route 5

<table>
<thead>
<tr>
<th>ALS</th>
<th>DIR</th>
<th>JACOX</th>
<th>005/135</th>
<th>10000</th>
</tr>
</thead>
<tbody>
<tr>
<td>JACOX</td>
<td>LOC</td>
<td>GANDI</td>
<td>351/15.9</td>
<td>7500</td>
</tr>
<tr>
<td>GANDI</td>
<td>ILS</td>
<td>KDEN</td>
<td>351/6.2</td>
<td>5333</td>
</tr>
</tbody>
</table>

C-49
### DIVERT TO ABQ

**Route 1**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-210</th>
<th>FMN</th>
<th>V-187</th>
<th>V-187</th>
<th>ILS</th>
<th>KABQ</th>
<th>240/115</th>
<th>16000</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMN</td>
<td>V-187</td>
<td>AWASH</td>
<td>134/104</td>
<td>11000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWASH</td>
<td>V-187</td>
<td>ABQ</td>
<td>136/16</td>
<td>8000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABQ</td>
<td>ILS</td>
<td>KABQ</td>
<td></td>
<td></td>
<td>077/9.8</td>
<td>5352</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>244.8</td>
<td></td>
</tr>
</tbody>
</table>

**Route 2**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>TAS</th>
<th>V-83</th>
<th>V-83</th>
<th>ILS</th>
<th>KABQ</th>
<th>173/45</th>
<th>17000</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>V-83</td>
<td>SAF</td>
<td>174/64</td>
<td>11000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>AWASH</td>
<td>238/49</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWASH</td>
<td>DIR</td>
<td>ABQ</td>
<td>136/16</td>
<td>8000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABQ</td>
<td>ILS</td>
<td>KABQ</td>
<td></td>
<td></td>
<td>077/9.8</td>
<td>5352</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>183.8</td>
<td></td>
</tr>
</tbody>
</table>

**Route 3**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-83</th>
<th>TAS</th>
<th>V-83</th>
<th>V-83</th>
<th>ILS</th>
<th>KABQ</th>
<th>173/45</th>
<th>17000</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>V-83</td>
<td>SAF</td>
<td>174/64</td>
<td>11000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAF</td>
<td>DIR</td>
<td>CURLY</td>
<td>249/51</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURLY</td>
<td>V-187</td>
<td>AWASH</td>
<td>136/10</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWASH</td>
<td>V-187</td>
<td>ABQ</td>
<td>136/16</td>
<td>8000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABQ</td>
<td>ILS</td>
<td>KABQ</td>
<td></td>
<td></td>
<td>077/9.8</td>
<td>5352</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>195.8</td>
<td></td>
</tr>
</tbody>
</table>

### DIVERT TO KGTJ

**Route 1**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-484</th>
<th>HBU</th>
<th>V-26</th>
<th>MTJ</th>
<th>V-26</th>
<th>JNC</th>
<th>V-187</th>
<th>LOMMA</th>
<th>ILS</th>
<th>KGTJ</th>
<th>112/17.1</th>
<th>4858</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBU</td>
<td>V-26</td>
<td>MTJ</td>
<td>326-276/96</td>
<td>16000</td>
<td>261/40</td>
<td>16000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>220.1</td>
<td></td>
</tr>
<tr>
<td>MTJ</td>
<td>V-26</td>
<td>JNC</td>
<td>295/54</td>
<td>11000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JNC</td>
<td>V-187</td>
<td>LOMMA</td>
<td>341/13</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOMMA</td>
<td>ILS</td>
<td>KGTJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>216.1</td>
<td></td>
</tr>
</tbody>
</table>

**Route 2**

<table>
<thead>
<tr>
<th>ALS</th>
<th>V-484</th>
<th>HBU</th>
<th>V-484</th>
<th>JNC</th>
<th>V-187</th>
<th>LOMMA</th>
<th>ILS</th>
<th>KGTJ</th>
<th>112/17.1</th>
<th>4858</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBU</td>
<td>V-484</td>
<td>JNC</td>
<td>326-276/96</td>
<td>16000</td>
<td>280/90</td>
<td>16000</td>
<td></td>
<td></td>
<td>216.1</td>
<td></td>
</tr>
<tr>
<td>JNC</td>
<td>V-187</td>
<td>LOMMA</td>
<td>341/13</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOMMA</td>
<td>ILS</td>
<td>KGTJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Route 3

| ALS | V-210 | FMN | 240/115 | 16000 |
| FMN | V-187 | JNC | 333/142 | 16000 |
| JNC | V-187 | LOMMA | 341/13 | 9000 |
| LOMMA | ILS | KGTJ | 112/17.1 | 4858 |
|       |       |     | 287.1 & |

DIVERT TO KFMN

Route 1

| ALS | V-210 | RESER | 240/84 | 16000 |
| RESER | V-210 | FMN | 237/31 | 9000 |
| FMN | ILS | KFMN | 256/5.9 | 5503 |
|     |     |     | 120.9 & |

Route 2

| ALS | V-484 | HBU | 326-276/96 | 16000 |
| HBU | V-95 | DRO | 190/85 | 16000 |
| DRO | DIR | TURLY | 170/24 | 10000 |
| TURLY | V-368 | FMN | 252/16 | 9000 |
| FMN | ILS | KFMN | 256/5.9 | 5503 |
|     |     |     | 226.9 & |

Route 3

| ALS | V-368 | BRAZO | 218/51 | 16000 |
| BRAZO | V-368 | TURLY | 252/54 | 16000 |
| TURLY | V-368 | FMN | 252/16 | 9000 |
| FMN | ILS | KFMN | 256/5.9 | 5503 |
|     |     |     | 126.9 & |

DIVERT TO KSAF

Route 1

| ALS | V-83 | TAS | 173/45 | FL210 |
| TAS | V-83 | NAMBE | 174/49 | 11000 |
| NAMBE | V-83 | SAF | 174/15 | 9000 |
| SAF | DIR | COMBO | 152/13 | 9000 |
| COMBO | DIR | SAF | 332/8 | 7800 |
| SAF | DIR | KSAF | 332/4.2 | 6344 |
|     |     |     | 134.2 & |
**Route 2**

<table>
<thead>
<tr>
<th>Route 2</th>
<th>ALS</th>
<th>V-210</th>
<th>FMN</th>
<th>240/115</th>
<th>16000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FMN</td>
<td>V-187</td>
<td>CABZO</td>
<td>134/88</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>CABZO</td>
<td>V-62</td>
<td>ZIASE</td>
<td>075/26</td>
<td>10000</td>
</tr>
<tr>
<td></td>
<td>ZIASE</td>
<td>V-62</td>
<td>SAF</td>
<td>075/27</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>SAF</td>
<td>DIR</td>
<td>COMBO</td>
<td>152/13</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>COMBO</td>
<td>DIR</td>
<td>SAF</td>
<td>332/8</td>
<td>7800</td>
</tr>
<tr>
<td></td>
<td>SAF</td>
<td>DIR</td>
<td>KSAF</td>
<td>332/4.2</td>
<td>6344</td>
</tr>
<tr>
<td><strong>Route 3</strong></td>
<td>ALS</td>
<td>V-368</td>
<td>FMN</td>
<td>219-252/121</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>FMN</td>
<td>V-68</td>
<td>PEDRA</td>
<td>114-152/81</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>PEDRA</td>
<td>V-62</td>
<td>ZIASE</td>
<td>075/17</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>ZIASE</td>
<td>V-62</td>
<td>SAF</td>
<td>075/27</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>SAF</td>
<td>DIR</td>
<td>COMBO</td>
<td>152/13</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>COMBO</td>
<td>DIR</td>
<td>SAF</td>
<td>332/8</td>
<td>7800</td>
</tr>
<tr>
<td></td>
<td>SAF</td>
<td>DIR</td>
<td>KSAF</td>
<td>332/4.2</td>
<td>6344</td>
</tr>
<tr>
<td><strong>Route 1</strong></td>
<td>ALS</td>
<td>V-83</td>
<td>GOSIP</td>
<td>061/60</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>GOSIP</td>
<td>V-83</td>
<td>VIGIL</td>
<td>358/19</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>VIGIL</td>
<td>V-83</td>
<td>PUB 178/10</td>
<td>358/12</td>
<td>7000</td>
</tr>
<tr>
<td></td>
<td>PUB 178/10</td>
<td>ARC</td>
<td>AYNES</td>
<td>VAR/20</td>
<td>7000</td>
</tr>
<tr>
<td></td>
<td>AYNES</td>
<td>DIR</td>
<td>PUB</td>
<td>244/10</td>
<td>5500</td>
</tr>
<tr>
<td></td>
<td>PUB</td>
<td>DIR</td>
<td>KPUB</td>
<td>244/2.1</td>
<td>4726</td>
</tr>
<tr>
<td><strong>DIVERT TO KPUB</strong></td>
<td>ALS 003/17</td>
<td>V-83</td>
<td>003/17</td>
<td>17000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALS 003/17</td>
<td>ARC</td>
<td>DANNE</td>
<td>VAR/12</td>
<td>10000</td>
</tr>
<tr>
<td></td>
<td>DANNE</td>
<td>DIR</td>
<td>ALS 322/11</td>
<td>142/6</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>ALS 322/11</td>
<td>DIR</td>
<td>KALS</td>
<td>142/5.2</td>
<td>7535</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40.2</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

Sample Diverter Display Screen Images

This appendix contains a sample of display screen images taken from the Diverter demonstration showing the type and format of information presented in the demonstration.
## DIVERTER PLANNING CONSOLE

**CURRENT DESTINATION: KCOS**

<table>
<thead>
<tr>
<th>Start</th>
<th>Show Attribute Weights</th>
</tr>
</thead>
</table>

ATC reports severe **THUNDERSTORMS on a LINE**, 30NM wide by 40NM long located 15NM-WEST of KCOS moving EAST at 10 knots, tops 45000 feet, 0.75IN-HAIL, ICING, LIGHTNING air to air and air to ground, and SEVERE turbulence in the vicinity of the cells.
CURRENT DESTINATION: KCOS

Start
Show Attribute Weights

ATC reports severe THUNDERSTORMS on a LINE, 30NM wide by 40NM long to the EAST at 10 knots, tops 45000 feet, and are reported to continue. Avoid in the vicinity of the cells.

DIVERTER DELAY-DEVERT RECOMMENDATION RULES

<table>
<thead>
<tr>
<th>IF</th>
<th>THEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>If estimated holding time is &gt; 60 minutes</td>
<td>DIVERT</td>
</tr>
<tr>
<td>If estimated holding time is ≤ available holding time</td>
<td>DEVERT</td>
</tr>
<tr>
<td>If estimated holding time ≤ 60 minutes and</td>
<td></td>
</tr>
<tr>
<td>If estimated holding time ≤ available holding time</td>
<td>DELAY</td>
</tr>
</tbody>
</table>

Landing Delay for COS is 70 minutes, therefore ....

RECOMMEND DIVERTING

EXIT
**DIVERTER PLANNING CONSOLE**

**CURRENT DESTINATION: KCOS**

Start
Show Attribute Weights

<table>
<thead>
<tr>
<th>ATC reports severe THUNDERSTORMS on a LINE, 30NM wide by 40NM long located 15NM-WEST of KCOS moving EAST at 10 knots, tops 45000 feet, 0.75IN-HAIL, ICING, LIGHTNING air to air and air to ground, and SEVERE turbulence in the vicinity of the cells.</th>
</tr>
</thead>
<tbody>
<tr>
<td>the weight of ALAMOSA = 296</td>
</tr>
<tr>
<td>the weight of PUEBLO = 0</td>
</tr>
<tr>
<td>the weight of SANTA-FE = 0</td>
</tr>
<tr>
<td>the weight of FARMINGTON = 288</td>
</tr>
<tr>
<td>the weight of ALBUQUERQUE = 0</td>
</tr>
<tr>
<td>the weight of DENVER = 318</td>
</tr>
<tr>
<td>the weight of GRAND-JUNCTION = 0</td>
</tr>
</tbody>
</table>

DIVERTER recommends diverting due to severe weather
DIVERTER recommends the final destination to be DENVER

![List and Compare Airfields](Image)
## DIVERTER PLANNING CONSOLE

### CURRENT DESTINATION: KCOS

<table>
<thead>
<tr>
<th>AIRFIELDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DENVER 318</td>
</tr>
<tr>
<td>2. ALAMOSA 296</td>
</tr>
<tr>
<td>3. FARMINGTON 288</td>
</tr>
<tr>
<td>4. PUEBLA 0</td>
</tr>
<tr>
<td>5. SANTA-FE 0</td>
</tr>
<tr>
<td>Exit</td>
</tr>
</tbody>
</table>

### DENVER

#### ATTRIBUTES FOR DENVER

**WEATHER FOR DENVER**

"10BKN30OVC4H 300/095 666"  

**SAFETY ATTRIBUTES FOR DENVER**

- DENVER meets approach minimum standards
- DENVER safety crew duty time can be met
- DENVER enroute traffic has no conflicts
- DENVER approach traffic has some conflicts
- DENVER runway traffic has no conflicts
- DENVER within altitud safety limits
- DENVER no severe turbulence
- DENVER is within structural limits
- DENVER route would cause light icing
- DENVER allows the airplane to be above minimum enroute altitude
- DENVER has some aircraft approach landing equipment inoperative

**AIRFIELD STATUS ATTRIBUTES FOR DENVER**

- DENVER has a runway of 8,000 feet or greater
- DENVER airport is open
- DENVER has a dry runway
- DENVER taxiways open

"MORE"
### Diverter Planning Console

#### Current Destination: KCOS

<table>
<thead>
<tr>
<th>DENVER</th>
<th>AIRFIELDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENVER has an available gate</td>
<td>1. DENVER 318</td>
</tr>
<tr>
<td>DENVER has adequate lighting at night</td>
<td>2. ALAMOSA 298</td>
</tr>
<tr>
<td>DENVER has instrument condition lighting</td>
<td>3. FARMINGTON 288</td>
</tr>
<tr>
<td>DENVER all instrument approach aids operational</td>
<td>4. PUEBLO 0</td>
</tr>
<tr>
<td>DENVER has approach control radar</td>
<td>5. SANTA-FE 0</td>
</tr>
<tr>
<td>DENVER has approach control communications</td>
<td>Exit</td>
</tr>
<tr>
<td>DENVER has tower control communications</td>
<td></td>
</tr>
<tr>
<td>DENVER has ground control communications</td>
<td></td>
</tr>
<tr>
<td>DENVER has no special operating hours</td>
<td></td>
</tr>
<tr>
<td>DENVER has parking space readily available</td>
<td></td>
</tr>
<tr>
<td>DENVER meets approach minimum standards</td>
<td></td>
</tr>
<tr>
<td>DENVER safety crew duty time can be met</td>
<td></td>
</tr>
<tr>
<td>DENVER enroute traffic has some conflicts</td>
<td></td>
</tr>
<tr>
<td>DENVER approach traffic has some conflicts</td>
<td></td>
</tr>
<tr>
<td>DENVER runway traffic has no conflicts</td>
<td></td>
</tr>
<tr>
<td>DENVER within airspeed safety limits</td>
<td></td>
</tr>
<tr>
<td>DENVER no severe turbulence</td>
<td></td>
</tr>
<tr>
<td>DENVER is within structural limits</td>
<td></td>
</tr>
<tr>
<td>DENVER route would cause light icing</td>
<td></td>
</tr>
<tr>
<td>DENVER allows the airplane to be above minimum enroute altitude</td>
<td></td>
</tr>
<tr>
<td>DENVER has some aircraft approach landing equipment inoperative</td>
<td></td>
</tr>
</tbody>
</table>

### Attributes for Denver

#### Facilities Attributes for Denver
- DENVER has company parts and maintenance available
- DENVER has fire and emergency equipment available
- DENVER has suitable stairs readily available
- DENVER has power cart readily available
- DENVER has relief crew available if required
- DENVER has company air transportation to passenger destination
- DENVER has good hotel accommodations if greater than a 6 hour layover

#### Passenger Comfort Attributes for Denver
- DENVER cabin altitude descent rate less than 500 ft/min
- DENVER has light turbulence
- DENVER route would not require any maneuver above 1 G
- DENVER route would require less than a 30 degree bank angle
- DENVER route would not require any large power changes

#### Schedule Attributes for Denver
- DENVER requires holding pattern of 10 - 20 minutes
- DENVER has terminal delay of between 0 and 10 minutes
- DENVER has no gate taxi delay
- DENVER has no turn around delay
- DENVER has departure delays between 0 and 10 minutes

**MORE**
<table>
<thead>
<tr>
<th>AIRFIELDS</th>
<th>FARMINGTON</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DENVER 318</td>
<td>ATTRIBUTES FOR FARMINGTON</td>
</tr>
<tr>
<td>2. ALAMOSA 296</td>
<td>WEATHER FOR FARMINGTON</td>
</tr>
<tr>
<td>3. FARMINGTON 286</td>
<td>&quot;10BKN32OVC15 290/10 3000 68F&quot;</td>
</tr>
<tr>
<td>4. PUEBLO 0</td>
<td>SAFETY ATTRIBUTES FOR FARMINGTON</td>
</tr>
<tr>
<td>5. SANTA-FE 0</td>
<td>FARMINGTON meets approach minimum standards</td>
</tr>
<tr>
<td>Exit</td>
<td>FARMINGTON safety crew duty time can be met</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON enroute traffic has no conflicts</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON approach traffic has some conflicts</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON runway traffic has no conflicts</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON within airspeed safety limits</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON no severe turbulence</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON is within structural limits</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON route would not cause any icing</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON allows the airplane to be above minimum enroute altitude</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON has all aircraft required landing equipment</td>
</tr>
<tr>
<td></td>
<td>AIRFIELD STATUS ATTRIBUTES FOR FARMINGTON</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON has a runway of 8,000 feet or greater</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON airport is open</td>
</tr>
<tr>
<td></td>
<td>FARMINGTON has a slush on the runway</td>
</tr>
<tr>
<td></td>
<td>&quot;&quot;MORE&quot;&quot;</td>
</tr>
</tbody>
</table>
## DIVERTER PLANNING CONSOLE

### CURRENT DESTINATION: KCOS

**LOCKHEED NASA - LANCE**

<table>
<thead>
<tr>
<th>AIRFIELDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DENVER 318</td>
</tr>
<tr>
<td>2. ALAMOSA 296</td>
</tr>
<tr>
<td>3. FARMINGTON 282</td>
</tr>
<tr>
<td>4. PUEBLO 0</td>
</tr>
<tr>
<td>5. SANTA-FE 0 Exit</td>
</tr>
</tbody>
</table>

### FARMINGTON

- Taxiway to gate closed
- Has an available gate
- Has adequate lighting at night
- Has instrument condition lighting
- ILS, DME, & marker beacon out
- Has approach control radar
- Has approach control communications
- Has tower control communications
- Has no ground control communications
- Special operating hours are within 10 min. of ETA
- Has parking space readily available
- Meets approach minimum standards
- Safety crew duty time can be met
- Enroute traffic has no conflicts
- Approach traffic has some conflicts
- Runway traffic has no conflicts
- Within airspeed safety limits
- Is within structural limits
- Route would not cause any icing
- Allows the airplane to be above minimum enroute altitude
- Has all aircraft required landing equipment

### Attributes for FARMINGTON

#### Facilities Attributes for FARMINGTON

- Has company parts and maintenance available
- Has fire and emergency equipment available
- Has suitable stairs readily available
- Has power cart readily available
- Does not have relief crew available
- Has no air or surface transportation to passenger dest.
- Has poor hotel accommodations if greater than a 6 hour layover

#### Passenger Comfort Attributes for FARMINGTON

- Cabin altitude descent rate less than 500 ft/min
- Has no turbulence
- Route would not require any maneuver above 1 G
- Route would require less than a 30 degree bank angle
- Route would not require any large power changes

#### Schedule Attributes for FARMINGTON

- Requires holding pattern of 0 - 10 minutes
- Has terminal delay of between 0 and 10 minutes
- Has no gate taxi delay
- Has turnaround time of between 30 and 60 minutes
- Has no departure delays

**MORE**
## DIVERTER PLANNING CONSOLE

<table>
<thead>
<tr>
<th>CURRENT DESTINATION: KCOS</th>
<th>AIRFIELDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DENVER</strong></td>
<td><strong>ALAMOSA</strong></td>
</tr>
<tr>
<td>- ALAMOSA has turn around time of greater than 60 minutes</td>
<td>- Comparison of DENVER vs. ALAMOSA</td>
</tr>
<tr>
<td>- DENVER has company facilities for unscheduled maintenance</td>
<td>- Advantages of ALAMOSA</td>
</tr>
<tr>
<td>- ALAMOSA has no provisions for unscheduled maintenance</td>
<td>- ALAMOSA exceeds approach minimum standards</td>
</tr>
<tr>
<td>- DENVER has approach control radar</td>
<td>- DENVER meets approach minimum standards</td>
</tr>
<tr>
<td>- ALAMOSA has no approach control communications</td>
<td>- ALAMOSA enroute traffic has no conflicts</td>
</tr>
<tr>
<td>- DENVER has company parts and maintenance available</td>
<td>- DENVER enroute traffic has some conflicts</td>
</tr>
<tr>
<td>- ALAMOSA has no parts and maintenance available</td>
<td>- ALAMOSA approach traffic has no conflicts</td>
</tr>
<tr>
<td>- DENVER has suitable stairs readily available</td>
<td>- DENVER approach traffic has some conflicts</td>
</tr>
<tr>
<td>- ALAMOSA does not have suitable stairs readily available</td>
<td>- ALAMOSA route would not cause any icing</td>
</tr>
<tr>
<td>- DENVER has relief crew available if required</td>
<td>- DENVER route would cause light icing</td>
</tr>
<tr>
<td>- ALAMOSA does not have relief crew available</td>
<td>- ALAMOSA has all aircraft required landing equipment</td>
</tr>
<tr>
<td>- DENVER has company air transportation to passenger destination</td>
<td>- DENVER has some aircraft approach landing equipment inoperative</td>
</tr>
<tr>
<td>- ALAMOSA has surface transportation to passenger destination</td>
<td>- ALAMOSA has no turbulence</td>
</tr>
<tr>
<td>- DENVER has good hotel accommodations if greater than a 6 hour layover</td>
<td>- DENVER has light turbulence</td>
</tr>
<tr>
<td>- ALAMOSA has poor hotel accommodations if greater than a 6 hour layover</td>
<td>- ALAMOSA requires holding pattern of 0 - 10 minutes</td>
</tr>
<tr>
<td>- DENVER cabin altitude descent rate less than 500 ft/min</td>
<td>- DENVER requires holding pattern of 10 - 20 minutes</td>
</tr>
<tr>
<td>- ALAMOSA cabin altitude descent rate greater than 5000 ft/min</td>
<td>- ALAMOSA has no departure delays</td>
</tr>
<tr>
<td>- DENVER route would not require any maneuver above 1 G</td>
<td>- DENVER has departure delays between 0 and 10 minutes</td>
</tr>
<tr>
<td>- ALAMOSA route would require 1 G + G</td>
<td>- ALAMOSA landing fees are between $100 and $500</td>
</tr>
<tr>
<td>- DENVER route would require less than a 30 degree bank angle</td>
<td>- DENVER landing fees are greater than $500</td>
</tr>
<tr>
<td>- ALAMOSA route would require bank angle between 30 and 60 degrees</td>
<td>- ALAMOSA crew duty time is between 10 &amp; 30 mins. less than origin</td>
</tr>
<tr>
<td>- DENVER route would not require large power changes</td>
<td>- DENVER crew duty time is equal to original destination</td>
</tr>
<tr>
<td>- ALAMOSA route would require large power changes</td>
<td></td>
</tr>
<tr>
<td><strong>CURRENT DESTINATION: KCOS</strong></td>
<td><strong>AIRFIELDS</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>LOCKHEED</strong></td>
<td>1. DENVER 318</td>
</tr>
<tr>
<td><strong>NASA - LARC</strong></td>
<td>2. ALAMOSA 296</td>
</tr>
<tr>
<td><strong>DENVER</strong></td>
<td>3. FARMINGTON 288</td>
</tr>
<tr>
<td>FARMINGTON scheduled maintenance would cost $1,000 - $5,000</td>
<td>4. PUEBLO 0</td>
</tr>
<tr>
<td>DENVER has company facilities for unscheduled maintenance</td>
<td>Exit</td>
</tr>
<tr>
<td>FARMINGTON has no provisions for unscheduled maintenance</td>
<td>5. SANTA-FE 0</td>
</tr>
<tr>
<td><strong>DENVER</strong></td>
<td>Comparison of DENVER vs. FARMINGTON</td>
</tr>
<tr>
<td>has a dry runway</td>
<td>Advantages of FARMINGTON</td>
</tr>
<tr>
<td>FARMINGTON has a slush on the runway</td>
<td>FARMINGTON enroute traffic has no conflicts</td>
</tr>
<tr>
<td>DENVER taxiways open</td>
<td>DENVER enroute traffic has some conflicts</td>
</tr>
<tr>
<td>FARMINGTON taxiway to gate closed</td>
<td>FARMINGTON route would not cause any icing</td>
</tr>
<tr>
<td>DENVER all instrument approach aids operational</td>
<td>DENVER route would cause light icing</td>
</tr>
<tr>
<td>FARMINGTON 118, DME, &amp; marker beacon out</td>
<td>FARMINGTON has all aircraft required landing equipment</td>
</tr>
<tr>
<td>DENVER has ground control communications</td>
<td>DENVER has some aircraft approach landing equipment inoperative</td>
</tr>
<tr>
<td>FARMINGTON has no ground control communications</td>
<td>FARMINGTON has no turbulence</td>
</tr>
<tr>
<td>DENVER has no special operating hours</td>
<td>DENVER has light turbulence</td>
</tr>
<tr>
<td>FARMINGTON special operating hours are within 10 min. of ETA</td>
<td>FARMINGTON requires holding pattern of 0 - 10 minutes</td>
</tr>
<tr>
<td>DENVER has company parts and maintenance available</td>
<td>DENVER requires holding pattern of 10 - 20 minutes</td>
</tr>
<tr>
<td>FARMINGTON has non-company parts and maintenance available</td>
<td>FARMINGTON has no departure delays</td>
</tr>
<tr>
<td>DENVER has relief crew available if required</td>
<td>DENVER has departure delays between 0 and 10 minutes</td>
</tr>
<tr>
<td>FARMINGTON does not have relief crew available</td>
<td>FARMINGTON landing fees are less than $100</td>
</tr>
<tr>
<td>DENVER has company air transportation to passenger destination</td>
<td>DENVER landing fees are greater than $500</td>
</tr>
<tr>
<td>FARMINGTON has no air or surface transportation to passenger destination</td>
<td></td>
</tr>
<tr>
<td>AIRFIELD STATUS CONDITIONS</td>
<td>AIRFIELD STATUS CONDITIONS</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>CONDITIONS</strong></td>
<td><strong>ALS</strong></td>
</tr>
<tr>
<td>Runway Length (ft)</td>
<td>10</td>
</tr>
<tr>
<td>&lt; 5000 ft. = 1, 5000 = 5, 6000 = 6, 7000 = 8, &gt; 8000 ft. = 10</td>
<td></td>
</tr>
<tr>
<td>Runway Open/Closed</td>
<td>10</td>
</tr>
<tr>
<td>Open = 10, Closed = 2</td>
<td></td>
</tr>
<tr>
<td>Runway Conditions</td>
<td>10</td>
</tr>
<tr>
<td>Ice = 1, Slush = 5, Wet or Snow = 7, Dry = 10</td>
<td></td>
</tr>
<tr>
<td>Taxiway Open to Gate</td>
<td>10</td>
</tr>
<tr>
<td>Open = 10, Closed = 2</td>
<td></td>
</tr>
<tr>
<td>Lighting (day/night)</td>
<td>10</td>
</tr>
<tr>
<td>Yes = 10, No = 2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CONDITIONS</strong></th>
<th><strong>ALS</strong></th>
<th><strong>PUB</strong></th>
<th><strong>SAF</strong></th>
<th><strong>FMM</strong></th>
<th><strong>ABQ</strong></th>
<th><strong>DEN</strong></th>
<th><strong>GJ</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument Approach</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Approaches (weather)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILS &amp; VOR out = 1, ILS, GNE, &amp; marker beacon out = 5, ILS &amp; marker beacon out = 6, GNE out = 7, Marker beacon out = 8, All operational = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radar Working</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No = 5, Yes = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications OK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No = 5, Yes = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tower Communications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No = 5, Yes = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications OK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No = 5, Yes = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Operating Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed in 60 min. of EIR = 1, Closed in 10 min. of EIR = 4, Closed in 10 min. of EIR = 6, Closed in 10 min. of EIR = 9, No Special operating hours = 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No = 4, Yes = 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### DIVERTER PLANNING CONSOLE

**CURRENT DESTINATION: DENVER**

<table>
<thead>
<tr>
<th>RANKED ROUTES</th>
<th>DIST-TO-DEST (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ALS-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>164</td>
</tr>
<tr>
<td>2. ALS-ACREE-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>100</td>
</tr>
<tr>
<td>3. ALS-HBU-ACREE-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>229</td>
</tr>
<tr>
<td>4. ALS-LAA-HGO-RAMAH-IOC-JACOX-GANDI-KDEN</td>
<td>320</td>
</tr>
<tr>
<td>5. ALS-LAA-HGO-RAMAH-IOC-GANDI-KDEN</td>
<td>308</td>
</tr>
</tbody>
</table>

**DIVERTING because of**

Severe Weather.....

Suggests new route to DENVER is

ALS-SHREW-BYSON-JACOX-GANDI-KDEN

---

**DENVER**

The best routes due to weighting factors are:

- the weight of ALS-SHREW-BYSON-JACOX-GANDI-KDEN = 119
- the weight of ALS-ACREE-SHREW-BYSON-JACOX-GANDI-KDEN = 117
- the weight of ALS-HBU-ACREE-SHREW-BYSON-JACOX-GANDI-KDEN = 107
- the weight of ALS-LAA-HGO-RAMAH-IOC-JACOX-GANDI-KDEN = 113
- the weight of ALS-LAA-HGO-RAMAH-IOC-GANDI-KDEN = 111

I just sent waypoints = (ALS SHREW BYSON JACOX GANDI KDEN)

---

**DENVER**

DENVER has been chosen as the destination

DIVERTER recommends the route to DENVER to be

ALS-SHREW-BYSON-JACOX-GANDI-KDEN
<table>
<thead>
<tr>
<th>CURRENT DESTINATION: DENVER</th>
<th>RANKED ROUTES</th>
<th>DIST-TO-DEST (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverting because of</td>
<td>1. ALS-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>164</td>
</tr>
<tr>
<td>Severe Weather...</td>
<td>2. ALS-MCFEE-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>190</td>
</tr>
<tr>
<td>Suggests new route to DENVER is</td>
<td>3. ALS-MCFEE-ALAN-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>229</td>
</tr>
<tr>
<td>ALS-SHREW-BYSON-JACOX-GANDI-KDEN</td>
<td>5. ALS-LAH-LAH-RAHA-IOC-GANDI-KDEN</td>
<td>360</td>
</tr>
</tbody>
</table>

**ATTRIBUTES FOR ALS-SHREW-BYSON-JACOX-GANDI-KDEN**

**SAFETY ATTRIBUTES**
- light enroute weather
- no enroute traffic
- no approach traffic conflicts
- runway traffic conflicts
- within A/B limits
- within A/C icing parameters
- above MEA
- AC maintenance no factor

**PASSENGER COMFORT ATTRIBUTES**
- cabin descent rate less than 500 ft/min
- virtually no turbulence
- no maneuver above 1 G
- less than 30 degree bank
- I just sent original alternate message

**ATTRIBUTES FOR ALS-SHREW-BYSON-JACOX-GANDI-KDEN**

**SCHEDULE AND ECONOMY ATTRIBUTES**
- holding < 20 mins.
- wind effects < orig. dest. costs
- meets time slot < 5 seconds
- shortest approach descent distance

**ROUTING ATTRIBUTES**
- enroute descent to straight in
- restricted area < 5 min. add. time
- military ops areas no extra time
- no climb required
- no climb required for emergency
- no descent until 2-5 mins. out due to terminal area restrictions
<table>
<thead>
<tr>
<th>CURRENT DESTINATION: DENVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>List and Compare Airfields</td>
</tr>
<tr>
<td>Select In-flight Problem</td>
</tr>
<tr>
<td>Show Attribute Weights</td>
</tr>
</tbody>
</table>

The new waypoint info is ((ALS 105 49 57 21 72 48 35000) (SHREW 105 40 39 10 4 109 35000) (BYSON 105 32 39 22 27 14 29000) (JACOX 104 5 39 29 76 30 10000) (GANDI 104 53 39 45 3 16 7500) (KDEN 104 53 39 46 0 1 5333))

PILOT ROUTE CHOICE:
ALS-SHREW-BYSON-JACOX-GANDI-KDEN
## DIVERTER PLANNING CONSOLE

### CURRENT DESTINATION: DENVER

<table>
<thead>
<tr>
<th>RANKED ROUTES</th>
<th>DIST-TO-DEST (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ALS-BLOKE-GOSIP-BLOOM-KINGO-HGO-RAHAI-IOC-GANDI-KDEN</td>
<td>-</td>
</tr>
<tr>
<td>2. ALS-GOSIP-PUB-IOC-ENGLE-GANDI-KDEN</td>
<td>212</td>
</tr>
<tr>
<td>3. ALS-GOSIP-PUB-IOC-ENGLE-GANDI-KDEN</td>
<td>288</td>
</tr>
<tr>
<td>4. ALS-HBU-CHILT-SILOW-JACOX-KDEN</td>
<td>239</td>
</tr>
</tbody>
</table>

Divertering because of Cabin Pressurization Failure.....

Suggests new route to DENVER is ALS-BLOKE-GOSIP-BLOOM-KINGO-HGO-RAHAI-IOC-GANDI-KDEN

---

| the weight of ALS-HBU-CHILT-SILOW-JACOX-KDEN | 0 |
| the weight of ALS-GOSIP-PUB-IOC-ENGLE-GANDI-KDEN | 0 |
| the weight of ALS-GOSIP-PUB-COS-IOC-ENGLE-GANDI-KDEN | 0 |
| the weight of ALS-GOSIP-KINGO-HGO-IOC-ENGLE-GANDI-KDEN | 107 |

The new plan has been calculated

I just sent waypoints (ALS BLOKE GOSIP BLOOM KINGO HGO RAHAI IOC GANDI KDEN)

---

Re-calculating current route due to failure of PRESSURIZATION SYSTEM

DIVERTER recommends the route to DENVER to be ALS-GOSIP-KINGO-HGO-IOC-ENGLE-GANDI-KDEN

Route planning optimized.

DIVERTER recommended route to DENVER now is ALS-BLOKE-GOSIP-BLOOM-KINGO-HGO-RAHAI-IOC-GANDI-KDEN

This route has a total distance of 295 nautical miles

This route was calculated based on:
- MAX ALTITUDE allowed
- AIRCRAFT STATUS
- ENVIRONMENT status
- DISTANCE
<table>
<thead>
<tr>
<th>CURRENT DESTINATION: DENVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>List and Compare Airfields</td>
</tr>
<tr>
<td>Select In-flight Problem</td>
</tr>
<tr>
<td>Show Attribute Weights</td>
</tr>
</tbody>
</table>

**NASA - LARC LOCKHEED**

The new waypoint info is ((ALS 105 49 37 21 72 48 35000) (GOSIP 104 34 37 38 74 61 35000) (PUB 104 25 38 18 10 61 35000) (IOC 104 20 39 26 3 68 29600) (ENGLE 104 56 39 38 294 39 90000) (GANDI 104 53 39 45 18 7 7500) (KDEN 104 53 39 46 0 1 5333))

**PILOT ROUTE CHOICE:**

ALS-GOSIP-PUB-IOC-ENGLE-GANDI-KDEN
<table>
<thead>
<tr>
<th>CURRENT DESTINATION: ALAMOSA</th>
<th>RANKED ROUTES</th>
<th>DIST-TO-DEST(nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverterizing because of</td>
<td>1. ALS-ALSFI-DANNE-ALSFI2-KALS 92</td>
<td></td>
</tr>
<tr>
<td>Severe Emergency.....</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggests new route to KALS is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALS-ALSFI-DANNE-ALSFI2-KALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The new plan has been</td>
<td>Re-calculating current route due to a SEVERE emergency</td>
<td></td>
</tr>
<tr>
<td>calculated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I just sent waypoints a (ALS ALSFI1 DANNE ALSFI1 KALS)</td>
<td>Route planning optimized,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALS-ALSFI-DANNE-ALSFI2-KALS</td>
<td>DIVERTER recommended route to KALS now is</td>
</tr>
<tr>
<td></td>
<td>This route has a total distance of 92 nautical miles</td>
<td>This route was calculated based on:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AIRCRAFT STATUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENVIRONMENT status</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DISTANCE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAX ALTITUDE</td>
</tr>
</tbody>
</table>
It was determined that a system to incorporate artificial intelligence into airborne flight management computers is feasible. The AI functions that would be most useful to the pilot are to perform situational assessment, evaluate outside influences on the contemplated rerouting, perform flight planning/replanning, and perform maneuver planning.

A study of the software architecture and software tools capable of demonstrating Diverter was also made. A skeletal planner known as the Knowledge Acquisition Development Tool (KADET), which is a combination script-based and rule-based system, was chosen and used to implement the system. A prototype system was developed which demonstrates advanced in-flight planning/replanning capability.