

Flight Schedule Monitor User's Guide

Version 7.9

**Prepared for Federal Aviation Administration
Traffic Management Applications**

by
Metron Aviation, Inc.

1	FSM Overview	1-1
	Introduction.....	1-1
	Purpose and Scope	1-2
	Limitations and Contacts.....	1-2
	Conventions	1-2
	Common Terms Used in This Document	1-4
2	Understanding FSM Features	2-1
	Introduction.....	2-1
	Understanding Monitored Live Mode.....	2-1
	Understanding Historical Mode.....	2-2
	Understanding Ground Delay Tools	2-3
	FSM Software Technical and Visual Cues.....	2-5
	Technical Cues	2-5
	Visual Cues	2-5
	Windows Conventions	2-6
	Title Bar	2-6
	Menu Bar	2-7
	Toolbar.....	2-7
	Airport Shortcut Keys.....	2-8
	Tabs	2-8
	Windows Position and Resizing	2-9
	Moving a Window.....	2-10
3	Understanding Components.....	3-1
	Monitored Live Mode Components	3-1
	Control Panel Component.....	3-1
	Open Data Set Component	3-14
	Map Component.....	3-19
	Query Manager Component.....	3-23
	Bar Graph Component.....	3-27
	Time Line Component.....	3-34
	Ground Delay Tools Components.....	3-43
	GDT Setup Component	3-44
	GDT Map Component	3-60
	GDT Bar Graph Component.....	3-66
	GDT Data Graph Component	3-67
	GDT Data Table Component	3-70
	GDT Time Line Component.....	3-72
	GDT Coversheet.....	3-74
	GDT Advisory.....	3-84
4	Opening FSM.....	4-1
	Opening an Airport	4-1
	Opening FSM in Monitored Live Mode.....	4-2
	Using the US Map to Open Components in Monitored Live	4-4
	Opening FSM in Historical Mode.....	4-7
	Begin Monitoring an Airport	4-7

Managing Historical Data.....	4-9
Opening FSM in GDT Mode.....	4-10
5 Viewing Airport Demand	5-1
Dynamic Graphs	5-1
About the Display	5-1
Arrival vs. Departure Bars on the Graph.....	5-2
Original vs. Modeled Data Bars on the Graph.....	5-3
Show Cancelled Flights.....	5-3
Show Unassigned Slots	5-3
Show Legend	5-4
Changing the Time Increments Display.....	5-4
Tracking Time.....	5-4
Track GDP/GS Hours.....	5-4
Arrival/Departure Flow Rate	5-5
Show More/Less Hours	5-5
View the AAR and ADR.....	5-5
Changing the AAR/ADR.....	5-5
Demand Counts.....	5-7
6 Viewing Flight Information	6-1
Roll-Over Events.....	6-1
Right-Click Capabilities	6-3
FSM Flight Coloring	6-8
Color By Arrival Status	6-10
Color By Arrival/Departure	6-11
Color By Centers.....	6-12
Color By Aircraft Category	6-12
Color By Aircraft Class	6-13
Color By Carrier.....	6-14
Color by Arrival Fix	6-15
Color by Departure Fix.....	6-15
Color by Exemption Status.....	6-15
Color By User	6-16
Color By Alarm Status	6-16
Color By Distance	6-17
Viewing Information in the Time Line Component	6-18
View Open Arrival Slots	6-19
Time Line Flight Count.....	6-19
Time Line Flight List.....	6-20
GDT Time Line Display Options.....	6-21
Flight Lists.....	6-23
Flight List Menu.....	6-23
Opening Flight Lists.....	6-24
Flight List Format.....	6-26
Selecting Flight List Information.....	6-26
Grouping Information in the Flight List.....	6-29
Sorting Information in the Flight List	6-31

Multi-level Sorting	6-32
Flight Filtering in Flight Lists.....	6-33
Viewing a Single Flight.....	6-34
Search By Callsign	6-34
Flight Info Window	6-35
Flight Detail Window	6-37
Viewing Problem Flights.....	6-41
Other Flight Reports.....	6-41
Compliance Flight Lists	6-41
Query Manager Flight Lists.....	6-41
7 Decision Support Tools	7-1
Evaluating Demand Versus Capacity.....	7-1
Bar Graph.....	7-1
Time Line.....	7-1
TMI Evaluation Using Carrier Statistics Report.....	7-2
Changing Airport Arrival Rates (AAR)	7-3
Specify Model AAR	7-3
Changing the Rate	7-3
View Model AAR Line	7-5
Apply or Clear AAR Changes	7-5
Specify Model AAR Menu Options.....	7-5
Changing Airport Departure Rates (ADR).....	7-5
Specify Model ADR	7-5
Changing the Rate	7-6
View Model ADR Line	7-7
Apply or Clear ADR Changes	7-7
Specify Model ADR Menu Options.....	7-7
Reset AAR/ADR Model Rates	7-7
Manipulating Data Time.....	7-8
Set Time (Historical Mode)	7-8
Modify Data Time (GDT Mode only).....	7-9
Update Data Time (Historical Mode Only)	7-9
Remove and Restore Flights (CSA Only)	7-9
Remove Flights	7-9
Restore Flights	7-10
8 Modeling a Traffic Management Initiative	8-1
Modeling a TMI Using Parameters You Specify	8-1
Modeling a TMI Using Proposed Parameters.....	8-5
Modeling Analysis	8-6
Preview Your Work.....	8-6
GDT Data Graph Component	8-9
GDT Data Table Component	8-10
The Analysis Report.....	8-11
Reload the Data.....	8-12
9 Issuing an Initial Ground Delay Program.....	9-1
Run to Generate the GDP Coversheet.....	9-1

Reviewing Program Parameters.....	9-2
Using Autosend.....	9-2
Re-Opening the Coversheet.....	9-3
Creating an Advisory.....	9-4
Sending an Advisory.....	9-4
Purging a GDP.....	9-5
Purge Coversheet.....	9-5
Viewing Flight Information before Purging a Program.....	9-5
Example.....	9-6
10 Monitoring GDP Delivery.....	10-1
Introduction.....	10-1
Monitoring GDP Delivery using the Time Line and Bar Graph.....	10-1
Time Line Component.....	10-1
Bar Graph Component.....	10-1
Monitoring Effects on NAS Users.....	10-2
Surface Delay Report.....	10-2
Priority Flight List.....	10-2
Time Out Delay List (Airline Only and General Aviation Users Only).....	10-2
Time Out Cancel List (Airline Only and General Aviation Users Only).....	10-3
Slot Hold.....	10-3
Sub Opportunities (Airline and General Aviation Users Only).....	10-3
Slot List.....	10-3
Carrier Statistics.....	10-4
Unassigned Slots Report.....	10-5
ETMS Unassigned Slots Report.....	10-5
Monitoring Flight Compliance.....	10-5
Monitoring Program Parameters.....	10-6
FADT Parameters Updated.....	10-6
SCS Bridge.....	10-7
GDP Parameters.....	10-8
GS Parameters.....	10-9
Compression Parameters.....	10-9
Blanket Parameters.....	10-9
Parameters Block.....	10-10
11 Monitoring EDCT Compliance.....	11-1
Using FSM to Monitor EDCT Compliance.....	11-1
Viewing a Single Flight.....	11-2
Adding ADL Fields.....	11-2
Column Positioning.....	11-2
Sorting Information in the CTD Compliance List.....	11-3
Multi-level Sorting.....	11-3
Compliance List Menu.....	11-3
Confirming an EDCT.....	11-4
Adjusting an EDCT.....	11-4
12 EDCT Change Request (ECR).....	12-1
ECR Menu Bar.....	12-2

Opening ECR	12-2
Locating a Flight	12-3
Viewing Flight Information	12-5
Updating an EDCT for a Flight	12-5
Update Options	12-6
Viewing SCS Response	12-7
Control Types Associated with ECR	12-7
13 Revising/Extending a Ground Delay Program.....	13-1
Getting Current Demand and Weather Information.....	13-1
Deciding When to Revise a Program	13-1
Revising a GDP.....	13-2
Modifying the AAR.....	13-2
Reducing/Expanding the Scope	13-2
Extending the Program	13-3
Revising a GAAP GDP	13-4
Sending a Proposed Parameters Advisory	13-5
Suspend Airline Substitutions and Slot Credit Substitutions	13-6
Issuing the Revision	13-6
Example Revision	13-7
14 Issuing a Compression	14-1
Suspend Airline Substitutions and Slot Credit Substitutions	14-1
Open GDT Mode	14-1
Entering Parameters	14-3
Issuing the Compression.....	14-3
Run to Generate the Compression Coversheet	14-4
Issuing a Compression through Autosend	14-5
Send the Advisory	14-6
Coversheet Reports	14-6
15 Deciding When to Use a Compression or Revision	15-1
Deciding When to Use a Compression.....	15-1
Deciding When to use a Revision	15-2
16 Airborne Holding and Blanket Programs	16-1
Using Airborne Holding	16-1
Selecting General Tab Parameters	16-1
AAR Tab Modifications	16-2
Airborne Holding Reports	16-2
Using a Blanket Program.....	16-4
Blanket Coversheet.....	16-6
Sending a Proposed Parameters Advisory	16-7
Suspend Airline Substitutions and Slot Credit Substitutions.....	16-8
Issue a Blanket Program	16-8
17 Issuing a Ground Stop	17-1
Selecting the Parameters.....	17-1
General Tab Parameters.....	17-3
Generating a GS Coversheet.....	17-9
GS Coversheet	17-10

Sending an Advisory	17-10
Re-Opening the Coversheet	17-11
Example of Issuing an Actual GS	17-12
Viewing GS Controlled Flights	17-13
Query Manager Flight List	17-15
18 Other Ground Stop Functions	18-1
Purging a GS	18-1
Viewing Flight Information before Purging a Program	18-1
Reducing the Scope of a Ground Stop	18-3
Extending a Ground Stop	18-5
GS Coversheet.....	18-7
Suspend Airline Substitutions and Slot Credit Substitutions.....	18-7
Send GS	18-7
Moving from a GS to a GDP	18-8
Suspend Airline Substitutions and Slot Credit Substitutions.....	18-9
Issuing a GDP	18-9
19 Understanding and Using FSM Reports	19-1
Counts Reports.....	19-1
Viewing the Count List.....	19-1
Count List Menu	19-2
Count List by Demand.....	19-3
Counts by Centers	19-4
Counts by Aircraft Type	19-5
Counts by Aircraft Class.....	19-6
Counts by Arrival Fix	19-7
Counts by Departure Fix.....	19-8
Counts by User	19-9
By Unassigned Slot	19-10
Compliance Flight Lists	19-11
The By CTD Compliance Report.....	19-13
The By ETE Compliance Report	19-13
The By CTA Compliance Report.....	19-14
The Spurious Flight Compliance Report	19-14
The Cancel But Flew Compliance Report	19-14
Surface Delay Report	19-14
Surface Delay Report Menu.....	19-15
Priority Flight Report	19-16
Priority Report Menu.....	19-16
Time Out Delay Report	19-17
Time Out Delay Report Menu	19-19
Time Out Cancel Report.....	19-19
Time Out Cancel Report Menu	19-20
Slot Hold Report	19-20
Slot Hold Report Menu.....	19-21
Sub Opportunities Report	19-21
Sub Opportunities Report Menu	19-22

Slot List	19-23
Slot List Report Menu	19-23
Understanding Coversheet Reports.....	19-24
FADT Report	19-24
Analysis Report.....	19-25
Carrier Statistics Report.....	19-26
20 Using Query Manager.....	20-1
Built-in Filters	20-1
User Defined Filters	20-2
Creating a New User Defined Filter.....	20-2
Query Manager Flight List	20-10
Appendix A: Flight Status.....	A-1
Appendix B: FSM 7.8 Algorithms.....	B-1
Auto-Delay Algorithm:.....	B-1
Effective AAR:.....	B-1
Excluded Flight:.....	B-1
Exclude_and_Exempted Flight:.....	B-1
Exempt Flight:	B-1
Floor_Time:	B-1
Non-Exempt Flight: (2 types).....	B-2
Open_Slot:	B-2
Plus_Time:	B-2
Slot_Hold:.....	B-2
Slot_Time:	B-2
Virtual slot time:	B-2
Wheel_Arrival_Time:	B-2
For “Ground Delay Program (GDP)”.....	B-3
Loop A.....	B-10
End Loop A.....	B-10
Loop B.....	B-11
End Loop B.....	B-11
Loop C.....	B-12
End Loop C.....	B-13
End of RBS++ Algorithm.....	B-13
(“Prioritize Member”)	B-15
Step 2.....	B-15
Loop 1 – for each Open_Slot in the Osq.....	B-17
Loop 1.1.....	B-17
Loop 1.1.1	B-18
Loop 1.1.1.1	B-18
End Loop 1.1.1.1.....	B-19
End Loop 1.1.1.....	B-19
End Loop 1.1.....	B-19
Loop 1.2 (from Loop 1 (d.))	B-19
End Loop 1.2.....	B-20
Loop 1 cont.....	B-20

End Loop 1	B-20
Loop 2- for each Open_Slot in the system	B-21
End Loop 2	B-21
End of Compression Algorithm (“Prioritize Member”).....	B-21
(For one open slot)	B-23
Loop A – for each flight in the TFq, say Flt.....	B-23
End Loop A.....	B-24
End Intra-Airline Compression Algorithm.....	B-24
(“Prioritize Member” for one open slot)	B-25
Loop B	B-25
End Loop B.....	B-25
End of Inter-airline Compression Algorithm.....	B-25
Loop C.....	B-27
End Loop C.....	B-28
End Compress Flight Algorithm.....	B-28
End Move Up a Flight Algorithm.....	B-29
Step 3.....	B-32
Loop 1.....	B-32
End IF.....	B-34
End Loop 1	B-34
End “+/- Delay” Algorithm	B-34
Loop 1.....	B-36
Loop 2.....	B-36
End Loop 2	B-37
End Loop 1	B-37
Loop 3.....	B-38
End Loop 3	B-38
End of Ground Stop Algorithm.....	B-38
C.2 Purge Algorithm	B-39
End of Purge Algorithm	B-40
C.3 Airborne Holding Algorithm.....	B-41
End Airborne Holding Algorithm.....	B-43
Appendix C: Glossary of Abbreviations	C-1

1 FSM Overview

Introduction

The amount of traffic in our National Airspace System (NAS) is expected to grow at least 3-5% for the next 15 years. The NAS is a static resource and the Federal Aviation Administration (FAA) needs to find a balance between the increase in traffic and available resources in the NAS. The FAA responded to this issue by developing Free Flight. Free Flight is an innovative concept designed to enhance NAS safety and efficiency by transitioning from a centralized command and control system to a distributed planning system.

Collaborative Decision Making (CDM) is one of the five core products in Free Flight Phase I. CDM is a joint government/industry initiative aimed at improving air traffic management through increased information exchange, common situational awareness, equitable resource allocation, and performance analysis.

Flight Schedule Monitor (FSM) was used in CDM's first major thrust, Ground Delay Program Enhancements, and the FAA has continued to use it since it went into Prototype Operations in January 1998. FSM fulfills the CDM goal of giving all users *common situational awareness*. FSM does this by displaying a current picture of air traffic demand at airports using real-time data culled from CDM participant data and aggregated by Volpe National Transportation Systems Center. Using this picture, air traffic specialists and airline operations centers alike make better decisions and keep traffic flowing as smoothly as possible.

When adverse conditions affect an airport, they also affect traffic flow. The airport cannot handle a normal amount of arriving and departing aircraft which disturbs operations. One method the FAA uses to compensate for reduced capacity at an airport is to delay flights arriving at that airport before these flights take off. This is known as a Ground Delay Program (GDP). As part of CDM Prototype Operations, all FAA traffic management personnel use FSM to determine the necessity for ground delay programs and other traffic management initiatives and to enact them.

FSM has been continuously enhanced since the early prototype capability to include better functionality and support for the ever-expanding user community. FSM was originally designed with C++ programming language. To better serve the CDM community, and to keep up with improving technology, FSM was completely rebuilt on the Java platform in the fall of 2003. The Java FSM architecture can support a large number of concurrent users at a single site. Java FSM can also greatly improve threading options and enhance file handling. Additional features include built-in cross-platform user interface support.

Today, traffic management specialists across the NAS and Canada, as well as over 40 CDM-participant airlines use FSM to monitor and manage airport demand and capacity.

The FAA Air Traffic Control System Command Center (ATCSCC) uses FSM to:

- Monitor airports - view the existing demand and constraints at these airports
- Model and run traffic management initiatives, including airborne holding, GDPs, and Ground Stops (GS)
- Update EDCTs through the use of EDCT Change Request (ECR)

Traffic Management Units use FSM on a daily basis in more than 80 FAA air traffic control (ATC) field facilities to monitor capacity and demand at over 50 airports.

Airline operations centers (AOCs) use FSM to:

- Monitor airports by viewing existing demand and constraints at these airports
- Analyze the impact of proposed GDPs on their operations
- Model flight cancellations
- Send Slot Credit Substitution (SCS) requests to the hub site through the ECR component

Purpose and Scope

FSM has two major purposes:

1. Monitoring Airport Capacity/Demand Data
2. Managing Traffic Flow

FSM monitors flights arriving at and departing from an airport while tracking demand and capacity. When an imbalance exists, traffic management specialists analyze different combinations of GDPs, airborne holding, etc. to determine the best way to fix the imbalance. Once the traffic management specialists determine an airport needs a traffic management initiative (TMI), FSM sends out the parameters to the users and updates its own data accordingly. Airline operations' users model the effects of the TMI and decide whether to alter their own operations.

FSM displays both Monitored Live (Online) and Historical CDM data. Traffic management specialists use Live data to monitor the current situation at any airport. In Monitor Live data mode, FSM updates demand in the flight schedule display approximately every 5 minutes to keep the picture current. FSM users can examine historical data to replay a day's events and analyze the effects of all traffic management programs.

Limitations and Contacts

This document describes FSM as of 9/15/2004. Because FSM is an evolving product, future enhancements (i.e.- modifications and additional functions) will be introduced into this guide as they become available.

For information and/or technical assistance with FSM software, contact the following:

Government Personnel	Airline Personnel
ETMS Hotline (703) 904-3343	FSM Support (703) 234-0769 fsm_support@metronaviation.com

Conventions

Conventions are the same throughout all FSM components unless otherwise specified.

Keyboard and Mouse Conventions

Command	What It Means
<u>File</u> > <u>Open</u>	Choose the Open option from the File menu.

Command	What It Means
Click	Click once with the left mouse button.
Ctrl + click	Press the Ctrl key while clicking with the left mouse button.
Double-Click	Click twice with the left mouse button.
Ctrl 1	Press and release the Ctrl key; then press and release the number "1" key on the keyboard.
Checkmark	Select the option with the left mouse button to make a checkmark appear in a checkbox.
CTRL + A	Press the Ctrl key while pressing the A key on your keyboard. Displays arrival data in the active component
CTRL + C	Press the Ctrl key while pressing the C key on your keyboard. Command used to close a window or component.
CTRL + D	Press the Ctrl key while pressing the D key on your keyboard. Displays departure data in the active component.
CTRL + F	Press the Ctrl key while pressing the F key on your keyboard. Finds a particular flight by entering the flight's call sign and origin airport.
CTRL + L	Press the Ctrl key while pressing the L key on your keyboard. Displays a color legend for the active component.
CTRL + P	Press the Ctrl key while pressing the P key on your keyboard. Prints the active component on your screen.
CTRL + R	Press the Ctrl key while pressing the R key on your keyboard. Displays the Rename Window dialog box and allows you to change the title bar name of the active component on your screen.
CTRL + S	Press the Ctrl key while pressing the S key on your keyboard. Command used to save data.
CTRL + S	Press the Ctrl key while pressing the S key on your keyboard when in Historical Mode, allows you to designate which time to view within a set of historical data.
ALT + F4	Press the Alt key while pressing the F4 key on your keyboard. Shuts down the component that you are viewing.
F1	Press the F1 key on your keyboard to access the web based on-line help for the active component.

Note: All keyboard functions work the same in all components unless stated otherwise. If you use a particular keyboard command on a component where that option is not available, FSM makes no changes to the component. Ensure the component you want to submit is “active” when executing a command.

Common Terms Used in This Document

Component, Window, and Panel – The three terms are used interchangeably throughout this document. They refer to the active window on your screen.

Active - This document uses the term *active* in two different ways. First, if several windows are open, only one window can accept user input from either the mouse or keyboard - that window is *active*. Second, within the *active* window, only one action button, push button, or text entry field is *active*.

DAS (Delay Assignment) – The default delay assignment mode, formerly known as FA delay.

Dialog box - A window that allows the user to enter text and use buttons to make choices.

Checkbox – A picture of a square box (checked or not checked) appears on the screen. When you select the Checkbox, a checkmark appears in the box and the item associated to that checkbox is selected. You can select several checkboxes at any one time.

Radio button - A picture of an analog push button (a circle with or without a dot) appears on the screen. When you select a radio button, a dot fills in the circle. You can select exactly one radio button in a group of radio buttons at any time.

Aggregate Demand List (ADL) - When Volpe National Transportation Systems Center receives updated flight schedules and other NAS information from participating CDM AOCs, Volpe sends the information back to the users in the form of an Aggregate Demand List (ADL). FSM uses the ADLs, which Volpe updates approximately every 5 minutes, to process data and display the information. The ADL consists of 53 data fields, each of which this document describes in detail in Chapter 6.

Airport Arrival Rate (AAR) - The number of arriving aircraft that an airport can accommodate during a certain period of time.

Airport Departure Rate (ADR) - The number of departing aircraft that an airport can accommodate during a certain period of time.

CDM (Collaborative Decision Making)- One of 5 core products in Free Flight Phase I, Collaborative Decision Making is a joint government/industry initiative with the goal of improving air traffic management through increased information sharing, common situational awareness, and equitable resource allocation.

Delay - Delay is defined as Estimated Time of Arrival (ETA) - (IGTA - taxi). IGTA is the initial gate time of arrival, and taxi (unless otherwise specified by the user in Ground Delay Tools (GDT) mode has a default value of 10 minutes.

GAAP (General Aviation Airport Program) – A delay assignment mode used during a GDP when current demand does not meet capacity but it believed that unknown traffic will meet or near capacity. Unassigned slots are allocated for future pop-up demand.

Ground Delay Operations - Any one of a number of ways to delay flights on the ground. This includes GDPs, GSs and Airborne holding.

Ground Delay Program (GDP) - A specific Ground Delay Operation, which assigns delay (control times) to flights before departure.

Ground Stop (GS) - A specific Ground Delay Operation, which grounds (holds) flights for a specified amount of time at their departure airports.

EDCT Change Request (ECR) – Use the EDCT Change Request tool to view and update an arriving flight's control times during a GDP.

Slot Credit Substitution (SCS) - A situation that commonly occurs during GDPs where an operator has a flight f_0 with a slot at time t_0 , and flight f_0 cannot use its slot because it is delayed or cancelled. In these situations, SCS provides a mechanism for an operator to substitute other operator's flights to bridge the slot from an unusable time to a time that the operator can use to his/her advantage. SCS is an enhancement to the simplified substitution process implemented in ETMS 7.2.

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2 Understanding FSM Features

Introduction

This section provides a brief overview of the three FSM data modes: Monitored Live mode, Historical, and Ground Delay Tools (GDT) Mode. Monitored Live mode allows you to monitor and display airport capacity and demand. Historical Mode allows you to review past airport events through archived data and is an excellent way to conduct post analysis. Ground Delay Tools Mode allows you to model and issue Traffic Management Initiatives (TMIs), such as Ground Delay Programs (GDPs) and Ground Stops (GSs). The data mode appears after the ADL time in the title bar of each component (see Figure 2-1).

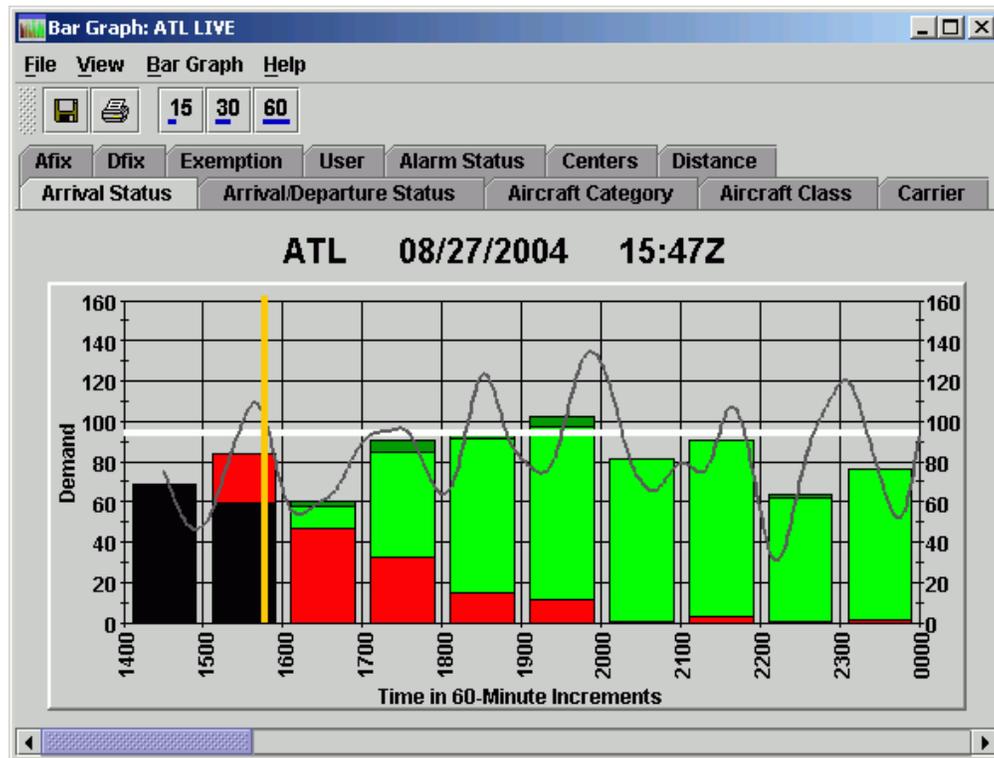


Figure 2-1: FSM Bar Graph Component

For more detailed information on individual components, see Chapter 3: Understanding Components.

Understanding Monitored Live Mode

In Monitored Live mode, you can monitor airport capacity and demand information for both flight arrivals and departures in various FSM components. FSM updates demand data approximately every 5 minutes in Monitored Live mode, with every new ADL. FSM provides information that supports detailed flight data and various types of demand count lists. If a flight violates pre-defined parameters, FSM generates alarms.

When opening components from the Open Data Set component, the two default Monitored Live Mode components are:

- Bar Graph – Displays demand versus capacity of a specified airport

- Time Line – Displays how flights are distributed throughout each hour

These two components open by default if you do not change the *Open With* options in the Open Data Set component. You can also open the Time Line and Bar Graph components individually from the US Map component. You can access the Flight List component using the Open Data Set as well, but it is not the default selection. See Chapter 4 for more information on how to open FSM.

Figure 2-2 shows a possible Monitored Live mode windows management. In this example, the user selected ATL from the Open Data Set component. The two default components, Time Line and Bar Graph, display automatically when the user does not select any other components in the *Open With* selection box of the Open Data Set component.

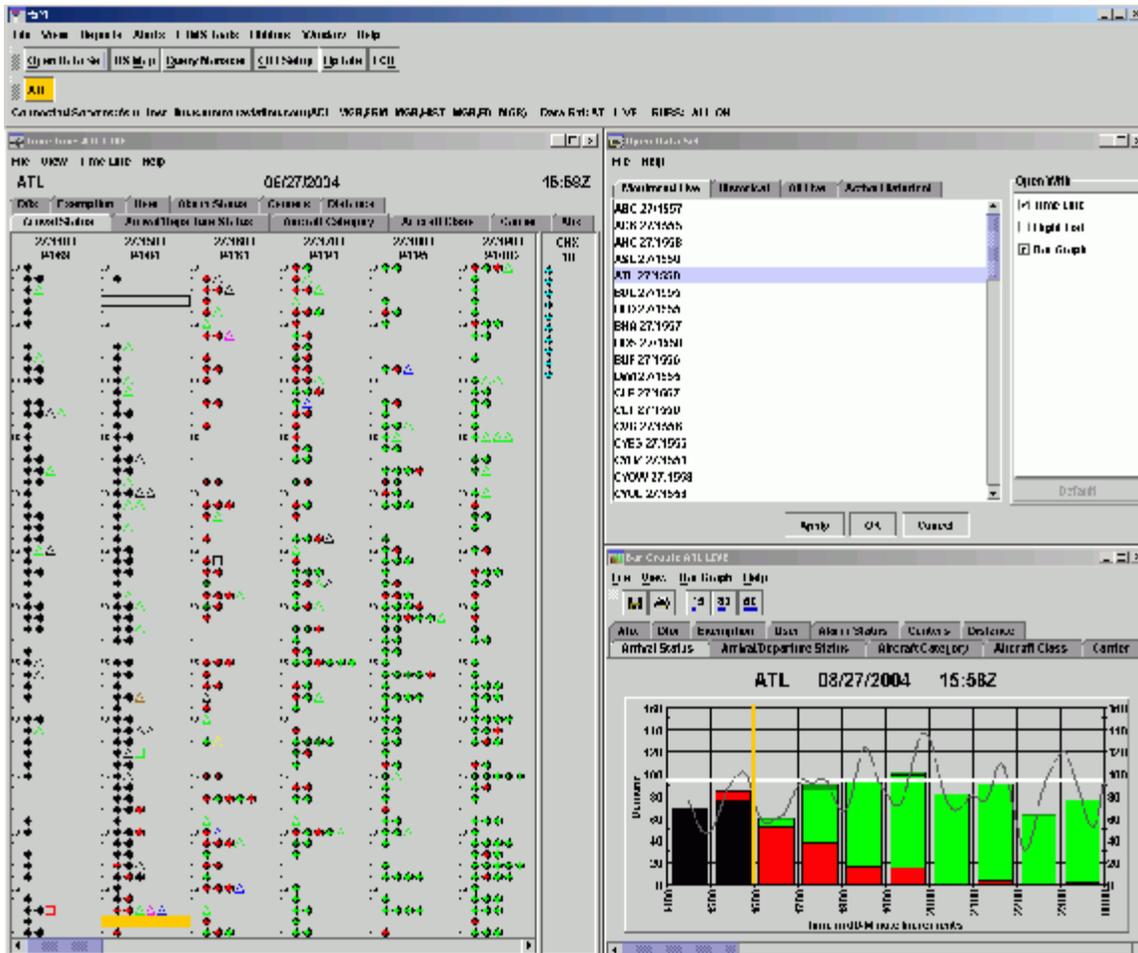


Figure 2-2: Monitor Mode (Live)

Understanding Historical Mode

Historical mode allows you to select any data set stored in a database. You can use this data to analyze scenarios or replay the day’s air traffic events. From the Open Data Set component with the Historical tab active, you can drill down to find the year, month, date, and airport of the desired information you want to view. Once you select the date and airport, FSM gives you the option of selecting a data time. See the Open Data Set component in Chapter 3 for more

information. FSM displays Historical mode data in much the same way as the Monitored Live mode, however, the word Historical appears next to the ADL time stamp in each Historical mode component. In Historical mode, you can view data in the same 5-minute ADL increments in which it originally arrived. Click **Update** on the Control Panel component to update the data to the next historical ADL time (see Figure 2-3).

You must open the Historical mode data using the Open Data Set component. The two default Historical mode windows are:

Bar Graph component - Displays demand versus capacity of a specified airport.

Time Line component - Displays flight distribution throughout each hour.

These two components open by default if you do not change the *Open With* options in the Open Data Set component. You can access the Flight List component using Open Data Set as well, but that is not the default selection.

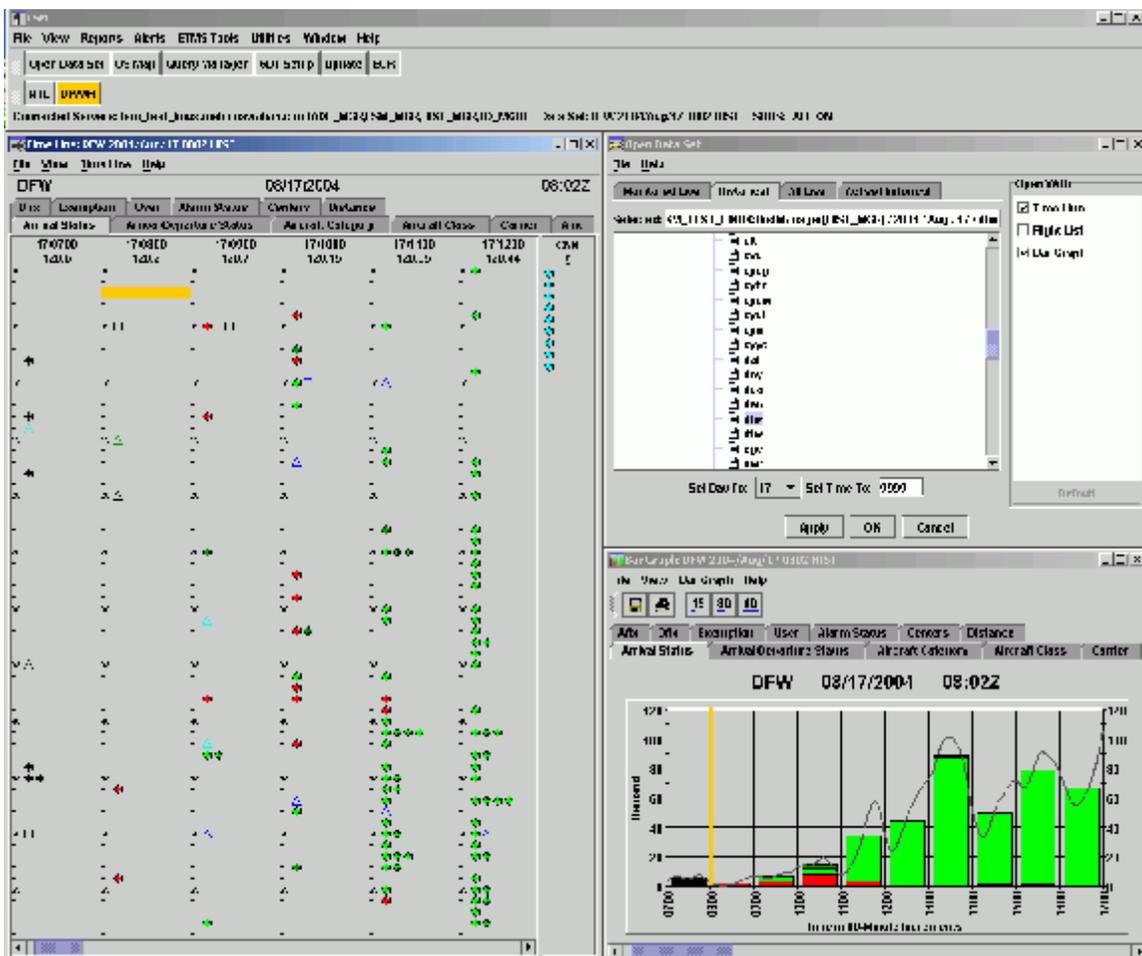


Figure 2-3: Historical Mode

Understanding Ground Delay Tools

Although you primarily use Monitored Live mode to monitor airport demand/capacity balance and flight information, you use GDT mode to help make air traffic management decisions and conduct analysis. You must first select a data set, or airport, in either Monitored Live mode or Historical mode to access GDT Mode. Once you select a data set, click **GDT Setup** on the

- GDT Time Line component – Displays flight distribution throughout each hour.

FSM Software Technical and Visual Cues

Technical Cues

As mentioned in Chapter 1, the initial design for FSM used the C++ programming language, but to keep up with improving technology and to better serve the CDM community; the new design for FSM uses Java to completely rebuild the application. You will notice some differences from the C++ version when using Java-based FSM. Most programming languages, such as C++, compile source code directly into machine code, which is executed in a particular microprocessor architecture. Instead, Java runs in a Java Virtual Machine (JVM) and is interpreted, not compiled. What this means to you is that commands tend to take a few more seconds to execute. For example, if you click **Show Open Data Set** on the Control Panel, the Open Data Set component may take a second longer to appear on your screen. The main advantage of the new Java architecture is that it supports a wide range of platforms, this gives Java FSM the same look and feel across platforms.

Java software needs a Java Runtime Environment (JRE) on your computer to execute. FSM Version 7.9 requires a JRE version 1.4.1 or higher. Without an available JRE for a given environment, it is impossible to run Java software. For more Technical information, please see the FSM 7.6+ Technical Guide.

Visual Cues

Dropdown menu boxes do not automatically collapse when you move the cursor away from the dropdown box. Expanded menu boxes remain open until you click somewhere else on the screen (not in the box). Secondary boxes, as shown in Figure 2-5, act slightly different. You must move the cursor directly to the left or right, then up or down to select an option from the secondary pop-up menu. If you try to cut across diagonally, the pop-up menu collapses.

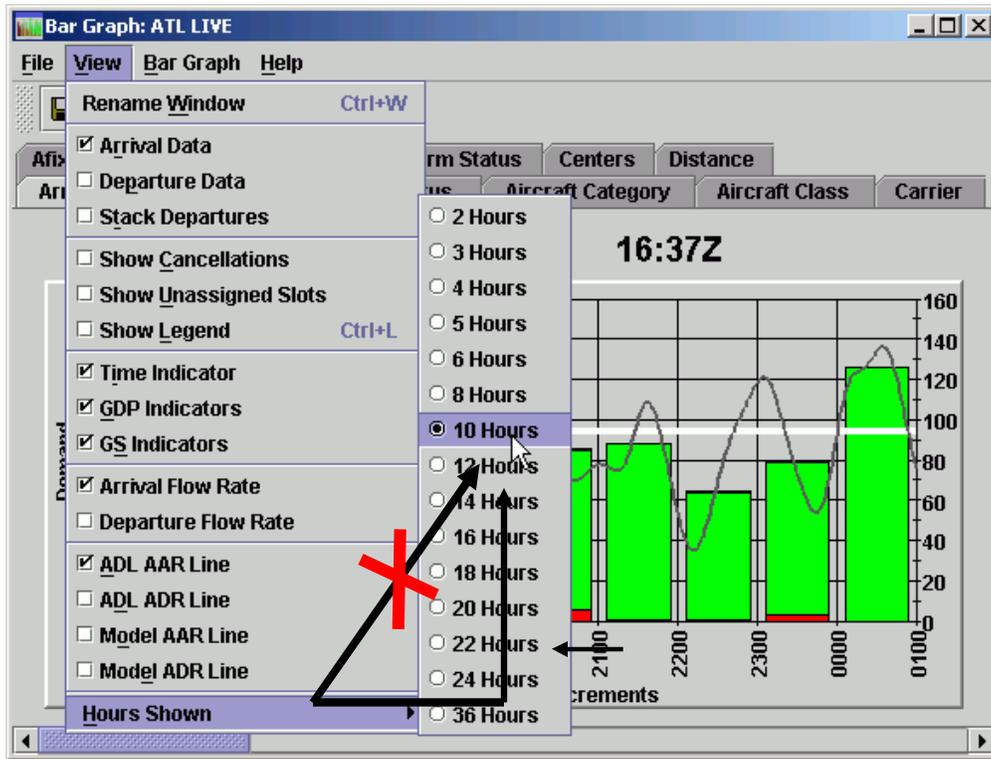


Figure 2-5: Java Navigation

Windows Conventions

This section provides an overview of the FSM user interface. It describes the windows, the menu bars, toolbars, and other important features. Figure 2-6 shows the FSM Control Panel component. This panel appears for all FSM modes.



Figure 2-6: Control Panel

Title Bar

The Title bar contains a control icon, window title, and Windows buttons.



Figure 2-7: Title Bar

The control icon appears on the left side of the title bar. Click it to open the Control menu, which contains commands for positioning, resizing, minimizing, maximizing and closing the window. Double-clicking on the control icon closes the window.

The window title describes the contents of the window. In the Title display you see the window name, airport three-letter identifier, date, ADL time and the data mode. Double-clicking the window title area is the same as clicking the Window Maximize or Restore buttons.

Use the Window buttons located on the right side of the title bar to resize and close the window.

Table 2-1: Window Buttons

Minimize		Reduces the window to its windows icon on the taskbar
Maximize		Enlarges the window to fill the screen
Restore		Returns the window to its last size and position
Close		Closes the window

Menu Bar

The Menu bar, positioned directly below the title bar, displays the menu headings.



Figure 2-8: Menu Bar

The menus that are available depend on the window. Click a menu heading to open the menu and choose a command. The arrows next to a command indicate another submenu for that command. Open the submenu by placing the mouse cursor over the menu command (see Figure 2-9).

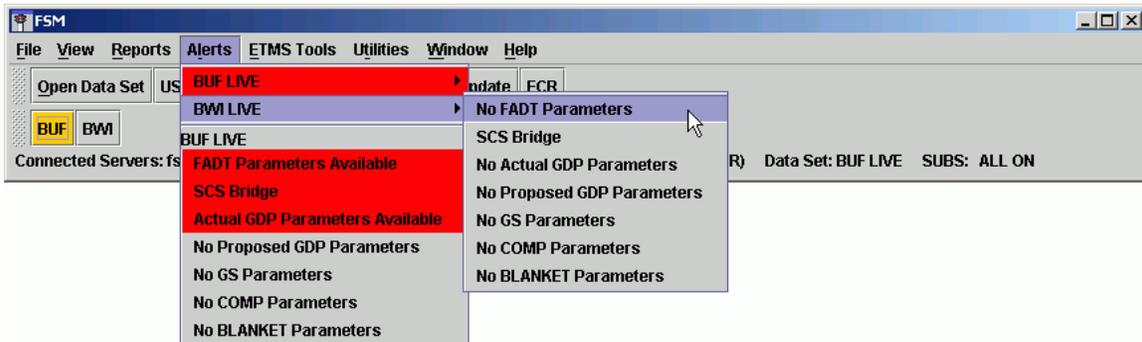


Figure 2-9: Submenu Structure

Toolbar

The docked toolbar appears directly under the menu bar.



Figure 2-10: Control Panel Toolbar

The toolbar contains shortcut buttons for frequently used commands. The commands that are available depend on the window. By default, the Toolbar docks at the top of the window. You can undock it and move it to any location on your screen. Move the toolbar to your desired location by left-clicking the gray dots next to **Show Open Data Set** and dragging. When you move the Toolbar, the window title displays **Core**. Close the undocked window to re-dock the Toolbar to its original window.



Figure 2-11: Moved Toolbar

Airport Shortcut Keys

All airports and their respective data modes currently opened by the FSM client are displayed as shortcut buttons on the Control Panel component.

The airport that is active, or in focus, on your screen is listed on the Control Panel component next to Data Set text and the active airport button is highlighted in orange (see Figure 2-12).



Figure 2-12: Control Panel

Listed below are the various buttons that are available when an airport is opened in various data modes:

- Live Date Mode – Airport's three-letter identifier (i.e. ATL)
- GDT Data Mode – Airport's three-letter identifier/G (i.e. ATL /G)
- Historical Mode – Airport's three-letter identifier/H (i.e. LGA/H)
- Historical Mode/GDT – Airport's three-letter identifier/GH (i.e. LGA/GH)

Hovering the cursor over an airport button on the Control Panel will display a tool tip that describes the airports data set in more detail. GDT tool tips display year/month/day/airport for the dataset button. Historical mode will display the year/month/day/airport/ADL time for the dataset button.

Tabs

Tabs appear on most FSM components. Selecting a tab makes that tab active. The tab that is active is highlighted. Tabs found in the Bar Graph and Time Line are different display options. When you select a tab, the coloring option appears in the component.

For example, Figure 2-13 shows the Bar Graph with the coloring tab Arrival Status selected. The time increment buttons appear as **15**, **30**, and **60** minute buttons with a blue line underneath each number.

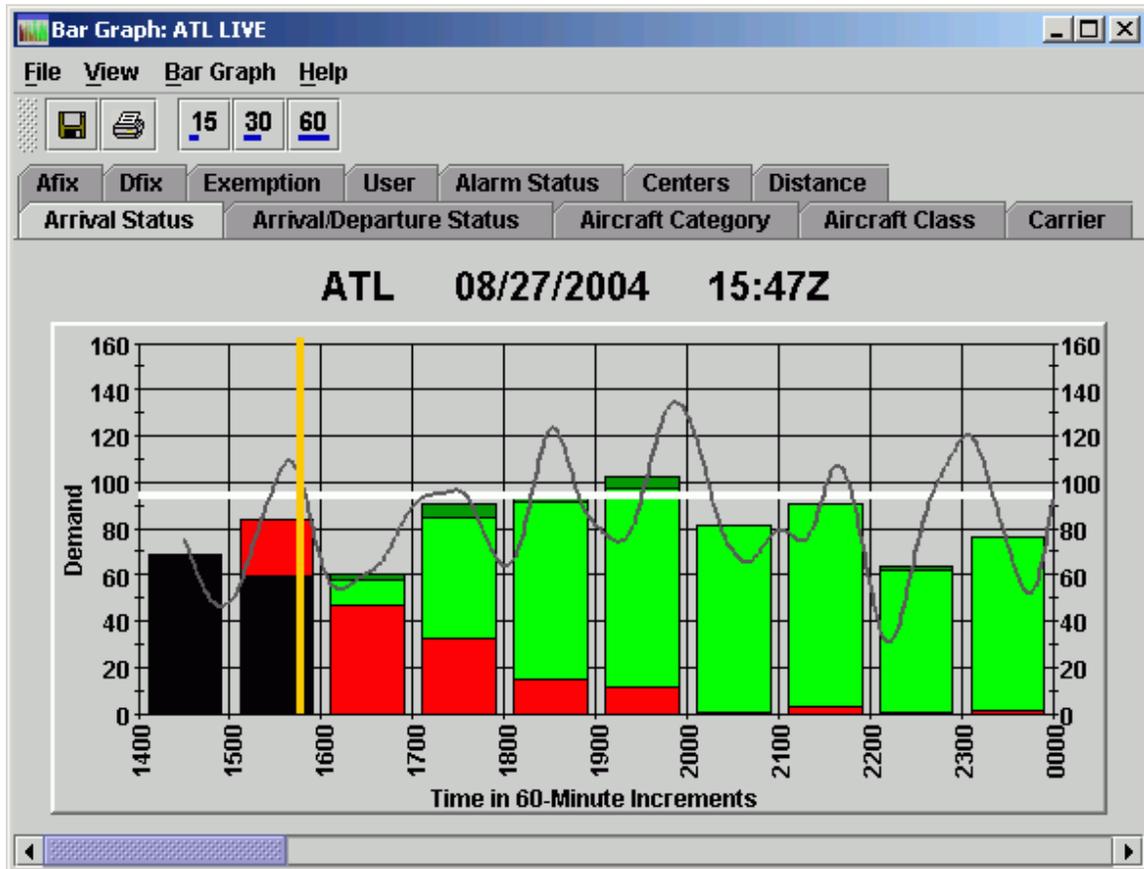


Figure 2-13: Component Tabs

Windows Position and Resizing

When more than one window appears on your screen, a window must be *active* to use it. Activate the window by clicking anywhere on it. The title bar of an active window is blue, while the title bar of an inactive window is gray.

Resizing windows allows you to view more windows on your screen at one time. To resize a window, position the cursor on any of the borders of the window until your cursor changes to a double-sided arrow. When this appears, click and drag in the direction of your choice. When placing your cursor over a corner, the double-sided arrow is diagonal. This allows you to move 2 sides of the window at the same time.



Figure 2-14: Windows Resizing

Moving a Window

You can move around the windows in FSM to suit your needs. Left-click the title bar of the window and drag it to move it to a desired position on the screen.

Note: The cursor remains as the normal cursor and not a double-edged arrow.

3 Understanding Components

Monitored Live Mode Components

Use Monitored Live mode components to monitor airport capacity and demand information for both flight arrivals and departures. Demand data updates approximately every 5 minutes in *live* mode, with every new ADL. This section familiarizes you with the main Monitored Live mode components:

- Control Panel
- Open Data Set
- US Map
- Query Manager
- Bar Graph
- Time Line

Control Panel Component

The first component you see upon opening FSM is the FSM Control Panel. The Control Panel component allows you to access all other FSM components for displaying, monitoring, and managing traffic flow at any airport. The Control Panel consists of the menu bar and six buttons, the explanation for each of these buttons appears below. When you open an airport, an associated button appears just above the Connected Servers information (the text beneath the Control Panel buttons that identifies the server to which FSM is connected).



Figure 3-1: Control Panel Component

Control Panel Menu Bar

The menu bar in the Control Panel Component contains eight options: File, View, Reports, Alerts, ETMS Tools, Utilities, Window, and Help.

1. File Menu

- **File > Open Data Set** - Opens the Open Data Set component, which allows you to open an airport in both Live and Historical data modes.
- **File > Load Adaptation** - Loads a previously saved adaptation with your display preferences. For example, on a regular basis you monitor ATL airport with the Time Line and Bar Graph components displayed, you can save this configuration and select Load Adaptation to view the desired data in that format.
- **File > Save Adaptation** - Saves your current windows management for an airport. You can reopen this adaptation later using File > Load Adaptation.

- **File > Exit** - Closes the Control Panel component and exits the FSM application.
2. View Menu
- **View > Status Map** - Opens the *US Map* component, to view airports currently being monitored by FSM. The Map component also shows when there is a TMI in place for any particular airport.
 - **View > GDT Setup** – Opens the GDT Setup components for selected airports.
 - **View > Flight List** – Opens the Flight List for a selected airport.

3. Reports Menu

Under the Reports Menu, there are seven Counts Lists:

- **Counts > By Demand** – Displays arrival demand in 15-minute interval flight counts and totals the flight count for each hour. This is a quick way to check the arrival demand for each hour.
- **Counts > By Centers** – Provides flight counts according to departure centers. There are 27 centers and “ZZZ,” which includes any center not part of the initial 27. Again, in Monitored Live mode, FSM bases these counts on flights’ ETA times, as displayed in the FSM Time Line.
- **Counts > By Aircraft Type** – Displays a count list based on the aircraft type. This Count List incorporates the same classifications for aircraft type as in the FSM Color By Aircraft Type option. That is, FSM classifies them according to the aircraft type as specified by the manufacturer.
- **Counts > By Aircraft Class**– Provides flight counts according to the aircraft weight. This Count List incorporates the same classifications for aircraft weight as FSM’s Color By Aircraft Class menu option.
- **Counts > By Arrival Fix** – Provides flight counts according to the arrival fix at which each flight is arriving for the monitored airport. Arrival fix names for each airport vary. FSM automatically generates the correct Arrival Fix names for the monitored airports and uses them in the Count List headings.
- **Counts > By Departure Fix** – Provides flight counts according to the departure fix at which each flight is arriving for the monitored airport. Departure fix names for each airport vary. FSM automatically generates the top 11 departure fixes for the monitored airport and uses them in the Count List headings. If the departure fix is other than these 11 or is unknown, FSM lists the flight under the “Other” column.
- **Counts > By User** – Provides a flight count according to the classification of the aircraft. Counts By User classifies flights according to their function in the NAS. There are 7 user types in FSM:
 - C – Air Carriers
 - T – Air Taxi

- F – Freight/Cargo Carriers
- M – Military
- G – General Aviation
- - Other – This class includes flights that do not belong to one of the five categories listed above.
- U – Unknown – This category is for flights which may fall into a user category, but the classification for them is not known in FSM.
- **Counts > By Unassigned Slots** – Lists all unassigned slots for each 15, 30, and 60 minute time-bin. The report is dynamic-it updates with each new ADL FSM receives.

Under the Reports Menu, there are five Compliance reports:

- **Compliance > By CTD** – Flights included in a delay program that violate departure compliance. By default, flights that violate arrival compliance are defined as flights arriving more than 5 minutes before or 5 minutes after their Control Time of Departure (CTD). Any flight that has an Actual Runway Time of Departure (ARTD) of 5 minutes earlier or 5 minutes later than their CTD triggers the CTD Compliance Alarm.
- **Compliance > By ETE** – Difference between the Estimated Time En-route (ETE) estimated by Enhanced Traffic Management System (ETMS) and actual flight time is greater than a specified value, but the flight status is not "cancelled."
- **Compliance > By CTA** – - Flights included in a delay program that violate arrival compliance. By default, flights that violate arrival compliance are flights arriving more than 5 minutes before or 5 minutes after their CTA.
- **Compliance > Spurious Flights** – Flights submitted as UX Cancellations with no corresponding entries in the OAG.
- **Compliance > Cancelled That Flew** – Flights submitted with a "Cancelled" status that flew at a later time within the program parameters.

When one of FSM's compliance alarms is triggered for a flight, FSM generates a list of flights that have triggered an alarm. Alarms are triggered in accordance with the reasons listed above.

FSM can generate additional reports upon request when flights do not comply with certain criteria. These reports update automatically with every ADL for all airports for which FSM collects data via its data collector.

Note: The Report Lists include flights arriving only at the active monitored airport.

Under the Reports Menu, there are seven additional reports:

- **Reports > Surface Delay** – This report indicates the ground delay imposed on flights and contains departure information for arrival and departure flights.

- **Reports > Priority Flights** - This report is similar to an FSM Flight List, but lists flights specifically tagged as Lifeguard (LFG) or Diversion Recovery (DVT) flights.
- **Reports > Time Out Delay** - This report quickly provides a picture for you of which flights from your operation are contributing to the Time Out delay problem. Easier access to this information should help you assess and resolve the problem. The format of this report is the same as the FSM Flight Lists which include all flights with a delay status marked as `TO` (Time Out). Figure 3-2 illustrates a Time Out Delayed Flight List. All the TOD column checkboxes are marked, indicating that all flights on the list are Time Out Delayed.

Note: When you initially open a Flight List, you may need to reposition the ADL data columns for easier viewing.

	AC	ID	ORIG	DEST	ETD	ETA	SGTD	SGTA	LRTD	LRTA
1	AWI	816	ORD	ATL	A27/1505	A27/1631	27/1445	27/1649	-	-
2	DAL	1709	TPA	ATL	A27/1709	E27/1814	27/1654	27/1824	-	-
3	COM	1989	MHT	ATL	A27/1720	E27/1933	27/1638	27/1935	-	-
4	DAL	263	MIA	ATL	A27/1539	A27/1703	27/1505	27/1701	-	-
5	CAA	754	LEX	ATL	L27/1718	E27/1828	27/1611	27/1729	-	-
6	TRS	361	LGA	ATL	A27/1555	E27/1739	27/1510	27/1738	-	-
7	COA	1163	EWB	ATL	A27/1613	E27/1758	27/1600	27/1820	27/1612	27/1753
8	DAL	681	IND	ATL	L27/1607	E27/1718	27/1435	27/1607	-	-
9	DAL	1600	COS	ATL	A27/1720	E27/1956	27/1710	27/2005	-	-
10	DAL	27	EDDF	ATL	A27/0808	E27/1731	27/0745	27/1740	-	-
11	DAL	125	EBBR	ATL	E27/0854	E27/1754	27/0830	27/1800	-	-
12	DAL	153	LEBL	ATL	E27/1332	E27/2019	27/1105	27/2105	-	-
13	DAL	843	DCA	ATL	A27/1620	E27/1736	27/1605	27/1748	-	-
14	DAL	15	EDDF	ATL	A27/0952	E27/1902	27/0925	27/1910	-	-
15	DAL	1791	DAY	ATL	E27/1641	E27/1732	27/1612	27/1740	-	-
16	DAL	1116	MEM	ATL	L27/1721	E27/1817	27/1608	27/1725	-	-
17	DAL	129	EINN	ATL	E27/1146	E27/1842	27/1105	27/1915	-	-
18	DAL	234	RSW	ATL	A27/1527	A27/1642	27/1510	27/1650	-	-
19	DAL	131	EDDM	ATL	A27/0931	E27/1951	27/0900	27/1925	-	-
20	CAA	272	AVL	ATL	A27/1658	E27/1745	27/1640	27/1744	-	-
21	DAL	1683	MSP	ATL	A27/1641	E27/1901	27/1625	27/1858	-	-
22	DAL	1219	BDL	ATL	A27/1641	E27/1837	27/1628	27/1900	-	-
23	ASH	2893	CLT	ATL	A27/1705	E27/1759	27/1635	27/1749	-	-
24	N	8990M	BNA	ATL	P27/1718	E27/1832	-	-	-	-
25	AAL	1714	MIA	ATL	A27/1605	E27/1727	27/1525	27/1722	27/1600	27/1724
26	COM	1149	ATW	ATL	A27/1708	E27/1901	27/1630	27/1841	-	-
27	BTA	2872	IAH	ATL	A27/1507	A27/1647	27/1415	27/1616	27/1505	27/1640
28	N	417BA	AAO	ATL	P27/1605	E27/1801	-	-	-	-
29	CAA	148	XNA	ATL	A27/1638	E27/1806	27/1625	27/1807	-	-

Total flights: 97

Figure 3-2: Time Out Delayed Flight List

- **Reports > Time Out Cancel** - This report quickly provides a picture of which flights from the operation are contributing to the Time Out cancel problem. Easier access to this information should help you review and resolve the problem. This report is in the same format as the FSM Flight Lists and includes all flights with cancellation status of **TO**.

- **Reports > Slot Hold** - This report is similar to an FSM Flight List, but only lists flights with their slot hold flag set to Y.
- **Reports > Sub Opportunities** – Provides a flight list to assist airlines and general aviation customers in identifying subbing opportunities.
- **Reports > Slot List**- Provides a slot list for a specified airport or an airline and its sub-carriers at a specified airport in the exact format that goes to the airlines.
- **Reports > Carrier Statistics** - Opens a report displaying delay statistics for all carriers with flights operating at the specified airport. Only flights with arrival slots are calculated in the report metrics. That is, flights with a CTA appear in the carrier statistics. If a carrier operates at the airport, but has no flights with a CTA, the Carrier Statistics report displays “0” or “N/A” in those rows. You can choose the type of delay to view in the report by clicking **ABS Delay** (absolute delay) or **ATC Delay** (delay imposed only by the FAA) at the top of the report.

For more information on *Reports* see Chapter 19, Reports.

4. Alerts Menu

FSM uses the **Alerts** option to notify you when new parameters are available for any airport you are currently monitoring. The **Alert** menu option is highlighted in red when new or unviewed parameters are received for airports currently being monitored. In addition, the airports and the type of parameters that FSM updates are also highlighted in red. The Alert menu remains highlighted in red until you view all updated parameters.

Note: If you select an airport with the letters GDP in the Open Data Set window, the Control Panel Alerts menu is highlighted in red for that airport.

- **Alerts > FADT Parameters Available** – This alert does not actually give you program parameters. However, you can view a listing of all the FADTs generated during each TMI. FADTs are reports generated when you run a GDP, GS, Blanket or Compression operation. FSM lists FADTs in chronological order.
- **Alerts > SCS Bridge** – This alert indicates when a new SCS update occurs. Selecting SCS Bridge displays the current subbing status and may contain the following keywords:
 - SUBS: Indicates whether all substitutions are enabled (ON) or disabled (OFF).
 - SCS: Indicates whether slot credit substitutions for all operators are enabled (ON) or disabled (OFF).
 - BRIDGING: Indicates whether bridging subs are disabled (OFF) for a particular operator (airline name, GA, or MILITARY). If bridging is off for an airline, any flight which has a MAJOR field or carrier code (from ACID) that matches the airline name is not used for an

SCS bridge. If bridging is enabled (ON) for an operator, no line appears, in other words, the only allowed value for this keyword is OFF.

- **Alerts > Actual GDP Parameters Available** – This alert occurs when FSM receives actual GDP Parameters through the ADL. First-time GDP Parameters, new GDP Parameters and deleted GDP Parameters trigger this Alert. Select this to view these parameters in a static window.
- **Alerts > Proposed GDP Parameters Available** - This alert turns red when parameters for a Proposed GDP arrive through the ADL. Select this to view the newly proposed parameters in a static window.
- **Alerts > GS Parameters Available** – This alert turns red when a Ground Stop (GS) is issued and FSM receives its parameters through the ADL. First-time GS Parameters, new GS Parameters and deleted GS parameters, all trigger this Alert. Select this to view the parameters in a static window.
- **Alerts > Compression Parameters Available** – This alert turns red when FSM receives parameters for the compression function through the ADL. Select this to view the new parameters in a static window.
- **Alerts > Blanket Parameters Available** – This alert turns red when FSM receives parameters for a Blanket function through the ADL. Select this to view the new parameters in a static window.

5. ETMS Tools

The **ETMS Tools** dropdown menu contains seven core options: EDCT Commands, Command Line, Weather Request, ADL Request, ADL Arrival Rate, ADL Departure Rate, and Delete GDP Parameters.

- **ETMS Tools > EDCT Command** options:
 - **> EDCT CHECK** – Displays the current status of a single flight controlled by an EDCT program. When you issue this command, you get a one-line response showing the controlled departure time and whether the ETMS has issued a Control Time (CT) message to implement the control for this flight.
 - **> EDCT CNX** – Creates a report of all flights cancelled in EDCT programs for selected airports or a report listing only cancelled flights for specified airlines for selected airports.
 - **> EDCT CTA LIST** – Creates a report of all controlled and cancelled flights for an airport and/or an airline at an airport, as well as open slots.
 - **> EDCT HOLD** – Holds all slots in a GDP for all flights or only the flights belonging to a specified airline and its sub-carriers at a specified airport.
 - **> EDCT LIST** – Creates a report containing a list of all airports currently controlled by EDCT programs.
 - **> EDCT LOG** – Creates a report of all EDCT files, cancellation messages, Simplified Substitution (SS) processing messages, and EDCT updates processed by the system in the order they were

- received. Only traffic management specialists at the Air Traffic Control System Command Center (ATCSCC) can use this command.
- **> EDCT PURGE** – Purges EDCT flight controls for a specified airport or for all airports.
 - **> EDCT RELEASE** – Releases all slots in a GDP for all flights or only the flights belonging to a specified airline and its sub-carriers at a specified airport.
 - **> EDCT SCS OFF** – Suspends slot credit substituting for flights controlled by EDCT programs at a specified airport or at all airports. To allow slot credit processing after suspending slot credit substituting, you must activate processing with the **EDCT SCS ON** command. *Only traffic management specialists at the Air Traffic Control System Command Center (ATCSCC) can use this command.*
 - **> EDCT SCS ON** – Allows slot credit substituting for flights controlled by EDCT programs at a specified airport or at all airports. To prohibit slot credit substituting, you must suspend processing with the **EDCT SCS OFF** command. *Only traffic management specialists at the Air Traffic Control System Command Center (ATCSCC) can use this command.*
 - **> EDCT SHOW** – Creates a report that contains detailed information on all flights controlled by EDCT programs for a specified airport, or for all airports.
 - **> EDCT SLIST** – Provides a slot list (using the same format that goes to the airlines) for a specified airport or an airline and its sub-carriers at a specified airport.
 - **> EDCT SLOTS** – Creates a report list of all open slots for airlines at specified airports.
 - **> EDCT SUB OFF** – Suspends Substitution processing (SI) messages for flights controlled by EDCT programs at a specified airport or at all airports.
 - **> EDCT SUB ON** – Allows Substitution processing (SI) for any flights controlled by EDCT programs at a specified airport or at all airports where substitution processing was previously suspended.
 - **> EDCT SUB SHOW** – Generates a report that shows the status of simplified substitution processing (SS) messages for all airports. *Only traffic management specialists at the Air Traffic Control System Command Center (ATCSCC) can use this command.*
 - **> EDCT UPDATE** – Allows you to update a controlled flight with new departure and arrival times. After you issue this command, you get a one-line response stating that the update was successful. *Only traffic management specialists at the Air Traffic Control System Command Center (ATCSCC) can use this command.*
 - **> EDCT REMOVE** – Allows you to remove flights from the ETMS database, as if they never existed. Using this command can eliminate a duplicate flight or remove a specific incorrect flight. *Only Computer System Analysts (CSA) at the Air Traffic Control Systems Command Center (ATCSCC) can use this command.*
 - **> EDCT RESTORE** – Allows you to “undo” the effects of the Remove command. It allows some or all of the flights that you did not want to remove from the database to be restored. *Only Computer*

System Analysts (CSA) at the Air Traffic Control Systems Command Center (ATCSCC) can use this command.

- **> EDCT UNASSIGNEDSLOTS** – Allows you to request, by airport identifier, an updated unassigned slots list generated by the hub site.
- **ETMS Tools > Command Line** – Displays a dialogue box which allows the user to enter any EDCT FAA commands. Only the FAA uses this feature and provides additional information about controlled flights and airports.
- **ETMS Tools > Weather Request** – Allows you to request current airport weather (METAR and TAF) for one or more airports (use the three letter airport identifiers separated by commas or spaces).
- **ETMS Tools > ADL Request** – Allows you to request a new ADL generated from the hub site.
- **ETMS Tools > ADL AAR > Modify** - Allows you to modify ADL Arrival Rates including the ability to assign several different Airport Arrival Rates (AARs) within the same hour (see Figure 3-3).
- **ETMS Tools > ADL AAR > Reset** – Resets the Arrival Rate to the ETMS default arrival rate.
- **ETMS Tools > ADL ADR > Modify** - Allows you to modify ADL Departure Rates including the ability to assign several different Airport Departure Rates (ADRs) within the same hour.
- **ETMS Tools > ADL ADR > Reset** – Resets the Departure Rate to the ETMS default departure rate.

You have the option to model an AAR/ADR from the Bar Graph, the Modify AAR/ADR window automatically reflects the modeled rates displayed in the Bar Graph. Then you can send the model rates from the Modify AAR/ADR window to ETMS. The rates appear in the next ADL update. Use this method of changing the AAR or ADR when there is no GDP being sent.

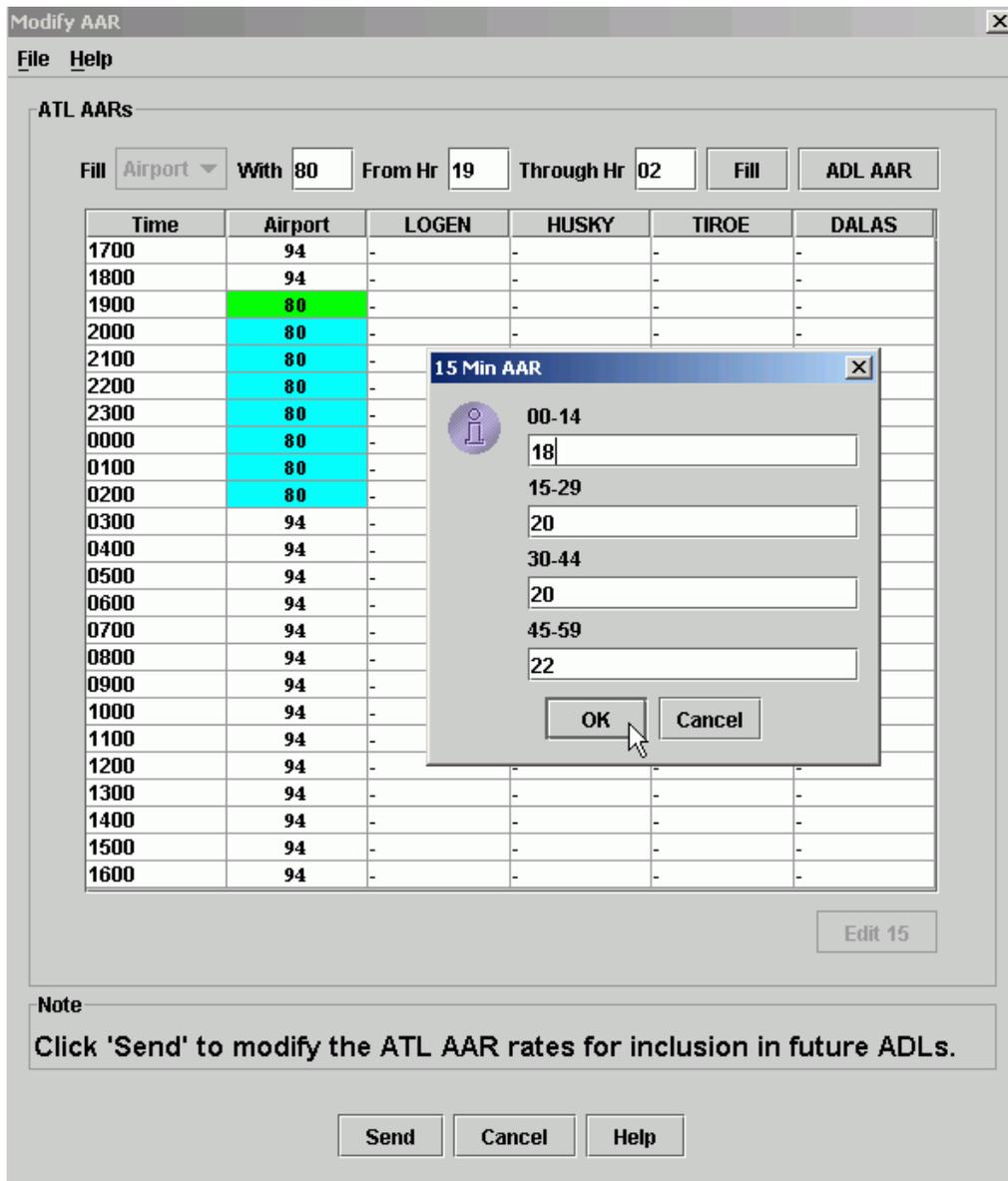


Figure 3-3: Specify Model AAR Window

- **ETMS Tools > Delete GDP Parameters** – Opens the Delete GDP Parameter dialogue box (see Figure 3-4). Select the airport for which you want to delete GDP parameters from the For Data Set drop down menu.

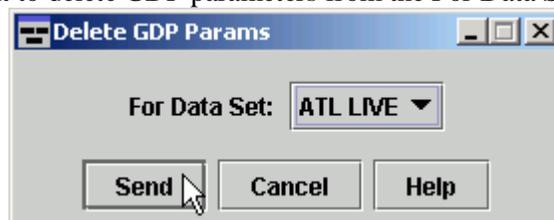


Figure 3-4: Delete GDP Params Window

6. Utilities Menu

- **Utilities > Query Manager** – Opens the Query Manager component.
- **Utilities > Search By Call sign** – Opens the Search By Call sign window.
- **Utilities > Model Arrival Rates > Specify** – Opens the Specify Model AAR window allowing you to specify the model Arrival Rates and the ability to assign several different AARs within the same hour.
- **Utilities > Model Arrival Rates > Reset** – Resets the model Arrival Rate to equal the current ADL AAR>
- **Utilities > Model Departure Rates > Specify** – Opens the Specify Model ADR window allowing you to specify the Model Departure Rates and to assign several different ADRs within the same hour.
- **Utilities > Model Departure Rates > Reset** – Resets the model Departure Rate to equal the current ADL ADR.
- **Utilities > View File** – This option allows you to view previously saved Analysis Reports, Coversheets, and Flight Data, as shown in Figure 3-8.

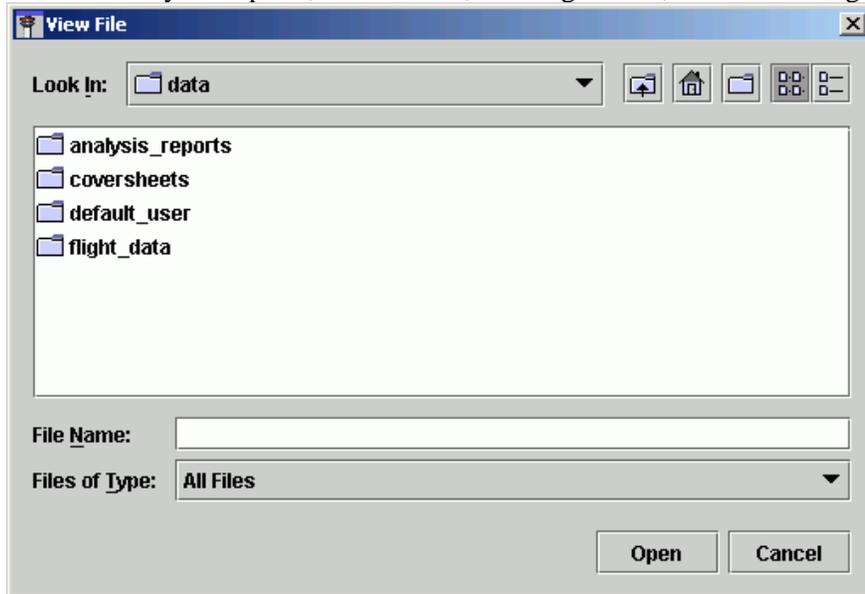


Figure 3-5: View File Window

- **Utilities > Set Time** – Allows you to set a specified time for Historical data sets only (see Figure 3-9).

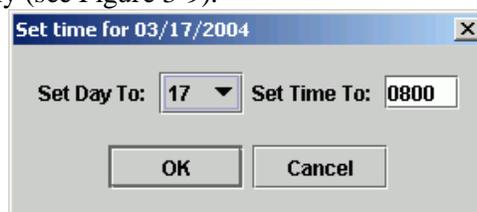


Figure 3-6: Set Time Dialog Box

- **Utilities > Update** – Updates the active historical mode components with the next historical ADL file.

- **Utilities > ECR** – Opens the ECR component to update a controlled flight’s control times.

7. Window Menu

- **Window > Hide All Windows** - Hides all open FSM components.
- **Window > Hide All Iconified Windows** - Hides all FSM iconified bars displayed in the Task bar.
- **Window > LIVE (+ airport abbreviation), GDT yyyy/mm/dd/Airport, or HIST yyyy/mm/dd/airport** – Click the data mode and airport selection to open the active components for that airport. Each individual component appears under the **Window** menu. Select a checkbox to display and bring to the front of your monitor the subsequent airport component. Airport and Data selections are consecutively numbered in the order they were opened.

8. Help Menu

- **Help > FSM** – Accesses the web-based FSM on-line help.
- **Help > ADL Data Elements** – Accesses the ADL Data Elements page from the web-based FSM on-line help.
- **Help > Show Configuration** – Displays current FSM configuration in use (see Figure 3-10).

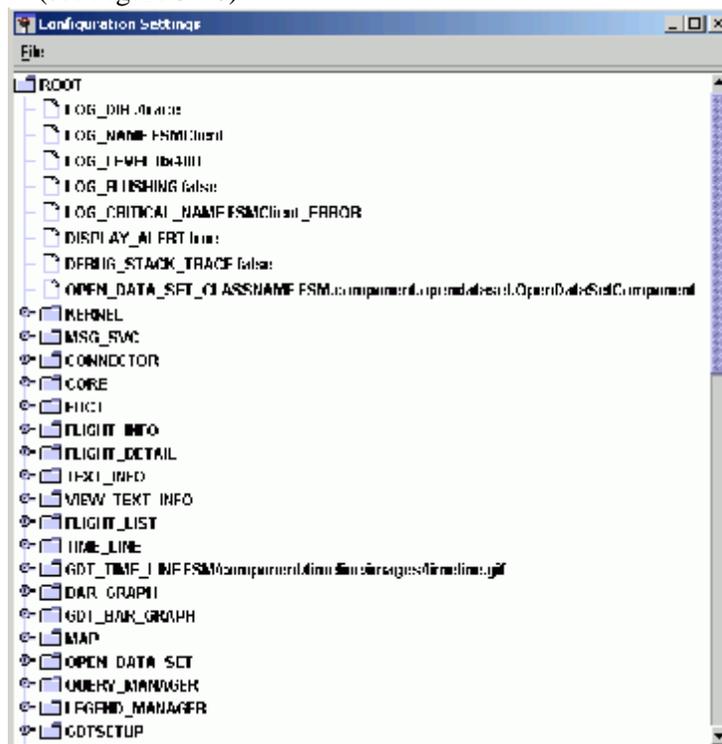


Figure 3-7: Configuration Setting Window

- **Help > About FSM** - Displays information about the FSM version running including the FSM Version and Copyright Information– The version of FSM

currently running (i.e. FSM 7.9), Metron Aviation, Inc. copyright notice, the software build-date and Product License information.

Modify and Specify Model AAR/ADR Window Menu

- **File > Open**- Opens previously saved AAR/ADR parameters.
- **File > Save** - Saves the AAR/ADR parameters to a text file (can be opened later and used again).
- **File > Print** - Prints the Modify AAR/ADR window.
- **File > Close** - Closes the Modify AAR/ADR window.
- **Help > Demand Rates** – Opens the online help information specific to the modifying demand rates.

Depending on the AARs you assign within an hour, that hour's AAR background color changes.

- **Green** indicates that you distributed the AAR unevenly among the 15-minute increments in that hour.
- **Blue** indicates that the 15-minute AARs do not differ from each other by more than a value of "1."
- **White** indicates that the AAR for that hour is the same as the ADL AAR.
- **Red** indicates that the AAR is more than twice the value of the default AAR.

Once you finish entering your AAR/ADR information:

- Click **Send** from the Modify Rates window to send the modified rates to ETMS. The next ADL update will reflect the new rates. Click **Send** from the Specify Model Rates window to change your local machines rates.
- Click **Cancel** to close the modify AAR/ADR rates without taking any action.
- Click **ADL AAR/ADR** at the top right of the Modify window to reset the rates back to what the original AAR/ADR rate when you first opened the window.
- Click **Help** at anytime to give you a description of both the **Send** and **Cancel** buttons.

Reset AAR and Reset ADR Components

The ETMS Tools > Reset AAR/ADR components have identical setup features. The figure below is an example of the Reset AAR component.

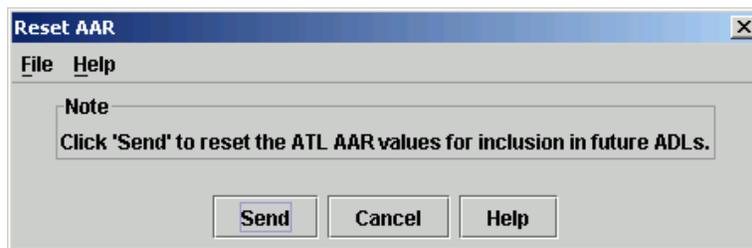


Figure 3-8: Reset AAR Window

Reset AAR/ADR Window Menu

- **File > Close** - Closes the Reset AAR/ADR window.
- **Help > Demand Rates** – Opens the online help information specific to the modifying demand rates.

Note: When in Historical Mode, clicking **Send** resets the historical data to the first ADL update time.

In Monitored Live mode:

- Click **Send** to reset AAR/ADR values to the default setting and send the information to ETMS. The reset AAR/ADR is reflected in the next ADL update.
- Clicking **Cancel** closes the Reset AAR/ADR window without taking any actions.
- Click **Help** to display a pop-up screen with additional information on the **Send** and **Cancel** buttons.

Control Panel Buttons

You can use the buttons from the Control Panel component to open other FSM components.

- **Open Data Set** opens the Open Data Set component in which the user may select various operating modes and available airports. See Open Data Set component overview for more detail.
- **US Map** opens the US Map Component, which displays airports currently being monitored and their status in their respective geographical locations. See US Map component for more detail.
- **Query Manager** opens the Query Manager component that lists Built-in and User-defined filters. See the Query Manager component information below for more detail.
- **GDT Setup** opens four GDT components: GDT Setup, GDT Map, GDT Bar Graph, and GDT Data Table components. An airport must already be opened for the GDP Setup component to be activated. If there is no data set selected, the **GDT Setup** button displays an error message (by default). See Chapter 4 for detailed information on Ground Delay Tool Components.
- **Update** allows you to update the Time Line and Bar Graph with the next ADL update only in Historical Mode. You must open an airport in Historical Mode for the **Update** button to operate. If there is no Historical data set selected, clicking **Update** causes an error message: “Not a historical data set”.
- **ECR** opens the ECR components. Use ECR to update EDCTs for flights arriving into a controlled airport. See Chapter 13 for detailed information on the ECR component functionality.

Open Data Set Component

Clicking **Open Data Set** on the Control Panel opens the Open Data Set component. This component allows you to choose an FSM data mode and data set for monitoring and managing air traffic flow. A *data mode* is the type of data you want to use: historical or live. Live data is fed from ETMS to the FSM client on a real-time basis, while historical data is archived data that FSM can pull to allow you to review airport events in the past. A *data set* is the airport and the components which you would like to display.

- **Monitored Live** - Monitored Live mode provides a list of airports currently monitored by the FSM server and readily available for viewing by the user. This data mode runs real-time data and receives ADL updates every 5 minutes while running FSM.
- **Historical** - This data mode uses historical data that has been stored by your FSM server database. Historical data is available for recall to analyze scenarios or replay a day's air traffic events.
- **All Live** - All Live provides a list of airports that you can view (not currently being monitored by the server, but available).
- **Active Historical** - The Active Historical tab provides a list of airports' historical data currently opened and monitored by the user.

Note: All times displayed in and used by FSM are Zulu times unless otherwise specified.

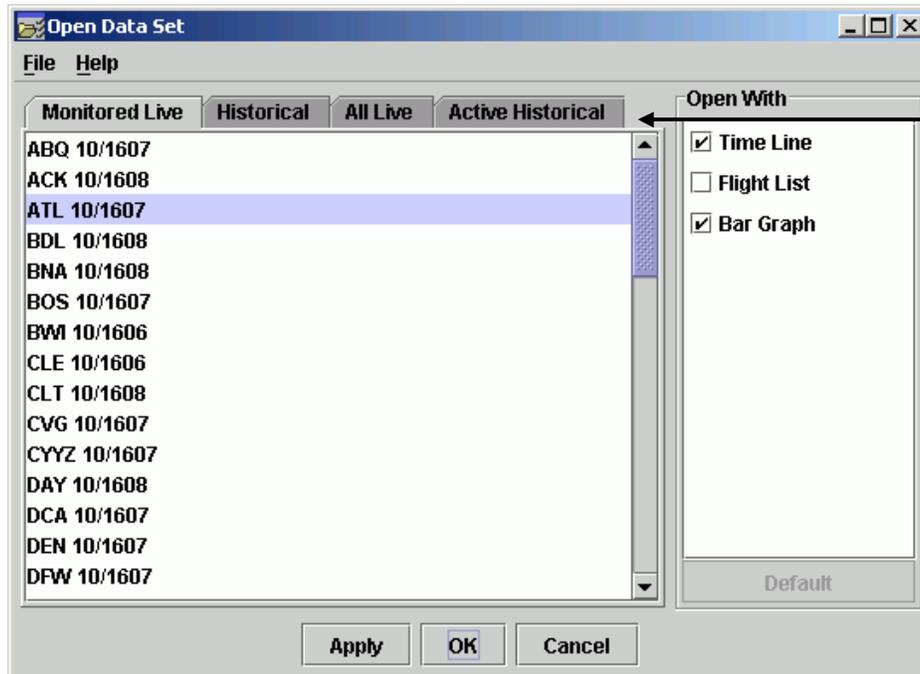


Figure 3-9: Open Data Set Component

Open Data Set Menu Bar

The Menu Bar in the Open Data Set component contains two options: File and Help.

- **File > Close** – Closes the Open Data Set component.
- **Help > Open Data Set** – Accesses the web-based on-line help for the Open Data Set component.

Open With Options

The **Open With** portion of the Open Data Set component contains three component options with which to open and view an airport:

- Time Line – opens the Time Line component of the selected airport, displaying regular Time Line options for each airport.
- Flight List – opens the Flight List component of the selected airport.
- Bar Graph – opens the Bar Graph component of the selected airport.

Select the components you want to open for a selected airport by placing a checkmark in the associated checkbox of the Open With section(see Figure 3-10). If you do not make any changes in the Open With section, the Time Line and Bar Graph components for the selected airport open by default.

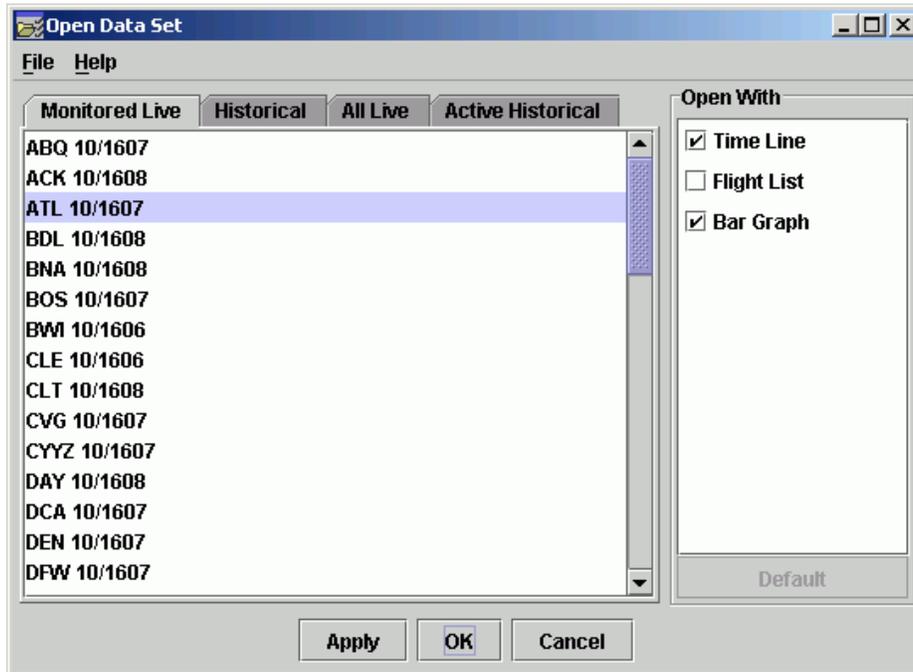


Figure 3-10: Open With Component Selection

Open Data Set Tab Options

The Tab Options in the Open Data Set window consist of four tab selections, Monitored Live, Historical, All Live, and Active Historical.

1. Monitored Live Tab

The Monitored Live tab provides a list of airports currently monitored by the FSM server and readily available for you to view. GDP Actual or GS Actual along with the program times appear next to airports with a TMI in place. Select the desired data set by clicking the airport information in the scrolling area of the window. See Chapter 4 Opening FSM, for more information on using the Open Data Set component. For example, Figure 3-11

shows ATL airport, which has a GDP in place, with the Time Line and Bar Graph selected; this opens the Time Line and Bar Graph components for ATL in Monitored Live mode.

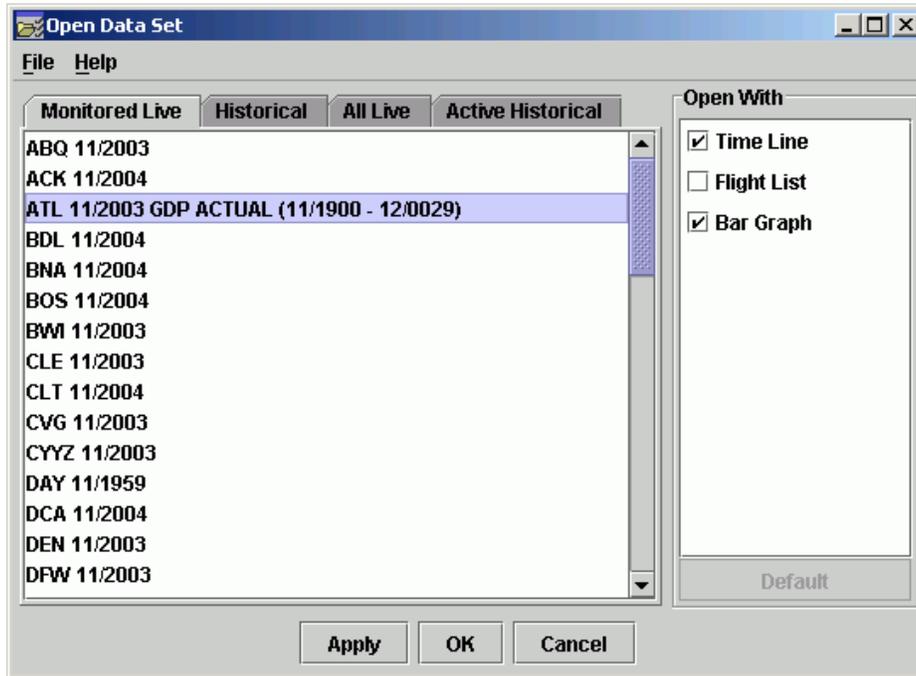


Figure 3-11: Open Data Set - Monitored Live Tab

2. Historical Tab

When you first open the Open Data Set component, the Monitored Live tab is the default tab. To select the Historical data display, click on the Historical tab. This display provides you with the available historical data archived in FSM. You can select your historical data by drilling down from the server from which you want to pull data. FSM arranges the drill down order by Server>Year>Month>Day>Airport (see Figure 3-13). If the FSM Client is connected to two servers, both servers appear.

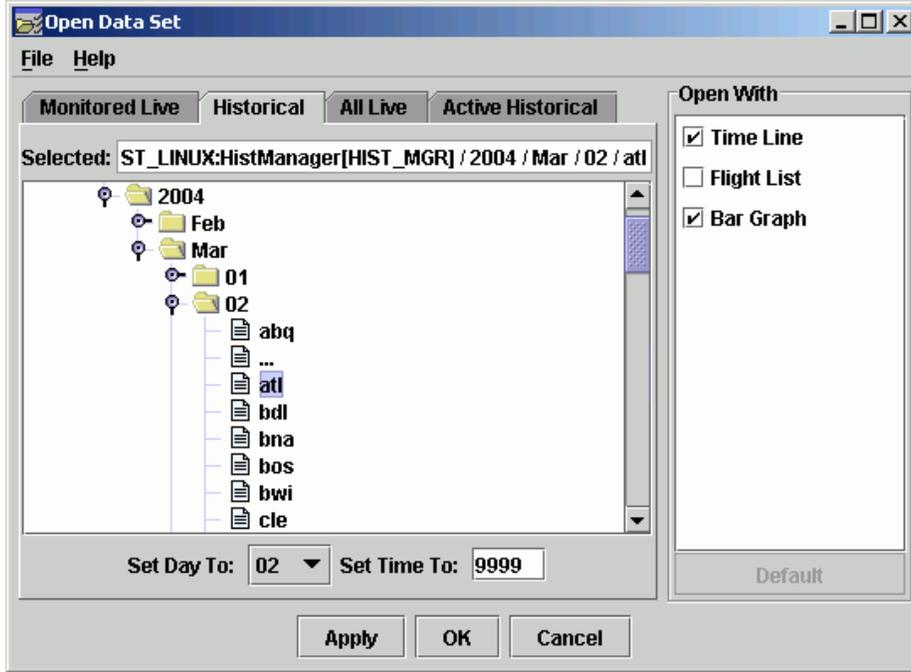


Figure 3-12: Open Data Set - Historical Tab

3. All Live

The All Live tab provides a list of airports that you can view. When you select an airport dataset from the All Live tab, it initially takes slightly longer to open than from the Monitored Live tab. When selected, the airport's 3-letter code is highlighted in light purple.

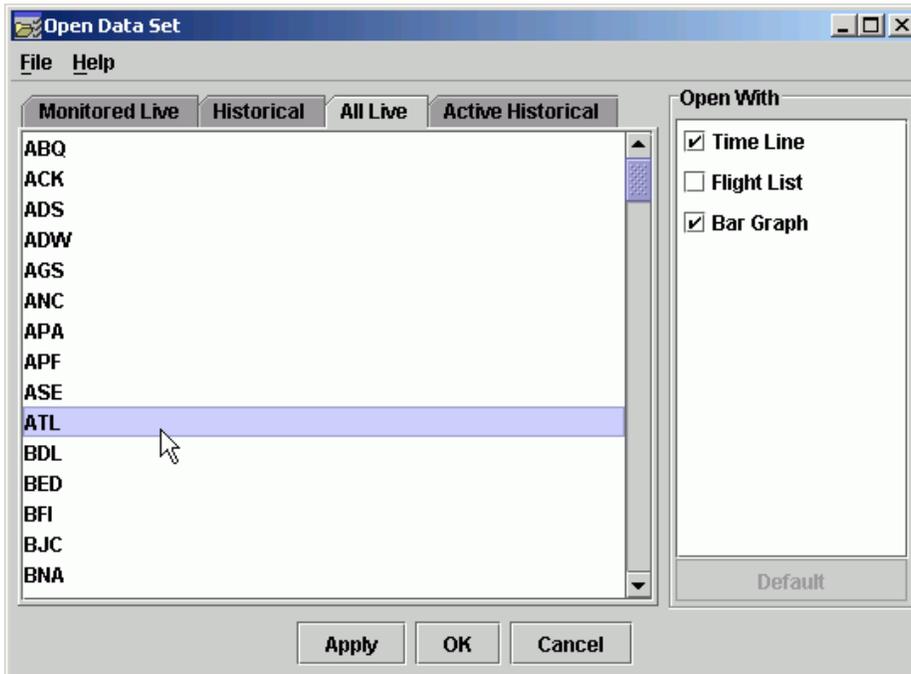


Figure 3-13: Open Data Set - All Live Tab

4. Active Historical

The Active Historical tab provides a list of airports, currently open in Historical Mode, that you are monitoring. You can open additional components or toggle from one historical data set to another from this Tab.

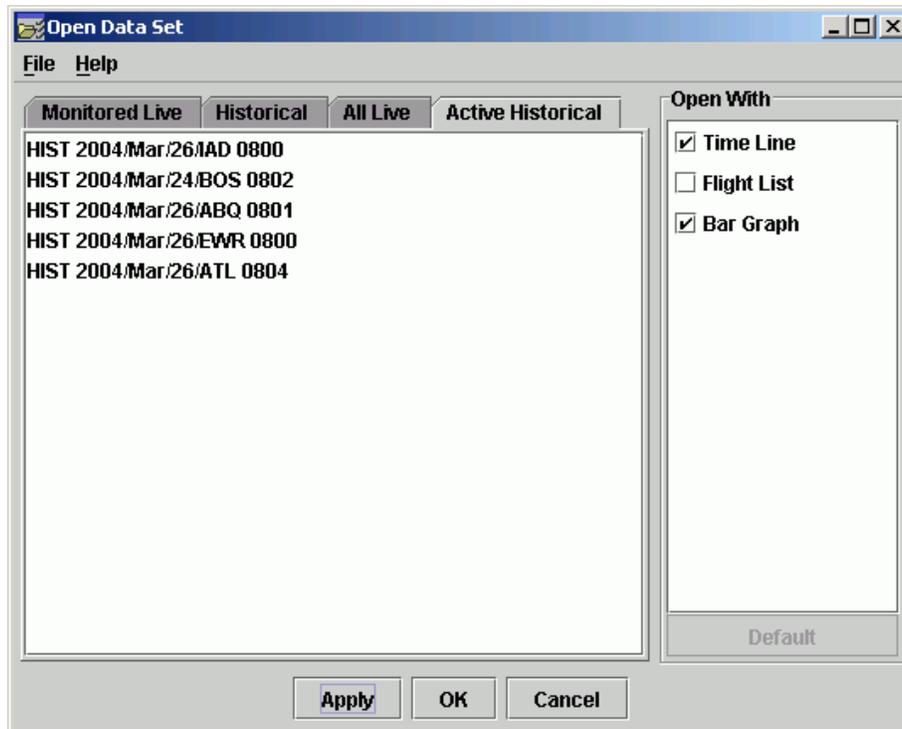


Figure 3-14: Open Data Set - Active Historical Tab

Open Data Set Buttons

1. **Apply** keeps the Open Data Set component active in addition to opening the selected airport components.
2. **OK** closes the Open Data Set component when opening the selected airport components.
3. **Cancel** closes the Open Data Set component without making any selections.

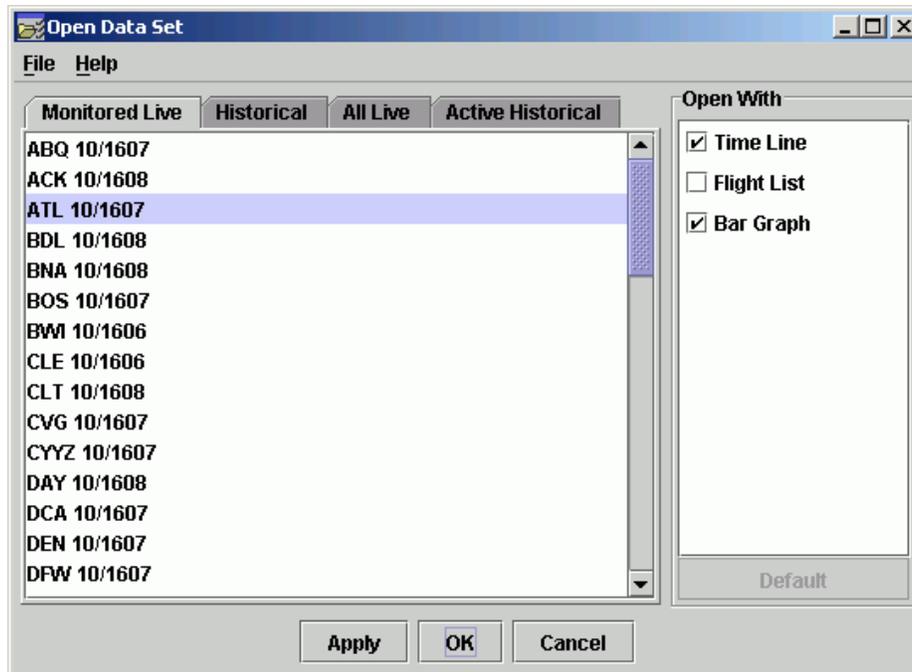


Figure 3-15: Open Data Set Button Option

4. **Default** returns the **Open With** selections to the previously checked (default) items, the Time Line and Bar Graph.

Map Component

You can view the US Map component by clicking **US Map** on the Control Panel component. The US Map displays North America with an overlay of all US and Canadian centers and an outline of the 48 contiguous states. Airports currently being monitored by the server appear with the airport three-letter identifier (US) or four-letter identifier (Canada) and a colored dot indicating the status of each airport. The number of monitored airports listed on the US Map appears in the title bar-**monitored data sets: XX** where XX is the number of airports currently monitored and displayed on the Map (see Figure 3-18).

Table 3-1: Airport Status

Color	Status
Green	No Traffic Management Initiatives (TMIs) are in effect for the airport.
Red	A Ground Delay Program (GDP) or Ground Stop (GS) is in effect.
Yellow	There is either a proposed GDP or GS.

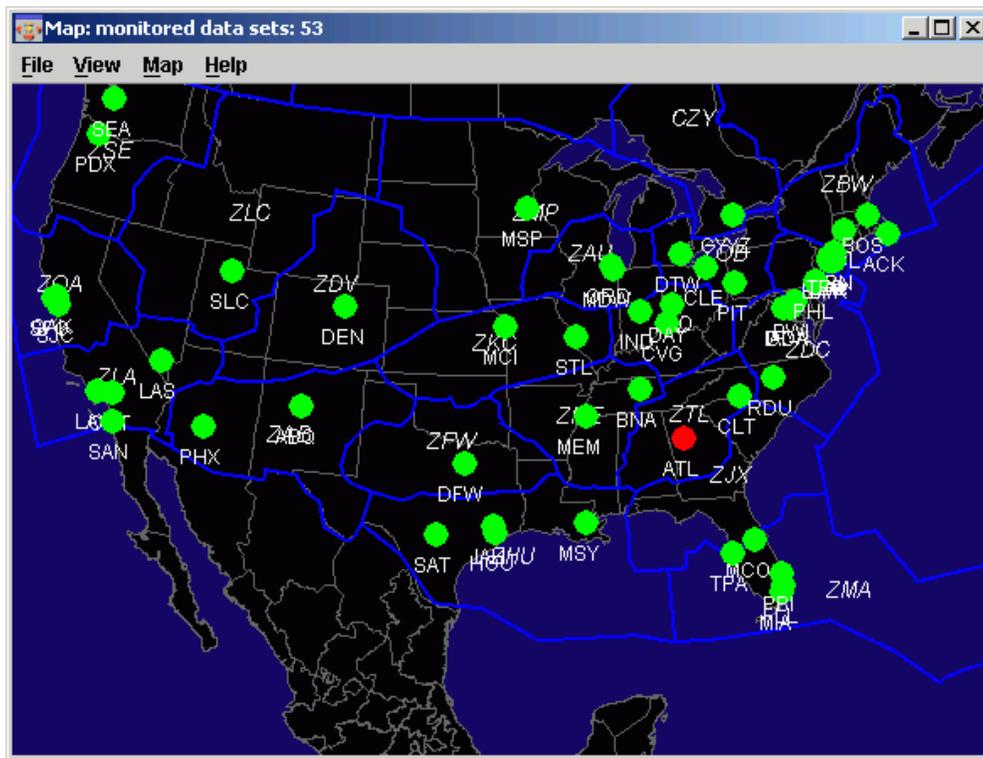


Figure 3-16: US Map component

Map Zoom Capabilities

There are several different ways to zoom in or zoom out on the US Map or GDT Map components.

1. Quick Key Method – Pressing **Z** on your keyboard incrementally *zooms in* to the center of your screen. Pressing **U** on your keyboard incrementally *zooms out* from the center of your screen. To move the center focus of your screen to another focal point or to zoom in on a particular airport, move the cursor to the desired location and press **M** on the keyboard. Quick key **M** moves the central focus of the map to the cursor location. To zoom in or out from that point, continue to use **Z** or **U** quick keys. In addition, pressing **X** on the keyboard undoes the last command (up to 25 commands).

Table 3-2: Quick Key Commands

Quick Key	Description
M	Move
Z	Zoom in

Quick Key	Description
U	Zoom out
X	Undo Move/Zoom

2. Drag and Drop Method – To zoom out, hold down the left mouse button and drag the cursor up and left. To zoom in, hold down the left mouse button and drag any direction, besides up and left, around the area you want to zoom in on.
3. Right Click Method – After using either method listed above, right-clicking the cursor anywhere within the Map component gives you two options: Default zoom and undo zoom. Default zoom returns the Map zoom to the initial zoom setting. Undo zoom, undoes the last zoom command– same as using the X quick key.

Note: The Drag and Drop Method is not precise, it is recommended that you use the Quick Key Method.

Viewing Airport Parameters

From the US Map, you can view the scope of an airport’s TMI parameters. Left-click an airport that has either proposed or active parameters in place and FSM displays the parameters (see **Figure 3-17**). The maroon overlay and red airports indicates the area and airports included in the airport’s TMI.

In addition to the graphical parameters display, white text shows the airport ID, date, ADL time, the type of program, and the program time range. To return to the normal Map display, click anywhere on the map.

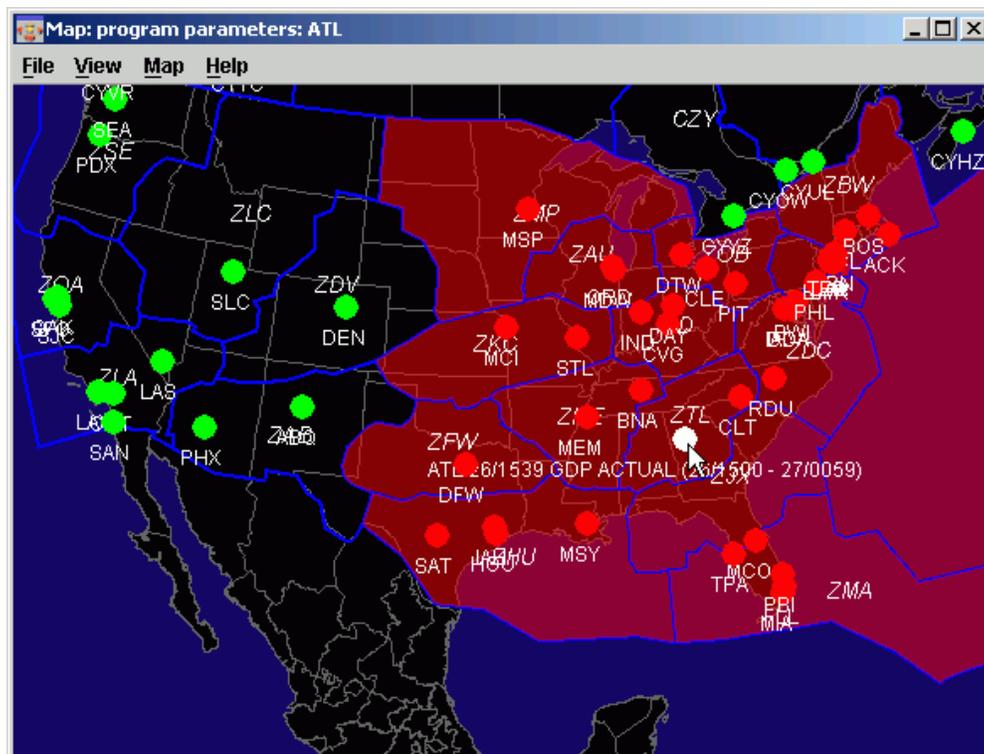


Figure 3-17: View Airport Parameters

Opening Components from the US Map

You can access an airport's Time Line, Bar Graph, and Flight List components directly from the US Map component. Left-click the airport, this turns the airport white in color and if the airport is running a TMI, the parameters appear in the Map, similar to the GDT Map display. Once you select an airport, right-click on the airport to display the pop-up selection menu, which includes the zoom option described above. The pop-up menu also allows you to view the Time Line, Bar Graph, or Flight List components for the selected airport in Monitored Live mode only. For example, selecting **Open Time Line** opens up the Time Line live component for ATL. For more information see Chapter 4 Opening FSM.

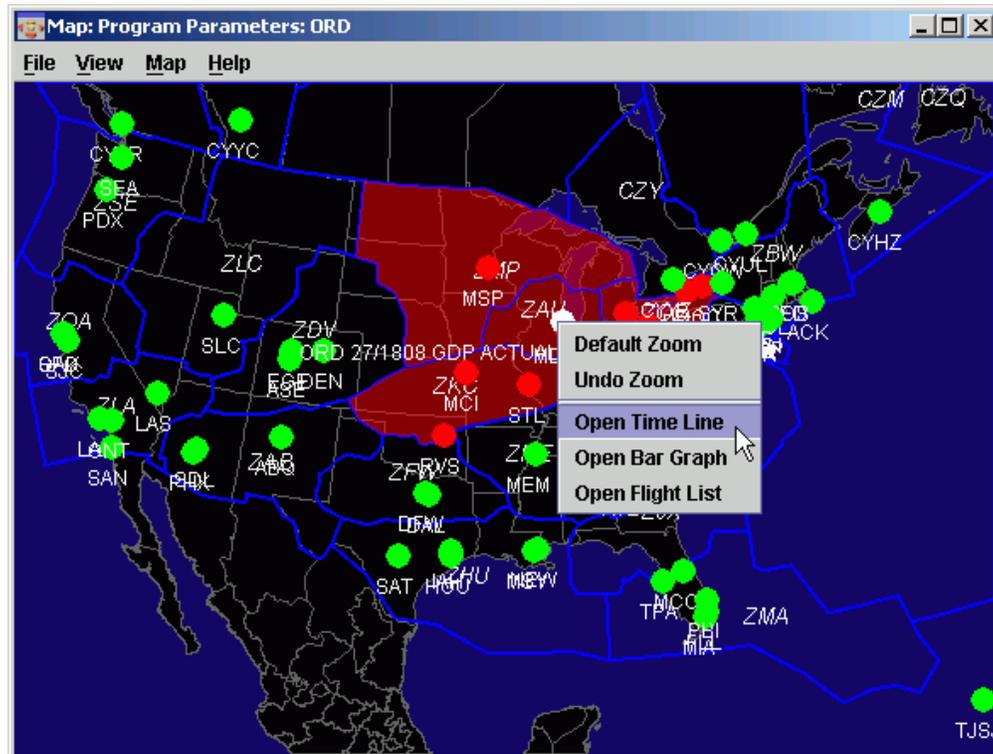


Figure 3-18: Component Selection

US Map Menu Bar

The US Map menu bar contains four options: File, View, Map and Help.



Figure 3-19: US Map Menu Bar

1. File Menu
 - **File > Save as** - Saves the *US Map* as a .jpg image in a directory that you specify.
 - **File > Print** - Prints the active *US Map* on the monitor.
 - **File > Close** - Shuts down the *US Map* component.
2. View Menu

- **View > Rename Window...**- Displays the Rename Window dialog box and allows you to change the title bar name. Type in the desired name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes (see Figure 3-22).



Figure 3-20: Rename Window Dialog Box

3. Map Menu

- **Map > Zoom In** – Allows you to enlarge the Map.
- **Map > Zoom Out** - Allows you to reduce the Map size.
- **Map > Default Zoom** – Returns the Map to the original default zoom.

4. Help Menu

- **Help > Map**- Accesses the web-based on-line help for the US Map component.

Query Manager Component

You can view the Query Manager component by clicking **Query Manager** (see Figure 3-21) or by selecting **Utilities > Query Manager** from the Control Panel component. The Query Manager component enables you to query flights and create a Flight List that contains flights that meet only your selected criteria.

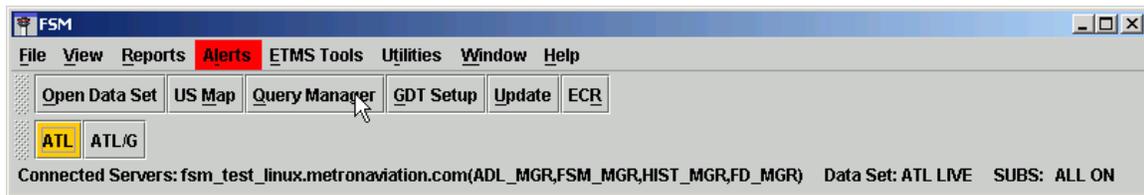


Figure 3-21: Opening Query Manager Component

The Query Manager component gives you the option of selecting between Built-in Filters or User-defined Filters as shown in Figure 3-24.

Built-in Filters are pre-defined, *read-only* filters designed from criteria that are frequently used for viewing flight information. Double-click on the BUILT_IN *Built-in Filters* folder or click on the Expand/Collapse icon to view/hide all contents in the folder. When you expand the *Built-in Filters* folder, you see a number of filters from which to choose. You may continue to drill down to view more detail by double-clicking on the folders or by clicking on their respective Expand/Collapse icons.

The **AND** filters list consists of filters that FSM compares to find a match in the data set. An **OR** filter consists of a list of filters that FSM compares to find matching flights in the data set. A **CONSTRAINT** is an attribute, operator, or value. For more information on filters see Chapter 20 Query Manager.

User Defined Filters are *active* filters you create and customize based on your Flight List needs. There are two methods of creating user-defined filters:

- Creating a New Filter
- Editing a Built-in filter

For more information on filters see Chapter 20 Query Manager.

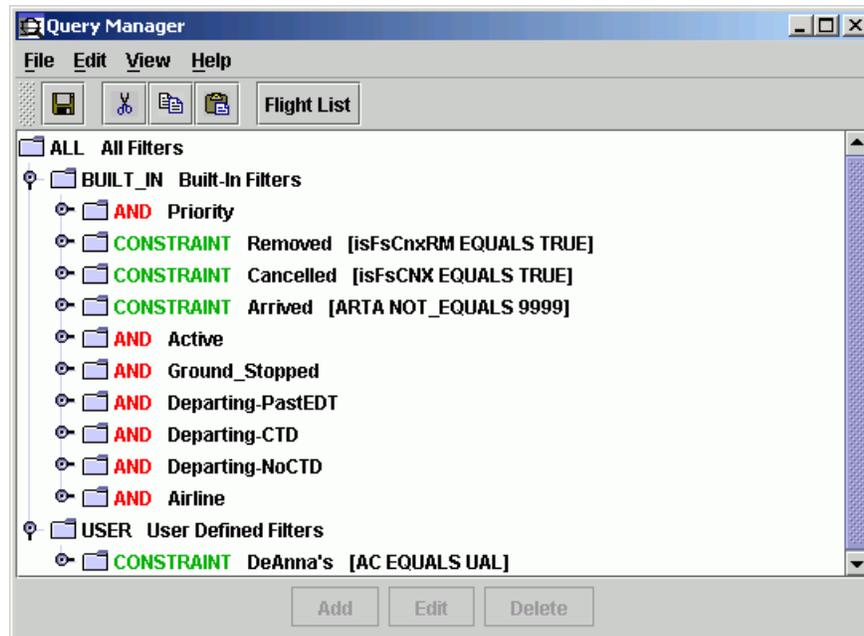


Figure 3-22: Query Manager Component

Opening a Flight List

You must be monitoring an airport before you can query for a Flight List.

1. Click **Query Manager** to open the Query Manager Component. The Query Manager window appears.
2. Select any one of the Built-in or User-Defined Filters.
3. Click **Flight List**.
 - If you are only monitoring one airport, the Flight List automatically opens, in table format, with the information generated from the selected filter criteria.
 - “No Active Data Sets” error messages pop-up if the FSM Client is not monitoring any airports.
 - If you are monitoring more than one airport, the Set Data Set window appears.
4. Select the desired airport for which you want to view the queried flight list.

5. Click **OK** to open the Flight List (see Figure 3-23). See Chapter 6: Viewing Flight Information for detailed information on Flight Lists.



Figure 3-23: Set Data Set Window

Query Manager Menu Bar

The menu bar of the FSM Query Manager component contains four options: File, Edit, View, and Help.

1. File Menu

- **File > Save** - Saves the User-Defined Filters into the user_filter.ini file. In the FSM Client ini file, you can specify the name and location of where the user_filter.ini file is stored. The saved filters are available every time you open a Query Manager.
- **File > Close** - Closes the Query Manager window - taking no action.

2. Edit Menu

- **Edit > Cut** - Deletes selected User Defined Filters from the Query Manager.
- **Edit > Copy** - Copies selected filters to the clipboard.
- **Edit > Paste** - Pastes selected filters from the clipboard to the User-Defined Filters folder.

3. View Menu

- **View > Rename Window...** - Displays the Rename Window dialog box and allows you to change the component name in the title bar. Enter the desired component name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes (see Figure 3-32).



Figure 3-24: Rename Window Dialog Box

- **View > Flight List** - Displays the Flight list if the FSM client is monitoring only one airport, or the Set Data Set window when the FSM client is monitoring multiple airports.

4. Help Menu

- **Help > Query Manager** – Accesses the web-based on-line help for the *Query Manager Component*.

Bar Graph Component

The Bar Graph component allows you to view the overall demand of the airport being monitored. Airport demand consists of the total flights using the airport for arrivals and departures. The FSM Dynamic Graph displays airport demand information as it is received through ADLs. There are 12 different color options to view this demand. The Arrival Status Tab is the default view when you first open the Bar Graph component. The airport, date, last ADL update time, and data mode also appear in the Bar Graph title bar.

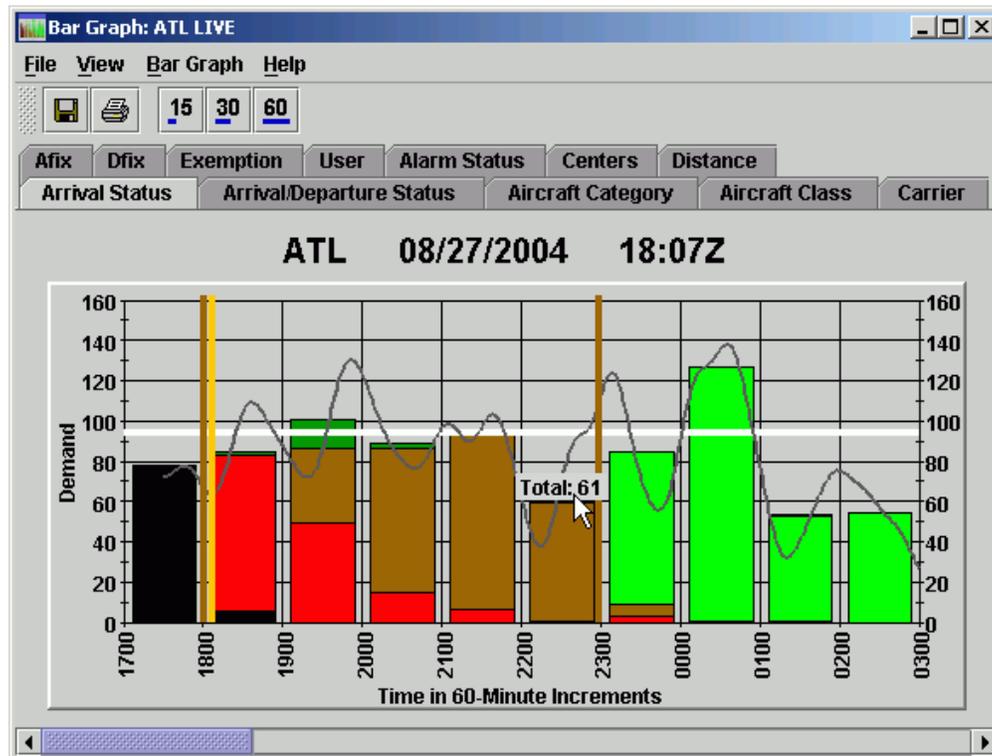


Figure 3-25: Bar Graph Component

The Bar Graph component displays data according to which “Color” tab option you select. For example, the default color tab is Arrival Status, which displays the bars in the graph colored according to the percentage of flights that represent each respective arrival status. If half of the flights for one time period are scheduled to depart, while the other half are airborne (flight active), the bar for that hour is half red (flight active) and half lime green (departing [No EDCT]). If every flight for the hour has arrived, the bar for that hour is black.

The graph is dynamic and changes according to the information from each ADL update. Likewise, the graph automatically updates itself when you select a different “Color” tab. To view a flight count for any hour, place the cursor over any bar within the Bar Graph, the respective number/count appears for the bar the cursor is hovering over. If you place the cursor near the top of a bar, the total number of flights for that hour appears. You can use the same method to find out the Airport Arrival Rate (AAR). Place the cursor over the AAR and the rate appears. Double-clicking any bar displays a Flight List for flights contained in that hour bar. See Chapter 6: Viewing Flight Lists for more detailed information on viewing flight list information.

Bar Graph Legend

To view the color legend check the **View > Show Legend** checkbox from the Bar Graph's main menu. The Legend displays the color scheme for the color tab currently displayed and allows you to toggle the coloring options on and off by using the checkbox next to each color.

Clicking **Synchronize Legend** from the legend gives you a drop down box to select other opened components (see Figure 3-26). Selecting a checkbox next to any other components dynamically synchronizes the current component with the selected component from the dropdown menu.

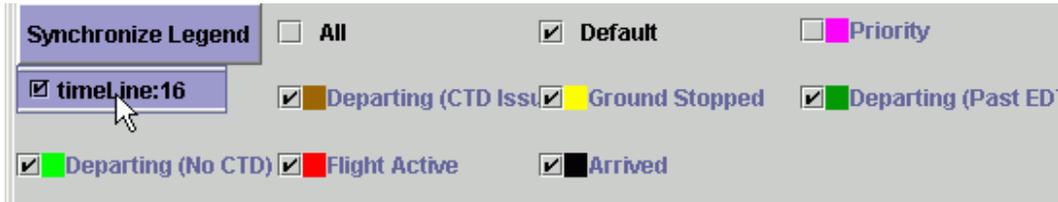


Figure 3-26: Synchronize Legend

Note: Figure 3-26 is a good example of why you may want to rename your component windows when monitoring several airports. Instead of time line: 16, renaming the Time Line component to ATL Time Line would make component identification easier. Use **View > Rename Window...** when available to rename the title bars.

Bar Graph Menu Bar

The menu bar of the FSM Bar Graph component contains four options: File, View, Bar Graph and Help.

1. File Menu
 - **File > Save as** - Saves the Bar Graph as a .jpg image to a directory you specify.
 - **File > Print** - Prints the Bar Graph currently viewed on your screen.
 - **File > Close Group** – Closes all the components associated with the open component. This function removes the airport button from the Control Panel for the selection airport and data mode.
 - **File > Close** – Shuts down the Bar Graph component for that particular airport.
2. View Menu – consists of 12 checkboxes. Check the box to view the information and uncheck the box to hide the information.
 - **View > Rename Window** - Displays the Rename Window dialog box that allows you to change the component name of the title bar. Enter the desired component name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes.
 - **View > Arrival Data** - Displays all arrival data for the monitored airport. The bars of the graph are solid only when you are viewing arrival data in FSM.

- **View > Departure Data** - Displays all departure data for the monitored airport. The only time when the bars of the graph appear hashed, as shown in Figure 3-27, is when you view departure data in FSM. When you view both arrival and departure data in FSM, you see two bars for each time increment. Bars that represent arrival data are solid, whereas bars that represent departure data are hashed.

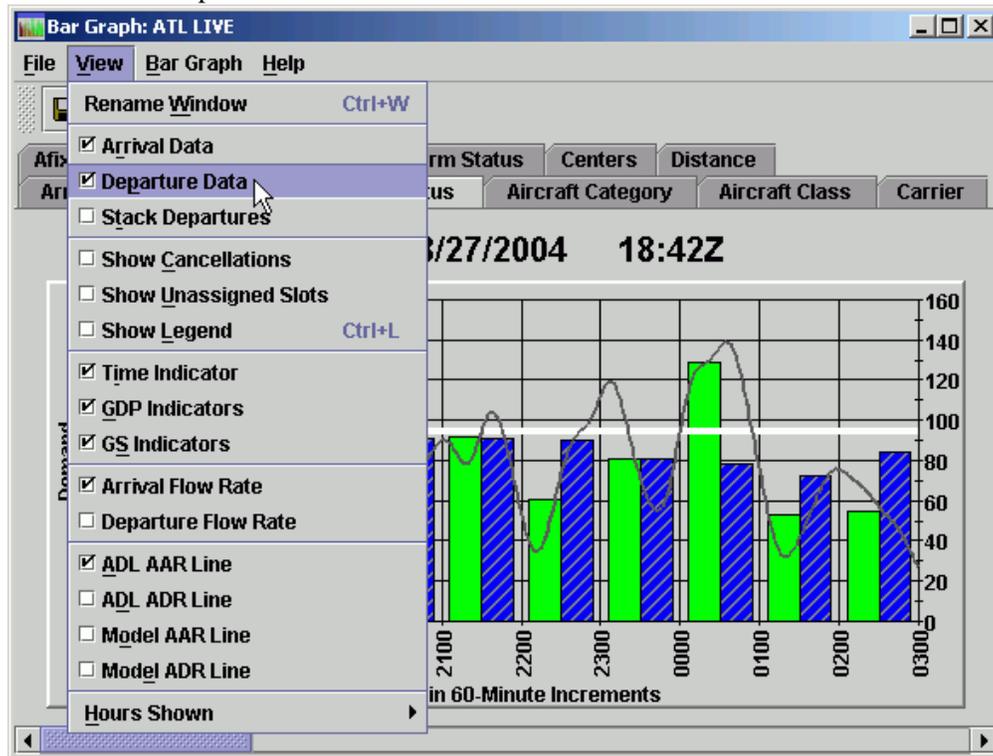


Figure 3-27: Normal View with Arrival and Departure Data Displayed

- **View > Stack Departures** - Displays departing flights in the same bars as arriving flights, (see Figure 3-28). The bars on the graph become solid, with both arriving and departing flights included in the bar for their departure or arrival time. To differentiate between departing and arriving flights, use the Arrival/Departure tab to color your flights. Using Arrival/Departure displays (by default) arriving flights in green and departing flights in blue.

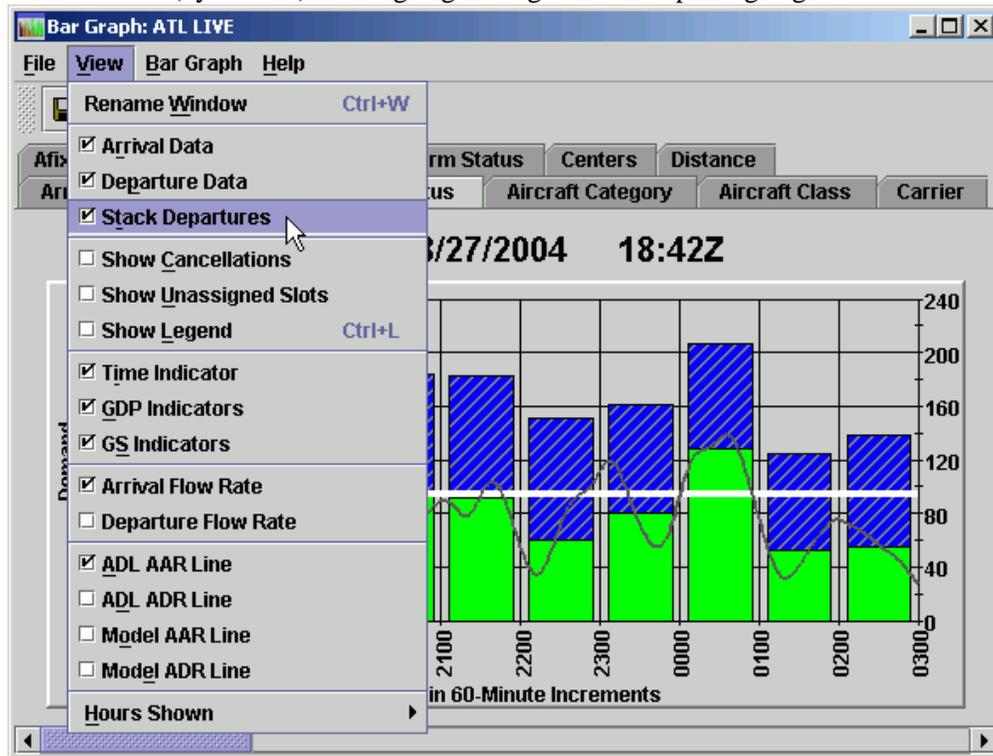


Figure 3-28: Arrival and Departure Data displayed in stacked format

- **View > Show Cancellations** – Displays cancelled flights in the color cyan. Cancelled flights do not automatically appear in the graph. Showing cancelled flights is useful to compare the original airport demand with the demand after the cancellations. To differentiate between cancelled and regular flights, use the Arrival Status tab to color your flights.
- **View>Unassigned Slots** – Displays all unassigned slots in the color white for a GAAP GDP.
- **View > Show Legend** – Displays the appropriate color legend associated with the tab option you are viewing.
- **View > Time Indicator** – Displays an orange vertical line that remains fixed at the current time. Like the FSM Time Line, the Bar Graph Component also tracks time.
- **View > GDP Indicators** – Displays brown vertical lines to indicate the start time and end time of a current GDP. The program time indicators appear automatically when a program goes into effect at the monitored airport.

- **View > GS Indicators** - Displays yellow vertical lines to indicate the start time and end time of a current GS. The GS time indicators appear automatically when a GS goes into effect at the monitored airport.
- **View > Arrival Flow Rate** – Displays a thin, dark gray line that represents the arrival flow rate independently of the time-bin convention, enabling you to visualize arrivals as a dynamic flow rate.
- **View > Departure Flow Rate** – Displays a thin, cyan line that represents the departure flow rate independently of the time-bin convention, enabling you to visualize departures as a dynamic flow rate.
- **View > ADL AAR Line** – Displays a white horizontal line that runs through the graph representing the current Airport Arrival Rate (AAR) for the monitored airport. The ADL AAR (shown by default) is a fixed AAR sent by the FAA Air Traffic Control System Command Center (ATCSCC) to advise of the number of arriving aircraft an airport can accommodate at any given interval of time. The AAR changes according to the interval of time being displayed. For example, an AAR of 60 per hour = AAR of 15 per quarter hour. *Only ATCSCC users can change the ADL AAR.*
- **View > ADL ADR Line** – Displays a cyan horizontal line that runs through the graph. The line represents the Airport Departure Rate (ADR) for the monitored airport. The ADL ADR, (shown by default when **Departures** is checked), is a fixed value sent by the FAA ATCSCC to specify the number of departing aircraft an airport can accommodate at any given interval of time. The ADR also changes according to the time increment used in the graph display. For example, an ADR of 60 per hour is equal to an ADR of 15 every quarter hour.
- **View > Model AAR Line** – Displays a user-specified AAR as a dashed white line. You use the Model AAR for modeling and analysis; you can change this according to program needs.
- **View > Model ADR Line** - Displays a dashed blue line and is useful for modeling traffic scenarios and analysis.
- **View > Hours Shown > 2/3/4/5/6/8/10/12/14/16/18/20 Hours** - The default data display is 10 hours. You can specify the number of hours displayed in the bar graph to see more or less flight data. For example, you may want to view the AAR in 15-minute increments, which is difficult to see on a graph with 10 hours' worth of data. To change the number of hours in the graph, select **View > Hours Shown > X Hours** (X = number of hours). The graph automatically updates to show the number of hours specified.

3. Bar Graph Menu

- **Bar Graph > Track Time** - Makes the graph move as the time changes. When you track time in this way, the second bar on the graph is always the

current time. When you uncheck the box, the bars do not move, but you can still use the Time Indicator to determine the current time on the graph.

- **Bar Graph > Set Time** – This option is functional only while in Historical mode. Selecting this causes the Set Time dialog box to appear. You can select the day and time for which you would like to view the historical data.
- **Bar Graph > Model Arrival Rates > Specify** – You must select **View > Model AAR Line** to see the Model AAR Line (a dashed white line) on the Bar Graph. If the ADL AAR appears on the graph, the dashed line (for modeling) is hidden behind the solid white ADL line. You can adjust the Model AAR by:
 - Selecting **Bar Graph > Model Arrival Rates > Specify**. This option displays the Specify Model AAR window. Fill in the necessary information and the new AAR appears on the graph. See Chapter 7 for more information on changing the AAR.
 - Dragging the white line in the graph to the desired AAR. The dashed line moves to the AAR specified. Only the portion of the line to the right of the cursor moves. Any portion of the line to the left of your cursor should remain in the same position as you drag the line to a new AAR.
- **Bar Graph > Model Arrival Rates > Reset** – Restores the Model AAR to its original value. The Model AAR disappears.
- **Bar Graph > Model Departure Rates > Specify** – You must select **View > Model ADR Line** to see the Model ADR Line (a dashed blue line). If the ADL ADR appears on the graph, the dashed line (for modeling) is hidden behind the solid blue line. You can adjust the Model ADR by:
 - Selecting **Bar Graph > Model Departure Rates > Specify**. This option displays the Specify Model ADR window. Fill in the necessary information and the new ADR appears on the graph. See Chapter 7 for more information on changing the ADR.
 - Dragging the blue line in the graph to the desired ADR. The dashed line moves to the ADR specified. Only the portion of the line to the right of the cursor moves. Any portion of the line to the left of your cursor should remain in the same position as you drag the line to a new ADR.
- **Bar Graph > Model Departure Rates > Reset** – Restores the Model ADR to its original value. The Model ADR disappears.

Note: Modeling the AAR or ADR rates from the Bar Graph only changes the local model rate for modeling purposes. To send a new AAR/ADR to ETMS, without issuing a TMI, use **Demand Rates > Modify AAR/ADR** from the Control Panel and click **Send**.

4. Help Menu

- **Help > Bar Graph** – Accesses the web-based on-line help for the Bar Graph component.

Shortcut Keys

15, 30, and 60 – Clicking the **15, 30, or 60** time-bin buttons displays bar graph capacity and demand information based on the time-bin value selected. The default time increment is 60-minutes.

Bar Graph Tab Options

The screen resolution determines the arrangement of the 12 tabs in the Bar Graph. You have the option to color flights according to several variables available in FSM. The default tab setting colors flights according to their Arrival Status; however FSM offers the flexibility to view flights according to different criteria. This allows for effective analysis of which flights make up the demand at an airport. Each of the 12 pre-defined color tabs of the Bar Graph window displays different information with a corresponding color scheme and legend. See Table 3-3 below for the default color settings for all 12 tabs.

Table 3-3: Bar Graph Coloring Tabs

Tab Option	Bar Color	Description
Arrival Status (Default View):	Light Green	Departing (No CTD)
	Red	Flight Active
	Black	Arrived
	Brown	Departing (EDCT Issued)
	Dark Green	Departing (Past EDT)
	Yellow	Ground Stopped
	Cyan (optional)	Cancelled
	Blue (optional)	Removed
	Pink (optional)	Priority
	White (optional)	Unassigned Slot
Arrival/Departures	Light Green	Arriving
	Blue	Departing
Aircraft Category	Light Green	Turbo
	Red	Jet
	Black	Propeller
	Yellow	Unknown
Aircraft Class	Light Green	Large

Tab Option	Bar Color	Description
	Red	Heavy
	Black	Small
	Yellow	Unknown
Carrier	Various Colors	All Majors
	White	Single Airline (User input)
AFIX	Various Colors	The Arrival Fixes associated with the monitored airport
DFIX	Various Colors	The Departure Fixes associated with the monitored airport
Exemption	Red	Flights Exempted
	Black	Flight Excluded
	Light Green	Flight Not Exempted
User	Blue	Air Cargo
	Magenta	Carrier
	Light Green	General Aviation
	Brown	Military
	Orange	Air Taxi
	Cyan	Other
	Red	Unknown
Alarm Status	Red	Flights With Alarm
	Black	Other Flights
Centers	Red	All Centers
Distance	Red	All Distances

Time Line Component

The Time Line component is a timetable that displays airport arrival and departure rates and demand in one-minute hash marked increments in the hour columns Figure 3-29. The number of hours displayed is based on the size of your Time Line component. You can change the number of hours viewed on the screen at one time by dragging the edge of the window in or out to increase/decrease the window size. You can also use the scroll bar to scroll forward or backwards in time. You can resize the CNX (cancelled flights) column as well.

The large numbers at the top of each column represent the date/hour (i.e. 27/1600 indicates that this display is for the 1600 hour for the 27th day of the month). Directly below the date/hour information is the AAR and/or ADR versus the demand at the airport (the number of flights projected to arrive) for the hour shown. For example, 70/65 at the top of a column indicates that the AAR is 70 for that hour and 65 flights are expected to arrive within that hour. The ADR versus demand appears in parentheses when FSM displays departure data. For example, (60/40) indicates that 60 flights can depart the airport in that hour, but only 40 are projected to depart. The last data update time is highlighted in orange.

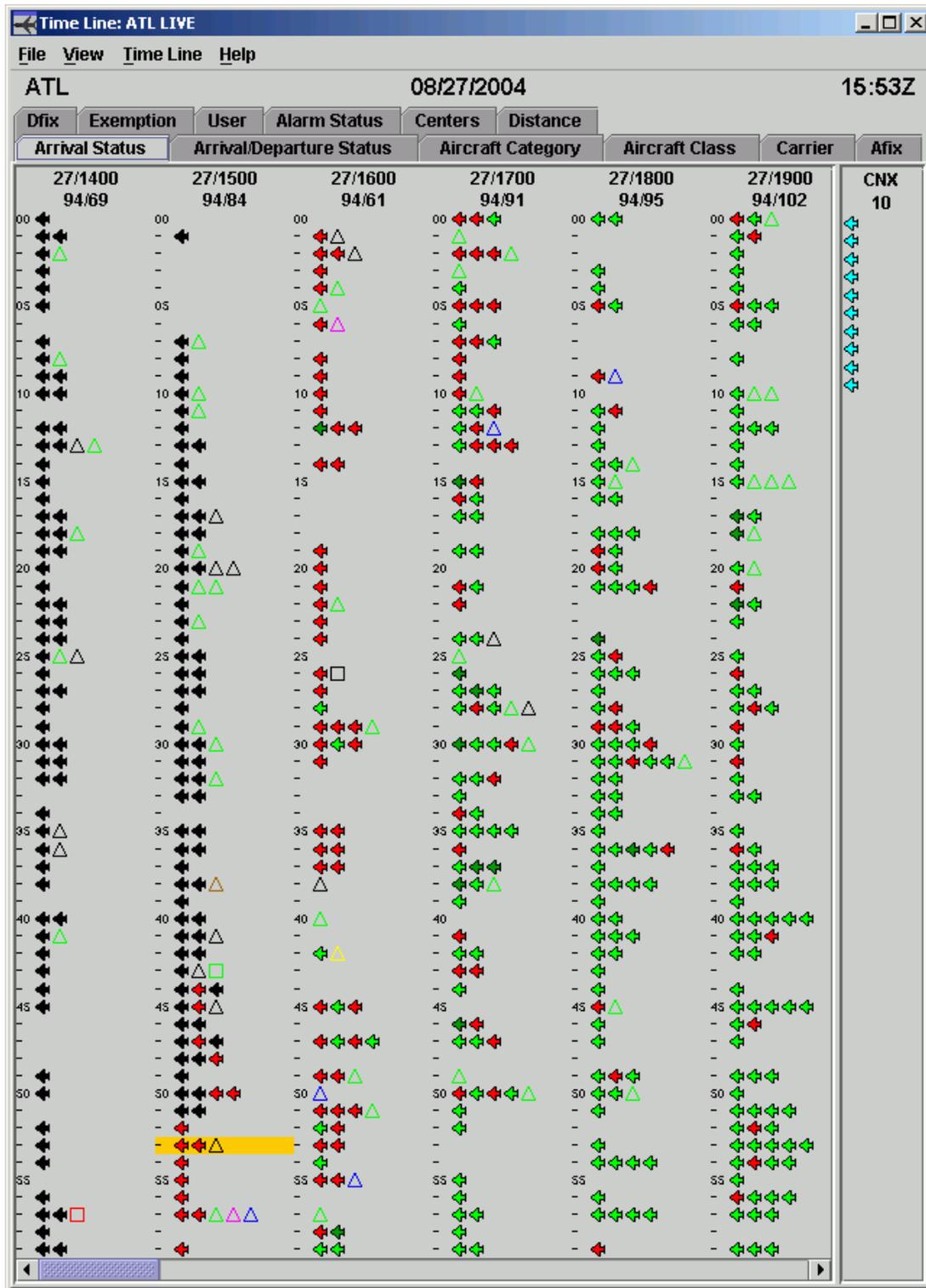


Figure 3-29: Time Line Component

From the Time Line, you can view flights arriving and departing from a monitored airport, as well as open arrival slots, unassigned slots, and cancellations. The airport, date, last ADL time,

and data mode appear in the Time Line title bar. The Time Line displays the airport being monitored, the date, and the time directly above the coloring tabs.

Each flight arriving at the monitored airport appears to the left of the minute hash marks, which correspond to the ETA of the flight. A pop-up window displays the flight's ACID, Departure airport, arrival airport, ETD, and ETA when you place your cursor over a flight (see Figure 3-30).



Figure 3-30: Pop-up Flight information

Viewing Time Line Flight Information

Right-clicking on a flight icon gives you four additional options for that flight: **Flight Info**, **Flight Detail**, **EDCT Check**, **EDCT Update**, and **ECR**.

- Selecting **Flight Info** displays the Flight Info component, which contains general ADL information for a flight including ADIC, status, origin airport, destination airport, ETD, ETE, ETA, CTD, CTA, Delay Flag, and Cancel Flag when applicable.
- Selecting **Flight Detail** displays more detailed flight information. The Flight Detail window contains all the ADL information for that flight.
- Selecting **EDCT Check** opens the EDCT Check dialog box giving ATCSCC specialists the ability to send a message to the Hubsite requesting the flight's EDCT time as opposed to getting the ECDDT time from the ADL.
- Selecting **EDCT Update** opens the EDCT Command Line dialog box, which allows ATCSCC specialists to send an EDCT update request to the Hubsite.
- Selecting the **ECR** option opens the ECR component for the selected flight. Opening ECR in this manner automatically fills the ACID, ORIG, and flight information into the ECR component for the flight.

Note: EDCT Check and EDCT Update are ATCSCC only options.

FSM displays cancelled flights under the CNX column. Cancelled flights have the same hover and right-click capabilities as all other flights. FSM keeps and displays flight data compiled by Volpe National Transportation Systems Center, which includes data for up to 20 hours after the current time.

You can also access flight lists and flight counts from the Time Line component. For more information on viewing flight information in the Time Line, see Chapter 6 Viewing Flight Information.

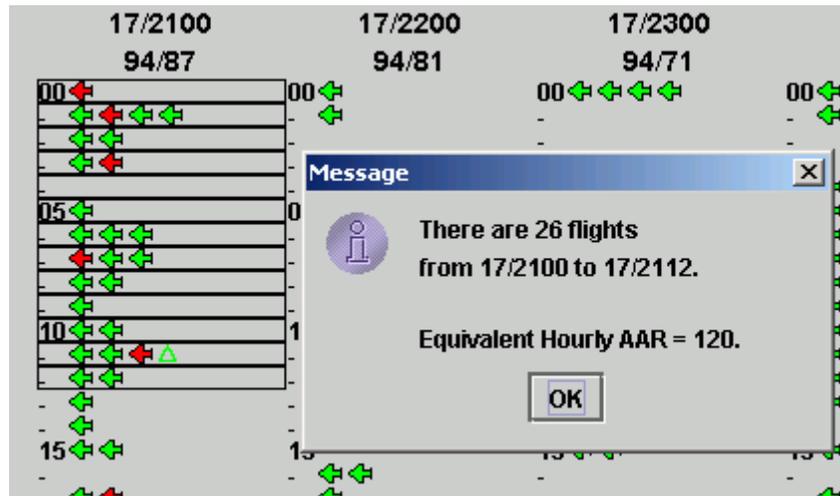


Figure 3-31: Flight Count

Icons in the Time Line

- Airplane Icons represent flights arriving at or departing from the monitored airport. Arriving flights face left while departing flights face right. Clicking an arrival flight icon highlights the flight by putting a white square around the icon. If the flight is delayed, the open arrival slot that resulted from its delay is also highlighted.
- A filled square icon appears only when a GDP is in effect. The filled square represents an arrival slot left open by a cancelled flight. The arrival slot is open and available for use by other flights. Cancelled flights appear on the Time Line under the CNX heading and are highlighted when you select their associated slot.
- An empty square icon also corresponds to a cancelled flight. However, this arrival slot is not available for use by other flights. Clicking this icon highlights its associated cancelled flight, displayed under CNX in the Time Line.
- A filled triangle icon appears only when a GDP is in effect. The filled triangle indicates an open arrival slot due to a delayed flight. The arrival slot is open and available for use by other flights. Clicking this icon also highlights the delayed flight that caused the slot to open up.
- An empty triangle icon also corresponds to a delayed flight. However, this arrival slot is not available for use by other flights. Clicking this icon also highlights the associated delayed flight.

- A white diamond represents an unassigned slot. No right- or left-click capabilities exist for this icon. It is simply a place holder during a GAAP GDP with GAAP until filled by a pop-up flight.

Note: You can find an explanation for any of the Time Line icons by selecting **Help > Legend** in the FSM Control Panel component.

Table 3-4: Time Line Icons

Time Line Icon	Description
	Indicates the latest or current ADL file data update time in the Time Line component.
	A flight arriving at the monitored airport by ETA in the Time Line component and colored by the current color scheme.
	A flight departed from the monitored airport by ETD in the Time Line component and colored by the current color scheme.
	An open slot due to a cancelled flight, which is included in a GDP. It is positioned at its arrival slot time and colored by carrier.
	An open slot due to a cancelled flight, which is not included in a GDP. It is positioned at its (IGTA-taxi) and colored by carrier.
	An open slot due to a delayed flight that is included in the GDP. It is positioned at its arrival slot time and colored by carrier. The corresponding flight is positioned at a later time matching the ETA.
	An open slot due to a delayed flight that is not included in the GDP. It is positioned at its (IGTA – taxi) and colored by carrier. The corresponding flight is positioned at a later time matching the ETA
	An unassigned slot. These appear in the Monitored Live mode, Historical mode, and GDT mode time lines for GAAP GDPs.

Time Line Menu Bar

The menu bar in the FSM Time Line component contains four options: File, View, Time Line and Help.

1. File Menu

- **File > Save as** - Saves the Time Line as a .jpg image in a directory that you specify.

- **File > Print** - Prints the Time Line that is currently on the screen.
- **File > Close Group** – Closes all the components associated with the open component. This function removes the airport button from the Control Panel for the selected airport and data mode.
- **File > Close** - Shuts down the Time Line component for that particular airport.

2. View Menu

- **View > Rename Window...**– Displays the Rename Window dialog box and allows you to change the component name in the title bar. Enter the desired name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes.

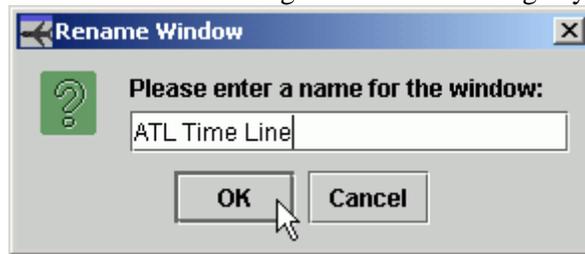


Figure 3-32: Rename Window

There are six additional display options to choose from under the View menu. Select the checkbox to view the information.

- **View > Arrival Data** – Displays all arrival data for that airport.
- **View > Departure Data** – Displays all departure data for that airport.
- **View > Show Cancellations** – Displays all cancelled flights under the column marked CNX, to the right of the active flight information.
- **View > Show Color Legend** – Displays the appropriate color legend associated with the current view.
- **View > Open Slots in Carrier Color** – Displays all open slots due to cancelled or delayed flights in the associated carriers color.
- **View>Show Unassigned Slots** – Displays all unassigned slots during a GAAP GDP.
- **View > Auto Icons** - Displays flights in the TSD icon format. The TSD format displays different icons based on the flight aircraft weight. When you select Auto Icons, the classic FSM Time Line icons, which display the same icon for all aircraft weights, appear.

Table 3-5: Auto Icons

Classic View	New (TSD) Icon Format	Description
		Jet

		Heavy
		Prop (Includes Turbo and Piston)

- **View > Flight Info** - Displays the Flight Info window for a quick reference on the flight.
- **View > Flight Detail** - Displays the Flight Detail window for more in-depth information on the flight.
- **View > Flight List** - Displays the FSM Flight List.

Note: **View > Arrival Data**, **Show Cancellations**, and **Open Slots in Carrier Color** checkboxes are selected by default.

3. Time Line Menu

- **Time Line > Track Time** –Allows you to turn Track Time on and off. To force the Time Line component to update when the current hour changes, select Track Time. When the hour changes, the Time Line moves forward one hour. If you uncheck the Track Time box, you can scroll forward or back in time and at the next update time the Time Line does not return to the current time.
- **Time Line > Set Time** – This option is available only under Historical Data Mode and allows you to choose the time to view within a set of historical data.
- **Time Line > Search By Callsign** - Allows you to find a particular flight by entering the flight's call sign and original airport. The flight icon in the Time Line is highlighted with a white box.

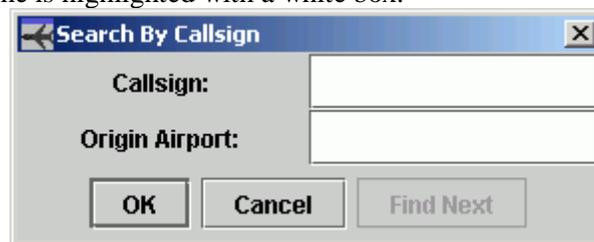


Figure 3-33: Search By Call Sign

4. Help Menu

- **Help > Time Line** - Accesses the web-based on-line help for the Time Line component.
- **Help > Legend** – Accesses the web-based on-line help for the Time Line icon legend.

Time Line Color Tab Options

The 12 tabs are arranged in the Time Line based on the screen resolution. The picture below is based on Windows default settings.



Figure 3-34: Time Line Coloring Tabs

The default value colors the flights according to their arrival status. FSM gives you the flexibility to view flights according to different criteria. This allows for effective analysis to determine which flights make up the demand at an airport. There are 12 pre-defined Color tabs in the Time Line component. Each color tab option displays different information with a corresponding color scheme and legend (see Table 3-6).

Table 3-6: Color Tab Options

Tab Option	Color Display Options
Arrival Status (Default View):	Priority, Removed, Departing (CTD Issued), Ground Stopped, Departing (Past EDT), Departing (No CTD), Flight Active, and Arrived Flights
Arrival/Departure Status:	Arriving and Departing Flights
Aircraft Category	Propeller, Turbo, Jet, and Unknown
Aircraft Class	Small, Large, Heavy, and Unknown
Carrier	All Major carrier and option to enter a single carrier
Afix	Color by arrival fix for that airport
Dfix	Color by departure fix for that airport
Exemption	Flts Excluded, Flts Not Exempted, and Flts Exempted
User	Air Cargo, Carrier, G/A, Military, Air Taxi, Other, and Unknown
Alarm Status	Flights with Alarm Set and Other flights
Centers	ZAB, ZAU, ZBW, ZDC, ZDV, ZFW, ZHU, ZID, ZJX, ZKC, ZLA, ZLC, ZMA, ZME, ZMP, ZNY, ZOA, ZOB, ZSE, ZTL, ZZZ and manual input. Note: Center options may change for Canadian airports.
Distance	Distance ranges from <200 to <2400 in increments of 200 miles and >=2400.

Ground Delay Tools Components

Ground Delay Tools (GDT) Components aid users in looking at various operational or traffic scenarios. You can use modeling tools to analyze existing operations and previous days' events. The actual running and issuing of Traffic Management Initiatives is not covered in this section. This section familiarizes you with all the GDT components:

- GDT Setup
- GDT Map
- GDT Bar Graph
- GDT Data Graph
- GDT Data Table (Optional)
- GDT Time Line (Optional)
- GDT Coversheet
- GDT Advisory

You can open any monitored airport in Ground Delay Tools mode by choosing a monitored airport and then clicking **GDT Setup** on the Control Panel component. There are four default GDT components that automatically display for the selected airport. All GDT components are interactive; any change in one component dynamically reflects in all other components where applicable.

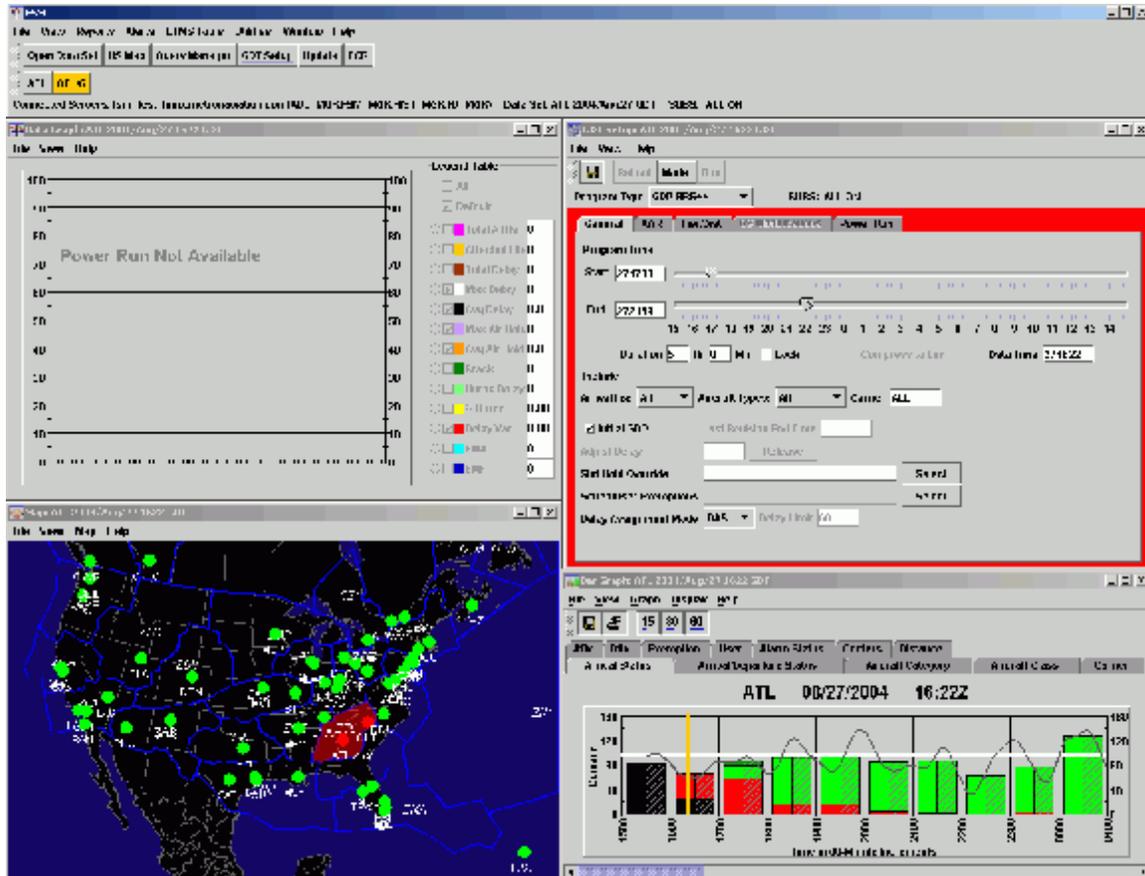


Figure 3-35: GDT Default Components

GDT Setup Component

You use the GDT Setup component to issue and send Traffic Management Initiatives (TMIs). The GDT Setup component consists of a menu bar, four action buttons, Program Type selection box, and five tabs that focus on different areas of information. You must select the type of TMI you want to issue from the **Program Type** selection box:

1. GDP RBS++ - The default Program Type. This program runs the Ration By Schedule Algorithm plus Compression.
2. GDP RBS – The original Ration By Schedule Algorithm. RBS is based on IGTA wheel arrival time (IGTA – Taxi).
3. Compression – Run this program to decrease delay on flights involved in an existing GDP. If there are a number of slots for cancelled flights in the stack hours, you can use compression to move these flights to a later slot without needing to extend the GDP.

4. GS Immediate - Unlike ground delay programs, which delay flights because of a reduced AAR, the Ground Stop function prevents flights from departing until further notice. GS Immediate issues a Ground Stop Immediately.
5. GS Future - Similar to GS Immediate, although the Ground Stop is issued at a specified time in the future.
6. Blanket – Run this program type to revise any ground delay operation. This option adds or subtracts a fixed number of minutes to or from FAA-imposed delay. You should not use Blanket in conjunction with a GS.
7. Airborne Holding - Used by traffic management specialists to determine the necessity of a GDP. In certain situations, putting delay on flights en route may be a better option than delaying flights on the ground. The airborne holding algorithm in FSM produces the amount of expected airborne holding delay, defined as [ASLOT – ETA] that would result from running a program.
8. Purge - Cancels a GDP or GS, releasing all delay on included flights. This program type requires no input on any tab option.

The GDP Setup component tab options and features change based on the Program Type selection. The five GDT Setup tabs are General (default selection), AAR, Tier/Distance, GS Modifications, and Power Run.

This section discusses the Setup Panel based on each tab option. Closing the GDT Setup component closes all the GDT components for the airport. The GDT Setup panel displays the substitution status for the airport: SUBS: ALL ON, ALL OFF, or SCS OFF.

Note: The *Program Type* Purge is not mentioned in any of the tab panels, since Purge requires no parameter modifications.

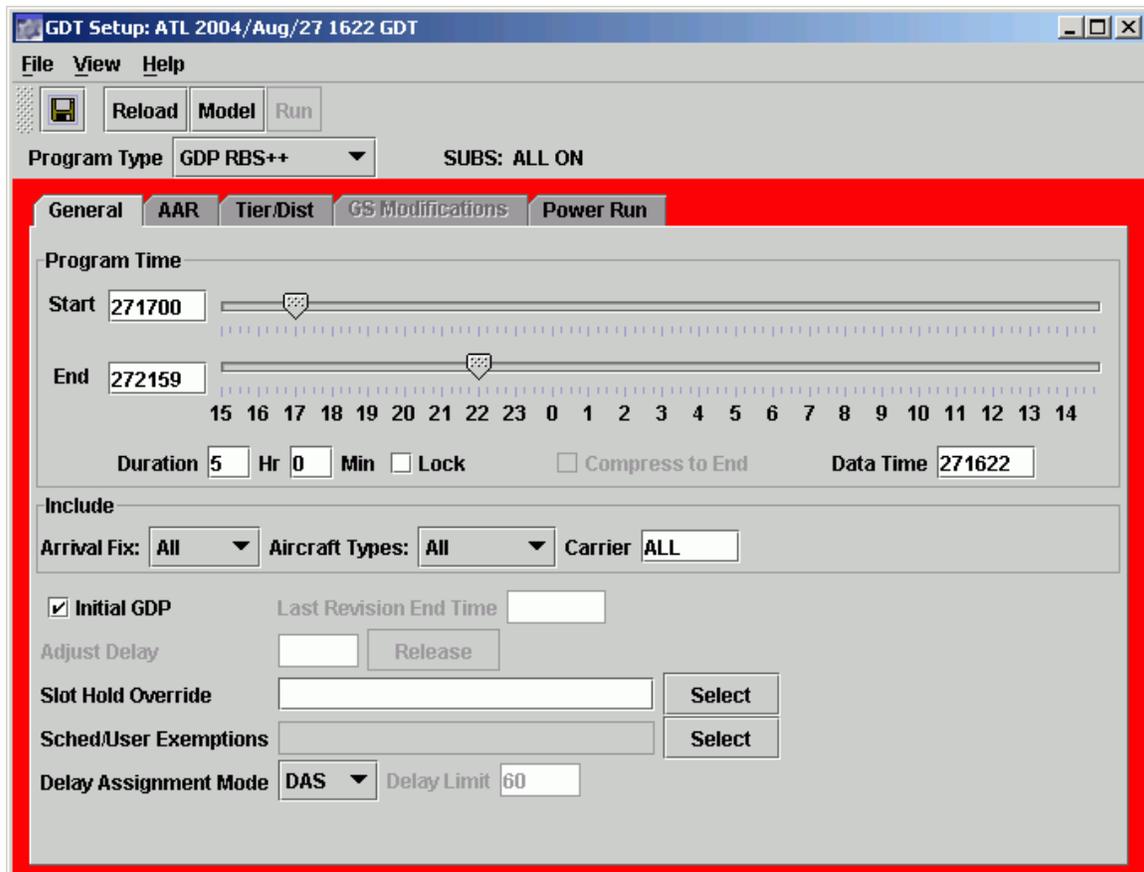


Figure 3-36: GDT Setup Component

GDT Setup Panel Menu Bar

The menu bar (shown below) in the GDT Setup component contains three options: File, View, and Help.

1. File Menu

- **File > Load Proposed Parameters** – Opens a secondary dropdown menu to select from specific parameter options:
 - > **Ground Delay Program** – Loads the proposed GDP parameters.
 - > **Ground Stop** - Loads the proposed Ground Stop parameters.
 - > **Blanket** - Loads the proposed Blanket parameters.
 - > **Compression** - Loads the proposed Compression parameters.
- **File > Load Actual Parameters** - Opens a secondary dropdown menu to select from specific parameter options:
 - > **Ground Delay Program** - Loads the actual GDP parameters.
 - > **Ground Stop** - Loads the actual Ground Stop parameters.

- **> Blanket** - Loads the actual Blanket parameters.
- **> Compression** - Loads the actual Compression parameters.
- **File > Open Coversheet** – Opens the Coversheet file explorer that contains all the Coversheet files. Select the coversheet you want to open and click **Open**. All coversheet files are named covr.xxx, where xxx is the airport three-letter identifier. The file names also include the Date and ADL time followed by the type of coversheet (GS, GDP, or CNX).
- **File > Open Parameters File** – Opens the PARAM_DIRECTORY File in file explorer. Select the parameters file and click **Open** to view the Parameters Files.
- **File > Save as** – Saves the *Setup* component as a .jpg image to a directory of your choice.
- **File > Close** – Shuts down the *Setup* component and all the complimentary GDT components for that particular airport.

2. View Menu

- **View > Rename Window...** – Displays the Rename Window dialog box and allows you to change the component name in the title bar. Enter the desired name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes.



Figure 3-37: Rename Window Dialog Box

There are five additional display options to choose from under the **View** menu. If you close a component and want to reopen it, use the **View** menu options to select and reopen the desired component.

- **View > Data Graph** – Displays the Data Graph component
- **View > GDT Map** – Displays the GDT Map component
- **View > Demand Graph** – Displays the GDT Bar Graph component
- **View > Time Line** – Displays the GDT Time Line component
- **View > Data Table** – Displays information found in the Data Graph component, but in tabular format.
- **View > Flight List** – Displays the Flight List for the monitored airport. The default Flight List includes AC, ID, ETD, ETA, DEST, ORIG, and ARTA-CTA data elements.

3. Help Menu

- **Help > GDT Setup** – Accesses the web-based on-line help for the GDT Setup component.

GDT Setup Panel Buttons

The three action buttons are **Reload**, **Model**, and **Run**. These buttons are active when the feature is available.

- Clicking **Reload** causes FSM to load the latest ADL data into the GDT mode. You then can model the program using the latest data and make any adjustments you think are necessary.
- Clicking **Model** models and reflects your changes in all GDT components for analysis and review. After you make any modification to any portion of the GDT Setup component, which FSM indicates by highlighting the tab window area with a red border, the **Model** button becomes active. After clicking **Model**, your GDT Setup component also resets and the red border disappears until you make an additional change.
- Clicking **Run** displays the GDP/GS coversheet, which then gives you the option to send an **Advisory** or **Autosend** this initiative to ETMS.

General Tab

The General Tab is active for all program types and is the default tab that opens when you open the GDT Setup component. Within this panel you can enter the Program Time, Include **Arrival Fix** and **Aircraft Types**, select **Initial GDP** or **Last Revision End Time**, **Adjust Delay**, select **Slot Hold Override**, etc. Options which are not features for certain program types are disabled.

You can edit **Start** and **End** time parameters in the Program Time section for all program types. You can populate the times in the text box to the right of the time field or use the slide bars, which automatically fill the time into the text box. Set the Duration of the program by entering the time in the corresponding textboxes using the format [ddhhmm] or by clicking and dragging the pointers on the **Start Time** and **End Time** for the desired hours.

- **Start Time** – Enter the date and time when the GDP should begin.
- **End Time** – Enter the date and time when the GDP should end.

Once you select a **Start Time**, you can either select the **End Time** or enter the **Duration** of the program in the **Hr** and **Min** text boxes. The **End Time** of the program adjusts automatically based on the **Start Time** if you enter a duration time.

- **Lock** – This functionality will “fix” the duration time of the program. This is helpful when you want to change the Start Time, but not decrease or increase the program length.
- **Compress to End** – This functionality is only available during a Compression. When checked, all flights that have control times are eligible for compression.
- **Data Time** – This functionality is the ADL time on which you are modeling and analyzing your TMI. Set the time you want to use as the current time. You can set this time forward or back without changing the data. If you

change the *Data Time*, a warning box appears letting you know the “Data Time changed from default,” and the time is highlighted in red. Changing the Data Time back to the default ADL time puts the Data text field back to normal. You cannot edit *Data Time* for an Airborne Holding program.

Note: The default ADL time always appears in the GDT Setup Title bar.

You can select parameters for *Arrival Fix*, *Aircraft Types*, and *Carrier* for all program types except Compression and Airborne Holding in the Include section. The default is set to **All** for the three parameters listed below.

- **Arrival Fix** – Use the dropdown menu to determine which Arrival Fixes to include in the operation. You can select All or one individual fix.
- **Aircraft Types** – Select All, Jet Only, or Prop Only from the Aircraft Types dropdown menu to specify the aircraft types included in the GDP operation.
- **Carriers** – Select All to include all carriers at that airport. If you want to include only a single airline, type the carrier’s 3-letter code into the text box. The application does not allow you to include only one carrier without including its sub-carriers. Likewise, you cannot include one sub-carrier. Typing a carrier code into this field always includes the major and its sub-carriers.
- **Initial GDP** and **Last Revision End Time** – Available for only GDP RBS++ and RBS. If the program in place is the initial program (there is not a program currently running for that airport) you should select the Initial GDP checkbox. If you are running a revision, the **Last Revision End Time** is filled out and the Initial GDP checkbox should be unchecked. It is important that you do not select **Initial GDP** during a revision.
- **Adjust Delay** – This parameter is available only when using the Blanket Program Type. You can use **Adjust Delay** to add or release a specified amount of time from selected criteria. You should only use Blanket during a GDP. For example, if you had a hole in the traffic flow, you could select centers, distance, fixes, or aircraft types and enter in a negative number to release some delay or release all delay by clicking **Release**. **Release** fills in the Adjust Delay text field with –999, which is equivalent to releasing all delay. Alternatively, you can add delay to the selected criteria by entering the amount of extra delay in minutes.
- **Slot Hold Override** – You can change parameters only for RBS++, RBS, and Compression. The Slot Hold Override field allows you to override an airline’s slot holding status by either typing an airlines’ three-letter identifier directly in the text field next to **Slot Hold Override** or click **Select** to open the Select Slot Holding window as shown in Figure 3-38.

The Select Slot Holding window lists the airlines currently holding slots at the airport and allows you to select which airline(s) to override. Select the

box next to each airline to override its slot holding status and include the slot in compression. When you check a box, that airline can no longer hold slots.

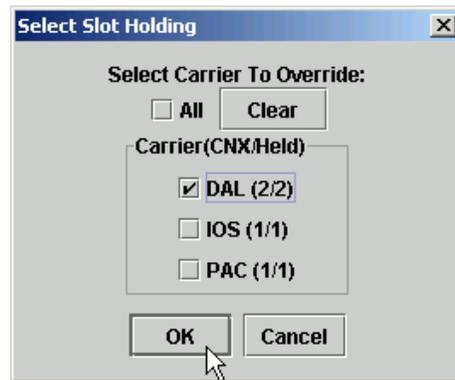


Figure 3-38: Slot Holding Override Window

- **Sched/User Exemptions** – You can select exemptions for any program type. Valid values for this field are:
 - Schedule Status – Any flight with SGTD and/or SGTA populated.
 - Air Carrier – ADL User field C.
 - Freight/Cargo Carrier – ADL User field F.
 - General Aviation – ADL User field G.
 - Military – ADL User field M.
 - Air Taxi – ADL User field T.
 - Other – ADL User field null or other than listed.
- **Delay Assignment Mode** – Allows you to select either DAS (Delay Assignment) or GAAP (General Aviation Airport Program). DAS is the default setting. Most GDP programs use a DAS delay. A GAAP delay allows for the management of heavy pop-up traffic at an airport where current demand does not meet capacity.
- **Delay Limit** – Allows you to set the amount of delay (in minutes) for flights controlled by a GAAP GDP. The default **Delay Limit** is 60 minutes. If an ADL contains GDP parameters that include a Delay Limit, that limit appears when you use the Load Parameters feature.

AAR Tab

The AAR tab is active for all Program Types except Compression and Blanket. The AAR Tab panel is almost identical to the Modify AAR Rates window.

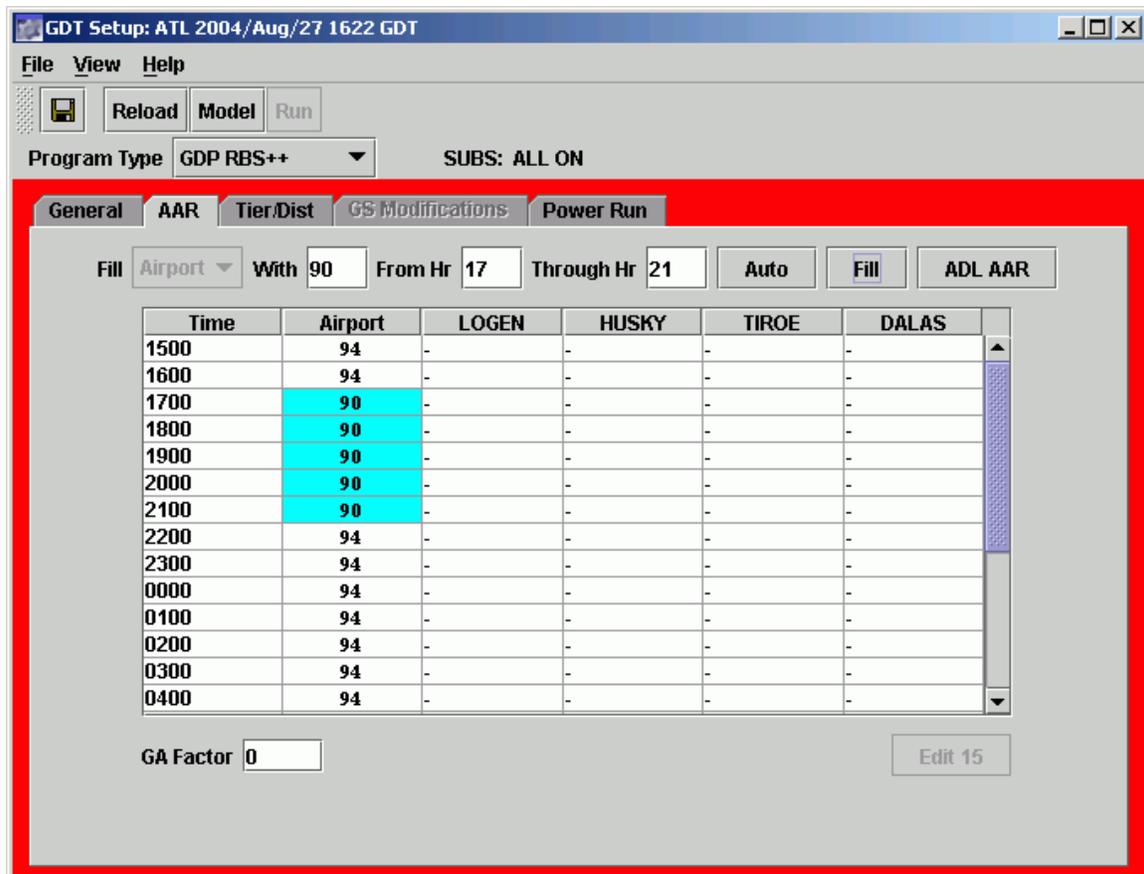


Figure 3-39: GDT Setup - AAR Tab

Fill in the program rates using the method described in the Control Panel Menu Bar, ETMS Tools menu, subsection above. There are two additional features to the GDT AAR tab, which are not included in Modify AAR Rates; the **Auto** Button and the **GA Factor** field. You can click **Auto** to fill the **From Hr** and **Through Hr** fields to match the Program Time specified in the General Tab. If you click **Fill** after entering the AAR rate and hours, the AAR automatically fills in the appropriate hour rows. The **GA Factor** is not available in GS Immediate or GS Future Program Types. The **GA Factor** accounts for potential “pop-up” flights. For example, if you change the AAR for a certain number of hours to 40 with a GA Factor of 5, the AAR that FSM uses to run the GDP is 35. This leaves room for any unknown flights that show up in that hour because the actual capacity of the airport is 40.

Note: Changing AARs for fixes is not a functional option. The Fill dropdown has only Airport as a valid entry. Assigned AARs for certain fixes are a future enhancement.

Tier/Dist Tab

The Tier/Dist tab is active for all Program Types except Compression and Airborne holding. The Tier/Dist Tab has two types of exemption criteria, Tier based and Distance based. In the Exempt By dropdown box, select either a Tier or Distance based initiative.

Tier/Distance Tab with Exempt By Tier Selected

When you select **Exempt By** Tier, the panel illustrated below appears. The panel contains three sections where you can modify parameters: Centers, Airports, and Flights.

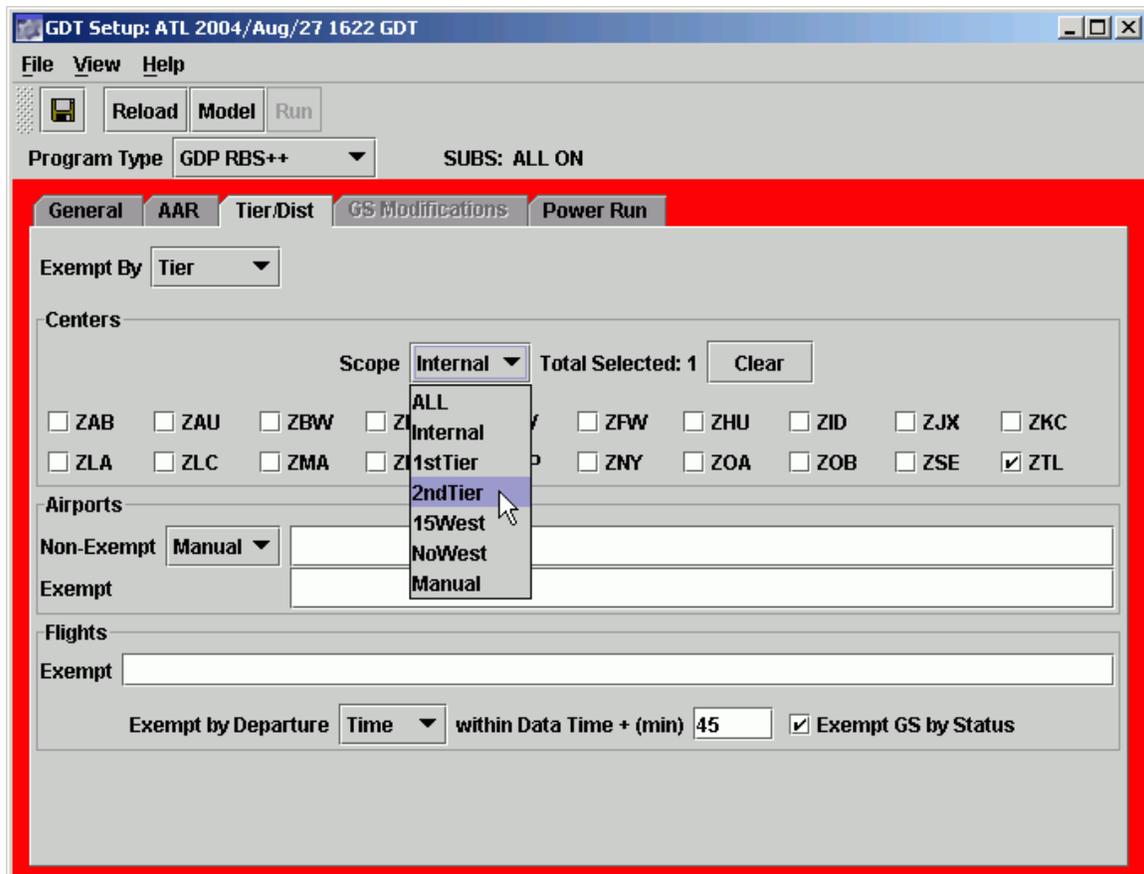


Figure 3-40: GDT Setup – Tier Tab

Centers: You can select the centers you want to include in the program or select a Tier level from the *Included* dropdown menu:

- **Scope:** Select a tier option from the dropdown menu. Selecting a Tier, automatically selects the associated centers. The total number of centers selected appears to the right of the Tier selection. Click **Clear** to erase all centers with checkmarks and return the included tier selection back to Manual.
- **Manual Center Selection:** Click on the checkbox to select or unselect individual centers to include in the program.

Airports: This section of the panel allows you to include and exempt airports:

- **Non-Exempt:** You can include certain departure airports from a TMI that were not originally included based on the Center section criteria. Enter the 3 or 4-letter airport code to include that airport. Separate airports with a space or a comma.
- **Exempt:** You can exempt certain departure airports from a TMI. Enter the 3 or 4-letter airport code to exempt that airport. Separate airports with a space or a comma.

Flights: This section of the panel allows you to exempt, i.e. give no delay, to priority flights as well as select *Exempt by Departure Status* or Time.

- **Exempt:** Enter a flight's ACID to exempt priority flights from the Ground Stop.
- **Exempt by Departure:** To exempt flights based on their Departure Time or Departure Status, click the dropdown menu to select the desired option. When exempting a flight based on departure time, enter a value in *within Data Time + (min)*. The value should equal the number of minutes relative to the data time to exempt flights that depart within that time. For example, to exempt flights departing within 20 minutes of the current time, enter 20 in the *within Data Time + (min)* (default value is 45). If you base your exemptions on Departure Status, you do not need to fill out any further parameters in this field.
- **Exempt GS by Status:** Checking this box exempts GS flights according to their departure status. GS flights that have not departed (are on the ground and not airborne) are included in the GDP. This checkbox is selected by default.

Tier/Distance Tab with Exempt By Distance Selected

When you select *Exempt By* Distance, the panel illustrated below in Figure 3-41 appears. The Distance panel contains four sections in which you can modify the parameters: Distance, Centers, Airports, and Flights.

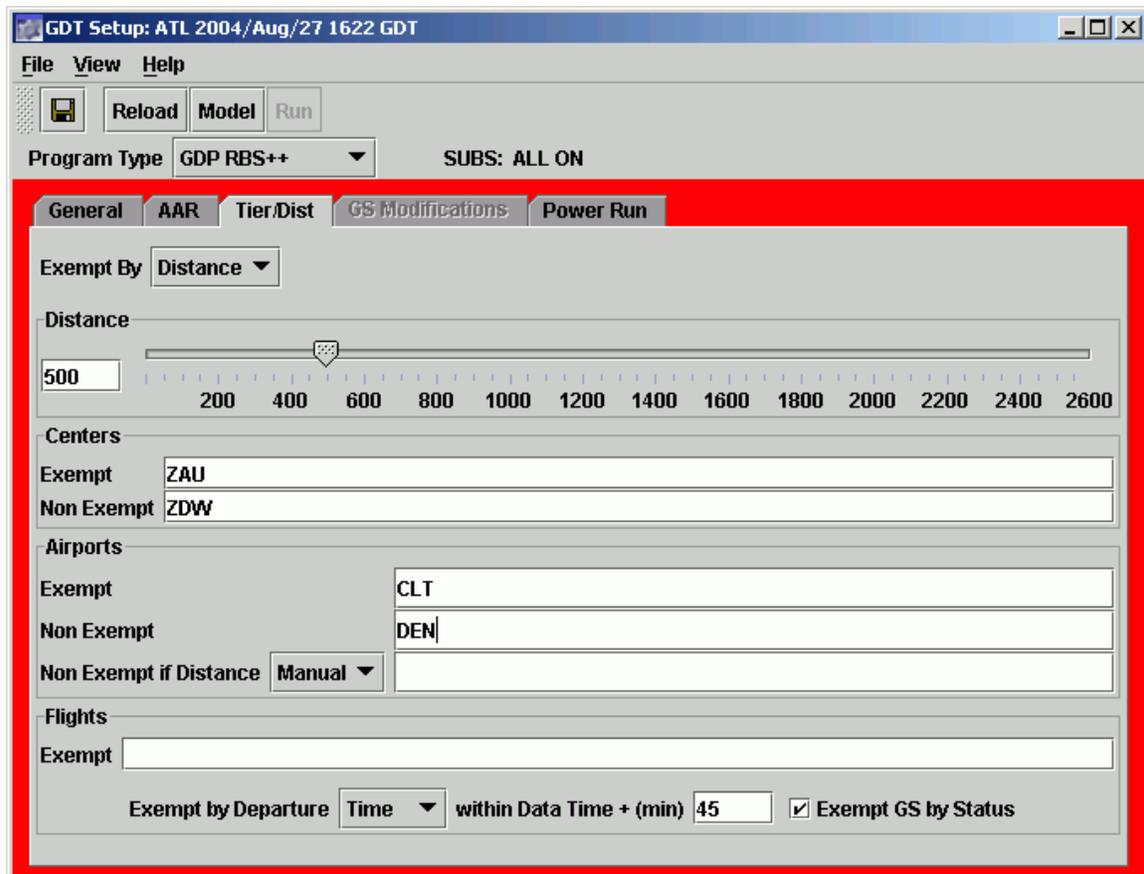


Figure 3-41: GDT Setup - Distance Tab

Distance: When the Distance Panel first appears, the default distance is 200 nautical miles. You can enter your distance range directly into the Distance textbox or click and drag the sliding bar for the desired distance; this automatically fills in the distance. Remember, anything changed in the Setup panel is reflected in the GDT Map. You can change the distance range from the Setup panel and simultaneously view the range ring and what centers/airports are affected from the GDT Map.

Centers: You can enter centers to be *Exempt* (receive no delay) or *Non Exempt* (receive delay).

- **Exempt:** You can exempt certain centers from a TMI that were originally partially, or entirely, included based on the Distance criteria. Enter the 3 or 4-letter center identifier to exempt a particular center. Separate multiple centers with a space or a comma.
- **Non-Exempt:** You can include certain centers from a TMI that were not included originally based on the Distance criteria. Enter the 3 or 4-letter center identifier to include a particular center. Separate multiple centers with a space or a comma.

Airports: This section of the panel allows you to include and/or exempt airports.

- **Exempt:** You can exempt certain departure airports from a TMI. Enter the 3 or 4-letter airport code to exempt that airport. Separate multiple airports with a space or a comma.
- **Non Exempt:** You can include certain departure airports from a TMI that were not included originally based on the Distance criteria. Enter the 3 or 4-letter airport code to include that airport. Separate multiple airports with a space or a comma.
- **Non Exempt if Distance:** Use this field to include Canadian airports. If you select a Canadian airport, FSM includes that airport if it falls within the selected distance parameter.

Flights: This section of the panel allows you to exempt, i.e. give no delay, to priority flights as well as select Exempt by Departure Status or Time.

- **Exempt:** You may choose to exempt certain flights from a TMI. Enter a flight's call sign in the text field. Separate multiple flights with a space or a comma.
- **Exempt by Departure:** Use the dropdown menu to Exempt flights based on their Departure Time or Departure Status. When exempting a flight based on departure time, enter a value in the *within Data Time + (min)* text field. The value should equal the number of minutes relative to the data time to exempt flights that depart within that time. For example, to exempt flights departing within 20 minutes of the current time, enter 20 next to *Data Time + (min)* [default value is 45]. If you base your exemptions on Departure Status, you do not need to fill out any further parameters in this field.
- **Exempt GS by Status:** Checking this box exempts GS flights according to their departure status. GS flights that have not departed (are on the ground and not airborne) are included in the GDP. This checkbox is selected by default.

GS Modifications Tab

The GS Modifications Tab is available only for GS Immediate and GS Future Program Types. Use this Tab to input additional information/parameters for Ground Stops.

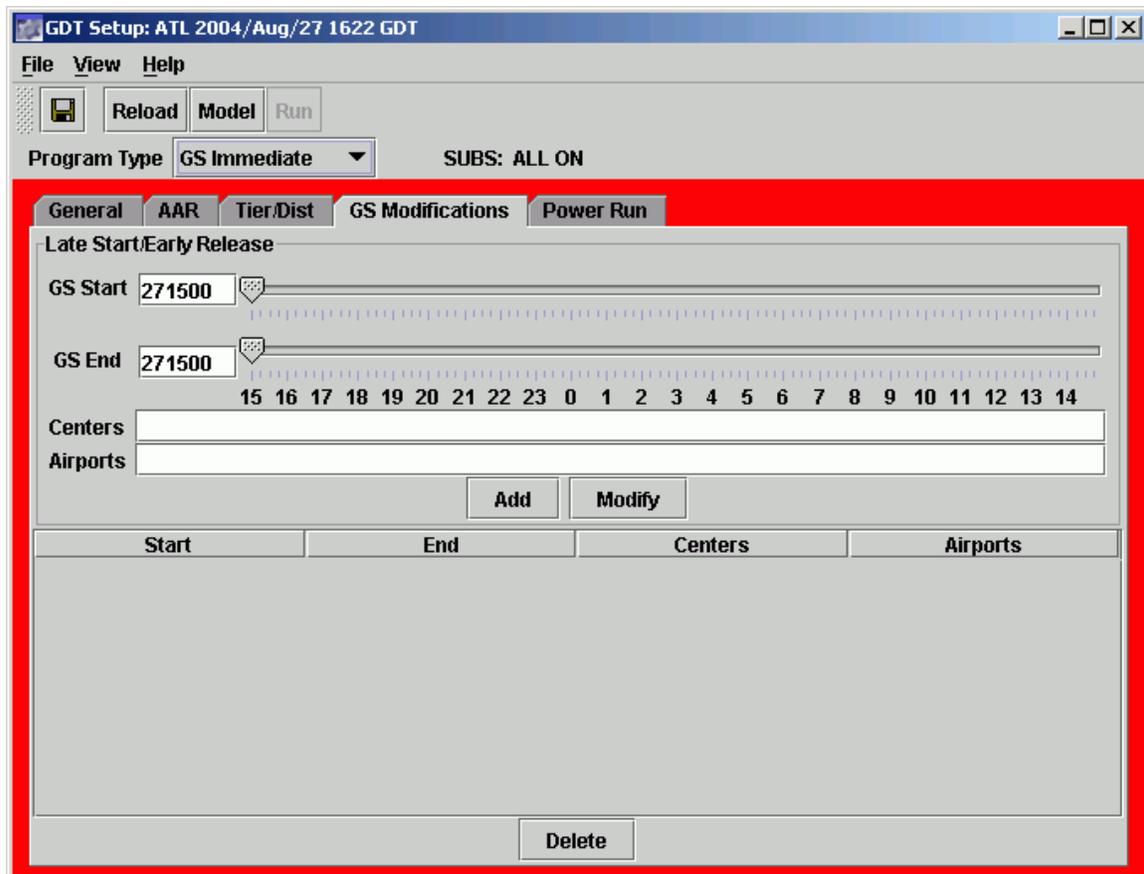


Figure 3-42: GDT Setup - GS Modifications Tab

Late Start/Early Release: Using this option you can specify an additional center or airport at which to run a GS. The GS parameters set in this field can have start and end times that differ from the main GS. All other parameters in the GS initiative remain the same. You can edit or delete the statements you add to this field. To edit, select the center or airport then click **Modify**. To delete, select the center/airport and then click **Delete** at the bottom of the Panel.

- **GS Start** and **GS End:** For the selected Centers/Airports, you can specify time parameters that differ from the main GS. All other parameters in the GS remain the same.
- **Centers:** You can add additional centers to run a GS. Enter the 3 or 4-letter center name and then click **Add**. Separate multiple centers with a space or a comma.
- **Airports:** You can add additional airports to run a GS. Enter the 3 or 4-letter airport code and then click **Add**. Separate multiple airports with a space or a comma.

Power Run

The Power Run tab is available only for GDP RBS++, GDP RBS, GS Immediate, and GS Future Program Types. Once the parameters are set, you may want to determine which parameters run the best GDP. In this case, you can take advantage of FSM's powerful analysis capabilities to view the results of the parameters you have selected before actually running the operation.

You can use the Power Run tab in the GDT Setup component as an analysis tool. There are four GDP and three GS Power Run operations, which analyze the results for any program. You can select these options from the dropdown menu that appears next to **Power Run By**. You use the Power Run function to determine whether you need to modify the parameters. When any Power Run is generated, FSM automatically saves the Power Run to a file.

Once you have clicked **Run** on the GDT Setup component, you still have the option to analyze the parameters used. FSM generates a post-operation evaluation, called the Analysis Report, when you click **Run**. The Analysis Report is an option on the Reports menu in any delay operation Coversheet.

To view a scenario, select the type of program to model in the **Power Run By** dropdown menu and click **Model**. Model displays the effects of potential operation parameters and how traffic at the airport would be affected by using these parameters for an actual program in all GDT components. Review the program statistics in the Data Graph. To preview the effects of running a Power Run scenario as an actual program, move the black line on the Data Graph component to other options displayed on the X-axis. This is discussed in more detail below in the Data Graph Component Section.

With the exception of Power Run for Decision Time, you can preview the proposed parameters and their effect on the airport’s traffic.

Note: After you click **Model**, the Setup Panel no longer contains a red border, which indicates that all the components reflect the information in the GDT Setup component.

Power Run Options

The different options when using **Power Run By** describe what data appear on the X-axis of the Data Graph and the headers in the Data Table (see Figure 3-43). The Program Type you select determines which options appear in the Power Run By dropdown menu. All GDP functions have “GDP” listed before the Power Run Type and all GS functions have “GS” listed before the Power Run Type.

Table 3-7 Power Run Options by Program Type

Program Type	Power Run By Options
GDP RBS++ GDP RBS	GDP Center Group
	GDP Data Time
	GDP Distance
	GDP Decision Time
	GDP Center Group & Data Time
	GDP Data Time & Distance
GS Immediate GS Future	GS Center Group
	GS Time Period
	GS Center Group & Time Period

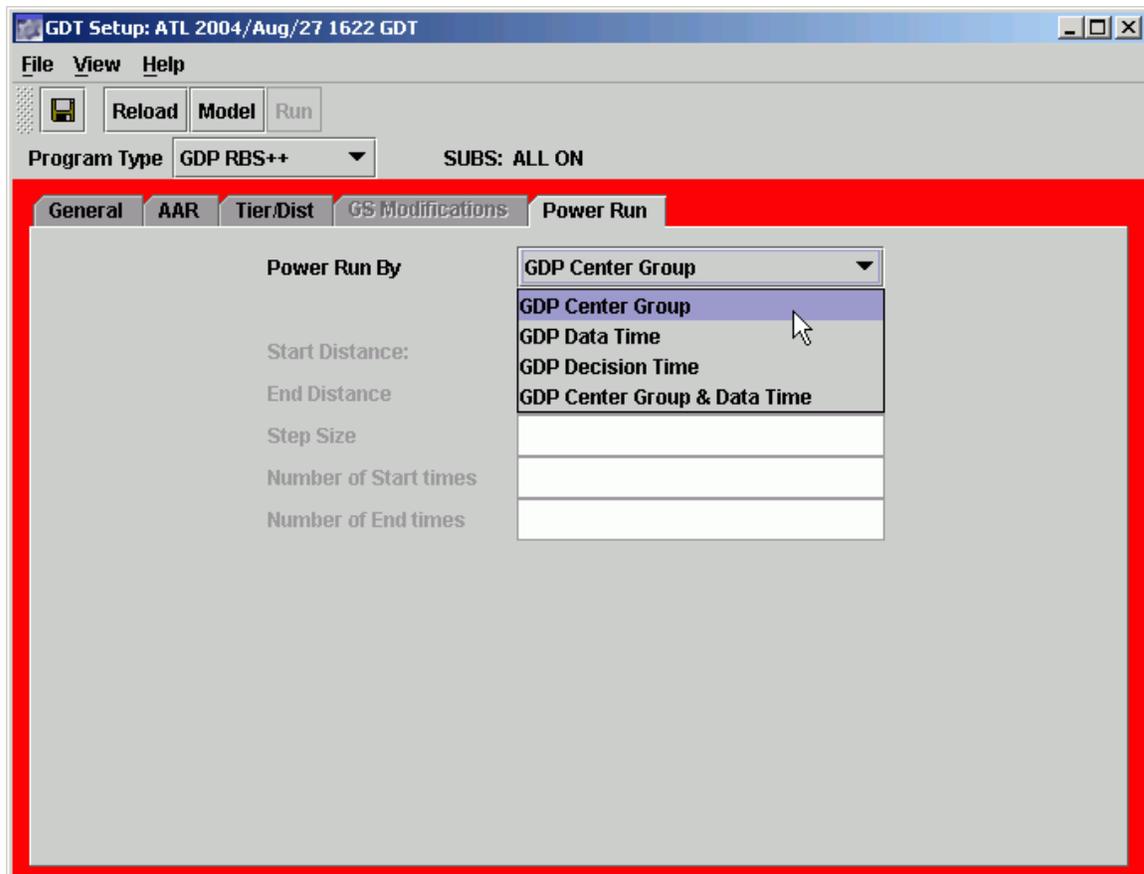


Figure 3-43: GDT Setup - Power Run Tab

Note: Distance variables are only editable when you model a Distance based Program.

- **Center Group:** Available for both GDP and GS Program types, this option allows you to view the effect of the “proposed parameters” on the different center groups. The post-operation demand rate for each hour for a specific group of centers appears in the Data Graph. Other information displayed, includes average delay, number of affected flights and total delay.
- **GDP Data Time:** From the Setup Panel, select GDP Data Time in the Power Run By dropdown menu. This option is available only for GDP program types. This option allows you to view the effects of the proposed GDP according to the time the GDP is issued. Using the display, you can determine how far in advance you need to issue the GDP. Any hour whose demand still exceeds the AAR is highlighted in red.
- **GS Time Period:** From the *GDT Setup* component, select GS Time Period in the Power Run By dropdown menu. This option is available only for GS program types. This function shows you the effect of running a ground stop for various lengths of time. When you select GS Time Period, two text fields become active: *Number of Start Times* and *Number of End Times*. The

default for both is set to 2, but you can manually enter in another value to meet your analysis needs.

Note: If you decide to run a GS for longer than one hour, FSM provides a warning message to ensure you want the ground stop to last for that duration.

- **Distance:** From the *GDT Setup* component, select Distance from the Power Run By dropdown menu when modeling either a GDP or GS. This function shows you the effect of running a GDP or GS for various distance parameters. When Distance is selected from the Power Run By dropdown menu, three text fields become active in the Power Run Tab: *Start Distance*, *End Distance*, and *Step Size* (distance increment). The default is set to start at 200 nautical miles and End at 2000 nautical miles with a Step Size of 200 nautical miles. You can manually input your desired distance and increment range into the appropriate text fields.
- **GDP Decision Time:** From the *GDT Setup* component, select GDP Decision Time from the Power Run By dropdown menu. Decision Time is available only with GDP operations. This function displays the optimum time to run the proposed GDP including specific Center Groups. The optimum GDP time is defined as the latest “half hour” in which running a GDP does not cause the demand in the first hour of the GDP to exceed the AAR. Power Run for Decision Time displays each center group with the optimum GDP Time. If a center group cannot benefit from a GDP, “NA” appears below that center group.
- **GDP Center Group & Data Time:** From the *GDT Setup* component, select GDP Center Group & Data Time from the Power Run By dropdown menu. This option is available only for GDP program types. This function combines Power Run by Center Group and Power Run by Data Time. When you perform Power Run by Center Group & Data Time, you can view all available options to run a GDP using a particular center group at various data times.
- **GDP Data Time & Distance:** From the *GDT Setup* component, select GDP Data Time & Distance from the Power Run By dropdown menu. This option is available only for GDP program types. This function combines Power Run by Data Time and Power Run by Distance. When you perform Power Run by Center Group & Data Time, you can view all available options to run a GDP using a particular distance at various data times. Just as in the Distance set up, three text fields become active in the Power Run Tab: *Start Distance*, *End Distance*, and *Step Size* (distance increment). The default is set to start at 200 nautical miles and End at 2000 nautical miles with a Step Size of 200

nautical miles. You can manually input your desired distance and increment range into the appropriate text fields.

- **GS Center Group:** This Power run allows you to see different statistics for all center groups. The Data Graph's X-axis and the Data Table's column header display the various center groups. This option is available only for GS program types.
- **GS Time Period:** This Power Run allows you to see different statistics for different Time Periods. You can specify the number of Time Periods by typing a number in the Number of Start times and Number of End times' textboxes on the Power Run Tab. The Data Graph's X-axis and the Data Table's column headers show the various Time Periods. This option is available for only GS program types.
- **GS Center Group & Time Period:** This Power Run allows you to see which combination of center groups and time periods put in the GS parameters would produce the best program. The Data Graph's X-axis and the Data Table's column headers show the various Time Periods and Center Group combinations. This option is available only for GS program types.

GDT Map Component

The GDT Map component is one of four components that automatically open when you click **GDT Setup** on the Control Panel. The GDT Map component is similar to the display of the US Map component in monitor mode, however the functionality is different. Selections made in the GDT Setup component reflect automatically in all the other GDT components. Airports the server is currently monitoring appear with the airports' three-letter identifier and a colored dot that indicates the GDT status of each airport. The title bar displays the normal component labeling conventions. GDT appears at the end of the title bar label to indicate that you are looking at the Map in GDT mode.

When you initially open GDT mode, the GDP Setup component has the exempt by tier with internal centers selected by default on the Tier/Dist Tab. Therefore, the GDT map initially has only the airport's Internal center selected. When a center is included, it is colored with a maroon overlay and the airports that are within the centers are colored red as shown in Figure 3-44. The color red for an airport indicates that a Traffic Management Initiative includes the airport. A green colored airport indicates that the airport is exempt from delay.

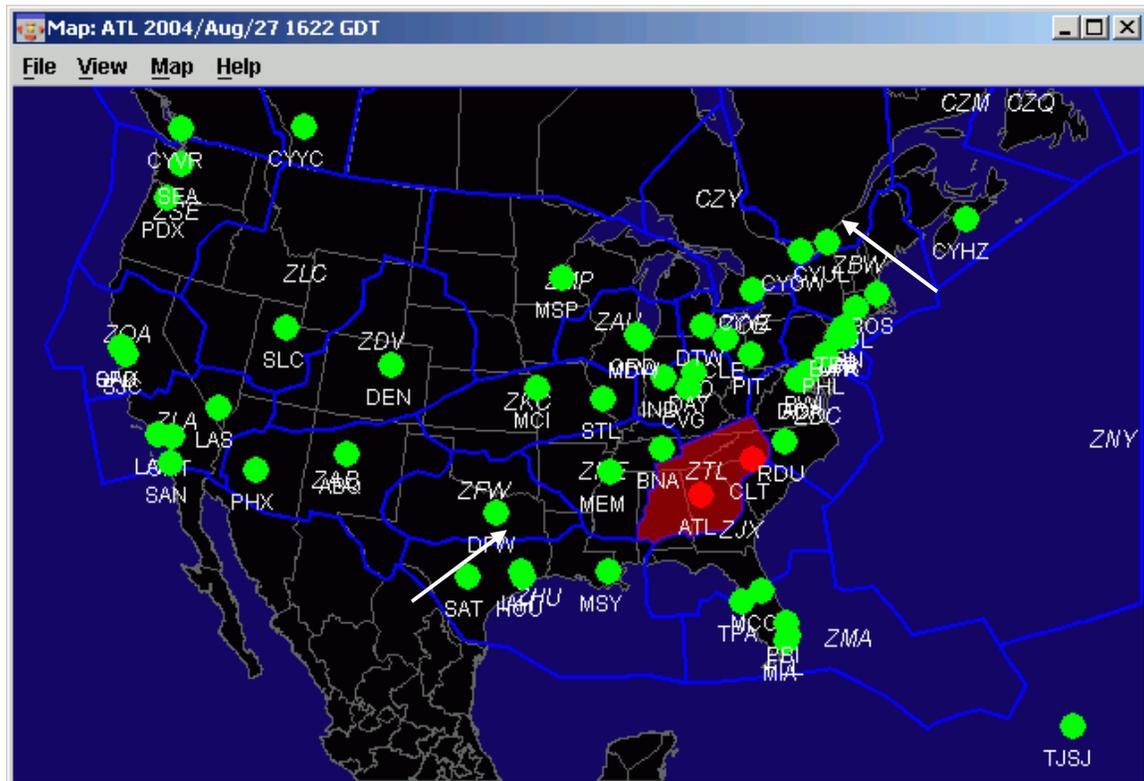


Figure 3-44: GDT Map Component

The GDT Map component allows you to design a TMI visually by selecting/deselecting airports and/or centers. Selecting/Deselecting airports, centers, and adjusting the distance range interactively updates other GDT components.

GDT Map Zoom Capabilities

GDT Map contains the same zoom capabilities at the US Map in Live mode, for more detail refer to Map Component section of this chapter.

Distance Based GDPs

When you select a distance based GDP in the GDP Setup component, a maroon colored “range ring” appears on the GDT Map component. The default distance is set to 200 nautical miles. The range distance is indicated on the GDT Map just outside the top of the ring. In addition to adjusting the range from the GDT Setup component, you can alter the distance directly from the GDT Map. Put your cursor on the edge of the distance ring until the cursor turns into direction arrows, then hold down the left mouse button and drag and drop the edge of the ring to increase or decrease the distance. All airports within the range limit are included automatically into the program and colored red. To exclude an airport from within the distance range, just click on the dot for that particular airport. Clicking on an airport within the distance ring turns the dot to green and excludes that airport from program delay. Any additional airports you select appear in the

GDP Setup component in the Airports: Non Exempt or Exempt field in the Tier/Dist Tab. Likewise you can select/deselect centers to include in a program from the GDT Map. Clicking once on a center includes the center in the program. The color of the selected center changes to maroon and the airports within that center change color indicating that the program includes them as well. The selected center appears in the GDP Setup component in the Centers: Non Exempt field in the Tier/Dist Tab. ZFW in Figure 3-45 and Figure 3-46 is an example of a user selected non-exempt center.

Note: Clicking only once on a center that is already included within the program selection does not reflect any visual difference on the screen.

If you click twice on a selected center, that center is exempt from the program. The selected center turns to black and the airports within the center turn green to indicate that they are exempt from delay. The center selected appears in the GDP Setup component in the Centers: Exempt field in the Tier/Dist Tab. Figure 3-45 is an example of a user selected exempt center (ZAU). If you click on a center a third time, the center selection returns to the distance based default selection.

Mouse Action	Description
Click on Airport	Toggle an airport from Exempt/Non-exempt
Click on center once	Includes Center in program
Click on center twice	Exempts center from program delay
Click on center three times	Default selection by distance

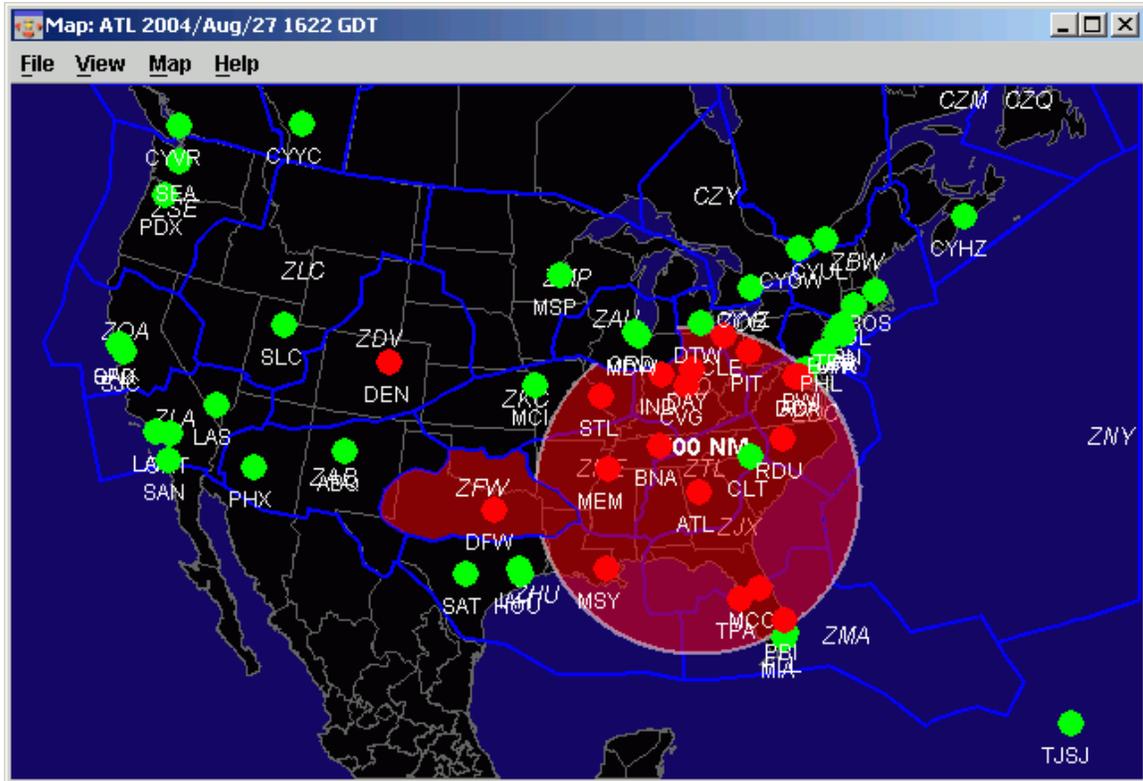


Figure 3-45: GDT Map Setup

Figure 3-46 is the GDT Setup component which corresponds with the GDT Map component setup in Figure 3-45.

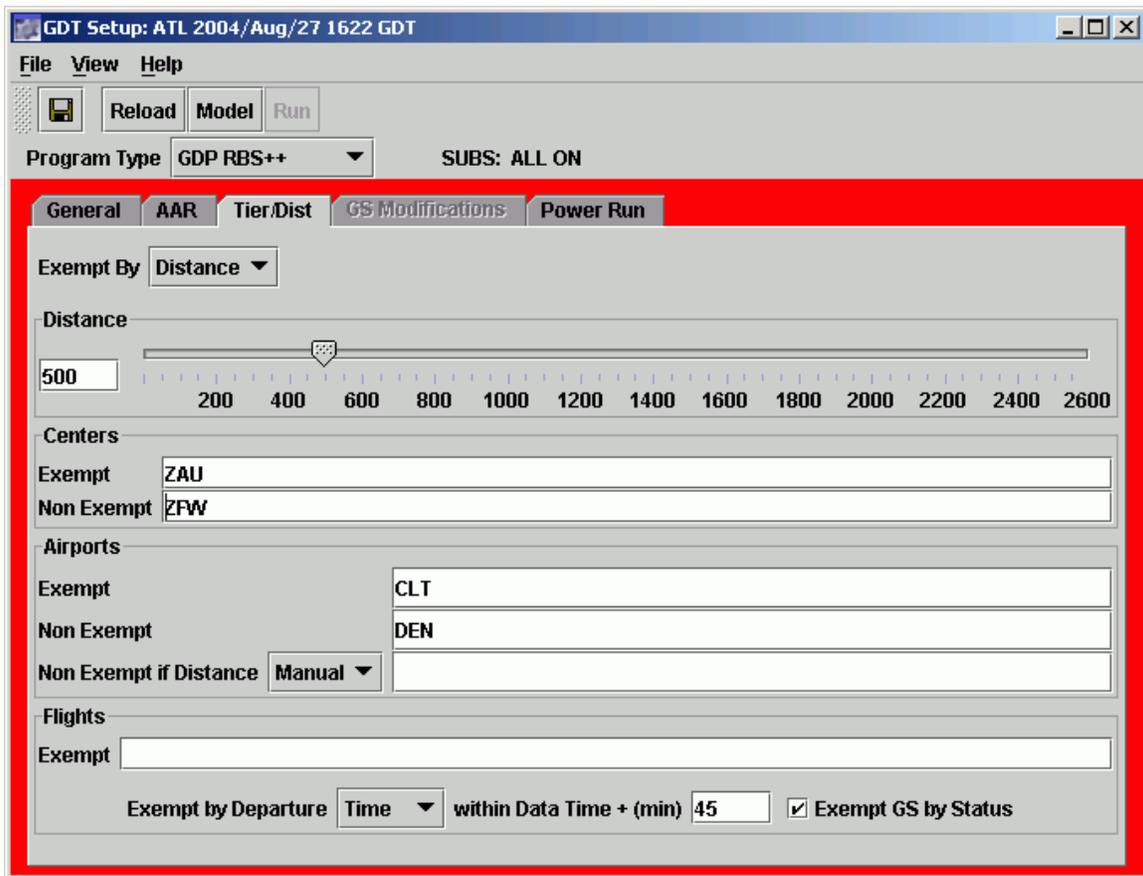


Figure 3-46: GDT Setup reflected GDT Map component

Tier based GDPs

The initial default setting when you open GDT Mode components is an ALL Tier based GDP. When you select a tier based GDP from the GDP Setup component, FSM colors all centers included in a TMI maroon on the map and colors all airports included red. For example, the next figure illustrates a 1st Tier GDP with user selected airport, ATL, as an additional Non-Exempt airport. The method of selecting/deselecting airports and/or centers is the same as described above in the distance based GDP.

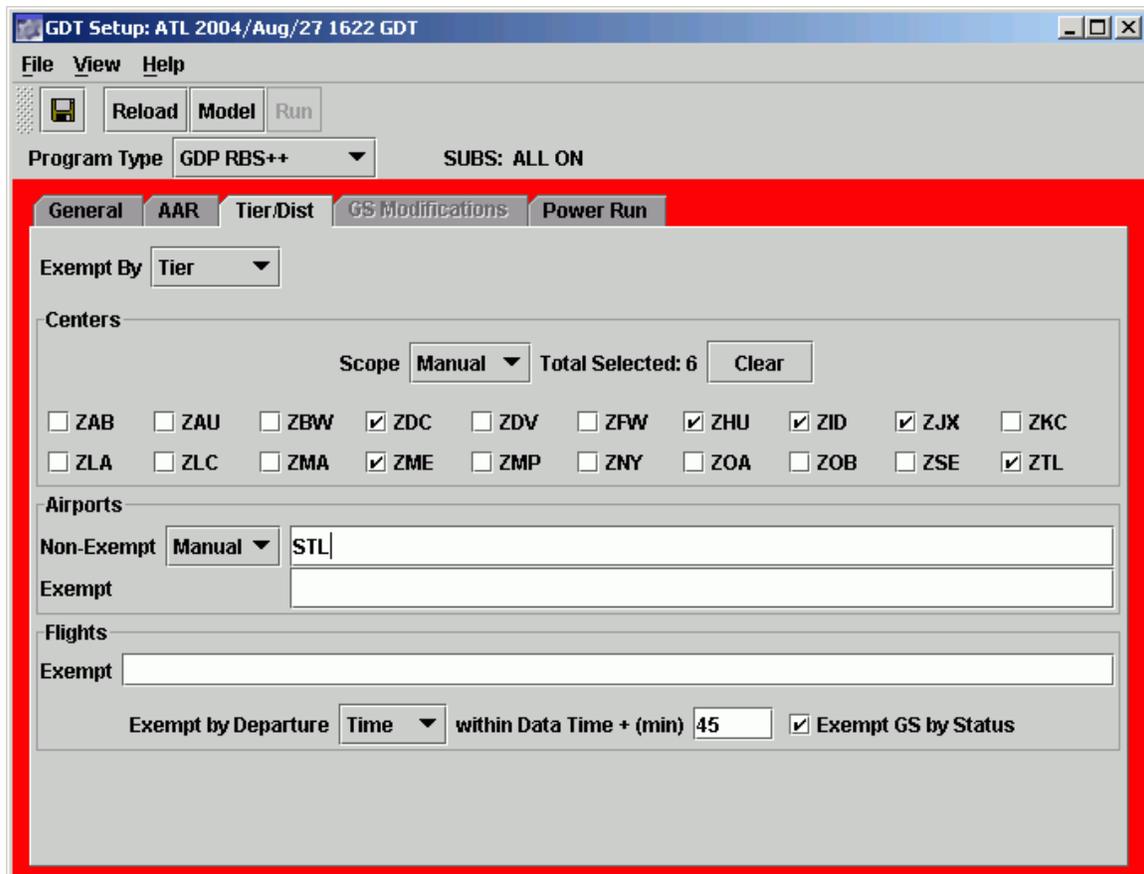


Figure 3-48: GDT Setup Component ATL 1st Tier

GDT Map Menu Bar

The GDT Map component menu bar contains four options: File, View, Map and Help. The menu selections are the same for the GDT Map as they are for the Status Map—see the Map Component section in this chapter for more information.

GDT Bar Graph Component

The GDT Bar Graph component is one of four components that open automatically when you click **GDT Setup** on the Control Panel component. The Bar Graph allows you to view arrival demand at the airport being monitored and compares actual data with proposed parameters. Click **Model** on the GDT Setup component to view the modeled parameter results in the Bar Graph as well as the Data Graph component. The GDT Bar Graph menu and Tab options are almost identical to that of the Monitored (Live) Graph. Please review the Bar Graph Component section above for more detail. There are some minor differences in the GDT Graph. In GDT mode, only arrival information appears, therefore under the **View** menu no ADL ADR Line or Model ADR Line option appears.

One of the key differences of GDT Bar Graph is that it always displays both solid and hashed bars. Solid bars represent the original data, while hashed bars represent modeled data (see Figure 3-49).

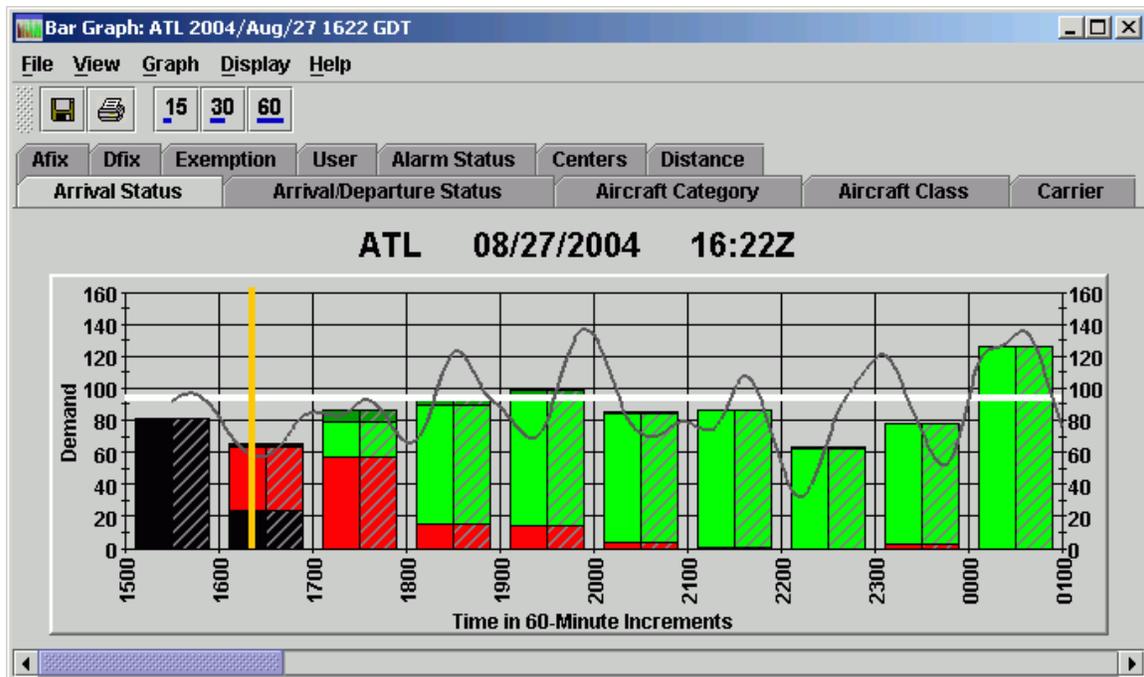


Figure 3-49: GDT Bar Graph Display

GDT Data Graph Component

The GDT Data Graph component is one of the four components that automatically opens when you click **GDT Setup** on the Control Panel component. You have the option to review, or model your ground delay parameters before actually running the program or revising any parameters. Click **Model** on the GDT Setup component to view the initiative's results with your current parameters in the Data Graph.

From the Power Run Tab on the GDT Setup component, you can choose the type of data you want to view on the Data Graph's X-axis. When you click **Model**, you can view the results of various scenarios. You have the option to change your parameters, analyze the program further, or, if satisfied with the result, run the program (see Figure 3-50).

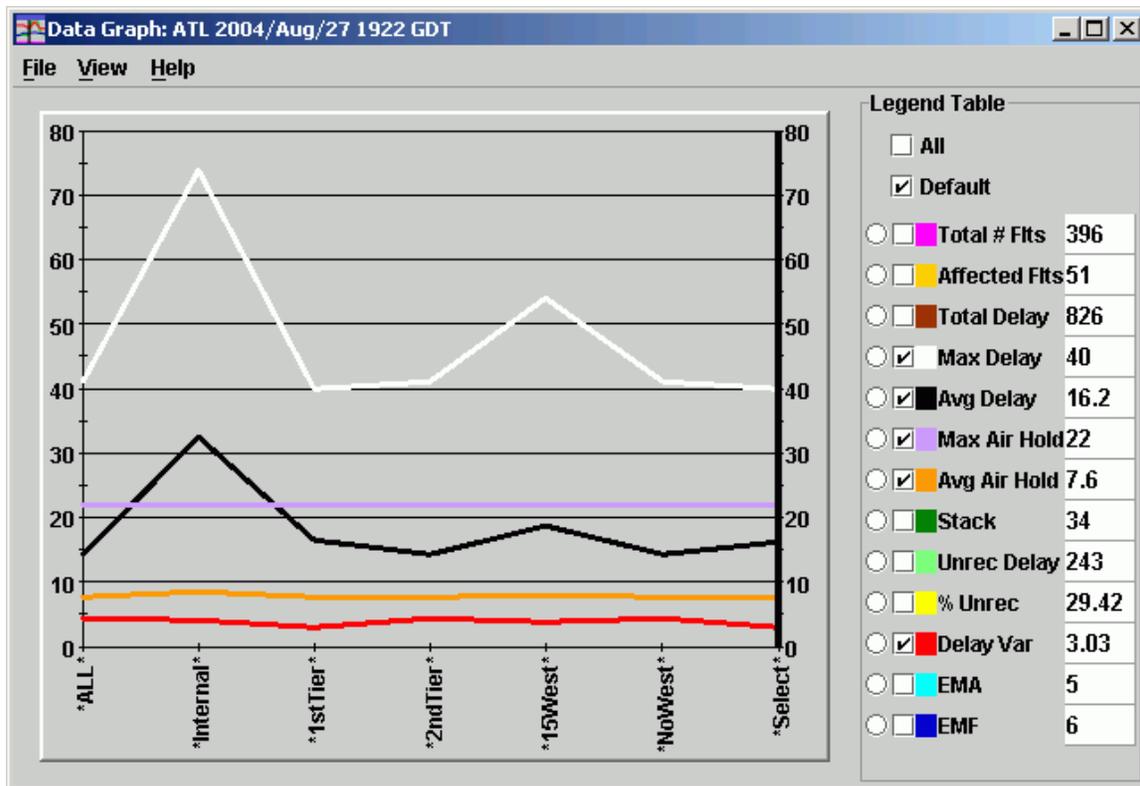


Figure 3-50: Data Graph Component

Selecting Different Scenarios

You can view all the available scenarios based on the Power Run selection from the GDT Setup component. For example, selecting **Power Run By > GDP Center Group** from the Power Run tab on the GDT Setup and then clicking **Model**, displays all the available tiers for the monitored airport on the Data Graph component's X-axis. Your modeled scenario statistics are displayed in the Legend Table. Using your cursor to drag the black vertical line to a center group, or just move the cursor over the desired center group and click to move the line. The delay statistics to the right of the Data Graph reflect the line of scenario delineation. In addition, changing the center group option automatically updates all GDT components to reflect the new parameters. The Data Graph component includes a roll-over feature. Rolling your cursor over any line in the Data Graph gives you the delay statistics for the colored line that reflects the results of the center group. From the Data Graph, it is easy to visualize what center groups give the best results.

Delay Statistics

The Legend Table displays the delay statistics. By default the Legend Table appears when you open the Data Graph component. You can hide the legend by un-checking the **View > Show Legend** box from the Data Graph Menu. In the Legend Table, you can view a desired delay statistic several ways. Selecting the **All** checkbox selects and displays all the delay statistics. Selecting the **Default** checkbox displays the default delay statistics, which are Max Delay, Avg Delay, Max Air Hold, Avg Air Hold, and Delay Var. You can select/deselect any of the delay statistic checkboxes that you want to view in the Data Graph. To view one delay statistic in more detail, select the desired radio button option, located to the left of the checkboxes. The radio button option displays only one delay statistic at a time, but gives a more refined look at the numbers. The Data Graph includes the following Delay Statistics:

- Total # Flts: The total number of flights included in the TMI (cancelled and exempt flights) for each particular power run scenario. Default color is pink.
- Affected Flts: The total number of flights included in and affected by the TMI for each particular power run scenario (non-exempt and non-cancelled flights only).
- Total Delay: The total amount of delay that would occur if you ran that particular scenario. Default color is maroon.
- Max Delay: The maximum amount of delay (in minutes) that any one flight would receive if you ran that particular scenario. Default color is white.
- Avg Delay: The average amount of delay (in minutes) flights would receive if you ran that particular scenario. Default color is black.
- Max Air Hold: The maximum amount of airborne holding delay (in minutes) that would be placed on any one flight if you ran that particular scenario. Default color is lavender.
- Avg Air Hold: The average amount of airborne holding (in minutes) that would be placed on flights if you ran that particular scenario. Default color is orange.
- Stack: The amount of flights that would be left in the “stack” hour following the end of the initiative if you ran that particular scenario. Default color is hunter green.
- Unrec Delay: Unrecoverable delay is the amount of delay that remains on flights even if you release the TMI right before the start time for the selected scenario. FSM determines this value by setting the time to the TMI start time and performing the release delay function. Default color is lime green.
- % Unrec: Percentage of Unrecoverable delay is a value that FSM calculates by taking the Unrecoverable Delay and dividing it by Total Delay (Unrecoverable Delay/Total Delay). This is the percentage of delay that remains even if you release all delay at the start time for the selected scenario. Default color is yellow.
- Delay Var: Delay Variability is the standard deviation of the carriers’ average delay. FSM determines this value by taking the average delay of all carriers to see if they are similar. If the average delay is similar for all carriers, the delay variability is a small value. Larger deviation, or increased dissimilarity of average delay for all carriers, results in larger delay variability values. Default color is red.
- EMA: The Equity Metric for Airlines (EMA) is a metric that indicates (as a whole) how equitable, or fair, the proposed initiative is for the airlines. Equity is determined by comparing the delay assigned in a proposed initiative to that which results if you use the airborne holding model. You must view any deviation from the airborne holding model as decreased

equity. The values shown in this field are integers rounded from the calculated values. A value of 1 indicates that the initiative option results in delays that are exactly the same as those for airborne holding. A value from 2 to 8 indicates an option that still exhibits good equity, though the one with the lower value is still preferred. A value from 9 to 16 indicates an option with increasingly significant deviation from the standard. A value above 16 indicates an option with poor equity. Default color is cyan.

- **EMF:** The Equity Metric for Flights is a metric that indicates (as a whole) how equitable, or fair, the proposed initiative is for all the flights. Equity is determined by comparing the delay assigned in a proposed initiative to that which results from using the airborne holding model. You must view any deviation from the airborne holding model as decreasing equity. The values shown in this field are integers rounded from the calculated values. A value of 1 indicates that the initiative option results in delays that are exactly the same as those for airborne holding. A value from 2 to 8 indicates an option that still exhibits good equity, though the one with the lower value is still preferred. A value from 9 to 16 indicates an option with increasingly significant deviation from the standard. A value above 16 indicates an option with poor equity. Default color is blue.

GDT Data Graph Menu

The menu bar (shown below) in the GDT *Data Graph* component contains three options: **File**, **View**, and **Help**.

1. File Menu

- **File > Save as** – Saves the Data Graph as a .jpg image in a directory that you specify.
- **File > Print** – Prints the Data Graph that is currently active on your screen.
- **File > Close** – Closes the Data Graph component only.

2. View Menu

- **View > Show Legend** – By default the checkbox is selected and the color legend of the delay statistics appear. Unselect the checkbox to hide the legend and the delay statistics.

3. Help Menu

- **Help > Data Graph** – Opens a web-based on-line help system.

GDT Data Table Component

The GDT Data Table component is an optional component in GDT Mode. To open the GDT Data Table, select **View > Data Table** from the GDT Setup component menu bar.

The Data Table is an exact representation of the Data Graph, but in tabular format (see

	ALL	Internal	1stTier	2ndTier	15West	NoWest	Mar
1800 94	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0
1900 90	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19
2000 90	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15
2100 90	78 / 1 / 4	83 / 0 / 8	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4
Total # Flts	396	396	396	396	396	396	396
Affected Flts	69	10	50	69	36	69	51
Total Delay	984	326	827	984	672	984	826
Max Delay	41	74	40	41	54	41	40
Avg Delay	14.3	32.6	16.5	14.3	18.7	14.3	16.2
Max Air Hold	22	22	22	22	22	22	22
Avg Air Hold	7.6	8.4	7.6	7.6	7.9	7.6	7.6
Stack	34	33	34	34	34	34	34
Unrec Delay	392	52	243	392	161	392	243
% Unrec	39.84	15.95	29.38	39.84	23.96	39.84	29.41
Delay Var	4.39	3.98	3.03	4.39	3.68	4.39	3.03
EMA	4	6	5	4	5	4	5

Demand: (# flights / Open slots / stack)

Figure 3-51). The column headings display the same information that appears on the X-axis of the Data Graph, which is based on the Power Run selection type. The top scroll area displays the hours of the proposed initiative along with the current AAR for each hour. Under each heading, the [# of flight/Open Slots/Stack] values appear for each hour/heading combination. Below the Hour rows are the various statistics. You can sort the Delay Statistic rows by clicking on the statistic labels beneath the Program Hour rows. This sorts the best scenarios from left to right for the selected statistic.

Data Table: ATL 2004/Aug/27 1922 GDT								
File Help								
 								
		ALL	Internal	1stTier	2ndTier	15West	NoWest	Mar
1800	94	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0	77 / 12 / 0
1900	90	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19	105 / 4 / 19
2000	90	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15	86 / 0 / 15
2100	90	78 / 1 / 4	83 / 0 / 8	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4	78 / 1 / 4
Total # Flts		396	396	396	396	396	396	396
Affected Flts		69	10	50	69	36	69	51
Total Delay		984	326	827	984	672	984	826
Max Delay		41	74	40	41	54	41	40
Avg Delay		14.3	32.6	16.5	14.3	18.7	14.3	16.2
Max Air Hold		22	22	22	22	22	22	22
Avg Air Hold		7.6	8.4	7.6	7.6	7.9	7.6	7.6
Stack		34	33	34	34	34	34	34
Unrec Delay		392	52	243	392	161	392	243
% Unrec		39.84	15.95	29.38	39.84	23.96	39.84	29.41
Delay Var		4.39	3.98	3.03	4.39	3.68	4.39	3.03
EMA		4	6	5	4	5	4	5

Demand: (# flights / Open slots / stack)

Figure 3-51: Data Table Component

The Data Table component and the Data Graph Component are dynamically interactive.

You can move the model line in the Data Graph component and the Data Graph highlights the corresponding column or you can select a column header from the Data

Table to dynamically move the selection line in the Data Graph.

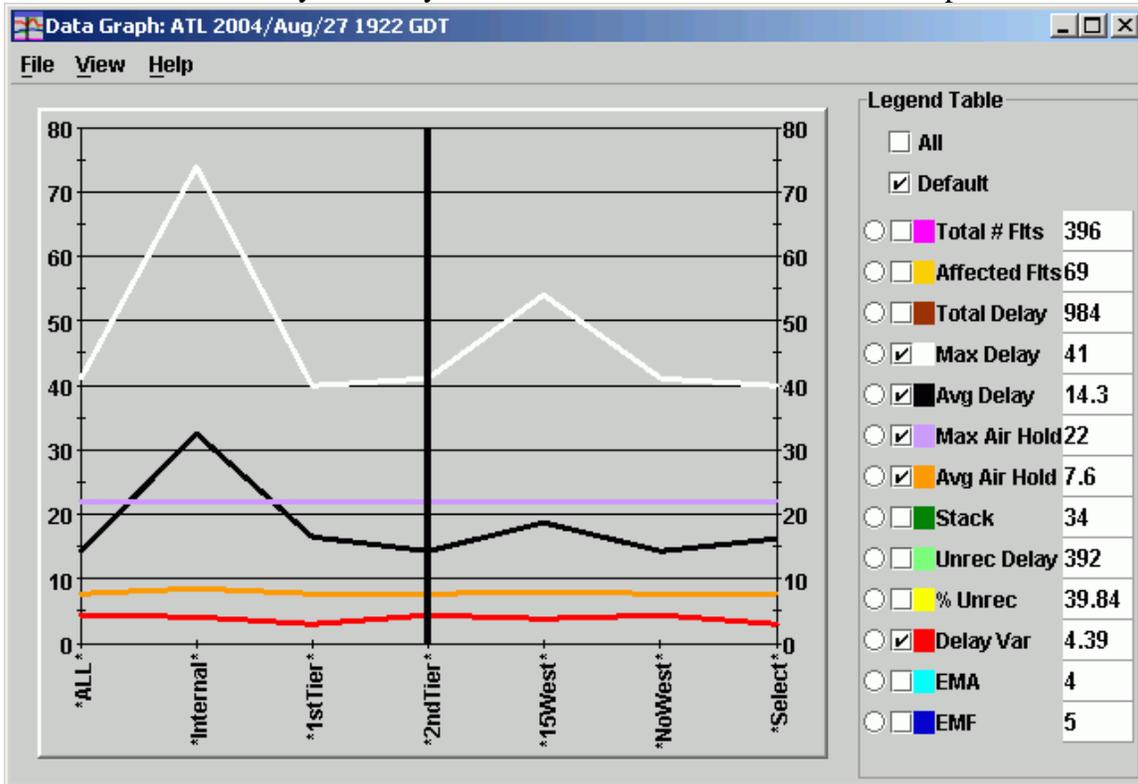


Figure 3-52 illustrates how both the Data Graph and Data Table display the same statistics but in different formats.

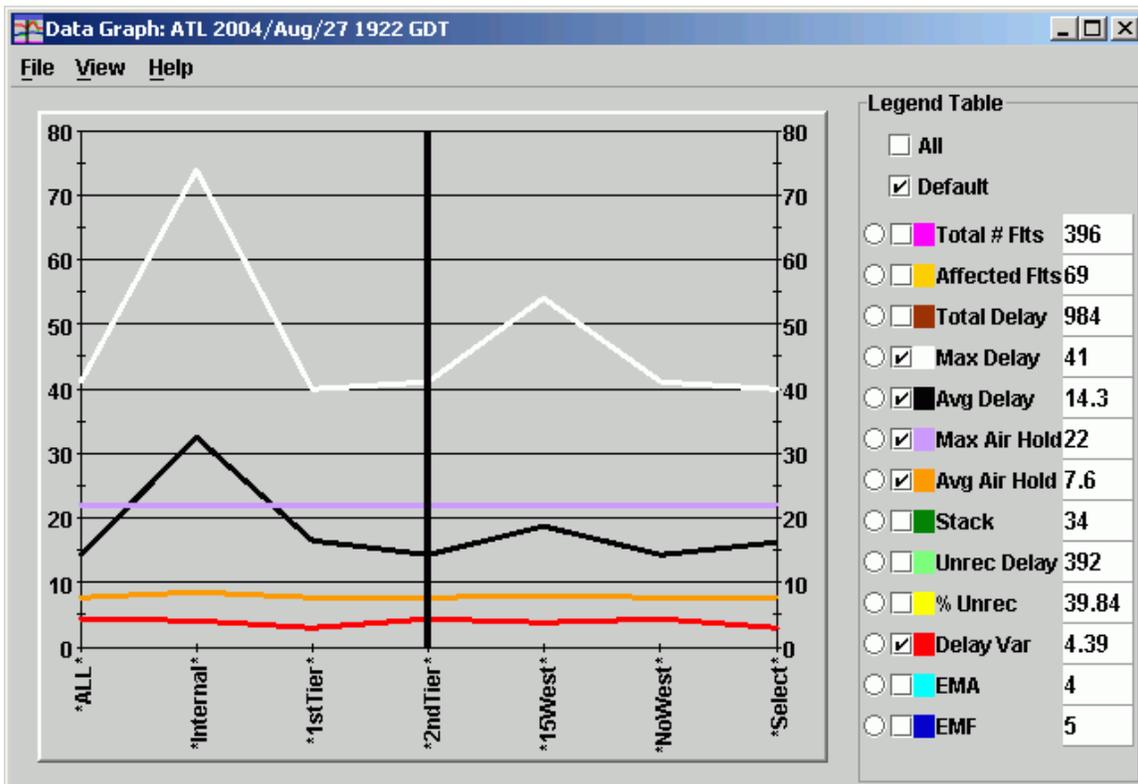


Figure 3-52: Data Graph Reflected the Data Table selection for 1st Tier

GDT Data Table Menu

The menu bar in the GDT Data Graph component contains two options: File and Help.

1. File Menu

- **File > Save as** – Saves the *Data Table* as a .jpg image in a directory that you specify.
- **File > Print** – Prints the *Data Table* that is currently active on your screen.
- **File > Close** – Closes the *Data Table* component only.

2. Help Menu

- **Help > Data Table** – Opens a web-based on-line help for the *Data Table* component.

GDT Time Line Component

The GDT Time Line component is an optional component in GDT Mode. To open the GDT Time line, select **View > Time Line** from the GDT Setup component menu bar. The Time Line in GDT Mode is almost identical to the Time Line in Monitored Live mode.

There are two differences to the GDT Time Line that should be noted. First, GDT Mode uses only arrival data, the GDT Time Line displays only arriving flights where as the Live Time Line can display both arrival and departure data. The **View > Departure Data** option that appears in the Monitored Live Time Line is not an option in GDT Mode.

Second, there is an extra menu option, **Display**, available in the GDT Time Line. The **Display** Menu option contains 6 additional radio button choices for how you can view flights in the GDT Time Line component, shown in Figure 3-53 below.

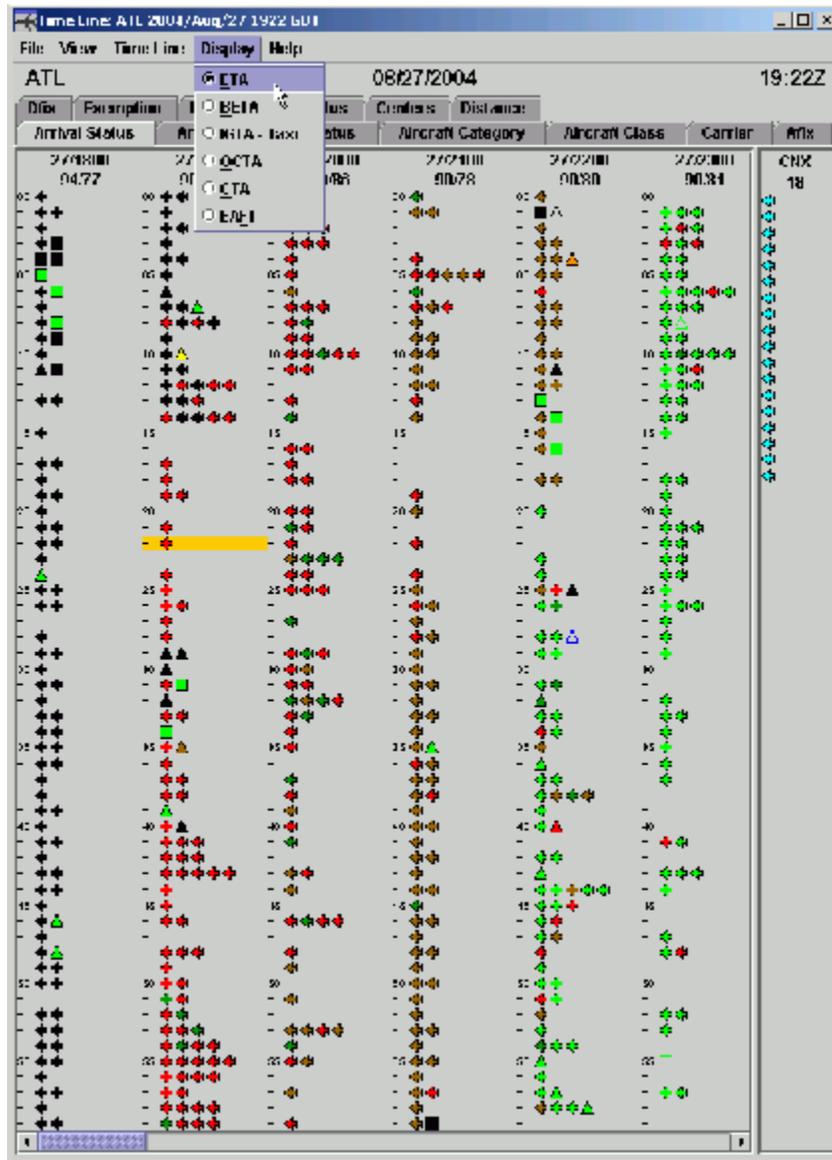


Figure 3-53: GDT Time Line Component

You can display the flights in the Time Line based on various ADL arrival data fields. By default, the GDT Time Line displays based on ETA.

GDT Time Line Menu Bar

The menu bar in the GDT Time Line component contains five options: **File, View, Time Line, Display** and **Help**.

1. File Menu – the GDT Time Line File menu is exactly the same as the Monitored Live Time Line File menu except that it has no Close Group option. See the Time Line Menu Bar section above for more information.
2. View Menu – the GDT Time Line View menu is exactly the same as the Monitored Live Time Line View menu except that it has different default selections. See the Time Line Menu Bar section above for more information.

Note: Show Cancellations and Open Slots in Carrier Color checkboxes are selected by default.

3. Time Line Menu – the GDT Time Line component Time Line menu is exactly the same as the Monitored Live Time Line component Time Line menu. See the Time Line Menu Bar section above for more information.
4. Display Menu
 - **Display > ETA** – Display flights based on their Estimated Time of Arrival (ETA).
 - **Display > BETA** – Displays flights based on their Base Estimated Time of Arrival (BETA). The BETA matches the ETA and is frozen when the flight becomes active or when the flight becomes controlled.
 - **Display > IGTA – taxi** – Displays flights based on their Initial Gate Time of Arrival (IGTA) minus taxi time (IGTA Wheel Time). The IGTA is based on the OAG times or flight plan times and never changes. Taxi time default is 10 minutes, but you can change it in the GDT Control window.
 - **Display > OCTA** – Displays flights based on their Original Controlled Times of Arrival (OCTA), Original ETA, OGTA Wheel Time, or ETA position, depending on the available information. For example, if the Original CTA is not available, FSM uses Original ETA and so on.. This time never changes.
 - **Display > CTA** – Displays flights based on their current Controlled Time of Arrival (CTA).
 - **Display > EAFT** – Displays flights based on their Estimated Arrival Fix Time (EAFT), which is the time at which the flight crosses its designated arrival fix.
5. Help Menu – the GDT Time Line Help menu is exactly the same as the Monitored Live Time Line Help menu. See the Time Line Menu Bar section above for more information.

GDT Coversheet

Each GDT program generates a coversheet when you run the program. The GDT Coversheet contains all the GDT parameters, depending on Program Type selected, including the text fields for specific parameters. This section describes each type of Coversheet, the Coversheet menu, and Coversheet buttons.

Coversheet Menu

There are three file menu options available on the GDT Coversheet: File, View, and Help.

1. File Menu
 - **File > Save As...** – Saves a coversheet in FSM. The default format is fsmc.<airport> followed by the date, time, and program information.

- **File > Save Web Coversheet As...** – Saves the Coversheet information to a file for later use. The default format is covr.<airport> followed by the date, time, and program information.

Note: The Coversheet saves itself in a pre-defined file format that may not exactly match the software display on your computer monitor.

- **File > Close** – Closes the Coversheet window.
2. View Menu
- **View > FADT** – Displays the FADT Report.
 - **View > Analysis** – Displays the Analysis Report.
 - **View > Carrier Statistics** – Displays the Carrier Statistic report
3. Help Menu
- **Help > Coversheet** – Displays web-based on-line help information about the FSM Coversheet.

General Parameters

Field Name	Description	Applicable Program Types
Airport	The affected arrival airport where the program is issued.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Program Time	The program time period (Start Time/End Time).	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Data Time	Current date and time (in Zulu time).	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Update Time	Last ADL time that passed before running the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Minimum moveup time	The minimum time that the Compression algorithm tries to move up a flight. If it cannot find a flight with at least 10 minutes of benefit, the algorithm will decrease the minimum move up time by 1-minute increments until it can assign a flight to a better slot time.	Compression
Priority	Compression gives priority to CDM members and then	Compression

Field Name	Description	Applicable Program Types
	non-CDM members.	
EQP Type	The Equipment Type selected for the program.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future, Purge
Arrival Fix	The arrival fixes of the affected airport being included in the program.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future, Purge
Carrier	Carriers that operate at that airport appear in the program. This can be “All” or a single major carrier and its sub-carriers. A 3-letter airline code indicates that the program includes only one major carrier. A single carrier included in the program is always a major carrier and its sub-carriers. It is never truly a “single” airline.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future, Purge
Last GDP End Time	If this is not the first GDP of the day for the airport, the ending time of the last GDP run appears here.	GDP RBS, GDP RBS++
Program Type	The type of program you ran. Either RBS, RBS++, or compression when you run a GDP.	GDP RBS, GDP RBS++
Delay assignment mode	The type of delay assignment mode selected for the GDP, DAS or GAAP.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future
Delay limit	The maximum number of minutes a pop-up flight can be delayed during a GAAP GDP.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future
Sched/User Exemptions	The type of flights exempt from departure delay during a GDP.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future
WX Metar	FSM automatically fills in Metar information.	GDP RBS, GDP RBS++, Blanket

Field Name	Description	Applicable Program Types
WX TAF	FSM automatically fills in TAF information.	GDP RBS, GDP RBS++, Blanket
Slot override carriers	Some carriers have the option to hold slots, or exclude their slots from compression, at an airport for future use. Overriding this option means that the algorithm includes any carriers' slots that the carrier held in the compression at that airport.	Compression

Tier/Dist Parameters

Field Name	Description	Applicable Program Types
Exempt by	Lists if the program is either Tier or Distance based. For Distance based GDPs, the distance of the range ring appears in nautical miles.	GDP RBS, GDP RBS++, GS Immediate, GS Future
Exempt by	Lists if flights are exempt by Departure Time or Departure Status.	GDP RBS, GDP RBS++, GS Immediate, GS Future
Exempt GS flights	GS Stopped flights are exempted by status, even when you select Exempt by Departure Time on the Tier/Dist setup tab, when you select the Exempt by GS Flights checkbox.	GDP RBS, GDP RBS++
Plus time	Flights that are exempt from the program because their departure time is within the current time + the value in the (min) field. This field has a default value of 45 minutes when you select Exempt by Departure Time.	GDP RBS, GDP RBS++
Center Keyword	The center grouping keyword	GDP RBS, GDP RBS++,

Field Name	Description	Applicable Program Types
	is an abbreviated term to describe the scope of the initiative. For example, the Center Keyword 2ndTie refers to a strictly second tier-based program.	Blanket, GS Immediate, GS Future
Airport Keyword	The airport grouping keyword is used to list what Canadian airports are receiving departure delay.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future
Included Centers	This is a list of the centers affected by the GDP operation. If there are too many centers to fit in the space provided, you see “...” and can click the arrow at the end of the field to pull down a menu with a complete listing of the facilities involved.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future
Included Airports	Airports affected by the GDP operation. If there are too many airports to fit in the space provided, you see “...” and can click the arrow at the end of the field to pull down a menu with a complete listing of the facilities involved.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future
If-distance airports	Canadian Airports that are included if they fall within the distance range. This field is only applicable during distance-based programs.	GDP RBS, GDP RBS++, GS Immediate, GS Future
Exempted centers	Centers that are within the scope of the GDP but exempt from delay.	GDP RBS, GDP RBS++, GS Immediate, GS Future
Exempted airports	Airports that are within the scope of the GDP but exempt from delay.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future
Exempted flights	List of flights by call sign exempted from the GDP operation.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future

Field Name	Description	Applicable Program Types
Last Start/Var Releas...	Additional Centers or airports at which to run a GS. The parameters in this field can have a GS start and stop time that differs from the main GS.	GS Immediate, GS Future

Program Results Summary

Field Name	Description	Applicable Program Types
Minimum delay before	The minimum delay given to any one flight included in the parameters before you ran the program.	GDP RBS, GDP RBS++, Blanket, GS Immediate, GS Future, Purge
Minimum delay after	The minimum delay given to any one flight included in the parameters after you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Total Affected Flights	Total number of flights included in the GDP operation (including cancelled flights) and the number of flights actually affected (non-exempt) by the GDP (excluding cancelled flights). (Max [0, CTA - BETA]) determines Any ATC Delay statistics.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Average delay before	Total delay of flights in the GDP operation divided by the Total Affected Flights in the operation before you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Average delay after	Total delay of flights in the GDP operation divided by the Total Affected Flights in the operation after you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Total Flights	The total numbers of flights arriving at the monitored airport within the program start and end time.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge

Field Name	Description	Applicable Program Types
Maximum delay before	The longest delay assigned to any one flight in the GDP before you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Maximum delay after	The longest delay assigned to any one flight in the GDP after you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Stack value	Number of flights pushed out of the GDP period as a result of running the GDP.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Total delay before	The sum of all delays resulting from this GDP operation in minutes before you ran the program. Determined by CTA - OETA..	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Total delay after	The sum of all delays resulting from this GDP operation in minutes after you ran the program. Determined by CTA - OETA..	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Stack AAR	The AARs that occur in the hours after the end time of the GDP, but that still have CTA flights in them because of GDP delay.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Report Time	The current date and time in DDHHMM format. The time is according to the 24-hour clock in Zulu time.	GDP RBS, GDP RBS++, Compression, Purge

Scrolling Window Statistics

Field Name	Description	Applicable Program Types
ETA	Estimated Time of Arrival broken into 15-minute increments.	GDP RBS, GDP RBS++

Average Delay	Average delay for each 15-minute increment.	GDP RBS, GDP RBS++
Original Demand	Number of arrival flights for each 15-minute increment before running the GDP.	GDP RBS, GDP RBS++
Unassigned Slots	Number of unassigned slots for each 15-minute increment during a GAAP GDP.	GDP RBS, GDP RBS++
Quarterly AAR	The Airport Arrival Rate set for each 15-minute increment after running the GDP.	GDP RBS, GDP RBS++
Hourly AAR	The Airport Arrival Rate for each hour during the GDP.	GDP RBS, GDP RBS++

Coversheet Buttons

- **Advisory** – When you click **Advisory**, the Advisory Window appears, which allows you to send either a Proposed or an Actual Advisory to all FSM users.
- **Autosend** –When you click **AutoSend** the FADT files are sent to Volpe, which are then distributed in the next ADL.
- **Close** – When you click **Close**, no action is taken from the GDP Coversheet window.

Coversheet examples

This section provides examples of coversheets.

GDP Coversheet: ATL: 1900-2159

File View Help

General

Airport: ATL Program time: 1900-2159 Data time: 272014
 Update time: 272014 EQP type: All Arrival fix: All
 Carrier: ALL Last GDP end time: Unknown Program type: GDP
 Delay assignment mode: DAS Delay limit: N/A Sched/User Exemptions: None

Wx METAR: KATL NO CURRENT METAR REPORT AVAILABLE FOR KATL
 Wx TAF: KATL NO CURRENT TAF REPORT AVAILABLE FOR KATL

Tier/Dist

Exempt by: Tier Exempt by: Departure Time Exempt GS flights: Yes
 Plus time: 45 min. Center keyword: 2ndTier Airport keyword: Manual

Included centers: ZTL ZAB ZAU ZBW ZDC ZFW ZHU ZID ZJX ZKC ZMA ZME ZNY ZOB
 Included airports:
 If-distance airports:
 Exempted centers:
 Exempted airports:
 Exempted flights:

Program Results

Minimum delay before: 1 Minimum delay after: 1 Total affected flights: 69
 Average delay before: 27 Average delay after: 22 Total flights: 319
 Maximum delay before: 76 Maximum delay after: 50 Stack value: 46
 Total delay before: 1926 Total delay after: 1526 Stack AAR: 90

Report time: 2017

ETA	Average Delay	Original Demand	Unassigned Slots	Quarterly AAR	Hourly AAR
27/1900 00 - 14	23	30	0	23	
15 - 29	30	14	0	22	
30 - 44	31	22	0	23	
45 - 59	30	39	0	22	90
27/2000 00 - 14	28	28	0	23	
15 - 29	27	23	0	22	
30 - 44	26	20	0	23	
45 - 59	25	15	0	22	90

Advisory... Autosend... Close

Figure 3-54: GDP Coversheet

GS Coversheet: ATL: 2024-2123

File View Help

General

Airport: ATL Program time: 2024-2123 Data time: 272014
 Update time: 272014 EQP type: All Arrival fix: All
 Carrier: ALL Delay assignment mode: DAS Delay limit: N/A
 Sched/User Exemptions: None

Tier/Dist

Exempt by: Tier Exempt by: Departure Status Center keyword: 2ndTier
 Airport keyword: Manual

Included centers: ZAB ZFW ZAU ZKC ZME ZID ZMA ZHU ZJX ZOB ZBW ZTL ZNY ZDC
 Included airports:
 If-distance airports:
 Exempted centers:
 Exempted airports:
 Exempted flights:
 Late Start/Var Releas...

Program Results

Minimum delay before: 1	Minimum delay after: 1	Total affected flights: 89
Average delay before: 21	Average delay after: 41	Total flights: 102
Maximum delay before: 76	Maximum delay after: 84	Stack value: 0
Total delay before: 1926	Total delay after: 3736	Stack AAR: 0

Advisory... Autosend... Close

Figure 3-55: GS Coversheet

GDP CNX Coversheet: ATL: 2014-0053

File View Help

General

Airport: ATL Program time: 2014-0053 Data time: 272014
 Update time: 272014 EQP type: All Arrival fix: ALL
 Carrier: ALL

Program Results

Minimum delay before: 1	Minimum delay after: 1	Total affected flights: 65
Average delay before: 29	Average delay after: 8	Total flights: 144
Maximum delay before: 76	Maximum delay after: 34	Stack value: 0
Total delay before: 1926	Total delay after: 574	Stack AAR: 0

Report time: 2020

Advisory... Purge... Close

Figure 3-56: Purge Coversheet

Note: Blanket and Compression Coversheets contain similar information as the examples illustrated above.

GDT Advisory

This window contains all the GDT parameters that you set and some fields in the Remarks section that you must fill in before sending an advisory.

Advisory Menu

1. File Menu
 - **File>Save As** – Saves an advisory in FSM. The default format is adzy.<airport> followed by the date, and time.
 - **File>Print** – Prints the information from the Advisory window.
 - **File>Close** – Closes the Advisory window without taking any action.
2. Help Menu
 - **Help>[Program Type] Advisory** – Displays web-based on-line help information about the Advisory window for the Program Type.

Program Parameters Summary

Field Name	Description	Applicable Program Types
Airport	The airport for which you are issuing a program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Center	The center that includes the affected airport.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Program Time	The times at which the program starts and ends.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
ADL Time	The time of the last ADL used before you ran the program.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Delay assignment mode	The type of delay assignment mode selected for the GDP, DAS or GAAP.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge
Delay limit	The maximum number of minutes a pop-up flight can be delayed during a GAAP GDP.	GDP RBS, GDP RBS++, Compression, Blanket, GS Immediate, GS Future, Purge

Program Results Summary

The Program Results summary on the Advisory window contains the exact same information as the Coversheet Results Summary excluding any scroll window information.

Remarks

You must fill out the remarks section before sending an Advisory.

- **Respond By** – The time by which users must respond to a Proposed GDP. It is normally defined as the current time plus 30 minutes. That time is then rounded up to the next 15-minute time increment. For example, if the current time is 1812, the Respond By time is 1845 (1812 + 30 = 1842. Round up to the nearest 15-minute increment is 1845).
- **Valid Until** – The time at which the Advisory message expires. This is normally defined as the Respond By time plus 30 minutes and rounded up to the end of the hour. For example, if the Respond By time is 1845, the message is valid until 1959. The message could also expire at the same time the program ends.
- **Proposed** – One of the two types of advisories available to send. A Proposed Advisory lets users know about a potential GDP and allows users to send comments about the parameters before the program is enacted.
- **Actual** – One of the two types of advisories available to send. An Actual Advisory lets users know that a program has been issued and does not allow users to comment on the parameters.
- **Reason** – Select a reason for running the GDP from the available pull down menu. Select Weather, Volume, Runway, Equipment, or Other.
- **Explanation** – If you select “Other” in the Reason field, you must type a reason or other commentary in the Explain field before you can send an Advisory.
- **Probability of Extension** – Likelihood a Ground Stop will be extended past its current end time (Ground Stop Advisory only)
- **Comments** – This field is available for any additional comments about the program you feel are necessary.

Advisory Buttons

- **Send** – Emails the program parameters to all parties involved, including the Hub site. If the parameters are for a Proposed Advisory, the Hub site sends out the parameters immediately in the next ADL. When you send parameters for an Actual Advisory, the Hub site ensures that it has received the associated FADT file with flight control times for the program before sending any parameters through the ADL.
- **Close** – Click this and FSM takes no action from the GDP Advisory window.

Advisory examples

This section provides examples of Advisories.

GDP Advisory: ATL: Program Time: 2100-0159

File Help

Program Parameters Summary

Airport: ATL	Center: ZTL	Program time: 2100-0159
ADL time: 272014	Delay assignment mode: DAS	Delay limit: N/A

Program Results Summary

Minimum delay before: 1	Minimum delay after: 1	Total affected flights: 429
Average delay before: 6	Average delay after: 15	Total flights: 429
Maximum delay before: 76	Maximum delay after: 38	Stack value: 12
Total delay before: 1926	Total delay after: 4860	Stack AAR: 94

Report time: 2021

Remarks

Respond by: 272045Z Valid until: 272159Z Proposed Actual

Reason: Explanation:

Comments:

Send... Close

Figure 3-57: GDP Advisory

GS Advisory: ATL: Program Time: 2024-2123

File Help

Program Parameters Summary

Airport: ATL	Center: ZTL	Program time: 2024-2123
ADL time: 272020	Delay assignment mode: DAS	Delay limit: N/A

Program Results Summary

Minimum delay before: 1	Minimum delay after: 1	Total affected flights: 93
Average delay before: 18	Average delay after: 38	Total flights: 93
Maximum delay before: 76	Maximum delay after: 84	Stack value: 0
Total delay before: 1527	Total delay after: 3147	Stack AAR: 0

Report time: 2021

Remarks

Respond by: 272100Z Valid until: 272159Z Proposed Actual

Reason: Explanation:

Probability of Extension: MEDIUM Comments:

Send... Close

Figure 3-58: GS Advisory

Note: Blanket, Compression, and Purge Advisories contain similar information as the examples illustrated above.

4 Opening FSM

The Control Panel component, shown below, is the first component displayed when you start the FSM application. You can open FSM in three different data modes:

1. Monitored Live – Monitor airports in real-time.
2. Historical – View, recall or analyze previous airport air traffic events.
3. GDT- Model, analyze, and/or create Traffic Management Initiatives (TMIs) for airports depending on air traffic variables.



Figure 4-1: Main Control Panel Component

Opening an Airport

Click **Open Data Set** on the Control Panel component to open the Open Data Set Component. The Open Data Set component displays four data Tabs that you use to access both live and historical data. The four Tabs available in the Open Data Set components are listed below and shown in Figure 4-2:

1. Monitored Live – Provides a list of airports currently monitored by the FSM server and readily available for viewing by the user. Live data mode runs real-time data and receives ADL updates approximately every 5 minutes.
2. Historical – Displays historical data that has been stored in a database. Historical data can be recalled to analyze scenarios or replay a day's air traffic events.
3. All Live – Provides a list of airports that can be viewed by the user (not on the server but will only take a minute to bring up).

4. Active Historical – Provides a list of historical airport data currently opened and monitored by the user.

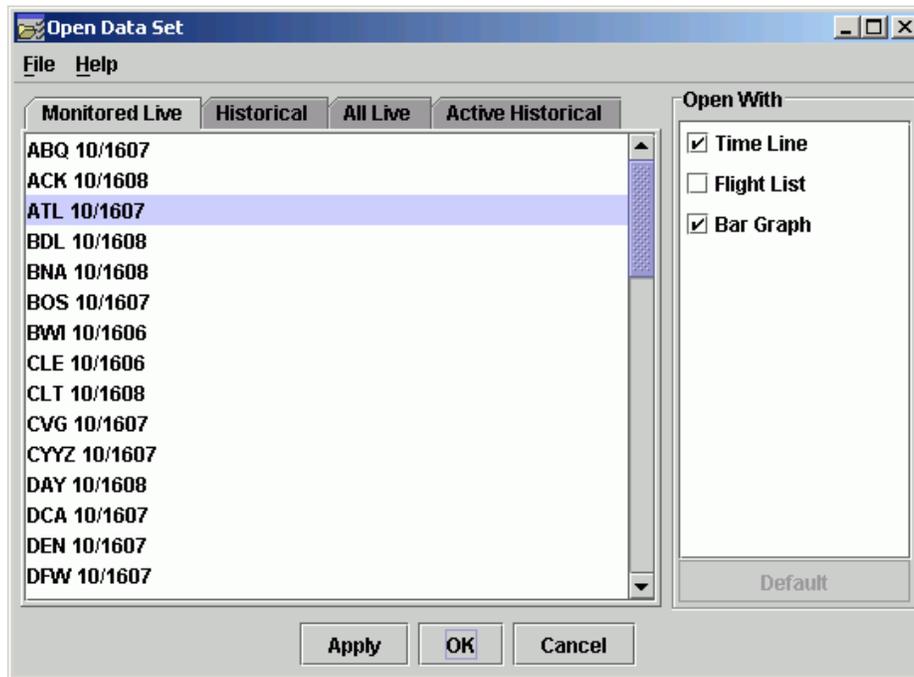


Figure 4-2: Open Data Set Component

To open an airport you must select a Data mode, a Data set, and choose the display components to view the information.

- Data Mode – From the Open Data Set component you can open an airport in either Live or Historical Data Modes. To open an airport in Live Data Mode, use either the Monitored Live or All Live data tabs. To open an airport in Historical Data Mode, use either the Historical or Active Historical (if you have already opened an airport in historical mode) data tabs. You can access GDT mode by clicking **GDT Setup** on the Control Panel.
- Data Set – The Data Set is the airport you want to view. When opening an airport in Historical data mode, you must select a date from the Historical tab's menu structure and enter a time (optional).
- Display Components – From the Open With selection box you can open data sets in three components: *Time Line*, *Flight List*, and *Bar Graph* components. By default, both *Time Line* and *Bar Graph* components are selected.

Opening FSM in Monitored Live Mode

From the Open Data Set component, you can open FSM in Monitored Live mode. The Monitored Live tab is active when the Open Data Set component initially opens and provides a list of airports currently monitored by the FSM server readily available for viewing.

To open an airport in Monitored Live mode

1. Click **Open Data Set**.
2. Select the desired data set (airport) from the Monitored Live tab.

Note: If an airport currently has a GDP or GS in place, the Open Data Set component displays “GDP ACTUAL” or “GS Actual” followed by the date and times of the TMI next to the airport.

3. Select the components you want to view for the data set in the Open With panel.
4. Click **Apply** or **OK** to display the data set in the components that you selected in the Open With box. By default, FSM displays both Time Line and Bar Graph components if you do not change anything in the Open With component selections.

Note: Double-clicking an airport or selecting the airport and then clicking Apply leaves the Open Data Set component open. Selecting the airport and then clicking OK opens the airport in the selected components but closes the Open Data Set window.

Figure 4-3 shows ATL airport selected with the *Time Line* and *Bar Graph* components checkmarked in the Open With selection box. This opens the Time Line and Bar Graph components for ATL in Live data mode.

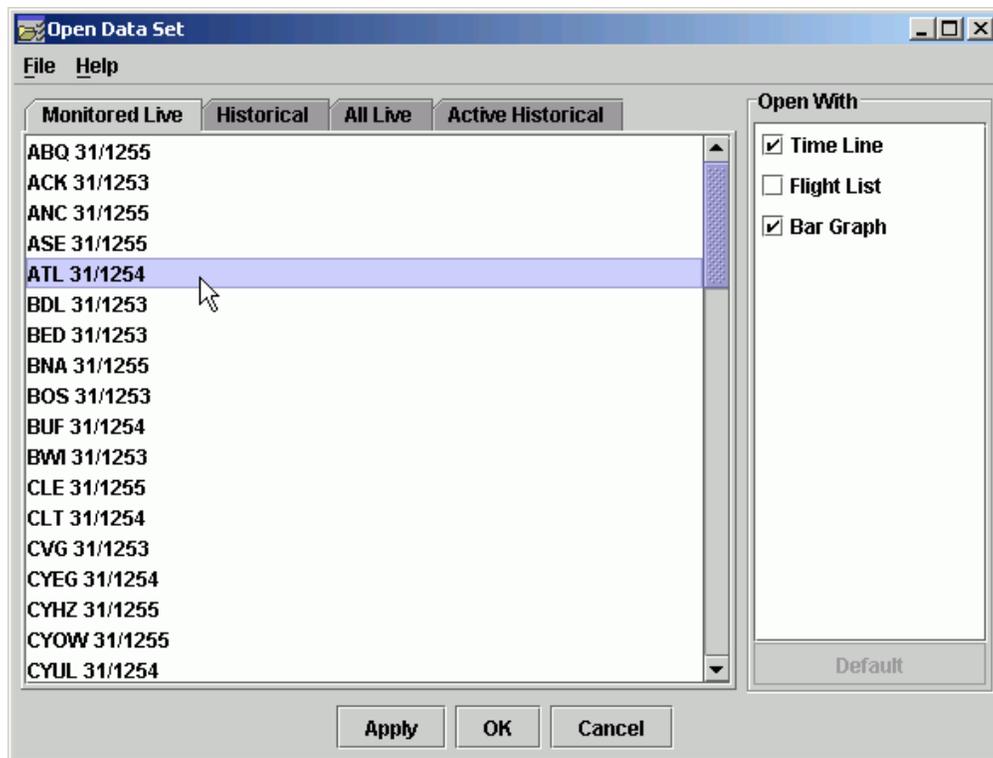


Figure 4-3: Monitored Live Tab

Figure 4-4 shows FSM opened in Monitored Live mode for ATL.

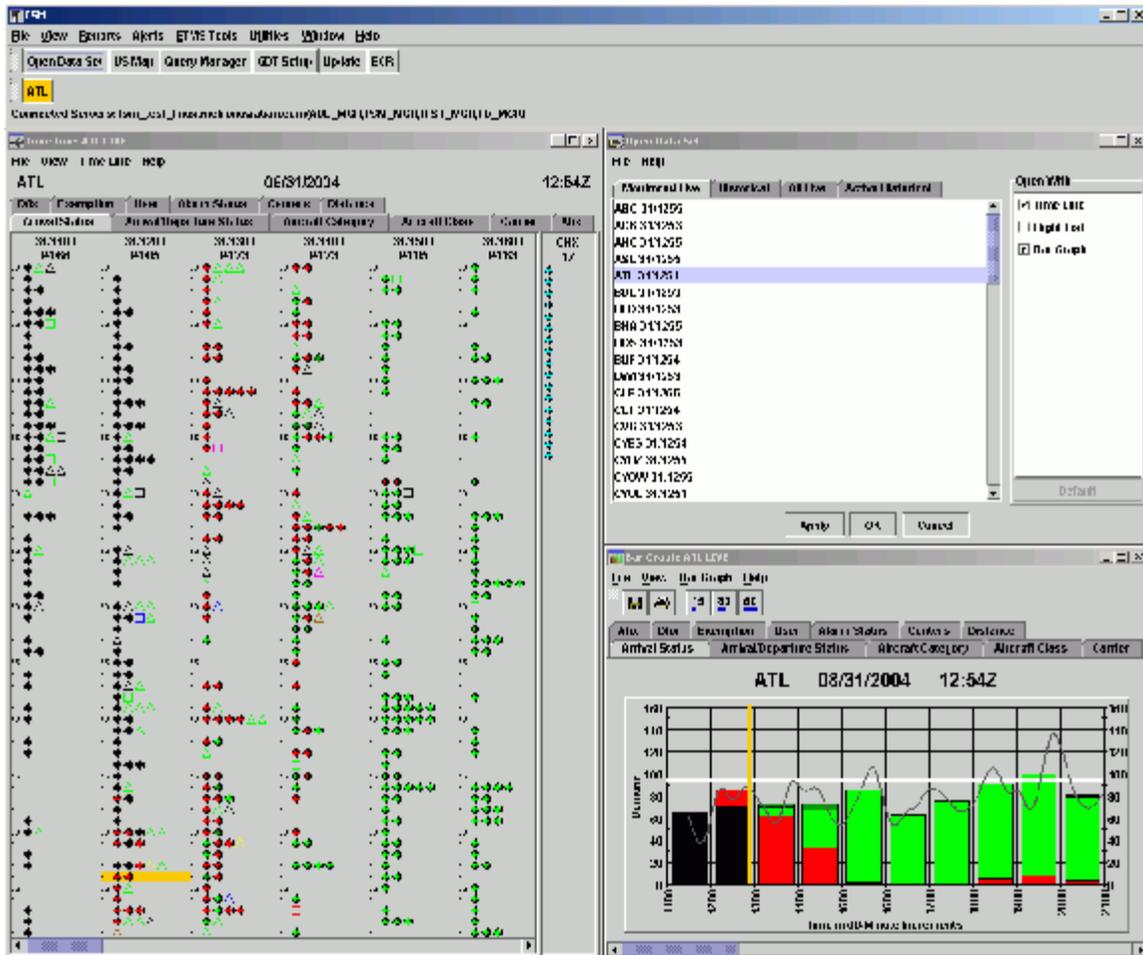


Figure 4-4: ATL Monitored Live Mode

Using the US Map to Open Components in Monitored Live

Click US Map on the Control Panel component to view all the airports currently being monitored on the US Map.



Figure 4-5: US Map Button

Figure 4-6 shows green airports that indicate normal operations, while red airports indicate that there is an actual TMI. Yellow airports indicate there is a proposed TMI.

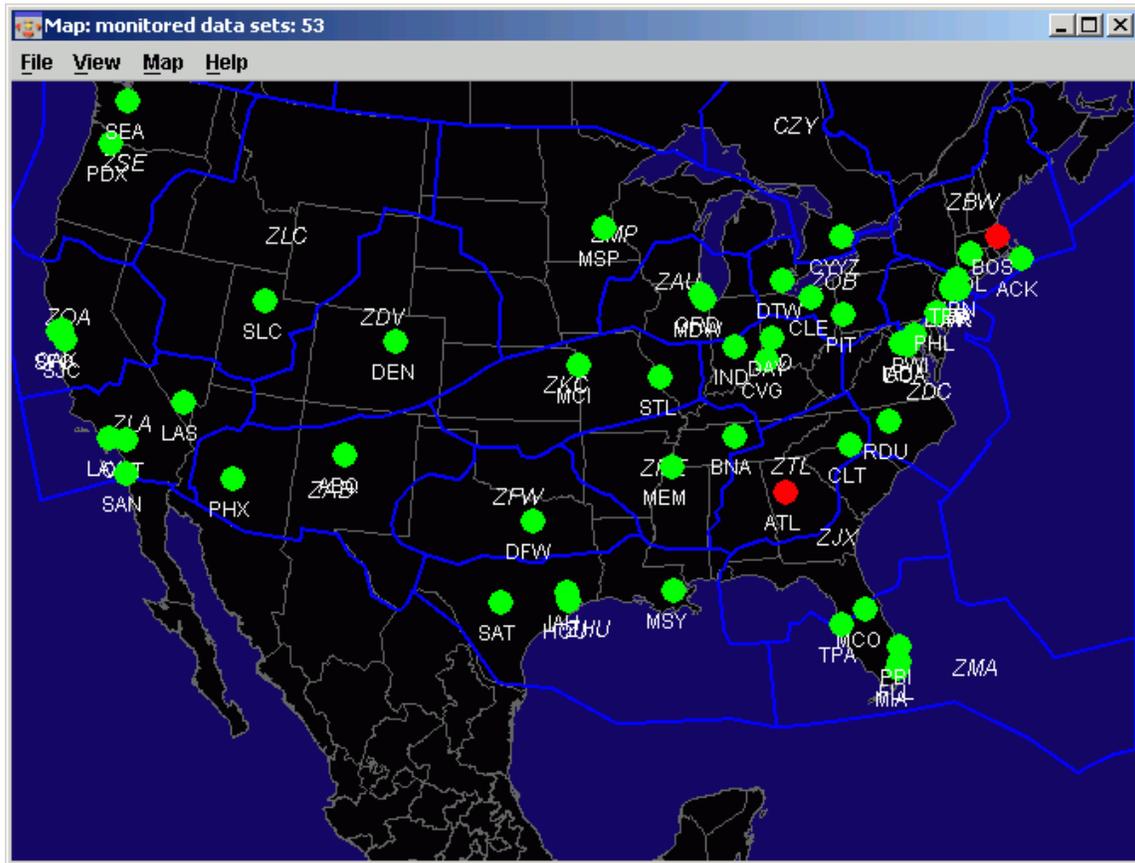


Figure 4-6: US Map Component

To open a data set from the US Map component

1. Click on the airport you want to open.

Opening FSM in Historical Mode

The Historical tab on the Open Data Set component opens archived data that you can use to review and analyze past airport events. The Open Data Set component defaults to the Monitored Live tab when you first open it. Click on the Historical tab to view archived data. You can drill down to the desired data set by clicking on the drill down icons or by double-clicking the file name.

Historical file structure is organized as follows: Server, Year, Month, Day and Airport.

Note: If the client connects to multiple servers, both servers are listed.

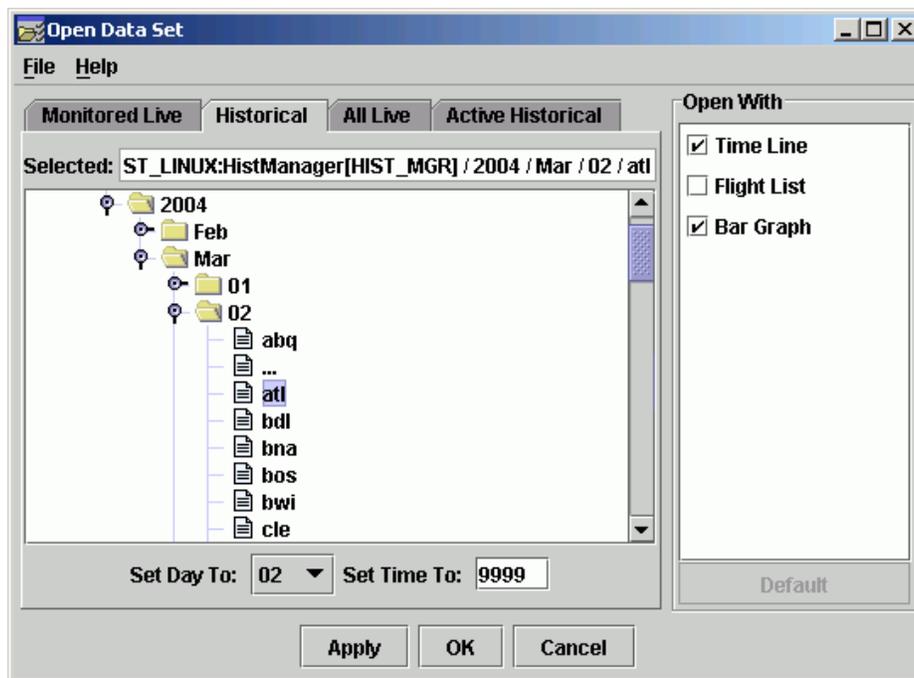


Figure 4-9: Historical Tab

The default settings for Historical mode are the same as in Monitored Live mode—Time Line and Bar Graph components appear selected by default for the selected Data set. The Flight List component does not open unless you select the corresponding checkbox in the Open With selection box. Once you select the desired data set, you have the option to set the data set time before opening the data set. When you specify a data time, the components open the ADL data time closest to, but not after, the specified time.

Note: FSM displays in and uses Zulu times unless otherwise specified.

You can open the data set in several ways after you select the desired airport, components, and data time. Double-clicking on a desired airport or clicking **Apply** opens the Historical mode data and leaves the Open Data Set component open. Clicking **OK** also opens the Historical mode data in FSM, but closes the Open Data Set component.

Begin Monitoring an Airport

The All Live tab on the Open Data Set component provides a list of airports that the server is not currently monitoring but are readily available for viewing (see Figure 4-10).

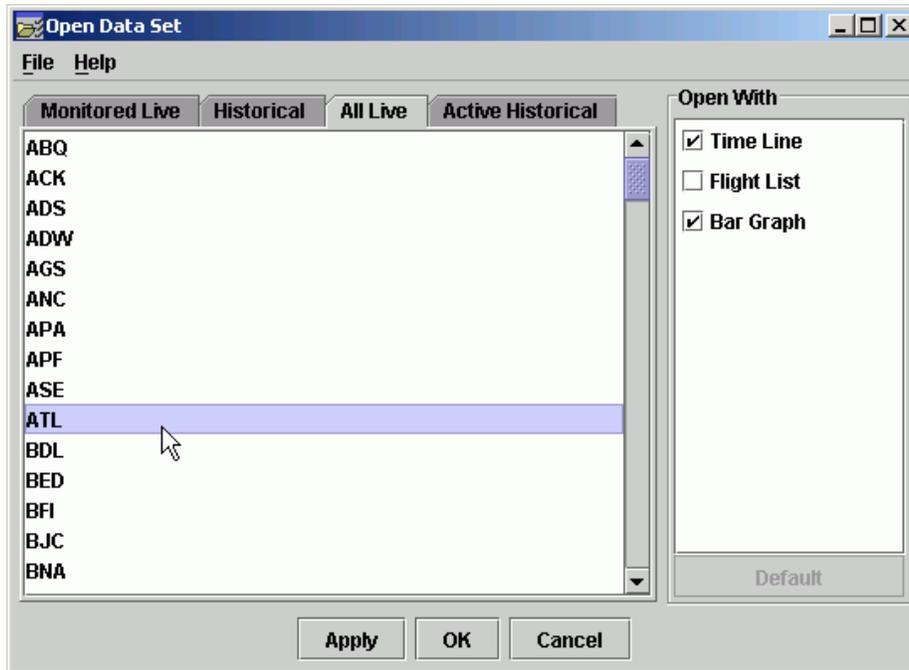


Figure 4-10: All Live Tab

To begin monitoring an airport from the All Live tab

1. Click **Open Data Set**.
2. Select the All Live tab.
3. Select the airport.
4. Select the components you want to view for the airport in the Open With panel.
5. Click **Apply** or **OK** to open the airport.

Note: The All Live tab opens airports in Live mode only. Opening an airport from the All Live tab may take a few moments longer than opening an airport from the Monitored Live tab and an FSM information message may appear to indicate the airport takes a moment to collect the first set of data (see Figure 4-11).



Figure 4-11: FSM information message

6. Click **OK** to close the FSM information message. After opening an airport from the All Live tab, FSM places the airport on the Monitored Live tab.

Managing Historical Data

The Active Historical tab on the Open Data Set component provides a list of opened Historical data you are viewing and monitoring. The Active Historical tab has an empty display window unless you have already opened a data set from the Historical tab.

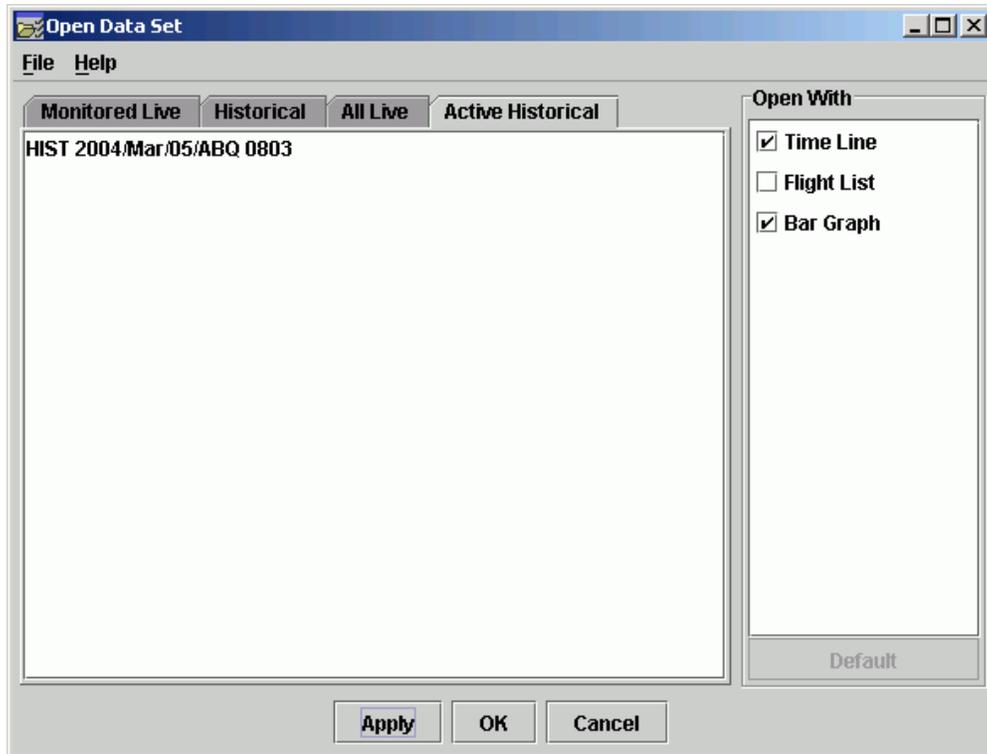


Figure 4-12: Active Historical Tab

To open the historical data

1. Click **Open Data Set**.
2. Select the Active Historical tab.
3. Select the desired data set.
4. Click **Apply**. This opens the airport with the components selected in the Open With selection box. The Active Historical tab opens airports in Historical mode that you have already opened.

Opening FSM in GDT Mode

When you open GDT mode below, four GDT components open by default (see Figure 4-13): GDT Setup, GDT Map, GDT Data Graph, and GDT Bar Graph. You can open additional components, such as Flight List, Data Table, and Time Line components, from the GDT Setup component in GDT mode. See Chapter 3, Ground Delay Tools Component for more detail.

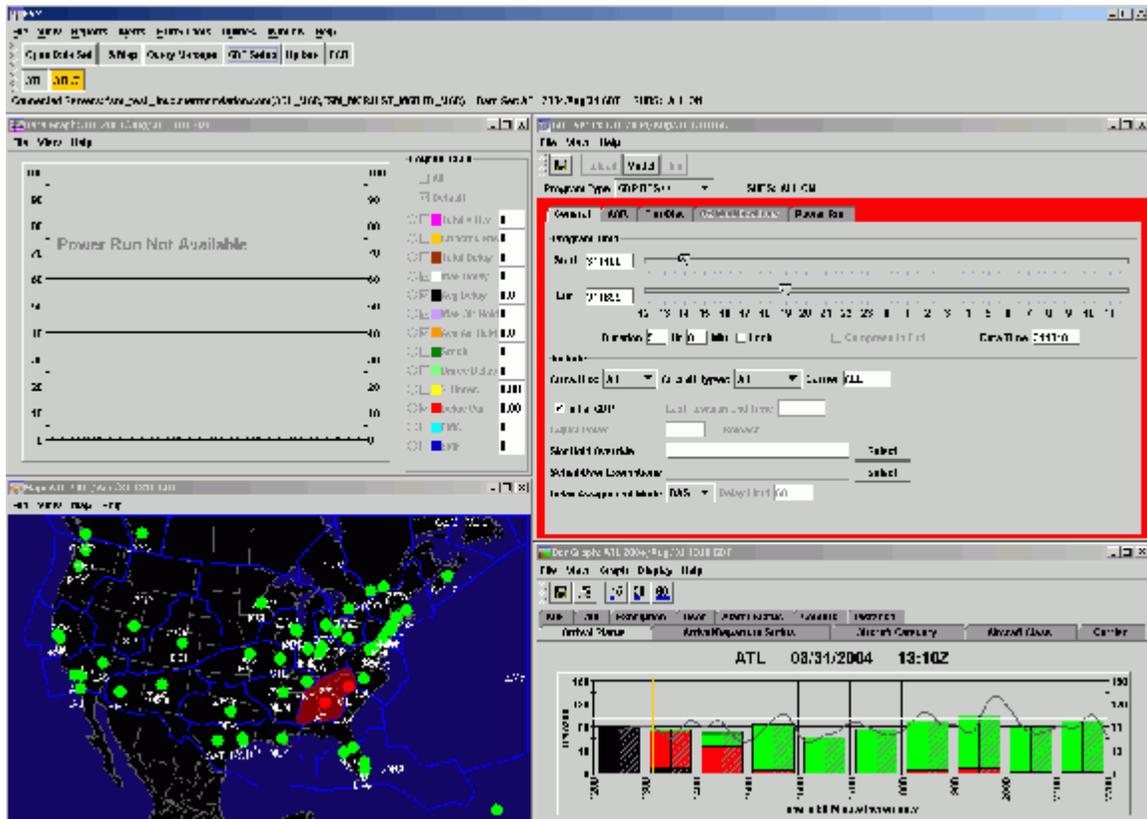


Figure 4-13: GDT Mode

To open an airport in GDT mode

Open FSM in Ground Delay Tools (GDT) Mode to analyze air traffic management options and implement TMIs.

1. Select an airport that is open in either Live or Historical mode.
2. Click **GDT Setup** on the Control Panel component.



Figure 4-14: GDT Setup Button

The GDT Setup panel, GDT Data Graph, GDT Map and GDT Bar Graph for the airport appear as shown in Figure 4-13.

5 Viewing Airport Demand

You already know that FSM displays flight information in several ways. But to make traffic management decisions, you must also be able to view the overall demand on the airport. Airport demand is made up of the total flights using the airport for arrival and departure. The main utilities to view total airport demand are the FSM Bar Graph components and Count List Reports from the Control Panel component. The FSM Bar Graphs constantly display airport demand information as FSM receives it through ADLs. The Count List Reports are broken down into seven different options, depending on your needs.

Dynamic Graphs

The Current Demand "stacks" its data according to the coloring tab currently displayed. For example, if the tab option opened is Arrival Status, the bars in the graph are colored according to the percentage of flights that represent each respective arrival status. If half of the flights for one time period have not departed (light green), while the other half are in the air (red), the bar for that hour is half red/half green. If every flight for the hour has landed, the bar for that hour is black.

The graph is dynamic and changes according to the information in each ADL update. The graph also automatically updates itself when you choose a different color tab option.

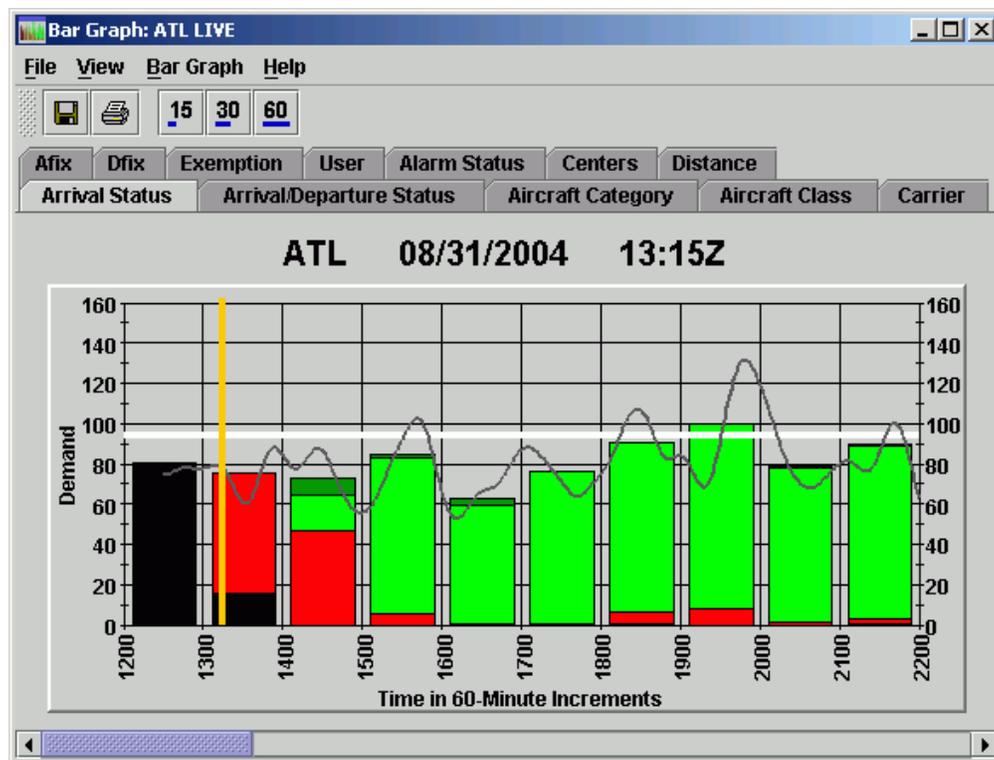


Figure 5-1: Bar Graph displaying Color by Arrival Status Tab

About the Display

There are 12 different coloring options to view the demand. The Arrival Status tab is the default view when you first open a Bar Graph component. The airport, date, time, and data mode appear in the title bar. The airport, date, and last ADL update time also appears just below the color tabs. Flight color is a feature in FSM that assists the user in distinguishing between the varying statuses

of each displayed flight. The bar graph displays the arrival flow rate by default. This thin, white line represents the airport arrival flow independent of the time-bin convention. For more information on the Bar Graph component, see Chapter 3, Understanding Components.

Arrival vs. Departure Bars on the Graph

The Bar Graph defaults to only arrival data in the Monitored Live mode. When you are viewing arrival data in FSM, the bars on the graphs are solid. You can toggle both Arrival and Departure data on and off using the Arrival Data and Departure Data options from the Bar Graph **View** menu. To view Departure Data select **View > Departure Data** checkbox (see Figure 5-2 below).

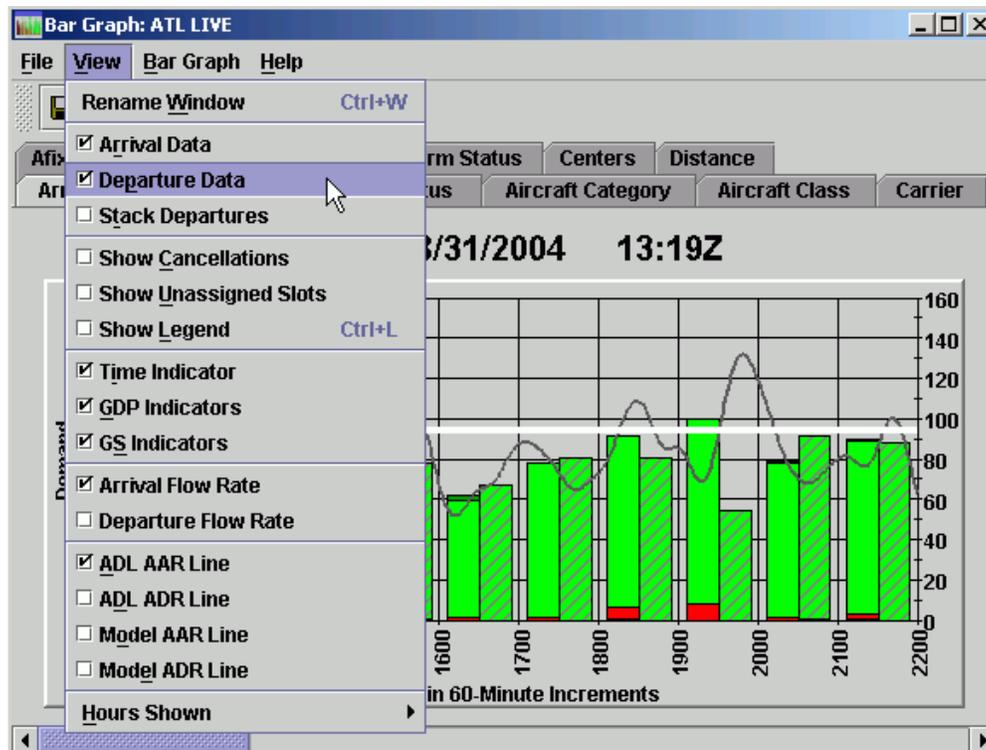


Figure 5-2: Toggle Arrival and Departure Data on/off

When you select both the *Arrival Data* and *Departure Data* checkboxes from the **View** menu, the Bar Graph displays arrival and departure data simultaneously. When viewing both arrival and departure data, you see two bars for each time increment. Bars that represent arrival data are solid, while bars that represent departure data are hashed.

Selecting **View > Stack Departures** stacks departure data on top of the arrival data. The Stack Departures option creates one bar on the graph for each time increment that represents the sum of both the arriving and departing flights. The departing flights are hashed while the arriving flights are solid in color, as shown in Figure 5-3 below.

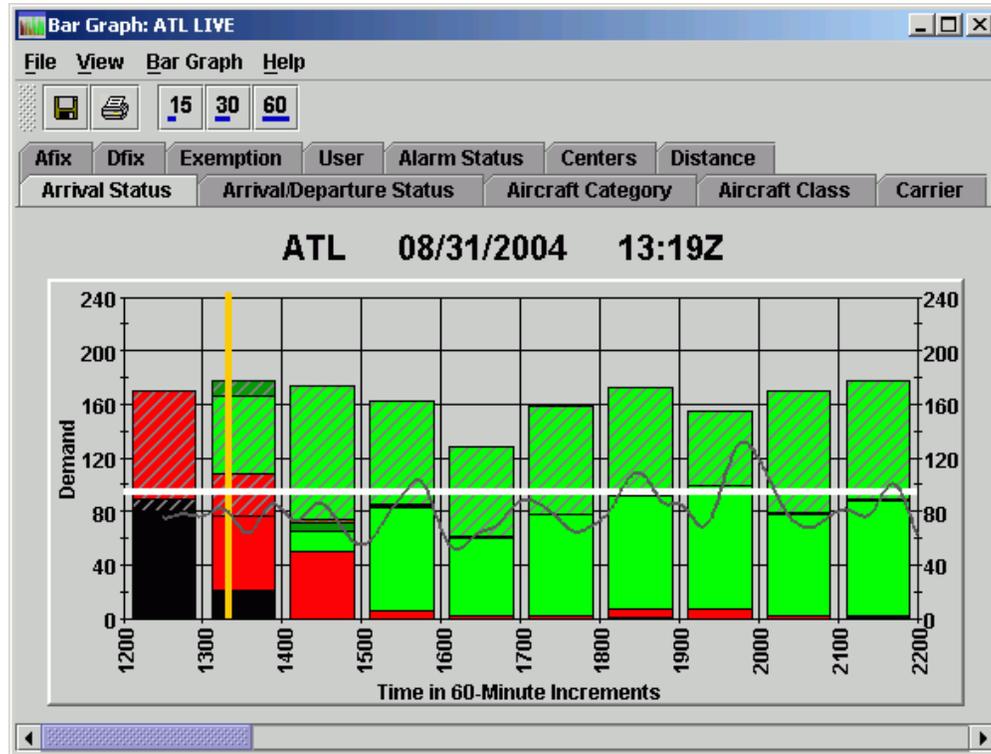


Figure 5-3: Stacked Arrival/Departure Information

Original vs. Modeled Data Bars on the Graph

In GDT Mode the Bar Graph always displays both solid and hashed bars. Solid bars represent the original data, while hashed bars represent modeled data.

Show Cancelled Flights

Cancelled flights do not appear by default in the Graph. To view cancelled flights in the Bar Graph, select the **View > Show Cancellations** checkbox. Cancelled flights appear in cyan at the top of each hour bar. Showing cancelled flights is useful to compare the original airport demand with the demand after cancellations. To hide cancelled flights, uncheck the **View > Show Cancellations** checkbox.

Show Unassigned Slots

Unassigned Slots do not appear by default in the Graph. To view unassigned slots during a GAAP GDP in the Bar Graph, select the **View > Show Unassigned Slots** checkbox. Unassigned Slots appear in white at the top of each hour bar. Unassigned Slots can only be viewed from the Arrival Status tab. To hide unassigned slots, uncheck the **View > Show Unassigned Slots** checkbox.

Show Legend

The Bar Graph Legend indicates the color key according to each respective flight status for each color tab. To view/hide the legend, select **View > Show Legend** checkbox.

Changing the Time Increments Display

When the Bar Graph component opens, the default time increment to display capacity and demand information is 60-minutes. To view this information in 15-minute or 30-minute time increments, click the associated button from the Bar Graph (see Figure 5-4 below).

When you change the time increment on the Bar Graph, the demand numbers listed on the Y-axis of the graph change accordingly. For example, if the AAR of 32 displays for 60-minute time increments, a 30-minute time increment for the same information displays an AAR of 16.

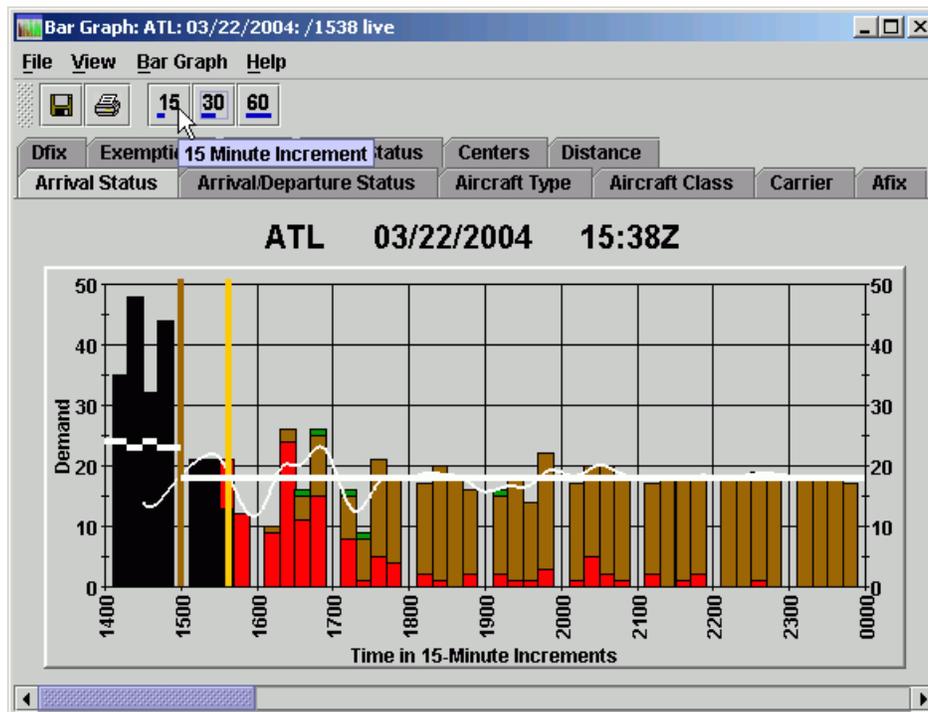


Figure 5-4: 15-Minute increment display

Tracking Time

Like the FSM Time Line, the Bar Graph component also tracks time. The Time Indicator is an orange vertical line that remains fixed at the current time. To show/hide the time indicator click the **View > Time Indicator** checkbox.

By default, the Bar Graph updates with each hour. Keeping the **Bar Graph > Track Time** checkbox checked moves the bar at the turn of each hour. When you do not check the box, the bars do not move, but the orange Time Indicator still displays the current time on the graph.

Track GDP/GS Hours

You can view the hours of a GDP or GS in effect at the airport you are monitoring by using the Bar Graph. The Bar Graph has optional program indicators that work like the Time Indicator to show the start and end times of a current GDP or Ground Stop. The GDP Time indicators are colored brown and the GS Time indicators are colored yellow. The program time indicators

appear automatically when a program goes into effect at the monitored airport. To view or remove the program indicators, select **View > GDP Indicators** or **> GS Indicators**.

Arrival/Departure Flow Rate

The flow rates operate independently of the time-bin convention, enabling users to visualize arrival and departure demand as dynamic flow rates. A gray line represents the Arrival Flow Rate and a cyan line represents the Departure Flow Rate. To view or remove the arrival or departure flow rate from the Bar Graph toggle the **View > Arrival Flow Rate** or **View > Departure Flow Rate** checkboxes. The Arrival Flow Rate is displayed by default.

Show More/Less Hours

The FSM default displays 10 hours of data in the Bar Graph. You can specify the number of hours displayed in the bar graph to view more or less flight data. For example, you may want to view the demand in 15-minute time increments, which is difficult to see on a graph with 10 hours worth of data. To change the number of hours in the Bar Graph, select **View > Hours Shown > X** (where X = number of hours). The graph automatically updates itself to show the amount of hours you specify. Use the scroll bars at the bottom of the component to view more hours.

View the AAR and ADR

The white horizontal line that runs through the graph represents the Airport Arrival Rate (AAR) for the monitored airport. The ADL AAR, which appears by default, is a fixed AAR sent by the FAA Air Traffic Control System Command Center (ATCSCC) to advise of the number of arriving aircraft an airport can accommodate at any given interval of time. The AAR changes according to the interval of time displayed. For example, an AAR of 60 per hour is equal to an AAR of 15 per quarter hour. To toggle the ADL AAR Line on/off select the **View > ADL AAR Line** checkbox from the Bar Graph menu.

A cyan horizontal line runs through the Bar Graph representing the Airport Departure Rate (ADR) for the monitored airport. The ADL ADR is a fixed value sent by the FAA ATCSCC to specify the number of departing aircraft an airport can accommodate at any given interval of time. FSM does not display the ADL ADR by default. To view the ADL ADR Line, select the **View > ADL ADR Line** checkbox. The ADR also changes according to the time increment used in the graph display. For example, an ADR of 60 per hour is equal to an ADR of 15 per quarter hour.

Note: Departure information is not available in GDT Mode; therefore ADR options are removed from the GDT Bar Graph.

Changing the AAR/ADR

Only ATCSCC users can change the actual ADL AAR or ADL ADR (the rate used in Volpe ADLs which reflects real operational data). For ATCSCC users, see Chapter 3: Control Panel component for details on how to modify AAR/ADR rates. Other users can *model* the effects of various AARs and ADRs by using the Model function.

Before modeling the AAR or ADR, ensure that you select the **View > Model AAR Line** or **View>Model ADR Line** checkbox, otherwise your modeled rates are hidden from view. If the ADL AAR/ADR appears on the Bar Graph, the dashed line (for modeling) appears in the same position as the ADL AAR.

There are two methods to change your modeled AAR/ADR:

1. Use your cursor to drag the dashed line in the graph to the desired rate. The dashed line moves to the AAR/ADR you specified. Only the portion of the line to the right of

the cursor moves. Any portion of the line to the left of your cursor should remain in the same position as you drag the line to a new AAR. Moving the AAR/ADR from the graph also automatically fills in the Specify AAR/ADR window.

2. Select **Bar Graph > Model Arrival Rates > Specify** or **Bar Graph > Model Departure Rates > Specify**. The Specify Model AAR window appears with the modified AAR/ADR filled in, and the new rates appear on the Bar Graph.

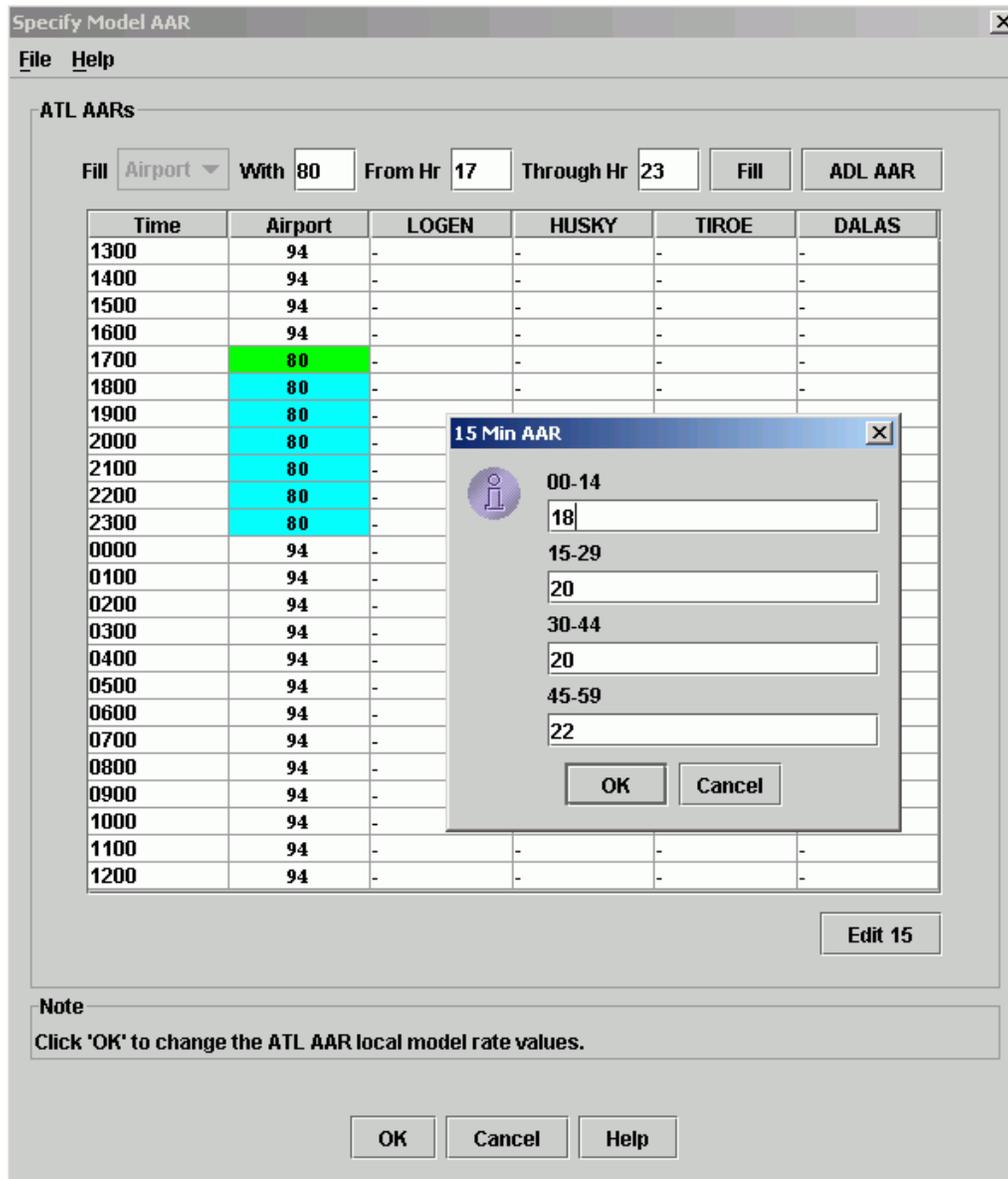


Figure 5-5: Specify Model AAR Window

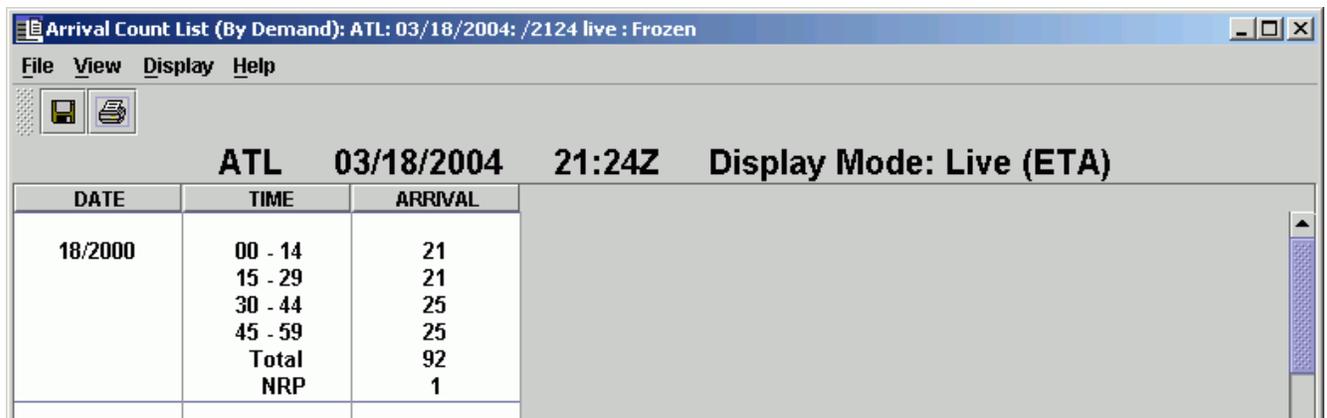
To restore the Model AAR/ADR rates to their original values, select **Bar Graph > Model Arrival Rates > Reset** or **Bar Graph > Model Departure Rates > Reset**. You can also click **ADL AAR** from the Specify Model AAR/ADR window to reset the rates to the current ADL value. The Model line should disappear behind the ADL AAR/ADR rates.

Demand Counts

Count Lists give you the option to check the flights that make up arrival and/or departure demand for each hour. You can open all Count Lists from the FSM Control Panel component. There are 7 count list reports:

- By Demand
- By Center
- By Aircraft Type
- By Aircraft Class
- By Arrival Fix
- By Departure Fix
- By User

To view a demand count for a particular monitored airport, first select the airport to view the demand count that you want to view, and then select **Reports > Counts > By report type**. If you have not selected an airport, FSM displays an error message that indicates “No Current Data Set” is selected (see Figure 5-6). For more information on Count List reports see Chapter 19: Reports.



ATL 03/18/2004 21:24Z Display Mode: Live (ETA)		
DATE	TIME	ARRIVAL
18/2000	00 - 14	21
	15 - 29	21
	30 - 44	25
	45 - 59	25
	Total	92
	NRP	1

Figure 5-6: Count List By Demand

Note: Count Lists in GDT Mode only show counts for arriving flights.

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6 Viewing Flight Information

FSM allows you to monitor flights arriving at and departing from an airport. You can view general traffic flow into an airport using several different components. The most obvious sources to view general traffic flow are the FSM Time Line and Bar Graph components. In addition to viewing the overall traffic flow of an airport, you can access individual flight information using FSM. This chapter takes a look at the various ways that FSM allows you to view general traffic flow and flight information when making traffic management and operational decisions.

The FSM Time Line and Bar Graph components open by default to the Arrival Status tab for the monitored airport that you open. The Arrival Status tab shows flights colored by arrival status. To view departure information, select the Arrival/Departure Status tab in Time Line and Bar Graph components. FSM displays arrival and departure information depending on whether you select the Arrival and/or Departure Data checkboxes from the **View** menu.

Roll-Over Events

The roll-over feature is active in the Monitored Live mode Time Line and Bar Graph components, and the GDT mode Data Graph component. Where available, rolling your cursor over various features, gives you additional pop-up information.

1. Time Line –Rollig your cursor over a flight icon, causes a pop-up window to display the flight's ACID, ORIG, DEST, ETD, and ETA (see Figure 6-1).

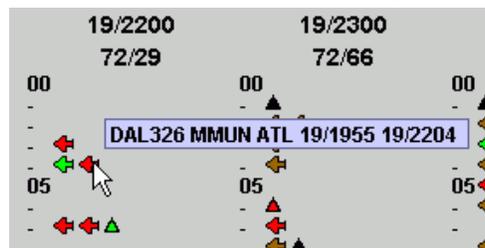


Figure 6-1: Rollover Flight Icons in the Time Line Component

- Bar Graph – To view a flight count for any hour, roll your cursor over any bar within the Bar Graph and the respective number of flights appears for the status color your cursor is over (see Figure 6-2). When you bring the cursor to the top of each column, the total number of flights for that column or hour appears in the Bar Graph. If you roll the cursor near the top of a bar, the total number of flights for that hour appears. You can use the same method to find the set Airport Arrival Rate (AAR). Roll the cursor over the AAR and the rate appears.

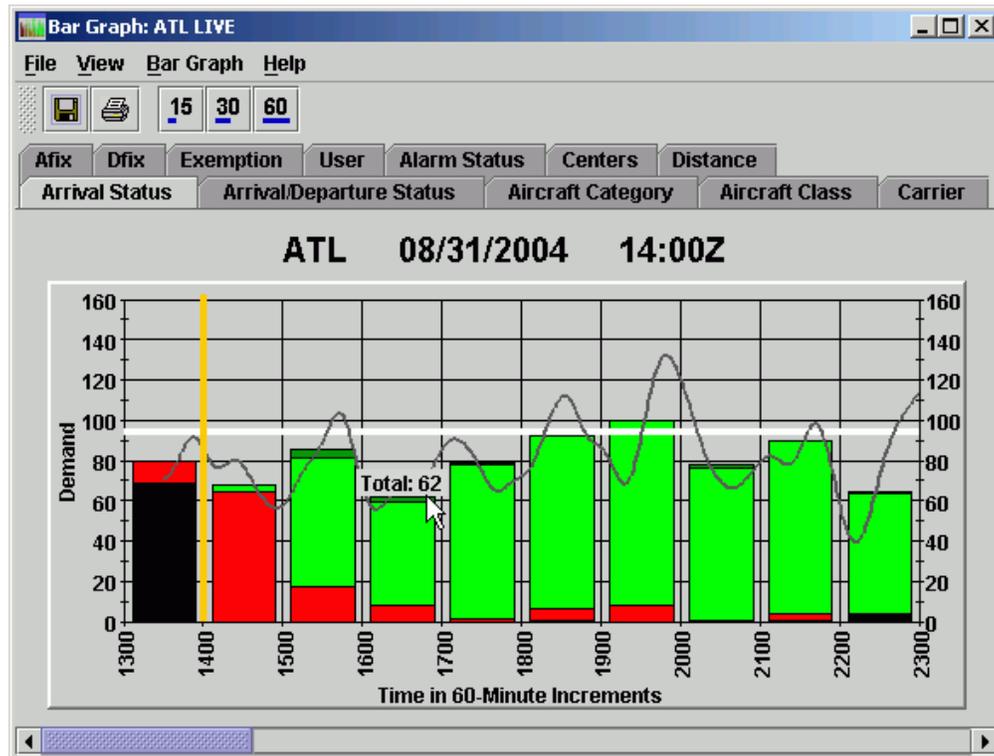


Figure 6-2: Bar Graph Count Rollover

3. **GDT Data Graph** –Rolling your cursor over any line in the Data Graph shows you the delay statistic count for the colored line. This line reflects the selected criteria of the scenario being monitored or modeled. Figure 6-3 illustrates the 2nd tier option selected with all the corresponding delay statistics in the legend. The roll-over shows a maximum delay of 246 minutes if you select a 1st Tier program.

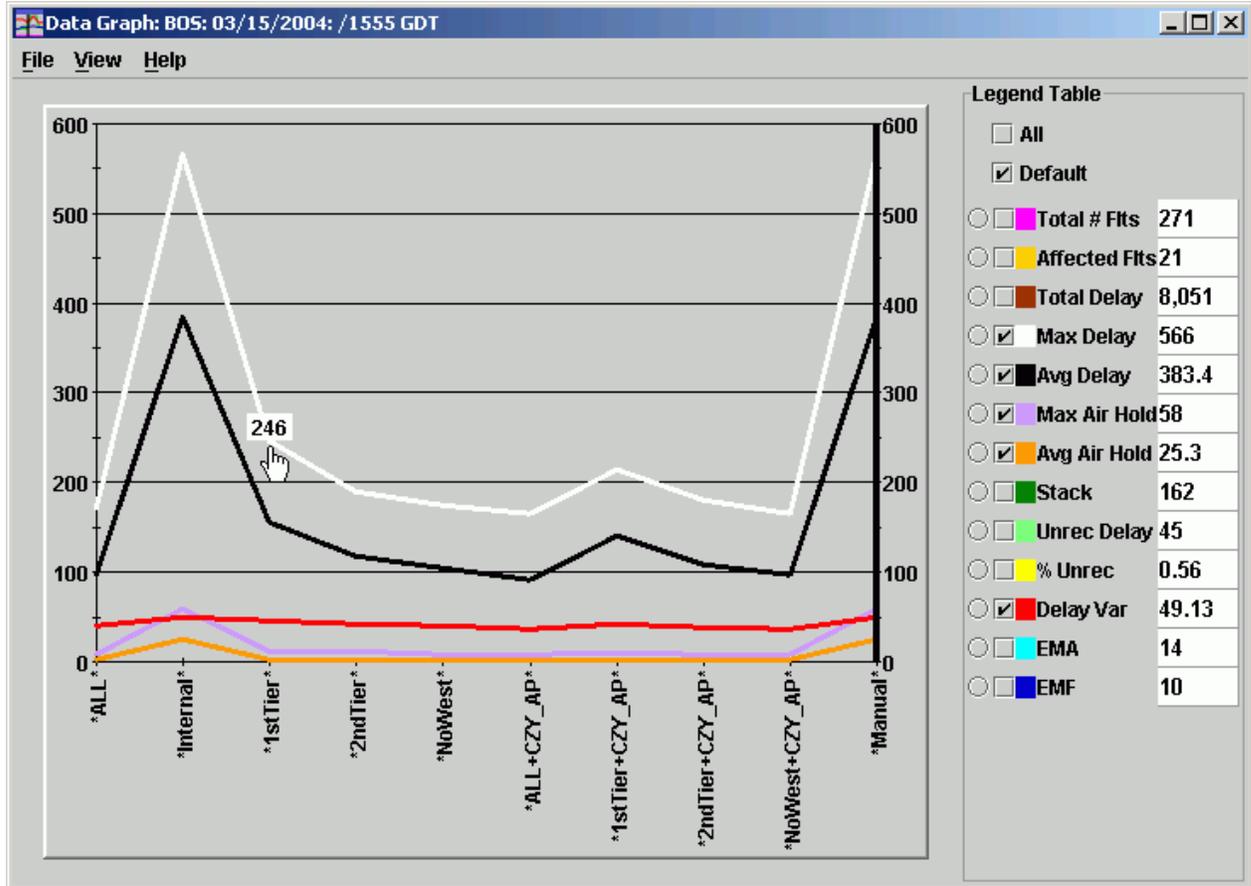


Figure 6-3: Data Graph Delay Statistic Rollover

Right-Click Capabilities

The right-click feature is active in Time Line, US Map, GDT Data Graph, and GDT Setup components.

1. Time Line – Right-clicking on a flight icon in the Time Line shows you five additional options for that flight: **Flight info**, **Flight detail**, **EDCT Check**, **EDCT Update**, and **ECR**.

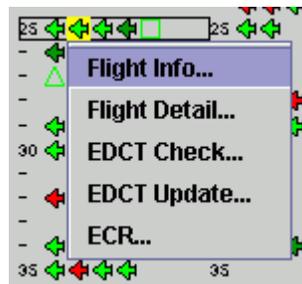


Figure 6-4: Time Line Right-Click Feature

- Selecting **Flight info** displays the Flight Info panel (see Figure 6-5), which contains some general ADL information for a flight, including ADID, status, origin airport, destination airport, ETD, ETE, ETA, CTD, CTA, Delay Flag, and Cancel Flag when applicable. Double-clicking on a flight icon in the Time Line also opens the flight's Flight Info window.

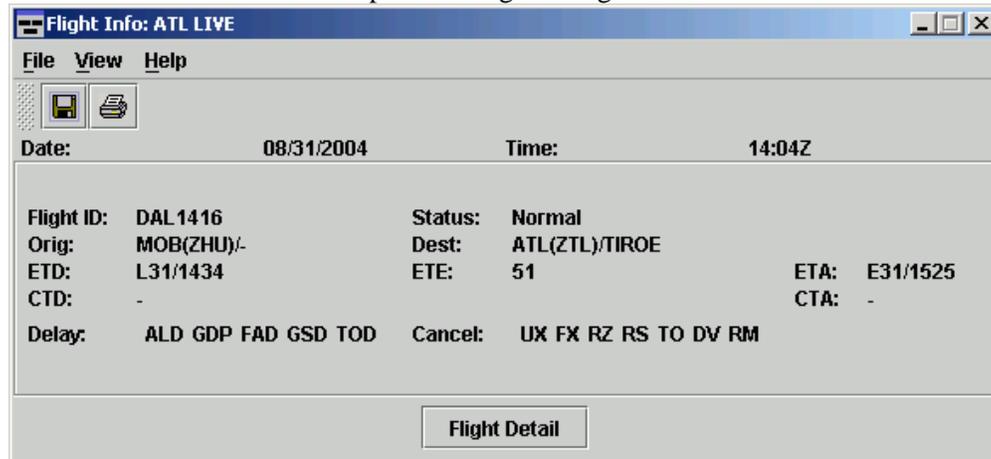


Figure 6-5: Flight Info Window

- Selecting **Flight detail** displays the Flight Detail window as shown in Figure 6-6. The Flight Detail window contains all the ADL information for that flight.

Flight Detail Information											
Flight ID:	DAL1118	Date:	00/01/2001	Time:	11:01Z						
Aircraft Type:	B732	AC_CAT:	Jet	Class:	Large						
Major:	DA	CDM Participant:	Y	Class:	Air Carrier						
Departure		GCD		Arrival		ADL Element					
Airport/Center:	MUSZHU	25Z	ATLZTL	TROPOL1512		DPDEFDORXFAFT					
Rz.Followup:	:		LGC1MGM	DPOTRSHSTANSTRSH							
Procedure:	:										
Time	Runway	Flt Route	Runway	Gate	ADL Element						
Estimated:	1311434	51	F311525		FTKTFPTA						
Controlled:					CTD#FTECTA						
Scheduled:	311430			311541	SG1D5G1A						
Proposed:	311430	46		311516	PGTDPTF.PGTA						
Actual:	311430			311511	LGTDLRTD.LRTALGTA						
Initial Estimated:	311430			311511	KTDACTA						
Actual(LTS):	-	-	-		AR1DL1L1W1A						
Actual(Airline):					DUKXOFT.OMN						
Earliest:	-	-	-		BR1D81A						
Original Estimated:	311434	51	311525		OPTDPTF.PFTA						
Date Estimated:	311434				DCTDCTA						
Original Control:	-	-	-		DU1D01A						
CR Exception:	-	CR Type:	-	CR Element:	-						
Slot ID:	-	Slot Hold:	-	Do Recovery:	-						
Delay Status: All D GMP FAD GSD TOD ITOD 0 CRX Status: IX FX R7 R5 TO DW RFA											
Remark: NRP LFG 01 ATV SUMP DVT ADC FCA WNR Alarm: CC FC FL SF CF											
Absolute Delay (Max(D, CTA - HOTA) - Taxi): 0											
Schedule Variation (ETA - (GTA - HOTA)): -5											
ATC Delay (Max(0, CTA - RFTA)): 0											

Figure 6-6: Flight Detail Window

- Selecting **EDCT Check** or **EDCT Update** displays the EDCT Check or EDCT Update windows. These EDCT widows allow you to check a flight's EDCT or Update a flight's EDCT.

The image shows two windows side-by-side. The left window is titled 'EDCT Check' and contains three text input fields: 'Aircraft ID: DAL856', 'Origin Airport: LAS', and 'Destination Airport: ATL'. Below these fields are three buttons: 'Send', 'Cancel', and 'Help'. The right window is titled 'EDCT Update' and contains several text input fields: 'Aircraft ID: DAL856', 'Departure Airport: LAS', 'Arrival Airport: ATL', 'IGTD (ddhhmm): 181435', 'CTD (ddhhmm): -', 'CTA (ddhhmm): 181807', 'ERTA (ddhhmm): 181814', 'CX (Y/N): N', and 'SH (Y/N): -'. Below these fields are three buttons: 'Send', 'Cancel', and 'Help'.

Figure 6-7EDCT Check and Update Windows

Note: The EDCT Check and EDCT Update options are available only for specialists at the ATCSCC.

- Selecting **ECR** displays the EDCT Change Request (ECR) component. If the selected flight from the time is a controlled flight, the flight information automatically fills in the ECR window. Refer to Chapter 13 for more information.

- In addition, after you select an airport on the US Map, you can right-click on the selected airport to view more options to open the airport in other components. You have the option of showing flights in the Time Line, Bar Graph, or Flight List components (see Figure 6-9). You can open only one component at a time from the US Map component.

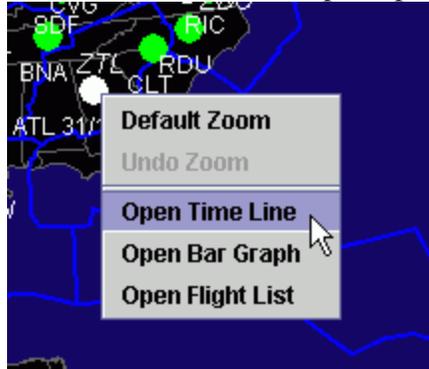


Figure 6-9: US Map Right-Click selected airport

FSM Flight Coloring

Display information by Flight color is a feature in FSM that assists the user in distinguishing between the varying statuses of multiple flights. Flight color options appear as tabs on the Time Line and Bar Graph components in all data modes. The following 12 coloring options are available in FSM:

1. Arrival Status
2. Arrival/Departure
3. Centers
4. Aircraft Category
5. Aircraft Class
6. Carrier
7. Arrival Fix
8. Departure Fix
9. Exemption Status
10. User
11. Alarm Status
12. Distance

The following sections provide a brief description of the 12 coloring options. The coloring schemes are documented based on FSM's default settings. You can configure all coloring schemes. Within the components you can select **View > Show Legend** at any time to display the color legend associated with the active color tab (see Figure 6-10).

You can view cancelled flights by selecting **View > Show Cancellations**. Cancelled flights are colored Cyan. The examples below show the Bar Graph component, but the Time Line component works in the same manner.

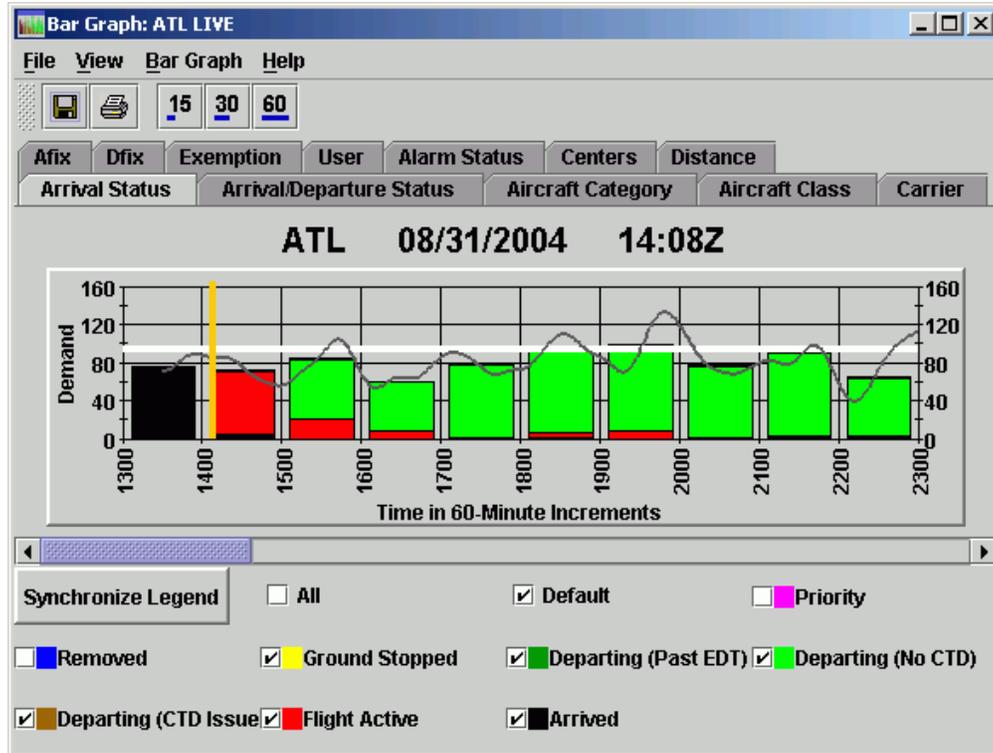


Figure 6-10: Bar Graph with Legend

Color By Arrival Status

The Arrival Status tab colors flights in the Time Line and Bar Graph according to their arrival status at their destination airport. To remove a color associated with a flight status in the Time Line or Bar Graph uncheck that status color checkbox in the component legend. The status data remains grayed-out until you select the checkbox again to restore the status color back to the graph (see Figure 6-11).

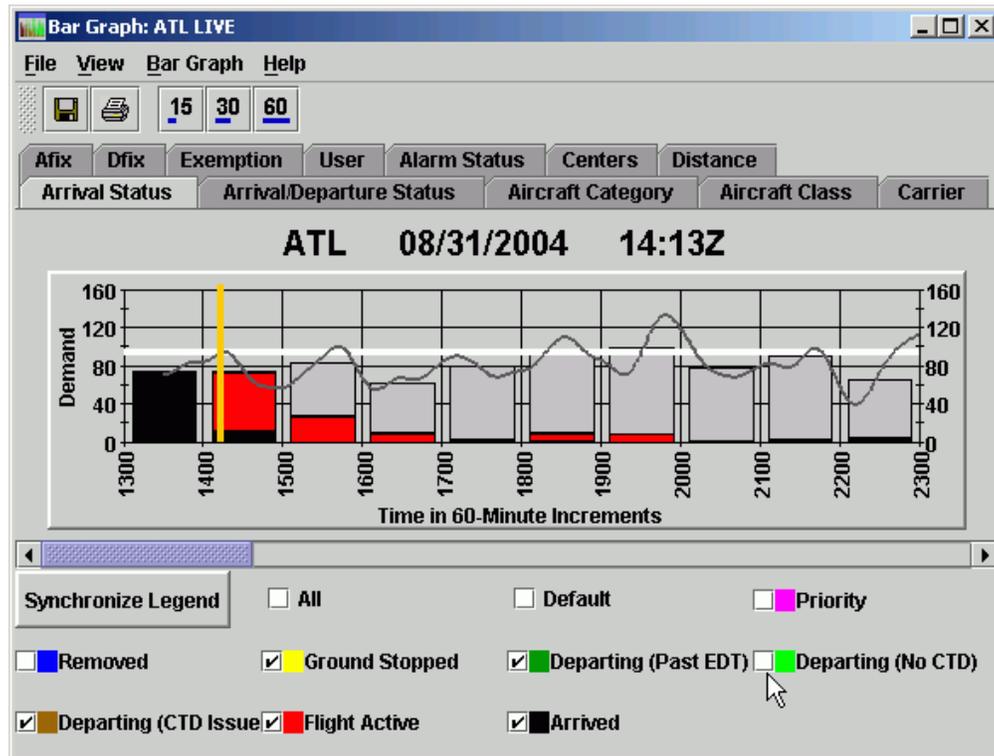


Figure 6-11: Bar Graph with departing flights not displayed

Table 6-1 displays FSM default coloring for Arrival Status.

Table 6-1: Arrival Status Tab Coloring

Flight Status	Definition	Default Color
Departing (No CTD)	Flights waiting to take off without delay. No Estimated Departure Clearance Time issued.	Light Green
Departing (CTD Issued)	Waiting to take off without delay. Estimated Departure Clearance Time issued.	Brown
Departing (Past EDT)	Flights which have passed their Estimated Departure Time and remain on the ground.	Dark Green
Arrived	Flights have arrived at their destination airport.	Black
Flight Active	Flights currently en route to their destination airport	Red
Cancelled	Flights that do not fly because they are cancelled.	Cyan

Flight Status	Definition	Default Color
Ground Stopped	The flight is currently in a Ground Stop program.	Yellow
Removed	The ATCSCC CSA removed the flights.	Blue
Priority	Flights designated as Lifeguard (LFG) or Diversion Recovery (DVT) flight. This coloring applies only to flights that are not active and overrides all other colors when selected.	Pink
Unassigned Slots	Unassigned slots allocated by ETMS during a GAAP GDP.	White

Color By Arrival/Departure

The Arrival/Departure tab allows you to quickly view flights that are arriving at the monitored airport versus flights that are departing the monitored airport. Arriving flights are colored Light Green while departing flights are Blue.

Color By Centers

The Centers tab allows you to quickly locate flights that departed from one or several centers. By default, FSM shows all centers. To color flights departing from a specific group of centers, you can either select a tier level from the legend's dropdown menu or you can select a center or group of centers. When you select one of the options from the dropdown menu, the centers not associated with that particular group are disabled, leaving only the selected centers colored in red. You can also enter a center in the *Manual* text box if it is not already a center choice. Selecting the All option in the dropdown menu restores all centers back to the graph. The figure below is an example of 1st Tier centers plus SFO selected for ATL.

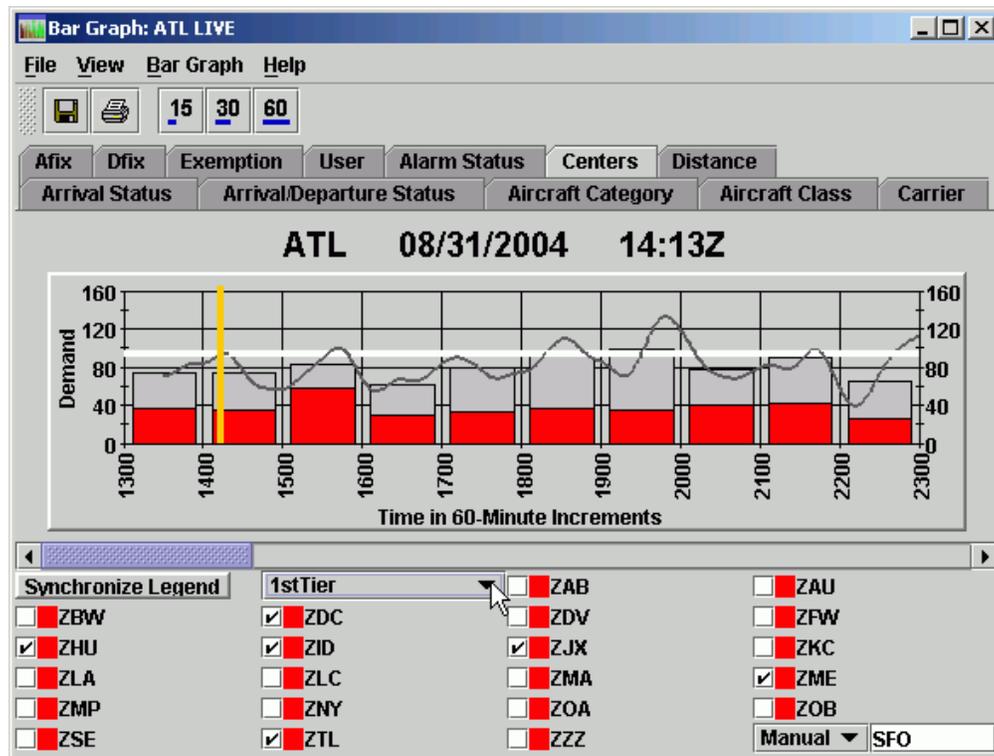


Figure 6-12: Bar Graph Colored by Centers

Color By Aircraft Category

The Aircraft Category tab colors flights according to their equipment classification.

displays FSM default coloring for Aircraft Category.

Table 6-2: Aircraft Category Coloring

Equipment Type	Default Color
Propeller	Black
Turbo	Green
Jet	Red
Unknown	Yellow

Note: FSM colors flights based on their equipment types. FSM does not classify equipment types.

Color By Aircraft Class

The Aircraft Class tab colors flights according to their standardized weight class, determined by the FAA. Table 6-3 shows FSM default coloring for Aircraft Class.

Table 6-3: Aircraft Class Coloring

Equipment Type	Color
Small	Black
Large	Green
Heavy	Red
Unknown	Yellow

Color By Carrier

The Carrier tab colors flights by airline carrier. In the Carrier tab, select **View > Show Legend** to show the color assigned to each carrier.

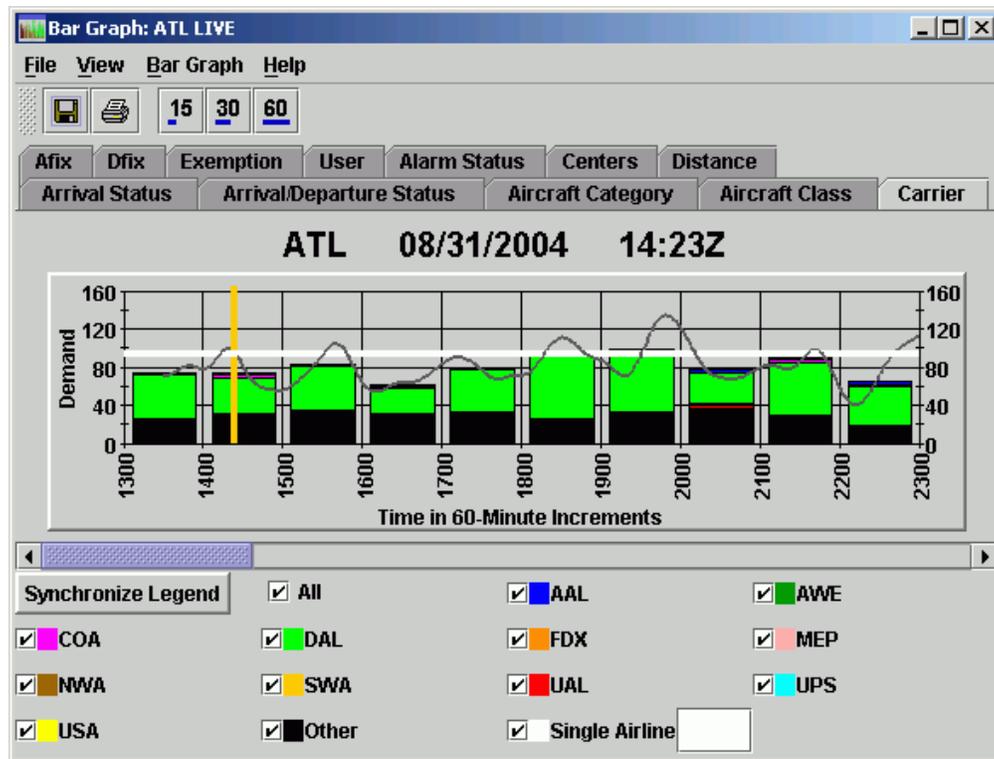


Figure 6-13: Bar Graph Color by Carrier

Uncheck the carrier checkbox in the color legend if you do not want to view a particular carrier in the component. The carrier data remains grayed-out until you select the checkbox again to restore the carrier color back to the component.

Typing a single airline identifier into the Single Airline textbox lets you view the flights of a major carrier without viewing its sub-carrier flights. Selecting *All* selects and colors all listed carriers. The Carrier tab shows a maximum of 12 carriers. Table 6-4 explains FSM default coloring by Carrier.

Table 6-4: Carrier Coloring

Flight Carrier	Default Color
COA	Magenta
USA	Yellow
NWA	Brown
AWE	Dark Green
AAL	Blue
MEP	Dark Pink

UAL	Red
DAL	Light Green
TWA	Cyan
SWA	Orange
Single Airline	White
Other	Black

If you are an airline user, when you select the Carrier tab, the FSM default color is for the flights of your carrier. Your carrier abbreviation appears in the Single Airline text box so that you immediately view your carrier's flights. For major carriers, the box next to the carrier name is selected and the carrier abbreviation appears in the Single Airline box. This allows you to differentiate between the major and any of your sub carriers. Because of flight filtering, non-FAA operators cannot view any other carriers' flights other than those belonging to their own major or sub-carriers. All other flights are colored black.

If you are an FAA user, the FSM default is to have no carriers selected for coloring. You select which carriers to color by putting a checkmark next to the carrier abbreviation or entering a carrier code in the *Single Airline* text box in the Carrier legend. When you select a major carrier to color, the major carrier and its sub-carriers are all the color of its Major.

Color by Arrival Fix

The Arrival Fix (AFIX) tab colors flights according to which arrival fix the flight is approaching for the arrival airport. Arrival Fix names vary for each airport. FSM automatically generates the monitored airport's arrival fix names and assigns a color to each fix in the legend. For those flights with an unknown arrival fix, FSM assigns that fix a value of "Other."

Note: All flights departing the monitored airport are colored as "Other" because their arrival fix is at another airport.

Color by Departure Fix

The Departure Fix (DFIX) tab colors flights according to which departure fix the flight has departed over at its origin airport. Departure fix names vary for each airport. FSM automatically generates the monitored airport's top departure fix names and assigns a color to each fix in the legend. For those flights with a departure fix that is other than the top departure fix names listed or that is unknown, FSM assigns that flight a value of "Other."

Color by Exemption Status

The Exemption tab colors flights according to their status in any GDT operation. By default, flights are Non Exempt, meaning that the flight is subject to any GDT operation. However, in running a GDT operation, you may decide to exclude certain flights from the operation. This changes the Non Exempt status on some flights to either excluded or exempted. The ADL contains the exemption status for all flights. Table 6-5 shows FSM default coloring for Exemption Status.

Table 6-5: Exemption Status Coloring

Exemption Status	Default Color
------------------	---------------

Flts Excluded	Black
Flts Not Exempted	Green
Flts Exempted	Red

Color By User

The User tab colors flights according to their user status. User status describes the primary function of that flight. This information is sometimes masked from airline users because of flight filtering. For example, military flights are not listed as such. Table 6-6 shows FSM default coloring for User status.

Table 6-6: User Coloring

User Status	Color
Air Cargo (F)	Blue
Carrier (C)	Magenta
General Aviation (G/A)	Green
Military (M)	Brown
Air Taxi (T)	Orange
Other (O)	Cyan
Unknown (U)	Red

Color By Alarm Status

The Alarm Status tab colors all flights red that have at least one non-compliant alarm triggered. You can also view these flights by selecting individual compliance reports from the **Reports > Compliance** menu from the Control Panel. Compliant flights are colored black.

Color By Distance

The Distance tab colors all flights within a certain distance of the airport. The Distance tab displays all flight distances in red and allows you to view/select distance ranges of up to 2,400 miles in 200-mile increments.

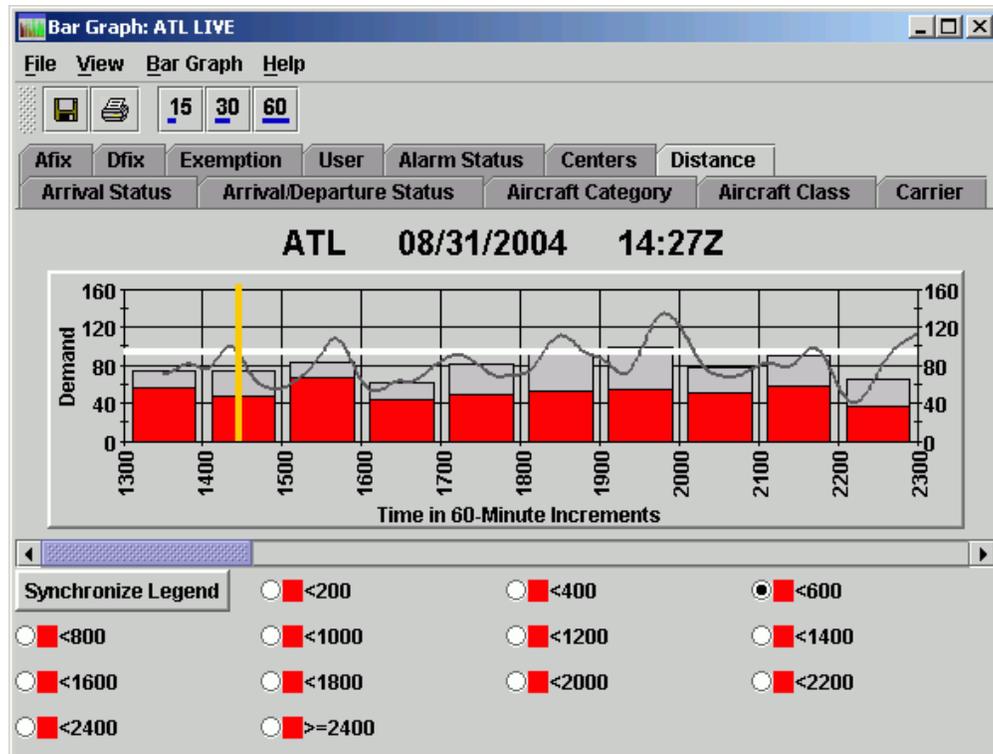


Figure 6-14: Bar Graph by Distance

Viewing Information in the Time Line Component

From the Time Line, you can view flights arriving at and departing from the monitored airport, as well as open arrival slots, unassigned slots, and cancellations. The selected tab in the Time Line indicates the type of data displayed. The tab coloring options are the same as described above in Flight Coloring options. Directly above the tab options, the Time Line lists the airport being monitored, as well as the date and ADL time as shown in Figure 6-15. For more information on the Time Line component, see Chapter 3, Understanding Components.

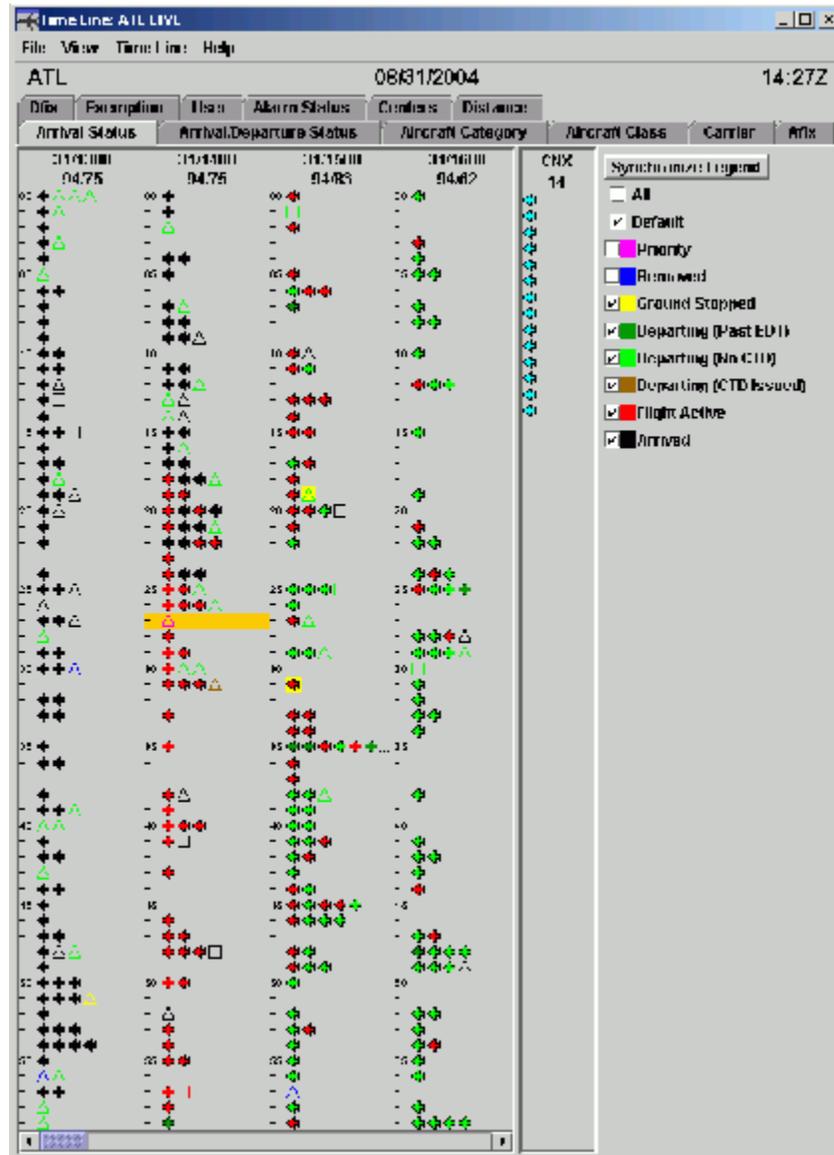


Figure 6-15: Time Line Component with Color Legend Displayed

The AAR and/or ADR versus the demand on the airport (the number of flights projected to arrive) for that hour appears directly below the date/hour information. The Airport Departure Rate versus demand appears in parentheses when you select **View > Departure Data**. For example, if the Time Line displayed (90/85), this would indicate that 90 is the Airport Departure Rate and 85 flights are projected to depart for that hour.

Each flight arriving at the monitored airport appears beside the minute hash mark, which corresponds to the ETA of the flight. Cancelled flights appear under the CNX column. You can show or hide icons for cancelled flights by selecting **View > Show Cancellations** from the Time Line component. FSM keeps and displays flight data compiled by Volpe National Transportation Systems Center, which includes data for up to 24 hours after the current time.

View Open Arrival Slots

To view open arrival slots that resulted from delayed or cancelled flights, select the **View > Open Slots in Carrier Color** checkbox from the Time Line. Slots appear on the Time Line as square (cancelled) or triangle (delayed) icons. Note that airline users see only their own slots in the color that FSM designates for their airline. Any slot left open from another carrier's cancelled or delayed flight is colored black.

Time Line Flight Count

If you need to determine a flight count for a particular time span, you can use the Time Line to retrieve the information quickly.

1. Select the hour number for the beginning time.
2. Press and hold **Ctrl** as you select the last hour number for the time span. This counts all flights in the selected area that are colored according to a "Color By" criterion.

A message box appears.

Note: You must select at least two minutes worth of flight data.

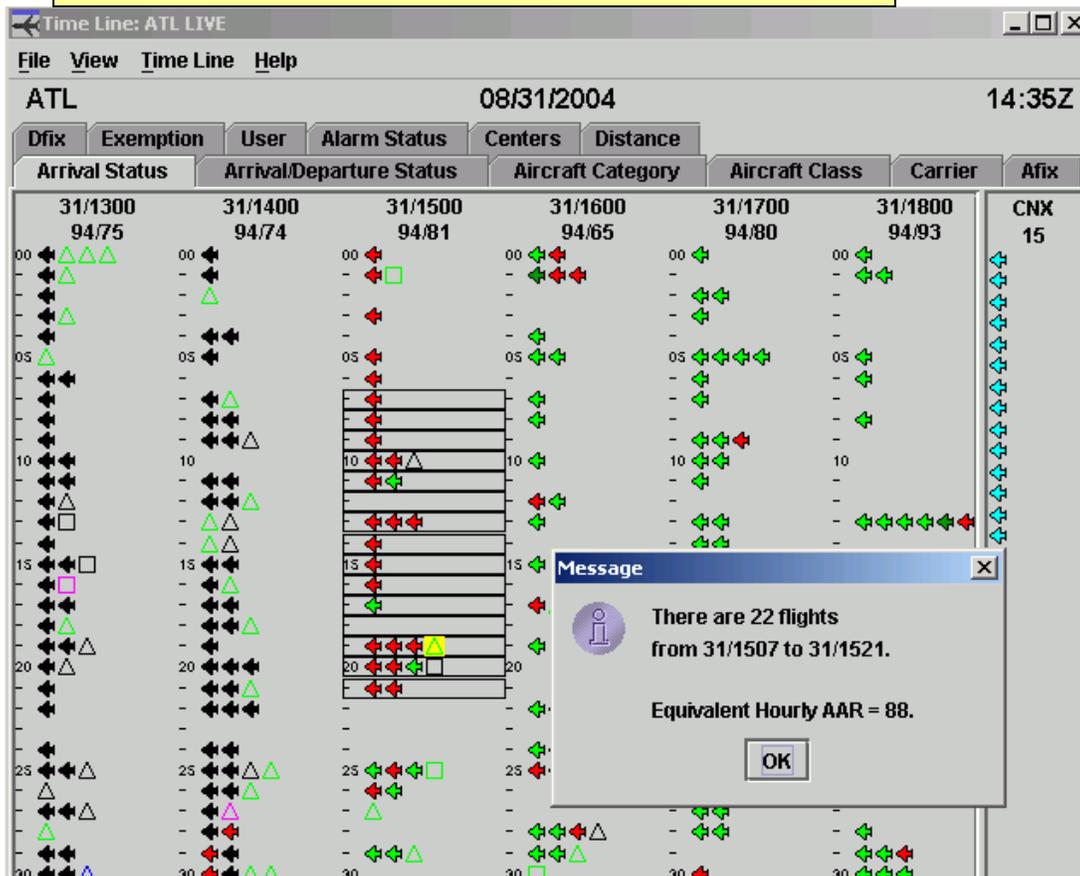


Figure 6-16: Flight Count List

When you select a group of flights to count on the Time Line, FSM returns information about the count. This information includes the total number of flights, how many flights are arrivals and how many are departures, the time period and the equivalent AAR and/or ADR. FSM derives the AAR and ADR values using: $AAR = (\#flts/\#minutes) \times 60$.

3. Click **OK** to close the message box.

Time Line Flight List

If you need to determine a flight list for a particular time span, you can use the Time Line to retrieve the list quickly.

1. Select the first flight icon.
2. Press **Shift** as you select the last flight icon. This creates a flight list in the selected area that is colored according to a "Color By" criterion(see Figure 6-17).

Note: You must select at least two minutes worth of flight data.

The Flight List window appears.

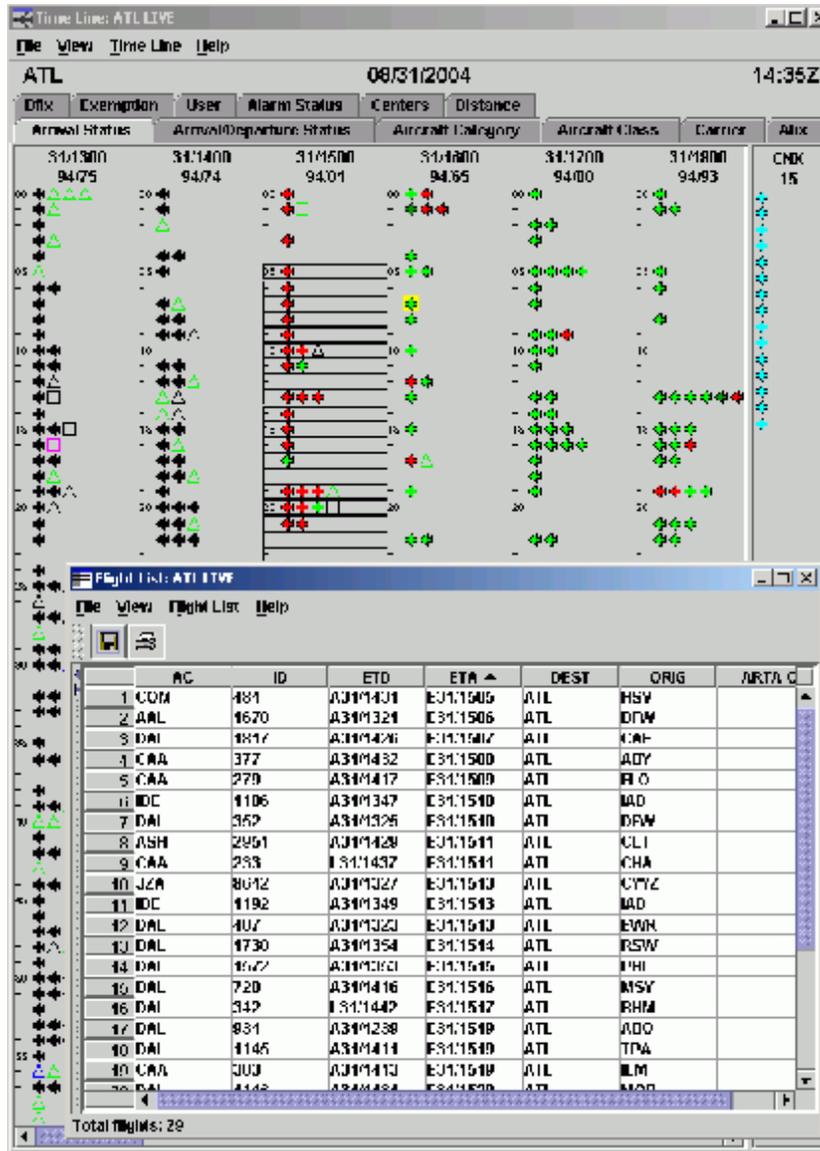


Figure 6-17: Flight List

3. Select **File>Close** from the Flight List window to close the flight list.

GDT Time Line Display Options

The GDT Time Line gives you the option to display flights according to different flight data. When you choose different criteria to use in the FSM Flight display, your changes affect both the FSM Time Line and Bar Graph components. For a description of each menu option on the Time Line **Display** menu, see Chapter 3, Understanding Components.

To Change the GDT Time Line Flight Display

To change the display in the GDT Time Line, use the Display menu options. For a description of each menu item, see Chapter 3, Understanding Components. For example, you want to see all flights by their Controlled Time of Arrival (CTA) and colored by Exemption Status.

1. Select **Display>CTA** in the GDT Time Line component.
2. The Time Line displays flights by their CTA.

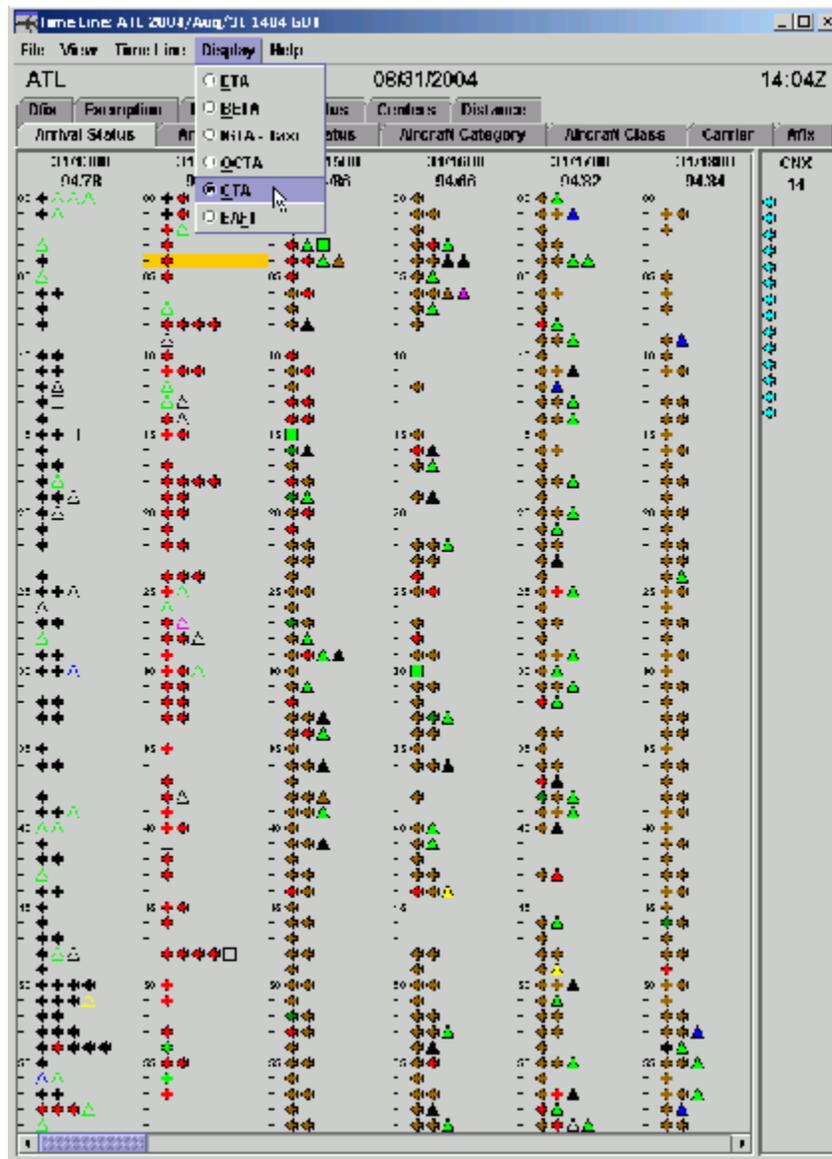


Figure 6-18: GDT Time Line Display by CTA

3. Select the Exemption Status tab.
The Exemption Status tab shows all flights colored by Exemption Status and by their CTA.
4. Select **Display>ETA** to return the flight display to its default appearance.

Flight Lists

FSM generates Flight Lists automatically when it performs certain functions. You can generate one for a specific group of flights that you select. Flight Lists allow you to view what flights contribute to the arrival demand at an airport and how many flights fall into specific categories. You can open an FSM Flight List in a variety of ways from all FSM modes and several FSM components. You can obtain Flight Lists from the Bar Graph, Time Line, Status Map, Open Data Set, Query Manager, and GDT Setup components.

The way FSM generates a Flight List differs depending upon the type of information you need.

Note: Report Flight Lists vary in the initial default information displayed, but the functionality described below is the same. For more information on Report Lists, see *Chapter 19*.

When you want to see only flights that meet certain criteria, you can generate a Flight List from the Query Manager component. From a Flight List, you can also select a single flight and view the Flight Info or Flight Details for that flight by right-clicking on the selected flight, or by highlighting the flight and using the **View** menu options. All Flight Lists are dynamic and are updated along with every ADL update.

	AC	ID	ETD	ETA ▲	DEST	ORIG	ARTA-CTA
1	DAL	224	A31/1303	E31/1505	ATL	SAT	
2	COM	484	L31/1432	E31/1506	ATL	HSV	
3	AAL	1678	A31/1321	E31/1506	ATL	DFW	
4	DAL	1817	L31/1425	E31/1507	ATL	CAE	
5	IDE		1/1347	E31/1510	ATL	IAD	
6	CAA		1/1437	E31/1511	ATL	CHA	
7	DAL		1/1325	E31/1511	ATL	DFW	
8	CAA		1/1419	E31/1511	ATL	FLO	
9	DAL		1/1353	E31/1512	ATL	PBI	
10	JZA		1/1327	E31/1513	ATL	CYYZ	
11	IDE		1/1349	E31/1513	ATL	IAD	
12	DAL	1738	A31/1354	E31/1514	ATL	RSW	
13	DAL	342	L31/1442	E31/1517	ATL	BHM	
14	DAL	934	A31/1239	E31/1517	ATL	ABQ	
15	CAA	303	L31/1410	E31/1518	ATL	ILM	
16	N	392KC	P31/1400	E31/1623	ATL	ARR	
17	CAA	246	L31/1733	E31/1808	ATL	CHA	

Total flights: 17

Figure 6-19: Flight List

Flight List Menu

The menu bar in the Flight List component contains four menu options: **File**, **View**, **Flight List**, and **Help**.

1. File Menu

- **File > Save as** - Saves the Flight List to a text file, which can be opened later and used again.

- **File > Print** – Prints the Flight List information viewed on the monitor screen.
- **File > Close** - Closes the Flight List component.
- **File > Close Group** – Closes the all the data set components associated with the Flight List component.

2. View Menu

- **View > Rename window** – Displays the Rename Window dialog box and allows you to change the title bar name.
- **View > Add/Remove Columns** – Allows you to add or delete ADL data fields as columns to the Flight List.
- **View > Group Flights** – Allows you to group ADL data fields to the Flight List in ascending or descending order.
- **View > Sort Flights** – Allows you to sort ADL data fields to the Flight List in ascending or descending order.
- **View > Apply Filter** – Allows you to apply a filter to the data fields in the Flight List component.
- **View > Clear Filter** – Allows you to clear a filter from the data fields in the Flight List component.
- **View > Flight Info** - Opens the Flight Info window.
- **View > Flight Detail** - Opens the Flight Detail window.

3. Flight List Menu

- **Flight List > Freeze Data** – When checked, prevents the Flight List from updating when new ADLs arrive.
- **Flight List > Set Time** – Sets the time for the Flight List component in Historical mode only.
- **Flight List > Search By Callsign** – Opens the Search by Callsign component.

4. Help Menu

- **Help > Flight List** – Accesses the web-based on-line help for Flight Lists.

Opening Flight Lists

You can open flight lists from multiple components in FSM. This section explains how to open Flight Lists from the:

- Open Data Set component
- Bar Graph component
- Time Line component
- US Map component

To open a Flight List from the Open Data Set component

You can open Flight Lists directly from the Open Data Set component. For example, you want to see the flight list for ORD, as well as the Time Line and Bar Graph components, that FSM is currently monitoring.

1. Click **Open Data Set** from the Control Panel.
2. Select the ORD data set in the Monitored Live tab.
3. Select **Flight List** in the Open With section of the screen (*Time Line* and *Bar Graph* appear selected by default).
4. Click **Apply** or **OK**.

The Time Line, Bar Graph, and current Flight List for ORD appear.

To open a Flight List from the Bar Graph component

You can open Flight Lists directly from the Bar Graph component. For example, you want to see a flight list for the Arrival Status of all flights, including cancelled flights, between the 1700 and 1800 hours for BOS.

1. Click **Open Data Set** from the Control Panel.
2. Select the BOS data set in the Monitored Live tab.

The Time Line and Bar Graph for BOS appear

3. Select **View > Show Cancellations** from the Bar Graph to include cancelled flights in the flight list.
4. Ensure the Bar Graph displays in 60 minute increments. If it is not, click **60**.

Note: If the Bar Graph displays in 15 or 30 minute increments, clicking on a bar gives you only the flights for that increment.

5. Double-click the bar between 1700 and 1800 to generate the Flight List (For more information on Bar Graphs, see Chapter 3).

To open a Flight List from the Time Line component

See the Time Line Flight List section above for information on how to open a flight list from the Time Line.

To open a Flight List from the US Map component

You can open Flight Lists for a monitored airport directly from the US Map component. For example, you want to view a flight list for MCI.

1. Click **US Map** on the Control Panel.
2. Select **MCI**.

The dot for the airport turns white in color when selected. In addition to turning white, the airport's last ADL time also appears-day then time.

3. Right-click on the airport to display a pop-up menu, which includes the zoom options as well as the options to view the Time Line, Bar Graph, or Flight List components for that airport in Monitor Live mode.
4. Select **Open Flight List...** to view the Flight List for MCI.

The Flight List appears.

5. Select **File>Close** to close the Flight List window.

Flight List Format

Although there are many ways to generate an FSM Flight List, the lists are always in the same format. Flight List characteristics include:

- Spreadsheet format – you can manage the lists in the same way you manage spreadsheets.
- You can resize the Flight List and scroll through it.
- The default sort order for Flight List is by ETA.
- The Component information appears in the Flight List title bar: Three-letter airport code and mode in which the data was retrieved.
- The number of flights contained in the list appears in the bottom left corner of the component.

	AC	ID	ETD	ETA ▲	DEST	ORIG	ARTA-C
1	DAL	585	A31/1233	A31/1400	ATL	DCA	
2	AAL	536	A31/1215	A31/1401	ATL	DFW	
3	TRS	369	P31/1212	E31/1401	ATL	LGA	
4	DAL	975	A31/1220	A31/1404	ATL	PHL	
5	DAL	1426	A31/1305	A31/1404	ATL	JAN	
6	DAL	1086	A31/1245	A31/1405	ATL	PBI	
7	DAL	453	A31/1157	A31/1407	ATL	MSP	
8	TRS	363	A31/1214	A31/1408	ATL	LGA	
9	DAL	1548	A31/1228	A31/1408	ATL	IAH	
10	DAL	637	L31/1252	E31/1408	ATL	CMH	
11	LOF	5621	A31/1245	A31/1409	ATL	STL	
12	DAL	1618	A31/1232	A31/1409	ATL	TUL	
13	DAL	1481	A31/1150	A31/1411	ATL	CYUL	
14	DAL	606	A31/1215	A31/1411	ATL	OMA	
15	DAL	705	A31/1221	A31/1412	ATL	LGA	
16	DAL	385	A31/1252	A31/1412	ATL	ORF	
17	CAA	121	A31/1340	A31/1415	ATL	CSG	
18	DAL	361	A31/1159	A31/1415	ATL	PVD	
19	DAL	1168	A31/1334	A31/1416	ATL	CAE	
20	DAL	987	A31/1254	A31/1417	ATL	CLF	

Total flights: 3024

Figure 6-20: Flight List

Selecting Flight List Information

There are certain default values for Flight List information categories (the default information is configurable). When you first open a Flight List, the default information appears.

- ACID – The air carrier (AC) and aircraft identification number (ID). This is a three letter carrier code followed by the flight's identification number. For example, UAL1234 indicates a United Airlines flight with ID number 1234. Airline users see only their own carrier and sub-carriers ACIDs; FSM masks all other flights.
- ETD – The flight's Estimated Time of Departure
- ETA – The flight's Estimated Time of Arrival

- DEST – The airport from which the flight is departing
- ORIG – The airport at which the flight is arriving.
- ARTA – ARTD – Actual Runway Time of Arrival minus Actual Runway Time of Departure. This gives an accurate calculation of the flight's ETE.

You can configure the information in the Flight List to suit your needs by using the Add/Remove Columns window. The Add/Remove Columns window allows you to add columns by:

- Field – Allows you to select individual ADL data elements.
- Group – Allows you to select logical groups of ADL elements.
- FSM Calculated value – Allows you to select values that are the result of operations on times listed in the ADL.

You can also remove columns using the Add/Remove Columns window with the following *exceptions*:

- AC
- ID

This section explains how to add, remove, and move columns on the flight list.

To add data column information to a Flight List

1. Select **View > Add/Remove Columns** from the Flight List component.

The Add/Remove Columns window appears showing all possible informational categories that you can view in FSM's Flight Lists. The categories correspond to the available data fields in the ADL, groups of available data fields, and calculations that you can specify. The data elements that currently appear in the Flight List, also appear in the **Fields Displayed** scroll box (see Figure 6-21).

2. Select any data fields you want to add from the By Field section of the window.
3. Click the bottom arrow button to move the fields to the **Fields Displayed** scroll box.
4. Select any groups of data fields that you want to add from the By Group section of the window.
5. Click the bottom arrow button to move the groups to the **Fields Displayed** scroll box.
6. Specify the calculation you would like to add from the By Calculation section of the window.

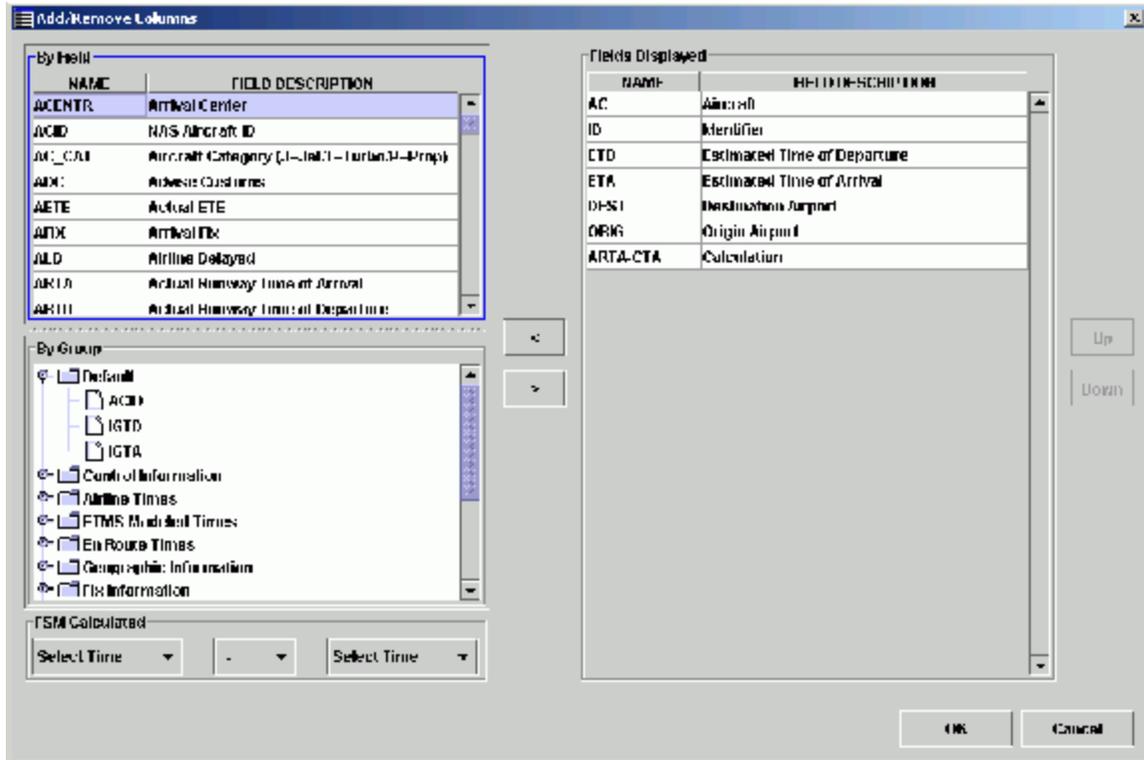


Figure 6-21: Add/Remove Columns Window

7. Click the bottom arrow button to move the calculations to the **Fields Displayed** scroll box.
8. Click **OK**.

To add multiple calculations to a Flight List

1. Select **View > Add/Remove Columns** from the Flight List component.

The Add/Remove Columns window appears.

2. Select the data fields you want to use for first the calculation.
3. Click the bottom arrow button to move the category to the **Fields Displayed** scroll box.
4. Select the data fields you want to use for the next calculation.
5. Click the bottom arrow button to move the category to the **Fields Displayed** scroll box.
6. Continue adding calculations in this way until all of your calculations appear in the Shown Fields section of the window.
7. Click **OK**.

All of the calculations appear in the Flight List window.

To remove data column information from a Flight List

1. Select **View > Add/Remove Columns** from the Flight List component.

The Add/Remove Columns window appears. The data elements that currently appear in the Flight List, are in the **Fields Displayed** scroll box (see **Error! Reference source not found.**).

Figure 6-22: Add/Remove Columns Window

2. To remove a **Shown** data field, you can double-click the field you want to remove or select the field and click the top arrow button to move the data field back to the appropriate scroll box.
3. Click **OK**.

To rearrange columns in a Flight List

You can arrange the order in which your columns appear with two different methods. The easiest and most convenient method is to do it directly from the Flight List itself, by dragging and dropping the column header to the desired position in the list. The second method, discussed below, uses the Add/Remove Columns window.

1. Select **View > Add/Remove Columns** from the Flight List component.

The Add/Remove Columns window appears.

2. Select the ADL data field (column header) from the Shown scroll box.
3. Move it up or down the list using the **Up** or **Down** buttons located to the right of the **Fields Displayed** scroll box. Moving a data element to the top of the Add/Remove Columns window positions the data element header to the left most column on the Flight List.
4. Once you move the data fields to the positions you want, click **OK**.

Grouping Information in the Flight List

Once you create a Flight List, you can group the information according to your own needs. To group a flight list select **View > Group Flights** on the Flight List component. The Group window enables either individual or multi-level grouping of all data fields that currently appear in the Flight List.

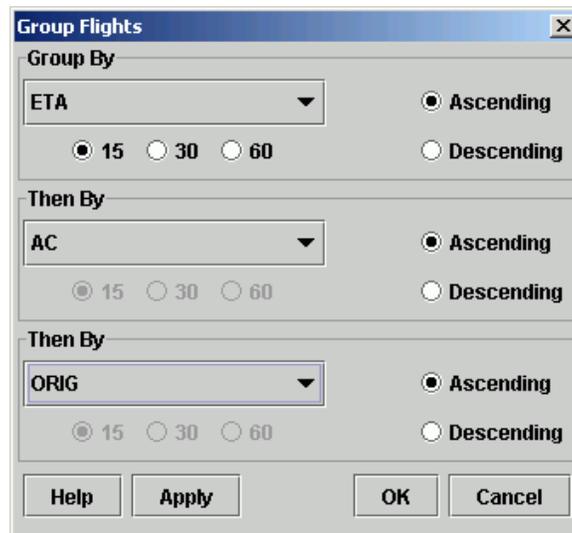


Figure 6-23: Flight List Grouping Window

The Group window has the following buttons:

- **Help** – Displays information about the component version currently running in the Group window.
- **Apply** – Keeps the Group window open after FSM updates the flight list.
- **OK** – Closes the Group window after FSM updates the flight list.

- **Cancel** – Cancels any selections made, closes the Group window, and restores the default selections.

Figure 6-24 below, shows the flights grouped by ETA, then Carrier, then Origin Airport. The Flight list appears in a split screen and FSM puts grouped flights into folders that you can expand for more detail. This grouped flight list corresponds with the Group window parameters shown in Figure 6-23.

	AC ^	ID	ETD	ETA ^	DEST
1	A	136	L31/1705	E31/1759	ATL
2	L	1226	A31/1210	E31/1517	ATL
3	L	1226	L01/1213	E01/1526	ATL
4	S	553	S01/0000	E01/0146	ATL
5	A	760	S01/0415	E01/0520	ATL
6	L	788	L31/2240	E01/0229	ATL
7	L	893	L01/0017	E01/0139	ATL
8	A	357	L31/1530	E31/1705	ATL
9	S	112	S01/1519	E01/1702	ATL
10	L	300	L31/1927	E31/2247	ATL
11	S	112	A31/1508	E31/1651	ATL
12	A	180	L31/2155	E31/2224	ATL
13	L	321	L01/1336	E01/1550	ATL
14	L	682	L31/1920	E31/2147	ATL
15	L	321	A31/1333	E31/1544	ATL
16	A	503	L31/2332	E01/0058	ATL

Total flights: 3057

Figure 6-24: Flight List Grouped

To group flights by one data field

1. Select a data field in the Group By dropdown.
2. Select either *Ascending* or *Descending*.
3. Click **OK** or **Apply** in the Group window and the Flight List groups flights according to the parameters you set.

To group flights by multiple data fields

You can also group according to multiple categories in the Flight List. For example, you want to group your filtered Flight List by the Initial Gate Time of Arrival (IGTA), Airline, and Origin Airport (OrigAp) respectively.

1. Select the **IGTA** data field in the Group By dropdown.

Note: You can specify time increments of *15*, *30*, and *60* minutes for data fields that are time based by selecting the corresponding radio buttons.

2. Select *Ascending*.
3. Select the **AC** data field in the Then By dropdown.
4. Select *Ascending*.

5. Select **ORIG** data field in the Then By dropdown.
6. Select **Ascending**.
7. After you select all the grouping parameters, click **Apply** or **OK** to generate the grouped Flight List.
8. You can expand a group by double-clicking on the group or clicking on the expand/collapse icon. Drilling down shows individual flights within each group set. The grouping parameters appear above the grouped flights section.

To remove grouping from a Flight List

You can easily return to the normal Flight List display.

1. Select **View > Group Flights** to access the Group Window.
2. Select **None** in the Group By field.
3. Click **OK**.

Sorting Information in the Flight List

Once you create a Flight List, you can sort the information and arrange it according to your own needs. You can sort the list one column category at a time by double-clicking the column heading. The arrow at the top of the column indicates that ascending or descending order for that category sorts the Flight List column.

To sort by multiple categories select **View > Sort Flights** from the Flight List component. The Sort window shows the data fields that are currently listed in the Flight List. The data fields correspond to the available data fields in the ADL. You can also sort multiple categories by pressing Ctrl on your keyboard and then selecting up to three categories. The arrow at the top of the column indicates that ascending or descending order for that category and the size of the arrow indicates was level the sort is. sorts the Flight List column.

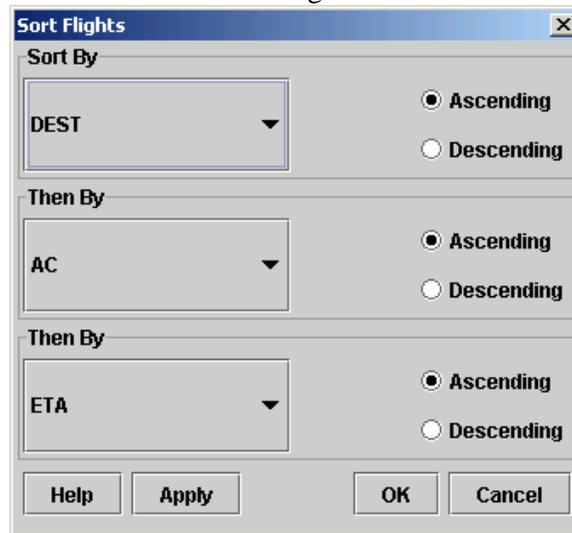


Figure 6-25: Sort Window

The Sort Window has the following buttons:

- **Help** - Displays information about the component version currently running in the Sort window.
- **Apply** - Keeps the Sort window open after FSM updates the flight list.
- **OK** - Closes the Sort window after FSM updates the flight list.
- **Cancel** - Cancels any selections made and closes the Sort window.

Figure 6-26 shows flights sorted by Destination, then AC, and then ETA. This sorted Flight List corresponds with the Sort window parameters shown in Figure 6-25.

	AC ^	ID	ETD	ETA ^	DEST ^	ORIG	ARTA-C
364	CAA	228	L01/1219	E01/1417	ATL	HPN	
365	CAA	700	L01/1203	E01/1429	ATL	MMMY	
366	CAA	308	L01/1328	E01/1431	ATL	PFN	
367	CAA	628	L01/1354	E01/1441	ATL	VLD	
368	CAA	139	L01/1334	E01/1444	ATL	MYR	
369	CAA	284	L01/1335	E01/1445	ATL	LEX	
370	CAA	681	L01/1410	E01/1446	ATL	DHN	
371	CAA	624	L01/1324	E01/1449	ATL	IAD	
372	CAA	377	L01/1417	E01/1451	ATL	ABY	
373	CAA	214	L01/1409	E01/1453	ATL	AVL	
374	CAA	303	L01/1400	E01/1505	ATL	ILM	
375	CAA	279	L01/1419	E01/1510	ATL	FLO	
376	CAA	233	L01/1437	E01/1511	ATL	CHA	
377	CAA	133	L01/1435	E01/1522	ATL	VPS	
378	CAA	474	L01/1450	E01/1532	ATL	TYS	
379	CAA	591	L01/1424	E01/1533	ATL	BTR	
380	CAA	663	L01/1425	E01/1536	ATL	MLU	
381	CAA	441	L01/1450	E01/1536	ATL	PFN	
382	CAA	397	L01/1513	E01/1536	ATL	MCN	
383	CAA	749	L01/1424	E01/1540	ATI	SRO	

Total flights: 3150

Figure 6-26: Sorted Flight List

Multi-level Sorting

You can use the Sort window to sort a flight list by multiple data fields. For example, you want to sort your Flight List by Destination (DEST), Carrier (AC), and Estimated Time of Arrival (ETA) respectively.

1. Select **View > Sort Flights** from the Flight List component.
The Sort window appears.
2. Select the **DEST** data field in the Sort By dropdown menu.
3. Select **Ascending**.
4. Select the **AC** data field in the Then By dropdown menu.
5. Select **Ascending**.
6. Select the **ETA** data field in the Then By dropdown menu.
7. Select **Ascending**.
8. Click **OK** or **Apply** in the Sort window to generate the sorted Flight List.

Flight Filtering in Flight Lists

The Apply Filter window displays a pre-determined list that allows you to arrange the data in the Flight List according to your selection.

1. Select **View > Apply Filter** from the Flight List component.
2. Select a filter option from the Apply Filter window.
3. Click **OK**. This applies the filter to the flight list. For example, when you select the Arrived filter option, FSM arranges the data according to the arrived flights in the Flight List.
4. To cancel the applied filter and return to the original Flight List settings, select **View > Clear Filter** from the Flight List menu.

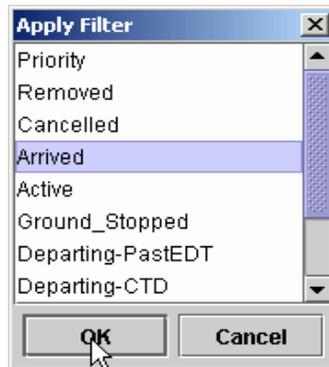


Figure 6-27: Apply Filter Window

Viewing a Single Flight

You can view information for a single flight by:

- Searching By Callsign for the flight
- Viewing the Flight Information window
- Viewing the Flight Detail window

This section describes how to access and use each of these methods to obtain information on a specific flight.

Search By Callsign

You can use the Search By Callsign component when you know the call sign for the flight you want to view. In FSM, the uniqueness of a flight relies on the call sign, origin, and destination. In performing the search, if you enter only the call sign, leaving Origin blank, FSM finds the first flight with that call sign regardless of the origin airport. There may be other flights with the same call sign, but different origin airports that you cannot see.

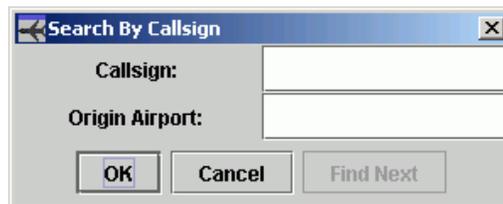


Figure 6-28: Search By Call sign Dialog Box

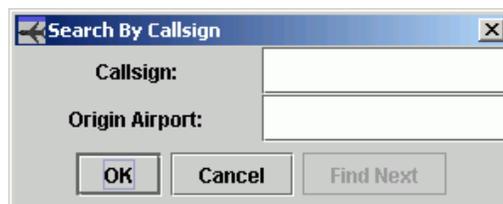
After entering the search criteria, you have three options on the Search By Call Sign dialog box:

1. **OK** - Performs the search and closes the Search By Call Sign window (if the search returns only one flight).
2. **Cancel** - Closes the window without performing the search.
3. **Find Next** - Locates the next flight that has the same call sign and/or original airport and leaves the Search By Call Sign dialog box open for you to perform another search. If the flight is unique, FSM tells you that it cannot find another flight.

To use Search By Callsign

1. Ensure you have a data set open.
2. From the Time Line component select **Time Line > Search By Callsign** (or select **Utilities>Search By Callsign** if the Time Line is not open).

The Search By Callsign dialog box appears.

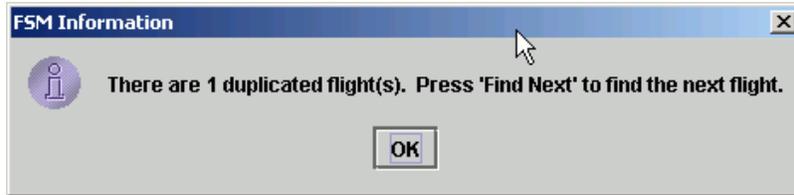


3. Enter the flight's *Callsign* and *Origin Airport*.

Note: The origin airport field is optional.

4. Click **OK**.
5. The Flight Info window for that flight appears.

If more than one flight has the call sign you entered, you receive a message box.



6. Click **OK**.
7. Click **Find Next** on the Search By Callsign dialog box to see the next flight with that call sign.
8. Once you have finished viewing the flights, click **Cancel** on the Search By Callsign dialog box to exit from the search.

Using wildcards to search for a flight

You can use the * and ? wildcards to search for flights for which you have incomplete call sign or origin airport information. For example, you have call sign SWA13 but are missing the last two digits and the origin airport starts with a D.

1. Ensure you have an airport data set open.
2. From the Time Line component select **Time Line > Search By Callsign** (or select **Utilities>Search By Callsign** if the Time Line is not open).

The Search By Callsign dialog box appears.

3. Enter the flight's *Callsign* and *Origin Airport* using the wildcards.

Note: The wildcard “?” stands in for one character (i.e. SWA1?? returns all SWA flights with two ID numbers). The wildcard “*” stands for multiple characters (i.e. UAL* returns all UAL flights with any length ID number).



4. Click **OK**.

The Flight Info window for that flight appears. If more than one flight meets these criteria, a Flight List appears displaying all matching flights. The Flight List operates in the same way as any other Flight List.

5. Click **Cancel** on the Search By Callsign dialog box to exit the search.

Flight Info Window

You can access individual flight information by right-clicking on any flight icon in the Time Line component or by right-clicking on a single flight in a Flight List and selecting **View flight info** from the pop-up menu (see Flight Lists). The Flight info window appears. The Flight Info window gives you some general ADL information for the selected flight.

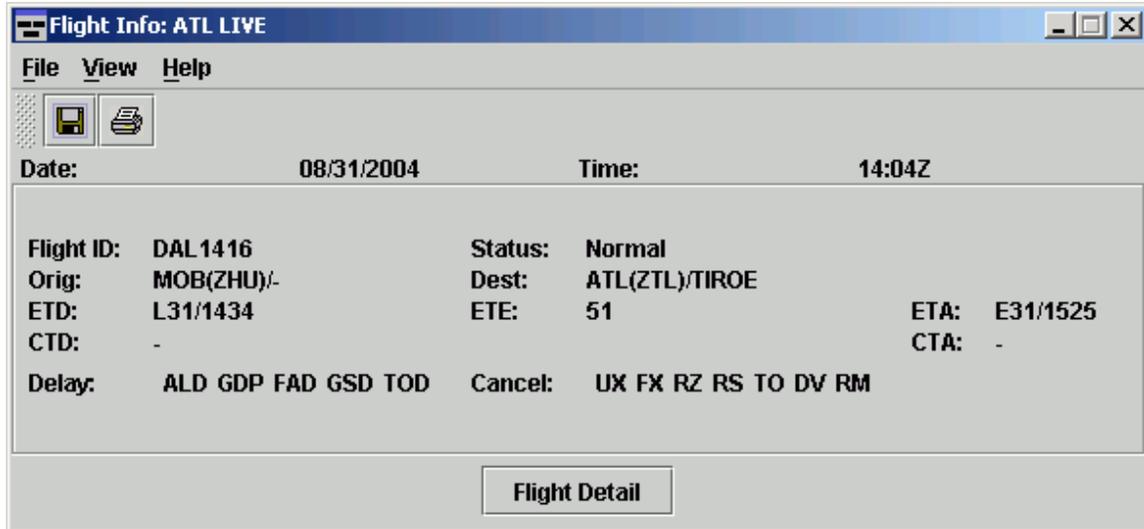


Figure 6-29: Flight Information Window

Flight Information Data

The Flight Info window contains the following information:

- **Date/Time** – The date and time at which you are viewing the flight. In Monitored Live mode, this is always the current date and time.
- **Flight ID** – The aircraft call sign (a combination of airline code and flight number). FSM filters this information for airline users.
- **Status** – Flight Status describes the current status of a flight. For example, a flight can be Delayed, In Program, or Unknown.
- **Orig** – Origin airport of the flight, with the corresponding center in parentheses.
- **Dest** – Destination airport of the flight, with the corresponding center in parentheses.
- **ETD** – Most recent Estimated Departure Time for the flight.
- **ETE** – When available, FSM gives the actual time en route for the flight. Otherwise, FSM gives an estimated time en route.
- **ETA** – Most recent Estimated Arrival Time for the flight.
- **CTD** – The Control Time of Departure for the flight, if it has one.
- **CTA** – The Control Time of Arrival for the flight, if it has one.
- **Delay** – If the flight is delayed, one of the delay codes is highlighted. ALD indicates that the carrier imposed a delay on the flight. GDP indicates that the flight is delayed because of a ground delay program. FAD indicates that the flight is delayed because of a fuel advisory. GSD indicates that the flight is delayed because of a ground stop. TOD indicates the flight is delayed because its EDT timed out in ETMS; the flight passed its ETD without taking off.

- **Cancel** – If the flight is cancelled, one of the cancellation codes is highlighted. UX indicates that the flight was cancelled due to an EDCT update, which a traffic manager may use to cancel a flight. FX indicates that the flight was cancelled using an FX message, which is the CDM message used by the airlines to indicate a cancelled flight. RZ indicates that the flight was cancelled using an RZ message, which is a NAS flight plan cancellation message. RS indicates that the flight was cancelled using an RS message, which is an internal ETMS message generated when a specialist takes an OAG flight out of the database. TO indicates that ETMS considers the flight time out cancelled because no activation message has been received within a certain time of the predicted departure time. The amount of time out delay appears in parentheses. DV indicates that the flight was cancelled and diverted to an alternate destination. RM indicates that the flight has been removed from the ETMS database.

Flight Info buttons

- **View Flight Details Button** – Clicking this button brings up the Flight Detail window. This window provides more detailed information of the flight.

Flight Info Menu

The menu bar in the Flight Info window contains three options: **File**, **View**, and **Help**.

1. File Menu

- **File > Save as** – Saves the flight information to a text file, which you can open later and use again.
- **File > Print** – Prints the flight information you see on the screen.
- **File > Close** – Closes the Flight Info window.

2. View Menu

- **View > Flight Detail** – Displays the Flight Detail window.

3. Help Menu

- **Help > Flight Information** – Accesses the web-based on-line help information for the Flight Info window.

Flight Detail Window

Use **Flight Detail** to obtain more detailed information for a specific flight than appears in the Flight Info window. There are four ways to access the **Flight Detail** window:

1. Right-click any flight icon in the FSM Time Line and select **Flight Detail**.
2. Right-click a flight in any FSM Flight List and select **Flight Detail**.
3. Click **Flight Detail** from the Flight Information window.
4. Select **View > Flight Detail** in the Flight Information window.

Flight Detail Information																
Flight ID:	DAL1118	Date:	08/31/2001	Time:	11:01Z											
Aircraft Type:	B732	AC_CAT:	Jet	Class:	Large											
Major:	DL	CDM Participant:	Y	User:	Air Carrier											
Departure		GCD		Arrival		ADL Element										
Airport/Center:	MUSZHU	25Z	ATLZTL	TROPOL1512		DPOTRSHNSTANSTUSH										
Rz.Falltime:	:	LGC1MGM		DPOTRSHNSTANSTUSH												
Procedure:	:															
Time	Runway	Flt Route	Runway	Gate	ADL Element											
Estimated:	1311434	51	F311525		FTXTFTCTA											
Controlled:					CTD#F#CTA											
Scheduled:	311430			311541	SG1D/SG1A											
Proposed:	311430	46		311516	PSTD#FT#PSTA											
Altitude:	311430			311511	LGTD#LRTD#LRTALGTA											
Initial Estimate:	311430			311511	KTDCTA											
Actual INTS:	-	-	-	-	AR1DL1LW1A											
Actual Altitude:					OUT#O#T#OMIN											
Earliest:	-	-	-	-	BR1D#R1A											
Original Estimate:	311434	51		311525	QFTD#FT#QFTA											
Date Estimate:	311434			311525	DCTD#CTA											
Original Control:	-	-	-	-	OU1D#O1A											
CR Exception:	-	CR Type:	-	CR Element:	-											
Sub ID:	-	Slot Hold:	-	Do Recovery:	-											
Delay Status:	ADR	GMP	FAD	GSD	TOD	ITOD	0	CRX Status:	IX	FX	R7	RS	TD	IV	RA	
Remark:	MRP	IFG	II	ATV	SMP	DVT	ADC	FCO	WNR	Alarm:	CC	FC	F0	SF	CF	
Absolute Delay (MaxID, CTA - HCTA - Tax@k)											0					
Schedule Variation (ETA - (ETA - Dep@))											-5					
ATC Delay (MaxID, CTA - RFTA@)											0					

Figure 6-30: Flight Details Window

Flight Detail ADL Data Elements

The Flight Details window contains the following information:

- **Flight ID** – The code that identifies the airline and flight number.
- **Date/Time** – The date and time at which you are viewing the flight. In Monitored Live mode, this is always the current date and time.
- **Aircraft Type** – Indicates the type of aircraft being used for the flight.
- **AC_CAT** – Indicates the equipment type: propeller, jet, turbo, or unknown.
- **Class** – The class to which the aircraft belongs. Classes are: heavy, large, or small.
- **Major** – The airline carrier that controls substitutions for the flight.
- **CDM Participant** – Indicates whether the flight belongs to an airline that participates in the FAA's Collaborative Decision Making program.
- **User** – The user class to which the aircraft belongs. User Classes are: air carrier, air taxi, air cargo, military, general aviation, and other.
- **Departure Information** – This column contains the flights Departure information.
- **GCD** – This field indicates the Great Circle Distance (GCD), which is the distance between the origin airport and arrival airport.
- **Arrival Information** – This column contains the flights Arrival information..

- **ADL Element** – This column indicates which ADL elements FSM used to derive the information in each column. For example, to display the flight's departure fix time, FSM uses the ADL element marked DFIX.
- **Airport Center** – Includes the flights origin and destination Airport and Center (Airport/Center). This row also contains the flight's GCD.
- **Fix Estimate** – Departure Fix (DFIX) and Estimated Departure Fix Time (EDFT) and the arrival Fix (AFIX) and Estimated Arrival Fix Time (EAFT).
- **Procedure** – Departure Procedure (DP), Departure Procedure Transition (DTRSN), Standard Terminal Arrival Route (STAR) and Standard Transition (STRSN)
- **Gate, Runway, and En Route Times** – This section of the Flight Details window displays estimated, controlled, scheduled, proposed, airline, and actual times for several fields that allow you to track the flight's progress from the departure gate and runway to the destination runway and gate. The information includes the various times given for:
 - **ETD/ETE/ETA** – Estimated Wheel Times
 - **CTD/ETE/CTA** – Control Times
 - **SGTD/SGTA** – Scheduled Gate Times
 - **PGTD/ETE/PGTA** – Proposed Gate Times
 - **LGTD/LRTD/LRTA/LGTA** – Airline Gate and Runway Times
 - **IGTD/IGTA** – Initial Estimated Gate Times
 - **ARTD/ETE/ARTA** – Actual Runway Times
 - **OUT/OFF/ON/IN** – Time that the flight was out of the departure gate, off the departure runway, on the arrival runway, and in the arrival gate.
 - **ERTD/ERTA** – Earliest Runway Times
 - **OETD/ETE/OETA** – Original Estimated Wheel Times
 - **BETD/BETA** – Beginning Estimated Wheel Times
 - **OCTD/OCTA** – Original Control Times
 - **Control Exempt/ Control Type/ Control Element** – Displays the type of controls on the flight resulting from a program.
 - **Slot ID/Slot Hold** – The Slot ID is the currently assigned slot for the flight. Slot Hold indicates whether the slot is being held so that it is not used in compression. A "Y" indicates the slot is being held. A dash (-) indicates the slot is not being held.
 - **Diversion Recovery (Div Recovery)** – Indicates whether the flight is a diversion recovery leg of a previous flight.
 - **Delay Status (ALD GDP FAD GSD TOD)** – Indicates the type of delay, if any, on a flight.
 - **LTOD** – If a flight is time out delayed, the length of time out delay appears here.

- **CNX Status (UX FX RZ RS TO DV RM)** – Indicates the cancellation status of the flight. The codes indicate how or why the flight was cancelled.
- **Remark (NRP LFG III ATV SWP DVT ADC FCA WXR)** – These codes indicate important information about the flight. NRP is National Route Program flight. LFG is Lifeguard flight. III is Category III flight. ATV is Altitude reservation. SWP is SWAP flight. DVT is Diversion recovery flight. ADC is Advise customs. FCA is Flow Constrained Area. WXR is Severe weather route.
- **Alarm Status (CC EC EA SF CF)** – Indicates the type of alarm criteria, if any, that the flight meets.
- **Absolute Delay (Max [0, ETA - (IGTA - Taxi)])** – FSM calculates the Absolute Delay to include all types of delay on a flight. This includes FAA and airline-imposed delay due to traffic management initiatives, mechanical delays, etc. Please note that delay can be only a positive integer. Therefore, if the flight is running as scheduled or is early, Absolute Delay is a value of zero (0).
- **Schedule Variation (ETA - [IGTA - Taxi])** – Schedule variation is almost identical to absolute delay with the exception that schedule variation can include negative values. A negative value in the Schedule Variation field indicates that the flight is running earlier than scheduled.
- **ATC Delay (Max [0, CTA - BETA])** – ATC Delay includes only that delay that results from an FAA traffic management initiative and any action taken by the airline as a result of the traffic management initiative. This does not include airline-imposed delay, such as mechanical failures, crew delay, etc. ATC Delay can be only a positive integer. If the flight is running ahead of its schedule, ATC delay is a value of zero (0).

Note: For a description of each of the flight data fields contained in the Flight Details window. See ADL Data Format or select **Help>ADL Data Elements** from the FSM Control Panel component.

Flight Detail Menu

The menu bar in the Flight Detail component contains two options: **File** and **Help**.

1. File Menu

- **File > Save as** – Saves the Flight Detail to a text file, which you can open later and use again.
- **File > Print** – Prints the Flight Detail information you see on the screen.
- **File > Close** – Closes the Flight Detail window.

2. Help Menu

- **Help > Flight Details** – Accesses the web-based on-line help for Flight Details information.

Viewing Problem Flights

In the air traffic community, operators need to identify which flights from their own operations may be contributing to delay and cancellation problems. Delays and cancellations, caused by Time Outs, occur when no activation message has been received within a certain time of the predicted departure time. Time Outs can be problematic when trying to manage air traffic. To help, FSM includes two reports for problem flights: Time Out Delay Report and Time Out Cancel Report. See chapter 19: Reports for more information about these reports. You can group and sort Report Lists using the same methods described in the Flight List section. You can access all reports lists from the **Reports** menu on the Control Panel component.

Other Flight Reports

Flight reports in FSM are a good way to view a set of flights arriving at an airport that meet specific criteria. You can access the following reports from the **Reports** menu on the Control Panel component:

- Surface Delay Report
- Priority Flight Report
- Slot Hold Report
- Sub Opportunities Report

See chapter 19: Reports for more information about these reports.

Compliance Flight Lists

When any flight becomes noncompliant, FSM generates a flight list, called a compliance report, that includes these flights. You can access the compliance reports from the **Reports > Compliance >** option from the Control Panel component. There are five possible compliance reports:

- By CTD
- By ETE
- By CTA
- Spurious Flight
- Cancelled That Flew Compliance

See chapter 19: Reports for more information about these reports.

Query Manager Flight Lists

The Query Manager component can query an airport and generate a Flight List that contains only flights that meet certain criteria. You can access the Query Manager by clicking **Query Manager** on the FSM Control Panel component. From the Query Manager, select any one of the Built-in or User-defined Filters then click **Flight List** or select **View > Flight List**.

Note: If you do not have a data set (airport) selected, FSM displays a “No Active Data Sets” error message.

The generated Flight List contains only those flights that meet the selected criteria. For more detail on how to view and use flight filters in Query Manager, see **Chapter 3: Query Manager**.

7 Decision Support Tools

Decision support or modeling tools are functions in FSM that aid you in looking at various operational or traffic scenarios. You can use modeling tools to analyze existing operations and previous days' events. This chapter reviews some of the utilities in FSM specifically set up to help you model various air traffic scenarios. You can use these tools at any time during your FSM session.

Adverse weather or any other significant airport event can decrease the airport's capacity, which lowers the AAR. When the airport's arriving flight demand exceeds the airport's AAR capacity, then you may need a Traffic Management Initiative (TMI).

FSM allows you to model different scenarios in Ground Delay Tools (GDT) mode to help you determine what type of TMI would be most effective. Either a Ground Delay Program or Ground Stop, or in some cases both may be necessary.

Evaluating Demand Versus Capacity

Bar Graph

The Bar Graph serves as a quick look to see if demand exceeds the airport's capacity. The arrival flow rate displays the airports' demand independently of the time-bin conventions. Therefore, you can view where the fluctuations in demand are located within each hour. If there are several hours where demand is significantly greater than the AAR, you may need a TMI to control the traffic flow into the airport.

The Bar Graph component is colored according to the tab option currently in use. For example, if the Arrival Status tab is active, the bars in the graph are colored according to the percentage of flights that represent each respective arrival status. If half of the flights for one time period have not departed (light green), while the other half are in the air (red), the bar for that hour is half red/half green. If every flight for the hour has already landed, the bar for that hour is black. The Bar Graph is dynamic and changes according to the information in each ADL update. The Bar Graph also automatically updates itself when you choose a different tab option. See Chapter 3: Bar Graph for more information.

Time Line

The Time Line component is colored according to the tab option currently in use. You can view the default colors from the Time Line's legend. See Chapter 3: Time Line for more information. At the top of each hour column in the Time Line, the airport's AAR and expected demand appears for that hour. For example, 72/86 indicates that the AAR is 72 and the demand expected for that hour is 86 (see Figure 7-1). There are situations where demand exceeds capacity in one hour but the next hour has plenty of room to accommodate the spill over from the previous hour. In these instances, a TMI would be unlikely. Figure 7-1 shows an AAR of 72 for an airport. At 1600z, the demand expected is 86; therefore, the demand exceeds the capacity by 14 flights. At first glance this seems excessive, but looking into the next hour, the expected demand is only 58. The airport can accommodate the 16 flights from the 1600z hour in the 1700z hour. A TMI is more likely when demand exceeds capacity for several hours.

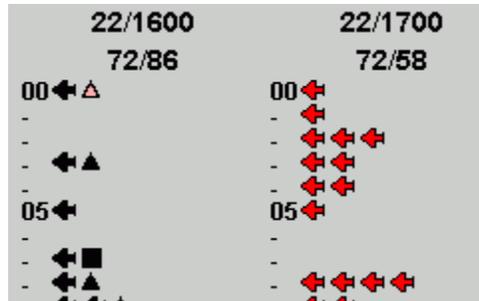


Figure 7-1: Time Line AAR vs. Demand counts

Deciding when a TMI is necessary is not always this simple, but the ATCSCC works closely with all participants through telcons to decide when a TMI is essential.

TMI Evaluation Using Carrier Statistics Report

When you run a TMI, FSM generates a Carrier Statistics report. You can view this report from the Control Panel component by selecting **Reports > Carrier Statistics** or from **View > Carrier Statistics** on any TMI Coversheet. Ensure the desired airport is active to review the correct airport's carrier statistics. From the Carrier Statistics report you can view ATC delay or ABS (total delay including airline delay). The Carrier Statistics report is based on flight's ETA and displays specific delay information for each carrier's flights. The Carrier Statistics report is particularly helpful to airlines. Airlines can view how the TMI affects them.

Figure 7-2 is an example of the ATCSCC personnel view of the carrier statistic report. Airlines would only see their own call sign and any sub-carriers. For more information on the Carrier Statistics report, see Chapter 19: Reports.

Carrier Name	CDM	#Flights Affected	On Time %	Delay	Delay Max / Min	%Delay / %Traffic
	MBR	Total/Non_Exempt/Exempt/CNX	%	Total/Total% / Avg / AffAvg		
.DL	Y	2 / 1 / 1 / 0	50.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
AAL	Y	29 / 27 / 2 / 0	10.3	1714 / 3.1 / 59.1 / 63.5	119 / 2	1.12
AFR	N	2 / 0 / 2 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
AJM	N	2 / 0 / 2 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
AMX	N	3 / 0 / 3 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
ASH	Y	2 / 2 / 0 / 0	50.0	46 / 0.1 / 23.0 / 23.0	43 / 3	0.44
AWE	Y	3 / 3 / 0 / 0	0.0	216 / 0.4 / 72.0 / 72.0	103 / 38	1.36
AWI	N	1 / 1 / 0 / 0	100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
BAW	N	2 / 0 / 2 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
BSK	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
CAA	Y	173 / 164 / 7 / 2	11.1	10095 / 18.1 / 59.0 / 61.6	133 / 0	1.12
CAL	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00

Figure 7-2: Carrier Statistics

Changing Airport Arrival Rates (AAR)

Changing the AAR on the Bar Graph is helpful to visually determine how a lowered AAR affects the balance between capacity and demand. If demand exceeds the reduced AAR, then a TMI may be necessary.

Specify Model AAR

The **Bar Graph > Model Arrival Rates > Specify** allows you to change the Model AAR for a specific amount of time. You can set the Model AAR for up to 15 hours beyond the current time. The new Model AAR appears in the Bar Graphs. The Time Line only displays actual ADL AAR rates.

Changing the Rate

There are several ways to change the model AAR using the Specify Model AAR window, including the ability to assign several different AARs within the same hour.

Note: Although FSM displays Fixes; you can only specify an AAR for an airport. Arrival Fix based programs are a future enhancement.

To modify rates, enter the new value in the **With** text box. Then, fill in the hours in the **From Hr** and **Through Hr** text boxes to reflect the duration of the new AAR. Click **Fill** to automatically fill those hours. This is a good option when you need to fill a block of hours with one rate.

To fill several hours, each with different rates, you can enter new values directly into the Airport column cells next to the appropriate Time row cells that you want to change.

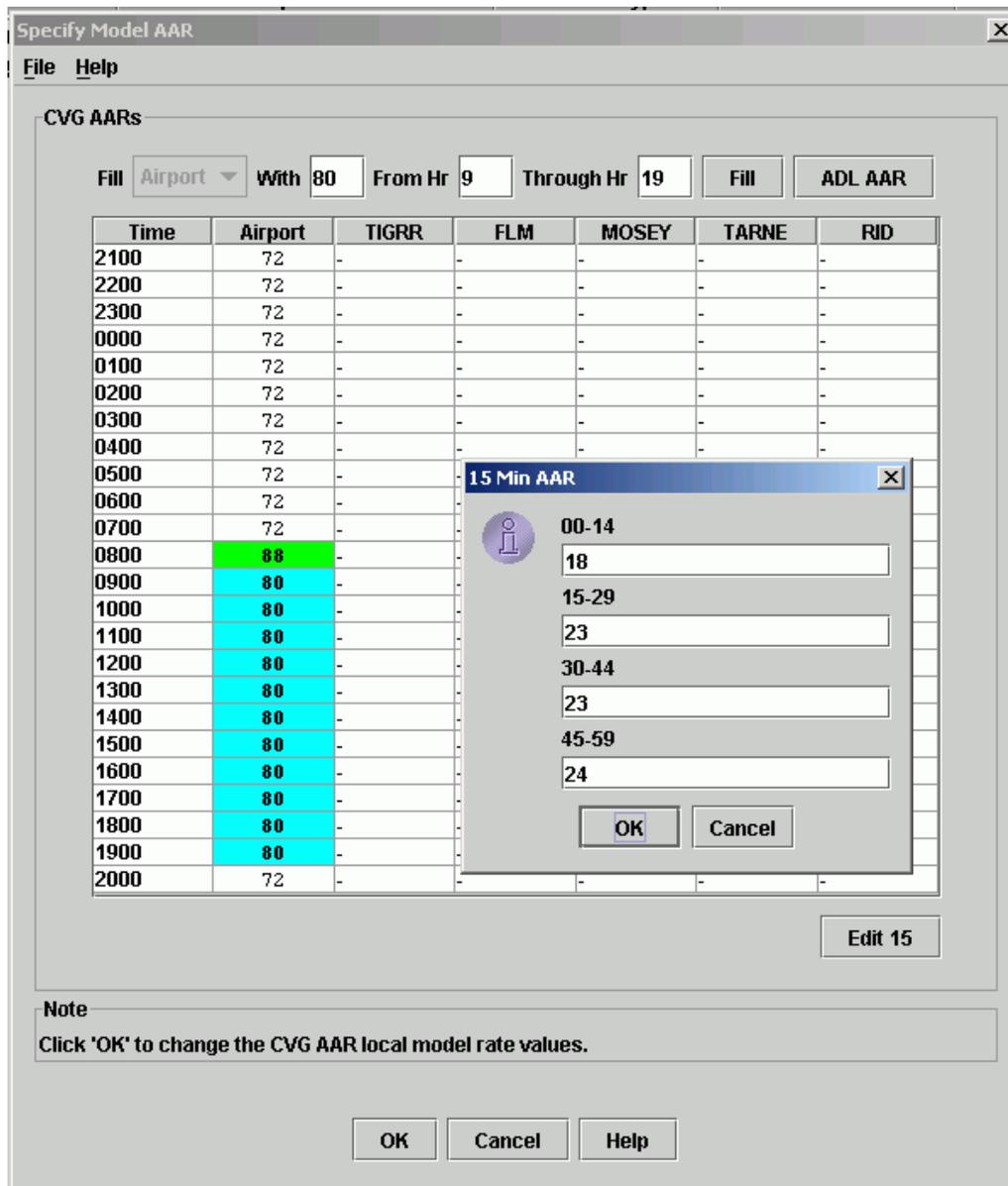


Figure 7-3: Specify Model AAR Window and 15 Min AAR Dialog Box

To fill a single hour with multiple AARs, click on the airport cell you want to modify and then click **Edit 15** in the lower right-hand corner of the rates table or right-click on an active cell in the Airport column. The 15 Min AAR dialog box appears. This window allows you to assign AARs in 15-minute increments for that hour. For example, Figure 7-3 illustrates an AAR of 80, but for the first fifteen minutes the airport can take only 10 flights. Therefore, you need to assign an AAR of 23 or 24 for the other 15-minute time increments. You can assign any value in each 15-minute increment as long as the total equals the overall AAR/ADR value for that hour. Click **OK** to change the 15-minute increments for that hour or **Cancel** to close the window. When an hour increment is not evenly distributed in the 15-minute increments, the cell is colored green.

After changing your Model AAR information, click **OK** from the Specify Model AAR window to reflect the changes in your local Bar Graph component. Ensure the **View > Model AAR Line** checkbox is checked so that you can view the modeled rates.

View Model AAR Line

The dashed, white line represents the modeled AAR. To view the modeled AAR line, you must ensure that you select the **View > Model AAR Line** checkbox. In all FSM Modes, Model AAR initially appears in the same position as the ADL AAR in the Demand Graph. If the ADL AAR appears on the graph, the dashed line (for modeling) is hidden behind the white solid line. In addition to changing the model AAR rate from the **Bar Graph > Model Arrival Rates > Specify** feature, you can change the AAR by placing your cursor over the AAR line and dragging the model line to your desired model rate.

Note: Only the portion of the line to the right of the cursor moves.

Any portion of the line to the left of your cursor should remain in the same position as you drag the line to a new AAR. The Bar Graph Component and the Specified Modeled AAR Rates component dynamically sync; therefore when you alter an AAR rate from one component, the changes also are reflected in the other. For more information on AAR Rate see Chapter 5: View Airport Demand.

Apply or Clear AAR Changes

After you enter new AAR information, there are three options available on the Specify Model AAR panel:

- **OK** – Applies the newly modeled AAR to the Bar Graphs and closes the Specify Model AAR window.
- **Cancel** – Closes the Specify Model AAR window without taking any action.
- **Help** – Defines the function of the component.

Specify Model AAR Menu Options

1. File Menu

- **File > Open** – Opens previously saved AAR parameters.
- **File > Save As** – Saves the AAR parameters to a text file which you can open later and use again.
- **File > Print** – Prints the Specify Model AAR window.
- **File > Close** – Closes the Specify Model AAR window.

2. Help Menu

- **Help > Demand Rates...** – Accesses the web-based on-line help for Specifying demand rates.

Changing Airport Departure Rates (ADR)

Changing the ADR on the Bar Graph is helpful to visually determine how a lowered ADR affects the balance between capacity and demand on the monitored airport.

Specify Model ADR

The **Bar Graph > Model Departure Rates > Specify** allows you to change the Model ADR for a specific amount of time. You can set the Model ADR for up to 15 hours beyond the current time. The new Model ADR appears in the Bar Graph component.

Changing the Rate

You can change the model ADR in several ways using the Specify Model ADR window, including assigning several different ADRs within the same hour (see Figure 7-4).

To modify rates, enter the new value in the *With* text box, then fill in the hours in the *From Hr* and *Through Hr* text boxes to reflect the duration of the new ADR. Click **Fill** to automatically fill those hours with the new ADR. This is a good option when you need to fill a block of hours with one rate.

To fill several hours, each with different rates, you can enter new values directly into the Airport column cells. Click **OK** to change the ADR rates. Click **Cancel** to close the window, or click **Help** to see a definition of the function of the component. Click **ADL ADR** to reset airport values.

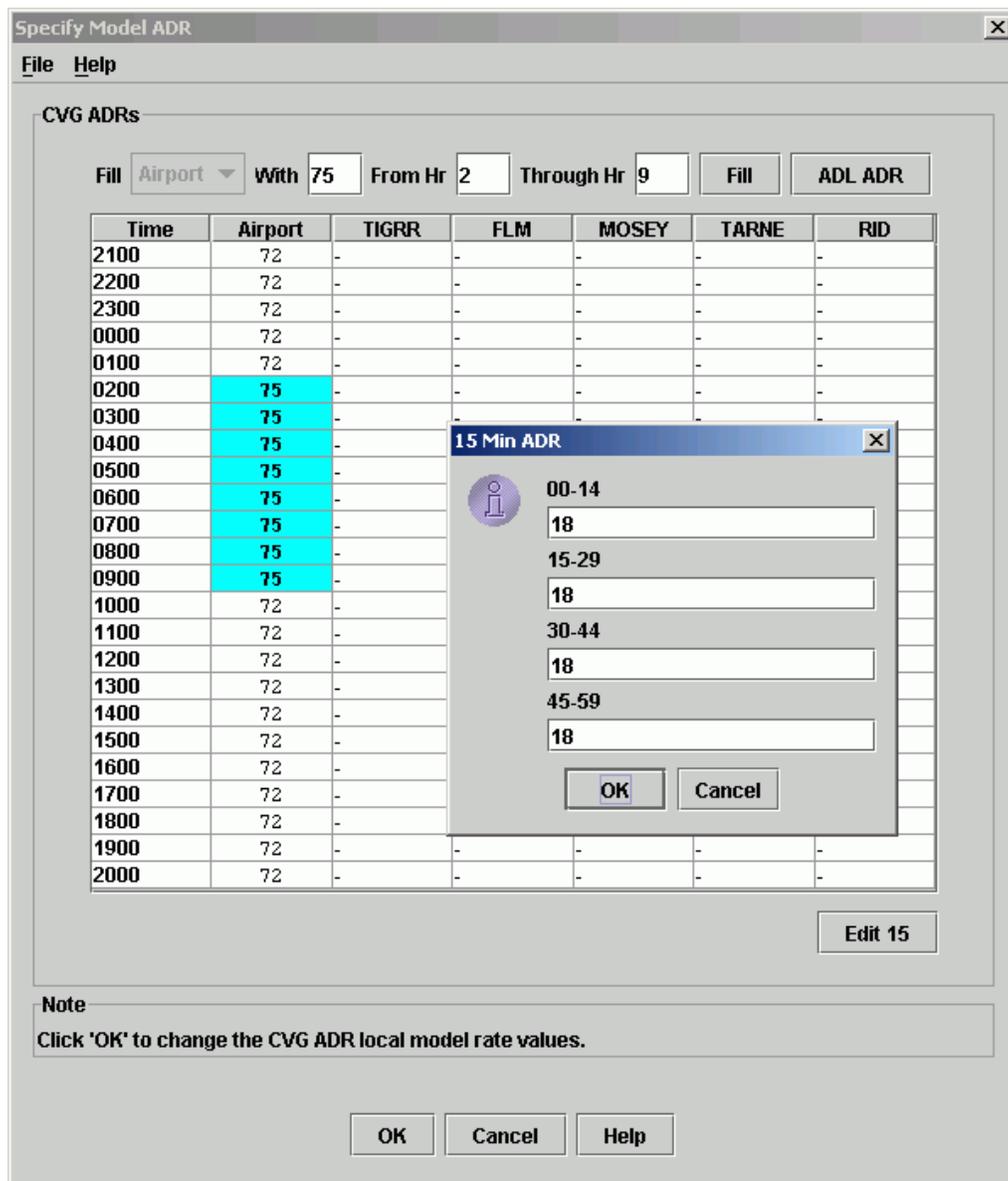


Figure 7-4: Specify Model ADR Window and 15 Min ADR Dialog Box

To fill a single hour with multiple ADRs, click the cell you want to modify and then click **Edit 15** at the lower right-hand corner of the rates table or right-click on the active cell in the Airport

column. This brings up the 15-minute ADR window that allows you to assign the ADR in 15-minute increments for that hour. For example, Figure 7-4 illustrates an ADR of 75, but for the first fifteen minutes the airport can only take 10 flights. Therefore, you should assign an ADR of 21 or 23 for the other 15-minute time increments. You can assign any value in each 15-minute increment as long as the total equals the overall ADR value for that hour. Click **OK** to change the hour or **Cancel** to close the window. When an hour increment is not evenly distributed in the 15-minute increments, the cell is colored green.

After changing your Model ADR information, click **OK** from the Specify Model ADR main window to reflect the changes in your local Bar Graph component. Check the **View > Model ADR Line** checkbox to view the modeled rates.

View Model ADR Line

The dashed, cyan line represents the modeled ADR. To view the model ADR line you must check the **View > Model ADR Line** checkbox. In all FSM modes, the model ADR initially appears in the same position as the ADL ADR in the Demand Graph. If the ADL ADR appears on the graph, the dashed line (for modeling) is hidden behind the solid cyan line. In addition to changing the model ADR rate from the **Bar Graph > Model Arrival Rates > Specify** feature; you can change the AAR by placing your cursor over the AAR line and dragging the model line to your desired model rate. Only the portion of the line to the right of the cursor moves. Any portion of the line to the left of your cursor should remain in the same position as you drag the line to a new ADR. The Bar Graph Component and the Specified Modeled AAR component are dynamically synced; therefore, when you alter an AAR rate from one component, the changes also appear in the other. For more information on ADR rates see Chapter 5: View Airport Demand.

Apply or Clear ADR Changes

After you enter new ADR information, there are three buttons available on the Specify Model ADR panel:

- **OK** – Applies the newly modeled ADR to the Bar Graph and closes the Specify Model ADR window.
- **Cancel** – Closes the Specify Model ADR window without taking any action.
- **Help** – Defines the function of the component.

Specify Model ADR Menu Options

1. File Menu

- **File > Open** – Opens previously saved ADR parameters.
- **File > Save** – Saves the ADR parameters to a text file, which you can open later and use again.
- **File > Print** – Prints the Specify Model ADR window.
- **File > Close** – Closes the Specify Model ADR window.

2. Help Menu

- **Help > Demand Rates...** – Accesses the web-based on-line help for the Demand Rates Window.

Reset AAR/ADR Model Rates

You can reset the AAR/ADR data to the original data in several ways during your FSM session.. In the Bar Graph, you can select **Bar Graph > Model Arrival Rates > Reset** in the Monitored

Live, Historical or GDT mode. You can select **Utilities > Model Arrival Rates > Reset** from the Control Panel.

You can also reset the AAR Rates from the Specify AAR Rates window. Select **Bar Graph > Model Arrival Rates > Specify** and click **ADL AAR** to reset the AAR rates to the original values. The steps to reset ADR Rates are identical to those for the AAR rates with the exception of the GDT mode. The ADR rates are not available in GDT Mode.

Manipulating Data Time

Set Time (Historical Mode)

When working in Historical Mode, you have the ability to specify the time you would like to view. You can specify the data time from the Open Data Set component when you first open an airport in historical mode (See Chapter 3: Open Data Set for more information) or at any time while you are in historical mode for an airport. To change the data time when viewing an airport in historical mode, select **Bar Graph > Set Time (Historical Mode Only)**. This feature is available only in Historical Mode. The Set time dialog box appears and allows you to specify the time at which to view airport data (see Figure 7-5). Select the day from the dropdown box and time in “hhmm” format.

Note: Time in FSM is always in Zulu time unless otherwise specified.

Click **OK** to update flights’ data to the closest, but no later than, the entered time. Click **Cancel** to close the Set Time dialog box without changing the data time.



Figure 7-5: Set Time Dialog Box

Modify Data Time (GDT Mode only)

You can select the *Data Time* from the General tab on the GDT Setup component. The data time allows you to change the data time without making any modifications to the data itself. In the *Data Time* textbox, enter a time in “hhmm” format to change the time. Valid times are from 0-2359. When you change the *Data Time* to a value other than the current time, the *Data Time* text box, as well as the GDT tab border, is highlighted in red.

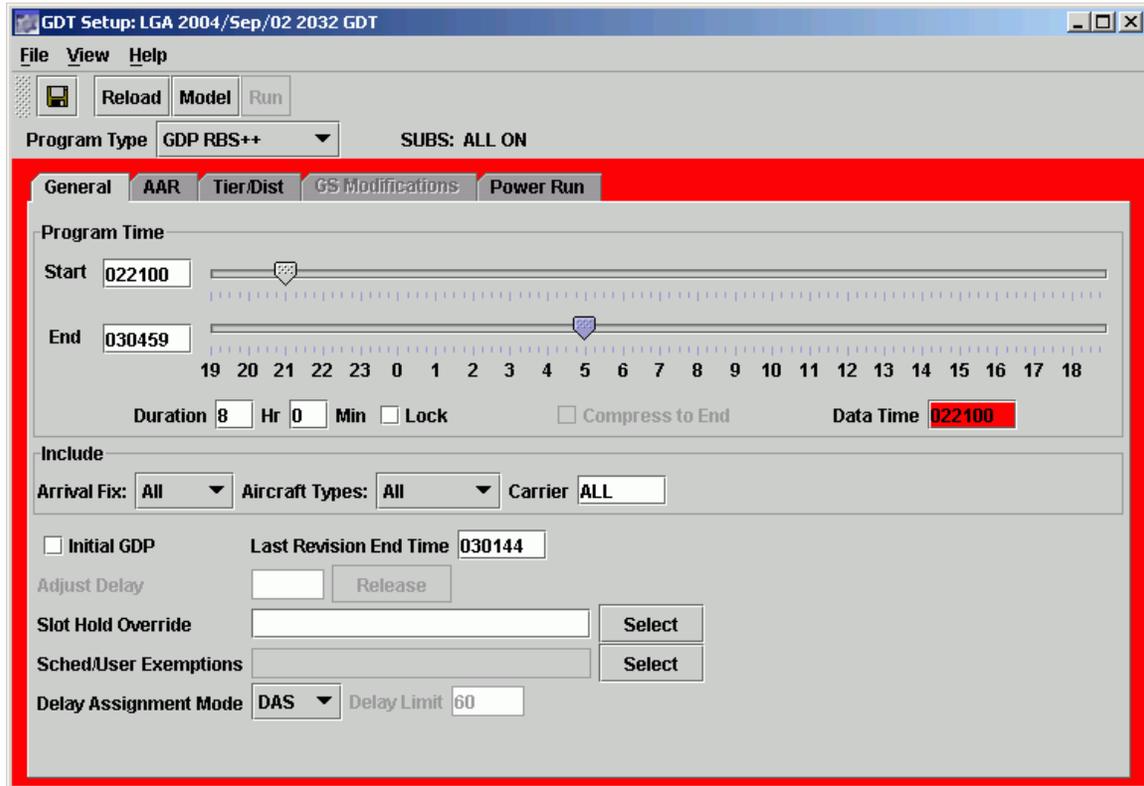


Figure 7-6: GDT Setup Component

Update Data Time (Historical Mode Only)

You can only use **Update** on the Control Panel component when in Historical mode. Click **Update** to receive the next historical ADL updates. If you click **Update** within any other mode except the historical mode, the following error message appears: “Not a historical data set”.

Remove and Restore Flights (CSA Only)

Remove Flights

You can remove flights from the ETMS database using FSM. You can use this feature to remove an airline that goes on strike, eliminate duplicate flights, or remove erroneous flights listed in the OAG. To remove a flight, ensure the airport from which you want to remove the flight is active, and then select **ETMS Tools > EDCT Commands > EDCT Remove** from the Main Control Panel (see Figure 7-7). The EDCT Remove dialog box prompts you to type in the flight number and date. To remove the flights from the database, click **Send**. FSM prompts you to decide whether you really want to remove the flight. Click **YES** to remove the flight. Click **NO** to cancel the action. Click **Cancel** to close the dialog box without taking any action. **Help** defines and explains the Remove Flights feature.

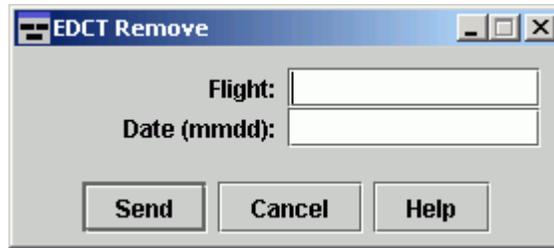


Figure 7-7: EDCT Remove Dialog Box

Restore Flights

To restore a flight, select **ETMS Tools > EDCT Commands > EDCT Restore** from the Control Panel, as shown in Figure 7-8. The EDCT Restore dialog box prompts you to type in the flight number and date. To restore the flight to the database, click **Send**. FSM prompts you to decide whether you really want to restore the flight. Click **YES** to restore the flight. Click **NO** to cancel the action. Click **Cancel** to close the dialog box without taking any action. **Help** defines and explains the Restore Flights feature.



Figure 7-8: EDCT Restore Dialog Box

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8 Modeling a Traffic Management Initiative

Due to unexpected events, such as bad weather at an airport, the FAA delays flights scheduled to arrive at the affected airport. The FAA examines flights to determine whether to include them in a Traffic Management Initiative (TMI) based on the time period of the operation. The FAA checks those flights eligible for inclusion in the operation against the various exemption criteria specified.

Generally, a TMI is necessary where arrival demand excessively surpasses the airport capacity. The AAR defines airport capacity. You can raise the AAR rates, or lower them, due to weather, runway closures, or any other significant event. FSM helps determine what kind of Program Type would be necessary to adequately control the traffic flow into the airport.

One important function of FSM GDT Mode is that it allows you to view "what-if" scenarios. That is, FSM analyzes the effects of a TMI operation using different parameters you set. FSM's analysis capabilities help you determine the best parameters for a TMI operation—one that minimizes impact on air carrier operations *and* maximizes efficiency during adverse conditions. This chapter discusses modeling any TMI in GDT Mode.

You can use the GDT Setup Panel component to model, issue, and send TMIs. You can manage the TMI parameters from the GDT Setup Panel. When you model a TMI, you can use parameters that you specify or you can use proposed parameters.

Modeling a TMI Using Parameters You Specify

To model a TMI, you need to set the parameters you want to use for the TMI. You can do this by opening any monitored airport in GDT mode and selecting the TMI parameters there. The parameters you can set for the TMI are different depending on which program type you select. For more information on what parameters are available for each program type, see Chapter 3: Understanding Components.

To Model a TMI using parameters you specify

For example, you want to model a GDP RBS++ program type for ATL.

1. Click **Open Data Set**.
The Open Data Set window appears.
2. Select ATL from the Live tab.
3. Click **OK**.
The Time Line and Bar Graph components for ATL appear.
4. Click **GDT Setup**.

Note: If there is no airport in focus when you click **GDT Setup**, an FSM error message indicates that "No current data set" is selected.

The GDT Setup Panel, GDT Time Line, GDT Bar Graph, and GDT Map appear, as shown in Figure 8-1.

Note: All GDT components interact with one another; The GDT Setup and GDT Map dynamically reflect one another, whereas clicking Reload or Model on the GDT Setup panel reflects changes in all components.

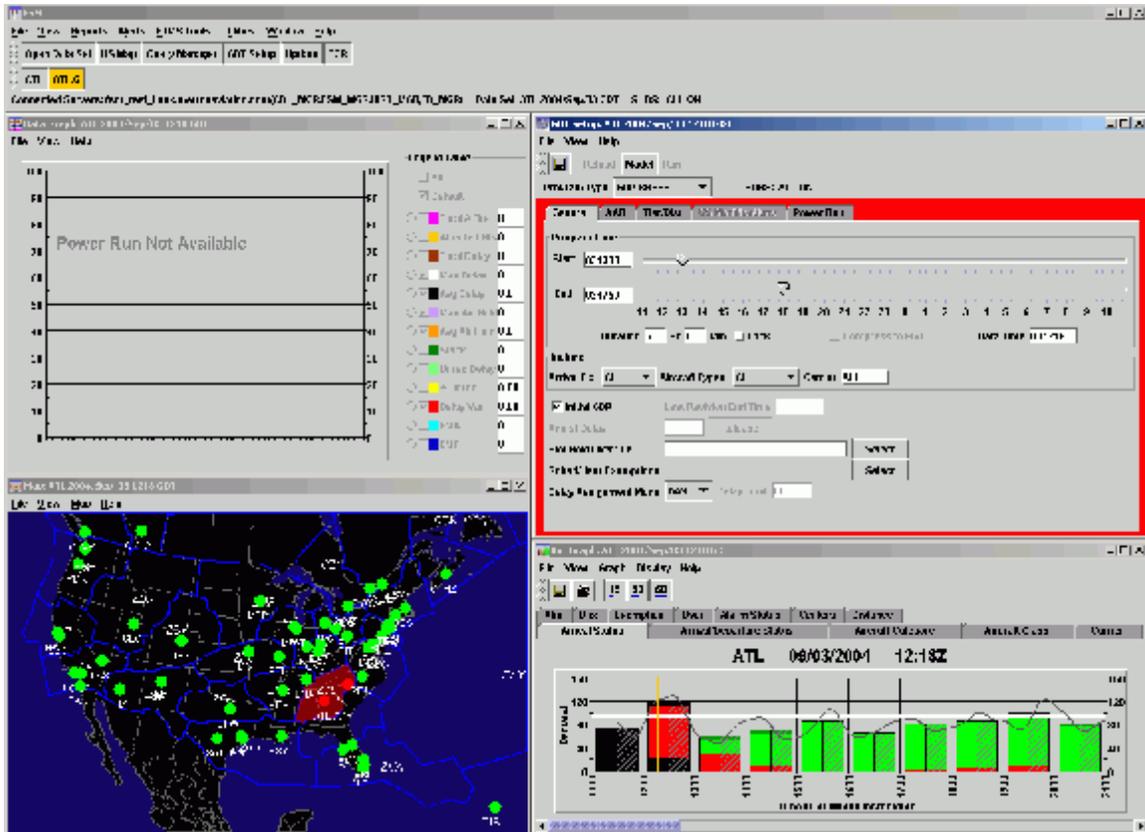


Figure 8-1: Initial Default GDT Display

5. Enter the appropriate values for the GDP RBS ++ into the General tab of the GDT Setup panel. For this example, enter the following:
 - *Start Time* – 1300
 - *End Time* – 1759
 - *Arrival Fix* – All
 - *Air Craft Type* – All
 - *Carrier* – All
 - *Initial GDP* – Checked by default
 - *Sched/User Exemptions* – Click Select and select Military
 - *Delay Assignment Mode* – DAS

Note: Enter the appropriate additional (positive number) or decreased (negative number) delay time in *Adjust Delay* when using the Blanket Program Type. Clicking **Release** fills in the Adjust Delay text field with –999, which is equivalent to releasing all delay from your specified criteria.

GDT Setup: ATL 2004/Sep/03 1218 GDT

File View Help

Reload Model Run

Program Type GDP RBS++ SUBS: ALL ON

General AAR Tier/Dist GS Modifications Power Run

Program Time

Start 031300

End 031759

11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7 8 9 10

Duration 5 Hr 0 Min Lock Compress to End Data Time 031218

Include

Arrival Fix: All Aircraft Types: All Carrier ALL

Initial GDP Last Revision End Time

Adjust Delay Release

Slot Hold Override Select

Sched/User Exemptions M Select

Delay Assignment Mode DAS Delay Limit 60

Figure 8-2: GDT Setup General Tab

Note: When you select the *Lock* checkbox option, it locks the duration of the program. Changing either the start time or the end time changes both times according to the TMI duration time.

6. Enter the appropriate values for the program into the AAR tab of the GDT Setup panel. For this example, enter an AAR of 75.

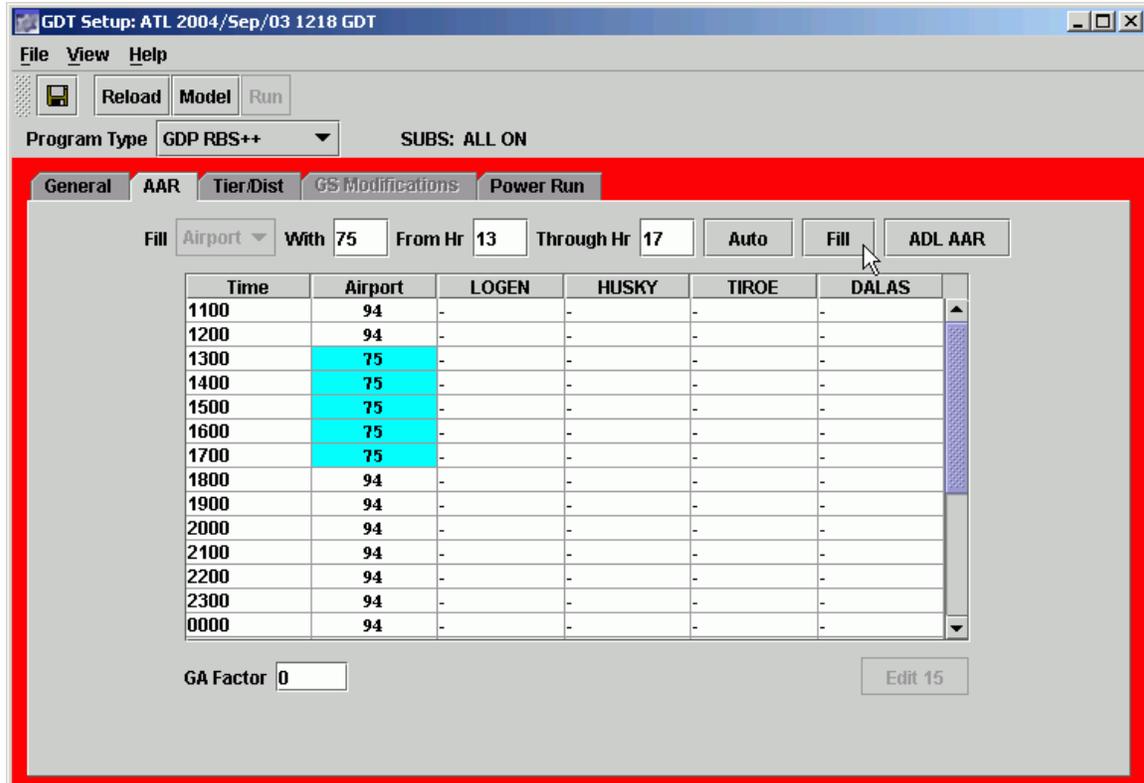


Figure 8-3: GDT Setup Panel AAR Tab

Note: Changing AARs for fixes is not an option. The Fill dropdown has only Airport as a valid entry. Assigned AARs for certain fixes is a future enhancement.

7. Enter the appropriate values for the program into the Tier/Dist tab of the GDT Setup panel. For this example, enter the following:
 - *Exempt By* – Tier
 - *Scope* – 2ndTier - ZAB

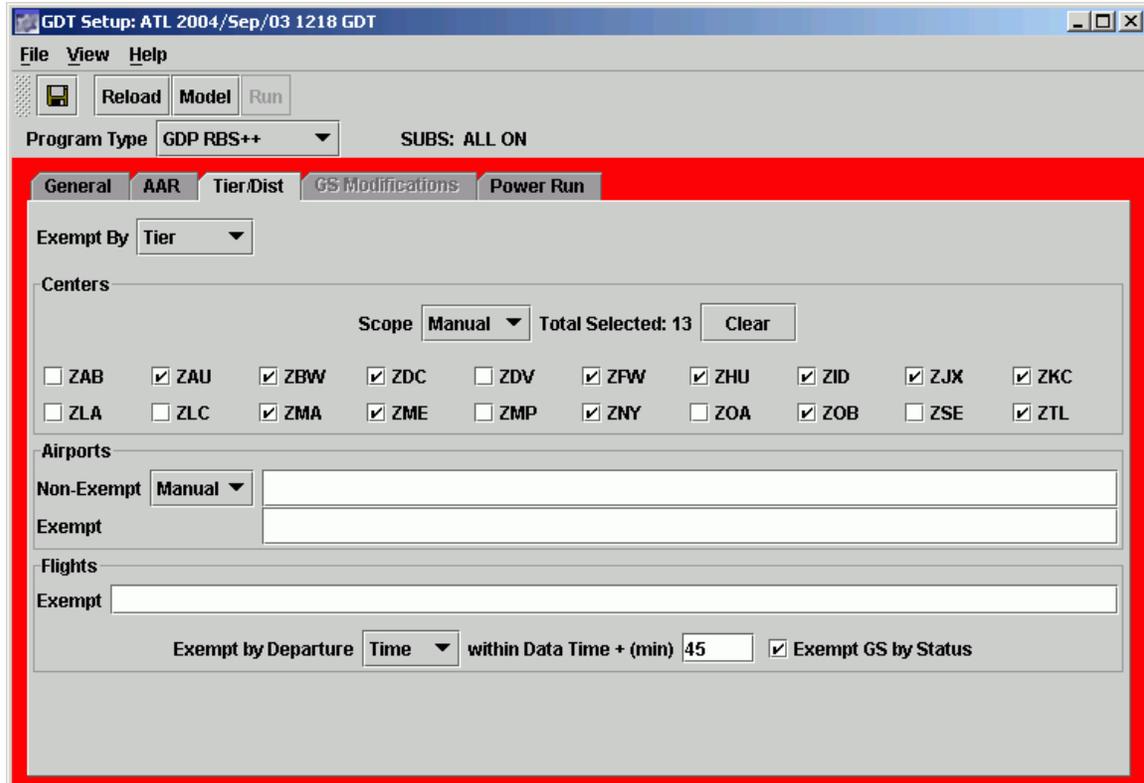


Figure 8-4: Exempt By Tier selected

Note: Any changes you make to the *GDT Map* dynamically reflect in the *GDT Setup* component's Tier/Dist Tab.

8. Select GDP Center Group & Data Time on the Power Run tab.
9. Click **Model**.

FSM models the program using the parameters you provided. The red border inside the GDT Setup Panel disappears. FSM updates the Data Graph, Bar Graph, and Map with your parameters.

You can use these components to determine how this program affects SFO.

10. If you want to load the latest ADL and analyze the data before issuing the program, click **Reload**.

The border inside the GDT Setup Panel turns red.

11. Click **Model** to see the updated data reflected in the GDT components.

Note: You can retrieve additional components from the **View** menu.

Modeling a TMI Using Proposed Parameters

When the ATCSCC sends out proposed parameters for a TMI, you can model those parameters to determine how they affect your situation. This can help you to plan before the ATCSCC implements the actual TMI.

Note: You can use the same steps to model actual parameters except that you select **File>Load Actual Parameters>[Program Type]**.

To Model a TMI using proposed parameters

For example, the ATCSCC sends out proposed parameters for GDP RBS++ program type for MCI and you want to model it.

1. Click **Open Data Set**.
The Open Data Set window appears.
2. Select MCI from the Live tab.
3. Click **OK**.
The Time Line and Bar Graph components for MCI appear.
4. Click **GDT Setup**.
The GDT Setup Panel, GDT Time Line, GDT Bar Graph, and GDT Map appear.
5. Select **File>Load Proposed Parameters>Ground Delay Program**.
FSM loads the proposed parameters into the GDT Setup Panel.

Note: You can only load parameters for the airport you are modeling.

6. Click **Model**.
FSM models the program using the parameters you loaded. The red border inside the GDT Setup Panel disappears. FSM updates the Data Graph, Bar Graph, and Map with the proposed parameters.
You can now determine how the program affects you.

Modeling Analysis

Preview Your Work

After clicking **Model** on the GDT Setup component, all FSM GDT components change to reflect the modeled TMI. Viewing these components can help you decide if the TMI you have modeled is the best scenario for the traffic flow problems at an airport. All of the following components are based on an ATL modeled GDP program.

GDT Time Line Component

To open the GDT Time Line, select **View > Time Line** from the GDT Setup component. You can preview the changes made in the Time Line as a result of running the TMI model. A quick glance at the Time Line shows you the number of canceled flights (squares) and the number of delayed flights (triangles).

Note: If you modeled a GDP with a GAAP delay limit, you would also see the number of Unassigned Slots (white diamonds).

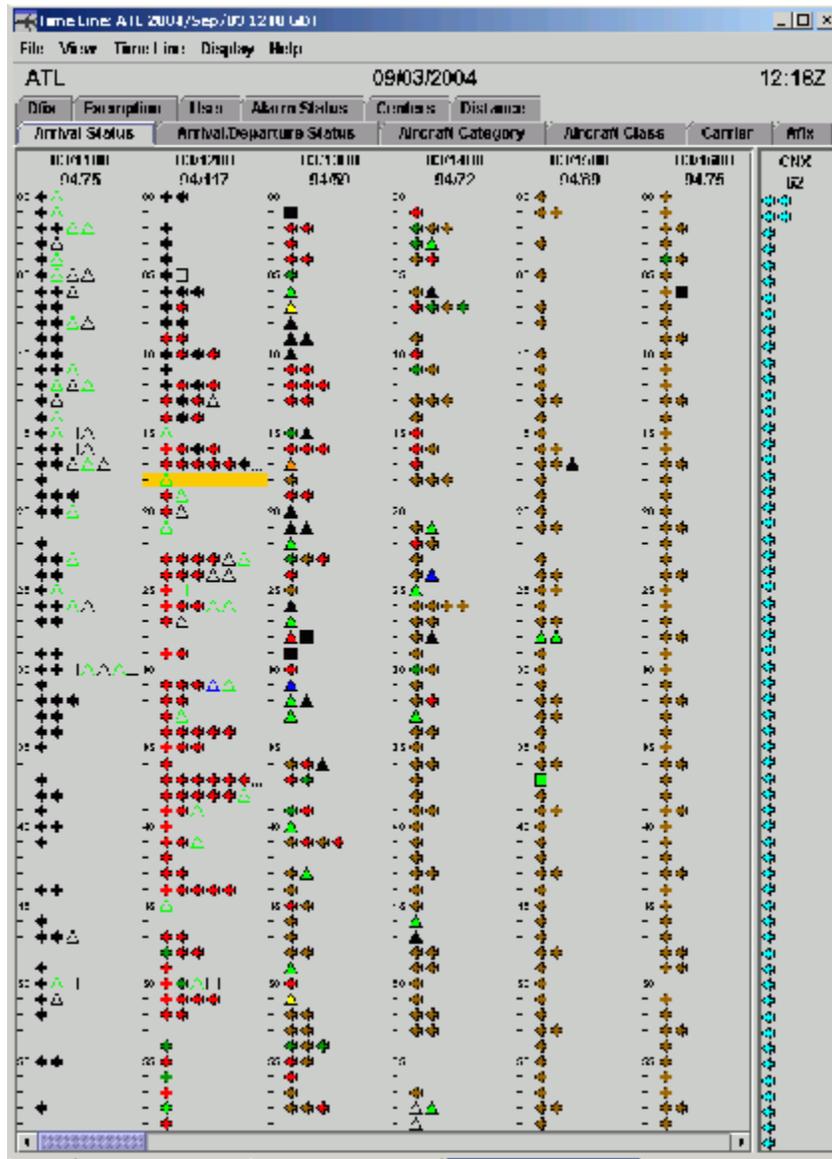


Figure 8-5: Modeled ATL GDP: Time Line View

GDT Bar Graph Component

The bar graph always displays both solid and hashed bars. Solid bars represent the original data, while hashed bars represent modeled data. Select **View > Model AAR Line** from the GDT Bar Graph to view the modeled AAR (dashed white line). The bar graph can indicate if the stack at the end of the program is a potential problem and allows you to view the overall impact of the program (see **Figure 8-6**).

Note: If you model a GDP with a GAAP delay limit, white sections of bars represent the Unassigned Slots.



Figure 8-6: Modeled ATL GDP: Bar Graph View

GDT Data Graph Component

The GDT Data Graph provides a visual statistical representation of the modeled TMI. The Power Run option that you ran appears on the X-axis. Using your mouse, drag the black vertical line to the desired Power Run option or just click the mouse over the desired option to move the line. The delay statistics to the right of the Data Graph reflect the line of delineation of the scenario. Additionally, changing the Power Run option automatically updates all GDT components to reflect the new parameters. Rolling your mouse over any line in the Data Graph gives you the delay statistic count for the colored line that reflects the results of the option.

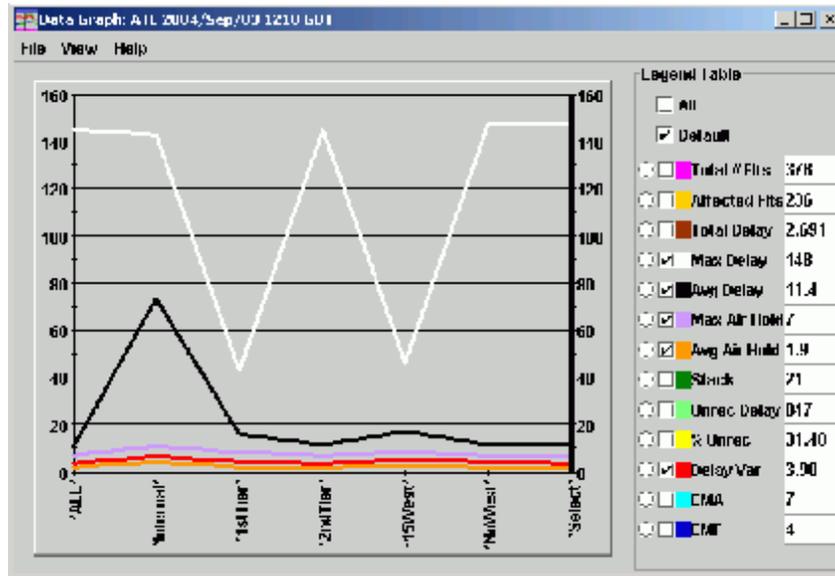


Figure 8-7: Modeled ATL GDP: Data Graph View

For more information on the Data Graph component, see Chapter 3: Understanding Components.

GDT Data Table Component

You can access the GDT Data Table by selecting **View > Data Table** in the GDT Setup component. The Data Table component contains all the same statistics as the Data Graph, only in tabular format (see Figure 8-8). Use the Data Table to look across a row for a particular statistic to find the best scenario. The same options that appear on the X-axis on the Data Graph are column headers in the Data Table.

	ALL	Internal	1stTier	2ndTier	15West	NoWest	Manual
1300 75	58:08:0	58:08:0	58:08:0	58:08:0	58:08:0	58:08:0	58:08:0
1400 75	72:33:0	72:33:0	72:33:0	72:33:0	72:33:0	72:33:0	72:33:0
1500 75	68:02:0	77:33:0	68:02:0	68:02:0	68:02:0	68:02:0	68:02:0
1600 75	75:11:1	60:01:0	74:12:1	75:11:1	75:11:1	75:11:1	75:11:1
1700 75	71:23:3	66:13:3	72:23:3	73:23:3	73:23:3	73:23:3	73:23:3
Internal Hits	370	370	370	370	370	370	370
Affected Flts	25	27	150	241	132	236	236
Traffic Delay	2,919	1,977	3,719	2,082	2,241	2,682	2,682
Max Delay	145	143	43	145	46	148	148
Avg Delay	1.16	1.32	10.8	1.12	1.60	1.3	1.3
Max Air Hold	7	11	8	7	8	7	7
Avg Air Hold	1.9	4.1	2.1	1.8	2.7	1.8	1.8
Stack	21	13	23	21	20	21	21
Time: Delay	439	27	498	870	469	361	347
%Unrec	15.03	1.74	13.15	32.50	20.76	31.72	31.40
Delay Var	3.38	0.37	1.37	3.82	4.78	1.01	3.80
EMTA	6	13	5	6	0	5	7
EMF	1	17	1	4	11	1	1

Figure 8-8: Modeled ATL GDP: Data Table View

The Analysis Report

FSM generates the Analysis Report after you click **Run** from the GDT Setup component. To evaluate the effects of any delay operation, select **View > Analysis Report** from the Coversheet, as shown in Figure 8-9.

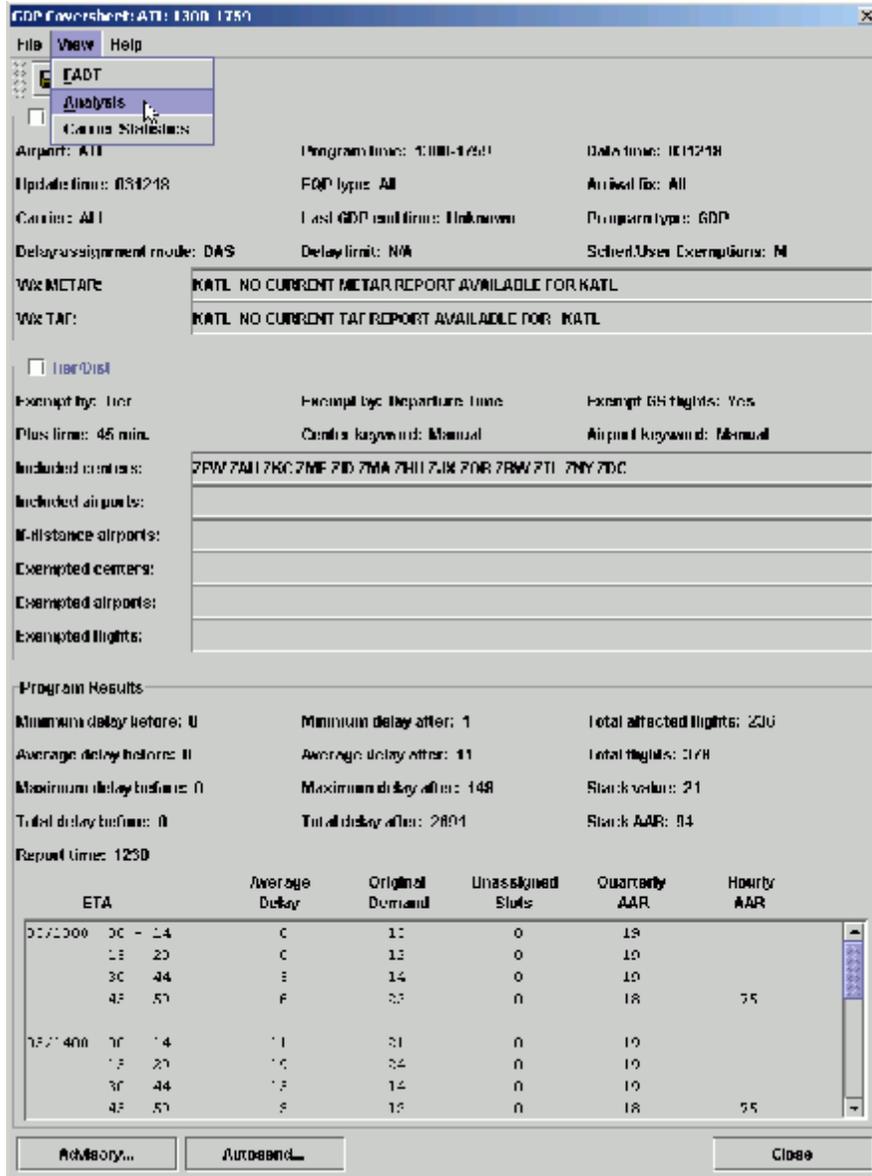


Figure 8-9: Coversheet

FSM automatically opens the spreadsheet application that you have indicated in your configuration files to display the Analysis Report.

Flight	Carrier	Class	Alt	Orig	Dest												
6	AA	Y	0	5	C	0	32	3.2	32	3.2	0	0	0	0	0	0	0
7	DF	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
8	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
9	UA	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
10	AA	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
11	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
12	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
13	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
14	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
15	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
16	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
17	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
18	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
19	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
20	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
21	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
22	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
23	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
24	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
25	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
26	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
27	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
28	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
29	DL	Y	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0
30	Total		300	200	C	0	200	12	200	12	0	0	0	0	0	0	0

Figure 8-10: Analysis Report for ATL GDP

The Analysis Report contains pertinent information for the Ground Delay Operation that has just run, including detailed slot information for individual airlines, delay statistics for before and after the operation, and arrival and departure information for individual flights (see Figure 8-10). The report contains two sections. One section reflects changes that occur as a result of RBS; the other section reflects changes that occur as a result of Compression. Included in the analysis are statistics for bridge-only carriers.

Reload the Data

If you have been developing a TMI for a while, you may have missed some incoming ADLs. Before sending out the final TMI parameters, you may want to update the data for your proposed TMI. To do this, click **Reload** on the GDT Setup component. The **Reload** button is active only when the actual data time is more recent than the data available in GDT mode. Clicking **Reload** also models the TMI event.

9 Issuing an Initial Ground Delay Program

This chapter assumes that you have already modeled your Ground Delay Program (GDP) and you have decided that a GDP is the best Traffic Management Initiative (TMI) to control the demand at the airport you are monitoring. See Chapter 9 for more information on how to set and model your parameters.

Run to Generate the GDP Coversheet

Click **Run** after you complete and model your GDP setup from the GDT Setup component. Clicking **Run** saves the parameters to a file specified in FSM's configuration file and causes the GDP Coversheet to appear on the screen. Clicking **Run** also generates three reports, the FADT, Analysis, and Carrier Statistics Reports, which you can view by selecting **View > FADT, Analysis Report**, or **Carrier Statistics** from the Coversheet menu. See Coversheet Reports below for more information on reports.

Note: If you modeled your GDP, the red border around the GDT Setup Panel no longer appears and the **Run** button is enabled. If you change any parameter in the GDT Setup component, you must click **Model** first, and then **Run**. Clicking **Reload** retrieves the most current parameters and models at the same time.

The GDP Coversheet contains all the GDP parameters including the text fields for specific parameters. After reviewing the GDP parameters, send an **Advisory** and use **Autosend** from the GDP Coversheet to issue the GDP, as shown in Figure 9-1.

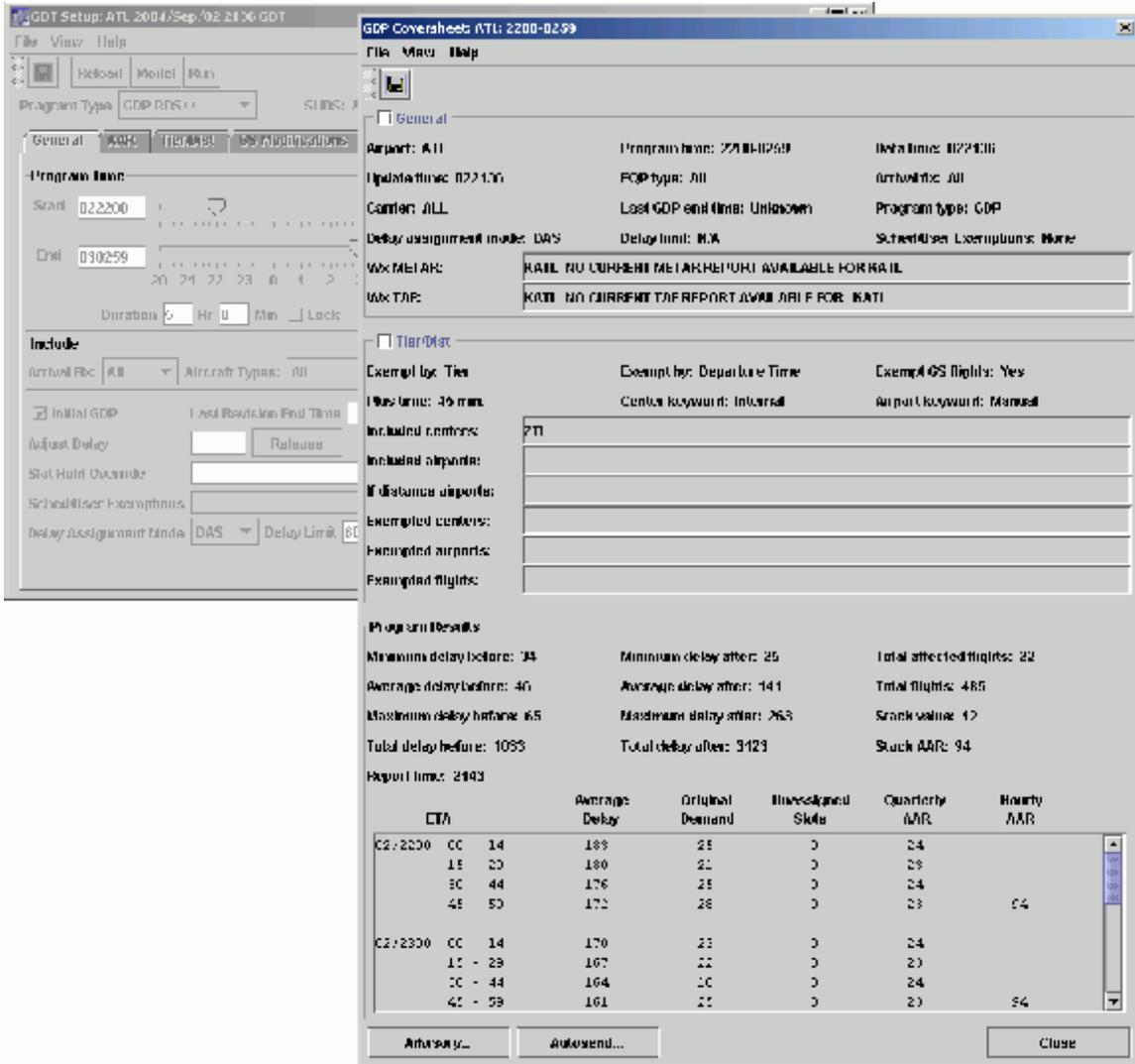


Figure 9-1: GDP Coversheet

For more information on the Coversheet component, see Chapter 3: Understanding Components.

Reviewing Program Parameters

Reviewing the program parameters is important before issuing the GDP. Ensure that the General Parameters, Tier/Dist, Program Results, and scrolling window sections accurately reflect all of the information you entered for the GDP.

Once you complete the GDP Coversheet and mark all of the checkboxes, you can either send out an **Advisory** or **Autosend** the GDP to the Hub site.

When you click **Advisory**, the Advisory Window appears, which allows you to send either a Proposed or an Actual Advisory to all FSM users. See below on page 4 for more information.

Using Autosend

From the GDP Coversheet, click **Autosend**. Clicking **Autosend** sends the entire FADT file to all users, including airlines. During the Autosend process the Autosend Progress bar appears (see **Error! Reference source not found.**). The Hub site does not send out any actual program

information through the ADL unless there is an Actual Advisory with parameters matching the FADT.

Note: If you choose **Advisory** or **Autosend** more than 15 minutes after switching to GDT Setup, FSM warns you to return to Monitor Live mode and get the most recent data from an updated ADL before continuing with the Ground Delay Operation.

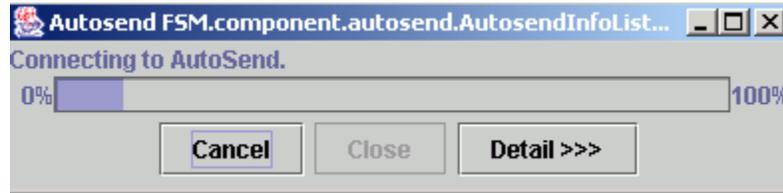


Figure 9-2: Autosend Progress bar

Click **Close** and no action is taken from the GDP Coversheet window.

Re-Opening the Coversheet

If you want to review previous Coversheets for the airport, or if you accidentally closed the Coversheet before sending out the advisory, you can re-open it for review to continue sending out your program. Select **File > Open** from the GDT Setup component. This opens a file selection window for the Reports directory. You should see all Coversheets generated for that airport.

Note: The Coversheet files appear in the reports directory until you choose to delete them.

FSM generates Coversheet files when you run a new or revised GDP, GS, Compression, or Substitution. FSM also generates Coversheets when you purge (cancel) a program. You can differentiate between the different Coversheet files by looking at the last few letters in the file name:

- GDP indicates a GDP Coversheet.
- GS' indicates a Ground Stop Coversheet.
- COMP' indicates a Compression Coversheet.
- SUBS' indicates a Substitution Coversheet.

FSM names a typical Coversheet file by:

- Type of file (for Coversheets, it is always covr)
- Airport
- 2-character date (just the day)
- Time generated (HHMMSS)
- Rate used
- Type of Coversheet (gdp, gs, comp, subs)
- Center group included

For example, a file named "covr.SFO.28150808.3030.GDPNew.ALL" indicates a New GDP (first GDP of the day) Coversheet generated for SFO airport on the 28th at 1508Z with a 30 rate that includes all centers in the program.

Once you find the appropriate Coversheet file, click on the file name to select it and click Open. The Coversheet opens in FSM exactly as it appeared the first time FSM generated it. If the

Coversheet is still valid to send out a program, the buttons at the bottom of the Coversheet are enabled. If the Coversheet is no longer valid, the buttons are grayed out.

Note: Even if the Coversheet is still valid, enough time may have passed that it would be better to generate a new program and Coversheet.

Creating an Advisory

To compose either an Actual or Proposed GDP Advisory, click **Advisory** on the GDP Coversheet. The GDP Advisory window appears (see Figure 9-3). This window contains all the GDP parameters, which you set, and some fields in the Remarks section that you must enter before sending an advisory.

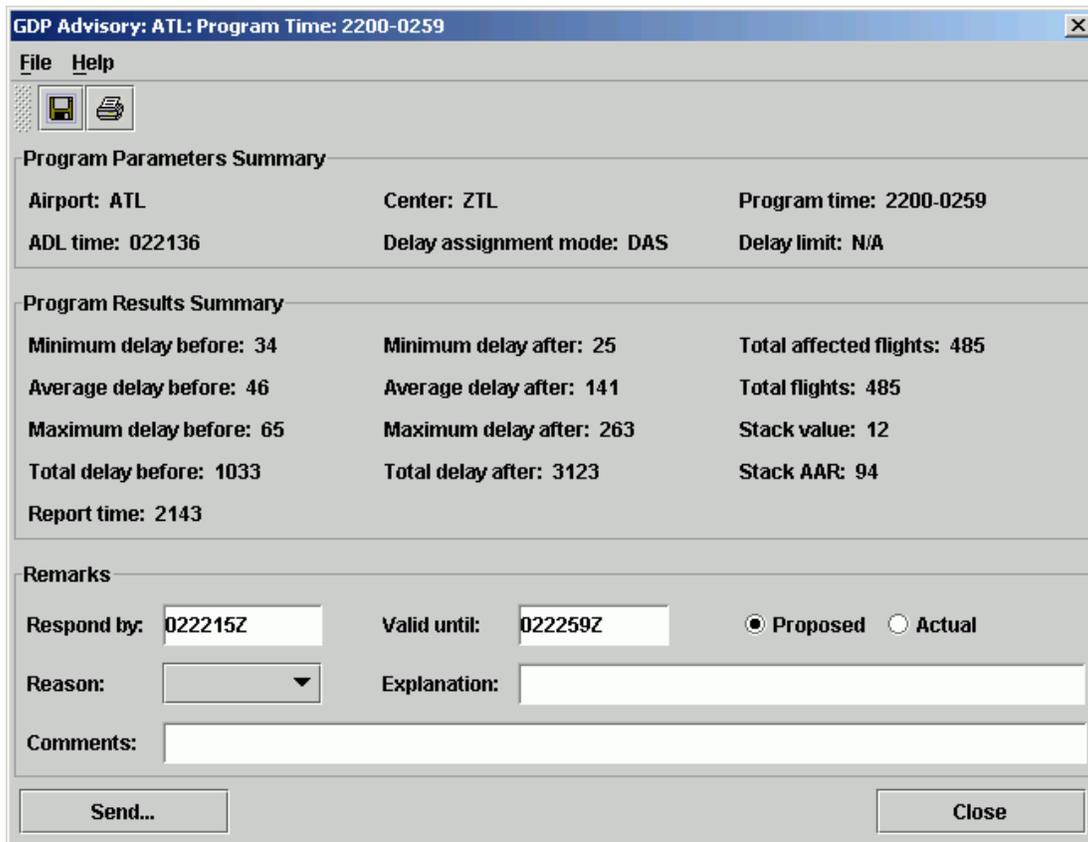


Figure 9-3: Send an Advisory

Sending an Advisory

Once you complete the GDP Advisory, you can either save that Advisory to a specified directory on another computer or actually send it to the appropriate parties via email.

Click **Send** to email the program parameters to all parties involved, including the Hub site. A checkmark appears next to the **Send** button on the Advisory window and next to the **Advisory**

label  on the GDP Coversheet to indicate that you have sent the advisory.

If the parameters are for a Proposed Advisory, the Hub site sends out the parameters immediately in the next ADL. When you send parameters for an Actual Advisory, the Hub site ensures that it has received the associated FADT file with flight control times for the program before sending any parameters through the ADL.

Click **Close** and no action is taken from the GDP Advisory window.

Purging a GDP

To purge (cancel) and release all delay on flights included in the GDP, use the Purge function from the GDT Setup Component. Selecting the Program Type Purge option on the GDT Setup Component is the same as using the Release Delay option for the Blanket Program Type-See Chapter 16 for more details on the Program Type Blanket.

The Purge option requires no user input. Once the Purge option is selected, all the features in the setup panel are grayed out. Click **Run** to generate the GDP Purge Coversheet (See Figure 9-4).

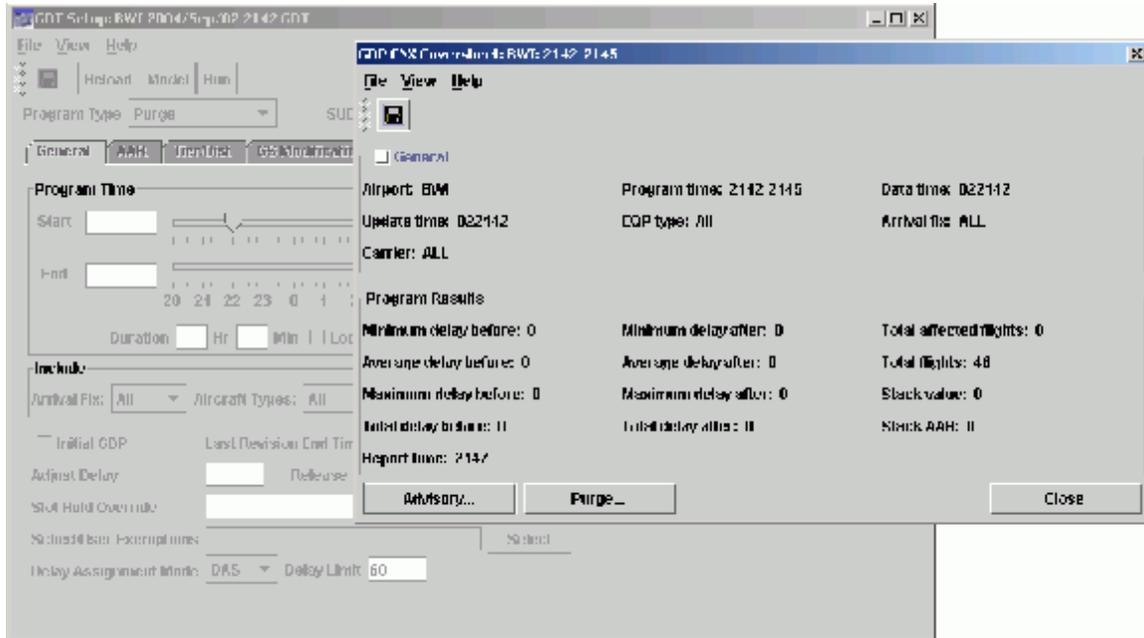


Figure 9-4: Purge Coversheet

The information included in the Purge Coversheet is pre-defined-you cannot change it. Information on the Purge Coversheet includes:

- Program Input parameters
- Program Results

For more information on the Coversheet component, see Chapter 3: Understanding Components.

Purge Coversheet

From the Purge Coversheet, click **Purge** to purge any control times from the ETMS system. Purge works the same as the Autosend function to send new operation parameters and cancellation messages to the Hub site for inclusion in the ADLs.

Note: The Hub site waits for an Advisory for the cancelled GDP before sending the new parameters.

Finish the GDP cancellation by clicking **Advisory** and sending a Purge advisory.

Viewing Flight Information before Purging a Program

When you model a purge for a program, ETMS sets the minimum notification time to the value of the minimum notification time for flights in a ground delay parameter. For the controlled flight affected by the PURGE, FSM determines the minimum notification time based on the type of

control and taxi status of the flight. If a controlled flight is in a taxi status, without regard to the type of control, then FSM sets the minimum notification time to the value of the minimum notification time for flights in a taxi status.

ETMS models a new estimated departure time based on the flight's control departure time and the minimum notification time based on the following criteria:

- If the flight is active or completed, ETMS sets the ETD to the actual departure time.
- If the CTD of the flight is within the minimum notification time from the current time, the estimated departure time remains set to the CTD.
- If the CTD of the flight is greater than the minimum notification time plus the current time, then ETMS calculates a candidate ETD selected from the following values in order of priority:
 1. Earliest Runway Departure Time
 2. Earliest Runway Arrival Time minus the Estimated Time Enroute
 3. Original Estimated Departure Time
 4. Initial Gate Departure Time plus the taxi time for the flight
- If this candidate time is greater than the current time plus the minimum notification time, then ETMS sets the ETD to this candidate time.
- If the candidate time is less than the current time plus the minimum notification time, then ETMS sets the ETD to the current time plus the minimum notification time.

Example

The section below is an example of how to issue a GAAP GDP. When the known demand does not exceed the capacity at an airport but you think that the unknown demand will exceed capacity, you can use a GDP with a *Delay Assignment Mode* of GAAP to control traffic flow into the airport. This situation usually occurs at airports that serve large numbers of General Aviation (GA) flights. The General Aviation Airport Program (GAAP) was designed for this situation. As usual, scheduled flights receive a slot, but ETMS also generates unassigned slots for unknown demand. As flights become known, ETMS assigns them to one of the open slots or gives them an FA delay. The FA delay time also differs in that it is one set value for all flights. No flight at a GAAP airport receives a delay longer than the maximum delay limit.

To issue a GAAP GDP

1. Click **Open Data Set**.
The Open Data Set window appears.
2. Select the airport for which you want to issue the GAAP GDP.
3. Click **OK**.
The Time Line and Bar Graph components for the airport appear.
4. Click **GDT Setup**.
The GDT components for the airport appear.
5. Select RBS++ for the *Program Type*.

6. Select the appropriate values for the Program Time and Include sections of the General tab on the GDT Setup Panel.
7. If the GAAP GDP is an initial GDP for the airport, ensure the **Initial GDP** box is checked. Otherwise, enter a **Last Revision End Time**. This should be done by default.
8. Select any **Slot Hold Override** that is necessary for the GAAP GDP. This only applies during a revision.
9. Select any **Sched/User Exemption** that is necessary for the GAAP GDP.
10. Select GAAP for the **Delay Assignment Mode**.
11. Enter the **Delay Limit** appropriate for the GAAP GDP. The default value is 60.
12. Enter the appropriate AAR for the GAAP GDP on the AAR tab.
13. Set the Scope for the GAAP GDP on the Tier/Dist tab.
14. Select the Power Run you want FSM to use for this GAAP GDP.
15. Click **Model**.

The red border in the GDT Setup Panel disappears and all the GDT components reflect the modeled GAAP GDP.

16. If the program appears to deal with the traffic flow in the manner you want, click **Run** to generate the Coversheet.

The Coversheet window appears.

17. Carefully examine each section of the Coversheet. If the data is correct, select the **General** checkbox and the **Tier/Dist** checkbox.
18. Click **Autosend** on the Coversheet to send the parameters to the Hub site.
19. Click **Advisory** on the Coversheet.

The Advisory window appears.

20. Select either **Proposed** or **Actual**.
21. Modify the **Respond By** time if Proposed was selected.
22. Modify the **Valid Until** time if Proposed was selected.
23. Select the **Reason** for the GAAP GDP.
24. Enter the **Explanation** and any **Comments** as needed.
25. Click **Send**.

The unassigned slots for the GAAP GDP appear in the Time Line and Bar Graph components for the airport, an Unassigned slots block appears in the ADL, and an UNASSIGNED_SLOTS block appears in the FADT.

10 Monitoring GDP Delivery

Introduction

When a Ground Delay Program (GDP) is in effect, you want to monitor the progress of the program to ensure the program is affecting NAS operations in the intended manner. You also want to ensure that flights included in the program are complying with the program parameters. FSM generates various reports and statistics for monitoring a program's progress.

Monitoring GDP Delivery using the Time Line and Bar Graph

Time Line Component

During a GDP, it is easy to view the Time Line to get a general idea of how evenly the flights are distributed throughout an hour and of how many cancelled or delayed flights are in the program. Filled triangles represent delayed flights. Filled triangles appear on the Time Line only when a GDP is in effect. The filled triangle indicates an open arrival slot due to a delayed flight. ETMS leaves the arrival slot open and makes it available for use by other flights. Clicking this icon also highlights the associated delayed flight.

The filled square icon appears only when a GDP is in effect and represents an arrival slot left open by a cancelled flight. Cancelled flights appear on the Time Line under the CNX heading and are highlighted when you click their associated slot. If there are numerous open slots, or solid triangles and squares, you may need to use a compression or revision to use the empty slots (see **Error! Reference source not found.**).

The white diamond icon appears on the Time Line when a GDP with a GAAP delay limit is in place. This icon represents Unassigned Slots. As pop-up flights become known, EDCT assigns them to one of the unassigned slots or gives them an FA delay.

Bar Graph Component

During a GDP, use the Bar Graph component to view the distribution of flights, within each hour. To view how flights are distributed in smaller time increments, click on the 15 or 30-minutes bin selection buttons located below the Bar Graph menu bar. The thin, grey line displays the arrival flow rate, which illustrates the fluctuations of demand within the time-bins (see Figure 10-1). The default time increment is set to 60 minutes. In addition to viewing the flight distribution, you can view how many cancelled flights and unassigned slots are in the program. Select **View > Show Cancellations** to display the cancelled flights in cyan on the Bar Graph. Select **View > Show Unassigned Slots** to display unassigned slots in white during a GAAP GDP.

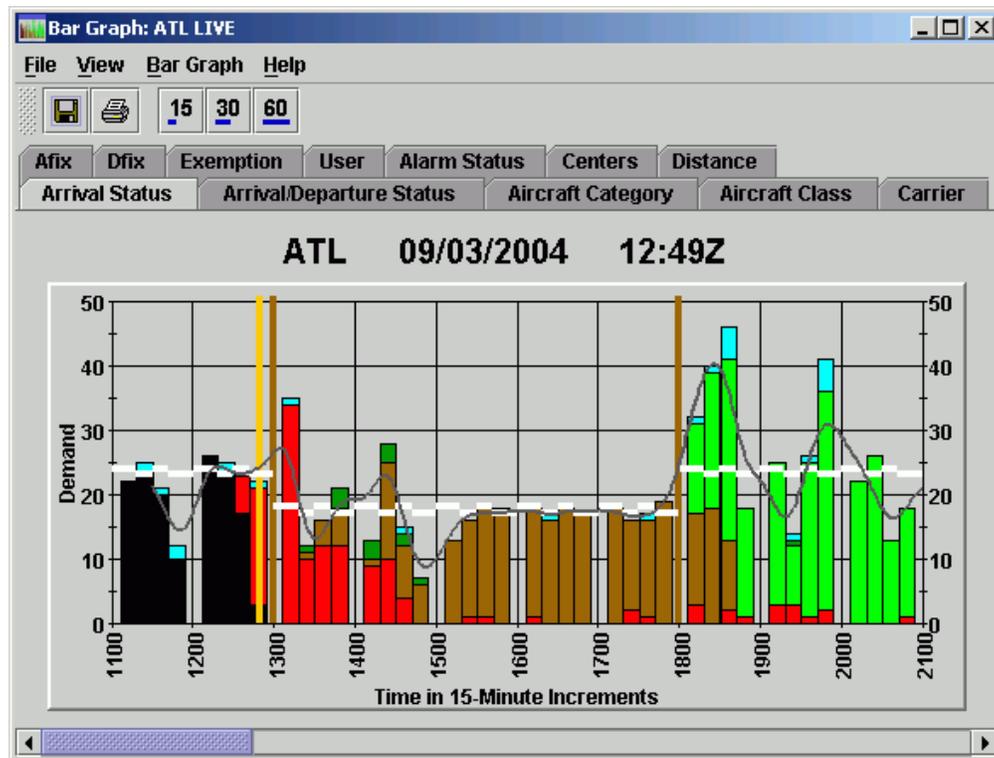


Figure 10-1: Bar Graph displayed in 15 minute Time Increments

White sections of bars appear when a GDP with a GAAP delay limit is in place. These sections represent Unassigned Slots. As pop-up flights become known, EDCT assigns them to one of the unassigned slots or gives them an FA delay.

Monitoring Effects on NAS Users

You can open several reports from the **Reports** menu on the main Control Panel component. You can use these reports to monitor the affects of the GDP on NAS users.

Surface Delay Report

Select **Reports > Surface Delay** to generate a report that indicates the ground delay imposed on flights. The report contains departure information for both arriving and departing flights. This report is very similar to an FSM Flight List and allows you to view histograms of both Absolute Delay and ATC Delay. See Chapter 6 for more information on Flight Lists.

Priority Flight List

Select **Reports > Priority Flights** to view this report. This report identifies priority flights. It is similar to an FSM Flight List, but lists only those flights tagged as Lifeguard (LFG) or Diversion Recovery (DVT) flights.

Time Out Delay List (Airline Only and General Aviation Users Only)

Select **Reports > Time Out Delay** to view this report. The Time Out Delay Report quickly provides a picture of which flights from your operation are contributing to the Time Out delay problem. Easier access to this information should help you review and resolve the problem. The report is in the same format as FSM Flight Lists and includes all flights whose delay status is 'TO.'

Time Out Cancel List (Airline Only and General Aviation Users Only)

Select **Reports > Time Out Cancel** to view this report. The Time Out Cancel Report quickly provides a picture of which flights from your operation are contributing to the Time Out cancel problem. Easier access to this information should help you review and resolve the problem. The report is in the same format as FSM Flight Lists and includes all flights whose cancellation status is 'TO.'

Slot Hold

Select **Reports > Slot Hold** to view this report. This report generates a flight list of all flights that are currently holding their cancelled slots.

Sub Opportunities (Airline and General Aviation Users Only)

Select **Reports > Sub Opportunities** to view this report. This report generates a flight list to assist airlines and general aviation customers in identifying subbing opportunities. Two columns, ERTA-CTA and SchedVar, have been added to illustrate the most eligible flights to be subbed.

	ACID	TYPE	ORIG	DEST	ERTD	ERTA	CTA	ERTA-CTA	SchedVar
1	USA1443	B733	PHL	ORD	25/1346	25/1525	-	-	25
2	USA1227	B733	PIT	ORD	-	-	26/0337	-	47
3	USA963	B733	PIT	ORD	25/2101	25/2202	26/0002	-120	104
4	USA945	B733	PHL	ORD	-	-	-	-	-18
5	USA637	B733	PHL	ORD	25/1912	25/2054	25/2112	-18	-14
6	USA574	B734	PHL	ORD	25/2151	25/2334	26/0030	-56	76
7	USA551	B733	CLT	ORD	25/1739	25/1925	25/2214	-169	-9
8	USA510	B733	PHL	ORD	25/1531	25/1711	25/1741	-30	1
9	USA470	B733	PIT	ORD	25/1531	25/1632	25/1637	-5	-9
10	USA375	B733	CLT	ORD	25/1352	25/1527	-	-	-5
11	USA368	B733	CLT	ORD	25/1932	25/2120	25/2116	4	-7
12	USA347	B733	CLT	ORD	-	-	-	-	-2
13	USA299	B735	PHL	ORD	25/2307	26/0058	26/0205	-67	70
14	USA270	B735	PIT	ORD	25/2241	26/0009	26/0113	-64	67
15	USA210	B734	CLT	ORD	25/2122	25/2311	25/2317	-6	3
16	UPS6840	B763	ANC	ORD	-	-	-	-	3
17	UPS614	DC87	SDF	ORD	-	-	-	-	3
18	UPS610	A306	PHL	ORD	-	-	-	-	3
19	UPS608	DC87	DFW	ORD	-	-	-	-	3
20	UPS606	A306	SDF	ORD	-	-	-	-	3
21	UAL9935	B772	GSO	ORD	-	-	-	-	0
22	UAL9886	B733	CMH	ORD	-	-	-	-	0
23	UAL8215	B735	CYZ	ORD	25/1823	25/1929	25/2224	-175	-11
24	UAL8173	B752	MCO	ORD	25/1415	25/1630	25/1638	-8	-20
25	UAL8170	A319	EWR	ORD	25/1458	25/1645	25/1735	-50	3
26	UAL8164	B733	LGA	ORD	25/1925	25/2114	25/2136	-22	7
27	UAL8155	B735	DTW	ORD	-	-	26/0246	-	60
28	UAL8141	A320	BOS	ORD	25/1438	25/1639	25/1645	-6	-6
29	UAL8136	B735	MSP	ORD	25/2320	26/0009	26/0125	-76	65

1179 Flights

Figure 10-2: Sub Opportunities Report

Slot List

Select **Reports > Slot List** to view this report. The Slot List report generates the second part of the FADT List that FSM generates after a program runs. Included in the Slot List are the Aircraft Identification number (ACID), assigned slot time (ASLOT), departure center (DEP), controlled time of departure (CTD), controlled time of arrival (CTA), aircraft type (TYPE), exemption status (EX), cancellation status (CX), slot hold status (SH), earliest runway time of arrival (ERTA), and initial gate time of departure (IGTD).

When you select this report, a file selection window appears. Ensure the opened directory in the file selection window is the Reports directory. Enter a name for the file you want to generate and click **Save**. You can then use **Utilities > View a File** to open your saved slot list (see Figure 10-3).

B8 LIST REPORT

AIRLINE .GA										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
N413QS	ATL031312A	PHL	031124	031312	GDP	Y	-	-	-	031042
N44EG	ATL031440A	MMU	031240	031440	GDP	Y	-	-	-	031230
N421LC	ATL031503A	MCO	031244	031503	GDP	Y	-	-	-	031230
AIRLINE AAL										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AAL536	ATL031359A	DFW	031211	031359	GDP	Y	-	-	031346	031200
AAL1578	ATL031353A	MIA	031217	031353	GDP	Y	-	-	031343	031200
EGF442	ATL031422A	ORD	031242	031422	GDP	Y	-	-	031403	031145
LOF5621	ATL031441A	STL	031257	031441	GDP	Y	-	-	031421	031245
AAL1678	ATL031508A	DFW	031327	031508	GDP	Y	-	-	031505	031313
AAL1846	ATL031633B	DFW	031449	031633	GDP	-	-	-	031600	031402
AAL1145	ATL031723A	ORD	031517	031723	GDP	-	-	-	031653	031506
LOF5663	ATL031730A	STL	031607	031730	GDP	-	-	-	031705	031530
AAL1714	ATL031751A	MIA	031622	031751	GDP	-	-	-	031713	031525
AIRLINE AFR										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AFR316	ATL031803A	LFPG	030908	031803	GDP	Y	-	-	-	030815
AIRLINE AJM										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AJM57	ATL031728A	MKJS	031455	031728	GDP	Y	-	-	-	031445
AIRLINE AMX										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AMX636	ATL031551A	MMMX	031310	031551	GDP	Y	-	-	-	031300
AIRLINE ASH										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
ASH2951	ATL031545A	CLT	031500	031545	GDP	-	-	-	-	031420

Figure 10-3: Reports > Slot List

Carrier Statistics

Select **Reports > Carrier Statistics** to view this report. The report shows delay statistics for all carriers with flights that operate at that particular airport. FSM calculates flights only with assigned arrival slots in the report metrics. That is, flights with a Control Time of Arrival (CTA) appear in carrier statistics. If a carrier operates at the airport, but has no flights with a CTA, the Carrier Statistics report displays "0" or "N/A" in those rows. You can choose the type of delay to view in the report by selecting the *Delay Type* of **ATC** or **ABS** at the top of the report. FSM selects the **ATC** delay type by default. **ABS** Delay is the *absolute delay* on a flight, including FAA and airline delay imposed on the flights. FSM calculates absolute delay using Max (0, ETA

- [IGTA - Taxi]). ATC Delay is the *delay imposed only by the FAA* on flights. FSM calculates it using Max (0, CTA - BETA).

The report displays delay statistics for all carriers that operate at an airport. Carriers with no presence at the monitored airport do not show up in Carrier Statistics.

Carrier Statistics: ATL: 09/03/2004: 1252 live : Frozen

File View Help

Airport: ATL ADL Update Time: 09/03/04 12:52Z Delay Type: ATC ABS

Carrier Name	CDM MBR	#Flights Total/Non_Exempt/Exempt/CNX	Affected	On Time %	Delay Total/Total%/ Avg /AffAvg	Delay Max / Min	%Delay / %Traffic
AAL	Y	9 / 9 / 0 / 0		55.6	151 / 1.7 / 16.8 / 16.8	38 / 0	0.77
AFR	N	1 / 1 / 0 / 0		0.0	49 / 0.6 / 49.0 / 49.0	49 / 49	2.25
AJM	N	1 / 1 / 0 / 0		100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
AMX	N	1 / 1 / 0 / 0		100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
CAA	Y	82 / 81 / 0 / 1		27.2	2134 / 24.5 / 26.3 / 26.3	55 / 0	1.21
CAL	N	1 / 1 / 0 / 0		100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
COA	Y	7 / 7 / 0 / 0		28.6	162 / 1.9 / 23.1 / 23.1	36 / 10	1.06
DAL	Y	200 / 196 / 0 / 4		46.9	4056 / 46.5 / 20.7 / 20.7	146 / 0	0.95
DLH	N	1 / 1 / 0 / 0		100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
EJM	N	1 / 1 / 0 / 0		100.0	7 / 0.1 / 7.0 / 7.0	7 / 7	0.32
FDX	Y	1 / 1 / 0 / 0		100.0	6 / 0.1 / 6.0 / 6.0	6 / 6	0.28
IDE	Y	5 / 5 / 0 / 0		20.0	138 / 1.6 / 27.6 / 27.6	53 / 5	1.27

Figure 10-4: Carrier Statistics

For more information on the Carrier Statistics Report, See Chapter 19: Understanding and Using FSM Reports.

Unassigned Slots Report

The Unassigned Slots report shows all unassigned slots available for a GDP with a GAAP delay. You can use this report to track the availability of unassigned slots during the program.

ETMS Unassigned Slots Report

You can access the ETMS Unassigned Slots report from **ETMS Tools>ETMS UNASSIGNEDSLOTS** on the Control Panel and enter the airport identifier. This allows you to track the availability of unassigned slots in ETMS during a GDP with a GAAP delay limit.

Monitoring Flight Compliance

FSM generates Compliance List reports for monitored airports currently in a GDP. Under the **Reports > Compliance >** menu option on the main Control Panel you find five compliance reports:

- By CTD
- By ETE
- By CTA
- Spurious Flight
- Cancel That Flew

See Chapter 19: Reports for more information on Compliance Reports.

FSM updates the compliance reports automatically with every ADL for all airports for which FSM collects data. Compliance reports include only those flights arriving at the currently monitored airport. The list you generate is for the airport that you were last viewing, therefore ensure that the desired airport is active before selecting the Compliance report. The Compliance reports appear in the same format as all FSM Flight Lists, see Chapter 6 for more information on Flight Lists.

Monitoring Program Parameters

You can find the program parameter alerts for all monitored airports under the **Alerts** menu on the main Control Panel component. All monitored airports appear in alphabetical order under the **Alerts** menu. When ETMS updates an airport's parameters, the **Alerts** menu is highlighted in red as well as the monitored airport and its corresponding updated parameters. Figure 10-5 shows ATL airport with FADT Parameters, SCS Bridge parameters, and Ground Stop Parameters updated. DTW has no updated parameters. Once you read the updated parameters, the parameter color returns to its original state. FSM lists the parameters of the airport currently active, on the main Alerts menu. Clicking on the other airports activates a pop-up box that displays the parameters for the selected airport. If you select another airport, the Alerts menu changes accordingly.

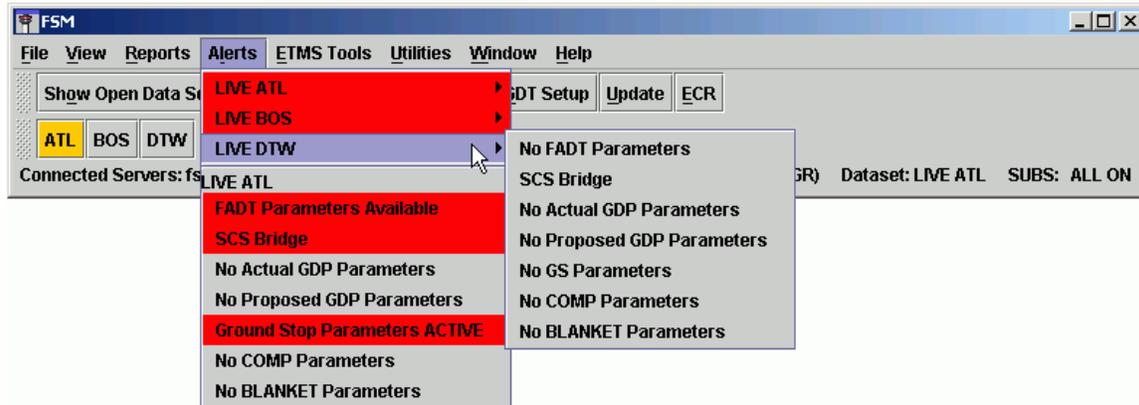


Figure 10-5: Alerts Menu

FADT Parameters Updated

The **Alerts > FADT Parameters Available** menu option is highlighted in red when there is a new FADT. Selecting **FADT Parameters Updated** displays a pop-up window that lists the FADTs generated during the day for the selected airport in [ddhhmmss] format (see Figure 10-6). This option does not actually give you program parameters. FADTs are reports generated when you run a GDP, GS, Blanket, or a Compression operation. During a GDP with a GAAP Delay Assignment Mode, the FADT displays an Unassigned Slots block.

Note: FSM does not always list the FADTs in chronological order.



Figure 10-6: FADT Parameters Window

SCS Bridge

Alerts > SCS Bridge is highlighted red in color when there is a new SCS update. Selecting SCS Bridge displays the Substitution Flag Block window, which displays the current subbing status (see Figure 10-7). The Substitution Flag Block may contain the following keywords:

- **SUBS:** Indicates whether all substitutions are enabled (ON) or disabled (OFF)
- **SCS:** Indicates whether slot credit substitutions for all operators are enabled (ON) or disabled (OFF)

- **BRIDGING:** Indicates whether bridging subs are disabled (OFF) for a particular operator (airline, GA, or MILITARY). If bridging is off for an airline, any flight that has a MAJOR field or carrier code (from ACID) that matches the airline name is not used for an SCS bridge. If bridging is enabled for an operator, no line appears, that is, the only allowed value for this keyword is OFF.

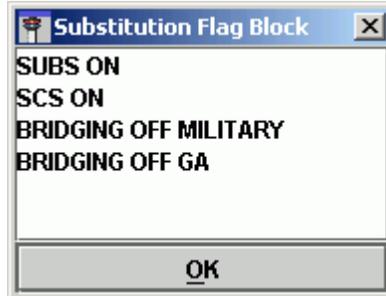


Figure 10-7: SCS Flag Block Window

Note: By default, Military and GA bridging is disabled.

GDP Parameters

Alerts > Actual GDP Parameters Available is highlighted in red when FSM receives Actual GDP Parameters through the ADL. First-time GDP Parameters, new GDP Parameters, and deleted GDP Parameters all trigger this Alert. Select **Actual GDP Parameters Available** to view the parameters that FSM takes from the FADT file and displays in a static GDT Setup window (see Figure 10-8). Tab navigation allows you to view all the parameters, although you cannot make changes to this window. If no Actual GDP Parameters exist, the text reads **No Actual GDP Parameters**.

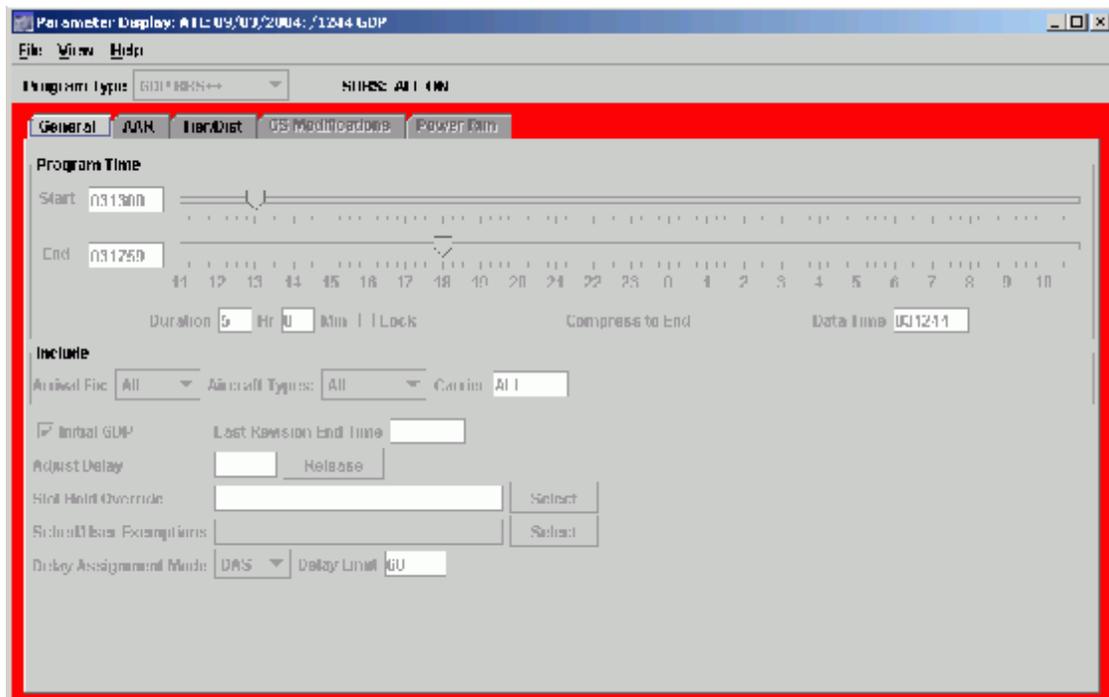


Figure 10-8: Actual GDP Parameter Display Window

Alerts > Proposed GDP Parameters Available is highlighted in red when parameters for a Proposed GDP arrive through the ADL. Select Proposed GDP Parameters Available to view the

proposed parameters, which FSM takes from the FADT file and displays in a static GDP Setup window. Tab navigation allows you to view all the proposed GDP parameters, although you cannot make changes to this window. If no Proposed GDP Parameters exist, the text reads **No Proposed GDP Parameters**.

GS Parameters

Alerts > GS Parameters Active is highlighted in red when the FAA issues a Ground Stop and FSM receives its parameters through the ADL. First-time GS Parameters, new GS Parameters and deleted GS parameters all trigger this Alert. Select **GS Parameters Available** to view the parameters, which FSM takes from the FADT file and displays in a static GDP Setup window (see Figure 10-9). Tab navigation allows you to view all the GS parameters, although you cannot make changes to this window. If no GS Parameters exist, the text reads **No GS Parameters**.

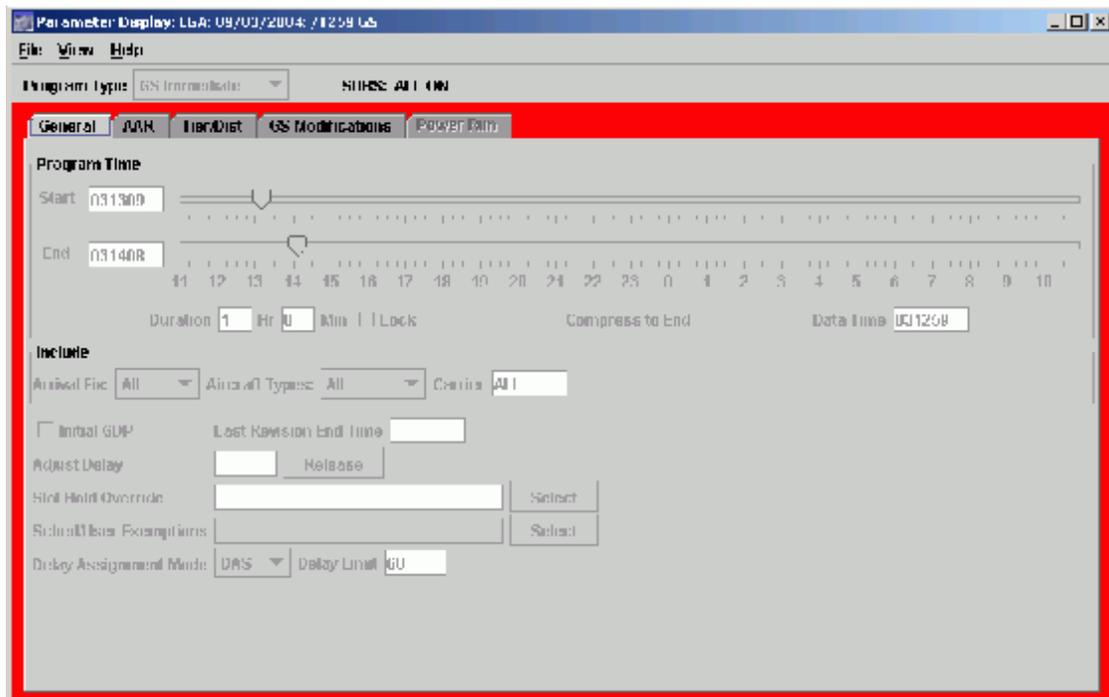


Figure 10-9: Actual GS Parameters Window

Compression Parameters

When FSM receives parameters for the compression function through the ADL, it triggers the **Alerts > Compression Parameters Available**. When Compression parameters arrive, **Compression Parameters Available** is highlighted in red for the corresponding airport. Select **Compression Parameters Available** to view the new parameters, which FSM takes from the FADT file and displays in a static GDP Setup window. Tab navigation allows you to view compression parameters, although you cannot make changes to this window. If no Compression Parameters exist, the text reads **No Compression Parameters**.

Blanket Parameters

When the FAA lifts or adds delay a ground delay program, FSM triggers the **Alerts > Blanket Parameters Available**. When FSM receives the message through the ADL to add or remove delay for all flights, it highlights the Blanket Parameters Available text in red. Select this menu option to view the new parameters, which FSM takes from the FADT file and displays in text

format in the Blanket Parameters window. If no Blanket Parameters exist, the text reads **No Blanket Parameters**.

Parameters Block

You can view the parameters block for a program by opening the static Parameter Display window from the **Alerts** menu on the Control Panel. From the Parameter Display window, select **View> Parameters Block** to see the parameter block for the program (see Figure 10-10).

Note: For GDP programs with a Delay Assignment Mode of GAAP, the Parameters block includes Unassigned Slots information.

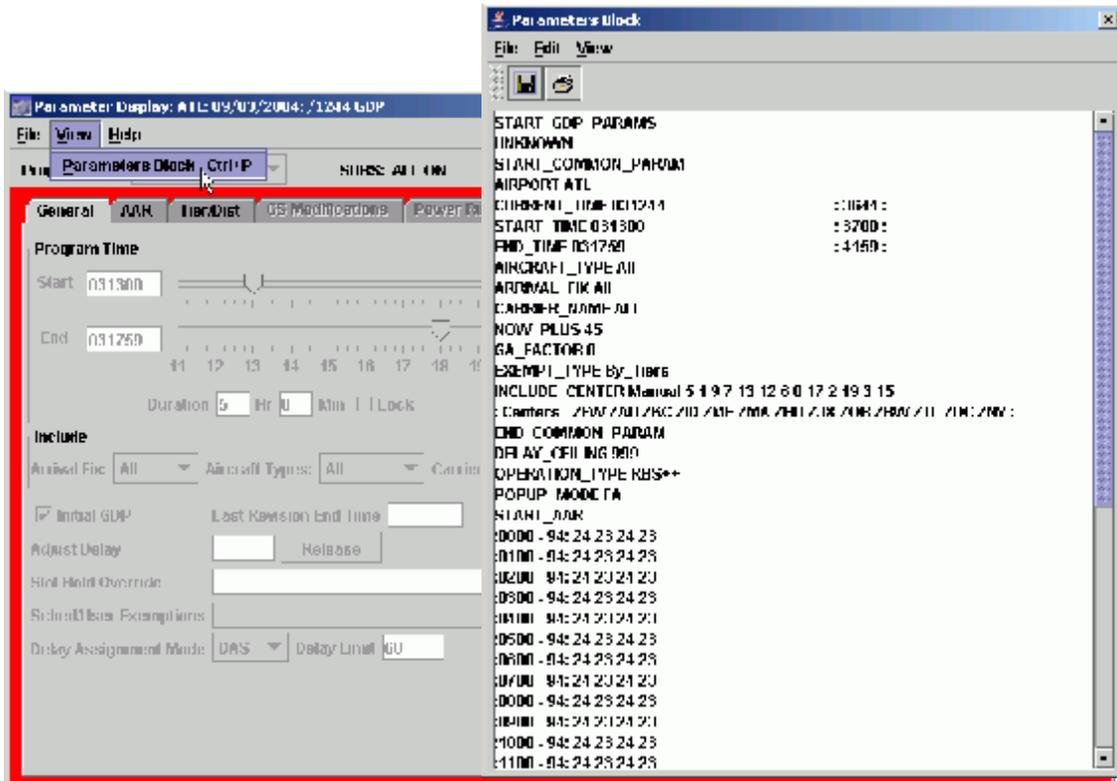


Figure 10-10: Parameters Block

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11 Monitoring EDCT Compliance

Estimated Departure Clearance Time (EDCT) compliance impacts the success of a Ground Delay Program (GDP). Real-time monitoring of EDCTs is possible through both FSM and Real-Time FSA to identify problem areas as they occur, therefore reducing or eliminating EDCT compliance issues. This chapter introduces several options for monitoring EDCT compliance of a GDP.

Using FSM to Monitor EDCT Compliance

The FSM Control Panel contains 5 compliance flight lists:

- CTA Compliance
- Actual ETE vs. Original ETE Compliance
- CTD Compliance
- Spurious Flight Compliance
- Cancel That Flew Compliance

The functionality of compliance flight lists is identical to all other FSM Flight Lists. This chapter focuses on CTD compliance for monitoring EDCT compliance of a GDP. See Chapter 11 for more information on the other 4 compliance reports.

To view a list of flights that had non-complaint EDCTs, select **Reports > Compliance > CTD Compliance** from the FSM Control Panel component. The CTD Compliance list includes all flights in a delay program that violate departure compliance. The default departure boundaries are:

More than 5 minutes before their EDCT or more than 5 minutes after their EDCT.

Any flight that has an ARTD of 5 minutes earlier or 5 minutes later than the most recent OrigEDCT appears in the **Reports > Compliance > CTD Compliance** list (see Figure 11-1).

Note: Ensure that the airport for which you want to view the compliance report is active. If no airport is active, FSM displays an error message- “No current data set”.

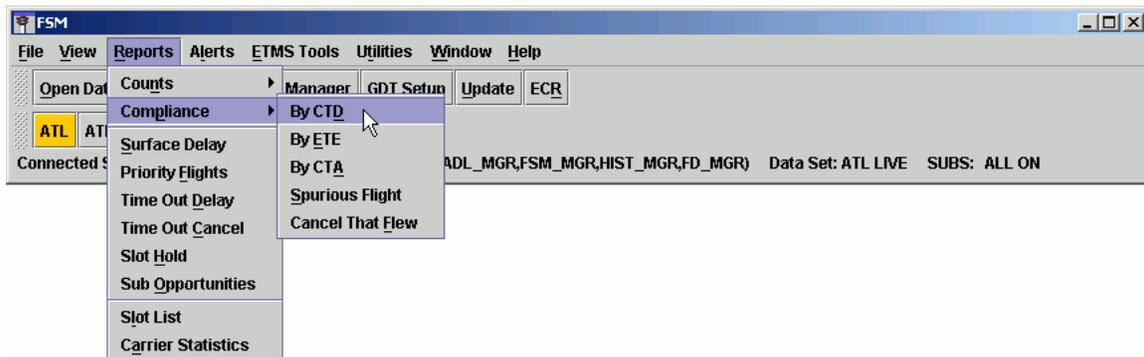


Figure 11-1: Accessing the CTD Compliance List

When you open the CTD Compliance list, FSM does *not* display the *CTD* (or *EDCT*) field by default. The flights' *ACID*, *ETD*, and *ETA* appear by default. The *ETD* has a prefix “A”, which indicates that the flights' *ETD* is the Actual time of departure (see Figure 11-2). The total count of all CTD non-compliant flights appears in the lower left-hand portion of the CTD Compliance window. The CTD Compliance window automatically updates when FSM receives a new ADL.

	ACC	ID	OHIS	INST	FID	FIA	AHID	AHIA	CTD	CIA	AHID-CID
1	DAI	273	IGA	ATI	AD31310	ED31457	031210		031210	031443	30
2	PCF	4278	KAM	ATI	AD31308	ED31439	031209		031212	031424	27
3	USA	1401	CI I	ATI	AD31248	ED31312	031248	-	031242	031405	16
4	DAI	216	OMB	ATI	AD31251	ED31413	031251	-	031257	031401	-16
5	DAI	1105	MKE	ATI	AD31298	ED31436	031298	-	031291	031438	7
6	DAI	821	DYW	ATI	AD31303	ED31443	031303	-	031293	031401	10
7	MEP	121	MKE	ATL	AD31305	ED31443	031305	-	031258	031456	9
8	CAA	248	CHA	ATL	AD31302	ED31335	031302	-	031250	031438	12
9	TPS	230	PDI	ATL	AD31314	ED31438	031314	-	031503	031439	11
10	DAL	833	RDU	ATL	AD31303	ED31401	031303	-	031258	031400	7
11	DAL	1455	PIL	ATL	AD31302	ED31443	031302	-	031300	031501	-6
12	DAL	1616	LIT	ATL	AD31251	ED31401	031251	-	031210	031407	6
13	NWA	1120	MSP	ATL	AD31256	ED31450	031256	-	031219	031450	7
14	N	121LC	MCO	ATL	AD31251	ED31507	031251	-	031211	031503	10
15	DAL	1230	SFO	ATL	AD31250	ED31403	031250	-	031211	031406	6
16	COM	618	CVV	ATI	AD31251	ED31416	031251	-	031216	031402	8
17	DAI	216	MSP	ATI	AD31258	ED31505	031258	-	031252	031406	16

Total flights: 17

Figure 11-2: CTD Compliance Window

Viewing a Single Flight

You can access more information on a single flight in two ways from the CTD Compliance window. Right-click on a single flight row or use the **View** menu. Right-click on a flight and select either **Flight Info** or **Flight details** for more information on the selected flight (see Figure 11-3), or click on a single flight to highlight the entire row and then select **File > Flight Info** or **Flight Details** to access the same information.

	ACC	ID	OHIS	INST	FID	FIA	AHID	AHIA	CTD	CIA	AHID-CID
1	DAI	273	IGA	ATI	AD31310	ED31457	031210		031210	031443	30
2	PCF	4278	KAM	ATI	AD31308	ED31439	031209		031212	031424	27
3	USA	1401	CI I	ATI	AD31248	ED31312	031248	-	031242	031405	16
4	DAI	216	OMB	ATI	AD31251	ED31413	031251	-	031257	031401	-16
5	DAI	1105	MKE	ATI	AD31298	ED31436	031298	-	031291	031438	7
6	DAI	821	DYW	ATI	AD31303	ED31443	031303	-	031293	031401	10
7	MEP	121	MKE	ATL	AD31305	ED31443	031305	-	031258	031456	9
8	CAA	248	CHA	ATL	AD31302	ED31335	031302	-	031250	031438	12
9	TPS	230	PDI	ATL	AD31314	ED31438	031314	-	031503	031439	11
10	DAL	833	RDU	ATL	AD31303	ED31401	031303	-	031258	031400	7
11	DAL	1455	PIL	ATL	AD31302	ED31443	031302	-	031300	031501	-6
12	DAL	1616	LIT	ATL	AD31251	ED31401	031251	-	031210	031407	6
13	NWA	1120	MSP	ATL	AD31256	ED31450	031256	-	031219	031450	7
14	N	121LC	MCO	ATL	AD31251	ED31507	031251	-	031211	031503	10
15	DAL	1230	SFO	ATL	AD31250	ED31403	031250	-	031211	031406	6
16	COM	618	CVV	ATI	AD31251	ED31416	031251	-	031216	031402	8
17	DAI	216	MSP	ATI	AD31258	ED31505	031258	-	031252	031406	16

Total flights: 17

Figure 11-3: Accessing Flight Information

Adding ADL Fields

Adding ADL fields in the CTD Compliance Report is the same as adding fields to the Flight List. For more information see Chapter 6: Viewing Flight Information.

Column Positioning

Column positioning in the CTD Compliance Report is the same as column positioning in the Flight List. For more information see Chapter 6: Viewing Flight Information.

Sorting Information in the CTD Compliance List

Sorting Information in the CTD Compliance Report is the same as sorting information in the Flight List. For more information see Chapter 6: Viewing Flight Information.

Multi-level Sorting

Multi-level sorting in the CTD Compliance Report is the same as multi-level sorting in the Flight List. For more information see Chapter 6: Viewing Flight Information.

Compliance List Menu

The menu bar in the Flight List component contains four options: File, View, Flight List and Help. The functionality of compliance flight lists is identical to all other FSM Flight Lists.

1. File Menu
 - **File > Save as** – Saves the Compliance List to a text file, which you can open later and use again.
 - **File > Print** – Prints the Compliance List information viewed on the screen.
 - **File > Close** – Closes the Compliance list window.
2. View Menu
 - **View > Rename window** – Displays the Rename Window dialog box and allows you to change the title bar name.
 - **View > Select Data Columns** – Allows you to add or delete ADL data fields to the Flight List.
 - **View > Group Flights** – Allows you to group ADL data fields to the Flight List in ascending or descending order.
 - **View > Sort Flights** – Allows you to sort ADL data fields to the Flight List in ascending or descending order.
 - **View > Apply Filter** – Allows you to apply a filter to the data fields in the Flight List.
 - **View > Clear Filter** – Allows you to clear a filter from the data fields in the Flight List.
 - **View > Flight Info** – Opens the *Flight Info* window.
 - **View > Flight Detail** – Opens the *Flight Detail* window.
3. Flight List Menu
 - **Flight List > Set Time** – Sets the time for the *Flight List* component in Historical mode only.
 - **Flight List > Search by Call sign** – Opens the *Search by Call sign* window.
4. Help Menu
 - **Help > CTD Compliance** – Accesses the web-based on-line help for CTD Compliance.

Confirming an EDCT

The **ETMS Tools > EDCT Commands > EDCT Check** option is available from the Control Panel and displays an unfilled EDCT Check dialog box. To confirm a flight's EDCT, type in the flight's call sign, its Origin and Destination Airport, and then click **Send**. In addition to using the ETMS Tools menu, right-clicking on a single flight icon in the Time Line or flight row in any FSM Flight List window opens a pop-up window that allows you to select EDCT Check to display the EDCT Check dialog box. The right-click method automatically populates the flight information (see Figure 11-4). Click **Send** to submit the request to ETMS. ETMS then sends a response with the flight's current EDCT.

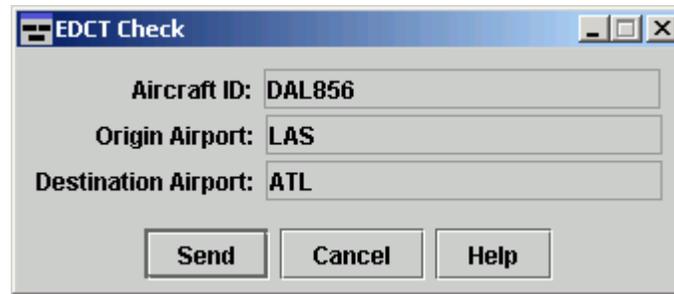
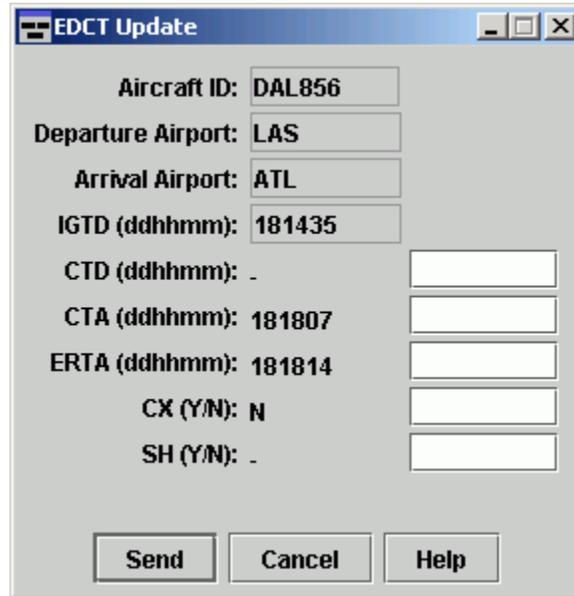


Figure 11-4: EDCT Check Dialog Box

Adjusting an EDCT

If you are an ATCSCC specialist and you select the **ETMS Tools > EDCT Command > EDCT Check** option from the main Control Panel, you can adjust the control times for individual flights. This command displays an unfilled EDCT Update dialog box. You must type in the flight's call sign, Origin and Destination Airport, IGTD, and updated control times. You can also update EDCTs through the ECR component, see Chapter 12 for more details.

In addition to using the **ETMS Tools** menu, right-clicking on a single flight in the Time Line or Flight List window displays a pop-up menu that allows you to select **EDCT Update** to open the EDCT Update dialog box. The right-click method automatically populates the flight's information, requiring you to fill in only the new control times for the flight (see Figure 11-5). Click **Send** to submit the update to ETMS. ETMS then sends a response confirming the flight's new EDCT, which appears in the next ADL.



The image shows a dialog box titled "EDCT Update" with a standard Windows-style title bar. The dialog contains several input fields for flight information. The fields are: Aircraft ID (DAL856), Departure Airport (LAS), Arrival Airport (ATL), IGTD (ddhhmm) (181435), CTD (ddhhmm) (-), CTA (ddhhmm) (181807), ERTA (ddhhmm) (181814), CX (Y/N) (N), and SH (Y/N) (-). Each field has a corresponding empty input box to its right. At the bottom of the dialog are three buttons: Send, Cancel, and Help.

Aircraft ID:	DAL856	
Departure Airport:	LAS	
Arrival Airport:	ATL	
IGTD (ddhhmm):	181435	
CTD (ddhhmm):	-	
CTA (ddhhmm):	181807	
ERTA (ddhhmm):	181814	
CX (Y/N):	N	
SH (Y/N):	-	

Figure 11-5: EDCT Update Dialog Box

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12 EDCT Change Request (ECR)

The EDCT Change Request (ECR) tool is part of the FAA's CDM Ground Delay Program Enhancements (GDPE) effort. ECR has been operational at the FAA's ATCSCC since April 2002. ECR displays current flight information using real-time data culled from CDM participants and aggregated by the Hub site. It allows you to change Estimated Departure Clearance Times (EDCTs) for GDP controlled flights and keep traffic flowing as smoothly as possible.

Prior to the ETMS 7.9 release, only the ATCSCC had access to ECR. With the release of 7.9, ECR is now available for all CDM participants, although non-ATCSCC user functionality is limited to the use of the SCS request option. Only ATCSCC users can access the *Limited*, and *Manual* EDCT UPDATE selections. The *Unlimited* option is available only to ATCSCC and the FAA Field facilities. ECR grays out these options for all other users.

The ECR component allows you to search for a flight, view current flight information, model suggested update times for flights, and display options for updating control times. The ECR title bar displays the Airport, date, ADL time, and monitor mode (see Figure 12-1).

The screenshot shows the ECR Component software interface. The window title is "ECR: ATL: 09/03/2004: 1321 live". The interface is divided into several sections:

- Find Flight:** Includes a menu bar (File, View, Help) and a search area. The "Airport" is set to "ATL" and "ADL Update" is "03/1321". There are input fields for "ACID" and "ORIG". "Earliest EDCT" is set to "03" and "Max Additional Delay" is "31". The "ECR Reason" is set to "ACFT_OPR" (selected). Buttons for "Find Flight", "Flight Detail", and "Apply Model" are present.
- Flight Information:** Contains a "Current Data" section with fields for IGTD, IGTA, CTD, CTA, ETD, ETE, ETA, ERTD, and ERTA.
- Update Criteria:** Includes fields for "E_CTD" and "CTA Range".
- Update Options:** Features radio buttons for "SCS" (selected), "Limited", "Unlimited", and "Manual". Each option has associated fields for "CTD", "CTA", and "E_CTA+".

Buttons for "Send Request" and "Cancel" are located at the bottom of the "Update Options" section.

Figure 12-1: ECR Component

ECR Menu Bar

The *ECR* menu bar contains three options: File, View, and Help.

1. File menu:
 - **File > Close** – Closes the *ECR* component.
2. View menu:
 - **View > Rename Window** – Displays the Rename Window dialog box that allows you to change the component name of the title bar. Enter the desired component name then click **OK** to change the title bar heading. Click **Cancel** to close the Rename Window dialog box without making any changes.
3. Help menu:
 - **Help > ECR** - Accesses the web-based on-line help for the *ECR* component.

Opening ECR

You can use three methods to open ECR – namely two menu options from the Control Panel and the third option from the Time Line.

1. Ensure that the correct Dataset is active before opening ECR.
2. Click **ECR** from the Control Panel. Figure 12-2 displays the ECR component being opened for ATL.



Figure 12-2: Opening ECR from the Control Panel

3. Select **Utilities > ECR** from the Control Panel.

- Right-click on a flight icon in the Time Line and select **ECR** from the pop-up menu (see Figure 12-3). The ACID, ORIG, and flight information automatically display in the ECR component when you open it from the Time Line.

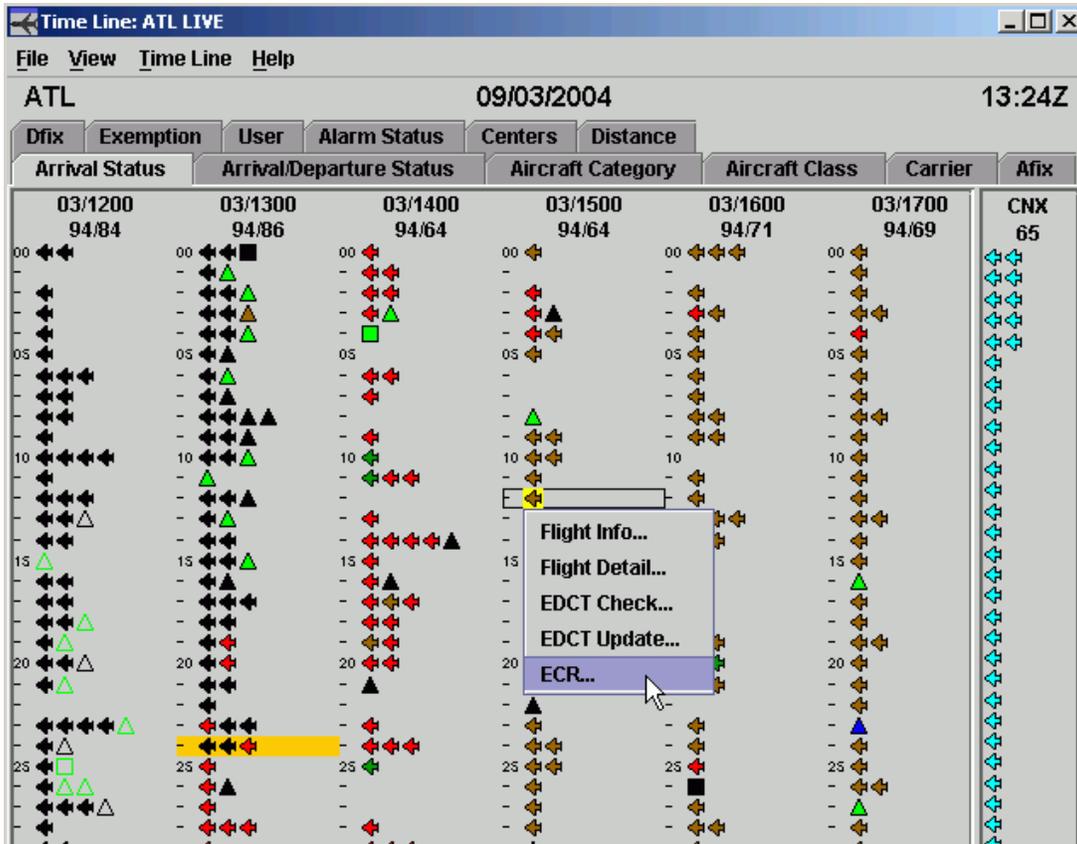


Figure 12-3: Opening ECR from the Time Line

Locating a Flight

To begin updating an EDCT, enter a flight ACID in the ECR window. Verify that both the three-letter airport identifier (*Airport*) and the last ADL Update time (*ADL Update*) for the correct airport appear in purple text, as shown in Figure 12-4. You can use two methods to find a flight in ECR:

- Open ECR from the Time Line by right-clicking a flight icon and selecting the **ECR** option. ECR automatically finds flight information and populates the appropriate fields in the ECR component.

2. Enter a flight's aircraft identifier in *ACID* and click **Find Flight**.



Figure 12-4: Updating an EDCT using ECR

Viewing Flight Information

After ECR finds a flight, the current information appears under the Flight Information section. The table below illustrates the fields listed in the current data section.

Current Data

IGTD	Initial gate time of departure	IGTA	Initial gate time of arrival
CTD	Current control time of departure	CTA	Current control time of arrival
ETD	Estimated time of departure	ETA	Estimated time of arrival
ETE			Estimated time en route
ERTD	Earliest runway time of departure	ERTA	Earliest runway time of arrival

Updating an EDCT for a Flight

After finding and displaying the flight's current information, enter the flight's new *Earliest EDCT* in the Find Flight section of the ECR component.

1. Type the earliest EDCT to which the flight can comply in *Earliest EDCT*.
2. Select one of the five options listed in *ECR Reason* as the general reason for the EDCT update; either:
 - *ACFT_OPR*: aircraft operator; default selection
 - *Equip*: equipment
 - *TMI*: traffic management initiative
 - *Wx*: weather change
 - *Other*: Reason not previously listed
3. Click **Apply Model** to populate the Update Criteria section and to model different update parameters based on the new Earliest EDCT data.

Update Criteria

E_CTD	New earliest CTD requested	CTA Range	Interval between the New Earliest CTA and the sum of the New Earliest CTA and Maximum Additional Delay
-------	----------------------------	-----------	--

4. Select the desired update option (SCS Request, Unlimited, Limited, or Manual). FSM selects the *SCS* radio button by default (customers other than the ATCSCC only have the *SCS* request as an option).

5. Click **Send Request** to send the request to the Hub site (see **Error! Reference source not found.**).

The screenshot shows a software window titled "ECR: ATL: 03/05/2004: /2002 live". The window has a menu bar with "File", "View", and "Help". Below the menu bar are icons for saving and printing. The main area is divided into several sections:

- Find Flight:**
 - Airport: ATL (highlighted in blue)
 - ADL Update: 05/1953 (highlighted in blue)
 - ACID: CAA531
 - ORIG: MGM
 - Earliest EDCT: 05 2100
 - Max Additional Delay: 30
 - ECR Reason: ACFT_OPR, Equip, TMI, Wx, Other
 - Buttons: Find Flight, Flight Detail, Apply Model
- Flight Information:**
 - Current Data:**

IGTD: 05/1905	IGTA: 05/1949
CTD: 05/1938	CTA: 05/2008
ETD: 05/2053	ETE: 26
ERTD: 05/2045	ETA: 05/2119
	ERTA: 05/2123
 - Update Criteria:**
 - E_CTD: 05/2100
 - CTA Range: 05/2126 - 05/2156
- Update Options:**
 - SCS**
 - Limited** CTD: 05/2100 CTA: 05/2126 E_CTA+: 0
 - Unlimited** CTD: 05/2100 CTA: 05/2126 E_CTA+: 0
 - Manual** CTD: [] [] CTA: --/---- E_CTA+: --
 - Buttons: Send Request, Cancel

Figure 12-5: EDCT Update

Update Options

There are four options for updating an EDCT using ECR: *SCS Request*, *Unlimited*, *Limited*, and *Manual*. Only the *SCS Request* option is available for all users. The *Limited*, and *Manual* options are for ATCSCC use only. The *Unlimited* option is available only to ATCSCC and the FAA Field facilities.

- **SCS Request** – The ECR tool sends a Slot Credit Substitution (SCS) request via a Simplified Subs Packet to ETMS, using the window reflected in the CTA range. FSM selects the SCS Request option by default.

Note: You can use SCS only when you request a later EDCT. If the New Earliest EDCT is before the current CTD, FSM grays out the SCS radio button.

- **Unlimited** – The ECR tool shows the EDCT, CTA, and the delay past the New Earliest CTA for the optimal EDCT update for between the New Earliest CTA and the last CTA of the program (Field and ATCSCC use only).
- **Limited** – The ECR tool shows the EDCT, CTA and delay past the New Earliest CTA for the optimal EDCT update within the CTA range (ATCSCC use only).
- **Manual** – You can input an EDCT in the space provided (DD/ hhmm) and the ECR tool calculates the CTA by adding the flight's ETE (ATCSCC use only).

Viewing SCS Response

After requesting a Slot Credit Substitution (SCS), the hub site sends back a response . If the SCS request is successful, the response is a slot list of the flights affected including new control times and control types (see Figure 12-6).

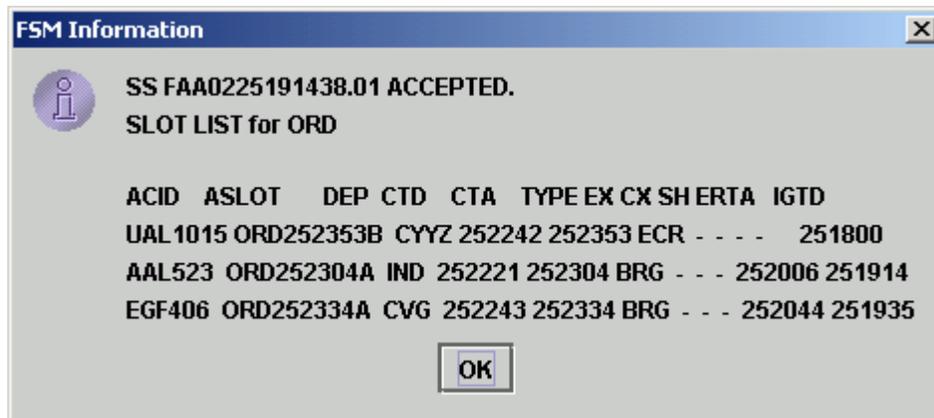


Figure 12-6: SCS Response

Control Types Associated with ECR

Control Type	Control Time Change Origin
ECR	SCS Request submitted by the ATCSCC
SCS	SCS Request submitted by all customers other than ATCSCC (airline user or general aviation customers)
UPD	ATCSCC EDCT update (Changes made by Unlimited, Limited, or Manual options)

BRG	Bridged up to accommodate an SCS request
-----	--

13 Revising/Extending a Ground Delay Program

Once a Ground Delay Program (GDP) is already in place, the conditions that originally necessitated the GDP may change. The weather may improve or get worse, a runway may shut down or its' configuration change, the AAR may increase or decrease, or the demand may have changed since the original program was issued. When these cases arise, you may find it necessary to revise the original program.

Getting Current Demand and Weather Information

Before you revise, you want to ensure you have the most current ADL. From the FSM *Control Panel* component, select **ETMS Tools > ADL Request**. Enter the three-character airport ID in the ETMS ADL Request Dialog box and click **Send**, as shown in Figure 13-1. FSM sends the request immediately to ETMS and all live mode windows for that airport update when FSM receives the new ADL.

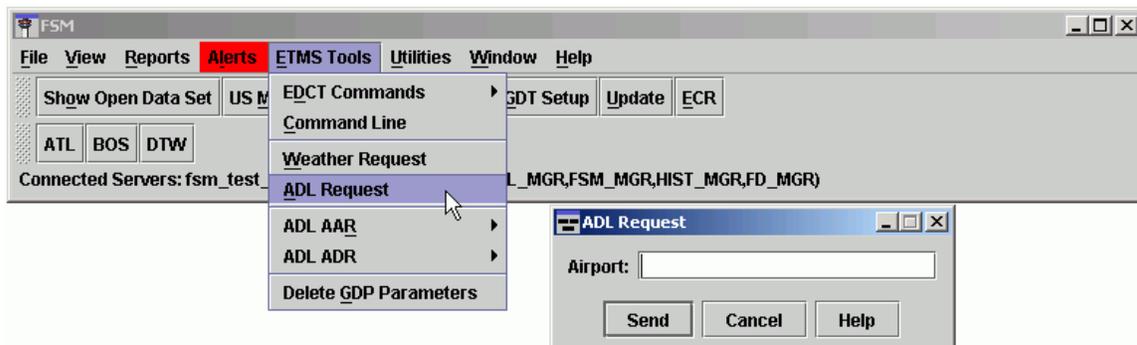


Figure 13-1: ETMS ADL Request and ETMS ADL Request Dialog Box

You also want to ensure you have the most recent weather information. Select **ETMS Tools > Weather Request** from the Control Panel. ETMS Weather is the option directly above the ADL Request (see Figure 13-1). Enter the three-character airport ID (for multiple airport weather reports, enter airport identifiers separated by spaces or commas) in the ETMS Weather Dialog box (see Figure 13-2). FSM sends the request immediately to ETMS and the current METAR and TAF appear in a text window on your screen.

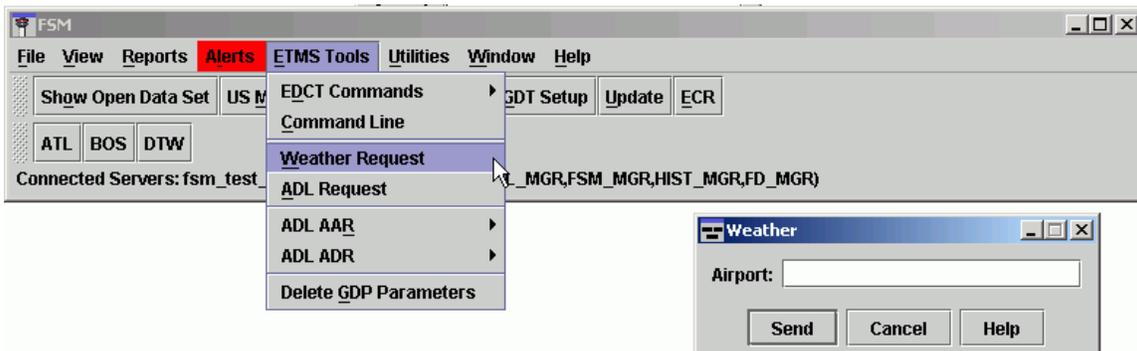


Figure 13-2: ETMS ADL Request and ETMS ADL Request Dialog Box

Deciding When to Revise a Program

There are several tools available to help you decide if a revision is necessary. The Live Time Line and Bar Graph components allow you to visually compare the airports capacity (AAR) vs. its demand. If the Time Line shows a large number of delayed flights (solid triangles) or cancelled

flights (solid squares) and/or the Bar Graph shows that demand is under or over the AAR for certain hours, a revision helps to reallocate the slots. When a revision is necessary, the FSM Power Run Tab in the GDT Setup component is helpful for analyzing different options (see Chapter 8 for more information on how to use Power Run).

Revising a GDP

You can change a number of parameters during a revision to meet the change of conditions at the airport being monitored. For example, you may need to revise any one or combination of the following parameters: you may need to increase/decrease the AAR, increase/decrease the number of centers involved, expanded/reduced the distance range of the GDP, revise from a GAAP GDP into a normal GDP, or extend the length of the program. To change any of the program parameters, open the airport in GDT mode. To load the current parameters select **File > Load Actual Parameters > Ground Delay Program** in the GDT Setup component. Ensure that, when issuing a revision that the *Last Revision End time* on the General Tab is filled in and the *Initial GDP* checkbox is unchecked. .

Modifying the AAR

Select the AAR Tab in the GDT Setup component. The current AAR appears for the hours of the current program. To increase/decrease the AAR, use either the **Fill** method or change each hour manually. To review the AAR Tab, see Chapter 3: Understanding Components.

Reducing/Expanding the Scope

You can reduce or expand the scope with Tier and Distance based GDPs. Select the Tier/Dist Tab, and select either *Exempt By* Tier or Distance. If you prefer to use the Tier based GDP, you can select a new center group or manually add or delete centers by selecting the center checkboxes. Newly selected centers are now included (receive departure delay) in the program. If you release a center from program delay, the flight originating from that center runs through the release delay algorithm. FSM adjusts distance based programs based on the distance radius. You can expand the distance range to capture more airports in the program or decrease the distance radius to release delay on previously delayed airports.

Extending the Program

To extend the program, change the *Duration* time from the General Tab or click and drag the *End Time* slide bar to adjust the duration. You can extend the program without changing any other parameters or you can extend the program in conjunction with any other number of parameter modifications, as shown in Figure 13-3.

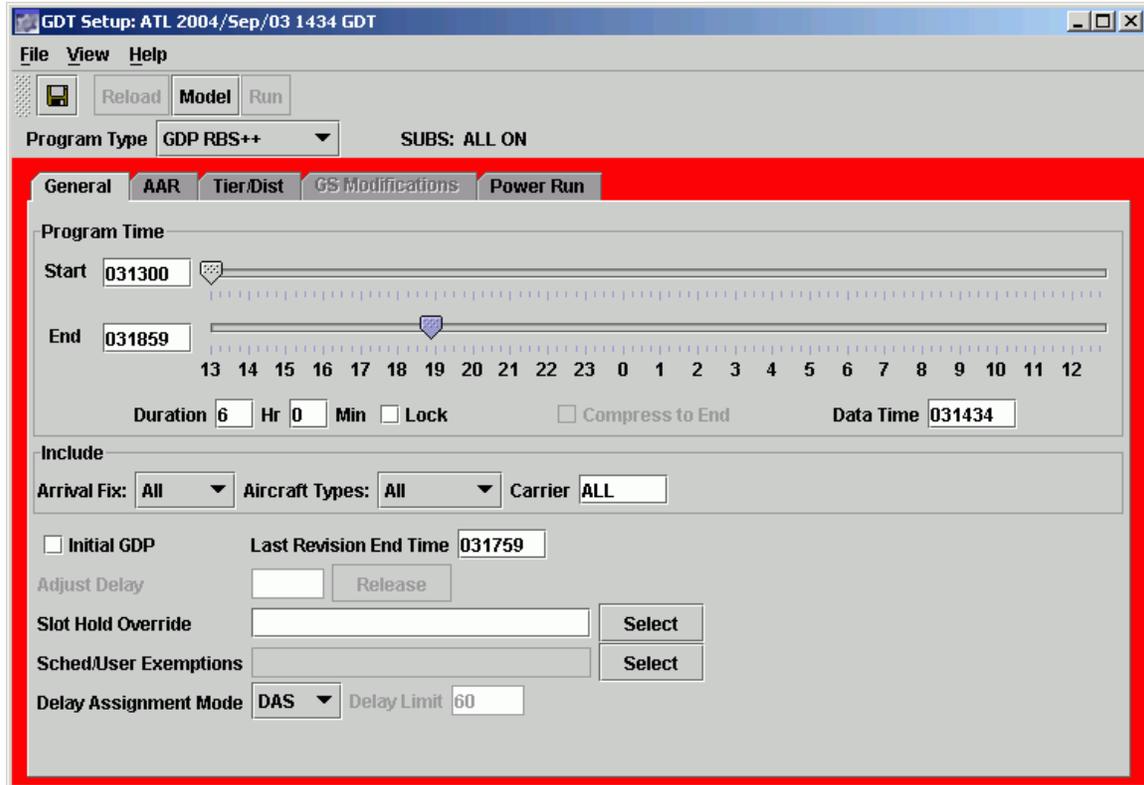


Figure 13-3: Modifying the Program Duration

Revising a GAAP GDP

To revise a program from a GAAP GDP to a normal GDP, change the Delay Assignment Mode on the General tab from GAAP to DAS. Click **Select** next to *Schd/User Exemptions* to open the Exempt Scheduled window to exempt scheduled or user groups from departure delay during the revision as needed.

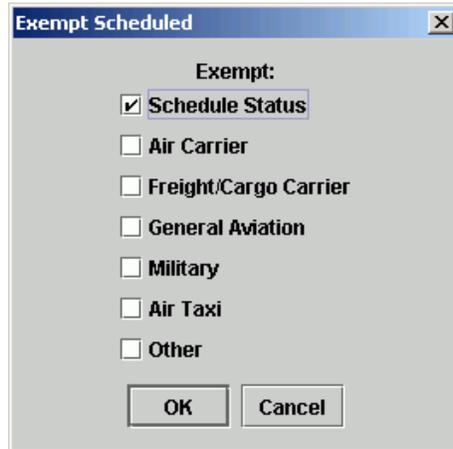


Figure 13-4: Sched/User Exemptions

Sending a Proposed Parameters Advisory

After modifying the parameters of the GDP and if the modeled results are favorable, it is recommended that you send out a Proposed Advisory. A Proposed GDP revision is a program suggested by the FAA, but not immediately implemented. Click **Run** from the GDT Setup panel to open the GDP Coversheet. Review the parameters and then click **Advisory**. Fill out the Advisory window Remarks section and ensure that you select the **Proposed** radio button (see Figure 13-5). Click **Send** to distribute the proposed parameters to all FSM users. A Proposed GDP revision allows NAS users enough time to comment on the proposed parameters even though they may change before the FAA implements an actual program.

The screenshot shows a window titled "GDP Advisory: ATL: Program Time: 1530-1859". It has a menu bar with "File" and "Help", and icons for saving and printing. The window is divided into several sections:

- Program Parameters Summary:**

Airport: ATL	Center: ZTL	Program time: 1530-1859
ADL time: 031450	Delay assignment mode: DAS	Delay limit: N/A
- Program Results Summary:**

Minimum delay before: 33	Minimum delay after: 12	Total affected flights: 314
Average delay before: 36	Average delay after: 13	Total flights: 314
Maximum delay before: 39	Maximum delay after: 29	Stack value: 46
Total delay before: 147	Total delay after: 55	Stack AAR: 94
Report time: 1453		
- Remarks:**

Respond by: Valid until: Proposed Actual

Reason: Explanation:

Comments:

At the bottom, there are two buttons: "Send..." and "Close".

Figure 13-5: GDP Advisory Window

Suspend Airline Substitutions and Slot Credit Substitutions

Now you are ready to issue the revised GDP but before issuing the revision, you need to suspend the acceptance of airline substitutions and Slot Credit Substitutions (SCS) messages temporarily. From the FSM Control Panel, select the **ETMS Tools > EC DT Commands > EDCT Sub Off** option to turn substitutions off, as shown in Figure 13-6. Enter the three-character airport ID into the EDCT SubOff dialog box and click **Send** to suspend substitutions for that airport. Airlines' substitution or SCS messages are no longer accepted after FSM sends the SubOff message to ETMS.

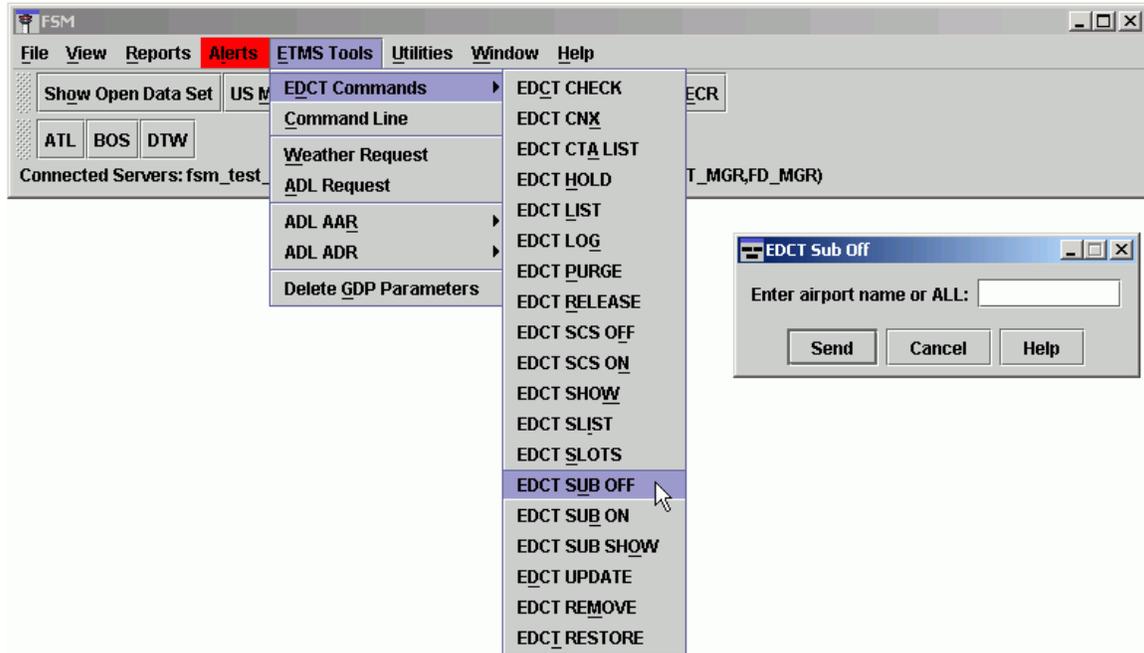


Figure 13-6: Turn Subs OFF

Issuing the Revision

Once you have determined the program parameters for an Actual GDP and you have turned off the substitutions, there are two steps to enact the program and send the parameters out through the ADL. ETMS does not send program parameters for an Actual program through the ADL until it receives both the program parameters (through an Advisory) and a matching FADT list (Autosend) with flight control times.

Click **Run** from the GDT *Setup* component to open the GDP Coversheet with the revised parameters. **Send** the Advisory and click **Autosend** from the Coversheet to implement the revision.

If you leave SUBS turned ON when you click **Autosend** from a coversheet during a compression, revision, or extension, you receive an FSM warning message that instructs you to “Turn SUBS OFF, reload and remodel the program...” (see Figure 13-7). Click **OK** to clear the FSM warning and then turn SUBS OFF before reloading and remodeling the program. Wait for SUBS OFF to be reflected successfully before clicking **Autosend** again.

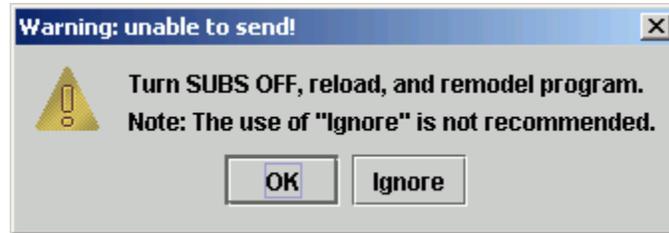


Figure 13-7: SUBS OFF Warning

Although it is recommended that you turn SUBS OFF during any revision, you can bypass the warning message by clicking **Ignore** from the message box. Click **Ignore** to clear the FSM warning and FSM automatically continues with the Autosend process even though SUBS are ON.

Completing a revision is similar to sending an initial GDP, see Chapter 9 for more detail.

Example Revision

The section below is an example of how to revise a GDP with a GAAP Delay Assignment Mode to a DAS Delay Assignment Mode. If you change Delay Assignment Mode to DAS, all unassigned slots are removed from the program and from the ADL and FADT.

To revise a GDP with a GAAP Delay Assignment Mode

1. Click **Open Data Set**.
The Open Data Set window appears.
2. Select the airport for which you want to revise the GDP with a GAAP Delay Assignment Mode.
3. Click **OK**.
The Time Line and Bar Graph components for the airport appear.
4. Click **GDT Setup**.
The GDT components for the airport appear. Select **File > Load Actual Parameters > Ground Delay Program** to load the current parameters for the airport. Ensure that, when issuing a revision that **Initial GDP** is unchecked and the **Last Revision End time** is entered correctly on the General Tab. This is done by default.
5. Select DAS from the **Delay Assignment Mode**.

Note: If you change the **Delay Assignment Mode** to DAS from GAAP, all unassigned slots are *removed* from the FADT, ADL, and from the FSM components.

6. Make any additional changes to the program that are needed.

7. Select the Power Run you want FSM to use for this GDP.
8. Click **Model**.
The red border in the GDT Setup Panel disappears and the GDT components reflect the modeled GDP.
9. If the program appears to deal with the traffic flow in the manner you want, click **Run** to generate the Coversheet.
10. Carefully examine each section of the Coversheet. If the data is correct, select the *General* checkbox and the *Tier/Dist* checkbox.
11. Click **Autosend** on the Coversheet to send the parameters to the Hub site.
12. Click **Advisory** on the Coversheet.
The Advisory window appears.
13. Select either *Proposed* or *Actual*.
14. Modify the *Respond By* time if Proposed was selected.
15. Modify the *Valid Until* time if Proposed was selected.
16. Select the *Reason* for the GDP revision.
17. Enter the *Explanation* and any *Comments* as needed.
18. Click **Send**.

14 Issuing a Compression

At certain times during a GDP, you may find it favorable to run a Compression. The Compression function exchanges delayed flights with open slots to lessen the delay on those flights.

Compression attempts to fill all available arrival slots with flights that, although delayed from their OETA, can still arrive at the available slot time. Compression tries to place flights from the same airline that created the slot in the new arrival slot, however, if this is not possible, it uses other airlines' flights to fill the arrival slots. A pure Compression can be beneficial to the performance of a GDP when there is limited pop-up traffic and non-compliance issues with flights in the stack hours.

Suspend Airline Substitutions and Slot Credit Substitutions

Before opening up GDT mode to issue a Compression, you need to suspend, temporarily, the acceptance of airline substitutions and Slot Credit Substitutions (SCS) messages. From the FSM Control Panel, select the **ETMS Tools > EDCT Commands > EDCT Sub Off** option to turn substitutions off. Enter the three-character airport ID into the EDCT SUB OFF dialog box and click **Send** to suspend substitutions for that airport. Airlines substitution or SCS messages are no longer accepted by ETMS after FSM sends the EDCT Sub Off message to ETMS (see Figure 14-1).

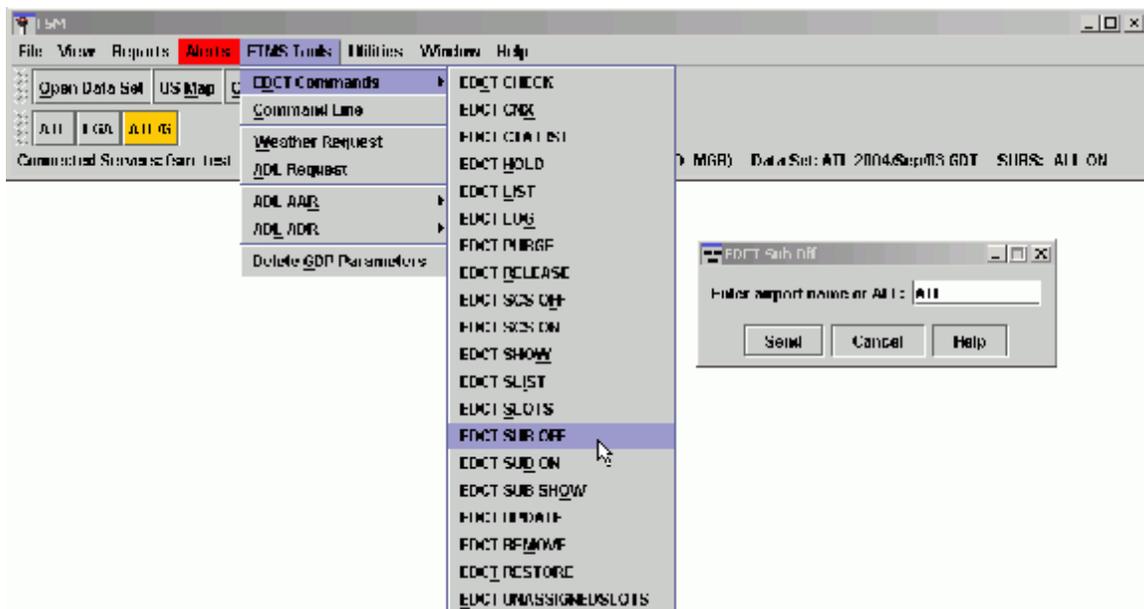


Figure 14-1: Turn Subs OFF

Open GDT Mode

Open Ground Delay Tools (GDT) mode by selecting a GDP monitored airport and then clicking **GDT Setup** from the Control Panel. The four default GDT components automatically appear for the selected airport. To perform the Compression function, select the **Program Type > Compression** option from the FSM GDT Setup component.

Note: The GDT Data Graph is blank and displays “Power Run Not Available” when you select the *Program Type* Compression.

When you select the *Program Type* Compression, the General tab is the only tab available for entering parameters, as shown in Figure 14-2.

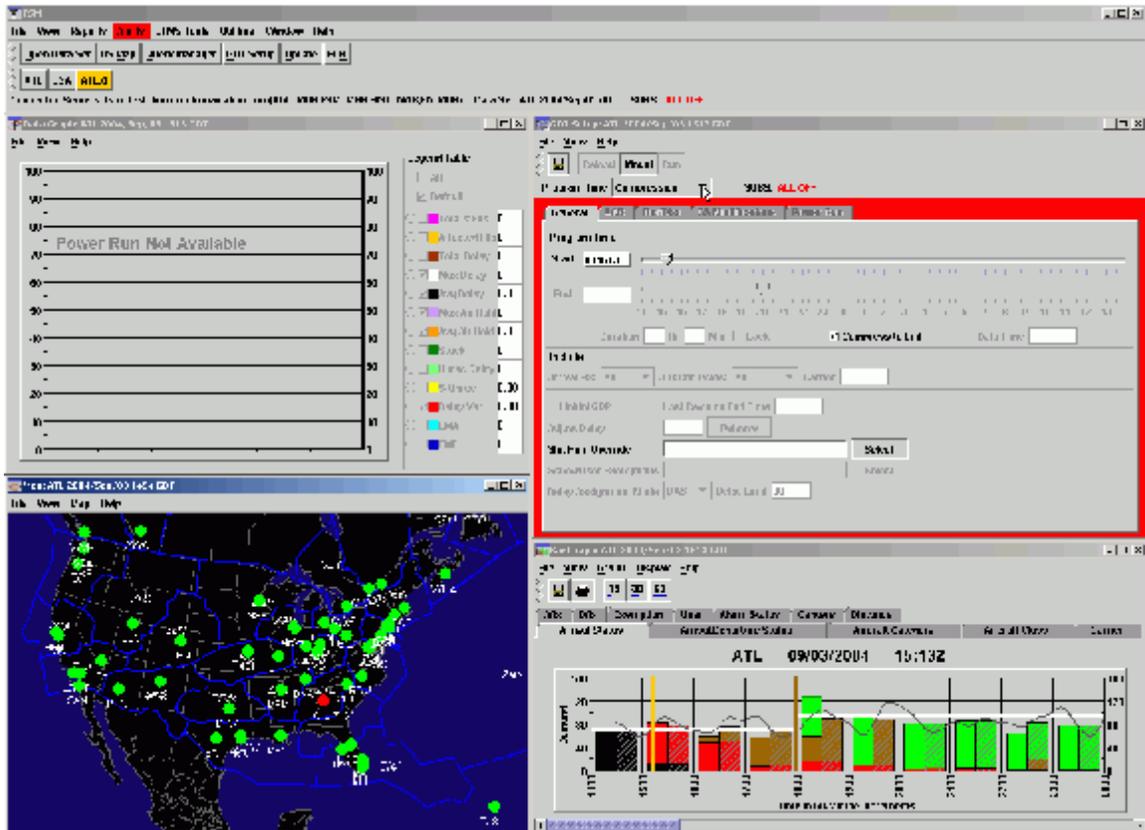


Figure 14-2: Compression Setup

Entering Parameters

On the General Tab, adjust the time range by clicking and dragging the pointers on the *Start* and *End* time lines or by entering a new time (ddhhmm) in the textboxes. When you select the *Compress To End* checkbox, the end time and duration fields remain empty. *Compress to End* indicates that FSM includes all flights with control times in the Compression. When you deselect *Compress to End*, FSM automatically fills in the current *End* time and duration. The *Slot Hold Override* functionality is available during Compression. Click **Select** to review the slots held (see Figure 14-3).

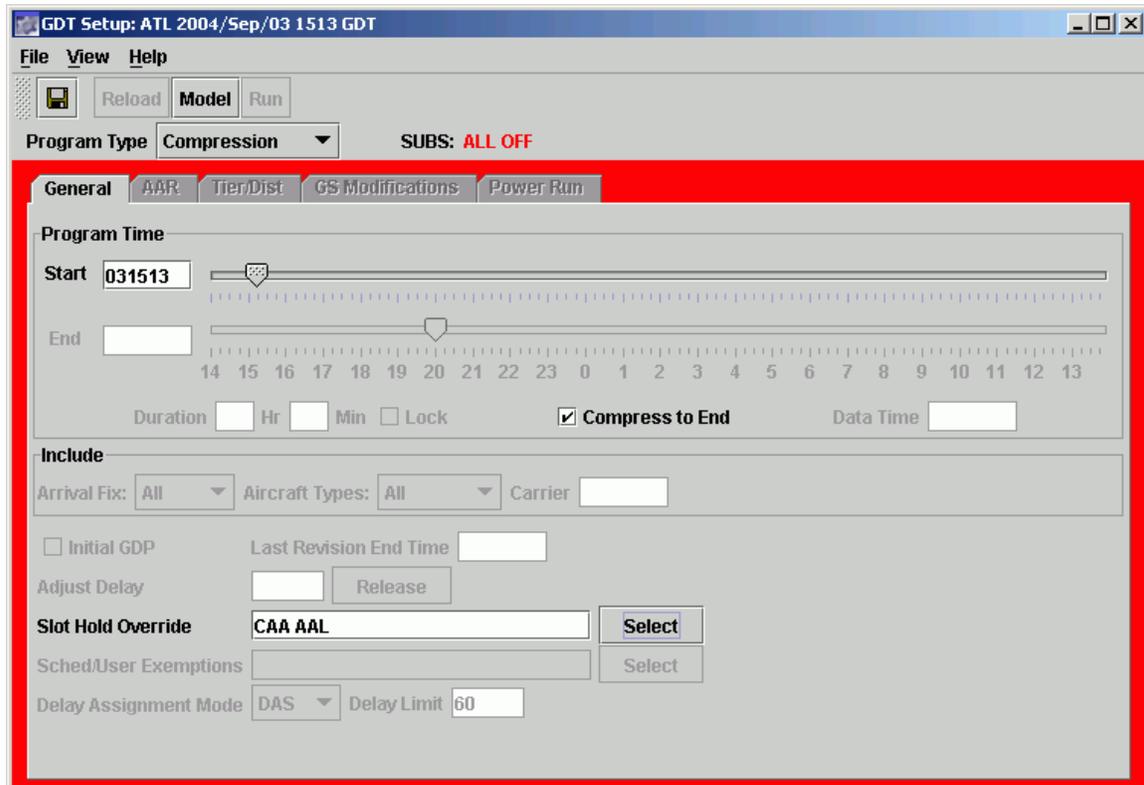


Figure 14-3: Compression GDT Setup Panel

For more information on the GDT Setup Panel, see Chapter 3 Understanding Components.

Issuing the Compression

Once you turn off the substitutions and you model the Compression, there are two steps to enact the Compression and send the parameters out through the ADL. Volpe does not send Compression parameters for an Actual program through the ADL until it receives both the Autosend FADT List with flight control times and the matching program parameters (through an Advisory). Not until it receives both sets of parameters does it send the program parameters and control times through the ADL and the program implemented.

Note: Compressions will ignore all unassigned slots if the GDP has a *Delay Assignment Mode* of GAAP.

Run to Generate the Compression Coversheet

Click **Run** after you complete your Compression setup and model it from the GDT Setup component. Clicking **Run** saves the parameters to a file specified in FSM's configuration file and causes the Compression Coversheet to appear on the screen. Clicking **Run** also generates two coversheet reports, a FADT and Analysis Report, which you can view by selecting **View > FADT** or **View>Analysis Report** from the Coversheet.

Note: If you modeled the Compression or there is enough information that you do not need to complete a new model, the red border around the GDT Setup Panel does not appear and **Run** is enabled. If you change any significant parameter in the GDT Setup component, you must click **Model** first, and then click **Run**.

The Compression Coversheet contains all the Compression parameters data. After reviewing the Compression parameters, you need to send both **Autosend** FADT control times and an **Advisory** from the Compression Coversheet to implement an actual Compression (see Figure 14-4).

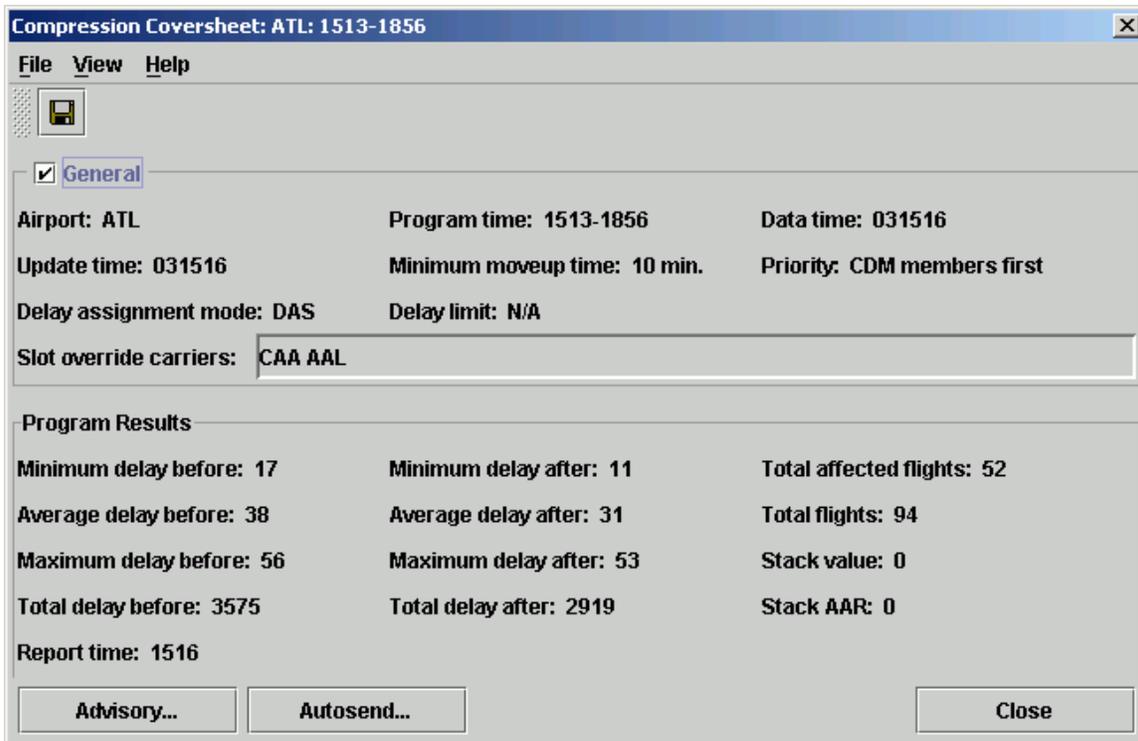


Figure 14-4: Compression Coversheet

Reviewing the program parameters is important before issuing the Compression. For more information about the Compression Coversheet, see Chapter 3 Understanding Components.

Issuing a Compression through Autosend

Click **Autosend** from the Compression Coversheet to send the FADT file to all users, including airlines.

Note: If you select **Advisory** or **Autosend** more than 15 minutes after switching to GDT Setup, FSM warns you to return to the GDT Setup component and click **Reload** before continuing with the Compression. This retrieves the most recent data from an updated ADL.

If SUBS are ON when you click **Autosend** from a coversheet during a compression, revision, or extension, you receive the following FSM warning message (see Figure 14-5 **Error! Reference source not found.**).

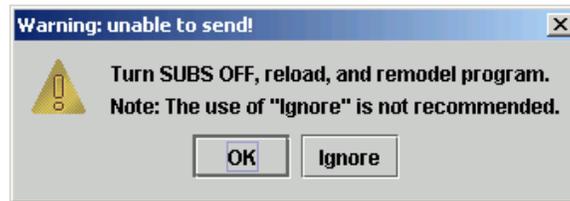


Figure 14-5: SUBS OFF Warning

Click **OK** to clear the FSM warning and then turn SUBS OFF before reloading and remodeling the program. Wait for FSM to reflect SUBS OFF successfully before clicking **Autosend** again.

Although it is recommended that you turn SUBS OFF during any revision, you can bypass the warning message by clicking **Ignore** on the message box. FSM automatically continues with the Autosend process even though SUBS are ON.

Send the Advisory

To compose either an Actual or Proposed Compression Advisory, click **Advisory** from the Compression Coversheet and the Compression Advisory window appears (Figure 14-6). This window contains all the Compression parameters, which you set and some fields in the Remarks sections that you must fill out before sending an Advisory.

Compression Advisory: ATL: Program Time: 1513-1856

File Help

Program Parameters Summary

Airport: ATL	Center: ZTL	Program time: 1513-1856
ADL time: 031516	Delay assignment mode: DAS	Delay limit: N/A

Program Results Summary

Minimum delay before: 17	Minimum delay after: 11	Total affected flights: 94
Average delay before: 38	Average delay after: 31	Total flights: 94
Maximum delay before: 56	Maximum delay after: 53	Stack value: 0
Total delay before: 3575	Total delay after: 2919	Stack AAR: 0
Report time: 1516		

Remarks

Respond by: Valid until: 031659Z Proposed Actual

Reason: OTHER Explanation:

Comments: USERS ARE ADVISED TO RESUME SUBSTITUTIONS, COMPRESSION PROCESSING COMPLETE AND

Send... **Close**

Figure 14-6: Compression Advisory Window

For more information about the Advisory component, see Chapter 3 Understanding Components. You must fill out the remarks section before sending an Advisory. You must select either *Proposed* or *Actual* to send the appropriate Advisory.

Once you have completed the Compression Advisory, click **Send** and FSM emails the program parameters to all parties involved in the program, including the Volpe Hub. A checkmark appears next to the **Send** button on the Advisory window and next to the **Advisory** button on the

Compression Coversheet to indicate that you sent the advisory.

✓ **Advisory...**

If the parameters are for a Proposed Advisory, Volpe sends out the parameters immediately in the next ADL. If the parameters are for an Actual Advisory, Volpe ensures that it has received the associated FADT file (Autosend) with flight control times for the program before sending any parameters through the ADL.

When you click **Close**, FSM takes no action from the Compression Advisory window.

Coversheet Reports

FSM creates three Coversheet reports:

- FADT report
- Analysis report
- Carrier Statistics report

For more information on these reports, see Chapter 19: Understanding and Using FSM Reports.

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15 Deciding When to Use a Compression or Revision

After the FAA issues an initial GDP, the airport's demand and/or capacity fluctuate and a Compression or Revision may be necessary to control the traffic flow into the airport. Monitor the GDP delivery (see Chapter 11) to determine if demand continues to exceed capacity and decide whether a Compression or Revision may be necessary.

Deciding When to Use a Compression

Compression may be the best operation when you do not want to extend the GDP or change the AAR and a large number of cancelled flights with slots ahead of operational flights occur in the stack hours. The Stack hours are the stack of flights after the end time of the GDP. You can easily identify the number of cancelled flights in a stack hour by looking at the FSM Bar Graph. Select the **View > Show Cancellations** checkbox on the Bar Graph to view all cancelled flights. Rolling your mouse over the cyan colored flights displays a tool tip with the number of cancelled flights for that hour. Figure 15-1 illustrates numerous cancelled flights ahead of operational flights in the stack hours (2300-0100).

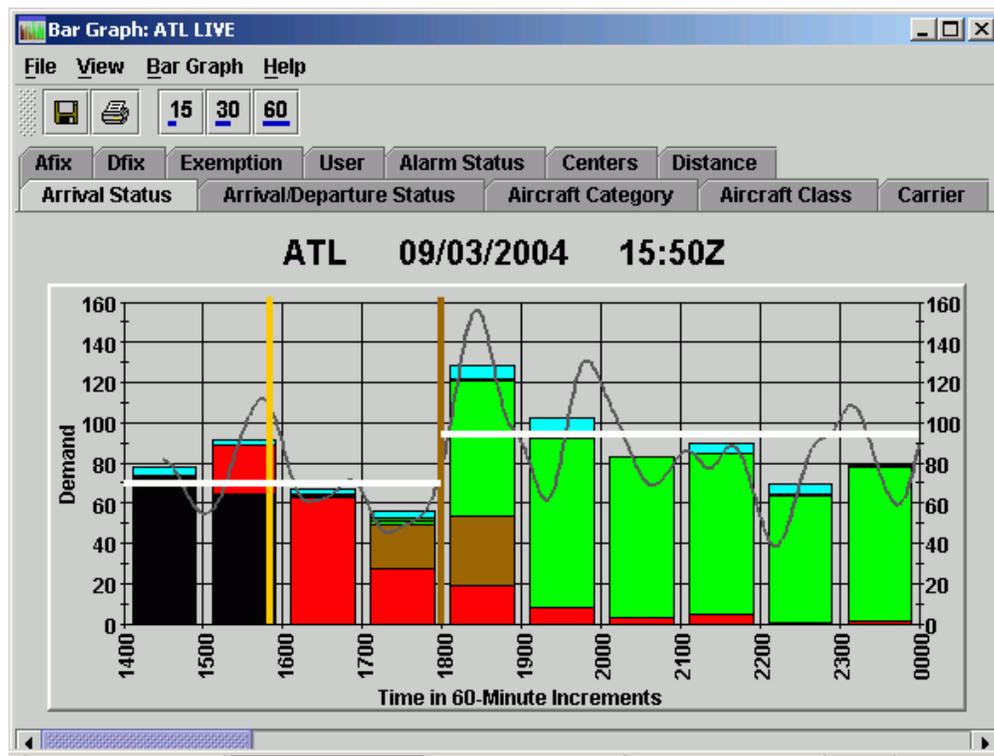


Figure 15-1: Stacked Hours

You can also get a quick visual idea of where the cancelled flights (squares) and delayed flights (triangles) are from the FSM Time Line. If a large number of squares appear throughout the program time, issuing a compression is helpful for reallocating operational flights to the slots held by the cancelled flights.

Running Compression with End Time of 9999 decreases delay on the operational flights and moves the cancelled flights to the end of the program. Compression can reduce both the total delay and average delay of a GDP. For more information on Issuing a Compression, see Chapter 14: Issuing a Compression.

Deciding When to use a Revision

Use a Revision when you want to extend the End Time, change the program's AAR, or change the scope of the program. In cases where you do not want to modify the program parameters but several pop-up flights exist, a Revision may be the most favorable option. A Revision captures the pop-up flights in the system and assigns them control times, where as a Compression only captures controlled flights already included in the current GDP.

Note: The guidelines mentioned above are not procedures; see the FSM Handbook for procedural guidelines.

16 Airborne Holding and Blanket Programs

Using Airborne Holding

Traffic management specialists use Airborne Holding to determine the necessity of a GDP. In certain situations, putting delay on flights en route may be a better option than delaying flights on the ground. The airborne holding algorithm in FSM produces the amount of expected airborne holding delay, defined as ASLOT - ETA, which would result from running a program.

To run the Airborne Holding algorithm, select the *Program Type* Airborne Holding option from the GDT Setup component. Selecting the Airborne Holding option enables only the General and AAR tabs. Using the two tabs, you need to fill out the parameters of the air traffic scenario you want to model. The only input parameters for Airborne Holding are the General tab's Start and End times and the AAR tab parameters.

Selecting General Tab Parameters

From the General Tab, specify the Start and End times of the program. All other fields are disabled, as shown in Figure 16-1.

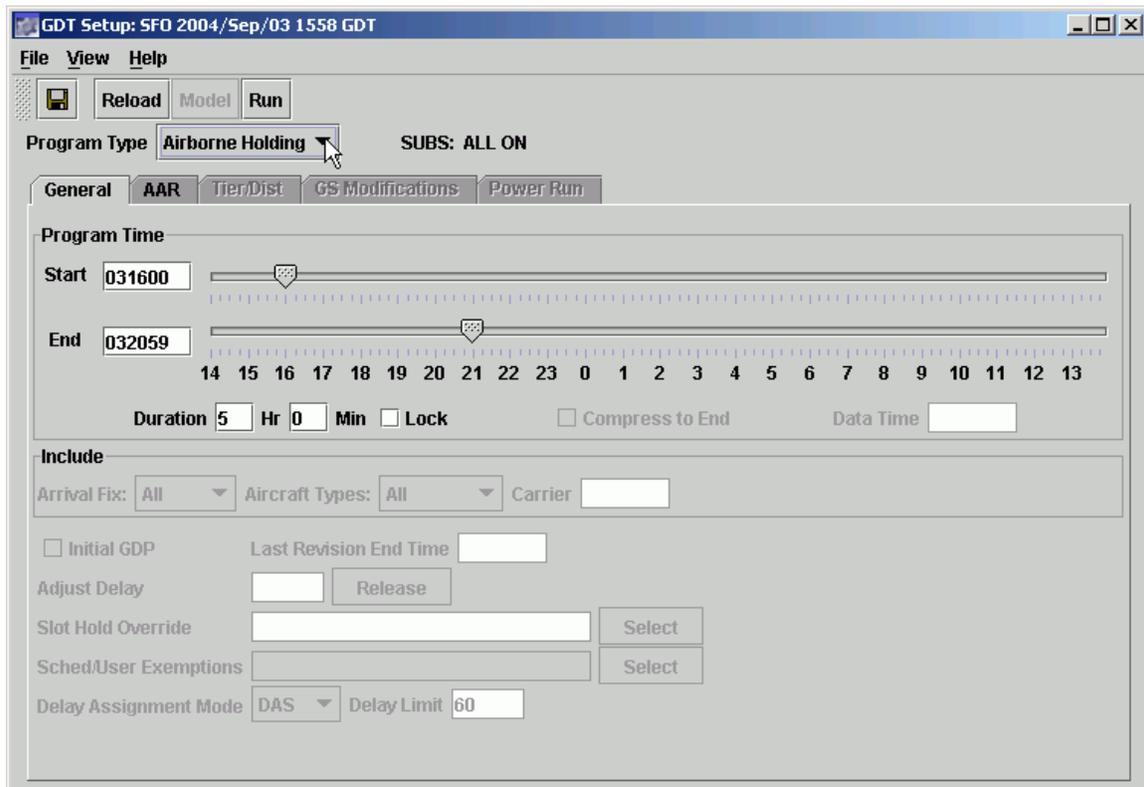


Figure 16-1: Airborne Holding General Tab

AAR Tab Modifications

Click on the AAR tab to enter the reduced AAR for that airport on which to base your Airborne Holding Model.

Figure 16-2 shows the AAR tab in the GDT Setup software. The window title is "GDT Setup: SFO 2004/Sep/03 1558 GDT". The menu bar includes "File", "View", and "Help". Below the menu bar are buttons for "Reload", "Model", and "Run". The "Program Type" is set to "GDP RBS++" and "SUBS: ALL ON". The "AAR" tab is active, showing a table with columns for "Time", "Airport", "CEDES", "SKUNK", "PIRAT", and "PYE". The table rows show times from 1400 to 0300. The 1700 and 1800 rows are highlighted in cyan, with the "Airport" column value of 35. Above the table are input fields for "Fill Airport", "With 35", "From Hr 17", "Through Hr 18", "Auto", "Fill", and "ADL AAR". At the bottom, there is a "GA Factor 0" field and an "Edit 15" button.

Time	Airport	CEDES	SKUNK	PIRAT	PYE
1400	60	-	-	-	-
1500	60	-	-	-	-
1600	60	-	-	-	-
1700	35	-	-	-	-
1800	35	-	-	-	-
1900	60	-	-	-	-
2000	60	-	-	-	-
2100	60	-	-	-	-
2200	60	-	-	-	-
2300	60	-	-	-	-
0000	60	-	-	-	-
0100	60	-	-	-	-
0200	60	-	-	-	-
0300	60	-	-	-	-

Figure 16-2: Airborne Holding AAR Tab

For more information on the AAR tab, see Chapter 3: Understanding Components.

Airborne Holding Reports

Running the Airborne Holding algorithm generates two reports: Airborne Holding Flight List and Carrier Statistics. The Airborne Holding Flight List appears automatically when the *Program Type* Airborne Holding is **Run**, as shown in Figure 16-3.

Airborne Holding Flight List

The Flight List contains information for all flights that meet the operation parameters. The Flight List includes *ASLOT*, which is the arrival slot the flights use, and *ASLOT - ETA*, which is the amount of expected airborne holding delay. For more information on the Flight List Format, See Chapter 6 Viewing Flight Information.

The screenshot shows a software window titled "Airborne Holding Flight List: SFO 2004/Sep/03 1558 GDT". The window has a menu bar with "File", "View", "Flight List", and "Help". Below the menu bar are icons for saving and printing. The main area contains a table with the following columns: ACID, ORIG, DEST, ETD, ETA, ASLOT, and ASLOT-ETA. The table lists 30 flights, each with a unique ACID, origin (ORIG), destination (DEST), estimated time of departure (ETD), estimated time of arrival (ETA), arrival slot (ASLOT), and the difference between ASLOT and ETA (ASLOT-ETA). At the bottom of the window, it states "Total flights: 160".

	ACID	ORIG	DEST	ETD	ETA	ASLOT	ASLOT-ETA
1	BISON41	SUU	SFO	A03/1442	E03/1602	03/1602Z	0
2	UAL852	RJAA	SFO	A03/0726	E03/1606	03/1606Z	0
3	ACA549	CYVR	SFO	A03/1432	E03/1610	03/1610Z	0
4	UAL1135	CYVR	SFO	A03/1436	E03/1611	03/1611Z	0
5	ASA690	CYVR	SFO	A03/1433	E03/1613	03/1613Z	0
6	ASH7193	AUS	SFO	A03/1256	E03/1615	03/1615Z	0
7	AWE803	PHX	SFO	A03/1422	E03/1618	03/1618Z	0
8	AAL1920	LAX	SFO	A03/1517	E03/1623	03/1623Z	0
9	UAL133	ORD	SFO	A03/1211	E03/1623	03/1624Z	1
10	NWA28	RJAA	SFO	A03/0735	E03/1624	03/1625Z	1
11	N291BC	BOI	SFO	A03/1508	E03/1624	03/1626Z	2
12	N844GF	STS	SFO	P03/1610	E03/1626	03/1627Z	1
13	UAL788	SNA	SFO	A03/1521	E03/1627	03/1628Z	1
14	UAL291	MCO	SFO	A03/1128	E03/1629	03/1629Z	0
15	UAL983	RNO	SFO	A03/1553	E03/1629	03/1630Z	1
16	UAL594	SAN	SFO	A03/1514	E03/1630	03/1631Z	1
17	UAL297	BWI	SFO	A03/1106	E03/1631	03/1632Z	1
18	SKW6155	ACV	SFO	A03/1525	E03/1632	03/1633Z	1
19	UAL859	PDX	SFO	A03/1518	E03/1632	03/1634Z	2
20	ANA008	RJAA	SFO	A03/1125	E03/1632	03/1635Z	3
21	UAL964	MMMX	SFO	A03/1231	E03/1634	03/1636Z	2
22	UAL1291	DFW	SFO	A03/1317	E03/1635	03/1637Z	2
23	AMT625	MDW	SFO	A03/1230	E03/1638	03/1638Z	0
24	UAL984	BUR	SFO	A03/1537	E03/1641	03/1641Z	0
25	KHA269	STL	SFO	A03/1259	E03/1645	03/1645Z	0
26	SKW6187	BFL	SFO	A03/1540	E03/1645	03/1645Z	0
27	UAL171	BOS	SFO	A03/1045	E03/1645	03/1646Z	1
28	UAL281	MIA	SFO	A03/1122	E03/1648	03/1648Z	0
29	UAL1134	IAH	SFO	A03/1314	E03/1650	03/1650Z	0
30	UAL69	EWR	SFO	A03/1107	E03/1650	03/1651Z	1

Total flights: 160

Figure 16-3: Airborne Holding Flight List

Carrier Statistics

The Carrier Statistics Based on ETA After GDP (Airborne Holding) displays specific delay information for each carrier's flights. The Carrier Statistics report is arranged in several columns for easy access to important information. The Carrier Statistics report appears automatically when you run the *Program Type* Airborne Holding, as shown in Figure 16-4.

Airport: SFO		ADL Update Time: 09/03/04 15:58Z				Delay Type: Ahld				
MXA	N	1 / 1 / 0 / 0	100.0	9 / 0.9 / 9.0 / 9.0	9 / 9	1.46				
NWA	Y	5 / 5 / 0 / 0	100.0	34 / 3.5 / 6.8 / 6.8	14 / 1	1.11				
RYN	N	1 / 1 / 0 / 0	100.0	11 / 1.1 / 11.0 / 11.0	11 / 11	1.79				
SIA	N	1 / 1 / 0 / 0	100.0	6 / 0.6 / 6.0 / 6.0	6 / 6	0.98				
SKW	Y	2 / 2 / 0 / 0	100.0	13 / 1.3 / 6.5 / 6.5	8 / 5	1.06				
UAL	Y	72 / 72 / 0 / 0	91.7	445 / 45.2 / 6.2 / 6.2	20 / 0	1.00				
USA	Y	3 / 3 / 0 / 0	100.0	26 / 2.6 / 8.7 / 8.7	13 / 0	1.41				
VIR	N	1 / 1 / 0 / 0	100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00				
GAYM	N	9 / 9 / 0 / 0	100.0	56 / 5.7 / 6.2 / 6.2	14 / 0	1.01				

Total	NA	160 / 160 / 0 / 0	95.0	984 / 100.0 / 6.2 / 6.2	20 / 0	NA				

Scheduled	NA	138 / 138 / 0 / 0	94.9	870 / 88.4 / 6.3 / 6.3	20 / 0	NA				
Non-Sched	NA	22 / 22 / 0 / 0	95.5	114 / 11.6 / 5.2 / 5.2	17 / 0	NA				

Figure 16-4: Airborne Holding Carrier Statistics

For more information on the Carrier Statistics report, see Chapter 19: Understanding and Using FSM Reports.

Using a Blanket Program

You can use the Blanket program to revise any GDP. Before you revise, ensure you have the most current ADL and weather information. From the Control Panel, select **ETMS Tools > ADL Request** or **Weather Request** (see Chapter 13: Revising a GDP for more information). Use the Blanket program to add or subtract a fixed number of minutes to or from an FAA-imposed delay. Do not use Blanket in conjunction with a GS. You should use a Blanket program only if you do not need to adjust the airport's AAR.

Select *Program Type* of Blanket from the GDP Setup component's General tab, as shown in Figure 16-5. Each ground-delayed flight has an associated slot time. Use this IGTA-based slot time to determine whether to include a flight in the Blanket program. The slot time is adjusted by the requested minutes of delay. Should the airline-delayed flight's position be earlier than the new slot time, the program moves the airline-delayed flight to the newly assigned slot time. The program moves the open slots due to the delay and cancellation accordingly.

When you use the Blanket Program, only the General and Tier/Dist tabs are available for entering parameters. The two tabs are almost identical to other program types with the exception of the additional *Adjust Delay* feature on the General tab.

The screenshot shows the GDT Setup software interface for a Blanket program type. The window title is "GDT Setup: ATL 2004/Sep/03 1605 GDT". The "Program Type" is set to "Blanket" and "SUBS: ALL ON". The "General" tab is active, showing "Program Time" with "Start" at 031615 and "End" at 032009. The duration is 3 hours and 55 minutes. Other settings include "Arrival Fix: All", "Aircraft Types: All", "Carrier: ALL", "Adjust Delay: 20", and "Delay Limit: 60".

Figure 16-5: Blanket Delay Program Type

For more information on the GDT Setup component, see Chapter 3: Understanding Components.

Blanket Coversheet

To view the effect that the entered parameters have on operations; click **Run** on the GDT Setup component. The **Run** option generates the Blanket Coversheet. To view the analysis of the generated Blanket delay, select **View > Analysis** in the opened Blanket Coversheet window, as shown in Figure 16-6.

Blanket Coversheet: ATL: 1615-2009

File View Help

FADT
Analysis
Carrier Statistics

Airport: ATL Program time: 1615-2009 Data time: 031605
 Update time: 031605 Plus time: 30 min. Delay Adjustment (Min): 20
 EQP type: All Arrival fix: All Carrier: ALL
 Delay assignment mode: DAS Delay limit: N/A Sched/User Exemptions: None

Wx METAR: KATL NO CURRENT METAR REPORT AVAILABLE FOR KATL
 Wx TAF: KATL NO CURRENT TAF REPORT AVAILABLE FOR KATL

Tier/Dist

Center keyword: 1stTier Airport keyword: Manual

Included centers: ZME ZID ZHU ZJX ZTL ZDC
 Included airports:
 Exempted airports:
 Exempted flights:

Program Results

Minimum delay before: 30	Minimum delay after: 50	Total affected flights: 34
Average delay before: 41	Average delay after: 61	Total flights: 144
Maximum delay before: 56	Maximum delay after: 76	Stack value: 0
Total delay before: 1400	Total delay after: 2080	Stack AAR: 0

Advisory... Autosend... Close

Figure 16-6: Blanket Coversheet

Sending a Proposed Parameters Advisory

After specifying the Blanket parameters and if the modeled results are favorable, it is recommended that you send out a Proposed Advisory. A Proposed Blanket revision is a program suggested by the FAA, but not immediately implemented. Click **Run** from the GDT Setup to generate the Blanket Coversheet. Review the parameters and then click **Advisory** to open the Blanket Advisory window (see Figure 16-7).

Enter the reason for the revision and the time when you will turn subs off in Advisory window Remarks section and select **Proposed**. Click **Send** to distribute the proposed parameters to all FSM users. A Proposed Blanket revision allows NAS users enough time to comment on the proposed parameters even though they may change before the FAA implements an actual program.

Blanket Advisory: ATL: Program Time: 1615-2009

File Help

Program Parameters Summary

Airport: ATL	Center: ZTL	Program time: 1615-2009
ADL time: 031605	Delay assignment mode: DAS	Delay limit: N/A

Program Results Summary

Minimum delay before: 30	Minimum delay after: 50	Total affected flights: 144
Average delay before: 41	Average delay after: 61	Total flights: 144
Maximum delay before: 56	Maximum delay after: 76	Stack value: 0
Total delay before: 1400	Total delay after: 2080	Stack AAR: 0
Report time: 1609		

Remarks

Respond by: 031645Z Valid until: 031759Z Proposed Actual

Reason: [Dropdown] Explanation: [Text Box]

Comments: [Text Box]

Send... Close

Figure 16-7: Blanket Advisory

Suspend Airline Substitutions and Slot Credit Substitutions

Before issuing the Blanket program, you need to suspend the acceptance of airline substitutions and Slot Credit Substitutions (SCS) messages temporarily. From the FSM Control Panel, select the **ETMS Tools > EDCT Commands > EDCT Command > EDCT SubOff** sub menu option to turn all substitutions off. Enter the three-character airport ID into the EDCT SubOff dialog box and click **Send** to suspend substitutions for that airport. Airline substitution or SCS messages are no longer accepted after FSM sends the Sub Off message to ETMS.

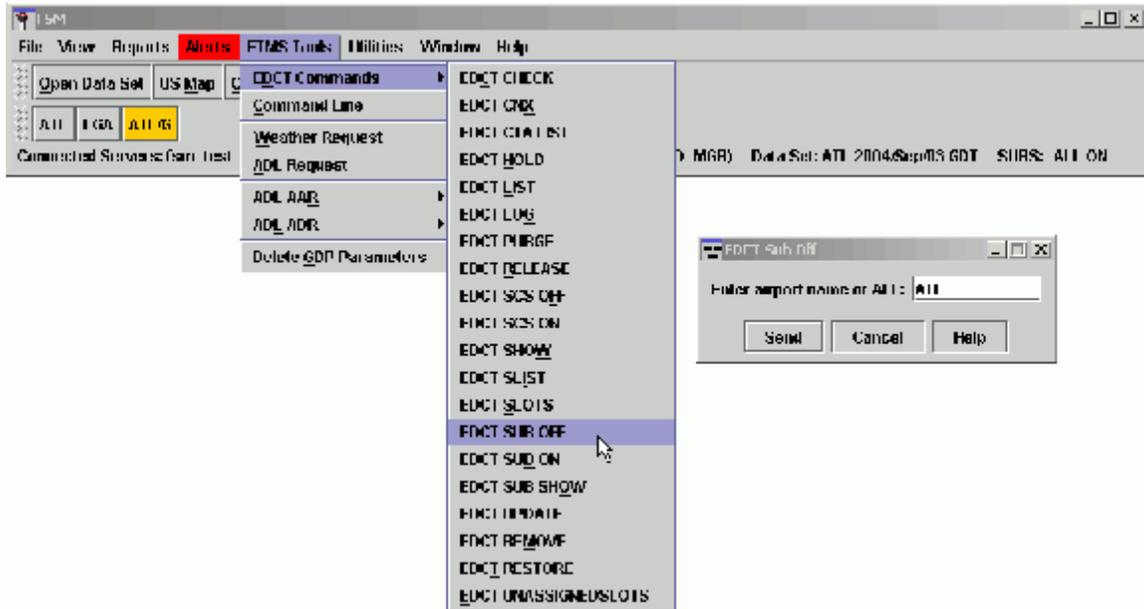


Figure 16-8: Turn Subs OFF and ECDD Sub Off Dialog Box

Issue a Blanket Program

Implementing a Blanket program is very similar to sending out a GDP Program or Revising a GDP program. Once you are satisfied with the Blanket parameters and you have turned substitutions off, there are two steps to enact the program and send the parameters out through the ADL. Volpe does not send out the program parameters for an Actual program through the ADL until the Hub site receives both the program parameters (through an Advisory) and a matching FADT list (**Autosend**) with flight control times. Only when Volpe receives both sets of parameters does it send the program parameters and control times through the ADL at which point it implements the program.

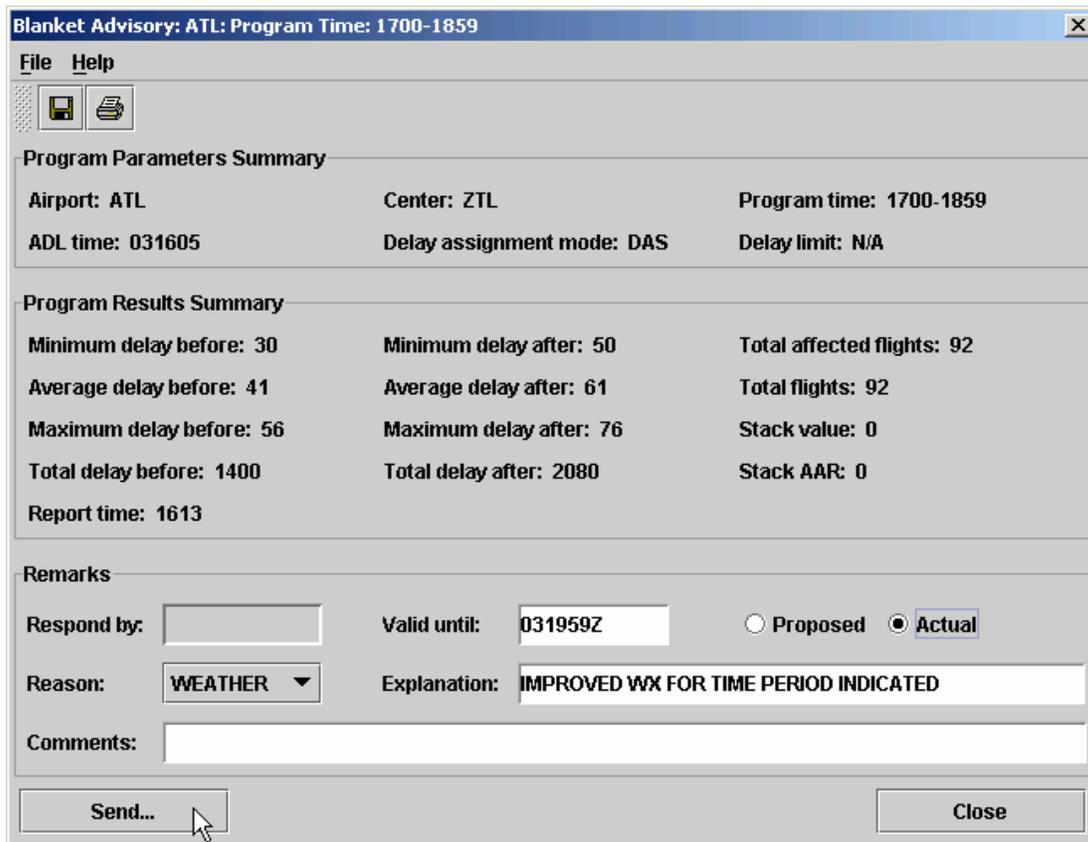
Select **Run** from the GDT Setup Component to open the Blanket Coversheet with the revised parameters. Send both the Advisory and **Autosend** from the Coversheet to implement the Blanket revision. For more information on sending an Advisory and Autosend from the Coversheet, see Chapter 9: Issuing an Initial Ground Delay Program.

Note: Blanket programs ignore all unassigned slots if the GDP has a **Delay Assignment Mode** of GAAP. From the Coversheet, click **Autosend**.

FSM sends the program parameters and the EDCT portion of the FADT file to the Hub site when you click **Autosend**. However, the Hub site does not include this information in the incoming ADLs until the Hub site receives a matching Advisory as well.

To send an Actual Advisory (i.e., to match a FADT file sent for an actual program), click **Advisory** from the Coversheet. This brings up the Blanket Advisory window. FSM selects

Proposed by default when you first open the Advisory window, therefore you must select *Actual*. The actual Blanket Advisory window requires that you fill out the *Reason* before sending it.



The screenshot shows a window titled "Blanket Advisory: ATL: Program Time: 1700-1859". It has a menu bar with "File" and "Help". Below the menu bar are icons for saving and printing. The window is divided into several sections:

- Program Parameters Summary:**

Airport: ATL	Center: ZTL	Program time: 1700-1859
ADL time: 031605	Delay assignment mode: DAS	Delay limit: N/A
- Program Results Summary:**

Minimum delay before: 30	Minimum delay after: 50	Total affected flights: 92
Average delay before: 41	Average delay after: 61	Total flights: 92
Maximum delay before: 56	Maximum delay after: 76	Stack value: 0
Total delay before: 1400	Total delay after: 2080	Stack AAR: 0
Report time: 1613		
- Remarks:**

Respond by: Valid until: Proposed Actual

Reason: Explanation:

Comments:

At the bottom, there are two buttons: "Send..." and "Close". A mouse cursor is pointing at the "Send..." button.

Figure 16-9: Actual Advisory

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17 Issuing a Ground Stop

Unlike ground delay programs, which delay flights because of a reduced AAR, the GS Immediate, and GS Future function prevents flights from departure until further notice. In FSM, the GDT Setup Component is identical for all Traffic initiatives, with active tabs and fields differentiating among program types. The GS Modifications tab is active for both types of Ground Stop (GS) programs. During a Ground Stop, ETD is checked against the **Start** time and **End** time to determine whether to include the flight in the GS. (In a GDP, times are checked against a flight's ETA). Flights included in the GS program are assigned a new ETD one minute after the GS **End** time. The flight's new ETAs are assigned based on the flights' Original ETE. For example, if the GS period is 1320-1419, flights with an ETD between 1320 and 1419 have a new ETD of 1420. The new ETA is the New ETD + Orig. ETE.

There are two types of GS programs:

- **GS Immediate** – GS Immediate issues the program immediately and you should use *Exempt By Departure* Status during this program type.
- **GS Future** – Issue this GS for a specific time in the future and you should use *Exempt By Departure* Time should be used during this program type.

Selecting the Parameters

Open any monitored airport in Ground Delay Tools (GDT) mode by clicking **GDT Setup** on the Control Panel component. If an airport is not active when you click **GDT Setup**, an FSM error message indicates “No current data set” selected. When the four GDT components open, select the **Program Type** GS Immediate or GS Future from the GDT Setup component.

General Tab Parameters

In the General Tab, you can adjust the Program Time, the *Arrival Fix*, *Aircraft Type*, and *Carriers* you want to include in the GS program time (see [Figure 17-2](#)) by clicking and dragging the pointers on the *Start* and *End* time lines or by entering a new time (ddhhmm) in the textboxes. If you do not indicate changes for *Arrival Fix*, *Aircraft Type*, or *Carrier*, the default is set to include All.

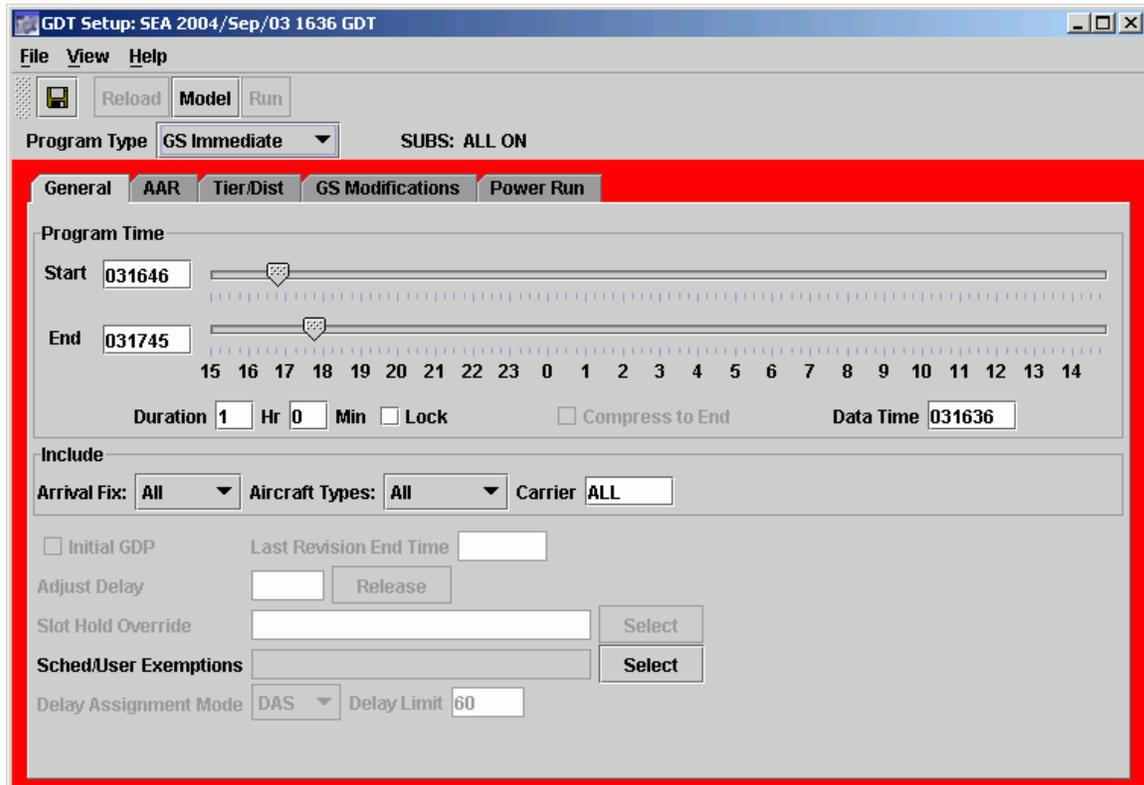


Figure 17-2: GDT Setup General Tab

Note: If you select GS Immediate as the *Program Type*, the start time defaults to the current time minus 10 minutes. So if the current time is 1841Z, the default start time is 1831Z. If you selected GS Future as the *Program Type*, you can enter the date and time when the GS will begin.

AAR Tab Parameters

Under the AAR tab, select the desired AAR for the airport (see [Figure 17-3](#)). While a GS program is not based on the AAR, this section is available for specialists to view and evaluate whether or not to issue a GS. Set the target AAR values under this tab to efficiently monitor capacity vs. demand. Clicking **ADL AAR** restores the AAR values to their original state.

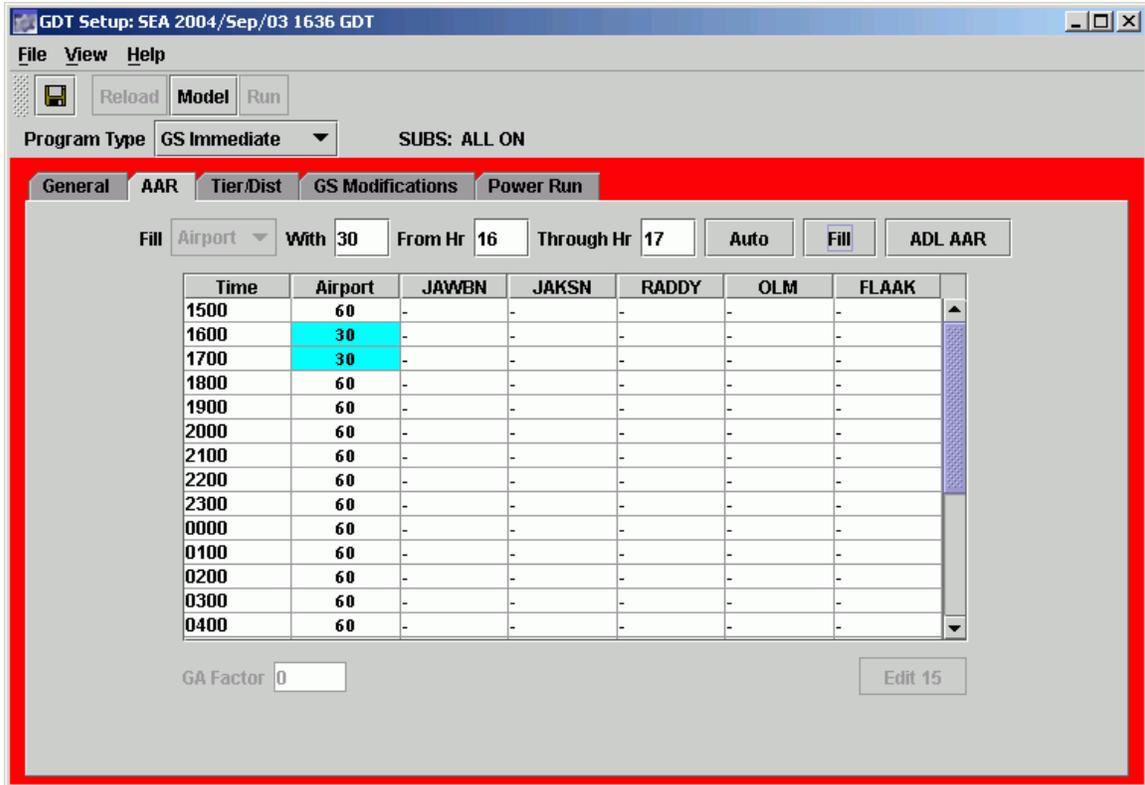


Figure 17-3: GDT Setup AAR Tab

Tier/Dist Tab

Click on the Tier/Dist tab to select the facilities and airports included in the GS. GSs are always Tier based; therefore Distance is not a valid exemption criterion. The Tier panel contains three sections where you can modify parameters: Centers, Airports, and Flights (see Figure 17-4).

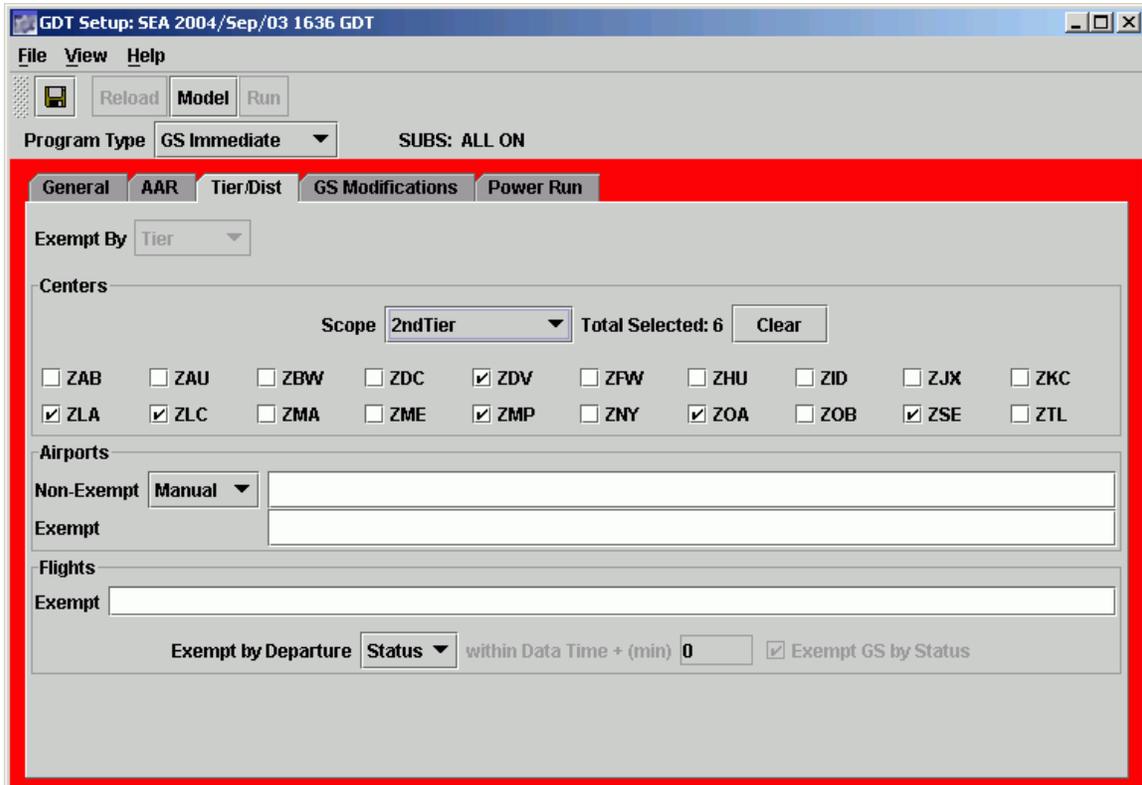


Figure 17-4: GDT Setup GS Tier/Dist Tab

Note: GS Immediate should be based on Departure **Status** and GS Future should be based on **Time**.

GS Modifications Tab

Using the GS Modifications tab you can specify additional centers or airports to run in the GS (see Figure 17-5). The GS parameters set in this tab can have GS start and stop times that differ from the main GS. All other parameters in the GS program remain the same. You can edit or delete the text added to this field.

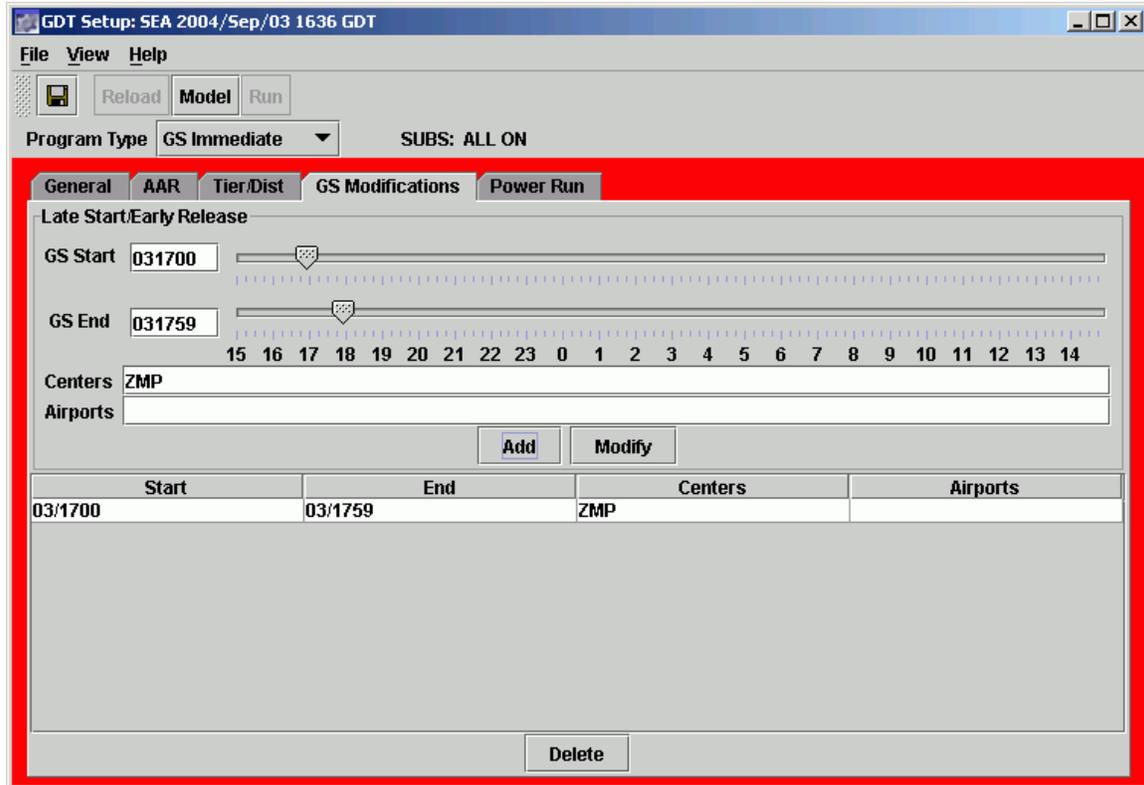


Figure 17-5: GDT Setup GS Modifications Tab

After you enter the GS Modification parameters, click **Add** to add the parameters to the program. The modification appears in the table. To change an existing modification, highlight the modification line from the table. This enters the parameters in the textboxes where you can adjust the information and click **Modify** to change it. To remove a modification from the table, highlight the modification line and click **Delete**. For more information on the GS Modifications tab, see Chapter 3: Understanding Components.

Power Run Tab

Before actually running the GS, you may want to review the parameters you set to ensure they are best for your program. This allows you to take advantage of several analysis tools embedded in FSM.

Use the Power Run tab in the GDT Setup component as an analysis tool. There are three GS Power Run operations, which analyze the effects/results of any program:

- GS Center Group
- GS Time Period
- GS Center Group & Time Period

You can select these options from the dropdown menu that appears next to **Power Run By**. Use the Power Run function to determine whether you need to modify the parameters. When you generate any Power Run, FSM automatically saves the Power Run to a file.

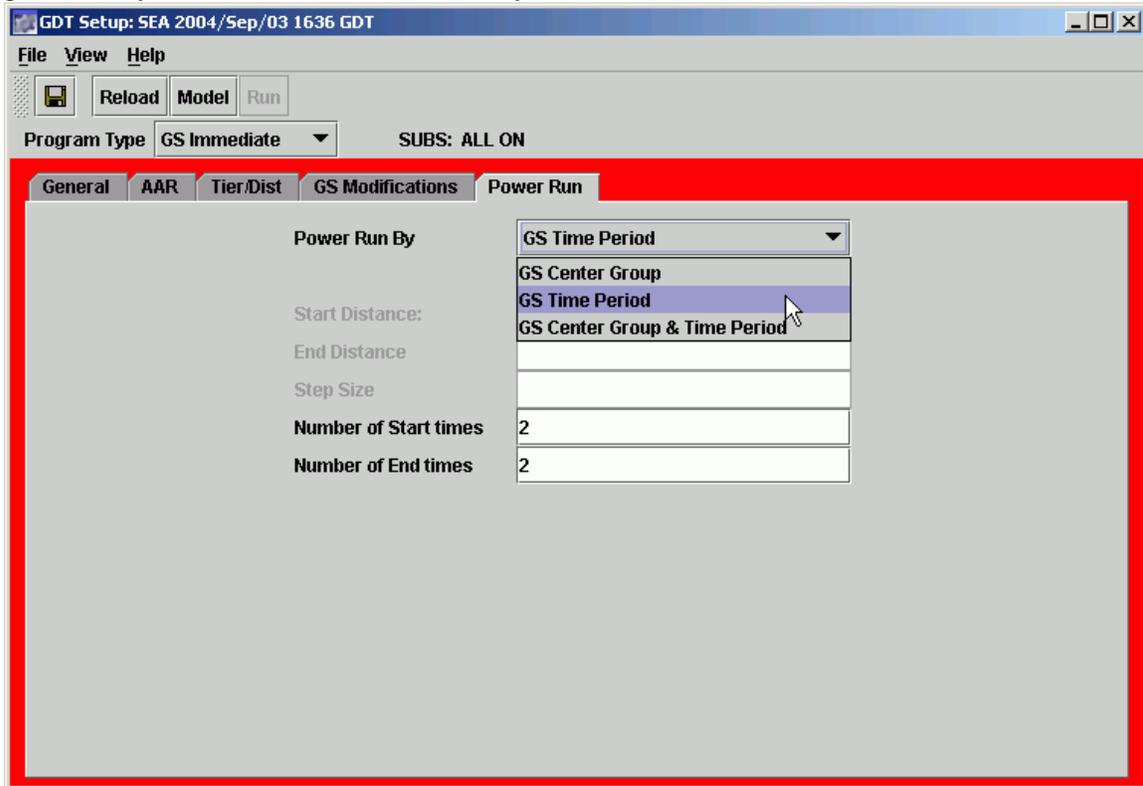


Figure 17-6: GDT Setup GS Power Run Tab

To view a scenario, select an option from the **Power Run By** dropdown menu and click **Model**. Model displays the effects of the GS parameters and how traffic at the airport would be affected if you used these parameters for an actual program in all GDT components. Review the program statistics in the Data Graph.

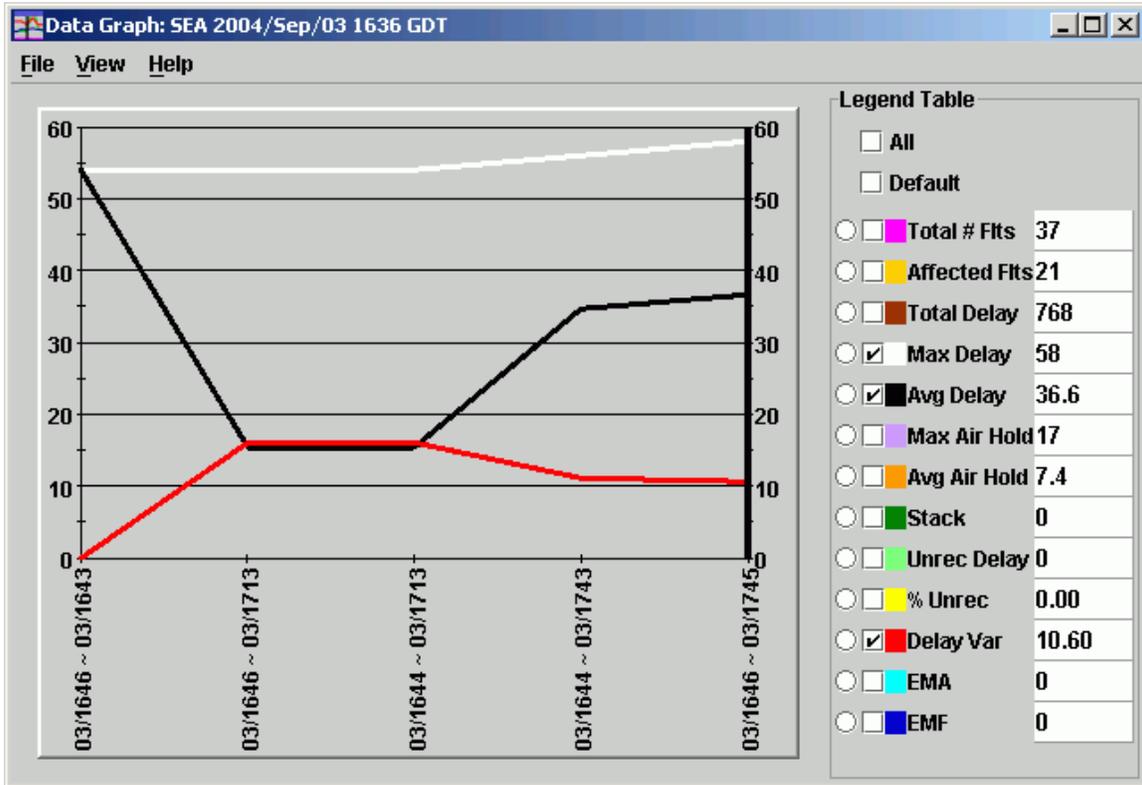


Figure 17-7: Power Run Data Graph by GS Center Group

To preview the effects of a Power Run scenario, move the black line on the Data Graph component to other options displayed on the x-axis. This is discussed in more detail below in the Data Graph Component section. To view the same information in the table format, select **View > Data Table** from the GDT Setup component.

Note: After you click **Model**, the Setup Panel no longer contains a red border; this indicates that all components reflect the information in the GDT Setup Panel.

	03/1646 ~ 03/1643	03/1646 ~ 03/1713	03/1644 ~ 03/1713	03/1644 ~ 03/174
1600 30	26 / 0 / 0	26 / 0 / 0	26 / 0 / 0	26 / 0 / 0
1700 30	39 / 0 / 9	36 / 0 / 6	36 / 0 / 6	35 / 0 / 5
Total # Flts	32	37	37	37
Affected Flts	1	15	15	21
Total Delay	54	230	230	728
Max Delay	54	54	54	56
Avg Delay	54.0	15.3	15.3	34.7
Max Air Hold	9,999	6	6	15
Avg Air Hold	9,999.0	2.5	2.4	6.7
Stack	0	0	0	0
Unrec Delay	0	0	0	0
% Unrec	0.00	0.00	0.00	0.00
Delay Var	0.00	16.14	16.14	10.98
EMA	0	0	0	0

Demand: (# flights / Open slots / stack)

Figure 17-8: Power Run Data Table by GS Center Group

Generating a GS Coversheet

Run the GS program once you set the parameters and you are ready to implement the GS. Click **Run** on the GDT Setup component. This saves the parameters to a specified FSM configuration file and the GS Coversheet appears on the screen.

Note: GS programs ignore all unassigned slots if the GDP has a **Delay Assignment Mode** of GAAP. Clicking **Run** generates three reports:

- FADT report
- Analysis report
- Carrier Statistics report

You can view all reports by selecting **View > FADT**, **View > Analysis Report**, or **View > Carrier Statistics** from the Coversheet component. You can also view the Carrier Statistics by selecting **Report > Carrier Statistics** from the main Control Panel component. See Chapter 19: Understanding and Using FSM Reports for more information.

GS Coversheet

The GS Coversheet contains all program parameter data for you to review before sending the GS program. You send the GS out from the GS Coversheet (see Figure 17-9).

GS Coversheet: SEA: 1646-1745		
File View Help		
<input checked="" type="checkbox"/> General		
Airport: SEA	Program time: 1646-1745	Data time: 031636
Update time: 031636	EQP type: All	Arrival fix: All
Carrier: ALL	Delay assignment mode: DAS	Delay limit: N/A
Sched/User Exemptions: None		
<input checked="" type="checkbox"/> Tier/Dist		
Exempt by: Tier	Exempt by: Departure Status	Center keyword: 2ndTier
Airport keyword: Manual		
Included centers:	ZSE ZLC ZLA ZMP ZDV ZOA	
Included airports:		
If-distance airports:		
Exempted centers:		
Exempted airports:		
Exempted flights:		
Late Start/Var Releas...	[ZMP] 031700 - 031759	
Program Results		
Minimum delay before: 0	Minimum delay after: 8	Total affected flights: 21
Average delay before: 0	Average delay after: 36	Total flights: 37
Maximum delay before: 0	Maximum delay after: 58	Stack value: 0
Total delay before: 0	Total delay after: 768	Stack AAR: 0
<input type="button" value="Advisory..."/> <input type="button" value="Autosend..."/> <input type="button" value="Close"/>		

Figure 17-9: Ground Stop Coversheet

For more information on the GS Coversheet, see chapter 3: Understanding Components.

Once you review the GS Coversheet and checkmark all checkboxes, send out an **Advisory** and **Autosend** the GS to the Hub site.

Sending an Advisory

To compose either an Actual or Proposed GS Advisory, click **Advisory** from the GS Coversheet. The GS Advisory window appears (see **Error! Reference source not found.**). This window contains all the GS parameters to send to all participants and a separate Remarks section that you must fill out before sending the Advisory.

GS Advisory: SEA: Program Time: 1646-1745

File Help

Program Parameters Summary

Airport: SEA	Center: ZSE	Program time: 1646-1745
ADL time: 031636	Delay assignment mode: DAS	Delay limit: N/A

Program Results Summary

Minimum delay before: 0	Minimum delay after: 8	Total affected flights: 37
Average delay before: 0	Average delay after: 36	Total flights: 37
Maximum delay before: 0	Maximum delay after: 58	Stack value: 0
Total delay before: 0	Total delay after: 768	Stack AAR: 0
Report time: 1657		

Remarks

Respond by: Valid until: Proposed Actual

Reason: Explanation:

Probability of Extension: Comments:

Figure 17-10: Send a GS Advisory

For more information on the Advisory component, see chapter 3 Understanding Components.

Once you complete the GS Advisory, click **Send** to email the program parameters to all parties involved in the program, including the Hub site. A checkmark appears next to the **Send** button on the Advisory window and next to the **Advisory** button on the GS Coversheet to indicate that you

sent the advisory.

If the parameters are for a Proposed Advisory, the Hub site sends out the parameters immediately in the next ADL. When FSM sends parameters for an Actual Advisory, the Hub site ensures that it has received the associated FADT file with flight control times for the program before sending any parameters through the ADL.

When you click **Close**, FSM takes no action from the GS Advisory window.

Click **AutoSend** from the GS Coversheet to send the FADT List to both the Hub and Airlines.

When you click **Close**, FSM takes no action from the GS Coversheet window.

Re-Opening the Coversheet

If you want to review previous Coversheets for the airport or if you accidentally closed the Coversheet before sending out the advisory, you can re-open it for review or to continue sending out the program. See Chapter 9: Issuing an Initial Ground Delay Program for more information.

Example of Issuing an Actual GS

An Actual GS is a program that the FAA is going to implement; they have gathered user comments and are ready to enact the program. If you are preparing an Actual GS, you need to send a FADT file through the Autosend function.

The Hub site does not send program parameters for an Actual program through the ADL until it receives both the program parameters (through an Advisory) and a matching FADT list with flight control times. Once Volpe receives both of these, it sends the program parameters and control times through the ADL to all FSM users and implements the program.

To send a Ground Stop

The advisory contains the program parameters for the Hub site to send through the ADL.

1. Click **Open Data Set**.
2. The Open Data Set window appears.
3. Select the airport for which you want to issue the GS.
4. Click **OK**.
5. The Time Line and Bar Graph components for the airport appear.
6. Click **GDT Setup**.
7. The GDT components for the airport appear.
8. Select Immediate or Future GS for the **Program Type**.
9. Enter the GS parameters on the various GDT Setup Panel tabs.
10. Click **Model**.
11. The red border in the GDT Setup Panel disappears and all the GDT components reflect the modeled GAAP GDP.
12. If the program appears to deal with the traffic flow in the manner you want, click **Run** to generate the Coversheet.
13. The Coversheet window appears.
14. Carefully examine each section of the Coversheet. If the data is correct, select the **General** checkbox and the **Tier/Dist** checkbox.
15. Click **Advisory** to complete the advisory for the actual program.
16. The GS Advisory window appears (See Re-Opening the Coversheet

If you want to review previous Coversheets for the airport or if you accidentally closed the Coversheet before sending out the advisory, you can re-open it for review or to continue sending out the program. See Chapter 9: Issuing an Initial Ground Delay Program for more information.

17. on page 11).
18. Complete the fields required in the GS Advisory window.
19. Select **Actual** on the GS Advisory.
20. Click **Send** and close the Advisory window.
21. Click **Autosend** on the Coversheet to send the FADT to the Hub site and CDM participants.

The FADT file is still forwarded to Autosend at the ETMS terminal so that you can re-send the file if there is a problem with the initial transmission.

The Hub site does not send out any actual program information through the ADL unless there is an Actual Advisory with parameters matching the FADT.

Double-click on a bar in the Bar Graph to open the Flight List component. When all colors appear on the Bar Graph, the Flight List contains all flights, both GS and other flights. Select the **View > Show Legend** checkbox to open the color legend. Uncheck all color options with the exception of yellow GS Flights. Then click on the hour bar that has only GS flights displayed; this opens a Flight List containing only GS flights.

	AC	ID	ETD	ETA	DEST	ORIG	CTL_TYPE
1	AWE	890	P03/1750	C03/2011	SEA	LAS	GS
2	ASA	515	L03/1750	C03/2020	SEA	BUR	GS
3	QXE	2450	L03/1750	C03/2042	SEA	SBA	GS
4	UAL	495	L03/1750	C03/2014	SEA	DEN	GS
5	ASA	539	P03/1750	C03/2028	SEA	DEN	GS
6	UAL	419	L03/1750	C03/2006	SEA	DEN	GS
7	UAL	381	L03/1750	C03/2014	SEA	DEN	GS

Total flights: 7

Figure 17-12: GS Flight list for 1 Hour Bar

There are certain default values of Flight List information. When you first open a Flight List, the default information appears. This default information is adjustable. For more information on the Flight List component, see chapter 6: Viewing Flight Information.

Query Manager Flight List

The Query Manager already contains a built-in filter for GS flights. To get a list of GS flights at any open airport, select the **AND Ground_Stopped** Filter and then click **Flight List** or select **View > Flight List** from the Query Manager component.

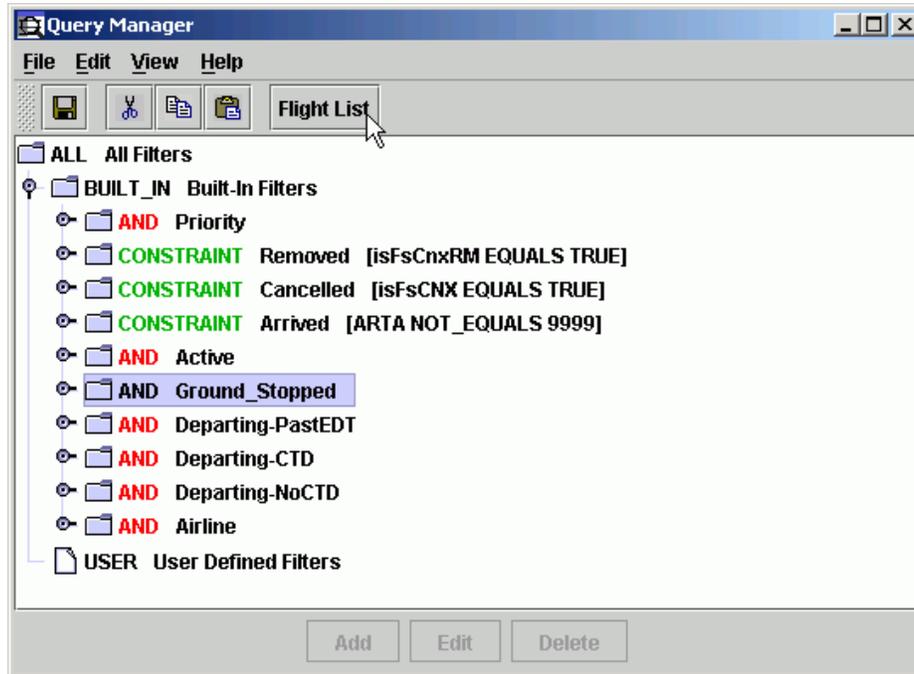


Figure 17-13: Query Manager Component

When you are monitoring more than one airport, clicking **Flight List** opens the Set Data Set window, showing all open airports. Select the Data Mode/Airport and click **OK** to view that airport's GS Flight List (see Figure 17-14). Click **Cancel** to exit the Set Data Set window without opening a Flight List.



Figure 17-14: Set Data Set Selection window

Opening a Flight List from the Query Manager lists all the flights that are GS at the specified airport unless otherwise defined by a customized CONSTRAINT, whereas accessing a Flight List from the Bar Graph only displays a list of flights for the selected hour. For more information on how to use the Query Manager component, see Chapter 20.

	AC	ID	ETD	ETA ▲	DEST	ORIG	ARTA-C
1	QXE	440	P03/1746	E03/1825	SEA	PDX	
2	QXE	236	P03/1746	E03/1828	SEA	PDX	
3	BSY	6003	P03/1746	E03/1834	SEA	MWH	
4	BSY	6003	S03/1746	E03/1835	SEA	MWH	
5	QXE	327	P03/1746	E03/1841	SEA	GEG	
6	QXE	393	L03/1746	E03/1841	SEA	GEG	
7	QXE	156	P03/1746	E03/1851	SEA	EUG	
8	ASA	503	L03/1746	E03/1916	SEA	RNO	
9	QXE	407	L03/1746	E03/1917	SEA	BOI	
10	DAL	908	P03/1746	E03/1925	SEA	SLC	
11	ASA	555	P03/1746	E03/1935	SEA	OAK	
12	SWA	1783	L03/1746	L03/1938	SEA	SJC	
13	UAL	419	L03/1746	L03/2002	SEA	DEN	
14	AWE	890	P03/1746	E03/2007	SEA	LAS	
15	UAL	495	L03/1746	L03/2010	SEA	DEN	
16	UAL	381	L03/1746	L03/2010	SEA	DEN	
17	ASA	515	P03/1746	E03/2016	SEA	BUR	
18	ASA	539	P03/1746	E03/2024	SEA	DEN	
19	ASA	281	L03/1746	E03/2033	SEA	LAX	
20	QXE	2450	L03/1746	E03/2038	SEA	SBA	

Total flights: 21

Figure 17-15: Query Manager Flight List

18 Other Ground Stop Functions

Once a Ground Stop (GS) is in place, the conditions that originally necessitated the Ground Delay Program (GDP) may change. This chapter covers additional GS features that you use when conditions demand modifications to an existing GS:

- Purging a GS
- Reducing the Scope of a GS
- Extending a GS
- Moving from a GS to a GDP

Purging a GS

From the Purge Coversheet, click **Purge** to purge any control times from the ETMS system. Purge works the same as the Autosend function to send new operation parameters and cancellation messages to the Hub site for inclusion in the ADLs.

Note: The Hub site waits for an Advisory for the cancelled GDP before sending the new parameters.

Finish the GS cancellation by clicking **Advisory** and sending a Purge advisory.

Viewing Flight Information before Purging a Program

When you model a purge for a GS program, ETMS sets the minimum notification time to the value of the minimum notification time for flights in a ground stop. FSM determines a minimum notification time for controlled flights in a taxi status. If a controlled flight is in a taxi status, without regard to the type of control, then FSM sets the minimum notification time to the value of the minimum notification time for flights in a taxi status.

ETMS models a new estimated departure time based on the flight's control departure time and the minimum notification time based on the following criteria:

- If the flight is active or completed, ETMS sets the ETD to the actual departure time.
- If the CTD of the flight is within the minimum notification time from the current time, the estimated departure time remains set to the CTD.
- If the CTD of the flight is greater than the minimum notification time plus the current time, then ETMS calculates a candidate ETD selected from the following values in order of priority:
 1. Earliest Runway Departure Time
 2. Earliest Runway Arrival Time minus the Estimated Time Enroute
 3. Original Estimated Departure Time
 4. Initial Gate Departure Time plus the taxi time for the flight
- If this candidate time is greater than the current time plus the minimum notification time, then ETMS sets the ETD to this candidate time.
- If the candidate time is less than the current time plus the minimum notification time, then ETMS sets the ETD to the current time plus the minimum notification time.

To purge a GS

The Purge option requires no user input.

1. Click **Purge**. All the tabs in the setup panel are disabled.
2. Click **Model**.
3. The red border in the GDT Setup Panel disappears and all the GDT components reflect the modeled purge.
4. If the program appears to deal with the traffic flow in the manner you want, click **Run** to generate the GS CNX Coversheet.
5. The Coversheet window appears.

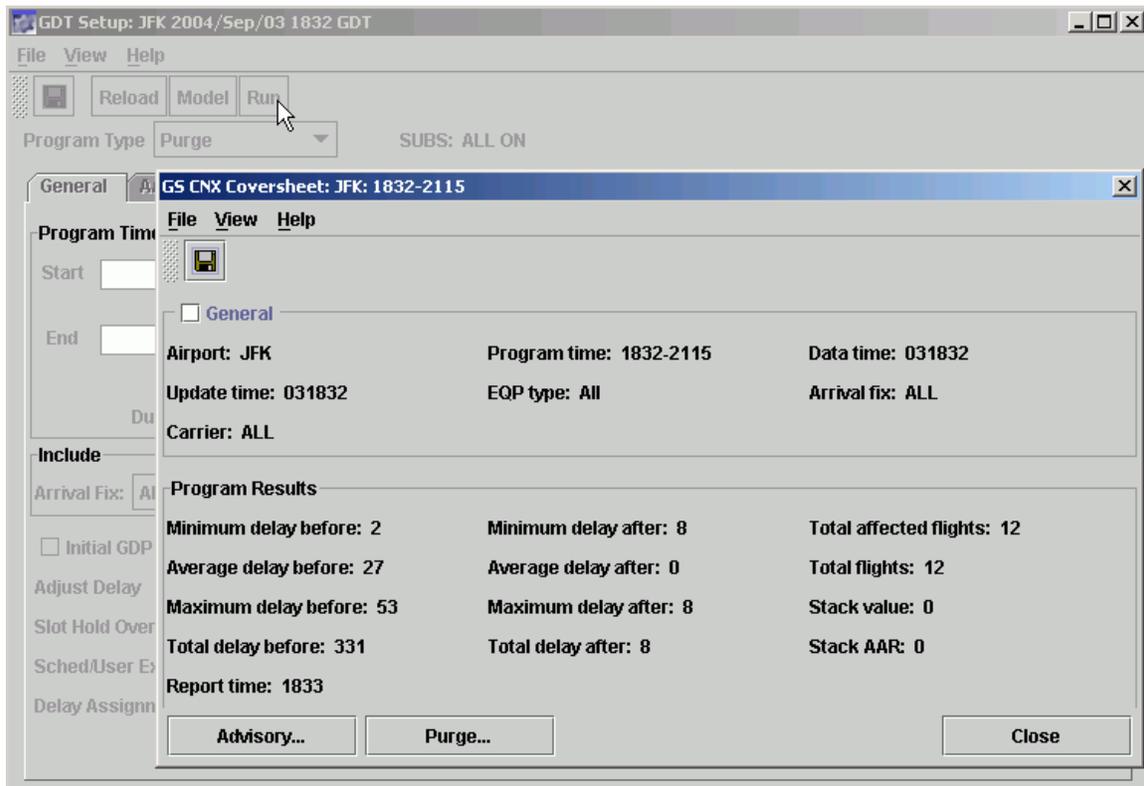


Figure 18-1: GS CNX Coversheet

The information included in the Purge Coversheet is pre-defined and you cannot change it. Information on the Purge Coversheet includes: General Parameters and Program Results. For more information on the Coversheet component, see chapter 3: Understanding Components.

6. After you review the information in the General section, select the **General** checkbox.
7. From the CNX Coversheet, click **Purge** to purge any control times from the ETMS system. Purge works the same as the **Autosend** function to send new operation parameters and cancellation messages to the Hub site for inclusion in the ADLs.
8. Click **Advisory** to finish the GS cancellation and send a Purge advisory to all users.

Reducing the Scope of a Ground Stop

To reduce the scope of an existing GS you must open GDT mode and purge the current GS for all flights and then issue another Immediate GS with the reduced scope.

Note: Before Purging a Ground Stop, communication with all operators is encouraged to notify them that another Immediate GS program will be implemented shortly after the Purge.

Ensure the GS airport that you want to modify is active before clicking **GDT Setup** on the Control Panel component. This opens the four default GDT components for the selected airport. Select **Program Type > Purge** from the GDT Setup component and click **Model** then **Run** to purge the existing GS (see Figure 18-2). The Purge Program type requires no parameter modifications; therefore all tabs are disabled.

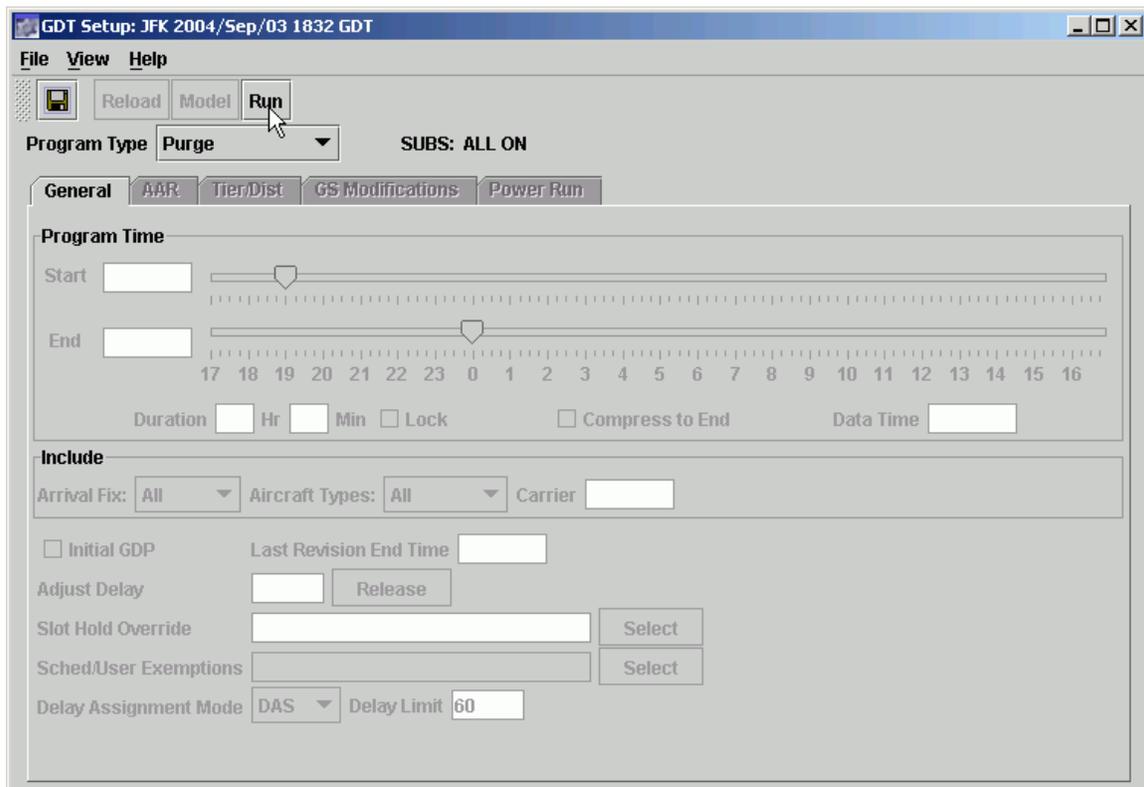


Figure 18-2: GS Purge

Clicking **Run** to Purge/CNX the current GS program opens the GS CNX Coversheet (see Figure 18-3). The information included in the Purge Coversheet is pre-defined and you cannot change it. See chapter 18 for more information on GS Purge Coversheet information.

General		
Airport: JFK	Program time: 1832-2115	Data time: 031832
Update time: 031832	EQP type: All	Arrival fix: ALL
Carrier: ALL		
Program Results		
Minimum delay before: 2	Minimum delay after: 8	Total affected flights: 12
Average delay before: 27	Average delay after: 0	Total flights: 12
Maximum delay before: 53	Maximum delay after: 8	Stack value: 0
Total delay before: 331	Total delay after: 8	Stack AAR: 0
Report time: 1836		

Figure 18-3: GS CNX Coversheet

From the Purge Coversheet, click **Purge** to purge any control times from the ETMS system. Purge works the same as the **Autosend** function to send new operation parameters and cancellation messages to the Hub site for inclusion in the ADLs.

Note: The Hub site waits for a cancelled GS Advisory before sending the new parameters.

Finish the GS purge/cancellation by clicking **Advisory** to send a GS CNX Advisory.

Once you send both the Purge command and the GS Purge Advisory from the GS Purge Coversheet, it is important to wait for the Purge to appear in the next ADL before issuing the revised GS. View the airport in Monitored Live mode to ensure that the GS has been purged.

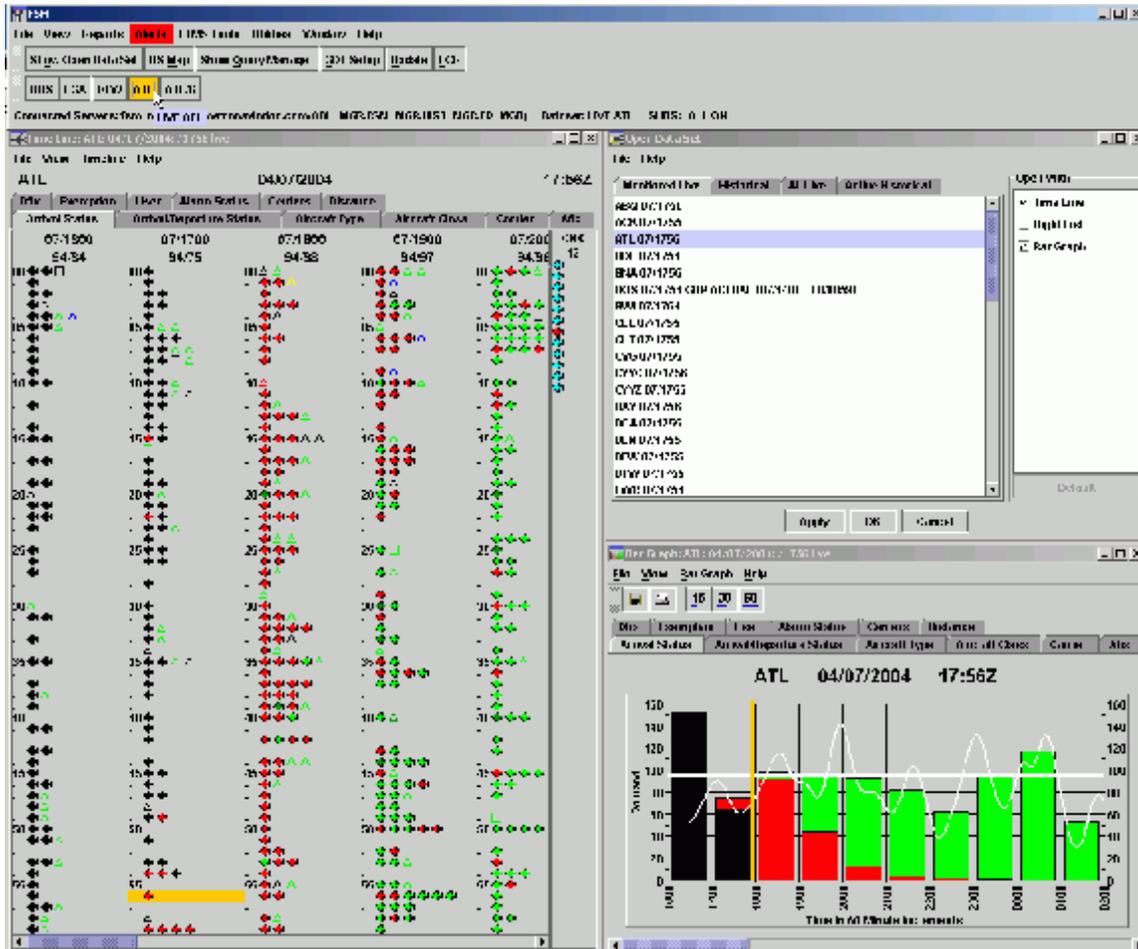


Figure 18-4: GDP Purged

Once the Purge appears in FSM, it is now safe to issue a GS Immediate with the reduced scope parameters in GDT Mode. Fill in the GS parameters as needed. Once you make the GS parameter inputs, click **Reload** or **Model** on the GDT Setup component to view the delay statistics for the new scenario and make adjustments if necessary. Once you are ready to issue the GS Immediate, click **Run** from the GDT Setup component to open the GS Immediate Coversheet. From the GS Immediate Coversheet, send both the **Autosend** and **Advisory** to implement the new GS. See Chapter 17 for more detail on how to issue a GS.

Extending a Ground Stop

To extend an existing GS, ensure the Ground Stopped airport you want to modify is active before clicking **GDT Setup** on the Control Panel component. This opens the four default GDT components for the selected airport. Select GS Immediate from the **Program Type** dropdown menu and then select **File > Load Actual Parameters > Ground Stop**, as shown in Figure 18-5.

After FSM loads the actual parameters, adjust the parameters and extend the GS Time as necessary. Click **Model** to view the Delay Statistics in the Data Graph and make any adjustments as needed.

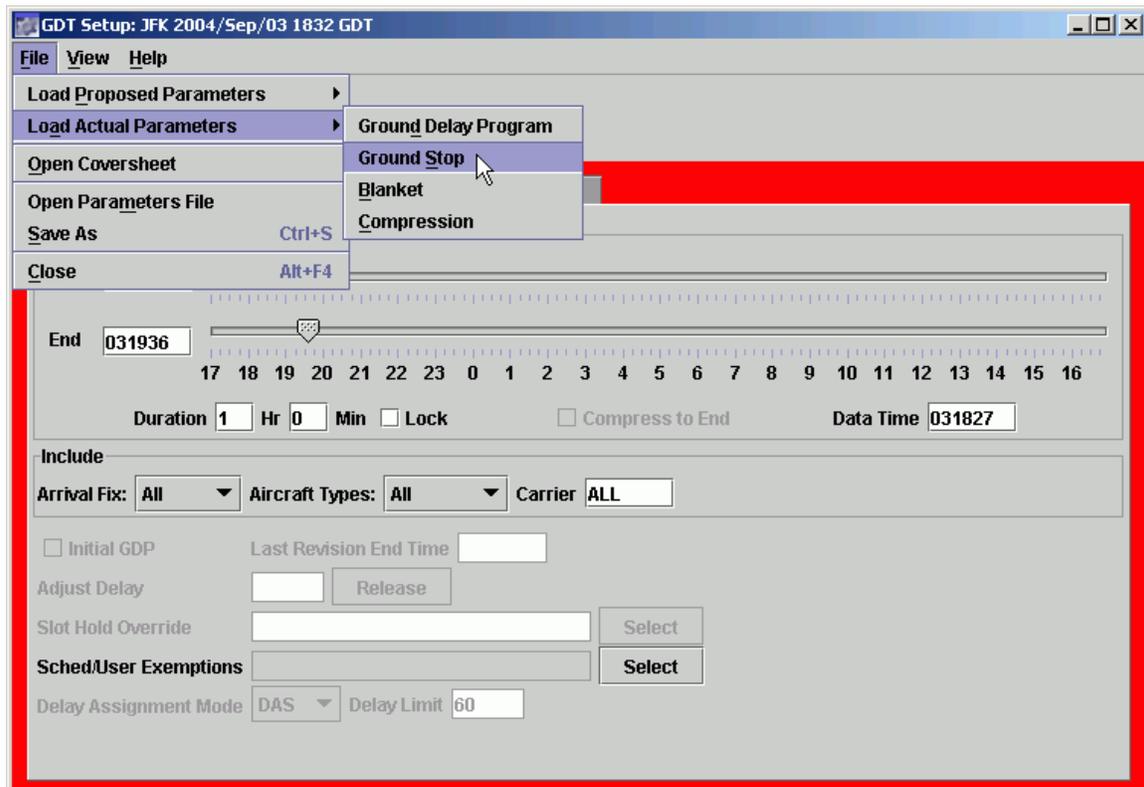


Figure 18-5: Load Actual Parameters > Ground Stop

Run the GS program once you modify the parameters and you are ready to implement the GS. Click **Run** on the GDT Setup component. This saves the parameters to a file specified in FSM's configuration file and opens a GS Coversheet. Clicking **Run** generates three reports:

- FADT report
- Analysis report
- Carrier Statistics report

You can view these reports by selecting **View > FADT**, **View>Analysis Report**, or **View>Carrier Statistics** from the Coversheet. You can also view the Carrier Statistics by selecting **Report > Carrier Statistics** from the main Control Panel component. For more information on these reports, see chapter 19: Understanding and Using FSM Reports.

GS Coversheet

The GS Coversheet contains all the operation's parameter data. Send the GS out from the GS Coversheet.

Program Results		
Minimum delay before: 2	Minimum delay after: 8	Total affected flights: 20
Average delay before: 16	Average delay after: 71	Total flights: 58
Maximum delay before: 53	Maximum delay after: 121	Stack value: 0
Total delay before: 331	Total delay after: 1431	Stack AAR: 0

Figure 18-6: GS Immediate Coversheet

Once you complete the GS Coversheet and checkmark all checkboxes, send out an **Autosend** and send a proposed Advisory if time permits (see Figure 18-6).

Suspend Airline Substitutions and Slot Credit Substitutions

Before sending a revised GS and after response time has expired from the proposed advisory, select **ETMS Tools > EDCT Commands > EDCT Sub OFF** from the Control Panel component to turn substitutions off. **Send GS**

On the GDT Setup component, select *Program Type* GS Immediate and select **File > Load Proposed Parameters > Ground Stop**. If proposed parameters are unavailable, load actual parameters and adjust as needed. Click **Model** then **Run** from the GDT Setup component to open the GS Immediate Coversheet. From the GS Immediate Coversheet, click **Autosend** to send the

FADT. Click **Advisory** on the GS Immediate Coversheet to open the Advisory window. Enter the reason for the GS revision and ensure that you select **Actual** before clicking **Send**. After you send both **Autosend** and an actual **Advisory**, close the Coversheet and return to view the airport in Monitored Live mode. See Chapter 17: Issuing a Ground Stop for more detail on how to issue a GS.

Moving from a GS to a GDP

When issuing a GDP at an airport that already has a GS in place, open GDT mode for the airport and select GDP RBS++ *Program Type*. Select **Exempt Flights by Departure Status** (rather than by Time) on the GDT Setup component's Tier/Dist tab. Exempting flights by departure status is necessary to capture flights affected by the GS.

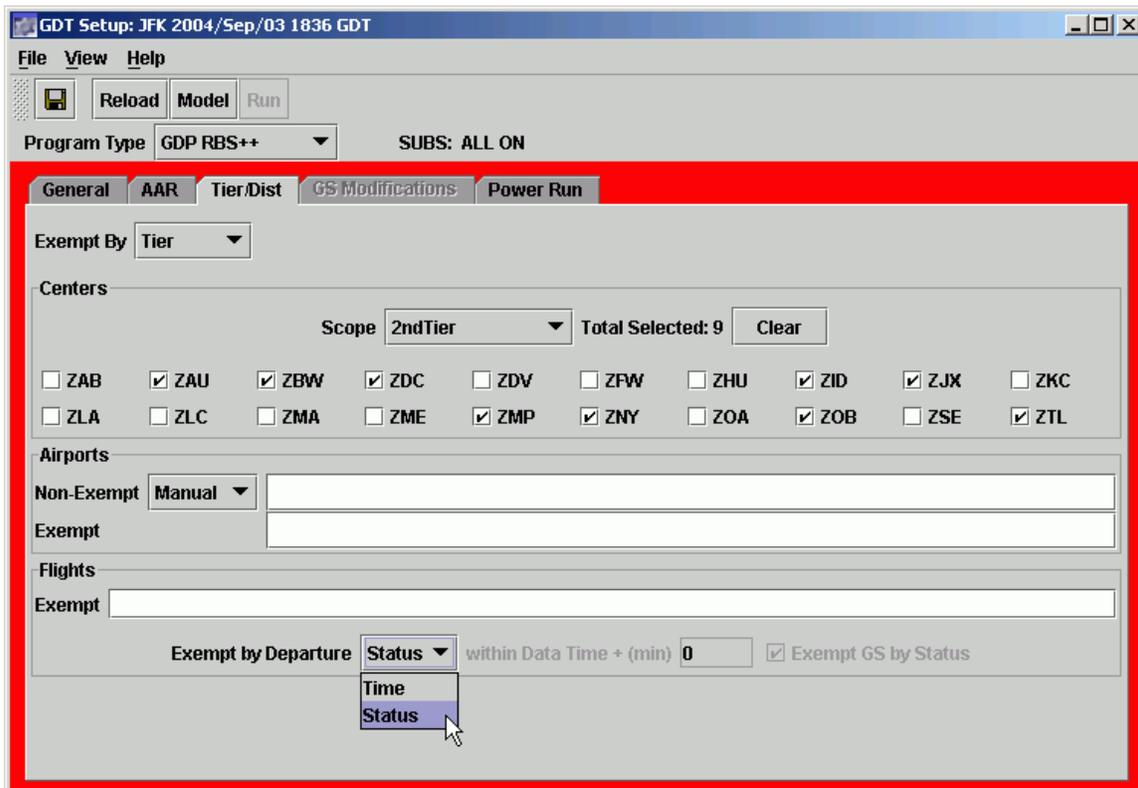


Figure 18-7: Tier/Dist Tab set up for moving from at GS to a GDP

Suspend Airline Substitutions and Slot Credit Substitutions

When moving from a GS to a GDP, you need to suspend, temporarily, the acceptance of airline substitutions and Slot Credit Substitutions (SCS) messages. From the FSM Control Panel, select the **ETMS Tools > ECDT Commands > EDCT Sub Off** option to turn substitutions off, as shown in Figure 18-8. Enter the three-character airport ID into the EDCT SubOff dialog box and click **Send** to suspend substitutions for that airport. Airlines' substitution or SCS messages are no longer accepted after FSM sends the SubOff message to ETMS.

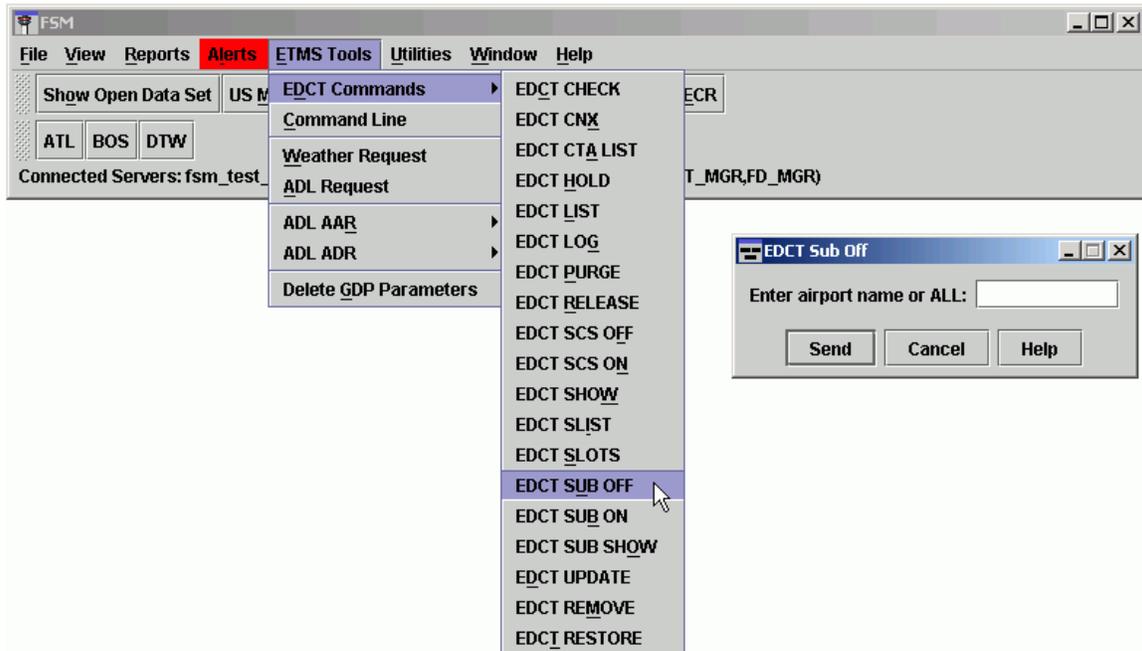


Figure 18-8: Turn Subs OFF

Issuing a GDP

Once you have determined the program parameters for an Actual GDP and you have turned off the substitutions, you must perform two steps to enact the program and send the parameters out through the ADL. Volpe does not send program parameters for an Actual program through the ADL until it receives both the program parameters (through an Advisory) and a matching FADT list (Autosend) with flight control times.

Click **Run** from the GDT Setup component to open the GDP Coversheet with the revised parameters. Send both the **Advisory** and **Autosend** from the Coversheet to implement the revision.

If SUBS are turned ON when you click Autosend from a coversheet during a compression, revision, or extension, you receive an FSM warning message that instructs you to “Turn SUBS OFF, reload and remodel the program...” (see Figure 18-9). Click **OK** to clear the FSM warning and then turn SUBS OFF before reloading and remodeling the program. Wait for SUBS OFF to be reflected successfully before clicking **Autosend** again.

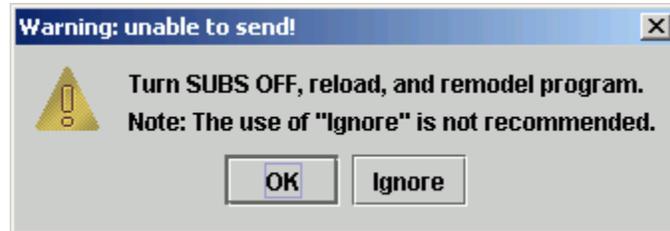


Figure 18-9: SUBS OFF Warning

Although it is recommended that you turn SUBS OFF during any revision, you can bypass the warning message by clicking **Ignore** from the message box. This clears the FSM warning. FSM automatically continues with the **Autosend** process even though SUBS are ON.

See Chapter 9 for more information on issuing a GDP.

19 Understanding and Using FSM Reports

FSM makes several different reports available to you. These reports give you information about counts, compliance, surface delay, priority flights, time out delay, time out cancel, slot hold, sub opportunities, slot list, analysis, FADT, and carrier statistics. You can use these reports to better understand how traffic reacts to programs that are in place and determine when to make adjustments to programs.

Counts Reports

Counts reports give you the option to check the flights that make up arrival and/or departure demand for each hour. You can open all Count Lists from the FSM Control Panel component. There are 8 count list reports:

- By Demand
- By Center
- By Aircraft Type
- By Aircraft Class
- By Arrival Fix
- By Departure Fix
- By User
- By Unassigned Slot

To view a demand count for a particular monitored airport, first select the airport to view the demand count that you want to view, and then select **Reports > Counts > [By report type]**. If you have not selected an airport, FSM displays an error message that indicates “No Current Data Set” is selected (see Figure 19-1).

DATE	TIME	ARRIVAL
18/2000	00 - 14	21
	15 - 29	21
	30 - 44	25
	45 - 59	25
	Total	92
	NRP	1

Figure 19-1: Count List By Demand

Note: Count Lists in GDT Mode only show counts for arriving flights.

Viewing the Count List

After selecting the type of demand count, a Count List window appears. The type of Count List appears in parentheses in the Count List window’s title bar. The three-letter airport code, Date,

ADL Time FSM generated the list, and display mode appear in the title bar as well as above the Count List columns.

FSM arranges each count list in 15-minute intervals with totals for each hour based on the FSM Time Line component. NRP (National Route Plans) counts appear below the total count for each hour. An NRP is a flight that files for a more direct route, but is considered to be a preferred route (as designated by the FAA). In Monitor Mode, counts appear based on a flight's ETA by FSM default. You can view Count Lists based on the Count List **Display** menu: by ETA, BETA, IGTA - Taxi, OCTA, CTA, EFTA, Departure, and Arrival/Departure, as shown in Figure 19-2.

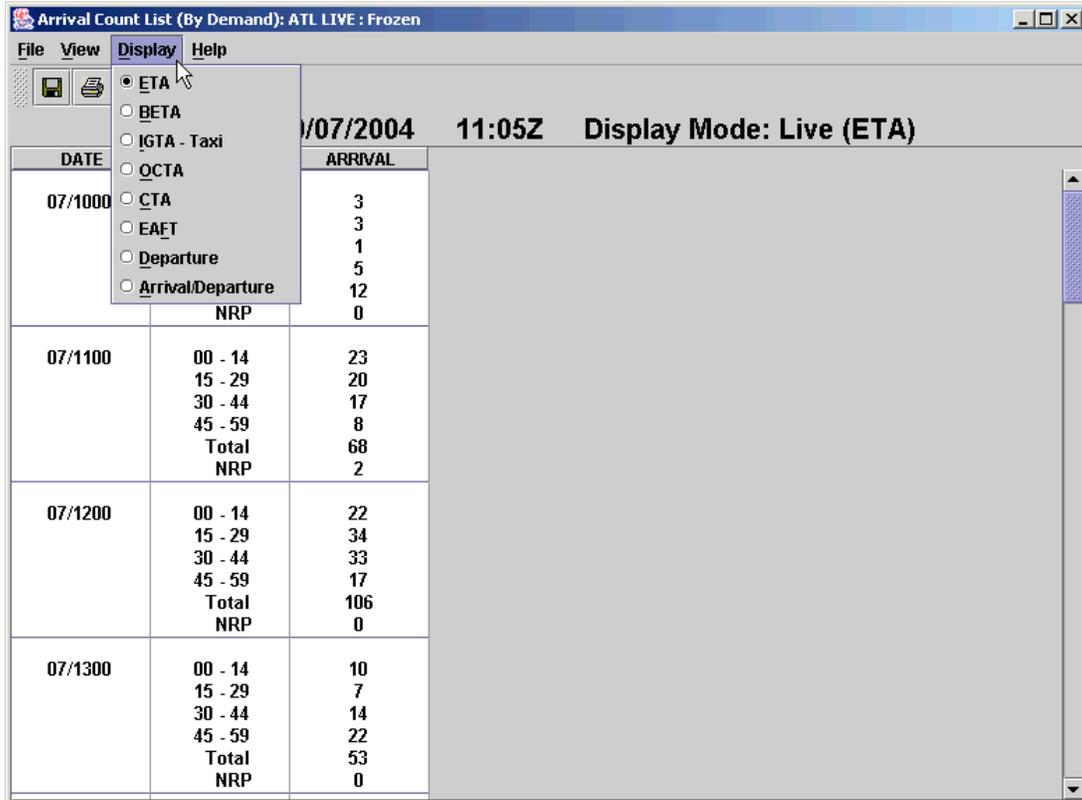


Figure 19-2: Count List Display Data

To increase the size of any Count List window, drag the edge of the window with your mouse. When the information contained in the window is too large for the window, you can scroll through the data.

Count List Menu

The Count Lists (with the exception of Departure Fix) each have four menus: File, View, Display and Help.

1. File Menu
 - **File > Save as** – Saves the Count List to a file so that you can open it later in a text file.
 - **File > Print** – Sends the Count List to a printer so that you can view a hard copy of the Count List.
 - **File > Close** – Closes and quits the Count List component without taking any action.

2. View Menu

- **View > Freeze Data** – Freezes the count list data at the time you select the option, otherwise the Count List updates with each new ADL.

3. Display Menu

- **Display > ETA** – Displays counts based on the flights' Estimated Time of Arrival.
- **Display > BETA** – Displays counts based on the flights' Beginning Estimated Wheel Time of Arrival.
- **Display > IGTA** – Taxi – Displays counts based on the flights' Initial Estimated Gate Time Arrival – Taxi.
- **Display > OCTA** – Displays counts based on the flights' Original Control Time of Arrival.
- **Display > CTA** – Displays counts based on the flights' Control Time of Arrival.
- **Display > EAFT** – Displays counts based on the flights' Estimated Fixed Time of Arrival.
- **Display > Departure** – Displays counts based on the Departure flights.
- **Display > Arrival/Departure** – Displays counts based on Arrival and Departure flights.

4. Help Menu

- **Help > Counts** – Accesses the web-based on-line help for the Count Lists.

Note: The Counts by Departure Fix and Counts by Unassigned Slots do not have a Display Menu.

Count List by Demand

The By Demand Count List displays arrival demand in 15-minute interval flight counts and totals the flight count for each hour. You can use this report to perform a quick check of the arrival demands in each hour (see Figure 19-3).

DATE	ARRIVAL	NRP
07/1000	1 2 4 12 19	0
07/1100	00 - 14: 25 15 - 29: 21 30 - 44: 7 45 - 59: 6 Total: 59 NRP: 2	
07/1200	00 - 14: 10 15 - 29: 39 30 - 44: 25 45 - 59: 27 Total: 101 NRP: 0	
07/1300	00 - 14: 16 15 - 29: 12 30 - 44: 9 45 - 59: 18 Total: 55 NRP: 0	

Figure 19-3: Counts by Demand

Counts by Centers

The By Centers Count List provides flight counts according to departure centers. There are 20 centers for this particular display (Figure 19-4). If the three-letters “ZZZ” appear, they represent any center that is not part of the other 20. Again, in Monitored Live mode, FSM bases these counts on flights’ ETA times as displayed in the FSM Time Line.

Time Bin	U	P	T	J	U	Total	NRP
16:1900							
00-14	0	2	1	1	0	1	0
15-29	0	0	0	0	0	2	0
30-44	0	1	0	1	0	2	0
45-59	0	0	0	0	1	1	0
Total	0	3	1	2	0	6	0
NRP	0	0	0	0	0	0	0
16:2000							
00-14	0	1	2	2	0	0	0
15-29	0	0	2	2	1	0	0
30-44	0	1	1	0	0	2	1
45-59	0	2	0	1	0	0	0
Total	0	4	5	5	1	0	6
NRP	0	0	0	0	0	0	0
16:2100							
00-14	0	1	0	0	1	0	0
15-29	0	0	1	0	0	0	0
30-44	0	0	0	2	1	1	0
45-59	0	2	0	1	0	0	0
Total	0	3	1	3	1	2	0
NRP	0	0	0	0	0	0	0
16:2200							
00-14	0	0	1	0	1	0	0
15-29	0	0	0	0	0	2	0
30-44	1	0	1	0	0	2	1
45-59	0	2	1	1	0	2	0
Total	1	2	2	1	2	6	2
NRP	0	0	0	0	0	0	0
16:2300							
00-14	0	4	0	2	1	0	0
15-29	1	2	0	0	0	0	0
30-44	0	0	0	0	0	0	0
45-59	0	0	0	3	0	0	0
Total	1	6	0	5	1	0	3
NRP	0	0	0	0	0	0	0
17:0000							
00-14	0	2	0	0	0	0	0
15-29	0	2	0	3	0	0	2
30-44	0	2	1	2	0	1	0
45-59	0	3	1	0	0	0	3
Total	0	9	4	5	0	3	5
NRP	0	0	0	0	0	0	0
17:0100							
00-14	0	2	0	0	0	0	0
15-29	0	0	1	1	0	0	0
30-44	0	0	0	1	0	0	0
45-59	0	0	0	1	0	0	0
Total	0	2	1	2	0	0	0
NRP	0	0	0	0	0	0	0

Figure 19-4: Counts by Centers

Counts by Aircraft Type

The By Aircraft Type Count List displays a count list based on the aircraft type. FSM classifies Aircraft Types according to the aircraft type as specified by the manufacturer (Propeller, Turbo, Jet, and Unknown).

The Count List By Aircraft Type report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins
- Aircraft Types (P, T, J, U)
- Total – Total types for each time bin, hour, and NRP

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of types in each hour
- NRP count

DATE	TIME	P	T	J	U	TOTAL
07/1000	00 - 14	0	0	3	0	3
	15 - 29	0	0	3	0	3
	30 - 44	0	0	1	0	1
	45 - 59	0	0	5	0	5
	Total	0	0	12	0	12
	NRP	0	0	0	0	0
07/1100	00 - 14	0	0	18	0	18
	15 - 29	0	1	22	0	23
	30 - 44	0	1	13	0	14
	45 - 59	0	1	8	0	9
	Total	0	3	61	0	64
	NRP	0	0	2	0	2
07/1200	00 - 14	0	1	19	0	20
	15 - 29	0	0	22	0	22
	30 - 44	0	0	24	0	24
	45 - 59	0	1	22	0	23
	Total	0	2	87	0	89
	NRP	0	0	0	0	0
07/1300	00 - 14	0	0	17	0	17
	15 - 29	0	1	9	0	10
	30 - 44	0	0	23	0	23
	45 - 59	0	0	23	0	23
	Total	0	1	72	0	73
	NRP	0	0	0	0	0

Figure 19-5: Counts by Aircraft Type

Counts by Aircraft Class

The By Aircraft Class Count List provides flight counts according to the aircraft weight. This Count List incorporates the following classifications for aircraft weight: Small, Large, Heavy, and Unknown.

The Count List By Aircraft Class report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins
- Aircraft Classes (S, L, H, U)
- Total – Total classes for each time bin, hour, and NRP

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of types in each hour
- NRP count

DATE	TIME	S	L	H	U	TOTAL
07/1000	00 - 14	1	1	1	0	3
	15 - 29	0	0	0	0	0
	30 - 44	3	1	0	0	4
	45 - 59	2	7	0	0	9
	Total	6	9	1	0	16
	NRP	0	4	0	0	4
07/1100	00 - 14	3	7	0	0	10
	15 - 29	1	4	0	0	5
	30 - 44	1	5	0	0	6
	45 - 59	1	9	0	0	10
	Total	6	25	0	0	31
	NRP	0	0	0	0	0
07/1200	00 - 14	1	11	1	0	13
	15 - 29	5	9	0	0	14
	30 - 44	1	2	1	0	4
	45 - 59	1	2	0	0	3
	Total	8	24	2	0	34
	NRP	0	0	0	0	0
07/1300	00 - 14	0	0	0	1	1
	15 - 29	0	2	0	0	2
	30 - 44	0	3	0	0	3
	45 - 59	0	2	0	0	2
	Total	0	7	0	1	8
	NRP	0	0	0	0	0

Figure 19-6: Counts by Aircraft Class

Counts by Arrival Fix

The By Arrival Fix Count List provides flight counts according to the arrival fix each flight is arriving at for the monitored airport. Arrival fix names for each airport vary. FSM automatically generates the correct Arrival Fix names for the monitored airports and uses them in the Count List headings.

The Count List By Arrival Fix report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins
- Arrival Fixes
- Total – Total fixes for each time bin, hour, and NRP

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of fixes in each hour
- NRP count

Figure 19-7: Counts by Arrival Fix

Counts by Departure Fix

The By Departure Fix Count List provides flight counts according to the departure fix each flight is arriving at for the monitored airport. Departure fix names for each airport vary. FSM automatically generates the top 11 departure fixes for the monitored airport and uses them in the Count List headings. If the departure fix is other than these 11 or is unknown, the flight appears under the “Other” column.

The Count List By Departure Fix report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins
- Departure Fixes
- Total – Total fixes for each time bin, hour, and NRP

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of fixes in each hour
- NRP count

DATE	TIME	BAF	BETTE	BOSOX	GLYDE	GREKI	HAPIE	LUCOS	MARES	MERIT	MHT	NELIE
07/1000	00 - 14	0	0	2	3	0	0	3	0	0	1	0
	15 - 29	0	0	1	3	0	0	0	0	0	3	0
	30 - 44	0	0	1	1	0	0	5	0	0	3	0
	45 - 59	0	0	2	3	0	0	1	0	0	0	0
	Total	0	0	6	10	0	0	9	0	0	7	0
	NRP	0	0	0	3	0	0	1	0	0	1	0
07/1100	00 - 14	0	0	1	2	0	0	5	0	0	2	0
	15 - 29	2	0	6	1	0	0	5	0	0	3	0
	30 - 44	0	0	2	1	0	0	3	0	0	2	0
	45 - 59	1	0	3	3	0	0	1	0	0	0	0
	Total	3	0	12	7	0	0	14	0	0	7	0
	NRP	0	0	0	2	0	0	0	0	0	1	0
07/1200	00 - 14	1	0	1	2	0	0	4	0	0	2	0
	15 - 29	0	0	1	5	0	0	8	0	0	6	0
	30 - 44	1	0	0	3	0	0	7	0	0	3	0
	45 - 59	0	0	3	2	0	0	2	0	0	2	0
	Total	2	0	5	12	0	0	21	0	0	13	0
	NRP	0	0	0	4	0	0	0	0	0	2	0
07/1300	00 - 14	1	0	2	1	0	0	4	0	0	2	0
	15 - 29	1	0	2	1	0	0	5	0	0	4	0
	30 - 44	1	0	1	3	0	0	1	0	0	1	0
	45 - 59	1	0	2	3	0	0	2	0	0	3	0
	Total	4	0	7	8	0	0	12	0	0	10	0
	NRP	0	0	0	4	0	0	0	0	0	0	0

Figure 19-8: Counts by Departure Fix

Counts by User

The Arrival Count List By User provides a flight count according to the classification of the aircraft (Figure 19-9). The Arrival Count List by User classifies flights according to their function in the NAS. There are 7 types of users in FSM:

- C – Air Carriers
- T – Air Taxi
- F – Freight/Cargo Carriers
- M – Military
- G – General Aviation
- O – Other – This class includes flights that do not belong to one of the five categories listed above.
- U – Unknown – This category is for flights which may fall into a user category, but the classification of which is not known in FSM

CVG 03/16/2004 20:57Z Display Mode: Live (ETA)									
DATE	TIME	F	C	G	M	T	O	U	TOTAL
16/1900	00 - 14	0	1	0	0	10	0	0	11
	15 - 29	0	3	0	0	12	0	0	15
	30 - 44	0	3	0	0	8	0	0	11
	45 - 59	0	2	0	0	5	0	0	7
	Total	0	9	0	0	35	0	0	44
	NRP	0	2	0	0	0	0	0	2
16/2000	00 - 14	0	5	0	0	9	0	0	14
	15 - 29	0	5	1	0	6	0	0	12
	30 - 44	0	1	0	0	7	1	0	9
	45 - 59	0	2	0	0	11	0	0	13
	Total	0	13	1	0	33	1	0	48
	NRP	0	1	0	0	0	0	0	1
16/2100	00 - 14	0	4	0	0	2	0	0	6
	15 - 29	0	0	1	0	3	0	0	4
	30 - 44	0	0	0	0	9	0	0	9
	45 - 59	0	0	0	0	6	0	0	6
	Total	0	4	1	0	20	0	0	25
	NRP	0	1	0	0	0	0	0	1
16/2200	00 - 14	0	1	0	0	11	0	0	12
	15 - 29	0	1	1	0	4	0	0	6
	30 - 44	1	8	0	0	3	0	0	12
	45 - 59	0	11	0	0	13	0	0	24
	Total	1	21	1	0	31	0	0	54
	NRP	0	4	0	0	0	0	0	4
16/2300	00 - 14	0	7	0	0	18	0	0	25
	15 - 29	0	1	1	0	4	0	0	6
	30 - 44	0	2	0	0	2	0	0	4
	45 - 59	0	1	0	0	9	0	0	10
	Total	0	11	1	0	33	0	0	45
	NRP	0	0	0	0	0	0	0	0

Figure 19-9: Counts by User

The Count List By User report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins
- Users – F, C, G, M, T, O, U
- Total – Total fixes for each time bin, hour, and NRP

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of Users in each hour
- NRP count

By Unassigned Slot

The unassigned slot report is very similar to the count list report. The title bar for the report shows the report icon, and “Count List (Unassigned Slot): [three letter airport identifier] [ADL

Date YYYY/MMM/DD/] [ADL Time HH:MMZ] [Mode: Live/Hist] : [Frozen (if you select it)]".
 The report does not have a Display menu item.

The Count List By Unassigned Slot report contains the following information:

- Date – ADL day and time
- Time – 15 minute time bins and Total
- Unassigned Slots – number of unassigned slots per time bin

The data are arranged in the following manner:

- Block for each hour in the ADL
- Counts by each 15 min bin
- Sum of slots in each hour – Total number of Unassigned slots for the hour.

DATE	TIME	UNASSIGNED SLOTS
07/1000	00 - 14	0
	15 - 29	0
	30 - 44	0
	45 - 59	0
	Total	0
07/1100	00 - 14	0
	15 - 29	0
	30 - 44	0
	45 - 59	0
	Total	0
07/1200	00 - 14	0
	15 - 29	0
	30 - 44	0
	45 - 59	0
	Total	0
07/1300	00 - 14	0
	15 - 29	0
	30 - 44	0
	45 - 59	0
	Total	0

Figure 19-10: Count List (By Unassigned Slot) Report

Compliance Flight Lists

When any flight becomes noncompliant, FSM generates a flight list that includes these flights. You can access the compliance reports from the **Reports > Compliance > [Report Name]** option from the Control Panel component. There are five possible compliance reports:

- By CTD
- By ETE
- By CTA

- Spurious Flight
- Cancelled That Flew Compliance

For example, if you select **Reports > Compliance > By CTA**, all flights that have noncompliant CTAs appear with the FltAlarm CC checkboxes checked. This report also contains non-compliant alarm columns. If the flight has additional alarms (non-compliant) associated with it, those alarm checkboxes also appear checkmarked. Figure 19-11 is an example of CTA Compliance Alarm Flight List.

Note: Alarm Flight Lists include only those flights arriving at the selected airport.

	AC	ID	Major	ORIG	DFST	FTD	FTA	ARTD	ARTA	CTE
1	HAI	454	HAI	ORD	ATI	A19:1721	A19:1847	19:1721	19:1847	<input type="checkbox"/>
2	DAL	1229	DAL	PHO	ORD	A19:1817	A19:1951	19:1817	19:1951	<input type="checkbox"/>
3	TRS	273	TRS	DOS	ATL	A19:1653	A19:1904	19:1653	19:1904	<input type="checkbox"/>
4	IRS	629	IRS	FWH	All	A19:1643	A19:1831	19:1643	19:1831	<input type="checkbox"/>
5	TRS	209	TRS	CAK	ATL	A19:1717	A19:1931	19:1717	19:1931	<input type="checkbox"/>
6	TRS	9234	TRS	FWH	ATI	A19:1744	A19:1911	19:1744	19:1911	<input type="checkbox"/>
7	IRS	931	IRS	JAX	ATL	A19:1817	A19:1936	19:1817	19:1936	<input type="checkbox"/>
8	TRS	559	TRS	DUF	ATL	A19:1712	A19:1952	19:1712	19:1952	<input type="checkbox"/>
9	IRS	118	IRS	PHI	All	A19:1719	A19:1856	19:1719	19:1856	<input type="checkbox"/>
10	TRS	160	TRS	RSW	ATL	A19:1723	A19:1944	19:1723	19:1944	<input type="checkbox"/>
11	TRS	180	TRS	DCA	ATI	A19:1721	A19:1842	19:1721	19:1842	<input type="checkbox"/>
12	IRS	81	IRS	HLL	ATL	A19:1721	A19:1818	19:1721	19:1818	<input type="checkbox"/>
13	TRS	705	TRS	DAY	ATL	A19:1830	A19:1949	19:1830	19:1949	<input type="checkbox"/>
14	IRS	829	IRS	MWV	All	A19:1720	A19:1846	19:1720	19:1846	<input type="checkbox"/>
15	TRS	055	TRS	MSP	ATL	A19:1716	A19:1912	19:1716	19:1912	<input type="checkbox"/>
16	NWA	1428	NWA	MSP	ATI	A19:1857	A19:1953	19:1857	19:1953	<input type="checkbox"/>
17	N	71/NC	Other	BJJ	ATL	A19:1817	A19:1850	19:1817	19:1850	<input type="checkbox"/>
18	N	2020T	Other	DIA	ATI	A19:1901	A19:1937	19:1901	19:1937	<input type="checkbox"/>
19	JIA	2111	JISA	PHI	All	A19:1718	A19:1817	19:1718	19:1817	<input type="checkbox"/>
20	DAL	1574	DAL	RSW	ATL	A19:1827	A19:1952	19:1827	19:1952	<input type="checkbox"/>
21	DAI	830	DAI	SFO	ATI	A19:1820	A19:1925	19:1820	19:1925	<input type="checkbox"/>
22	DAL	908	DAL	KJC	ATL	A19:1857	A19:1816	19:1857	19:1816	<input type="checkbox"/>
23	DAL	350	DAL	MSY	ATL	A19:1826	A19:1934	19:1826	19:1934	<input type="checkbox"/>
24	DAI	1571	DAI	CAH	All	A19:1818	A19:1951	19:1818	19:1951	<input type="checkbox"/>
25	DAI	973	DAL	MSY	ATL	A19:1659	A19:1902	19:1659	19:1902	<input type="checkbox"/>
26	DAI	914	DAI	CLF	ATI	A19:1858	A19:1819	19:1858	19:1819	<input type="checkbox"/>
27	DAL	311	DAL	MCO	ATL	A19:1819	A19:1924	19:1819	19:1924	<input type="checkbox"/>
28	DAL	615	DAL	LGA	ATL	A19:1623	A19:1909	19:1623	19:1909	<input type="checkbox"/>

Figure 19-11: CTA Compliance Alarm Report

To view the Compliance alarm columns on the generated report, select the alarms from the Add/Remove Columns window. If a flight is non-compliant, the checkbox under the Alarm type is selected. The Compliance Alarm columns are defined below:

1. **CC** – These flights violated their CTA Compliance. Flights arriving more than 5 minutes before or more than 5 minutes after their Control Time of Arrival (CTA).
2. **EC** – These flights violated their CTD Compliance. The departure boundaries are more than 5 minutes before or more than 5 minutes after their estimated departure clearance time. Any flight, which has an ARTD of 5 minutes earlier or 5 minutes later than the most recent EDCT, appears in the CTD Compliance report.
3. **EA** – These flights violated the Actual ETE vs. Original ETE alarm. FSM generates this Alarm when the difference between the ETE estimated by ETMS and actual flight time is

greater than a specified value, but the flight status is not “cancelled.” The default value is 15 minutes. ETMS estimates ETE using OCTA - OCTD. ETMS calculates actual flight time using ARTA -ARTD.

4. **SF** - This alarm detects the cancellation of a false flight used to ignite a substitution stream. Flights submitted as SI cancellations with no corresponding entries in the OAG trigger the Spurious Flights Alarm.
5. **CF** – This alarm detects any flights that were cancelled but later flew without the flight being reinstated properly.

The By CTD Compliance Report

The By CTD Compliance report checks for flights which violate departure compliance in a delay program. The default departure boundaries are more than 5 minutes before or more than 5 minutes after their estimated departure clearance time. Any flight that has an ARTD of 5 minutes earlier or 5 minutes later than the most recent OrigEDCT is included in the By CTD Compliance report, as shown in Figure 19-12.

AIR	OR	ORIG	DEST	FID	FIR	JHEID	JHEIR	CTD	CDR	ARTD	CTD
1 USA	1439	CLT	ATL	003:1240	003:1330	03:1240	-	03:1242	03:1335		6
2 DNL	305	ONT	ATL	003:1251	003:1414	03:1251		03:1257	03:1433		6
3 DNL	1085	MKE	ATL	003:1250	003:1436	03:1250		03:1254	03:1440		7
4 DNL	621	DTW	ATL	003:1301	003:1443	03:1301		03:1254	03:1451		10
5 MCP	121	MKE	ATL	003:1305	003:1443	03:1305		03:1256	03:1455		9
6 CAA	216	CIA	ATL	003:1302	003:1335	03:1302		03:1250	03:1330		12
7 DNL	633	FDU	ATL	003:1303	003:1401	03:1303		03:1256	03:1400		7
8 DNL	1450	PHL	ATL	003:1302	003:1411	03:1302		03:1308	03:1501		6
9 DNL	1640	LIT	ATL	003:1251	003:1402	03:1251		03:1248	03:1407		6
10 MWA	1128	MSP	ATL	003:1250	003:1452	03:1250		03:1249	03:1458		7
11 M	121LC	MCO	ATL	003:1251	003:1502	03:1251		03:1244	03:1503		10
12 DNL	1236	SRQ	ATL	003:1250	003:1403	03:1250		03:1244	03:1406		6
13 CCA	518	CVV	ATL	003:1251	003:1445	03:1251		03:1246	03:1452		8

Figure 19-12: CTD Compliance

The By ETE Compliance Report

The By ETE Compliance report compares the Actual ETE vs. Original ETE. FSM includes flights in the *By ETE* Compliance report when the difference between the ETE estimated by ETMS and actual flight time is greater than a specified value, but the flight status is not “cancelled.” The default value is 15 minutes. ETMS estimates ETE using OCTA - OCTD. ETMS calculates actual flight time using ARTA - ARTD. The actual flight time format is very similar to Figure 19-12.

The By CTA Compliance Report

The By CTA Compliance reports check for flights which violate arrival compliance in a delay program. By default, flights that violate arrival compliance are defined as those flights arriving more than 5 minutes before or more than 5 minutes after their Control Time of Arrival. If ETMS detects any of the specified conditions, the flight is included in the By CTA Compliance Flight List, as shown in Figure 19-13.

	AC	ID	ORIG	DEST	ETD	ETA	ARTP	ARTA	CTD	CTA	ARTA CTA
1	NWA	471	DTW	ATL	03/11/11	03/11/11	03:11:21	03:11:30	03/11/11	03:11:30	
2	CAA	114	FWA	ATL	03/11/11	03/11/11	03:11:15	03:11:16	03/11/11	03:11:14	
3	CAA	125	MGM	ATL	03/11/11	03/11/11	03:11:27	03:11:10	03/11/11	03:11:24	
4	DAL	1737	DTW	ATL	03/11/11	03/11/11	03:11:17	03:11:13	03/11/11	03:11:18	
5	CAA	270	PTN	ATL	03/11/11	03/11/11	03:11:11	03:11:17	03/11/11	03:11:30	
6	CAA	843	MDA	ATL	03/11/11	03/11/11	03:11:18	03:11:18	03/11/11	03:11:08	
7	CAA	118	SRH	ATL	03/11/11	03/11/11	03:11:51	03:11:22	03/11/11	03:11:05	
8	IRS	305	LGA	ATL	03/11/11	03/11/11	03:11:13	03:11:15	03/11/11	03:11:22	
9	DAL	1056	PHX	ATL	03/11/11	03/11/11	03:11:17	03:11:07	03/11/11	03:11:04	
10	DAL	255	CAC	ATL	03/11/11	03/11/11	03:11:56	03:11:26	03/11/11	03:11:11	
11	DAL	1548	IAH	ATL	03/11/11	03/11/11	03:11:44	03:11:28	03/11/11	03:11:38	
12	DAI	751	MSF	ATL	03/11/11	03/11/11	03:11:40	03:11:21	03/11/11	03:11:04	
13	DAI	401	MDW	ATL	03/11/11	03/11/11	03:11:14	03:11:19	03/11/11	03:11:13	
14	DAL	1166	RSW	ATL	03/11/11	03/11/11	03:11:12	03:11:09	03/11/11	03:11:17	
15	PCC	3529	MOD	ATL	03/11/11	03/11/11	03:11:25	03:11:21	03/11/11	03:11:00	

Total flights: 17

Figure 19-13: CTA Compliance

The Spurious Flight Compliance Report

The Spurious Flight Compliance report detects the cancellation of false flights used to ignite a substitution stream. Flights submitted as FX cancellations with no corresponding entries in the OAG are included in the Spurious Flight List.

The Cancel But Flew Compliance Report

The Cancel But Flew Compliance report included any flight that was cancelled and later flew.

Surface Delay Report

The Surface Delay Report indicates the ground delay imposed on flights and contains departure information for both arriving and departing flights. To view a Surface Delay Report, select the monitored airport for which you want to view the report and then select **Reports > Surface Delay** from the FSM Control Panel component.

	AC	ID	Major	ORG	DEST	DCENTER	AGENCY	EID	DEID
1	USA	277	USA	CLT	ATL	ZTL	ZTL	14	L192216
2	USA	1209	USA	CLT	ATL	ZTL	ZTL	116	S200505
3	USA	1205	USA	PHL	ATL	ZNY	ZTL	131	S200313
4	USA	1415	USA	CLT	ATL	ZTL	ZTL	99	L200044
5	UPS	321	UPS	JAX	ATL	ZDX	ZTL	117	L200452
6	UAL	1124	UAL	ORD	ATL	ZAU	ZTL	74	L200432
7	HAJ	566	HAJ	ORD	ATL	ZAU	ZTL	125	L200200
8	UAL	1110	UAL	ORD	ATL	ZAU	ZTL	80	L192314
9	HAJ	250	HAJ	ORD	ATL	ZAU	ZTL	133	L200317
10	UAL	148	UAL	DCN	ATL	ZDW	ZTL	123	L200058
11	UAL	464	UAL	ORD	ATL	ZAU	ZTL	3	A191221
12	UAL	136	UAL	DCN	ATL	ZDW	ZTL	8	A191046
13	UAL	540	UAL	DCN	ATL	ZDW	ZTL	1	A191233
14	UAL	242	UAL	ORD	ATL	ZAU	ZTL	27	L192013
15	TRS	273	TRS	DO5	ATL	ZDW	ZTL	1	A191653
16	IRN	323	IRN	LGA	ATL	ZNY	ZTL	118	L200306
17	TRS	575	TRS	CMH	ATL	ZNY	ZTL	0	A191643
18	TRS	470	TRS	FWI	ATL	ZDC	ZTL	138	L200330
19	TRS	102	TRS	DTW	ATL	ZNY	ZTL	72	L192220
20	TRS	97	TRS	FWI	ATL	ZDC	ZTL	115	L200157
21	TRS	366	TRS	LGA	ATL	ZNY	ZTL	15	A191057
22	TRS	325	TRS	PHL	ATL	ZNY	ZTL	136	L200116
23	TRS	178	TRS	NSW	ATL	ZNA	ZTL	138	L200302
24	TRS	1720	TRS	MEM	ATL	ZNC	ZTL	107	L200149
25	IRN	571	IRN	FWI	ATL	ZNY	ZTL	1	A191006
26	TRS	603	TRS	MKC	ATL	ZAU	ZTL	29	A191930
27	IRN	1511	IRN	JAX	ATL	ZDX	ZTL	181	L192226
28	TRS	063	TRS	MSP	ATL	ZMP	ZTL	139	L200312
29	TRS	363	TRS	PHL	ATL	ZNY	ZTL	135	L200301

Figure 19-14: Surface Delay Report

The displayed information defaults to arrival data. To view departure data select **View > Departure Data**. The Surface Delay Report then displays both arrival and departure data. To alternate information in the report you can check or uncheck the arrival or departure boxes.

Surface Delay Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign

- Help
 - Surface Delay – General information about this report

Priority Flight Report

This report identifies "priority" flights. It is similar to a Flight List, but only lists those flights tagged as Lifeguard (LFG) or Diversion Recovery (DVT) flights. To view a Priority Flight Report, select the monitored airport for which you want to view the report and then select **Reports > Priority Flights** from the Control Panel component. Any flights that have the LFG or DVT checkboxes marked appear on the Priority Report.

Priority Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign
- Help
 - Priority – General information about this report

	AC	ID	ORIG	DEST	DCENTR	ACENTR	ETD	ETA	SGTD	SG
1	PCJ	43	SJC	ABQ	ZOA	ZAB	P24/1815	E24/2020	-	-
2	LN	21NM	SVC	ABQ	ZAB	ZAB	P24/1457	E24/1550	-	-

Total flights: 2

Figure 19-15: Priority Report

Time Out Delay Report

The Time Out Delay Report provides a quick picture of flights that are contributing to the Time Out delay problem. The report is in the same format as FSM Flight Lists and includes all flights with a delay status of 'TOD'. To view the Time Out Delay report, select an airport being monitored and then select **Reports > Time out Delay** from the FSM Control Panel component. The Time Out Delay report flight list shows all flights that have triggered the TOD alarm with the TOD checkbox selected (see Figure 19-16).

Time Out Delay Report: ATL: 03/19/2004: /1950 GDI

File View Flight List Help

	AC	ID	Major	ORIG	DEST	TOD	EID	EIA	SGID	SGI
1	AAE	610	AAE	PHX	ATL	✓	A1901800	E1902116	1901717	1902060
2	CAA	736	CAA	ICT	ATL	✓	A1901001	A1901940	1901746	1901959
3	CAA	121	CAA	ILH	ATL	✓	A1901907	E1902026	1901800	1901942
4	CAA	206	CAA	HSV	ATL	✓	A1901951	E1902034	1901905	1902010
5	CAH	9402	CAH	CVG	ATL	✓	A1901955	E1902184	-	-
6	DAL	9012	DAL	MGM	ATL	✓	A1901954	E1902024	-	-
7	DAI	207	DAI	SFA	ATI	✓	A1901520	A1901018	1901500	1901939
8	DAL	200	DAL	MCGT	ATL	✓	E1901604	A1901054	1901535	1901956
9	DAI	1678	DAI	PHX	ATI	✓	A1901638	E1902038	1901620	1902054
10	DAL	56	DAL	HJAA	ATL	✓	E1901808	E1902000	1901745	1902010
11	DAL	100	DAL	LEMD	ATL	✓	E1901934	E1902009	1901930	1902036
12	DAL	632	DAL	SFO	ATL	✓	A1901620	A1901826	1901500	1901920
13	DAL	290	DAL	SKDO	ATL	✓	E1901424	A1901052	1901445	1901910
14	DAL	361	DAL	MCI	ATL	✓	A1901809	A1901946	1901759	1901960
15	DAL	39	DAL	CIAM	ATL	✓	A1900932	A1901023	1900945	1901950
16	DAI	22	DAI	HDF	ATI	✓	A1900105	A1901805	1901846	1901880
17	DAL	125	DAL	ODOR	ATL	✓	E1900946	A1901945	1900925	1901929
18	DAI	178	DAI	LAM	ATI	✓	A1901635	E1902019	1901846	1902027
19	DAL	65	DAL	EGCC	ATL	✓	A1901150	E1902033	1901120	1902036
20	DAI	120	DAI	FINN	ATI	✓	A1901155	E1902029	1901900	1902040
21	DAL	231	DAL	LAX	ATL	✓	A1901909	E1902219	1901808	1902240
22	DAL	131	DAL	EDDM	ATL	✓	A1900950	E1901956	1900940	1902026
23	DAL	180	DAL	LAS	ATL	✓	A1901741	E1902107	1901700	1902110
24	DAL	1966	DAL	SAN	ATL	✓	A1901536	A1901909	1901525	1901921
25	DAI	261	DAI	XHR	ATI	✓	A1901814	E1902156	1901746	1902140
26	DAL	102	DAL	MWCR	ATL	✓	E1901928	E1902150	1901910	1902152
27	DAI	258	DAI	MCI	ATI	✓	A1901641	A1901846	1901624	1901841
28	DAL	394	DAL	ORF	ATL	✓	A1901630	E1902043	1901630	1902059
29	DAI	365	DAI	PHX	ATI	✓	A1901636	E1902046	1901630	1902060

48 Flights:

Figure 19-16: Time Out Delay (TOD) Report Flight List

The displayed information defaults to arrival data. To view departure data, select **View > Departure Data**.

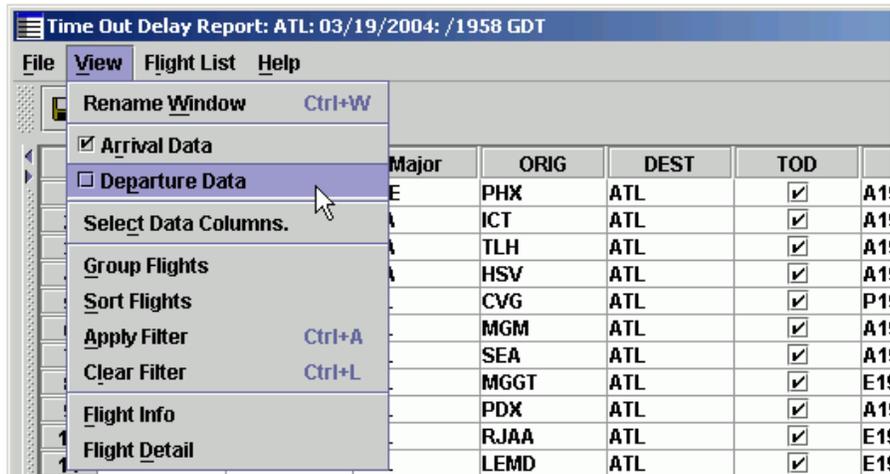


Figure 19-17: TOD Delay Report with Departure Data

The Time Out Delay report displays both arrival and departure data. To alternate information in the report you can check or uncheck the arrival or departure boxes.

Time Out Delay Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign
- Help
 - Time Out – General information about this report

Time Out Cancel Report

The Time Out Cancel Report provides a quick picture of flights, from your operation, which are contributing to the Time Out cancel problem. The report is in the same format as FSM Flight Lists and includes all flights with a cancellation status of Time Out Cancelled (ToCnx). To view

the Time Out Cancel report, select a monitored airport and then select **Reports > Time Out Cancel** from the Control Panel component. The Time Out Cancel report shows all flights that have triggered the ToCnx alarm and the ToCnx checkboxes are selected for all flights included in the report. The Time Out Cancelled report format is identical to the Time Out Delayed report as shown in Figure 19-16.

The displayed information defaults to arrival data. Select the **View > Departure Data** checkbox to view Departure Data in the Flight List. The Time Out Cancel Report then displays both arrival and departure data. To alternate information in the report you can check or uncheck the arrival or departure boxes.

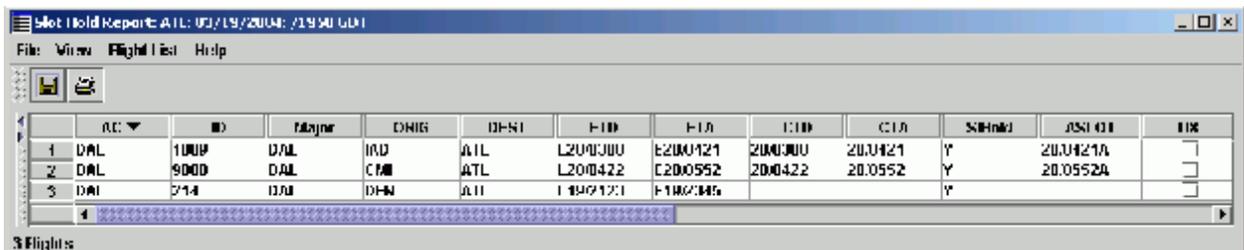
Time Out Cancel Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign
- Help
 - Time Out Cancel – General information about this report

Slot Hold Report

The Slot Hold Report lists all currently held slots. This report is similar to an FSM Flight List, but only lists those flights whose slot hold flag is set to ‘Y’ as shown in Figure 19-18. To view a Slot Hold Report, select the monitored airport for which you want to view the report and then select **Reports > Slot Hold** in the Control Panel component.



	RC	ID	Major	ORIG	DEST	FTD	FLO	CTD	CTA	Slot Hold	ASL CDT	CHK
1	DAL	1000	DAL	ORD	ATL	L200300	E200421	200300	200421	Y	200421A	<input type="checkbox"/>
2	DAL	9000	DAL	CMH	ATL	L200422	E200552	200422	200552	Y	200552A	<input type="checkbox"/>
3	DAL	214	DLA	DHN	ATL	L190121	E190245			Y		<input type="checkbox"/>

Figure 19-18: Slot Hold Report

The displayed information defaults to arrival data. To view departure data, select **View > Departure Data** checkbox in the dropdown menu. The Slot Hold Report then displays both arrival and departure data. To alternate information in the report you can check or uncheck the arrival or departure boxes.

Slot Hold Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign
- Help
 - Slot Hold – General information about this report

Sub Opportunities Report

You can access the Sub Opportunities Report from the Control Panel by selecting **Reports > Sub Opportunities**. This report assists airlines and general aviation customers in identifying subbing opportunities.

	ACID	TYPE	ORIG	DEST	FRTD	FRTA	CTA	FRTA-CTA	SchemaMo
1	USA1443	R733	PHI	ORD	251348	251525	-	-	25
2	USA1227	B733	PIT	ORD	-	-	260007	-	47
3	USA963	D733	PIT	ORD	252101	252202	260002	-120	104
4	USA184	B733	PHI	ORD	-	-	-	-	-48
5	USA637	D733	PIL	ORD	251942	252054	252112	-10	-14
6	USA624	R734	PHI	ORD	252151	252334	260030	-58	76
7	USA951	B733	CLT	ORD	251739	251825	252211	109	8
8	USA540	D733	PIL	ORD	251531	251714	251741	-30	1
9	USA471	B733	PHI	ORD	251521	251632	251637	-5	-11
10	USA375	D733	CLT	ORD	251352	251527	-	-	-5
11	USA388	R733	CLT	ORD	251832	252120	252116	4	-7
12	USA317	B733	CLT	ORD	-	-	-	-	2
13	USA299	D735	PIL	ORD	252307	260050	260205	-67	70
14	USA271	B733	PHI	ORD	252241	260019	260111	-14	67
15	USA210	D734	CLT	ORD	252122	252314	252317	-6	3
16	UPS884	R733	ANC	ORD	-	-	-	-	3
17	UPS611	D737	SDF	ORD	-	-	-	-	3
18	UPS640	A306	PIL	ORD	-	-	-	-	3
19	UPS888	D737	DFW	ORD	-	-	-	-	3
20	UPS606	A306	SDF	ORD	-	-	-	-	3
21	UAL8035	R772	GRD	ORD	-	-	-	-	0
22	UAL888	B733	CMH	ORD	-	-	-	-	0
23	UAL8215	D735	CVY	ORD	251823	251929	252224	-175	-11
24	UAL8171	B732	MCO	ORD	251445	251633	251638	-8	-211
25	UAL8170	A319	DWR	ORD	251450	251645	251735	-50	3
26	UAL8184	R733	LGA	ORD	251825	252114	252136	-22	7
27	UAL8155	B733	DIA	ORD	-	-	200210	-	60
28	UAL8141	A320	DOS	ORD	251430	251639	251645	-6	-6
29	UAL8136	B733	MSP	ORD	252320	260019	260125	-16	65

Figure 19-19: Sub Opportunities Report

Sub Opportunities Report Menu

Many of the menu items are the same as for the Flight List component. For more information on the Flight List component, see Chapter 6: Viewing Flight Information.

- File
 - Save As
 - Print
 - Close
- View
 - Rename Window
 - Arrival Data – Toggles Arrival data off and on.
 - Departure Data – Toggles Departure data off and on.
 - Add/Remove Columns
 - Group Flights
 - Sort Flights
 - Apply Filter
 - Clear Filter
- Flight List
 - Set Time
 - Search By Callsign
- Help
 - Sub Opportunities – General information about this report

Slot List

Select **Reports > Slot List** to view this report. The Slot List report generates the second part of the FADT List that FSM generates after a program runs. Included in the Slot List are the Aircraft Identification number (ACID), assigned slot time (ASLOT), departure center (DEP), controlled time of departure (CTD), controlled time of arrival (CTA), aircraft type (TYPE), exemption status (EX), cancellation status (CX), slot hold status (SH), earliest runway time of arrival (ERTA), and initial gate time of departure (IGTD).

Slot List: ATL: 03/19/2004: /1439 live

File View Slot List Help

Freeze Data

B8 LIST REPORT

AIRLINE .GA										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
N737GG	ATL192044A	EUR	191900	192044	GS	-	-	-	-	191430
N747RC	ATL192101C	BJJ	191900	192101	GS	-	-	-	-	191600
N743E	ATL192111A	BED	191900	192111	GS	-	-	-	-	191430
AIRLINE AAL										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AAL121Q	ATL192027B	ORD	191900	192027	GS	-	-	-	191657	191512
LOF5663	ATL192028F	STL	191900	192028	GS	-	-	-	191810	191630
AAL1714	ATL192029C	MIA	191900	192029	GS	-	-	-	191759	191605
AAL1228	ATL192035D	MIA	191900	192035	GS	-	-	-	192021	191820
AAL2944	ATL192036A	DFW	191900	192036	GS	-	-	-	191910	191719
AAL413	ATL192038C	ORD	191900	192038	GS	-	-	-	192005	191809
AAL2814	ATL192041A	DFW	191900	192041	GS	-	-	-	191706	191510
AAL1752	ATL192041C	DFW	191900	192041	GS	-	-	-	192009	191811
AIRLINE ASH										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
ASH2696	ATL191938B	CLT	191900	191938	GS	-	-	-	191907	191759
ASH2742	ATL192048A	PHL	191900	192048	GS	-	-	-	191738	191445
ASH7106	ATL192115A	DEM	191900	192115	GS	-	-	-	191840	191555
AIRLINE AWI										
ACID	ASLOT	DEP	CTD	CTA	TYPE	EX	CX	SH	ERTA	IGTD
AWI2116	ATL191942E	TLH	191900	191942	GS	-	-	-	-	191755
AWI2109	ATL191946A	SAV	191900	191946	GS	-	-	-	-	191550
AWI2103	ATL191946B	SAV	191900	191946	GS	-	-	-	-	191845
AWI2182	ATL191954A	JAX	191900	191954	GS	-	-	-	-	191445
AWI2135	ATL191957A	GSO	191900	191957	GS	-	-	-	-	191440
AWI2155	ATL191958B	MYR	191900	191958	GS	-	-	-	-	191450
AWI2123	ATL191958F	GSO	191900	191958	GS	-	-	-	-	191810
AWI2193	ATL192003A	RDU	191900	192003	GS	-	-	-	-	191500

Figure 19-20: Reports > Slot List

Slot List Report Menu

- File
 - Save As – Saves the list as a file so that you can access it later.
 - Print – Prints the report.
 - Close – Closes the report window.
- View
 - Freeze Data – When selected, this keeps the slot list from updating with the next ADL.
- Slot List
 - Search – Allows you to search for a specific string of data.

- Help
 - Slot List – General information about this report.

Understanding Coversheet Reports

FSM creates three Coversheet reports:

- FADT report
- Analysis report
- Carrier Statistics report

FADT Report

FSM generates FADT reports when you **Run** any TMI operation. A FADT reports contains program parameters and delay statistics for that TMI operation. To review the FADT file, select **View > FADT Report** from the TMI Coversheet and the FADT Report window appears displaying the program information (see Figure 19-21).

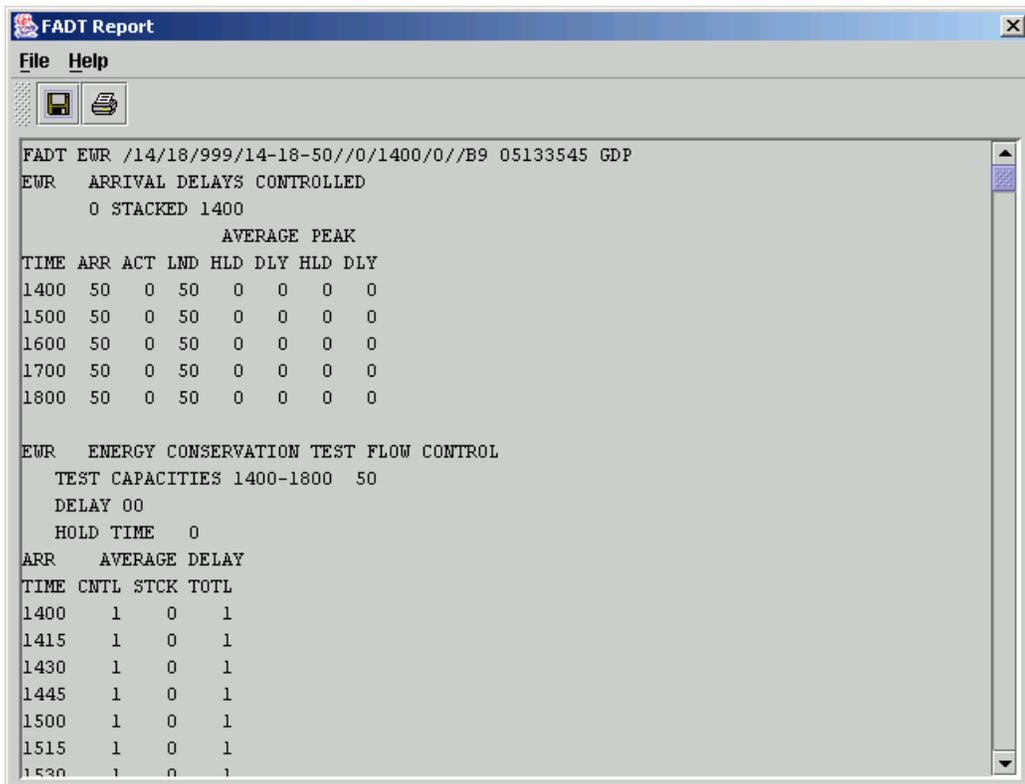


Figure 19-21: FADT Report

Analysis Report

To evaluate the effects of a TMI after the program runs, select **View > Analysis Report** from the Coversheet of any program. (FSM generates the Coversheet when you click **Run** from a GDT Setup Panel after setting the desired parameters). FSM automatically opens the spreadsheet application you have indicated in your configuration files to display the Analysis Report.

Carrier	Flight	Total	Delay	Average	Before	After	DT	Diff	Cancelled	Cancelled	Delayed	Delayed
Flight	Detected	Before	After	DT	Diff	DT	Diff	Over slot	Yield	Open	Close	Moved
6	AAL	16	-	0	-	0	0	0	0	0	0	0
7	ACA	3	2	0	-	7	35	7	35	0	0	0
8	ATL	1	-	0	-	0	-	0	0	0	0	0
9	AAI	1	-	0	-	0	-	0	0	0	0	0
10	ASA	1	-	0	-	0	-	0	0	0	0	0
11	BAW	1	-	0	-	0	-	0	0	0	0	0
12	CCA	33	55	0	-	74	3	74	3	0	0	0
13	UAL	9	4	0	-	0	0	0	0	0	0	0
14	EI	2	-	0	-	0	-	0	0	0	0	0
15	JCO	1	-	0	-	0	-	0	0	0	0	0
16	KLM	1	-	0	-	0	-	0	0	0	0	0
17	LOF	2	-	0	-	2	-	2	0	0	0	0
18	MFE	1	-	0	-	0	-	0	0	0	0	0
19	KWA	5	-	0	-	9	-	9	0	0	0	0
20	SAL	2	-	0	-	0	-	0	0	0	0	0
21	SWK	1	-	0	-	0	-	0	0	0	0	0
22	TRS	2	-	0	-	0	10	0	10	0	0	0
23	UAL	4	2	0	-	5	20	5	20	0	0	0
24	UAA	2	-	0	-	0	-	0	0	0	0	0
25	UAF	2	-	0	-	0	-	0	0	0	0	0
26	Total	100	55	0	-	130	10	130	10	0	0	0

Figure 19-22: Analysis Report

The Analysis Report contains information pertinent to the TMI program that just ran:

- Detailed slot information for individual airlines
- Delay statistics for before and after the operation
- Arrival and departure information for individual flights

The report contains two sections. One section reflects changes that occur as a result of RBS; the other section reflects changes that occur as a result of Compression.

Carrier Statistics Report

FSM generates Carrier Statistics when you **Run** any TMI operation. The Carrier Statistics report contains delay statistics for all carriers with flights that operate at that particular airport. To view the Carrier Statistics, select **View > Carrier Statistics** from the Compression Coversheet or select **Reports > Carrier Statistics** from the Control Panel. Ensure that the desired airport is active to review the correct airport's carrier statistics when selecting Carrier Statistics from the Control Panel (see Figure 19-23).

Carrier Name	CDM MBR	#Flights Affected Total/Non_Exempt/Exempt/CNX	On Time %	Delay Total/Total%/ Avg /AffAvg	Delay Max / Min	%Delay / %Traffic
AAL	Y	16 / 6 / 10 / 0	37.5	3 / 3.4 / 0.2 / 0.5	3 / 0	0.40
ACA	Y	3 / 2 / 1 / 0	66.7	7 / 7.9 / 2.3 / 3.5	5 / 2	5.03
AFR	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
AMT	Y	1 / 1 / 0 / 0	100.0	3 / 3.4 / 3.0 / 3.0	3 / 3	6.47
AZA	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
BAW	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
COA	Y	134 / 53 / 80 / 1	39.8	58 / 65.2 / 0.4 / 1.1	14 / 0	0.94
DAL	Y	9 / 4 / 5 / 0	44.4	3 / 3.4 / 0.3 / 0.8	3 / 0	0.72
DLH	N	2 / 0 / 2 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
JGO	N	1 / 1 / 0 / 0	100.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00
KLM	N	1 / 0 / 1 / 0	0.0	0 / 0.0 / 0.0 / 0.0	NA / NA	0.00
LOF	N	2 / 1 / 1 / 0	50.0	0 / 0.0 / 0.0 / 0.0	NA / 0	0.00

Figure 19-23: Carrier Statistics Report

FSM calculates only flights with assigned arrival slots in the report metrics. That is, flights with a Control Time of Arrival (CTA) appear in carrier statistics. If a carrier operates at the airport, but has no flights with a CTA, the Carrier Statistics report displays “0” or “N/A” in those rows. You can choose the type of delay to view in the report by selecting a *Delay Type* of either **ATC** or **ABS** at the top of the report. FSM selects the **ATC** delay type by default. **ABS** Delay is the absolute delay on a flight, including FAA and airline delay imposed on the flights. FSM calculates Absolute delay using Max (0, ETA - [IGTA - Taxi]). **ATC** Delay is the *delay imposed only by the FAA* on flights and FSM calculates it using Max (0, CTA - BETA).

The report displays delay statistics for all carriers that operate at an airport. Carriers with no presence at the monitored airport do not appear in the Carrier Statistics.

Note: **View > Carrier Statistics** report is not available from a Coversheet that you opened from a file.

The following information appears in the Carrier Statistics Report:

- Carrier Name: The airline to which the delay data corresponds.
- CDM MBR: Indicates if the carrier is a CDM member (Y/N).
- # Flights Affected – Total/Non_Exempt/Exempt/CNX
 - Total: Total number of flights for the specified time period.
 - Non-Exempt: Number of the total flights that are Non-Exempt (included) in the program.

- Exempt: Number of the total flights that are Exempt (receive no delay) from the program.
- CNX: Number of the total flights that are canceled (CNX).
- On Time %: Percentage of flights that arrive within 15 minutes of their ETA.
- Delay - Total/Total%/Avg/AffAvg:
 - Total: Total minutes of delay for each airline.
 - Total %: Percentage of delay attributed to the airline. FSM derives this value by dividing the total delay minutes for an airline by the total delay minutes for all airlines combined.
 - Avg: Average Delay minutes on a carrier's total number of flights.
 - Aff Avg: Average Delay minutes for the carrier's flights affected by a program.
- Delay - Max/Min:
 - Max: Shows Maximum delay amount that a carrier's flights could receive.
 - Min: Minimum delay amount that a carrier's flights could receive.
- % Delay / % Traffic: Indicates the delay equity for a carrier at an airport. A value of "1" in this column means that a carrier's delay is perfectly equitable. A value greater than "1" indicates a carrier receives worse than average delay. A value less than "1" indicates that a carrier receives less than average delay.

The bottom of the reports gives the same statistics for Scheduled/Non-Scheduled flights.

Carrier Statistics Menu Options

- **File Menu**
 - **File > Save as** – Saves the Carrier Statistics report as a .txt file in a directory that you specify.
 - **File > Print** – Prints the Carrier Statistics report viewed on your screen.
 - **File > Close** – Closes the Carrier Statistics report.
- **View Menu**
 - **View > Freeze Data** – When you select the Freeze Data checkbox, the carrier statistics report does not dynamically update with every ADL. FSM selects the Freeze Data checkbox by default.
- **Help Menu**
 - **Help > Carrier Statistics** – Accesses the web-based on-line help for Carrier Statistics.

20 Using Query Manager

The Query Manager in FSM is a useful tool for retrieving data from FSM that does not already appear in one of the reports mentioned in chapter 19: Understanding and Using FSM reports. You can use this tool to build your own ad-hoc reports. The Query Manager has built-in filters and filters that you can define (user defined filters). This chapter discusses both types of filters and how to use them.

Built-in Filters

Built-in Filters are pre-defined, read-only filters designed from criteria that are frequently used for viewing flight information.

Double-click on the *BUILT_IN Built-in Filters* folder or click on the Expand/Collapse icon to view/hide all contents in the folder. When you expand the Built-in Filters folder, you see a number of filters from which to choose. You can continue to drill down to view more detail by double-clicking on the folders or by clicking on their respective Expand/Collapse icons.

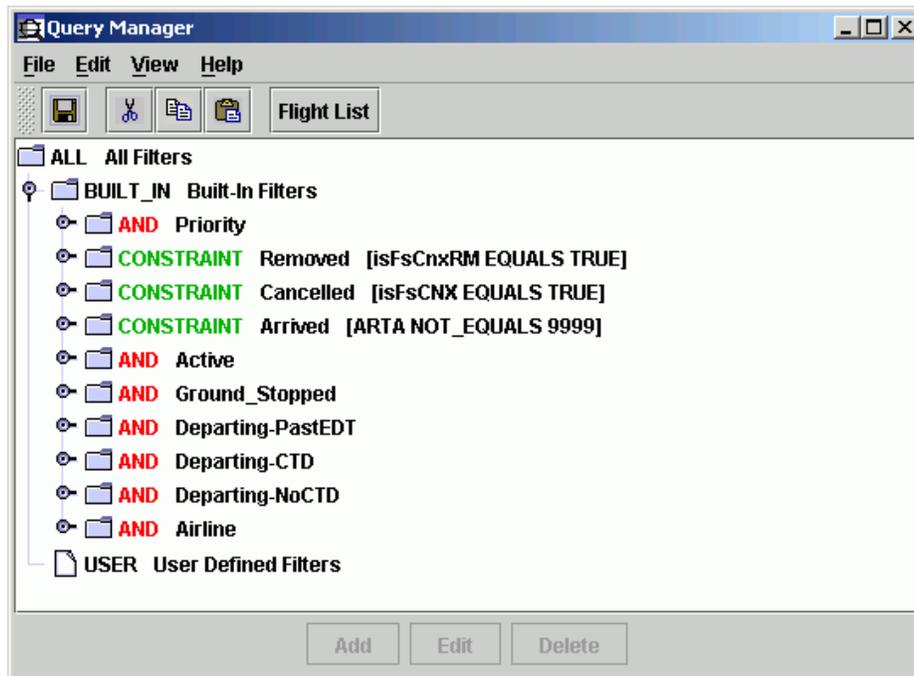


Figure 20-1: Query Manager Built-In Filters

The *AND* filters list consists of filters that FSM compares to find a match in the data set. For an object to match an *AND* filter, all the filters in the list must be true. An *OR* filter consists of a list of filters that FSM compares to find matching flights in the data set. For an object to match an *OR* filter at least one of the filters in the list must be true. A *CONSTRAINT* is an attribute, operator, or value. FSM uses the red *AND*, the blue *OR*, and the green *CONSTRAINT* coloring as a visual aide to distinguish between the three different types of filter options.

The *AND*, *OR*, and *CONSTRAINT* filters have the ability to create new filters by copying/pasting a built-in filter selection directly into the *USER User Defined Filters* folder. The Built-in Filters option buttons remain grayed because they are read-only filters. You cannot edit or delete a Built-in Filter for the same reason.

User Defined Filters

User Defined Filters are active filters you create and customize based on your Flight List needs. There are two methods of creating user-defined filters:

1. Adding a New Filter
2. Editing a Built-in filter

Creating a New User Defined Filter

If you find that the existing filters do not give you the information you need, you can create a new filter.

To create a new User Defined Filter

1. Select the User Defined Filters folder (see Figure 20-2).

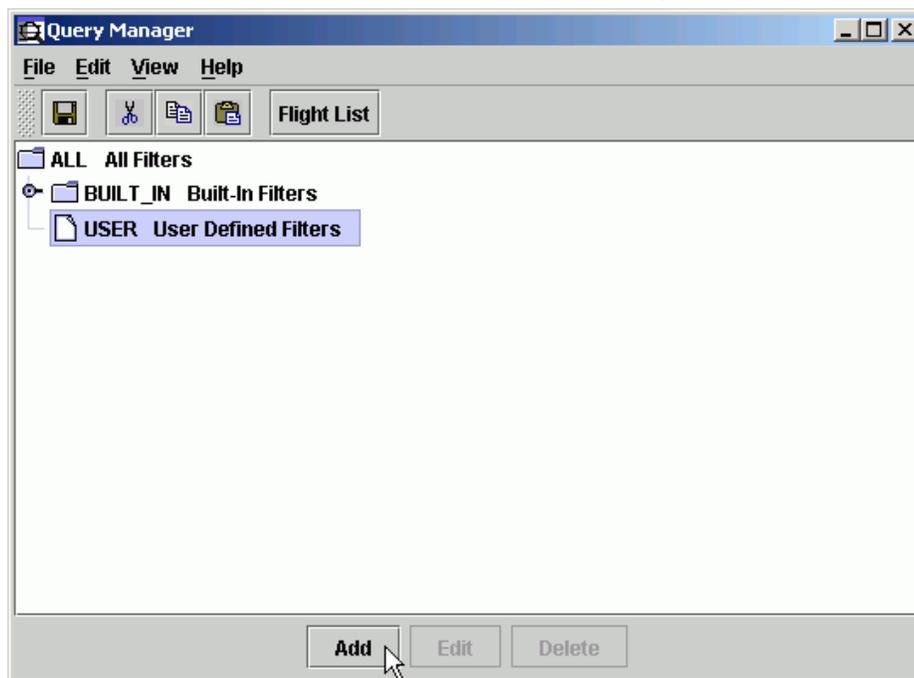


Figure 20-2: User Defined Filters

2. Click **Add**.

The Add Filter dialog box appears.



Figure 20-3: Add Filter Dialog Box

3. You can select one of three filter types: *OR List*, *AND List*, and *Constraint*.
4. In Filter name, you can give your filter a unique name.
5. Click **OK**.

FSM adds the new filter under the User Defined Filters folder.

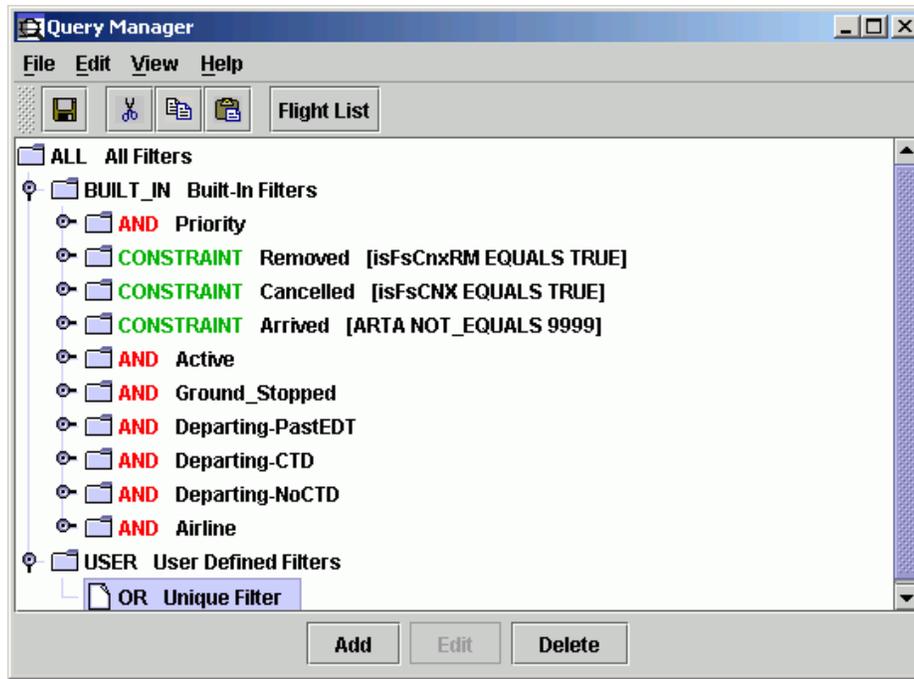


Figure 20-4: New User Defined Filter

For information on creating Constraint filters, see "To create Constraint filters" in this chapter. For information on how to add additional filters and constraints to AND and OR filters, see the "To add additional filters or constraints to user defined filters" section in this chapter.

To add additional filters and constraints to User Defined Filter

Once you create a new AND or an OR filter, you can add additional filters and constraints to them. There are two ways to add additional filters and constraints:

- Use the copy and paste functionality to add existing Built-in or User Defined filters to the User Defined filter.
- Highlight the filter to which you want to add filters and constraints and use the steps in "To create a new User Defined filter" above to add the filter or constraint.

This section shows how to use the copy and paste method.

1. Select the Filter that you want to add to the User Defined Filter.

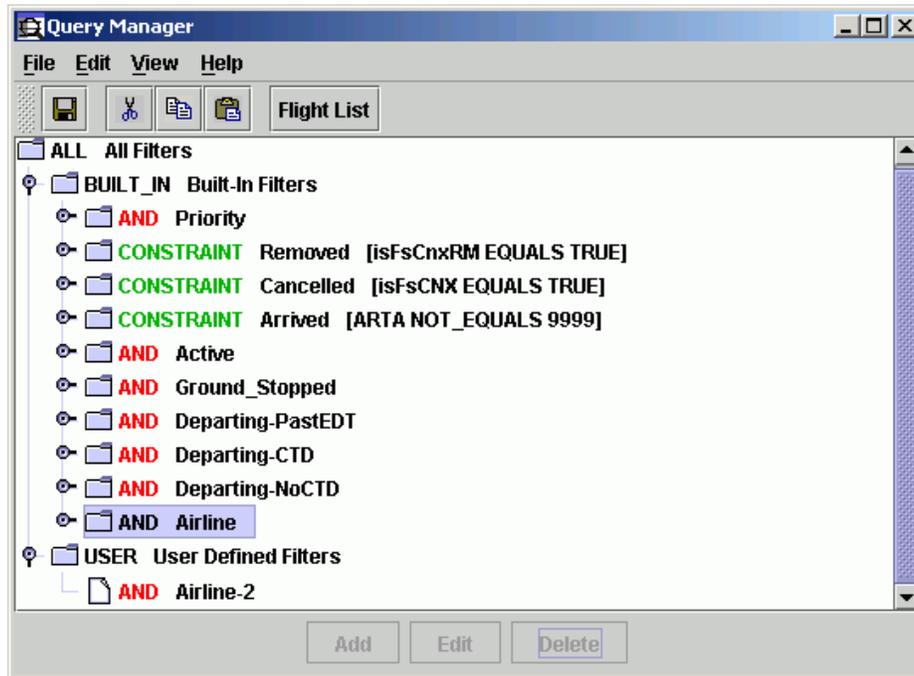


Figure 20-5: Built-In Filter

2. Select **Edit > Copy**.
3. Select the User Defined Filter to which you want to add the filter.

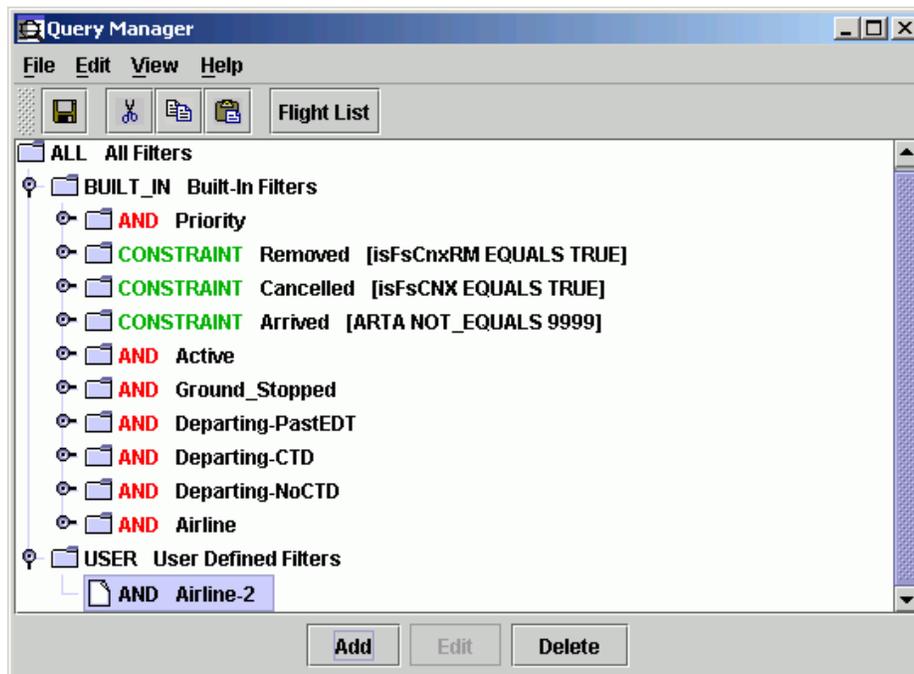


Figure 20-6: User Defined Filter

4. Select **Edit > Paste**.

The Filter appears below the User Defined Filter.

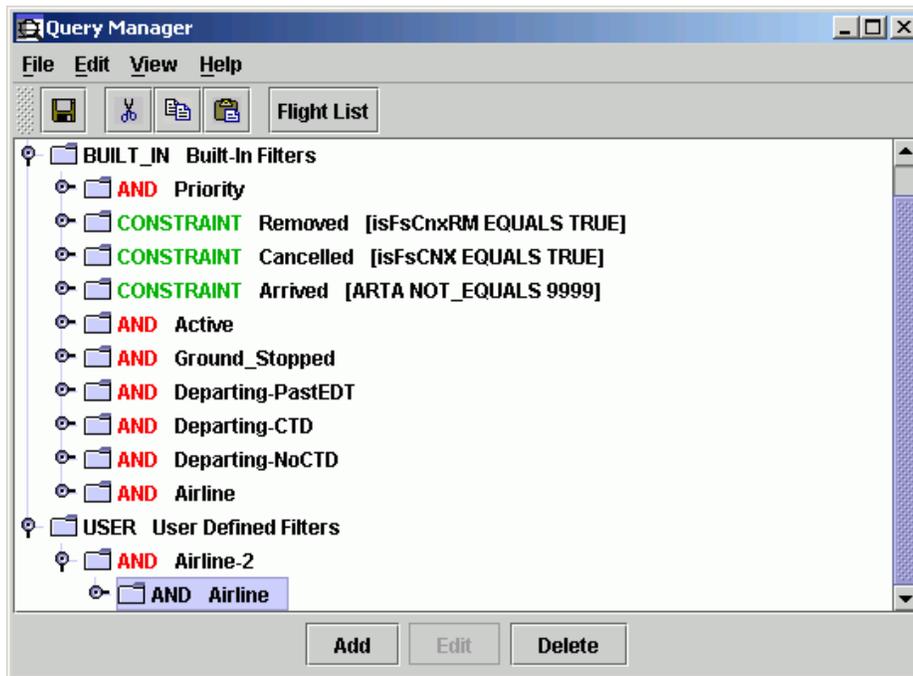


Figure 20-7: Filter Added to User Defined Filter

To create user defined Constraint filters

1. From the Query Manager window, click **Add**.
2. Enter a *Filter name*.
3. Select *Constraint* from the Add Filter dialog box.



Figure 20-8: Add Filter Window

4. Click **OK**.

The Edit Constraint window appears.

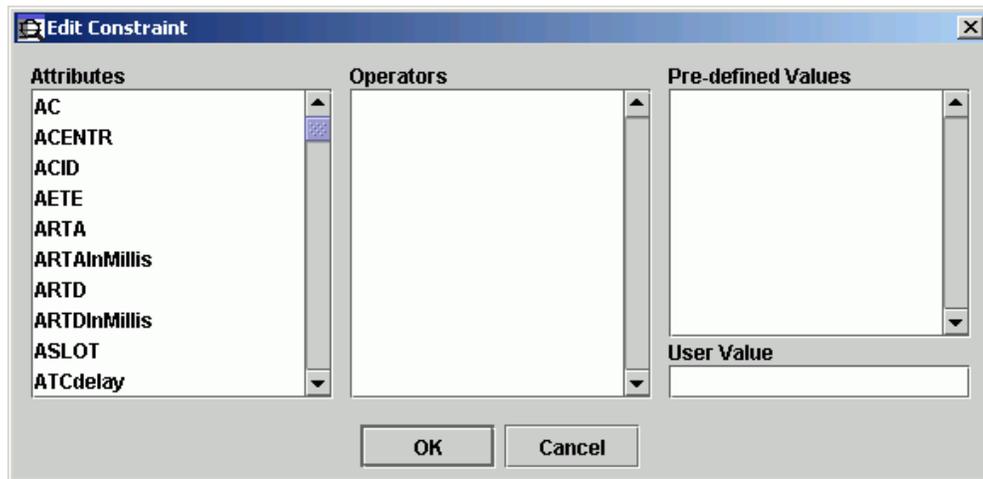


Figure 20-9: Edit Constraint Window

Note: From the Edit Constraint window you must define your constraint by selecting a value from each of the three windowpanes (one value per window): Attributes, Operators and Pre-defined Values.

5. Select an attribute from the Attributes windowpane. This automatically populates the Operators windowpane with the available options based on your attribute selection.

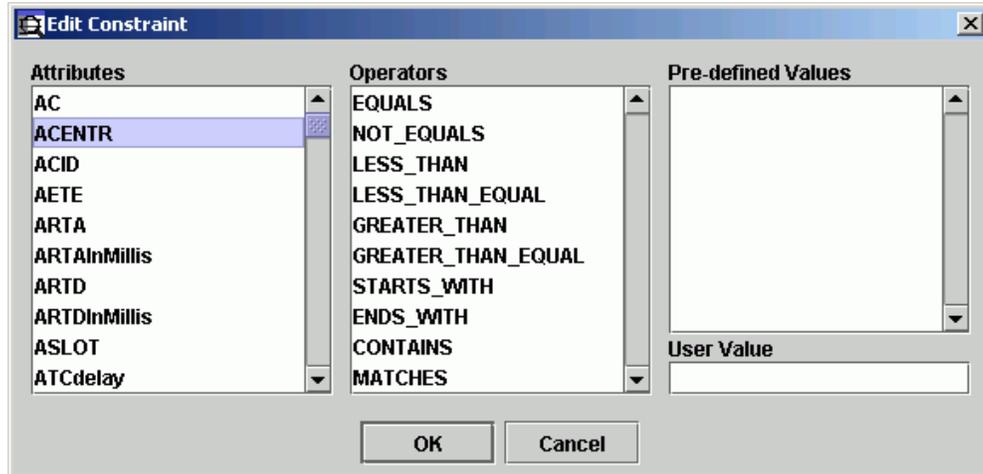


Figure 20-10: Edit Constraint Window

6. Select one of the Operators listed.
7. Select one of the Pre-defined Values.

Note: Some Pre-defined Values and User Values may automatically populate as a result of the selection made in the Attributes windowpane.

8. Enter a value in the User Value text-field if no options appear in the Pre-defined Values windowpane.

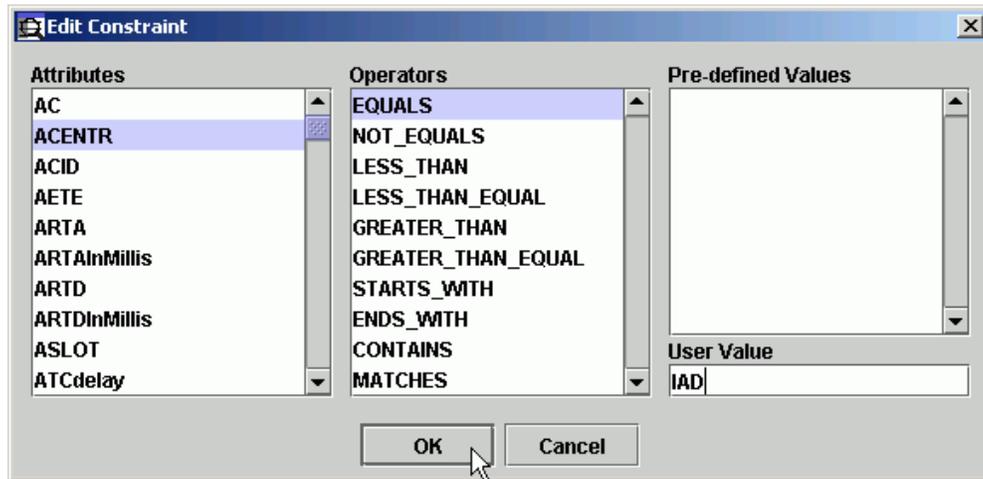


Figure 20-11: Edit Constraint Window with User Value

9. Click **OK** to complete the Constraint definition.

FSM adds the new CONSTRAINT filter under the User Defined Filters. The CONSTRAINT appears with the new filter name including the three values chosen from the Edit Constraints component in brackets.

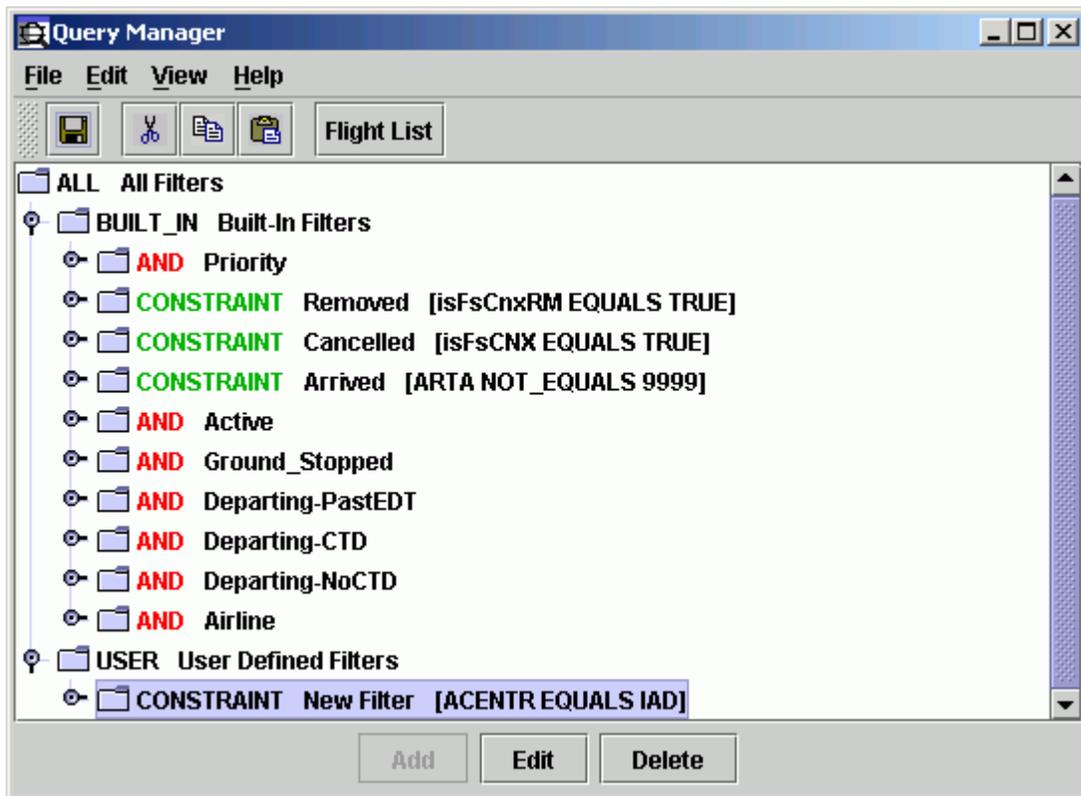


Figure 20-12: Query Manager with User Defined Constraint

To edit an existing CONSTRAINT

You can edit only User Defined Constraints; you cannot amend additional filters to an existing CONSTRAINT. The Add button is disabled when an existing CONSTRAINT is highlighted.

1. Click Edit.

The Edit Constraint window appears.

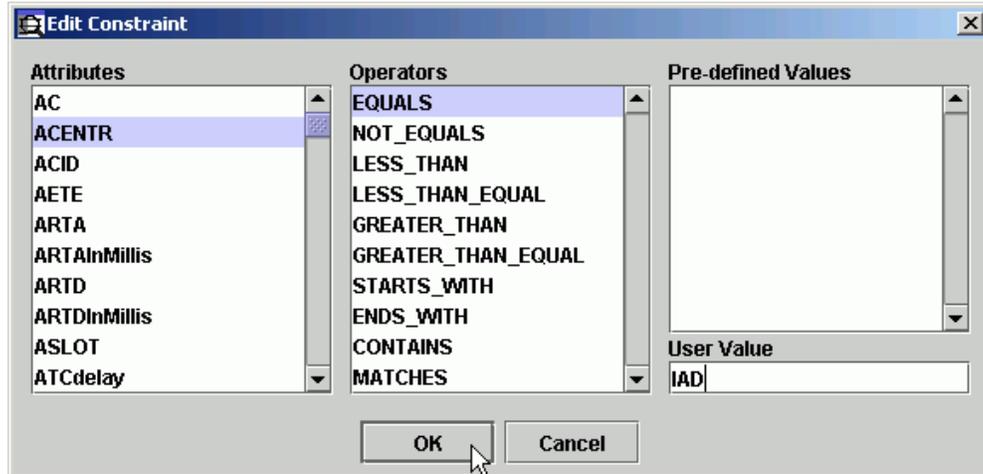


Figure 20-13: Edit Constraint Window

2. Select the new value from Attributes, Operators, Pre-defined Values, or enter a new User Value.

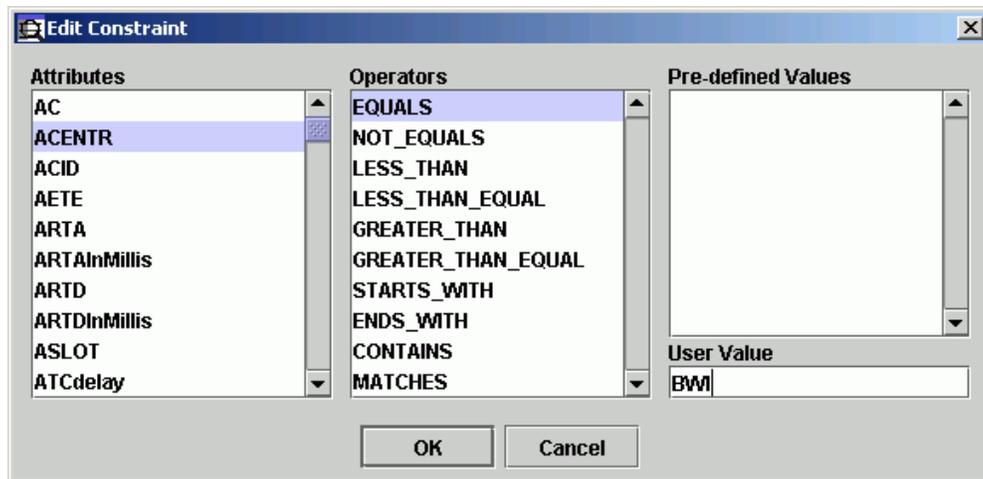


Figure 20-14: Edit Constraint Window with New User Value

3. Click **OK** to complete the new Constraint definition.

FSM changes the Constraint accordingly.

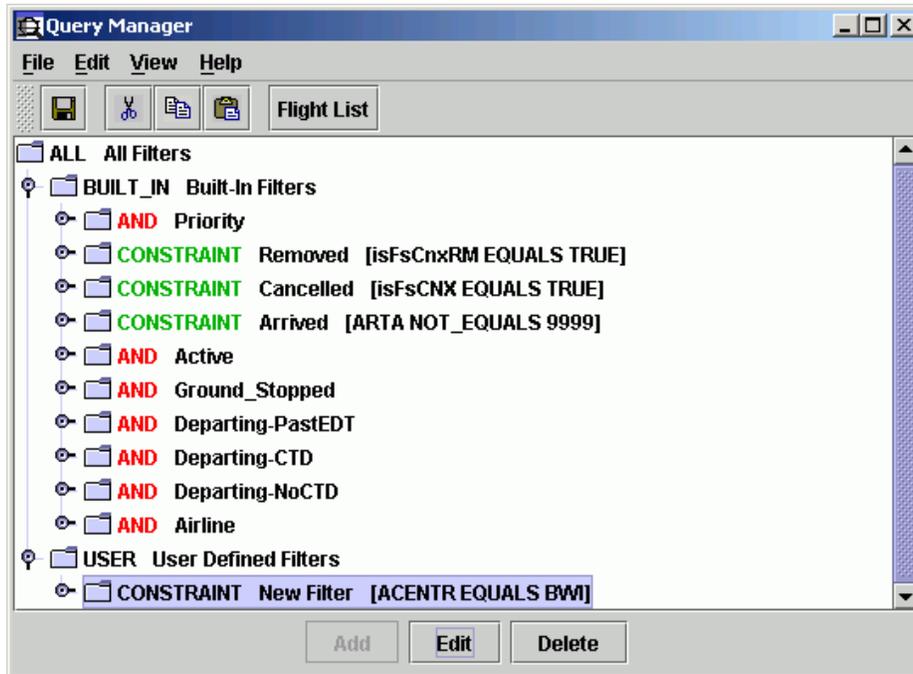


Figure 20-15: Query Manager with edited User Defined Constraint

To delete a User Defined Filter

You can permanently remove user defined filters.

1. Select the filter you want to delete.
2. Click **Delete**.

To view User Defined Filter information

You can select the collapse/expand icon next to the filter name or double-click the folder to view/hide filter information (see Figure 20-16).

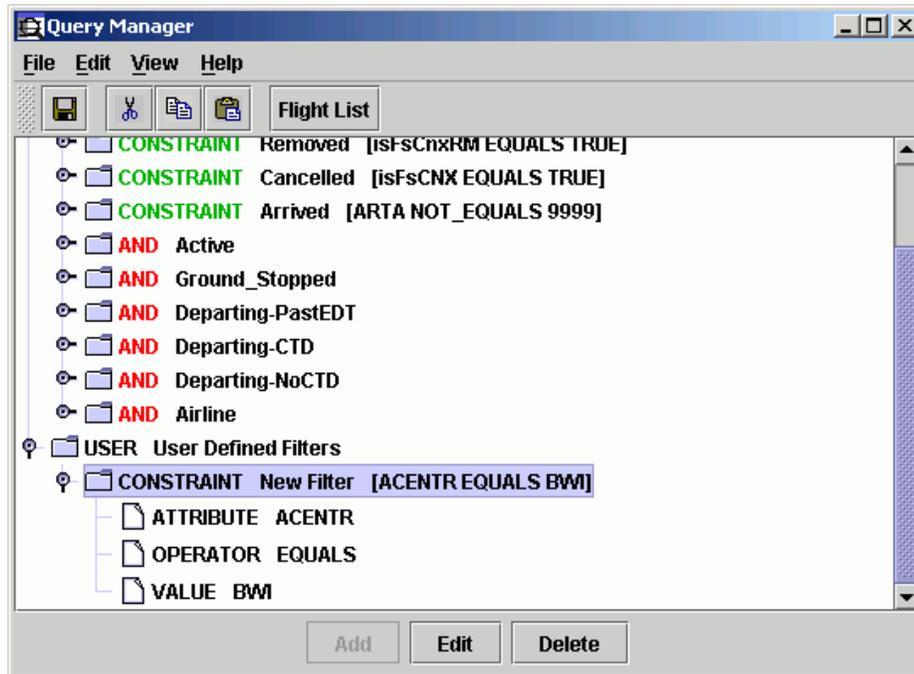


Figure 20-16: User Constraint Added

Query Manager Flight List

Access the Query Manager component by clicking **Query Manager** from the Control Panel. When you want to see flights that meet certain criteria, you can generate a Flight List from the Query Manager component. Select any one of the Built-in or User-defined Filters. Click **Flight List** or select **View > Flight List** from the Query Manager component.

Note: If you do not have a data set (airport) selected, FSM displays a “No Active Data Sets” error message.

The generated Flight List contains only those flights that meet the selected criteria. The Query Manager already contains a built-in filter for GS flights. To get a list of GS flights at any open airport, select the **AND Ground_Stopped** Filter. Click **Flight List** or select **View > Flight List** from the Query Manager component.

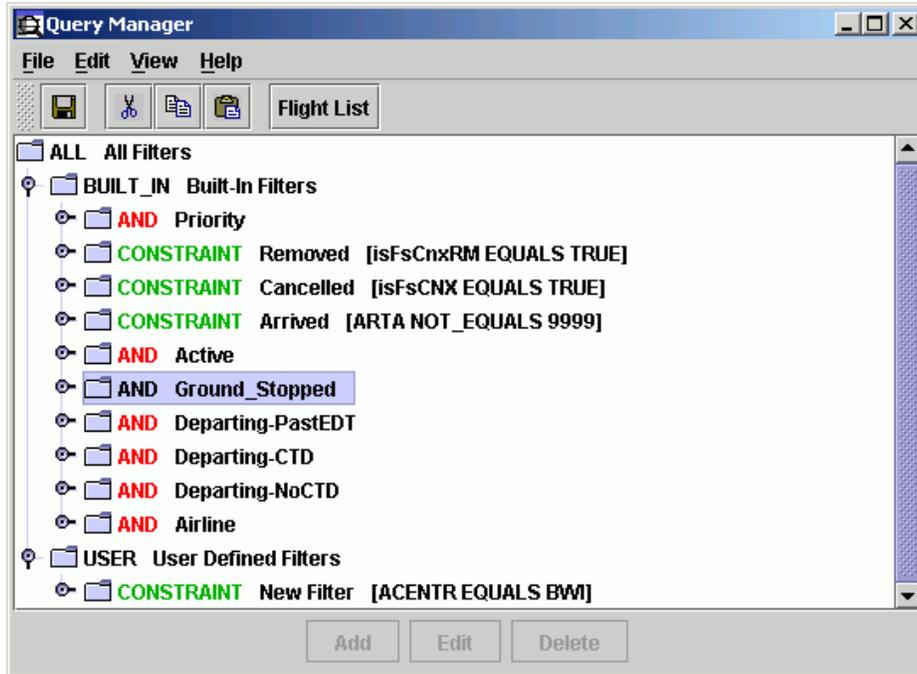


Figure 20-17: Query Manager Component

When you are monitoring more than one airport, clicking Flight List opens the Set Data Set window, showing all open airports. Select the Data Mode/Airport and click **OK** to view that airport's GS Flight List (see Figure 20-18). Click **Cancel** to exit the Set Data Set window without opening a Flight List.



Figure 20-18: Set Data Set Selection window

Opening the Flight List from the Query Manger lists all the flights that are GS at the specified airport unless otherwise defined by a customized CONSTRAINT, whereas accessing a Flight List from the Bar Graph only displays a list of flights for the selected hour.

	AC	ID	ETD	ETA ▲	DEST	ORIG	ARTA-CTA
1	ALO	3737	L06/1848	C06/1910	DCA	PHL	
2	USA	2177	L06/1848	C06/1927	DCA	LGA	
3	DAL	1957	L06/1848	C06/1929	DCA	LGA	
4	JIA	2233	L06/1848	C06/1931	DCA	RDU	
5	USA	1262	L06/1848	C06/1944	DCA	CLT	
6	CHQ	3086	L06/1848	C06/1954	DCA	SAV	
7	NWA	230	L06/1848	C06/1954	DCA	DTW	
8	USA	2037	L06/1848	C06/1958	DCA	BOS	
9	UAL	614	L06/1848	C06/2016	DCA	ORD	
10	ASH	2769	P06/1848	C06/2025	DCA	HSV	
11	NWA	624	L06/1848	C06/2045	DCA	MSP	
12	AAL	1370	L06/1848	C06/2045	DCA	MIA	
13	MEP	99	P06/1848	C06/2054	DCA	MCI	
14	CAA	199	L06/1848	C06/2125	DCA	DFW	
15	COA	458	L06/1848	C06/2131	DCA	IAH	

Total flights: 15

Figure 20-19: Query Manager Flight List

Appendix A: Flight Status

The flight Status appears in the Flight Information Window. Flight Status can be one of the following:

- **Normal** - Flight is flying as expected.
- **FX Canceled** - Generated when an airline sends an FX cancellation message.
- **NAS Canceled** - A NAS Cancellation received through an RZ message. A flight cancellation message that arrives from somewhere in the NAS system other than the AOC in charge of the flight.
- **RS Canceled** - an OAG cancellation.
- **RM** - The flight has been removed from the ETMS database.
- **RZ** - A NAS flight plan cancellation message.
- **Timeout Canceled** - A timeout cancellation. ETMS cancels the flight because its EDT has passed and the flight has not taken off. ETMS determines the necessary lag time between the EDT and the current time before cancelling the flight. The amount of time depends upon whether ETMS received any information for the flight (e.g. flight plan).
- **DV Canceled** - This flight has been diverted to a new arrival airport.
- **ID Canceled** - The flight's ID has been changed. In this case, the old flight and ID is cancelled and a new flight with a new ID is created.
- **Airline Delayed (ALD)** – A carrier delayed this flight by either an FC Message (create new flights) or and FM Message (modify flights).
- **In Program** - Delayed because of inclusion in a Ground Delay Program.
- **Ground Stopped** - Delayed because of inclusion in a Ground Stop Program.
- **FA Delayed** - A new flight was created in the database after a GDP went into effect. Because this flight has not received any GDP delay, an FA Delay is put on the new pop-up flight.
- **Timeout Delayed (TOD)**- A flight's ETD passed without the flight actually taking off. ETMS bumps the ETD time to account for possible unreported delay. Once the Time Out Delay goes into effect, ETMS determines the length of time to wait until registering the flight as **TO Canceled**.

In Ground Delay Tools Mode, an *exemption status* appears in the Flight Information Window. Exemption status appears above the Flight Status in the Flight Information Window. Exemption status refers to the flight's inclusion in a Ground Delay Operation and is one of the following:

- **Excluded by Aircraft Type** - The program did not include aircraft of this type.
- **Excluded by Arrival Fix** - The program did not include this arrival fix.
- **Excluded by Arrival Time** - The flight's ETA did not fall within the program time limits.
- **Excluded by Departure Time (GS Only)** - The flight is cancelled or the ETD is before the start time or after the end time.
- **Exempted by Departing Center** - The program did not include this flight's center.

- **Exempted by Distance** - The flight is exempted because the departure airport is outside the distance specified by the program.
- **Exempted by Departing Airport** - This airport was specifically exempted from the program.
- **Exempted by Specific Flight** - This flight was specifically excluded from the program.
- **Exempted by Departure Status** - The ETD prefix is either A or E.
- **Exempted by Departure Time** - The flight's Revised EDCT (or Ptime) comes before the Current Time + Now_Plus.
- **Excluded and Exempted** - Because of program parameters, this flight met excluded and exempted status criteria. This status includes flights which do not fly within the time period of a GDP and which meet exemption criteria.
- **Not Exempted** - This flight is eligible for inclusion in the program.

When a flight triggers one of FSM's alarms, FSM generates a list of flights that have triggered an alarm. Flights trigger alarms are triggered when they do not comply with certain operations' criteria. Flights trigger alarms for the following reasons:

- **CC** - Flights arriving more than 5 minutes before or more than 5 minutes after their Control Time of Arrival.
- **CF** - Flights that were cancelled but later flew without the flight being reinstated properly.
- **EA** - The actual flight time is greater than a specified value, but the flight status is not cancelled. The default value is 15 minutes.
- **EC** - The departure boundaries are more than 5 minutes before or more than 5 minutes after their estimated departure clearance time.
- **SF** - Spurious Flights or flights submitted as SI cancellations with no corresponding entries in the OAD.

The term alerts refers to areas in which the traffic demand is projected to exceed a pre-defined capacity threshold. The following are flight Alerts:

- **Alerts > FADT Parameters Available** – This alert does not actually give you program parameters. Rather, you can view a listing of all the FADTs generated during that day. FADTs are reports generated when a GDP, GS, +/- Delay or Compression operation runs.

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Note: FSM does not always list the FADTs in chronological order.

- **Alerts > SCS Bridge** This alert turns red in color when there is a new SCS update. Selecting SCS Bridge displays the current subbing status and may contain the following keywords:
 - **SUBS:** Indicates whether all substitutions are enabled (ON) or disabled (OFF)
 - **SCS:** Indicates whether slot credit substitutions for all operators are enabled (ON) or disabled (OFF)
 - **BRIDGING:** Indicates whether bridging subs are disabled (OFF) for a particular operator (airline name, GA, or MILITARY). If bridging is off for an

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airline, any flight whose MAJOR field or carrier code (from ACID) matches the airline name is not used for an SCS bridge. If bridging is enabled for an operator, no line appears, in other words, the only allowed value for this keyword is OFF.

- **Alerts > Actual GDP Parameters Available** – This alert turns red in color when FSM receives Actual GDP Parameters through the ADL. First-time GDP Parameters, new GDP Parameters and deleted GDP Parameters all trigger this Alert. Select Actual GDP Params Updated to view the parameters in the GDP Parameter Display panel, which is similar to the GDP Setup Panel. From the GDP Parameter Display panel, you can save the parameters or close the panel.

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- **Alerts > Proposed GDP Parameters Available** - This alert turns red when parameters for a Proposed GDP arrive through the ADL. Select Proposed GDP Parameters to view the new parameters.

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- **Alerts > GS Parameters Available** – This alert turns red in color when the FAA issues a GS and FSM receives its parameters through the ADL. First-time GS Parameters, new GS Parameters and deleted GS parameters all trigger this Alert. Select GS Parameters to view the parameters in the GS Parameter Display panel, which is similar to the GS Setup Panel. From the GS Parameter Display panel, you may save the parameters to a file or close the window.

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- **Alerts > Compression Parameters Available** – When FSM receives parameters for the compression function through the ADL, it triggers this alert. When Compression parameters arrive, Compression Parameters turn red in the Alert menu. Click the red text to view the new parameters.

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- **Alerts > Blanket Parameters Available** – FSM applies this alert to all flights that are part of a specific GDP.

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Appendix B: FSM 7.8 Algorithms

This section illustrates FSM Algorithms in detailed flow chart format. The FSM Algorithms include Rationing By Schedule (RBS++), Compression, “+/- Delay”, Ground Stop, Purge, and Airborne Holding. In addition, the Compression Algorithm calls on four subset algorithms: Intra-airline Compression, Inter-airline Compression (Substitution), Compress Flight, and Move Up a Flight. Sub-section contains a list of common terms used throughout the FSM Algorithms. Sub-sections B.3- C.3 include each FSM Algorithm’s flow chart.

B.1 Common Terms

Auto-Delay Algorithm:

This is the set up for Compression, which takes into account the Earliest Runway Time of Arrival (ERTA).

Effective AAR:

AAR minus GA Factor.

ETE:

ETE = max ((ETA – ETD), (CTA – CTD)) if configured to use Max ETE.
ETE = ETA – ETD if configured to use ETE.

Excluded Flight:

A flight that does not meet the criteria of being included in a GDP. These criteria include factors such as the flights IGTA – taxi being outside the program start/end time, affix, and removal status.

Exclude_and_Exempted Flight:

A flight whose ETA is later than the program start time, is excluded from the program, and meets program exemption criteria such as exempt airport, departure time, or status.

Exempt Flight:

Airborne Flights, departing within Now Plus parameter, specific spatial constraints and any flight that meets the criteria of an “exempt flight” within the algorithm. An exempt flight’s ETD will not receive delay. Exempt flights receive first priority during RBS++.

Floor_Time:

The Floor_Time of an open slot is the ETA of its associated flight, or 9999 if its associated flight is cancelled. This results in open slots associated with canceled flights being processed first.

Non-Exempt Flight: (2 types)

- Previously Controlled: Have second priority behind exempt flights during RBS++. These flights are ordered by their ASLOT.
- Non-previously Controlled: Have third priority during RBS++. These flights are ordered by IGTA, but may have to sort by ASLOT.

Open_Slot:

An open slot is created when a flight is canceled or delayed, so all open slots have one and only one associated flight. This is an association that never changes. An open slot due to delay (at least one of the delay flags is set in the flight record) is created if its associated flight's ETA is later than where the open slot will be displayed on the time line, which is at either (1) Wheel_Arrival_Time if the flight doesn't have a slot, or (2) its slot time if the flight has a slot.

Plus_Time:

Value entered by the FSM user when implementing a GDP. The Plus_Time determines the buffer past the data time in which flights will not be delayed. This is to insure that flights that are already boarding are not issued a delay.

Slot_Hold:

Slot_Hold is a status that is applied to an Open_Slot so that it is not filled by the compression process. A NAS user normally holds slots when they intend to use a slot but have not yet determined which specific flight will be moved to fill that slot. A slot can also be held by ETMS when a flight is timeout or NAS canceled.

Slot_Time:

The time position of airport capacity allocated to a NAS user, this is the time that the users flight should target for its arrival. The Slot_Time is used to create the Slot Identification, which is a combination of the arrival airport, the slot time, and a suffix to differentiate multiple slots issues for the same minute.

Virtual slot time:

Based on 15-minute effective AAR. The smallest slot time increment is one minute.

Wheel_Arrival_Time:

The arrival time used for rationing airport capacity. The IGTA is set by ETMS based on the first information received for that flight. The IGTA will be set to SGTA, LGTA, or PGTA depending on which is the first value receive by ETMS. IGTA is then adjusted for taxi-in time to determine the Wheel_Arrival_Time.

B.2 Rationing by Schedule (RBS++) Algorithm

For “Ground Delay Program (GDP)”

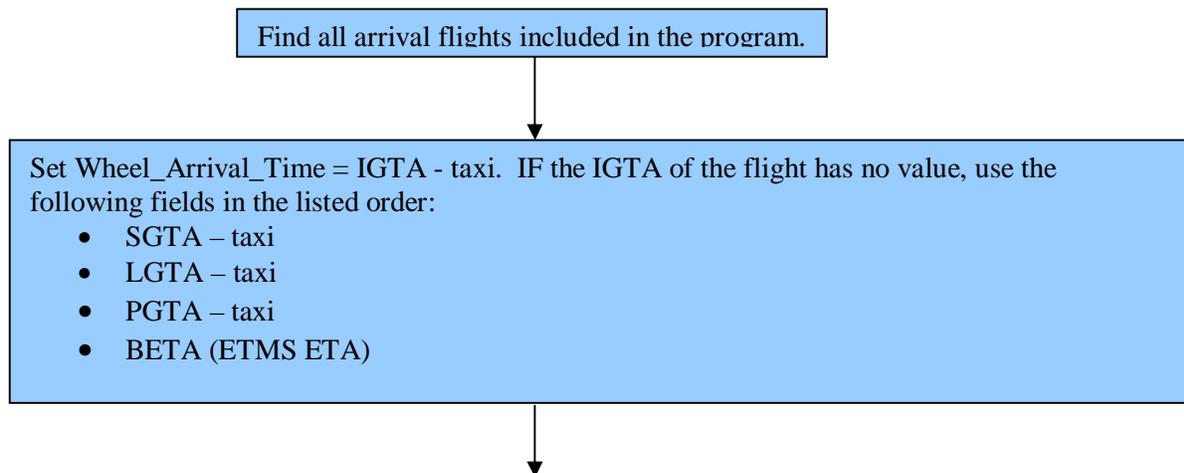
This function requires the following input parameters:

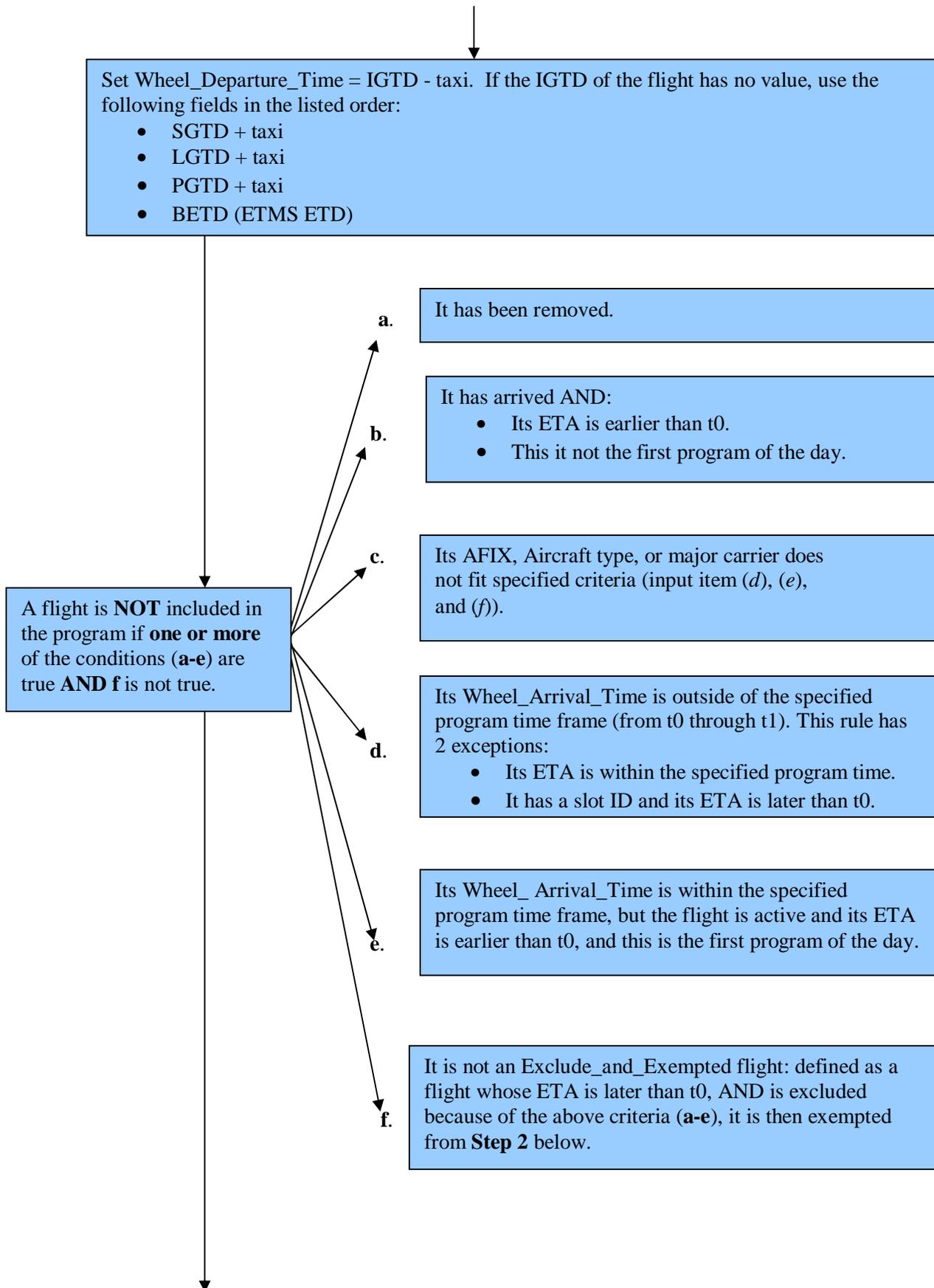
- a. Start_Time = t0
- b. End_Time = t1
- c. Data_Time
- d. Included_AFIX
- e. Included Aircraft Type
- f. Included Carrier
- g. Delay_Ceiling
- h. GDP Operation (RBS++ for this writing)
- i. AAR Values (for each 15 minutes time period)
- j. GA_Factor (per hour)
- k. Options for flight exemption from the departure end - by Departure_Time or by Departure_Status. Plus_Time in minutes indicates how many minutes from the data time should be used for this exemption; if exempt by departure status, Plus_Time is set to zero.
- l. Option for ground stopped (GS) flight exemption - whether to exempt GS flights by their departing status or not.

Note: This option is unnecessary if user have already selected “exempt by status” in item (k).

- m. Specific_Flight_Exemption.
- n. Specific Departure Airport Exemption.
- o. Facilities (departing centers and airports) involved.
- p. Last GDP Ending Time.
- q. Carriers/GA flights whose slot holding status is to be overridden.

Step 1





Step 2

Use the exemption criteria specified by the user to determine if an included flight is exempted from this program. Each of the following exemption criteria (a - e) is checked against the included flight.

IF any specified exemption criteria (a - e) is true, THEN the flight is exempt from the program.

a. Specific Departure Airport (input item (n)).

b. Departure_Time or Status (input item (k), (l)).
 IF exempt by departure status is selected (input item (k)), the flight is exempted when the flight's ETD has a prefix of 'A' or 'E'.
 ELSE (exempt by departure time is selected (input item (k)));

- IF exempt GS flights by departing status (input item (l)), then the flight is exempted when its CTL_TYPE is "GS", and its ETD has a prefix letter of 'A' or 'E';
- IF the flight is still not exempted at this point, check its departure time:
 - IF CTD exists, set t = CTD;
 - ELSE Set t = Wheel_Departure_Time;
 - The flight is exempted when t is less than (earlier than) Data_Time (input item (c)) + Plus_Time (input item (l)).

c. Specific flight (input item (m)).

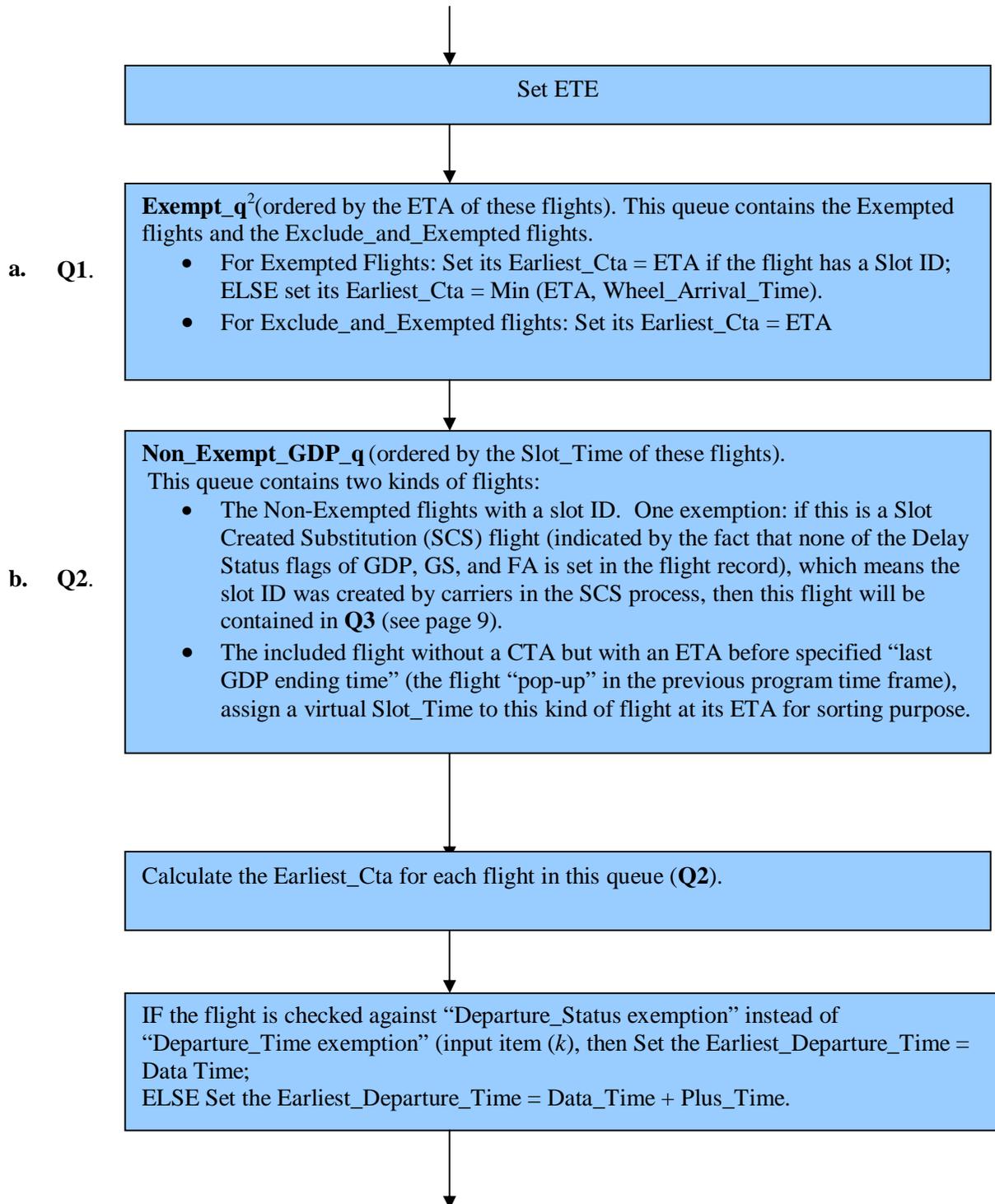
d. Source facilities (input item (o)).

e. Schedule Arrival Time - IF a flight is scheduled to arrive before the GDP start time, but is delayed into the GDP time frame, this flight shall be exempted to avoid double penalty. Wheel_Arrival_Time is used as the scheduled arrival time if the flight is not controlled, otherwise CTA is used.

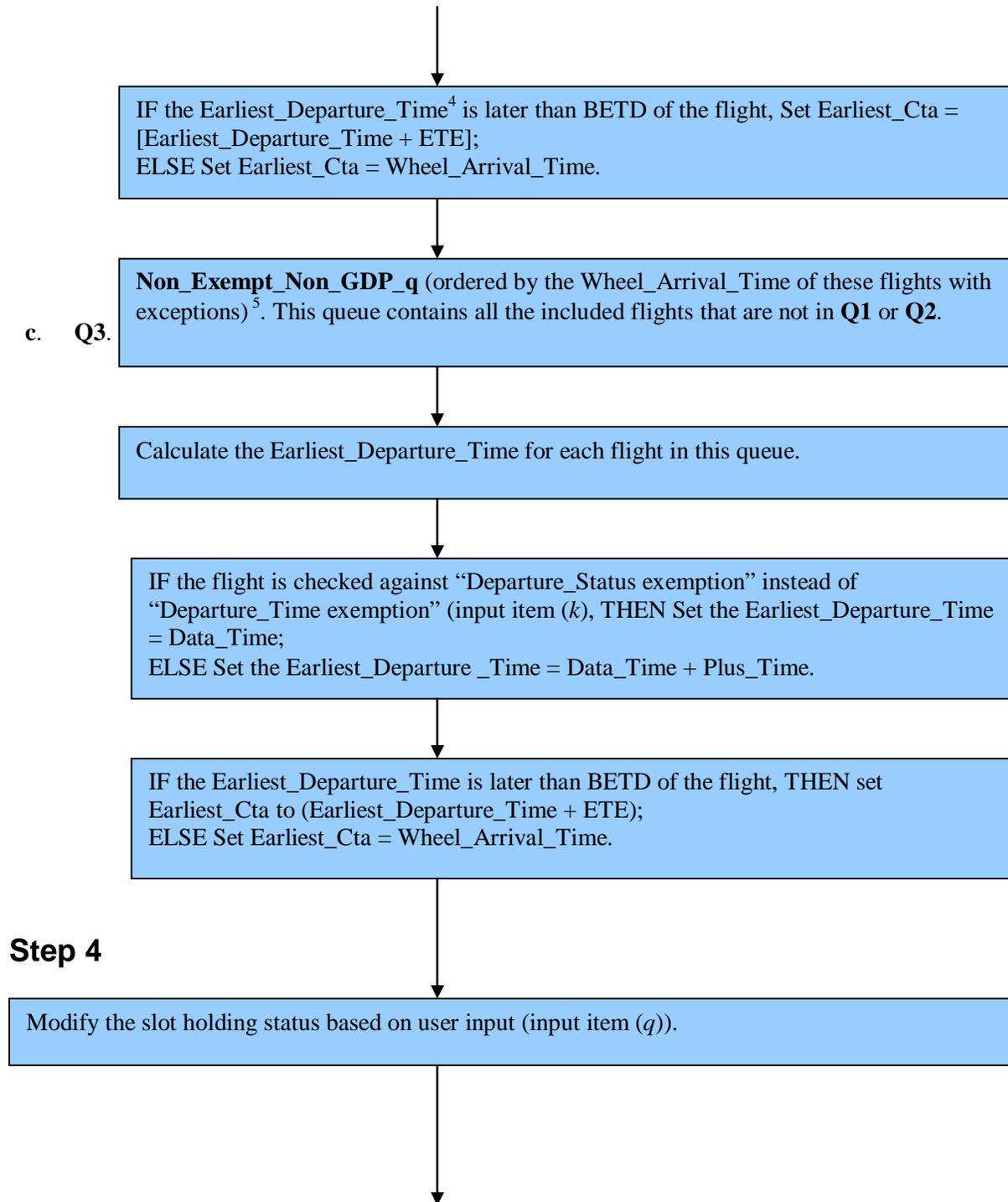
Step 3

Create 3 sorted queues (Q1, Q2, & Q3) and assign an Earliest_Cta¹ value for each of the included flights.

¹ Earliest_Cta is a temporary value for each flight to indicate the earliest time the flight's new Controlled Time of Arrival (CTA) can be.

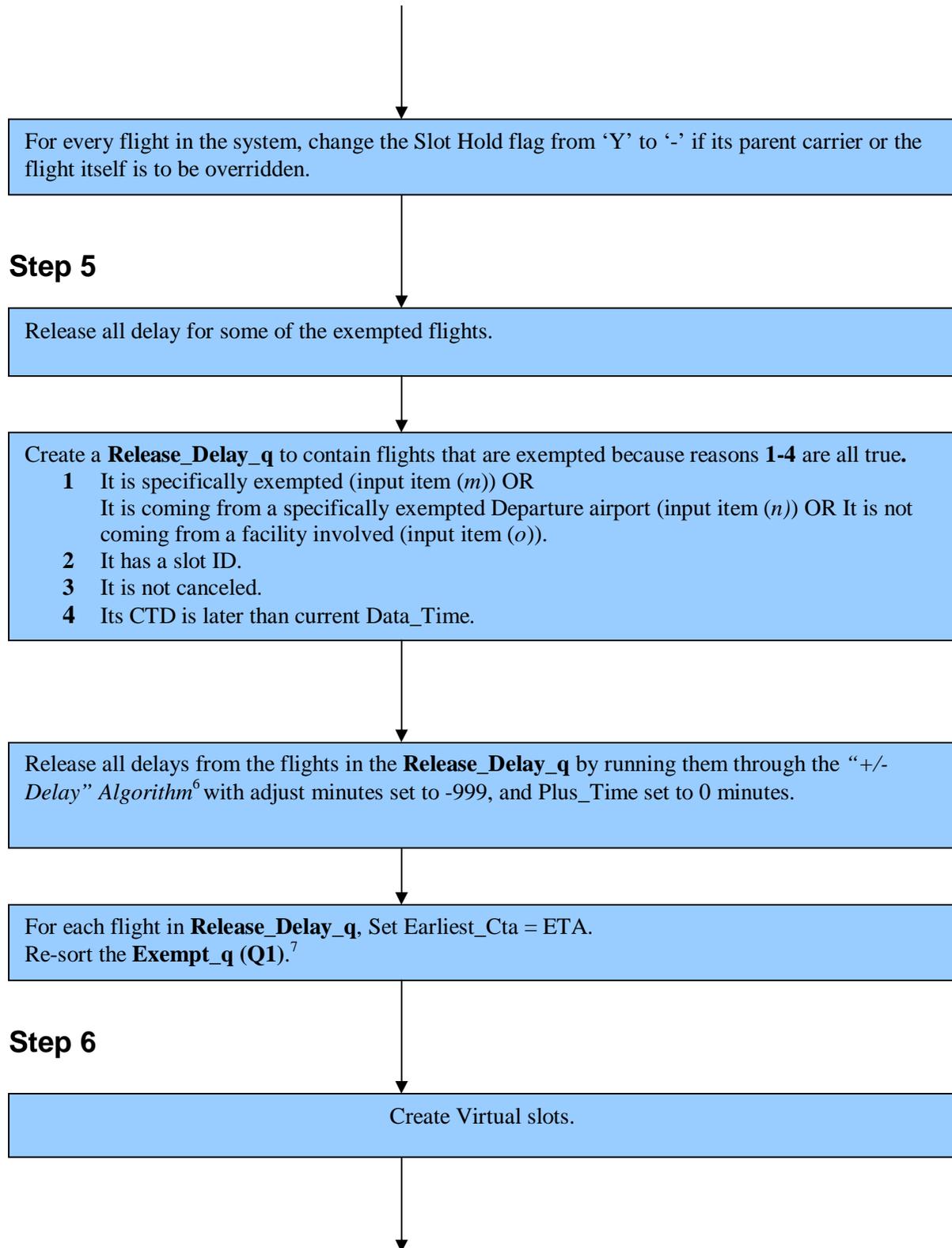


² Q1 is sorted by ETA to maintain the current flight arrival order.



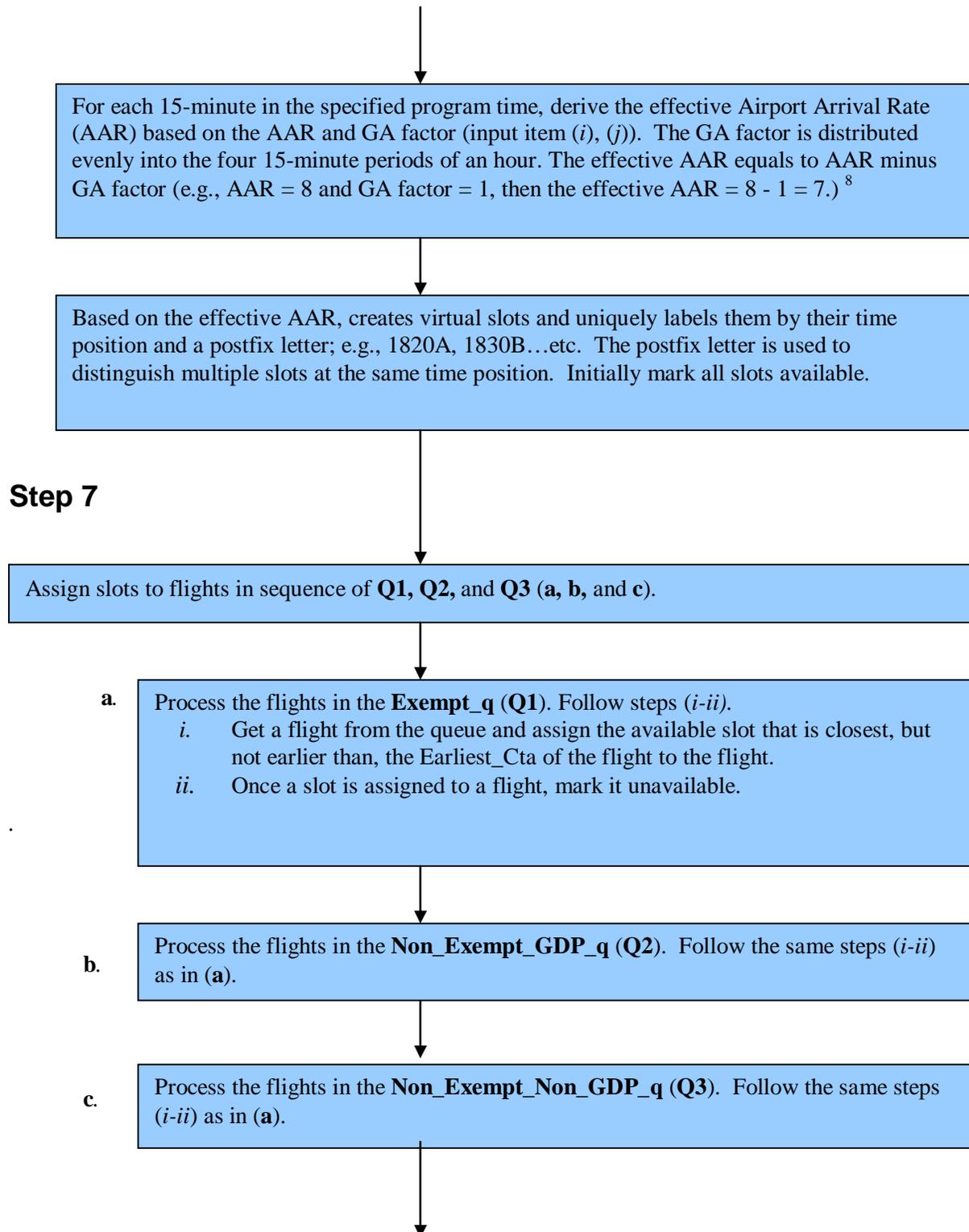
⁴ Earliest_Departure_Time = Data_Time for the GS flight whose exemption status is checked against Departure_Status and Data_Time + Plus_Time for all other flights.

⁵ Q3 uses CTA for ordering Slot Credit Substitution (SCS) flights, use Wheel_Arrival_Time for all other flights in Q3.



⁶ See "+/- Delay" Algorithm (page 5)

⁷ The two statements contained in this box are necessary since ETA of some flights is modified by this step of delay releasing..



⁸ The effective AAR calculation only applies to the hours in the GDP period. For the hours outside of the GDP period, effective AAR = specified AAR.

Step 8

Assign OCTA/CTA to the flights (the OCTA is assigned only once for a flight, if a flight already has a OCTA value, then this process will only apply to CTA).

a. Process the flights in the **Exempt_q (Q1)**. Do **Loop A**.

Loop A

i. IF the flight is an Exclude_and_Exempted flight, do not process it, throw away the associated slot and remove this flight from the **Exempt_q** and move to the next flight in the queue. If not, then go to (ii).

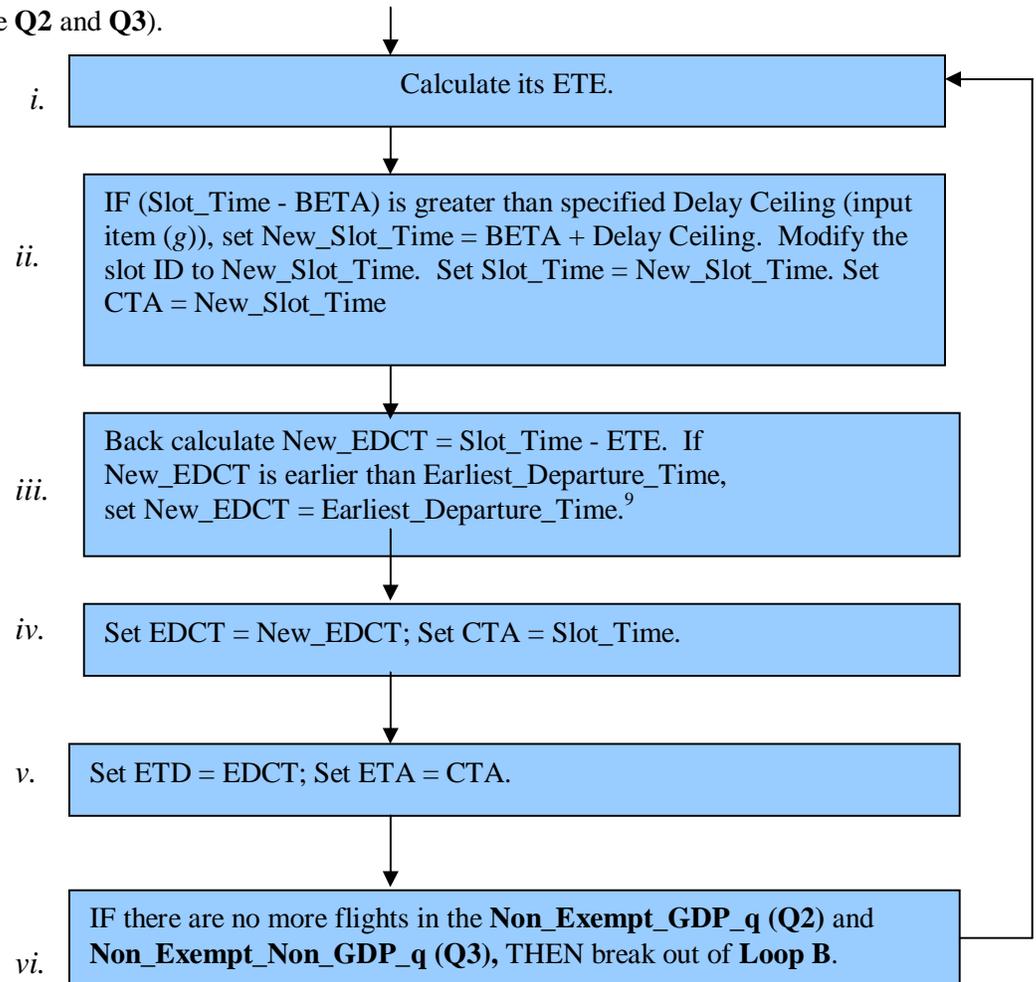
ii. Set its CTA = slot time.

iii. IF the flight never had a CTA, set its CTD = ETD;
Else:
• IF the flight is not activated, also set its CTD = ETD;
ELSE the flight's CTD remains the same as before.

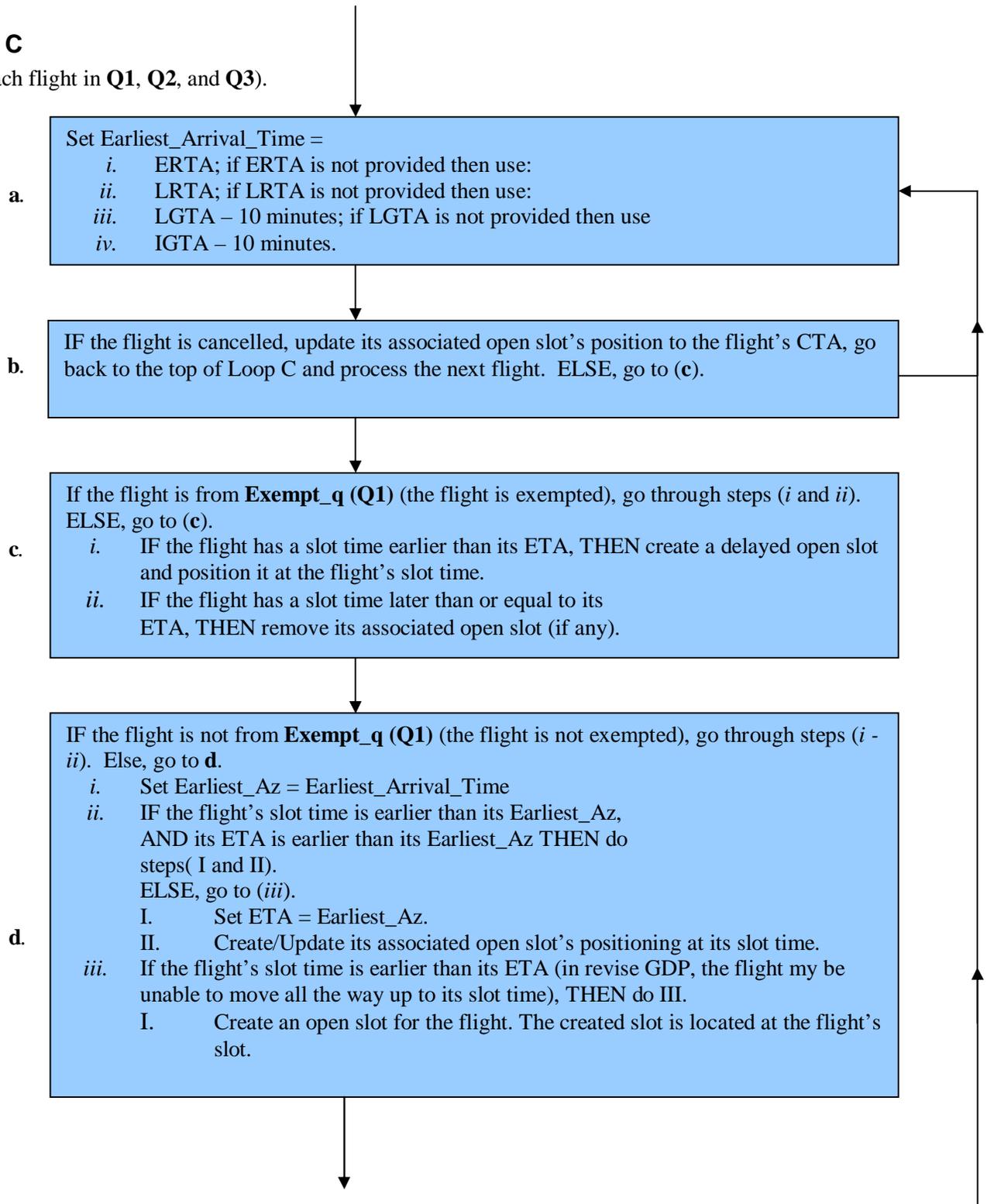
iv. IF there are no more flights in the **Exempt_q (Q1)**, THEN break out of **Loop A**.

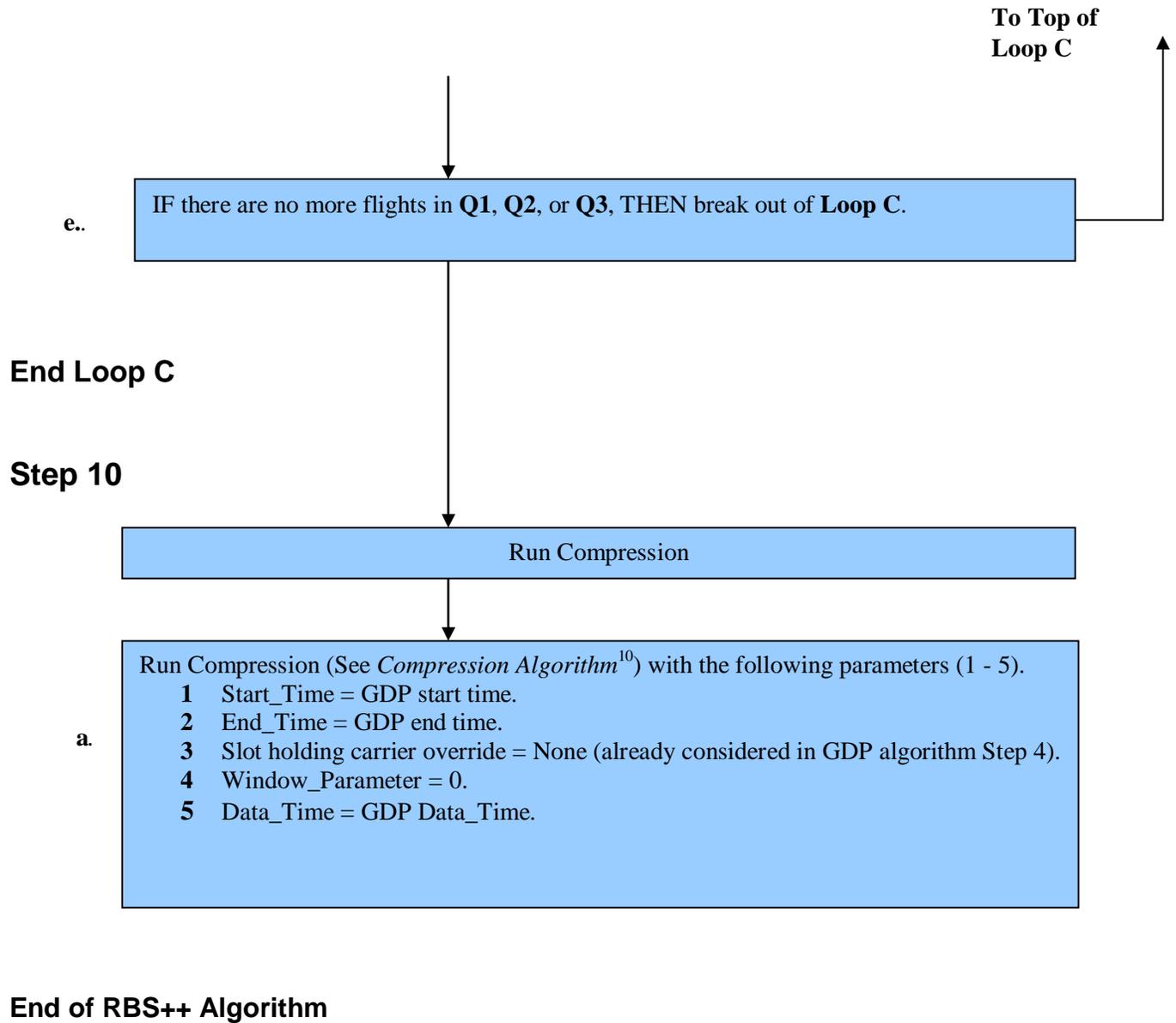
End Loop A

b. Process the flights in the **Non_Exempt_GDP_q (Q2)** and **Non_Exempt_Non_GDP_q (Q3)**. Do **Loop B**.

Loop B(For each flight in queue **Q2** and **Q3**).**End Loop B****Step 9**Adjust all the open slots associated with the included flight (Auto-Delay Algorithm). Do **Loop C**.

⁹ The Earliest_Depart_Time is defined as the data time for the GS flight whose exemption status is checked against departure status, and [data time + Plus_Time] for all other flights.

Loop C(For each flight in **Q1**, **Q2**, and **Q3**).¹⁰ In revised GDP, the flight may be unable to move all the way up to its slot time.



¹¹ See Compression Algorithm (page 5)

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B.3 Compression Algorithm ("Prioritize Member")

This Function requires the following input parameters:

- a. Start_Time = t0
- b. End_Time = t1
- c. Slot_Holding_Carrier_Override(s)
- d. Window_Parameter (default = 0)
- e. Data_Time
- f. Minimum_Move_Up_Time

Step 1

Modify the slot holding status based on user input (input item (c)).

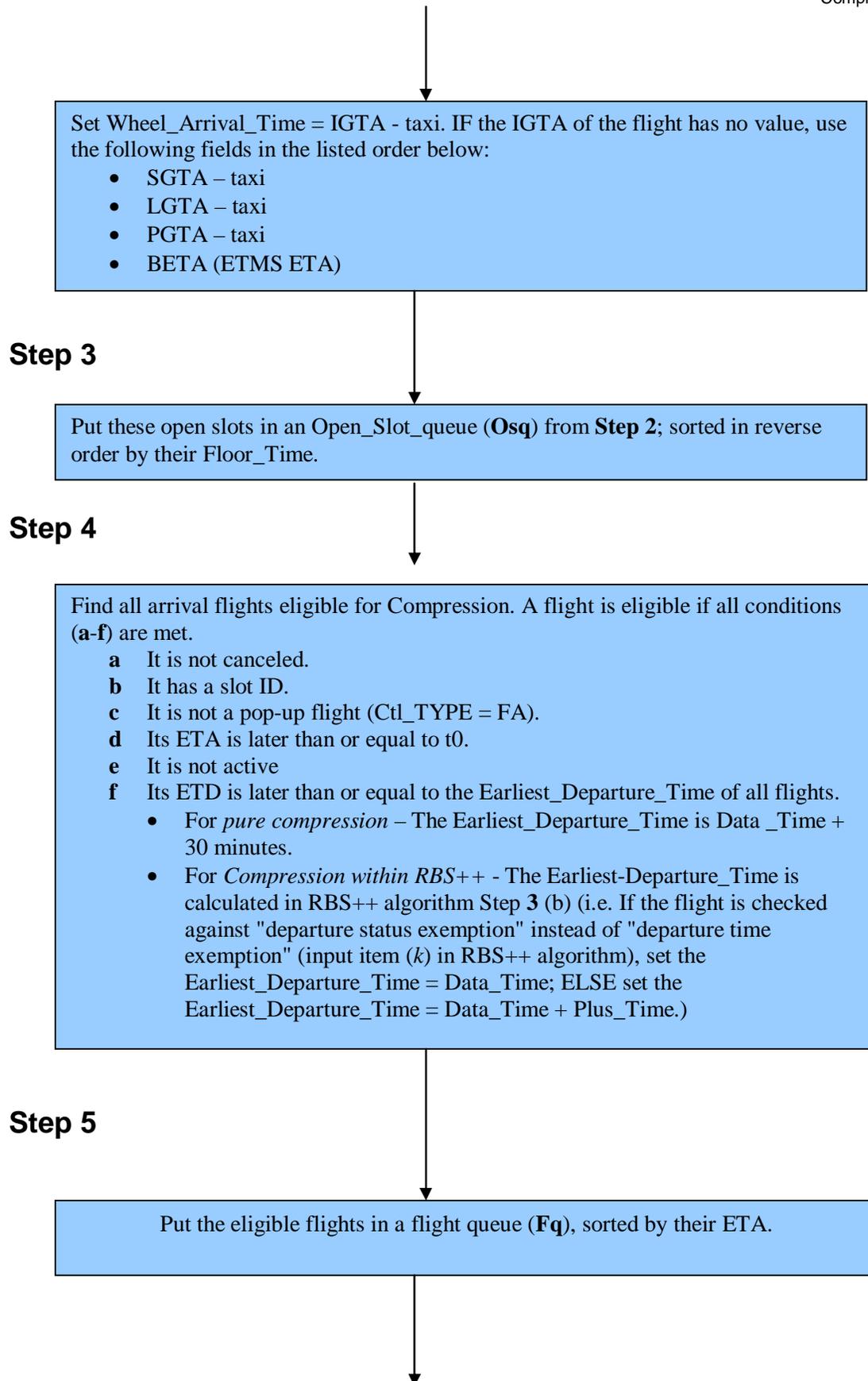
IF a flights parent carrier or the flight itself is optioned to be overridden, THEN change the Slot_Hold_Flag from 'Y' to '-' for every flight in the system.

Step 2

Find all eligible open slots for Compression. (for both pure compression operation and compression with RBS++) An eligibility check of an open slot is as follows; All conditions (a-c) must be met:

- a Time of Slot_Time is between t0 and t1.
- b Its associated flight has a slot ID (the Open_Slot is displayed in a solid color).
- c Its associated flight is not a pop-up flight (Ctl_Type = FA).

After passing the above 3 conditions, check if its associated flight is cancelled and the slot-hold flag is on, which makes the open slot not eligible. Otherwise the open Slot is eligible.



Step 6

Run the *Compression Algorithm*, do **Loop 1** below.

Loop 1 – for each *Open_Slot* in the *Osq*.

a. Set the *Floor_Time* for the open slot in case its associated flight has moved.

b. IF the *Floor_Time* for the open slot is earlier then the current position of the open slot, remove the *Open_Slot* and go back to the top of **Loop 1** and process the next open slot. ELSE, go to c.

c. Create a *Temporary_Flight_Queue (TFq)* that contains all eligible flights in *Fq*.

d. IF the flight associated with this open slot is a “former pop-up” (*FA_Delay* flag is set) OR the flight is removed.

True

False

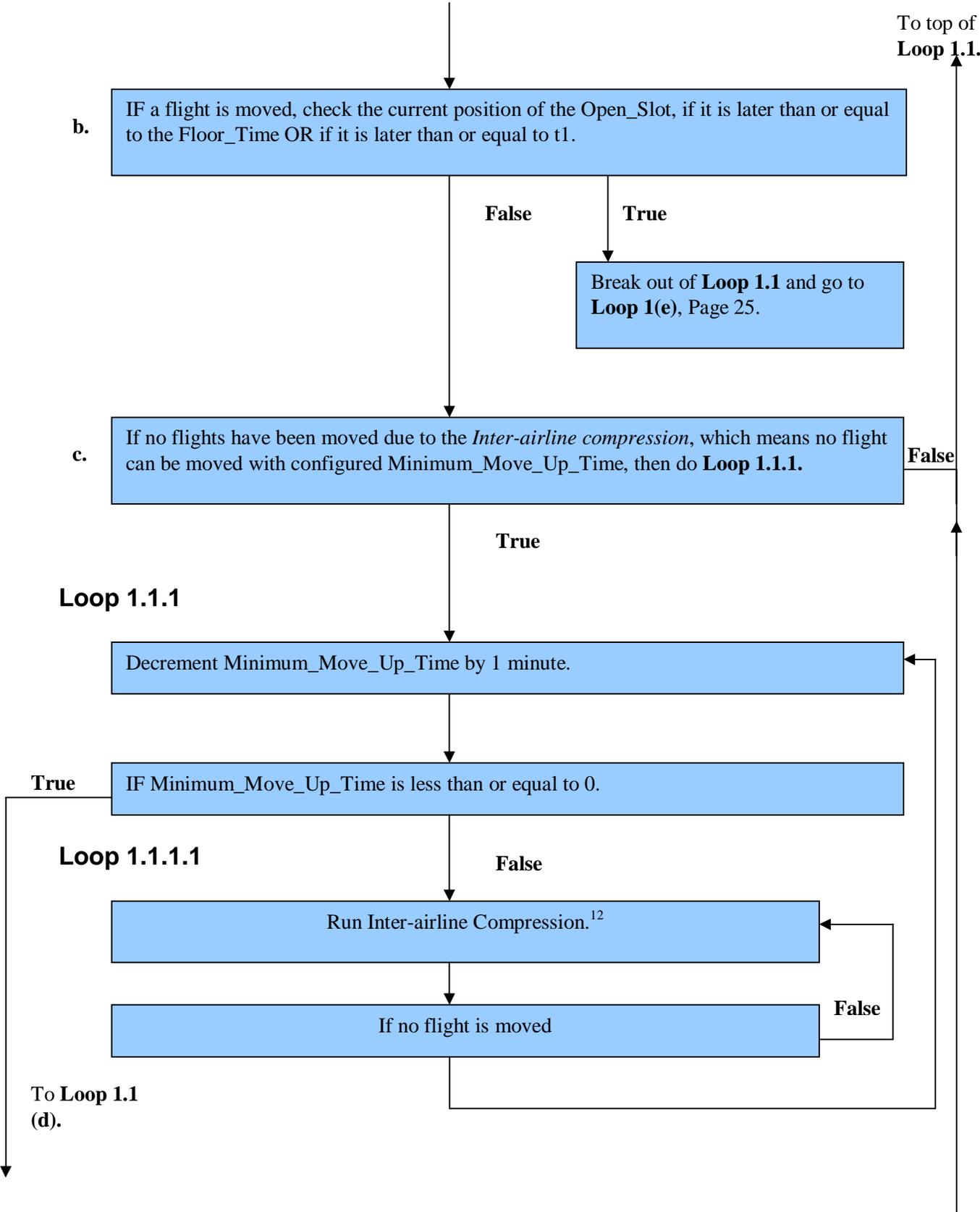
Do **Loop 1.2**, Page 24

Loop 1.1

a. Run *Inter-airline compression*¹¹ using flights in the *TFq*. The run will move only the first qualified flight in the *TFq*.

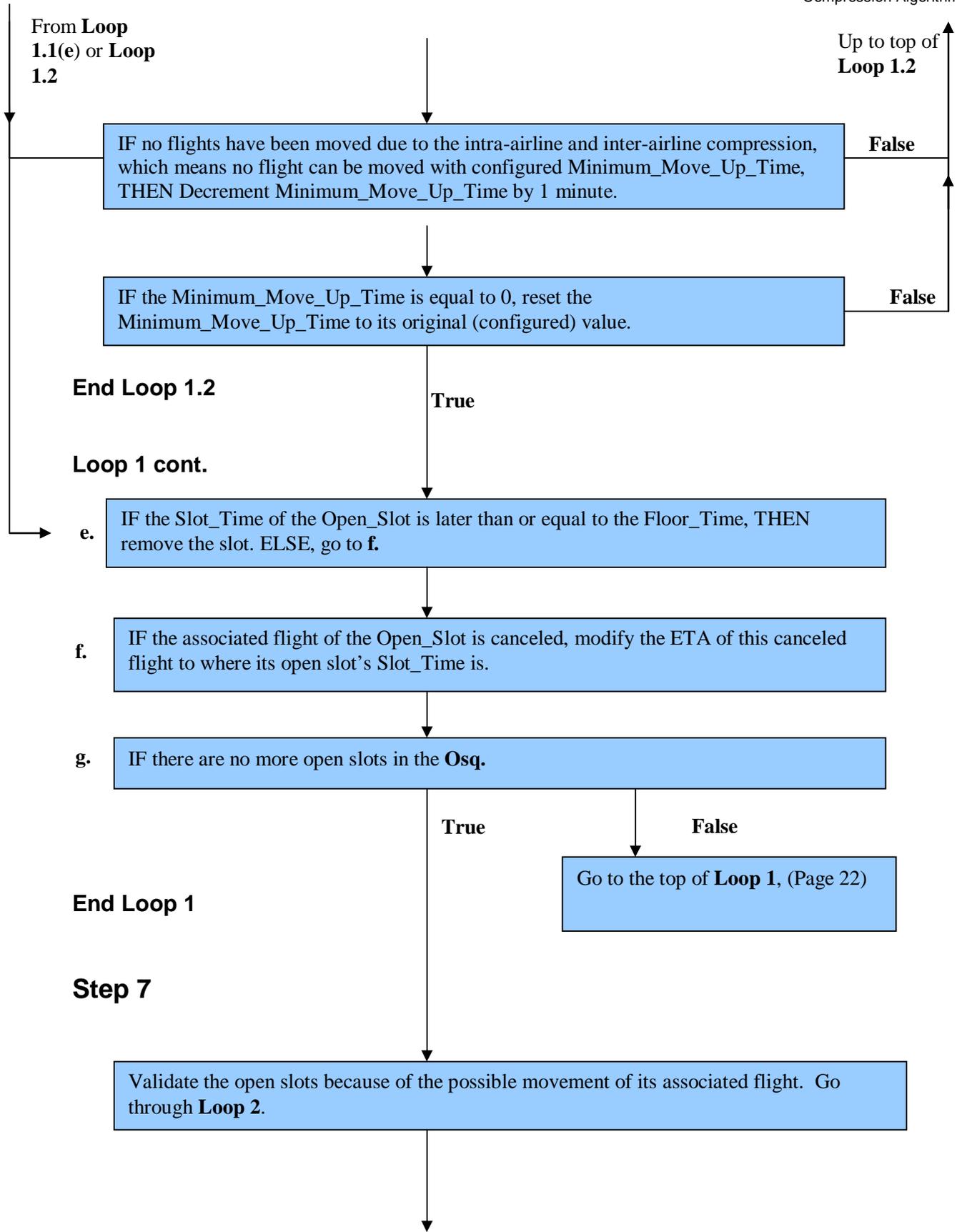
From **Loop 1.1** (c or e)

¹² See “Inter-airline Compression (for one open slot)” (page 5)

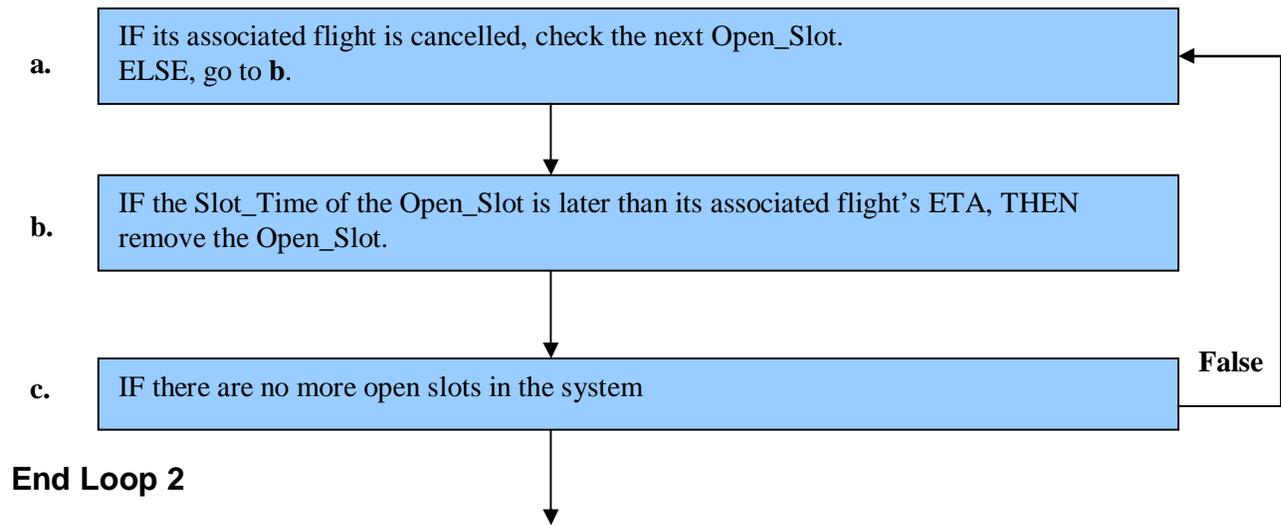


¹³ See “Inter-airline Compression (for one open slot)” (page 5)

From Loop 1.1(e)



Loop 2- for each Open_Slot in the system



End of Compression Algorithm (“Prioritize Member”)

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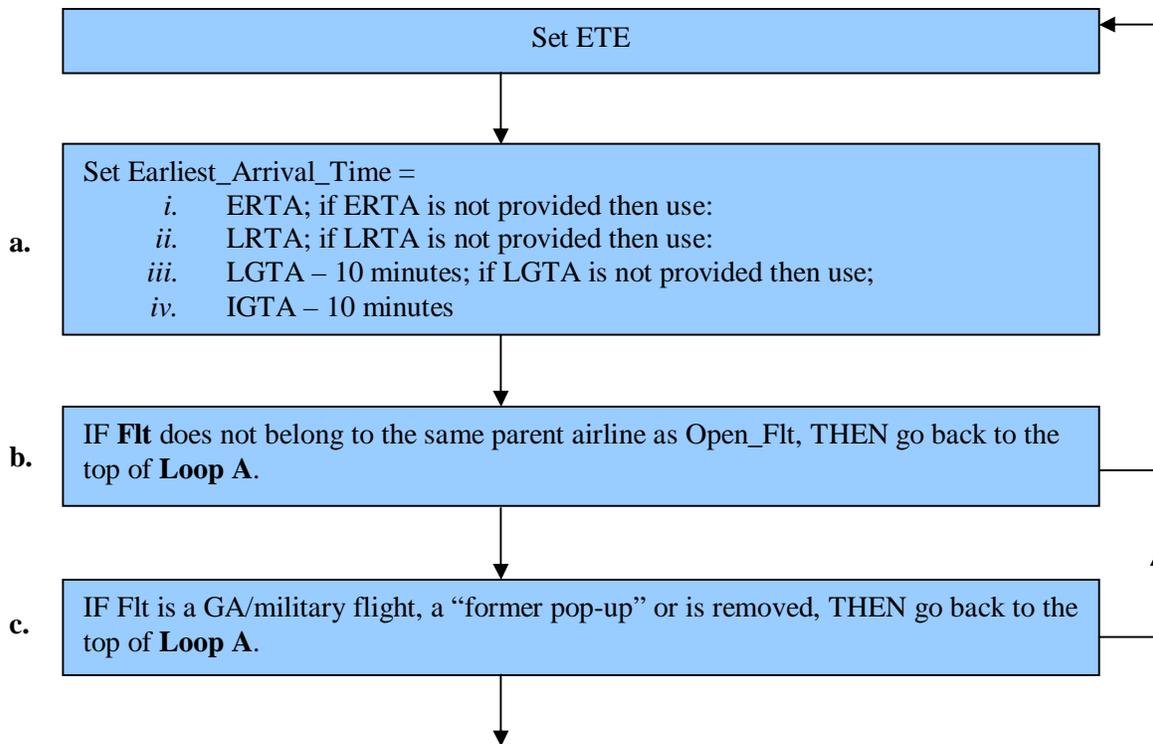
B.3.1 Intra-airline Compression Algorithm (For one open slot)

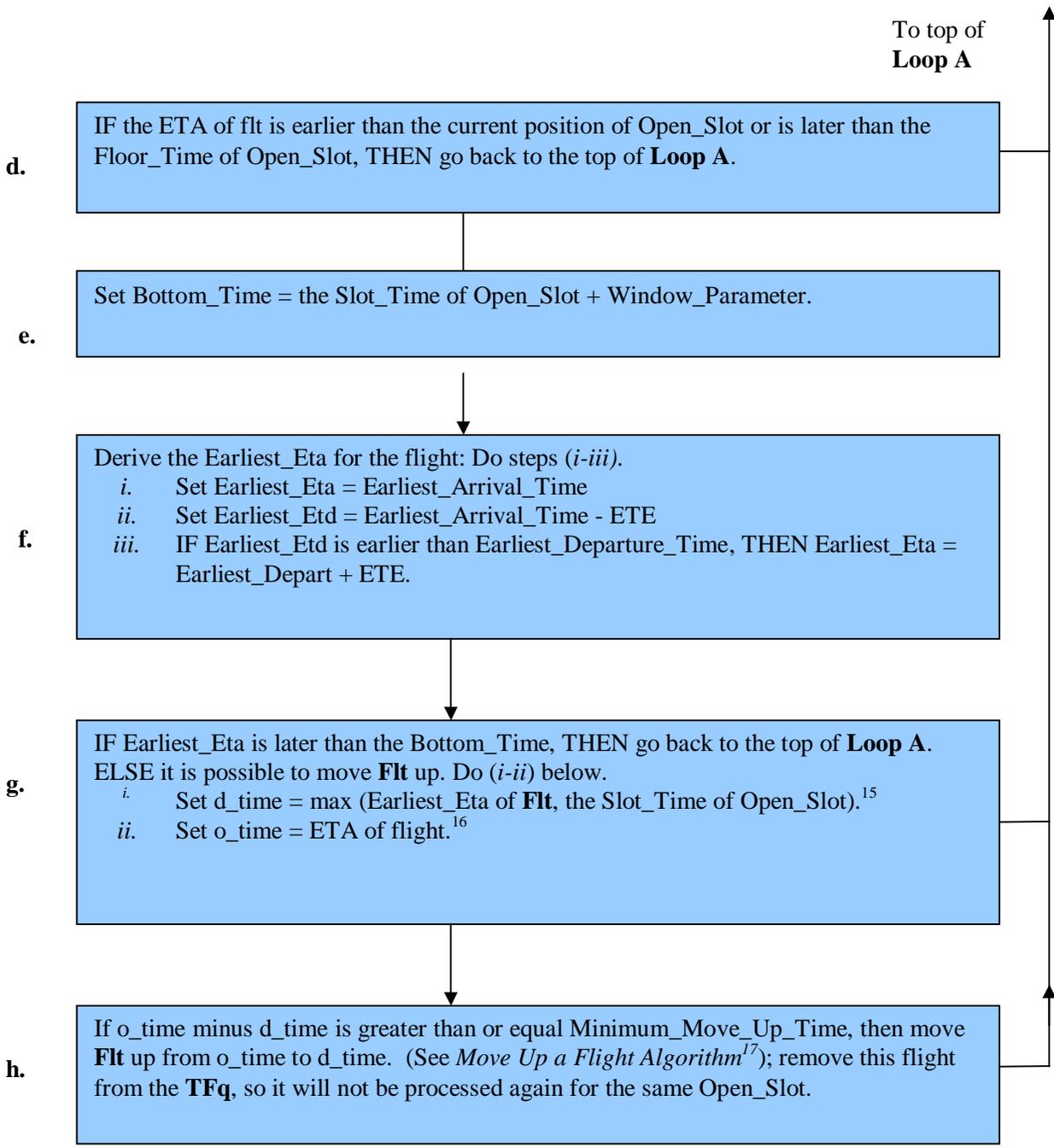
This Function requires the following input parameters:

- a. An Open_Slot
- b. A flight record (Open_Flt), which is associated with Open_Slot.
- c. The flight queue (**TFq**) containing all eligible flights for Substitution.
- d. Earliest_Departure_Time. For pure compression, the value of this field equals to Data Time + 30 minutes; For compression within RBS++, the value of this field is calculated in RBS++ algorithm **Step 3(b)**.
- e. Window_Parameter
- f. Minimum_Move_Up_Time

If the Open_Flt is a GA/Military flight, a former pop-up flight, or is removed, then break out of this function (intra-airline compression does not apply to open slots associated with those flights).

Loop A – for each flight in the **TFq**, say **Flt**.





End Loop A

End Intra-Airline Compression Algorithm

¹⁶ d_time is potentially where flight ends up.

¹⁷ o_time is where flight is at.

¹⁸ See Move Up a Flight Algorithm (page 5).

B.3.2 Inter-airline Compression Algorithm ("Prioritize Member" for one open slot)

This function requires the following input parameters:

- a. An *Open_Slot*.
- b. A flight record (*Open_Flt*), which is associated with *Open_Slot*.
- c. The flight queue (*TFq*) containing all eligible flights for Compression.
- d. *Window_Parameter*.

Loop B

Step 1

Run *Compress Flight Algorithm*¹⁸ with **member-only option**. The run will move only the first qualified flight in the **TFq**. If a flight is moved due to this member-only compression, return.

Step 2

Run *Compress Flight Algorithm*¹⁹ with **non member-only option**.

End Loop B

End of Inter-airline Compression Algorithm

¹⁹ See "Compress Flight Algorithm" (page 5)

²⁰ See "Compress Flight Algorithm" (page 5)

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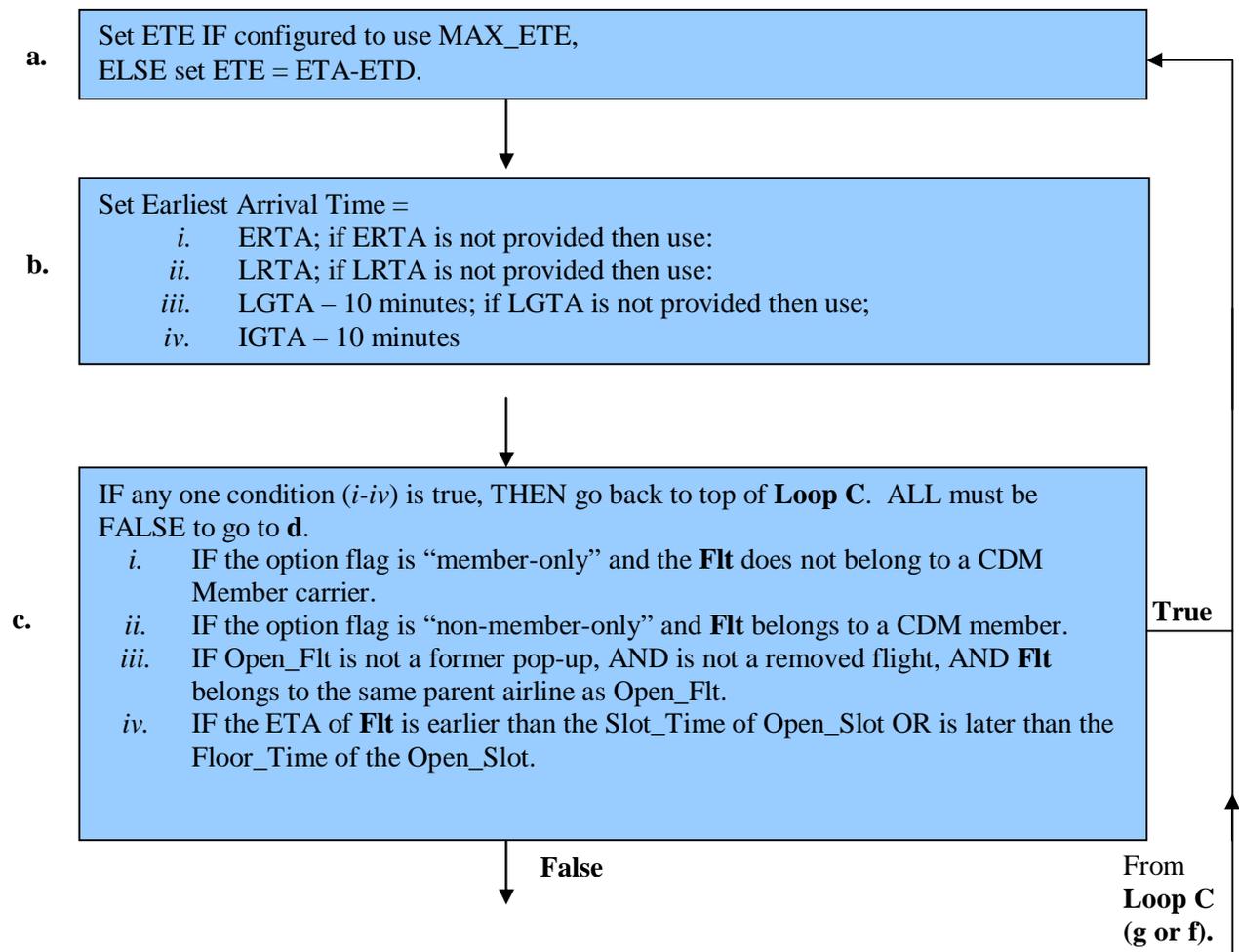
B.3.3 Compress Flight Algorithm

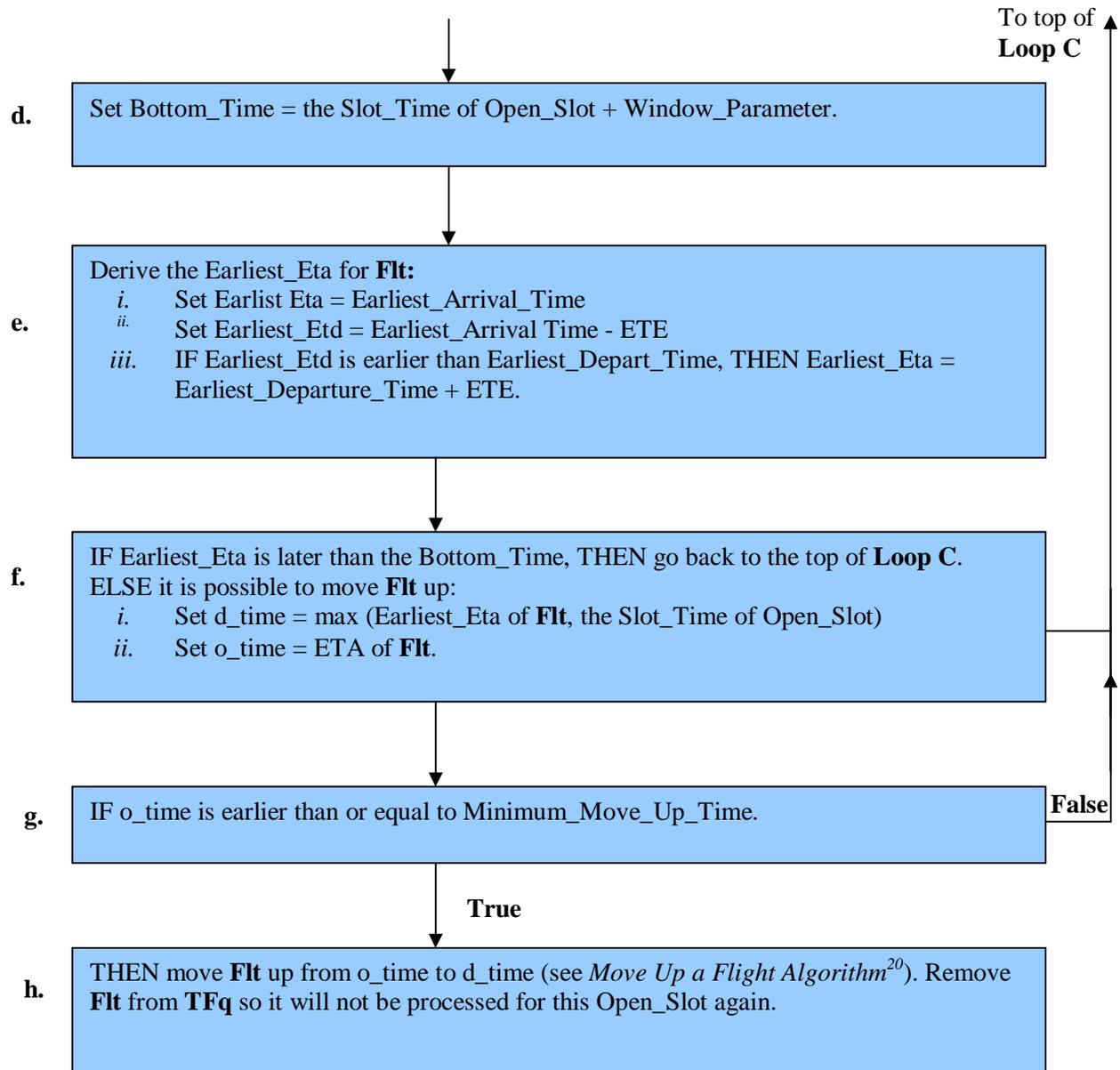
This function requires the following input parameters:

- a. An *Open_Slot*.
- b. A flight record (*Open_Flt*), which is associated with *Open_Slot*.
- c. The flight queue (**TFq**) containing all eligible flights for Compression.
- d. *Option_Flag* of “member-only” or “non-member-only”.
- e. *Earliest_Departure_Time*. For pure compression, the value of this field equals to *Data_Time* + 30 minutes; For compression within RBS++, the value of this field is calculated in RBS++ algorithm **Step 3(b)**.
- f. *Window_Parameter*.
- g. *Minimum_Move_Up_Time*.

Loop C

For each flight in the flight queue, say **Flt**.





End Loop C

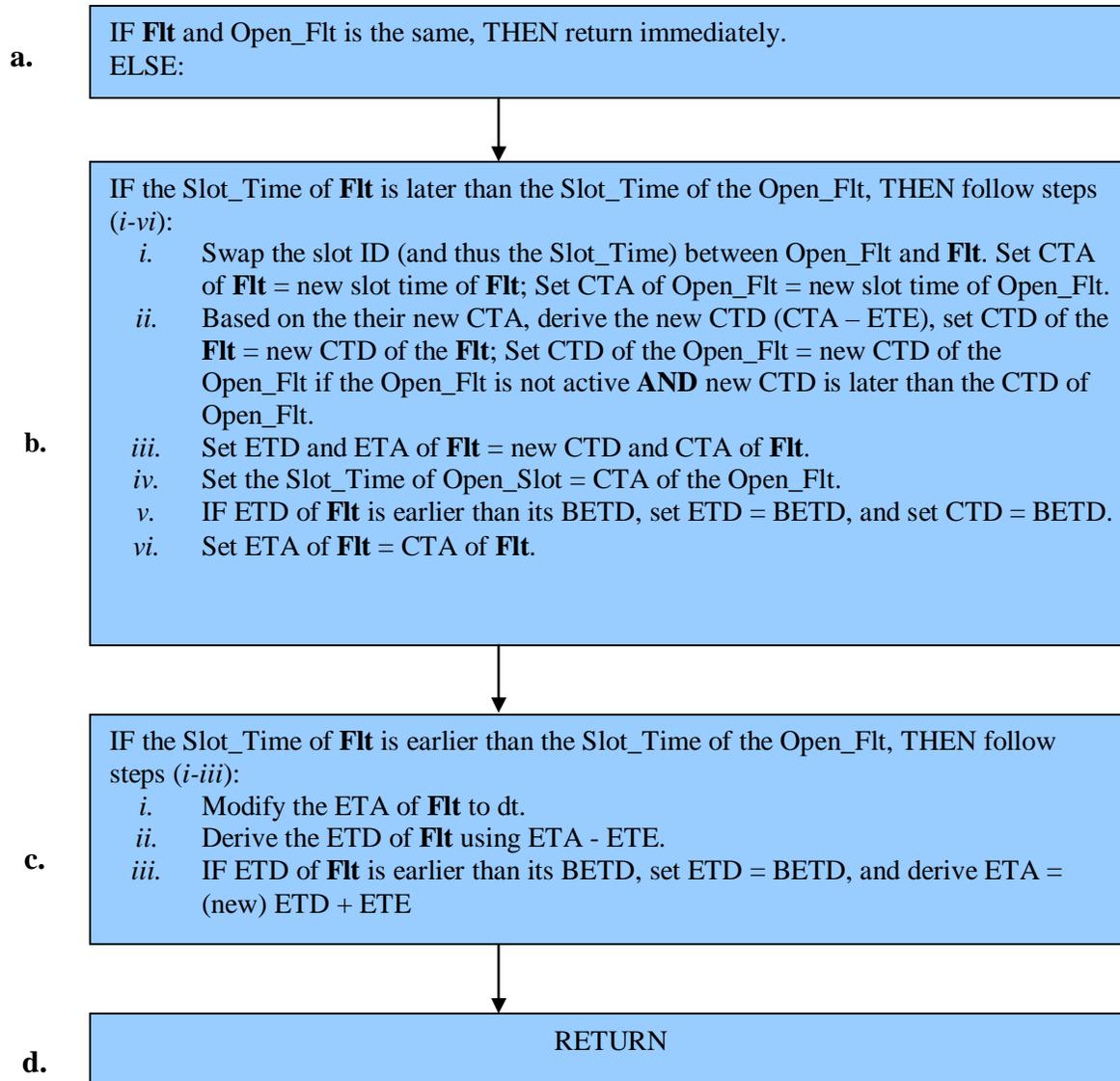
End Compress Flight Algorithm

²¹ See “Move Up a Flight Algorithm (page 5)

B.3.4 Move Up a Flight Algorithm

This function requires the following input parameters:

- a. flight record (Flt), which is to be swapped with an open slot.
- b. Open_Slot.
- c. A flight record (Open_Flt), which is associated with Open_Slot.
- d. The time from where the flt is moving (ot).
- e. The time to where the flt is moving (dt).



End Move Up a Flight Algorithm

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B.4 “+/- Delay” Algorithm

Note that the “program” in the following text refers to “+/- Delay” program. This function requires the following input parameters:

- a. Start time = t0
- b. End time = t1
- c. Data_Time
- d. Included AFIX
- e. Included Aircraft Type
- f. Included Major Carrier
- g. Adjusted minutes (A_Min)
- h. Plus_Time in minutes indicate how many minutes within the data time should be used for departure exemption
- i. Specific flight exemption
- j. Specific airports exemption
- k. Facilities (centers/airports) involved

Step 1

Find all arrival flights included in the program. A flight is included IF all three criteria (*i-iii*) below are true:

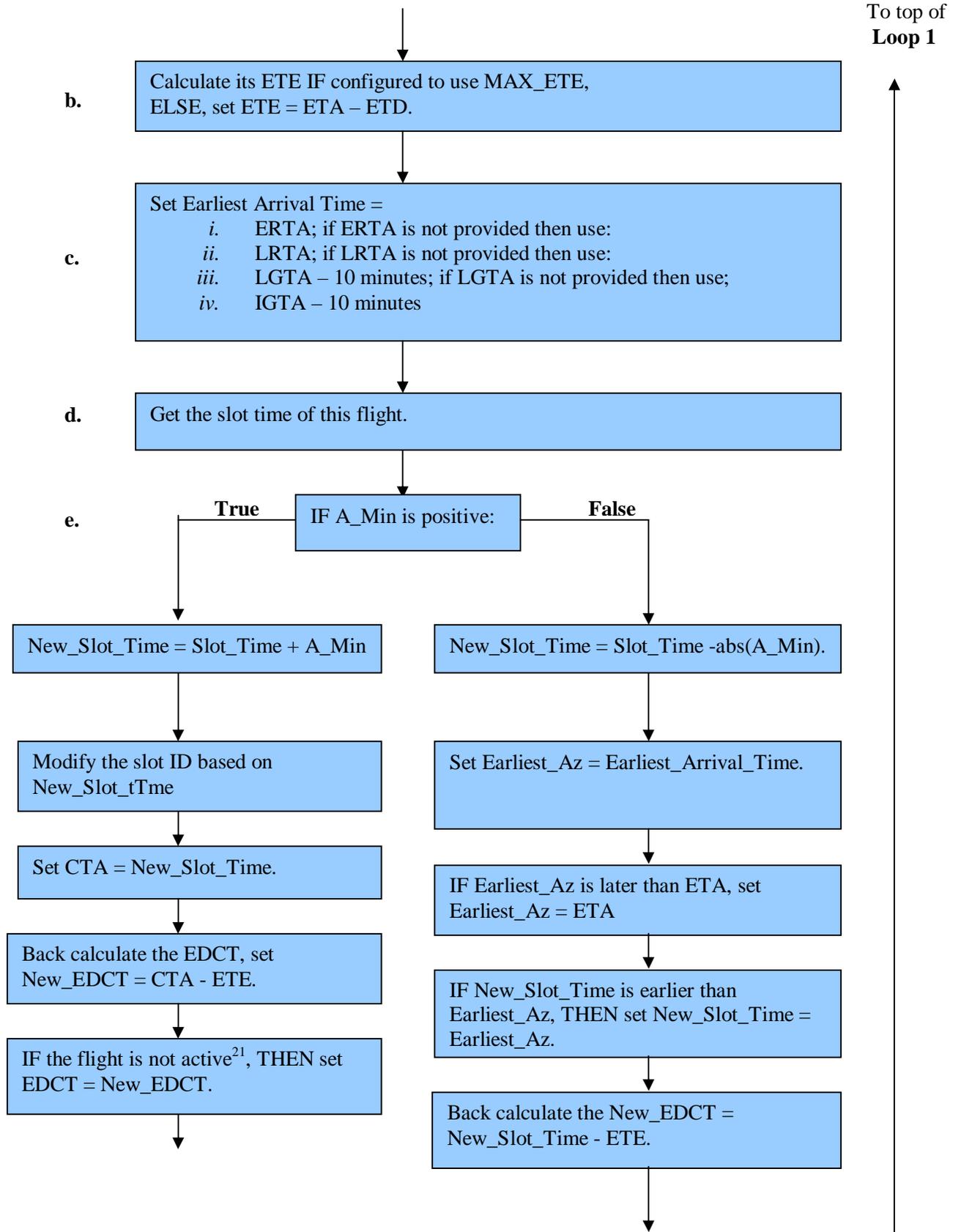
- i.* Its AFIX, Aircraft Type, and Major Carrier fit specified criteria.
- ii.* It has a slot ID
- iii.* Its ETA is within the specified program time (from t0 through t1)

Step 2

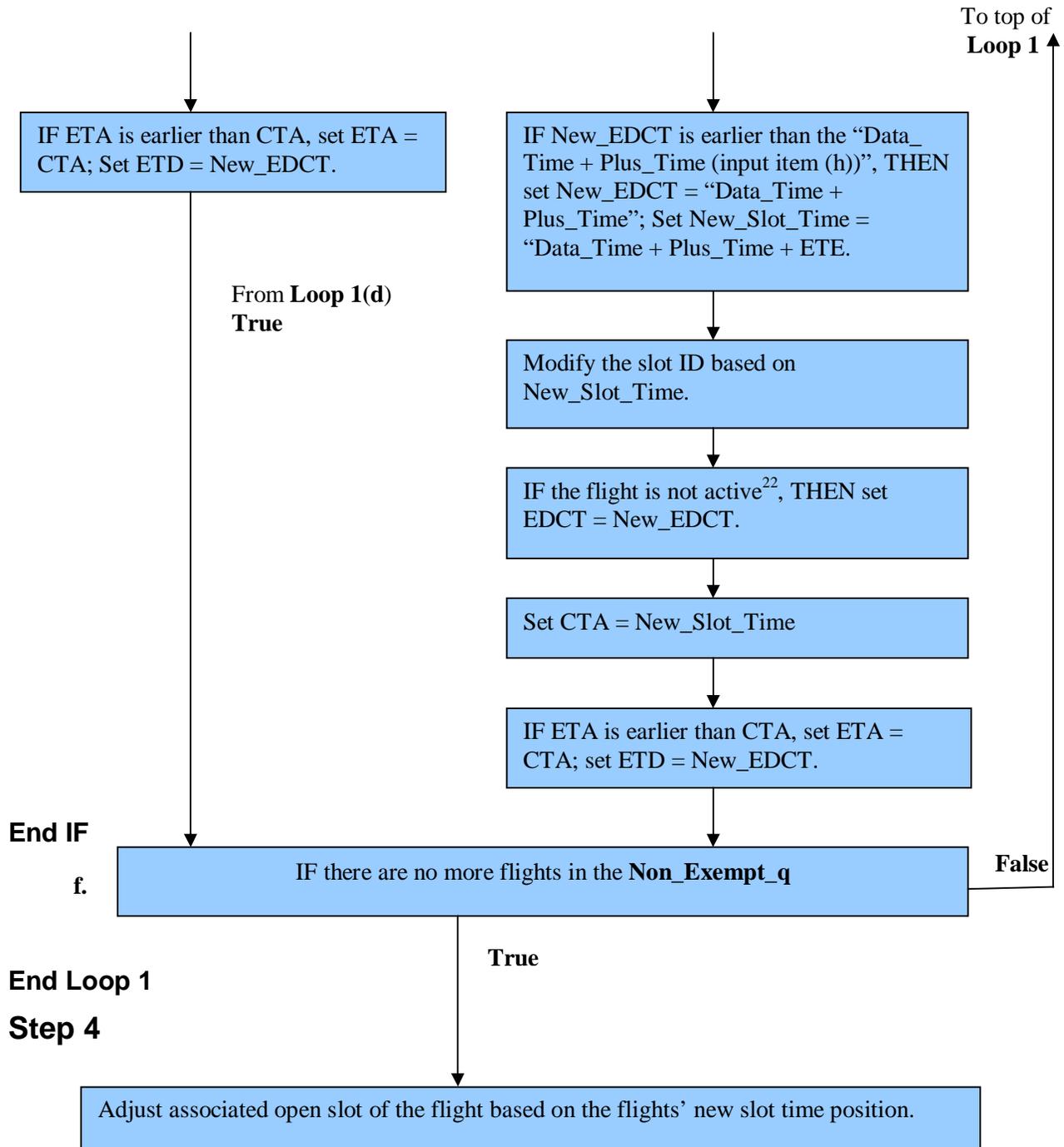
Use the exemption criteria specified by the user to determine if an included flight is exempted from this program.

Set Wheel_Departure_Time = IGTD - taxi. IF the IGTD of the flight has no value, use the following fields in the listed order:

- SGTD + taxi
- LGTD + taxi
- PGTD + taxi
- BETD (ETMS ETD)



²² A flight is active if its ETD has a prefix letter of “A” or “E”.



End “+/- Delay” Algorithm

²³ A flight is active if its ETD has a prefix letter “A” or “E”.

B.5 Ground Stop Algorithm

Note: The “program in the following text refers only to “Ground Stop” program.

This function requires the following input parameters:

- a. One or more Ground Stop Statements, each contains the following parameters:²³
 1. Start time = t0
 2. End time = t1
 3. Involved facilities - centers and/or airports
- b. Included AFIX
- c. Included Aircraft Type
- d. Included Major Carrier
- e. Target AAR (for each 15 minute time period)
- f. Plus_Time in minutes indicate how many minutes within the data time should be used for departure exemption
- g. Specific flights exemption
- h. Specific airports exemption
- i. Data_Time
- j. Option of Immediate/Future Ground Stop is intended.²⁴

Step 1

Put all the input Ground Stop Statements into a statement-queue, sort the queue by t1 (End Time) of the Ground Stop Statement.

Step 2

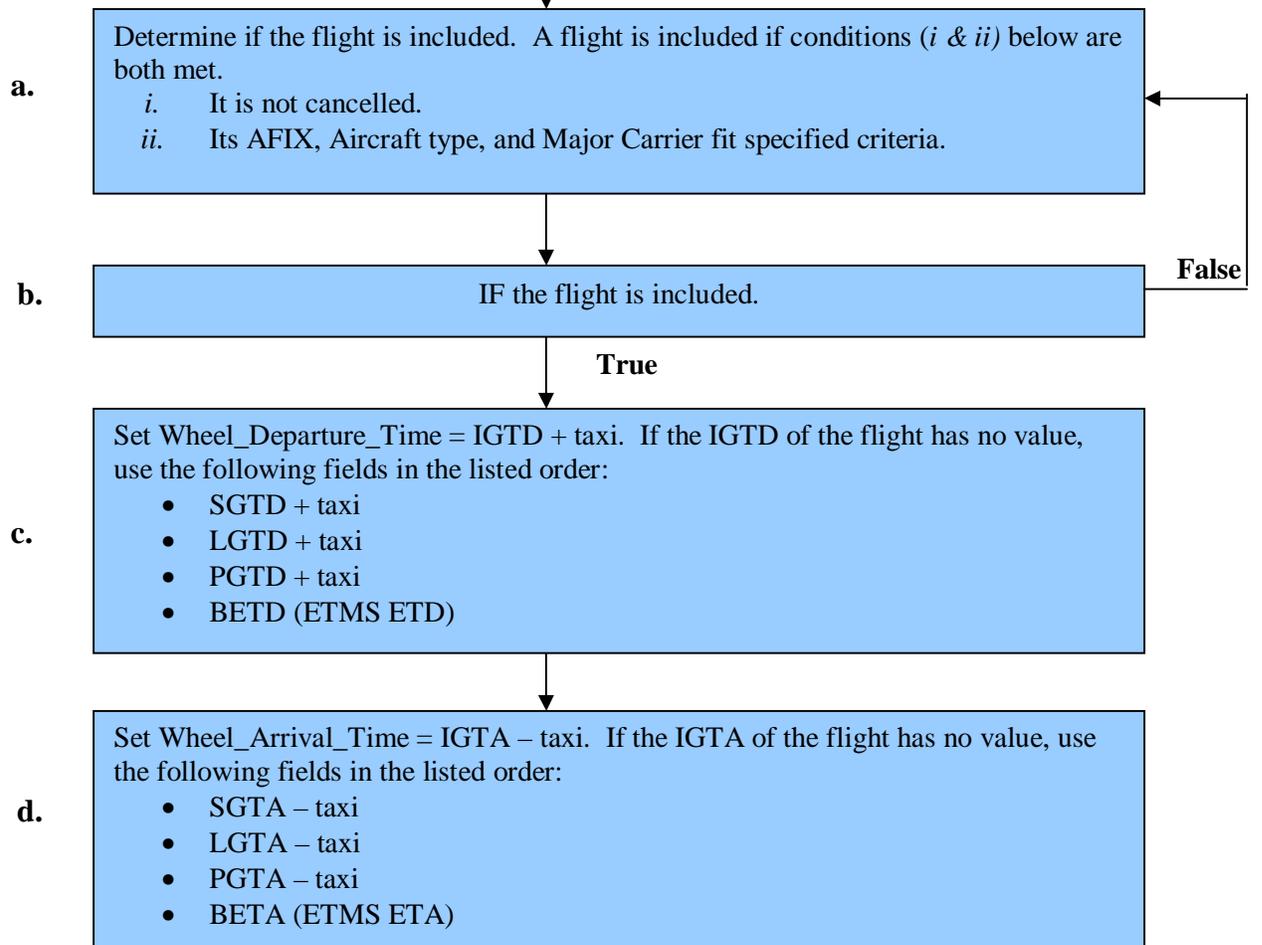
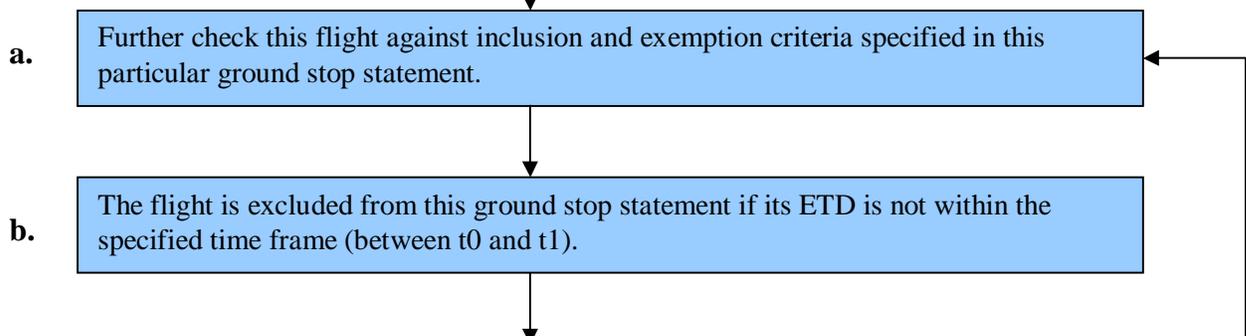
Process each flight record in the system, Do **Loop 1**.

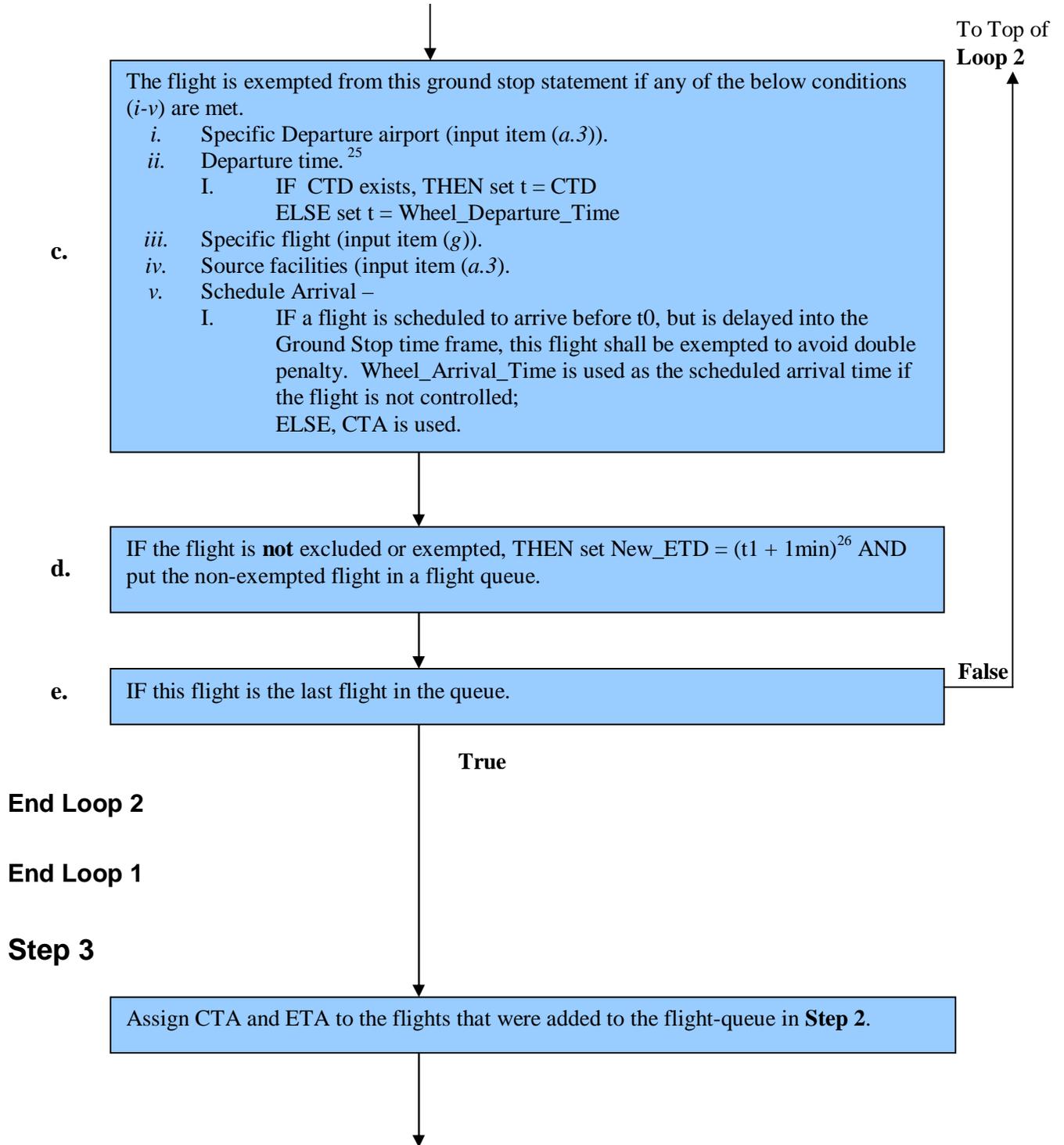
²⁴ The current panel selection is the first for Ground Stop parameters.

²⁵ The difference lies in the default setting of the above parameters.

Loop 1

For each flight in the system

**Loop 2**For each Ground Stop
Statement in the statement-queueFrom
Loop 2(e).

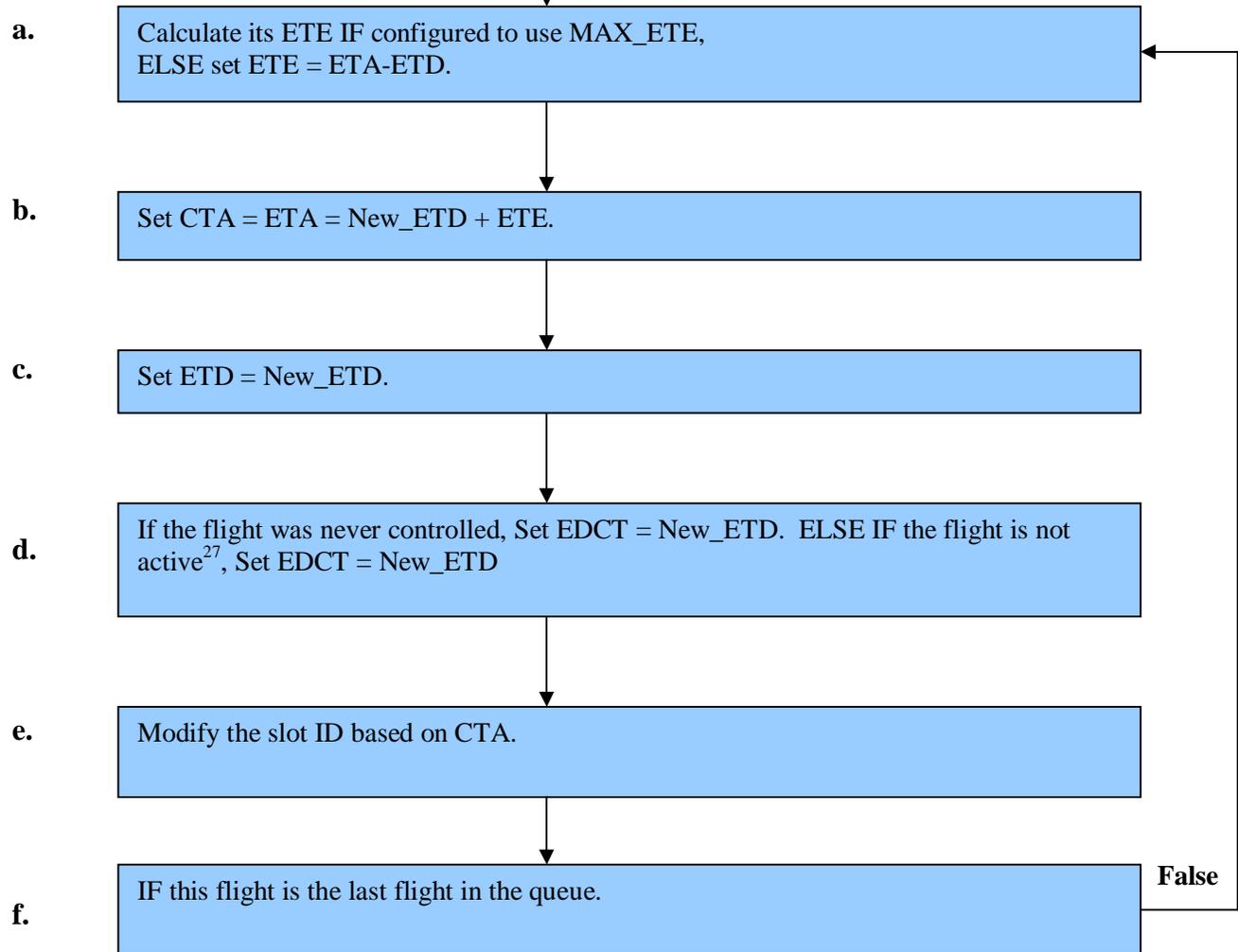


²⁶ The flight is exempted when t is less than (earlier than) Data Time (input item (i)) + Plus_Time (input item (f)).

²⁷ Because the Ground Stop statements are sorted by its t1 (Step 1), the flight will always get the latest new_ETD if more than one statement includes this flight.

Loop 3

For each flight in the Flight_Queue.



End Loop 3

End of Ground Stop Algorithm

²⁸ A flight is active if its ETD has a prefix letter of 'A' or 'E'.

C.2 Purge Algorithm

The Purge Algorithm is used by FSM to model the cancellation of a Traffic Management Initiative. The **EDCT** > *Purge* command is sent to ETMS for implementation. ETMS then uses the same logic for the Actual purge.

This function requires the following input parameters:

- a. MIN_NOTIF_AFTER_EDCT_PURGE = 45 minutes.

Note: The MIN_NOTIF of 45 minutes is configured in both FSM and ETMS to match each other. 45 minutes is the average minimum time an airline needs to get a flight ready for takeoff after a program is cancelled.

- b. Use_Time
- c. Actual_Depature_Time

Step 1

IF the flight is active or completed, THEN set ETD = Actual_Depature_Time and do NOT Purge. Otherwise, do Step 2.

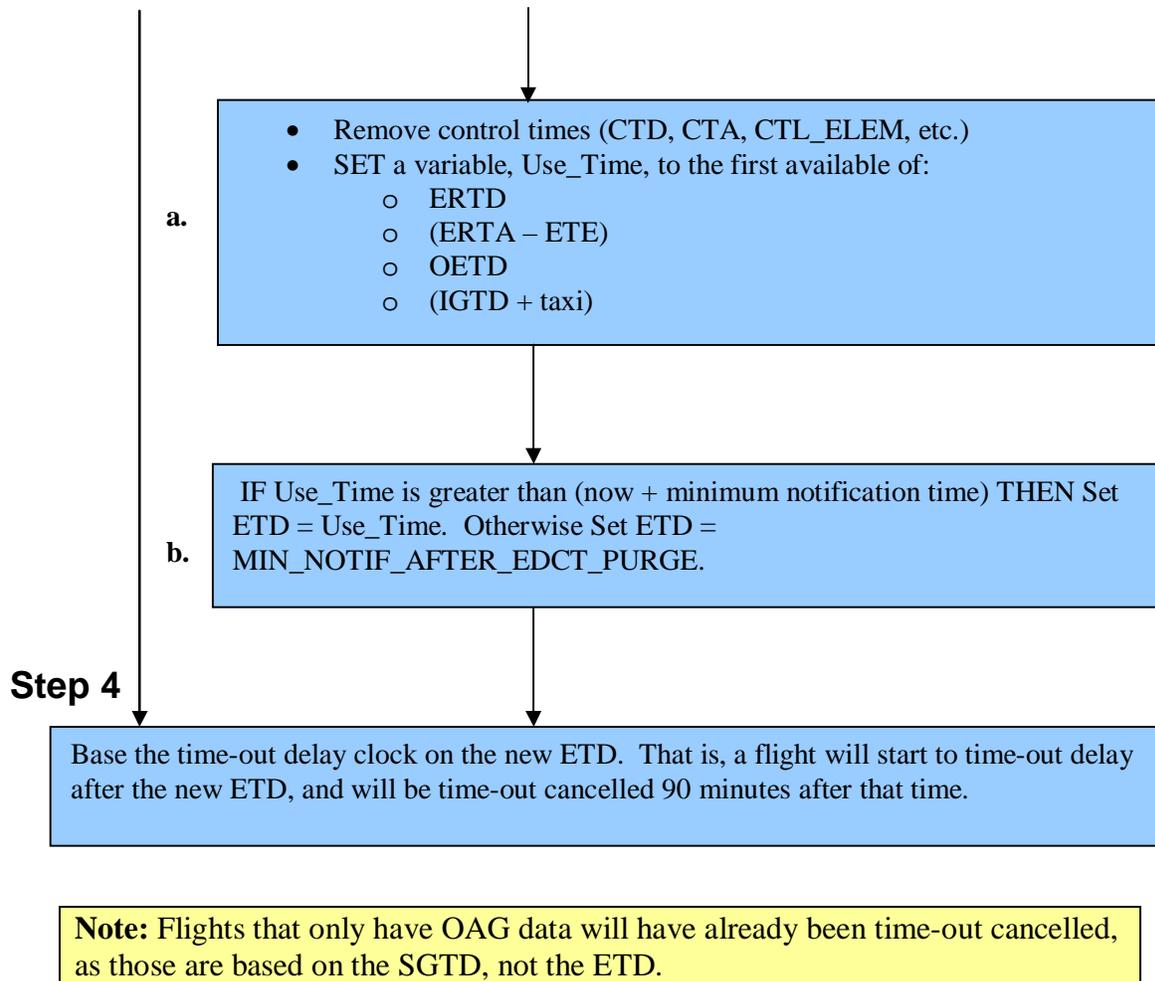
Step 2

IF CTD is less than or equal to (now + minimum notification time), THEN do Step 2(a). ELSE do Step 3.

- a.
- Do NOT change ETD/ETA
 - Remove control times (CTD, CTA, CTL_ELEM, etc.)

Step 3

IF CTD is greater than or equal to (now + MIN_NOTIF_AFTER_EDCT_PURGE THEN do Step 3(a & b).



End of Purge Algorithm

C.3 Airborne Holding Algorithm

This function requires the following input parameters:

- a. Airport. The Airport object that the algorithm will be applied to.
- b. Data Time = dt.
- c. Start Time = t0.
- d. End Time = t1.
- e. AAR Values (for each 15 minutes time period).
- f. GA_Factor (per hour or for each 15 minutes time period).
- g. Taxi (Default 10 minutes).
- h. Time field to be used. (BY_ETA, BY_BETA, BY_WHEEL_AZ, BY_OCTA, BY_CTA, BY_EAFT)

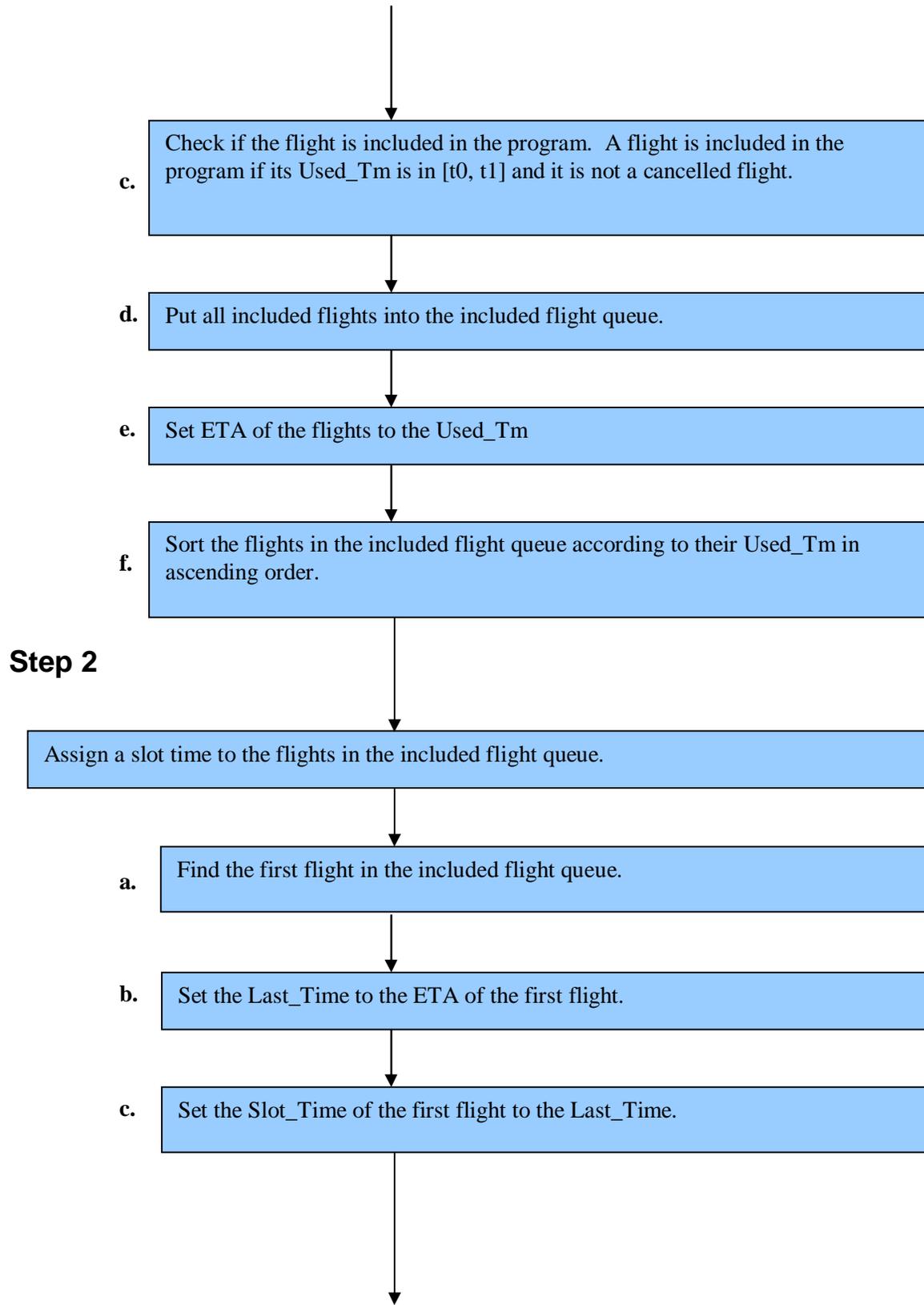
Note: All Operations outlines below are performed on flights of the target airport.

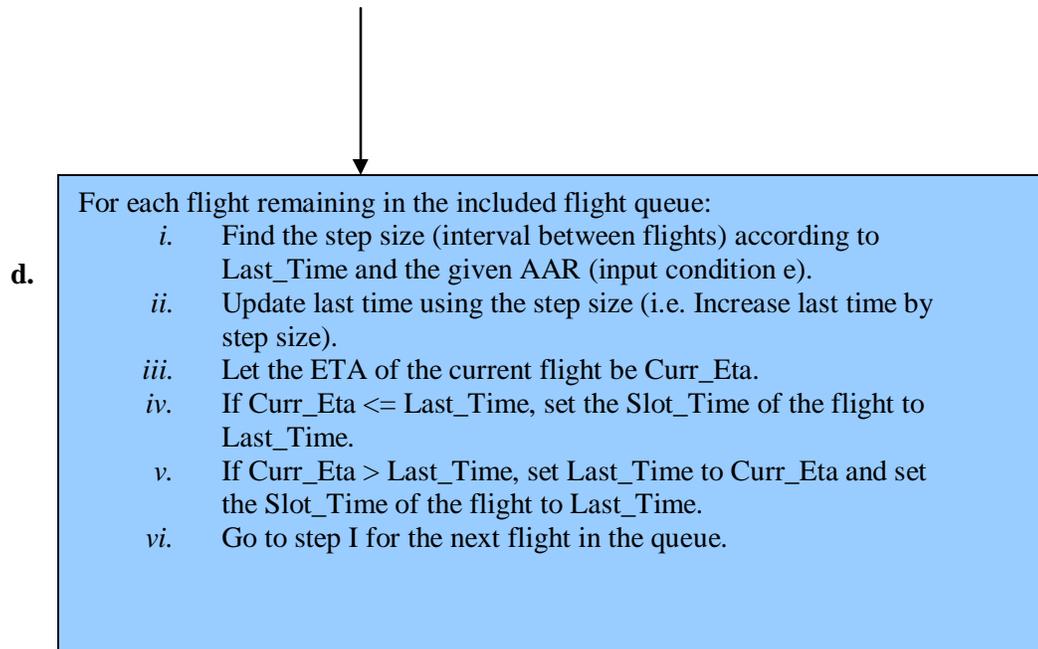
Step 1

Find all arrival flights included in the program (included flight queue),
For each arrival flight:

- a. Compute Wheel_Arrival_Time = IGTA - taxi. If the IGTA of the flight has no value, use the following fields in the listed order:
- SGTA - taxi
 - LGTA - taxi
 - PGTA - taxi
 - BETA

- b. Derive used time based on input parameter h. Denote the time as Used_Tm.





End Airborne Holding Algorithm

Appendix C: Glossary of Abbreviations

III - Category III Flight (flight remark)

AAL - American Airlines

AAR - Airport Acceptance Rate

ADC - Advise Customs (flight remark)

Airborne Holding - A deterministic mathematical model used to calculate predicted airborne holding.

AffAvgDelay - (Affective Average Delay) total delay divided by number of non-exempted flights, calculated after running a GDP.

ALD - The carrier imposed a delay on the flight (delay status).

ARTD /ARTA - Actual Runway Times (Departure/Arrival)

ASD - Aircraft Situation Display

ATA - Actual wheels-on Arrival Time

ATCSCC - Air Traffic Command System Control Center

ATD - Actual wheels-off Departure Time

ATR-310 - Traffic Flow Management Integrated Product team

ATL - Atlanta International Airport

ATV - Altitude Reservation (flight remark)

AUA-500 - Air Traffic Systems Development, Traffic/Flight Service Station

BETD/BETA - Beginning Estimated Wheel Times

BOS - General Edward L Logan International Airport in Boston

CC - Alarm Status for flights arriving more than 5 minutes before or more than 5 minutes after their Control Time of Arrival

CDM - Collaborative Decision Making

CF - Alarm status for flights that were cancelled but later flew without the flight being reinstated properly.

CNX - Cancelled Flight; Cancel

COA - Continental Airlines

CTA - Revised OrigCTA (Control Time of Arrival) after substitution/cancellation

CTD - Control Time of Departure

CTT - Collaborative Technology Testbed

DCenter - Departure Center

DEP - Departure Airport

DP - Departure Procedure

DTRSN - Departure Procedure Transition

DV - The flight was cancelled and diverted to an alternate destination (cancel status).

DVT - Diversion Recovery flight (flight remark)

EA - The actual flight time is greater than a specified value, but the flight status is not cancelled. The default value is 15 minutes (alarm status).

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EC - The departure boundaries are more than 5 minutes before or more than 5 minutes after their estimated departure clearance time (alarm status).

ECR – EDCT Request Tool.

EGF - American Eagle Airlines

EPS - Airport Engineering Performance Standards

ERTD/ERTA - Earliest Runway Times

ETA - Updated Estimated (wheels-on) Arrival Time. Prefixes: P (proposed), E (estimated)

ETD - Updated Estimated (wheels off) Departure time. Prefixes P (proposed), E (estimated)

ETE - Estimate Time En Route in minutes

ETMS - Enhanced Traffic Management System

FAD - Fuel Advisory Delay

FADT List - Generated after running a GDP. Contains information about all ground-delayed flights (all flights that have been issued an OrigEDCT). If a center or an airline has ground-delayed flights, their call-signs, departure airports, PTimes, EDCTs and CTAs are given for each appropriate center and airline.

FCA - Flow Constrained Area (flight remark)

FSM - Flight Schedule Monitor

FX - A CDM message used by the airlines to indicate a cancelled flight (cancel status).

GCD - The Great Circle Distance (GCD), which is the distance between the departure airport and arrival airport.

GDP - Ground Delay Program

GDT - Ground Delay Tools

GS- Ground Stop

HITL - Human in the Loop

IGTD/IGTA - Initial Estimated Gate Times

LFG - Lifeguard Flight (flight remark)

LGTD/LRTD/LRTA/LGTA - Airline Gate and Runway Times

LTOD - Length of Time Out Delay

MOA - Memorandum of Agreement/Military Operations Area

NRP - National Route Program Flight (flight remark)

OAG - Official Airline Guide

OCTD/OCTA - Original Control Times

OETD/ OETA - Original Estimated Wheel Times

ORD - O'Hare International Airport in Chicago

OOOI – OUT/OFF/ON/IN - Time that the flight was out of the departure gate, off the departure runway, on the arrival runway, and in the arrival gate.

PGTD/PGTA - Proposed Gate Times (Departure/Arrival)

Power Run - A Tab in the GDT *Setup* component, which allows you to model various scenarios to help evaluate what parameters are most favorable.

RBS - Ration By Schedule. A ground delay algorithm based on the OAG time.

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RBS++ - An enhanced version of RBS which automatically performs compression.

RM - The flight has been removed from the ETMS database (cancel status).

RS - An internal ETMS message generated when a specialist takes an OAG flight out of the database (cancel status).

RZ - A NAS flight plan cancellation message (cancel status).

SGTD/SGTA - Scheduled Gate Times (Departure/Arrival)

SCDT List - Contains flight delay information for the airport that has been issued a ground delay. Contains information such as flight's call-sign, equipment type, departure airport, Ptime, etc.

Schedule Accuracy - The sum of the absolute values of the difference of (actual departure time - estimated departure time) for each flight, divided by the number of valid flights.

SCS - Slot Credit Substitution

SF - Spurious Flights or flights submitted as SI cancellations with no corresponding entries in the OAD (alarm status).

SFO - San Francisco International Airport

Slot List - A modified FADT List. In addition to the information provided by the FADT list, the slot list includes the slot ID, flight class and information about exempted flights.

Slot ID - A time slot assigned during ground delay, substitution/cancellation

STAR - Standard Terminal Arrival Route

STRSN - Standard Terminal Arrival Route Transition

SWP - SWAP flight (flight remark)

TO - The flight time out considered cancelled because no activation message has been received within a certain time of the predicted departure time (cancel status).

TOD - Time Out Delay -the flight passed its ETD without taking off (delay status).

UX - Cancelled flight due to an EDCT update by a traffic manager (cancel status).

WXR - Severe Weather Route (flight remark)

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