Training Document
For
Real-Time FSA Version 2.0

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Revision History

Revision	Release Date	Author's Initials	Description of Change
Version 2.0 Initial Release	02/01/2001	DLA	The initial release will include Performance, Flight Status; Time Out Delay, Compliance Report, Cancelled Flights That Flew, and Pop-Up reports. Additionally, Version 2.0 will include drill down and query capabilities that will allow the user to view a flight history for any flight.

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Real Time FSA

This document is a training manual for new users of Real-Time FSA. It provides instructions for accessing the FSA reports and explains how to interpret the information displayed in these reports.

Introduction

"Real-time FSA is a web based application that allows you to monitor ground delay programs (GDPs) as they are executing.

FSA generates six different types of reports: Performance, Flight Status, Compliance, Cancels That Flew, Pop-Ups and Time Out Delay. These reports are updated every five minutes with the most current Airport Demand List (ADL) information.

The information provided in these reports will help you identify problems as they are happening, so action can be taken to correct problems that are impacting GDP performance.

Accessing the Reports

The reports are viewed using Netscape. To access the reports

1. Start Netscape
2. Go to the ATCSCC homepage http://www.atcscc.tfmi.nas.faa.gov/
3. Select the "FSA Reports" link. You can also access the reports by clicking on the "Operations" button on the ATCSCC web toolbar, then select the "FSA Reports" link.

Figure 1

The FSA home page shown above will have a link for each airport that is currently running a GDP. Clicking on an airport link will display the Performance report for the selected airport. All other reports can be accessed from the Performance report.

Links are also available for canceled GDP's from the current day. The reports for the canceled GDPs are accessed in the same manner.

Figure 2

Performance Report

Overview

The Performance Report shows whether the program is delivering the requested AAR(see Figure 2).

For each program hour the report displays the AAR, number of slots, number of cancellations, extra demand, displaced demand, and total demand expected. These counts are the key to understanding why the program is over or under delivering for a particular hour. An explanation of each count is provided below.

AAR: This is the AAR set in FSM by the traffic management specialist. The AAR shown will be pro-rated for partial hours at the beginning of the program or if the AAR changed in the middle of an hour due to a revision.

Number of Slots: The number of slots FSM created for that hour. Sometimes the number of slots will not equal the requested AAR due to a number of factors. See Appendix A for further explanation.

Cancellations: The number of cancelled flights in the hour. (This number will equal the number of squares on the FSM timeline for the hour).

Extra Demand: The number of extra flights showing up in the hour that do not have an FSM assigned slot in the hour. The extra demand is typically due to pop-ups, flights that should have shown up in an earlier hour (they have a slot time prior to the hour), or flights that should be showing up in a later hour (they have a slot time in a later hour). Occasionally extra demand may be due to "Non-program" flights. These are flights that were not originally given a slot by FSM because they were not expected to arrive during the program hours. For instance, flights may delay into the first hour of the program after the initial program is run.

Arriving Prior to Control Hour: This is a count of the number of flights which should have shown up in the hour (they have slot times in the hour) but are expected to arrive in an earlier hour due to an early departure or some other reason.

Arriving After Control Hour: This a count of the number of flights which should have shown up in the hour (they have slot times in the hour) but are expected to arrive in a later hour due to a late departure or some other reason.

Total Demand: The Total Demand expected to arrive in the hour at the ADL time shown at the top of the report.

The Total Demand will equal the Number Of Slots plus Extra Demand minus the demand that didn't show up (Cancellations and flights Arriving Prior to and After Control Hour).

Drill Down Capabilities

To view the flights comprising each count click on the associated link. Figure 3 below shows the result of clicking on the Extra Demand Link for the 1800 hour. The resulting flight list shows all of the aircraft that are expected to arrive in the 1800 hour that do not have FSM assigned slots in this hour.

Figure 3

The “Comments” field in the flight list provides an indication of why a flight either does not have slot or is not arriving at its assigned slot time. For instance, N18CG and N4NT are pop-ups that have not yet been assigned a slot through a revision. EGF62 was not originally expected to arrive during the program; however due to an airline delay it is now expected to arrive in the 1800 hour. Notice also that there are several flights that were given slot times in the 1900 hour but are actually going to arrive in the 1800 hour because they departed early. See Table 1 on page 9 for a complete list of the comments that may appear in the “Comments” field.

Clicking on a call sign in the flight list will display current and past ADL information for the flight selected.

Usage

Determining why there is over or under delivery: The counts in combination with the "Comments" field in the flight lists show why an hour is heavy or light.

Determining if a compression or revision is needed: Use information provided in the Performance Report to determine whether a compression or revision is needed.

To determine if any action is needed and what type of action is needed look at the counts.

No Action Required: If the Total Demand = AAR, Cancellations=0, and there has been very little shift in demand (the Displaced Prior and Displaced Future counts show the degree to which demand has shifted), no action should be necessary. The demand graph in FSM will appear "smooth" with very few triangles and no squares.

Compression Only: If the Total Demand <> AAR, but the Number of Slots=AAR, and there is no pop-up traffic then a compression should suffice. Pop-ups that do not have a slot will be listed at the top of each hour in the Extra Demand flight lists. The Pop-Up Report will show the amount of pop-up traffic expected in each hour.

RBS++: If Total Demand <> AAR, and Number of Slots <> AAR, or there is a significant amount of pop-up traffic then a revision is needed.

Use of the Performance report will show the impact of GDP actions/modeling choices. For instance, after a ground stop is issued, the number of slots assigned per hour will not equal the AAR. Issuing a ground stop redistributes the arrival slots based on the ground stop release time not the AAR. This uneven distribution is why a revision should be run coming out of a ground stop instead of compression. Issuing EDCT updates and adjusting GDPs by "Blanket" amounts of time also moves arrival slots and may cause the number of slots to differ from the AAR.

NOTE: Issuance of a GDP, GDP extension or revision close to the start time will not display slot assignments for those flights that are within 30 minutes of arriving. Although these flights were assigned slots, they are not processed through autosend and will not be in the FADT. This was a programming choice made during the initial development of FSM to prevent airline substitution for airborne flights and will be corrected in a future FSM version. This aspect of the software may cause the number of slots in the first hour to appear different than the requested AAR.

Detecting Airborne Holding: Large positive ETE fluctuations for flights that have already departed may be an indication of airborne holding.

Flight Status Report

Overview

The Flight Status Report shows the current status of all program flights including cancelled flights (See Figure 4 below). The Status report can be sorted by ACID or ETA. To locate an individual flight, click on the "Find in page" link to search for the flight by its ACID, ETA, or slot time.

Figure 4

The Comments field as described previously indicates why a flight is not arriving at its designated arrival slot. Table 1 on the following page describes each of the comments that may appear in the Comments field.

FSA Flight Status Comments	
Comment	**Description**
Early Departure	The flight departed early. The criteria is (ETD – CTD <= -1).
Late Departure	The flight departed late. The criteria is (ETD – CTD => 1).
Airline Delay	Delay reported by the airline as indicated by the LRTD field. The amount of airline delay is reflected in the Late Departure calculation.
Time-out Delay	The flight was time out delayed by ETMS's timeout logic (i.e., the TOD flag =Y). International flights are excluded since DZ messages are typically not received for international flights until they reach U.S. airspace.
Subbed With Window	The flight's CTA is not equal to its Slot Time due to airline subbing that took advantage of the 20-minute window. Note that the difference between the slot time and CTA could actually be greater than 20 minutes due to multiple subs.
ETE Fluctuation	This comment indicates that the current ETE (ETA-ETD) does not equal the en-route time reflected in the control times (CTA -CTD).
Exempt	The flight was exempt when initially controlled and has remained exempt (i.e., the Exempt flag =Y for all flight records that have control times.)
Data Anomaly	FSA has detected a data abnormality that may indicate a data processing error has occurred. Flights with Data Anomaly will be omitted from the Compliance, Pop-Up, CNX That Flew and Time Out Delay reports.
CNX That Flew	A cancelled flight that operated and was not reinstated before departing.
Non Program Flight	The flight was not originally in the program but is now arriving during the program hours due to a delay or early arrival. The following rules will be used to identify these flights: the flight does not have a slot ID; it has a SGTA; the (IGTA-Taxi) does not fall within the program hours; however the current ETA does fall within the program hours.
Pop-up	The flight does not have a SGTD/SGTA, the pop-up time > program model time, and BETA or ETA falls within the program hours.
Diversion Recovery	The DV_REC flag is set to Y for the flight.
Cancelled	The cancellation comment shows the type of cancellation and the time of cancellation. If a flight has multiple cancellation flags set only one cancellation reason will be shown according to the following precedence: SI, FX, TO, RZ, ID, RS.

Table 1

Compliance Report

Overview

The compliance flight list shows all flights that are not CTD compliant. A flight is considered "non-compliant" if it departed early by more than 5 minutes or it departed late by more than 15 minutes. The Compliance flight list can be sorted by Departure Hour, ACID, origin, and departure center. The default is sort is by Departure Hour.

Figure 5

Note: FSA uses the CTD assigned to the flight when it departed to measure compliance. Departure status is determined by looking at the ETD prefix. A prefix of "E" or "A" indicates that flight has departed. The ETD prefix is being used to determine departure status instead of ARTD, in order to capture flights that have departed for which ETMS doesn't usually receive ARTDs (international flights. flights which started out VFR, etc.)

Usage

By sorting the Compliance Report by departure center or origin trends such as flights from particular centers or towers that are not departing within the appropriate EDCT window can be identified. This may indicate ESP delays due to miles-in-trail initiatives or possible problems at the departure airport. Sorting the Compliance report by ACID may help to identify airlines that are consistently departing flights early or late.

NOTE: The accuracy of the compliance report can be effected by suspension of EDCTs, "white hat" approvals that have not had an EDCT update, and flights in ground stops that are not in FSM.

Exclusions

Flights that were cancelled and operated without reinstating and flights for which FSA has detected a "data anomaly" will not be shown in the Compliance report. Additionally, ground stopped flights that departed prior to receiving a GDP control time will not be included in the compliance list.

Pop-up Report

Overview

The Pop-Up Report shows all pop-ups that are arriving during the program hours. For the purposes of this report, a pop-up flight is defined as any flight that does not have a SGTD/SGTA and did not exist at the time the initial program was modeled (i.e. there was no flight record for the flight in the model ADL). This list will show all pop-ups regardless of whether they have subsequently been given a slot in a compression or revision. The Pop-up flight list can be sorted by departure hour, ACID, and ETA.

Figure 6

The Pop-up Time column shows the time the flight first appeared in the ADLs. The TOD column indicates whether the flight is currently in time out delay. The CNX-Status column shows whether or not the flight has been cancelled. If a flight has multiple cancellation flags set only one cancellation reason will be shown according to the following precedence: SI, FX, TO, RZ, ID, RS. The Subbed column indicates whether the flight has ever been subbed by the airline via a SI message.

Usage

The pop-up report can be used to identify the carriers filing the pop-up traffic, pop-ups that are in time-out delay contributing to the “rolling spike” problem, and pop-ups being cancelled and used in the substitution process. Sorting the pop-up list by pop-up time will identify the amount of pop-up flights filed after the most recent revision/extension was completed. The pop-up report can also be used to identify how many flights have shown up since the initial GDP, extension or revision was completed.

By reviewing the Pop-up report through out the GDP, it is possible to identify trends such as how many pop-up flights a carrier operates or cancels. If a large number pop-ups are time out canceling, this may indicate there is a problem with duplicate calls signs or that system data problems exist.

Exclusions

Flights for which a data anomaly has been identified will not be shown in the pop-up list.

Cancels That Flew Report

Overview

The "Cancels that Flew" report shows all controlled flights that were cancelled then operated without being reinstated.

Figure 7

The CNX-Reason column shows the most current cancellation reason. If a flight has multiple cancellation flags set, only one cancellation reason will be shown according to the following precedence: SI, FX, TO, RZ, ID, RS.

Usage

Review the cancel reasons for these flights. Flights operating after time out canceling may indicate the airline is having a hard time keeping up with flight data. Flights operating that were SI or FX canceled may indicate the airline is continuing to fly flights that were used for substitution.

Exclusions

Diversion cancellations are not included in this list. Flights for which FSA has detected a data anomaly will also be excluded.

Time Out Delay Report

The time out delay report lists all flights that are currently in time out delay (i.e., the TOD flag=Y in the current ADL). The Time Out Delay flight list can be sorted by ACID or Arrival Hour.

Figure 8

The column labeled “Minutes Of TOD” shows the total number of minutes the flight has been in timeout delay. The minutes of time out delay may be under or overestimated by up to 5 minutes due to timing issues in message processing between FSM, VOLPE and the HOST. The Cancel Status column shows whether the flight is currently cancelled as well as the time at which it was cancelled. If a flight is reinstated it will no longer be shown as cancelled in this report.

Usage

Use the Time Out Delay report to help assess the likelihood that timeout delayed flights (the “dark greenies” in FSM) are going to operate, based on the length of time the flight has been in time out delay. Most flights will be time-out cancelled once they have been in time out delay for 90 minutes.

Sort the flight list by ACID to see if a particular carrier has a large number of time-out delayed flights. Follow-up with the carrier may be necessary to determine if the flights are intended to operate.

A large number of time-out delayed/cancelled flights for a single carrier may also indicate that there is a problem with duplicate call signs or that the carrier is having problems that are adversely affecting its data quality.

Flight Lookup

FSA’s Flight Lookup feature allows you to query the FSA real-time database for flight information. To access the query capabilities select the “Flight Lookup” link from any of the FSA reports. The query interface is shown below.

Figure 9

To view the flight history for a particular flight enter the flight's call sign in the ACID field. At a minimum, the ACID field must contain a value. It is not required to enter information in the remaining flight fields. Once the search criteria has been entered, click on the **Submit Search Terms** button.

A multiple flight query may done by using an asterisk after the three-letter ID. For example, to query for all ComAir flights enter the carrier's 3 letter abbreviation and an asterisk as shown below. Then click on the **Submit Search Terms** button.

Figure 10

If more than one flight matches your criteria FSA will return a list of flights as shown in Figure 11. View the flight records for any flight in the list by clicking the associated “Lookup Link”.

Figure 11

If only one flight matches the criteria FSA will automatically display the flight records. Flight records are sorted in ascending order by ADL time.

Figure 12

The flight history for a flight on a prior day may also be viewed. To do so, select the "Get past day" checkbox and enter the date of interest in the format shown in Figure 13. For prior day lookups, the destination must also be entered.

Figure 13

Appendix A: Questions and Answers

1. Why does the number of slots not equal the requested AAR?

The number of slots shown for a particular hour in the Performance Flight List does not correspond to the requested AAR. This may occur for several reasons:

- **Flights within 30 minutes of arriving**: Currently, FSM drops flights that are within 30 minutes of arriving from the FADT file. The slots allocated to these flights will not show up in the ADLs. Therefore, for the initial program the affected flights will not have a slot ID or control times. In the case of revisions FSM will show slot times prior to the revision for the affected flights.
- **EDCT Updates**: An EDCT update also changes the flight's slot time; therefore if the slot is moved to a prior hour the number of slots will no longer equal the requested AAR.
- **Ground Stops:** Issuance of an FSM ground stop assigns all flights a CTD equal to the GS end time + 1 minute. The affected flights slot times will also be updated to the new CTD + ETE. This may dramatically redistribute slots.
- **Schedule Composition:** Occasionally, FSM will not allocate as many slots as requested if it cannot assign any flights to an available slot due to the schedule composition. This should very rarely occur - typically this only happens when the demand does not exceed the AAR by very much.
- **Flights Are Dropped:** Occasionally, flights get dropped from the ADL due to processing errors. The number of slots will be reduced by one for each controlled flight that has been dropped.

2. I see a flight that does not have a slot, but according to FSA it is not a pop-up or a non-program flight. Is this correct?

This is possible because there is a rule in RBS++, which drops flights that are within 30 minutes of arriving out of the FADT file. Thus, a flight arriving in the program which is also within 30 minutes of arriving at the time the initial program is modeled will be assigned a slot but that slot will not appear in FSM or ETMS because it will not be forwarded to Volpe.

This rule will be eliminated in a future release of FSM.

3. I see a flight listed as extra demand that is arriving in the correct hour. Why is this flight being counted as extra demand?

The only time you will see a flight, which is arriving in the correct hour, listed as extra demand is if its slot ID has a z suffix. The z suffix indicates that this is not a slot that was allocated by FSM when the program (or latest revision) was run and therefore it is considered to be extra demand. This is an artifact of how FSM treats pop-ups in compression. During compression FSM creates additional slots for pop-ups, because the pop-up flights must have a slot in order to be included in compression. These slots that get created as a result of the compression process are given a slot ID with a Z suffix.

Note that because the original pop-up which created the slot may be subbed up, the flight currently assigned to the slot may not be the pop-up which caused the slot to get created in the first place. Therefore, a Z suffix does not necessarily mean the flight assigned to the slot is a pop-up. Check the comments field to verify that this is the case.

The compression process will be modified in the next release of FSM so that pop-ups are no longer included in stand-alone compression and you will no longer see Z slots.