



U.S. Department  
of Transportation

# Memorandum

**Research and  
Special Programs  
Administration**

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Subject: Aggregate Demand List (ADL) / FSM Broadcast Data Formats - Version 10 Revision 4  
To: CDM Workgroup  
From: Ken Howard / Miro Lehky  
Date: 07 November 2005

In conjunction with the release of version 8.2 of the Enhanced Traffic Management System (ETMS) and Flight Schedule Monitor (FSM), the format of the Aggregate Demand List (ADL) file will be changing. These changes are primarily driven by the introduction of the Airspace Flow Program (AFP) and FSM Auto-Monitor functions. This document describes the new format which will be effective upon the operational deployment of ETMS 8.2 in the spring of 2006. At that time, this document will supersede:

- *ADL Data Format Version 9 - Revision 1* dated 3 June 2004

The body of the document has been fully updated to reflect the new format. The following is a summary list of the specific ADL items that have changed:

- Updated the version number from 9 to 10. (Section 1.1.5)
- Redefined ADL as “Aggregate Demand List”, due to its new generalized usage. (Throughout Document)
- Introduced the concept of ADLs for elements other than airports (Throughout Document)
- Modified ADL file name convention (Section 1.1.2)
- Added 2 new data blocks:
  - ◆ ADL\_DEFINITION (Section 1.2.1)
  - ◆ ELEMENT\_DEFINITION (Section 1.2.6)
- Modified when specific data blocks are required (Section 1.2.18)
- Modified text used to indicate a cancelled program (Sections 1.2.10 and 1.2.13)
- Added 8 new flight data fields:
  - ◆ ENTRY (Section 1.3.2 - Field 8)
  - ◆ EXIT (Section 1.3.2 - Field 9)
  - ◆ CR\_TIME (Section 1.3.2 - Field 25)
  - ◆ IENTRY (Section 1.3.2 - Field 29)
  - ◆ EENTRY (Section 1.3.2 - Field 39)
  - ◆ OENTRY (Section 1.3.2 - Field 46)

- ◆ BENTRY (Section 1.3.2 - Field 49)
- ◆ DO (section 1.3.2 - Field 61)
- ◆ AFP (section 1.3.2 – Field 71)
- Modified 4 flight data fields:
  - ◆ Changed ASLOT field format (Section 1.3.2 – Field 55)
  - ◆ Changed CTL\_ELEM field format (Section 1.3.2 – Field 56)
  - ◆ Modified CTL\_TYPE Field (Section 1.3.2 – Field 57);
    - § Added value AFP
    - § Added value RCTL
    - § Changed value FA to DAS
  - ◆ Changed FAD field to DAS (Section 1.3.2 - Field 71)
- Modified when specific flight fields are required (Section 1.3.3)
- Provided format specifications for the FSM Broadcast file (Part 2)
- Modified and/or clarified numerous field definitions. (Throughout Document)

## Introduction

The ADL is the main data product that drives FSM and the ETMS Ground Delay Program Enhancements operations. ETMS generates an ADL for each element that is being monitored by FSM. The ADL is composed of data extracted from the ETMS hub site databases, which are maintained with a combination of OAG data, CDM Participant provided flight data messages, NAS messages generated from the ATC system, and issued ground delays (EDCTs). The ADL also includes AFP and GDP specific data entered by Authorized FAA Users via FSM. The ADL is described in Part 1 consisting of the following sections:

- 1.1 – ADL General Description: Provides an overview of the ADL
- 1.2 – ADL Data Blocks: Describes the data blocks provided in the ADL
- 1.3 – ADL Flight-Specific Data: Describes the data fields provided in the ADL flight data records

With the advent of AFP, there is a new requirement for ETMS to distribute data to FSM. To monitor and model an AFP, FSM must have an ADL based on a Flow Evaluation Area (FEA) or Flow Constrained Area (FCA). Unlike airports, FEA and FCA names are not known to FSM ahead of time. Therefore, ETMS will generate a new message, the FSM Broadcast message, which will notify all FSMs which FEAs and/or FCAs are available for monitoring. Also, to meet a requirement for FSM to automatically monitor airports with programs in place, the FSM Broadcast message will include a list of all the initiatives for the current day. The FSM Broadcast message is described in Part 2 which consists of the following sections:

- 2.1 – FSM Broadcast Description: Provides an overview of the FSM Broadcast
- 2.2 – FSM Broadcast Data Elements: Describes the XML data provided in the FSM Broadcast

## Terminology

The following common terminology is utilized throughout this document;

- “NAS User”

An airline, cargo carrier, general aviation (GA) pilot, military, or anyone else who operates aircraft in the National Airspace System (NAS). A NAS User is not required to be a CDM Participant in order to submit substitutions.

- “CDM Participant”

A subset of NAS Users who participates in the CDM process by submitting schedule data and substitutions to the ETMS system.

- “FAA User”

A traffic manager or other member of the FAA that uses ETMS/FSM. This also includes other ATC service providers, such as Nav Canada, who make use of ETMS/FSM.

- “Authorized FAA User”

FAA Users who are authorized to perform specific restricted functions such as issuing a TMI. This also includes other ATC service providers, such as Nav Canada, who make use of ETMS/FSM.

- “Any User”

Any user of ETMS/FSM regardless of their affiliation (ATC service provider or NAS User).

- “Initial Program”

The initial issuance of an AFP or GDP to manage flights arriving at an airport or FCA. Slot allocation is based principally on arrival at the controlling element.

- “Revised Program”

The revision of an AFP or GDP that is already in place. This revision can be simply to change the rate, scope, or a modification in start / end times which extend or reduce the time frame of the program. Revisions replace existing slots with new slots during the time frame of the revision.

- “Compression”

The compression of an initial or revised AFP or GDP. A compression reallocates slots which are open due to flight cancellations or delays. Compressions do not create new slots, but simply reallocate existing slots.

- “Blanket”

The blanket adjustment of a GDP that is already in place. A blanket reduces or increases delay times, based on a user specified value, without consideration of the airport rate.

- “Ground Stop”

The issuance of a traffic stop. Ground Stops differ from an Initial or Revised GDP in that slot allocation is based on a specified earliest departure time (i.e. the Ground Stop Time).

- “Purge”

The cancellation of a TMI. The purge process removes from ETMS all TMIs currently in place for a specific element.

- “Traffic Management Initiative” or “TMI”

These terms refer to the domain of all FSM events (Initial, Revision, Compression, Blanket, Ground Stop and Purge) whether they are for an airport (GDP) or FCA (AFP).

- “Ground Delay Program” or “GDP”

These terms refer to only to the domain of Airport Ground Delay Program events (Initial, Revision, Compression, Blanket, Ground Stop and Purge).

- “Airspace Flow Program” or “AFP”  
These terms refer only to the domain of Airspace Flow Program events (Initial, Revision, Compression and Purge).
- Specific Program Type.  
Any reference to a specific type of AFP or GDP event shall be spelled out by hyphenating the General and Specific TMI Type;

<b>Specific to GDP Events</b>	<b>Specific to AFP Events</b>	<b>Both GDP and AFP Events</b>
GDP-Initial	AFP-Initial	AFP/GDP-Initial
GDP-Revision	AFP-Revision	AFP/GDP-Revision
GDP-Compression	AFP-Compression	AFP/GDP-Compression
GDP-Blanket	n/a	n/a
GDP-Ground Stop	n/a	n/a
GDP-Purge	AFP-Purge	AFP/GDP-Purge

## References

The following documents are useful in understanding the contents of this memo. The first document describes the communications protocol for registering for and receiving the data described in this memo. The second describes the format of the FEA/FCA definition data. In both cases, you should refer to the latest versions of these documents.

1. *CDM Protocol for CDMNET v2.1*, R. Sharick / M. Lehky, October 11, 2005.
2. *TFMDI Interface Control Document v. 1.1*, September 20, 2004. (Note - a new version of this document, which will reflect changes included in the ADL, is forthcoming).

# Part 1 – Aggregate Demand List (ADL) Description

## 1.1 - General Description

### 1.1.1 Contents

An ADL file contains all data pertinent to issuing a TMI for arrivals at specified NAS Elements (e.g. FEA, FCA, or Airport). A particular ADL contains data for only one element (FEA, FCA, or Airport). The data provided can include the following items. (NOTE: The data block name for each item is shown in square brackets.)

- The description of the content of the ADL [ADL\_DEFINITION] (all ADLs)
- The airport arrival rate [AAR] (all ADLs)  
NOTE: For historical reasons, this term is used for airports, FEAs, and FCAs. It should be thought of as an element acceptance rate.
- The airport departure rate [ADR] (airport ADLs only)
- The arrival fixes [AFIX] (airport ADLs only)
- The departure fixes [DFIX] (airport ADLs only)
- The definition of the FEA or FCA on which the ADL is based [ELEMENT\_DEFINITION] (FEA/FCA ADLs only)
- The current weather at the airport [METAR] (airport ADLs only)
- The forecast weather at the airport [TAF] (airport ADLs only)
- The current list of unassigned slots [UNASSIGNED\_SLOTS] (all ADLs)
- The parameters defining a proposed or actual ground delay program [GDP\_PARAMS]
- The parameters defining a compression [COMP\_PARAMS]
- The parameters defining a blanket [BKT\_PARAMS]
- The parameters defining a ground stop [GS\_PARAMS]
- The status of substitutions [SUB\_FLAG]
- A list of all the FADTs that have been issued for this element [FADT\_TIMES]
- A list of all airport arrivals from one hour in the past to 24-plus hours in the future [ARRIVALS]. (NOTE: Flights are added into the ADL 24-hours prior to departure time. When viewing an arrival list, you are guaranteed to see all arrivals for the next 24-hours, but will see many arrivals beyond this time as well.)
- A list of all airport departures from one hour in the past to 24 hours in the future [DEPARTURES] (airport ADL only).
- A list of all flights traversing an FEA or FCA during the defined FEA/FCA time range [ARRIVALS]. (NOTE: Unlike airports, the time range for an FEA or FCA is fixed and is defined as part of the FEA/FCA.)
- For each arrival and departure, a record containing virtually every field in the ETMS database, except for route-of-flight related fields.

- Any flights that would normally be within the ADL time range, but are then delayed up to 12 hours beyond the ADL will continue to be listed, in effect giving the ADL a 36 hour time range for some flights.

The application protocol for registering for ADL data and receiving ADLs is described in reference 1.

### **1.1.2 File Naming**

ETMS uses a file naming convention that facilitates identifying files for users who are trying to find particular files in a directory full of data files. The file naming for the ADL files follows this convention for two reasons:

- It has proven to be useful to FAA users
- It allows the ADL files to be co-mingled with ETMS data files in a logical manner

A file name consists of six parts separated by periods (.):

- Element identifier for which the data was generated;
  - For airports ADLs – three or four alpha-numeric character airport identifier padded to five characters with trailing blanks filled with underscores (\_)
  - For FEA ADLs – up to six characters limited to alpha-numeric, “-“, and “\_”; any of which can be used in any position. NOTES - FEA names are not guaranteed to be unique and can duplicate airport names, in such a case they should not be considered to be the same element. FEA names can be reused within the same day, in such a case they should not be considered to be the same element.
  - For FCA ADLs – six alpha-numeric characters beginning with “fca” and then a numeric identification number.
- Report type; four characters— for ADL files, type is “lcdm”
- Date and time the file was requested— 8 digits; ddhmmss
- Sequence number, used to distinguish two identical files requested in the same second— 2 digits; 01, 02, etc.
- Data type ,
  - For airports ADLs – “arr” for airport arrivals only, “dep” for airport departures only, “all” for both (airport arrivals and departures)
  - For FEA ADLs – “fea” for Flow Evaluation Area
  - For FCA ADLs — “fca” for Flow Control Area
- Filtering type— “unfilt” for no filtering, “gamf” for GA and military filtering, “airline name” (e.g., aal) for airline-specific filtering

All letters in a file name are lower case even though various elements of the file name can be upper case when used in other contexts.

For example, an ADL file generated for the ATCSCC for Boston arrivals on February 6 at 15:35:33 Z would be named:

bos\_\_lcdm.06153533.01.arr.unfilt

An ADL file generated for Delta for Atlanta arrivals and departures on July 17 at 09:17:05 would be named:

atl\_\_lcdm.17091705.01.all.dal

An ADL file generated for an FEA named “EWR\_A” on July 17 at 09:17:05 would be named:

ewr\_a.lcdm.17091705.01.fea.unfilt

An ADL file generated for an FCA named “FCA027” on July 17 at 09:17:05 would be named:

fca027.lcdm.17091705.01.fca.unfilt

An ADL file is compressed and encrypted for transmission to user sites. The suffix “.gz” indicates a file is compressed (using “gzip”). The suffix “.enc” indicates a file is encrypted (using blowfish). The suffix .gz.enc indicates a file is both compressed and encrypted.

### **1.1.3 Organization**

An ADL file consists of two main parts: the header and the data update. The header consists of five fixed-format lines required by FSM, interspersed by some comment lines containing useful information about the report. The data update section consists of multiple blocks of data delimited by keywords. Each data block starts with a keyword “START\_XXX” where “XXX” is the mnemonic indicating the data type. Each data block ends with a corresponding “END\_XXX” keyword. The entire data update section is delimited by its own keywords: “START\_UPDATE” and “END\_UPDATE”.

The use of the “START” and “END” keywords is designed to make it easier to keep backwards compatibility when new data is added to the file. When a software program encounters a “START” keyword, it should check to see if the keyword is one that the program recognizes. If not, the program should discard lines until it reaches the corresponding “END” keyword.

### **1.1.4 General Formatting**

The ADL files are formatted to enhance the readability of the files. The general characteristics of the formatting follow.

- An ADL contains ASCII records terminated by NEWLINE characters.
- Comment lines are used to provide helpful information or to separate blocks of text. A comment line contains a “#” character in column 1.
- FSM Header lines contain a “:” character in column 1.
- “START\_XXX” and “END\_XXX” keywords appear on separate lines starting in column 1.
- Lines within a data block are indented by one column; that is, a space character appears in column 1.
- There can be no blank lines within a data block.
- Within the flight records:
  - fields are fixed-width (column-aligned)
  - a blank field is indicated by “-“ in the first column of the field
  - the value of a true/false field is shown as “Y” (true) or “-“ (false)

### **1.1.5 Header**

The header of an ADL file consists of five lines required by FSM interspersed with comment lines. A colon (:) in column 1 indicates a required header line. Comment lines are indicated by a pound sign (#) in column 1. The required lines must be in the order listed below; the comment lines can appear anywhere. In some cases, blank comment lines are used just to improve the readability of the file.

The five required lines are defined as follows. (NOTE: The line numbers ignore any interspersed comment lines.)

- Required line 1 – “:Product Code:” followed by the FSM product code.
- Required line 2 – “:Magic Number:” followed by the FSM magic number
- Required line 3 – “:Version Num:” followed by the ADL version number in hexadecimal
- Required line 4 – “:Date:” followed by the date the ADL was generated
- Required line 5 – “:First Update:” followed by the day/time at which the ADL was generated

A sample header follows:

```
:Product Code: 0xfaa
:Magic Number: 0xfaa1
:Version Num : 0xA
#
#
:Date: 11/16/2002
:First Update: 16010315
#
```

## **1.2 - ADL Data Blocks**

The bulk of an ADL file is the data update. It starts with a single line containing the day-hour-minute-second at which the update was generated, as follows:

```
START_UPDATE ddhhmmss
```

The data update is terminated by a single line that also includes the update time, as follows:

```
END_UPDATE ddhhmmss
```

The data update is itself composed of many data blocks, described in following sub-sections. Individual data blocks may or may not appear in a particular ADL depending on the element type and user actions. A table titled *Data Block Applicability* summarizing this information appears following the data block descriptions.

### **1.2.1 ADL DEFINITION**

The ADL Definition data block is required for all ADLs. This block provides various information regarding the generation of the ADL file. The ADL Definition data block must contain four parameters, as follows:

```
START_ADL_DEFINITION
ELEM_NAME Lcc[c] or FCAddd
ELEM_TYPE LLL
ADL_START_TIME ddhhmmss
ADL_END_TIME ddhhmmss
END_ADL_DEFINITION
```

Following is a description of each of the keywords in the ADL\_DEFINITION data block:

1. ELEM\_NAME – The name of the airport, FEA, or FCA described in this ADL. Maximum length is 6-characters.

For airports ADLs – three or four alpha-numeric character airport identifier



For FEA ADLs – up to six characters limited to upper case alpha-numeric, “-“, and “\_”; any of which can be used in any position. NOTES - FEA names are not guaranteed to be unique and can duplicate airport names, in such a case they should not be considered to be the same element. FEA names can be reused within the same day, in such a case they should not be considered to be the same element.

For FCA ADLs – six alpha-numeric characters beginning with “FCA” and then a numeric identification number.

2. ELEM\_TYPE – The type of element described in this ADL. Type can be APT, FEA, or FCA.
3. ADL\_START\_TIME – The start time of the request that generated the ADL.
4. ADL\_END\_TIME – The end time of the request that generated the ADL.

The time range should be interpreted as follows:

- For an airport arrival list, the list includes all flights whose arrival time (ETA) is greater than or equal to the ADL\_START\_TIME and less than or equal to the ADL\_END\_TIME.
- For an airport departure list, the list includes all flights whose departure time (ETD) is greater than or equal to the ADL\_START\_TIME and less than or equal to the ADL\_END\_TIME.
- For an FCA-based arrival list, the list includes all flights whose entry time (ENTRY) is greater than or equal to the ADL\_START\_TIME and less than or equal to the ADL\_END\_TIME.

#### ***1.2.1.1 Airport ADL Time Interval***

The ADL time range is computed as follows:

- Get the current time.
- Truncate to the start of the current hour.
- Subtract 1:00 from the current hour; this is the start time.
- Add 35:59 to the current hour; this is the end time.

For example, if a report is generated at 12:35, it will contain the flights arriving/departing from 11:00 the same day to 23:59 the next day.

#### ***1.2.1.2 FEA/FCA Time Interval***

When an FEA or FCA is created in ETMS, the user defines a time range for that FEA/FCA. The ADL for an FEA/FCA will contain flights for that user-defined time range, plus an additional time range to help ensure that flights are not delayed out of the ADL. The ADL time range is defined as the FEA/FCA start to the FEA/FCA end time plus X hours, where X is a parameter than can be defined at the ETMS hub site. The ADL time range for an FEA/FCA is applied as follows:

- For an FEA/FCA that defines a volume of airspace, the ADL will include any flight that is in the FEA/FCA at any time from the FEA/FCA start time to the FEA/FCA end time plus X hours.
- For an FEA/FCA that defines an airspace fix or a line segment, the ADL will include any flight that crosses the FEA/FCA from the FEA/FCA start time to the FEA/FCA end time plus X hours.
- For an FEA/FCA that defines an airport, the ADL will include any flight arriving at or departing from the FEA/FCA, from the FEA/FCA start time to the FEA/FCA end time plus X hours.

### **1.2.2 AFIX**

The AFIX block is required for an airport ADL, but will not appear in an FEA/FCA ADL. It contains a list of the arrival fixes defined in ETMS for the ADL airport. A sample AFIX block follows:

```
START_AFIX
ROBRT
BARIN
TRIXY
FINKS
MUMSY
END_AFIX
```

A sample AFIX block without any defined fixes follows:

```
START_AFIX
END_AFIX
```

### **1.2.3 DFIX**

The DFIX block is required for an airport ADL, but will not appear in an FEA/FCA ADL. It contains a list of the departure fixes defined in ETMS for the ADL airport. A sample DFIX block follows:

```
START_DFIX
ROBRT
BARIN
TRIXY
FINKS
MUMSY
END_DFIX
```

A sample DFIX block without any defined fixes follows:

```
START_DFIX
END_DFIX
```

### **1.2.4 AAR**

The AAR block is required for all ADLs. It contains at least one line showing the default value for the airport or FEA/FCA arrival rate. For an FEA/FCA the default value will always be “0”. It may contain an additional line showing values that an Authorized FAA User has entered, either through an AAR update or as part of a TMI. A sample AAR block follows:

```
START_AAR
DEFAULT 60
AAR_TIME 161500 IDX 9 ADR-15 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9
END_AAR
```

The AAR\_TIME value is the date/time of the first 15 minute period to which the first AAR should be applied. The remaining AARs are for the subsequent 15 minute periods. The “IDX 9” should be ignored.

### **1.2.5 ADR**

The ADR block is required for an airport ADL, but will not appear in an FEA/FCA ADL. It contains at least one line showing the default value, as an hourly ADR. It may contain an additional line showing values that

an Authorized FAA User has entered, either through an ADR update or as part of a GDP. A sample ADR block follows:

```
START_ADR
  DEFAULT 60
  ADR_TIME 131900 IDX 13 ADR-15 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9
END_ADR
```

The ADR\_TIME value is the date/time of the first 15 minute period to which the first ADR should be applied. The remaining ADRs are for the subsequent 15 minute periods. The “IDX 13” should be ignored.

### **1.2.6 ELEMENT DEFINITION**

The ELEMENT\_DEFINITION block is required for ADLs defining an FEA or FCA, but will not appear in an airport ADL. The ELEMENT\_DEFINITION block contains information defining the FEA/FCA. An FEA/FCA definition will be in XML format using the same formatting as in the TFMEDI data feed (see reference document 2) and as used internally by ETMS, with the slight difference that the following unnecessary containers and their sub-elements will be omitted:

- <INDEX\_INFO>
- <FCA\_DISPLAY\_PREFERENCES> – This entire container will be omitted.

A full description of the FEA/FCA format is provided in reference 2. A sample ELEMENT\_DEFINITION block follows:

```
START_ELEMENT_DEFINITION
  <FCA>
    <FCA_ID>fca.etmst1.lxpc94.20050523143218</FCA_ID>
    <NAME>FCA004</NAME>
    <DOMAIN>PUBLIC</DOMAIN>
    <LASTUPDATE>20050523143331</LASTUPDATE>
    <UP_WKSTN>lxpc94</UP_WKSTN>
    <UP_SITE>etmst1</UP_SITE>
    <CR_WKSTN>lxpc94</CR_WKSTN>
    <CR_SITE>etmst1</CR_SITE>
    <SHARE_SITES>CCSD</SHARE_SITES>
    <REASON>NONE</REASON>
    <TYPE>FCA</TYPE>
    <COLOR_ID>34</COLOR_ID>
    <START>20050523143000</START>
    <END>20050523193000</END>
    <EXTENDED>TRUE</EXTENDED>
    <LOOK_AHEAD>12</LOOK_AHEAD>
    <FSM_ELIGIBLE>TRUE</FSM_ELIGIBLE>
    <POLYGON>
      <CEILING>600</CEILING>
      <FLOOR>0</FLOOR>
      <DIRECTION>0</DIRECTION>
      <SPEED>0</SPEED>
      <DRAWING>>false</DRAWING>
      <POINTS>4285,8015 4008,8003 </POINTS>
    </POLYGON>
  <PRIMARY_FILTER>
```

```

    <COLOR_ID>25</COLOR_ID>
    <CONDITIONS>
      <ALL>
        <DEPARTS_ANY>ORD</DEPARTS_ANY>
        <ARRIVES_ANY>EWR</ARRIVES_ANY>
      </ALL>
    </CONDITIONS>
  </PRIMARY_FILTER>
</FCA>
END_ELEMENT_DEFINITION

```

### **1.2.7 METAR**

The METAR block is optional for an airport ADL, but will not appear in an FEA/FCA ADL. The METAR block will always contain the current METAR. A sample METAR block follows:

```

START_METAR
  KEWR 071851Z 22012G20KT 10SM OVC250 19/00 A3020 RMK AO2
    SLP225 T01890000=
END_METAR

```

### **1.2.8 TAF**

The TAF block is optional for an airport ADL, but will not appear in an FEA/FCA ADL. The TAF block will always contain the current TAF. A sample TAF block follows:

```

START_TAF
  KEWR 071901Z 071918 24012KT P6SM OVC250
    BECMG 0002 VRB03KT SCT060 BKN250
    FM0800 VRB03KT P6SM SKC
    TEMPO 0912 6SM BR
    FM1400 17005KT P6SM SCT250=
END_TAF

```

### **1.2.9 UNASSIGNED SLOTS**

The UNASSIGNED\_SLOTS block is required for all ADLs. If a TMI utilizes a Delay Assignment Mode of GAAP the block will contain a list of unassigned slots that have not yet been allocated to flights. Each line may contain up to 50 slots. If all available slots have been assigned or if Delay Assignment Mode of DAS is utilized the block will contain the value NONE. A sample UNASSIGNED\_SLOTS block for a GDP follows:

```

START_UNASSIGNED_SLOTS
  EWR.191233A EWR.191234A EWR.191235A EWR.191236A EWR.191237A EWR.191238A EWR.191239A
  EWR.191241A EWR.191242A EWR.191243A EWR.191442A EWR.191245A EWR.191246A EWR.191247A
  EWR.191249A EWR.191250A EWR.191251A EWR.191252A EWR.191253A EWR.191254A EWR.191255A
END_UNASSIGNED_SLOTS

```

A sample UNASSIGNED\_SLOTS block for an AFP follows:

```

START_UNASSIGNED_SLOTS
  FCA027.191233A FCA027.191234A FCA027.191235A FCA027.191236A FCA027.191237A
  FCA027.191241A FCA027.191242A FCA027.191243A FCA027.191442A FCA027.191245A
  FCA027.191249A FCA027.191250A FCA027.191251A FCA027.191252A FCA027.191253A
END_UNASSIGNED_SLOTS

```

A sample empty UNASSIGNED\_SLOTS block follows:

```
START_UNASSIGNED_SLOTS
NONE
END_UNASSIGNED_SLOTS
```

### **1.2.10 GDP PARAMS**

The GDP\_PARAMS block contains all the parameters specified when an Authorized FAA User either proposes or issues an AFP/GDP-Initial or AFP/GDP-Revision. Each parameter is preceded by an explanatory keyword. The first line after START\_GDP\_PARAMS will contain either PROPOSED or ACTUAL, indicating whether the AFP/GDP-Initial or AFP/GDP-Revision has actually been issued. Times are shown as day/time (DDHHMM) as well as in an internal FSM format. A proposed GDP\_PARAMS block will appear whenever a proposed CDM advisory for an AFP/GDP-Initial or AFP/GDP-Revision has been sent and will not replace any GDP\_PARAMS blocks containing actual parameters. An actual GDP\_PARAMS block will appear if EDCTs have actually been issued. Only the parameters from the last actual AFP/GDP-Initial or AFP/GDP-Revision issued will be shown and will cause any proposed AFP/GDP parameters to be dropped.

Once an actual GDP\_PARAMS block appears in the ADL, it will stay in the ADL until one of the following conditions occurs:

- The AFP or GDP is purged (cancelled).
- A new AFP/GDP-Initial or AFP/GDP-Revision is issued.

Once proposed GDP\_PARAMS block appears in the ADL, it will stay in the ADL until one of the following conditions occurs:

- The AFP or GDP is purged (cancelled).
- A new actual AFP/GDP-Initial or AFP/GDP-Revision is issued.
- A new proposed AFP/GDP-Initial or AFP/GDP-Revision is issued.

This means the last GDP\_PARAMS block will stay in the ADL even if a compression, blanket, or ground stop is issued or if the AFP's or GDP's end time has passed.

When a GDP or AFP is cancelled, all of the lines in the block will be removed and will be replaced by the text PGM\_TERMINATED followed by the time of the cancellation in MMDDHHMMSS format. This message will be retained until a new TMI, either actual or proposed, is issued or until 0800z.

A sample GDP\_PARAMS block follows:

```
START_GDP_PARAMS
ACTUAL
#
START_COMMON_PARAM
ELEMENT BOS
ELEMENT_TYPE APT

CURRENT_TIME 151958      : 4358 :
START_TIME 151958      : 4358 :
END_TIME 160159      : 4959 :
AIRCRAFT_TYPE All
ARRIVAL_FIX All
CARRIER_NAME All
NOW_PLUS 45
GA_FACTOR 0
SEL_APT MSP
```

```

INCLUDE_CENTER SECOND_TIER
END_COMMON_PARAM
DELAY_CEILING 999
OPERATION_TYPE RBS++
FULL_BRIDGE_ONLY UAL
LIMIT_BRIDGE_ONLY AAL
LIMIT_BRIDGE_ONLY DAL
START_AAR
:0000 - 38: 10 9 10 9
:0100 - 38: 10 9 10 9
:0200 - 38: 10 9 10 9
:0300 - 38: 10 9 10 9
:0400 - 38: 10 9 10 9
:0500 - 38: 10 9 10 9
:0600 - 38: 10 9 10 9
:0700 - 38: 10 9 10 9
:0800 - 38: 10 9 10 9
:0900 - 38: 10 9 10 9
:1000 - 38: 10 9 10 9
:1100 - 38: 10 9 10 9
:1200 - 38: 10 9 10 9
:1300 - 38: 10 9 10 9
:1400 - 38: 10 9 10 9
:1500 - 38: 10 9 10 9
:1600 - 38: 10 9 10 9
:1700 - 38: 10 9 10 9
:1800 - 38: 10 9 10 9
:1900 - 38: 10 9 10 9
:2000 - 38: 10 9 10 9
:2100 - 38: 10 9 10 9
:2200 - 38: 10 9 10 9
:2300 - 38: 10 9 10 9
END_AAR
DEP_EXEMPT_TYPE By_Status
LAST_GDP_END_TIME NA
TOTAL_FLIGHTS 326
AFFECTED_FLIGHTS 191
TOTAL_DELAY 31551
MAX_DELAY 206
AVG_DELAY 165
REPORT_TIME 152002ZZ
END_GDP_PARAMS

```

### **1.2.11 COMP PARAMS**

The COMP\_PARAMS block contains all the parameters specified when an Authorized FAA User performs a compression of a previously issued AFP or GDP. It is similar to the GDP\_PARAMS block.

Once a COMP\_PARAMS block appears in the ADL, it will stay in the ADL until one of the following conditions occurs:

- The TMI is purged (cancelled).
- A new TMI is issued.

A sample COMP\_PARAMS block follows:

```
START_COMP_PARAMS
ACTUAL
#
ELEMENT BOS
ELEMENT_TYPE APT
ADL_TIME 8/15/1999 22:03Z
REPORT_TIME 15220521
WINDOW_PARAMETER 0
START_TIME 152203
END_TIME 160459
BRIDGE_ONLY UAL
COMP_RULE MEMBERS_ONLY
TOTAL_FLIGHTS 142
AFFECTED_FLIGHTS 71
TOTAL_DELAY 22407/21644/-763
MAX_DELAY 203/203/0
MIN_DELAY 3/3/0
AVG_DELAY 157.8/152.4/-5.4
END_COMP_PARAMS
```

### **1.2.12 BKT\_PARAMS**

The BKT\_PARAMS block contains all the parameters specified when an Authorized FAA User performs a blanket delay of a previously issued ground delay program. It is similar to the GDP\_PARAMS and COMP\_PARAMS blocks.

Once a BKT\_PARAMS block appears in the ADL, it will stay in the ADL until one of the following conditions occurs:

- The TMI is purged (cancelled).
- A new TMI is issued.

A sample BKT\_PARAMS block follows:

```
START_BKT_PARAMS
ACTUAL
START_COMMON_PARAM
ELEMENT BOS
ELEMENT_TYPE APT
CURRENT_TIME 232024 : 4424 :
START_TIME 232200 : 4600 :
END_TIME 240357 : 5157 :
AIRCRAFT_TYPE All
ARRIVAL_FIX All
CARRIER_NAME ALL
NOW_PLUS 45
GA_FACTOR 0
INCLUDE_CENTER ALL
END_COMMON_PARAM
ADJUST_MINUTE 20
REPORT_TIME 232032ZZ
```

END\_BKT\_PARAMS

### **1.2.13 GS PARAMS**

The GS\_PARAMS block contains all the parameters specified when an Authorized FAA User issues a ground stop using FSM. It is similar to the GDP\_PARAMS block.

Once a GS\_PARAMS block appears in the ADL, it will stay in the ADL until one of the following conditions occurs:

- The TMI is purged (cancelled).
- A new TMI is issued.

When a GS is cancelled, all of the lines in the block will be removed and will be replaced by the text PGM\_TERMINATED followed by the time of the cancellation in MMDDHHMMSS format. This message will be retained until a new GS, either actual or proposed, is started or until 0800z.

A sample GS\_PARAMS block follows:

```
START_GS_PARAMS
ACTUAL
#
START_COMMON_PARAM
ELEMENT BOS
ELEMENT_TYPE APT
CURRENT_TIME 232024 : 4424 :
START_TIME 232200 : 4600 :
END_TIME 240357 : 5157 :
AIRCRAFT_TYPE All
ARRIVAL_FIX All
CARRIER_NAME ALL
NOW_PLUS 15
GA_FACTOR 0
INCLUDE_CENTER ALL
END_COMMON_PARAM
START_AAR
:0000 - 38: 10 9 10 9
:0100 - 38: 10 9 10 9
:0200 - 38: 10 9 10 9
:0300 - 38: 10 9 10 9
:0400 - 38: 10 9 10 9
:0500 - 38: 10 9 10 9
:0600 - 38: 10 9 10 9
:0700 - 38: 10 9 10 9
:0800 - 38: 10 9 10 9
:0900 - 38: 10 9 10 9
:1000 - 38: 10 9 10 9
:1100 - 38: 10 9 10 9
:1200 - 38: 10 9 10 9
:1300 - 38: 10 9 10 9
:1400 - 38: 10 9 10 9
:1500 - 38: 10 9 10 9
:1600 - 38: 10 9 10 9
:1700 - 38: 10 9 10 9
```



```

:1800 - 38: 10 9 10 9
:1900 - 38: 10 9 10 9
:2000 - 38: 10 9 10 9
:2100 - 38: 10 9 10 9
:2200 - 38: 10 9 10 9
:2300 - 38: 10 9 10 9
END_AAR
REPORT_TIME 232032ZZ
END_GS_PARAMS

```

### **1.2.14 SUB\_FLAG**

The SUB\_FLAG block shows the status of the slot substitution process. The SUB\_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 users are enabled (ON) or disabled (OFF).
- BRIDGING – Indicates whether bridging subs are disabled (OFF) for a particular user (airline name, GA, or MILITARY). If bridging is off for a NAS User, any flight whose MAJOR Field or carrier code (from the ACID) matches the airline name will not be used for an SCS bridging. If bridging is enabled for a NAS User, no line will appear; that is, the only allowed value for this keyword is OFF.

A sample SUB\_FLAG block follows:

```

START_SUB_FLAG
SUBS ON
SCS OFF
BRIDGING OFF AAL
BRIDGING OFF BLR
BRIDGING OFF GA
BRIDGING OFF MILITARY
END_SUB_FLAG

```

### **1.2.15 FADT\_TIMES**

The FADT\_TIMES block contains a list of each FADT file that has been processed during the current traffic management event at the airport. A FADT file is the file that FSM generates whenever a set of EDCTs or DAS delays is sent out. Any TMI, except an AFP/GDP-Purge, will cause a FADT to be generated. The FADT\_TIMES list will show each FADT that has been processed as well as the type of the FADT. The FADT\_TIME block will only appear if a TMI is in place for that Airport or FCA. A sample FADT\_TIMES block follows:

```

START_FADT_TIMES
04173029 GDP
04184317 COMP
04200011 GDP
END_FADT_TIMES

```

For AFPs the following event types can be listed in the FADT\_TIMES block;

- AFP

- COMP

For GDPs the following event types can be listed in the FADT\_TIMES block;

- GDP
- COMP
- BLKT
- GS

### **1.2.16 ARRIVALS**

The ARRIVALS block is required for an FEA/FCA ADL and optional for an airport ADL. The ARRIVALS block contains the arriving flights for the ADL Element. The START\_ARRIVALS line contains an additional field indicating the number of flight records that appear in the block. START\_ARRIVALS is then followed by a line for each flight in the ARRIVALS block. The contents of each line and the definition of the data fields are provided in section 1.3 of this document.

Two comment lines precede the ARRIVALS block. One indicates that the following list is for arrivals. The other shows the column headers for each of the data fields in the flight records.

ETMS defines a flight to be a flight leg; that is, a unique combination of call sign (ETMSID), origin (ORIG), destination (DEST), and time of operation (IGTD). For example, flight ABC1223 from BOS to ORD to SFO on 8/23/99 is two flights, one operating from BOS to ORD, another operating from ORD to SFO. Given this definition, the ARRIVALS block contains the following flights for the ADL time range.

For an airport, the ADL includes:

- All flights that ETMS currently predicts to arrive at the given airport in the ADL time interval.
- All cancelled flights that, when they originally entered the CDM database via an FS, FC, FM, or FZ message, were predicted to arrive at the given airport in the ADL time interval.
- All flights that are diverted but that, when they originally entered the CDM database via an FS, FC, FM, or FZ message, were predicted to arrive at the given airport in the ADL time range. (NOTE: The original diverted flight will not appear in the ADL if a diversion recovery is created with the same call sign.)

For an FEA and FCA, the ADL includes:

- All flights currently meeting the FEA/FCA criteria. This would include all flight traversing the spatial area and meeting any filtering specified for that FEA/FCA.
- All flights that would meet the FEA/FCA criteria if the end time was extended. This time range can be determined from the ADL\_DEFINITION block.

NOTE – Since the FEA is not baselined a flight that cancels or reroutes out of an FEA will then no longer be listed in the ADL.

For an FCA, the ADL includes:

- All flights that were at some point were predicted to traverse the FCA in the ADL time interval but which no longer traverse the FCA due to a time or route change. That is, only flights that were delayed or rerouted after the FCA was created can possibly appear in the FCA ADL. These flights will have the DO flag set.

- All cancelled flights that were at some point predicted to traverse the FCA in the ADL time interval. That is, only cancelled flights that were cancelled after the FCA was created can possibly appear in the FCA ADL. These flights will have the appropriate cancel flag set in addition to having the DO flag set.

A sample ARRIVALS block follows (NOTE: the records have been truncated to the width of the page, and only two records are shown):

```
#
#ACID      ETMSID      ARRIVALS
#          DEST ACENTR  ORIG  DCENTR  ETD      ETA      DFIX      EDFT ...
#
START_ARRIVALS 592
UCA4467  UCA4467  BOS   ZBW     ISP   ZNY     A152320 A160001 -      -      ...
AAL0155  AAL155   BOS   ZBW     EGLL  ZEU     E151617 A160003 -      -      ...
...
END_ARRIVALS
```

### **1.2.17 DEPARTURES**

The DEPARTURES block contains the departing flights for an airport. The START\_ DEPARTURES line contains an additional field indicating the number of flight records that appear in the block.

START\_ DEPARTURES is then followed by a line for each flight in the DEPARTURES block. The contents of each line and the definition of the data fields are provided in section 1.3 of this document.

Two comment lines precede the DEPARTURES block. One indicates that the following list is for departures. The other shows the column headers for each of the data fields in the flight records.

ETMS defines a flight to be a flight leg; that is, a unique combination of call sign (ETMSID), origin (ORIG), destination (DEST), and time of operation (IGTD). For example, flight ABC1223 from BOS to ORD to SFO on 8/23/99 is two flights, one operating from BOS to ORD, another operating from ORD to SFO. Given this definition, the DEPARTURES block contains the following flights for the ADL time range:

- All flights that ETMS currently predicts to depart from the given airport in the ADL time interval.
- All cancelled flights that, when they originally entered the CDM database via an FS, FC, FM, or FZ message, were predicted to depart from the given airport in the ADL time interval.
- All flights that are diverted but that, when they originally entered the CDM database via an FS, FC, FM, or FZ message, were predicted to depart from the given airport in the ADL time range. (NOTE: The original diverted flight will not appear in the ADL if a diversion recovery is created with the same call sign.)

A sample DEPARTURES block follows (NOTE: the records have been truncated to the width of the page, and only two records are shown):

```
#
#ACID      ETMSID      DEPARTURES
#          DEST ACENTR  ORIG  DCENTR  ETD      ETA      DFIX      EDFT ...
#
START_DEPARTURES 608
GAA1234  GAA1234  ISP   ZNY     BOS   ZBW     A160004 E160057 LUCOS  160013 ...
SWA0785  SWA785   STL   ZKC     BOS   ZBW     A160007 E160402 MHT    160018 ...
END_DEPARTURES
```

### **1.2.18 DATA BLOCK APPLICABILITY**

The table below defines which types of data blocks are required, dependent on the element type of the ADL. The different applicability for FEAs and FCAs is due to the actual program only being issued for FCAs and

not FEAs. Due to this, the blocks applicable to an implemented program will never be seen in an ADL for an FEA.

Data Block Type	Element Type		
	Airport	FEA	FCA
ADL_DEFINITION	Required	Required	Required
AFIX	Required	Not Supported	Not Supported
DFIX	Required	Not Supported	Not Supported
AAR	Required	Required	Required
ADR	Required	Not Supported	Not Supported
ELEMENT_DEFINITION	Not Supported	Required	Required
METAR	Optional	Not Supported	Not Supported
TAF	Optional	Not Supported	Not Supported
UNASSIGNED_SLOTS	Required	Required	Required
GDP_PARAMS	Optional	Not Supported	Optional
COMP_PARAMS	Optional	Not Supported	Optional
BKT_PARAMS	Optional	Not Supported	Not Supported
GS_PARAMS	Optional	Not Supported	Not Supported
SUB_FLAG	Optional	Not Supported	Optional
FADT_TIMES	Optional	Not Supported	Optional
ARRIVALS	Optional	Required	Required
DEPARTURES	Optional	Not Supported	Not Supported

### 1.3 – Flight-Specific Data

This section describes the data items that CDM will provide for a flight. Each data item description includes:

- The name under which the data item appears in the ADL file (these are the names that appear in the column header comment line)
- An expanded descriptor for the data item
- The corresponding CDM message field reference number, when it exists, in square brackets
- The format of the field
- When necessary, a definition of the field and how it will be filled

Some general notes about the field descriptions and formats:

- Fields with null values will appear in the ADL file as the character ‘-’.
- Field syntax is given in an abbreviated shorthand using the following conventions:

- L – represents one upper-case letter
  - d – represents one digit
  - c – represents one alphanumeric character (either letter or digit); by convention, CDM uses only upper case letters in the data fields
  - [] – means the characters within are optional; any characters not shown in brackets are required
  - Example: Ldd[cc] means an upper case letter followed by two required digits and zero, one, or two characters.
- All time-of-day fields will be 6 digits: two digits each of day-hour-minute (ddhhmm).
  - Field values are left aligned with their column headers.
  - Fields are separated by two or more blanks.
  - No field will be blank; if no value is defined for that field, a '-' will appear.
  - Current ETMS report field names have been used wherever appropriate. Some new names have been suggested where the existing field names are misleading or confusing.
  - The name choices are constrained so that all of the current ETMS field names can still be used (this is critical for backwards compatibility). This leads to what may seem like some strange choices for names. For example: Airline Gate Time of Departure would be logically abbreviated as AGTD. Unfortunately, this is a pre-existing name for the Actual Gate Time of Departure (although it is not a gate time!). CDM Gate Time of Departure might also be a desirable choice, but CGTD is Controlled Gate Time of Departure (again, even though it is not a gate time). So LGTD is used (it is at least somewhat mnemonic: airLine).
  - Flag name lengths have been minimized in an attempt to keep the ADL files from getting any bigger than necessary. This again follows ETMS convention.

### **1.3.1 Parsing Hints**

The ADL file formatting has been designed to parse by name rather than by position. Although every effort will be made not to rearrange the file, it may be desirable to do so in order to add fields but still keep the file readable. The approach that some have used to parse data out of the ETMS reports is to:

- Define the field names that you are looking for as constants
- Search for those names in the column header line counting what position each is in
- Read the flight data records, assigning the values in the previously determined positions into the appropriate internal variables

For example, if you are interested in PGTD, you search the column header line to find that it is the 20th field. You parse each flight record, grab the 20th token, convert it to internal format, and store it in the appropriate internal variable (this works because we ensure that a token exists in every column). Additionally, you can flag an error if a key field that you need is not in the ADL file. This generally keeps the parsing software forward compatible through file format changes.

### **1.3.2 Flight Data Fields**

Prior to the version 10 ADL, every flight record in every ADL had the same format. Starting with version 10, the record format depends on the ADL element type. If the ADL is for an FEA or FCA, the records contain all of the same fields from the airport ADL plus additional FEA/FCA-specific fields. These FEA/FCA-only

fields are indicated in the text. If a field has no indicator, it is required in every ADL. A table at the end of this section summarizes which fields appear in each type of ADL.

The fields currently provided for each flight in an ADL are, from left to right:

1. ACID: NAS Aircraft Identifier (AKA. flight identifier, call sign) [CDM Field 02] – Lc[cccc]

The flight identifier as it is displayed by ETMS. The ACID is populated from OAG data, CDM message, or NAS message. If ETMS has received NAS data on the flight the ACID will appear exactly as it appears in the NAS; that is, it will include any extra leading zeros. The ACID is used for display purposes in all products utilizing the ADL. The ACID may change during the lifecycle of a flight in ETMS; specifically, leading zeros may be introduced into the flight number portion of a commercial flight identifier.

2. ETMSID: ETMS Aircraft Identifier (AKA. flight identifier, call sign) [CDM Field 02] – Lc[cccc]

The ETMSID is the internal aircraft identifier used by ETMS for flight data matching. The ETMSID for a given flight record will not change during the existence of the flight in ETMS. The ETMSID will match the ACID except in the case where leading zeros appear in the flight number portion of a commercial flight identifier. In this case, ETMS will strip the leading zeros. The ETMSID should be used only to determine the uniqueness of a particular flight and should not be used for display purposes.

3. DEST: Destination Airport (AKA. arrival airport) [CDM Field 27] – Lcc[c]

4. ACENTR: Arrival Center – LLL

ARTCC of the destination airport

5. ORIG: Origin Airport (AKA. departure airport) [CDM Field 26] – Lcc[c]

6. DCENTR: Departure Center – LLL

ARTCC of the origin airport

7. ETD: Estimated Time of Departure from the Origin Airport– Lddddd

The ETD is a concatenation of two fields, the prefix and the actual ETD time. The prefix indicates the status of the flight and its source data; that is, it is a combination of what data ETMS has processed for the flight and what state the flight is in (e.g., scheduled, taxied, active). The ETD is the best, estimated runway departure time considering all data sources. The prefix also gives clues to how the ETD was modeled; however, one must be careful in interpreting the ETD modeling.

The prefixes are explained below, both in terms of flight status and ETD computation. They are listed in increasing order of priority. ETMS shows the highest priority prefix; for example, if ETMS shows a “P” prefix for a flight, it may also have received “S” and “N” data.

- “S” Prefix (Scheduled)
  - Status: ETMS has processed only OAG schedule data for this flight. There has been no CDM or NAS message to corroborate that the flight will operate as indicated. The flight may be controlled but is not airborne.
  - ETD Computation:
    - § If the flight is controlled, ETMS sets the ETD to the controlled departure time (CTD).
    - § If the flight is not controlled, ETMS models the ETD as the scheduled departure time (SGTD) from OAG plus a historical ground time estimate.
    - § ETMS applies “time-out” logic, as described below.

- “N” Prefix (eEarly iNtent)
  - Status: ETMS has processed an early-intent flight plan for this flight. ETMS may have also processed OAG schedule data. There has been no other CDM message or NAS message for the flight. The flight may be controlled but is not airborne.
  - ETD Computation:
    - § If the flight is controlled, ETMS sets the ETD to the CTD.
    - § If the flight is not controlled, ETMS models the ETD as the departure time from the early-intent flight plan plus a historical ground time estimate.
    - § ETMS applies “time-out” logic, as described below.
- “P” Prefix (Proposed)
  - Status: ETMS has received a flight plan from the NAS for the flight. There may also have been OAG schedule data or an early intent message. There have been no CDM messages. The flight may be controlled but is not airborne.
  - ETD Computation:
    - § If the flight is controlled, ETMS sets the ETD to the CTD.
    - § If the flight is not controlled, ETMS models the ETD as the departure time from the flight plan (P-time, PGTD) plus a historical ground time estimate.
    - § ETMS applies “time-out” logic, as described below.
- “L” Prefix (airLine time)
  - Status: ETMS has processed a CDM message for the flight. ETMS may also have processed OAG schedule data, an early-intent flight plan, and/or a NAS flight plan for the flight. The flight may be controlled but is not airborne.
  - ETD Computation:
    - § If the flight is controlled and the CTD is later than the LRTD and LGTD, ETMS sets the ETD to the CTD.
    - § If the CDM message contained a runway departure time estimate (LRTD) and the flight is not controlled or the CTD is earlier than the LRTD, ETMS sets the ETD to the user-provided time (LRTD).
    - § If the CDM message contained only a gate time departure estimate (LGTD) and the flight is not controlled or the LGTD is later than the CTD, ETMS models the ETD as the gate departure time plus a historical ground time estimate.
    - § ETMS applies “time-out” logic, as described below.
- “T” Prefix (Taxied)
  - Status: ETMS has received a CDM message from the user with an OUT time. This indicates that the flight has pushed off the gate and is in “Taxi” status.
  - ETD Computation: ETMS does not use the OUT time in the ETD modeling. Since the “T” prefix indicates that ETMS has processed CDM messages for the flight, the ETD modeling is the same as for the “L” prefix. The rules are repeated here for clarity.
    - § If the flight is controlled and the CTD is later than the LRTD and LGTD, ETMS sets the ETD to the CTD.

- § If the CDM message contained a runway departure time estimate (LRTD) and the flight is not controlled or the CTD is earlier than the LRTD, ETMS sets the ETD to the user-provided time (LRTD).
- § If the CDM message contained only a gate time departure estimate (LGTD) and the flight is not controlled or the LGTD is later than the CTD, ETMS models the ETD as the gate departure time plus a historical ground time estimate.
- § ETMS applies “time-out” logic, as described below.

- “E” Prefix (Estimated)
  - Status: ETMS has received an active NAS message for the flight, but did not get a NAS activation message (DZ) or CDM message with OFF time. The active message is most commonly a track update (TZ), but may also be a flight plan (FZ), amendment (AF), or boundary crossing (UZ). Flight is active or completed.
  - ETD Computation: ETMS estimates the actual departure time from the active NAS message by modeling backwards from the position and time on the message.
- “A” Prefix (Actual)
  - Status: ETMS has received a NAS activation message or a CDM message with an OFF time. Flight is active or completed.
  - ETD Computation: ETMS uses the actual departure time from a NAS DZ message or from a CDM-participant provided OFF time. If both are available, ETMS uses the NAS DZ time.

#### “Time-out” Logic

If at any time a flight’s departure time goes more than 5-minutes in the past and the flight is not active, ETMS adds five minutes to the ETD. ETMS does not change the prefix in this case. Thus, for any flight with a prefix of S, N, P, L, or T, the ETD may include additional “time-out” delay that ETMS has added to keep the flight current. The amount of time-out delay is shown in the field LTOD (item 79). ETMS will eventually cancel flights when the “time-out” delay gets too large (see TO flag – item 66).

8. ENTRY (FEA/FCA-only): Estimated Element Entry Time (New) – dddddd

The ENTRY is the current, best, estimated entry time for an FEA or FCA considering all data sources.

9. EXIT (FEA/FCA-only): Estimated Element Exit Time (New) – dddddd

The EXIT is the current, best, estimated exit time for an FEA or FCA considering all data sources. If the FEA/FCA is a fix or line segment, the EXIT time will equal the ENTRY time.

10. ETA: Estimated Time of Arrival at the Destination Airport – Lddddd

The ETA is a concatenation of two fields, the prefix and the actual ETA time. The prefix indicates the status of the flight and its source data; that is, it is a combination of what data ETMS has processed for the flight and what state the flight is in (e.g., estimated, controlled). The ETA is the best, estimated runway arrival time considering all data sources. The prefix also gives clues to how the ETA was modeled; however, as with the ETD, the prefix must be interpreted very carefully.

The prefixes are explained below, both in terms of flight status and ETA computation. They are listed in increasing order of priority. ETMS shows the highest priority prefix; for example, if ETMS shows a “C” prefix for a flight, the flight may also have “L” data.

The rules for the arrival prefix depend on whether the flight is on the ground or has departed, and are therefore presented separately below.

#### ETA Prefix for Flights on the Ground (ETD Prefix is S, N, P, L, or T)



- “E” Prefix (Estimated)
  - Status: The flight is on the ground and not controlled.
  - ETA Computation:
    - § ETMS models the en route time of the flight based on current route, altitude, speed, aircraft type, and winds. ETMS adds the en route time to the ETD to get the ETA. If ETMS has not received flight plan data from the user or the NAS, it assigns a default route, altitude, and speed based on historical data for that city-pair and aircraft type.
- “L” Prefix (airLine time)
  - Status: ETMS has received a CDM message with a predicted runway arrival time. The flight is on the ground and is not controlled.
  - ETA Computation:
    - § ETMS sets the ETA to the airline-provided en route time (LRTA – LRTD) plus the ETD. (NOTE: If the flight is in time-out delay, the ETA will be later than the LRTA.)
- “C” Prefix (Controlled)
  - Status: ETMS has received a controlled departure time for the flight. The flight has not yet departed.
  - ETA Computation: ETMS applies no special ETA processing for a controlled flight. That is, ETMS applies the same logic as for an “E” or “L” ETA. The rules are repeated here to put them in context.
    - § If no LRTA has been processed, ETMS models the en route time of the flight based on current route, altitude, speed, aircraft type, and winds. ETMS adds the en route time to the ETD to get the ETA. If ETMS has not received flight plan data from the user or the NAS, it assigns a default route, altitude, and speed based on historical data for that city-pair and aircraft type.
    - § If an LRTA has been processed, ETMS sets the ETA to the airline-provided en route time (LRTA – LRTD) plus the ETD. (NOTE: If the flight is in time-out delay, the ETA will be later than the LRTA.)

ETA Prefix for Flights That Have Departed (ETD Prefix is E or A)

- “E” Prefix (Estimated)
  - Status: The flight is in the air.
  - ETA Computation:
    - § ETMS uses reported positions and speeds to refine the ETA.
- “A” Prefix (Actual)
  - Status: ETMS has received a NAS termination message (AZ) and/or has inferred from the track data (TZs) that the flight has landed.
  - ETA Computation:
    - § ETMS sets the ETA to the AZ time if it appears consistent with the TZ data. Otherwise, ETMS leaves the ETA to be the last predicted time.

11. DFIX: Departure Fix – LLL[LL]

The name of the departure fix, at the origin airport, as determined by ETMS modeling.

12. EDFT: Estimated Departure Fix Time – dddddd  
Time over the departure fix as estimated by ETMS.
13. DP: Departure Procedure – LLL[LL]d  
The name of the Departure Procedure (DP) taken from the historical, early intent, or NAS flight plan.
14. DTRSN: DP Transition Fix – LLL[LL]  
The name of the DP transition taken fix from the historical, early intent, or NAS flight plan.
15. AFIX: Arrival Fix – LLL[LL]  
The name of the arrival fix as determined by ETMS modeling.
16. EAFT: Estimated Arrival Fix Time – dddddd  
Time over the arrival fix as estimated by ETMS.
17. STAR: Standard Terminal Arrival Route – LLL[LL]d  
The name of the Standard Terminal Arrival Route (STAR) taken from the historical, early intent, or NAS flight plan.
18. STRSN: STAR Transition Fix – LLL[LL]  
The name of the STAR transition fix from the historical, early intent, or NAS flight plan.
19. USR – User Category – L  
One character indicating the category of user operating the flight. The available values are:
  - C - Air Carrier
  - F - Freight/Cargo Carrier
  - G - General Aviation
  - M - Military
  - T - Air Taxi
  - O - Other
20. TYPE: Aircraft Type [CDM Field 03] – Lcc[c]  
Rules of precedence for setting this field, in decreasing order of priority are:
  - Value received from NAS
  - Value received from CDM Participant
  - Value received from OAG
21. CTG: Aircraft Category – L  
One character indicating:
  - J - Jets
  - P - Props
  - T - Turbo
22. CLS: Aircraft Weight Class – L  
One character indicating:

- H - Heavy
- L - Large
- S - Small

23. ARTD: Actual Runway Time of Departure (AGTD in ETMS) – dddddd

Name changed as previous name was misleading (it is a runway time not a gate time). ARTD is the time from a NAS DZ message. If no DZ has been received, this field is blank.

24. ARTA: Actual Runway Time of Arrival (AGTA in ETMS) – dddddd

Name changed as previous name was misleading (it is a runway time not a gate time). ARTA is the time from a NAS AZ message. If no AZ has been received, this field is blank.

25. CR\_TIME (FEA/FCA-only): Create Time – dddddd

Used to indicate how long ETMS has known of the flight. For FEA/FCA ADLs this is the time the flight was first detected to be intersecting the FEA/FCA.

26. SGTD: Scheduled Gate Time of Departure – dddddd

Gate departure time from OAG. Null if no OAG data available for the flight.

27. SGTA: Scheduled Gate Time of Arrival – dddddd

Gate arrival time from OAG. Null if no OAG data available for the flight.

28. IGTD: Initial Gate Time of Departure (formerly OGTD) [CDM Field A1] – dddddd

Used to save the initial gate departure time of the flight. Useful for flight data matching. IGTD is set as follows:

- When a flight is first created, if it is created from OAG data, CDM Participant data (from CDM message), or flight plan data, the IGTD is set to the gate departure time from that source. It will thereafter never be changed.
- If a flight is created from an “active” message (e.g., departure message, airborne flight plan, etc.), the IGTD is set to null.

29. IENTRY (FEA/FCA-only): Initial Element Entry Time (New) – dddddd

Used to save the original entry time into the area defined by the FEA or FCA. IENTRY is used by FSM to determine the priority order when allocating flights to slots. IENTRY is set as follows:

- For an FEA, the IENTRY time will always be set to the predicted entry time (ENTRY) minus any delay the flight has already incurred (ETD – IGTD).
- For an FCA, the IENTRY time will be set as follows. When a flight is first observed to be traversing the FCA, the IENTRY time is set to the predicted entry time (ENTRY) minus any delay the flight has already incurred (ETD – IGTD). It will thereafter never be changed.
- If a flight is created from an “active” message (e.g., departure message, airborne flight plan, etc.), the IENTRY is set to null.

30. IGTA: Initial Gate Time of Arrival (formerly OGTA) – dddddd

Used to save the original gate arrival time of the flight. Useful for flight data matching. IGTA is set as follows:

- When a flight is first created, if it is created from OAG data, CDM Participant data (from CDM message), or flight plan data, the IGTA is set to the gate arrival time from that source. It will thereafter never be changed.
  - If a flight is created from an “active” message (e.g., departure message, airborne flight plan, etc.), the IGTA is set to null.
31. PGTD: Proposed Gate Time of Departure – dddddd  
Departure time from NAS flight plan. Null if no flight plan has been received for the flight. If multiple flight plans have been processed, shows the P time from the last one.
32. PGTA: Proposed Gate Time of Arrival – dddddd  
Arrival time from NAS. Generally this is initially set from the flight plan, and then updated when DZs and UZs are processed. Null if no NAS arrival time has been received for the flight.
33. PETE: Filed ETE – dddd  
The PETE field was created because the PGTD and PGTA pair do not preserve the ETE filed by the flight operator on the flight plan. PETE is set in the following manner:
- If a NAS flight plan has been received for this flight with an ETE field, PETE is set to the latest such value. Otherwise the value is null. PETE is in units of minutes.
34. LRTD: Airline Runway Time of Departure [CDM Field T1] – dddddd  
Predicted runway time of departure provided by the CDM Participant in a CDM message. If a CDM Participant has sent in a runway departure time in a CDM message, then this field contains the most recent such time. Otherwise, the value is null.
35. LRTA: Airline Runway Time of Arrival [CDM Field T2] – dddddd  
Predicted runway time of arrival provided by the CDM Participant in a CDM message. If a CDM Participant has sent in a runway arrival time in a CDM message, then this field contains the most recent such time. Otherwise, the value is null.
36. LGTD: Airline Gate Time of Departure [CDM Field T3] – dddddd  
Predicted gate time of departure provided by the CDM Participant in a CDM message. If a CDM Participant has sent in a gate departure time in a CDM message, then this field contains the most recent such time. Otherwise, the value is null
37. LGTA: Airline Gate Time of Arrival [CDM Field T4] – dddddd  
Predicted gate time of arrival provided by the CDM Participant in a CDM message. If a CDM Participant has sent in a gate arrival time in a CDM message, then this field contains the most recent such time. Otherwise, the value is null.
38. ERTD: Earliest Runway Time of Departure [CDM Field T7] – dddddd  
The earliest departure time that the CDM Participant would like to have assigned to this flight in a TMI. If the CDM Participant has sent this field in a CDM FC or FM message, then the most recent such time is contained in this field. Otherwise, the value is null.
39. EENTRY (FEA/FCA-only): Earliest Element Entry Time (New) – dddddd  
The earliest possible entry time into the FEA or FCA, as calculated by ETMS. This field is used to ensure that a flight will not be assigned a slot for an FEA/FCA that it cannot use. Since the CDM Participants do not send earliest entry times for an FEA/FCA, ETMS will compute this value by first determining the earliest ETA (EETA), then applying any delta to the ENTRY time.

Compute EETA as follows:

- If flight has ERTA, EETA = ERTA
- Else if flight has LRTA, EETA = LRTA
- Else if flight has LGTA, EETA = LGTA-10
- Else if flight has IGTA, EETA = IGTA-10
- Else, EETA = ETA

Then compute the delta between EETA and ETA and apply to ENTRY:

- $EENTRY = ENTRY + (EETA - ETA)$

40. ERTA: Earliest Runway Time of Arrival [CDM Field T8] – dddddd

The earliest arrival time that the CDM Participant would like to have assigned to this flight in a TMI. If the CDM Participant has sent this field in a CDM FC or FM message, then the most recent such time is contained in this field. Otherwise, the value is null.

41. OUT: Gate Out Time [CDM Field T13] – dddddd

The time at which a flight pushed out from the gate as reported by the CDM Participant via a CDM message. If the CDM Participant sends more than one value, the most recently submitted time is contained in this field. Otherwise, the value is null.

42. OFF: Runway Off Time [CDM Field T11] – dddddd

The time at which a flight lifts off from the runway as reported by the CDM Participant via a CDM message. If the CDM participant sends more than one value, the most recently submitted time is contained in this field. Otherwise, the value is null.

43. ON: Runway On Time [CDM Field T12] – dddddd

The time at which a flight touches down on the runway as reported by the CDM Participant via a CDM message. If the CDM participant sends more than one value, the most recently submitted time is contained in this field. Otherwise, the value is null.

44. IN: Gate In Time [CDM Field T14] – dddddd

The time at which a flight pulls in at the gate as reported by the CDM Participant via a CDM message. If the CDM Participant sends more than one value, the most recently submitted time is contained in this field. Otherwise, the value is null.

45. OETD: Original Estimated Time of Departure (OGTD in ETMS) – dddddd

OETD is used to save the ETD last modeled by ETMS before either a TMI is issued, or the flight departs, or the flight is “time-out” delayed by ETMS. The OETD is used to “back out” of a TMI. The OETD is different from the BETD in that it does NOT include any time-out delay modeled by ETMS whereas the BETD does include time-out delay. Renamed from OGTD because the ETMS name is misleading. OETD is set in the following manner:

- Whenever an ETD is updated from an FS, FC, FM, or FZ, as long as the flight is not controlled or active, the OETD is set to the new ETD minus any current time-out delay.

46. OENTRY (FEA/FCA-only): Original Element Entry Time (New) – dddddd

OENTRY is used to save the ENTRY last modeled by ETMS before either an AFP is issued and the flight departs, or the flight is “time-out” delayed by ETMS. The OENTRY is different from the BENTRY in that it does NOT include any time-out delay modeled by ETMS whereas the BENTRY does include time-out delay. OENTRY is set by referencing the OETD in the following manner:

- $OENTRY = ENTRY + (OETD - ETD)$

47. OETA: Original Estimated Time of Arrival (OGTA in ETMS) – dddddd

See discussion of Original Estimated Time of Departure. OETA will be set in the following manner:

- Whenever the ETA is updated from an FS, FC, FM, or FZ, as long as the flight is not controlled or active, the OETA will be updated to the ETA.

48. BETD: Base Estimated Time of Departure (OGTD in ETMS) – dddddd

BETD is used to save the ETD at the time a TMI is issued or the flight departs. The BETD is used to compute the amount of departure delay that can be attributed to a TMI. The BETD includes any time-out delay modeled by ETMS. BETD is set in the following manner:

- Whenever an ETD is updated from an FS, FC, FM, or FZ, as long as the flight is not controlled or active, the BETD is set to the new ETD.
- Whenever CDM re-models a departure time due to a “time-out” delay, the BETD is updated to the new ETD.

49. BENTRY (FEA/FCA-only): Based Element Entry Time (New) – dddddd

BENTRY is used to save the ENTRY at the time an AFP is issued or the flight departs. The BENTRY is used to compute the amount of departure delay that can be attributed to an AFP. The BENTRY includes any time-out delay modeled by ETMS. BENTRY is set relative to the BETD in the following manner:

- $BENTRY = ENTRY + (BETD - ETD)$

50. BETA: Base Estimated Time of Arrival (OGTA in ETMS) – dddddd

See discussion of Base Estimated Time of Departure. BETA will be set in the following manner:

- Whenever the ETA is updated from an FS, FC, FM, or FZ, as long as the flight is not controlled or active, the BETA will be updated to the ETA.
- Whenever CDM re-models a departure time due to a “time-out” delay, the BETA is updated to the new ETA.

51. OCTD: Original Controlled Time of Departure – dddddd

OCTD preserves the first controlled departure time (CTD, a.k.a. EDCT) for a flight. OCTD is set in the following manner:

- If an EDCT is received for a flight and the flight is not already controlled, the OCTD is set to the EDCT time.
- If an EDCT is received for a flight and the flight is already controlled, the OCTD is not changed.
- If an EDCT purge is received for a flight and the flight is not active or completed, the OCTD is cleared.
- If a flight is not currently controlled, nor was it controlled when it departed, the value of OCTD is null.

52. OCTA: Original Controlled Time of Arrival – dddddd

OCTA preserves the first controlled arrival time (CTA) for a flight. Refer to the CTA definition for a full definition of this field. OCTA is set in the following manner:

- If an EDCT is received for a flight and the flight is not already controlled, the OCTA is set to the CTA.
- If an EDCT is received for a flight and the flight is already controlled, the OCTA is not changed.

- If an EDCT purge is received for a flight and the flight is not active or completed, the OCTA is cleared.
- If a flight is not currently controlled, nor was it controlled when it departed, the value of OCTA is null.

53. CTD: Controlled Time of Departure (CGTD in ETMS) – dddddd

CTD is the current controlled departure time (EDCT) for a flight. CTD is set in the following manner:

- If an EDCT is received for a flight, the CTD is set to the EDCT time.
- If an EDCT purge is received for a flight and the flight is not active or completed, the CTD is cleared.
- If a flight is not currently controlled, nor was it controlled when it departed, the value of CTD is null.

54. CTA: Controlled Time of Arrival (CGTA in ETMS) – dddddd

CTA is the current controlled arrival time (EDCT) for a flight at the controlled element as defined in the CTL\_ELEM field. That is, if the CTL\_ELEM is an airport, the CTA is the assigned arrival time at the airport. If the CTL\_ELEM is an FCA, the CTA is the assigned entry time at the FCA. CTA is set in the following manner:

- If an EDCT is received for a flight, the CTA is set to the CTA from the EDCT.
- If an EDCT purge is received for a flight and the flight is not active or completed, the CTA is cleared.
- If a flight is not currently controlled, nor was it controlled when it departed, the value of CTA is null.

55. ASLOT: Arrival Slot [CDM Field A2] – Lcc[c].ddddddL for GDP Slots / FCAdd.dddddL for AFP Slots

When a TMI is issued, each controlled flight is assigned an arrival slot. The ASLOT is the flight's slot for the control element defined by the CTL\_ELEM field. Slots for AFPs can be easily identified since the first three characters will always be FCA. The ASLOT field is set as follows:

- If an EDCT is received for a flight, the ASLOT is assigned to the value from the message.
- If an EDCT purge is received for a flight and the flight is not active or completed, the ALSOT is cleared.
- If a flight is not currently controlled, nor was it controlled when it departed, the value of ASLOT is null.

56. CTL\_ELEM: Control Element – Lcc[c] for GDPs / FCAdd for AFPs

If a flight is controlled (i.e., has a CTD and CTA), the CTL\_ELEM indicates the constrained NAS element for which a TMI was issued. Currently, the CTL\_ELEM can be an arrival airport or FCA. It is set in the following manner:

- If a flight is controlled, the CTL\_ELEM is the name of the airport or FCA for which the TMI was issued.
- If a flight is not controlled, the CTL\_ELEM is null.

57. CTL\_TYPE: Control Type – LL[LL]

If a flight is controlled (i.e., has a CTD and CTA), CTL\_TYPE indicates the specific source of the current CTD/CTA. The possible sources along with an indication of what program type they are applicable to:

- GDP – control times were assigned as part of an GDP-Initial or GDP-Revision (GDP)
- AFP – control times were assigned as part of an AFP-Initial or AFP-Revision (AFP)
- GS – control times were assigned as part of a GDP-Ground Stop (GDP)
- BLKT – control times were assigned as part of a GDP Blanket (+/-) (GDP)
- COMP – control times were assigned as part of a AFP-Compression or GDP-Compression (AFP and GDP)
- BRG – control times were assigned when creating a bridge for an SCS or ECR request (AFP and GDP)
- DAS – control time assigned from a DAS delay to a pop-up flight (AFP and GDP)
- GAAP – control times are from an unassigned slot being assigned to a pop-up flight (AFP and GDP)
- RCTL – a control time assigned to a flight that was at some point controlled by an AFP, dropped out, and was re-controlled as a pop-up in another AFP. As opposed to other pop-ups, RCTL flights retains full substitution rights (AFP)
- SUB – control times assigned by a conventional user substitution message (AFP and GDP)
- SCS – control times assigned by a slot credit substitution message submitted by a NAS User (AFP and GDP)
- ECR – control time assigned by a slot credit substitution message submitted by an Authorized FAA user (AFP and GDP)
- UPD – control time from an ETMS “EDCT UPDATE” command made by an Authorized FAA user (AFP and GDP)

58. CTL\_EXMPT: Control Exempt Flag – c

If a flight is controlled (i.e., has a CTD and CTA), CTL\_EXMPT indicates whether the flight was categorized as “exempt” (for example, due to departure time status or departure center) when the AFP/GDP-Initial or AFP/GDP-Revision was computed. This exemption in relation to the CTL\_ELEM listed in that specific ADL.

59. SL\_HOLD: Slot Hold Flag [CDM Field A6] – L

If a flight is controlled (i.e., has a CTD and CTA), the SL\_HOLD flag indicates whether the slot associated with this flight is being held, or would be held, by the NAS User for the next compression. The compression algorithm will not automatically fill slots that are held.

60. DVREC: Diversion Recovery Flag – c

Indicates that the flight is a recovery of a flight that was previously diverted. A diversion recovery inherits data from the original flight to ensure that it is given the same degree of priority that the original flight would have received in any GDP that has been or may be run.

- G – Diversion recovery segment of a flight where the destination of the original flight was changed while that flight was still proposed.
- A – Diversion recovery segment of a flight where the destination of the original flight was changed after the original flight was active.



(NOTE: The DVREC field simply indicates the flight is a result of a change of destination; it is not an indicator that the flight is eligible for any priority due to diversion recovery status.)

61. DO (FEA/FCA-only): Drop Out Flight (New) – L

Indicates a flight that was originally routed through that area but subsequently changed its route such that it no longer traverses the FEA/FCA (i.e. it has Dropped Out of the FEA/FCA). (NOTE: In the case of an FEA the traffic has no baseline, thus no flight will ever have a DO status.)

62. UX: Update Cancelled – L

Indicates whether the flight is currently cancelled due to an EDCT UPDATE cancel. An Authorized FAA User may utilize the EDCT UPDATE command to cancel a flight that is part of a TMI.

63. FX: FX Cancelled – L

Indicates whether the flight is currently cancelled and an FX message has been processed for this flight. An FX message is the CDM message used by a CDM Participant to indicate a flight is not operating.

64. RZ: RZ or NAS Cancelled – L

Indicates whether the flight is currently cancelled and an RZ message has been processed for this flight. An RZ message is a NAS flight plan cancel message.

65. RS: RS Cancelled – L

Indicates whether the flight is currently cancelled and an RS message has been processed for this flight. An RS message is an internal ETMS message generated when an Authorized FAA User takes an OAG flight out of the database.

66. TO: Time Out Cancelled – L

Indicates whether the flight is currently cancelled due to having been timed out by ETMS. ETMS times out a flight when no activation message has been received within a certain time of the predicted departure time.

The time out logic for flights departing the 20 Continental United States (CONUS), seven Canadian, Honolulu (ZHN/PHZH) and Anchorage (ZAN/PAZA) Centers is as follows:

- If NAS messages have been received for a flight, ETMS will time out the flight 90 minutes after its predicted departure time.
- If only OAG data or CDM messages have been received for a flight, ETMS will time out the flight five minutes after departure time.

ETMS does not time out flights departing from other regions of the world.

67. DV: Diversion Cancelled – L

Indicates whether the flight is currently cancelled and was diverted to an alternate destination. The diversion may have come from either a NAS flight plan or a CDM modify (FM) message.

68. RM: Remove Cancelled – L

Indicates a flight that has been manually removed by an Authorized FAA User.

69. ALD: Airline Delayed – L

Indicates that the CDM Participant has at some point sent in a departure time estimate (via an FC or FM) for a flight that was later than the estimate previously in the database.

70. GDP: GDP Delayed – L

Indicates that the flight has at some point been controlled by a GDP-Initial or GDP-Revision.

71. AFP: AFP Delayed – L

Indicates that the flight has at some point been controlled by an AFP-Initial or AFP-Revision.

72. DAS: DAS Delayed – L

Indicates that a DAS (formerly FA) delay has been applied to this flight.

73. GSD: Ground Stop Delayed – L

Indicates the flight has at some point been part of a GDP-Ground Stop program.

74. TOD: Time Out Delayed – L

Indicates that ETMS is delaying this flight due to the fact that it has not departed as projected. The TOD status precedes a time out cancel (TO). A time out delay occurs when a flight has a flight plan message, its departure time is in the past, and it has not been activated yet. In this case, ETMS moves the flight back in time in 5-minute increments until cancelled by time out logic (see TO field). If ETMS receives a new message for this flight moving its departure time into the future, the TOD flag will be cleared indicating that the flight is not longer in time out delay. Time out delay logic is applied only to the same flight as time out cancel logic (see TO field).

75. CTL\_ALM: Alarm Flag – Oxddd

Indicates the alarm status flags that are set for a particular flight. The CTL\_ALM value is the hexadecimal value of the cumulative total of all set flags, where each flag is a bit in the CTL\_ALM word. Once set, a flag is never cleared. More than one alarm can be set at a given time.

The alarm flags are defined as follows:

- NO\_ALARM = 0
- CTA\_COMPLIANCE (0x1)
  - For a GDP, indicates that a flight landed outside the CTA compliance window (more than 5 minutes earlier or 5 minutes later than the CTA).
  - For an AFP, indicates that the estimated entry time into the FCA was outside the CTA compliance window (more than 5 minutes earlier or 5 minutes later than the CTA).
- CTD\_COMPLIANCE (0x2) – For both a GDP and AFP, indicates that a flight took off outside the CTD compliance window (more than 5 minutes earlier or 5 minutes later than the CTD).
- ETE\_VALUE (0x4)
  - For a GDP, indicates the difference between the actual en route time (ORIG to DEST) and the controlled en route time (ORIG to DEST) were outside the compliance time range (more than 15 minutes).
  - For an AFP, indicates that the estimated flying time from the origin airport to the FCA entry point was outside the compliance time range (more than 15 minutes).
- SPURIOUS\_FLT (0x8) – For both a GDP and AFP, indicates that a flight was not scheduled (that is, was created on that day from a CDM message or flight plan), was controlled in a TMI and was cancelled by a CDM message.
- CANCELLED\_FLEW (0x10) – For both a GDP and AFP, indicates a flight that had a status of cancelled at the time that it was activated by a DZ, UZ, TZ, or AZ message.

Example: A CTL\_ALM value of 0x0013 means that the CTA\_COMPLIANCE, CTD\_COMPLIANCE, and CANCELLED\_FLEW alarm flags are all set.

76. CDM\_MBR: CDM Member Flag – L

Flag indicating whether this flight belongs to a CDM Participant and is thus eligible for the full benefits of compression.

77. MAJOR: Major Carrier – LLL[L] or .LL

Indicates the organization within which this flight will be considered when RBS++ is computed (that is, all flights with the same MAJOR value are considered together during the intra-airline swapping portion of RBS++ and Compression). The MAJOR code can indicate an actual air carrier, a general aviation fleet operator, or a pseudo carrier used to logically group certain flights. If the MAJOR code is three letters, it is an official three-letter code that can be used for flight plan filing. If the MAJOR starts with a period character (.), it is a dummy code used only within ETMS. Dummy codes are used for any organization, such as a GA data provider, that is a CDM Participant but does not have an official three-letter code. If the flight IDs are being filtered, the MAJOR field will contain the filtered four-letter code, and the “.” will not be indicated.

78. GCD: Great Circle Distance – dddd

Indicates the great circle distance, in nautical miles, between the origin and the destination airports.

79. LTOD: Length of Time Out Delay – ddd

If the TOD flag is set, this field indicates the length of the time that the flight has currently been time out delayed, in minutes. If a new message is received pushing the flight out of time out delay, this time is reset to zero. Time out delay logic is not applied to international flights (See additional discussion under field TOD).

80. NRP: National Route Program flight– L

Flight plan has been processed with the keyword “NRP” or its aliases in field 11. This indicates the flight is participating in the National Route Program.

81. LFG: Lifeguard or MEDEVAC flight– L

Flight plan has been processed with the keyword “LIFEGUARD” or its aliases in field 11.

82. III: Flight is capable of utilizing CAT3 landing minimums.– L

Flight plan has been processed with the keyword “CATIII” or its aliases in field 11.

83. ATV: Altitude Reservation – L

Flight plan has been processed with the keyword “ALTRV” or its aliases in field 11.

84. SWP: Swapping– L

Flight plan has been processed with the keyword “SWAP” or its aliases in field 11.

85. DVT: Diversion Recovery flight– L

Flight plan has been processed with the keyword “DVRSN” or its aliases in field 11.

86. ADC: Advise Customs– L

Flight plan has been processed with the keyword “ADCUS” or its aliases in field 11.

87. FCA: Flow Constrained Area – L

Flight plan has been processed with the keyword “FCA” or its aliases in field 11.

88. WXR: Severe weather reroute– L

Flight plan has been processed with the keyword “WXRTE” or its aliases in field 11.

### **1.3.3 FLIGHT DATA FIELD APPLICABILITY**

The below table defines which flight data fields are supported dependent on the element type of the ADL. Required fields will be listed but may be null. Fields not supported will not be included in the ADL.

Field Reference	Field Name	Element Type	
		Airport	FEA or FCA
1	ACID	Required	Required
2	ETMSID	Required	Required
3	DEST	Required	Required
4	ACENTR	Required	Required
5	ORIG	Required	Required
6	DCENTR	Required	Required
7	ETD	Required	Required
8	ENTRY	Not Supported	Required
9	EXIT	Not Supported	Required
10	ETA	Required	Required
11	DFIX	Required	Required
12	EDFT	Required	Required
13	DP	Required	Required
14	DTRSN	Required	Required
15	AFIX	Required	Required
16	EAFT	Required	Required
17	STAR	Required	Required
18	STRSN	Required	Required
19	USR	Required	Required
20	TYPE	Required	Required
21	CTG	Required	Required
22	CLS	Required	Required
23	ARTD	Required	Required
24	ARTA	Required	Required
25	CR_TIME	Not Supported	Required
26	SGTD	Required	Required
27	SGTA	Required	Required
28	IGTD	Required	Required

Field Reference	Field Name	Element Type	
		Airport	FEA or FCA
29	IENTRY	Not Supported	Required
30	IGTA	Required	Required
31	PGTD	Required	Required
32	PGTA	Required	Required
33	PETE	Required	Required
34	LRTD	Required	Required
35	LRTA	Required	Required
36	LGTD	Required	Required
37	LGTA	Required	Required
38	ERTD	Required	Required
39	EENTRY	Not Supported	Required
40	ERTA	Required	Required
41	OUT	Required	Required
42	OFF	Required	Required
43	ON	Required	Required
44	IN	Required	Required
45	OETD	Required	Required
46	OENTRY	Not Supported	Required
47	OETA	Required	Required
48	BETD	Required	Required
48	BENTRY	Not Supported	Required
50	BETA	Required	Required
51	OCTD	Required	Required
52	OCTA	Required	Required
53	CTD	Required	Required
54	CTA	Required	Required
55	ASLOT	Required	Required
56	CTL_ELEM	Required	Required
57	CTL_TYPE	Required	Required
58	CTL_EXMPT	Required	Required
59	SL_HOLD	Required	Required

Field Reference	Field Name	Element Type	
		Airport	FEA or FCA
60	DVREC	Required	Required
61	DO	Not Supported	Required
62	UX	Required	Required
63	FX	Required	Required
64	RZ	Required	Required
65	RS	Required	Required
66	TO	Required	Required
67	DV	Required	Required
68	RM	Required	Required
69	ALD	Required	Required
70	GDP	Required	Required
71	AFP	Required	Required
72	DAS	Required	Required
73	GSD	Required	Required
74	TOD	Required	Required
75	CTL_ALM	Required	Required
76	CDM_MBR	Required	Required
77	MAJOR	Required	Required
78	GCD	Required	Required
79	LTOD	Required	Required
80	NRP	Required	Required
81	LFG	Required	Required
82	III	Required	Required
83	ATV	Required	Required
84	SWP	Required	Required
85	DVT	Required	Required
86	ADC	Required	Required
87	FCA	Required	Required
88	WXR	Required	Required

## Part 2 –FSM Broadcast Message Description

### 2.1 - General Description

#### 2.1.1 Contents

ETMS sends an FSM Broadcast message (separate from ADLs) to notify applications, primarily FSM, of two sets of dynamic data:

- The current traffic management initiatives that are proposed, in place, or have been purged on this day
- The current FEAs and FCAs that are available for monitoring with FSM

The protocol for receiving FSM Broadcast messages is fully described in reference 1. An application that wants to initiate the flow of ADLs for any element contained in the FSM Broadcast message must follow the protocol described in that document.

The FSM Broadcast message consists of three parts, a header, the list of current programs, and the list of current FEAs and FCAs. Each is described in a following section.

Some general items about this file:

- All times are of the format: YYYYMMDDHHMMSS (year-month-day-hours-minutes-seconds) and are always in Zulu time.
- The TMIs displayed in this file are reset at 0800; that is, at 0800 each day, any TMIs which are purged or beyond their end time at 0800 are removed from the file. In general, this means that the file starts out empty at 0800 and accumulates data until 0759 the next day. However, if a TMI is still active at 0800, it will remain in the file through the next day.
- The file will be broadcast at a regular 5 minute interval, except that the following events will trigger a new file irrespective of the set interval:
  - When a TMI is processed by ETMS
  - When a FEA/FCA is created, modified, or removed
  - When requested by an application

#### 2.1.2 File Naming

ETMS uses a file naming convention that facilitates users who are trying to find particular files in a directory full of data files. The file naming for the FSM Broadcast files follows this convention for two reasons:

- It has proven to be useful to FAA users
- It allows the Broadcast, ADL, and Delta files to be co-mingled with ETMS data files in a logical manner

A file name consists of four parts separated by periods (.):

- Element identifier for which the data was generated; six characters with trailing blanks filled with underscores (\_), for the broadcast files — this will always be “fsm”
- Report type; four characters — for FSM Broadcast files, type is “bcdm”
- Date and time the file was created — 8 digits; ddhhmmss

- Sequence number, used to distinguish two identical files created in the same second — 2 digits; 01, 02, etc.

All letters in a file name are lower case.

For example, an FSM Broadcast file generated on February 6 at 15:35:33 Z would be named:

```
fsm____.bcdm.06153533.01
```

An FSM Broadcast file is compressed and encrypted for transmission to user sites. The suffix “.gz” indicates a file is compressed (using “gzip”). The suffix “.enc” indicates a file is encrypted (using Blowfish). The suffix .gz.enc indicates a file is both compressed and encrypted.

### **2.1.3 Organization**

An FSM Broadcast file consists of three main parts: the header, a list of current TMIs, and a list of current FSM eligible FEAs/FCAs. Each of the sections is contained in the top level container of <FSM\_BROADCAST>.

```
<FSM_BROADCAST>
  <HEADER>
    ..Header Elements
  </HEADER>
  <CURRENT_PROGRAMS>
    ..Current Programs Elements
  </CURRENT_PROGRAMS>
  <CURRENT_FEAS_FCAS>
    ..Current FEAs/FCAs Elements
  </CURRENT_FEAS_FCAS>
</FSM_BROADCAST>
```

### **2.1.4 General Formatting**

The FSM Broadcast files are formatted using the XML standard. Additional information regarding the XML format can be found at <http://www.w3c.org/XML>. The XML format utilized differs from the XML specification in the following ways:

- The standard XML document header is not provided

## ***2.2 FSM Broadcast Data Elements***

The bulk of an FSM Broadcast file is the data elements. Each block of data is contained within an XML container.

### **2.2.1 Header**

The header of an FSM Broadcast file consists of four required XML elements. These elements provide general information regarding the specific FSM broadcast file. The header is required for all FSM broadcast files.

Following is an example of a current header block:

```
<HEADER>
  <FILE_NAME>fsm____.bcdm.06153533.01</FILE_NAME>
  <UPDATE_TIME>200506153533</UPDATE_TIME>
  <HUB_SITE>etmsa</HUB_SITE>
</HEADER>
```



Following is a description of each of the elements of the header block:

1. HEADER – The container for the file header. This container is required as are the contents.
2. FILE\_NAME – The file name of the message. This field is required.
3. UPDATE\_TIME – The time at which this file was last updated by ETMS. This field is required.
4. HUB\_SITE – The name of the ETMS hub site that generated this file. Maximum length is 8-characters. This field is required.

### **2.2.2 Current Programs**

The Current Programs block is required for all FSM Broadcast files. It defines all current proposed and actual TMIs.

Following is an example of a current programs block.

```
<CURRENT_PROGRAMS>
  <CTL_ELEM>
    <ELEM_NAME>BOS</ELEM_NAME>
    <ELEM_TYPE>APT</ELEM_TYPE>
    <ISSUED>200505121340</ISSUED>
    <LAST_MODIFIED>200505121545</LAST_MODIFIED>
    <CUM_START>200505121400</CUM_START>
    <CUM_END>200505121959</CUM_END>
    <PROGRAM>
      <PROG_TYPE>GDP</PROG_TYPE>
      <PROG_START>200505121400</PROG_START>
      <PROG_END>200505121959</PROG_END>
      <PROG_STATUS>ACTIVE<PROG_STATUS>
    </PROGRAM>
  </CTL_ELEM>
</CURRENT_PROGRAMS>
```

Following is a description of each of the elements of the current programs block:

1. CURRENT\_PROGRAMS – The container for the list of elements (airport, FEA, or FCA) that have or had some type of TMI on the current day. This container is required and may appear only once. If there are no controlled elements, CURRENT\_PROGRAMS will appear as an empty tag.
2. CTL\_ELEM – The container for an element that is currently controlled or has been controlled on this day. This container is optional; that is, there may not be any controlled elements at some times. This container may have multiple instances.
3. ELEM\_NAME – The name of the airport, FEA, or FCA described in this container. Maximum length is 6-characters. Required if and only if CTL\_ELEM is present.
4. ELEM\_TYPE – The type of element described in this container. Type can be APT, FEA, or FCA. Required if and only if CTL\_ELEM is present.
5. ISSUED – The time that a program was first issued for this element on this day. Time is reset if a program is purged and then re-issued. Required if and only if CTL\_ELEM is present.
6. LAST\_MODIFIED – The time at which the program parameters or status was last updated. If the program is active or proposed, this will be the time at which the last set of valid parameters was received. If the program is purged, this will be the time the purge was processed. Required if and only if CTL\_ELEM is present.

7. CUM\_START – The overall start time of the collective set of programs for this element. If the program is purged, this will reflect the value at the time of the purge. Required if and only if CTL\_ELEM is present.
8. CUM\_END – The overall end time for the collective set of programs for this element. If the program is purged, this will reflect the value at the time of the purge. Required if and only if CTL\_ELEM is present.
9. PROGRAM – Container for an instance of a TMI that is currently in effect for this element or which was in effect at the time the program was purged. One or more PROGRAM containers are required if and only if CTL\_ELEM is present.
10. PROG\_TYPE – The type of TMI described in this container; can be AFP, GDP, GS, COMP, or BLKT. Required if and only if PROGRAM is present.
11. PROG\_START – The start time of the program described in this container. Required if and only if PROGRAM is present.
12. PROG\_END – The end time of the program described in this container. Required if and only if PROGRAM is present.
13. PROG\_STATUS – The current status of the program described in this container. Can be PROPOSED, ACTIVE, PURGED, or EXPIRED. Required if and only if PROGRAM is present.
  - a. PROPOSED – Parameters have been sent but the program has not actually been issued. Cannot exist if an active program of the same type is present.
  - b. ACTIVE – A program is in place and currently controlling flights.
  - c. PURGED – The programs have been cancelled through an explicit command from the FAA. If one PROGRAM is PURGED, all must be PURGED.
  - d. EXPIRED – The parameters for this program have been dropped from the ADL even though the program was not purged.

### **2.2.3 Current FEAs FCAs**

The Current FEAs/FCAs block is required for all FSM Broadcast files. It defines FEAs/FCAs currently available for FSM monitoring.

Following is an example of a current FEA/FCA block.

```
<CURRENT_FEAS_FCAS>
<FCA>
  <FCA_ID>fca.etmst1.lxpc94.20050523143218</FCA_ID>
  <NAME>FCA004</NAME>
  <DOMAIN>PUBLIC</DOMAIN>
  <LASTUPDATE>20050523143331</LASTUPDATE>
  <UP_WKSTN>lxpc94</UP_WKSTN>
  <UP_SITE>etmst1</UP_SITE>
  <CR_WKSTN>lxpc94</CR_WKSTN>
  <CR_SITE>etmst1</CR_SITE>
  <REASON>NONE</REASON>
  <TYPE>FCA</TYPE>
  <COLOR_ID>34</COLOR_ID>
  <START>20050523143000</START>
  <END>20050523193000</END>
  <POLYGON>
    <CEILING>600</CEILING>
    <FLOOR>0</FLOOR>
```

```

    <DIRECTION>0</DIRECTION>
    <SPEED>0</SPEED>
    <DRAWING>>false</DRAWING>
    <POINTS>4285,8015 4008,8003 </POINTS>
</POLYGON>
<PRIMARY_FILTER>
  <COLOR_ID>25</COLOR_ID>
  <CONDITIONS>
    <ALL>
      <DEPARTS_ANY>ORD</DEPARTS_ANY>
      <ARRIVES_ANY>EWR</ARRIVES_ANY>
    </ALL>
  </CONDITIONS>
</PRIMARY_FILTER>
</FCA>
</CURRENT_FEAS_FCAS>

```

The CURRENT\_FEAS\_FCAS container is required and can appear only once. If there are no FEAs or FCAs defined for monitoring, the CURRENT\_FEAS\_FCAS tag will appear as an empty tag.

The FCA definition can include elements not shown in the above sample; data is fully described in reference 2. The only difference between reference 2 and the FCA definition included in the ADL is the omission of the following unnecessary data elements:

- <INDEX\_INFO>
- <FCA\_DISPLAY\_PREFERENCES> – This entire container will be omitted.