ENHANCED ATFM OPERATOR'S MANUAL

CAMU provides air traffic flow management through airspace capacity management within South Africa, built on leading edge technology, supporting traffic growth by optimising capacities, upholding environmental and safety concerns, with highly skilled, people through collaborative decision making processes with the entire aviation community.

Version 2

Updated 1 Apr 2010

Published by Central Airspace Management Unit

Johannesburg, Rep of S. Africa

ENHANCED ATFM OPERATOR'S MANUAL

Version	Date	Updates	Updated By	Approved By
1.0	1 Mar 2010	Initial release	Armando de Olim	Armando de Olim
2.0	1 Apr 2010	Appendix A (ver2.2) CAMU Web User's Guide ANNEX 2 Delay Codes – Added Delay Code OE00	Metron Aviation Armando de Olim	Armando de Olim

ENHANCED ATFM OPERATOR'S MANUAL

Table of Contents

ENHANCED ATFM OPERATOR'S MANUAL

1. INTRODUCTION

1.1. Purpose

The Enhanced Air Traffic Flow Management (ATFM) Operator's Manual has been prepared with the main object of providing an operational description of the Central Airspace Management Unit (CAMU) Enhanced ATFM Procedures and of the related actions, information and message/web exchange.

1.2. Applicability

It is aimed at the aviation community who will be involved in the ATFM process including but not limited to Aircraft Operators (AOs), Aerodrome Operators, Flow Management Positions (FMPs), and ATS Units operating within the South African National Airspace.

1.3. Validity

Applicability of the document is from the 03 May 2010.

1.4. Amendments

This document is usually updated once a year. Major changes are promulgated by an Aeronautical Information Publication (AIP).

2. ESTABLISHMENT OF ATFM PROCEDURES

The responsibility for the management of air traffic flow and capacity management within South African sovereign and delegated airspace resides with the Central Airspace Management Unit (CAMU) which is established at the Johannesburg ATC Centre. The unit's responsibility includes, apart from managing the functions of the slot allocation program, the management of the flexible use of airspace (FUA), facilitating military exercises and operations, special and unusual events and any other activity which might require the use of airspace for a particular time period. The unit is also responsible for the re-routing of traffic, affected by adverse weather and temporary restricted or special use airspace in consultation with the aviation community in a collaborative decision making (CDM) process. In addition they will balance demand against capacity using the ATFM system after CDM with the appropriate aviation community members.

Air traffic flow and capacity management is a vital part of air traffic management in exploiting the full capacity of the air transport system without running the risk of infringing upon safety caused by overload situations. In future the management of ATC capacity will become equally important as managing the traffic flows.

From the 1 March 2010, the enhanced air traffic flow management (ATFM) service will commence within South African sovereign and delegated airspace. The service will be provided from the CAMU, which is supported by Flow Management Positions (FMP) established in certain control centers.

The objectives of the enhanced ATFM services are to:

- Reduce ground and en-route delays;
- Maximise capacity and optimise the flow of air traffic;
- Provide an informed choice between departure delay, re-routing and/or flight level selection;
- Alleviate unplanned in-flight rerouting;
- Assist ATS Units in planning for and managing future workload in the light of forecast increased traffic flows within South Africa;
- Assessing the impact of FUAs and TSAs on the air traffic control system;
- Provide improved solutions around predicted severe weather;
- Balance the demand and capacity of ATC sectors;
- Determine the necessity for an airspace/ground delay program and other traffic management initiatives (TMIs) and enact on them; and;
- Enabling aircraft operators to operate as close to their preferred trajectories.

The ATFM procedures in this handbook have been established using the following documents as reference:

SA AIP S004/10, in addition to the general description above is in conformance with the procedures set out in ICAO DOC 4444 - Air Traffic Management. They form the basis for operating procedures specific to the CAMU.

Procedures specific to the CAMU that are in line with policy and strategy developed and approved by the SACAA. These include Letters of Procedures (LOP) between ATS Units and the CAMU and Service Agreements between the CAMU and AOs, Aerodrome operators.

2.1. The difference between Air Traffic Control (ATC) and ATFM

All air traffic controllers, including air traffic flow managers, strive to provide a safe, orderly, and expeditious flow of traffic on essentially a first come first served basis. The differences lie in the scope, time parameters, tools, equipment, and the communication processes. The separation of air traffic is the responsibility of air traffic controllers, utilizing the tools at their disposal. The normal communication process is:

Controller ← **Air Traffic Flow Manager**

↓ ↓ ↓ ↑

Pilot ← **Aircraft Operator**
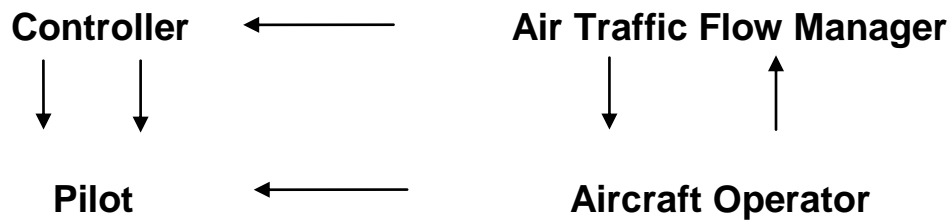
3.   AIR TRAFFIC FLOW MANAGEMENT (ATFM)

3.1.   Objectives

ATFM is a service with the objective to enhance the quality of service and the performance of the ATM system, by balancing the demand against capacity, by optimising the use of available resources and coordinating adequate responses.

3.2.   Responsibility for ATFM Measures

The CAMU, in co-operation with the Flow Management Positions (FMP), including regional ACCs, is responsible for the execution of ATFM measures within the Johannesburg, Cape Town and Johannesburg Oceanic FIRs.

3.2.1.   ATS line of communication and decision making

In general, the ATS Units' management/supervisory/FMP coordinates directly with the CAMU. After appropriate CDM has been carried out, the CAMU has final approval authority for all national air traffic management initiatives (TMIs).

3.3.   ATFM Phases

ATFM has 3 phases:

3.3.1   Strategic Flow Management takes place two days or more prior to the day of operation and includes research, planning and coordination activities. This phase consists of analysing the evolution of the forecast demand, historical data analysis and the identification of potential new problems and in evaluating possible solutions.

3.3.2   Pre-Tactical Flow Management is applied during two days prior to the day of operation and consists of planning and coordination activities. This phase analyses and decides on the best way to manage the available capacity resources and on the need for the implementation of flow measures. One output is the Daily Airspace Plan (DAP) published via the ATNS website (www.atns.co.za/atfm/dap), or by sending a blank email to dap@atns.co.za and copy will be returned to you and forwarded via email to subscribers.

3.3.3   Tactical Flow Management is applied on the day of the operation. This phase updates the DAP according to the actual traffic and capacity. The management of the traffic is made through ATC slot allocation and/or ad-hoc rerouting.

3.4.   Areas subjected to ATFM

The ATFM adjacent area is the area, adjacent to Johannesburg, Cape Town and Oceanic FIRs; this includes all the regional airspaces adjoining South Africa. Flights originating from this area may be subject to ATFM measures when entering the South Africa area.

The CAMU may apply ATFM Measures to flights which:

Depart, or arrive: Johannesburg (FAJS), Cape Town (FACT), Durban (FADN), Bloemfontein (FABL), Lanseria (FALA), George (FAGG), Port Elizabeth (FAPE), East London (FAEL), and Kruger Mpumalanga Intl Airport (FAKN). Other aerodromes and airspaces within the Johannesburg and Cape Town FIRs may be subjected to ATFM as well;

and/or;

Entering the Johannesburg and Cape Town, Oceanic FIRs after departing from an adjacent Flight Information Region (FIR) within the ATFM adjacent area.

3.5.   Traffic Management Initiatives (TMI)

When conditions dictate that a TMI be instituted they could take the form of the following: (refer Chapter 4: Traffic Management Initiatives)

- **Ground Delay Programs (GDP)** may be instituted so as to delay the flights on the ground and avoid excessive airborne holding or re-routings;
- An **Airspace Flow Programs (AFP)** may be institute for an airspace constraint. When an Airspace Flow Program (AFP) is declared, the area subjected to the program will be called a flow constraint area (FCA);
- A **Ground Stop (GS)** may be declared at an aerodrome when adverse conditions or major ATS outages cause demand to exceed capacity to such a degree that gridlock occurs at an aerodrome;
- **Level capping**, and;
- **Rerouting of aircraft**.

When an Aircraft Operator (AO) would benefit from a reroute or level capping in-lieu of a departure delay then a rerouting proposal (RRP) would be offered. Aircraft Operators would be required to respond by the time indicated in the message, to take advantage of the RRP.

3.6.   Information on ATFM Measures

Information on ATFM measures will be distributed by the CAMU via the following methods:

3.6.1. Bi-annual Airspace Operations Plan

The Bi-annual Airspace Operations Plan (AOP) document provides a consolidated view of the forecast seasonal ATFM situation which includes the traffic and capacity forecast, bottleneck identification and description of the associated ATFM and Traffic Management Initiatives (TMI). The AOP is the final result of the operations planning process which consolidates inputs from the aviation community involved in airspace management operations (i.e. ATS Units, Aerodromes, Airspace Users, Military, etc.). The AOP is published biannually by the CAMU – with summer and winter releases. Each release can be updated twice per season. The first AOP will be available on the 1st March 2010.

3.6.2. The Daily Airspace Plan (DAP)

The Daily Airspace Plan (DAP) is produced the day prior to the day of operation. The Daily Airspace Plan (DAP) will provide a summary of planned ATFM measures for the 24 hours period. It is updated regularly. The current day's Daily Airspace Plan (DAP) is the result of up to seven days of research, and historical data analysis within the CAMU ATFM system. The Daily Airspace Plan (DAP) published via the ATNS website (www.atns.co.za/atfm/dap), or by sending a blank email to dap@atns.co.za and copy will be returned to you and forwarded via email to subscribers.

3.6.3. The ATFM Flow Advisory Message (FAM)

The Flow Advisory Message (FAM) providing information to ATS Units, Aerodrome Operators and Aircraft Operators about the implementation, revision, compression, and cancellation of a Ground Delay Program (GDP), Ground Stop (GS) and Airspace Flow Program (AFP) will be transmitted. Except for the cancellation of a Ground Delay Program (GDP) or Airspace Flow Program (AFP), the FAM may include the following items:

- Aerodrome or Airspace;
- Delay Assignment Mode;
- Time frame;
- Program Type. (Optional);
- Program Rate;
- Flights Included; (Optional, will be available on CAMU Web and on message exchange)
- Scope;
- Additional ATS Units Included;
- Exempt ATS Units;
- Delay Assignment Table Applies To. (Optional);
- Maximum Delay or Delay Limit. (As appropriate);
- Average Delay. (Optional);
- Reason;
- Remarks.

The Daily Airspace Plan (DAP) and Flow Advisory Message (FAM) will be transmitted via AFTN and/or emailed to ATS Units and those Aircraft Operators and Aerodrome Operators who wish to be included in the address list.

```
FAM                              →  Flow Advisory Message
EVENT: GDP - FAJS                →  Ground Delay Program at FAJS
EVENT_START_TIME                 →  Starting time of the GDP,
201002011200                        YYYYMMDDhhmm
EVENT_END_TIME 201002012059      →  End time of GDP
START_PROGRAM_RATE                  YYYYMMDDhhmm
1200-1900 ADR 30                 →  Between 1200-1900 – Aerodrome Dep rate
1200-1900 AAR 30                 →  Between 1200-1900 – Aerodrome Arr rate
ATS UNITS EXEMPTED: NIL          →  ATS Units that are exempted from the
FLIGHT INCLUDED: LIVE ON            program
CAMU WEB                         →  Flights included – refer CAMUWEB
AVG DELAY: 8 MIN                 →  Average delay of the GDP
COMMENTS EXCESSIVE DEMAND        →  Comments – reason
FAJS                             →  Regulation cause – refer to Annex 2
REG_CAUSE WD89
```

Figure 3-1   Sample of a FAM for a GDP at FAJS

```
FAM
EVENT: AFP FCA02
EVENT_START_TIME 201002041100
EVENT_END_TIME 201002041300
START_PROGRAM_RATE
1100-1300 AAR 04
ATS UNITS EXEMPTED: NIL
FLIGHT INCLUDED: LIVE ON CAMU WEB
AVG DELAY: 13 MIN
COMMENTS EXCESSIVE DEMAND FAJA ACC SOUTH
REGCAUSE: CE81
```

Basic map illustrating the FCA

(Only when sent by email)
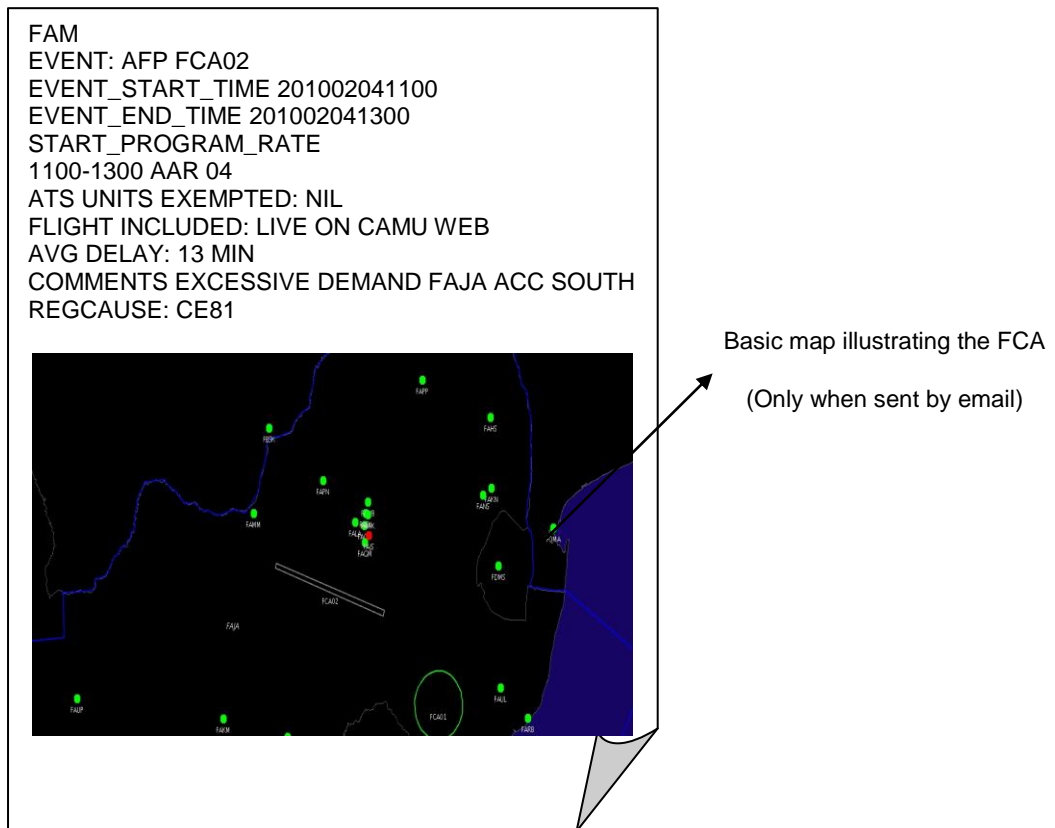
Figure 3-2   Sample of a FAM for an AFP – FCA02

3.6.4. Collaborative Decision Making (CDM) Teleconference (Telcon)

Collaborative Decision Making (CDM) allows decisions to be taken, after collaboration of relevant aviation community members, on the basis of the most comprehensive, up-to-date and accurate information. This in turn will facilitate decisions about flights to be made according to the latest information available, thereby enabling the flight trajectory to be dynamically optimised to reflect near or real-time events. This CDM process is a key enabler of the ATFM process allowing the sharing of all relevant information between aviation community members so that the best gate to gate trajectory of flights can be achieved. This will enable the community members to update each other continuously on events within the strategic to tactical phase.

To be efficient and to reach the required objectives, CDM should have the following characteristics:

- an inclusive process;
- a transparent process; and;
- a process that builds trust within the aviation community.

The principles of CDM have been implemented in the CAMU day-to-day operations, planning and developments with active involvement of appropriate members of the aviation community. An ATFM CDM Telephone conference (Telcon) with all relevant ATS Units and appropriate aviation community members will be held at various times to discuss current daily airspace plan (DAP), weather impact, flow rates, flexible use of airspace (FUA), post event discussion, inputs from ATS Units regarding staffing, consolidation of ATC sectors, anticipated traffic management initiative (TMI), equipment, anticipated traffic volumes, constraints, current configuration and aerodrome arrival rates (AAR), anticipated configuration and aerodrome arrival rates (AAR), aerodrome departure rates (ADR), special events, military activities that impact ATFM, and flow constraint areas (FCA) – current and anticipated.

3.6.4.1. Planning and Review of ATFM Situation CDM Conferences

Each day at 0500 UTC the ATFS briefs attendees to the daily telcon on the current ATFM situation in South Africa and prospects for the rest of day based upon the plan the CAMU has constructed that day.   Follow up telcons may occur at ad hoc intervals depending on circumstance. Special meeting may be scheduled due to special events or situations.   Occurrence of these special conferences will be advised by AFTN, email, or other methods.

3.6.4.2. The CDM "System Approach"

The "system approach" is a management approach that considers the impact of individual actions on the whole national airspace. ATFM personnel facilitate a "system approach" in managing traffic. They consider who or what may be impacted and focus on a coordinated effort to ensure equity in the delivery of air traffic services. A system approach is taken in collaborative decision-making activities with the system stakeholders (stakeholders include air traffic control, airlines, general

aviation, aerodrome authorities, South African Weather Services or any other participants in the aviation community).

3.6.5. CAMUWEB

CAMUWEB is an important part of the enhanced ATFM system, as it allows AOs, aerodrome operators and ATS Units, access to information about TMIs. AOs will be able to view flight details and manage their own ATC slots during a TMI. ATS Units and aerodrome operators will be able to view all flights arriving and departing from their aerodrome. Please refer to Appendix A: CAMUWEB User's handbook for detailed information.

3.7. Air Traffic Flow Management Position

The Air Traffic Flow Management (ATFM) position within the CAMU is manned by Air Traffic Flow Specialists (ATFS) who have Principle Air Traffic Control experience and was established to further enhance CDM and its practical application in ATC operations. In pre-tactical flow management they manage the preparation of the Daily Airspace Plan (DAP). For all ATFM operations, the ATFS is the point of contact with the aviation community concerning ATFM measures.

ATFS will play an important role during special events and in the event of crisis situation in South Africa whereby they will lead coordination with the aviation community.

Through the daily activities of the CAMU, the ATFM position is the focal point for strategic, pre-tactical and tactical information for the airspace and about ATFM situations in South Africa. The ATFS will liaise with all relevant aviation community members, aerodrome operators and ATS Units, proposing and implementing ATFM developments. The ATFS will continue to monitor the national airspace system and amend or implement TMI's as required, continually ensuring demand is balanced against capacity and the equity for all airspace users.

4.   TRAFFIC MANAGEMENT INITIATIVE

4.1.   Overview

This chapter explains terms, techniques, and programs associated with Air Traffic Flow Management in the South African National Airspace (NAS). As flight operations personnel and pilots, the effects of Traffic Management Initiatives (TMI) will be experienced in highly congested airspace, which may be caused by traffic volume, special events, system failures or weather conditions.

Knowing how to access relevant information and understanding air traffic management initiatives will aid in planning flights, avoiding needless delay, and assisting in gaining full access to the NAS. Customers may have dedicated resources for coordinating with the CAMU personnel, but, as will be demonstrated, not only airlines or large general aviation company gain benefit from understanding how air traffic management initiatives may affect flights.

4.1.1.   Exemption from a Traffic Management Initiative (TMI)

TMI choices can be offered to pilots/aircraft operators that allow decisions based on best business options (e.g., should it be decided to fly later or should the decision be taken to reroute around the constraint).

4.1.2.   Compliance with traffic management initiatives

All operators have the right of refusal of a specific clearance and may elect an alternative. Alternatives include, but are not limited to ground delay, diversion to other aerodromes or request to stay on the filed route.

4.1.3.   Compliance with a TMI

Air traffic controllers and Air Traffic Flow Management specialists strive to ensure TMI compliance. In special circumstances they may request exemptions for certain aircraft.   In the case of Ground Delay Programs (GDP) or Airspace Flow Programs (AFP), the CAMU monitors compliance with the Airport Flow Tool (AFT). The AFT is a computer program used by the CAMU to monitor aerodrome capacity, demand balance, model TMIs, and evaluate alternative approaches to managing the traffic.

4.1.4.   NAS information

The CAMU website, www.camu.co.za , provides near real-time status information about the NAS.

ENHANCED ATFM OPERATOR'S MANUAL

4.2. BASIC AIR TRAFFIC MANAGEMENT TECHNIQUES & TERMS

4.2.1. Miles-in-Trail (MIT)

Miles-in-trail describes the number of miles required between aircraft departing an aerodrome, over a fix, at an altitude, thru a sector, or route specific. MITs are used to apportion traffic into a manageable flow, as well as provide space for additional traffic (merging or departing) to enter the flow of traffic. For example, standard separation between aircraft in the area control environment is ten (10) nautical miles. During a weather event this separation may increase significantly.

4.2.1.1. Delays attributed to MIT

Normally MIT is implemented in response to a specific situation. For example, the CAMU has implemented a 30 MIT restriction on aircraft departing FAJS via UQ22 that will affect 10 aircraft in a one-hour time frame.

4.2.2. Minutes-in-Trail (MINIT)

Minutes-in-trail describe the minutes needed between successive aircraft. It is normally used when aircraft are operating in a non-radar environment or transitioning to/from a non-radar environment. It may also be used if additional spacing is required due to aircraft deviating around weather.

4.2.2.1. Departure flow rates

During tactical traffic management CAMU may declare flow rates for certain routes and aerodromes. For example, - traffic departing from FACT to FAJA TMA must depart five (5) minutes apart.

4.2.3. Airborne Holding

Planned airborne holding is used to manage a particular situation. At other times, airborne holding is in response to a situation and is unplanned.

4.2.4. Sequencing Traffic Programs

Sequencing programs are designed to achieve a specified interval between aircraft. They may be software generated or determined by Air Traffic Flow Management personnel. There are different sequencing programs to accommodate different phases of flight. The Maestro arrival program assigns an arrival time to achieve a constant flow of traffic into FAJS and FACT or over a common point.

4.2.5.   Level Capping

4.2.5.1.   Using altitude to manage traffic flows

Altitude is used to segregate different flows of traffic or to distribute the number of aircraft requesting access to a specified airspace sector. For Example, flights that operate between FAPP and FAKN might be level capped below flight level 195 to reduce traffic inside FAJS Area North East airspace.

4.2.5.2.   Definition of "capping"

"Capping" is a colloquialism for planning to hold aircraft at altitudes lower than their requested altitude until they are clear of a particular area.   It is used during constrained situations in the NAS and enables aircraft to continue to depart while remaining "underneath" a constrained airspace.

4.2.5.2.   Notification of being "Capped"

CAMU may send the Airline Operator a Rerouting Proposal (RRP) pre-tactically and advise of the restriction. Tactically, the air traffic controller will advise in the clearance to "expect" a final altitude lower than the requested altitude, based on the appropriate altitude for the direction of the flight.

4.2.5.3.   Fuel considerations

Each pilot in command has the option to refuse a clearance for safety reasons. If a pilot cannot comply with a clearance, ATC is to be advised. At that time, different options may be presented, including the option of taking a delay on the ground until the situation in the airspace is resolved.

4.3.   ADVANCE AIR TRAFFIC MANAGEMENT INITIATIVES

4.3.1.   Ground Delay Programs (GDP)

A Ground Delay Program (GDP) is an air traffic flow management procedure where aircraft are delayed at their departure aerodrome in order to manage demand with capacity en-route or at their arrival or departure aerodrome. Flights are assigned ATC departure slots times called calculated take off time (CTOT). Ground Delay Programs will normally be implemented at aerodromes where capacity has been reduced because of weather conditions, ATS failures or when demand exceeds capacity for a sustained period.

They are implemented to ensure the demand in a particular piece of airspace or at an aerodrome is kept at a manageable level, to preclude extensive holding and to prevent aircraft from having to divert to other aerodromes.

4.3.1.1. Process of the GDP

The CAMU ATFM System uses software called Airport Flow Tool (AFT) that compiles scheduled flight information and flight plans to calculate and then display graphically the known demand airspace sectors and for arrival and/or departures at aerodromes. When an average of demand versus capacity is noted, a GDP is modelled through the AFT software. AFT assigns departure and arrival "slots" to aircraft based on the available capacity and flight arrival times, and adds delay in sequential order until demand equals capacity.
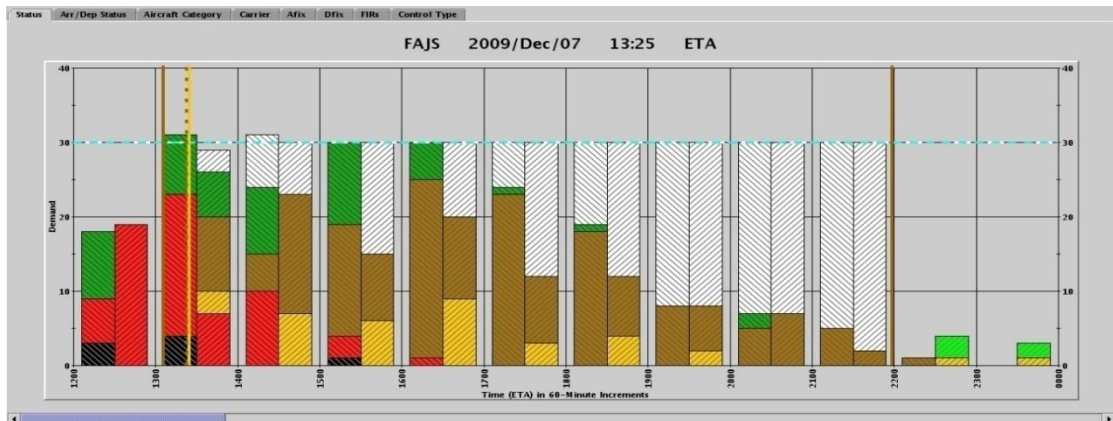
Figure 4-1 Demand Graph from Airport Flow Tool illustrating demand and capacity

FAJS demand graph (Figure 4-1) before a GDP was issued for thunderstorm activity. Note the airport arrival rate is 30 (blue line) and the demand has peaks and valleys.

The figure (Figure 4-2) below is the FAJS demand graph after the GDP was issued. The GDP starts at 1300UTC with the airport arrival rate of 23 and departure rate of 20 until 1700UTC then the rate increases to 30 for the remainder of the program. The demand is levelled out.
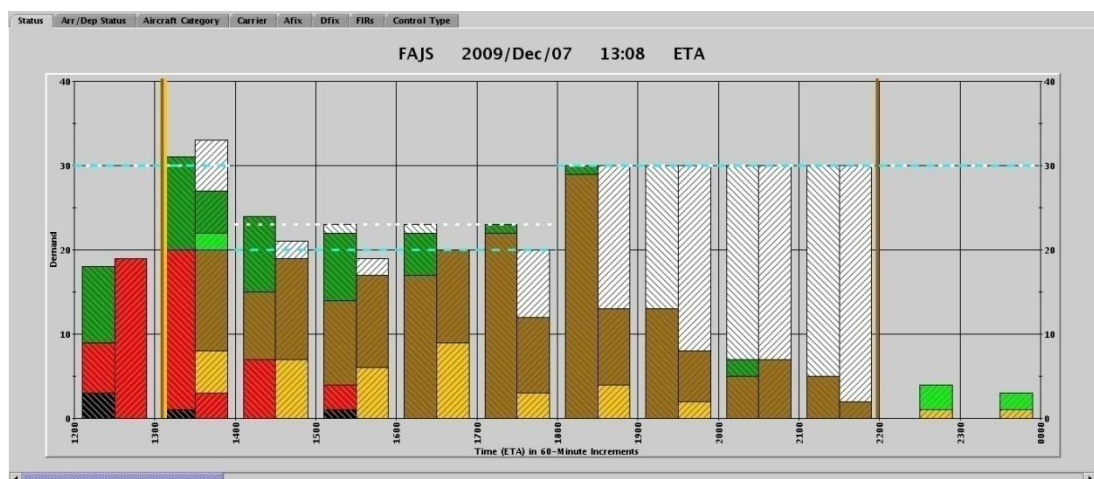
Figure 4-2 Demand Graph from Airport Flow Tool illustrating demand and capacity after GDP

All aircraft that have a filed a flight plan to a GDP aerodrome that are known to the AFT software are assigned a calculated take off time (CTOT, see definitions below), although not all aircraft will receive a delay.

Aircraft that are not in the original list of flights when the program is implemented will also receive a delay. Their delay will be equal to the average Delay Assigned (DA, see definitions below) to all other flights arriving in the 15-minute time interval that their flight is requesting to arrive.

4.3.1.2.   Definitions of terms used in a GDP.

Calculated Takeoff Time (CTOT):

The runway release time ("wheels up") assigned to an aircraft in a GDP. CTOTs appear on the appropriate CAMU Web Page located in the towers and terminal facilities.

Delay Assignment (DA):

The delay that is assigned to an aircraft during a GDP.

Aggregate Demand List (ADL):

The traffic in the NAS that was known at the time the list was generated from the Airport Flow Tool (AFT)

Program rate:

The number of aircraft that the GDP is to provide to the aerodrome, for each hour. The program rate may not be the same as the arrival rate. In some instances, the traffic is slowed for en-route sector complexity, caused by weather, even though the arrival aerodrome is not constrained.

Aerodrome Arrival Rate (AAR):

The number of aircraft an aerodrome can accept in a one-hour time frame.

The AAR is determined by taking into consideration the runways in use, weather conditions, aerodrome facilities and NAVAID limitations etc.

Aerodrome Departure Rate (ADR):

The number of aircraft an aerodrome can release in a one-hour time frame

ENHANCED ATFM OPERATOR'S MANUAL

The table below illustrates the AAR for FAJS based on ground speed versus distance between flights, the greater the ground speed and the less the distance between flights results in a higher AAR. Figures in red indicate AARs.

AIRPORT ARRIVAL RATE [AAR] TABLE												
Average Distance Between Aircraft on Final CAP/HR = GS DIS												
	Staggered Parallel Approach FAJS Rwy03				Normal							LVPs
G/S on final approach	3NM	3.5NM	4NM	4.5NM	5NM	5.5NM	6NM	6.5NM	7NM	8NM	9NM	10NM
100	33	29	25	22	20	18	17	15	14	13	11	10
110	37	31	28	24	22	20	18	17	16	14	12	11
120	40	34	30	27	24	22	20	18	17	15	13	12
130	43	37	32	29	26	23	21	20	18	16	14	13
135	45	38	34	30	27	24	22	21	19	17	15	13.5
140	46	40	36	31	28	25	23	21	20	18	16	14
145	48	41	36	32	29	26	24	22	21	18	16	14.5
150	50	43	37	33	30	27	25	23	21	19	17	15
155	51	44	38	34	31	28	26	23	22	19	17	15.5
160	53	45	40	35	32	29	26	24	23	20	18	16
165	55	47	41	36	33	30	27	25	24	21	18	16.5
170	56	48	42	38	34	31	28	26	24	21	19	17
175	58	50	43	39	35	32	29	27	25	22	19	17.5
180	60	51	45	40	36	33	30	28	26	23	20	18
185	60	53	46	41	37	34	31	28	26	23	21	18.5
190	63	54	47	42	38	35	32	29	27	24	21	19

Table 4-1 Sample table used to determine AAR for FAJS

Key: GS – Ground Speed, CAP – Capacity, HR – Hour, DIS – Distance in NM

4.3.1.3.   *Information detailing current GDPs*

When a GDP is implemented, the CAMU details the parameters of the program(s) and issues an advisory and can be found at www.camu.co.za. Current programs are

also included in the daily airspace plan on the ATNS web at www.atns.co.za/dap. Each line details the program aerodrome, the start and end times of the program, flights included, scope*, reason, average delays (AVG), airport arrival rate (AAR), program rate (PR), and the corresponding advisory number with hyperlink.

*Scope refers to the distance or ATS Units included in the GDP. While the program may not cause all flights to be delayed, all flights will receive a CTOT. Flights outside of the scope will receive a CTOT closely matching their proposed departure time.

4.3.1.4.   CTOT information

CTOTs for a GDP may be accessible through the CAMU webpage by entering the tail number and date of flight, at www.camu.co.za. Slot Allocation Message (SAM) is also sent to the Aircraft operator which includes the CTOT. In addition, operators may also view their CTOT via the ATNS's File to fly website, www.atns.co.za.

4.3.1.5.   The process for implementing Traffic Management Initiatives (TMI)

Air traffic Flow management specialists monitor the NAS for high demand sectors/aerodromes/entry exit beacons on a continuous basis. When   concern is raised about a traffic situation at a specific sector/aerodrome/entry exit beacon (s), CDM is held among impacted ATS Units, the CAMU, the aerodrome authorities and the aviation community to discuss alternatives and modelled scenarios.

An advisory may be issued when a GDP is being proposed but not yet implemented. If the decision is made to implement a GDP, then CTOTs will be sent to operators of flights concerned, the CAMU Web page, and an advisory is issued that states a GDP has been implemented. You may find more information about advisories via the CAMU Web   www.camu.co.za .

4.3.1.6.   Affect of GDP procedures on aircraft operators

All aircraft operators are expected to depart at the CTOT. Each aircraft operator needs to arrange his taxi in a manner consistent with meeting the CTOT. If an aircraft is late, aircraft operators are required to view the CAMU Web page to get a new CTOT and pass it to the pilot. Operators are encouraged to release slots as soon as they are aware that they will not make their CTOT, this will enable other operators to use the released slot.

4.3.1.7.   How do I know what my CTOT is?

You may go to CAMU Web, www.camu.co.za , to obtain your latest CTOT that is in place for your arrival/departure aerodrome, when there is a TMI. In addition you will be sent a Slot Allocation Message (SAM) or Slot Revision Message (SRM) via, AFTN, or e-mail. Failing that you may contact the CAMU or the ATC tower.

4.3.1.8.   Changing of a CTOT

A CTOT can be changed, based on changing conditions at the GDP aerodrome e.g. changing weather conditions or changes in the airport arrival/departure rate. Aircraft operators may substitute their aircrafts' CTOTs to meet their schedule objective on the CAMU Web Page.

4.3.1.9   Notification of a change in CTOT

Aircraft operators will receive a [Slot Revision Message (SRM)](#) via the e-mail or SMS, they will also be able to go to the CAMU web for updates. Pilots may contact the departure/arrival aerodrome's control tower to establish their CTOT.

4.3.1.10.   VFR Clearances

Air traffic controllers are required to provide VFR aircraft with the appropriate delay assignment before providing the pilot with a clearance to the ground delayed aerodrome. Operators are to check the CAMU Web prior to departure to see if a GDP is in place. This information is also available from the departure ATS Unit, to get the CTOT prior to departure.

4.3.1.11.   Time outside of the parameters for the GDP

GDPs are based on original scheduled arrival/departure times. In the case of a GDP being in place for an arrival or departure aerodrome the estimated elapsed time (EET) and average taxi time is considered in determining the appropriate departure time. The CTOT may be assigned after the times listed in the GDP. In some cases the CTOT is after the program time because excess demand will flow over into subsequent hours, but must still be managed to ensure the balance between capacity and demand. If your flight was estimated to arrive near the end of the GDP, the flight may be assigned a CTOT that puts the arrival time after the GDP has ended.

4.3.1.12.   Procedure to change departure time

Pilots should contact their operations who will in turn request a new slot via the CAMU Web or contact CAMU if they need to change their departure time, however, this may not necessarily change the CTOT.

4.3.2.   AIRSPACE FLOW PROGRAMS (AFP)

An AFP is a traffic management initiative that identifies constraints in the en route system, develops a real-time list of flights that are filed into the constrained area, and distributes Calculated Take Off Times (CTOT) to gauge the demand through the area.

4.3.2.1. Process of the AFP?

If an AFP is issued and a flight is included, a CTOT will be issued. Meeting the CTOT is important because it allows traffic managers to properly gauge flights through the constrained area being controlled by the AFP. When an AFP is issued, the CAMU will send an Advisory that will be emailed to AOs. The AFP will also appear on the CAMU Web site. At aerodromes with an aerodrome traffic control tower, controllers will provide the CTOT if not received it via the SAM/SRM message, web page, when the pilot calls for clearance. If departing from an aerodrome without a control tower, the CTOT can be determined for the flight by checking the CAMU website at www.camu.co.za. This website will provide information regarding the location and reason for an AFP. It will also provide a "Look Up" function to determine if your flight has received a CTOT.

It is important to check the CAMU website (before departure) to determine if the flight is included in an AFP. Depending on the severity of the constraint leading to AFP, the following may apply:

- be assigned airborne holding to provide the delay necessary for
- the flight to arrive; or
- be rerouted to avoid the AFP altogether; or
- need to land to absorb the delay; or
- be allowed to enter the AFP with minimal delay.

There is a window of time in which to depart and so as not miss the CTOT. Flights are asked to depart as close to the CTOT as possible. ATS Unit, flights may depart 5 minutes before the CTOT and up to 10 minutes after to assist with the tactical issues at aerodromes. Outside of the 15 minute window, the following options are available:

- Accessing the CAMU web site to obtain a new CTOT
- At aerodromes without a control tower, you may:

  1.   Access the CAMU web site to obtain a new CTOT.
  2.   Contact the overlying ATC tower or the CAMU.

Should an operator not want to accept the delay then the following options are available:

- Contact the CAMU to calculate a re-route out of the AFP. If there is another acceptable route available that would take the flight out of the AFP, a Rerouting Proposal (RRP) will be sent should the operator accept the re-route then a re-filing of the flight plan is required. Once the flight plan is re-filed an SRM/SLC will be issued.
- Make a stop enroute. In severe cases the pilot may elect to land at an intermediate aerodrome to provide the delay necessary for the flight to arrive at the AFP controlled time of arrival. If flight plan is filed into an existing AFP, the flight will be treated as a "popup", the flight will be assigned a CTOT consistent with the delay received by other flights filed to enter the AFP at

about the same time. If a flight plan is filed out of an AFP and into another, the flight will be treated as a "popup". The flight will be assigned a CTOT consistent with the delay received by other flights filed to enter the AFP at about the same time. In addition, the flight will forfeit the arrival slot in the original AFP. If the flight is included in both an aerodrome ground delay program and an AFP, the CTOT for the ground delay program will take precedence.

It is recognised that the predicted demand through an AFP and the possible weather impacting the area may change substantially over time. When the conditions warrant, Air Traffic Flow Specialists will take steps to coordinate and implement revisions to the AFP. In a revision, AFP entry slots are recomputed so that demand is again metered to meet capacity and new CTOTs are sent via SRM and posted on the CAMU Web page.

4.3.2.2. Implementation of AFPs and coordination of all AFP decisions.

The ATFS in the CAMU will have oversight responsibilities for all AFPs.

4.3.2.3. Scope of AFPs

It is expected that AFPs will be utilised to manage airspace constraints throughout the NAS. They will also be used to manage situations such as increased traffic demand as a result of special events, as well as equipment failures which result in loss of capacity. This will provide traffic managers with an additional tool to manage geographic areas that experience periods of complex, high volume traffic.

4.3.2.4. AFP Arrival Rate

Based on the anticipated conditions, the ATFS will select an arrival rate based on guidelines developed through analysis of historical data. These guidelines will be refined over time. When 'ad-hoc' AFPs are developed, the arrival rate may be a set at the number of aircraft allowed to pass through the Flow Constraint Area (FCA) per hour or may be a percent reduction of known demand.

4.3.2.5. Flights that have an AFP CTOT, but are part of an aerodrome ground stop

The ground stop has the higher priority. If the ground stop is lifted and the AFP is still in place, the flight will get a new CTOT for the AFP along with a control type of RCTL (re-control).

4.3.2.6. Information on CTOT's issued for AFP's

ATS Units are currently unable to obtain AFP CTOTs information without contacting the CAMU. The CAMU Web will display up to date information on AFPs. The web page will show if your flight is included in the AFP.

4.3.3. GROUND STOPS (GS)

4.3.3.1 Definition of a Ground Stop

A Ground Stop (GS) is a procedure requiring flights that meet specific criteria to remain on the ground. The GS may be aerodrome specific, related to a geographical area.

4.3.3.2. Reason for a GS

Ground Stops are implemented when air traffic control is unable to safely accommodate additional aircraft in the system, in other words the demand is exceeding the capacity to such an extent that a GDP is inadequate and severe restrictions are required to manage the flow of traffic. They are most frequently used for:

- Severely reduced capacity situations such as:
- Weather below user arrival minima;
    - Severe weather reducing usable routes;
    - Major equipment outages;
    - Catastrophic events.
- Precluding extended periods of airborne holding.
- Precluding sectors from reaching saturation levels.
- Precluding aerodromes from reaching gridlock.

GS are normally reactive to the current situation, however, in some situations, they may be planned in advance. For example, weather is forecast to develop along the east coast. Aircraft may be released until the weather materializes, at that time, a GS would be issued to ensure additional aircraft are not released until the operational situation allows.

4.3.2.4. The process for a GS

When one of the circumstances as stated above are present or there is indication that they will occur the ATFS in the CAMU will institute a GS after doing various modelling exercises.

4.3.2.5. Current status or information on GS

GS information of 15 minutes or more is viewable on the webpage www.camu.co.za

4.3.4. ADAPTIVE COMPRESSION (AC)

4.3.4.1. Definition of Adaptive Compression

Adaptive compression is used to help ensure that all slots in a program are used. A background process at the CAMU will automatically:

- Monitor a GDP AFP for open slots.

- Identify those slots that are in danger of going unused.
- Move other flights earlier to take advantage of those open slots.
- Move the open slots later.
- Update the databases with the changes.
- Send notification (CTOT updates) to the aircraft operators about the changes via SRMs.

4.3.4.2.   Benefits of Adaptive Compression

- Higher utilization of the aerodrome/airspace capacity.
- Aircraft Operators can be more proactive regarding constraints, restrictions, etc.
- Reduced workload for the ATFS /ATC.

4.3.5.   Rerouting Proposals (RRP)

The RRP can be issued due to several circumstances. The following RRP have direct impact on aircraft operators.

- RRP due to Airspace Constraints and/or ATC capacity;
- RRP due to Weather.

The RRP due to Airspace Constraints

The RRP due to airspace constraints includes restrictions on airspace sectorisation and configuration in general. A specific airspace could eventually be closed (e.g. TSA, etc) and now open at a given date and time (or vice-versa), allowing for a more efficient use of airspace by AO's and airspace users in general. CAMU may suggest a RRP to an AO for consideration to improve possible delay cause by traffic flows constraint.

4.4.   FLOW CONSTRAINED AREA (FCA)

4.4.1   Definition of a FCA

Developed on an ad hoc basis, they are both three-dimensional volumes of airspace, along with flight filters and a time interval, used to identify flights. They may be drawn graphically, around weather, in the case of the ATFM tool they can be automatically drawn around weather or they may be based on a particular airspace/sector or element such as a VOR/FIX. They are used to evaluate demand on a resource.

4.4.2.   Information on FCAs

When a FCA is declared, an AFP will be used to manage the constraints and a Flow Advisory Message (FAM) will be published and a SAM will be issued for relevant flights. The information will be displayed on the CAMU Web under initiatives.

4.4.3.   Display of the FCA - graphically

The FCA will be shown in the FAM when viewed in an e-mail.

5   TACTICAL SLOT ALLOCATION PROCESS

Air Traffic Control Slot allocation is an ATFM measure established to balance the demand against capacity and to regulate traffic flows, thus making full and efficient use of the available system capacity. Tactical slot allocation takes place on the day of operation and replaces strategic, airport slot allocation. So as to ensure efficient usage of airspace and optimized flight trajectories, aircraft operators adhere to:

- strategic ATFM measures (e.g. strategic traffic routing/strategic airport slot allocation etc);
- general ATFM procedures including flight plan filing and CAMU web interaction requirements; and;
- current ATFM measures (e.g. specific measures applicable on the day in question) Aircraft Operators shall ensure that their crews are informed of, and adhere to ATC slots, issued by the ATFM service.

5.1.   Initial slot allocation process for IATA coordinated airports

The process of airport slot allocation (as described in SAAIP ENR 1.9) will continue for coordinated airports. After receiving a strategic slot, AO's can expect to have reasonable assurance that they can depart or arrive at an aerodrome at the time allocated. This time is the time the aircraft is expected to be off blocks (EOBT) and the time expected to be in block (EIBT). As these slots are allocated strategically or pre-tactically and the situation often changes tactically and these times could change. AOs are to keep to their airport slots and contact the relevant towers for changes.

5.2.   Slot allocation process

The implementation of ATFM slot management involves three major facets:

- Permanent strategic slot management at the three busiest aerodromes: FAJS, FADN and FACT as per South African ENR 1.9. This could be expanded onto other aerodromes during special events and when the traffic demand warrants it.
- ATFM Slot management (tactical slot management) for both departures and arrivals at FAJS; FACT and FADN. This could be expanded onto other aerodromes during special events and when the traffic demand warrants it.
- Collaborative integration of aircraft operators to enhance decision making.

The ATFM system internally purges its current pre tactical slot allocations for the coordinated aerodromes and loads in the data as the baseline for the upcoming day, normally at 0200 UTC.

The ATFM system interprets the schedule data and strategic slot allocations received from Official Airline Guide (OAG) and Score system respectively and will start an active Ground Delay Program (GDP). Based on the rate selected for each aerodrome, the ATFM system will also track the slots that are not currently allocated to flights; these are called unassigned slots. The resultant SAM/SRM messages

from the slot assignments will be queued by the ATFM system until 2 hours to the Earliest Off-Block Time (EOBT). However, the slot assignments are visible through the ATFM system, the CAMU Web site, and Enhanced Substitution Module (ESM), the latter, is a separate module which can be purchased by AO's. As AOs submit new flight plans during the day, the ATFM system will assign unassigned slots to flights that were not known at the time of the pre tactical import. These flights are considered "pop-ups", and they will be assigned any available slot as close as possible to their desired EOBT/EIBT on a first-come, first-served basis.

The CAMU Web site enables a subset of the ATFM system client capabilities, e.g. slot management and reporting capabilities. The CAMU Web site is password protected and will provide different views for different types of users. Through the CAMU Web site, the Aircraft Operator (AO) will be able to view their flights/slots and all unassigned slots for a particular controlling element. By providing visibility into the unassigned slots, the AO will also be able to generate a slot improvement if available through the CAMU Web site. The AO will be able to swap their current slot for an open slot based on their own schedule. The AO operator will be able to modify flight data, swap slots between two of its own flights, suspend flights or cancel a flight.

The following flight data fields are modifiable by the AO via the CAMU Web site: ·

- Earliest Estimated Take Off Time (EETOT) and Earliest Estimated Landing Time (EELDT);
- Controlled Time of Departure (CTD) and Controlled Time of Arrival (CTA);
- Assigned Slot (SLOT); ·
- Slot Hold Flag; ·
- Cancellation Status.

5.3. Slot management for arrivals and departures

The goals behind providing slot management on both the arriving and departing ends are twofold: to assure AO's a manageable departure slot especially when the aircraft is delayed and to more effectively manage scenarios where there is a large departure demand. However, the major risk in managing departure rates is if an equivalent or greater action is not taken with the arrival rates. The end result of this scenario is the surface of the aerodrome may become gridlocked with aircraft.

Due to the risk of surface gridlock, as mentioned previously, the ATFS will determine rates as an overall measure of aerodrome operations, including both departures and arrivals. The ATFM system will be programmed with an overall aerodrome rate and then set the appropriate mix of arrivals and departures within this rate. This decision will be made with the required CDM taking place with relevant members of the aviation community. The ATFM system will then assign slots according to the blended rate. This approach will simplify the rate-setting process within the ATFM system and will give the user a better model of overall aerodrome demand prior to submitting the delay program. This will assist in preventing an ATFS from submitting a GDP that may incur significant surface saturation.

5.4. Line of Flight Continuity

In implementing slot management for arrivals and departures, efficiency is gained by knowing the connection between a flight arriving at an aerodrome and the potential later departure slot that the same aircraft has at the aerodrome. If a GDP delays the flight from arriving on schedule, then knowing the connection between arrival and departure slot allows the ATFM system to be more efficient in assigning an achievable departure slot for the same aircraft. To this end, it is required that AO submit their aircraft registrations (tail numbers) into the flight plan in field 18 or via the CAMU Web page. The ATFM system uses the registration number of aircraft, to make the association between arrival and departure slots.

5.5. Slot Precedence

A tremendous amount of complexity is created in the system as multiple slots are assigned to a single aircraft. For example a flight departing FACT for FAJS that files to fly through a Flight Constrained Area (FCA) that has an active Airspace Flow Program and then returns to FACT through the same FCA. In this scenario, the flight would have a departure slot at FACT, an arrival slot at the FCA, an arrival slot at FAJS, a departure slot at FAJS, another arrival slot at the AFP, and finally an arrival slot at FACT (6 slots!). Without a rule for slot precedence, this slot allocation problem cannot be solved. The following slot allocation precedence is used for ATFM regulations:

(in chronological order)

- Aerodrome arrival slot
- Aerodrome departure slot
- AFP arrival slot

If this order of precedence is applied to the previous example, then all slots would be based upon the slot allocation for arriving at FAJS.

5.6. The Exemptions

The obvious exemptions to slot management are international flights that the ATFM would not be able to communicate controlled departure times. International flights, particularly long-haul international flights, would typically be included in the airport slot data and therefore would hold a slot. However, these flights would not be available for slot modifications through a revision or compression in the ATFM system. In addition, when a CAMU operator runs a revision or compression to a current flow management program, airborne flights are also exempt for obvious reasons.

5.7. Slot swapping

The ATFM system will allow AO's to retain their slots for substitutions and swapping. However, after a certain time interval, if the AO has not placed another flight into a

cancelled slot, then the slot automatically reverts back to the unassigned slot pool that is available to all AO's and the ATFS to assign flights. Substitutions, cancellations, and slot swapping is possible through three separate interfaces in the ATFM solution: the CAMU Web site, the CDM Interface (ESM), and the ATFM system directly via the ATFS. An AO has open access to the CAMU Web site and is able to actively participate in the collaborative process through that site without purchasing ESM.

5.8. Allocation Stage

At a fixed time before the Estimated Off-Block Time (EOBT) of each flight, a slot is allocated to the flight and a Slot Allocation Message (SAM) is sent to the AO's and ATC. An allocated slot cannot be taken by another flight. However, an AO should update an EOBT, if it is thought that the flight will not be able to comply. Moreover, the slot allocated to a flight may be improved by the true revision process.

5.9. Slot Compression Process

At certain times during a GDP or AFP, it may be favourable to run a Compression. The Compression function exchanges delayed flights with open slots to lessen the delay on flights. This is the semi-automatic mechanism that routinely attempts to improve the slot of allocated flights; for a given flight, the true revision process takes place after the SAM has been issued until a time parameter before the CTOT. This parameter is linked to the Aerodrome of Departure (ADEP).

5.10 Slot Swapping Procedure

AO's may submit their request for a slot swap to CAMU either directly to the ATFS, or preferably via the CAMU web. The prerequisites are that both flights have their slots issued and that they are both subject to the same most penalising regulation. A maximum of one swap per flight may be carried out, if the swap is feasible and has no negative airspace/aerodrome effect.

Note: Normally, only two flights of the same AO may be swapped. Exceptionally, in critical events at airports slots of two different AOs may be swapped on request via the CAMU.

5.11. Aerodrome Parameters
Taxi-time

The taxi-time at aerodromes is an important parameter taken into account in the slot allocation process. Default taxi-time is specified for each runway at an aerodrome in the ATFM system database but can be changed on the day of operation. Changing taxi-time can resolve certain aerodrome operating problems without the need to reduce capacity or to request an increase of the slot window beyond the existing -5+10 minutes around the CTOT.

The taxi-time can be modified for a given time period.   A modification of the taxi-time will modify all flights having their EOBT inside the period, some issued slots may be recalculated and a few short notice SRMs issued.

6   SLOT ALLOCATION PROCEDURES

The slot allocation procedures detailed below are those applicable to the CAMU ATFM system. They are applied to all flights subject to ATFM slot allocation departing from within the ATFM area or from within the ATFM Adjacent area and entering the ATFM area.

6.1.   Airport slots

The airport slot allocation procedures remain enforce as described in SA AIP ENR 1.9.1 part 1 and Aircraft Operators are to comply with their EOBT unless subjected to an Air Traffic Control Slot. These slots will be available on the CAMU WEB on the day of operation.

6.2.   Departure Slots

When other ATFM processes are exhausted, traffic management initiatives (TMIs) will be applied by CAMU to balance demand against capacity and departure times will be issued in the form of a Calculated Take Off Time (CTOT). AO's must plan their flight to be ready for takeoff at the calculated take off time (CTOT) (At the holding point). The calculated take off time (CTOT) is a nominal time with a tolerance of –5 to +10 minutes; this enables the ATC to manage traffic tactically

The calculated take off time (CTOT) is generally issued not later than 2 hours before EOBT, however Aircraft Operators and ATS Units are to monitor the CAMU web for the latest information on calculated take off time (CTOT) as this could change as tactical conditions dictate.

The calculated take off time (CTOT) is included in a slot allocation message (SAM), which is sent by the CAMU to:

- The address notified in advance to the CAMU by the aircraft operator, or;
- When the address is not known with the CAMU:
    - The ATC Tower of the aerodrome of departure, and;
    - If different, the flight plan originator;
- The CAMU web's slot substitution and flight elements subpages.

Furthermore, ATC is informed about the calculated take off time (CTOT) issued. If no slot allocation message (SAM) is received before EOBT, it can be assumed that the flight concerned may depart in accordance with the filed EOBT.

Aircraft Operators shall arrange the departure of their flights to comply with the calculated take off time (CTOT) issued. A slot window is available to ATC to optimise the departure sequence. This is not for use by AO's who should plan an EOBT consistent with the CTOT.

All flights subjected to a calculated take off time (CTOT) will be displayed on the CAMU Web's Initiatives page.

6.3.   Late Reception of Slot Messages

There are many mechanisms within the AFTM system to prevent, in normal circumstances, the late transmission of a slot, or update to a slot.   Nevertheless, there are four conditions that can cause the late reception of a slot time:

Late Flight Plan Submission/Update. The flight plan is filed or modified (reception of a FPL/DLA/CHG message by the ATFM system) shortly before the EOBT.   If needed, a SAM/SRM is sent immediately.   Of course, in this case the SAM/SRM is also late.

A TMI is Created or Modified. For flights having already received a slot, a SRM may be sent.

Manual Intervention

The ATFS can manually allocate another slot to a given flight causing a SRM to be sent.

Transmission Delay

The message is sent early enough, but due to transmission problems it arrives late. The occurrence is limited but it may happen.

6.4.   Slot Adherence

AO's and ATC are jointly responsible for CTOT compliance at departure aerodromes.

6.4.1.   Aircraft Operators

In order to comply with a CTOT, AO's need to plan the departure of a flight so that the aircraft will be ready for start up in sufficient time to comply with a CTOT taking into account the taxi-time.

AOs shall inform themselves of and adhere to:

- General ATFM procedures including flight plan filing, strategic ATFM Measures and message exchange requirements.

                              and

- Current ATFM Measures (e.g. specific measures applicable on the day in question, such as ATFM slot or flight suspension).

6.4.2.   ATC

ATC is responsible for CTOT compliance monitoring at departure aerodromes. Whereas the exact procedures to be followed will depend on the way that ATS is organised at each aerodrome, the following requirements shall apply in all cases:

- ATS Units shall ensure that CTOT, if applicable, be included as part of the ATC clearance. ATC shall take account of an applicable slot or flight suspension when a clearance is issued.
- ATS Units responsible for CTOT compliance monitoring shall be provided with the necessary information concerning the ATFM Measures in force and CTOTs allocated.
- ATC shall provide all possible assistance to AO's to meet CTOT.
- A slot tolerance (-5' to +10') is available to ATC to organise the departure sequence.
- ATC may deny start up clearance to a flight unable to meet its CTOT until coordination with the CAMU / CAMU Web has been effected and a revised CTOT issued.

6.5. Slot Revisions

Revisions to CTOTs should, where possible, be coordinated between the AO and the CAMU using the CAMU Web Slot Swap exchange procedures. However, it may be the case that last minute revisions to CTOTs and slot extensions when the pilot is in direct communication with ATC, are more easily or efficiently coordinated with the ATFS via ATC.

6.6. ATFM Contingency

In the event of the ATFM system failure, a number of appropriate procedures have been put in place to minimise the impact on the aviation community.

For each contingency procedure instructions will be issued by the ATFS. In order to permit an effective and orderly resumption of slot allocation by the ATFM system following recovery, flight plan and flight plan update messages will continue to be sent to the ATFM system throughout the whole period of operation of the contingency plan.

6.7. Flight Plans

All aircraft operators are requested to file non-repetitive (ICAO) flight plans at least 3 hours before EOBT to provide CAMU with accurate forecast of potential air traffic demand. Early filing of flight plans will ensure that the calculated take off time (CTOT) issued is as close to the requested EOBT + published Taxi time as possible. Aircraft Operators (AO's) should be aware that filing a flight plan late may lead to a disproportionate delay. It is in the best interest of Aircraft Operators (AO's) to initiate prompt revisions or cancellations, thus permitting the system to maximise use of available capacity and minimise delay. The later the revision is made the greater the probability of a delay.

6.8. Duplicate Flight Plans

Duplicate Flight Plans is the term used to refer to the flight plans of flights which do not take place i.e. flight plans that were not cancelled by the originators and another flight plan has been filed. Only one Flight Plan shall exist at any given time for the same flight.

It is absolutely essential that flight plan originators:

- Cancel a flight plan as soon as they know that the flight is not going to take place.
- Cancel an existing flight plan before filing a replacement flight plan for the same flight.

The existence of multiple flight plans is to be avoided at all costs as they will:

- Present ATC with false information.
- Impair the efficiency of the ATFM system.
- Be responsible for the issuance of unnecessary new slots.
- Cause additional unnecessary delays to regulated flights.
- Lead to an under utilisation of ATC capacity.

6.9. EOBT Requirements

It is a requirement for both ATC and ATFM, that the EOBT of a flight shall be an accurate EOBT. This applies to all flights, whether subject to a flow management regulation or not. Any change to the EOBT of more than 15 minutes for any IFR flight intending to operate within South African Airspace shall be communicated to the appropriate ATS Units.

When an AO submits an amendment message (e.g. DLA or CHG) to an ATSU, they must always give the EOBT the earliest EOBT they may comply with. This time is not directly related to the (new) CTOT provided in the SAM/SRM. The EOBT in the flight plan should always reflect the time at which the AO actually wants to be off-blocks. The EOBT should always be changed if the original EOBT established by the AO cannot be met by the AO for reasons other than ATFM delay.

The following procedures are to enable an AO to meet the above requirements whenever they know that the EOBT of a flight will require modification.

6.10. Procedure for Modifying the EOBT of a Flight having received an ATFM Slot.

During a TMI, operators must obtain a new slot via the CAMU WEB and then compile with the following:

It is a requirement for both ATC and ATFM that the EOBT of a flight shall be an accurate EOBT. This applies to all flights, whether subject to ATFM or not. Any change to the EOBT of more than 15 minutes (+ or -) for any IFR flight must be

addressed to CAMU via an amendment message (e.g. DLA or CHG). The Aircraft Operator (AO) will receive a new Slot Allocation Message (SAM) or Slot Revision Message (SRM), once the changes are made through the CAMU Web.

Once a flight plan has been filed for a flight subject to ATFM measures, any change in EOBT of more than 15 minutes shall be submitted, using a DLA message or by cancelling the original FPL and filing a new flight plan.

Aircraft Operators will be able to interact with CAMU via the CAMU website, www.camu.co.za to amend calculated take off times (CTOT), suspend, de-suspend and to perform a slot swap within own aircraft schedule or move the flight to the acceptable open slot in the future.

In Summary:

- AO is to obtain a new slot via the CAMU Web, and,
- When amending the EOBT to a later time, a DLA or CHG message shall be sent.
- When amending the EOBT to an earlier time, a CNL message shall be sent to an ATSU and shall be followed by a new flight plan with the new EOBT indicated.

Or

Calculating your EOBT once a CTOT is sent:

- Take the current CTOT, minus the taxi time, and send the new EOBT, which must not be after this time e.g. EOBT 1000, CTOT 1100, but the flight cannot go off blocks until 1042. The taxi time is 18 minutes. 1100 minus 18, = 1042. The new EOBT must be earlier than 1042.

Possible Scenarios:

ATFM systems are continuously seeking to give zero delay, the CTOT of the flight will never be earlier than the new EOBT plus the taxi-time.

Recommendations:

- All CTOT revisions or cancellations are to be made preferably using the CAMU Web Page interface
- In all cases, it is in the best interest of AOs to initiate prompt revisions/cancellations thus permitting the system to maximise use of available capacity and minimise delay.

General information on ATFM messages used by the CAMU including the format, messages fields and addressing procedures are included in paragraph 6.14. A summary of all messages is set out in Annex 1.

6.11.   CAMU Helpdesk

The CAMU is available to provide assistance to those AO's who have critical operational problems which cannot necessarily be solved by use of the CAMU Web interface or whose aircraft has a delay in excess of the average delay for the most penalising regulation. The CAMU is also there to provide advice and assistance to those AO's who do not have access to the CAMU Web page or who do not understand the ATFM system.

The CAMU can assist, for example, with flights, which are delayed to the point where they may no longer be able to operate because of night curfews, weather or crew flight and duty times.

The CAMU telephone number is +27 (0) 11 9286433

When connected to the CAMU, callers are requested to provide the flight's ACID before stating the problem. This enables the ATFS to display the relevant data concerning the flight before any problem solving takes place. Callers, who have less than the average delay and no specific operational flight critical problem to resolve, should not call the CAMU. All calls to the CAMU are recorded for quality purposes.

AOs who require advice, assistance of a routine nature can also contact the CAMU. For operational flight planning problems, AOs should call the relevant ATSU or briefing office, not the CAMU.

The CAMU resources have to be focussed on assisting the more critical problems.

6.11.1.   Contact Details

While this document should cover all operational matters, the CAMU may be contacted using the following methods:

Postal Address:	*CAMU (ATNS)* *Private Bag X1* *Bonaero Park* *1622* *SOUTH AFRICA*	Site Address:	*CAMU (Johannesburg ATCC)* *Gate 14* *OR Tambo Intl Airport OPS Complex* *Bonaero Drive* *Bonaero Park* *KEMPTON PARK*
Tel:	*+27 (0) 11 928 6433*		
Fax:	*+27 (0) 11 928 6420*		
Email:	*camuhelpdesk@atns.co.za*		

6.12.   ATFM Messages

6.12.1.   Slot Allocation Message (SAM)

The SAM is used to inform AOs & ATS of the Calculated Take-Off Time (CTOT) computed by the ATFM system for an individual flight, to which AOs/ATC must adhere. This message is sent to AOs/ATS 2 hours before the last received EOBT.

—TITLE SAM —ARCID SAA123 —ADEP FAJS —ADES FADN —EOBD 100303 —
EOBT 1020 —CTOT 1035 —REGUL FAJS — TAXITIME 0015 —REGCAUSE WA 84

Figure 6-1 Composition of Slot Allocation Message (SAM)

The SAM is used to inform AO's and ATS of the Calculated Take-Off Time (CTOT) for an individual flight.

Normal response of AO's/ATS to a Sam message

⊞ AO's must comply with the CTOT.   A slot is issued as a Calculated Take-Off Time (CTOT). The CTOT is defined as a time at which the aircraft shall take-off.

⊞ The calculation of take-off times takes into account the off-block times and an average taxiing time for the runway in use at the airfield concerned.

6.12.2.   Slot Revision Message (SRM)

After the ATFM system has issued an initial SAM, subsequent updates may be notified via the Slot Revision Message – (SRM). This message may be used to indicate a delay increase or decrease. The SRM notifies a change of slot. It is issued after the SAM, if applicable. AOs/ATC must comply with the NEWCTOT.

CAMU system sending of a SRM

⊞ A SRM is sent to notify all concerned of either a significant change (>5') to the original CTOT or a modification of the most penalising regulation or both. Such changes are due to circumstances unrelated to the flight e.g. the introduction of a new restriction or a change to the parameters of an existing restriction the ATFS are able to let all flights be considered for improvement.

⊞ In response to a DLA or CHG when the current CTOT is no longer compliant with the new information.

⊞ When AO modifies slot on the CAMU web and the new slot is within a TMI then a SRM will be sent, AO must then send a CHG/DLA message.

⊞ To notify all concerned of a routine improvement/deterioration of the CTOT.

—TITLE SRM —ARCID ABC101 —ADEP FAJS —ADES FADN—EOBD 100303 —
EOBT 0925 —NEWCTOT 0950 —REGUL FAJS — COMMENT CLDT 100303 1050—
TAXITIME 0010 —REGCAUSE WA 84

Figure 6-2 Composition of a Slot Revision Message (SRM)

Response of AOs/ATS to SRM

The NEWCTOT must be complied with

6.12.3.   Flight Suspense Message (FLS)

Indicates that a specific flight has been suspended in the system and is considered as not taking off. The flight data is kept in the database, but suspended (closure of an aerodrome for a long period, for example). The procedure for de-suspending a flight is through a DLA, a CNL or a CHG, depending on the circumstances, that will be explained in another part of the document.

AOs may suspend their flights on CAMU Web and later de-suspend their flights into open slots. This is used when an AO is experiencing technical difficulties and need to temporarily suspend their flight. AOs are still required to send a CHG or DLA to modify the FPL.

The ATFM system will cancel the original CTOT, issue the suspension with a Flight Suspension (**FLS**) message and await the response of the AO.

—TITLE FLS —ARCID ABC101—ADEP FAJS —ADES FADN —EOBD 100303 — EOBT 0945 —TAXITIME 0015

Figure 6-3 Composition of Flight Suspense Message (FLS)

6.12.4.   Slot Requirement Cancellation Message (SLC)

Sent to AOs/ATS to advise that a flight is no longer subject to ATFM measures and may depart without delay or as per EOBT.

An SLC is sent to AOs/ATS to advise that a flight which has received a CTOT is no longer subject to an ATFM restriction. It may be due to the change in parameters of an existing restriction or its cancellation, or to the reception of a message from AOs such as DLA, and CHG.

—TITLE SLC —ARCID ABC101 —ADEP FAJS —ADES FADN —EOBD 100303 — EOBT 0945 —TAXITIME 0015

Figure 6-4 Composition of Slot Requirement Cancellation Message (SLC)

Response of AOs/ATS to a SLC

A flight may normally depart without an ATFM restriction.

When the SLC is issued after EOBT + 15 minutes the AO must update its EOBT by sending a DLA.

6.12.5.   De-Suspension Message (DES)

This CAMU message indicates that a flight, which was previously suspended, is now de-suspended and active in the system. No further action is expected after the reception of a DES by the AO

The ATFM system sends a DES when a flight not subject to ATFM restrictions is de-suspended. The original suspension could have been due to e.g. receipt of an SAM, the effect of exceptional conditions, closure of aerodrome, termination of the activation monitoring.

—TITLE DES —ARCID ABC101 —ADEP FAJS —ADES FADN —EOBD100303 — EOBT 0945—COMMENT CLDT 100303 1055 —TAXITIME 0015

Figure 6-5 Composition of a De-Suspension Message (DES)

The required action by the AO/ATC is to amend the EOBT by more than 15 minutes later than the EOBT given in the flight plan by sending a DLA message.

6.13. ATFM Messages Fields

Each ATFM message comprises a number of fields some of which are mandatory and some optional. Their number varies according to the message type. The fields used in ATFM messages are summarized as follows.

FIELDS	DEFINITION
ADEP	ICAO indicator of aerodrome of departure
ADES	ICAO indicator of aerodrome of destination
CTOT	Calculated Take-Off Time
EOBD	Estimated Off-Block Day.
EOBT	Estimated Off-Block Time
FILTIM	Date and time stamp of original message
NEWCTOT	Revised CTOT
NEWEOBT	Revised EOBT
NEWRTE	New Route
REGUL	Identifier for the restriction imposed (may include more than one) Which aerodrome? Or FCA
RESPBY	Latest time by which a response is required
RVR	Runway Visual Range (this field is optional in certain messages)
COMMENT	Commentary
TAXITIME	Taxi Time
REGCAUSE	Regulation Cause – Refer Annex 2 *
TITLE	Title of the message

*REGCAUSE Field

In order to provide more specific nomenclature for delay causes and, at the same time, to assist the post-flight analysis, the ADEXP field —REGCAUSE comprises:

a)   Reason for Regulation code (one letter code corresponding to the reason assigned by the ATFM system to the most penalising regulation).

b) Regulation Location code - one letter code: D, E or A), describing the phase of the flight (Departure, Enroute and Arrival) affected by the most penalising regulation.

c) A space.

d) The IATA Delay Code in numeric (81, 82, 83, 84, or 89) or 00 when no IATA Code available.

The —REGCAUSE appears in the SAM and SRM messages, and is associated only with the most penalising regulation. The code appearing in the message is the code valid at the time the delay was given to the flight. (see Annex 2)

7.   REROUTING PROCEDURES

During the Tactical Phase, the ATFS monitors the delay situation and where possible, identifies flights subject to delays that would benefit from a reroute.

This is achieved by selecting a flight and then either:

Choosing an alternative route.   or

Asking the ATFM system to process all possible options.

In both cases the ATFM system will consider the routes as well as the possible flight level limitations and give the consequent result in terms of delay.

The ATFS will consult with the AO concerned about the choices. Once the final decision is taken the selected route which will result in the booking of a slot for that flight and at the same time trigger the sending of a Rerouting Proposal (RRP) message to the originator. AO's who wish to benefit from the offer shall consequently modify their flight plan (either with a CHG or a CNL and refile).

To secure the new CTOT, the CHG / new FPL should be received before the Respond By (RESPBY) time in the RRP. At the reception of the new route in the flight plan, the CAMU system will merge it with the proposal. Then SLC, SAM or SRM messages will be transmitted as appropriate.

7.1.   Rerouting Proposal (RRP) Message

The CAMU sends an RRP following the assessment of 'WHAT-IF' reroute scenarios which are initiated by the ATFS. The RRP may be issued after the transmission of a slot (i.e. SAM) or prior to the slot transmission i.e. when a Provisional Take-Off Time (PTOT) has been allocated to a flight internally in the system.

The flight has already received a CTOT corresponding to its original route.

A new CTOT is offered provided the flight is refiled along the proposed New Route (NEWRTE).

ACTION   A RRP with a NEWRTE is issued.

—TITLE RRP —ARCID ABC101 —ADEP FAJS —ADES FADN —EOBD 100801 — EOBT 1030 —ORGRTE APDAK UQ48 VAVAN —NEWRTE STV 2620S02850E VAVAN—RESPBY 0900 —TAXITIME 0010

Figure 7-1 Composition of Rerouting Proposal (RRP) Message (1)

The flight has already received a CTOT corresponding to its original route.

8.   EXEMPTIONS FROM ATFM SLOT ALLOCATION

8.1.   Flights that Qualify for Exemption from ATFM Slot Allocation

The following flights are exempted from ATFM slot allocation:

- flights carrying the South African Head of State or equivalent status ["STS/HEAD"],,
- flights conducting search and rescue operations ["STS/SAR"],
- flights authorised by the relevant States Authorities to include in the flight plan "STS/ ATFMEXEMPTAPPROVED",
- flights in state of emergency ["STS/EMER"].

ANNEXES

ANNEX 1. ATFM MESSAGES LISTS

ATFM Messages issued by CAMU: SAM, SRM, SLC, FLS, DES, RRP.

The following tables give examples of all ATFM messages currently in use. The tables include a brief description of each message and subsequent actions.

Message	Originator and Description	Action
- TITLE **SAM** - ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0925 - CTOT 1037 - REGUL FAJS - COMMENT CLDT 100303 1237 - COMMENT PR03 - TAXITIME 0010 - REGCAUSE CA 83	SAM: Slot Allocation Message Sent to AO/ATC 2 Hours before last received EOBT. CAMUWEB shows CTOT. The SAM is used to inform AOs & ATS of the Calculated Take-Off Time (CTOT) computed by CAMU for an individual flight, to which AOs/ATC must adhere.	Sent to AOs/ATS 2 hours before the last received EOBT. AOs/ATC must comply with the CTOT.
- TITLE **SRM** - ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0925 - NEWCTOT 1037 - REGUL FAJS - COMMENT CLDT 100303 1237 - TAXITIME 0010 - REGCAUSE AD 89	SRM : Slot Revision Message Sent to AO/ATC to pass or confirm any revision to a CTOT following the issue of the initial SAM. This message may be used to indicate a delay increase or decrease.	The SRM notifies a significant change of slot. AOs/ATC must comply with the NEWCTOT.
- TITLE **SLC** - ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0925 - TAXITIME 0010	SLC: Slot Requirement Cancellation Message Sent to AO/ATC to advise that a flight which has received a CTOT is no longer subject to a restriction.	Flight may depart without restriction unless a new message is received later.
- TITLE **FLS** - ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0815 - TAXITIME 0010	FLS : Flight Suspension Message Sent to AO/ATC at or after Slot Issue Time to suspend a flight due to exceptional conditions or adverse weather conditions or AO delays flight will enter suspension mode on CAMUWEB.	Flight must be de-suspended to become active again via the CAMUWEB.
- TITLE **DES** - ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0815 -COMMENT CLDT 100303 1015 -TAXITIME 0010	DES : Flight De-suspension Message Sent to AO/ATC to de-suspend , a SAM will be sent as well.	No action is normally required of AOs/ATS and the flight if subjected to ATFM regulation will be issued with a CTOT.

- TITLE **RRP** -ARCID ABC123 - ADEP FAJS - ADES FACT - EOBD 100303 - EOBT 0925 - ORGRTE N0280F180 RAGUL UQ10 WY DCT FACT - NEWRTE N0280F180 RAGUL BLV WY FACT - RESPBY 0755 - TAXITIME 0010	RRP : Rerouting Proposal Message This message is sent to an AO to offer a reroute avoid the need for a slot on a new route or to improve the CTOT. A "respond by time" is also added.	The message is sent to an AO to offer reroute to avoid or reduced a delay AO must response by RESPBY time if contend with the RRP.

ANNEX 2. REGCAUSE - DELAY CODES

Correlation between IATA delay codes and the CAMU's reasons for TMI's, the reasons are indicted in REGCAUSE field and in the FAM.

CAMU DELAY CODES						
Reason for Traffic management initiatives	*CODE*	*Regulation Location*	*EXAMPLE*	*Code*	*IATA Delay Cause*	*CAMU Regulation Example Code*
ATC Capacity	C	D	Demand exceeds the capacity	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**CD 89**
		E		81	ATFM DUE TO ATC ENROUTE DEMAND/ CAPACITY	**CE 81**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**CA 83**
ATC Ind Action	I	D	Controllers' strike	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**ID 89**
		E		82	ATFM DUE TO ATC STAFF/ EQUIPMENT ENROUTE	**IE 82**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**IA 83**
ATC Routeings	R	E	Phasing in of new procedures	81	ATFM DUE TO ATC ENROUTE DEMAND/ CAPACITY	**RE 81**
ATC Staffing	S	D	Illness; traffic delays on the highway	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**SD 89**
		E		82	ATFM DUE TO ATC STAFF/ EQUIPMENT ENROUTE	**SE 82**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**SA 83**
ATC Equipment	T	D	Radar failure; RTF failure	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**TD 89**
		E		82	ATFM DUE TO ATC STAFF/ EQUIPMENT ENROUTE	**TE 82**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**TA 83**
Accident/Incident	A	D	RWY23 closed due accident	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**AD 89**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**AA 83**
Aerodrome Capacity	G	D	Lack of parking; taxiway closure; areas closed for maintenance; demand exceeds the declared airport capacity	87	AIRPORT FACILITIES	**GD 87**
		A		87	AIRPORT FACILITIES	**GA 87**
Equipment non-ATC	E	D	Runway or taxiway lighting failure	87	AIRPORT FACILITIES	**ED 87**
		A		87	AIRPORT FACILITIES	**EA 87**
Ind Action non-ATC	N	D	Firemen's strike	98	INDUSTRIAL ACTION OUTSIDE OWN AIRLINE	**ND 98**
		A		98	INDUSTRIAL ACTION OUTSIDE OWN AIRLINE	**NA 98**
Military Activity	M	D	Golden eagle;	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**MD 89**
		E		82	ATFM DUE TO ATC STAFF/ EQUIPMENT ENROUTE	**ME 82**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**MA 83**
Special Event	P	D	FIFA football cup; Heads of Government meetings	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**PD 89**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**PA 83**
Weather	W	D	Thunderstorm; low visibility; X winds	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**WD 89**
		E		73	WEATHER EN ROUTE OR ALTERNATE	**WE 73**
		A		84	ATFM DUE TO WEATHER AT DESTINATION	**WA 84**
Environmental Issues	V	D	Noise	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**VD 89**
		A		83	ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	**VA 83**
Other	O	D	Initial Airport Slot Allocation	89	RESTRICTIONS AT AIRPORT OF DEPARTURE	**OD 89**
		E		81	ATFM DUE TO ATC ENROUTE DEMAND/ CAPACITY	**OE 81**
		E		00	AIRPORT SLOT ALLOCATION	**OE 00**
		A		83	ATFM DUE TO WEATHER AT DESTINATION	**OA 83**

ANNEX 3. PRIMARY FIELD COMPOSITION OF TACTICAL ATFM MESSAGES EXCHANGE

ADEXP Field	SAM	SRM	SLC	FLS	DES	RRP	Comment
-TITLE	1	1	1	1	1	1	Message title (SAM, SRM or SLC)
ARCID	1	1	1	1	1	1	ACID - Aircraft ID - Callsign
-ADEP	1	1	1	1	1	1	ADEP - Departure aerodrome
-ADES	1	1	1	1	1	1	ADES - Destination aerodrome
-IOBD	(1)	(1)		(1)	(1)	(1)	Initial off-block date and time
-IOBT	(1)	(1)		(1)	(1)	(1)	Initial off-block date and time
-CTOT	1					(1)	CTOT - Take-off time slot.
-NEWCTOT		1				(1)	CTOT - Take-off time slot.
-EOBD	1	1	1	1	1	1	EOBD – Estimated Off Block Date
-EOBT	1	1	1	1	1	1	EOBT - Estimated Off Block
-REGUL	1	1					Refer to ***** document for content description
-TAXITIME	1	1	1	1	1	1	TAXITIME (from offline config data)
-REGCAUSE	1	1					Refer to ANNEX 2 for content description
-ORGRTE						1	Original route
-NEWRTE						1	New route
-RESPBY						1	Time by which a response to the re-route has to be made (filled in with a default value off-line defined)
-REASON						(1)	Regulation reason
-COMMENT	0<	0<	0<	0<	0<	0<	Free text

The numerical code indicates the permissible cardinality of fields in the CAMU IFPS messages:

"1" means: exactly one field of the specified type is required,

a "blank cell" means : this field is not in a message,

"(1)" means: a single optional field of the specified type is allowed,

"n<" means : n or more occurrences of this field can appear in a message

ANNEX 4. ATFM RTF PHRASEOLOGY

SLOT	Calculated Take-Off Time (CTOT) delivery resulting from a Slot Allocation Message (SAM). (The CTOT shall be communicated to the pilot on first contact with ATC).	SLOT (*time*)
	Change to CTOT [resulting from a Slot Revision Message (SRM)].	REVISED SLOT (*time*)
	CTOT cancellation (resulting from a Slot Cancellation Message (SLC)).	SLOT CANCELLED, REPORT READY
SUSPENSION	Flight suspension until further notice. (resulting from an FLS).	FLIGHT SUSPENDED UNTIL FURTHER NOTICE, DUE (*reason*)
	Flight de-suspension (resulting from a De-Suspension Message (DES)).	SUSPENSION CANCELLED, REPORT READY
DENIAL	Denying start-up when requested too late to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT EXPIRED, REQUEST A NEW SLOT
	Denying start-up when requested too early to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT (time), REQUEST START-UP AT (time)

ANNEX 5. SUMMARY OF CAMU ATFM SYSTEM PARAMETERS

PARAMETER	BASIC DEFINITION	VALUE
FPL Filing Time	The minimum time before EOBT for flight plan filing when a flight may be subject to ATFM.	At least 3 hours before EOBT
Slot Issue Time	The time at which the CAMU issues the SAM to the AO and ATC at the aerodrome of departure.	2 hours before EOBT
Slot Window	A slot is issued as a Calculated Take-Off Time (CTOT). The CTOT is defined as a time when the aircraft must take-off. The Slot tolerance of -5 to +10 is primarily intended for use by ATC to allow for aerodrome congestion problems.	-5' to +10' around CTOT
RRP Time-Out	A RRP expires if no response is received from an AO by the "Respond by Time" (RESPBY) included in the message.	30 minutes

ANNEX 6. ACRONYMS

AAR - Aerodrome Arrival Rate

ACC - Area Control Centre

ADEP - Departure Aerodrome

ADEP - Aerodrome of Departure

ADES - Aerodrome of Destination

ADL - Aggregate Demand List

AEET – Actual Estimated En route Time

AffAvgDelay - (Affective Average Delay) total delay divided by number of non-exempted flights, calculated after running a GDP.

AFP - Airspace Flow Program

AFT - Aerodrome Flow Tool

AFTN - Aeronautical Fixed Telecommunication Network

AIC - Aeronautical Information Circular

AIP - Aeronautical Information Publication

Airborne Holding - A deterministic mathematical model used to calculate predicted airborne holding.

AO - Aircraft Operator

AOCC - Aircraft Operator Control Centre

AOP - The Bi-annual Airspace Operations Plan

ARCID - Aircraft Identification

ARCTYP - Aircraft Type

ATC - Air Traffic Control

ATFM - Air Traffic Flow Management

ATOT /ALTD - Actual runway times (Departure/Arrival)

ATOT - Actual Take-Off Time

ATS - Air Traffic Services

CAMU - Central Airspace Management Unit

CAP - Capacity

CDM - Collaborative Decision Making

CHG - Modification Message

CLDT – Controlled Landing Time

CNL - Cancellation Message

CNX – Cancelled Flight; Cancel

CTL_ELEM – If a flight is controlled (i.e., has a CTOT and CLDT), this field indicates the constrained NAS element for which a ground delay program or ground stop was run. Currently, the CTL_ELEM can be an arrival aerodrome or FCA.

CTOT - Calculated Take Off Time

DAP - ATFM Daily Airspace Plan

DEP - Departure Message

DES - De-Suspension Message

DEST - Destination

DLA - Delay message

EENTRY – Earliest Element Entry Time

EET - Estimate En Route Time in minutes

ELTOT/ELLDT - Earliest Take Off/Landing Times

ENTRY – Current, best, estimated time of entry for a flight into an FCA considering all data sources

EOBD - Estimated Off-Block Date

EOBT   - Estimated Off-Block Time

ETA - Updated Estimated (wheels-on) Arrival Time. Prefixes: P (proposed), E (estimated)

ETD - Updated Estimated (wheels off) Departure time. Prefixes P (proposed), E (estimated)

EXIT – Estimated Element Exit Time

FAM - ATFM flow advisory Message

FCA - Flow Constrained Area

FIR - Flight Information Region

FL - Flight Level

FLS - Flight Suspension Message

FMP - Flow Management Position

FPL - Filed Flight Plan

FUA - Flexible use of Airspace

GDP - Ground Delay Program

GS- Ground Stop

HR - Hourly Rate

IATA - International Air Transport Association

ICAO - International Civil Aviation Organization

IOBD - Initial Off-Block Date

IOBT - Initial Off-Block Time

IOBT/IIBT - Initial Estimated Block Times

LOA - Letter Of Agreement

LVP - Low Visibility Procedures

MINIT - Minutes-in-Trail

MIT - Miles-in-Trail

NAS - National Airspace System

NEWCTOT - New Calculated Take-Off Time

NEWRTE - New Route

NOTAM - Notice to Airmen

OAG - Official Airline Guide

POBT/PIBT - Proposed block times (Off/In)

REG or REGUL - Regulation

RESPBY - Respond by (time out to give a response)

RMK - Remark

RPL - Repetitive Flight Plan

RRP - Rerouting Proposal

SAM - Slot Allocation Message

SLC - Slot Cancellation Message

Slot List - A modified TMI file. In addition to the information provided by the TMI file, the slot list includes the slot ID, flight class and information about exempted flights.

SOBT/SIBT - Scheduled Block Times (Off/In)

SRM - Slot Revision Message

TELCON - Telephone Conference

TMI - Traffic Management Initiatives

TSA - Temporary Segregated Airspace

APPENDIX A. - CAMU WEB USER'S GUIDE

CAMU Web
Release 2.2.0 User Guide

Document Version 2.2

March 2010

Metron Aviation, Inc.
45300 Catalina Court, Suite 101
Dulles, VA 20166

ENHANCED ATFM OPERATOR'S MANUAL

Table of Contents

A-1. Introduction

This document serves as a reference guide for new users of Central Airspace Management Unit (CAMU) Web. It provides instructions for accessing the CAMU reports and explains how to interpret the information displayed in these reports.

CAMU Web is a web-based application that allows you to monitor current and cancelled traffic management initiatives (TMIs).

CAMU Web generates ten different types of initiative-level reports:

1. Performance
2. Flight Status
3. Compliance
4. CTOT Before POBT
5. Cancels That Flew
6. Pop-Ups
7. Time Out Delay
8. Duplicate Flights
9. Events
10. Unassigned Slots

These reports are updated every five minutes with the most current Aggregate Demand List (ADL) information.

The information provided in these reports helps you identify problems as they occur, so that you can correct problems that impact TMI performance.

The format for the CAMU Web home page displays whether individual events within a TMI are active or inactive. CAMU Web updates events to inactive when one of the following occurs:

1. Purge — all active events become inactive.
2. The event is no longer controlling any flights.
3. Another (actual) event is issued (Airspace Flow Program [AFP], Ground Delay Program [GDP] or Compression [COMP]). A Ground Stop (GS) becomes inactive only if it is purged or is no longer controlling flights.

It is possible to have both a GDP event such as a revision and a GS executed within the GDP active at the same time, if the GS did not encompass all flights in the GDP.

If a GS is active but a GDP has not been issued, only two reports are available: the Compliance report, and the Events report. If a GDP is active at the same time as the GS, all reports are available.

> **Note: A GS cannot be issued for an airspace element.**

A-2. Accessing the Reports

The reports are viewed using an internet browser. To access the reports:

Start your browser.

Go to the CAMU Web Home page (see Figure 1)

Enter your Username and Password and click **Login**. If you need to re-enter your information, click **Reset**.
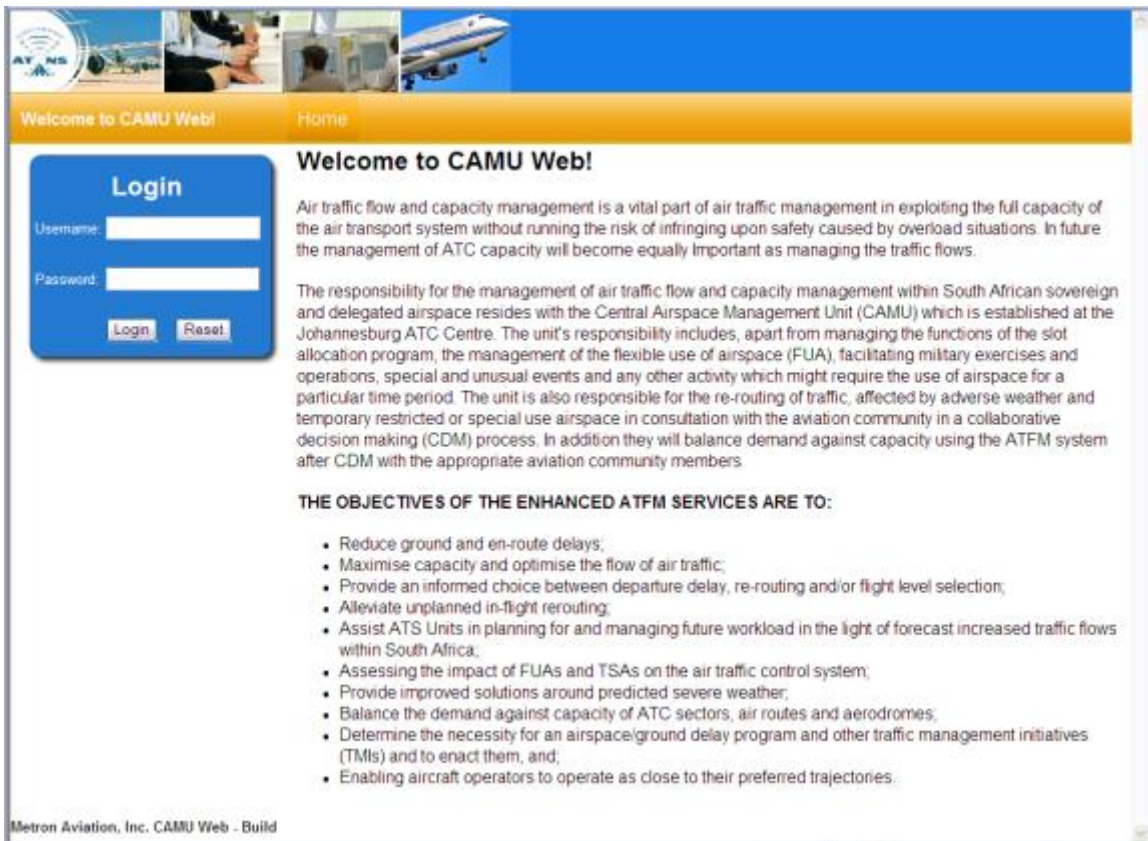
Figure 1: CAMU Web Home Page

The CAMU Web Initiatives page has a link for each aerodrome or airspace element that has a TMI (see Figure 2). The cause for the initial SCORE program is *Airport Slot*. Revisions to SCORE will reflect the values from AFT. Each initiative within an event is sorted by its report time. When you click on a link for an aerodrome or airspace element with a GDP or AFP, CAMU Web displays the Performance report for the selected aerodrome or airspace element. GS initiatives take the user to the Compliance Report. The Element Flight List and Lookup Flight reports are the only two reports accessible from the Home page. You can access all other reports from the *Reports Links* navigation bar on the Performance Report page.

ENHANCED ATFM OPERATOR'S MANUAL
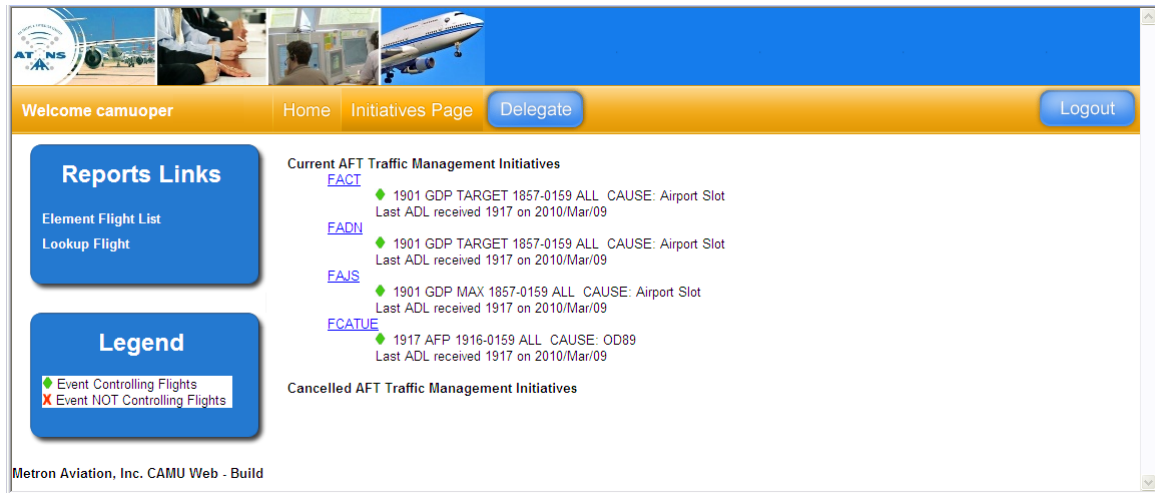
Figure 2: CAMU Web Initiatives Page

The Initiatives page also displays the status of initiatives. Table 1 explains the statuses and their corresponding symbols.

Table 1: Current Initiative Statuses

Symbol	Status	Description
◆	Event Controlling Flights	TMI is controlling flights in the element.
✗	Event NOT Controlling Flights	TMI is no longer controlling flights in the element.

Links are also available for cancelled TMIs from the current day. The reports for the cancelled TMIs are accessed in the same manner.

A-3. Performance Report

The Performance Report shows whether the program is delivering the requested Program Rate (see Figure 3). There are two types of aerodrome programs generated in the Airport Flow Tool (AFT) system: Target and Max. *Target* programs have an overall Program Rate set for the aerodrome. *Max* programs set a specific Arrival (A) and Departure (D) rate for the aerodrome. The Performance Report will show the "Max" or "Target" label in the Program Rate field to indicate which program type is in effect. Max programs will include specific arrival and departure counts in each cell and the row labels will show "(A/D)". Max program drilldown reports can be generated for the arrival or the departure flight lists. Target programs will show a combined aerodrome-level value in each cell and the drilldown report shows both arrival and departure flights.

Airspace programs, since they do not include departure data, use a single Program Rate value in the Performance Report.

FAJS Performance — Flight List Generated at 1454 on 2010/Jan/25

Text Version

Original Start Time: 02:01

Hour	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600
AFT Program Rate (Max) (A/D)	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30	29 / 28	25 / 23	25 / 23	25 / 23	25 / 23	25 / 23	25 / 2?
Number of Assigned Slots (A/D)	1/0	0/1	3/4	8/6	9/18	13/7	23/15	27/9	24/12	16/12	22/15	23/11	24/9	17/18	25/1?
Flights Controlled by Another Initiative (A/D)	0/0	0/2	0/7	0/7	0/4	0/3	0/5	0/4	0/4	0/5	0/3	0/8	0/7	0/6	0/10
Cancellations (A/D)	-0/-0	-0/-1	-1/-24	-3/-12	-12/-7	-7/-18	-6/-14	-6/-12	-4/-11	-6/-17	-4/-5	-8/-4	-0/-2	-0/-0	-0/-0
Extra Demand (A/D)	0/0	0/2	2/34	6/20	20/8	13/27	7/25	8/21	8/19	12/27	11/15	20/11	8/11	12/0	1/0
Flights Prior to Their Control Hour (A/D)	-0/-0	-0/-0	-0/-1	-1/-5	-2/-11	-3/-1	-5/-4	-5/-3	-3/-8	-4/-8	-5/-10	-2/-6	-5/-8	-6/-9	-11/-2
Flights After Their Control Hour (A/D)	-0/-0	-0/-0	-1/-0	-1/-0	-0/-0	-0/-0	-0/-0	-0/-1	-0/-0	-0/-0	-0/-0	-0/-0	-1/-0	-0/-0	-0/-0
Total Current Demand (A/D)	1/0	0/4	3/20	9/16	15/11	16/18	19/27	24/18	25/15	18/19	24/18	33/20	26/17	23/15	15/20
Number of Unassigned Slots	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
Total Potential Demand	1	4	23	25	26	34	46	42	40	37	42	53	43	45	35

Figure 3: Performance Report

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

AFT Program Rate (Target) / AFT Program Rate (Max): The rate set in AFT by the traffic management specialist. The rate shown will be pro-rated for partial hours at the beginning of the program. The rate will also be pro-rated if it changed in the middle of an hour due to a revision.

Number of Assigned Slots: The number of slots AFT created for that hour. Sometimes the number of slots does not equal the requested program rate due to a number of factors. See Appendix A for further explanation.

Flights Controlled By Another Initiative: The number of flights passing through, departing from or arriving at the current element that another TMI controls. These flights have a "CTL_ELEM" value that is different than the current element for which the TMI was created. This number is positive.

Cancellations: The number of cancelled flights in the hour. This number equals the number of squares on the AFT timeline for the hour. The number is always a negative number.

> **Note: The CAMU Web System displays all cancellations of flights with slots for each hour of the TMI on the Cancellations Row.**

Extra Demand: The number of extra flights showing up in the hour that do not have an AFT assigned slot in the hour. This number is the sum of those flights that are pop-up (non-scheduled) flights in the current hour, arrival flights with an assigned slot in an earlier or later hour but an ETA in the current hour, and departure flights with an assigned slot in an earlier or later hour but an ETD in the current hour. Occasionally extra demand may be due to "Non-program" flights. These are flights that were not originally given a slot by AFT because they were not expected to arrive during the program hours. For instance, flights may delay into the first hour of the program after the initial program is run.

Flights Prior to Their Control Hour: The number of flights which should have shown up in the hour (they have slot times in the hour), but are expected to arrive or depart in an earlier hour due to an early departure or some other reason.

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

Total Current Demand: The total number of flights expected to arrive in the hour at the ADL time shown at the top of the report. The Total Current Demand for an hour equals the number of slots allocated minus the "No-shows" (i.e., the Cancellations and flights Arriving Prior to and After Their Control Hour) plus the extra flights arriving in the hour that do not have slots in the hour (i.e., the Extra Demand).

Number of Unassigned Slots: The total number of Unassigned Slots for a GDP or AFP event. If a 0 is displayed in the place of the number, then all the available unassigned slots have been used up in the program for that hour. Clicking on the number causes a list of Unassigned Slots for the appropriate hour to appear and displays it underneath the Performance report.

Total Potential Demand: The sum of the Total Current Demand row and the Number of Unassigned Slots row for each hour. Clicking on the number generates a combination of the unassigned slot list and the total current demand list for the appropriate hour and displays it underneath the Performance report.

Drop Outs: The number of flights that have rerouted out of an AFP. This number is positive. Clicking on the number generates a flight list of drop out flights for the appropriate hour and displays it underneath the Performance report. This row only is displayed for airspace elements.

Ground Stop Only

Since there is no AFT Program rate associated with a GS, it is not possible to generate the performance report. The Compliance Report shows all non-compliant GS flights for all active ground stops at the aerodrome being viewed.

Drill Down Capabilities

Click on the associated link to view the flights that comprise each count. Where **A/D** is displayed, click the left side or "**A**" for arrival information or click the right side or "**D**" for departure information.

Click **Extra Demand A/** for the **1400** hour. The resulting flight list shows all of the aircraft that are expected to arrive in the 1400 hour that do not have AFT assigned slots in this hour (see Figure 4). To view the departure information, click **Extra Demand /D**.

14:00 Hour Extra Demand (Arrival)

*An asterisk indicates the flight has not yet departed.

Slot Hour	ACID	Slot Time	ETA	ETA-Slot Time	ADEP	ADES	DFIR	AFIR
	EXY1110*	-	E25/1612	0	FAKM	FAJS	FAJA	FAJA
1600	MNO0158	25/1604A	E25/1414	-110	FACT	FAJS	FACA	FAJA
	SAA0566	25/1612A	E25/1430	-102	FADN	FAJS	FAJA	FAJA
	SAA0420	25/1615A	E25/1437	-98	FAPE	FAJS	FACA	FAJA
	EXY110	25/1647A	E25/1412	-155	FAKM	FAJS	FAJA	FAJA
1700	CAW218	25/1702A	E25/1456	-126	FADN	FAJS	FAJA	FAJA
2100	CAW274	25/2110A	A25/1439	-391	FYWH	FAJS	FYWH	FAJA
	LNK755	25/2125A	E25/1417	-428	FAJS	FAJS	FAJA	FAJA

Figure 4: Hour Extra Demand /A

Note: For airline users, general aviation and military flights are not displayed, so the number of flights displayed in the report may be fewer than the count shown in the performance table.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Sorting

By default CAMU Web sorts the flight lists displayed on the performance report by Slot Time. Click on any of the underlined column titles to re-sort the flight list by the column selected.

> **Note: Sorting by the Entry column title causes the Slot Time column title to rename to Entry Hour. Sorting by the ETA or ETD column title causes the Slot Time column title to rename to Arrival Hour or Departure Hour.**

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Usage

Determining why there is over or under delivery

The counts in combination with the comments in the drill down flight lists show why an hour is heavy or light. For example, if three additional flights are expected to arrive in the 2100 hour that do not have slots in this hour. The reason for the extra demand may be due to two flights that were supposed to arrive in the 2000 hour that are no longer expected to arrive in this hour due to errors in EET estimation and, for one flight, a time out delay into the 2100 hour. If no flights have been cancelled and one flight is arriving prior to its controlled time, then the net balance (i.e., the total demand) is 57 flights – two flights more than the requested program rate of 55.

Determining whether a compression or revision is needed

You can use the information provided in the Performance Report to determine whether an event needs a compression or revision. To determine if you need to take any action and what type of action is most appropriate, compare the requested Program Rate to the Number of Slots and the Total Demand for future hours, as described in the following section.

No Action Required

If the Total Demand equals the Program Rate, there are no cancellations, and there has been very little shift in demand, no action should be necessary. The demand graph in AFT appears "smooth" and the AFT timeline has very few triangles and no squares.

> **Note: The number of "Flights Arriving Before Their Control Hour" and the number of "Flights Arriving After Their Control Hour" show the degree to which demand has shifted.**

Compression Only

If the Total Demand is less than or greater than Program Rate, but the Number of Slots equals the Program Rate, and there is no pop-up traffic then a compression should suffice. CAMU Web lists pop-ups that do not have a slot at the top of each hour in the Extra Demand flight lists. To view the Extra Demand flight list for an hour, click on the **Extra Demand** count for that hour. The Pop-Up report also shows the amount of pop-up traffic expected in each hour.

Ration by Schedule with Compression (RBS++)

If Total Demand is less than or greater than Program Rate, and Number of Slots is less than or greater than Program Rate, or there is a significant amount of pop-up traffic, then the event needs a revision.

GDP Modelling

The Performance Report shows the impact of GDP actions/modelling choices. For example, after a GS is issued, the number of slots assigned per hour no longer equals the Program Rate. Issuing a GS redistributes the arrival slots based on the GS release time - not the Program Rate. Issuing Estimated Departure Clearance Time (EDCT) updates also moves arrival slots and may cause the number of slots to differ from the Program Rate.

The presence of large negative estimated en route time (EET) fluctuations may indicate a lack of slot availability when a large number of flights are exempted in RBS++. See the Events Report to determine how many flights were exempted for a particular event. This report displays the total number of flights included in each program event as well as the number of flights affected. The difference between these two numbers equals the number of exempt flights for that event.

AFP Modelling

The Performance Report shows the impact of AFP actions/modelling choices. See the Events Report to determine how many flights were exempted for a particular event. This report displays the total number of flights included in each program event as well as the number of flights affected. The difference between these two numbers equals the number of exempt flights for that event.

Detecting Airborne Holding

Large positive EET fluctuations for flights that have already departed may be an indication of airborne holding.

A-4. Flight Status Report

For GDP and AFP initiatives: The Flight Status report shows the current status of all program flights arriving or departing within the program and any flight arriving or departing outside of the program with a GDP control or AFP control (see Figure 5). By default, the Arrival report is displayed. To display the Departure report (which is only available for aerodromes), click the **Flight Status (Departure)** link located below the report title.

> **Note: When you sort by Entry Time for an airspace element (FCA), the Arrival Hour column header changes to Entry Hour. Also, when you sort by Exit Time for an airspace element (FCA), the Arrival Hour column header changes to Exit Hour.**

Figure 5: Flight Status Report

For airspace elements (e.g., FCAs), Entry time is used instead of ETA since ETA measures the flight's arrival at its destination aerodrome, not the FCA. The Entry time is the time at which a flight enters an airspace element's boundaries.

> **Note: Airspace elements also have an Exit field, the time a flight traversed out of the FCA, and CTL_ELEM indicates the initiative that is currently controlling the flight.**

Sorting

By default CAMU Web sorts the flight lists displayed on the Flight Status report by Arrival/Departure Hour. Click on any of the underlined column titles to re-sort the flight list by the selected column. FCA data sets are sorted by ENTRY.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Exclusions

CAMU Web does not display general aviation and military flights for airline users.

A-5. Cancels That Flew Report

The "Cancels that Flew" report shows all controlled flights that were cancelled then operated without being reinstated via a FM, FZ, or FA message (see Figure 6).

Figure 6: Cancels That Flew

The *Cancel-Reason* column shows the most current cancellation reason. If a flight has multiple cancellation flags set, only one cancellation reason is displayed according to the following precedence: SX, FX, TO, DV, RS, DO. By default, the Arrival report is displayed; click **Cancels That Flew (Departure)** link located below the report title to view the departure version for aerodromes.

Sorting

By default CAMU Web sorts the flight lists displayed on the Cancels That Flew report by Arrival/Departure time for aerodromes and ENTRY for airspace elements. Click on any of the underlined column titles to re-sort the flight list by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Usage

An airline may unintentionally operate a cancelled flight because they are unaware that it was cancelled. Typically, this occurs when a flight has been timeout cancelled by the system. Review the cancellation reason for the flights in this report. The presence of flights that operated after time out cancelling may indicate the airline is having difficulty keeping their flight data current.

System gaming can be identified by looking for flights that are cancelled, subbed, and then operated at the original slot time. Look to see if any of the "Cancels that Flew" were SX or FX cancelled. For those identified, click on the ACID to view the flight history. Review the CTL_Type field to see if the flight was subbed. Also check to see if the flight departed at its current CTOT or the original CTOT assigned to the flight prior to being cancelled and subbed.

Exclusions

Diversion cancellations are not included in this list.

CAMU Web does not display general aviation and military flights for airline users.

A-6. Compliance Reports

Aerodromes and airspace elements include a Departure Compliance report that shows flights' compliance with their controlled time of departure at their origin aerodrome (see Figure 7). For aerodromes, the Departure Compliance report defaults to show *arrival* flights' departure compliance; the user can access the *departure* flights' departure compliance by clicking the link under the report title. For airspace elements, CAMU Web displays the Departure Compliance report for arrival data only since there is no departure data in airspace data sets. Airspace elements have an Arrival Compliance report as well, which shows the airspace flights' compliance with their arrival times at the FCA.

The compliance flight list shows all flights that did not comply with their assigned controlled time of departure regardless of whether they were controlled by a GS, AFP, or GDP when they departed. A departure flight is considered non-compliant if it failed to depart within a specified compliance window; an arrival flight is non-compliant if it failed to arrive within the compliance window. When measuring departure compliance, the CTOT column shows the CTOT used to measure compliance. For GDP or AFP controlled flights this is always equal to the CTOT the flight had at departure.   Arrival compliance uses CLDT.

The compliance window is the maximum number of minutes a flight may depart (or arrive) prior to its CTOT (CLDT) or after its CTOT (CLDT) and still be considered compliant.

Currently, CAMU Web uses a (-5, +5) minute compliance window. This means a flight is considered non-compliant if it departed early by more than five minutes, or it departed late by more than five minutes. The compliance parameters are displayed underneath the report header.

- "GDP" is displayed in the Control Action column if a GDP controls the flight when it departs.
- "AFP" is displayed in the Control Action column if an AFP controls the flight when it departs.
- "GS" is displayed in the Control Action column if a GS controls the flight when it departs. For GS flights, CAMU Web always shows the CTOT used to measure compliance.
- If an update is issued for a GS flight, CAMU Web shows the update time and uses this time to measure compliance.

Figure 7: Departure Compliance Report (Arrival)

> **Note:** CAMU Web uses the CTOT assigned to the flight when it departs to measure compliance.

FCA Arrival Compliance Report

In the top left-hand corner of the Departure Compliance report for an FCA is a link to the FCA Arrival Compliance Report. This report displays a list of all AFP impacted flights that are not Control Time of Arrival (CLDT) compliant. Non-compliance is anything outside of a plus or minus five minutes entry window (+/- 5). You can get back to the departure Compliance report by clicking on the **Compliance** link in the left-hand menu bar.

When you sort by Entry Time for an airspace element (FCA), the Departure Hour column header changes to Entry Hour.

Sorting

By default, CAMU Web sorts the flight lists displayed on the Compliance reports by Arrival/Departure time for aerodromes and by ENTRY for airspace elements. Click on any of the underlined column titles to re-sort the flight list by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Compliance Remarks

The **Non-Compliance Reason** column on the Compliance report allows you to enter a reason for non-compliance for a specific flight. Click the **Reason** link in the **Non-Compliance Reason** column to open the **Compliance Remarks** window for the associated flight (see Figure 8).

Figure 8: Compliance Remarks

You must complete all fields displayed on the form prior to clicking **Submit**.

To specify a Non-Compliance Reason:

Click on the **Non-Compliance Reason** dropdown menu to display a list of reasons.

Select one of the following reasons:

Aircraft Operator
Equipment
TMI
Weather
Other

> **Note: Click on the Help button for a description of each reason.**

Provide a more detailed explanation of the circumstances which prevented the flight from departing in the *Comments* text area.

> **Note: For ATNS users, the person submitting the information should provide his or her aerodrome ICAO ID and operator initials. Airline users should enter their three letter carrier abbreviation in the Facility ID textbox.**

Click **Submit**. CAMU Web records the following information in the CAMU Web database: the flight ID, the non-compliance reason, the comments entered, the current UTC time, the facility ID, the operator initials, and the IP address of the sender. Storing the preceding information allows the non-compliance data to be matched back to other flight information in the CAMU Web database, for reporting and analysis purposes.

You receive confirmation that the information you provided has been saved. The reason entered is displayed in the compliance report instead of the word "Reason".

If the reason you entered is not displayed in the *Non-Compliance* column, click on your browser's reload button. The link should now reflect the last reason entered for the flight. Other users will not see the reason entered until the compliance report is reloaded in their browser. CAMU Web reports automatically reload every three minutes. Any time a user clicks on a **Non-Compliance Reason** link, CAMU Web checks to see if any prior information was entered for the flight.

To update the Non-Compliance Reason

You cannot edit information that has been submitted. However, you may provide an alternative reason and additional comments. To do so, follow the same procedure as previously described. When you click on the link in the *Non-Compliance Reason* column, any information previously entered for the flight is displayed at the top of the Compliance Feedback window. You may select an alternative reason or the same reason as previously entered. Before clicking **Submit**, you must also enter information in the *Comments*, *Facility ID*, and *Operator Initials* fields. Once you click **Submit**, the last reason entered will be displayed in the *Non-Compliance Reason* Column for the associated flight.

Exclusions

"Cancels that Flew" are not displayed in the Compliance report. Ground stopped flights that departed prior to receiving a control time and international flights are also excluded. Flights that departed, for which no DZ message was received, are excluded. The ATOT field is blank for these flights.

For airline users, non-compliant general aviation and military flights are not displayed.

Usage

The Compliance Report can be used to identify ATNS facilities that are not releasing flights within the compliance window as well as airlines that fail to depart within the compliance

window. Sort by DFIR to see if the aerodromes within a particular FIR are releasing flights early or late. A lack of compliance within a particular departure FIR may indicate the FIR is trying to deal with local traffic management initiatives such miles-in-trail restrictions. Sorting the Compliance report by ACID can help identify airlines that are consistently departing flights early or late. However, when looking at airline compliance, keep in mind that late departures may be due to departure delays at the origin – not airline delays.

> **Note: The accuracy of the compliance report can be affected by suspension of EDCTs, "white hat" approvals for which an EDCT update was not submitted, and ground stops that are not implemented using AFT. When any of the preceding events occur, a flight's CTOT is not updated in the data; thus, the flight may appear non-compliant.**

How CAMU Web Measures Compliance

If a flight is controlled by a GDP or AFP when it departed, compliance is measured using the specified compliance window (currently -5, +5).

If a flight is controlled by a GS when it departed, the flight will be considered compliant if it departs after the end time of the GS (ATOT greater than or equal to CTOT from the GS). If an airline subs the GS flight and changes the CTOT, CAMU Web will still measure compliance based on the CTOT assigned by the GS, except in the case where the substitution resulted in a CTOT outside of the GS parameters. In the event that a substitution assigns a control time prior to the start time of a GS or after the end time of a GS, compliance will be measured based on the CTOT assigned by the substitution using a (-5, +5) minute window. If an update is issued for a GS flight, CAMU Web will measure compliance based on the update time using the current compliance window.

A-7. CTOT Before POBT Report

The CTOT before POBT report shows all flights with a CTOT that are earlier than their POBT and have either not departed, or have departed and are non-compliant based on the compliance window (see Figure 9). A flight is displayed on this list under one of two conditions- it receives a CTOT earlier than its POBT, or a POBT is submitted after the CTOT was assigned and it is later than the CTOT. If the flight departs and is compliant, the flight is removed from the list. If it is non-compliant after departure, it stays on the list. Also, if a program event runs, and the flight receives a new CTOT that is later than its POBT, the flight is removed from this report.

By default, the Arrival report is displayed. To display the Departure report, click the **CTOT Before POBT (Departure)** link located below the report title.

FAJS CTOT Before POBT (Arrival)   Flight List Generated at 2345 on 2010/Jan/25

CTOT Before POBT (Departure)
Text Version

*An asterisk indicates the flight has not yet departed.

Departure Hour	ACID	ETD	CTOT	ETD-CTOT	POBT	POBT-CTOT	ADEP	ADES	DFIR	AFIR
0600	ETH0809*	C25/0610	25/0610	0	25/0855	165	HAAB	FAJS	HAAA	FAJA
1200	REJ842	A25/1207	25/1150	17	25/1155	5	FAKN	FAJS	FAJA	FAJA
1300	EXY900	A25/1341	25/1250	51	25/1320	30	FAGG	FAJS	FACA	FAJA
1600	DHV0304*	C25/1620	25/1620	0	25/1950	210	FVHA	FAJS	FVHA	FAJA
	DHV0306	A25/1634	25/1620	14	25/1955	215	FLLS	FAJS	FLFI	FAJA
1700	KQA0764*	C25/1750	25/1750	0	25/1855	65	HKJK	FAJS	HKNA	FAJA
	SAA0223*	C25/1751	25/1751	0	25/2025	154	SBGR	FAJS	SBBS	FAJA
2000	SAA0061*	C25/2057	25/2057	0	25/2200	63	DNMM	FAJS	DNKK	FAJA

Figure 9: CTOT Before POBT

Sorting

By default CAMU Web sorts the flight lists displayed on the CTOT Before POBT report by Arrival/Departure time for aerodromes and ENTRY for airspace elements. Click on any of the underlined column titles to re-sort the flight list by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Exclusions

"Cancels that Flew" are not displayed in the CTOT before POBT Report. Ground stopped flights that departed prior to receiving a control time and international flights also are excluded.

A-8. Pop-up Report

The Pop-Up Report shows all pop-ups arriving (or expected to arrive) during the program hours (see Figure 10). For the purposes of this report, a pop-up flight is defined as any flight that does not have a SOBT/SIBT and was not in the ADL data at the time the initial program was modelled. This list shows all pop-ups regardless of whether they have subsequently been given a slot in a revision.

Figure 10: Pop-up Report

The *Pop-up Time* column shows the time the flight first appeared in the ADLs. The *TOD Minutes* column indicates whether the flight is currently in time out delay. The *Cancel-Status* column shows whether the flight has been cancelled. If a flight has multiple cancellation flags set, only one cancellation reason is displayed according to the following precedence: SX, FX, TO, DV, RS, DO. The *Subbed* column indicates whether the flight has ever been subbed by the airline via a SX message or simplified sub message.

> **Note: For airspace elements (i.e., FCAs) Entry time is used instead of ETA since ETA is not applicable to an airspace element. The Entry time is the time at which a flight enters an airspace element's boundaries.**

Sorting

By default CAMU Web sorts the flight lists displayed on the Pop-Up report by Pop-Up time. Click on any of the underlined column titles to re-sort the flight list by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Exclusions

CAMU Web does not display general aviation and military flights for airline users.

Usage

The pop-up report shows the unscheduled flights that have been filed since the initial GDP or AFP was executed. To see how many pop-ups have been filed since the last revision/extension, sort the pop-up list by pop-up time and look for flights whose pop-up time is later than the model time of the revision/extension.

Sort the pop-up flight list by ETA (for GDPs) or ENTRY (for AFPs) to determine if the excess demand for a particular time period is due to pop-up traffic.

Sort the Pop-Up Report by ACID to see which carriers are filing pop-up flights. By reviewing the Pop-Up Report on a consistent basis, it may be possible to identify trends such as whether a carrier tends to operate the pop-ups it files.

Review the TOD and Cancel Status columns for pop-up flights that are contributing to the "Rolling Spike Problem" by time out delaying or time out cancelling. If a large number of pop-ups are time out cancelling, this may indicate there is a problem with duplicate calls signs or that some other automation problem is occurring.

A-9. Time Out Delay Report

The Time Out Delay report lists all flights that are currently in time out delay (see Figure 11). By default, the Arrival report is displayed. To display the Departure report, click the **Time Out Delay (Departure)** link located below the report title.

Figure 11: Time Out Delay Report

The **Minutes in TOD** column displays the total number of minutes the flight has been in timeout delay. The **Cancel Status** column displays whether the flight is currently cancelled as well as the time at which it was cancelled. If a flight is reinstated it no longer appears as cancelled in this report.

> **Note: For airspace elements (i.e., FCAs) Entry time is used instead of ETA since ETA is not applicable to an airspace element. The Entry time is the time at which a flight enters an airspace element's boundaries.**
>
> **Note: When sorting by Entry Time for an airspace element (FCA), the Arrival Hour column header changes to Entry Hour.**

Sorting

By default CAMU Web sorts the report by ETA for GDPs and ENTRY for AFPs. Click on any of the underlined column titles to sort by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Exclusions

International flights are excluded from the time out delay flight list.

CAMU Web does not display general aviation and military flights for airline users.

Usage

Flights may timeout delay for a variety of reasons including delays at the departure aerodrome or airline delays. The AFT system timeout *delays* a flight if it has not departed within five minutes of its ETD. The system timeout *cancels* a flight after ten minutes if it does not have a Flight Plan ID from the flight data processing system, has not departed within 10 minutes of its current ETOT and no ATOT value has been set. The AFT system will also timeout cancel flights after they have been in timeout delay for 90 minutes.

Sort the flight list by ACID to see if a particular carrier has a large number of time-out delayed flights. Follow-up with the carrier may be necessary to determine if the carrier intends to operate a flight. A large number of timeout cancelled flights for a single carrier may indicate that there is a problem with duplicate call signs. Time out delayed flights may also indicate an airline is not providing current flight information regarding delays. By reviewing the TOD report on a consistent basis, it may be possible to identify airline or flight data quality problems.

A-10. Duplicate Flights Report

By default, the Arrival report is displayed (see Figure 12). To display the Departure report, click the **Duplicate Flights (Departure)** link located below the report title. The Duplicate Flights Report primarily identifies multiple occurrences of a flight that appear in AFT due to data processing errors, such as flight data mismatches. However, some shuttle flights may also be flagged as duplicates. The intent of this report is to alert users about flights shown in AFT that may not operate. This list might show two flights as duplicates even though they are both legitimate flights, such as the case with shuttle flights. CAMU Web identifies possible duplicates by looking for flights with the same or similar ACID, origin, destination, initial gate time of departure (IOBT), and ETA for GDPs, Entry for AFPs. The list is sorted by ACID.

> **Note: For airspace elements (i.e., FCAs) Entry time is used instead of ETA since ETA is not applicable to an airspace element. The Entry time is the time at which a flight enters an airspace element's boundaries.**

In addition to the existing logic to detect duplicate flights, the following criteria are used:

If two flights have the same ACID, ADEP, ADES, and IOBTs that are within 20 minutes of each other, consider the flights to be duplicates.

If a duplicate pair both has an ETA Prefix of A, remove the pair from the list.

If one of the flights in a duplicate pair is dropped from the arrivals data, do not add the duplicate pair to the list. If the flight was dropped after being added to the list, remove the duplicate pair from the list.

These changes were made to better identify "demand unlikely to materialize."

Figure 12: Duplicate Flights Report

Sorting

Click on any of the underlined column titles to sort by the selected column.

Accessing a Flight's History

Click on a call sign in the flight list to display all the flight data received through the ADLs for the flight selected.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

Usage

The Duplicate Flights Report allows the user to easily see demand that might not materialize. If it appears that one particular carrier has a large number of flights listed, it could mean that carrier is having a data problem. Like the Time Out Delay report, follow up with a carrier may be needed to determine if a flight is going to operate or not. Looking at the SLOT field allows you to see which flights are included in the program.

Exclusions

For airline users, general aviation and military flights are not displayed.

A-11. Unassigned Slots Report

The Unassigned Slots report displays the number of Unassigned Slots for each hour in 15-minute time bins and the total number of unassigned slots for each hour (see Figure 13).

Figure 13: Unassigned Slots Report

Sorting

You cannot sort data for the Unassigned Slots report.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

A-12. Events Report

All TMI actions executed through AFT are displayed on the Events page including GDP, AFP, compression, ground stops, and purges (see Figure 14). For each action taken, the Events Report displays the execution time followed by the event type and the start and end time for event. The Model Time and Reflect Time for all events also are displayed. The Model Time is the ADL time displayed in AFT when the event was modelled. The Reflect Time is the ADL time displayed in AFT when the new control times first appear in the data. Other parameters may also be listed depending on the event type.

Figure 14: Events Report

For distance-based TMIs several parameters are displayed. Definitions are provided in Table 2.

Table 2: Distanced Based TMI Parameters

Term	Definition
Exempt Distance	The distance specified in the GDP setup panel in nautical miles.
Exempt FIRs (ADEP/ADES)	Shows any FIRs that fall within the distance specified, that are exempted from departure delay.
Non Exempt FIRs (ADEP/ADES)	Shows the FIRs that fall outside of the distance, but are subject to departure delay.
Exempt Aerodromes (ADEP/ADES)	Displays the aerodromes that fall within the distance, but are exempted from departure delay.
Non Exempt Aerodromes (ADEP/ADES)	Shows the aerodromes that are subject to departure delay, that fall outside of the distance specified.
Aerodrome If	The flights departing from these aerodromes will not be exempted

Term	Definition
Distance	from departure delay if they fall within the distance range of the program.

Sorting

You cannot sort data in the Events report.

Viewing in Text Format

To view the report in text format, click the **Text Version** link that is located below the report title. Click your browser's back button to return to the report in GUI format.

A-13. Querying the Element Flight List

The Element Flight List feature allows you to query the CAMU Web database for a specific aerodrome or FCA. To access the query capabilities, complete the following steps:

Click the **Element Flight List** link in the *Reports Links* navigation bar found on the Home page or any page (see Figure 15) and the Element Flight List page is displayed.
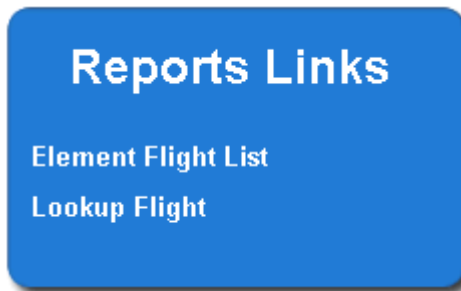
Figure 15: Element Flight List Link

Enter an aerodrome or FCA in the ***Please Enter the Aerodrome/FCA*** box. **If you enter an FCA, select the** *FCA* **checkbox.**

Click **Display Flights.** The slot list for the entered FCA or aerodrome is displayed (see Figure 16 and Figure 17).

Figure 16: Slot List for FCA Flight List Query

Figure 17: Slot List for Aerodrome Flight List Query

You can further filter which flights are displayed by clicking the ***Display*** dropdown menu.

The selected default is ***Arrivals & Departures***. Arrivals are flights with the ADES matching the Element name entered, and Departures are flights with the ADEP matching the Element name entered. All non-active, non-cancelled arrival and departure flights are displayed. After the ALDT or ATOT is received, the flight is identified as active and is removed from the flight list. ***Arrivals & Departures*** is not an option for FCAs.

If you select ***Arrivals***, all non-active, non-cancelled arrival flights are displayed. After the ALDT is received, the flight is identified as active and is removed from the flight list. ***Arrivals*** are the only option for FCAs.

If you select ***Departures***, all non-active, non-cancelled departure flights are displayed. After the ATOT is received, the flight is identified as active and is removed from the flight list. ***Departures*** is not an option for FCAs.

Displaying Tower View of Flight List

The **Tower View** checkbox filters the data that is displayed in the slot list. Tower View only applies to the ***Arrivals Only*** and ***Departures Only*** views. It does not apply to the ***Arrivals and Departures*** view.

For ***Arrivals Only*** flights, the Tower View displays the ACID, ADEP, ETA + Taxi In and ETA (see Figure 18).

Figure 18: Arrivals Only Tower View

For **Departures Only** flights, the Tower View displays the ACID, ADES, ETD-Taxi Out, ETD, and CTOT (see Figure 19).

Figure 19: Departures Only Tower View

Sorting

To sort the list, click any one of the table headers. For example, click **ACID** and the table is sorted in ascending order. Click **ACID** again, and the table is sorted in descending order.

Suspending Updates

The date and time of the most current update is displayed parenthetically after **[name of aerodrome/FCA] Flight List** heading. To prevent the screen from refreshing, select the **Suspend Updates** checkbox. The date and timestamp will remain the same and the data will not update until you unselect the **Suspend Updates** checkbox.

Displaying Rows

From the **Rows per page** dropdown menu, select **50**, **100**, or **150** to determine how many rows are displayed per page. The numeric links will display your selected range of 50, 100 or 150.

Use the **Rows:** line to navigate between the pages and rows. Click **first** to view the first page of rows, and click **last** to view the last page of rows. Click the numeric links, e.g., **51-100** to view rows 51 through 100.

Note that only five sequential page links are displayed between **<<first** and **last>>.** As you click the links, the row selection moves sideways.

A-14. Looking Up Flights

CAMU Web's Flight Lookup feature allows you to query the CAMU Web database for flight information (see Figure 20). To access the query capabilities click the **Lookup Flight** link in the *Reports Link* navigation bar. The query interface is shown in Figure 20.

Figure 20: Lookup Flight Interface

To view the flight history for a particular flight enter the flight's call sign in the *ACID* field. At a minimum, the ACID field must contain a value. The remaining flight fields are optional. Once the search criteria have been entered, click **Submit Search Terms**. If there is only one matching flight for the search criteria, CAMU Web displays that flight's Flight History report. If there are multiple matches, CAMU Web displays the query results table.

A multiple flight query may be generated by using an asterisk after the three-letter ID. For example, to query for all enter the carrier's 3-letter abbreviation and an asterisk (see Figure 21). Then click **Submit Search Terms**.

Figure 21: Multiple Flight Lookup

CAMU Web returns a list of flights (see Figure 22). For airline users, general aviation and military flights are not displayed. Click on the flight's ACID to view the ADL records received for a particular flight.

Figure 22: Multiple Flight Lookup Results

The Flight History is colour-coded to highlight changes in a flight's control times identified by CAMU Web (see Figure 23). Flight records are sorted in ascending order by ADL time. The "Flight in Other Elements" field shows if the current flight is also part of another element's data set; click the element name to view the Flight History report with that element's ADL data for the flight.

Figure 23: Flight History for a Flight Controlled by a GDP Program

Table 3 describes the colour scheme and what each colour represents. The colouring is applied when an ADL update includes a change to a flight's CTOT or CLDT. To view a definition of each data field, position the mouse pointer over the column header and a description will pop-up.

Table 3: CAMU Web Flight History Color Scheme

Color	Description
Brown	CTOT/CLDT changed due to an AFT event (AFP, GDP, Compression, Ground Stop).
Cyan	CTOT/CLDT changed to an airline substitution or SCS
Dark Gray	Flight is no longer listed in the ADL. If this is the last line in the Flight History Report, the flight was dropped due to flight data system issues. If there is a gray line followed by another line, then the flight temporarily dropped out of the ADL and returned in a later ADL. Note: This does not apply to flights that drop out in the first ADL of each hour due to the ADL time roll over.

The flight history for a flight on a prior day may also be viewed by ATNS users. To do so, select the "**Get past day**" checkbox and enter the date of interest (see Figure 24). For prior day lookups, you must enter the destination.

Note: Airline users do not have access to historical flight lookups.

Figure 24: Flight Lookup Past Days
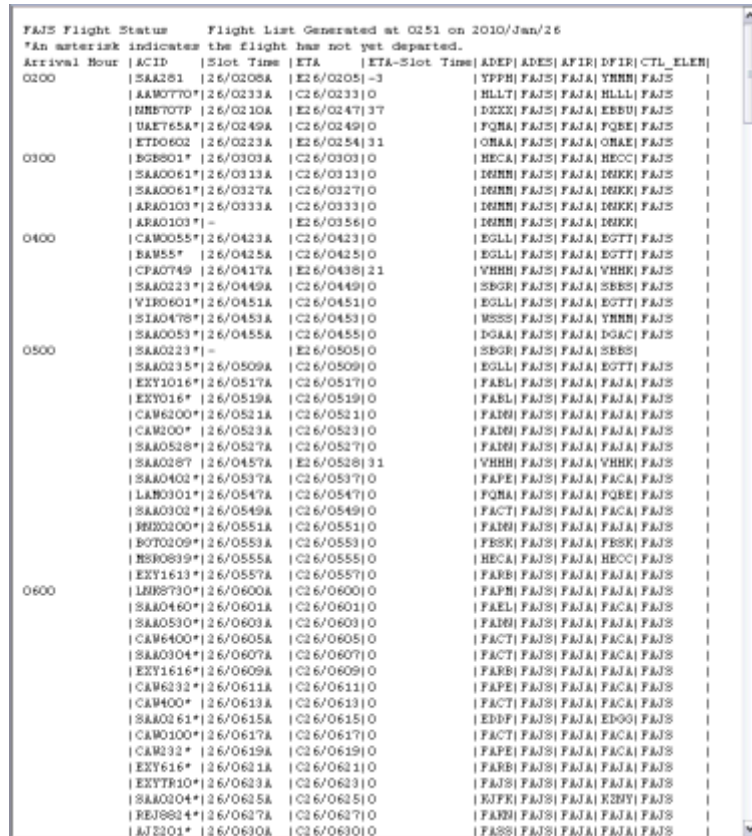
A-15. Copying, Saving, and Printing a CAMU Web Report

It is easiest to copy, save, or print a report when using a text version of the report.

Creating a Text Version of a Report

To generate a text version, select the **Text Version** link below the report title. A text version of the report is displayed (see Figure 25).

Figure 25: Text Version of Compliance Report

To Copy and Paste the text report

From the browser *Edit* menu click <u>**Select All**</u> or alternatively use the shortcut keys **CTL-A**. To highlight a portion of the report, left click and drag to highlight the section you want to copy.

Right click the selection.

Select <u>**Edit → Copy**</u>.

Paste the copied text into a log or any other document.

To Save the text report

From the browser, select <u>**File → Save As**</u>.

Enter a file name.

Select the location where you want to save the file.

For the *Save As Type,* select "**Text File (*.txt)**".

Click **Save**.

ENHANCED ATFM OPERATOR'S MANUAL

To Print the text report

From the browser, select **File → Print**.

Select the printer.

Click **OK**.

> **Note: If you try to print a flight history the browser will only print a single page width. To print all columns of the flight history you will need to save it as a text file and print from another application such as Notepad, Word, or Excel.**

A-16. Delegating/Undelegating Control

The CAMU Operator can delegate control to the Aerodrome Operator role. The delegation will permit the Aerodrome Operator to swap flights until such time that the control is undelegated. Note that the ability to delegate/undelegate will not be transferred to the delegated user.

The Aerodrome Operator can perform substitutions only on aerodromes for which both the Aerodrome Operator and CAMU Operator have permissions. For example, if the CAMU Operator has permissions for FAJS, FACT and FADN and Aerodrome Operator has viewing rights to FADN and FAPE, the delegation only allows the Aerodrome Operator substitution permissions to FADN.

Figure 26: CAMU Operator's Delegate Button

To delegate control, complete the following steps:

Click the **Delegate** button located on the orange navigation bar (see Figure 26). The Delegate button will toggle to Undelegate and the word "delegate" will be added to the end of the Username in the navigation bar (see Figure 27).

Figure 27: Navigation Bar After Control has Been Delegated

Click **Undelegate** to regain control from the Aerodrome Operator.

A-17. Substitution

The Substitution page is the main page where you may suspend flight, swap flight slots, and update flights' ELTOT, ELLDT, and AC_REG. Click the **Substitutions** link in the ***Reports Links*** navigation bar to access the Substitution page (see Figure 28).

Figure 28: Substitution Page

Updating the Data

To refresh the page with the most current data, click the **Update Data** button. Note that there may be a time lapse between when you click **Submit** and when your updates are reflected.

For example, if you swap some flights, click **Submit**, and click **Update Data**, your changes may not be reflected as they are still being processed. The parenthetical sentence next to the **Update Data** button will indicate how long it could take for the changes to be reflected.

Displaying Rows

From the ***Rows per page*** dropdown menu, select *50*, *100*, or *150* to determine how many rows are displayed per page. The numeric links will display your selected range of 50, 100 or 150.

Use the ***Rows:*** line to navigate between the pages and rows. Click ***first*** to view the first page of rows, and click ***last*** to view the last page of rows. Click the numeric links, e.g., **51-100** to view rows 51 through 100.

Note that only five sequential page links are displayed between ***<<first*** and ***last>>.*** As you click the links, the row selection moves sideways.

Suspending Flights

Suspended flights do not retain ownership of the suspended slot. A suspended flight's SLOT will be returned to the Unassigned Slot pool. Once a flight is suspended, the associated SLOT is then available for any flight to swap into or for a pop-up flight.

To suspend flights, complete the following steps:

Select the Flight to be suspended.

Click the **Suspend Flight** button. The flight will be displayed in the Suspended Flights List at the bottom of the CAMU Web Substitution page (see Figure 29).

Click the **Submit** button to save your suspension. Upon a successful suspension, a message is displayed, e.g., Suspension of Flight BAW42 Succeeded.

Suspended Flights List

ACID	ADEP	ADES	Type	IOBT	ETD	CTOT	ETA	IIBT	EET	ELTOT	ELLDT	AC_REG	Major
BAW42	FACT	EGLL	Departure	26/2020	26/2045		27/0819	27/0815	11:34:00				BAW
RNX0103	FAJS	FACT	Arrival	26/0725	26/0907		26/1057	26/0935	01:50:00				RNX
CAW0042	FACT	EGLL	Departure	26/2020	26/2043		27/0748	27/0746	11:05:00				CAW
ZSKKC	FASD	FACT	Arrival	26/1000	26/1135		26/1219	26/1106	00:44:00				Other
REJ664	FAKN	FACT	Arrival	26/1115	26/1321		26/1541	26/1355	02:20:00				SAA
HMB611	FACT	FYOG	Departure	26/0720	26/1051		26/1221	26/0900	01:30:00			TBN	HMB
CAW0103	FAJS	FACT	Arrival	26/1000	26/1139		26/1323	26/1210	01:44:00				CAW
VALERIE	FAPE	FACT	Arrival	26/1240	26/1423		26/1517	26/1355	00:54:00				Other
SAA6831	FAJS	FACT	Arrival	26/2215	26/2242		27/0031	26/0030	01:49:00				SAA
IVAN	FAPE	FACT	Arrival	26/1328	26/1525		26/1619	26/1443	00:54:00				Other
EXY1721	FACT	FYWB	Departure	26/0815	26/0843		26/1048	26/1041	02:05:00				SAA
SFR0911	FAJS	FACT	Arrival	26/2133	26/2155		26/2347	26/2345	01:52:00				SFR
REJ663	FACT	FAKN	Departure	26/0800	26/1131		26/1353	26/1035	02:22:00				SAA
CAW0139	FAJS	FACT	Arrival	26/1120	26/1257		26/1443	26/1330	01:46:00				CAW

Figure 29: Suspended Flights Displayed in the Suspended Flights List

Swapping Slots

Swapping can only occur with flights of similar type; you cannot swap between departures and arrivals. Suspended flights may not be used in swapping.

To swap flights, complete the following steps:

Select a slot be swapped.

Select the second slot to be swapped.

Click the **Swap** button.

Click the **Submit** button to send the swap. A message indicating a successful swap will be displayed, e.g., "Substitution of Flight AFR282 to Slot 09/2021 and AFR284 to Slot 09/2019 Succeeded."

> **Note: Clicking Update Data does not submit your swap. If you click Update Data before clicking Submit, the flights will not be swapped.**

Updating ELTOT and ELLDT

Updating an ELTOT or ELLDT ensures that during a Revision or Compression, the flight is not moved up to a time that it cannot achieve. These times are the earliest times the flight can make.

To update ELTOT or ELLDT complete the following steps:

Double-click in the **ELTOT** or **ELLDT** cell to make edits. A calendar popup window is displayed (see Figure 30).
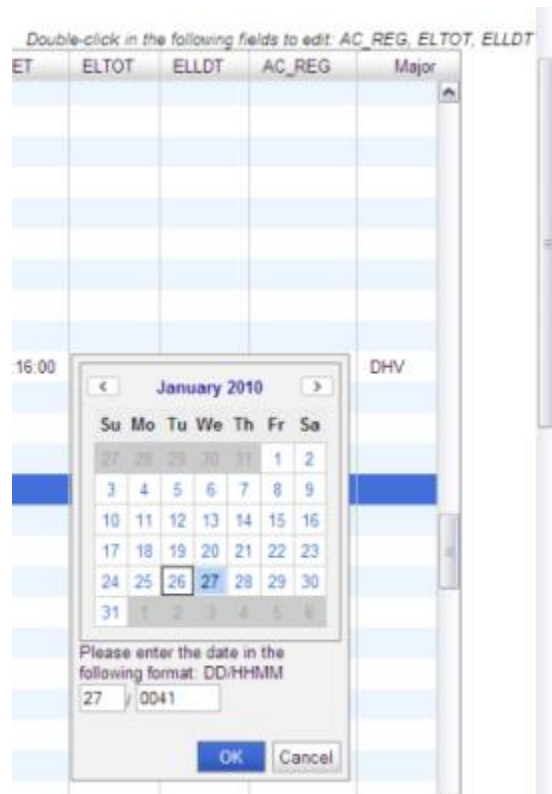
Figure 30: Popup Calendar to Edit ELTOT, ELLDT, or AC_REG

Enter the date and time in the following format: DD/HHMM.

Click **OK**. The slot is updated with the new values.

Updating AC_REG

Users can enter a flight's registration number via the CAMU Web substitution interface.

To update AC_REG complete the following steps:

Double-click in the **AC_REG** cell to make edits. A pop-up text box is displayed (see Figure 31).
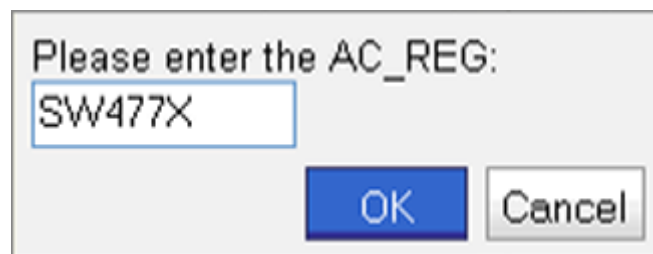
Figure 31: Edit AC_REG Field

Enter the aircraft registration number.

Click **OK**.

Click **Update Data**. The flight's **AC_REG** cell is updated with the new value. Note that you may have to click **Update Data** more than once (after 27 seconds) to view the update.

Appendix A: Questions and Answers

Why does the number of slots not equal the requested Program Rate?

This number of slots may not equal the program rate for several reasons:

Non-Compliant Flights: Flights which have already arrived will not be included in a revision, even if the slot time assigned to the flight falls within the revision time period. Furthermore, AFT does not look to see if slot times that fall within the revision time period were previously assigned to a flight that is not included in the revision. Therefore, it is possible that a slot time may be associated with multiple flights. The end result is that the number of slots for a particular hour can exceed the program rate for an hour. To illustrate, consider a flight with a slot time of 2130 with a 60-minute en-route time. The flight was assigned a CTOT of 2030 but departed an hour early at 1930 and arrived at 2030. A revision is run at 2045 with a start time of 2045. Because the flight has already arrived it is not included in the revision and will keep the 2130 slot time assigned to it. Assuming the program rate was 30 RBS++ creates 30 slots for the 2100 hour and creates a new 2130 slot, which is assigned to another flight. Now two flights have a 2130 slot time. Even though AFT allocated 30 slots in the revision, 31 slots now exist for the 2100 hour.

EDCT Updates: An EDCT update changes the flight's slot time; therefore if the slot is moved to a different hour the number of slots will no longer equal the requested program rate.

Ground Stops: Issuance of an AFT ground stop assigns all flights a CTOT equal to the ground stop end time + 1 minute. The affected flights slot times will also be updated to the new CTOT + EET. This may dramatically redistribute slots.

Schedule Composition: Occasionally, AFT will not allocate as many slots as requested if it cannot assign any flights to an available slot due to the schedule composition. This should very rarely occur - typically this only happens when the demand does not exceed the program rate by very much.

Flights Are Dropped: Occasionally, flights get dropped from the ADL due to processing errors. The number of slots will be reduced by one for each controlled flight that has been dropped.

Appendix B: CAMU Web Users Roles

User Role Options

Select one of the following roles (see Table 4 for specific privileges):

> CAMU Administrator (camuadmin)
> CAMU Operator (camuoper)
> Aircraft Operator (aircraftoper)
> Aerodrome Operator (dromeoper)
> Aerodrome Observer (Read-only access) (dromeobs)

Aerodromes

> Enter the aerodromes that the user has access

Majors

> Enter the majors that the user has access

Table 4: Role Privileges

Role	Privileges
CAMU Operator (Superuser)	View all flights and slots for a particular controlling element. Modify flight data, swap slots between any two flights, or suspend any flight. Swap any open slots. Suspend a flight. Delegate control to the Aerodrome Operator role.
Aircraft Operator	View own flights and slots for a particular controlling element. Swap slots between two of its original flights, or suspend any of their flights. If the airline is affiliated with a specific MAJOR, then the AO will be able to modify the MAJOR's flight plus any sub-carrier flights associated with that MAJOR. Swap their carrier's current slot for an open slot based on their own schedule. Cancel or suspend a flight.
Aerodrome Operator	View all controlled flights arriving at/departing from their associated aerodrome. Perform all the actions of a CAMU Operator on their flights, except the ability to delegate control to another

Role	Privileges
	user, when the CAMU Operator has delegated control to the Aerodrome Operator. The Aerodrome Operator will not be able to delegate control in any way. This ability to delegate and un-delegate only resides with the CAMU Operator. CANNOT modify flight information when the CAMU Operator has re-taken control of traffic management. Once the CAMU Operator has re-taken control, the Aerodrome Operator's permissions will revert to their original setting. Perform substitutions only on aerodromes that both the Aerodrome Operator and CAMU Operator have permissions for.
Aerodrome Observer	View all controlled flights arriving at / departing from their associated aerodrome.

Appendix C: Acronyms

AC_REG .... Aircraft Registration

ACID .... Aircraft Identifier

ADEP .... Departure Airport

ADES .... Destination Airport

ADL.................... Aggregate Demand List

AFIR .... Arrival FIR

AFP.................... Airspace Flow Program

AFT.................... Airport Flow Tool

ALDT .... Actual Landing Time

ATNS .... Air Traffic and Navigational Services

ATOT .... Actual Take-Off Time

CAMU .... Central Airspace Management Unit

CDM .... Collaborative Decision Making

CLDT .... Controlled Landing Time

COMP .... Compression

CTL_ELEM .... Control Element

CTL_Type .... Control Type

CTOT................. Calculated Take Off Time

DFIR .... Departure FIR

EDCT................. Estimated Departure Clearance Time

EET.................... Estimated En Route Time

ELLDT .... Earliest Airline Landing Time

ELTOT .... Earliest Airline Take-Off Time

ETA.................... Estimated Time of Arrival

ETD .... Estimated Time of Departure

FCA .... Flow Constrained Area

FIR..................... Flight Information Region

GAAP................. General Aviation Airport Program

GDP................... Ground Delay Program

GS .... Ground Stop

GUI .... Graphical User Interface

IIBT .... Initial In-Block Time

IOBT .... Initial Off-Block Time

POBT................. Planned Off-Block Time

RBS .... Ration By Schedule

SIBT.................... Scheduled In-Block Time

SOBT................. Scheduled Off-Block Time

TMI .... Traffic Management Initiative

TOD .... Time Out Delay

UTC .... Coordinated Universal Time

Appendix D: Warning and Error Messages

Warnings

Warnings		
Identifier	**Message**	**Description**
WARN006	FLIGHT NOT FOUND.	Flight does not exist. The message was ignored.
WARN007	FLIGHT ALREADY SUSPENDED.	Flight identified in message has already been canceled in a prior to the message.

Packet Header Errors

Packet Header Errors		
Identifier	**Message**	**Description**
ERR401	PACKET NOT PROCESSED.	The packet has not been processed due to internal GDG error.
ERR402	PACKET ID IS MISSING. USE LLLDDDDDDDDDD.DD	The packet header line does not include a packet ID.
ERR403	INVALID PACKET ID. USE LLLDDDDDDDDDD.DD	The packet ID does not match the specified syntax.
ERR404	NO MESSAGES IN PACKET.	The packet contains no messages type.
ERR405	UNKNOWN PACKET CODE. USE FD OR SS.	The packet contains a code other than FD in the header line.
ERR406	PACKET CODE LINE MISSING. USE FD LLLDDDDDDDDDD.DD	The packet has no header line.
ERR407	UNKNOWN HUB SITE ARINC ADDRESS. USE QU BOSCDYA.	The packet was sent to the wrong address.
ERR409	MESSAGE NOT PROCESSED DUE TO + ETMS_NAME + INTERNAL ERROR.	An error occurred while attempting to update the GDG Flight Database (FDB).
ERR410	INVALID EN ROUTE TIME.	En Route Time may not exceed 18 hours.

Message Validation Errors

Message Validation Errors		
Identifier	**Message**	**Description**
ERR101	FLIGHT HAS BEEN COMPLETED.	Cannot modify data fields other than the actual departure and arrival times after a flight has been completed.

ENHANCED ATFM OPERATOR'S MANUAL

	Message Validation Errors	
Identifier	**Message**	**Description**
ERR104	CANNOT MODIFY ASSIGNED ARRIVAL SLOT.	Cannot modify the assigned arrival slot.
ERR108	FLIGHT NOT FOUND. PROVIDE AIRCRAFT TYPE TO CREATE.	The flight does not already exist. GDG would have created it if aircraft type had been provided on the FM.
ERR110	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR111	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR112	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR113	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR114	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR115	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR116	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR117	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR203	FLIGHT HAS BEEN COMPLETED.	Can't cancel a flight that has already flown.
ERR204	FLIGHT IS ACTIVE.	Can't cancel a flight that is already in the air.
ERR205	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR206	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR207	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR208	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.

Message Validation Errors		
Identifier	**Message**	**Description**
ERR209	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR210	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR211	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR212	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR213	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR214	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR215	FOUND SCHEDULED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR216	FOUND SCHEDULED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR217	FOUND CANCELLED FLIGHT WITH OTHER DEPARTURE AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected
ERR218	FOUND CANCELLED FLIGHT WITH OTHER ARRIVAL AIRPORT.	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR302	UNKNOWN FORMAT FOR FLIGHT ID.	The flight ID field does not match the specified syntax.
ERR303	UNKNOWN FORMAT FOR AIRPORT.	An airport field does not match the specified syntax.
ERR304	UNKNOWN FORMAT FOR DEPARTURE AIRPORT.	The departure airport field does not match the specified syntax.
ERR305	UNKNOWN FORMAT FOR ARRIVAL AIRPORT.	The arrival airport field does not match the specified syntax.
ERR306	UNKNOWN AIRPORT.	The specified airport does not exist in the GDG airport database.
ERR307	FLIGHT ID/DEPARTURE/ARRIVAL AIRPORT MISSING.	One of the first three required fields is missing (cannot tell which one from syntax).

Message Validation Errors		
Identifier	**Message**	**Description**
ERR308	UTC DEPARTURE DATE/TIME MISSING.	The required field UTC Departure Date/Time is missing.
ERR309	INVALID UTC DEPARTURE DATE/TIME.	The UTC Departure Date/Time contains an illegal value (e.g., a month greater than 12)
ERR310	UNKNOWN FORMAT FOR UTC DEPARTURE DATE/TIME.	The UTC Departure Date/Time field does not match the specified syntax.
ERR311	AIRCRAFT TYPE MISSING.	An aircraft type field was not provided.
ERR312	RUNWAY DEPARTURE TIME MISSING.	A runway arrival time was provided without a runway departure time. These fields must be provided in pairs.
ERR313	RUNWAY ARRIVAL TIME MISSING.	A runway departure time was provided without a runway arrival time. These fields must be provided in pairs.
ERR314	GATE DEPARTURE TIME MISSING.	A gate arrival time was provided without a gate departure time. These fields must be provided in pairs.
ERR315	GATE ARRIVAL TIME MISSING.	A gate departure time was provided without a gate arrival time. These fields must be provided in pairs.
ERR317	INVALID TIME. USE DDHHMM.	A time field contains an illegal value (e.g., date greater than 31).
ERR318	DEPARTURE TIME LATER THAN ARRIVAL TIME.	A departure time cannot be later than an arrival time in a matched pair of times (e.g., gate times).
ERR319	DEPARTURE TIME EQUAL TO ARRIVAL TIME.	A departure time cannot be equal to an arrival time in a matched pair of times (e.g., gate times).
ERR321	DEPARTURE DATE TOO FAR IN FUTURE.	The departure date is more than 1 day in the future (this limit is temporary until future flights are processed.
ERR322	ARRIVAL TIME IN PAST.	Cannot create a flight arriving in the past.
ERR323	FIELD SPECIFIED MULTIPLE TIMES.	A field has been defined more than once.
ERR324	INVALID FORMAT FOR AIRCRAFT TYPE.	The aircraft type field does not match the specified syntax.
ERR325	UNKNOWN AIRCRAFT TYPE.	The specified aircraft type does not exist in the GDG database.
ERR326	FLIGHT ID TOO LONG. USE MAX 8 CHARS.	The Flight ID has more than 8 characters.

Message Validation Errors		
Identifier	Message	Description
ERR327	LINE CONTINUATION CHARACTER MUST BE LAST FIELD.	The line continuation character must be the last field in a message. It must also stand apart from other fields.
ERR398	INVALID CHARACTER.	An unrecognizable character was received in an FC, FM, or FX message.
ERR399	UNKNOWN SYNTAX ERROR.	A totally unrecognizable message was received.

ENHANCED ATFM OPERATOR'S MANUAL

Simplified Substitution Errors

Identifier	Message	Description
Simplified Substitution Errors		
ERR 412	ILLEGAL HOLD FLAG VALUE: USE R OR H.	Valid values for Hold Flag are H to hold slot or R to release slot.
ERR 413	NOT AUTHORIZED TO SUB FOR THESE FLIGHTS.	At least one flight in this packet belongs to a carrier for which the sender is not authorized to make substitutions at this airport. Sender must be authorized to submit substitutions for all flights referenced in an SS packet.
ERR414	CANNOT CANCEL A NON-CONTROLLED FLIGHT.	An FX message submitted in an SS packet must pertain to a controlled flight. A non-controlled flight may only be cancelled in an FD packet. The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR416	CTA NOT WITHIN 20-MINUTE WINDOW.	CTA must be no earlier than the slot time for the flight's assigned slot, and no more than 20 minutes later than the slot time.
ERR417	CANNOT SUB INTO SLOT NOT OWNED BY THIS CARRIER.	The FM message references a slot that does not currently belong to the sending airline or one of its authorized affiliates.
ERR418	CANNOT SUB TWO FLIGHTS IN ONE SLOT.	Packet contains FM messages that assign more than one flight to the same slot. Only one flight may be assigned to a slot.
ERR419	CANNOT SUB ONE FLIGHT IN TWO SLOTS.	Packet contains FM messages that assign a flight to more than one slot. A flight may be assigned to only one slot.
ERR420	CANNOT SUB A NON-CONTROLLED FLIGHT.	Cannot use an FM message to assign a flight to a slot if the flight does not already have a slot assignment. This message is generated if the flight referenced in an FM does not exist in the GDG flight database, or if it exists but is not currently controlled. The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR421	CANNOT CONTROL FLIGHT SCHEDULED TO ARRIVE DURING GDP.	An SC message can be used to create a slot and assign it to a flight only if the flight is scheduled to arrive after the GDP end time is over.
ERR422	SLOT NOT OWNED BY FLIGHT IN THIS PACKET.	In order to preserve the one-flight-one-slot rule, every slot that is assigned in an SS packet must be assigned to another flight in that packet prior to the packet being processed.
ERR423	CANNOT SUB INTO SLOT OCCUPIED BY FORMER POPUP FLIGHT.	Flight cannot be assigned to an earlier slot if the flight currently assigned to that slot was formerly a popup.

Simplified Substitution Errors		
Identifier	**Message**	**Description**
ERR424	AIRPORT NOT CONTROLLED.	A HOLD ALL SLOTS or RELEASE ALL SLOTS message was received for an airport that does not currently have a GDP.
ERR425	CANNOT CHANGE HOLD FLAG FOR NON-CONTROLLED FLIGHT.	Cannot modify hold flag for flight that does not have an assigned slot in a GDP. The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR426	CANNOT SUB POP-UP FLIGHT.	Cannot assign a popup flight to a slot. Only compression may assign a popup to a slot, after which the flight is referred to as a former popup.
ERR427	CONTROL INFO MISSING. SPECIFY: DEP.TIME, ARR.TIME, AND SLOT.	CTD, CTA, and ASLOT fields are required in an FM message submitted in an SS packet.
ERR428	SLOT TIME CANNOT BE IN THE PAST.	A flight cannot be assigned to a slot whose slot time is earlier than the current time.
ERR429	CANNOT SUB COMPLETED FLIGHT.	Cannot modify slot assignment for a completed flight.
ERR430	CANNOT SUB MULTIPLE AIRPORTS.	All messages in an SS packet must pertain to flights arriving at the same airport.
ERR432	SC CAN BE SENT ONLY IN SS PACKET.	Slots cannot be created in an FD packet. An SC message may only be submitted in an SS packet.
ERR433	CANNOT CREATE SLOT FOR CONTROLLED FLIGHT.	Flight referenced in SC message is already controlled. Cannot use SC message to create a slot and assign a flight to the newly created slot if the flight already has an assigned slot or an FA Delay.
ERR434	SLOT ALREADY EXISTS.	The slot value provided in SC message already exists. A newly created slot must have a unique slot identifier. An airline can generally create a unique identifier by changing the suffix letter in the slot name.
ERR435	CANNOT USE SIMPLE SUB MSG AFTER OLD STYLE SUB MSG.	Until transition to Simplified Substitution messages is complete, airlines may submit substitutions using either the new SS messages or the old SI messages. However, once an airline has submitted an SI message, it must continue to use SI messages for the remainder of that GDP.
ERR436	SLOT IN SC MSG CANNOT BE DURING CURRENT GDP.	Slot time for newly created slot falls in the current GDP timeframe. For an airline to create a slot, the slot time portion of the Assigned Arrival Slot field in the SC message must specify a time that is after the GDP is over.

Simplified Substitution Errors		
Identifier	**Message**	**Description**
ERR437	ETE CANNOT BE CHANGED BY MORE THAN 50%.	The new ETE, derived by subtracting CTD from CTA, cannot change from the prior ETE by more than 45 minutes or 50% of the prior ETE, whichever is greater.
ERR438	SUB PROCESSING IS OFF.	Command Center is currently not accepting substitution messages pertaining to this GDP. GDG sends an GDG SUBS ON message when it resumes accepting substitution messages.

Appendix E: Revision History

Version	Date	Updates	Updated By	Approved By
1.0	7/26/2007	Updated for ATNS	AMW	John Suh
2.0	1/28/2010	Updated for ATNS	JS Sullivan	John Suh
2.1	2/12/2010	Added Warning Error and Messages Appendix	JS Sullivan	John Suh
2.2	3/12/2010	Updated Accessing Reports, Element Flight List, and Substitution sections	JS Sullivan	John Suh