Unlocking winning partnerships

Air Traffic Flow Management (ATFM) Tool Brief

Objectives:

1. To understand the purpose of the Airport Flow Tool (AFT)
2. To understand the purpose of the Central Airspace Management Unit Web Interface (CAMU Web)

Airport Flow Tool (AFT)

What is it?

AFT is a pre-tactical advanced decision support tool used to monitor system demand and capacity, and implement traffic management initiatives to efficiently resolve imbalances within the South African Airspace. AFT provides CAMU with a common situational awareness through the use of Airport Demand List (ADL) data, a traffic schedule comprised of a combination of OAG schedule, IATA airport slots and flight data processor data. AFT presents graphical and timeline presentation of aerodrome and airspace demand and capacity information, and contains powerful utilities for ground delay management and analysis allowing CAMU air traffic flow specialists to react quickly to airspace constraints.

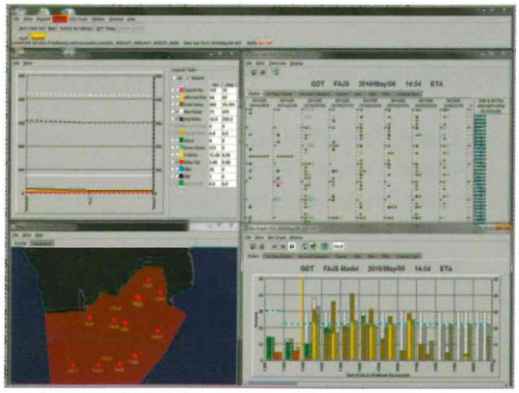
How do the CAMU Air Traffic Flow Specialists use AFT for Traffic Management Decision Making?

- **Monitor** aerodromes and Flow Constrained Areas (FCA) by viewing existing demand and constraints at those elements.
- **Model** the impacts of potential traffic management initiatives (TMIs) including Ground Delay Programs (GDPs), Airspace Flow Programs (AFPs) and Ground Stops (GS) to help decide which initiative is the best solution to the current constraints.
- **Implement** TMIs once a decision is made to reflect the changes in the ADL.

What are Airport Slot Management, Ground Stops, Ground Delay Programs and Airspace Flow Programs?

Airport Slot Management is used to pre-tactically balance the demand and capacity at an aerodrome. When an imbalance exists at an aerodrome, each arrival to and each departure from the aerodrome requires a slot. A TMI is deployed through AFT to issue arrival and departure slots when needed. These slots are issued in the form of a Calculated Take-Off Time (CTOT). Currently, FAJS, FACT and FALE are subject to daily Airport Slot Management Programs 24 hours a day, 7 days a week.

- Ground Stops (GS) may be declared at an aerodrome when adverse conditions or major ATC outages cause demand to exceed capacity to such a degree that gridlock occurs at an aerodrome.
- Ground Delay Programs (GDP) may be instituted to delay the flights on the ground due to capacity constraints at the arrival or departure aerodromes and avoid excessive airborne holding or re-routings.
- Airspace Flow Programs (AFP) may be instituted for an airspace constraint. When an AFP is declared, the area subject to the program will be identified by a Flow Constrained Area (FCA).



Screenshot of AFT, being used by the CAMU Operators.

What are Calculated Take Off Times (CTOT) and what can Towers and Aircraft Operators do with them?

AFT identifies constraints in either the en route environment identified by an FCA or at an individual aerodrome, and generates ADLs, which is a real-time list of flights that are filed into the FCA or aerodrome. The CAMU uses AFPs, GDPs and GS to manage the demand of traffic into these areas, and then distributes Calculated Take Off Times (CTOT) for the affected flights to balance the demand with the capacity. CTOTs are based upon arrival or departure slots. For arrivals slots, filed en route times are subtracted from the arrival slot to generate the CTOT.

CTOTs account for standard taxi times and placed in an achievable departure order. AFT's algorithms determine CTOT prioritization using airports slots as a baseline with the other flights being allocated the remaining slots. Aircraft Operators (AOs) must arrange their departure flights to comply with the CTOT issued (equates to "wheels up" time). A slot window is available to ATC Tower to optimise the departure sequence. This is not for use by AOs who should plan an EOBT consistent with the CTOT issued.

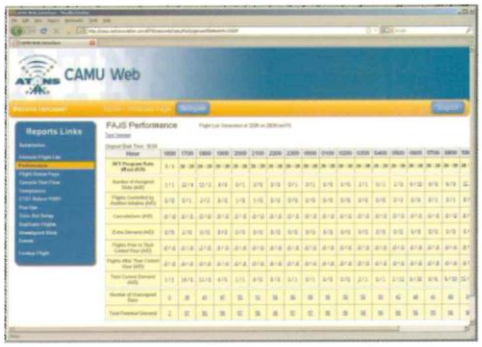
Once a TMI is issued, and when a flight is included (CTOT issued), the Towers can use the CAMU Web to view the CTOTs. Aircraft Operators can use the CAMU Web to view and modify their "slots" to manage daily operations once the TMI is issued. Compliance with the CTOT is important because it allows system-wide demand to be managed in an FCA or in a GDP. Depending on the severity of the constraint leading to the TMI, delay may be incurred for individual flights.

Central Airspace Management Unit (CAMU) Web

What is it?

CAMU Web is a web-based analysis and tactical slot management tool. The primary purpose of CAMU Web is to:

- Display current TMIs and associated parameters.
- Assess the performance of Ground Stops (GS), Ground Delay Programs (GDP) and Airspace Flow Programs (AFP) in real-time.
- Provide tactical slot management capabilities through Substitutions.



Screenshot of the CAMU Web interface

Who uses the software?

CAMU:

- View all flights and slots
- Swap and Cancel/Suspend all flights and slots

Tower Operators:

- View all flights and CTOTs

Aircraft Operators:

- View own flight data
- Swap ATFM slots between two of its own flights
- Cancel/Suspend a flight
- Reinstate suspended flights

What is a substitution and how does it work?

Managing slots effectively to ensure that no capacity is wasted is an important element in ATNS's ATFM system. Flight Substitutions is the way in which Aircraft Operators manage their slots. Through the Substitutions interface of CAMU Web, users are able to:

- Suspend cancelled flights from their slots, which will free up that slot for use by another flight.
- Assign a new slot if the current assigned slot is unachievable, or too far in the future.
- Swap slots between two flights.

For more information regarding the use of CAMU Web to manage slots, visit http://www.atns.co.za/atfm

METRON AVIATION

ATNS

Compliance Alarm Flags

CC	These flights violated their CLDT Compliance. Flights arriving more than 5 minutes before or more than 5 minutes after their Control Landing Time (CLDT)
EC	These flights violated their CTOT Compliance. The departure boundaries are more than 5 minutes before or more than 5 minutes after their estimated departure clearance time (EDCT). Any flight, which has an ATOT of 5 minutes earlier or 5 minutes later than the most recent EDCT, appears in the CTOT Compliance report.
EA	These flights violated the Actual EET vs. Original EET alarm. GDG generates this Alarm when the difference between the EET estimated by GDG and actual flight time is greater than a specified value, but the flight status is not "cancelled." The default value is 15 minutes. GDG estimates EET using OCLDT - OTOT. GDG calculates actual flight time using ALDT -ATOT.
SF	This alarm detects the cancellation of a false flight used to ignite a substitution stream. Flights submitted as FX cancellations with no corresponding entries in the OAG trigger the Spurious Flights Alarm.
CF	This alarm detects any flights that were cancelled but later flew without the flight being reinstated properly.