

ABU DHABI INTERNATIONAL AIRPORT

Airport Collaborative Decision Making Manual

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ABU DHABI INTERNATIONAL AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) MANUAL

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Purpose and Format of the Manual

This manual will document A-CDM related procedures and Abu Dhabi airport partner's responsibilities.

This document will be updated subject to change following testing and validation of new processes.

Acronyms

Acronym	Description	Definition and/or Explanation
ACARS	Aircraft Communications Addressing and Reporting System	
ADEP	Aerodrome of Departure	
ADES	Aerodrome of Destination	
AFTN	Aeronautical Fixed Telecommunication Network	
AGHT	Actual Ground Handling Time	The total duration of the ground handling of the aircraft. Metric ACGT – AEGT
AIBT	Actual In-Block Time	The time that an aircraft arrives in-blocks. (Equivalent to Airline/Handler ATA –Actual Time of Arrival, ACARS = IN).
ALDT	Actual Landing Time	The time that an aircraft lands on a runway. (Equivalent to ATC ATA – Actual Time of Arrival = landing, ACARS=ON).
ANSP	Air Navigation Service Provider	An organization responsible for management of flight traffic on behalf of a company, region or country.
AO	Aircraft Operator	A person, organization or enterprise engaged in or offering to engage in an aircraft operation. (ICAO Doc 4444, Chapter 1)
AOBT	Actual Off-Block Time	Time the aircraft pushes back / vacates the parking position. (Equivalent to Airline / Handlers ATD – Actual Time of Departure & ACARS=OUT)
AOC	Airlines Operator's Committee	The committee of airline representatives on an airport
AOCC	Airport Operation Control Centre	The airport centralized operation center
AODB	Airport Operations Data Base	Airport Operations Data Base with integrated A-CDM Platform
ARDT	Actual Ready Time (for Movement)	When the aircraft is ready for start-up/push back or taxi immediately after clearance delivery, meeting the requirements set by the TOBT definition.
ARV	Arrival	Inbound flight
ASAT	Actual Start- Up Approval Time	Time that an aircraft receives its start-up approval. Note: the moment the start-up approval is given can be in advance of the TSAT
ASBT	Actual Start Boarding Time	Time passengers are entering the bridge or bus to the aircraft
A-SMGCS	Advanced Surface Movement Guidance and Control System	System at airports having a surveillance infrastructure consisting of a Non-Cooperative Surveillance (e.g. SMR, Microwave Sensors, Optical Sensors etc) and Cooperative Surveillance (e.g. Multi-lateration systems)
ASRT	Actual Start Up Request Time	Time the pilot requests start up clearance. According to Abu Dhabi procedure, the pilot requests start up clearance at TOBT +/- 2 minutes, when the aircraft is ready. Because ASRT = ARDT we prefer to use ARDT in Abu Dhabi.
ATC	Air Traffic Control	Service provided by ground-based controllers who direct aircraft on the ground and in the air. This to separate, organise and expedite the flow of air traffic.
ATFM	Air Traffic Flow Management	A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that air traffic control capacity is utilized to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate air traffic services authority. (ICAO Annex 11, Chapter 1)
ATOT	Actual Take Off Time	The time that an aircraft takes off from the runway. (Equivalent to ATC ATD–Actual Time of Departure, ACARS = OFF).
ATTT	Actual Turn-round Time	Metric AOBT – AIBT
AXIT	Actual Taxi-In Time	Metric AIBT – ALDT
AXOT	Actual Taxi-Out Time	Metric ATOT – AOBT
CHG	Modification Message	Standard message sent to ATFM to change flight plan data

Acronym	Description	Definition and/or Explanation
CNL	Flight Plan Cancellation	Standard message sent to ATFM to cancel flight plan
CTOT	Calculated Take Off Time	A time calculated as a result of tactical slot allocation, at which a flight is expected to become airborne
DCL	Data link Departure Clearance	Aircraft start-up clearances communicated via Data link
DEP	Departure	Outbound flight
DLA	Delay message	Standard message sent to ATFM to delay flight plan
DMAN	Departure Manager	DMAN is a planning system to improve the departure flows at an airport by calculating the Target Take Off Time (TTOT) and Target Start up Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account.
EET	Estimated Elapsed Time	The estimated time required to proceed from one significant point to another (ICAO)
EIBT	Estimated In-Block Time	The estimated time that an aircraft will arrive in-blocks. (Equivalent to Airline/Handler ETA –Estimated Time of Arrival).
ELDT	Estimated Landing Time	The estimated time that an aircraft will touchdown on the runway. (Equivalent to ATC ETA –Estimated Time of Arrival = landing).
EOBT	Estimated Off-Block Time	The estimated time at which the aircraft will start movement associated with departure (ICAO).
ETOT	Estimated Take Off Time	The estimated take off time taking into account the EOBT plus EXOT.
ETTT	Estimated Turn-round Time	The time estimated by the AO/GH on the day of operation to turn-round a flight taking into account the operational constraints
EXIT	Estimated Taxi-In Time	The estimated taxi time between landing and in-block
EXOT	Estimated Taxi-Out Time	The estimated taxi time between off-block and take off. This estimate includes any delay buffer time at the holding point prior to take off.
FIDS	Flight Information Display System	
FPL	Filed Flight Plan	ICAO derived Flight Plan
GH	Ground Handler	Company responsible for handling of aircraft during turn-round at the airport.
ICAO	International Civil Aviation Organization	
MBTT	Minimum Boarding Time	Time specified by Aircraft Operator to board passengers per aircraft type and/or destination
MS	Milestone	
MTTT	Minimum Turn-round Time	The minimum turn-round time agreed with an AO/GH for a specified flight or aircraft type.
MVT	Movement message	Standardised IATA format message, sent via SITA to destination airport, AO and other recipients, containing departure data of a flight
RWY	Runway	
SIBT	Scheduled In-Block Time	The time that an aircraft is scheduled to arrive at its parking position.
SID	Standard Instrument Departure	Published flight procedures followed by aircraft on an IFR flight plan immediately after take-off from an airport.
SITA	SITA (commercial name)	Airline teletype system to send messages. And commercial name for the provider of the AODB system
SOBT	Scheduled Off-Block Time	The time that an aircraft is scheduled to depart from its parking position.
STAR	Standard Arrival Route	
STTT	Scheduled Turn-round Time	Metric SOBT – SIBT
SZC	Sheikh Zayed Air Navigation Center	Area Control Centre under authority of the General Civil Aviation Authority (GCAA)
TOBT	Target Off-Blocks Time	The time that an Aircraft Operator or Ground Handler estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle available and ready to start up / push back immediately upon reception of clearance from the TWR.

Acronym	Description	Definition and/or Explanation
TSAT	Target Start Up Approval Time	The time provided by ATC taking into account TOBT, CTOT and/or the traffic situation that an aircraft can expect start up / push back approval (when start up and push back are issued together). Note: The actual start up approval (ASAT) can be given in advance of TSAT
TTOT	Target Take Off Time	The Target Take Off Time taking into account the TOBT/TSAT plus the EXOT. Each TTOT on one runway is separated from other TTOT or TLDT to represent vortex and/or SID separation between aircraft.
TWR	Aerodrome Control Tower	
VTT	Variable Taxi Time	Common name for inbound (EXIT) and outbound (EXOT) Taxi Times.

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1. Introduction

Abu Dhabi Airport Company (ADAC) in partnership with Etihad Airways are steering the implementation of Airport Collaborative Decision Making (A-CDM) to optimize the use of the airport infrastructure and enhance operational efficiency. For the implementation of A-CDM, all airport partners need to be proactively engaged: this includes air traffic control (ATC), ADAC, Etihad Airways, Etihad Airways Services – Ground and all other airlines. The main objective is sharing of operational data in a transparent way, including earlier decision making capabilities, and the creation of a ‘no blame’ working environment. The communication between airport partners is critical to the success of the project, which encompasses both airside and landside activities. Immigration, police and customs services are integral to Abu Dhabi Airport achieving improved passenger satisfaction with minimal delay. These service providers are also essential to achieving the benefits associated with the implementation of A-CDM.

Abu Dhabi International Airport (ADIA) is setting a benchmark in the Middle East with the implementation of A-CDM. ADAC is listening to the needs of the various airport partners to ensure a win-win situation for all, with the main objective being to satisfy demand versus available capacity without jeopardizing safety or increasing delay. To ensure that ADIA remains an attractive global hub, it is imperative for the whole airport community to continuously explore initiatives that will enhance airport capacity and improve operational efficiency. A-CDM, amongst other excellent initiatives currently underway, will deliver these vision goals to the satisfaction of the airport community and most importantly to the passengers flying through ADIA.

The decision making by the Airport CDM Partners is facilitated by the sharing of accurate and timely information and by adapted procedures, mechanisms and tools. For this Abu Dhabi A-CDM has been built with the following elements:

- Information Sharing
- Milestone Approach
- Variable Taxi Time
- Pre-departure Sequencing
- Adverse Conditions
- Collaborative Management of Flight Updates

1.1 Information Sharing

The foundation of A-CDM is to create a joint picture for arrivals and departures and for all partners to have early access to the same accurate and timely information. This requires the linking of inbound and outbound flights, to create a continual operational process for each and every flight, from arrival through turn-round to departure. All partners have easy access to the most accurate data at the right time through the Airport Operations Data Base (AODB). The A-CDM portal within the AODB will enable management and decision making based on agreed quality data. A dynamic map from the Advance Surface Guidance Control and Monitoring System (ASMGCS) of the airport will show the operational situation in real time.

Accurate arrival information will enable the Airport Management Centre (AMC) to better monitor and prepare to receive the aircraft into the stands. Accurate arrival estimates are the basis for defining more predictable departure estimates, especially for those flights with short turn-around. ATC will have timely access to airport information concerning arrivals, such as stand allocation. Ground Handlers can better allocate their resources by getting good prediction of in-block time and real-time information of stand allocation. The Etihad Hub Control Centre (HCC) can anticipate potential arrival holding delays in their aircraft, crew and passenger planning. Police, immigrations and security can optimize their resource planning in order to process the passenger flows.

Sharing progress of the turnaround process and estimating target readiness and potential delays will enable Air Traffic Control (ATC) to plan the push back sequence and the take-off sequence. In the same time airport can manage their resources such as stands and gates more efficiently.

1.2 The Turn-round Process & Milestone Approach

The Milestone Approach focuses on:

- A set of selected milestones along the progress of the flight (final approach, landing, taxi-in, turn-round, taxi-out and departure). The progress of a flight process is tracked in the Airport CDM Platform (AODB) by a continuous sequence of flights events known as milestones, and rules for updating information downstream. Different Airport CDM partners can be responsible for different milestones, with the aim of integrating all of the milestones into a common seamless process for the flight.
- Time efficiency performance, which is measured for each milestone or between two milestones.

A-CDM at ADIA is based on the Eurocontrol milestones¹ depicted on the following figure.

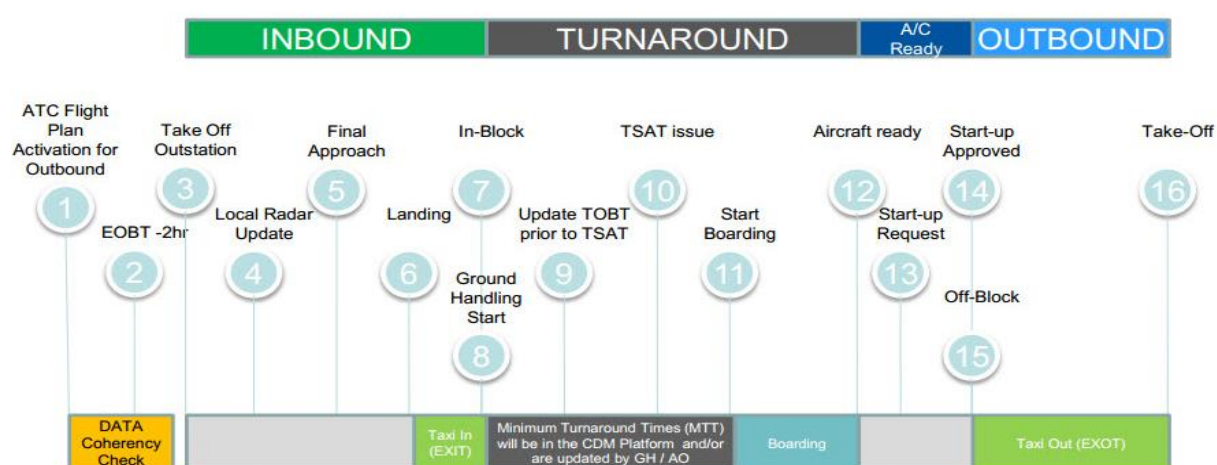


Figure 1: A-CDM Milestones

Timely shared information on milestone progress is important to improve predictability and efficiency. More specifically, based on improved arrival data, the ground handler and airline will predict the readiness of the aircraft for push back (see section Target off Block Time (TOBT)).

¹ The Manual, Airport CDM Implementation. V5.0, 31st March 2017. Eurocontrol

Based on these TOBT's, ATC can affect an earlier plan for the optimal order in which aircraft depart from the stands (see Pre-departure Sequence Target start-up approval time (TSAT)) which is based upon "best planned best served". This dynamic mechanism between accurate TOBT's serves as the baseline for accurate TSAT's planning is the core of Airport CDM.

1.2.1 Target off Block Time (TOBT)

The time that Ground Handlers and Airlines estimate that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle available and ready to start up / push back immediately upon reception of clearance from the Tower.

The Target off Block Time (TOBT) is the most important time identified in the turnaround process. This value is essential for the calculation of Target Start-up Approval time (TSAT) and the sequencing of aircraft for take-off on the runway.

Before the aircraft turnaround (achieved by tracking the milestones for this arrival), an estimation of the TOBT can be done automatically by the AODB. This prediction of the readiness of the aircraft for pushback will be shared with all the partners in the AODB/platform. Ground Handlers or Airlines must ensure the TOBT is updated when the time differs by more than 5 minutes from the previous TOBT.

As the TOBT will be used to calculate the target start-up approval time (TSAT), airlines need to be responsible for a timely, accurate and stable TOBT update in order to get a quality TSAT from the Pre-Departure Sequence planner.

The coordination process between airlines and ground handlers shall be in place to guarantee all that are responsible, contribute to identifying possible TOBT changes and updating the AODB accordingly.

In Abu Dhabi it has been agreed that certain working positions will be updating TOBT. See Table 2: List of Working Positions.

1.2.2 Pre-departure Sequence

The pre-departure sequence is the order that aircraft are planned to depart from their stands (push off-blocks)

In most airports today, the principle of "first come first served" is applied. This results in many aircraft being pushed back in a non-optimal way. This can result in congested aprons, taxiways and Runway holding points and fuel spent and other environmental issues.

Pre-departure sequencing supports Air Traffic Control (ATC) by managing the Target Off-Block Times (TOBTs) obtained from the turnaround process in a way that flights can depart from their stands in an optimal order. Based on aircraft progress by using the TOBT, as well as the operational traffic situation on the aprons, taxiways and near runways, DMAN will provide a TSAT that places each aircraft in an efficient pre-departure sequence (off-blocks). However, ATC has the ability to modify the sequence as required for operational reasons.

A Departure Manager tool assists ATC by calculating the optimal sequence and pushback order to optimize movements on the airfield surface. All partners have greater transparency on the operational situation regarding the position of departing flights, enabling them to rapidly respond to operational issues by making decisions that are driven by accurate and current information. Ground Handlers will be able to position their resources, such as push back vehicles, more efficiently as they will know exactly when the flights will be granted pushback clearance. The Stand and Gate management process will be more efficient as conflicts will be detected earlier. This will result in less last minute stand changes and holding on an already congested airport platform. ATC will be able to regulate the queue at the holding points (this can lead to a reduction in emissions and fuel wastage), plan push back sequence in order to reduce congestion on aprons and taxiways and maximise the runway throughput.

Pre-departure sequencing is an essential A-CDM Element for optimizing the use of the airport infrastructure by implementing 'Best-Planned-Best-Served' methodology.

1.2.3 Target start-up approval time (TSAT)

The time provided by ATC, taking into account TOBT and/or the local traffic situation and possible CTOT's, that an aircraft can expect start-up / push back approval.

Without A-CDM and TOBT's, ATC will plan departures based on estimated off block times (EOBT) coming from the filed flight plans. With no additional information from the actual readiness status of the aircraft, ATC can only plan the use of taxiways and runways based on static information which is non optimal.

In an A-CDM airport the dynamic mechanism between accurate TOBT's serving as the baseline for accurate TSAT planning is the core of Airport CDM.

1.2.4 Departure Manager Tool or DMAN

DMAN is a planning system to improve departure flows at airports by calculating the Target Take Off Time (TTOT) and Target Start-up Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account. (EUROCONTROL Definition)

By providing a planning function (i.e. DMAN) ATC can deliver a stable plan of traffic from stand to take off. By planning the departure flow the principle of best-planned best-served will be applied. This will lead to operational efficiency gains, reduced emissions, quicker recovery from adverse conditions and an improved runway utilisation.

1.2.5 TTOT and the TSAT by DMAN

Algorithm of TTOT and the TSAT calculation by DMAN will be detailed later once the DMAN is awarded. TSAT freezing will also be explained (i.e. capability to prevent TSAT improvement).

1.3 Variable Taxi Time

Variable Taxi Time (VTTT) is the estimated time that an aircraft spends taxiing between its parking stand and the runway or vice versa. Variable taxi time is the generic name for both inbound and outbound taxi time parameters, used for calculation of target take off time (TTOT) and target start-up approval time (TSAT).

In the A-CDM environment calculating and distributing to the Airport CDM partners accurate

estimates of taxi-in and taxi-out times improves the estimates of in-block and take off times.

- the Estimated In-Block Time (EIBT)
- the Estimated and Target Take Off Time (ETOT and TTOT)

At complex airports the layout of runways and parking stands can result in many differences in taxi time for both arriving and departing traffic.

The duration of the taxi time is calculated to the required accuracy, based on general and location-specific rules.

The most common parameters affecting taxi times include:

- Airport layout and infrastructure
- Runway(s) in use (including the distance of the taxi holding positions from the runway)
- Number of runway crossings required
- Aircraft parking stand location
- Meteorological conditions
- Aircraft type and operator
- Aircraft weight
- Push back approval delivery time
- Traffic density
- Local operating procedures

1.3.1 Variable Taxi-In Time

This is the estimated taxi time between landing and in-block.

Inbound taxi time (EXIT) includes runway occupancy and ground movement time.

For arriving flights an estimated taxi-In time (EXIT), added to the Estimated or Actual Landing Time (ELDT / ALDT) will provide a more accurate EIBT. Enhanced EIBT accuracy will benefit stand and gate management, automated calculation of TOBT and resource management.

1.3.2 Variable Taxi-Out time

This is the estimated taxi time between off-block (start of push back) and take-off (wheels off the ground).

Outbound taxi time (EXOT) includes push back & start-up time, ground movement and runway holding times. To maximize the runway throughput, pressure needs to be maintained by a number of aircraft ready at the holding point for departure. This allows ATC to fine tune the RWY sequence with a good mix of aircraft types and varying departure exit points.

An estimated taxi out time (EXOT) added to the target off blocks time (TOBT) or Target Start up Approval Time (TSAT) will provide a more accurate ETOT or TTOT.

At Abu Dhabi Airport, the VTTT will be revised quarterly to re-assess the A-CDM parameters in order to increase the accuracy.

2. The Abu Dhabi Milestones

2.1 Objective and Scope

Significant further improvements can be achieved by implementing the Milestone Approach for the turn-round process. Here, the progress of a flight process is tracked in the AODB by a continuous sequence of flights events known as milestones, and rules for updating information downstream. Different Airport CDM partners can be responsible for different milestones, with the aim of integrating all of the milestones into a common seamless process for the flight. Arrival flights will be linked to departure flights, based on Aircraft Registration, to have a continuous progress of arrival, turnaround and departure.

The main objective of the Milestone Approach is to further improve the common situational awareness of all partners when the flight is in the inbound and turn-round flight phases. More specifically, the objectives are to:

- Determine the significant events or A-CDM milestones to track the progress of flights
- Define information updates, alerts, notifications and triggers
- Ensure linkage between arriving and departing flights
- Enable early decision making whenever there are disruptions to an event

Timely shared information is paramount to enable each partner to react in time to update their milestones in real-time. Improvements in predictability and efficiency can be obtained by the action of each partner and thereafter by sharing between partners.

Once a flight has been activated in the AODB, upon the receipt of the ATC Flight Plan, several default values for this flight are added based on generic and local rules e.g. stand & gate, variable taxi times, flight plan data such as registration & type and the Estimated Off-Block Time (EOBT). Aircraft Operators and Ground Handlers can review and update certain default values in order to improve the quality of the prediction.

2.2 Overview of Abu Dhabi A-CDM Milestones

The table below summarizes the Milestones that will be used in Abu Dhabi Airport.

Milestone	Milestone is triggered by	Purpose of the Milestone
MS1 ATC Flight Plan Activated	The Airline sending the flight plan to ATC	To start the automated TOBT calculation process by setting TOBT = EOBT To check the data consistency between Airport Slot and Airline's flight plan data (aircraft registration and aircraft type) To generate alert if abnormality occurs
MS2 EOBT – 2 Hour	EOBT- 2 hours	To calculate the EIBT based on ELDT + EXIT = EIBT To update automatic calculated TOBT with EIBT + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS3 Take-off from	Take-off from out-station To calculate	To update automatic calculated TOBT with EIBT + MTTT if greater or equal than EOBT

Outstation	the EIBT based on ELDT + EXIT = EIBT	To check the consistency between TOBT vs EOBT To generate alerts if abnormality occurs
MS4 Local Radar Update	ELDT updates from Local Radar System	To calculate the EIBT based on ELDT + EXIT = EIBT To update automatic calculated TOBT with EIBT + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS5 Final Approach	ELDT updates from Local Radar	To calculate the EIBT based on ELDT + EXIT = EIBT system To update automatic calculated TOBT with EIBT + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS6 Aircraft landed	Aircraft Landing	To calculate the EIBT based on ALDT + EXIT = EIBT To update automatic calculated TOBT with EIBT + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS7 Aircraft In-Blocks	Aircraft arriving at stand	To update automatic calculated TOBT with AIBT + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS8 Ground Handling Starts	Start of ground handling	To check if ground handling has started for flights with day-, night- or technical stop To update automatic calculated TOBT with ACGH + MTTT if greater or equal than EOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS9 TOBT update prior to TSAT	At TOBT minus 40 minutes the automated TOBT needs to be validated for TSAT calculation	To validate feasibility of automatic calculated TOBT To check the consistency between TOBT vs EOBT To generate alert if abnormality occurs
MS10 TSAT Issue	At TOBT minus 40 minutes the TSAT will be published	To allow decision making based on TOBT and TSAT values
MS11 Boarding Starts	Boarding starts, input from the gate	To check if boarding has started as expected To verify feasibility TOBT based on assessment of boarding To generate alert if abnormality occurs
MS12 Aircraft Ready	Indication that aircraft is meeting TOBT definition requirements	To measure aircraft readiness against the TOBT To generate alert if abnormality occurs
MS13 Start Up Request	Start-up request	To check if start-up has been requested in line with TOBT To generate alert if abnormality occurs
MS14 Start Up Approved	The call from ATC to pilot to give clearance to push and start	To indicate to ATC all processes are going according to plan To generate alert if abnormality occurs
MS15 Off Block	The Actual Off Block Time (AOBT)	To check if the aircraft has gone off blocks as per TSAT To generate alert if abnormality occurs

MS16 Take Off	The take-off or wheels off the runway, aircraft airborne	To end the Abu Dhabi A-CDM process To generate alert if abnormality occurs
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Table 1: List of Milestones

2.3 Overview of Abu Dhabi A-CDM partner's working positions

With the roles and functions of the Airport Partners varying the table below gives an indication of the various partners, internal departments and department functional positions. The milestones and associated actions and discrepancy solving may result in different partner's actions and may vary from internal department functions. Where possible the A-CDM partner position should be identified in each milestone below.

A-CDM Partner	Department	Working Position	WP Id
Airport Operator	Airport Management Centre	Controller Live (Tactical)	AMC1
		Controller Planning (Pre-tactical)	AMC2
		Traffic Officer	AMC3
		AOCC Senior Officer	AMC4
		Senior Scheduling Officer / Scheduling Coordinator	AMC5
		Apron Control	AMC6
		BHS Senior Officer	AMC7
		BHS Controller	AMC8
		BHS Agent	AMC9
Airline Operator	Etihad Network Operation Centre NOC	Flight Dispatcher	NOC1
		Network Controller	NOC2
	Etihad Hub Control Centre HCC	Hub Control Duty Manager	HCC1
		Hub Controller	HCC2
		Aircraft Dispatch Duty Manager	HCC3
		Aircraft Dispatcher	HCC4
	Guest Services	Guest Services Agent	GS1
	Other Airlines	Station Managers	OA1
Air Traffic control	ATC GAL ANS	Clearance Delivery	ATC1
		GMC	ATC2
		Supervisor	ATC3
ACC	Sheikh Zayed Centre	Supervisor	ACC1
Ground Handler	EASG: Etihad Airways (and other	Ground Handler	GH1

Table 2: List of Working Positions

3. A-CDM at ADIA

3.1 Milestone 1 (MS1) – ATC Flight Plan Activation at EOBT-3 Hours

3.1.1 New Terminology for MS1

Terminology	Definition and description	Responsibility
EOBT	Estimated Off Block Time filed in flight plan	Airline
SIBT	Schedule In Block Time in Airport slot data	Airport
SOBT	Schedule Off Block Time in Airport slot data	Airport
STD	Schedule Time of Departure for passengers	Airline
TOBT	Target Off-Block Time	Airline / Ground Handler

Table 3: New Terms for Milestone 1

3.1.2 Introduction

As a slot coordinated airport (level 2), Abu Dhabi Airport requires each flight to operate as close as possible to the Scheduled Off Block Time (SOBT). Airlines have to file the ATC flight plan with the Estimated Off Block time (EOBT). Without A-CDM, the timings can be different on the day of operation and can give a distorted picture of the actual traffic demand for the runway.

Similarly, in order to ensure the accuracy of stand and gate planning, the airport needs to know the accurate information of aircraft type, aircraft registration and flight destination which is submitted in the flight plan.

3.1.3 Triggered by

The first activation of ATC flight plan at EOBT-3 hours, or, new or late submissions of ATC flight plan after EOBT-3 hours, after cancellation or revised EOBT.

3.1.4 A-CDM status

The A-CDM status is updated to “**FPL**”.

3.1.5 Process

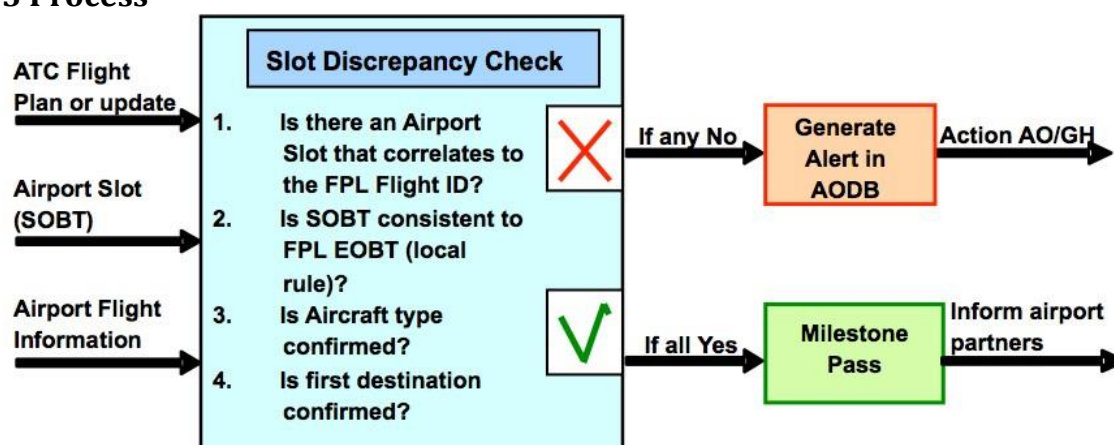


Figure 2: Milestone 1

3.1.6 Procedure

To check consistency between ATC Flight Plan and Airport slot data. The information to be checked includes EOBT and SOBT, aircraft registration, aircraft type and first destination data. Alerts will be generated in the AODB for further action or attention if there is any discrepancy identified. The airport and airline may need to either confirm or resolve the discrepancy. The intended outcome is for each Stakeholder to have the same flight information in order to guarantee accurate planning is achievable.

3.1.7 AODB functionality

1. The AODB initializes the TOBT as per SOBT.
2. The AODB will compare the data in flight plan and the airport slot data, and generate the below alerts:
 - **[CDM01]** “No airport slot available or slot already correlated”
 - **[CDM13]** “No ATC Flight plan available”
 - **[CDM03]** “Aircraft type discrepancy”
 - **[CDM04]** “Aircraft registration discrepancy”
 - **[CDM05]** “First destination discrepancy”
 - **[CDM08]** “Discrepancy of EOBT and TOBT”

3.1.8 Role of Airline and Ground Handler:

1. The Airlines have to ensure that the ATC flight plan (at SOBT-3 hours) matches the first destination (DEST), Aircraft Registration (REG) and Aircraft type (TYP) provided into A-CDM Platform. Airlines will either resolve the discrepancy by updating the flight plan or inform Airport Management Centre to confirm the discrepancy.
2. When no flight plan is filed for a flight with an airport slot, an alert (cf. **[CDM13]**) will be generated by the A-CDM platform to alert the airline to file a flight plan or confirm the cancellation of the flight.
3. When multiple flight plans are filed for one single flight known to operate under one SOBT, the airline will be alerted by the A-CDM platform to cancel the non-operating flight plan

3.1.9 Role of Airport Management Centre

1. When no Airport slot SOBT can be matched to an operational EOBT in the flight plan, the AODB will raise an alert **[CDM01]** to investigate this possible ad-hoc flight. Airport Management Centre will need to manually create the flight into AODB if the additional flight is confirmed by airline or ground handler
2. If there is any discrepancy of aircraft type, aircraft registration and first destination between Flight plan and Airport Slot data, Airport Management Centre can consult the Airline about the discrepancy

3.2 Milestone 2 (MS2) – EOBT -2 hours

3.2.1 New Terminology in MS2

Terminology	Definition and description	Responsibility
CTOT	Calculated Take-Off Time	SZC
ELDT	Estimated Landing Time	Airline
EXIT	Estimated Taxi In Time	ADAC
EIBT	Estimated In-Block Time	ADAC
MTTT	Minimum Turnaround Time	Airline / Ground Handler

Table 4: New Terms for Milestone 2

3.2.2 Introduction

At this moment, EOBT minus 2 hours, we are interested in the following:

- Arrival estimate updates (EIBT) which will have created system calculated TOBT, or updates of it, or
- Manual TOBT update, and or
- Calculated Take-off Time (CTOT). At EOBT-2 hours it will be known if flights are regulated or not. All regulated flights receive a CTOT from SZC. E.g. if your flight has a very delayed CTOT, you can make commercial decision to delay TOBT.

3.2.3 Triggered by

A time stamp, at EOBT-2hr

3.2.4 A-CDM status

The A-CDM status is unchanged (previous status is “FPL”).

3.2.5 Process

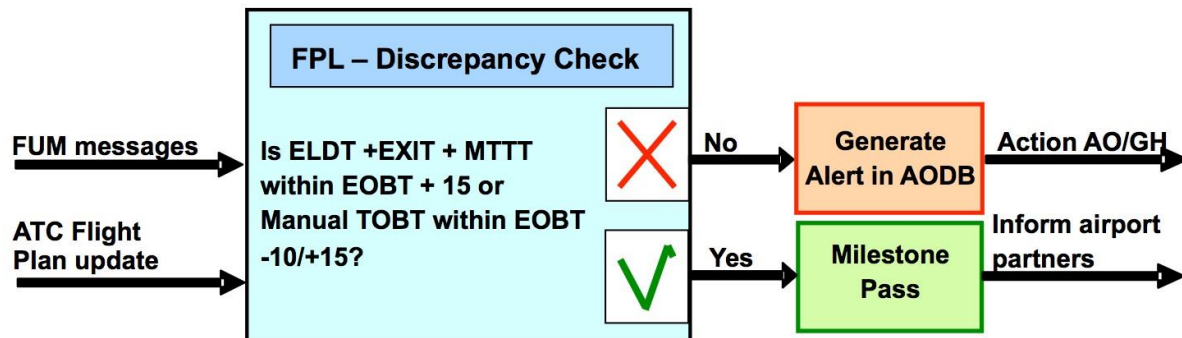


Figure 2: Milestone 2

3.2.6 Procedure

- To check (before or after take-off from outstation) whether AO/GH flight estimates are consistent with the Flight Plan EOBT.
- This check shall be performed to verify feasibility of the flight plan EOBT at EOBT-2 hrs.
- Calculation basis for the TOBT shall take into account EIBT+MTTT.
- In the case of manual input of TOBT, this estimate will override the EIBT+MTTT estimate.
- MS3 can take place before MS2 in the case of a flight that has departed from outstation before EOBT – 2 hrs.
- Late ATC flight plans shall pass the checks on MS1 and MS2, before commencing to further milestones.

3.2.7 AODB functionality

1. AODB will calculate TOBT, if not already done, or manual input received, and compare it with Flight Plan EOBT.
2. AODB will alert if the calculated TOBT is not in the window EOBT -13/+15 minutes and generate the alert: **[CDM08]** "Discrepancy of EOBT and TOBT".
3. Manual input of TOBT will be the top priority and override any other updates.

3.2.8 Role of Airline and Ground Handler:

1. The Airline has to ensure that latest updated ATC flight plan is available to the ATC system, where it will be correlated to the automated TOBT.
2. The Airline will have to resolve the discrepancy between TOBT and EOBT if it is more than -13/+15 minutes.
3. The Airline has to make sure that any known arrival estimate for the inbound flight is reflected in an update of the TOBT for the outbound flight (make sure that ELDT information is shared in the AODB, or TOBT updated in AODB).

3.3 Milestone 3 (MS3) – Take-off from Outstation

3.3.1 Introduction

Not all flights arrive or depart as per schedule. This results in inefficient use of airport stands and gates, as the buffer time between any two allocations has to be reserved to reduce the impact of the variability of the flight time.

Any deviation of flight time from schedule, both for arrival and departure flights needs to be shared in the A-CDM platform as early as possible, so that the stand and gate allocation in Abu Dhabi can be reviewed and adjusted on real time basis. In addition, it is beneficial to the ground handlers, as the early influx of information enables a timely adjustment of resource planning.

Take-off from outstation is the starting point of tracking the flight. When aircraft takes off at outstation, an airborne SITA movement message will be sent to Abu Dhabi (to airline, airport and/or ground handling) together with a first estimation of Estimated Landing Time (ELDT).

3.3.2 Triggered by

Take off from outstation (ATOT from outstation sent by SITA MVT message or ACARS OUT /OFF and received in AODB – and via the Airlines Aircraft Management System).

3.3.3 A-CDM Status

The A-CDM status is updated to “**AIR**”.

3.3.4 Process

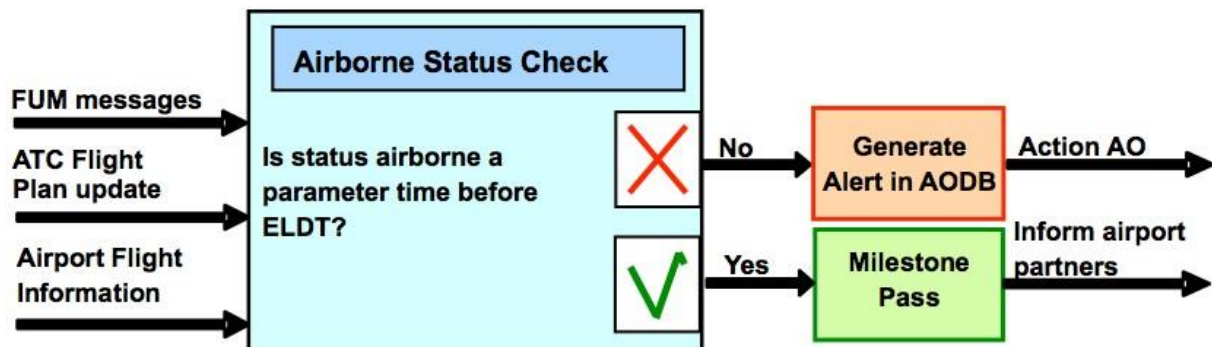


Figure 3: Milestone 3

3.3.5 Procedure

- To calculate EIBT for arrival flight and check if there is any potential gate conflict
- To calculate automated TOBT
- To check whether TOBT is consistent with ATC Flight Plan EOBT

3.3.6 AODB functionality

1. AODB will update ELDT and EIBT ($EIBT = ELDT + EXIT$).
2. AODB will alert if EIBT of the arrival conflicts with TSAT / TOBT / EOBT / SOBT of the preceding flight occupying the same stand: **[CDM31]** “Stand/Gate conflict”.
3. AODB will calculate the TOBT and compare it with Flight Plan EOBT.
4. If the calculated TOBT is more than EOBT + 15 minutes, AODB will generate the alert **[CDM08]** “Discrepancy of EOBT and TOBT”.
5. Manual input of TOBT will be the top priority and override any other updates.
6. The AODB generates the alert **[CDM06]**: “Status is not airborne at ELDT – 10 minutes”. A delay in airborne status does not stop downstream A-CDM process, but it will provide an early indication of a potential problem.

3.3.7 Role of Airline and Ground Handler

1. The Airline has to ensure that latest updated ATC flight plan is available to the ATC system, where it will be correlated to the automated TOBT.
2. The Airline will have to resolve the discrepancy by updating the flight plan or updating the TOBT, if TOBT is more than EOBT + 15 minutes or less than EOBT -13 minutes.
3. The airline has to make sure that any known arrival estimate for the inbound flight is reflected in an update of the TOBT for the outbound flight (make sure that ELDT information is shared in the AODB, or TOBT manual update in AODB).

3.3.8 Role of AMC

1. When a gate/stand conflict occurs, AOCC needs to assess and resolve the potential gate/stand conflict.

3.4 Milestone 4 (MS4) – Local Radar update

3.4.1 Introduction

When the arriving aircraft enters UAE Flight Information Region (FIR), more accurate updates of ELDT from local radar system will be available.

The accurate update of ELDT will improve the downstream activities e.g. the stand and gate allocation in Abu Dhabi can be reviewed and corrected on real time basis in case of conflict, preparation of ground handling resources, decisions for connecting passengers and others.

3.4.2 Triggered by

Detection of the flight by radar in either FIR or TMA.

3.4.3 A-CDM Status

The A-CDM status updated to “**FIR**” as soon as the flight is detected in local FIR.

The A-CDM status updated to “**TMA**” as soon as the flight is detected in local TMA.

3.4.4 Process

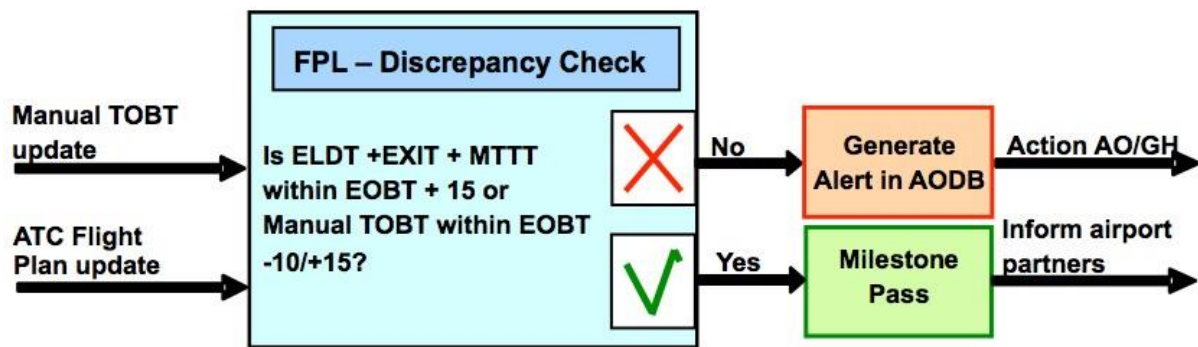


Figure 4: Milestone 4

3.4.5 Procedure

- To calculate automated TOBT.
- To check whether TOBT is consistent with ATC Flight Plan EOBT.
- To calculate EIBT for arrival flight and check if there is any potential gate conflict.

3.4.6 AODB functionality

1. AODB will update ELDT and EIBT ($EIBT = ELDT + EXIT$).
2. AODB will alert if EIBT of the arrival conflicts with TSAT of the preceding flight occupying the same stand. If no TSAT is available yet, the system considers the TOBT of preceding flight: **[CDM31]** “Stand/Gate conflict”.
3. AODB will calculate TOBT and compare TOBT with Flight Plan EOBT
4. If the calculated TOBT differs from EOBT -13/+15 minutes, the AODB will generate the alert: **[CDM08]** “Discrepancy of EOBT and TOBT”.
5. Manual input of TOBT will be the top priority and override any other updates

3.4.7 Role of Airline and Ground Handler

1. The Airline has to ensure that latest updated ATC flight plan is available in the AODB, where it will be correlated to the automated TOBT
2. The Airline will have to resolve the discrepancy by updating the flight plan or adjusting the TOBT, if TOBT is more than EOBT -13/+15 minutes
3. The airline has to make sure that any known arrival estimate for the inbound flight is reflected in an update of the TOBT for the outbound flight (make sure that ELDT information is shared in the AODB, or TOBT manual update in AODB)

3.4.8 Role of AMC

1. When a gate/stand conflict occurs, AOCC needs to assess and resolve the potential gate/stand conflict

3.5 Milestone 5 (MS5) – Final Approach

3.5.1 Introduction

When the arriving aircraft enters final approach area, ELDT is very accurate. The taxi time calculation, now based on RWY in use for landing, is also more accurate and subsequent estimates can be recalculated to detect potential stand and gate allocation conflicts, confirm ground handling resources allocation, validate decisions for connecting passengers etc.

3.5.2 Triggered by

Detection of the flight entering final approach area.

3.5.3 A-CDM Status

The A-CDM status is updated to “**FNL**” as soon as the Ten Miles Out information (TMO) is received.

3.5.4 Process

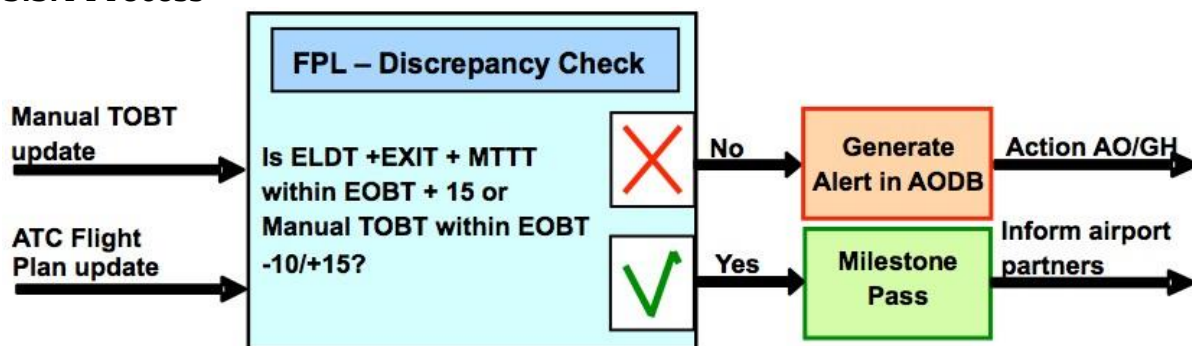


Figure 5: Milestone 5

3.5.5 Procedure

- To calculate EXIT with RWY in use for landing.
- To calculate EIBT and check if there is any gate conflict.
- To calculate automated TOBT.
- To check whether TOBT is consistent with ATC Flight Plan EOBT.

3.5.6 AODB functionality

1. AODB will update ELDT and recalculate EXIT (using RWY) and EIBT ($EIBT = ELDT + EXIT$)
2. AODB will alert if EIBT of the arrival conflicts with TSAT / TOBT / EOBT / SOBT of the preceding flight occupying the same stand: **[CDM31]** “Stand/Gate conflict”.
3. AODB will calculate TOBT and compare TOBT with Flight Plan EOBT
4. If the calculated TOBT is more than EOBT + 15 minutes AODB will generate the alert: **[CDM08]** “Discrepancy of EOBT and TOBT”.
5. Manual input of TOBT will be the top priority and override any other updates

3.5.7 Role of Air Traffic Control

1. ATC will need to share the runway in use, and planned runway changes, for the arrival flight for a better estimate of EXIT in AODB.

3.5.8 Role of Airline and Ground Handler

1. The Airline has to ensure that latest updated ATC flight plan is available in the AODB, where it will be correlated to the automated TOBT

2. The Airline will have to resolve the discrepancy by updating the flight plan, if TOBT is more than EOBT -13/+15 minutes
3. The airline has to make sure that any known arrival estimate for the inbound flight is reflected in an update of the TOBT for the outbound flight (make sure that ELDT information is shared in the AODB, or TOBT manual update in AODB)

3.5.9 Role of AMC

1. When a gate/stand conflict occurs, AOCC needs to assess and resolve the potential gate/stand conflict

3.6 Milestone 6 (MS6) – Landing

3.6.1 New Terminology in MS6

Terminology	Definition and description	Responsibility
ALDT	Actual Landing Time	ATC and Airline

Table 5: New Terms for Milestone 6

3.6.2 Introduction

The actual landing time or ALDT is the time that an aircraft touches down on the runway. This event triggers an update of downstream estimates – EIBT for inbound flight and TOBT for outbound flight if it exists.

At this milestone, it is the final chance for the airport to do necessary adjustment in bay planning in order to prevent aircraft holding for bay.

3.6.3 Triggered by

The actual landing of the aircraft, producing the Actual Landing Time (ALDT).

3.6.4 A-CDM Status

The A-CDM status is updated to “**TAX**”.

3.6.5 Process

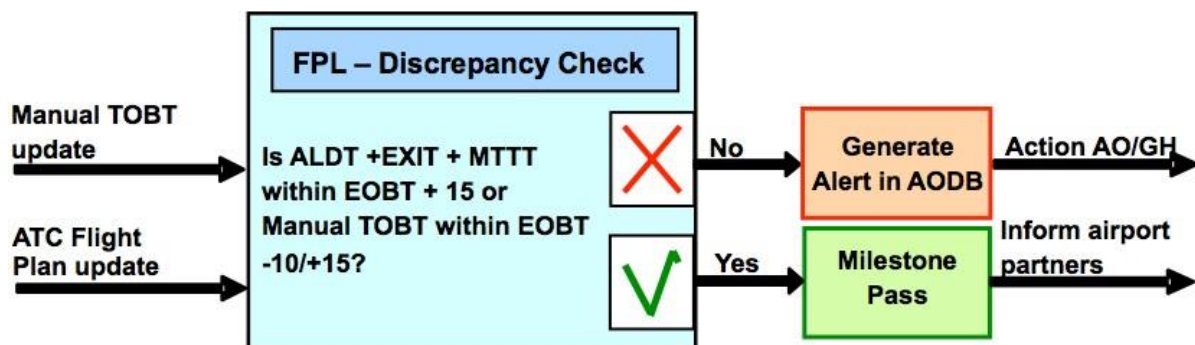


Figure 6: Milestone 6

3.6.6 Procedure

- To change ELDT to ALDT.
- To calculate EIBT and check if there is any gate conflict.
- To calculate automated TOBT.
- To check whether TOBT is consistent with ATC Flight Plan EOBT.

3.6.7 AODB functionality

1. AODB will capture ALDT and update EIBT ($EIBT = ALDT + EXIT$).
2. AODB will alert if EIBT of the arrival conflicts with TSAT / TOBT / EOBT / SOBT of the preceding flight occupying the same stand: **[CDM31] “Stand/Gate conflict”**.
3. AODB will calculate TOBT and compare TOBT with Flight Plan EOBT
4. If the calculated TOBT is more than EOBT -13/+15 minutes, the AODB will generate the alert: **[CDM08] “Discrepancy of EOBT and TOBT”**.
5. Manual input of TOBT will be the top priority and override any other updates

3.6.8 Role of Airline and Ground Handler

1. The Airline has to ensure that latest updated ATC flight plan is available in the AODB, where it will be correlated to the automated TOBT
2. The Airline will have to resolve the discrepancy by updating the flight plan, if TOBT is more than EOBT -13/+15 minutes
3. The Ground Handler has to ensure the ground resource is ready at the parking stand.

3.6.9 Role of AMC

1. When a gate/stand conflict occurs, AOCC needs to assess and resolve the conflict

3.7 Milestone 7 (MS7) – In Block

3.7.1 New Terminology in MS7

Terminology	Definition and description	Responsibility
AIBT	Actual In-Block Time	Airport

Table 6: New Terms for Milestone 7

3.7.2 Introduction

Actual In-Block Time or AIBT is the time that an aircraft arrives in block. This is the moment that the ground handling starts for a turnaround. The occurrence of AIBT triggers an automatic update of TOBT unless already manually updated.

3.7.3 Triggered by

Aircraft stopping at the stand, generating the Actual In-Block Time (AIBT).

3.7.4 A-CDM status

The A-CDM status is updated to “**IBK**”.

3.7.5 Process

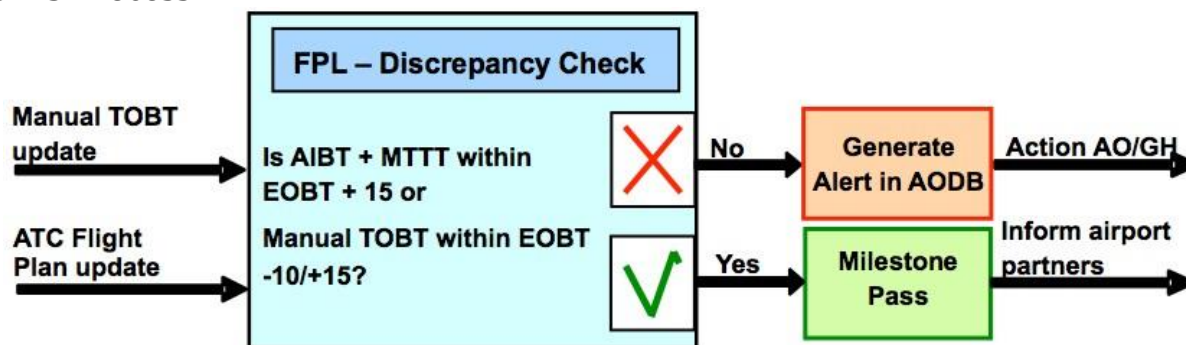


Figure 7: Milestone 7

3.7.6 Procedure

- To change EIBT to AIBT.
- To calculate automated TOBT.
- To check whether TOBT is consistent with ATC Flight Plan EOBT.

3.7.7 AODB functionality

1. AODB will capture AIBT.
2. AODB will calculate TOBT and compare TOBT with Flight Plan EOBT.
3. AODB will alert if the calculated TOBT is more than EOBT -13/+ 15 minutes and generate the alert **[CDM08]** “Discrepancy of EOBT and TOBT”.
4. Manual input of TOBT will be the top priority and override any other updates.

3.7.8 Role of Airline and Ground Handler

1. The Airline has to ensure that latest updated ATC flight plan is available in the AODB, where it will be correlated to the automated TOBT.
2. The Airline will have to resolve the discrepancy by updating the flight plan, if TOBT is more than EOBT -13/+15 minutes.

3.8 Milestone 8 (MS8) – Ground Handling Starts

3.8.1 New Terminology in MS8

Terminology	Definition and description	Responsibility
ACGT	Actual Commence of Ground Handling	Airline / Ground Handler

Table 7: New Terms for Milestone 8

3.8.2 Introduction

The MS8 will be part of a future implementation. This milestone is specific to flights that are the first operation of the day or that have been long term parked. For flights that are on a normal turn-round ACGT is considered to commence at AIBT.

3.9 Milestone 9 (MS9) – TOBT update

3.9.1 Introduction

The AODB always proposes a TOBT: the initial TOBT is the Scheduled Off-block time (SOBT). The schedule is uploaded one week before the season cutover. The airlines and ground handlers can validate the TOBT proposed by the AODB or update the TOBT manually if the one proposed by the system is deemed to be inaccurate. This confirmation process starts at TOBT-40 minutes, and will continue throughout the remaining period until aircraft is fully ready for departure.

TOBT-40 minutes is the time at which the airlines or ground handler have to ensure an accurate TOBT is in the system, taking into account the operational situation at that moment.

3.9.2 Triggered by

This process is triggered by a timestamp at TOBT – 40 minutes.

3.9.3 A-CDM status

The A-CDM status will reflect the operational status of the flight at TOBT – 40 minutes.

3.9.4 Process

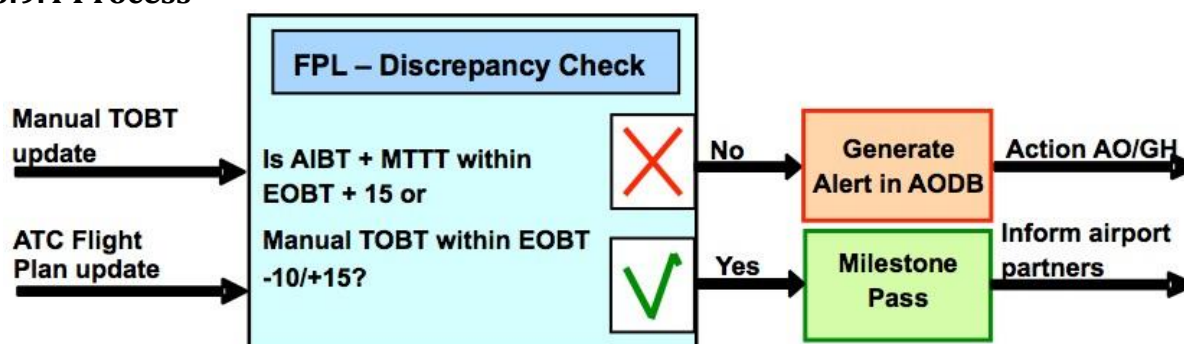


Figure 8: Milestone 9

3.9.5 Procedure

- Airlines and ground handlers confirm the best known TOBT into the AODB at TOBT- 40 minutes, and subsequently to monitor flight progress and to ensure TOBT reflects the true readiness time of departure.

3.9.6 AODB functionality

- If the TOBT is more than EOBT -13/+ 15 minutes the AODB will generate the alert: **[CDM08]** “Discrepancy of EOBT and TOBT”.
- Manual input of TOBT will be the top priority and override any other updates
- A function allows to cancel the manual input of TOBT and revert to automatic calculation
- The TOBT/TSAT is communicated to the pilot via VDGS.

3.9.7 Role of Airline and Ground Handler

- The Airline and Ground Handler need to provide the most accurate TOBT, taking into account the operational situation at that moment and after consolidating all relevant operational input from the Airline and other service providers for that flight. For Etihad, the Aircraft Management System is the main source for TOBT update.

The manual TOBT update and subsequent validation is performed:

- a. by Etihad Hub Control via the Aircraft Management System for Etihad flights
 - b. by Etihad Hub Control via AODB for airlines other than Etihad which are handled by Etihad Airways Services –Ground,
 - c. via an AODB Working Position or by contacting the AOCC Traffic Officer for all other carriers including Royal Jet, Abu Dhabi Aviation, Military, Presidential Flights and for Etihad Engineering.
2. The Airline and Ground Handler must communicate any change to their TOBT of +/- 5 minutes or greater.

For Etihad, the TOBT input is based on information provided by the Aircraft Dispatcher to Hub Control. In the unlikely event the Aircraft Dispatcher is not in attendance at the turnaround after doors are closed, bridge removed, and tug attached, the pilot will contact the Hub Controller by radio to advise any issue surrounding the departure after doors are closed.

3.10 Milestone 10 (MS10) – TSAT issue

3.10.1 New Terminology in MS10

Terminology	Definition and description	Responsibility
CTOT	Calculated Take Off Time	Airline and SZC
TSAT	Target Start up Approval Time	ATC
TTOT	Target Take Off Time	ATC

Table 8: New Terms for Milestone 10

3.10.2 Introduction

Target Off-Block Time (TOBT) and Target Start-up Approval Time (TSAT) provide a methodology to enable optimization in planning the departure sequence. The TOBT/TSAT procedure increases the predictability and allows an earlier (Pre-departure) planning that determines an optimal pushback order to feed the runway sequence in the best way.

With TSAT, all partners have greater transparency on the operational situation regarding the position of departing flights, enabling them to rapidly respond to operational issues by making decisions that are driven by accurate and current information.

- The TSAT allows the aircraft to leave the stand at the best possible moment, reducing fuel burn at taxi-out process and allowing for a more efficient use of airport infrastructure.
- With TSAT, ground handlers will be able to position their resources, such as push back vehicles, more efficiently as they will know exactly when the flights will be granted pushback clearance.
- The Stand and Gate management process will be more efficient as conflicts will be detected earlier. This will result in less last minute stand changes and holding on an already congested airport platform.

3.10.3 Triggered by

This process is triggered by a timestamp at TOBT – 40 minutes.

3.10.4 A-CDM status

The A-CDM status will reflect the operational status of the flight at EOBT – 40 minutes.

3.10.5 Process

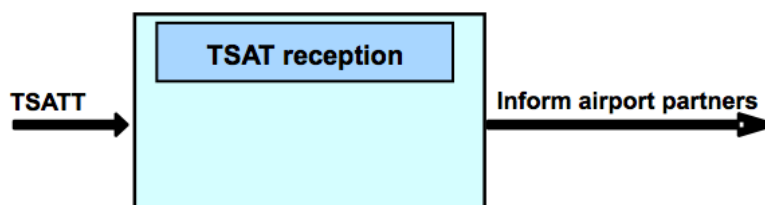


Figure 9: Milestone 10

3.10.6 Procedure

- The TOBTs provided by the airlines and ground handlers form the prediction of the traffic demand and are used by the Departure Manager (DMAN) to calculate the Target Start-up Approval Time (TSAT) with consideration of gate and stand location, runway in use, separation between departures, runway capacity, CTOT etc.

3.10.7 AODB functionality

1. The AODB continuously pushes TOBT into DMAN for the calculation of TSAT.
2. The AODB publishes TSAT at TOBT – 40 minutes to the downstream system, e.g. VDGS.

3.10.8 Role of ATC

1. ATC closely monitors the validity of TSAT generated by the DMAN and ensures the runway utilization is maintained at the optimal level.

3.10.9 Role of the Ground Handler

1. The Ground Handler makes sure that the tug is available at TOBT – 10 minutes and allocates the tugs to the aircraft based on the latest known TSAT – 10 minutes.

3.10.10 Role of the Pilot

1. The pilots monitors the update of TSAT, follow the start-up procedure.

3.11 Milestone 11 (MS11) – Boarding starts

3.11.1 New Terminology in MS11

Terminology	Definition and description	Responsibility
ASBT	Actual Start Boarding Time	Airport

Table 9: New Terms for Milestone 11

3.11.2 Introduction

A-CDM closely monitors the progress of flight preparation. When the boarding commences it gives a good indication of whether the TOBT/TSAT will be respected. If the ground staffs managing the gate process have not started boarding passengers by the required timestamp, the AODB generates an alert. A delay in boarding will not stop downstream A-CDM process, but it will provide an early indication of possible problems if it is not solved timely.

3.11.3 Triggered by

The milestone is triggered by a manual input in the FIDS system. The alert is raised when boarding has not started at TOBT – minimum boarding time.

3.11.4 A-CDM status

The A-CDM status is updated to “BRD”.

3.11.5 Process

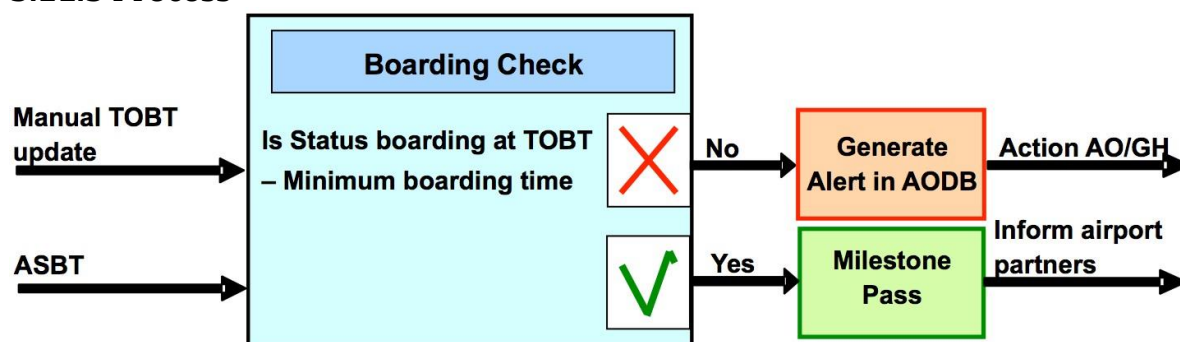


Figure 10: Milestone 11

3.11.6 Procedure

- To inform of Actual Start Boarding Time (ASBT) when it occurs.
- To check if the boarding process starts at the expected timestamp, and to send an alert if not.

3.11.7 AODB functionality

1. The AODB receives the boarding timestamp and display it in A-CDM platform once the boarding process is activated via FIDS.
2. The AODB checks if the boarding timestamp is captured at TOBT – MBTT (minimum boarding time). If not, the AODB generates the alert [CDM09]: “Boarding not started”.

3.11.8 Role of the Ground Handler

1. If the delay of boarding process is foreseen to impact TOBT, the ground handler will report a TOBT update.

3.12 Milestone 12 (MS12) – Aircraft Ready

3.12.1 New Terminology in MS12

Terminology	Definition and description	Responsibility
ARDT	Actual Ready Time (for movement)	Airline and ATC

Table 10: New Terms for Milestone 12

3.12.2 Introduction

For the moment we have no other mean to measure ARDT than ASRT (we refer to MS13). In the future we may capture ARDT from another source.

This milestone measures the readiness of the flight. The readiness is defined by the TOBT i.e. all doors closed boarding bridge removed, push back vehicle available and ready to start up / push back immediately upon reception of clearance from the Tower.

The airline and ground handlers' effort in predicting this readiness (TOBT) should be measured by comparing to the actual timestamp of aircraft readiness (ARDT).

3.12.3 Triggered by

The pilot calling for ATC start clearance at TOBT +/- 2 minutes triggers this process.

3.12.4 A-CDM status

The A-CDM status is updated to "RDY".

3.12.5 Process

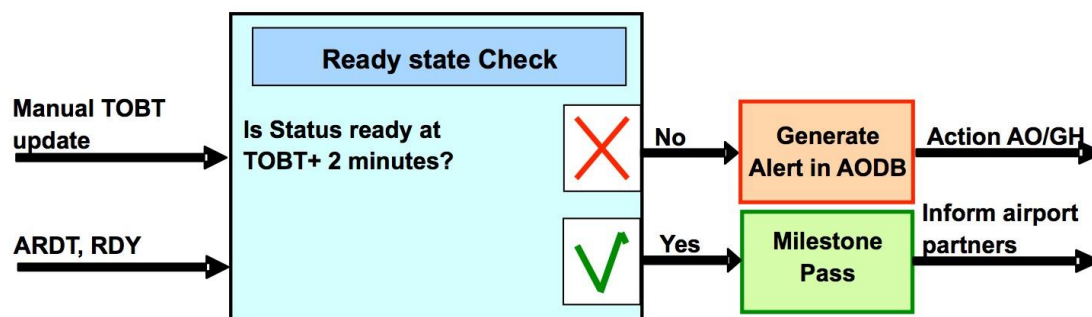


Figure 11: Milestone 12

3.12.6 AODB Functionality

1. The AODB receives the ready timestamp, which is currently ASRT (see MS13), and display it in A-CDM platform.
2. The AODB checks if the ready timestamp is captured at TOBT + 2 minutes. If not, the AODB generates the alert [CDM11]: "Flight not compliant with TOBT/TSAT".

3.12.7 Role of the pilot

The pilot calls Clearance Delivery for ATC start clearance at TOBT +/-2 minutes, to confirm readiness and requests start up. After the ATC advises any change to TSAT due to air traffic clearance restrictions or flow measures, the pilot monitors the ATC Ground frequency.

3.12.8 Role of ATC

1. ATC advises any change to TSAT due to air traffic clearance restrictions or flow measures by either DCL or RT.
2. ATC ground calls the pilot at TSAT +/-2 minutes for push and start clearance if traffic permits.

3.12.9 Role of the Ground Handler

1. Ground Handlers will be able to position their resources, such as push back vehicles, more efficiently as they will know exactly when the flights will be granted pushback clearance. The Ground Handler will execute the push back of the aircraft following the pilot's instructions.
2. The tugs should be available with aircraft from TSAT -10 minutes until TSAT +5 minutes.

3.13 Milestone 13 (MS13) – Start up requested

3.13.1 New Terminology in MS13

Terminology	Definition and description	Responsibility
ASRT	Actual Start up Request Time	Airline and ATC

Table 11: New Terms for Milestone 13

3.13.2 Introduction

This milestone is to inform all relevant Airport CDM Partners of Actual Start up Request Time (ASRT) in the Airport CDM Platform.

3.13.3 Triggered by

The milestone is triggered by the actual event of start-up request.

3.13.4 A-CDM status

The A-CDM status is unchanged (previous status is “RDY”).

3.13.5 Process

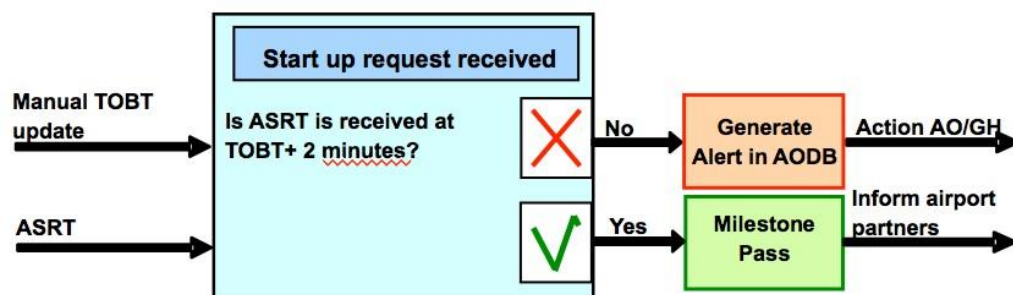


Figure 12: Milestone 13

3.13.6 AODB functionality

1. The AODB receives the ASRT timestamp and display it in A-CDM platform.
2. The AODB checks if the ASRT timestamp is captured at TOBT + 2 minutes. If not, the AODB generates the alert [CDM11]: "Flight not compliant with TOBT/TSAT".

3.13.7 Role of the pilot

The pilot calls Clearance Delivery for ATC start clearance at TOBT +/-2 minutes, to confirm readiness and requests start up. After the ATC advises any change to TSAT due to air traffic clearance restrictions or flow measures, the pilot monitors the ATC Ground frequency.

3.13.8 Role of ATC

1. ATC advises any change to TSAT due to air traffic clearance restrictions or flow measures by either DCL or RT.
2. ATC ground calls the pilot at TSAT +/-2 minutes for push and start clearance if traffic permits.

3.13.9 Role of the Ground Handler

1. Ground Handlers will be able to position their resources, such as push back vehicles, more efficiently as they will know exactly when the flights will be granted pushback clearance. The Ground Handler will execute the push back of the aircraft following the pilot's instructions.
2. The tugs should be available with aircraft from TSAT -10 minutes until TSAT +5 minutes.

3.14 Milestone 14 (MS14) – Start up approved

3.14.1 New Terminology in MS14

Terminology	Definition and description	Responsibility
ASAT	Actual Start up Approval Time	ATC

Table 12: New Terms for Milestone 14

3.14.2 Introduction

This milestone indicates if departure process is going according to plan and generates an alert if abnormality occurs.

3.14.3 Triggered by

ATC Ground calling the pilot for start-up clearance at TSAT+/- 2 minutes.

3.14.4 A-CDM status

The A-CDM status is unchanged (previous status is “RDY”).

3.14.5 Process

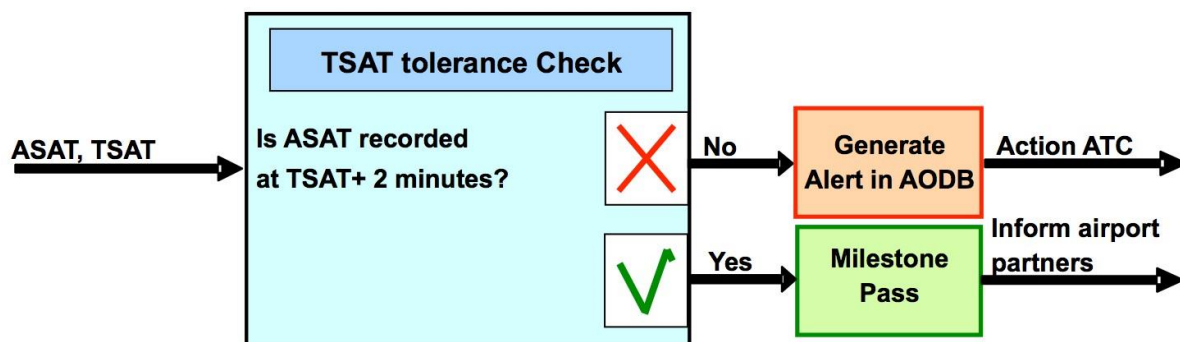


Figure 13: Milestone 14

3.14.6 AODB functionality

1. At TSAT + 5 minutes, if there is still no ASAT captured the AODB will generate the alert [CDM12]: “TSAT not respected by ATC” for common awareness. This Alert is removed when AOBT is received.

3.14.7 Role of the ATC

1. ATC Ground calls the pilot for start-up clearance at TSAT +/- 2 minutes if traffic permits.

3.14.8 Role of the pilot

1. The pilot must have a valid ATC en-route clearance and have confirmed readiness at TOBT +/- 2 minutes.
2. The pilot monitors ATC Ground frequency for push & start clearance.
3. Aircraft pushes back at TSAT +/- 2 minutes.
4. If the pushback cannot be executed by TSAT + 5 minutes due to unexpected late issues (e.g. technical), it is the pilot’s responsibility to advise ATC, Ground handlers and its airline representatives to update TOBT accordingly for a new TSAT. The pilot will then re-coordinate for new ATC clearance based on the new TOBT.

3.14.9 Role of the airline and Ground Handler

1. The ground handler will have a pushback tug available and walk around inspection completed at TSAT – 10 minutes and be ready to commence pushback at TSAT +/- 5 minutes, upon pilot instruction.
2. In case of “Missed TSAT” (i.e. alert **[CDM12a]**), the airline needs to input a new TOBT for the aircraft to receive a revised TSAT and be re-sequenced. The original TSAT will be given to another flight currently ready.
3. The Pilot, Ground Handler or Airline has the option to update the TOBT if applicable. This will result in a new TSAT, though it will be outside the original TSAT frozen period.

3.15 Milestone 15 (MS15) – Off-block

3.15.1 New Terminology in MS15

Terminology	Definition and description	Responsibility
AOBT	Actual Off-Block Time	Airline and Ground Handler

Table 13: New Terms for Milestone 15

3.15.2 Introduction

Immediately after receiving the start-up and pushback approval from ATC at TSAT +/- 5 minutes, the pilot shall commence the pushback process. Pushback at TSAT will ensure that the aircraft will have smooth taxi-out process, and the waiting time at the runway holding point prior to take-off will be controlled at an acceptable limit that is pre-determined by the runway capacity defined in DMAN.

3.15.3 A-CDM status

The A-CDM status is changed to “**OBK**”.

3.15.4 Triggered by

The Visual Docking Guidance System (VDGS) will automatically capture the timestamp when the aircraft physically vacate from the parking position. The event is also captured by the A-SMGCS and ACARS.

3.15.5 Process

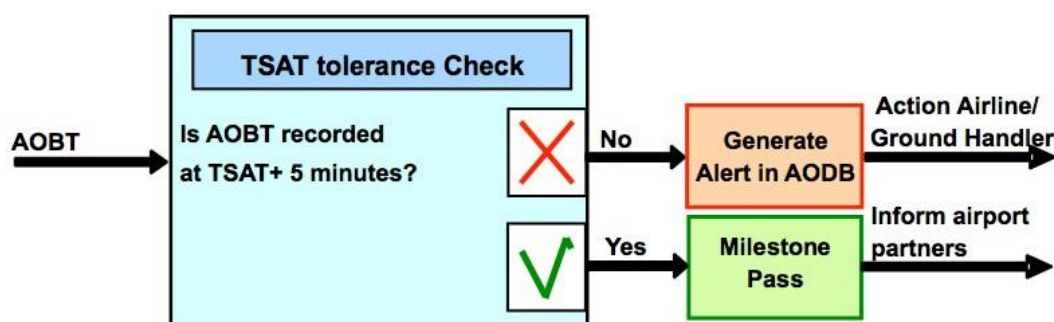


Figure 14: Milestone 15

This milestone indicates if TSAT processes are going according to plan and generates an alert if abnormality occurs.

3.15.6 AODB functionality

1. The AODB receives the AOBT once the aircraft is pushed back.
2. At TSAT + 5 minutes, if the aircraft has not started the pushback, the AODB will generate the alert **[CDM12a]** “Missed TSAT” and delete the target times (i.e. TOBT, TSAT and TTOT).

3.16 Milestone 16 (MS16) – Take off

3.16.1 New Terminology in MS16

Terminology	Definition and description	Responsibility
ATOT	Actual Take-off Time	Airline and ATC

Table 14: New Terms for Milestone 16

3.16.2 Introduction

This is the moment that an aircraft take off (wheels off the ground) from the runway. A-CDM process ends at this timestamp.

3.16.3 Triggered by

This milestone is triggered by the actual event of take-off that is captured by A-SMGCS and ACARS.

3.16.4 A-CDM status

The A-CDM status is changed to “**DEP**”.

3.16.5 Process

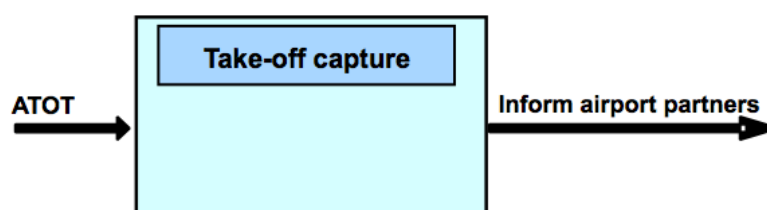


Figure 15: Milestone 16

3.16.6 AODB Functionality

1. The AODB receives the ATOT once the aircraft has taken off.

4. A-CDM Rules for ADIA

4.1 Communication of TSAT

At TOBT – 40 minutes the TSAT will be issued and published

- On the visual docking guidance system (VDGS) in the Midfield Terminal Apron Stands
- Via Aircraft Dispatcher
- In the AODB platform

At TOBT – 5 minutes

- Via ATC (Clearance Delivery) when aircraft calls ATC for en-route clearance (when aircraft are parked remotely and have no VDGS)

4.2 Start-Up Procedures

These procedures are applicable during the phase when the aircraft is still parked at the gate. For simplicity, no interaction with respect for routing or other services is provided here. Only Airport CDM related interaction between pilot and ground (ATC, CDM platform or DMAN) is detailed.

In ADIA, the following start-up procedures will be applicable when fully A-CDM compliant. Please refer to Aeronautical Information Publication for more details.

4.3 ATC/En-route Clearance:

- The pilot calls Clearance Delivery at TOBT +/- 2 minutes to confirm readiness.
- Clearance Delivery issues or confirms the ATC clearance with TSAT information.
- Clearance Delivery handovers departure to Ground Control after issuance of ATC clearance via RT or DCL.
- ATC advises any change to TSAT due to air traffic clearance restrictions or flow measures.
- The pilot monitors the ATC ground frequency and the VDGS for possible changes in TSAT.

4.4 Start-up and Push back clearance:

- ATC Ground Control calls the pilot at TSAT +/- 2 minutes for push and start clearance (ASAT).
- An alert is generated in the AODB and DMAN if no ASAT (Actual Start-up Approval Time) is detected at TSAT + 2 minutes.
- ATC Ground Control will cancel push and start clearance after investigation if the aircraft subsequently reports that they are not able to push and start, e.g. due to requirement for guest / baggage offload. In this circumstance it will be the pilot's responsibility to inform ATC that they are no longer ready and to inform GH/Airline to update TOBT for a new TSAT. Pilot will then request a new ATC push and start clearance based on the updated TOBT.
- Ground Control will not cancel ATC clearance if pushback delay is due to other ground traffic – E.g. Aircraft is ready for pushback but another aircraft is blocking the way.
- If the aircraft reports ready in accordance with their TOBT, but the push and start clearance cannot be provided due to ground congestion or other ATC issues, the TOBT should not be changed and the aircraft should be given start and push clearance as soon as possible after TSAT. The TSAT algorithm should take into account the delay in the AOBT for the aircraft when calculating TSATs for subsequent departures.

- The over-arching principle remains that airlines/ground handlers should manage/achieve TOBTs and the ATC operation should not be put under pressure by poor TOBT management. Equally, the ATC operation is responsible for achieving TSATs and airlines should not be penalized if this is unachievable as long as they have reported ready in accordance with their TOBT.

For more details, please refer to ANNEX G - Target times' cancellation, page 61.

4.5 Aircraft Towing Procedure

4.5.1 Objective

- Provide visibility of planned and actual towing movements
- Better manage towing with insights on
 - taxiway congestion (ATC)
 - ability to execute towing timely (GH)
 - priority (AO)

4.5.2 Definition

Towing can refer to either of 2 separate processes:

- Towing off refers to the event that an aircraft is towed off a position (stand, parking or hangar). Normally this is after arriving passengers have disembarked, as there exists a need to clear the parking stand for a longer turnaround or technical stop/maintenance.
- Towing in refers to the event that an aircraft is towed into the new position (parking, stand or hangar). Normally this is for departures from another parking position where they had to reside for their remaining turnaround time, or after coming out of maintenance.

4.5.3 Planning

- AOCC/AMC sends by email to Etihad Hub Control critical information about capacity constraints.
- Etihad provides AOCC with the list of aircraft scheduled for maintenance and needing tow-off to hangar and at what time. This list can be viewed by AOCC in the Operational Gantt chart.
- Other airlines inform AOCC by email or Fax.
- Separate "tow flights" are created by AOCC in the AODB.
- The flight number of a "tow flight" is the registration of the aircraft.
- The stand and gate allocation plan results in a towing plan for all flights, managed in the AODB. It includes aircraft registration, aircraft type, flight number (arrival and departure), departure position, arrival position, date and time of departure, date and time of arrival. The actual times (departure/arrival) are automatically filled when available.

RegNo	A/C Type	A Flight No	D Flight No	From POS	To POS	TOBT	EIBT	AOBT	AIBT
A6RRA	ER4	RG142	RG142	801	509	18/0730	18/0740	18/0833	18/0842
A6ETA	77W	EY428	EY428	510	112	18/0730	18/0745	18/0743	18/0748
VHVPH	77W	VA029	VA030	709	308	18/0850	18/0820	18/0836	18/0855
A6EHL	346	EY873	EY317	131	306	18/0855	18/0910	18/0925	18/0933
A6EHL	346	EY008	EY017	515	309	18/1023	18/1038	18/1100	18/1111
A6EIE	319	EY398	EY375	ADT	406	18/1055	18/1110		
A6EHE	346	EY871	EY243	ADT	304	18/1055	18/1110	18/1217	18/1225
A6DCC	332	EY986	EY909	705	207	18/1103	18/1118	18/1126	18/1145

Figure 16: Sample List of Tow Flights

- AMC also takes into consideration the departure traffic forecast to propose the initial TOBT (tow) in a low traffic interval.

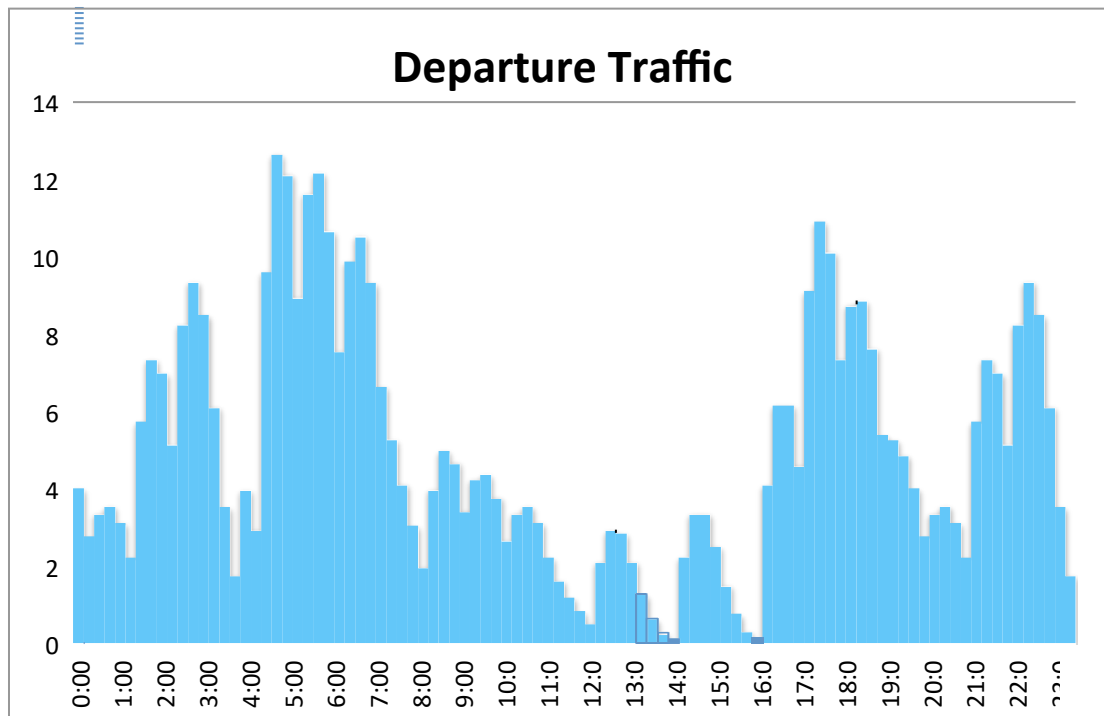


Figure 17: Forecast Traffic for Tow Schedule

- TOBT for Etihad “tow flights” are manually input in the operational Gantt by the Tow Coordinator Working Position (HCC2).
- TOBT for non-Etihad “tow flights” are manually input in the AODB by AOCC Controller Live Working Position (AMC1).
- Tow Coordinator Working Position (HCC2) and AOCC collaboratively manage this tow-plan.

4.5.4 Tactical operations

- The Tow Coordinator is responsible for taking into account all constraints (stand, tugs, ADAT availability, weather) to input/update the TOBT.
- The AODB calculates EIBT by adding a towing time to the TOBT thanks to a lookup table defining towing times between the stands.
- Towing team calls ATC at TOBT to request tow clearance. The Tow-clearance timestamp is recorded by AODB as ARDT (tow).
- AOBT and AIBT (tow) are captured by VDGS for equipped stands and A-SMGCS for non-equipped stands or ACARS, if previous sources not available.
- A-SMGCS* can indicate delay of en route towing when “tow flight” is tagged (followed by manual update from Tow Coordinator of EIBT (tow) in AODB).

4.5.5 A-CDM status

The A-CDM status of a “tow flight” is

- “IBK” or “RDY” before towing,
- “TOW” when towing and
- “IBK” after towing

Refer to “Tow statuses” in section ANNEX C - Abu Dhabi operational statuses.

4.5.6 AODB functionality

1. The AODB calculates the EIBT of “tow flights”.
2. The AODB receives the AOBT and AIBT (tow) from VDGS or for non-VDGS equipped stands from A-SMGCS* or ACARS, if previous sources not available. AOCC Apron Control Working Position (AMC6) manually inputs AOBT/AIBT (tow) not received on non-VDGS equipped stands.
3. The AODB alerts if an anticipated towing has not started. The alert [CDM61] “Towing not started” is raised at TOBT (tow) +10 minutes (parameter) if no AOBT was received.

4.5.7 Role of AMC

1. AMC sends by email to Etihad HCC critical information about capacity constraints. Etihad also represent other airlines for the towing procedure.
2. AMC creates “tow flights” in the AODB.

4.5.8 Role of Airline:

1. Etihad HCC Tow Coordinator provides AOCC with the list of aircraft scheduled for maintenance and needing tow-off to hangar. This list can be viewed by AOCC in the operational Gantt chart.
2. Etihad HCC Tow Coordinator input/updates TOBT (tow) of “tow flights” in the AODB.

4.5.9 Role of Air Traffic Control

1. ATC provides the tow-clearance at TOBT.

5. A-CDM in Adverse and Low Visibility Conditions

5.1 Priority and slot swapping

Priority and slot swapping will be developed with Etihad Airways in the future however some of the essential elements are:

1. The ability to 'freeze' a TSAT, i.e. where an indicated delay to the aircraft would be acceptable to the airline to enable guest connections and there would be an acceptance that the TSAT would not be optimised should delays reduce;
 2. The ability to swap TSATs / TTOTs in order to facilitate airline priorities;
 3. The ability to prioritise strategically (built into the TSAT algorithm for those flights / routes that are always a priority) and tactically (through swapping for 'on the day' priorities).
 4. A DMAN GUI to be made accessible to airlines to avoid the reliance on verbal/email communications between the carrier and ATC to enable the swapping of TSATs / TTOTs, thus providing an efficient process.
- 

6. Linking to the ATM Network

One of the essential enablers for developing ATM is the availability and accuracy of information, with emphasis on flight plan data quality. Without A-CDM there is a gap between the accuracy of the take-off time estimate provided by the Aircraft Operator and the accuracy of the Actual Take Off time provided by ATC.

Airport CDM will provide the structure to feed real time and dynamic airport data to the air traffic network. For this the best strategy will be a collaborative ATFM model with governance of standards and a harmonized approach. Past success stories have proven that establishing a common vocabulary is the foundation for a collaborative approach. All Stakeholders have to have the same understanding of the definitions used in order to enable information sharing.

Information Sharing, Milestone Approach, Variable taxi Times, Pre-departure Sequencing and Adverse Conditions will have to be implemented before the local flight data can be fed into the air traffic network. Once these locally changed processes, supported by IT systems integration and AODB, are being part of daily operations, Abu Dhabi Airport can guarantee accurate data flows.

7. Reversion Procedures

In the rare event which would warrant full reversion from CDM/TSAT Operations at Abu Dhabi, ATC would inform all stakeholders.

Appendices

ANNEX A - Abu Dhabi Alerts

Code	Alert name	Condition
[CDM01]	No airport slot available or slot already correlated	No airport slot available or slot already correlated
[CDM03]	Aircraft type discrepancy	Aircraft type should match the initial flight plan
[CDM04]	Aircraft registration discrepancy	Aircraft registration should match the initial flight plan
[CDM05]	First destination discrepancy	Destination should match the original flight plan
[CDM06]	Non airborne alert	Status is not airborne at ELDT – 10 minutes
[CDM08]	Discrepancy of EOBT and TOBT	TOBT is not in -13/+15 minutes EOBT
[CDM09]	Boarding not started	Status not boarding at TOBT – Minimum boarding time
[CDM10]	TOBT rejected or deleted	TOBT deleted or alert [CDM13] is active at TOBT-30 minutes
[CDM11]	Flight not compliant with TOBT/TSAT	Not ready at TOBT +2'or has not started or pushed at TSAT +2 minutes
[CDM12]	TSAT not respected by ATC	Flight not started or pushed at TSAT + 5 minutes
[CDM12a]	Missed TSAT (due to Airline/Ground handler)	Flight not ready to push and start at TSAT + 5 minutes and [CDM12] is not active
[CDM13]	No ATC flight plan available	EOBT field empty
[CDM20]	Inbound diversion	Unplanned flight diverting to Abu Dhabi airport
[CDM31]	Stand/Gate conflict	Preceding flight occupying same stand/gate
[CDM61]	Towing not started	Towing not started at TOBT (tow) +10 minutes if no AOBT was received

Table 15: List of alerts

RED = Process will be stopped. (No sequencing)

AMBER = Process continues, conflict has to be solved during process

YELLOW = Process continues, alert is seen as an information

ANNEX B - Actions Required on Alerts

Code	Alert name	Action required	Responsible
[CDM01]	No airport slot available or slot already correlated	Immediate update of ATC Flight Plan or request new Airport Slot.	AO
[CDM03]	Aircraft type discrepancy	Immediate update of ATC Flight Plan or AODB needed.	AO/AOCC
[CDM04]	Aircraft registration discrepancy	Immediate update of ATC Flight Plan or AODB needed.	AO/AOCC
[CDM05]	First destination discrepancy	Immediate update of ATC Flight Plan or AODB needed.	AO/AOCC
[CDM06]	Non airborne alert	Check outbound flight and ATC Flight Plan and update if required. (*)	AO
[CDM08]	Discrepancy of EOBT and TOBT	Update TOBT or Flight Plan EOBT	AO
[CDM09]	Boarding not started	Activate boarding or update TOBT if needed	AO
[CDM10]	TOBT rejected or deleted	Input a new TOBT or re-file the FPL	AO
[CDM11]	Flight not compliant with TOBT/TSAT	Instigate ASRT or process ASAT within 3'	Pilot
[CDM12]	TSAT not respected by ATC	Manually adjust sequence and give start and push clearance	ATC
[CDM12a]	Missed TSAT (due to Airline/Ground handler)	Input a new TOBT	AO
[CDM13]	No ATC flight plan available	Submit a new ATC Flight Plan or announce cancellation	AO
[CDM20]	Inbound diversion	File the new outbound FPL (*)	AO
[CDM31]	Gate conflict	Check TOBT of departing flight or change stand & gate allocation	AOCC
[CDM51]	Early arrival	Check resources availability (*)	All
[CDM61]	Towing not started		ATC

Table 16: Actions required on Alerts

RED = Process will be stopped. (No sequencing)

AMBER = Process continues, conflict has to be solved during process

YELLOW = Process continues, alert is seen as an information

(*) Action will not clear the alert

ANNEX C - Abu Dhabi Operational Statuses

The following operational statuses are implemented in Abu Dhabi:

Terminology		Definition
SCH	Scheduled	
FPL	Flight plan received	
AIR	Airborne in departure station	
FIR	Flight entered UAE Flight Information Region	
TMA	Fight entered TMA	
FNL	Final approach	
TAX	Landed. Taxiing in	
IBK	In block	
BRD	Boarding	
RDY	Start-up request launched. Aircraft ready.	
OBK	Off Blocks. Taxiing out	
DEP	Departed	
CNX	Flight plan cancelled	
DIV	Flight diverted	
HLD	Holding	
GOA	Go around	
RR	Return to ramp	
TOW	Towing	

Table 17: List of operational statuses

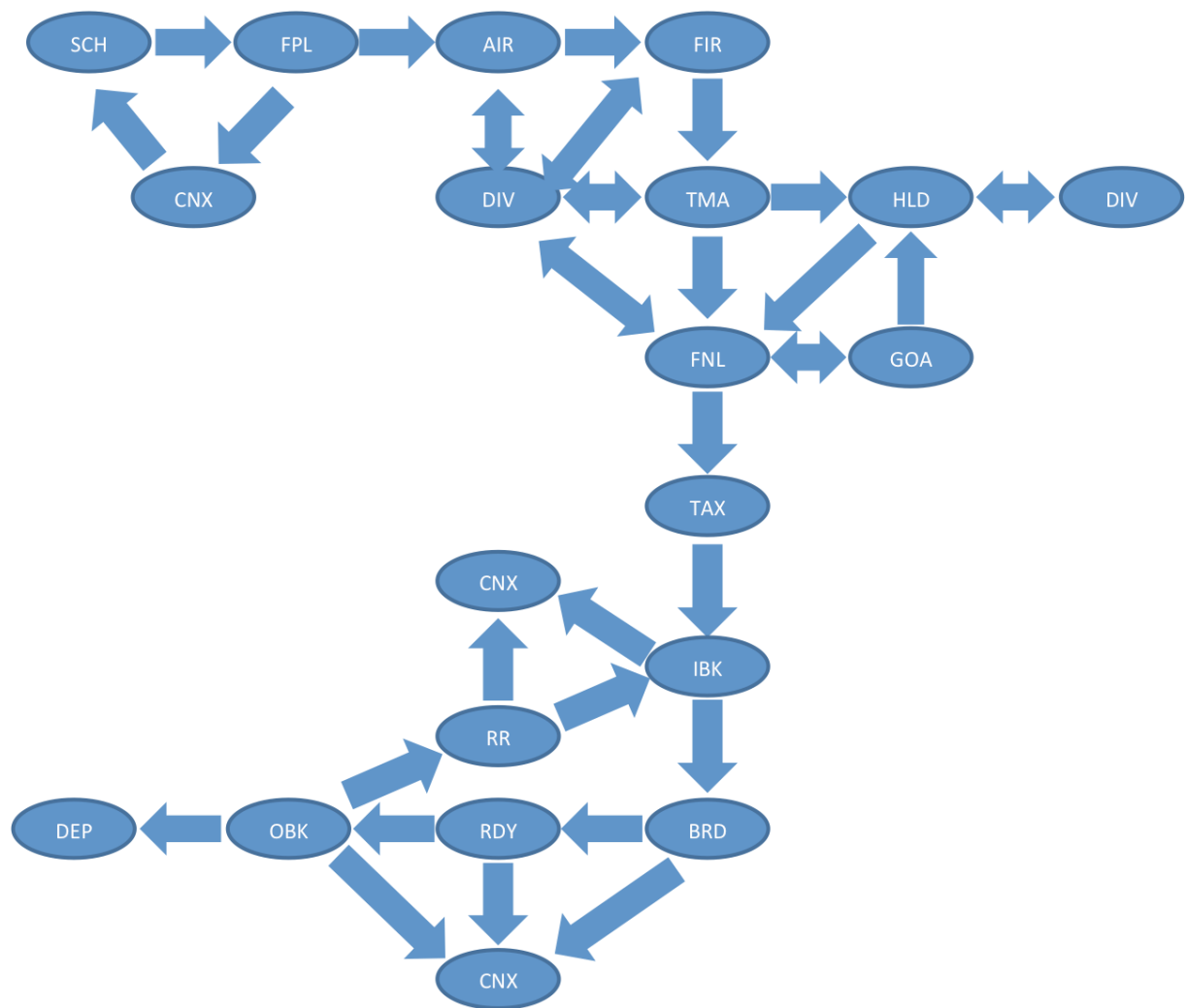


Figure 18: Statuses diagram



Figure 19: Towing statuses diagram

ANNEX D - System Parameters

Parameter	Value	AODB	VDGS	DMAN
Alert [CDM06] 'Status is not airborne at ELDT –10 minutes'	10 minutes	✓		
Alert [CDM08] 'Discrepancy of EOBT and TOBT' if TOBT < EOBT – 13 minutes	13 minutes	✓		
Alert [CDM08] 'Discrepancy of EOBT and TOBT' if TOBT > EOBT + 15 minutes	15 minutes	✓		
Alert [CDM10] 'TOBT rejected or deleted' is raised at TOBT+ 5 minutes	5 minutes	✓		
Alert [CDM11] 'Flight not compliant with TOBT/TSAT' is raised at TOBT + 2 minutes	2 minutes	✓		
Alert [CDM12] is generated at TSAT + 5 minutes (if there is still no ASAT captured)	5 minutes	✓		
Alert [CDM12a] is generated at TSAT + 5 minutes (if there is still no AOBT captured)	5 minutes	✓		
Alert [CDM61] 'Towing not started' is raised at TOBT (tow) + 10 minutes	10 minutes	✓		
EIBT is displayed on VDGS 30 minutes before EIBT if the stand is empty	30 minutes		✓	
AIBT is displayed on VDGS during 5 minutes	5 minutes		✓	
TOBT id displayed on VDGS 5 minutes after AIBT	5 minutes		✓	
TSAT is displayed on VDGS at TOBT -40 minutes	40 minutes *		✓	
TSAT is displayed in AODB at TOBT -40 minutes	40 minutes *	✓	✓	
Target times are deleted when a cancelled FPL has not been re-filed at TOBT-30 minutes	30 minutes	✓		✓
From TSAT - 10 minutes onwards, DMAN freezes TSAT calculation	10 minutes			✓

Table 18: List of system parameters

* Note: with DMAN roll out this parameter can be revisited.

ANNEX E - Procedures parameters

Procedures parameters	Value
TOBT must be updated when it differs by more than 5 minutes from the previous TOBT	5 minutes
EOBT must be updated when TOBT is earlier than EOBT by 13 minutes	13 minutes
EOBT must be updated when TOBT is later than EOBT by 15 minutes	15 minutes
EOBT must be updated when difference between EOBT and TOBT is more than 15 minutes	15 minutes
The Ground Handler allocates the tugs to the aircraft from TSAT -10 minutes	10 minutes
The Ground Handler allocates the tugs to the aircraft up to TSAT +5 minutes	5 minutes
The Pilot ensures aircraft is ready to be pushed back before TOBT +/- 2 minutes	2 minutes
The Pilot calls for ATC start clearance at TOBT +/- 2 minutes	2 minutes
ATC Ground calls the pilot for start-up clearance at TSAT +/- 2 minutes	2 minutes
Aircraft pushes back at TSAT +/-2 minutes	2 minutes
TOBT must not be earlier than SOBT -10 minutes	10 minutes

Table 19: List of procedures parameters

ANNEX F - Abu Dhabi Use Cases

Use case	Manual actions	System
Return to ramp	• ATC or AO informs AOCC • AOCC manually changes the status to "RR"	• AOBT, TOBT, TSAT and TTOT deletion • Alert [CDM10] "TOBT rejected or deleted"
Air return	• ATC or AO informs AOCC • AOCC creates a new inbound and outbound flight • AO file the new outbound flight plan	(Standard processing) (Standard processing)
Diversion out	• ATC (or AO) informs AOCC • AOCC manually changes the status to "DIV" • AO cancels the flight plan (AFTN or SITA message)	• ELDT and EIBT deletion • At TOBT-30'. TOBT, TSAT, TTOT deletion
Inbound flight cancellation	• AO informs AOCC • AOCC manually changes the status to "CNX"	• ELDT and EIBT deletion
Flight cancellation	• AO informs AOCC • AOCC manually changes the status to "CNX"	• ELDT and EIBT deletion • TOBT, TSAT and TTOT deletion
Flight plan cancellation (no FPL re-filing)	• AO cancels the flight plan (AFTN or SITA message)	• Alert [CDM13] "No ATC flight plan available" • At TOBT-30', TOBT, TSAT, TTOT deletion • At TOBT-30', alert [CDM10] "TOBT rejected or deleted" (and remove alert [CDM13])
Flight plan cancellation (FPL re-filing)	• AO cancels the flight plan (AFTN or SITA message) • AO re-file the flight plan	• Alert [CDM13] "No ATC flight plan available" • TOBT, TSAT, TTOT are kept • Alert [CDM13] is removed
Diversion in (Emergencies)	• ATC (or AO) informs AOCC • AOCC creates a new inbound flight • AOCC manually changes the status to "DIV" • AO file the new outbound flight plan	(Standard processing) • Alert [CDM20] "Inbound diversion" (Standard processing)
A/c not ready at TOBT+2		• Alert [CDM11] "Flight not compliant with TOBT"
A/c not ready at TOBT+5		• TOBT, TSAT and TTOT deletion • Alert [CDM10] "TOBT rejected or deleted" (and remove alert [CDM11])
No ASAT at TSAT+2		• Alert [CDM12] "TSAT not respected by ATC"
No AOBT at TSAT+5		• Alert [CDM12a] "Missed TSAT" • TOBT, TSAT and TTOT deletion
Go around		• Status is set to "GOA" on reception from ATC • ELDT is automatically re-evaluated and EIBT and TOBT recalculated

Table 20: Use cases

ANNEX G - Target Times' Cancellation

	Condition	Alert	Push & start clearance	Target times	Situation
Late readiness confirmation	clock > TOBT+2 & no ARDT	[CDM11]	Valid	Unchanged	Late pilot call to ATC (No aircraft readiness confirmation)
Missed TOBT	clock > TOBT+5 & no ARDT	[CDM10]	Cancelled	Cleared	It is the pilot's responsibility to inform ATC that they are not able to push and start e.g. due to requirement for guest / baggage offload. a/c is no longer ready: the pilot informs GH/Airline to update TOBT for a new TSAT. Pilot will then request a new ATC push and start clearance based on the updated TOBT.
TSAT not respected by ATC	clock > TSAT+2 & no ASAT	[CDM12]	As soon as possible after TSAT	TOBT unchanged TSAT recalculation TTOT recalculation by DMAN	The push and start clearance cannot be provided due to ground congestion or other ATC issues E.g. Aircraft is ready for pushback but another aircraft is blocking the way.
Missed TSAT	clock > TSAT+5 & no AOBT & [CDM12] not active	[CDM12a]	Cancelled	Cleared	It is the pilot's responsibility to inform ATC that they are not able to push and start e.g. due to requirement for guest / baggage offload. a/c is no longer ready: the pilot informs GH/Airline to update TOBT for a new TSAT. Pilot will then request a new ATC push and start clearance based on the updated TOBT.

Table 21: Target times' cancellation

ANNEX H - Contingency Procedures

System / Equipment	Description of failure	Procedure when system/equipment is down	Procedure when system/equipment restarts	Remark
SITA AODB	- No TOBT update and TSAT display	- TSAT issue suspended. Revert to start up procedure based on "ready" - Send official information to suspend CDM	- Send official information to restart CDM - Update TOBTs (and complete TOBT post event?) - Revert to CDM start up procedure	
Working Position	- No TOBT input from a WP	- Communicate TOBT to AOCC	- Revert inputting TOBT on the WP	
AIMS	- No TOBT is received in AODB for Etihad flights	- Input TOBT on WP	- EY to check manual TOBT input for consistency with AIMS TOBT input	
(Future) FIS	- No TOBT is received in AODB for Etihad flights	- Input TOBT on WP	- EY to check manual TOBT input for consistency with AIMS TOBT input	
EFPS TWR	- No ASRT and ASAT received in TWR	- Print strips and write updates on paper strips according to A-CDM Working Position	- Revert to normal operations	Depends on EFPS/DMAN configuration
DMAN	- No TSAT calculation and update	- The last known TSAT remains displayed in AODB/VDGS - Send official information to suspend CDM - Pilot still calls ready at TOBT +/- 2 and ATC will inform on start clearance	- Send official information to restart CDM - Normal calculation/display of TSATs - Revert to CDM start up procedure	
ACA	- No Airport schedule can be uploaded into AODB	- The backup of the full schedule of the season and the changes can be uploaded by AOCC	Revert to standard operations	
VDGS	- No display of TOBT and TSAT to crew and ground staff - No AOBT and AIBT received by AODB	- Pilot to call for start clearance at last known TOBT or at "Ready" or - Ground staff to update pilot verbally - AOBT/AIBT are manually input by apron	- Revert to CDM start up procedure	

Table 22: Contingency procedures

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FAQ 1. Where do you find TOBT?

The TOBT of your flight will be automatically loaded in the AODB / A-CDM platform. Any manual updates will be possible via this platform as well.

TOBT and TSAT are displayed on the Visual Docking Guidance System (VDGS):

FAQ 2. Who is responsible for the TOBT input?

A TOBT update is a joint and coordinated effort between the Aircraft Operator and the Ground Handler. A dedicated working position is accountable for the input, however multiple people are responsible for the accuracy of the TOBT. Airlines have to ensure:

- fluid communications with the Hub Control Centre (HCC) or Airport Management Centre (AMC), in the case of carriers not handled by EY i.e. terminal 2 operations, military etc.
- the co-ordination of internal working procedures between the Ground Handler and Aircraft Operator will have to be secured in the Service Level Agreement (SLA)

FAQ 3. Are all flights operating in Abu Dhabi part of this A-CDM process? E.g. General Aviation Flights, cargo flights?

All flights, General Aviation, cargo, military, medevac or Presidential are integral to the success of ACDM and all parties need to be aware of their obligations. All need access to the working platform of ACDM (or a responsible working position) and need to ensure flight planning accuracy for the programme's success. It is of paramount importance too, that all crews are briefed on their responsibilities on the CDM process.

FAQ 4. What happens if the filed ATC flight plan is cancelled?

The reasons for a flight plan cancellation by means of an AFTN cancellation message (CNL) sent by the airline can be:

- The airline cancels the flight plan with the intention to re-file a new one with new data (e.g. new route).
- The airline cancels the flight plan because the flight is cancelled for operational reasons.

The Airline will send a CNL message to AFTN, which will be uploaded into AODB, flagging a discrepancy between EOBT (cancelled) and SOBT (in early phase) or TOBT (in later phase). The airline will have to advise the AOCC for confirmation of any flight cancellation. If the airline decides to re-instate the flight, this will have to be done by filing a new flight plan EOBT and by informing AOCC.

AOCC will set the flight status in the AODB to “**CNX**” (cancelled) after receiving confirmation of the cancellation by the airline. At TOBT-30 minutes, the target times (i.e. TOBT, TSAT and TTOT) will be deleted automatically by the AODB. The alert **[CDM13]** is raised (i.e. “No ATC flight plan available”). When it happens the A-CDM process is stopped. If the flight is reinstated, AOCC will re-instate the flight in the AODB after the airline confirmation. In this case, the AODB will perform the data consistency check, starting again from MS 1.

FAQ 5. What happens if the filed ATC flight plan expires?

When the flight plan expires, alert [CDM08] “Discrepancy of TOBT and EOBT” is raised.

FAQ 6. What happens if the filed ATC flight plan is delayed?

The airline will send a DLA message to AFTN with a revised EOBT, which will be uploaded into the AODB. This may flag a discrepancy between new EOBT and TOBT. To solve this the Airline will adjust the TOBT within -13 /+ 15 minutes of the EOBT.

AOCC will need to evaluate the stand and gate planning based on the revised departure plan.

FAQ 7. What happens if we have an ad-hoc flight plan?

When an additional or ad-hoc flight wants to operate in and/or out of Abu Dhabi, the airline and/or appointed Ground Handler should request an airport slot (SOBT) in accordance with local requirements. The AODB, and MS1 check shall verify against filed EOBT. If the flight plan is filed late (after MS1) the check shall take place when both data sets are received by the AODB.

The airline will advise AOCC of the ad-hoc flight operations by applying for an airport slot (SOBT) and filing the ATC flight Plan (EOBT) accordingly.

AOCC will create the flight in the AODB and this data will be compared to the filed flight plan data (and EOBT) when the AODB receives that information. If no EOBT is received, an alert shall raise awareness to the airline (cf. alert [CDM13] “No ATC Flight Plan available”).

AODB will start MS1 checks when it receives SOBT and EOBT information for an ad-hoc flight. When SOBT and EOBT cannot be matched, the AODB shall alert the airline to file the EOBT or to apply for SOBT (cf. alert [CDM01] “No airport slot available or slot already correlated “ and [CDM13] “No ATC Flight Plan available”).

FAQ 8. How and when the TOBT is automatically calculated?

- The AODB always proposes an automatically calculated TOBT. The TOBT initially equals the scheduled off block time (SOBT) or the EOBT as soon as the flight plan has been filed.
- Then the TOBT is updated with the estimated landing time, taxi time and minimum turn round time (TOBT= ELDT+ EXIT+ MTTT).
- The automated TOBT will not be earlier than the EOBT.
- In case of an aircraft having a long ground time in Abu Dhabi, the automated TOBT based on available arrival estimates and minimum turn round time will not be earlier than the EOBT.

FAQ 9. When can the TOBT be updated manually?

At any time a manual update can be input for differences of more than +/- 5 minutes of the latest TOBT. There is no obligation to confirm an automatic TOBT if the latter one is correct.

FAQ 10. Can the TOBT be earlier than the SOBT?

Yes, you can enter a TOBT 10 minutes before your SOBT, to accommodate operational needs. If a TOBT earlier than SOBT -13 minutes is input, an alert will be generated to bring the EOBT and TOBT within 10 minutes: **[CDM08]** “Discrepancy of EOBT and TOBT”.

FAQ 11. What if the TOBT does not match the EOBT?

If the TOBT is later than EOBT + 15 minutes, the Aircraft Operator and/or Ground Handler will be informed by means of the alert **[CDM08]** “Discrepancy of EOBT and TOBT” and a DLA message will have to be sent, based on TOBT.

An alert will indicate that either the flight plan EOBT needs to be delayed by the Aircraft Operator or the TOBT adjusted in case the TOBT is more than 15 minutes ahead of EOBT.

FAQ 12. How do we update ELDT & EIBT in the event of a Cancellation?

The A-CDM process is stopped. From the arrival perspective, when a flight is cancelled the ELDT & EIBT are no longer valid. ELDT and EIBT data are deleted (set blank) and flight status set to “**CNX**”. The EOBT cancellation by the airline will also result in a discrepancy in AODB, flagged by the continuous checking of new EOBT data against airport data (see MS1). As a consequence, the TOBT will be deleted (see MS9 TOBT section).

The airline would have sent a CNL message to ATFM, which will trigger an automatic deletion of EOBT in AODB, flagging a discrepancy between EOBT and TOBT. The airline will ensure that change is communicated to AOCC. If the airline decides to re-instate the flight, this will have to be done by filing a new EOBT and by informing AOCC.

AOCC will have to set the flight status in the AODB to “**CNX**” (cancelled) after receiving confirmation of the cancellation by the airline. If the flight is reinstated, AOCC will re-instate the flight into AODB after receiving airline’s confirmation.

AODB will flag a discrepancy as the EOBT is cancelled by the airline. The milestone process will stop for this flight; ELDT, EIBT and TOBT will be deleted. If a new EOBT is subsequently filed to re-instate the flight, this data will be matched against the re-instated flight in the AODB, starting from MS1 again.

FAQ 13. How do we update ELDT & EIBT in the event of a Diversion Out?

If the Pilot decides to divert en-route to an alternate airport, the ELDT & EIBT are no longer valid and the A-CDM process is stopped and ELDT & EIBT are deleted (set blank) and flight status is to be set to “**DIV**”.

- In the case of the diverted flight is being rescheduled to fly to Abu Dhabi at a later stage, the new arrival flight needs to be uploaded to AODB and linked to the original outbound flight. The original EOBT for the outbound flight will have to be delayed.
- In the case the diverted flight is not scheduled to return to Abu Dhabi, the outbound EOBT will be cancelled by the airline and this will be flagged in the AODB during the

continuous check of new EOBT data against airport data (See MS1). Please refer to [FAQ 4: What happens if the filed ATC flight plan is cancelled?](#) Page 14.

The airline or ATC (whoever is the first one to know the diversion) will have to inform AOCC/Airline of the pilot's decision to divert out.

The airline will need to check AODB to determine if the diversion is reflected in it. If the information is not reflected correctly, the airline will have to inform AOCC. Once the airline has the new schedule information, they will advise AOCC on the creation of the new arrival flight and on the link to the delayed outbound flight in the AODB. The airline has to ensure that the EOBT data has been delayed or re-filed accordingly.

AOCC will update the flight status in the AODB to "**DIV**" (Diverted) after receiving confirmation of the diversion from ATC or the airline. If the flight is rescheduled, AOCC will create the new inbound flight into AODB after confirmation with the airline and link it to the original delayed outbound flight.

AODB will flag a discrepancy as ELDT and EIBT are no longer valid and the A-CDM process is stopped. ELDT & EIBT are to be deleted (set blank) and flight status set to "**DIV**". When the flight returns to Abu Dhabi Airport from a diversion station, the new flight will be uplinked in the AODB, after creation by AOCC. This flight will be linked based on Aircraft type and registration to the delayed outbound flight. Based on the new ELDT, a new TOBT will be calculated for this flight and checked against the EOBT for feasibility. If the new TOBT differs from the EOBT by -13/+15 minutes, the AODB would alert the airline to delay the EOBT accordingly.

[FAQ 14. How do we update ELDT & EIBT in the event of a Diversion In?](#)

This happens when a pilot wants to divert to Abu Dhabi Airport for an emergency and a request is being sent to ATC for acceptance.

ATC will need to inform AOCC for the information to be further passed over to airline and ground handler.

AOCC will create the additional flight into AODB

The airline will need to file the flight plan and advise AOCC the estimated departure time of the corresponding outbound flight.

AODB will automatically populate the flight information, linking arrival to departure if any and performing the regular data calculation and alerts.

[FAQ 15. How do we update ELDT & EIBT in the event of a 'go-around'?](#)

When an aircraft has a missed approach without actual touch-down (no touch-and-go), the status is changed to "**GOA**" and estimates are automatically updated.

The Air Traffic Management System (ATMS) will send "**GOA**" info to AODB.

AODB will automatically recalculate ELDT, EIBT and hence revise automatic TOBT calculation.

[FAQ 16. Can a TOBT be deleted and what is the consequence?](#)

Yes, a TOBT can be deleted. Before deletion, alert [\[CDM11\]](#) or [\[CDM12\]](#) has been raised for 3 minutes until TOBT+5 minutes or TSAT+5 minutes. At this moment the new alert will be raised to flag the deletion: [\[CDM10\]](#) "TOBT rejected or deleted".

See ANNEX G -Target times' cancellation, page 61

The consequence of deleting the TOBT is that all target times such as TSAT and TTOT will be deleted, and the flight will be excluded from A-CDM process.

The effect will be that the flight will be out of departure sequence and a new TOBT must be input requesting for a new TSAT. Therefore the flight will be re-sequenced in the next available sequence.

At any point the TOBT can be filled in again when a new departure time is known, making sure the flight plan EOBT matches this TOBT.

FAQ 17. When will the TOBT be deleted?

A manual or automatically calculated value of the TOBT can be set blank for several reasons. The consequence of deleting TOBT is that all target times such as TSAT and TTOT will be deleted, and the flight will be excluded from A-CDM process. The TOBT can be deleted in the following cases:

- Missed TOBT: According the Start-up procedures the pilot calls ATC at TOBT to report 'ready'. If you are not ready at TOBT + 2 minutes and an update is not received within the next 3 minutes, the TOBT will be deleted. See [FAQ 22: What if I am not ready at TOBT+2 minutes?](#) Page 29.
- Following a flight cancellation (i.e. manual cancellation in AODB by the AOCC. See [FAQ 12: How do we update ELDT & EIBT in the event of a Cancellation?](#) Page 19.
- Following a flight plan cancellation (i.e. reception of cancel message (CNL) via AFTN or SITA). If no flight plan has been (re-)filed 30 minutes before TOBT, then the target times are automatically deleted (i.e. TOBT, TSAT and TTOT are deleted). For more detail, see [FAQ 4: What happens if the filed ATC flight plan is cancelled?](#) Page 14.
- If the flight is diverted out and not continuing to Abu Dhabi. The A-CDM will be awaiting cancellation status before deleting target times as above. See [FAQ 24: How do we process a flight in the event of a diversion out?](#) Page 29.
- When a flight returns to ramp, the AOCC manually changes the status to "RR" and the AODB automatically deletes AOBT, TOBT, TSAT and TTOT. See [FAQ 26: How do we process return to ramp?](#) Page 30.

FAQ 18. Is there a limit to TOBT updates?

You can update the TOBT whenever it is needed throughout the flight process without limitation.

FAQ 19. What happens to my TOBT in case of change of aircraft?

- In case of **aircraft type change**, the flight plan needs to be cancelled and re-filed with the new aircraft type. A new ATC Flight Plan can be submitted before TOBT-30'. The TOBT remains in effect and is allocated to the new aircraft. The new flight plan is automatically associated with the arriving flight and normal process goes on.

- In case of **registration change** (i.e. same aircraft type), a change message can be sent by the airline.
- In both cases the AODB detects aircraft type discrepancy (cf. alert **[CDM03]**) and aircraft registration discrepancy (cf. alert **[CDM04]**)

Note that the AODB assumes that the minimum turnaround time is valid. If the aircraft has to be towed, or passengers directed to a different gate, any time penalty is expected to be handled in the manual update of TOBT.

FAQ 20. What happens to my TOBT when the flight plan gets delayed by means of DLA (delay) message?

A delay message will update the EOBT, which will flag a discrepancy between the TOBT and the EOBT in the A-CDM Platform unless automatic TOBT calculation is activated (refer to FAQ 8 How and when the TOBT is automatically calculated, page 17. The TOBT remains but the AODB will generate the alert **[CDM08]** “Discrepancy of EOBT and TOBT “ if the discrepancy of EOBT and TOBT is -13/+15 minutes.

FAQ 21. When is a TOBT used to calculate first TSAT?

At – 40 minutes of the TOBT, the known TOBT at that point will be used for calculating the first pre-departure sequence. From this point on, TOBT updates should be carefully input, as multiple changes can cause instability of the pre-departure sequence.

FAQ 22. What if I am not ready at TOBT+2 minutes?

If you are not ready at TOBT + 2 minutes, the AODB will raise the alert **[CDM11]** “Flight not compliant with TOBT/TSAT”.

You get another 3 minutes to solve and re-input new TOBT before the TOBT, TSAT and TTOT are deleted. A new TOBT has to be entered for requesting a new TSAT and the flight will be re-sequenced in the next available sequence.

FAQ 23. Can the pilot update TOBT directly?

A TOBT update is a joint and coordinated effort between the Aircraft Operator and the Ground Handler. The Aircraft Dispatcher is accountable for reporting the situation “above wings” and “below wings”, but multiple people are responsible, including the crew.

The Aircraft Dispatcher informs changes to TOBT to the Etihad Hub Controller (HCC2) or the Hub Control Duty Manager (HCC1).

However, in the unlikely event the Aircraft Dispatcher is not in attendance at the turnaround after doors are closed, bridge removed, and tug attached, the pilot can contact the Hub Controller by radio to advise any issue surrounding the departure after doors are closed.

FAQ 24. How do we process a flight in the event of a diversion out?

If the pilot decides to divert en-route to an alternate airport, the ELDT & EIBT are no longer valid.

- The status “**DIV**” is manually input by the AOCC for the inbound flight.
- The ELDT and EIBT are automatically deleted and the A-CDM process is stopped.

- The airline cancels the flight plan (via AFTN or SITA message).
 1. If the flight does not continue to Abu Dhabi airport, the outbound flight is in alert because there is no associated inbound flight. In the case the diverted flight is not scheduled to return to Abu Dhabi, the outbound EOBT will be cancelled by the airline and this will be flagged in AODB during the continuous check of new EOBT data against airport data (See MS1). Please refer to the [FAQ 4: What happens if the filed ATC flight plan is cancelled?](#), page 14.
 2. In the case the diverted flight is being rescheduled to fly at a later time to Abu Dhabi airport, another inbound flight from a different origin will be created. The new arrival flight needs to be uploaded to the AODB. This flight will be automatically linked to the original outbound flight in the AODB.

The original EOBT for the outbound flight will have to be delayed, or re-filed if the flight operates under a new flight number or on the next day. If the flight is rescheduled to operate on the next day, this flight number might already be in use and the flights may be distinguished by the addition of a suffix.

The airline or ATC (whoever is the first one to know the diversion) will have to inform AOCC/Airline of the pilot's decision to divert out.

The Airline will need to check the AODB to determine if the diversion is reflected on it. If the information is not reflected correctly, the airline will have to inform the AOCC. Once the airline has the new schedule information, they will advise the AOCC on the creation of the new arrival flight and link it to the delayed outbound flight in the AODB. The airline has to ensure that the EOBT data has been delayed or re-filed accordingly.

The AOCC will manually update the flight status in the AODB to **"DIV"** (Diverted) after receiving confirmation of the diversion from ATC or the airline. If the flight is rescheduled, the AOCC will create the new inbound flight into the AODB after confirmation with the airline and link it to the original outbound flight, as necessary. If the flight is rescheduled to operate on the next day, the two flights may be distinguished by the addition of a suffix.

The AODB will flag a discrepancy as ELDT and EIBT are no longer valid and the A-CDM process is stopped. ELDT & EIBT are to be deleted (set blank) and flight status set to **"DIV"**. When the flight returns to Abu Dhabi from a diversion station, the new flight will be uplinked in the AODB, after creation by the AOCC. This flight will be linked based on aircraft type and registration to the delayed outbound flight. Based on the new ELDT, a new TOBT will be calculated for this flight and checked against the EOBT for feasibility. If the new TOBT differs from the EOBT by -13/+15 minutes, the AODB would alert the airline to delay the EOBT accordingly.

FAQ 25. How do we process a flight in the event of a diversion in?

This happens when a pilot sends to ATC a request to divert to Abu Dhabi Airport (emergency only).

ATC informs the AOCC of the diversion in and the information will be further passed over to airline and ground handler.

The AOCC manually changes the status to “**DIV**” and creates the additional inbound flight into the AODB.

The Airline files the new outbound flight plan

The AODB automatically populates the flight information, linking arrival to departure if any and performing the regular data calculation and alerts.

FAQ 26. How do we process return to ramp?

The airline or ATC informs the AOCC.

The AOCC manually changes the status to “**RR**”. The flight number is unchanged.

The AODB automatically deletes AOBT, TOBT, TSAT and TTOT and raises the alert **[CDM10]** “TOBT rejected or deleted”. When ARDT is received, the status is replaced by “**RDY**”. The alert is removed when the TOBT is compliant.

FAQ 27. How do we process air return?

The Airline or ATC informs the AOCC.

The AOCC creates a new inbound and outbound flight. The suffix “R” is used for the primary flight and the suffix “A” for the second flight.

The Airline files the new outbound flight plan. A new flight number is used.

ATC will remain with original call sign as per filed flight plan. On landing the ATC system shall send the landing time to AODB using the original flight plan call sign. The two AODB entries (one with original call sign and one with the suffix) can be coupled in AODB.

FAQ 28. Does the TOBT automatically update the FIDS (Flight Information Display system)?

For all departures from AUH, the displayed (i.e. FIDS, kiosks, websites etc.) public departure time is derived from the TOBT. In the event though, the operator chooses not to publicly display the actual TOBT, they may elect to populate the POBT (Public Off Blocks Time) field in the AODB GUI which will override the TOBT in all public facing displays for the public departure time. The POBT time will be manually input by Hub Control for Etihad flights as well as those airlines that Etihad handles.

FAQ 29. How and when is TSAT calculated?

The Departure Manager (DMAN) calculates the Target Take Off Times (TTOT) and the Target Start-up Approval Times (TSAT) taking multiple constraints and preferences into account. The calculation of TSAT considers a variety of information sources including TOBT, stand, take off runway, CTOT, SID, variable taxi time, separation between departures, runway throughput level, ideal runway pressure, wake turbulence category etc.

With the TOBT, the DMAN will start to calculate the optimal order for aircraft to commence pushback from the stand. Further updates of TOBT will always activate the DMAN to look for a new set of optimal pushback sequences.

- The TSAT is published at EOBT – 40 minutes in the AODB and the Docking Guidance System (VDGS). The TSAT is distributed to the various Stakeholders at the airport via the A-CDM platform including pilots to facilitate decision-making.
- Between TOBT – 40 minutes and TSAT – 10 minutes, the DMAN will continue to calculate the best TSAT for the flight with the aim to minimize the difference between TOBT and TSAT, hence, the change of TSAT may occur when there are changes in TOBT values or departure flights dropping off from the queue.
- However, from TSAT – 10 minutes onwards, DMAN will freeze TSAT calculation in order to stabilize TSAT for the flight. In the event the TOBT is updated after this period, a new TSAT calculation will take place. The freezing period allows pilots, ground handlers and Air Traffic Controllers to have better predictability and a stable time to execute the start-up procedures.

FAQ 30. What happens if the aircraft is not ready at TOBT + 5 minutes?

At TOBT the pilot will call ready to ATC according to the start-up procedures. After his call the operational status becomes “**RDY**” (ready).

If the aircraft fails to call ready to ATC before TOBT+5 minutes, the TOBT will be deleted, and a new input is needed.

FAQ 31. What happens if ATC did not grant start-up and push back clearance at TSAT + 2 minutes?

If ASAT has not been received at TSAT + 2 minutes, the AODB generates the alert **[CDM11]**: “Flight not compliant with TOBT/TSAT “. This alert is removed when AOBT is received.

FAQ 32. What happens if the aircraft is not pushed back at TSAT + 5 minutes?

Pilots should monitor the flight turnaround progress and ensure the aircraft is fully ready to be pushed back at TSAT.

At TSAT + 5 minutes, if the aircraft has not started the pushback and no AOBT has been detected by AODB, then the AODB will generate the alert **[CDM12a]** “Missed TSAT” and delete the target times (i.e. TOBT, TSAT and TTOT).

The airline needs to input a new TOBT for the aircraft to receive a revised TSAT and be re-sequenced. The original TSAT will be given to another flight currently ready.

FAQ 33. Will the pushback procedure change?

Today the pushback tugs are planned on SOBT (schedules). As there is no pre-departure sequence, the order of pushback clearance is not always clear and can cause inefficient use of resources, manpower, tugs and airport infrastructure.

With the new procedure, the pushback tugs will be allocated to the aircraft based on TSAT. Tugs should stay with aircraft from TSAT -10 minutes until TSAT +5 minutes. For the ground handler, the resource allocation planning based on TSAT is better than on SOBT.

FAQ 34. How is TSAT Calculated?

In a CDM Airport we want to increase the predictability and plan earlier (Pre-departure) and determine an optimal push-back order to feed the runway sequence in the best way.

A Departure Manager (DMAN) calculates the Target Take Off Times (TTOT) and the Target Start-up Approval Times (TSAT) taking multiple constraints and preferences into account. This information is distributed to the various Stakeholders at the airport via the A-CDM platform and the other systems.

See also FAQ 21 “When is a TOBT used to calculate first TSAT?”