Telephone: (65) 6595 6051
AFS: WSSSYNYX
Facsimile: (65) 6441 0221
caas_singaporeais@caas.gov.sg
www.caas.gov.sg

REPUBLIC OF SINGAPORE
AERONAUTICAL INFORMATION SERVICES
CIVIL AVIATION AUTHORITY OF SINGAPORE
SINGAPORE CHANGI AIRPORT
P.O. BOX 1, SINGAPORE 918141

AIC

3/15

9TH JULY

INTRODUCTION OF AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) AT SINGAPORE CHANGI AIRPORT

1. Introduction

1.1. The purpose of this AIC is to inform aircraft operators of CAAS and Changi Airport Group's plan to implement A-CDM at Singapore Changi Airport by second quarter of 2016 to optimise airport operations by having an efficient turnaround process and improving the predictability of operational events.

1.2. A-CDM involves the sharing of accurate and timely information between airport operator, aircraft operators (AO), ground handling agents (GHA) and air traffic control (ATC) through different supporting systems and implementing a set of operational procedures.

1.3. The sharing of real time information enables better predictability of events during the turnaround process and aids in pre-departure sequence planning. Singapore Changi Airport's A-CDM aims to improve gate management, flight punctuality, reduce taxiway and holding point congestion which will be beneficial to all stakeholders.

1.4. Definition of commonly used terms in A-CDM

1.4.1. Target Off Block Time (TOBT) – The time an AO or GHA estimates that an aircraft will be ready, all doors closed, boarding bridge removed, pushback vehicle available and ready to start-up / pushback immediately upon reception of clearance from ATC.

1.4.2. Target Start Up Approval Time (TSAT) – The time provided by ATC that an aircraft can expect start-up / push back approval.

1.4.3. Calculated Take Off Time (CTOT) – A time calculated as a result of tactical slot allocation, at which a flight is expected to become airborne.

2. A-CDM Pre-Departure Procedures

2.1. The A-CDM procedures apply to all scheduled flights departing Singapore Changi Airport except for VVIP, CASEVAC, SAR and aircraft on special tasks.

2.2. Singapore Changi Airport's A-CDM portal will automatically calculate a system TOBT for each departure flight taking into account the estimated or actual in-block time (EIBT / AIBT), minimum turnaround time (MTT) and scheduled time of departure (STD).

2.3. If the calculated TOBT (EIBT / AIBT + MTT) is earlier than STD, the system will take the STD as TOBT.

2.4. If the calculated TOBT (EIBT / AIBT + MTT) is later than STD, the amount of turnaround delay that system predicts is equal to TOBT – STD.

2.5. The Pre-Departure Sequencer (PDS) will calculate the TSAT automatically by taking into account factors such as TOBT, calculated take-off time (CTOT), variable taxi times (VTT), wake turbulence category, departure separation, etc. A pre-departure sequence is a result from the calculated TSATs, thus the accuracy of TOBT is vital to an optimal TSAT.

2.6. AO are required to assess the system generated TOBT at 40 minutes prior to departure and update if necessary. Thereafter, TOBT needs to be updated constantly if it is expected to differ by 5 minutes or more until the flight commences pushback. AO can consider delegating the responsibility of TOBT submission to their GHA subject to prior internal arrangements between AO and GHA.

2.7. Failure to pushback by TSAT+5 minutes with no updates in TOBT will lead to an automated TOBT revision by the system which will be at least 15 minutes later. Delays can be expected as a result of re-sequencing based on the penalty revision. AO or GHA are strongly encouraged to update TOBT as soon as any expected delay to aircraft readiness for pushback is made available to avoid unnecessary hold-ups.

2.8. TOBT shall be updated through the following systems:

a. Airport Operations Centre System (AOCS) A-CDM web based portal; or
b. Gate Message Input Display (GMID) at boarding rooms.

2.9. TOBT information is available through the following channels:

a. AOCS A-CDM portal;
b. GMID;
c. Aircraft Docking Guidance System (ADGS) at contact stands;
d. Radio communication with GHA or AO.

2.10. TSAT information is available through the following channels:

a. AOCS A-CDM portal;
b. GMID;
c. ADGS at contact stands;
d. Radio communication with GHA or AO;
e. ATC - Upon issuance of ATC clearance (for flights parked at aircraft stands without ADGS).

3. A-CDM Start-up Procedures

3.1. Pilot shall ensure aircraft is ready for push back at TOBT.

3.2. Pilot to maintain communication with the AO / GHA as they are responsible for updating the TOBT. Notify the AO / GHA to update the TOBT if it is expected to differ by 5 minutes or more.

3.3. Pilot to contact Clearance Delivery and request for ATC clearance within 5 minutes of TOBT.

3.4. ATC will update TSAT changes if any, during issuance of ATC clearances. Note that TSAT displayed on ADGS may not be final and can be revised due to en-route clearance restrictions, ground congestion or flow measures.

3.5. Pilot shall contact Ground Movement Control for pushback at TSAT after obtaining ATC clearance, or as directed by ATC.

3.6. A flight issued with gate hold (TSAT>TOBT) but chooses to commence pushback before the assigned time will be allowed to do so subject to traffic. However, the flight should not expect an earlier departure time as the planned pre-departure sequence will be maintained.

3.7. If a flight is unable to pushback by TSAT + 5 minutes due to readiness of aircraft, ATC clearance and TSAT will be cancelled. Pilot must notify the AO / GHA to update the TOBT for a new TSAT before requesting for a new ATC clearance.

3.7.1 Non-compliance of initial TSAT may result in an aircraft losing its existing position in the pre-departure sequence. Delay can be expected as a result of re-sequencing based on new TOBT input.

3.7.2 Flight will not be allowed to depart until a valid TOBT is entered and revised TSAT is given and complied with.

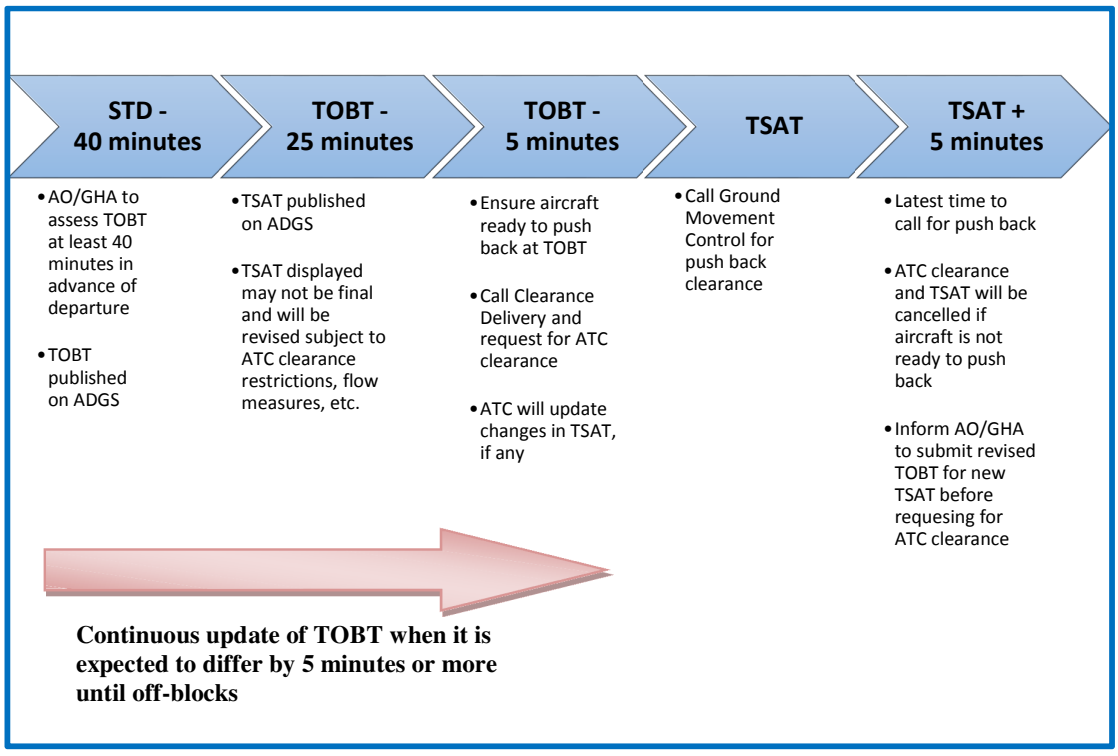
3.8. If delay in push back is due to ground traffic movement or ATC clearance restrictions, the ATC clearance will remain valid even if it exceeds TSAT + 5 minutes. Pilots need not update TOBT for such situations.

4. A-CDM information via Aircraft Docking Guidance System (ADGS)

4.1. All contact stands in Singapore Changi Airport will have ADGS. The fundamental operation and usage of ADGS still remain the same for flight crew. Additional information which includes TOBT, TSAT and TOBT count-down timer will be displayed in local times as part of the improvements to support A-CDM operations. (See Attachment A)

5. Summary of the A-CDM Pre-departure Process

5.1 The flowchart below provides a simple overview of the process that AO, GHA and pilots shall follow in A-CDM operations at Singapore Changi Airport. It includes the responsibilities and coordination detailed in paragraphs 2 and 3 above.



6. A-CDM Operational Trials

6.1. Singapore Changi Airport will be introducing A-CDM operational trials over a few phases prior to full implementation of A-CDM. The trials are planned to commence in December 2015 and more details will be provided in the AIP Supplement to be published in October 2015.

6.2. A-CDM procedures captured in this AIC will be constantly reviewed during the operational trials and may be refined prior to implementation.

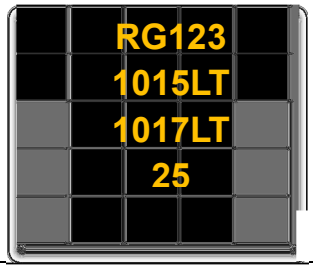
7. Contact and Information

7.1. Detailed information on A-CDM processes at Singapore Changi Airport can be found at http://www.changiairport-cdm.sg

7.2. Please email the Changi A-CDM Team at a-cdm@changiairport.com for application of AOCS A-CDM and GMID account or if you have any queries.

7.3. Aircraft operators may also contact their ground handling agent directly on queries regarding TOBT submission.

Aircraft Docking Guidance System (ADGS)

Description	Display on ADGS
Aircraft arrival to stand • No change in existing functionality and display	
40 minutes prior to TOBT • ADGS will display TOBT submitted by AO / GHA and a count down timer (2 digits) to TOBT in minutes • As ADGS can only display up to 7 characters per line, the displayed message will be scrolling. • Timings displayed will be in Local Time (LT) • TOBT timings will change instantly if there is an update done by AO / GHA	Snapshot 1  Snapshot 2  Snapshot 3 
25 minutes prior to TOBT • ADGS will display TSAT derived by PDS • As ADGS can only display up to 7 characters per line, the displayed message will be scrolling. • TSAT timings may change as the PDS is continuosly optimising push back times based on real time traffic conditions	Snapshot 1  Snapshot 2   Snapshot 3