

Fifth Meeting of the
Aerodrome Safety, Planning, and Implementation Group (ASPIG/5)
Doha/State of Qatar, 13th-15th June 2023



A-CDM

Hamad Int. Airport & Doha Int. Airport



مطار حمد الدولي Hamad International Airport



June 2023

Franz Sammueller/Air Navigation Department

Qatar A-CDM Stakeholders

Key Stakeholders / Core Team



- Tower (Hamad & Doha)
- Radar
- ATFM



Hamad International Airport: مطار حمد الدولي

- Operations Unit



- Flight OPS
- Ground Services



- Pax OPS
- Cargo OPS
- GA/BA OPS

Other stakeholders



- OCC
- Ground OPS

- All other airlines
- IT-Teams of all stakeholders

Key Information

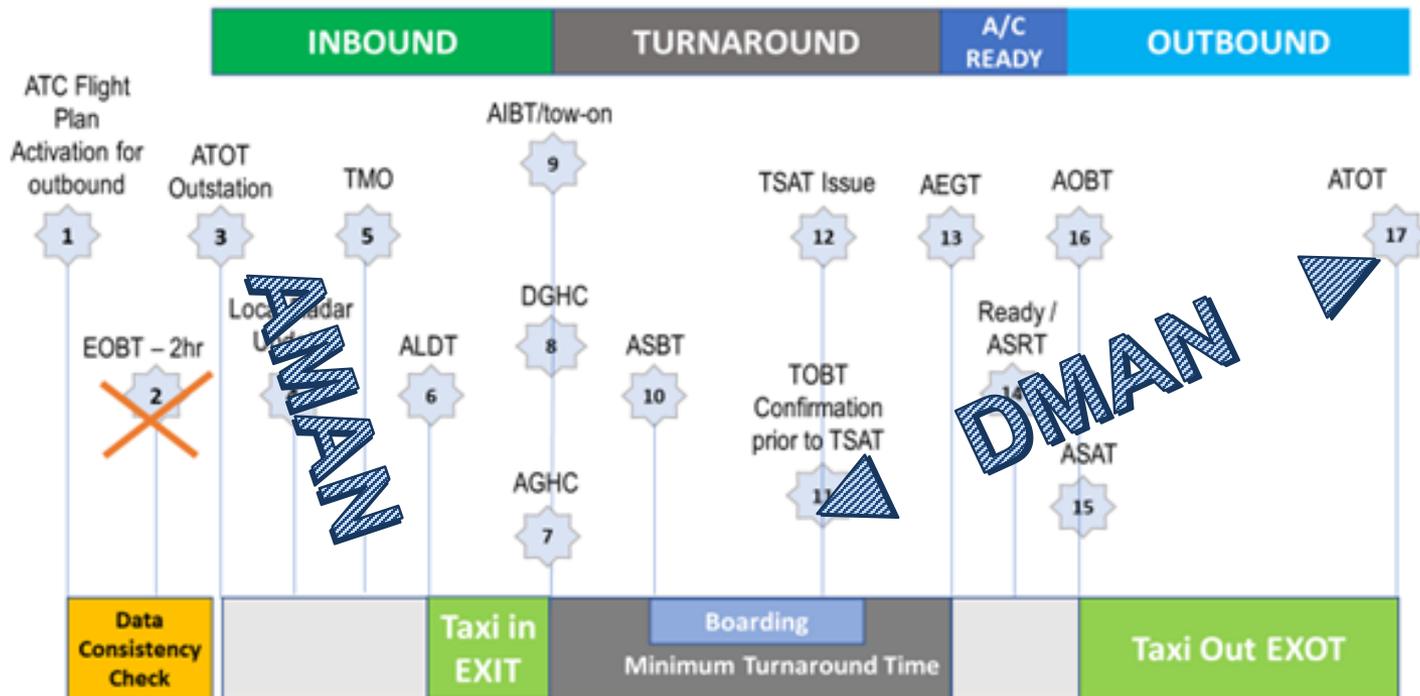
- COVID19 disruption delayed the implementation
 - A-CDM Go-Live 14th November 2022, published as Aeronautical Information Circular
 - A-CDM fully implemented on both OTHH & OTBD
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- A-CDM enhanced Operations during FIFA World Cup 2022
- Transparent communication and close cooperation between all A-CDM stakeholders
- Continuation of A-CDM working groups to adjust procedures, systems and training to achieve the required accuracy, based on lessons learned

Information sharing

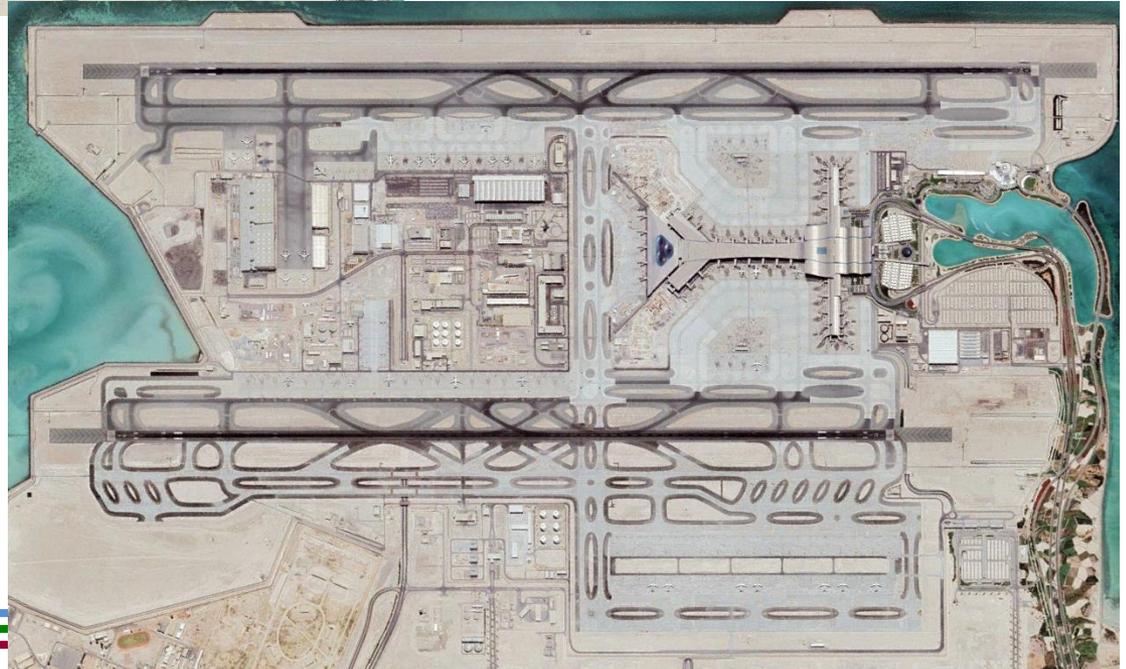
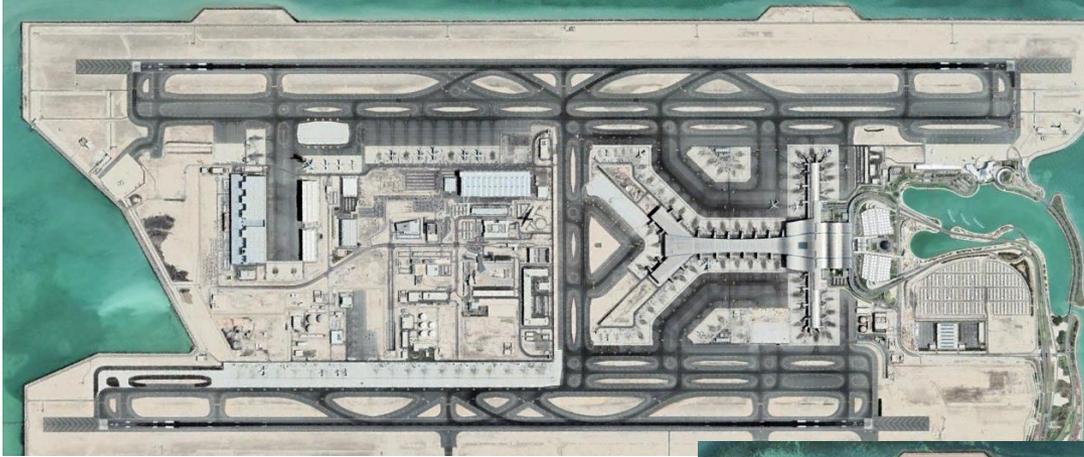
- Common understanding already back in 2017 (initial start of A-CDM)
- Sharing of all relevant information via one common platform
- All stakeholders working with the same quality of data on the same platform

Milestone management



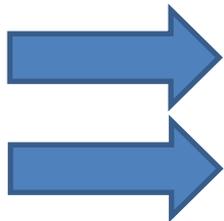
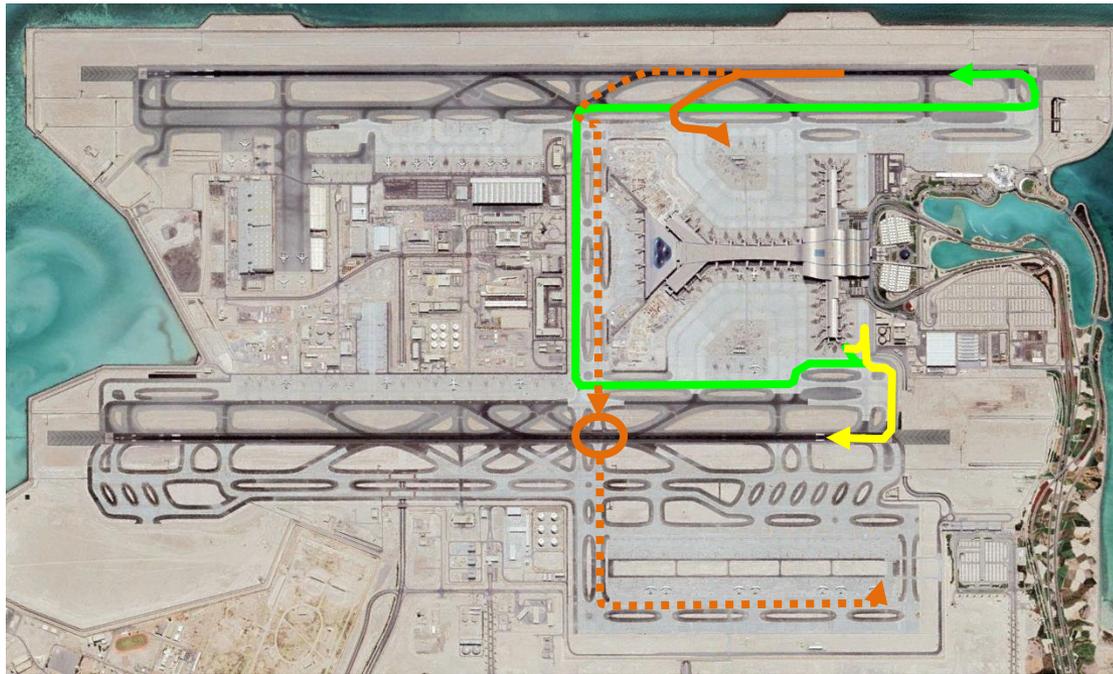
Variable taxi time (in & out)

- Airport layout and infrastructure



Variable taxi time (in & out)

- Airport layout and infrastructure
- Location of aircraft parking stand
- Runway(s) in use and distance from parking stand to the holding position(s)
- Runway crossing required ?
- Push-Back time(s)
- Aircraft type and operator
- Aircraft weight
- Meteorological conditions
- Traffic density
- Local operating procedures



EXIT (“taxi in time”) and EXOT (“taxi out time”)

Aeroficial Performance Cockpit



Aeroficial Intelligence Performance Cockpit



Performance Cockpit

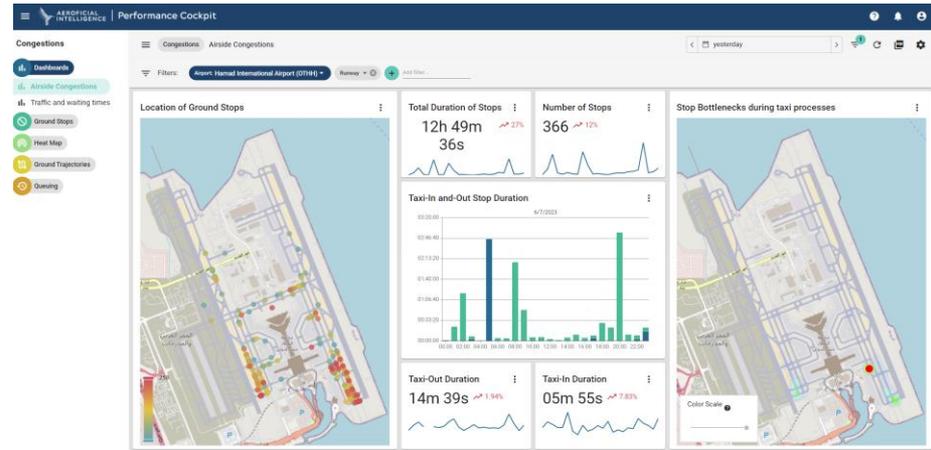
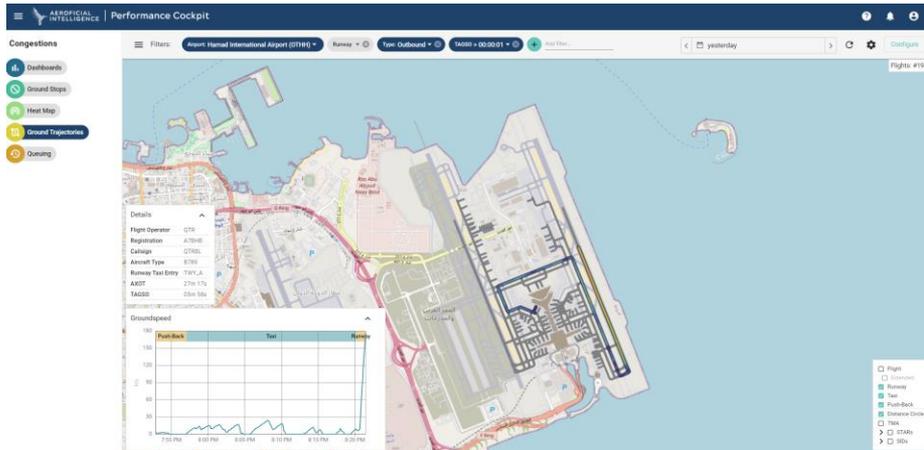
Welcome Franz!

- Live Cockpit**
 - Dashboard icon
- Airport Overview**
 - Dashboard icon
- Congestions**
 - Dashboard icon
 - Ground Stops
 - Heat Map
 - Ground Trajectories
 - Queuing
- Line-Up & Vacation**
 - Dashboard icon
 - Line-Up Trajectory
 - Line-Up Stops
- Safety**
 - Dashboard icon
- Separation**
 - Dashboard icon
- Runway Occupancy Time**
 - Dashboard icon
 - Exits used
 - Entries used
 - Runway Occupancy Time
- Airspace**
 - Dashboard icon
 - Outbounds
 - Inbounds
- TWR**
 - Dashboard icon
 - Inbounds

Aeroficial Intelligence Performance Cockpit



Live view



Statistics



Collaborative Management of Flight Updates

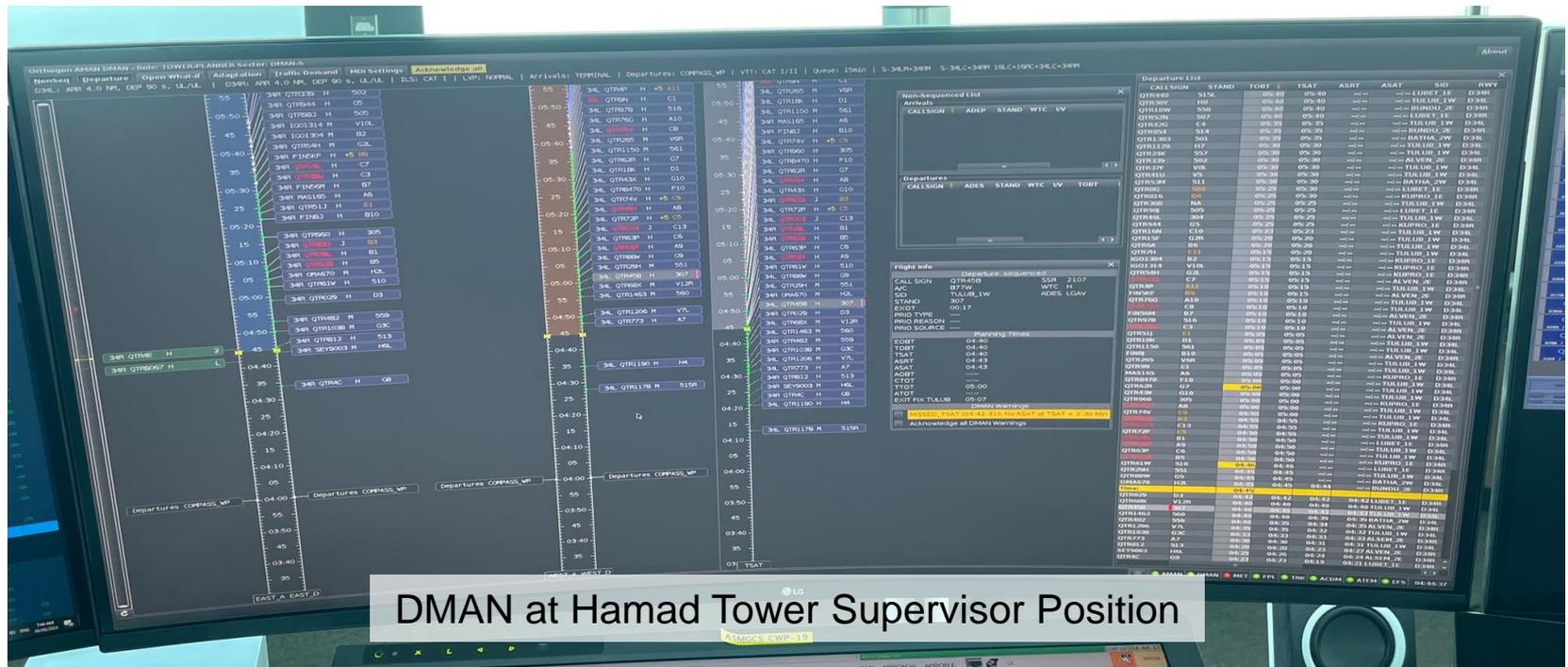
- Ongoing optimization, update handling via A-CDM sharing platform
- General updates, prioritization of flights, etc.
- All stakeholders working with the same quality of data on the same platform
- A-CDM platform and other A-CDM depended systems are configured according to restrictions and operational needs

The screenshot displays a complex data table within a web browser interface. The table lists various flight operations with columns including: FT, IA, IWAY, Destination, SCBT, EBRT, AGBT, TOBT, IT, TSAT, AGBT, ASAT, TTOT, ATOT, CTOT, REG, Priority, Alert, FStatus, Stand, Gate, DES_LA, DES_SC, Terminal, DGHC, AGBT, AROT, EXOT, AROT, ETOT, MTTT, CIC, MU, F, J, Y, TTL, PKX, NI, Best Time, and Comments. The data is organized into rows, with some cells highlighted in yellow or orange, indicating specific flight updates or statuses. The interface also shows a search bar and various filters at the top.

ACDM platform at Hamad Tower Supervisor Position

Pre-Departure Sequencing

- Departure Manager (DMAN) frequently adjusted to airport expansion areas, operational restrictions & airspace changes
- DMAN is configured to support A-CDM operations based on the latest airspace design
- Ongoing project: Integration of all towing movements into DMAN to optimize traffic flow on the ground



DMAN at Hamad Tower Supervisor Position



Additional Information

- 18th May 2023 ACDM AIC was transferred to Qatar eAIP
 - AD 2 Aerodromes:
 - OTHH AD 2.23 Additional Information / 4 ACDM
 - OTBD AD 2.23 Additional Information / 2 ACDM
- Arrival Manager (AMAN) update ongoing, completion foreseen end of 2023
 - AMAN is optimizing airspace/runway planning and runway balancing
- A-CDM in adverse conditions is an ongoing activity in the A-CDM working group and results are yet to come



Qatar eAIP OTHH

4 AIRPORT COLLABORATIVE DECISION MAKING (ACDM)

4.1 GENERAL

- 4.1.1 AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) concept of operations has been implemented at Hamad International Airport, to optimize airport operations by having an efficient turnaround process, departure and arrival sequencing planning and overall improving the predictability of events.
- 4.1.2 A-CDM involves the sharing of accurate and timely information between airport operator, aircraft operators, ground handlers and ATC through different supporting systems and implementing a set of operational procedures.
- 4.1.3 Target Off Block Time (TOBT) – The time an Aircraft Operator (AO) or Ground Handling Agent (GHA) or Airport authority estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle connected to the aircraft and ready to start-up/pushback immediately upon reception of approval from ATC.
- 4.1.4 Target Start Up Approval Time (TSAT) – The time provided by ATC that an aircraft can expect start-up/push back approval, based on RWY sequencing, push-back & taxi constraints and ATFM measures – Calculated Take-Off Time (CTOT), if applicable.

4.2 A-CDM PRE-DEPARTURE PROCEDURES

- 4.2.1 A-CDM procedures apply to all flights departing from Hamad International Airport, except HEAD, Military, SAR, MEDEVAC, HOSP and other special flights, whereby ATC shall have full discretion in the conduct of such operations.
- 4.2.2 A-CDM will generate and calculate an automated system-TOBT taking into account the estimated/actual in-block time (EIBT/AIBT), minimum turnaround time and scheduled time of departure (SOBT).
- 4.2.3 The ground handler (Qatar Aviation Services – QAS) will confirm the system generated TOBT at 45 minutes and later as required update the prior calculated TOBT. TOBT can be updated to an earlier time if needed. TOBT is subsequently updated to an accuracy of +/- 5 minutes if changes are expected.
- 4.2.4 TOBT is available through:
- A-CDM platform
 - Turnaround Coordinator
 - Parking stands equipped with VDGS
- 4.2.5 TSAT information is available through:
- A-CDM platform at 30 minutes before TOBT
 - Turnaround Coordinator
 - Parking stands equipped with VDGS shall display TSAT.
Note: Flight deck crew shall not contact ATC for start-up request earlier than TSAT -2 minutes.

4.3 A-CDM START-UP PROCEDURES

- 4.3.1 ATC/En-route Clearance request:
- ATC will communicate TSAT to flight deck crew (if available) but only via voice, DCL cannot provide TSAT.
- 4.3.2 Flight deck crew shall ensure aircraft is ready to push back at TOBT.
- 4.3.3 Start-up and Push back clearance: The flight deck crew must have a valid ATC en-route clearance.
- 4.3.4 At TSAT:
- At TSAT +/- 2 minutes:
 - Flight deck crew to call the appropriate ATC frequency, allocated during en-route clearance, to request start and push-back or start and taxi.
 - Flight deck crew shall continue monitoring the ATC frequency.
 - ATC will advise ATC-related changes to TSAT via frequency (if required).
 - Aircraft are supposed to push-back at TSAT +/- 2 minutes.
 - At TSAT + 5 minutes:
 - If the pushback cannot be executed by TSAT + 5 minutes due to any reason (and the crew requested and received startup clearance from ATC within the TSAT +/- 2 minutes window), it is the flight deck crew's responsibility to advise the ground handler and its airline representatives to update TOBT accordingly for a new TSAT.
 - The flight deck crew may be required to coordinate with ATC for new clearances (start-up approval and/or en-route clearance if required) based on the new TSAT.
Note: Flight deck crew shall not contact ATC or report ready for start-up request prior TSAT. Unless start-up on parking stand is required, ref 4.3.5
- 4.3.5 Start-up procedure on parking stand
- If an ACFT requires to start engine/s while on parking stand (i.e. due APU INOP), flight deck crew shall request engine start on stand at a time that ensures TSAT is met (i.e. TSAT -5 minutes).
 - Pushback request (after engine start on stand) shall be made at TSAT +/- 2 minutes.
 - Ref 4.3.4 item 2, if at TSAT +5 minutes pushback cannot be executed.



Qatar eAIP OTBD

2 AIRPORT COLLABORATIVE DECISION MAKING (ACDM)

2.1 GENERAL

- 2.1.1 AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) concept of operations has been implemented at Doha International Airport, to optimize airport operations by having an efficient turnaround process, departure and arrival sequencing planning and overall improving the predictability of events.
- 2.1.2 A-CDM involves the sharing of accurate and timely information between airport operator, aircraft operators, ground handlers and ATC through different supporting systems and implementing a set of operational procedures.
- 2.1.3 Target Off Block Time (TOBT) – The time an Aircraft Operator (AO) or Ground Handling Agent (GHA) or Airport authority estimates that an aircraft will be ready, all doors closed, push back vehicle connected to the aircraft and ready to start-up/pushback immediately upon reception of approval from ATC.
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2.2 A-CDM PRE-DEPARTURE PROCEDURES

- 2.2.1 A-CDM procedures apply to all flights departing from Doha International Airport, except HEAD, Military, SAR, MEDEVAC, HOSP, and other special flights, whereby ATC shall have full discretion in the conduct of such operations.
- 2.2.2 A-CDM will generate and calculate an automated system-TOBT taking into account the estimated/actual in-block time (EIBT/AIBT), minimum turnaround time and scheduled time of departure (SOBT).
- 2.2.3 The ground handler (Qatar Aviation Services – QAS) will confirm the system generated TOBT at 45 minutes and later as required update the prior calculated TOBT. TOBT can be updated to an earlier time if needed. TOBT is subsequently updated to an accuracy of +/- 5 minutes if changes are expected.
- 2.2.4 TOBT is available through:
- A-CDM platform
 - Turnaround Coordinator
- 2.2.5 TSAT information is available through:
- A-CDM platform at 30 minutes before TOBT
 - Turnaround Coordinator
- Note: Flight deck crew shall not contact ATC for start-up request earlier than TSAT -2 minutes.*

2.3 OTBD A-CDM START-UP PROCEDURE

- 2.3.1 Flight deck crew shall report "ready" to ATC at TOBT until max TOBT +5.
- 2.3.2 Flight deck crew shall monitor ATC frequency to receive start- and push-back approval or taxi instruction for PIPO stands.
- 2.3.3 ATC amongst other entities can inform flight deck crew about CTOT (if applicable).



Questions?



Thank you!

